Ref No. VAB/ENV/2022-23/37

Date: 25/11/2022

To,
The Director,
Ministry of Environment and Forest,
Regional Office (Southern Zone), Kendriya Sadan,9
4th Floor, 17th Main Road, 2nd Block, Koramangala,
Bengaluru, Karnataka- 560034

Subject:
Submission of 2nd 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 24/04/2022
2. Amendment in Environment Clearance from MOEF vide letter dated 14th March, 2022

Respected Sir,
With respect to above references, please find enclosed herewith:
2nd Six-monthly compliance report to Environment Clearance File No: IA-J-11011/946/2007-IA.II(I) dated 24/04/2022 for the period **April 2022 to September 2022** 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

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

VEDANTA LIMITED
Sesa Goa Iron Ore: Sesa Ghor, 20 EDC Complex, Patto, Panjim, Goa – 403 001, India
T +91 0832 2460000 | Website: www.sesagoaironore.com

Registered Office: Vedanta Limited, 1st Floor, 'C' wing, Unit 103, Corporate Avenue, Atul Projects, Chakala, Andheri (East), Mumbai 400093, Maharashtra, India
CIN: L13209MH1965PLC291394

Compliance Report to

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

(Period: April 2022 to September 2022)

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 30th September 2022
	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) under project site. There are around 3,00,000 nos. of plants available in the green belt area. This year, during the monsoon season, i.e., from June to September 2022, total 1560 numbers of plants were planted to carry out gap filling in our green belt. Apart from this, 1850 nos. of saplings were planted in adjoining villages of Amona and Navelim. List of species planted during this year has been attached as **Annexure- I.**
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 received from the State Forest Department, Govt. of Goa and the implementation of the same is in progress. In first phase, trap cameras would be provided by December 2022.
iv.	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	

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	MoEF&CC along with the six-monthly compliance report. a. 6.38 km internal plant road shall be black topped or concreted by April 2022.	**Complied** Black topping/concreting of 6.38km of internal road is completed. **Annexure II:** photographs of black topping/concreting of internal roads.
	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.	**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. We have acquired a company manufacturing slag cement for utilisation of slag wherein, we have provided a covered shed to store the slag, in compliance with this condition. **Annexure III:** Photographs of slag shed
	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.	**Complied.** Received the NOC on 14th July 2022 from concerned competent authority. Attaching **annexure-IV:** NOC received.
	d. Wind Shield for control of graphite particle emissions shall be provided by March 2022.	**Complied** New windshield of 260 m length has been installed at the plant boundary towards Amona village in terms of observation 50.1.26(v), of the EAC. **Annexure V:** Photographs of windshield
v.	Ductile Iron (DI) plant shall have the following provisions: a. Wet scrubbers for Volatile Organic Compounds in annealing furnace. b. Bag filter for Zn coating and Mg converter area. c. Wet scrubbers in paint and bitumen coating area. d. Bag Filter in Cement lining area. e. PTFE dipped bags shall be used in the plant. f. PM emissions from BF in Zinc coating area shall be 5 mg/Nm3. g. ETP with recycling facility shall be included. All scrubber effluent shall be treated in ETP.	Noted and shall be ensured during project phase of ductile iron pipe plant as part of detailed Engineering.
vi.	Parking area for trucks/dumpers shall be provided within the plant. No truck/dumper shall be parked outside the plant premises.	Parking area for trucks/dumpers is provided inside the plant premises. No company truck/ dumper is parked outside the plant premises.
vii.	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.	Various initiatives to conserve Navelim wetland have been initiated involving the community (Sasticho Akh Tenant Association) like cage fishing and back to farming. Through this project, interventions to conserve biodiversity, encourage agriculture and other alternative livelihood interventions are undertaken. Total 1850 nos. of plantation was also carried out in surroundings of Navelim wetland. **Annexure VI**: Photographs of the plantation.

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viii.	**Solid waste utilization** ● Maximum 90 days of slag storage area shall be permitted inside the plant.	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.	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.	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.	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 is 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.	Performance test of the air pollution control systems was done and efficiency certificates have been submitted to Goa State Pollution Control Board on 2nd September 2022. Attaching **annexure-VII:** Performance test results of air pollution control devices.
xii.	Submerged Arc Furnace shall be of closed type with 4th hole extraction system.	Noted. This shall be taken up during project phase.
xiii.	Particulate matter emissions from stacks shall be less than 30 mg/Nm3. 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/Nm3 within two years from the date of EC.	As a part of expansion project, new baghouse will be provided for Blast Furnace 1. The Work Order has been released towards the same and work is in progress at site.
xiv.	AAQ at Mosque and Siddhartha Caves archaeological sites shall be monitored once in a month as per the CPCB norms.	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-VIII:** Ambient air monitoring reports of both archaeological sites from April 2022 till September 2022.
	02 manual ambient air quality monitoring stations within the plant shall be replaced with one CAAQMS in addition to the 03 CAAQMS presently installed.	Goa State Pollution Control Board team visited the site on 25/08/2022 to identify the location for the new Continuous Ambient Air Quality Monitoring System (CAAQMS). Purchase Order for new CAAQMS has been released and will be installed in due course.
	Manual monitoring as done presently shall be continued and Benzo Amino Pyrene (BaP) shall be monitored manually as per CPCB norms.	Benzo Amino Pyrene (BaP) is being monitored monthly and reports are being submitted monthly to GSPCB. Attaching **annexure-IX:** BaP

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		monitoring data from April 2022 to September 2022.
	One manual air quality monitoring station shall be established towards Amona and Navelim villages and ambient air quality monitored as per CPCB norms.	We have installed one AAQMS towards Amona village and one AAQMS towards Navelim village. The ambient air quality monitoring at these two locations has been started. The reports are attached as **annexure-X.**
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-XI:** Riverine water quality reports from April'22 to September'22.
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 proposed for Blast Furnace 1. The Work Order has been released towards the same and work is in progress at site.
xix.	Additional Filter beds, arrester wall shall be provided along the storm water drainage for settlement of suspended particles and to prevent siltation.	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 monsoon 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:**	

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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.	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.	Six Ambient Air Quality Monitoring Stations (AAQMS) are present and monthly air monitoring is done through laboratories recognized under Environment (Protection) Act, 1986 or NABL accredited laboratories. Reports are being submitted before 15th of every month to Goa State Pollution Control Board (GSPCB). Attaching **annexure XII:** Ambient air quality reports from April'2022 to September'2022.
iii.	Sampling facility at process stacks and at quenching towers shall be provided as per CPCB guidelines for manual monitoring of emissions.	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.	Baghouses, Electrostatic Precipitators (ESPs), Dust Extracting Systems (DESs), 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.	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.	For road cleaning, road sweeping machines are deployed.
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.	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 whenever plying outside premises.
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.

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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 2022 as a part of pre-monsoon ground water study. The reports are enclosed herewith as **Annexure-XIII** for your reference.
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, however, new STP shall be installed during construction phase of expansion project.
v.	Garland drains and collection pits shall be provided for each stock pile to arrest the run-off in the event of heavy	Garland drains and catch ponds have been made along the stock piles to prevent water pollution during rainy season.

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	rains and to check the water pollution due to surface run off.	
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 and works every day.
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.	Noise pollution is monitored once every three months. Attaching **annexure XIV** as noise monitoring reports of May 2022 and August 2022.
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, 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.
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 is being explored for overall solar potential and shall be accordingly taken up.
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 composting unit and is recycled for further use.
VII	**Green Belt**	

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<table>
<tr><td>i.</td><td>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.</td><td>GHG emissions inventory is prepared for the plant. The list of programs for reduction of GHG emissions is as follows:
<table>
<tr><th>Sl.</th><th>Description</th></tr>
<tr><td>1</td><td>Increasing clean power generation in Waste Heat Recovery Power Plant through turbine upgradation.</td></tr>
<tr><td>2</td><td>Coke drying by using waste heat recovery from hot air of sinter cooler</td></tr>
<tr><td>3</td><td>Oxygen enrichment in Blast furnaces.</td></tr>
<tr><td>4</td><td>Replacing old low efficiency motors with IE4 super premium efficiency motors</td></tr>
<tr><td>5</td><td>Replacing old pumps with high efficiency pumps</td></tr>
<tr><td>6</td><td>Installing VFD's for several compressors, pumps and fans.</td></tr>
</table></td></tr>
<tr><th>VIII</th><th colspan="2">Public hearing and Human health issues</th></tr>
<tr><td>i.</td><td>Emergency preparedness plan based on the Hazard identification and Risk Assessment (HIRA) and Disaster Management Plan shall be implemented.</td><td>Emergency preparedness plan based on the Hazard identification and Risk Assessment (HIRA) and Disaster Management Plan is implemented.</td></tr>
<tr><td>ii.</td><td>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.</td><td>Heat stress analysis for the workmen who work in high temperature work zone has been carried out and proper Personal Protection Equipment (PPE) is provided always.</td></tr>
<tr><td>iii.</td><td>iii. Occupational health surveillance of the workers shall be done on a regular basis and records maintained.</td><td>Occupational health surveillance is done annually. The last Occupational health surveillance was done in Feb-March 2022.</td></tr>
<tr><th>IX</th><th colspan="2">Environment Management</th></tr>
<tr><td>i.</td><td>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.</td><td>Noted.</td></tr>
<tr><td>ii.</td><td>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</td><td>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.</td></tr>
</table>

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	shall be submitted to the MoEF&CC as a part of six-monthly report.	
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.	**T**he 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 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.

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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

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Annexure I

List of species planted

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Species planted within premises:

Sr. No.	Species name	Quantity
1	Mango	80
2	Badam	25
3	Jambhul	145
4	Kokum	160
5	Avla	125
6	Jackfruit	140
7	Tarnan (Rain Tree)	140
8	Mahagony	75
9	Chinch	105
10	Wood Apple	50
11	Teak	25
12	Pimpal	17
13	Vad	3
14	Cashew	30
15	Shisnum	25
16	Siral	25
17	Ranbad	25
18	Buyo	25
19	Khair	30
20	Ghoting	110
21	Rito	10
22	Shilho	5
23	Shishu	5
24	Vawlo	5
25	Kokar	5
26	Noni	5
27	Bamboo	10
28	Rain Tree	70
29	Owek	20
30	Otumb	65
Total		**1560**

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Species planted outside premises:

Sr. No.	Species name	Quantity
1	Mango	525
2	Lemon	130
3	Cashew	452
4	Coconut	73
5	Arecanut	547
6	Kokum	21
7	Dalchini	8
8	Nutmeg	6
9	Drumstick	2
10	Breadfruit	2
11	Chickoo	2
12	Other species	82
Total		**1850**

Sensitivity: Public (C4)

Annexure II

Photographs of concreted/black-topped internal roads

Sensitivity: Public (C4)

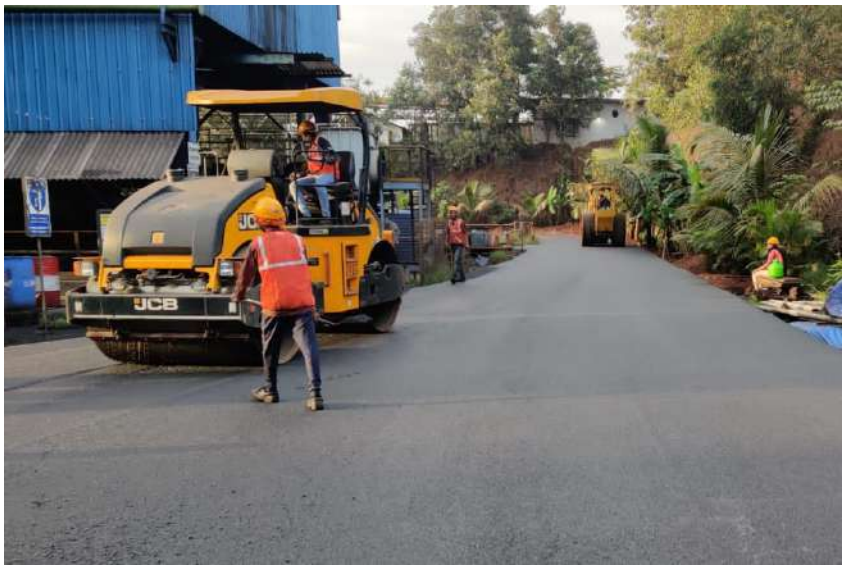
PHOTOGRAPHS OF BLACK TOPPING OF INTERNAL ROAD

