



D/C
VS Lignite Power Private Limited

Works
Village Gurha,
Tehsil Kolayat,
Dist. Bikaner,
Rajasthan

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Ref: MoE&F, LKN/KPBK/1040124/557
Date: 31.10.2017

CIN No.-U40104TG2001PTC045088

The Director

Ministry of Environment and Forests
Regional Office (Central Region),
Kendriya Bhawan, 5th Floor, Sector "H", Aliganj
Lucknow-226 024

Sub.: Submission of **Half-yearly EC Compliance Report** (Apr, '17 to Sep., '17) as per conditions mentioned in Environmental Clearance of **M/s. V.S Lignite Power Private Ltd.**

Ref: 1. Clearance letter no. J-13011/59/2006-IA.II (T) dated 15.02.2007
2. Project Code : Raj-25/490/07

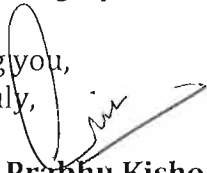
Dear Sir,

Please find enclosed herewith the Half-yearly EC Compliance Report (Apr, '17 to Sep., '17) as per conditions mentioned in Environmental Clearance of M/s. VS Lignite Power Private Ltd., Vill.-Gurha, Teh.- Kolayat, Dist.-Bikaner for your information and kind persual.

The Contents of the report are as follows:

1. Point wise compliance of conditions mentioned in Environmental Clearance
2. Ash generation and its uses/disposal : Annexure-I
3. Monthly Environmental Monitoring of Ambient Air Quality, Noise level, Water quality (Ground water & Surface water), Treated Wastewater and Stack monitoring : Annexure-II
4. Photographs of Greenbelt : Annexure- III

Thanking you,
Yours truly,


(Koneru Prabhu Kishore)
PLANT HEAD
VS Lignite power Private Ltd.

Encl.: As above

Cc.:

1. The Member Secretary

Rajasthan State Pollution Control Board
4, Institutional Area, Jhalana Doongari
Jaipur-302 004 (Rajasthan)

2. The Regional Officer

The Regional Office
Rajasthan State Pollution Control Board
Bichhawal Industrial Area
Bikaner (Rajasthan)

V. S. Lignite Power Pvt. Ltd.

Name of the Project : 1*135 MW Lignite based Power project at vill.-Gurha, Teh.-Kolayat, Dist.-Bikaner
Project Code : Raj-25/490/07
Clearance letter no. : J-13011/59/2006-IA.II (T) dated 15.02.2007
Period of Compliance report : April, 2017 to September, 2017

Point wise compliance for the conditions specified in Environmental Clearance is as below:

Sr. No.	Conditions	Compliance Status
1.	All the conditions stipulated by RPCB vide their letter no. F.5 (BK-193) RPCB/Gr-II/4558 dated 19.09.2006 shall be strictly implemented.	<p>Complied conditions stipulated by RPCB vide their letter no. F.5 (BK-193) RPCB/Gr-II/4558 dated 19.09.2006 This gist of details are as follows:</p> <p>Installations of pollution control equipments like ESP, Bag Filters, Water Sprinklers, ETP, STP, 100 m. high stack etc. have been done as mentioned in NOC and are working satisfactorily within the stipulated standards.</p> <p>A total of 23327 plants have been planted covering an area of about 31 hectares in the power plant premises. Existing trees etc. have also been protected. Additionally 4000 nos. of hedge plantation also carried out and being maintained accordingly. Please refer Annexure-III for Plantation photos.</p> <p>Fly ash utilization is being done as per Fly ash notification and subsequent amendments dated 25.01.2016. Part of the fly ash is being sent to bricks, cement and tiles manufactures and remaining being used for strengthening and stabilizing of kachha roads and mixing with OB in mines for slope stabilization.</p> <p>A small fly ash brick manufacturing plant has been set up for popularizing the use of fly ash bricks amongst entrepreneurs and local people.</p>
2.	Ash and sulphur content in the lignite shall not exceed 28 % & 1.4% respectively.	Ash and sulphur content in the lignite is <28 % & <1.4% respectively.
3.	Circulating Fluidized Bed Combustion (CFBC) boilers with lime injection shall be used.	CFBC boiler with lime injection facility has been installed.
4.	A stack of 100 m height with exit velocity of at least 20 m/sec. shall be provided with continuous on-line monitoring system. Data collected shall be analyzed and submitted regularly to the regional office of this ministry at Lucknow.	<p>Stack of 100 m height with continuous online monitoring system is provided.</p> <p>Average exit velocity: 20 m/s. Data is being submitted to Regional officer, MOEFCC, Luknow in the form of Half yearly compliance report</p>
5.	Water requirement shall not exceed 474.5 m ³ /hr. and CoC of 5 shall be adopted. No discharges of effluents directly or indirectly shall be done outside the plant boundary.	<p>Water requirement for the power plant is < 474.5 m³/hr. CoC of 4-5 has been adopted.</p> <p>Part of the treated waste water is being recycled/ reused in cooling tower as make up water after passing through RO plant and the remaining is being used in green belt</p>

		development and controlling fugitive dust and as such there is no wastewater discharge from plant premises. RO reject is also being used for controlling fugitive dust in lignite yard and in mining area.
6.	Closed circuit cooling with cooling towers shall be provided.	Closed circuit cooling towers are installed.
7.	Fly-ash shall be collected in dry form and ash generated shall be used in a phased manner as per provisions of the notification of Fly ash utilization issued by the ministry in September 1999 and its amendment .By the end of 9 th year full fly-ash utilization shall be ensured.	Fly ash is being collected in dry form in silo. Fly ash is being utilized as per Fly ash notification and subsequent amendment dated 25.01.2016. Part of the fly ash is being sent to cement plants, brick manufacturers etc. as per demand of those units and balance is used for filling/reclaiming low lying areas and stabilizing the overburden dumps of mines. During the half yearly period of April, 2017 to September, 2017, no ash was dispatched to brick and tiles manufacturers and other industries as there is no demand from those units as well as no ash (Dry basis) was generated during the period as the power station under shut down since 09.01.2017. For generation and utilization of fly and bottom ash please refer Annexure-I .
8.	Ash pond shall be lined with impervious layer to avoid leachate	Presently there is no ash pond.
9.	ESP with 99.9% efficiency shall be installed to limit particulate emission up to 100 mg/Nm ³ .In the event of non functioning of ESPs, the power plant should be shut down	ESP+ bag filter with 99.9% efficiency is installed to limit PM to less than 50 mg/Nm ³ . The measured dust emission from stack is nil as the power station was under shut down during this half-yearly period. In the event of non-functioning of the ESP the plant shall be shut down. Please refer stack monitoring (particulate matter) at Annexure-II .
10.	A 50 m wide green belt covering an area of 31 Ha shall be developed all around the plant periphery including ash pond area also.	A 50 m. width for green belt is being maintained. A total of 23327 trees (Neem, Shisham, Siris, Ardu, karanj etc.) have been planted presently covering an area of about 31 hectares in Power Plant premises. Additionally 4000 hedge and flowers are also planted in the power plant premises. Existing trees etc. have also been protected. Please refer Annexure-III for Plantation photos.
11.	Infrastructure facilities including first aid & sanitation arrangement shall be made for the drivers & other contract workers during construction phase.	All necessary arrangements for the workers were made during the construction phase.
12.	Rain water harvesting should be adopted. Central Groundwater Authority/Board shall be consulted for finalization of appropriate water harvesting scheme/structures.	Rain water harvesting pit has been excavated and collected rain water is being utilized for dust suppression on roads and for watering of green belt.
13.	Regular monitoring of ground water in and around ash pond area shall be carried out, records maintained and six monthly reports shall be submitted to the Regional office of this Ministry	Presently there is no ash pond. However, monthly monitoring of ground water at six (6) locations and surface water at two (2) locations in and around plant area is being carried out and the records are being maintained. Please refer monitoring reports at Annexure-II . The six monthly reports are being submitted regularly to MoEF.
14.	Leq of noise level shall be limited to 75 dBA and regular maintenance of equipment undertaken. For people	Being complied. Regular maintenance of the equipments is being undertaken. The noise levels within the premises at different locations like power plant office and mine office are

	working in the high noise area, earplug shall be provided.	observed to be in the range of 58.4 to 58.9 dB (A). In high noise area earplugs are provided to the workers. Please refer monitoring reports at Annexure-II .
15.	Regular monitoring of the air quality shall be carried out in and around the power plant and records maintained. Six monthly reports shall be submitted to the Regional office of this Ministry.	Regular monitoring of the air quality is being carried in and around the project area at 7 locations through reputed and accredited agency & records maintained. The results of the monitored data indicate that the ambient air quality of the region is in conformity with respect to norms of National Ambient Air Quality standards of CPCB, at all locations monitored. Please refer Annexure-II for Ambient Air Quality monitoring details. Half yearly report for the period Oct., 2016 to Mar., 2017 was submitted to the Regional office of MoEF, Lucknow and RSPCB, Jaipur and Bikaner vide letter no. MoE&F, LKN/DKRR/1040124/227 dated 13.04.2017.
16.	For controlling fugitive dust, regular sprinkling of water in lignite storage area and other vulnerable areas of the plant should be ensured.	9 nos. of Water sprinklers have been installed at lignite storage area and other vulnerable areas of the plant fly ash to control fugitive dust. Regular sprinkling of water through mobile water tankers on roads in Plant area is being undertaken for controlling fugitive dust.
17.	The project proponent should advertise in at least two local news papers widely circulated in the region around the project, one of which should be vernacular language of the area of the locality concerned, informing that the project has been accorded environmental clearance and copies of clearance letters are available with the state pollution control board/committee and may also be seen at the website of the MoEF at http://envfor.nic.in	The public notice has been given in two newspapers viz. Dainik Bhaskar and Rajasthan Patrika on 02.03.2007.
18.	A separate environmental monitoring cell with suitable qualified staff should be setup for implementation of the stipulated environmental safeguards.	Environmental Management Cell has been set up comprising Sr. Executive-Environment and other qualified staff has already been setup to look after day to day activities such as operation and maintenance of environmental pollution control equipments and to implement to Environmental Management Plan.
19.	Half yearly reports on the status of implementation of the stipulated conditions and environmental safeguards shall be submitted to this ministry/ regional office/CPCB/ SPCB	Half yearly compliance reports are being submitted regularly RO, MoEF and RSPCB. Half yearly report for the period Oct., 2016 to Mar., 2017 was submitted to the Regional office of MoEF, Lucknow and RSPCB, Jaipur and Bikaner vide letter no. MoE&F, LKN/DKRR/1040124/227 dated 13.04.2017.
20.	Regional office of the Ministry of Environment & Forests located at Lucknow will monitor the implementation of the stipulated conditions. A complete set of documents including Environment Impact Assessment report and Management Plan shall be forwarded to the regional office.	A complete set of documents with EIA/EMP has been sent to Regional Office – MoEF, Lucknow vide letter ref. No.MOE&F, LKN/PSRAO/113 dated 14.02.2008.
21.	Separate funds should be allocated for	A separate fund which is a part of total project cost and being

	implementation of environmental protection measures along with item-wise break-up. These cost should be included as part of the project cost. The funds earmarked for the environment protection measures should be not be diverted for other purposes and year-wise expenditure should be reported to the Ministry	utilized for establishment of equipment and implementation of environment protection measures. The environmental funds are used for the environmental activities only.
22.	Full cooperation should be extended to the scientists/officers from the Ministry at Lucknow/ CPCB/SPCB who would be monitoring the compliance of the environmental status	Noted and is being complied.
Additional Conditions vide letter no. J-13011/59/2006-IA.II (T) dated 4th June , 2009		
1.	Transportation of lignite from mine to power project shall be through 35 tons tipper.	Transportation of lignite from mine to power plant is being carried out by tipper/dumper.
2.	Extra measures for dust suppression like black topping of road, water sprinklers along the road should be provided.	Various extra measures have been implemented to control fugitive emission from the power plant premises. Mobile water tankers are being used for water sprinkling on the roads to control fugitive emission. Black topping of roads is already constructed.
3.	First aid and sanitation arrangement shall be made for the drivers and the contract workers during construction phase.	First aid and sanitation arrangement was provided to the drivers and contract workers during construction phase.
4.	Regular monitoring of ground level concentration of SO _x , NO _x , SPM and RSPM shall be carried out in the impact zone and record maintained. If at any stage these levels are found to exceed the prescribed limit, necessary control measures shall be provided immediately. The location of the monitoring stations and frequency of monitoring shall be decided in consultation with SPCB. Periodic reports shall be submitted to the Regional office of this Ministry. The data shall also be put on the website of the company.	Ambient air quality monitoring is being done by MoEF recognized agency as per National Ambient Air Quality standers in seven (7) locations in & around the Plant premises and, records maintained. The results of the monitored data indicate that the ambient air quality is in conformity with respect to norms of National Ambient Air Quality standards of CPCB, at all locations monitored. Please refer Annexure-IIA, IIB, IIC for Ambient Air Quality monitoring results. Half yearly reports are being submitted to the Regional office of MoEF and RSPCB. Half yearly reports inclusive of monitoring reports are being uploaded to the company web site.
5.	Provision shall be made for the housing of construction labour within the site with all the necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structure to be removed after the completion of the project.	Housing facilities with necessary infrastructures facilities and safe drinking water were provided for labour at the site during construction phase.

