

To,
The Director,
Ministry of Environment and Forest,
Regional Office (Southern Zone) KendriyaSadan, 4th Floor,
17th Main Road , 2nd Block, Koramangala
Bangalore.

31.05.2021

Sub:- 24th Six Monthly Compliance Report to the conditions of Environmental Clearance for Vedanta Ltd. (Formerly known as Sesa Sterlite Limited/Sesa Goa Limited) - Blast Furnace (0.9 MTPA), Sinter Plant (2MTPA), Coke Plant (0.6 MTPA) and Waste Heat Recovery Power Plant (60 MW) located at village Navelim, Taluka Bicholim in, North Goa District, Goa.

Ref:

1. F No.J-11011 /946/2007-IA-II(I) dated June 03,2009.
2. Amendment in Environmental Clearance from MOEF vide letter dated 25/04/2012 and 7/01/2020.

Sir,

With reference to the above, please find enclosed herewith:

24th six monthly compliance report to Environmental Clearance [F No.J-11011/946/2007-IA-II(I)] for the period **October 2020 to March 2021** for Vedanta Ltd (Formerly known as Sesa Sterlite Limited/Sesa Goa Limited) Blast Furnace(0.9 MTPA), Sinter Plant (2MTPA), Coke Plant (0.6 MTPA) and Waste Heat Recovery Power Plant (60 MW) located at village Navelim, Taluka Bicholim, North Goa District, Goa.

- Stack monitoring, Ambient Air Quality Monitoring, Water monitoring reports ,Ground Water and Workplace Monitoring reports for the said period.

Thanking you,

Yours faithfully,

For Vedanta Ltd.


Saptesh Sardesai

Director :- Value Added Business-Vedanta Ltd.

Cc: Member Secretary, GSPCB, CPCB (SZO)

Enclosures:-

- 24th six monthly compliance status report
- Tabulated Stack monitoring, Ambient Air Quality Monitoring, Water monitoring and Ground Water and Workplace Monitoring Reports for the period October 2020 to March 2021.

VEDANTA LIMITED

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CIN: L13209MH1965PLC291394

24th Compliance Report to EC No: F. No. J-11011/946/2007-IA-II(I)

(Period:- October 2020 to March 2021)

6 Monthly Compliance Report to Conditions Of Environmental Clearance Issued By MOEF, Govt. of India, for Blast Furnace (0.90MTPA), Sinter Plant (2MTPA), Coke Plant (0.6MTPA), Waste Heat Recovery Power Plant (60MW) by Vedanta Limited (earlier known as Sesa Sterlite Ltd./ Sesa Goa Limited) *

A. Specific Conditions

- I. Electrostatic precipitator (ESP) shall be provided to Sinter plant and WHRB based Power Plant to control gaseous emissions from all the vents/stacks within 100 mg/Nm³. Gas Cleaning Plant along with Ventury scrubber shall be provided to blast furnace. On-line stack monitoring facilities for all the stacks shall be provided to ensure particulate emissions below 100 mg/Nm³ and data submitted to the Ministry's Regional Office at Bangalore, CPCB and Goa Pollution Control Board. Efforts shall be made to reduce RSPM levels in the ambient air and a time bound action plan should be submitted.**

Electrostatic Precipitator (ESP) provided to the Sinter Plant at Head End & Tail End of Sinter Machine. Dry Gas Cleaning Plant (GCP) with a dust catcher & bag filters, provided to Blast Furnace. Online stack monitoring facilities is installed for Sinter main stack, Sinter Tail end stack, WHRB-1&2 of Waste Heat Recovery Power plant and Hot Blast Stove of Blast Furnace. Continuous Real time data are connected to CPCB portal .Other conditions complied subject to letter dated 15 Sep 2009 addressed to MOEF, which clarifies areas of non-applicability of the conditions. Regular Stack Monitoring & Ambient Air Quality Monitoring is conducted and monthly reports are submitted to GSPCB (Currently uploaded on OCEMS system as per GSPCB Direction). Also half yearly reports are submitted to CPCB & MOEF.

Detail of average reading for all six locations.

Sr.No.	Location	Average from October 20 to March 21			
		PM10	PM2.5	SO2	NO2
1	Amona Gate	74.05	35.04	11.31	18.22
2	Compound wall Towards Maina	74.24	34.88	11.91	18.08
3	Opposite BSNL Exchange	74.56	35.38	11.43	18.23
4	Near Dispatch Gate	74.05	34.78	11.41	18.14
5	Compound wall Towards Navelim	73.68	34.63	11.55	18.15
6	Nr. Sateri Temple	73.63	33.44	11.55	18.04

12 parameters monitoring as per National AAQ report is as follows**(Average from October 20 to March 21)**

Sr.no	Parameters	Amona Gate	Opp BSNL Exchange	Near dispatch gate	Comp. wall towards Navelim	Near Sateri temple	Comp. wall towards Maina
1	PM10	74.05	74.56	74.05	73.68	73.63	74.24
	limit =100 µg/m3						
2.	PM 2.5	35.04	35.38	34.38	34.63	33.44	34.88
	limit =60 µg/m3						
3.	SO ₂	11.31	11.43	11.41	11.55	11.55	11.91
	limit =80 µg/m3						
4.	NO ₂	18.22	18.23	18.04	18.15	18.04	18.08
	limit =80 µg/m3						
5.	Ozone	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0
	Limit =180 µg/m3						
6.	Lead (pb)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	limit =1 µg/m3						
7.	Ammonia (NH ₃)	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0
	Limit=400 µg/m3						
8.	Carbon Monoxide (mg/m3) (CO)	0.31	0.37	0.29	0.33	0.31	0.34
	Limit = 4 mg/m3						
9.	Benzene (C ₆ H ₆)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	Limit= 5 µg/m3						
10.	Benzo Pyrene (BaP)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

	Limit = 1 ng/m3						
11.	Arsenic (As)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
	Limit= 6 ng/m3						
12.	Nickel (Ni)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
	Limit= 20 ng/m3						

Individual day wise readings are attached as Annexure I.

II. Pulse jet bag filters shall be provided to coal crusher, product house, raw material handling areas. Transfer point etc. Bag filters shall be provided at the crusher. Screening and transfer points. The Coke Oven gases shall be fully utilized for power generation. Water sprinkling system and dry fog system shall be provided to control fugitive emissions at the coal handling area and work zone.

Pulse jet bag filters are provided for coal crusher house, coke screening towers, transfer points, raw material handling sections, etc. Also rain gun sprinklers are provided at raw material yard. Coal is stored in the closed shed. Wind screens are installed along the raw material storage yard. Bag house de-dusting system is provided for proportioning bin, sinter screening building, flux and fuel crushing and small de-dusting units for various transfer stations. Additionally fog/mist cannons have been brought for dust suppression from process activities at the source. Coke Oven Flue Gas (COFG) is fully utilized for Clean Power Generation.

III. Data on ambient air quality stack emission and fugitive emissions shall be uploaded on the company's website and also regularly submitted online to Ministry's Regional office at Bangalore, Goa State Pollution Control Board (GPCB) and Central Pollution Control Board as well as hard copy once in six months. Data on SPM, SO₂ and NO_x shall also be displayed prominently outside the premises at the appropriate place for the general public.

Ambient Air quality & source emission data is submitted on regular basis to GSPCB. Also six monthly data on stack emission & ambient air quality is submitted to GSPCB, CPCB, MOEF & in hard copy and through e-mail and also uploaded on company website :-

<http://sesagoaironore.com/sustainability/hse/environment-reports/>

Display of PM₁₀, PM_{2.5}, and SO₂ & NO₂ is done prominently outside the premises for the general public. Please refer to table in (i) of Specific Conditions. Ambient Air Quality Reports and Stack Monitoring Reports are submitted regularly to MOEF, CPCB & GSPCB along with six monthly compliance reports. All the values are within limits.

Stack emission data is provided in (iii) of GC below and as Annexure II.

IV. Secondary fugitive emissions from all the sources including Blast Furnace, Coke Oven and Sinter Plant shall be controlled within the latest permissible limits issued by the Ministry and regularly monitored. Guidelines/Code of Practice issued by the CPCB shall be followed.

There are no specific permissible limits, - guidelines/code of practice issued by CPCB/MOEF for Non-Recovery Coke Oven Plants. Rain guns have been installed at raw material yard for dust suppression. Bag filter de-dusting systems are used to control dust. Wind screen/wind shields are installed at prominent locations as per the instructions of GSPCB. The monitoring is done regularly. Also as an additional improvement initiative we have procured Fog/Mist canons and Road sweeping machine for road dust cleaning and ultimately for fugitive dust suppression and control.

V. Total water requirement shall not exceed 16632 m³/day. The effluent from generated utilities shall be treated in the effluent treatment plant and recycled and reused in the process in blast furnace, sinter plant, dust suppression. Ash moistening, firefighting and green belt development etc. No effluent shall be discharged outside the premises and 'zero' discharge shall be followed.

All Process water from Coke, Blast Furnace, and Sinter Plant is recycled and reused. After appropriate treatment Blow down from Cooling Tower of Power Plant is let out into Mondovi River after temperature & pH monitoring as per Consent conditions from Goa State Pollution Control Board (GSPCB).

The present Water Consumption is on an avg. 5285.05 m³/day (including water for cooling as well as process water) blow down water from Power Plant is around average 104.68 m³/day.

VI. Regular monitoring of influent and effluent water shall be ensured and treated wastewater shall meet the norms prescribed by the Goa State Pollution Control Board or described under the E(P) Act whichever are more stringent and reports shall be submitted six monthly to the Ministry's Regional Office at Bangalore, GSPCB and CPCB.

Blow down from Cooling Tower of Power Plant is let out into Mandovi river after temperature & pH adjustment. Monthly monitoring is carried out as per Consent conditions. Reports are submitted to GSPCB every month and to MOEF (RO), CPCB, and every six monthly as six monthly compliance reports. Blast Furnace, Sinter Plant and Coke Oven Plant operate on zero discharge. Only non-contact type of condenser cooling water is disposed back into Mandovi river as per Consent conditions from Goa State Pollution Control Board (GSPCB) .As per CTO condition max. 3600 m³/day blow down water can be disposed, however last six month avg. was around 104.68 m³/day. Temperature & pH is around avg. 27.8°C and 7.03 respectively.

VII. All the blast furnace slag shall be granulated and provided to cement manufacturers for further utilization. All the dust from the air pollution control equipments shall be recycled and reused in the Sinter plant. All the other solid wastes shall be disposed off in the environment-friendly

manner or provided to authorized recyclers/ re-processors. Used oil shall also be provided to authorized recyclers only. An action plan for the disposal of fly ash and granulated BF & SMS slag shall be submitted to the Ministry and its Regional Office at Bangalore within 3 months.

Granulated BF slag is disposed to cement industries. Dust from air pollution control equipment is recycled & reused in Sinter Plant. Used oil is disposed off to the authorized recyclers only. Disposal of Fly Ash & SMS slag is not applicable as the facility is limited to iron making through blast furnace and there is no steel making provision and the power plant is based on waste heat hence thermal coal is not used for power generation. The non-applicability of fly ash & SMS slag is mentioned in letter to MoEF dated 15 September 2009.

VIII. All the fly ash shall be utilized as per Fly Ash Notification, 1999 and amended in 2003.

Not Applicable as thermal coal is not used. The power plant is run on BF gas and Coke Oven Flue Gas.

IX. Vehicular pollution due to transportation of raw material and finished product shall be controlled. Proper arrangements shall also be made to control dust emissions during loading and unloading of the raw material and finished product.

Vehicular pollution due to transportation of raw materials and finished product is controlled. Rain Guns (Sprinkling system) have been installed in the raw material yard and water tankers are used for dust suppression. Sprinklers for dust suppression have been installed at Pig Iron Dispatch yard. Pollution under Check certificates of all vehicles entering premises is checked.