Bitumen road at Oxygen plant

Concrete road at the Blast Furnace 3 area

Sensitivity: Public (C4)

Concrete road at Blast Furnace 1 &2 raw material area



Bitumen road at Met coke oven

Sensitivity: Public (C4)

Annexure III

Photographs of slag sheds

Sensitivity: Public (C4)

Photographs of slag sheds

Slag shed at the cement plant

Slag shed at project site

Sensitivity: Public (C4)

Annexure IV

NOC received from competent authority

Sensitivity: Public (C4)

Department of Archaeology
Government of Goa
Ourem Road, Mala, Panaji, Goa, 403 001, India

No. 8/387/2022/DAA- 891 Dated: 14th July, 2022

To,
Shri Saptesh Sardesai,
CEO- Value Added Business,
Vedanta Limited,
Sesa Goa Iron Ore:Sesa Ghor,
20 EDC Complex,
Patto, Panaji-Goa-403 001, India

Sub: NOC for expansion project at Amona, Navelim village, Bicholim Taluka, North Goa District for Vedanta Sesa Iron Ore, to study the impact of expansion project of Vedanta Limited value added Business for the archaeological sites in the vicinity.

Ref.: 1. No.VAB/ENV/2021-22/23 dated 22/07/2021.
2. No.VAB/ENV/2021-22/dated 16/08/2021.
3. No. VAB/ENV/2021-22/dated 22/12/2021.
4. No. VAB/ENV/2022-23/05 dated 06/05/2022

Sir,

Please refer to your applications and subject cited above.

In this regard, this Directorate hereby conveys no objection, subject to following Conditions.

1. Vedanta Limited will carry out Heritage Impact Assessment (HIA)study within 6 months from the date of actual go live of the project and the report of Heritage Impact Assessment (HIA) study is to be submitted to this office. This study shall consider following points:

i. Impact of air pollution on exposed laterite caves, structures.

ii.Impact on local bio-diversity attached with monuments.

iii.Any other possible form of air/water pollution/emission which may cause harm to monument.

Contd…

2. Recommendations from Heritage Impact Assessment (HIA) study shall be adhered by Vedata Limited, Value Added Business, Met Coke Division, Navelim, under the supervision/guidance of Department of Archaeology or Archaeological Survey of India (ASI), as the case may be, and the cost for the same shall be borne by Vedanta Limited, Value Added Business, Met Coke Division, Navelim.
3. Incase if HIA Study points out towards any adverse effect on heritage due to activities carried under the project of Vedanta Limited value added Business then implementation of mitigation measures and compensation shall be the sole responsibility of Vedanta.

NOC is granted on the basis of above mentioned Conditions and bears approval of the Government vide U.O. No.66 dated 13/07/2022, this NOC is revocable in case of violation of any of the above conditions.

Yours faithfully,

(Dipak M. Bandekar)
Director of Archaeology

Annexure V

Photographs of windshield

Sensitivity: Public (C4)

Windshield installed towards Amona village side

Sensitivity: Public (C4)

Annexure VI

Photographs of plantation around Navelim wetland

Sensitivity: Public (C4)

Photographs of plantation done around Navelim wetland

Employees' participation in the plantation

Sensitivity: Public (C4)

Employees' participation in the plantation

Annexure VII

Performance test results of air pollution control devices

Sensitivity: Public (C4)

vedanta
transforming elements

sesa goa iron ore

Ref No. VAB/ENV/2022-23/16

Date: 02/09/2022

To,

The Member Secretary,

Goa State Pollution Control Board,

Pilarne Industrial Estate, Bardez- 403511, Goa.

Subject: Performance evaluation of Air Pollution Control Devices (APCDs)

Reference:

1. Point no. 9 in Table-1 of the Environment Audit Report of M/s Vedanta Limited, Amona, Goa
2. Point no. 4 in MOM of Personal Hearing held on 22.02.2022 in the matter of Environment Audit Report of M/s Vedanta Limited, Amona, Goa

Dear madam,

With respect to above mentioned references towards performance evaluation of Air Pollution Control Devices (APCDs) of M/s Vedanta Limited, Amona, Goa, we are submitting the Efficiency Certificates of the same. Kindly find them enclosed with this letter.

Thanking you

Yours faithfully

For Vedanta Limited- Value Added Business

Saptesh Sardesai

CEO- Value Added Business

Vondeker 5/9/22

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

VEDANTA LIMITED
Sesa Goa iron ore: Sesa Ghor, 20 EDC Complex, Patto, Panjim, Goa – 403 001, India
T +91 0832 2460600 | Website: www.sesagoaironore.com

Registered Office:
Vedanta Limited, 1st Floor, 'C' wing, Unit 103, Corporate Avenue, Atul Projects, Chakala, Andheri (East), Mumbai 400093, Maharashtra, India.
CIN: L13209MH1965PLC291394

List of efficiency certificates of the Air Pollution control devices

Sr No	APCD connected to the Stack
1.	BF 1 Cast house
2.	BF 2 Cast house
3.	BF 3 Cast house De-dusting
4.	BF 3 Stock house De-dusting
5.	MCD battery 2-ST-1 Bag house
6.	MCD battery CSP Bag house plant
7.	MCD battery-2, ST-2 Bag house
8.	MCD battery-2, ST-3 Bag house
9.	Sinter Plant-ESP Head end
10.	Sinter Plant Flux and fuel bag house
11.	Sinter plant Screening de-dusting bag house
12	Sinter Plant tail end ESP
13.	Sinter Plant proportioning De-dusting

ADITYA ENVIRONMENTAL SERVICES PVT. LTD.
Testing Laboratory is certified by **ISO 9001:2015&ISO 45001:2018**
Recognized by **MoEFCC** as **"Environmental Laboratory"** valid up to 24.04.2024
Laboratory: P-1, MIDC Mohopada, P.O. Rasayani, Dist. Raigad Pin 410222
Tel: 02192 252008, **CIN:** U74999MH2001PTC132091

Stack Emission Quality Test Report

Ref. No: AESPL/LAB-G/ST-22/05/50-52 **Issue Date:** 23/05/2022

Name of the client	:	M/S Vedanta Limited.
Name of site	:	M. Plant - Met Coke Sanquelim Navelim- Sanquelim Goa 403505 India
Date of sampling	:	18/05/2022 at 15:40
Date of receipt	:	19/05/2022
Date of analysis	:	19/05/2022 to 21/05/2022
Environmental condition	:	Ambient temperature 30°C
Monitored & transported by	:	AESPL
Project/ Job number	:	Purchase Order No: PO/2022/04/02783 dtd 25/04/2022
Reference of sampling	:	AESPL/LAB/QR/7.3.3/R-02
Method of sampling	:	AESPL/LAB/SOP/7.3.1/ST-01
Stack Details		
Stack attached to	:	BF-1, Cast house
Shape of Stack	:	Round
Pollution control device attached with the Stack	:	Bag Filter

Conclusion

Operating Temperature °C		Dust Load (TPM)		Operating Efficiency %
Inlet	Outlet	Inlet mg/Nm³	Outlet mg/Nm³	
58	49	951.06	20.5	97.8

Note:

1. The test report shall not be reproduced except in full, without written approval of laboratory.
2. Results relate only to the item tested.

Reshma S. Patil
(Authorized Signatory – Pollution & Environment)

-End of Test Report-

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Laboratory: P-1, MIDC Mohopada, P.O. Rasayani, Dist. Raigad Pin 410222
Tel: 02192 252008, **CIN**: U74999MH2001PTC132091

Stack Emission Quality Test Report

Ref. No: AESPL/LAB-G/ST-22/05/01-02 **Issue Date:** 11/05/2022

Name of the client	:	M/S Vedanta Limited.
Name of site	:	M. Plant - Met Coke Sanquelim Navelim- Sanquelim Goa 403505 India
Date of sampling	:	07/05/2022 at 15:20
Date of receipt	:	07/05/2022
Date of analysis	:	07/05/2022 to 10/05/2022
Environmental condition	:	Ambient temperature 30°C
Monitored & transported by	:	AESPL
Project/ Job number	:	Purchase Order No: PO/2022/04/02783 dtd 25/04/2022
Reference of sampling	:	AESPL/LAB/QR/7.3.3/R-02
Method of sampling	:	AESPL/LAB/SOP/7.3.1/ST-01
Stack Details		
Stack attached to	:	BF 2, Cast house
Shape of Stack	:	Round
Pollution control device attached with the Stack	:	Bag Filter

Conclusion

Operating Temperature °C		Dust Load (TPM)		Operating Efficiency %
Inlet	Outlet	Inlet mg/Nm³	Outlet mg/Nm³	
62	43	913.46	27.15	97.0

Note:

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Tel: 02192 252008, **CIN**: U74999MH2001PTC132091

Stack Emission Quality Test Report

Ref. No: AESPL/LAB-G/ST-22/06/01-03 **Issue Date:** 17/06/2022

Name of the client	:	M/S Vedanta Limited.
Name of site	:	M. Plant - Met Coke Sanquelim Navelim- Sanquelim Goa 403505 India
Date of sampling	:	13/06/2022 at 16:00
Date of receipt	:	13/06/2022
Date of analysis	:	13/06/2022 to 16/06/2022
Environmental condition	:	Ambient temperature 32°C
Monitored & transported by	:	AESPL
Project/ Job number	:	Purchase Order No: PO/2022/04/02783 dtd 25/04/2022
Reference of sampling	:	AESPL/LAB/QR/7.3.3/R-02
Method of sampling	:	AESPL/LAB/SOP/7.3.1/ST-01
Stack Details		
Stack attached to	:	BF 3 Cast House De-dusting
Shape of Stack	:	Round
Pollution control device attached with the Stack	:	Bag Filter

Conclusion

Operating Temperature °C		**Dust Load (TPM)**		**Operating Efficiency %**
Inlet	**Outlet**	**Inlet mg/Nm³**	**Outlet mg/Nm³**	
48	45	1343.01	27.89	97.9

Note:

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Tel: 02192 252008, **CIN**: U74999MH2001PTC132091

Stack Emission Quality Test Report

Ref. No: AESPL/LAB-G/ST-22/06/04-06 **Issue Date:** 17/06/2022

Name of the client	:	M/S Vedanta Limited.
Name of site	:	M. Plant - Met Coke Sanquelim Navelim- Sanquelim Goa 403505 India
Date of sampling	:	14/06/2022 at 10:46
Date of receipt	:	14/06/2022
Date of analysis	:	14/06/2022 to 16/06/2022
Environmental condition	:	Ambient temperature 30°C
Monitored & transported by	:	AESPL
Project/ Job number	:	Purchase Order No: PO/2022/04/02783 dtd 25/04/2022
Reference of sampling	:	AESPL/LAB/QR/7.3.3/R-02
Method of sampling	:	AESPL/LAB/SOP/7.3.1/ST-01
Stack Details		
Stack attached to	:	BF3, Stock house de-dusting
Shape of Stack	:	Round
Pollution control device attached with the Stack	:	De-dusting