6.	The proponent shall upload the status of compliance of the stipulated EC conditions including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the regional Office of MoEF, the respective zonal office of CPCB and the SPCB. The criteria pollutant levels namely SPM, RSPM, SO ₂ , NO _x (ambient levels as well as stack emissions) or critical sector parameters indicated for the project shall be monitored and displayed at a convenient location near main gate of the company in the public domain.	Six monthly reports inclusive of monitoring reports are being uploaded to the company web site and reports are being submitted to regional and head office of RPCB on regular basis. Half yearly report for the period Oct., 2016 to Mar., 2017 was submitted to the Regional office of MoEF, Lucknow and RSPCB, Jaipur and Bikaner vide letter no. MoE&F, LKN/DKRR/1040124/227 dated 13.04.2017. Monitoring reports are being displayed near the main gate.
7.	The project proponent shall also submit six monthly reports on the status of compliance of the stipulated conditions including results of monitored data (both in hard copies as well as by email) to the respective Regional Office of MoEF, the respective zonal Office of CPCB and the SPCB.	Half yearly compliance reports are being submitted to regional and head office of RSPCB regularly. Half yearly report for the period Oct., 2016 to Mar., 2017 was submitted to the Regional office of MoEF, Lucknow and RSPCB, Jaipur and Bikaner vide letter no. MoE&F, LKN/DKRR/1040124/227 dated 13.04.2017. Monitoring reports are being displayed near the main gate.
8.	The project proponent will upload the compliance status in their website and update the same from time to time at least on six monthly bases. Criteria pollutants levels (Stack and ambient levels of NO _x) will be displayed at the main gate of the power plant	Details uploaded on the website and the same are updated regularly. Salient environmental details as per RSPCB is being displayed and regularly updated at the main gate of power plant.

ANNEXURE-I

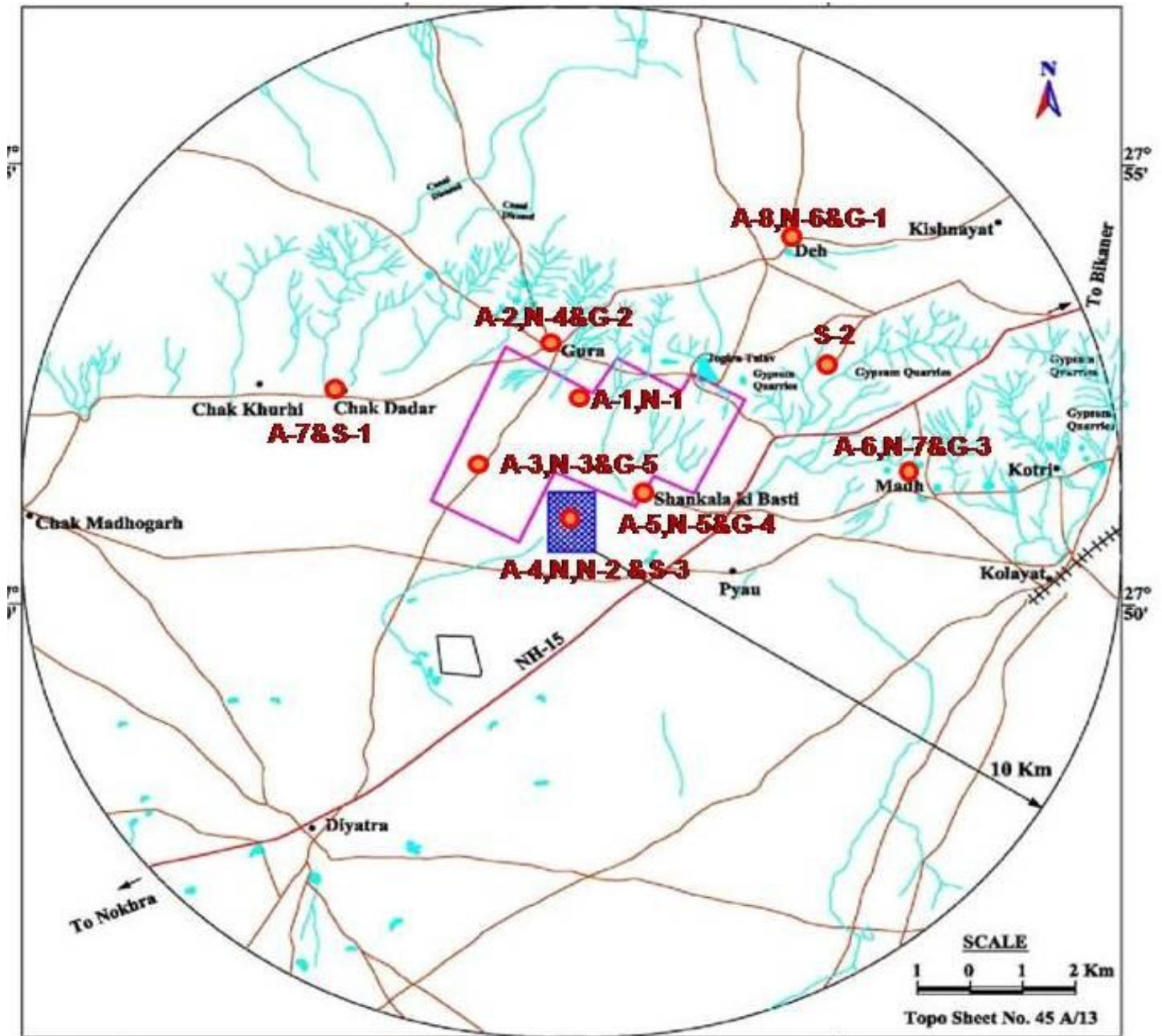
**VS Lignite Power Private Ltd.
Fly/Bottom Ash Generation & its Uses/disposal**

Sr. No.	Month	Ash Qty. (MT)		
		Generation	Disposal	
			Dispatch to cement Plants, brick and tiles manufacturers etc.*	Used for Stabilization and Strengthening of slopes and roads in lignite mine area
1.	April, 2017	VSLP power station was under Shut Down		
2.	May, 2017			
3.	June, 2017			
4.	July, 2017			
5.	Aug., 2017			
6.	Sep., 2017			







April, 2017

FIGURE-1

STUDY AREA MAP OF 10 KM RADIUS SHOWING SAMPLING LOCATIONS



LEGEND

- | | |
|--|--|
|  Plant Site |  Railway Line |
|  Mine Lease Area |  Road |
|  River / Nala/Canal |  Village |

- A= Ambient Air Quality Sampling Locations
- N= Ambient Noise Quality Monitoring Locations
- G= Ground Water Quality Sampling Locations
- S= Surface Water Quality Sampling Locations

A] Meteorological Station at Power Plant. N 27° 51' 21.9" E 72° 51' 35.4"

B] Ambient Air Quality Locations:

Location Code	Location Name	Direction W R T Plant	Distance from Plant (KM)
A-1	Mine Lease Area at Camp	N	2.2
A-2	Gurha Village	N	4.5
A-3	Power Plant (Chemical Building)	-	-
A-4	Sankhala ki basti Village	E	1.4
A-5	Madh	NE	6.3
A-6	Chakdadar	NW	4.8
A-7	Deh	NNE	6.8

C] Stack Emission Monitoring Location: 1. Power Plant Boiler Main Stack

D] Ambient Noise Quality Locations:

Location Code	Location Name	Direction W R T Plant	Distance from Plant (KM)
N1	Power Plant (Turbine area)	--	--
N2	Near Entrance Gate-1	--	--
N3	Near DM Plant 3 rd Floor	--	--
N4	Rasemadaniya	NW	2.3
N5	Gurha Village	N	4.5
N6	Sankhala ki basti	S	1.4
N7	Madh	NE	6.3

E] Water Quality Locations:

Location Code	Location Name	Direction W R T Plant	Distance from Plant (KM)
G-1	Deh	NNE	6.8
G-2	Gurha Village	N	1.4
G-3	Madh	NE	6.0
G-4	Sankhala ki basti	E	1.4
G-5	Mine Lease Area at Rasemadaniya	NW	2.3
S-1	Chakdadar Talab Water	W	4.8
S-2	Jogera Talab Water.	NE	5.2
S-3	Power Plant Reservoir water	-	-
WW-1	ETP Outlet Water	-	-
WW-2	STP Outlet Water	-	-

Ambient Air Quality Monitoring:

The Ambient Air Quality has been monitored at seven locations covering both inside the Plant premises area and outside the Plant area. The table showing Ambient Air Quality results is present in Table 1 to Table 7 respectively.

DETAILS OF AMBIENT AIR QUALITY	
NAME OF PROJECT	: M/s: VS Lignite Power Pvt Ltd
TYPE OF SAMPLE	: AMBIENT AIR QUALITY
LOCATION OF SAMPLING SIT	: Mine Lease Area at Camp-A1
Latitudes and Longitudes	: 27° 52' 31.4" N, 72° 51' 25.9" E
Mean Sea Level in Meters	: 220
DATE OF SAMPLING	: 03.04.2017 to 25.04.2017.
The concentrations (PM₁₀, PM_{2.5}, SO₂, NO₂, O₃, Pb, NH₃ and C₆H₆) are expressed in µg/m³, Concentrations (As, Ni and BaP) are expressed in ng/m³ and CO Concentration is expressed in PPM.	

TABLE-1

Sr. No	Date of Sampling	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	O ₃ µg/m ³	NH ₃ µg/m ³	Pb µg/m ³	As ng/m ³	Ni ng/m ³	C ₆ H ₆ µg/m ³	BaP ng/m ³	CO PPM
1.	03.04.2017	68.3	33.2	9.0	20.8	5.8	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
2.	04.04.2017	70.6	35.1	9.2	21.2	5.5	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
3.	10.04.2017	64.5	32.6	8.6	20.6	5.6	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
4.	11.04.2017	60.3	30.7	8.3	19.5	5.2	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
5.	17.04.2017	57.8	28.5	7.8	18.4	5.5	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
6.	18.04.2017	64.2	32.2	8.2	21.6	5.6	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
7.	24.04.2017	55.3	26.3	7.5	20.8	5.8	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
8.	25.04.2017	61.5	30.5	8.6	19.4	5.4	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Arithmetic Mean		62.8	31.1	8.4	20.3	5.6	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Maximum		70.6	35.1	9.2	21.6	5.8	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Minimum		55.3	26.3	7.5	18.4	5.2	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Percentile Values													
50th percentile		62.9	31.5	8.5	20.7	5.6	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
98th percentile		70.3	34.8	9.2	21.5	5.8	BDL	BDL	BDL	BDL	BDL	BDL	<1.0

Monthly Environmental Data Generation Report of 1*135 MW Power Plant **April, 2017**
VS Lignite Power Private Limited

DETAILS OF AMBIENT AIR QUALITY

NAME OF PROJECT	: M/s: <i>VS Lignite Power Pvt Ltd</i>
TYPE OF SAMPLE	: AMBIENT AIR QUALITY
LOCATION OF SAMPLING SITE	: Gurha Village -A2
Latitudes and Longitudes	: 27°52'52.9" N, 72°51'43.8" E
Mean Sea Level in Metres	: 228
DATE OF SAMPLING	: 03.04.2017 to 25.04.2017.
The concentrations (PM ₁₀ , PM _{2.5} , SO ₂ , NO ₂ , O ₃ , a, NH ₃ and C ₆ H ₆) are expressed in µg/m ³ , Concentrations (As, Ni and BaP) are expressed in ng/m ³ and CO Concentration is expressed in PPM.	