X. Green belt shall be developed in 33 % area within and around the plant premises as per the CPCB guidelines in consultation with DFO.

Green belt is developed in phases with plantation drives during the Monsoons. Total land area is 104 Ha. 21Ha is reserved for future usage and 33Ha is earmarked as greenbelt area. Plantation was carried out in consultation of Goa Forest Development Corporation (GFDC) as well as in-house guidance from company expert team.

XI. All the recommendations made in the Charter on Corporate Responsibility for Environment Protection (CREP) for the Steel Sector shall be strictly implemented.

The Project is not an Integrated Iron & Steel Plant and hence the CREP guidelines of steel sector are not applicable however, whatever CREP conditions are applicable for blast furnace and non-recovery coke plant have been complied, proactively.

XII. The company shall provide housing for construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, creche etc. The housing may be in the form of temporary structures to be removed' after the completion of the project.

All temporary housing structures have been decommissioned after the project is operational.

B. GENERAL CONDITIONS

1. The project authorities must strictly adhere to the stipulations made by the Goa Pollution Control Board (GPCB) and the State Government.

Stipulations made by GSPCB are strictly adhered to. Reports are either sent to Goa State Pollution Control Board (GSPCB) or uploaded on GSPCB Website. Regular site visits are made by GSPCB personnel to check the compliance status.

2. No further expansion or modifications in the plant should be carried out without prior approval of the Ministry of Environment and Forests.

No expansion or modification in the plant is carried out without prior approval of MoEFCC. We have got Environment Clearance and Consent to operate for hot metal expansion from existing Blast furnace for production enhancement of 0.45 MTPA to 0.54 MTPA. We have applied for Environment clearance for setting up of Ductile Iron plant, Ferro Silicon Plant, additional Oxygen plant and coke ovens in the existing Pig Iron and Coke Expansion Plant premises near existing mini blast furnace.

3. The gaseous emissions from various process units shall conform to the load/mass based standards notified by this Ministry on 19th May, 1993 and standards prescribed from time to time. The state Board may specify more stringent standards for the relevant parameters keeping in view the nature of the industry and its size and location. At no time, the emission level shall go beyond the prescribed standards. On-line continuous monitoring system shall be installed in stacks to monitor SPM and interlocking facilities shall be provided so that process can be automatically stopped in case emission level exceeds the limit. NOX burners shall be installed to control NOX levels.

Online stack monitoring instrument is installed for main stacks of Sinter plant (At Head End and Tail End), Hot Blast Stove and both WHRB stacks of Power Plant to track TPM and gases. Real time data are continuously going to CPCB portal. Interlock is provided for Sinter Machine, to ensure automatically stopping of the process when emission exceeds the limits.

The stack heights of stacks and latest data is as follows- (From October-20 to March-21)

Plant	Stack connected to	Height of stack	Particulate Matter in mg/Nm ³ (Avg.)	SO ₂ in kg/hr (Avg.)	NO ₂ in mg/Nm ³ (Avg.)
Sinter Plant	Main ESP	100m	56.65	NA	NA
	Discharge end ESP	30m	49.29	Not Applicable as these are de-dusting stacks	
	Sinter Screening & Product bunker Bag Filter	30m	19.68		
	Proportioning bin bag filter	30m	20.16		
	Flux & Fuel Area bag filter	30m	44.45		
Blast Furnace	Cast House De-dusting	30m	24.14	Not Applicable as these are de-dusting stacks	
	Stock House De-dusting	30m	43.66		
	Hot Blast Stoves (HBS)	60m	25.08	20.9 (mg/nm ³)	17.80
Power Plant	Waste Heat Recovery Boiler-1	50m	34.84	4.69	14.24
	Waste Heat Recovery Boiler-2	50m	38.52	5.52	21.37

***99% of the time (on an avg.) stacks connected to coke oven batteries are closed from top and coke oven flue gases with temperature of almost 1100°C are diverted to waste heat recovery boiler for clean power generation. As per latest consent granted by Goa State Pollution Control, the unit should carry out emission monitoring from the stacks of Waste Heat recovery boiler chimney attached to coke oven plant once in three month, which is carried out regularly and reports are sent/uploaded to GSPCB. However due to the structural weakening of Waste Heat Recovery Boiler 2 chimney, stack monitoring was not done for the aforesaid chimney for 4 Quarters and the same was done in the month of January` 21 after chimney re-erection. The same has been communicated to State Pollution Control Board.**

- 4. At least four ambient air quality-monitoring stations shall be established in the downward direction as well as where maximum ground level concentration of SPM, SO₂ and NO₂ are anticipated in consultation with the GPCB. Data on ambient air quality and stack emission shall be regularly submitted to this Ministry including its Regional Office at Bangalore I GSPCB I CPCB once in six months.**

AAQM locations are approved by GSPCB and the monthly reports are submitted to GSPCB. Two Continuous Ambient Air 'Quality Stations have been set up. Data on Air Quality, Stack emissions is

submitted once in six months to MOEF (RO) .Monthly AAQM reports are submitted to GSPCB. All 12 parameters as per NAAQM are monitored; other parameters are Below Detection Limits. Ozone and Ammonia are found in traces. Table is attached in (i) above Ambient Air Quality Reports and Stack Monitoring Reports are submitted regularly to MOEF, CPCB & GSPCB along with six monthly compliance report. All the values are within limits.

5. **In-plant control measures for checking fugitive emissions from all the vulnerable sources like Sinter plant, Blast Furnace area etc. shall be adopted. Further, specific measures like water sprinkling shall be carried out at the stock piles of raw material, stacker, reclaimer, transfer points etc. Dust extraction system and bag filters shall be provided to the sinter plant, stock house and blast furnace. Centralized de-dusting system i.e. collection of fugitive emissions through suction hood and subsequent treatment through bag filter or any other device and finally emitted through a stack of appropriately designed shall be provided. Fugitive emissions shall be controlled, regularly monitored and records maintained.**

Individual Pulse Jet Bag Filters are provided for Cast House, Stock House of Blast Furnace and Flux & Fuel House, Proportioning House, Sinter Screening House of Sinter Plant. These Pulse jet bag filters cover various capture points such as screening, transfer stations, etc. Electrostatic precipitators (ESPs) are provided at Head & Tail end of Sinter Machine of the Sinter Plant. Rain gun sprinklers are provided & operated at the Raw material yard of the Sinter Plant & Blast Furnace. Windscreens are also installed along the raw material boundary wall. Windshields are installed at the Pig Iron dispatch yard. All the stacks are of adequate height as per the design. Fugitive emissions are controlled, monitored & records maintained. Dust suppression system installed at raw material hoppers.

6. **Industrial wastewater shall be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19th May, 1993 and 31st December, 1993 or as amended form time to time. The treated wastewater shall be utilized for plantation purpose.**

All Process water from Coke, Blast Furnace, and Sinter Plant is recycled and reused after appropriate treatment. Blow down from Cooling Tower of Power Plant is let out into Mandovi river after temperature & pH adjustment as per GSPCB. Cooling tower blow down is monitored every month before disposal into river. Readings Of the same are attached in Annexure III.

7. **The overall noise levels in and around the plant area shall be kept well within the standards (85 dBA) by providing noise control measures including acoustic hoods. Silencers, enclosures etc. on all sources of noise generation. The ambient noise levels should conform to the standards prescribed under EPA Rules, 1989 viz. 75 dBA (daytime) and 70 dBA (night time).**

Overall noise levels in and around the plant area is on an average less than 85dB (A). Enclosures, acoustic hoods, silencers, etc. are provided wherever necessary. The ambient noise levels conforms to the standards prescribed under EPA Rules, 1989 viz. 75 dBA (daytime) and 70 dBA (nighttime) at the boundary of the plant.

8. **The company shall develop surface water harvesting structures to harvest the rain water for utilization in the lean season besides recharging the ground water table.**

Surface rain water harvesting and ground water recharging are in vogue as per the advise of Sr. hydro geologist from Water Resource Department (WRD) of Goa. Roof top rain water is directed to tanks and reused. Around 300000 (282706 m3 in previous monsoon) m3 rain water (from mid-June- mid October) is collected in excavated pits. The stored water is used for process in blast furnace, shell cooling and slag granulation. Also, water which is drawn from the Napoli (mining) pit (755389 m3 during previous financial year) and is used for the process after payment of necessary charges is obtained by Rain Water Harvesting.

9. Occupational Health Surveillance of the workers shall be done on a regular basis and records maintained as per the Factories Act.

Occupational Health Surveillance of the workers is carried out on a regular basis and records maintained as per the Factories Act. An Occupational Health Centre with an ambulance and Occupational physician (Company employee) and Para-medicos are available.

10. The project proponent shall also comply with all the environmental protection measures and safeguards recommended in the EIA / EMP report. Further, the company shall undertake socio-economic development activities in the surrounding villages like community development programmes, educational programmes, drinking water supply and health care etc.

There are three villages around the units. We have done the need assessment of the area and working towards the overall development of the villages in various thrust areas like Health, Education, livelihood creation & creation of social infrastructure.

11. The project authorities shall earmark adequate capital cost and recurring cost/annum for environment pollution control measures and utilize judiciously to implement the conditions stipulated by the Ministry of Environment and Forests as well as the State Government. An implementation schedule for implementing all the conditions stipulated herein shall be submitted to the Ministry's Regional Office at Bangalore. The funds so provided shall not be diverted for any other purpose

HSE department with competent employees reporting to the director of the unit looks after Environmental Management with Management support. An earmarked budget has been allotted with adequate provisions for implantation, operation and maintenance of Environment Pollution Control Measures

12. The Regional Office of this Ministry at Bangalore/CPCB/GPCB will monitor the stipulated conditions. A six monthly compliance report and the monitored data along with statistical interpretation shall be submitted to them regularly.

6 monthly compliance report & monitored data is submitted to MoEF, CPCB & GSPCB regularly on six monthly basis. The report & data uploaded on to company website: -
<http://sesagoaironore.com/sustainability/hse/environment-reports/>

- 13. The Project Proponent shall inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the GPCB and may also be seen at Website of the Ministry of Environment and Forests at <http://envfor.nic.in>. This shall be advertised within seven days from the date of issue of the clearance letter, at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same shall be forwarded to the Regional office.**

The information about grant of Environmental Clearance was published in 2 local newspapers as per the condition of EC. English Daily "Navhind Times" dated 12/06/2009 & Marathi Daily "Tarun Bharat" dated 12/06/2009.

- 14. Project authorities 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 and the date of commencing the land development work**

The first Consent to Operate was granted for following units in below mentioned years:-

Coke Plant	08/9/2011
WHRPP	22/12/2011
BF	08/06/2012
Sinter Plant	09/11/2012

Additional Recommendations on 25/4/12, when amendment in EC was granted

- 1. The NAAQS issued by the Ministry vide GSR No 826 (E) dated 16th November 2009 shall be followed.**

12 parameters as mentioned in NAAQS are monitored at AAQ stations and reports are submitted to GSPCB.

- 2. The Project Proponent shall also submit 6 monthly reports on the status of the compliance of stipulated environmental conditions including results of monitored data (both in hard copies as well as by e-mail) to respective RO of MOEF, respective ZO of CPCB & SPCB. RO of MOEF at Bangalore/CPCB/GSPCB shall monitor the conditions.**

Complied. Six monthly compliance reports submitted to RO of MOEF at Bangalore with cc to CPCB & GSPCB. Also monitored parameters are submitted to the authorities as mentioned in above clauses.

3. **Environmental Statement for each financial year ending 31st March in Form V as is mandated to be submitted by project proponent to GSPCB as prescribed under EPR 1986 shall also be put on the website of the company along with the status of compliance of environmental conditions and shall also be sent to respective ROs of MOEF by e-mail.**

Complied. The Environmental Statements for all units, viz, Coke Plant, Power Plant, Blast furnace and Sinter Plant for year 2019-20 are submitted on 18th September 2020.