Conclusion

Operating Temperature °C		Dust Load (TPM)		Operating Efficiency %
Inlet	Outlet	Inlet mg/Nm³	Outlet mg/Nm³	
35	35	2593.36	71.37	97.2

Note:

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(Authorized Signatory – Pollution & Environment)

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Stack Emission Quality Test Report

Ref. No: AESPL/LAB-G/ST-22/06/16&17 **Issue Date:** 23/06/2022

Name of the client	:	M/S Vedanta Limited.
Name of site	:	M. Plant - Met Coke Sanquelim Navelim- Sanquelim Goa 403505 India
Date of sampling	:	20/06/2022 at 14:10
Date of receipt	:	20/06/2022
Date of analysis	:	20/06/2022 to 22/06/2022
Environmental condition	:	Ambient temperature 28°C
Monitored & transported by	:	AESPL
Project/ Job number	:	Purchase Order No: PO/2022/04/02783 dtd 25/04/2022
Reference of sampling	:	AESPL/LAB/QR/7.3.3/R-02
Method of sampling	:	AESPL/LAB/SOP/7.3.1/ST-01
Stack Details		
Stack attached to	:	MCD Battery 2-ST1 Bag house
Shape of Stack	:	Round
Pollution control device attached with the Stack	:	Bag Filter

Conclusion

Operating Temperature °C		Dust Load (TPM)		Operating Efficiency %
Inlet	Outlet	Inlet mg/Nm³	Outlet mg/Nm³	
60	45	869.37	21.75	97.5

Note:

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(Authorized Signatory – Pollution & Environment)

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Laboratory: P-1, MIDC Mohopada, P.O. Rasayani, Dist. Raigad Pin 410222
Tel: 9112844844, **CIN:** U74999MH2001PTC132091

Stack Emission Quality Test Report

Ref. No: AESPL/LAB-G/ST-22/07/01&03 **Issue Date:** 22/07/2022

Name of the client	:	M/S Vedanta Limited.
Name of site	:	M. Plant - Met Coke Sanquelim Navelim- Sanquelim Goa 403505 India
Date of sampling	:	18/07/2022 at 15:03
Date of receipt	:	18/07/2022
Date of analysis	:	18/07/2022 to 21/07/2022
Environmental condition	:	Ambient temperature 23°C
Monitored & transported by	:	AESPL
Project/ Job number	:	Purchase Order No: PO/2022/04/02783 dtd 25/04/2022
Reference of sampling	:	AESPL/LAB/QR/7.3.3/R-02
Method of sampling	:	AESPL/LAB/SOP/7.3.1/ST-01

Stack Details

Stack attached to	:	MCD battery CSP Bag house plant
Shape of Stack	:	Round
Pollution control device attached with the Stack	:	Bag filter

Conclusion

Operating Temperature °C		Dust Load (TPM)		Operating Efficiency %
Inlet	Outlet	Inlet mg/Nm³	Outlet mg/Nm³	
37	37	80.42	0.21	99.74

Note:

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-End of Test Report-

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Tel: 9112844844,**CIN**: U74999MH2001PTC132091

Stack Emission Quality Test Report

Ref. No: AESPL/LAB-G/ST-22/07/04&05 **Issue Date:** 22/07/2022

Name of the client	:	M/S Vedanta Limited.
Name of site	:	M. Plant - Met Coke Sanquelim Navelim- Sanquelim Goa 403505 India
Date of sampling	:	19/07/2022 at 11:06
Date of receipt	:	19/07/2022
Date of analysis	:	19/07/2022 to 21/07/2022
Environmental condition	:	Ambient temperature 27°C
Monitored & transported by	:	AESPL
Project/ Job number	:	Purchase Order No: PO/2022/04/02783 dtd 25/04/2022
Reference of sampling	:	AESPL/LAB/QR/7.3.3/R-02
Method of sampling	:	AESPL/LAB/SOP/7.3.1/ST-01
Stack Details		
Stack attached to	:	MCD Battery-2, ST-2 Bag house
Shape of Stack	:	Round
Pollution control device attached with the Stack	:	Bag filter

Conclusion

Operating Temperature °C		Dust Load (TPM)		Operating Efficiency %
Inlet	Outlet	Inlet mg/Nm³	Outlet mg/Nm³	
27	30	16.31	0.1	99.38

Note:

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-End of Test Report-

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Tel: 9112844844,**CIN:** U74999MH2001PTC132091

Stack Emission Quality Test Report

Ref. No: AESPL/LAB-G/ST-22/07/07&08 **Issue Date:** 22/07/2022

Name of the client	:	M/S Vedanta Limited.
Name of site	:	M. Plant - Met Coke Sanquelim Navelim- Sanquelim Goa 403505 India
Date of sampling	:	19/07/2022 at 15:28
Date of receipt	:	19/07/2022
Date of analysis	:	19/07/2022 to 21/07/2022
Environmental condition	:	Ambient temperature 26°C
Monitored & transported by	:	AESPL
Project/ Job number	:	Purchase Order No: PO/2022/04/02783 dtd 25/04/2022
Reference of sampling	:	AESPL/LAB/QR/7.3.3/R-02
Method of sampling	:	AESPL/LAB/SOP/7.3.1/ST-01
Stack Details		
Stack attached to	:	MCD Battery-2, ST-3 Bag house
Shape of Stack	:	Round
Pollution control device attached with the Stack	:	Bag filter

Conclusion

Operating Temperature °C		Dust Load (TPM)		Operating Efficiency %
Inlet	Outlet	Inlet mg/Nm³	Outlet mg/Nm³	
31	30	184.50	0.1	99.95

Note:

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Reshma S. Patil
(Authorized Signatory – Pollution & Environment)

-End of Test Report-

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Laboratory: P-1, MIDC Mohopada, P.O. Rasayani, Dist. Raigad Pin 410222
Tel: 02192 252008, **CIN**: U74999MH2001PTC132091

Stack Emission Quality Test Report

Ref. No: AESPL/LAB-G/ST-22/06/07& 09 **Issue Date:** 21/06/2022

Name of the client	:	M/S Vedanta Limited.
Name of site	:	M. Plant - Met Coke Sanquelim Navelim- Sanquelim Goa 403505 India
Date of sampling	:	16/06/2022 at 14:35
Date of receipt	:	16/06/2022
Date of analysis	:	16/06/2022 to 18/06/2022
Environmental condition	:	Ambient temperature 30°C
Monitored & transported by	:	AESPL
Project/ Job number	:	Purchase Order No: PO/2022/04/02783 dtd 25/04/2022
Reference of sampling	:	AESPL/LAB/QR/7.3.3/R-02
Method of sampling	:	AESPL/LAB/SOP/7.3.1/ST-01
Stack Details		
Stack attached to	:	Sinter plant-ESP Head End
Shape of Stack	:	Round
Pollution control device attached with the Stack	:	ESP

Conclusion

Operating Temperature °C		Dust Load (TPM)		Operating Efficiency %
Inlet	Outlet	Inlet mg/Nm³	Outlet mg/Nm³	
140	110	7054.61	78.05	98.9

Note:

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Reshma S. Patil
(Authorized Signatory – Pollution & Environment)

-End of Test Report-

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Laboratory: P-1, MIDC Mohopada, P.O. Rasayani, Dist. Raigad Pin 410222
Tel: 9112844844, **CIN**: U74999MH2001PTC132091

Stack Emission Quality Test Report

Ref. No: AESPL/LAB-G/ST-22/06/22&24 **Issue Date:** 20/06/2022

Name of the client	:	M/S Vedanta Limited.
Name of site	:	M. Plant - Met Coke Sanquelim Navelim- Sanquelim Goa 403505 India
Date of sampling	:	17/06/2022 at 11:35
Date of receipt	:	17/06/2022
Date of analysis	:	17/06/2022 to 18/06/2022
Environmental condition	:	Ambient temperature 30°C
Monitored & transported by	:	AESPL
Project/ Job number	:	Purchase Order No: PO/2022/04/02783 dtd 25/04/2022
Reference of sampling	:	AESPL/LAB/QR/7.3.3/R-02
Method of sampling	:	AESPL/LAB/SOP/7.3.1/ST-01
Stack Details		
Stack attached to	:	Sinter plant Flux & fuel bag house
Shape of Stack	:	Round
Pollution control device attached with the Stack	:	Bag filter

Conclusion

Operating Temperature °C		Dust Load (TPM)		Operating Efficiency %
Inlet	Outlet	Inlet mg/Nm³	Outlet mg/Nm³	
32	30	707.60	24.91	96.48

Note:

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Reshma S. Patil
(Authorized Signatory – Pollution & Environment)

-End of Test Report-

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Tel: 9112844844, **CIN**: U74999MH2001PTC132091

Stack Emission Quality Test Report

Ref. No: AESPL/LAB-G/ST-22/06/19-21 **Issue Date:** 20/06/2022

Name of the client	:	M/S Vedanta Limited.
Name of site	:	M. Plant - Met Coke Sanquelim Navelim- Sanquelim Goa 403505 India
Date of sampling	:	15/06/2022 at 12.08
Date of receipt	:	15/06/2022
Date of analysis	:	15/06/2022 to 18/06/2022
Environmental condition	:	Ambient temperature 30°C
Monitored & transported by	:	AESPL
Project/ Job number	:	Purchase Order No: PO/2022/04/02783 dtd 25/04/2022
Reference of sampling	:	AESPL/LAB/QR/7.3.3/R-02
Method of sampling	:	AESPL/LAB/SOP/7.3.1/ST-01
Stack Details		
Stack attached to	:	Sinter plant Screening de-dusting bag house
Shape of Stack	:	Round
Pollution control device attached with the Stack	:	Bag filter

Conclusion

Operating Temperature °C		Dust Load (TPM)		Operating Efficiency %
Inlet	Outlet	Inlet mg/Nm³	Outlet mg/Nm³	
31	46	1185.28	26.13	97.80

Note:

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Reshma S. Patil
(Authorized Signatory – Pollution & Environment)

-End of Test Report-

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Laboratory: P-1, MIDC Mohopada, P.O. Rasayani, Dist. Raigad Pin 410222
Tel: 02192 252008, **CIN**: U74999MH2001PTC132091

Stack Emission Quality Test Report

Ref. No: AESPL/LAB-G/ST-22/06/10 & 12 **Issue Date:** 18/06/2022

Name of the client	:	M/S Vedanta Limited.
Name of site	:	M. Plant - Met Coke Sanquelim Navelim- Sanquelim Goa 403505 India
Date of sampling	:	14/06/2022 at 14:12
Date of receipt	:	14/06/2022
Date of analysis	:	14/06/2022 to 17/06/2022
Environmental condition	:	Ambient temperature 30°C
Monitored & transported by	:	AESPL
Project/ Job number	:	Purchase Order No: PO/2022/04/02783 dtd 25/04/2022
Reference of sampling	:	AESPL/LAB/QR/7.3.3/R-02
Method of sampling	:	AESPL/LAB/SOP/7.3.1/ST-01

Stack Details

Stack attached to	:	Sinter plant Tail end ESP
Shape of Stack	:	Round
Pollution control device attached with the Stack	:	ESP

Conclusion

Operating Temperature °C		Dust Load (TPM)		Operating Efficiency %
Inlet	Outlet	Inlet mg/Nm³	Outlet mg/Nm³	
120	101.5	3451.1	26.23	99.2

Note:

1. The test report shall not be reproduced except in full, without written approval of laboratory.
2. Results relate only to the item tested.