TABLE-2

S.No	Date of Sampling	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	O ₃ µg/m ³	NH ₃ µg/m ³	Pb µg/m ³	As ng/m ³	Ni ng/m ³	C ₆ H ₆ µg/m ³	BaP ng/m ³	CO PPM
1.	03.04.2017	62.5	31.6	8.4	19.4	5.3	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
2.	04.04.2017	53.4	26.5	7.5	18.5	5.5	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
3.	10.04.2017	58.1	29.1	7.9	19.0	5.4	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
4.	11.04.2017	55.3	27.4	8.1	17.8	5.3	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
5.	17.04.2017	52.7	25.3	7.6	17.5	5.6	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
6.	18.04.2017	58.4	28.2	7.8	18.6	5.7	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
7.	24.04.2017	55.2	25.6	7.5	18.0	5.2	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
8.	25.04.2017	60.8	29.4	8.1	19.2	5.1	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Arithmetic Mean		57.1	27.9	7.9	18.5	5.4	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Maximum		62.5	31.6	8.4	19.4	5.7	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Minimum		52.7	25.3	7.5	17.5	5.1	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Percentile Values													
50th percentile		56.7	27.8	7.9	18.6	5.4	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
98th percentile		62.3	31.3	8.4	19.4	5.8	BDL	BDL	BDL	BDL	BDL	BDL	<1.0

Monthly Environmental Data Generation Report of 1*135 MW Power Plant **April, 2017**
 VS Lignite Power Private Limited

DETAILS OF AMBIENT AIR QUALITY

NAME OF PROJECT	: M/s: VS Lignite Power Pvt Ltd
TYPE OF SAMPLE	: AMBIENT AIR QUALITY
LOCATION OF SAMPLING SITE	: Power Plant (Admin Building) -A3
Latitudes and Longitudes	: 27° 51' 21.9" N, 72° 51' 35.4" E
Mean Sea Level in Meters	: 226
DATE OF SAMPLING	: 03.04.2017 to 25.04.2017.

The concentrations (PM₁₀, PM_{2.5}, SO₂, NO₂, O₃, Pb, NH₃ and C₆H₆) are expressed in µg/m³, Concentrations (As, Ni and BaP) are expressed in ng/m³ and CO Concentration is expressed in PPM.

TABLE-3

S.No	Date of Sampling	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	O ₃ µg/m ³	NH ₃ µg/m ³	Pb µg/m ³	As ng/m ³	Ni ng/m ³	C ₆ H ₆ µg/m ³	BaP ng/m ³	CO PPM
1.	03.04.2017	65.4	32.6	11.2	24.5	5.8	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
2.	04.04.2017	72.7	35.8	11.6	25.1	6.2	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
3.	10.04.2017	75.3	32.5	12.5	25.8	6.0	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
4.	11.04.2017	68.4	33.6	11.3	24.2	5.5	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
5.	17.04.2017	62.6	30.9	10.5	23.1	5.6	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
6.	18.04.2017	74.2	36.2	12.4	24.2	5.8	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
7.	24.04.2017	70.3	34.8	12.1	22.6	5.3	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
8.	25.04.2017	60.6	30.3	11.6	22.3	6.1	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Arithmetic Mean		68.7	33.3	11.7	24.0	5.8	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Maximum		75.3	36.2	12.5	25.8	6.2	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Minimum		60.6	30.3	10.5	22.3	5.3	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Percentile Values													
50th percentile		69.4	33.1	11.6	24.2	5.8	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
98th percentile		75.1	36.1	12.5	25.7	6.2	BDL	BDL	BDL	BDL	BDL	BDL	<1.0

Monthly Environmental Data Generation Report of 1*135 MW Power Plant **April, 2017**
 VS Lignite Power Private Limited

DETAILS OF AMBIENT AIR QUALITY

NAME OF PROJECT	: M/s: <i>VS Lignite Power Pvt Ltd</i>
TYPE OF SAMPLE	: AMBIENT AIR QUALITY
LOCATION OF SAMPLING SITE	: Sankhala Ki basti Village -A4
Latitudes and Longitudes	: 27°51'21.2" N, 72°52'35.4" E
Mean Sea Level in Meters	: 215
DATE OF SAMPLING	: 06.04.2017 to 28.04.2017.
The concentrations (PM ₁₀ , PM _{2.5} , SO ₂ , NO ₂ , O ₃ , Pb, NH ₃ and C ₆ H ₆) are expressed in µg/m ³ , Concentrations (As, Ni and BaP) are expressed in ng/m ³ and CO Concentration is expressed in PPM.	

TABLE-4

S.No	Date of Sampling	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	O ₃ µg/m ³	NH ₃ µg/m ³	Pb µg/m ³	As ng/m ³	Ni ng/m ³	C ₆ H ₆ µg/m ³	BaP ng/m ³	CO PPM
1.	06.04.2017	60.3	28.6	6.5	18.2	5.3	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
2.	07.04.2017	54.5	26.5	6.8	17.9	5.4	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
3.	13.04.2017	49.8	24.1	5.6	17.5	5.1	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
4.	14.04.2017	52.4	25.3	6.5	18.3	5.2	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
5.	20.04.2017	58.3	27.8	6.0	18.6	5.3	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
6.	21.04.2017	56.9	28.5	6.8	18.3	5.6	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
7.	27.04.2017	50.8	24.1	7.2	17.5	5.3	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
8.	28.04.2017	55.2	27.9	6.4	17.9	5.5	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Arithmetic Mean		54.8	26.6	6.5	18.0	5.3	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Maximum		60.3	28.6	7.2	18.6	5.6	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Minimum		49.8	24.1	5.6	17.5	5.1	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Percentile Values													
50th percentile		54.9	27.2	6.5	18.1	5.3	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
98th percentile		60.0	28.6	7.1	18.6	5.6	BDL	BDL	BDL	BDL	BDL	BDL	<1.0

Monthly Environmental Data Generation Report of 1*135 MW Power Plant **April, 2017**
 VS Lignite Power Private Limited

DETAILS OF AMBIENT AIR QUALITY

NAME OF PROJECT	: M/s: <i>VS Lignite Power Pvt Ltd</i>
TYPE OF SAMPLE	: AMBIENT AIR QUALITY
LOCATION OF SAMPLING SITE	: Madh Village -A5
Latitudes and Longitudes	: 27° 51' 07.3" N, 72° 55' 53.0" E
Mean Sea Level in Meters	: 227
DATE OF SAMPLING	: 06.04.2017 to 28.04.2017.

The concentrations (PM₁₀, PM_{2.5}, SO₂, NO₂, O₃, Pb, NH₃ and C₆H₆) are expressed in µg/m³, Concentrations (As, Ni and BaP) are expressed in ng/m³ and CO Concentration is expressed in PPM.

TABLE-5

S.No	Date of Sampling	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	O ₃ µg/m ³	NH ₃ µg/m ³	Pb µg/m ³	As ng/m ³	Ni ng/m ³	C ₆ H ₆ µg/m ³	BaP ng/m ³	CO PPM
1.	06.04.2017	60.4	29.3	8.0	21.2	5.8	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
2.	07.04.2017	63.8	31.4	8.4	21.6	5.5	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
3.	13.04.2017	55.6	27.0	7.3	20.3	5.4	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
4.	14.04.2017	60.9	28.1	8.2	21.6	5.2	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
5.	20.04.2017	62.3	30.6	8.6	22.3	5.1	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
6.	21.04.2017	58.6	27.4	8.1	20.8	5.3	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
7.	27.04.2017	54.1	26.6	7.9	21.4	5.5	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
8.	28.04.2017	51.8	25.7	7.5	20.3	5.4	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Arithmetic Mean		58.4	28.3	8.0	21.2	5.4	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Maximum		63.8	31.4	8.6	22.3	5.8	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Minimum		51.8	25.7	7.3	20.3	5.1	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Percentile Values													
50th percentile		59.5	27.8	8.1	21.3	5.4	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
98th percentile		63.6	31.3	8.6	22.2	5.8	BDL	BDL	BDL	BDL	BDL	BDL	<1.0

Monthly Environmental Data Generation Report of 1*135 MW Power Plant **April, 2017**
 VS Lignite Power Private Limited

DETAILS OF AMBIENT AIR QUALITY

NAME OF PROJECT	: M/s: VS Lignite Power Pvt Ltd
TYPE OF SAMPLE	: AMBIENT AIR QUALITY
LOCATION OF SAMPLING SITE	: Chakdadar Village-A6
Latitudes and Longitudes	: 27° 52' 18.3" N, 72° 48' 19.9" E
Mean Sea Level in Meters	: 207
DATE OF SAMPLING	: 06.04.2017 to 28.04.2017.

The concentrations (PM₁₀, PM_{2.5}, SO₂, NO₂, O₃, Pb, NH₃ and C₆H₆) are expressed in µg/m³, Concentrations (As, Ni and BaP) are expressed in ng/m³ and CO Concentration is expressed in PPM.

TABLE-6

S.No	Date of Sampling	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	O ₃ µg/m ³	NH ₃ µg/m ³	Pb µg/m ³	As ng/m ³	Ni ng/m ³	C ₆ H ₆ µg/m ³	BaP ng/m ³	CO PPM
1.	06.04.2017	58.5	27.8	5.8	17.2	5.4	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
2.	07.04.2017	53.7	26.3	5.6	16.0	5.1	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
3.	13.04.2017	50.4	24.5	5.3	15.8	5.4	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
4.	14.04.2017	57.6	28.9	6.0	16.1	5.3	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
5.	20.04.2017	55.1	26.3	5.8	16.0	5.0	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
6.	21.04.2017	46.1	23.2	5.3	15.8	<5.0	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
7.	27.04.2017	52.6	25.6	6.2	16.1	5.2	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
8.	28.04.2017	56.3	28.4	5.7	16.3	5.1	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Arithmetic Mean		53.8	26.4	5.7	16.2	5.2	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Maximum		58.5	28.9	6.2	17.2	5.4	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Minimum		46.1	23.2	5.3	15.8	<5.0	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Percentile Values													
50th percentile		54.4	26.3	5.8	16.1	5.2	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
98th percentile		58.4	28.8	6.2	17.1	5.4	BDL	BDL	BDL	BDL	BDL	BDL	<1.0

Monthly Environmental Data Generation Report of 1*135 MW Power Plant **April, 2017**
VS Lignite Power Private Limited

DETAILS OF AMBIENT AIR QUALITY

NAME OF PROJECT	: M/s: VS Lignite Power Pvt Ltd
TYPE OF SAMPLE	: AMBIENT AIR QUALITY
LOCATION OF SAMPLING SITE	: Deh Village - A7
Latitudes and Longitudes	: 27° 54' 11.6" N, 72° 54' 32.6" E
Mean Sea Level in Metres	: 270
DATE OF SAMPLING	: 06.04.2017 to 28.04.2017.

The concentrations (PM₁₀, PM_{2.5}, SO₂, NO₂, O₃, Pb, NH₃ and C₆H₆) are expressed in µg/m³, Concentrations (As, Ni and BaP) are expressed in ng/m³ and CO Concentration is expressed in PPM.

TABLE-7

S.No	Date of Sampling	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	O ₃ µg/m ³	NH ₃ µg/m ³	Pb µg/m ³	As ng/m ³	Ni ng/m ³	C ₆ H ₆ µg/m ³	BaP ng/m ³	CO PPM
1.	06.04.2017	58.3	28.1	8.6	19.0	5.3	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
2.	07.04.2017	65.4	32.5	8.9	19.6	5.8	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
3.	13.04.2017	54.6	26.0	7.6	18.5	5.5	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
4.	14.04.2017	60.2	29.1	8.2	19.4	5.4	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
5.	20.04.2017	64.3	30.5	9.0	20.3	5.6	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
6.	21.04.2017	56.1	27.1	8.5	19.6	5.3	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
7.	27.04.2017	52.8	25.8	8.1	18.4	5.5	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
8.	28.04.2017	63.4	31.6	8.4	20.3	5.4	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Arithmetic Mean		59.4	28.8	8.4	19.4	5.5	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Maximum		65.4	32.5	9.0	20.3	5.8	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Minimum		52.8	25.8	7.6	18.4	5.3	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Percentile Values													
50th percentile		59.3	28.6	8.5	19.5	5.5	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
98th percentile		65.2	32.4	9.0	20.3	5.8	BDL	BDL	BDL	BDL	BDL	BDL	<1.0

Observations:

PM₁₀: The maximum value for PM₁₀ observed at Power Plant Area 75.3 µg/m³ and minimum value for PM₁₀ Chakdadar Village 46.1 µg/m³. The 24 hours applicable limit for industrial, Residential Rural and Other Areas is 100 µg/m³.