4. **The Company shall submit within 3 months their policy towards Corporate Environment Responsibility which should inter-alia address (i) SOP to bring into focus any Infringent/deviation/violation of EC conditions (ii) Hierarchical system or Administrative order of the company to deal with environmental issues and ensuring compliance to EC conditions (iii) System of reporting of noncompliance/violation environmental norms to Board of Directors of the company or/and stakeholders or shareholders.**

Corporate Environment Responsibility Policy Action Plan was submitted to MOEF, CPCB and GSPCB on 20/11/12 along with 7th Six Monthly EC Compliance. If any changes are incorporated in CER, same will be intimated to the authorities. Environmental issues are discussed periodically in Vedanta Sustainability Committee Meeting. This Sustainability Committee reports to the Board of Directors, which reviews performance on 6 monthly basis.

**Additional Conditions as per Amendment to Environmental clearance via letter
No:- F. No. J-11011/946/2007-IA.II(I) dated 07/01/2020**

1. **Additional filter beds, arrester wall shall be provided along the Storm Water Drainage for settlement of Suspended Particles and to prevent siltation. The runoff water shall be diverted in settling ponds to prevent any siltation of river/nallah/fields.**

Storm water drains are provided channelizing the storm water into the settling ponds. Filter beds and arrester wall are provided in the storm drains and these storm drains are desilted every year before monsoon.. The runoff water is diverted into the settling ponds and to prevent siltation of river/nallah/fields. Storm water passes through series of settling ponds and these settling ponds are desilted every year before monsoon. Also rainwater stored in some of the settling ponds are used in the process.

2. **All the transportation roads within the project premises shall be fully asphalted/ concreted in a phased manner to ensure the reduction of fugitive emissions and to get a clear runoff during monsoon.**

Most of the internal roads are black top however balance internal road of around 6.38 km will be black topped or concreted in a phased manner by 2023. Also, it will be pertinent to note that budget is allocated for the same annually

3. **Regular monitoring of ground water quality shall be carried out in one open well each in three villages i.e., Amona, Navelim and Maina villages in the post and pre-monsoon seasons and the results shall be submitted to GSPCB under intimation to RO, MOEF & CC Bangalore.**

Ground water quality monitoring was done in the surrounding villages i.e. Amona, Navelim and Maina in the month of October 2020 as a part of ground water study post-monsoon and in April 2021 as a part of ground water study in pre-monsoon period. The reports are enclosed herewith as Annexure IV for your reference.

4. **One additional Continuous Ambient Air Quality Monitoring Station (CAAQMS), in consultation with GSPCB shall be established within the project premise towards the adjoining village and monitoring reports shall be submitted to Goa State Pollution Control Board (GSPCB) and CPCB.**

Additional CAAQMS machine procured and available at site. The installation is yet to be done as the neighbouring state from where the expert manpower was supposed to come is under lock down due to covid pandemic.

5. **Additional sprinkling arrangement in the raw material stacking area shall be done to control fugitive dust within the project premise.**

Rain guns are provided in the stacking area for suppressing dust. Also, additional water tanker sprinkling is done in stacking yard. We have also installed two new fog cannons, a sprinkling arrangement in the yard.

6. **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.**

Bag Filters are provided to control the secondary emission with the hoods at the emission sources.

7. **The NO_x and CO levels should be monitored at workplace at regular intervals (minimum once a week and controlled).**

We are monitoring NO_x levels at 6 Locations and CO at multiple locations and monitoring is done weekly. Reports are submitted to Goa State Pollution control board.

8. **Monthly monitoring of BaP, Pb, HC, VoCs shall be conducted and report shall be submitted to GSPCB and CPCB.**

We have non-recovery type coke oven plants. However, we have started carrying out the monthly monitoring of BaP, Pb, HC, VoCs through AAQMS and Reports of the same are submitted to your good office. Reports of the same are attached as Annexure V.

9. **Performance evaluation of all air pollution control devices should be carried out through competent agencies as per the predetermined maintenance protocol of each equipment and report submitted to GSPCB and CPCB.**

Performance evaluation of Air Pollution control device like Baghouses, ESP's and others have been carried out by MOEF&Cc accredited Lab and the comprehensive report has been sent to GSPCB and CPCB.

10. The tree density in the existing greenbelt should be increased by planting local species within the project boundary areas adjoining villages as per CPCB guideline.

33% of dedicated green belt area has been marked within the premises. Every year plantation is taken up in the monsoon season to increase the density.

11. All above condition shall also be incorporated in the Six Monthly report submitted to Regional Office, Bangalore, MoEF&CC.

This is being complied hereby with this 24th E.C Compliance report which was first complied after 22nd E.C. Compliance report.

** Vedanta Limited (earlier known as Sesa Sterlite Ltd./Sesa Goa Ltd.) has implemented Blast Furnace (0.54MTPA), Sinter Plant (1MTPA), Coke Plant (0.3MTPA), Waste Heat Recovery Power Plant (30MW) vis-a-vis 50% of Environmental Clearance Capacity, as Phase I.*

With respect to Letter dated 25/4/12 from MOEF, name of Project Proponent has been changed from Sesa Industries Ltd. to Sesa Goa Ltd. And further to Vedanta Ltd. Also an amendment in EC has been issued by MOEF with respect to change in plant configuration with changes in stack dimensions.

- Vedanta Ltd. has got Environment Clearance and Consent To Operate for hot metal expansion from existing Blast furnace for production enhancement of 0.45 MTPA to 0.54 MTPA.
- We have applied for Environment clearance for setting up of 0.3 MTPA Capacity Ductile Iron plant, 0.005MTPA Capacity Ferro Silicon Plant, Increasing capacity of Existing plant from 0.54 MTPA to 0.65 MTPA through technology up-gradation, Setting up of 4 Coke ovens, Increase in Existing capacity of Production from old unit from 0.29 MTPA to 0.35 MTPA and Oxygen Plant in the existing Pig Iron Expansion Plant premises near existing mini blast furnace and Public Consultation has been completed for the same.

ANNEXURE-I**Ambient Air Monitoring data from October-20 to March-21**

1 - NEAR AMONA GATE				
Date	Particular Matter PM 10	Particular Matter PM 2.5	Sulphur Dioxide (SO₂)	Nitrogen Dioxide (NO₂)
01.10.2020	65.87	31.37	10.35	17.35
05.10.2020	58.12	28.79	9.72	16.74
08.10.2020	72.84	34.38	11.27	18.31
12.10.2020	61.46	29.41	10.45	16.88
15.10.2020	74.92	36.82	11.48	18.52
19.10.2020	57.32	28.03	10.17	16.34
22.10.2020	59.26	26.73	11.77	16.62
26.10.2020	72.06	35.14	11.92	18.38
29.10.2020	75.31	38.73	11.68	18.83
02-11-2020	74.73	33.89	10.28	17.48
05-11-2020	69.31	30.52	9.79	16.9
09-11-2020	74.88	36.19	11.15	18.22
12-11-2020	77.89	38.53	11.35	18.86
16-11-2020	71.92	33.78	10.32	17.73
19-11-2020	67.28	27.8	10.01	16.74
23-11-2020	82.59	38.92	11.94	19.03
26-11-2020	73.08	32.51	11.26	18.77
30-11-2020	71.94	36.68	10.74	18.51
03-12-2020	78.34	32.56	11.24	18.35
07-12-2020	82.8	39.24	11.78	19.71
10-12-2020	69.61	30.93	10.52	17.58
14-12-2020	74.16	33.87	11.41	18.68
17-12-2020	79.58	37.29	11.68	18.91
21-12-2020	70.28	31.65	10.37	17.14
24-12-2020	80.5	37.12	12.15	19.34
28-12-2020	75.27	34.68	11.14	18.53
31-12-2020	76.89	37.18	11.59	18.79
04-01-2021	75.89	31.67	10.75	18.12
07-01-2021	77.16	34.69	11.25	18.74
11-01-2021	82.56	38.32	12.37	19.35
14-01-2021	72.91	30.1 4	10.91	17.79
18-01-2021	82.01	41.07	11.88	18.73
21-01-2021	69.46	32.46	10.79	17.45
25-01-2021	78.9	36.83	11.56	18.51

28-01-2021	83.4	40.13	12.04	19.07
01-02-2021	73.52	32.49	10.86	17.69
04-02-2021	75.92	36.72	11.33	18.53
08-02-2021	77.16	37.84	11.95	19.58
11-02-2021	80.16	39.42	12.24	19.37
15-02-2021	74.36	36.27	11.72	18.46
18-02-2021	68.64	31.52	10.84	17.26
22-02-2021	70.28	35.38	11.33	17.15
25-02-2021	82.46	41.74	12.56	19.43
01-03-2021	78.63	35.77	11.26	18.25
05-03-2021	81.09	40.17	12.39	19.34
08-03-2021	70.16	34.28	11.44	17.79
12-03-2021	77.74	37.53	12.03	19.03
15-03-2021	72.69	35.29	11.65	18.32
19-03-2021	73.11	36.86	11.48	17.78
22-03-2021	69.32	32.17	10.83	17.08
26-03-2021	78.92	38.64	12.62	19.35
29-03-2021	76.02	37.43	12.35	18.47

2 - OPP. BSNL EXCHANGE

Date	Particular Matter PM 10	Particular Matter PM 2.5	Sulphur Dioxide (SO ₂)	Nitrogen Dioxide (NO ₂)
01.10.2020	68.44	32.46	10.2	17.26
05.10.2020	59.2	27.31	9.85	16.5
08.10.2020	74.89	37.81	11.59	18.48
12.10.2020	63.48	28.43	10.22	16.91
15.10.2020	76.92	38.46	11.58	18.88
19.10.2020	58.07	30.01	9.84	16.55
22.10.2020	62.34	32.25	10.86	17.11
26.10.2020	77.37	38.13	11.72	18.93
29.10.2020	74.18	35.49	11.27	18.05
02-11-2020	72.89	32.06	9.85	17.23
05-11-2020	73.58	34.7	10.14	17.69
09-11-2020	77.3	39.42	11.57	18.43
12-11-2020	81.46	40.15	11.94	19.52
16-11-2020	75.97	36.43	11.14	18.38
19-11-2020	70.57	31.48	10.58	16.89
23-11-2020	77.93	38.53	11.35	18.64
26-11-2020	72.68	33.28	10.94	17.4
30-11-2020	74.16	36.42	10.87	18.32
03-12-2020	77.31	30.66	11.2	18.42
07-12-2020	84.27	37.52	11.83	19.56
10-12-2020	71.36	30.76	10.42	17.38
14-12-2020	75.89	35.87	11.62	18.5

17-12-2020	73.9	33.61	11.37	17.84
21-12-2020	68.24	30.57	10.78	17.36
24-12-2020	82.42	38.84	12.33	19.88
28-12-2020	73.67	35.31	11.64	18.79
31-12-2020	72.56	33.87	11.38	18.52
04-01-2021	72.58	33.56	11.2	18.47
07-01-2021	76.98	35.78	11.37	18.66
11-01-2021	80.24	37.43	12.41	19.01
14-01-2021	74.72	32.09	11.68	17.89
18-01-2021	83.38	39.34	12.36	19.23
21-01-2021	71.38	30.26	11.85	17.96
25-01-2021	76.89	34.86	11.91	18.21
28-01-2021	82.13	38.93	12.3	19.17
01-02-2021	74.28	35.14	11.31	18.05
04-02-2021	81.53	39.73	12.4	19.13
08-02-2021	75.62	37.46	11.89	18.73
11-02-2021	72.19	33.18	11.43	17.65
15-02-2021	84.53	41.28	12.52	19.65
18-02-2021	70.44	35.16	11.39	17.82
22-02-2021	71.34	36.37	11.45	18.16
25-02-2021	77.62	38.61	12.16	19.24
01-03-2021	78.29	36.78	11.84	18.16
05-03-2021	76.12	37.42	11.65	18.03
08-03-2021	73.88	35.77	11.46	17.64
12-03-2021	80.42	40.12	12.58	19.43
15-03-2021	70.67	33.89	11.85	17.85
19-03-2021	75.34	37.2	11.92	18.27
22-03-2021	72.96	34.91	11.35	17.56
26-03-2021	79.35	38.14	12.65	19.11
29-03-2021	73.16	36.78	11.51	17.74