Reshma S. Patil
(Authorized Signatory – Pollution & Environment)

-End of Test Report-

ADITYA ENVIRONMENTAL SERVICES PVT. LTD.
Testing Laboratory is certified by **ISO 9001:2015&ISO 45001:2018**
Recognized by **MoEFCC** as **"Environmental Laboratory"** valid up to 24.04.2024
Laboratory: P-1, MIDC Mohopada, P.O. Rasayani, Dist. Raigad Pin 410222
Tel: 02192 252008, **CIN**: U74999MH2001PTC132091

Stack Emission Quality Test Report

Ref. No: AESPL/LAB-G/ST-22/06/13&14 **Issue Date:** 18/06/2022

Name of the client	:	M/S Vedanta Limited.
Name of site	:	M. Plant - Met Coke Sanquelim Navelim- Sanquelim Goa 403505 India
Date of sampling	:	15/06/2022 at 14:12
Date of receipt	:	15/06/2022
Date of analysis	:	15/06/2022 to 17/06/2022
Environmental condition	:	Ambient temperature 30°C
Monitored & transported by	:	AESPL
Project/ Job number	:	Purchase Order No: PO/2022/04/02783 dtd 25/04/2022
Reference of sampling	:	AESPL/LAB/QR/7.3.3/R-02
Method of sampling	:	AESPL/LAB/SOP/7.3.1/ST-01
Stack Details		
Stack attached to	:	Sinter plant Proportioning De-dusting (Outlet)
Shape of Stack	:	Round
Pollution control device attached with the Stack	:	Bag filter

Conclusion

Operating Temperature °C		Dust Load (TPM)		Operating Efficiency %
Inlet	Outlet	Inlet mg/Nm³	Outlet mg/Nm³	
33	30	882.58	32.65	96.30

Note:

1. The test report shall not be reproduced except in full, without written approval of laboratory.
2. Results relate only to the item tested.

Reshma S. Patil
(Authorized Signatory – Pollution & Environment)

-End of Test Report-

Annexure VIII

Ambient Air Quality Monitoring reports of Archaeological sites

Sensitivity: Public (C4)

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

Parameters	Unit	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22
PM 10	µg/m3	61.12	59.75	47.19	35.17	29.46	33.51
PM 2.5	µg/m3	29.70	26.08	17.84	17.62	12.18	14.59
SO2	µg/m3	12.46	11.94	10.05	9.76	9.20	9.26
NO2	µg/m3	18.69	17.14	14.72	14.46	13.72	13.88
CO	mg/m3	0.14	0.13	0.11	0.1	0.25	0.24
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-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22
PM 10	µg/m3	62.14	55.21	49.14	37.82	30.66	32.19
PM 2.5	µg/m3	30.78	27.21	19.66	18.17	13.49	13.97
SO2	µg/m3	13.02	11.05	11.16	10.56	9.74	9.66
NO2	µg/m3	19.26	16.74	16.28	16.61	14.08	14.24
CO	mg/m3	0.15	0.14	0.12	0.11	0.27	0.24
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

Sensitivity: Public (C4)

Annexure IX

Benzo Amino Pyrene (BaP) monitoring data

Sensitivity: Public (C4)

Benzo Amino Pyrene (BaP) monitoring data

(April 2022 to September 2022)

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
04-04-2022	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
07-04-2022	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
11-04-2022	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
14-04-2022	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
18-04-2022	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
21-04-2022	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
25-04-2022	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
28-04-2022	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
02-05-2022	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
05-05-2022	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
09-05-2022	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
12-05-2022	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
16-05-2022	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
19-05-2022	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
23-05-2022	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
26-05-2022	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
30-05-2022	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
02-06-2022	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
06-06-2022	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
09-06-2022	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
13-06-2022	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
16-06-2022	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
20-06-2022	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
23-06-2022	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
27-06-2022	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
30-06-2022	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
04-07-2022	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
07-07-2022	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
11-07-2022	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
14-07-2022	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
18-07-2022	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
21-07-2022	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
25-07-2022	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
28-07-2022	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
01-08-2022	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
04-08-2022	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
08-08-2022	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

Sensitivity: Public (C4)

11-08-2022	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
16-08-2022	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
18-08-2022	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
22-08-2022	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
25-08-2022	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
29-08-2022	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
01-09-2022	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
05-09-2022	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
08-09-2022	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
12-09-2022	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
15-09-2022	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
19-09-2022	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
22-09-2022	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
26-09-2022	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
29-09-2022	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Limits	**1 ng/m3**	**1 ng/m3**	**1 ng/m3**	**1 ng/m3**	**1 ng/m3**	**1 ng/m3**

Sensitivity: Public (C4)

Annexure X

Villages- Ambient Air Quality monitoring reports

Sensitivity: Public (C4)

AAQMS location 1: Near Amona village (Aug-22 and September-22)

Date	Particular Matter PM 10 (ug/m3)	Particular Matter PM 2.5 (ug/m3)	Sulphur Dioxide (SO2) (ug/m3)	Nitrogen Dioxide (NOx) (ug/m3)
01-08-2022	33.48	17.39	9.25	16.54
04-08-2022	32.97	16.58	9.44	16.39
08-08-2022	36.82	19.5	9.59	17.2
11-08-2022	34.12	18.78	9.51	16.84
16-08-2022	33.84	18.04	9.23	16.67
18-08-2022	32.76	18.37	9.07	16.43
22-08-2022	35.44	19.48	9.35	17.36
25-08-2022	34.38	17.68	9.28	16.59
29-08-2022	36.04	19.36	9.86	16.77
01-09-2022	35.01	20.25	9.74	16.62
05-09-2022	39.62	21.89	9.82	16.79
08-09-2022	41.25	22.16	10.05	16.85
12-09-2022	44.18	23.58	10.37	17.31
15-09-2022	37.83	19.94	9.78	16.54
19-09-2022	48.92	24.36	10.24	17.46
22-09-2022	42.37	23.67	10.09	16.74
26-09-2022	47.05	24.28	10.54	17.34
29-09-2022	40.68	21.98	9.88	16.5
NAAQS limits	100	60	80	80

AAQMS location 2: Near Navelim village (Aug-22 and September-22)

Date	Particular Matter PM 10 (ug/m3)	Particular Matter PM 2.5 (ug/m3)	Sulphur Dioxide (SO2) (ug/m3)	Nitrogen Dioxide (NOx) (ug/m3)
01-08-2022	31.58	16.82	9.22	16.62
04-08-2022	33.47	16.91	9.46	16.76
08-08-2022	35.12	18.01	9.53	17.27
11-08-2022	32.98	17.05	8.49	16.74
16-08-2022	36.07	18.43	9.68	17.33
18-08-2022	33.56	16.92	9.16	16.69
22-08-2022	34.89	19.52	9.39	17.32
25-08-2022	34.56	17.66	9.23	16.79
29-08-2022	36.37	19.78	9.93	16.16
01-09-2022	32.86	18.56	9.64	16.72
05-09-2022	37.63	20.94	9.77	16.84
08-09-2022	42.78	22.46	10.15	16.9
12-09-2022	45.72	24.72	10.46	17.23
15-09-2022	36.84	20.34	9.87	16.77
19-09-2022	49.41	25.63	10.39	17.56
22-09-2022	43.67	23.29	10.05	16.41
26-09-2022	46.98	24.33	10.67	17.34
29-09-2022	42.14	22.31	9.74	16.64
NAAQS limits	100	60	80	80

Sensitivity: Public (C4)

Annexure XI

Riverine water quality reports

Sensitivity: Public (C4)

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 9321312367

TEST CERTIFICATE

Doc. No: GLPL/QF/7.8/01

Test Certificate No.	GW/E/22/04086	T.C. Date:	19/04/2022
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 14/04/2022		
Lab Reference No.	GW/E/22/04086	Page No.	1 of 1
Sampling Done On	14/04/2022	Sample Received on	14/04/2022
Sample Collected By	GLPL	Analysis Period	14/04/2022 To 19/04/2022
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	—	7.02	6.5 – 8.5	APHA (23rd Edition) 4500 H^+
Dissolved Oxygen	mg/ltr	4.4	4.0	APHA (23rd Edition) 4500 O C
Turbidity	NTU	8.2	30.0	APHA (23rd Edition) 2130 B
BOD 3 days 27°C	mg/ltr	2.4	3.0	IS 3025 (Part 44) : 1993
Temperature	°C	27.8	—	APHA (23rd Edition) 2550 B
BACTERIOLOGICAL TEST :				
Fecal Coliform	Org/100 ml	94	100.0	APHA (23rd Edition) 9221 E

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

End

For **GADARK LAB PVT. LTD.**

AUTHORISED SIGNATORY
[KAILAS V. CHITALKAR]

CHECKED BY

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

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 9321312367

TEST CERTIFICATE

Doc. No: GLPL/QF/7.8/01

Test Certificate No.	GW/E/22/04087	T.C. Date:	19/04/2022
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 14/04/2022		
Lab Reference No.	GW/E/22/04087	Page No.	1 of 1
Sampling Done On	14/04/2022	Sample Received on	14/04/2022
Sample Collected By	GLPL	Analysis Period	14/04/2022 To 19/04/2022
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	---	7.03	6.5 – 8.5	APHA (23rd Edition) 4500 H^+
Dissolved Oxygen	mg/ltr	4.4	4.0	APHA (23rd Edition) 4500 O C
Turbidity	NTU	7.6	30.0	APHA (23rd Edition) 2130 B
BOD 3 days 27°C	mg/ltr	2.2	3.0	IS 3025 (Part 44) : 1993
BACTERIOLOGICAL TEST :				
Fecal Coliform	Org/100 ml	79	100.0	APHA (23rd Edition) 9221 E

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

End

For **GADARK LAB PVT. LTD.**

AUTHORISED SIGNATORY
[KAILAS V. CHITALKAR]

CHECKED BY

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

GADARK LAB PVT. LTD.

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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 9321312367

TEST CERTIFICATE

Doc. No: GLPL/QF/7.8/01

Test Certificate No.	GW/E/22/04117	T.C. Date:	03/05/2022
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 29/04/2022		
Lab Reference No.	GW/E/22/04117	Page No.	1 of 1
Sampling Done On	29/04/2022	Sample Received on	29/04/2022
Sample Collected By	GLPL	Analysis Period	29/04/2022 To 03/05/2022
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	—	6.96	6.5 – 8.5	APHA (23rd Edition) 4500 H^+
Dissolved Oxygen	mg/ltr	4.2	4.0	APHA (23rd Edition) 4500 O C
Turbidity	NTU	6.4	30.0	APHA (23rd Edition) 2130 B
BOD 3 days 27°C	mg/ltr	2.6	3.0	IS 3025 (Part 44) : 1993
Temperature	°C	27.8	—	APHA (23rd Edition) 2550 B
BACTERIOLOGICAL TEST :				
Fecal Coliform	Org/100 ml	84	100.0	APHA (23rd Edition) 9221 E

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

End

For **GADARK LAB PVT. LTD.**

AUTHORISED SIGNATORY
[KAILAS V. CHITALKAR]

CHECKED BY

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

GADARK LAB PVT. LTD.