PM 2.5: The maximum value for PM_{2.5} observed at Power Plant Area 36.2 µg/m³ and minimum value for PM_{2.5} at Chakdadar Village 23.2 µg/m³. The 24 hours applicable limit for industrial, Residential Rural and Other Areas is 60 µg/m³.

SO₂: The maximum value for SO₂ observed at Power Plant Area 12.5 µg/m³ and minimum value for SO₂ at Chakdadar Village 5.3 µg/m³. The 24 hours applicable limit for industrial, Residential Rural and Other Areas is 80 µg/m³.

NO₂: The maximum value for NO₂ observed at Power Plant Area 25.8 µg/m³ and minimum value for NO₂ at Chakdadar Village 15.8 µg/m³. The 24 hours applicable limit for industrial, Residential Rural and Other Areas is 80 µg/m³.

O₃: The maximum value for O₃ observed at Mine Lease Area at Camp 6.2 µg/m³ and minimum value for O₃ at Chakdadar Village <5.0 µg/m³. The 8 hours applicable limit for industrial, Residential Rural and Other Areas is 100 µg/m³.

NH₃: The value of NH₃ observed in All Locations is Below Detectable Limit. The 24 hours applicable limit for industrial, Residential Rural and Other Areas is 400 µg/m³.

Pb: The values of Pb observed in All Locations are Below Detectable Limit. The 24 hours applicable limit for industrial, Residential Rural and Other Areas is 1.0 µg/m³.

As: The value of AS observed in All Locations are Below Detectable Limit. The Annual average applicable limit for industrial, Residential Rural and Other Areas is 6 ng/m³.

Ni: The values of Ni observed in All Locations are Below Detectable Limit. The Annual average applicable limit for industrial, Residential Rural and Other Areas is 20 ng/m³.

C₆H₆: The values of C₆H₆ observed in All Locations are Below Detectable Limit. The Annual average applicable limit for industrial, Residential Rural and Other Areas is 5 µg/m³.

Benzo (a) Pyrene (BaP): The values of BaP observed in All Locations are Below Detectable Limit. The Annual average applicable limit for industrial, Residential Rural and Other Areas is 1 ng/m³.

CO: The value of CO observed in all locations are <1.0 PPM . The 8 hours applicable limit for Industrial, Residential Rural and other areas is 09 PPM.

Noise Monitoring

Inside the Premises:

The spot noise levels observed inside the premises at locations is given in Table-8, Date of Monitoring 19.04.2017 to 20.04.2017.

TABLE-8
INDUSTRIAL NOISE LEVELS-INSIDE THE PREMISES

Sr. No	Code	Location	Noise Level L_{eq} [dB(A)]
1.	N1	Power Plant (Turbine area)	55.4
2.	N2	Near Entrance Gate-1	50.9
3.	N3	Near DM Plant 3 rd Floor	49.2

Observations:

The Industrial noise levels within the premises at various equipment are observed to be in the range of 49.2 to 55.4 dB (A).

Outside the premises:

The statistical analysis is done for measured noise levels at four locations in the study area. The parameters are analyzed for L_{day} , L_{night} , and L_{dn} . The statistical analysis results are given in **TABLE-9** Date of Monitoring 25.04.2017 to 28.04.2017.

TABLE-9
AMBIENT NOISE LEVELS IN THE STUDY AREA

All the values are given in dB(A)

Sr. No	Code	Location	L_{day}	L_{night}	L_{dn}
1.	N4	Gurha Village	54.2	41.6	52.4
2.	N5	Sankhala ki basti	53.5	40.2	50.8
3.	N6	Reshmadhaniya	50.6	41.8	51.5
4.	N7	Madh	52.8	43.1	53.6

Observations:

a) Day Time Noise Levels (L_{day})

Residential Area

The daytime (L_{day}) noise levels are observed to be in the range of 50.6- 54.2 dB(A) which are within the prescribed limit of 55 dB(A).

b) Night time Noise Levels (L_{night})

Residential Area

The nighttime (L_{night}) Noise levels are observed to be in the range of 40.2 – 43.1 dB(A) Which are within the prescribed limit of 45 dB(A).

Ground Water Quality:

Five Ground water samples inside 10 km radius Mine Area was collected and analyzed. The analytical results are given in TABLE-10 to TABLE-12

TABLE-10
Ground Water Test Results as per IS 10500

Date of Sample Collection: 14.04.2017

Sr. No.	Parameter	Requirement Desirable Limits	Permissible Limits in the Absence of Alternate Source	Units	GW1 Deh Village Bore Water	GW2 Gurha Village Bore Water
1.	PH	6.5 – 8.5	NR	-	7.80	7.45
2.	Turbidity (NTU)	1	5	NTU	1.12	1.26
3.	Total Dissolve solids	500	2000	mg/L	2436	2328
4.	Dissolved Oxygen	-	-	mg/L	--	--
5.	Total Suspended Solids	Nil	Nil	mg/L	Nil	Nil
6.	Total Hardness as CaCO ₃	200	600	mg/L	710	630
7.	Residual Chlorine	0.2	-	mg/L	< 0.02	< 0.02
8.	Chloride as Cl	250	1000	mg/L	460	490
9.	Sulphate as SO ₄	200	400	mg/L	272.1	254.2
10.	Copper as Cu	0.05	1.5	mg/L	0.08	0.06
11.	Iron as Fe	0.3	1.0	mg/L	0.10	0.08
12.	Chromium as Cr ⁶⁺	0.05	NR	mg/L	0.14	0.06
13.	Zinc as Zn	5	15	mg/L	0.06	0.04
14.	Phosphates as PO ₄	-	-	mg/L	0.05	0.06
15.	Chemical oxygen Demand	-	-	mg/L	Nil	Nil
16.	Biochemical Oxygen Demand (3 days 27°C)	-	-	mg/L	<03	<03
17.	Oil & Grease	Nil	Nil	mg/L	< 0.01	< 0.01

Note: NR= No Relaxation.

Monthly Environmental Data Generation Report of 1*135 MW Power Plant April, 2017

VS Lignite Power Private Limited

TABLE-11

Sr.No.	Parameter	Requirement (Desirable Limits)	Permissible Limits in the Absence of Alternate Source	Units	GW3 Madh Village Bore Water	GW4 Sankhalaki basti Bore Water
1.	pH	6.5 – 8.5	NR	-	7.26	7.42
2.	Turbidity (NTU)	1	5	NTU	1.24	1.30
3.	Total Dissolve solids	500	2000	mg/L	2168	2064
4.	Dissolved Oxygen	-	-	mg/L	--	--
5.	Total Suspended Solids	Nil	Nil	mg/L	Nil	Nil
6.	Total Hardness as CaCO ₃	200	600	mg/L	510	450
7.	Residual Chlorine	0.2	-	mg/L	< 0.02	< 0.02
8.	Chloride as Cl	250	1000	mg/L	400	480
9.	Sulphate as SO ₄	200	400	mg/L	242.3	272.6
10.	Copper as Cu	0.05	1.5	mg/L	0.10	0.08
11.	Iron as Fe	0.3	1.0	mg/L	0.06	0.10
12.	Chromium as Cr ⁶⁺	0.05	NR	mg/L	0.08	0.12
13.	Zinc as Zn	5	15	mg/L	0.07	0.08
14.	Phosphates as PO ₄	-	-	mg/L	0.08	0.05
15.	Chemical Oxygen Demand	-	-	mg/L	Nil	Nil
16.	Biochemical Oxygen Demand (3 days 27°C)	-	-	mg/L	<03	<03
17.	Oil & Grease	Nil	Nil	mg/L	< 0.01	< 0.01

TABLE-12

Sr.No.	Parameter	Requirement (Desirable Limits)	Permissible Limits in the Absence of Alternate Source	Units	GW5 Rasemadaniya Bore Water
1.	PH	6.5 – 8.5	NR	-	7.42
2.	Turbidity (NTU)	1	5	NTU	1.06
3.	Total Dissolve solids	500	2000	mg/L	2234
4.	Dissolved Oxygen	-	-	mg/L	--
5.	Total Suspended Solids	Nil	Nil	mg/L	Nil
6.	Total Hardness as CaCO ₃	200	600	mg/L	510
7.	Residual Chlorine	0.2	-	mg/L	< 0.02
8.	Chloride as Cl	250	1000	mg/L	265
9.	Sulphate as SO ₄	200	400	mg/L	274.6
10.	Copper as Cu	0.05	1.5	mg/L	0.08
11.	Iron as Fe	0.3	1.0	mg/L	0.06
12.	Chromium as Cr ⁶⁺	0.05	NR	mg/L	0.04
13.	Zinc as Zn	5	15	mg/L	0.12
14.	Phosphates as PO ₄	-	-	mg/L	0.04
15.	Chemical Oxygen Demand	-	-	mg/L	Nil
16.	Biochemical Oxygen Demand (3 days 27°C)	-	-	mg/L	<03
17.	Oil & Grease	Nil	Nil	mg/L	< 0.01

Note: NR= NO Relaxation.

Surface Water Quality:

Two surface Water samples inside 10 km radius Mine area was collected and analyzed. The analytical results are given in TABLE-13.

**TABLE-13
SURFACE WATER**

Date of Sample Collection: 14.04.2017

Sr. No	Parameter	Units	IS:2296 Limits	SW1 Chekdadar Talab Water	SW2 Jogera Talab Water	SW3 Power Plant Reservoir water
1.	pH	-	6.5 – 8.5		7.50	7.70
2.	Total Dissolved Solids	mg/L	1500		230	210
3.	Dissolved Oxygen	mg/L	4 min		5.8	5.4
4.	Total Suspended Solids	mg/L	-		08	06
5.	Total Hardness	mg/L	-		90	110
6.	Chloride as Cl	mg/L	600		40	35
7.	Sulphate as SO ₄ ²⁻	mg/L	400		24.3	25.0
8.	Residual Chlorine	mg/L	0.2		< 0.02	< 0.02
9.	Iron as Fe	mg/L	-	Chekdadar Talab Was Dry	<0.04	<0.04
10.	Chromium as Cr	mg/L	50		< 0.005	< 0.005
12.	Copper as Cu	mg/L	0.1		< 0.002	< 0.002
12.	Zinc as Zn	mg/L	1.5		< 0.01	< 0.01
13.	Phosphates as PO ₄	mg/L	15		< 0.01	< 0.01
14.	Chemical oxygen Demand	mg/L	-		Nil	Nil
15.	Biochemical Oxygen Demand (3 days at 27°C)	mg/L	3		<03	<03
16.	Oil and grease	mg/L	0.1		< 0.1	< 0.1

Waste Water Quality:

Two Waste water samples (ETP/ STP Outlet) streams inside the Plant premises are collected and analyzed for various parameters. The Survey analytical results are given in TABLE-14

TABLE-14
WASTE WATER QUALITY RESULTS

Date of Sample Collection: 14.04.2017

S.No.	Parameter	Units	WW-1 ETP Outlet	WW-2 STP Outlet
1.	PH	-	7.20	7.14
2.	Total Dissolve solids	mg/L	894	720
3.	Dissolved Oxygen	mg/L	5.6	5.6
4.	Total Suspended Solids	mg/L	08	12
5.	Residual Free Chlorine	mg/L	< 0.02	0.24
6.	Chloride as Cl	mg/L	230	210
7.	Sulphate as SO ₄	mg/L	61.2	56.3
8.	Copper as Cu	mg/L	0.06	0.08
9.	Iron as Fe	mg/L	0.04	0.04
10.	Chromium as Cr ⁶⁺	mg/L	0.08	0.12
11.	Zinc as Zn	mg/L	0.07	0.06
12.	Phosphates as PO ₄	mg/L	0.06	0.08
13.	Chemical Oxygen Demand	mg/L	54	70
14.	Biochemical Oxygen Demand (3 days 27°C)	mg/L	16	20
15.	Oil & Grease	mg/L	< 1.0	<1.0

Note: NR= NO Relaxation.