3 - NEAR DISPATCH GATE

Date	Particular Matter PM 10	Particular Matter PM 2.5	Sulphur Dioxide (SO2)	Nitrogen Dioxide (NO2)
01.10.2020	65.18	30.54	10.47	16.26
05.10.2020	58.64	28.45	10.05	16.17
08.10.2020	72.16	35.33	11.25	18.35
12.10.2020	66.74	32.69	10.68	17.23
15.10.2020	74.2	36.03	10.96	18.54
19.10.2020	59.54	28.86	9.65	16.78
22.10.2020	65.35	31.27	11.2	17.3
26.10.2020	75.76	37.74	11.58	18.52
29.10.2020	70.37	33.89	11.21	17.84
02-11-2020	70.53	31.38	10.25	17.43

05-11-2020	77.19	37.73	11.25	18.15
09-11-2020	74.04	33.9	10.83	18.08
12-11-2020	79.34	38.84	11.58	19.67
16-11-2020	72.31	34.51	10.79	17.27
19-11-2020	69.57	30.38	10.03	16.95
23-11-2020	78.35	36.18	11.46	19.36
26-11-2020	74.46	34.74	11.26	18.26
30-11-2020	76.8	38.91	11.83	18.84
03-12-2020	74.76	32.41	11.58	18.3
07-12-2020	81.27	35.86	12.01	19.63
10-12-2020	70.58	31.04	10.35	17.78
14-12-2020	76.72	34.89	11.78	18.81
17-12-2020	72.14	31.82	11.24	17.53
21-12-2020	69.35	29.53	10.6	17.08
24-12-2020	74.2	36.68	11.62	19.36
28-12-2020	71.27	33.52	11.44	18.33
31-12-2020	74.94	35.71	11.21	18.74
04-01-2021	77.38	37.13	12.13	18.24
07-01-2021	74.18	33.68	11.67	18.62
11-01-2021	82.76	38.9	12.56	19.28
14-01-2021	76.9	34.12	11.2	18.03
18-01-2021	75.11	37.41	11.58	17.89
21-01-2021	72.6	31.87	10.42	17.34
25-01-2021	82.31	39.33	12.69	19.16
28-01-2021	77.59	36.1	12.03	18.33
01-02-2021	75.32	35.16	11.82	17.74
04-02-2021	83.41	40.15	12.35	19.32
08-02-2021	74.26	34.88	11.64	18.44
11-02-2021	80.24	37.05	12.48	18.14
15-02-2021	73.46	33.67	11.2	17.63
18-02-2021	71.06	32.48	10.76	17.28
22-02-2021	72.54	33.55	11.65	18.54
25-02-2021	75.4	36.51	12.24	18.77
01-03-2021	77.13	36.32	12.28	18.46
05-03-2021	74.8	33.75	11.75	17.84
08-03-2021	78.93	38.94	12.36	19.1
12-03-2021	73.89	36.2	11.47	18.05
15-03-2021	80.17	41.38	12.84	19.47
19-03-2021	70.64	31.57	10.32	17.24
22-03-2021	73.24	32.88	11.28	17.69
26-03-2021	79.74	38.91	12.5	18.62
29-03-2021	71.65	33.86	11.78	17.33

4 - COMPOUND WALL TOWARDS NAVELIM

Date	Particular Matter PM 10	Particular Matter PM 2.5	Sulphur Dioxide (SO ₂)	Nitrogen Dioxide (NO ₂)
01.10.2020	63.52	32.35	10.24	16.52
05.10.2020	57.16	29.41	9.83	16.28
08.10.2020	74.29	33.89	11.67	18.4
12.10.2020	65.84	33.68	10.46	17.68
15.10.2020	73.15	37.14	11.36	18.77
19.10.2020	57.28	29.36	9.79	17.14
22.10.2020	67.14	32.89	10.63	17.78
26.10.2020	72.69	38.42	11.41	17.92
29.10.2020	75.93	36.09	11.78	18.34
02-11-2020	68.24	29.33	10.58	16.82
05-11-2020	78.36	40.25	11.34	18.37
09-11-2020	72.09	35.2	10.38	17.83
12-11-2020	75.17	37.49	11.41	18.95
16-11-2020	82.61	39.68	12.42	19.82
19-11-2020	67.52	32.53	10.88	17.32
23-11-2020	76.25	38.79	11.68	19.03
26-11-2020	78.89	41.13	11.91	19.78
30-11-2020	73.1	35.27	11.45	18.51
03-12-2020	73.15	30.52	11.23	18.26
07-12-2020	78.26	33.78	11.69	19.7
10-12-2020	72.68	32.18	11.03	17.82
14-12-2020	81.57	37.38	12.25	18.75
17-12-2020	74.21	31.44	11.74	17.74
21-12-2020	68.85	27.35	10.87	17.26
24-12-2020	70.47	33.18	11.37	18.02
28-12-2020	73.84	33.79	11.64	18.46
31-12-2020	75.12	35.67	11.83	18.72
04-01-2021	74.81	33.12	12.03	17.56
07-01-2021	75.9	34.77	11.79	18.12
11-01-2021	79.32	37.83	12.54	18.32
14-01-2021	81.27	39.42	12.29	18.54
18-01-2021	77.94	35.6	11.89	17.67
21-01-2021	74.65	32.35	11.27	17.21
25-01-2021	80.04	38.73	12.84	19.5
28-01-2021	74.53	34.82	12.15	18.23
01-02-2021	72.53	34.68	11.68	17.24
04-02-2021	81.67	38.52	12.46	19.2
08-02-2021	75.09	38.24	12.14	18.48
11-02-2021	76.28	35.43	12.26	18.59
15-02-2021	74.95	33.08	11.82	17.84

18-02-2021	70.27	33.65	11.65	17.65
22-02-2021	68.26	30.22	10.54	18.32
25-02-2021	78.14	35.79	12.01	18.85
01-03-2021	73.89	34.59	11.65	17.22
05-03-2021	76.43	35.72	11.94	18.73
08-03-2021	67.92	30.74	10.87	17.16
12-03-2021	75.11	34.32	12.15	18.2
15-03-2021	70.47	31.26	11.04	17.54
19-03-2021	80.31	38.7	12.58	19.33
22-03-2021	77.08	36.31	12.43	18.68
26-03-2021	74.85	32.79	12.17	18.25
29-03-2021	72.19	32.18	11.52	17.48

5 - NEAR SATERI TEMPLE

Date	Particular Matter PM 10	Particular Matter PM 2.5	Sulphur Dioxide (SO ₂)	Nitrogen Dioxide (NO ₂)
01.10.2020	62.79	30.57	10.38	17.24
05.10.2020	55.31	28.31	9.7	16.17
08.10.2020	70.83	35.73	11.48	17.86
12.10.2020	64.38	31.58	10.79	16.83
15.10.2020	71.95	36.3	11.26	18.38
19.10.2020	58.28	27.49	9.84	16.24
22.10.2020	69.37	33.25	10.79	17.52
26.10.2020	74.16	37.79	11.37	18.06
29.10.2020	72.95	34.82	11.19	17.92
02-11-2020	72.58	31.95	10.76	17.12
05-11-2020	75.69	36.82	11.23	18.39
09-11-2020	69.14	30.37	10.84	17.43
12-11-2020	77.18	38.39	11.68	18.92
16-11-2020	75.92	36.74	11.41	18.58
19-11-2020	69.49	32.57	11.05	17.2
23-11-2020	76.66	37.03	11.42	19.56
26-11-2020	81.25	40.28	12.16	18.85
30-11-2020	75.89	36.79	11.6	19.04
03-12-2020	77.25	33.26	11.66	18.15
07-12-2020	83.68	39.42	12.27	19.76
10-12-2020	74.27	31.61	11.42	17.89
14-12-2020	77.42	36.84	11.85	19.14
17-12-2020	72.61	32.47	11.21	17.94
21-12-2020	68.45	29.38	11.03	17.51
24-12-2020	75.32	35.78	12.54	18.27
28-12-2020	73.12	33.3	12.19	18.11
31-12-2020	80.93	37.31	11.89	19.05
04-01-2021	72.67	30.53	11.73	17.76

07-01-2021	76.89	35.17	11.85	18.02
11-01-2021	81.19	38.32	12.42	18.47
14-01-2021	77.38	36.84	11.88	18.16
18-01-2021	74.06	33.75	11.64	17.85
21-01-2021	78.33	35.08	11.94	18.23
25-01-2021	82.85	39.43	12.76	19.12
28-01-2021	75.07	37.53	12.02	18.09
01-02-2021	74.54	32.35	11.86	17.89
04-02-2021	72.86	34.89	11.14	17.53
08-02-2021	83.47	40.25	12.45	18.51
11-02-2021	76.04	36.16	12.68	18.23
15-02-2021	73.68	32.79	11.74	17.43
18-02-2021	68.95	31.34	11.35	17.31
22-02-2021	71.26	34.86	11.89	17.66
25-02-2021	76.49	36.79	12.24	18.24
01-03-2021	72.16	31.78	11.25	17.61
05-03-2021	75.3	35.25	11.59	17.87
08-03-2021	68.21	30.47	10.72	17.48
12-03-2021	78.35	38.03	12.45	19.15
15-03-2021	76.39	34.68	12.17	18.62
19-03-2021	66.88	28.9	10.83	17.25
22-03-2021	73.46	32.54	11.64	17.86
26-03-2021	75.19	37.28	12.21	18.77
29-03-2021	70.37	30.14	10.94	17.92

6 - COMPOUND WALL TOWARDS MAINA

Date	Particular Matter PM 10	Particular Matter PM 2.5	Sulphur Dioxide (SO ₂)	Nitrogen Dioxide (NO ₂)
01.10.2020	65.38	32.07	10.23	17.46
05.10.2020	58.24	27.32	10.16	16.79
08.10.2020	72.57	34.18	11.38	17.93
12.10.2020	67.41	32.74	10.89	16.52
15.10.2020	74.95	36.79	11.43	18.19
19.10.2020	57.35	28.32	10.05	16.76
22.10.2020	68.93	35.79	10.87	16.87
26.10.2020	72.08	37.11	17.48	17.48
29.10.2020	76.28	39.36	18.52	18.52
02-11-2020	72.58	31.95	10.76	17.12
05-11-2020	75.69	36.82	11.23	18.39
09-11-2020	69.14	30.37	10.84	17.43
12-11-2020	77.18	38.39	11.68	18.92
16-11-2020	75.92	36.74	11.41	18.58
19-11-2020	69.49	32.57	11.05	17.2
23-11-2020	76.66	37.03	11.42	19.56