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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 9321312367

TEST CERTIFICATE

Doc. No: GLPL/QF/7.8/01

Test Certificate No.	GW/E/22/04118	T.C. Date:	03/05/2022
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 29/04/2022		
Lab Reference No.	GW/E/22/04118	Page No.	1 of 1
Sampling Done On	29/04/2022	Sample Received on	29/04/2022
Sample Collected By	GLPL	Analysis Period	29/04/2022 To 03/05/2022
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	—	6.98	6.5 – 8.5	APHA (23rd Edition) 4500 H^+
Dissolved Oxygen	mg/ltr	4.3	4.0	APHA (23rd Edition) 4500 O C
Turbidity	NTU	6.2	30.0	APHA (23rd Edition) 2130 B
BOD 3 days 27°C	mg/ltr	2.4	3.0	IS 3025 (Part 44) : 1993
BACTERIOLOGICAL TEST :				
Fecal Coliform	Org/100 ml	70	100.0	APHA (23rd Edition) 9221 E

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

End

For **GADARK LAB PVT. LTD.**

AUTHORISED SIGNATORY
[KAILAS V. CHITALKAR]

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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/7.8/01

Test Report No.	GW/E/22/05140	T.R. Date:	19/05/2022
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 14/05/2022		
Lab Reference No.	GW/E/22/05140	Page No.	1 of 1
Sampling Done On	14/05/2022	Sample Received on	14/05/2022
Sample Collected By	GLPL	Analysis Period	14/05/2022 To 19/05/2022
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	---	6.93	6.5 – 8.5	APHA (23rd Edition) 4500 H^+
Dissolved Oxygen	mg/ltr	4.3	4.0	APHA (23rd Edition) 4500 O C
Turbidity	NTU	7.4	30.0	APHA (23rd Edition) 2130 B
BOD 3 days 27°C	mg/ltr	2.3	3.0	IS 3025 (Part 44) : 1993
Temperature	°C	27.7	---	APHA (23rd Edition) 2550 B
BACTERIOLOGICAL TEST :				
Fecal Coliform	Org/100 ml	84	100.0	APHA (23rd Edition) 9221 E

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

End

For **GADARK LAB PVT. LTD.**

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TEST REPORT

Doc. No: GLPL/QF/7.8/01

Test Report No.	GW/E/22/05141	T.R. Date:	19/05/2022
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 14/05/2022		
Lab Reference No.	GW/E/22/05141	Page No.	1 of 1
Sampling Done On	14/05/2022	Sample Received on	14/05/2022
Sample Collected By	GLPL	Analysis Period	14/05/2022 To 19/05/2022
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	---	6.96	6.5 – 8.5	APHA (23rd Edition) 4500 H^+
Dissolved Oxygen	mg/ltr	4.4	4.0	APHA (23rd Edition) 4500 O C
Turbidity	NTU	7.2	30.0	APHA (23rd Edition) 2130 B
BOD 3 days 27°C	mg/ltr	2.2	3.0	IS 3025 (Part 44) : 1993
BACTERIOLOGICAL TEST :				
Fecal Coliform	Org/100 ml	84	100.0	APHA (23rd Edition) 9221 E

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

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For **GADARK LAB PVT. LTD.**

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TEST REPORT

Doc. No: GLPL/QF/7.8/01

Test Report No.	GW/E/22/05144	T.R. Date:	04/06/2022
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 30/05/2022		
Lab Reference No.	GW/E/22/05144	Page No.	1 of 1
Sampling Done On	30/05/2022	Sample Received on	30/05/2022
Sample Collected By	GLPL	Analysis Period	30/05/2022 To 04/06/2022
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	---	6.98	6.5 – 8.5	APHA (23rd Edition) 4500 H^+
Dissolved Oxygen	mg/ltr	4.3	4.0	APHA (23rd Edition) 4500 O C
Turbidity	NTU	6.9	30.0	APHA (23rd Edition) 2130 B
BOD 3 days 27°C	mg/ltr	2.4	3.0	IS 3025 (Part 44) : 1993
Temperature	^{0}C	27.8	---	APHA (23rd Edition) 2550 B
BACTERIOLOGICAL TEST :				
Fecal Coliform	Org/100 ml	79	100.0	APHA (23rd Edition) 9221 E

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

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For **GADARK LAB PVT. LTD.**

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TEST REPORT

Doc. No: GLPL/QF/7.8/01

Test Report No.	GW/E/22/05145	T.R. Date:	04/06/2022
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 30/05/2022		
Lab Reference No.	GW/E/22/05145	Page No.	1 of 1
Sampling Done On	30/05/2022	Sample Received on	30/05/2022
Sample Collected By	GLPL	Analysis Period	30/05/2022 To 04/06/2022
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	---	6.97	6.5 – 8.5	APHA (23rd Edition) 4500 H^+
Dissolved Oxygen	mg/ltr	4.4	4.0	APHA (23rd Edition) 4500 O C
Turbidity	NTU	6.7	30.0	APHA (23rd Edition) 2130 B
BOD 3 days 27°C	mg/ltr	2.2	3.0	IS 3025 (Part 44) : 1993
BACTERIOLOGICAL TEST :				
Fecal Coliform	Org/100 ml	70	100.0	APHA (23rd Edition) 9221 E

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

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For **GADARK LAB PVT. LTD.**

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TEST REPORT

Doc. No: GLPL/QF/7.8/01

Test Report No.	GW/E/22/06097	T.R. Date:	17/06/2022
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 13/06/2022		
Lab Reference No.	GW/E/22/06097	Page No.	1 of 1
Sampling Done On	13/06/2022	Sample Received on	13/06/2022
Sample Collected By	GLPL	Analysis Period	13/06/2022 To 17/06/2022
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 (23rd Edition) 4500 H^+
Dissolved Oxygen	mg/ltr	4.5	4.0	APHA (23rd Edition) 4500 O C
Turbidity	NTU	11	30.0	APHA (23rd Edition) 2130 B
BOD 3 days 27°C	mg/ltr	2.4	3.0	IS 3025 (Part 44) : 1993
Temperature	°C	27.7	---	APHA (23rd Edition) 2550 B
BACTERIOLOGICAL TEST :				
Fecal Coliform	Org/100 ml	79	100.0	APHA (23rd 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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TEST REPORT

Doc. No: GLPL/QF/7.8/01

Test Report No.	GW/E/22/06098	T.R. Date:	17/06/2022
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 13/06/2022		
Lab Reference No.	GW/E/22/06098	Page No.	1 of 1
Sampling Done On	13/06/2022	Sample Received on	13/06/2022
Sample Collected By	GLPL	Analysis Period	13/06/2022 To 17/06/2022
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	---	7.01	6.5 – 8.5	APHA (23rd Edition) 4500 H^+
Dissolved Oxygen	mg/ltr	4.4	4.0	APHA (23rd Edition) 4500 O C
Turbidity	NTU	10.9	30.0	APHA (23rd Edition) 2130 B
BOD 3 days 27°C	mg/ltr	2.3	3.0	IS 3025 (Part 44) : 1993
Temperature	^{0}C	27.7	---	APHA (23rd Edition) 2550 B
BACTERIOLOGICAL TEST :				
Fecal Coliform	Org/100 ml	70	100.0	APHA (23rd Edition) 9221 E

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AS per Class SW – II Waters

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TEST REPORT

Doc. No: GLPL/QF/7.8/01

Test Report No.	GW/E/22/06111	T.R. Date:	05/07/2022
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 30/06/2022		
Lab Reference No.	GW/E/22/06111	Page No.	1 of 1
Sampling Done On	30/06/2022	Sample Received on	30/06/2022
Sample Collected By	GLPL	Analysis Period	30/06/2022 To 05/07/2022
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	---	7.11	6.5 – 8.5	APHA (23rd Edition) 4500 H^+
Dissolved Oxygen	mg/ltr	4.8	4.0	APHA (23rd Edition) 4500 O C
Turbidity	NTU	15	30.0	APHA (23rd Edition) 2130 B
BOD 3 days 27°C	mg/ltr	2.3	3.0	IS 3025 (Part 44) : 1993
Temperature	^{0}C	27.7	---	APHA (23rd Edition) 2550 B
BACTERIOLOGICAL TEST :				
Fecal Coliform	Org/100 ml	94	100.0	APHA (23rd 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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TEST REPORT

Doc. No: GLPL/QF/7.8/01

Test Report No.	GW/E/22/06112	T.R. Date:	05/07/2022
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 30/06/2022		
Lab Reference No.	GW/E/22/06112	Page No.	1 of 1
Sampling Done On	30/06/2022	Sample Received on	30/06/2022
Sample Collected By	GLPL	Analysis Period	30/06/2022 To 05/07/2022
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 (23rd Edition) 4500 H^+
Dissolved Oxygen	mg/ltr	4.6	4.0	APHA (23rd Edition) 4500 O C
Turbidity	NTU	14	30.0	APHA (23rd Edition) 2130 B
BOD 3 days 27°C	mg/ltr	2.2	3.0	IS 3025 (Part 44) : 1993
Temperature	°C	27.7	---	APHA (23rd Edition) 2550 B
BACTERIOLOGICAL TEST :				
Fecal Coliform	Org/100 ml	79	100.0	APHA (23rd 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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TEST REPORT

Doc. No: GLPL/QF/7.8/01

Test Report No.	GW/E/22/07102	T.R. Date:	18/07/2022
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 14/07/2022		
Lab Reference No.	GW/E/22/07102	Page No.	1 of 1
Sampling Done On	14/07/2022	Sample Received on	14/07/2022
Sample Collected By	GLPL	Analysis Period	14/07/2022 To 18/07/2022
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	---	7.17	6.5 – 8.5	APHA (23rd Edition) 4500 H^+
Dissolved Oxygen	mg/ltr	5.2	4.0	APHA (23rd Edition) 4500 O C
Turbidity	NTU	18	30.0	APHA (23rd Edition) 2130 B
BOD 3 days 27°C	mg/ltr	2.2	3.0	IS 3025 (Part 44) : 1993
Temperature	^{0}C	27.7	---	APHA (23rd Edition) 2550 B
BACTERIOLOGICAL TEST :				
Fecal Coliform	Org/100 ml	94	100.0	APHA (23rd 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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TEST REPORT

Doc. No: GLPL/QF/7.8/01

Test Report No.	GW/E/22/07103	T.R. Date:	18/07/2022
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 14/07/2022		
Lab Reference No.	GW/E/22/07103	Page No.	1 of 1
Sampling Done On	14/07/2022	Sample Received on	14/07/2022
Sample Collected By	GLPL	Analysis Period	14/07/2022 To 18/07/2022
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	---	7.15	6.5 – 8.5	APHA (23rd Edition) 4500 H^+
Dissolved Oxygen	mg/ltr	5.1	4.0	APHA (23rd Edition) 4500 O C
Turbidity	NTU	17.2	30.0	APHA (23rd Edition) 2130 B
BOD 3 days 27°C	mg/ltr	2.1	3.0	IS 3025 (Part 44) : 1993
Temperature	^{0}C	27.7	---	APHA (23rd Edition) 2550 B
BACTERIOLOGICAL TEST :				
Fecal Coliform	Org/100 ml	84	100.0	APHA (23rd 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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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

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/7.8/01

Test Report No.	GW/E/22/07104	T.R. Date:	02/08/2022
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 28/07/2022		
Lab Reference No.	GW/E/22/07104	Page No.	1 of 1
Sampling Done On	28/07/2022	Sample Received on	28/07/2022
Sample Collected By	GLPL	Analysis Period	28/07/2022 To 02/08/2022
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	---	7.08	6.5 – 8.5	APHA (23rd Edition) 4500 H^+
Dissolved Oxygen	mg/ltr	4.9	4.0	APHA (23rd Edition) 4500 O C
Turbidity	NTU	14	30.0	APHA (23rd Edition) 2130 B
BOD 3 days 27°C	mg/ltr	2.2	3.0	IS 3025 (Part 44) : 1993
Temperature	^{0}C	27.7	---	APHA (23rd Edition) 2550 B
BACTERIOLOGICAL TEST :				
Fecal Coliform	Org/100 ml	84	100.0	APHA (23rd 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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TEST REPORT