Stack Emission Monitoring:

The power plant has a stack of height 100m, which is the major source of air pollution. The stack emission has been carried out and results are given in **Table-15**

TABLE-15
STACK EMISSION MONITORING

Date of Monitoring:

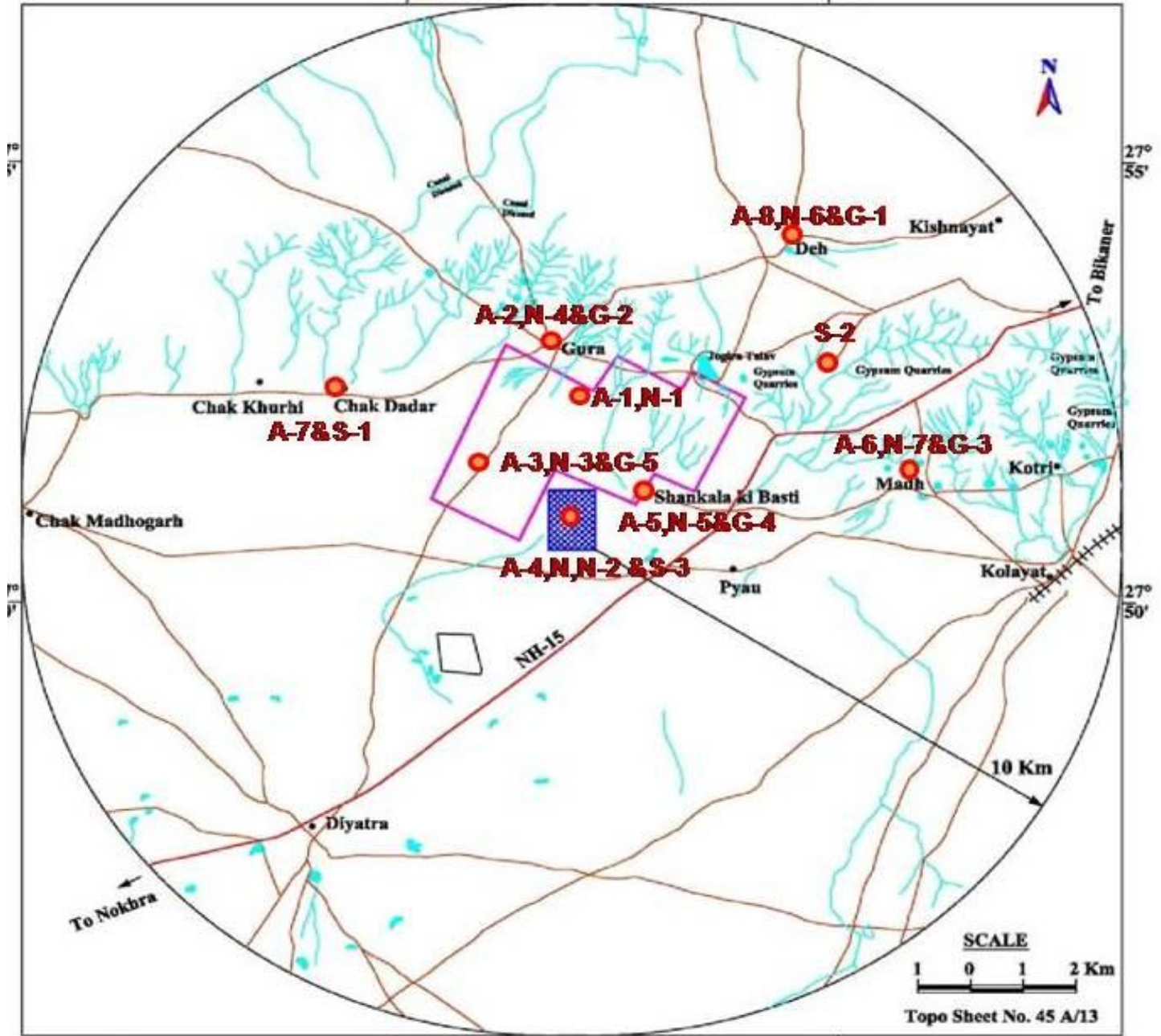
S.NO	Parameters	Results
1	Diameter of stack (m)	Plant was shut down
2	Cross Sectional Area(m ²)	
3	Flue Gas Temperature °C (Ts)	
4	Velocity(m/s)	
5	Volumetric Flow Rate(m ³ /s)	
6	Particulate Emissions (mg/Nm ³)	



May, 2017

FIGURE-1

STUDY AREA MAP OF 10 KM RADIUS SHOWING SAMPLING LOCATIONS



LEGEND	
	Plant Site
	Mine Lease Area
	River / Nala/Canal
	Railway Line
	Road
	Village

- A= Ambient Air Quality Sampling Locations**
- N= Ambient Noise Quality Monitoring Locations**
- G= Ground Water Quality Sampling Locations**
- S= Surface Water Quality Sampling Locations**

A] Meteorological Station at Power Plant. N 27° 51' 21.9" E 72° 51' 35.4"

B] Ambient Air Quality Locations:

Location Code	Location Name	Direction W R T Plant	Distance from Plant (KM)
A-1	Mine Lease Area at Camp	N	2.2
A-2	Gurha Village	N	4.5
A-3	Power Plant (Chemical Building)	-	-
A-4	Sankhala ki basti Village	E	1.4
A-5	Madh	NE	6.3
A-6	Chakdadar	NW	4.8
A-7	Deh	NNE	6.8

C] Stack Emission Monitoring Location: 1. Power Plant Boiler Main Stack

D] Ambient Noise Quality Locations:

Location Code	Location Name	Direction W R T Plant	Distance from Plant (KM)
N1	Power Plant (Turbine area)	--	--
N2	Near Entrance Gate-1	--	--
N3	Near DM Plant 3 rd Floor	--	--
N4	Rasemadaniya	NW	2.3
N5	Gurha Village	N	4.5
N6	Sankhala ki basti	S	1.4
N7	Madh	NE	6.3

E] Water Quality Locations:

Location Code	Location Name	Direction W R T Plant	Distance from Plant (KM)
G-1	Deh	NNE	6.8
G-2	Gurha Village	N	1.4
G-3	Madh	NE	6.0
G-4	Sankhala ki basti	E	1.4
G-5	Mine Lease Area at Rasemadaniya	NW	2.3
S-1	Chakdadar Talab Water	W	4.8
S-2	Jogera Talab Water.	NE	5.2
S-3	Power Plant Reservoir water	-	-
WW-1	ETP Outlet Water	-	-
WW-2	STP Outlet Water	-	-

Ambient Air Quality Monitoring

The Ambient Air Quality has been monitored at seven locations covering both inside the Plant premises area and outside the Plant area. The table showing Ambient Air Quality results is present in Table 1 to Table 7 respectively.

DETAILS OF AMBIENT AIR QUALITY

NAME OF PROJECT	: M/s: VS Lignite Power Pvt Ltd
TYPE OF SAMPLE	: AMBIENT AIR QUALITY
LOCATION OF SAMPLING SIT	: Mine Lease Area at Camp-A1
Latitudes and Longitudes	: 27° 52' 31.4" N, 72° 51' 25.9" E
Mean Sea Level in Meters	: 220
DATE OF SAMPLING	: 01.05.2017 to 23.05.2017.
The concentrations (PM ₁₀ , PM _{2.5} , SO ₂ , NO ₂ , O ₃ , Pb, NH ₃ and C ₆ H ₆) are expressed in µg/m ³ , Concentrations (As, Ni and BaP) are expressed in ng/m ³ and CO Concentration is expressed in PPM.	

TABLE-1

Sr. No	Date of Sampling	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	O ₃ µg/m ³	NH ₃ µg/m ³	Pb µg/m ³	As ng/m ³	Ni ng/m ³	C ₆ H ₆ µg/m ³	BaP ng/m ³	CO PPM
1.	01.05.2017	72.5	35.6	9.3	21.3	5.6	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
2.	02.05.2017	65.8	32.5	8.5	21.0	5.2	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
3.	08.05.2017	62.6	30.6	8.2	19.6	5.9	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
4.	09.05.2017	70.3	34.8	8.0	22.3	5.5	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
5.	15.05.2017	59.9	30.2	8.3	19.5	5.4	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
6.	16.05.2017	67.5	33.6	8.5	22.8	5.3	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
7.	22.05.2017	64.2	31.5	9.0	21.3	5.6	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
8.	23.05.2017	68.4	33.2	9.2	20.4	5.7	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Arithmetic Mean		66.4	32.8	8.6	21.0	5.5	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Maximum		72.5	35.6	9.3	22.8	5.9	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Minimum		59.9	30.2	8.0	19.5	5.2	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Percentile Values													
50th percentile		66.7	32.9	8.5	21.2	5.6	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
98th percentile		72.2	35.5	9.3	22.7	5.9	BDL	BDL	BDL	BDL	BDL	BDL	<1.0

Monthly Environmental Data Generation Report of 1*135 MW Power Plant **May, 2017**
VS Lignite Power Private Limited

DETAILS OF AMBIENT AIR QUALITY

NAME OF PROJECT	: M/s: VS Lignite Power Pvt Ltd
TYPE OF SAMPLE	: AMBIENT AIR QUALITY
LOCATION OF SAMPLING SITE	: Gurha Village -A2
Latitudes and Longitudes	: 27° 52' 52.9" N, 72° 51' 43.8" E
Mean Sea Level in Metres	: 228
DATE OF SAMPLING	: 01.05.2017 to 23.05.2017.
The concentrations (PM ₁₀ , PM _{2.5} , SO ₂ , NO ₂ , O ₃ , a, NH ₃ and C ₆ H ₆) are expressed in µg/m ³ , Concentrations (As, Ni and BaP) are expressed in ng/m ³ and CO Concentration is expressed in PPM.	

TABLE-2

S.No	Date of Sampling	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	O ₃ µg/m ³	NH ₃ µg/m ³	Pb µg/m ³	As ng/m ³	Ni ng/m ³	C ₆ H ₆ µg/m ³	BaP ng/m ³	CO PPM
1.	01.05.2017	60.6	29.5	8.0	18.8	5.4	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
2.	02.05.2017	62.3	30.2	8.3	20.3	5.6	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
3.	08.05.2017	65.8	32.4	8.5	20.6	5.2	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
4.	09.05.2017	59.5	28.5	7.4	18.1	5.4	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
5.	15.05.2017	64.2	31.6	8.0	19.3	5.5	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
6.	16.05.2017	60.8	29.4	7.8	20.4	5.3	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
7.	22.05.2017	56.3	27.5	7.2	19.0	5.4	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
8.	23.05.2017	62.4	30.6	8.3	19.6	5.2	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Arithmetic Mean		61.5	30.0	7.9	19.5	5.4	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Maximum		65.8	32.4	8.5	20.6	5.6	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Minimum		56.3	27.5	7.2	18.1	5.2	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Percentile Values													
50th percentile		61.6	29.9	8.0	19.5	5.4	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
98th percentile		65.6	32.3	8.5	20.6	5.6	BDL	BDL	BDL	BDL	BDL	BDL	<1.0

Monthly Environmental Data Generation Report of 1*135 MW Power Plant **May, 2017**
 VS Lignite Power Private Limited

DETAILS OF AMBIENT AIR QUALITY

NAME OF PROJECT	: M/s: VS Lignite Power Pvt Ltd
TYPE OF SAMPLE	: AMBIENT AIR QUALITY
LOCATION OF SAMPLING SITE	: Power Plant (Admin Building) -A3
Latitudes and Longitudes	: 27° 51' 21.9" N, 72° 51' 35.4" E
Mean Sea Level in Meters	: 226
DATE OF SAMPLING	: 01.05.2017 to 23.05.2017.
The concentrations (PM ₁₀ , PM _{2.5} , SO ₂ , NO ₂ , O ₃ , Pb, NH ₃ and C ₆ H ₆) are expressed in µg/m ³ , Concentrations (As, Ni and BaP) are expressed in ng/m ³ and CO Concentration is expressed in PPM.	

TABLE-3

S.No	Date of Sampling	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	O ₃ µg/m ³	NH ₃ µg/m ³	Pb µg/m ³	As ng/m ³	Ni ng/m ³	C ₆ H ₆ µg/m ³	BaP ng/m ³	CO PPM
1.	01.05.2017	68.3	33.5	11.6	25.3	5.6	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
2.	02.05.2017	70.5	34.2	11.8	25.8	6.2	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
3.	08.05.2017	78.6	38.4	12.8	26.5	6.8	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
4.	09.05.2017	73.9	36.5	11.5	25.1	5.9	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
5.	15.05.2017	66.5	32.6	11.2	24.3	5.7	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
6.	16.05.2017	73.4	37.0	12.6	25.6	6.2	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
7.	22.05.2017	79.6	39.5	13.0	26.8	6.6	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
8.	23.05.2017	64.6	32.5	12.5	23.2	6.3	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Arithmetic Mean		71.9	35.5	12.1	25.3	6.2	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Maximum		79.6	39.5	13.0	26.8	6.8	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Minimum		64.6	32.5	11.2	23.2	5.6	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Percentile Values													
50th percentile		72.0	35.4	12.2	25.5	6.2	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
98th percentile		79.5	39.3	13.0	26.8	6.8	BDL	BDL	BDL	BDL	BDL	BDL	<1.0

Monthly Environmental Data Generation Report of 1*135 MW Power Plant **May, 2017**
VS Lignite Power Private Limited

DETAILS OF AMBIENT AIR QUALITY

NAME OF PROJECT	: M/s: <i>VS Lignite Power Pvt Ltd</i>
TYPE OF SAMPLE	: AMBIENT AIR QUALITY
LOCATION OF SAMPLING SITE	: Sankhala Ki basti Village -A4
Latitudes and Longitudes	: 27°51'21.2" N, 72°52'35.4" E
Mean Sea Level in Meters	: 215
DATE OF SAMPLING	: 04.05.2017 to 26.05.2017.
The concentrations (PM ₁₀ , PM _{2.5} , SO ₂ , NO ₂ , O ₃ , Pb, NH ₃ and C ₆ H ₆) are expressed in µg/m ³ , Concentrations (As, Ni and BaP) are expressed in ng/m ³ and CO Concentration is expressed in PPM.	