26-11-2020	81.25	40.28	12.16	18.85
30-11-2020	75.89	36.79	11.6	19.04
03-12-2020	74.82	30.58	11.26	18.42
07-12-2020	77.9	33.54	11.97	19.83
10-12-2020	72.35	29.46	10.84	17.57
14-12-2020	79.13	37.02	12.15	19.58
17-12-2020	74.09	32.78	11.68	17.74
21-12-2020	70.16	28.39	11.17	17.19
24-12-2020	74.53	33.05	11.2	18.32
28-12-2020	77.81	35.87	12.24	18.75
31-12-2020	78.14	37.84	11.86	19.32
04-01-2021	75.83	32.68	11.84	17.87
07-01-2021	77.8	35.62	12.42	18.12
11-01-2021	82.84	39.44	12.84	18.58
14-01-2021	76.84	35.31	11.93	18.1
18-01-2021	73.86	32.88	11.53	17.92
21-01-2021	81.77	38.9	12.54	18.42
25-01-2021	83.85	40.31	12.89	19.68
28-01-2021	74.26	35.65	12.13	18.32
01-02-2021	73.14	33.57	11.33	18.05
04-02-2021	81.62	38.29	12.49	18.46
08-02-2021	75.29	36.67	12.16	18.24
11-02-2021	74.08	34.16	11.85	17.52
15-02-2021	76.04	35.03	12.01	18.43
18-02-2021	69.52	33.76	11.46	17.62
22-02-2021	71.46	35.26	11.64	17.76
25-02-2021	75.36	36.12	12.68	18.11
01-03-2021	74.51	34.78	11.42	17.52
05-03-2021	77.69	37.91	12.36	18.2
08-03-2021	70.24	32.86	11.64	17.69
12-03-2021	78.3	39.23	12.48	17.94
15-03-2021	73.52	34.9	12.2	17.62
19-03-2021	68.94	30.16	11.58	17.17
22-03-2021	76.65	36.48	12.49	18.41
26-03-2021	73.83	33.66	11.96	17.82
29-03-2021	77.34	37.42	12.19	18.44

ANNEXURE-II

STACK MONITORING DETAILS FROM October 2020 To March 2021

SINTER PLANT

Sr. No.	Month	Parameter	Stack Details				
			Head End ESP	Tail End ESP	Proportioning Dedusting	Screening Dedusting	Flux & Fuel Dedusting
1	October '20 - December'20	Particulate Matter(Mg/Nm3)	54.39	46.81	21.76	18.94	43.19
2	January'21 - March'21	Particulate Matter(Mg/Nm3)	58.92	51.77	18.56	20.42	45.71

Blast Furnace

Sr.No	Month	Parameter	Stack Details			
			Hot Blast Stove	PCM Cast House Dedusting	Stock House Dedusting	PCI Stack
1	October`20-December`20	Particulate Matter(Mg/Nm3)	26.11	36.48	41.56	45.26
		SO2 (Mg/Nm3)	18.24	NA	NA	NA
		Nox(Mg/Nm3)	21.37	NA	NA	NA
2	January`21-March`21	Particulate Matter(Mg/Nm3)	24.06	31.89	45.77	42.18
		SO2 (Mg/Nm3)	23.56	NA	NA	NA
		Nox(Mg/Nm3)	14.24	NA	NA	NA

Waste Heat Recovery Power Plant II

Sr.No	Month	Parameter	Stack Details	
			WHRB 1	WHRB 2
1	January`21-March`21	Particulate Matter(Mg/Nm3)	34.84	38.52
		SO2 (kg/hr)	4.69	5.52
		Nox(Mg/Nm3)	14.24	21.37

Annexure III- Power Plant CT Blowdown Water Analysis Data (October 20 to March 21)

Month	Parameter	CT Blowdown Discharge Before Treatment	CT Blowdown Discharge After Treatment
October 2020 1st Half	PH	7.09	7.1
	Temperature (Deg. Cel.)	27.7	27.8
	Suspended Solid(mg/Lit)	38	35
	Oil & Grease (mg/Lit)	1.6	1.6
	Free Chlorine (mg/Lit)	Nil	Nil
	Phosphates as P(mg/Lit)	1.18	1.15
	Copper as Cu (mg/Lit)	0.11	0.1
	Chromium as Cr (mg/Lit)	0.13	0.13
	Iron as Fe (mg/Lit)	0.052	0.049
	Zinc as Zn (mg/Lit)	0.017	0.015

October 2020 2nd half	PH	6.97	6.98
	Temperature (Deg. Cel.)	27.8	27.9
	Suspended Solid(mg/Lit)	28	29
	Oil & Grease (mg/Lit)	1.2	1.2
	Free Chlorine (mg/Lit)	Nil	Nil
	Phosphates as P(mg/Lit)	1.27	1.13
	Copper as Cu (mg/Lit)	0.17	0.14
	Chromium as Cr (mg/Lit)	0.09	0.07
	Iron as Fe (mg/Lit)	0.023	0.021
	Zinc as Zn (mg/Lit)	0.014	0.011

Month	Parameter	CT Blowdown Discharge Before Treatment	CT Blowdown Discharge After Treatment
-------	-----------	--	---------------------------------------

November 20 1st Half	PH	7.13	7.1
	Temperature (Deg. Cel.)	27.8	27.9
	Suspended Solid(mg/Lit)	31	32
	Oil & Grease (mg/Lit)	1.2	1.1
	Free Chlorine (mg/Lit)	Nil	Nil
	Phosphates as P(mg/Lit)	1.27	1.23
	Copper as Cu (mg/Lit)	0.15	0.14
	Chromium as Cr (mg/Lit)	0.19	0.17
	Iron as Fe (mg/Lit)	0.041	0.039
	Zinc as Zn (mg/Lit)	0.021	0.019

November 20 2nd Half	PH	7.03	7.02
	Temperature (Deg. Cel.)	27.8	27.9
	Suspended Solid(mg/Lit)	33	31
	Oil & Grease (mg/Lit)	1.4	1.4
	Free Chlorine (mg/Lit)	Nil	Nil
	Phosphates as P(mg/Lit)	1.23	1.21
	Copper as Cu (mg/Lit)	0.17	0.16
	Chromium as Cr (mg/Lit)	0.11	0.1
	Iron as Fe (mg/Lit)	0.028	0.026
	Zinc as Zn (mg/Lit)	0.013	0.012

Month	Parameter	CT Blowdown Discharge Before Treatment	CT Blowdown Discharge After Treatment
Dec-20	PH	7.07	7.05
	Temperature (Deg. Cel.)	27.7	27.8
	Suspended Solid(mg/Lit)	29	28
	Oil & Grease (mg/Lit)	0.8	1
	Free Chlorine (mg/Lit)	Nil	Nil
	Phosphates as P(mg/Lit)	1.18	1.15

	Copper as Cu (mg/Lit)	0.21	0.19
	Chromium as Cr (mg/Lit)	0.23	0.21
	Iron as Fe (mg/Lit)	0.049	0.046
	Zinc as Zn (mg/Lit)	0.024	0.022

Month	Parameter	CT Blowdown Discharge Before Treatment	CT Blowdown Discharge After Treatment
Jan-21	PH	7.01	7.03
	Temperature (Deg. Cel.)	27.8	27.8
	Suspended Solid(mg/Lit)	25	23
	Oil & Grease (mg/Lit)	1.4	1.2
	Free Chlorine (mg/Lit)	Nil	Nil
	Phosphates as P(mg/Lit)	1.48	1.46
	Copper as Cu (mg/Lit)	0.17	0.15
	Chromium as Cr (mg/Lit)	0.21	0.19
	Iron as Fe (mg/Lit)	0.044	0.04
	Zinc as Zn (mg/Lit)	0.02	0.019

Month	Parameter	CT Blowdown Discharge Before Treatment	CT Blowdown Discharge After Treatment
Feb-21	PH	7.14	7.11
	Temperature (Deg. Cel.)	27.8	27.8
	Suspended Solid(mg/Lit)	31	28
	Oil & Grease (mg/Lit)	1.2	1
	Free Chlorine (mg/Lit)	Nil	Nil
	Phosphates as P(mg/Lit)	1.3	1.24
	Copper as Cu (mg/Lit)	0.11	0.09
	Chromium as Cr (mg/Lit)	0.13	0.11
	Iron as Fe (mg/Lit)	0.041	0.038
	Zinc as Zn (mg/Lit)	0.017	0.014

Month	Parameter	CT Blowdown Discharge Before Treatment	CT Blowdown Discharge After Treatment
Mar-21	PH	6.94	6.91
	Temperature (Deg. Cel.)	27.8	27.8
	Suspended Solid(mg/Lit)	34	33
	Oil & Grease (mg/Lit)	1.4	1.2
	Free Chlorine (mg/Lit)	Nil	Nil
	Phosphates as P(mg/Lit)	1.41	1.36
	Copper as Cu (mg/Lit)	0.1	0.09
	Chromium as Cr (mg/Lit)	0.12	0.1
	Iron as Fe (mg/Lit)	0.037	0.035
	Zinc as Zn (mg/Lit)	0.015	0.013

Parameters	Limits as per CTO (For After treatment water)
pH	5.5-89.0
Suspended Solid(mg/Lit)	100
Oil & Grease (mg/Lit)	20
Free Chlorine (mg/Lit)	0.5
Phosphates as P(mg/Lit)	5
Copper as Cu (mg/Lit)	1
Chromium as Cr (mg/Lit)	0.2
Iron as Fe(mg/Lit)	1
Zinc as Zn(mg/Lit)	1

ANNEXURE IV (Ground water monitoring Post and pre Monsoon)

Post-monsoon



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

TEST CERTIFICATE

Doc. No: GLPL/QF/7.8/01

Test Certificate No.	GW/E/10159/20	T.C. Date	03/11/2020
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 30/10/2020		
Lab Reference No.	GW/E/10159/20	Page No.	1 of 1
Sampling Done On	30/10/2020	Sample Received on	30/10/2020
Sample Collected by	Client	Analysis Period	30/10/2020 To 03/11/2020
Sample Description	Amona – Sandesh Naik Well Water, 3 lit in plastic bottle & 1000 ml in glass bottle.		

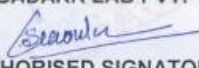
ANALYSIS REPORTS:

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	0.30	1.0 Max.	5.0 Max.	APHA 2130 B
pH	---	6.90	6.5 – 8.5	No Relaxation	APHA 4500 H ⁺ B
Electrical Conductivity	µS/cm	209.00	Not Specified		APHA 2510 B
Total Hardness as CaCO ₃	mg/ltr	78.00	200.0 Max.	600.0 Max.	APHA 2340 C
Chlorides	mg/ltr	49.43	250.0 Max.	1000.0 Max.	APHA 4500 Cl ⁻ B
Sulphate	mg/ltr	3.00	200.0 Max.	400.0 Max.	APHA 4500 SO ₄ ²⁻ E

Total Dissolved Solids	mg/ltr	135.00	500.0 Max.	2000.0 Max.	APHA 2540 C
Nitrate	mg/ltr	1.80	45.0 Max.	No Relaxation	APHA 4500 NO ₃ B
Calcium Hardness	mg/ltr	46.02	75.0 Max.	200.0 Max.	APHA 3500 Ca B
Dissolved Iron	mg/ltr	0.049	1.0 Max.	No Relaxation	APHA 3111 B
Magnesium Hardness	mg/ltr	27.98	30.0 Max.	100.0 Max.	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	6.00	Not Specified		APHA 2540 D
Oil & Grease	mg/ltr	<0.1	Not Specified		APHA 5520 B

End

For GADARK LAB PVT. LTD.


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



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

TEST CERTIFICATE

Doc. No: GLPL/QF/7.8/01

Test Certificate No.	GW/E/10160/20	T.C. Date	03/11/2020
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 30/10/2020		
Lab Reference No.	GW/E/10160/20	Page No.	1 of 1
Sampling Done On	30/10/2020	Sample Received on	30/10/2020
Sample Collected by	Client	Analysis Period	30/10/2020 To 03/11/2020
Sample Description	Maina - Digamber Naik Well Water, 3 lit in plastic bottle & 1000 ml in glass bottle.		