Doc. No: GLPL/QF/7.8/01

Test Report No.	GW/E/22/07105	T.R. Date:	02/08/2022
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 28/07/2022		
Lab Reference No.	GW/E/22/07105	Page No.	1 of 1
Sampling Done On	28/07/2022	Sample Received on	28/07/2022
Sample Collected By	GLPL	Analysis Period	28/07/2022 To 02/08/2022
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	---	7.03	6.5 – 8.5	APHA (23rd Edition) 4500 H^+
Dissolved Oxygen	mg/ltr	5	4.0	APHA (23rd Edition) 4500 O C
Turbidity	NTU	11	30.0	APHA (23rd Edition) 2130 B
BOD 3 days 27°C	mg/ltr	2.1	3.0	IS 3025 (Part 44) : 1993
Temperature	^{0}C	27.7	---	APHA (23rd Edition) 2550 B
BACTERIOLOGICAL TEST :				
Fecal Coliform	Org/100 ml	79	100.0	APHA (23rd 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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TEST REPORT

Doc. No: GLPL/QF/7.8/01

Test Report No.	GW/E/22/08104	T.R. Date:	19/08/2022
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 15/08/2022		
Lab Reference No.	GW/E/22/08104	Page No.	1 of 1
Sampling Done On	15/08/2022	Sample Received on	15/08/2022
Sample Collected By	GLPL	Analysis Period	15/08/2022 To 19/08/2022
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	---	7.11	6.5 – 8.5	APHA (23rd Edition) 4500 H^+
Dissolved Oxygen	mg/ltr	4.8	4.0	APHA (23rd Edition) 4500 O C
Turbidity	NTU	14	30.0	APHA (23rd Edition) 2130 B
BOD 3 days 27°C	mg/ltr	2.4	3.0	IS 3025 (Part 44) : 1993
Temperature	^{0}C	28	---	APHA (23rd Edition) 2550 B
BACTERIOLOGICAL TEST :				
Fecal Coliform	Org/100 ml	94	100.0	APHA (23rd 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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TEST REPORT

Doc. No: GLPL/QF/7.8/01

Test Report No.	GW/E/22/08105	T.R. Date:	19/08/2022
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 15/08/2022		
Lab Reference No.	GW/E/22/08105	Page No.	1 of 1
Sampling Done On	15/08/2022	Sample Received on	15/08/2022
Sample Collected By	GLPL	Analysis Period	15/08/2022 To 19/08/2022
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 (23rd Edition) 4500 H^+
Dissolved Oxygen	mg/ltr	4.9	4.0	APHA (23rd Edition) 4500 O C
Turbidity	NTU	12	30.0	APHA (23rd Edition) 2130 B
BOD 3 days 27°C	mg/ltr	2.3	3.0	IS 3025 (Part 44) : 1993
Temperature	^{0}C	27.9	---	APHA (23rd Edition) 2550 B
BACTERIOLOGICAL TEST :				
Fecal Coliform	Org/100 ml	84	100.0	APHA (23rd 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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TEST REPORT

Doc. No: GLPL/QF/7.8/01

Test Report No.	GW/E/22/08116	T.R. Date:	02/09/2022
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 29/08/2022		
Lab Reference No.	GW/E/22/08116	Page No.	1 of 1
Sampling Done On	29/08/2022	Sample Received on	29/08/2022
Sample Collected By	GLPL	Analysis Period	29/08/2022 To 02/09/2022
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	---	7.01	6.5 – 8.5	APHA (23rd Edition) 4500 H^+
Dissolved Oxygen	mg/ltr	4.7	4.0	APHA (23rd Edition) 4500 O C
Turbidity	NTU	10	30.0	APHA (23rd Edition) 2130 B
BOD 3 days 27°C	mg/ltr	2.4	3.0	IS 3025 (Part 44) : 1993
Temperature	^{0}C	27.8	---	APHA (23rd Edition) 2550 B
BACTERIOLOGICAL TEST :				
Fecal Coliform	Org/100 ml	84	100.0	APHA (23rd 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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TEST REPORT

Doc. No: GLPL/QF/7.8/01

Test Report No.	GW/E/22/08117	T.R. Date:	02/09/2022
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 29/08/2022		
Lab Reference No.	GW/E/22/08117	Page No.	1 of 1
Sampling Done On	29/08/2022	Sample Received on	29/08/2022
Sample Collected By	GLPL	Analysis Period	29/08/2022 To 02/09/2022
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	---	7.03	6.5 – 8.5	APHA (23rd Edition) 4500 H^+
Dissolved Oxygen	mg/ltr	4.8	4.0	APHA (23rd Edition) 4500 O C
Turbidity	NTU	9.8	30.0	APHA (23rd Edition) 2130 B
BOD 3 days 27°C	mg/ltr	2.2	3.0	IS 3025 (Part 44) : 1993
Temperature	^{0}C	27.8	---	APHA (23rd Edition) 2550 B
BACTERIOLOGICAL TEST :				
Fecal Coliform	Org/100 ml	84	100.0	APHA (23rd 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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TEST REPORT

Doc. No: GLPL/QF/7.8/01

Test Report No.	GW/E/22/0154	T.R. Date:	19/09/2022
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 14/09/2022		
Lab Reference No.	GW/E/22/09154	Page No.	1 of 1
Sampling Done On	14/09/2022	Sample Received on	14/09/2022
Sample Collected By	GLPL	Analysis Period	14/09/2022 To 19/09/2022
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 (23rd Edition) 4500 H^+
Dissolved Oxygen	mg/ltr	4.4	4.0	APHA (23rd Edition) 4500 O C
Turbidity	NTU	7.1	30.0	APHA (23rd Edition) 2130 B
BOD 3 days 27°C	mg/ltr	2	3.0	IS 3025 (Part 44) : 1993
Temperature	^{0}C	27.7	---	APHA (23rd Edition) 2550 B
BACTERIOLOGICAL TEST :				
Fecal Coliform	Org/100 ml	70	100.0	APHA (23rd 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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TEST REPORT

Doc. No: GLPL/QF/7.8/01

Test Report No.	GW/E/22/09155	T.R. Date:	19/09/2022
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 14/09/2022		
Lab Reference No.	GW/E/22/09155	Page No.	1 of 1
Sampling Done On	14/09/2022	Sample Received on	14/09/2022
Sample Collected By	GLPL	Analysis Period	14/09/2022 To 19/09/2022
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	---	7.06	6.5 – 8.5	APHA (23rd Edition) 4500 H^+
Dissolved Oxygen	mg/ltr	4.4	4.0	APHA (23rd Edition) 4500 O C
Turbidity	NTU	7.4	30.0	APHA (23rd Edition) 2130 B
BOD 3 days 27°C	mg/ltr	2.3	3.0	IS 3025 (Part 44) : 1993
Temperature	°C	27.8	---	APHA (23rd Edition) 2550 B
BACTERIOLOGICAL TEST :				
Fecal Coliform	Org/100 ml	79	100.0	APHA (23rd Edition) 9221 E

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

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For **GADARK LAB PVT. LTD.**

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[KAILAS V. CHITALKAR]

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TEST REPORT

Doc. No: GLPL/QF/7.8/01

Test Report No.	GW/E/22/09167	T.R. Date:	04/10/2022
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 29/09/2022		
Lab Reference No.	GW/E/22/09167	Page No.	1 of 1
Sampling Done On	29/09/2022	Sample Received on	29/09/2022
Sample Collected By	GLPL	Analysis Period	29/09/2022 To 04/10/2022
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	---	7.03	6.5 – 8.5	APHA (23rd Edition) 4500 H^+
Dissolved Oxygen	mg/ltr	4.3	4.0	APHA (23rd Edition) 4500 O C
Turbidity	NTU	8.4	30.0	APHA (23rd Edition) 2130 B
BOD 3 days 27°C	mg/ltr	2.1	3.0	IS 3025 (Part 44) : 1993
Temperature	^{0}C	27.8	---	APHA (23rd Edition) 2550 B
BACTERIOLOGICAL TEST :				
Fecal Coliform	Org/100 ml	84	100.0	APHA (23rd 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]

CHECKED BY

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

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/7.8/01

Test Report No.	GW/E/22/09168	T.R. Date:	04/10/2022
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 29/09/2022		
Lab Reference No.	GW/E/22/09168	Page No.	1 of 1
Sampling Done On	29/09/2022	Sample Received on	29/09/2022
Sample Collected By	GLPL	Analysis Period	29/09/2022 To 04/10/2022
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 (23rd Edition) 4500 H^+
Dissolved Oxygen	mg/ltr	4.3	4.0	APHA (23rd Edition) 4500 O C
Turbidity	NTU	8.2	30.0	APHA (23rd Edition) 2130 B
BOD 3 days 27°C	mg/ltr	2	3.0	IS 3025 (Part 44) : 1993
Temperature	^{0}C	27.8	---	APHA (23rd Edition) 2550 B
BACTERIOLOGICAL TEST :				
Fecal Coliform	Org/100 ml	79	100.0	APHA (23rd 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]

CHECKED BY

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

Annexure XII

Ambient air quality monitoring reports

Sensitivity: Public (C4)

AAQMS location 1: Near Amona Gate

Date	Particular Matter PM 10 (ug/m3)	Particular Matter PM 2.5 (ug/m3)	Sulphur Dioxide (SO2) (ug/m3)	Nitrogen Dioxide (NOx) (ug/m3)
04-04-2022	74.86	37.25	12.74	18.63
07-04-2022	70.32	32.79	12.33	17.76
11-04-2022	73.49	36.31	12.49	18.47
14-04-2022	71.08	32.94	12.12	18.32
18-04-2022	77.29	38.38	13.57	19.34
21-04-2022	74.16	34.52	12.8	18.43
25-04-2022	69.44	33.67	12.08	18.52
28-04-2022	80.34	41.35	13.46	19.64
02-05-2022	73.81	36.25	12.52	18.54
05-05-2022	74.69	37.39	12.65	18.62
09-05-2022	67.25	32.11	11.86	17.89
12-05-2022	70.94	30.87	12.02	18.25
16-05-2022	74.29	36.07	13.31	19.01
19-05-2022	69.31	31.2	12.56	18.11
23-05-2022	67.21	29.42	11.49	17.83
26-05-2022	78.52	40.44	13.28	19.62
30-05-2022	81.32	41.73	13.55	19.7
02-06-2022	52.16	32.68	11.76	17.43
06-06-2022	54.65	34.07	12.04	17.51
09-06-2022	48.93	28.62	10.76	16.84
13-06-2022	51.32	31.48	11.34	17.09
16-06-2022	46.84	27.33	9.84	16.78
20-06-2022	50.11	30.45	10.52	16.57
23-06-2022	44.35	26.56	10.39	16.81
27-06-2022	42.17	24.78	9.84	16.12
30-06-2022	40.52	23.61	9.74	15.37
04-07-2022	32.87	17.89	9.32	16.68
07-07-2022	34.71	18.32	9.46	16.75
11-07-2022	37.12	20.15	10.22	17.23
14-07-2022	33.6	17.96	10.03	16.75
18-07-2022	37.19	18.65	10.34	16.79
21-07-2022	35.09	19.22	9.86	16.23
25-07-2022	38.67	19.87	10.41	16.88
28-07-2022	38.93	20.12	9.74	16.75
01-08-2022	34.39	18.24	9.45	16.42
04-08-2022	32.55	17.08	9.37	16.14
08-08-2022	31.9	16.53	9.67	15.98
11-08-2022	36.84	20.17	10.14	16.83
16-08-2022	38.71	21.37	10.35	17.22
18-08-2022	32.11	17.92	10.07	16.21
22-08-2022	37.39	20.29	10.33	17.16
25-08-2022	33.18	17.22	9.64	16.55
29-08-2022	37.8	20.52	10.28	16.89
01-09-2022	36.12	20.56	9.71	16.37
05-09-2022	43.65	24.11	10.14	16.81