TABLE-4

S.No	Date of Sampling	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	O ₃ µg/m ³	NH ₃ µg/m ³	Pb µg/m ³	As ng/m ³	Ni ng/m ³	C ₆ H ₆ µg/m ³	BaP ng/m ³	CO PPM
1.	04.05.2017	58.3	27.5	6.3	18.5	5.6	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
2.	05.05.2017	61.4	30.2	7.5	19.2	5.4	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
3.	11.05.2017	56.8	26.3	5.8	18.1	5.3	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
4.	12.05.2017	60.3	28.6	7.0	18.6	5.5	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
5.	18.05.2017	62.6	31.0	6.5	19.2	5.1	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
6.	19.05.2017	58.3	28.2	6.2	18.0	5.2	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
7.	25.05.2017	54.5	26.5	5.8	17.7	5.0	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
8.	26.05.2017	63.4	32.1	7.4	19.5	5.3	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Arithmetic Mean		59.5	28.8	6.6	18.6	5.3	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Maximum		63.4	32.1	7.5	19.5	5.6	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Minimum		54.5	26.3	5.8	17.7	5.0	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Percentile Values													
50th percentile		59.3	28.4	6.4	18.6	5.3	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
98th percentile		63.3	31.9	7.5	19.5	5.6	BDL	BDL	BDL	BDL	BDL	BDL	<1.0

Monthly Environmental Data Generation Report of 1*135 MW Power Plant **May, 2017**
VS Lignite Power Private Limited

DETAILS OF AMBIENT AIR QUALITY

NAME OF PROJECT	: M/s: <i>VS Lignite Power Pvt Ltd</i>
TYPE OF SAMPLE	: AMBIENT AIR QUALITY
LOCATION OF SAMPLING SITE	: Madh Village -A5
Latitudes and Longitudes	: 27° 51' 07.3" N, 72° 55' 53.0" E
Mean Sea Level in Meters	: 227
DATE OF SAMPLING	: 04.05.2017 to 26.05.2017.
The concentrations (PM ₁₀ , PM _{2.5} , SO ₂ , NO ₂ , O ₃ , Pb, NH ₃ and C ₆ H ₆) are expressed in µg/m ³ , Concentrations (As, Ni and BaP) are expressed in ng/m ³ and CO Concentration is expressed in PPM.	

TABLE-5

S.No	Date of Sampling	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	O ₃ µg/m ³	NH ₃ µg/m ³	Pb µg/m ³	As ng/m ³	Ni ng/m ³	C ₆ H ₆ µg/m ³	BaP ng/m ³	CO PPM
1.	04.05.2017	58.3	28.3	7.5	20.3	5.6	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
2.	05.05.2017	60.2	29.6	8.2	20.6	5.2	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
3.	11.05.2017	52.5	25.2	7.0	19.5	5.4	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
4.	12.05.2017	56.7	27.4	7.6	20.6	5.1	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
5.	18.05.2017	53.2	26.7	7.2	20.2	5.0	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
6.	19.05.2017	55.6	26.3	7.8	21.3	5.4	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
7.	25.05.2017	59.3	30.2	8.1	22.2	5.2	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
8.	26.05.2017	54.3	26.8	7.9	21.8	5.1	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Arithmetic Mean		56.3	27.6	7.7	20.8	5.3	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Maximum		60.2	30.2	8.2	22.2	5.6	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Minimum		52.5	25.2	7.0	19.5	5.0	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Percentile Values													
50th percentile		56.2	27.1	7.7	20.6	5.2	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
98th percentile		60.1	30.1	8.2	22.1	5.6	BDL	BDL	BDL	BDL	BDL	BDL	<1.0

Monthly Environmental Data Generation Report of 1*135 MW Power Plant **May, 2017**
VS Lignite Power Private Limited

DETAILS OF AMBIENT AIR QUALITY

NAME OF PROJECT	: M/s: VS Lignite Power Pvt Ltd
TYPE OF SAMPLE	: AMBIENT AIR QUALITY
LOCATION OF SAMPLING SITE	: Chakdadar Village-A6
Latitudes and Longitudes	: 27° 52' 18.3" N, 72° 48' 19.9" E
Mean Sea Level in Meters	: 207
DATE OF SAMPLING	: 04.05.2017 to 26.05.2017.

The concentrations (PM₁₀, PM_{2.5}, SO₂, NO₂, O₃, Pb, NH₃ and C₆H₆) are expressed in µg/m³, Concentrations (As, Ni and BaP) are expressed in ng/m³ and CO Concentration is expressed in PPM.

TABLE-6

S.No	Date of Sampling	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	O ₃ µg/m ³	NH ₃ µg/m ³	Pb µg/m ³	As ng/m ³	Ni ng/m ³	C ₆ H ₆ µg/m ³	BaP ng/m ³	CO PPM
1.	04.05.2017	55.4	26.5	5.5	16.8	5.2	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
2.	05.05.2017	52.2	25.8	5.2	15.6	5.0	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
3.	11.05.2017	49.6	23.4	5.0	15.2	<5.0	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
4.	12.05.2017	54.1	27.1	5.6	16.3	5.2	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
5.	18.05.2017	50.3	24.9	5.3	15.8	5.1	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
6.	19.05.2017	45.2	22.0	5.0	15.0	<5.0	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
7.	25.05.2017	48.4	23.6	5.6	15.9	5.0	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
8.	26.05.2017	50.5	25.0	5.4	16.0	5.1	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Arithmetic Mean		50.7	24.8	5.3	15.8	5.1	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Maximum		55.4	27.1	5.6	16.8	5.2	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Minimum		45.2	22.0	5.0	15.0	<5.0	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Percentile Values													
50th percentile		50.4	25.0	5.4	15.9	5.1	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
98th percentile		55.2	27.0	5.6	16.7	5.2	BDL	BDL	BDL	BDL	BDL	BDL	<1.0

Monthly Environmental Data Generation Report of 1*135 MW Power Plant **May, 2017**
VS Lignite Power Private Limited

DETAILS OF AMBIENT AIR QUALITY

NAME OF PROJECT	: M/s: VS Lignite Power Pvt Ltd
TYPE OF SAMPLE	: AMBIENT AIR QUALITY
LOCATION OF SAMPLING SITE	: Deh Village - A7
Latitudes and Longitudes	: 27° 54' 11.6" N, 72° 54' 32.6" E
Mean Sea Level in Metres	: 270
DATE OF SAMPLING	: 04.05.2017 to 26.05.2017.

The concentrations (PM₁₀, PM_{2.5}, SO₂, NO₂, O₃, Pb, NH₃ and C₆H₆) are expressed in µg/m³, Concentrations (As, Ni and BaP) are expressed in ng/m³ and CO Concentration is expressed in PPM.

TABLE-7

S.No	Date of Sampling	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	O ₃ µg/m ³	NH ₃ µg/m ³	Pb µg/m ³	As ng/m ³	Ni ng/m ³	C ₆ H ₆ µg/m ³	BaP ng/m ³	CO PPM
1.	04.05.2017	55.8	22.5	8.2	18.6	5.2	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
2.	05.05.2017	60.5	29.6	8.5	19.0	5.6	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
3.	11.05.2017	62.3	30.2	7.3	19.4	5.1	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
4.	12.05.2017	58.4	28.5	7.0	18.3	5.3	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
5.	18.05.2017	60.5	29.3	8.5	19.2	5.2	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
6.	19.05.2017	54.3	26.2	7.3	18.0	5.4	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
7.	25.05.2017	50.5	24.6	6.5	17.8	5.3	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
8.	26.05.2017	56.4	27.5	7.8	18.2	5.2	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Arithmetic Mean		57.3	27.3	7.6	18.6	5.3	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Maximum		62.3	30.2	8.5	19.4	5.6	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Minimum		50.5	22.5	6.5	17.8	5.1	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Percentile Values													
50th percentile		57.4	28.0	7.6	18.5	5.3	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
98th percentile		62.0	30.1	8.5	19.4	5.6	BDL	BDL	BDL	BDL	BDL	BDL	<1.0

Observations:

PM₁₀: The maximum value for PM₁₀ observed at Power Plant Area 79.6 µg/m³ and minimum value for PM₁₀ Chakdadar Village 45.2 µg/m³. The 24 hours applicable limit for industrial, Residential Rural and Other Areas is 100 µg/m³.

PM 2.5: The maximum value for PM_{2.5} observed at Power Plant Area 39.5 µg/m³ and minimum value for PM_{2.5} at Chakdadar Village 22.0 µg/m³. The 24 hours applicable limit for industrial, Residential Rural and Other Areas is 60 µg/m³.

SO₂: The maximum value for SO₂ observed at Power Plant Area 13.0 µg/m³ and minimum value for SO₂ at Chakdadar Village 5.0 µg/m³. The 24 hours applicable limit for industrial, Residential Rural and Other Areas is 80 µg/m³.

NO₂: The maximum value for NO₂ observed at Power Plant Area 26.8 µg/m³ and minimum value for NO₂ at Chakdadar Village 15.0 µg/m³. The 24 hours applicable limit for industrial, Residential Rural and Other Areas is 80 µg/m³.

O₃: The maximum value for O₃ observed at Mine Lease Area at Camp 6.8 µg/m³ and minimum value for O₃ at Chakdadar Village <5.0 µg/m³. The 8 hours applicable limit for industrial, Residential Rural and Other Areas is 100 µg/m³.

NH₃: The value of NH₃ observed in All Locations is Below Detectable Limit. The 24 hours applicable limit for industrial, Residential Rural and Other Areas is 400 µg/m³.

Pb: The values of Pb observed in All Locations are Below Detectable Limit. The 24 hours applicable limit for industrial, Residential Rural and Other Areas is 1.0 µg/m³.

As: The value of AS observed in All Locations are Below Detectable Limit. The Annual average applicable limit for industrial, Residential Rural and Other Areas is 6 ng/m³.

Ni: The values of Ni observed in All Locations are Below Detectable Limit. The Annual average applicable limit for industrial, Residential Rural and Other Areas is 20 ng/m³.

C₆H₆: The values of C₆H₆ observed in All Locations are Below Detectable Limit. The Annual average applicable limit for industrial, Residential Rural and Other Areas is 5 µg/m³.

Benzo (a) Pyrene (BaP): The values of BaP observed in All Locations are Below Detectable Limit. The Annual average applicable limit for industrial, Residential Rural and Other Areas is 1 ng/m³.

CO: The value of CO observed in all locations are <1.0 PPM . The 8 hours applicable limit for Industrial, Residential Rural and other areas is 09 PPM.

Noise Monitoring

Inside the Premises:

The spot noise levels observed inside the premises at locations is given in Table-8, Date of Monitoring 16.05.2017 to 17.05.2017.

**TABLE-8
INDUSTRIAL NOISE LEVELS-INSIDE THE PREMISES**

Sr.No	Code	Location	Noise Level L_{eq} [dB(A)]
1.	N1	Power Plant (Turbine area)	58.6
2.	N2	Near Entrance Gate-1	52.3
3.	N3	Near DM Plant 3 rd Floor	50.8

Observations:

The Industrial noise levels within the premises at various equipment are observed to be in the range of 50.8 to 58.6 dB (A).

Outside the premises:

The statistical analysis is done for measured noise levels at four locations in the study area. The parameters are analyzed for L_{day} , L_{night} , and L_{dn} . The statistical analysis results are given in **TABLE-9** Date of Monitoring 23.05.2017 to 26.05.2017.