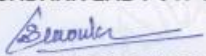
ANALYSIS REPORTS:

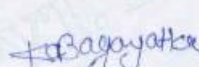
Parameters	Units	Test Result	Specification Range as per IS 10500 - 2012		Methods (APHA 23rd Edition)
			Requirement Acceptable Limit	Permissible Limit in the Absence of Alternate Source	
Colour (Pt. Scale)	Hazen unit	< 1.0	5.0 Max.	15.0 Max.	APHA 2120 B
Turbidity	NTU	0.20	1.0 Max.	5.0 Max.	APHA 2130 B
pH	---	6.68	6.5 - 8.5	No Relaxation	APHA 4500 H ⁺ B
Electrical Conductivity	µS/cm	104.00	Not Specified		APHA 2510 B
Total Hardness as CaCO ₃	mg/ltr	46.00	200.0 Max.	600.0 Max.	APHA 2340 C
Chlorides	mg/ltr	11.09	250.0 Max.	1000.0 Max.	APHA 4500 Cl ⁻ B
Sulphate	mg/ltr	1.75	200.0 Max.	400.0 Max.	APHA 4500 SO ₄ ²⁻ E
Total Dissolved Solids	mg/ltr	68.00	500.0 Max.	2000.0 Max.	APHA 2540 C
Nitrate	mg/ltr	2.10	45.0 Max.	No Relaxation	APHA 4500 NO ₃ B
Calcium Hardness	mg/ltr	24.00	75.0 Max.	200.0 Max.	APHA 3500 Ca B

Dissolved Iron	mg/ltr	0.024	1.0 Max.	No Relaxation	APHA 3111 B
Magnesium Hardness	mg/ltr	22.00	30.0 Max.	100.0 Max.	APHA 3111 B
Manganese	mg/ltr	< 0.001	0.10 Max.	0.30 Max.	APHA 3111 B
COD	mg/ltr	<4.00	Not Specified		APHA 5220 - B
BOD 3 days 27°C	mg/ltr	<1.00	Not Specified		IS 3025 (Part 44) : 1993
Phosphates	mg/ltr	<0.001	Not Specified		APHA 4500 P D
Total Suspended Solids	mg/ltr	8.00	Not Specified		APHA 2540 D
Oil & Grease	mg/ltr	<0.1	Not Specified		APHA 5520 B

End

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TEST CERTIFICATE

Doc. No: GLPL/QF/7.8/01

Test Certificate No.	GW/E/10161/20	T.C. Date	03/11/2020
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 30/10/2020		
Lab Reference No.	GW/E/10161/20	Page No.	1 of 1
Sampling Done On	30/10/2020	Sample Received on	30/10/2020
Sample Collected by	Client	Analysis Period	30/10/2020 To 03/11/2020
Sample Description	Navelim - Sanjay Naik Well Water, 3 lit in plastic bottle & 1000 ml in glass bottle.		

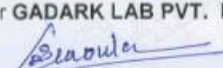
ANALYSIS REPORTS:

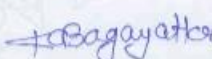
Parameters	Units	Test Result	Specification Range as per IS 10500 - 2012		Methods (APHA 23rd Edition)
			Requirement Acceptable Limit	Permissible Limit in the Absence of Alternate Source	
Colour (Pt. Scale)	Hazen unit	< 1.0	5.0 Max.	15.0 Max.	APHA 2120 B
Turbidity	NTU	0.20	1.0 Max.	5.0 Max.	APHA 2130 B
pH	---	6.62	6.5 - 8.5	No Relaxation	APHA 4500 H ⁺ B
Electrical Conductivity	µS/cm	170.00	Not Specified		APHA 2510 B
Total Hardness as CaCO ₃	mg/ltr	84.00	200.0 Max.	600.0 Max.	APHA 2340 C
Chlorides	mg/ltr	15.52	250.0 Max.	1000.0 Max.	APHA 4500 Cl ⁻ B
Sulphate	mg/ltr	2.81	200.0 Max.	400.0 Max.	APHA 4500 SO ₄ ²⁻ E
Total Dissolved Solids	mg/ltr	102.00	500.0 Max.	2000.0 Max.	APHA 2540 C
Nitrate	mg/ltr	2.44	45.0 Max.	No Relaxation	APHA 4500 NO ₃ B

Calcium Hardness	mg/ltr	62.03	75.0 Max.	200.0 Max.	APHA 3500 Ca B
Dissolved Iron	mg/ltr	0.041	1.0 Max.	No Relaxation	APHA 3111 B
Magnesium Hardness	mg/ltr	22.00	30.0 Max.	100.0 Max.	APHA 3111 B
Manganese	mg/ltr	< 0.001	0.10 Max.	0.30 Max.	APHA 3111 B
COD	mg/ltr	<4.00	Not Specified		APHA 5220 - B
BOD 3 days 27°C	mg/ltr	<1.00	Not Specified		IS 3025 (Part 44) : 1993
Phosphates	mg/ltr	<0.001	Not Specified		APHA 4500 P D
Total Suspended Solids	mg/ltr	10.00	Not Specified		APHA 2540 D
Oil & Grease	mg/ltr	<0.1	Not Specified		APHA 5520 B

End

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Doc. No: GLPL/QF/5.10/01

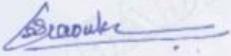
Test Certificate No.	GW/E/21/0540	T.C. Date	08/05/2021
Customer Name and Address	M/s. VEDANTA LIMITED (PIG IRON PLANT) SURVEY NO. 30 (PART)41,42/1,27 (PART) AMONA, P.O. MARCELA, BICHOLIM - GOA.		
Letter Ref/Date	As per Dated 03/05/2021		
Lab Reference No.	GW/E/21/0540	Page No.	1 of 1
Sampling Done On	03/05/2021	Sample Received on	03/05/2021
Sample Collected by	GLPL	Analysis Period	03/05/2021 To 08/05/2021
Sample Description	Maina - Digamber Naik Well Water, 3 lit in plastic bottle & 1000 ml in glass bottle.		

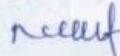
ANALYSIS REPORTS:

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	0.30	1.0 Max.	5.0 Max.	APHA 2130 B
pH	---	6.63	6.5 - 8.5	No Relaxation	APHA 4500 H ⁺ B
Electrical Conductivity	µS/cm	127.00	Not Specified		APHA 2510 B
Total Hardness as CaCO ₃	mg/ltr	62.00	200.0 Max.	600.0 Max.	APHA 2340 C
Chlorides	mg/ltr	17.02	250.0 Max.	1000.0 Max.	APHA 4500 Cl ⁻ B
Sulphate	mg/ltr	2.44	200.0 Max.	400.0 Max.	APHA 4500 SO ₄ ²⁻ E
Total Dissolved Solids	mg/ltr	79.00	500.0 Max.	2000.0 Max.	APHA 2540 C
Nitrate	mg/ltr	3.07	45.0 Max.	No Relaxation	APHA 4500 NO ₃ B
Calcium Hardness	mg/ltr	35.03	75.0 Max.	200.0 Max.	APHA 3500 Ca B
Dissolved Iron	mg/ltr	0.038	1.0 Max.	No Relaxation	APHA 3111 B
Magnesium Hardness	mg/ltr	26.97	30.0 Max.	100.0 Max.	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	5.00	Not Specified		APHA 2540 D
Oil & Grease	mg/ltr	<0.1	Not Specified		APHA 5520 B

End

For GADARK LAB PVT. LTD.


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ISO 9001 : 2015 Certified & ISO 45001 : 2018 Certified



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TEST CERTIFICATE

Doc. No: GLPL/QF/5.10/01

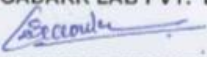
Test Certificate No.	GW/E/21/0541	T.C. Date	08/05/2021
Customer Name and Address	M/s. VEDANTA LIMITED (PIG IRON PLANT) SURVEY NO. 30 (PART)41,42/1,27 (PART) AMONA, P.O. MARCELA, BICHOLIM - GOA.		
Letter Ref/Date	As per Dated 03/05/2021		
Lab Reference No.	GW/E/21/0541	Page No.	1 of 1
Sampling Done On	03/05/2021	Sample Received on	03/05/2021
Sample Collected by	GLPL	Analysis Period	03/05/2021 To 08/05/2021
Sample Description	Navelim - Sanjay Naik Well Water, 3 lit in plastic bottle & 1000 ml in glass bottle.		

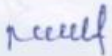
ANALYSIS REPORTS:

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	0.27	1.0 Max.	5.0 Max.	APHA 2130 B
pH	---	6.69	6.5 - 8.5	No Relaxation	APHA 4500 H ⁺ B
Electrical Conductivity	μS/cm	194.00	Not Specified		APHA 2510 B
Total Hardness as CaCO ₃	mg/ltr	93.00	200.0 Max.	600.0 Max.	APHA 2340 C
Chlorides	mg/ltr	17.52	250.0 Max.	1000.0 Max.	APHA 4500 Cl ⁻ B
Sulphate	mg/ltr	3.27	200.0 Max.	400.0 Max.	APHA 4500 SO ₄ ²⁻ ·E
Total Dissolved Solids	mg/ltr	124	500.0 Max.	2000.0 Max.	APHA 2540 C
Nitrate	mg/ltr	3.09	45.0 Max.	No Relaxation	APHA 4500 NO ₃ B
Calcium Hardness	mg/ltr	72.06	75.0 Max.	200.0 Max.	APHA 3500 Ca B
Dissolved Iron	mg/ltr	0.056	1.0 Max.	No Relaxation	APHA 3111 B
Magnesium Hardness	mg/ltr	20.94	30.0 Max.	100.0 Max.	APHA 3111 B
Manganese	mg/ltr	< 0.001	0.10 Max.	0.30 Max.	APHA 3111 B
COD	mg/ltr	<4.00	Not Specified		APHA 5220 - B
BOD 3 days 27°C	mg/ltr	<1.00	Not Specified		IS 3025 (Part 44) : 1993
Phosphates	mg/ltr	<0.001	Not Specified		APHA 4500 P D
Total Suspended Solids	mg/ltr	7.00	Not Specified		APHA 2540 D
Oil & Grease	mg/ltr	<0.1	Not Specified		APHA 5520 B

End

For GADARK LAB PVT. LTD.


AUTHORISED SIGNATORY
[SACHIN B. GAONKAR]


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Note:

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4. Customer complaint register is available at laboratory.

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

TEST CERTIFICATE

Doc. No: GLPL/QF/5.10/01

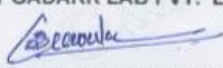
Test Certificate No.	GW/E/21/0542	T.C. Date	08/05/2021
Customer Name and Address	M/s. VEDANTA LIMITED (PIG IRON PLANT) SURVEY NO. 30 (PART)41,42/1,27 (PART) AMONA, P.O. MARCELA, BICHOLIM - GOA.		
Letter Ref/Date	As per Dated 03/05/2021		
Lab Reference No.	GW/E/21/0542	Page No.	1 of 1
Sampling Done On	03/05/2021	Sample Received on	03/05/2021
Sample Collected by	GLPL	Analysis Period	03/05/2021 To 08/05/2021
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	0.34	1.0 Max.	5.0 Max.	APHA 2130 B
pH	---	6.77	6.5 - 8.5	No Relaxation	APHA 4500 H ⁺ B
Electrical Conductivity	µS/cm	224.00	Not Specified		APHA 2510 B
Total Hardness as CaCO ₃	mg/ltr	84.00	200.0 Max.	600.0 Max.	APHA 2340 C
Chlorides	mg/ltr	44.55	250.0 Max.	1000.0 Max.	APHA 4500 Cl ⁻ B
Sulphate	mg/ltr	4.17	200.0 Max.	400.0 Max.	APHA 4500 SO ₄ ²⁻ E
Total Dissolved Solids	mg/ltr	142.00	500.0 Max.	2000.0 Max.	APHA 2540 C
Nitrate	mg/ltr	2.74	45.0 Max.	No Relaxation	APHA 4500 NO ₃ B
Calcium Hardness	mg/ltr	49.04	75.0 Max.	200.0 Max.	APHA 3500 Ca B
Dissolved Iron	mg/ltr	0.033	1.0 Max.	No Relaxation	APHA 3111 B
Magnesium Hardness	mg/ltr	34.96	30.0 Max.	100.0 Max.	APHA 3111 B
Manganese	mg/ltr	< 0.001	0.10 Max.	0.30 Max.	APHA 3111 B
COD	mg/ltr	<4.00	Not Specified		APHA 5220 - B
BOD 3 days 27°C	mg/ltr	<1.00	Not Specified		IS 3025 (Part 44) : 1993
Phosphates	mg/ltr	<0.001	Not Specified		APHA 4500 P D
Total Suspended Solids	mg/ltr	8.00	Not Specified		APHA 2540 D
Oil & Grease	mg/ltr	<0.1	Not Specified		APHA 5520 B

End

For GADARK LAB PVT. LTD.