Sensitivity: Public (C4)

08-09-2022	38.72	21.78	9.83	16.74
12-09-2022	46.07	26.82	10.47	17.2
15-09-2022	41.38	23.07	9.94	16.84
19-09-2022	50.22	27.44	10.68	17.59
22-09-2022	42.95	23.95	9.88	16.77
26-09-2022	48.05	26.16	10.47	17.46
29-09-2022	45.17	25.49	9.61	16.91
NAAQS limits	**100 (ug/m3)**	**60 (ug/m3)**	**80 (ug/m3)**	**80 (ug/m3)**

AAQMS location 2: Opp. BSNL exchange

Date	Particular Matter PM 10 (ug/m3)	Particular Matter PM 2.5 (ug/m3)	Sulphur Dioxide (SO2) (ug/m3)	Nitrogen Dioxide (NOx) (ug/m3)
04-04-2022	75.36	38.04	12.77	18.31
07-04-2022	72.77	33.26	12.38	17.68
11-04-2022	78.9	40.11	13.14	18.53
14-04-2022	72.54	33.58	12.23	18.01
18-04-2022	81.25	42.69	13.42	19.34
21-04-2022	75.59	33.82	12.72	18.55
25-04-2022	70.66	31.29	12.16	17.89
28-04-2022	78.29	41.89	13.08	19.3
02-05-2022	74.01	37.16	12.61	18.62
05-05-2022	75.69	38.33	12.74	18.71
09-05-2022	65.94	32.47	11.91	17.75
12-05-2022	70.24	30.62	11.85	18.13
16-05-2022	73.61	36.28	12.76	18.69
19-05-2022	68.12	32.46	11.38	18.04
23-05-2022	66.92	28.14	11.41	17.94
26-05-2022	77.2	39.52	13.19	19.4
30-05-2022	80.69	40.94	13.46	19.51
02-06-2022	53.17	32.51	11.58	17.52
06-06-2022	55.87	34.23	11.74	17.67
09-06-2022	47.92	28.54	10.65	16.7
13-06-2022	52.05	30.67	11.39	17.14
16-06-2022	46.76	27.8	9.92	16.72
20-06-2022	50.41	31.03	10.64	16.84
23-06-2022	44.63	26.2	10.24	16.69
27-06-2022	41.93	24.7	9.88	15.88
30-06-2022	42.67	25.34	9.94	16.32
04-07-2022	33.56	17.65	9.36	16.42
07-07-2022	34.48	18.15	9.42	16.5
11-07-2022	36.32	19.43	10.17	17.18
14-07-2022	32.77	17.24	9.34	16.83
18-07-2022	36.82	18.93	10.22	17.2

Sensitivity: Public (C4)

21-07-2022	35.89	18.46	9.91	16.79
25-07-2022	37.71	19.38	10.18	17.23
28-07-2022	38.79	19.78	10.33	17.44
01-08-2022	33.51	18.35	9.51	16.55
04-08-2022	34.78	17.12	9.86	16.39
08-08-2022	33.68	16.78	9.63	16.44
11-08-2022	35.44	19.85	10.24	16.82
16-08-2022	37.66	20.66	10.64	17.08
18-08-2022	32.58	17.74	9.88	16.66
22-08-2022	38.93	21.35	10.35	17.48
25-08-2022	34.06	17.69	9.63	16.61
29-08-2022	36.54	20.74	10.14	16.92
01-09-2022	34.07	21.28	9.63	16.42
05-09-2022	44.86	25.73	10.24	16.74
08-09-2022	41.36	22.05	9.79	16.38
12-09-2022	47.43	29.36	10.62	17.16
15-09-2022	39.67	22.33	9.95	16.5
19-09-2022	52.18	27.9	10.73	17.78
22-09-2022	45.82	24.18	9.85	16.55
26-09-2022	50.11	26.78	10.37	17.56
29-09-2022	44.49	24.32	9.62	16.72
NAAQS limits	**100 (ug/m3)**	**60 (ug/m3)**	**80 (ug/m3)**	**80 (ug/m3)**

AAQMS location 3: Near Dispatch gate

Date	Particular Matter PM 10 (ug/m3)	Particular Matter PM 2.5 (ug/m3)	Sulphur Dioxide (SO2) (ug/m3)	Nitrogen Dioxide (NOx) (ug/m3)
04-04-2022	73.81	36.92	12.62	18.37
07-04-2022	70.49	32.45	12.35	17.74
11-04-2022	77.26	38.51	13.26	18.68
14-04-2022	71.68	33.07	12.44	17.86
18-04-2022	80.13	41.45	13.53	19.24
21-04-2022	74.9	34.53	12.77	18.67
25-04-2022	73.58	32.66	12.9	17.43
28-04-2022	81.36	42.19	13.24	19.37
02-05-2022	73.85	35.68	12.66	18.7
05-05-2022	75.16	37.19	12.82	18.92
09-05-2022	66.73	32.47	11.78	17.83
12-05-2022	69.51	33.55	11.9	18.18
16-05-2022	74.36	36.37	12.71	18.27
19-05-2022	67.89	32.88	11.57	17.91
23-05-2022	66.74	29.04	11.56	17.75
26-05-2022	76.5	37.95	13.24	19.13
30-05-2022	78.91	38.8	13.39	19.44
02-06-2022	52.67	31.95	11.23	17.45

Sensitivity: Public (C4)

06-06-2022	54.19	33.75	11.58	17.72
09-06-2022	47.53	27.83	10.83	16.54
13-06-2022	53.37	32.01	11.45	17.2
16-06-2022	45.79	27.56	9.83	16.86
20-06-2022	51.05	30.74	10.92	17.14
23-06-2022	46.24	26.72	10.16	16.77
27-06-2022	40.74	24.83	9.74	15.92
30-06-2022	41.82	25.68	9.86	16.24
04-07-2022	35.17	17.56	9.32	16.56
07-07-2022	36.89	17.7	10.23	17.12
11-07-2022	33.94	16.38	9.45	16.58
14-07-2022	35.87	17.63	9.78	16.64
18-07-2022	37.53	18.35	10.12	17.32
21-07-2022	35.45	17.61	9.76	16.86
25-07-2022	38.18	18.84	10.23	17.13
28-07-2022	39.32	19.36	10.39	17.4
01-08-2022	34.78	19.14	9.58	16.65
04-08-2022	33.52	17.68	9.74	16.44
08-08-2022	32.16	16.96	9.54	16.32
11-08-2022	37.89	20.46	10.13	17.38
16-08-2022	36.18	19.79	10.57	17.12
18-08-2022	33.52	17.86	10.05	16.94
22-08-2022	37.06	20.22	10.47	17.34
25-08-2022	38.32	21.69	10.59	18.01
29-08-2022	33.18	18.43	9.78	17.53
01-09-2022	34.89	20.25	9.72	16.37
05-09-2022	42.68	22.68	10.11	16.82
08-09-2022	40.77	22.33	9.83	16.66
12-09-2022	46.84	24.71	10.44	17.12
15-09-2022	38.51	21.37	9.65	16.47
19-09-2022	51.66	26.82	10.85	17.84
22-09-2022	43.62	24.35	9.79	16.77
26-09-2022	47.71	25.89	10.26	17.42
29-09-2022	43.84	25	9.81	16.85
NAAQS limits	**100 (ug/m3)**	**60 (ug/m3)**	**80 (ug/m3)**	**80 (ug/m3)**

AAQMS location 4: Compound wall towards Navelim

Date	Particular Matter PM 10 (ug/m3)	Particular Matter PM 2.5 (ug/m3)	Sulphur Dioxide (SO2) (ug/m3)	Nitrogen Dioxide (NOx) (ug/m3)
04-04-2022	74.16	35.27	12.71	18.62
07-04-2022	70.45	31.56	12.26	17.82
11-04-2022	76.95	37.96	13.48	18.53
14-04-2022	71.44	34.18	12.51	17.64
18-04-2022	81.28	41.35	13.67	19.12

Sensitivity: Public (C4)

21-04-2022	75.59	37.66	12.83	18.78
25-04-2022	71.59	32.06	12.27	17.85
28-04-2022	80.17	40.84	13.55	19.26
02-05-2022	72.89	34.66	12.72	18.75
05-05-2022	74.3	36.95	12.85	18.86
09-05-2022	66.69	33.47	11.89	17.71
12-05-2022	68.04	34.55	12.06	17.94
16-05-2022	73.76	37.71	12.34	18.16
19-05-2022	65.84	33.67	11.49	17.55
23-05-2022	67.17	30.16	11.86	17.67
26-05-2022	77.68	38.94	13.37	19.04
30-05-2022	75.07	37.35	13.41	19.36
02-06-2022	51.79	31.64	11.54	17.36
06-06-2022	53.45	33.2	11.66	17.52
09-06-2022	46.94	27.58	10.73	16.74
13-06-2022	52.48	31.76	11.31	17.16
16-06-2022	47.23	27.82	9.9	16.65
20-06-2022	50.22	30.54	10.76	17.08
23-06-2022	46.76	27.75	10.22	16.84
27-06-2022	42.98	26.13	9.83	16.18
30-06-2022	40.82	25.91	9.74	16.06
04-07-2022	33.88	16.84	9.42	16.63
07-07-2022	34.19	17.21	9.68	16.84
11-07-2022	35.06	17.34	10.23	17.24
14-07-2022	34.78	17.07	9.71	16.57
18-07-2022	37.15	18.64	10.34	17.46
21-07-2022	36.87	17.52	10.07	16.95
25-07-2022	38.79	18.73	10.29	17.26
28-07-2022	39.44	19.56	10.42	17.41
01-08-2022	33.56	18.14	9.63	16.89
04-08-2022	32.74	17.73	9.47	16.67
08-08-2022	31.69	16.86	9.4	16.27
11-08-2022	36.82	19.52	10.24	17.44
16-08-2022	38.06	20.36	10.46	17.66
18-08-2022	32.14	18.45	9.86	16.96
22-08-2022	37.33	20.49	10.63	17.8
25-08-2022	36.95	20.07	10.78	17.73
29-08-2022	32.46	17.76	9.89	17.43
01-09-2022	35.74	19.54	9.84	16.61
05-09-2022	45.18	22.77	10.32	16.76
08-09-2022	38.9	20.76	9.93	16.81
12-09-2022	48.13	24.64	10.52	17.39
15-09-2022	41.26	20.45	9.77	16.4
19-09-2022	53.56	27.42	10.82	17.93
22-09-2022	44.35	24.48	10.27	16.64
26-09-2022	49.53	26.07	10.68	17.59
29-09-2022	44.75	25.13	9.84	16.58
NAAQS limits	**100 (ug/m3)**	**60 (ug/m3)**	**80 (ug/m3)**	**80 (ug/m3)**

Sensitivity: Public (C4)