AUTHORISED SIGNATORY
[SACHIN B. GAONKAR]


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ISO 9001 : 2015 Certified & ISO 45001 : 2018 Certified

ANNEXURE V (Workplace monitoring report)

October`20



Sadekar Enviro Engineers Pvt. Ltd.

B-306/307, Plot No. 61, Patel Estate, Reis Magos, Verem, Alto, Old Belim Road, Bardez, Porvorim, Panaji-Goa-403 101.
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WORKPLACE AIR QUALITY MONITORING REPORT

Report Date	02/11/2020
Name of Client	M/s. Vedanta Ltd.
Address of Client	BF3, Navelim, Bicholim-Goa
Sample Collected By	SEEPL Representative
Month of Sampling	October- 2020

WORKPLACE AIR MONITORING LOCATION

Location of ambient air station	Blast Furnace 3 PID2 Cast House		
Average Ambient Temperature (°C)*	30.1	Average Humidity (%)*	96
Average Wind Speed (km/hr)*	1.4	Average Wind direction(Deg)*	311
Instruments Used	FPS(APM-550), RDS(APM-460) & GPS(APM – 411)		

Sr No	Report No.	Date of Sampling	PARAMETERS	
			Oxides of Nitrogen(NOx)	Carbon Monoxide
1	SEE/AR/10/2020/0030	03/10/2020	0.25	1.3
2	SEE/AR/10/2020/0152	09/10/2020	0.30	2.2
3	SEE/AR/10/2020/0228	16/10/2020	0.23	1.7
4	SEE/AR/10/2020/0399	23/10/2020	0.17	1.5
5	SEE/AR/10/2020/0509	30/10/2020	0.24	1.4

Limits** (mg/m ³)	9.0	55.00
Test Methods	IS 5182 (Part 06)	IS 5182(Part 10)

Note : Test results related only to the sample tested.

: Test results relate only to the condition prevailing at the time of sampling

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** Permissible Exposure Limits as per OSHA (TWA for 8hrly)

Analysed by
Susmita Kapdoskar



Authorized Signatory
Varsha Pole

HEAD OFF. & LAB.: : Plot No. A-95, Road No. 16, Kisan Nagar Road, M.I.D.C. Wagale Industrial Area, Thane - 400 604. Maharashtra State, India.
☎ : (91-22) 2583 3321 / 2583 3322 / 2583 3323 / 2583 3324 * E-mail : prs@sadekarenviro.com / psadekar5@gmail.com

Gazetted By Ministry of Environment, Forest & Climate Change, Govt Of India, S. O. 857 (E).

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E-mail : sadekarenviro@rediffmail.com * Website : www.sadekarenviro.com * CIN No. U45209MH1998PTC-116379



Sadekar Enviro Engineers Pvt. Ltd.

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WORKPLACE AIR QUALITY MONITORING REPORT

Report No.	SEE/AR/10/2020/0029	Report Date	09/10/2020
Name of Client	M/s Vedanta Ltd.		
Address of Client	MCD II, Navelim, Bicholim-Goa		
Sample Collected By	SEEPL Representative	Environmental condition of lab	
Date of Sampling	03/10/2020	Temperature(°C)*	26.6 Humidity (%)* 69
Analysis Started On	05/10/2020	Analysis Completed On	09/10/2020

WORKPLACE AIR STATION LOCATION

Location of ambient air station	MCD II battery 2 area
Ambient Temperature (°C)*	29.8 Humidity (%)* 92
Wind Speed (km/hr)*	1.6 Wind Direction(Deg)* 286
Instruments Used	R.D.S.(APM- 460)

POLLUTION PARAMETERS

Sr. No.	Parameters	Result	Unit	Limits**	Method
01.	Ammonia (NH ₃)	2.32	mg/m ³	35.00	Method 401, Methods of Air Sampling & analysis, 3rd edition by Mr. J.P. Lodge
02.	Lead as Pb	<0.0010	mg/m ³	0.075	IS 5182 (Part 22)
03.	Benzo(a)Pyrene	<0.0020	mg/m ³	NS	IS 5182 (Part 12)
04.	VOC*	<0.20	ppm	NS	IS 5182 (Part 11):2006

** Permissible Exposure Limits as per OSHA (TWA for 8hrly)

Note : Test results related only to the sample tested.

: Test results relate only to the condition prevailing at the time of sampling

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Analysed by
Susmita Kapdoskar



Authorized Signatory
Varsha Pole

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November`20



Sadekar Enviro Engineers Pvt. Ltd.

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WORKPLACE AIR QUALITY MONITORING REPORT			
Report Date	02/12/2020		
Name of Client	M/s. Vedanta Ltd.		
Address of Client	BF3, Navelim, Bicholim-Goa		
Sample Collected By	SEEPL Representative		
Month of Sampling	November- 2020		
WORKPLACE AIR MONITORING LOCATION			
Location of ambient air station	Blast Furnace 3 PID2 Cast House		
Average Ambient Temperature (°C)	31.5	Average Humidity (%)	84
Average Wind Speed (km/hr)	1.7	Average Wind direction(Deg)	265
Instruments Used	FPS(APM-550), RDS(APM-460) & GPS(APM – 411)		
Sr No	Report No.	Date of Sampling	PARAMETERS
			Oxides of Nitrogen(NOx) Carbon Monoxide
1	SEE/AR/11/2020/0134	06/11/2020	0.22 1.0
2	SEE/AR/11/2020/0265	13/11/2020	0.39 2.5
3	SEE/AR/11/2020/0428	20/11/2020	0.18 1.9
4	SEE/AR/11/2020/0518	27/11/2020	0.22 1.1
Limits** (mg/m³)		9.0	55.00
Test Methods		IS 5182 (Part 06)	IS 5182(Part 10)
<p>Note : Test results related only to the sample tested.</p> <p>: Test results relate only to the condition prevailing at the time of sampling</p> <p>: This certificate may not be reproduced in part, without the permission of this laboratory.</p> <p>: Calibration details of the equipments used in monitoring and / or analysis is back side of analysis report</p> <p>: "The tests marked with an * are not accredited by NABL".</p> <p>** Permissible Exposure Limits as per OSHA (TWA for 8hrly)</p>			
<p></p> <p>Analysed by Susmita Kapdoskar</p>		 <p></p> <p>Authorized Signatory Varsha Pole</p>	

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WORKPLACE AIR QUALITY MONITORING REPORT					
Report No.	SEE/AR/11/2020/0133	Report Date	11/11/2020		
Name of Client	M/s Vedanta Ltd.				
Address of Client	MCD II, Navelim, Bicholim-Goa				
Sample Collected By	SEEPL Representative	Environmental condition of lab			
Date of Sampling	06/11/2020	Temperature(°C)	27.9	Humidity (%)	68
Analysis Started On	07/11/2020	Analysis Completed On	11/11/2020		

WORKPLACE AIR STATION LOCATION

Location of ambient air station	MCD II battery 2 area		
Ambient Temperature (°C)*	30.5	Humidity (%)*	82
Wind Speed (km/hr)*	1.4	Wind Direction(Deg)*	296
Instruments Used	R.D.S.(APM- 460)		

POLLUTION PARAMETERS

Sr. No.	Parameters	Result	Unit	Limits**	Method
01.	Ammonia (NH3)	3.62	mg/m3	35.00	Method 401, Methods of Air Sampling & analysis, 3rd edition by Mr. J.P. Lodge
02.	Lead as Pb	<0.0010	mg/m3	0.075	IS 5182 (Part 22)
03.	Benzo(a)Pyrene	<0.0020	mg/m3	NS	IS 5182 (Part 12)
04.	VOC	<0.20	ppm	NS	IS 5182 (Part 11)

**** Permissible Exposure Limits as per OSHA (TWA for 8hrly)**

Note : Test results related only to the sample tested.

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Susmita
Analysed by
Susmita Kapdoskar

Vchopdekar
Authorized Signatory
Varsha Pole



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December'20



Sadekar Enviro Engineers Pvt. Ltd.

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WORKPLACE AIR QUALITY MONITORING REPORT

Report Date	29/12/2020
Name of Client	M/s. Vedanta Ltd.
Address of Client	BF3, Navelim, Bicholim-Goa
Sample Collected By	SEEPL Representative
Month of Sampling	December- 2020

WORKPLACE AIR MONITORING LOCATION

Location of ambient air station	Blast Furnace 3 PID2 Cast House		
Average Ambient Temperature (°C)	30.6	Average Humidity (%)	74
Average Wind Speed (km/hr)	1.0	Average Wind direction(Deg)	196
Instruments Used	FPS(APM-550), RDS(APM-460) & GPS(APM – 411)		

Sr No	Report No.	Date of Sampling	PARAMETERS	
			Oxides of Nitrogen(NOx)	Carbon Monoxide
1	SEE/AR/12/2020/0241	04/12/2020	0.26	1.2
2	SEE/AR/12/2020/0433	11/12/2020	0.41	2.0
3	SEE/AR/12/2020/0635	18/12/2020	0.22	2.3
4	SEE/AR/12/2020/0901	25/12/2020	0.28	1.0
Limits** (mg/m³)			9.0	55.00

Test Methods	IS 5182 (Part 06)	IS 5182(Part 10)
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Note : Test results related only to the sample tested.

: Test results relate only to the condition prevailing at the time of sampling

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** Permissible Exposure Limits as per OSHA (TWA for 8hrly)

Susmita
Analysed by
Susmita Kapdoskar



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Varsha Pole

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WORKPLACE AIR QUALITY MONITORING REPORT

Report No.	SEE/AR/12/2020/0240	Report Date	09/12/2020
Name of Client	M/s Vedanta Ltd.		
Address of Client	MCD II, Navelim, Bicholim-Goa		
Sample Collected By	SEEPL Representative	Environmental condition of lab	
Date of Sampling	04/12/2020	Temperature(°C)	27.7
		Humidity (%)	68
Analysis Started On	05/12/2020	Analysis Completed On	09/12/2020

WORKPLACE AIR STATION LOCATION

Location of ambient air station	MCD II battery 2 area
Ambient Temperature (°C)*	31.3
Humidity (%)*	69
Wind Speed (km/hr)*	0.9
Wind Direction(Deg)*	154
Instruments Used	R.D.S.(APM- 460)

POLLUTION PARAMETERS

Sr. No.	Parameters	Result	Unit	Limits**	Method
01.	Ammonia (NH ₃)	4.12	mg/m ³	35.00	Method 401, Methods of Air Sampling & analysis, 3rd edition by Mr. J.P. Lodge
02.	Lead as Pb	<0.0010	mg/m ³	0.075	IS 5182 (Part 22)
03.	Benzo(a)Pyrene	<0.0020	mg/m ³	NS	IS 5182 (Part 12)
04.	VOC	<0.20	ppm	NS	IS 5182 (Part 11)

** Permissible Exposure Limits as per OSHA (TWA for 8hrly)

Note : Test results related only to the sample tested.