AAQMS location 5: Near Sateri temple

Date	Particular Matter PM 10 (ug/m3)	Particular Matter PM 2.5 (ug/m3)	Sulphur Dioxide (SO2) (ug/m3)	Nitrogen Dioxide (NOx) (ug/m3)
04-04-2022	73.52	34.28	12.63	18.62
07-04-2022	69.74	32.69	12.15	17.79
11-04-2022	77.32	36.81	13.28	18.75
14-04-2022	72.04	32.46	12.43	17.84
18-04-2022	78.52	39.43	13.49	19.35
21-04-2022	74.16	36.49	12.75	18.64
25-04-2022	70.44	32.33	12.33	17.62
28-04-2022	80.27	40.33	13.08	19.14
02-05-2022	74.85	35.41	12.65	18.7
05-05-2022	75.36	37.12	12.79	18.84
09-05-2022	65.95	32.86	11.75	17.69
12-05-2022	67.71	33.51	11.88	17.81
16-05-2022	74.55	36.98	12.27	18.27
19-05-2022	65.95	33.54	11.73	17.66
23-05-2022	67.48	31.49	11.91	17.79
26-05-2022	75.96	37.45	13.24	19.11
30-05-2022	78.37	38.92	13.36	19.26
02-06-2022	50.83	30.46	11.46	17.42
06-06-2022	52.76	32.87	11.52	17.58
09-06-2022	47.13	28.45	10.71	16.69
13-06-2022	51.64	30.73	11.22	17.23
16-06-2022	46.8	26.82	9.93	16.52
20-06-2022	49.74	28.67	10.54	17.11
23-06-2022	47.66	27.18	10.28	16.88
27-06-2022	42.52	26.34	9.89	16.35
30-06-2022	41.69	26.21	9.7	16.27
04-07-2022	35.12	17.32	9.66	16.79
07-07-2022	34.65	16.96	9.57	16.65
11-07-2022	36.28	17.4	10.13	17.14
14-07-2022	33.53	16.73	9.85	16.67
18-07-2022	37.76	18.46	10.23	17.36
21-07-2022	35.32	17.63	9.97	17.44
25-07-2022	39.73	19.21	10.33	17.5
28-07-2022	38.34	19.09	10.22	17.36
01-08-2022	34.78	18.47	9.73	16.92
04-08-2022	33.56	17.69	9.55	16.55
08-08-2022	32.44	16.93	9.69	16.23
11-08-2022	37.43	20.46	10.35	17.86
16-08-2022	35.09	19.27	10.22	17.61
18-08-2022	32.45	17.35	9.91	16.67
22-08-2022	33.67	18.33	10.05	17.16

Sensitivity: Public (C4)

25-08-2022	38.16	21.37	10.64	17.91
29-08-2022	34.02	17.85	9.92	17.2
01-09-2022	36.11	20.25	9.92	16.72
05-09-2022	43.98	23.19	10.26	16.85
08-09-2022	39.53	21.36	9.74	16.67
12-09-2022	47.79	24.77	10.42	17.44
15-09-2022	42.17	21.96	9.85	16.52
19-09-2022	51.25	27.84	10.54	18.02
22-09-2022	46.78	25.28	10.11	17.32
26-09-2022	44.86	24.91	10.08	17.24
29-09-2022	42.17	23.57	9.73	16.93
NAAQS limits	**100 (ug/m3)**	**60 (ug/m3)**	**80 (ug/m3)**	**80 (ug/m3)**

AAQMS location 6: Compound wall towards Maina

Date	Particular Matter PM 10 (ug/m3)	Particular Matter PM 2.5 (ug/m3)	Sulphur Dioxide (SO2) (ug/m3)	Nitrogen Dioxide (NOx) (ug/m3)
04-04-2022	74.28	35.13	17.7	18.74
07-04-2022	71.34	31.89	12.24	17.86
11-04-2022	78.95	37.32	13.33	18.61
14-04-2022	72.36	32.58	12.56	17.72
18-04-2022	80.27	40.69	13.35	19.24
21-04-2022	73.85	35.43	12.83	18.75
25-04-2022	70.96	31.59	12.46	17.94
28-04-2022	79.55	38.45	13.17	19.34
02-05-2022	76.28	36.52	12.71	18.66
05-05-2022	74.75	35.49	12.86	18.92
09-05-2022	64.87	33.65	11.81	17.58
12-05-2022	66.91	34.01	12.16	17.67
16-05-2022	75.08	37.82	12.47	19.13
19-05-2022	66.94	34.69	11.85	17.7
23-05-2022	68.76	35.27	11.97	17.91
26-05-2022	78.14	38.31	13.15	19.24
30-05-2022	81.36	39.42	13.46	19.56
02-06-2022	52.14	31.23	11.32	17.52
06-06-2022	51.76	30.64	11.18	17.44
09-06-2022	47.68	28.36	10.64	16.72
13-06-2022	53.19	32.15	11.43	17.58
16-06-2022	45.32	26.75	9.85	16.77
20-06-2022	47.9	28.9	10.71	17.22
23-06-2022	44.25	27.24	10.36	16.54
27-06-2022	40.52	26.43	9.65	16.36
30-06-2022	39.75	25.37	9.77	16.21
04-07-2022	34.78	17.72	9.66	16.62

Sensitivity: Public (C4)

07-07-2022	36.19	17.84	9.8	17.12
11-07-2022	35.62	17.48	9.72	16.7
14-07-2022	33.86	16.89	9.58	16.56
18-07-2022	37.84	18.22	10.13	17.42
21-07-2022	36.31	17.8	9.64	17.16
25-07-2022	38.74	19.34	10.38	17.91
28-07-2022	38.66	19.22	10.26	17.85
01-08-2022	35.17	19.15	9.84	17.08
04-08-2022	33.29	18.96	9.62	16.64
08-08-2022	32.54	16.72	9.59	16.18
11-08-2022	38.95	21.35	10.43	17.76
16-08-2022	34.68	18.86	10.34	17.62
18-08-2022	32.56	17.23	9.83	16.58
22-08-2022	36.17	19.04	10.14	17.24
25-08-2022	37.29	20.86	10.36	17.78
29-08-2022	34.48	17.84	9.86	17.25
01-09-2022	34.85	19.82	9.74	16.83
05-09-2022	45.16	24.69	10.22	17.34
08-09-2022	38.18	20.63	9.83	16.9
12-09-2022	48.95	25.18	10.54	17.21
15-09-2022	43.68	21.27	10.14	16.66
19-09-2022	50.57	27.07	10.66	17.83
22-09-2022	47.33	25.84	10.17	17.52
26-09-2022	45.88	25.18	10.45	17.8
29-09-2022	42.34	23.68	9.82	16.85
NAAQS limits	**100 (ug/m3)**	**60 (ug/m3)**	**80 (ug/m3)**	**80 (ug/m3)**

Sensitivity: Public (C4)

Annexure XIII

Pre-monsoon ground water monitoring report

Sensitivity: Public (C4)

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 9321312367

TEST CERTIFICATE

Doc. No: GLPL/QF/5.10/01

Test Report No.	GW/E/21/05095	T.R. Date	30/05/2022
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 25/05/2022		
Lab Reference No.	GW/E/21/05095	Page No.	1 of 1
Sampling Done On	25/05/2022	Sample Received on	25/05/2022
Sample Collected By	GLPL	Analysis Period	25/05/2022 To 30/05/2022
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	0.22	1.0 Max.	5.0 Max.	APHA 2130 B
pH	---	6.97	6.5 – 8.5	No Relaxation	APHA 4500 H^+ B
Electrical Conductivity	µS/cm	118	Not Specified		APHA 2510 B
Total Hardness as $CaCO_3$	mg/ltr	37	200.0 Max.	600.0 Max.	APHA 2340 C
Chlorides	mg/ltr	12.01	250.0 Max.	1000.0 Max.	APHA 4500 Cl^- B
Sulphate	mg/ltr	1.89	200.0 Max.	400.0 Max.	APHA 4500 SO_4^{2-} E
Total Dissolved Solids	mg/ltr	77	500.0 Max.	2000.0 Max.	APHA 2540 C
Nitrate	mg/ltr	1.05	45.0 Max.	No Relaxation	APHA 4500 NO_3 B
Calcium Hardness	mg/ltr	24.02	Not Specified		APHA 3500 Ca B
Dissolved Iron	mg/ltr	<0.001	1.0 Max.	No Relaxation	APHA 3111 B
Magnesium Hardness	mg/ltr	12.98	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	4	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]

CHECKED BY

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.

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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TEST CERTIFICATE

Doc. No: GLPL/QF/5.10/01

Test Report No.	GW/E/21/05096	T.R. Date	30/05/2022
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 25/05/2022		
Lab Reference No.	GW/E/21/05096	Page No.	1 of 1
Sampling Done On	25/05/2022	Sample Received on	25/05/2022
Sample Collected By	GLPL	Analysis Period	25/05/2022 To 30/05/2022
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	0.24	1.0 Max.	5.0 Max.	APHA 2130 B
pH	—	6.91	6.5 – 8.5	No Relaxation	APHA 4500 H^+ B
Electrical Conductivity	µS/cm	136	Not Specified		APHA 2510 B
Total Hardness as $CaCO_3$	mg/ltr	48	200.0 Max.	600.0 Max.	APHA 2340 C
Chlorides	mg/ltr	15.02	250.0 Max.	1000.0 Max.	APHA 4500 Cl^- B
Sulphate	mg/ltr	4.02	200.0 Max.	400.0 Max.	APHA 4500 SO_4^{2-} E
Total Dissolved Solids	mg/ltr	88	500.0 Max.	2000.0 Max.	APHA 2540 C
Nitrate	mg/ltr	1.32	45.0 Max.	No Relaxation	APHA 4500 NO_3 B
Calcium Hardness	mg/ltr	29.02	Not Specified		APHA 3500 Ca B
Dissolved Iron	mg/ltr	<0.001	1.0 Max.	No Relaxation	APHA 3111 B
Magnesium Hardness	mg/ltr	18.98	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	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]

CHECKED BY

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GADARK LAB PVT. LTD.

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Tel.: (022) 2577 7069 / 2577 7070 / 2085 0091 + 91 9321312367

TEST CERTIFICATE

Doc. No: GLPL/QF/5.10/01

Test Report No.	GW/E/21/05097	T.R. Date	30/05/2022
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 25/05/2022		
Lab Reference No.	GW/E/21/05097	Page No.	1 of 1
Sampling Done On	25/05/2022	Sample Received on	25/05/2022
Sample Collected By	GLPL	Analysis Period	25/05/2022 To 30/05/2022
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	0.24	1.0 Max.	5.0 Max.	APHA 2130 B
pH	—	6.89	6.5 – 8.5	No Relaxation	APHA 4500 H^+ B
Electrical Conductivity	µS/cm	163	Not Specified		APHA 2510 B
Total Hardness as $CaCO_3$	mg/ltr	54	200.0 Max.	600.0 Max.	APHA 2340 C
Chlorides	mg/ltr	21.02	250.0 Max.	1000.0 Max.	APHA 4500 Cl^- B
Sulphate	mg/ltr	3.46	200.0 Max.	400.0 Max.	APHA 4500 SO_4^{2-} E
Total Dissolved Solids	mg/ltr	106	500.0 Max.	2000.0 Max.	APHA 2540 C
Nitrate	mg/ltr	1.81	45.0 Max.	No Relaxation	APHA 4500 NO_3 B
Calcium Hardness	mg/ltr	34.03	Not Specified		APHA 3500 Ca B
Dissolved Iron	mg/ltr	<0.001	1.0 Max.	No Relaxation	APHA 3111 B
Magnesium Hardness	mg/ltr	19.97	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	6	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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Annexure XIV

Noise monitoring reports

Sensitivity: Public (C4)

Results of noise monitoring done between April-22 to September-22

Sr. no.	Location	Noise Level dB (A) Leq (May-22)		Noise Level dB (A) Leq (August-2022)	
		Day time avg.	Nighttime avg.	Day time avg.	Nighttime avg.
1	Near Amona gate	74.2	64.9	71.8	65.2
2	Opp. BSNL exchange	67.8	61.4	66.7	60.8
3	Near Dispatch gate	69.2	60.8	67.4	61.3
4	Near Satteri temple	59.3	48.7	54.9	44.2
5	Compound wall towards Navelim	62.7	53.6	63.4	52.1
6	Compound wall towards Maina	64.3	55.4	62.9	53.2

Sensitivity: Public (C4)