: Test results relate only to the condition prevailing at the time of sampling


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Analysed by
Susmita Kapdoskar




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January`21



Sadekar Enviro Engineers Pvt. Ltd.

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WORKPLACE AIR QUALITY MONITORING REPORT

Report Date	02/02/2021
Name of Client	M/s. Vedanta Ltd.
Address of Client	BF3, Navelim, Bicholim-Goa
Sample Collected By	SEEPL Representative
Month of Sampling	January 2021

WORKPLACE AIR MONITORING LOCATION

Location of ambient air station	Blast Furnace 3 PID2 Cast House		
Average Ambient Temperature (°C)	29.8	Average Humidity (%)	79
Average Wind Speed (km/hr)	0.9	Average Wind direction (Deg)	231
Instruments Used	FPS(APM-550), RDS(APM-460) & GPS (APM – 411)		

Sr No	Report No.	Date of Sampling	PARAMETERS	
			Oxides of Nitrogen (NOx)	Carbon Monoxide
1	SEE/AR/01/2021/0027	01/01/2021	0.22	1.5
2	SEE/AR/01/2021/0361	08/01/2021	0.36	1.8
3	SEE/AR/01/2021/0519	15/01/2021	0.26	2.1
4	SEE/AR/01/2021/0749	22/01/2021	0.32	1.3
5	SEE/AR/01/2021/0918	29/01/2021	0.24	1.7
Limits** (mg/m³)			9.0	55.00
Test Methods			IS 5182 (Part 06)	IS 5182(Part 10)

Note : Test results related only to the sample tested.

: Test results relate only to the condition prevailing at the time of sampling

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** Permissible Exposure Limits as per OSHA (TWA for 8hrly)

Susmita Kapdoskar
Analysed by
Susmita Kapdoskar



Varsha Pole
Authorized Signatory
Varsha Pole

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WORKPLACE AIR QUALITY MONITORING REPORT

Report No.	SEE/AR/01/2021/0028	Report Date	06/01/2021
Name of Client	M/s Vedanta Ltd.		
Address of Client	MCD II, Navelim, Bicholim-Goa		
Sample Collected By	SEEPL Representative	Environmental condition of lab	
Date of Sampling	01/01/2021	Temperature(°C)	25.7
		Humidity (%)	68
Analysis Started On	02/01/2021	Analysis Completed On	06/01/2021

WORKPLACE AIR STATION LOCATION *

Location of ambient air station	MCD II battery 2 area		
Ambient Temperature (°C)	28.8	Humidity (%)	72
Wind Speed (km/hr.)	1.3	Wind Direction (Deg)	319
Instruments Used	R.D.S. (APM- 460)		

POLLUTION PARAMETERS

Sr. No.	Parameters	Result	Unit	Limits**	Method
01.	Ammonia (NH ₃)	3.78	mg/m ³	35.00	Method 401, Methods of Air Sampling & analysis, 3rd edition by Mr. J.P. Lodge
02.	Lead as Pb	<0.0010	mg/m ³	0.075	IS 5182 (Part 22)
03.	Benzo(a)Pyrene	<0.0020	mg/m ³	NS	IS 5182 (Part 12)
04.	VOC	<0.20	ppm	NS	IS 5182 (Part 11)
05.	HC	1.2	ppm	NS	IS 5182(Part-XVII) 1979

** Permissible Exposure Limits as per OSHA (TWA for 8hrly)

Note : Test results related only to the sample tested.

: Test results relate only to the condition prevailing at the time of sampling

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Kapod
Analysed by
Susmita Kapdoskar



Vchopdekar
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Varsha Pole

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February`21






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WORKPLACE AIR QUALITY MONITORING REPORT				
Report Date	02/03/2021			
Name of Client	M/s. Vedanta Ltd.			
Address of Client	BF3, Navelim, Bicholim-Goa			
Sample Collected By	SEEPL Representative			
Sampling Plan	SEEPL/LD/FMT- 54	Sampling Procedure No.	SEEPL/QSP-10	
Month of Sampling	February 2021			
WORKPLACE AIR MONITORING LOCATION				
Location of ambient air station	Blast Furnace 3 PID2 Cast House			
Average Ambient Temperature (°C)	30.3	Average Humidity (%)	71	
Average Wind Speed (km/hr)	1.5	Average Wind direction (Deg)	189	
Instruments Used	FPS(APM-550), RDS(APM-460) & GPS (APM – 411)			
Sr No	Report No.	Date of Sampling	PARAMETERS	
			Oxides of Nitrogen (NOx)	Carbon Monoxide
1	SEE/AR/02/2021/0299	05/02/2021	0.24	1.8
2	SEE/AR/02/2021/0469	12/02/2021	0.34	1.5
3	SEE/AR/02/2021/0682	19/02/2021	0.29	2.6
4	SEE/AR/02/2021/1001	26/02/2021	0.35	1.7
	Limits** (mg/m³)		9.0	55.00
	Test Methods		IS 5182 (Part 06)	IS 5182(Part 10)
<p>Note : Test results related only to the sample tested.</p> <p>: Test results relate only to the condition prevailing at the time of sampling</p> <p>: This certificate may not be reproduced in part, without the permission of this laboratory.</p> <p>: Calibration details of the equipments used in monitoring and / or analysis is back side of analysis report</p> <p>: "The tests marked with an * are not accredited by NABL".</p> <p>** Permissible Exposure Limits as per OSHA (TWA for 8hrly)</p>				
 Checked by		  Authorized Signatory		

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WORKPLACE AIR QUALITY MONITORING REPORT					
Report No.	SEE/AR/02/2021/0300	Report Date	11/02/2021		
Name of Client	M/s Vedanta Ltd.				
Address of Client	MCD II, Navelim, Bicholim-Goa				
Sampling Plan	SEEPL/LD/FMT- 54	Sampling Procedure No.	SEEPL/QSP-10		
Sample Collected By	SEEPL Representative	Environmental condition of lab			
Date of Sampling	05/02/2021	Temperature (°C)	27.9	Humidity (%)	68
Analysis Started On	06/02/2021	Analysis Completed On	11/02/2021		

WORKPLACE AIR STATION LOCATION			
Location of ambient air station	MCD II battery 2 area		
Ambient Temperature (°C)	30.9	Humidity (%)	82
Wind Speed (km/hr)	2.7	Wind Direction (deg)	237
Instruments Used	R.D.S. (APM- 460)		

POLLUTION PARAMETERS					
Sr. No.	Parameters	Result	Unit	Limits**	Method
01.	Ammonia (NH3)	4.21	mg/m3	35.00	Method 401, Methods of Air Sampling & analysis, 3rd edition by Mr. J.P. Lodge
02.	Lead as Pb	<0.0010	mg/m3	0.075	IS 5182 (Part 22)
03.	Benzo(a)Pyrene	<0.0020	mg/m3	NS	IS 5182 (Part 12)
04.	VOC	<0.20	ppm	NS	IS 5182 (Part 11)
05.	HC	1.0	ppm	NS	IS 5182(Part-XVII) 1979

** Permissible Exposure Limits as per OSHA (TWA for 8hrly)

Note : Test results related only to the sample tested.

: Test results relate only to the condition prevailing at the time of sampling

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Checked by



V. Chopdekar
Authorized Signatory

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March'21



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WORKPLACE AIR QUALITY MONITORING REPORT



Report No.	SEE/AR/03/2021/0287	Report Date	10/03/2021
Name of Client	M/s Vedanta Ltd.		
Address of Client	MCD II, Navelim, Bicholim-Goa		
Sampling Plan	SEEPL/LD/FMT- 54	Sampling Procedure No.	SEEPL/QSP- 10
Sample Collected By	SEEPL Representative	Environmental condition of lab	
Date of Sampling	05/03/2021	Temperature (°C)	28.0
		Humidity (%)	66
Analysis Started On	05/03/2021	Analysis Completed On	10/03/2021

WORKPLACE AIR STATION LOCATION

Location of ambient air station	MCD II battery 2 area
Ambient Temperature (°C)	31.2
Humidity (%)	68
Wind Speed (km/hr)	2.2
Wind Direction (deg)	201
Instruments Used	R.D.S. (APM- 460)

POLLUTION PARAMETERS

Sr. No.	Parameters	Result	Unit	Limits**	Method
01.	Ammonia (NH ₃)	4.78	mg/m ³	35.00	Method 401, Methods of Air Sampling & analysis, 3rd edition by Mr. J.P. Lodge
02.	Lead as Pb	<0.0010	mg/m ³	0.075	IS 5182 (Part 22)
03.	Benzo(a)Pyrene	<0.0020	mg/m ³	NS	IS 5182 (Part 12)
04.	VOC	<0.20	ppm	NS	IS 5182 (Part 11)

05.	HC	1.2	ppm	NS	IS 5182(Part-XVII) 1979
<p>** Permissible Exposure Limits as per OSHA (TWA for 8hrly)</p> <p>Note : Test results related only to the sample tested.</p> <p>: Test results relate only to the condition prevailing at the time of sampling</p> <p>: This certificate may not be reproduced in part, without the permission of this laboratory.</p> <p>: Calibration details of the equipments used in monitoring or analysis is back side of analysis report.</p>					
 Checked by		 Authorized Signatory			

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WORKPLACE AIR QUALITY MONITORING REPORT

Report Date	30/03/2021		
Name of Client	M/s. Vedanta Ltd.		
Address of Client	BF3, Navelim, Bicholim-Goa		
Sample Collected By	SEEPL Representative		
Sampling Plan	SEEPL/LD/FMT- 54	Sampling Procedure No.	SEEPL/QSP-10
Month of Sampling	March 2021		

WORKPLACE AIR MONITORING LOCATION

Location of ambient air station	Blast Furnace 3 PID2 Cast House		
Average Ambient Temperature (°C)	30.8	Average Humidity (%)	65
Average Wind Speed (km/hr)	1.4	Average Wind direction (Deg)	198
Instruments Used	FPS(APM-550), RDS(APM-460) & GPS (APM – 411)		

Sr No	Report No.	Date of Sampling	PARAMETERS	
			Oxides of Nitrogen (NOx)	Carbon Monoxide
1	SEE/AR/03/2021/0288	05/03/2021	0.28	2.1
2	SEE/AR/03/2021/0514	12/03/2021	0.31	1.8
3	SEE/AR/03/2021/0793	19/03/2021	0.23	1.6
4	SEE/AR/03/2021/0958	26/03/2021	0.30	2.0
Limits** (mg/m ³)			9.0	55.00
Test Methods			IS 5182 (Part 06)	IS 5182(Part 10)

Note : Test results related only to the sample tested.

: Test results relate only to the condition prevailing at the time of sampling

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** Permissible Exposure Limits as per OSHA (TWA for 8hrly)

Checked by

Authorized Signatory

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Calibration details of Equipment used for Sampling & Analysis

Respirable Dust Sampler's with Gaseous Sampling

Sr No.	Equipment Name	Certificate No.	Calibrated on	Calibration due date
01	RDS-APM 460 BL(SR NO. 2228-DTK-2011)	ECL/SEEPL/2019-20/FLOW/5137	21/02/2020	21/02/2021

UV Spectrophotometer

Sr No.	Equipment Name	Calibration
01	UV	In House Calibration

Fine Particulate Sampler (SR NO. 291-DTJ-2014)

Sr No.	Equipment Name	Certificate No.	Calibrated on	Calibration due date
01	FPS - APM 550 MINI	ECL/SEEPL/2019-20/FLOW/5122	20/02/2020	20/02/2021

ICP-OES

Sr No.	Equipment Name	Calibration
01	ICP-OES	In House Calibration

Organic Vapour Sampler

Sr No.	Equipment Name	Sr. No.	Certificate No.	Calibrated on	Calibration due date
01	OVS Sampler	101-DTD-2014	ECL/SEEPL/2019-20/FLOW/5269	09/03/2020	09/03/2021