**TABLE-9
AMBIENT NOISE LEVELS IN THE STUDY AREA**

All the values are given in dB(A)

Sr.No	Code	Location	L_{day}	L_{night}	L_{dn}
1.	N4	Gurha Village	52.8	40.6	50.6
2.	N5	Sankhala ki basti	55.6	42.3	53.8
3.	N6	Reshmadhaniya	51.3	41.0	50.1
4.	N7	Madh	54.2	44.5	54.0

Observations:

a) Day Time Noise Levels (L_{day})

Residential Area

The daytime (L_{day}) noise levels are observed to be in the range of 51.3- 54.2 dB(A) which are within the prescribed limit of 55 dB(A).

b) Night time Noise Levels (L_{night})

Residential Area

The nighttime (L_{night}) Noise levels are observed to be in the range of 40.6 – 44.5 dB(A) Which are within the prescribed limit of 45 dB(A).

Ground Water Quality:

Five Ground water samples inside 10 km radius Mine Area was collected and analyzed. The analytical results are given in TABLE-10 to TABLE-12

TABLE-10
Ground Water Test Results as per IS 10500

Date of Sample Collection: 19.05.2017

Sr.No.	Parameter	Requirement Desirable Limits	Permissible Limits in the Absence of Alternate Source	Units	GW1 Deh Village Bore Water	GW2 Gurha Village Bore Water
1.	PH	6.5 – 8.5	NR	-	7.63	7.40
2.	Turbidity (NTU)	1	5	NTU	1.10	1.15
3.	Total Dissolve solids	500	2000	mg/L	2504	2412
4.	Dissolved Oxygen	-	-	mg/L	--	--
5.	Total Suspended Solids	Nil	Nil	mg/L	Nil	Nil
6.	Total Hardness as CaCO ₃	200	600	mg/L	740	710
7.	Residual Chlorine	0.2	-	mg/L	< 0.02	< 0.02
8.	Chloride as Cl	250	1000	mg/L	480	510
9.	Sulphate as SO ₄	200	400	mg/L	280.4	270.6
10.	Copper as Cu	0.05	1.5	mg/L	0.09	0.08
11.	Iron as Fe	0.3	1.0	mg/L	0.12	0.06
12.	Chromium as Cr ⁶⁺	0.05	NR	mg/L	0.16	0.10
13.	Zinc as Zn	5	15	mg/L	0.08	0.06
14.	Phosphates as PO ₄	-	-	mg/L	0.06	0.08
15.	Chemical oxygen Demand	-	-	mg/L	Nil	Nil
16.	Biochemical Oxygen Demand (3 days 27°C)	-	-	mg/L	<03	<03
17.	Oil & Grease	Nil	Nil	mg/L	< 0.01	< 0.01

Note: NR= No Relaxation.

Monthly Environmental Data Generation Report of 1*135 MW Power Plant May, 2017

VS Lignite Power Private Limited

TABLE-11

Sr. No.	Parameter	Requirement (Desirable Limits)	Permissible Limits in the Absence of Alternate Source	Units	GW3 Madh Village Bore Water	GW4 Sankhalaki basti Bore Water
1.	pH	6.5 – 8.5	NR	-	7.50	7.80
2.	Turbidity (NTU)	1	5	NTU	1.14	1.04
3.	Total Dissolve solids	500	2000	mg/L	2268	2168
4.	Dissolved Oxygen	-	-	mg/L	--	--
5.	Total Suspended Solids	Nil	Nil	mg/L	Nil	Nil
6.	Total Hardness as CaCO ₃	200	600	mg/L	550	490
7.	Residual Chlorine	0.2	-	mg/L	< 0.02	< 0.02
8.	Chloride as Cl	250	1000	mg/L	440	510
9.	Sulphate as SO ₄	200	400	mg/L	258.4	260.2
10.	Copper as Cu	0.05	1.5	mg/L	0.12	0.06
11.	Iron as Fe	0.3	1.0	mg/L	0.04	0.12
12.	Chromium as Cr ⁶⁺	0.05	NR	mg/L	0.06	0.14
13.	Zinc as Zn	5	15	mg/L	0.08	0.06
14.	Phosphates as PO ₄	-	-	mg/L	0.04	0.05
15.	Chemical Oxygen Demand	-	-	mg/L	Nil	Nil
16.	Biochemical Oxygen Demand (3 days 27°C)	-	-	mg/L	<03	<03
17.	Oil & Grease	Nil	Nil	mg/L	< 0.01	< 0.01

TABLE-12

Sr.No.	Parameter	Requirement (Desirable Limits)	Permissible Limits in the Absence of Alternate Source	Units	GW5 Rasemadaniya Bore Water
1.	PH	6.5 – 8.5	NR	-	7.16
2.	Turbidity (NTU)	1	5	NTU	1.10
3.	Total Dissolve solids	500	2000	mg/L	2120
4.	Dissolved Oxygen	-	-	mg/L	--
5.	Total Suspended Solids	Nil	Nil	mg/L	Nil
6.	Total Hardness as CaCO ₃	200	600	mg/L	480
7.	Residual Chlorine	0.2	-	mg/L	< 0.02
8.	Chloride as Cl	250	1000	mg/L	225
9.	Sulphate as SO ₄	200	400	mg/L	252.4
10.	Copper as Cu	0.05	1.5	mg/L	0.09
11.	Iron as Fe	0.3	1.0	mg/L	0.04
12.	Chromium as Cr ⁶⁺	0.05	NR	mg/L	0.08
13.	Zinc as Zn	5	15	mg/L	0.10
14.	Phosphates as PO ₄	-	-	mg/L	0.06
15.	Chemical Oxygen Demand	-	-	mg/L	Nil
16.	Biochemical Oxygen Demand (3 days 27°C)	-	-	mg/L	<03
17.	Oil & Grease	Nil	Nil	mg/L	< 0.01

Note: NR= NO Relaxation.

Surface Water Quality:

Two surface Water samples inside 10 km radius Mine area was collected and analyzed. The analytical results are given in TABLE-13.

TABLE-13
SURFACE WATER

Date of Sample Collection: 19.05.2017

Sr. No	Parameter	Units	IS:2296 Limits	SW1 Chekdadar Talab Water	SW2 Jogera Talab Water	SW3 Power Plant Reservoir water
1.	pH	-	6.5 – 8.5	Chekdadar Talab Was Dry	7.24	7.54
2.	Total Dissolved Solids	mg/L	1500		260	230
3.	Dissolved Oxygen	mg/L	4 min		5.2	5.6
4.	Total Suspended Solids	mg/L	-		10	08
5.	Total Hardness	mg/L	-		80	90
6.	Chloride as Cl	mg/L	600		45	30
7.	Sulphate as SO ₄ ²⁻	mg/L	400		22.4	21.6
8.	Residual Chlorine	mg/L	0.2		< 0.02	< 0.02
9.	Iron as Fe	mg/L	-		< 0.04	< 0.04
10.	Chromium as Cr	mg/L	50		< 0.005	< 0.005
12.	Copper as Cu	mg/L	0.1		< 0.002	< 0.002
12.	Zinc as Zn	mg/L	1.5		< 0.01	< 0.01
13.	Phosphates as PO ₄	mg/L	15		< 0.01	< 0.01
14.	Chemical oxygen Demand	mg/L	-		Nil	Nil
15.	Biochemical Oxygen Demand (3 days at 27°C)	mg/L	3		< 03	< 03
16.	Oil and grease	mg/L	0.1		< 0.1	< 0.1

Waste Water Quality:

Two Waste water samples (ETP/ STP Outlet) streams inside the Plant premises are collected and analyzed for various parameters. The Survey analytical results are given in TABLE-14

TABLE-14
WASTE WATER QUALITY RESULTS

Date of Sample Collection: 19.05.2017

S.No.	Parameter	Units	WW-1 ETP Outlet	WW-2 STP Outlet
1.	PH	-	7.16	7.18
2.	Total Dissolve solids	mg/L	580	750
3.	Dissolved Oxygen	mg/L	5.9	5.8
4.	Total Suspended Solids	mg/L	06	10
5.	Residual Free Chlorine	mg/L	< 0.02	0.20
6.	Chloride as Cl	mg/L	200	180
7.	Sulphate as SO ₄	mg/L	54.3	52.1
8.	Copper as Cu	mg/L	0.08	0.06
9.	Iron as Fe	mg/L	0.06	0.09
10.	Chromium as Cr ⁶⁺	mg/L	0.08	0.10
11.	Zinc as Zn	mg/L	0.04	0.08
12.	Phosphates as PO ₄	mg/L	0.08	0.04
13.	Chemical Oxygen Demand	mg/L	54	80
14.	Biochemical Oxygen Demand (3 days 27°C)	mg/L	16	22
15.	Oil & Grease	mg/L	< 1.0	<1.0

Note: NR= NO Relaxation.

Stack Emission Monitoring

The power plant has a stack of height 100m, which is the major source of air pollution. The stack emission has been carried out and results are given in **Table-15**

TABLE-15
STACK EMISSION MONITORING

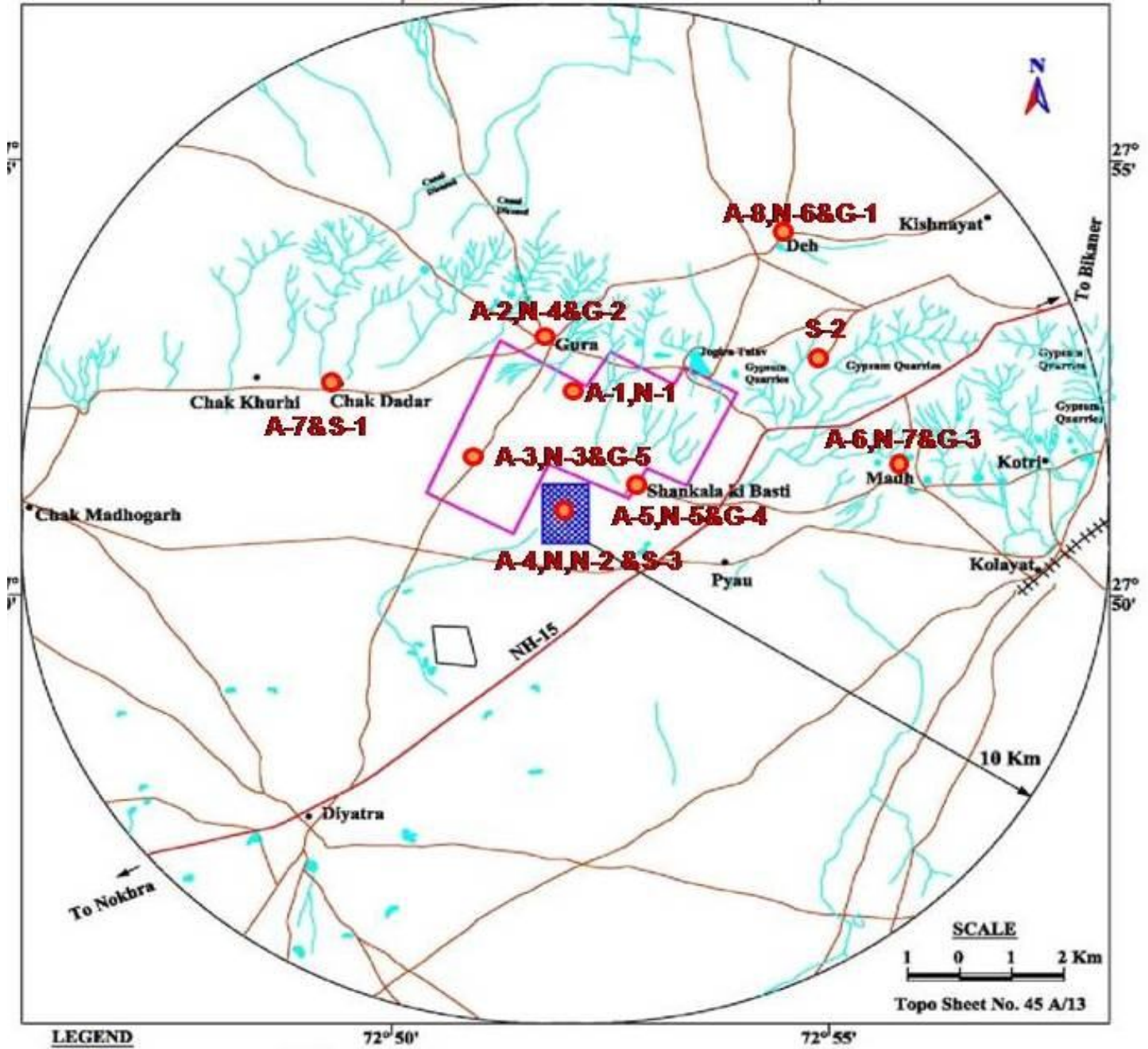
Date of Monitoring:

S.NO	Parameters	Results
1	Diameter of stack (m)	Plant was shut down
2	Cross Sectional Area(m ²)	
3	Flue Gas Temperature °C (Ts)	
4	Velocity(m/s)	
5	Volumetric Flow Rate(m ³ /s)	
6	Particulate Emissions (mg/Nm ³)	

June, 2017

FIGURE-1

STUDY AREA MAP OF 10 KM RADIUS SHOWING SAMPLING LOCATIONS



LEGEND	
	Plant Site
	Mine Lease Area
	River / Nala/Canal
	Railway Line
	Road
	Village

A= Ambient Air Quality Sampling Locations
 N= Ambient Noise Quality Monitoring Locations
 G= Ground Water Quality Sampling Locations
 S= Surface Water Quality Sampling Locations

Monthly Environmental Data Generation Report of 1*135 MW Power Plant **June, 2017**
 VS Lignite Power Private Limited

A] Meteorological Station at Power Plant. N 27° 51' 21.9" E 72° 51' 35.4"

B] Ambient Air Quality Locations:

Location Code	Location Name	Direction W R T Plant	Distance from Plant (KM)
A-1	Mine Lease Area at Camp	N	2.2
A-2	Gurha Village	N	4.5
A-3	Power Plant (Chemical Building)	-	-
A-4	Sankhala ki basti Village	E	1.4
A-5	Madh	NE	6.3
A-6	Chakdadar	NW	4.8
A-7	Deh	NNE	6.8

C] Stack Emission Monitoring Location: 1. Power Plant Boiler Main Stack

D] Ambient Noise Quality Locations:

Location Code	Location Name	Direction W R T Plant	Distance from Plant (KM)
N1	Power Plant (Turbine area)	--	--
N2	Near Entrance Gate-1	--	--
N3	Near DM Plant 3 rd Floor	--	--
N4	Rasemadaniya	NW	2.3
N5	Gurha Village	N	4.5
N6	Sankhala ki basti	S	1.4
N7	Madh	NE	6.3

E] Water Quality Locations:

Location Code	Location Name	Direction W R T Plant	Distance from Plant (KM)
G-1	Deh	NNE	6.8
G-2	Gurha Village	N	1.4
G-3	Madh	NE	6.0
G-4	Sankhala ki basti	E	1.4
G-5	Mine Lease Area at Rasemadaniya	NW	2.3
S-1	Chakdadar Talab Water	W	4.8
S-2	Jogera Talab Water.	NE	5.2
S-3	Power Plant Reservoir water	-	-
WW-1	ETP Outlet Water	-	-
WW-2	STP Outlet Water	-	-

Ambient Air Quality Monitoring

The Ambient Air Quality has been monitored at seven locations covering both inside the Plant premises area and outside the Plant area. The table showing Ambient Air Quality results is present in Table 1 to Table 7 respectively.

DETAILS OF AMBIENT AIR QUALITY

NAME OF PROJECT	: M/s: VS Lignite Power Pvt Ltd
TYPE OF SAMPLE	: AMBIENT AIR QUALITY
LOCATION OF SAMPLING SIT	: Mine Lease Area at Camp-A1
Latitudes and Longitudes	: 27° 52' 31.4" N, 72° 51' 25.9" E
Mean Sea Level in Meters	: 220
DATE OF SAMPLING	: 29.05.2017 to 20.06.2017.

The concentrations (PM₁₀, PM_{2.5}, SO₂, NO₂, O₃, Pb, NH₃ and C₆H₆) are expressed in µg/m³, Concentrations (As, Ni and BaP) are expressed in ng/m³ and CO Concentration is expressed in PPM.

TABLE-1

Sr. No	Date of Sampling	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	O ₃ µg/m ³	NH ₃ µg/m ³	Pb µg/m ³	As ng/m ³	Ni ng/m ³	C ₆ H ₆ µg/m ³	BaP ng/m ³	CO PPM
1.	29.05.2017	66.8	32.4	8.6	20.6	5.5	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
2.	30.05.2017	60.4	30.3	8.0	19.4	5.6	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
3.	05.06.2017	68.3	33.1	8.9	21.0	5.3	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
4.	06.06.2017	71.6	35.9	9.2	21.5	5.4	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
5.	12.06.2017	63.5	31.4	8.0	19.1	5.2	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
6.	13.06.2017	58.4	29.5	7.8	18.6	5.4	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
7.	19.06.2017	67.9	33.2	8.4	20.3	5.3	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
8.	20.06.2017	62.5	30.6	8.1	19.6	5.1	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Arithmetic Mean		64.9	32.1	8.4	20.0	5.4	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Maximum		71.6	35.9	9.2	21.5	5.6	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Minimum		58.4	29.5	7.8	18.6	5.1	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Percentile Values													
50th percentile		65.2	31.9	8.3	20.0	5.4	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
98th percentile		71.1	35.5	9.2	21.4	5.6	BDL	BDL	BDL	BDL	BDL	BDL	<1.0

Monthly Environmental Data Generation Report of 1*135 MW Power Plant **June, 2017**
VS Lignite Power Private Limited

DETAILS OF AMBIENT AIR QUALITY

NAME OF PROJECT	: M/s: VS Lignite Power Pvt Ltd
TYPE OF SAMPLE	: AMBIENT AIR QUALITY
LOCATION OF SAMPLING SITE	: Gurha Village -A2
Latitudes and Longitudes	: 27° 52' 52.9" N, 72° 51' 43.8" E
Mean Sea Level in Metres	: 228
DATE OF SAMPLING	: 29.05.2017 to 20.06.2017.

The concentrations (PM₁₀, PM_{2.5}, SO₂, NO₂, O₃, a, NH₃ and C₆H₆) are expressed in µg/m³, Concentrations (As, Ni and BaP) are expressed in ng/m³ and CO Concentration is expressed in PPM.

TABLE-2

S.No	Date of Sampling	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	O ₃ µg/m ³	NH ₃ µg/m ³	Pb µg/m ³	As ng/m ³	Ni ng/m ³	C ₆ H ₆ µg/m ³	BaP ng/m ³	CO PPM
1.	29.05.2017	56.3	27.4	7.5	18.1	5.3	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
2.	30.05.2017	60.8	29.3	8.0	19.5	5.5	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
3.	05.06.2017	54.6	26.9	7.1	17.6	5.2	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
4.	06.06.2017	62.5	30.2	8.3	18.4	5.6	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
5.	12.06.2017	57.4	28.4	7.5	17.9	5.3	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
6.	13.06.2017	53.2	25.8	7.3	17.5	5.1	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
7.	19.06.2017	60.1	29.6	8.1	18.6	5.4	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
8.	20.06.2017	64.6	31.7	8.4	19.0	5.2	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Arithmetic Mean		58.7	28.7	7.8	18.3	5.3	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Maximum		64.6	31.7	8.4	19.5	5.6	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Minimum		53.2	25.8	7.1	17.5	5.1	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Percentile Values													
50th percentile		58.8	28.9	7.8	18.3	5.3	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
98th percentile		64.3	31.5	8.4	19.4	5.6	BDL	BDL	BDL	BDL	BDL	BDL	<1.0

Monthly Environmental Data Generation Report of 1*135 MW Power Plant **June, 2017**
 VS Lignite Power Private Limited

DETAILS OF AMBIENT AIR QUALITY

NAME OF PROJECT	: M/s: VS Lignite Power Pvt Ltd
TYPE OF SAMPLE	: AMBIENT AIR QUALITY
LOCATION OF SAMPLING SITE	: Power Plant (Admin Building) -A3
Latitudes and Longitudes	: 27° 51' 21.9" N, 72° 51' 35.4" E
Mean Sea Level in Meters	: 226
DATE OF SAMPLING	: 29.05.2017 to 20.06.2017.
The concentrations (PM ₁₀ , PM _{2.5} , SO ₂ , NO ₂ , O ₃ , Pb, NH ₃ and C ₆ H ₆) are expressed in µg/m ³ , Concentrations (As, Ni and BaP) are expressed in ng/m ³ and CO Concentration is expressed in PPM.	

TABLE-3

S.No	Date of Sampling	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	O ₃ µg/m ³	NH ₃ µg/m ³	Pb µg/m ³	As ng/m ³	Ni ng/m ³	C ₆ H ₆ µg/m ³	BaP ng/m ³	CO PPM
1.	29.05.2017	65.6	32.4	10.4	23.8	5.8	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
2.	30.05.2017	74.2	36.5	12.2	25.2	6.0	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
3.	05.06.2017	62.4	30.2	10.1	23.4	5.4	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
4.	06.06.2017	70.7	35.6	11.8	24.0	5.9	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
5.	12.06.2017	65.8	31.4	10.5	23.5	5.8	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
6.	13.06.2017	68.6	33.5	11.4	23.1	5.4	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
7.	19.06.2017	73.2	36.8	12.6	25.4	6.0	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
8.	20.06.2017	60.5	29.5	11.0	24.2	5.7	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Arithmetic Mean		67.6	33.2	11.3	24.1	5.8	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Maximum		74.2	36.8	12.6	25.4	6.0	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Minimum		60.5	29.5	10.1	23.1	5.4	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Percentile Values													
50th percentile		67.2	33.0	11.2	23.9	5.8	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
98th percentile		74.1	36.8	12.5	25.4	6.0	BDL	BDL	BDL	BDL	BDL	BDL	<1.0

Monthly Environmental Data Generation Report of 1*135 MW Power Plant **June, 2017**
VS Lignite Power Private Limited

DETAILS OF AMBIENT AIR QUALITY

NAME OF PROJECT	: M/s: <i>VS Lignite Power Pvt Ltd</i>
TYPE OF SAMPLE	: AMBIENT AIR QUALITY
LOCATION OF SAMPLING SITE	: Sankhala Ki basti Village -A4
Latitudes and Longitudes	: 27°51'21.2" N, 72°52'35.4" E
Mean Sea Level in Meters	: 215
DATE OF SAMPLING	: 01.06.2017 to 23.06.2017.

The concentrations (PM₁₀, PM_{2.5}, SO₂, NO₂, O₃, Pb, NH₃ and C₆H₆) are expressed in µg/m³, Concentrations (As, Ni and BaP) are expressed in ng/m³ and CO Concentration is expressed in PPM.

TABLE-4

S.No	Date of Sampling	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	O ₃ µg/m ³	NH ₃ µg/m ³	Pb µg/m ³	As ng/m ³	Ni ng/m ³	C ₆ H ₆ µg/m ³	BaP ng/m ³	CO PPM
1.	01.06.2017	55.2	27.2	6.8	19.0	5.5	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
2.	02.06.2017	53.1	25.6	6.2	18.5	5.4	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
3.	08.06.2017	59.7	28.4	6.5	19.3	5.6	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
4.	09.06.2017	64.5	31.5	7.4	19.8	5.2	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
5.	15.06.2017	69.3	34.2	7.8	20.3	5.7	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
6.	16.06.2017	60.4	29.7	6.4	19.1	5.3	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
7.	22.06.2017	56.5	28.0	6.2	18.5	5.1	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
8.	23.06.2017	63.8	31.6	7.5	19.4	5.5	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Arithmetic Mean		60.3	29.5	6.9	19.2	5.4	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Maximum		69.3	34.2	7.8	20.3	5.7	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Minimum		53.1	25.6	6.2	18.5	5.1	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Percentile Values													
50th percentile		60.1	29.1	6.7	19.2	5.5	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
98th percentile		68.6	33.8	7.8	20.2	5.7	BDL	BDL	BDL	BDL	BDL	BDL	<1.0

Monthly Environmental Data Generation Report of 1*135 MW Power Plant **June, 2017**
VS Lignite Power Private Limited

DETAILS OF AMBIENT AIR QUALITY

NAME OF PROJECT	: M/s: <i>VS Lignite Power Pvt Ltd</i>
TYPE OF SAMPLE	: AMBIENT AIR QUALITY
LOCATION OF SAMPLING SITE	: Madh Village –A5
Latitudes and Longitudes	: 27° 51'07.3" N, 72° 55'53.0" E
Mean Sea Level in Meters	: 227
DATE OF SAMPLING	: 01.06.2017 to 23.06.2017.

The concentrations (PM₁₀, PM_{2.5}, SO₂, NO₂, O₃, Pb, NH₃ and C₆H₆) are expressed in µg/m³, Concentrations (As, Ni and BaP) are expressed in ng/m³ and CO Concentration is expressed in PPM.

TABLE-5

S.No	Date of Sampling	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	O ₃ µg/m ³	NH ₃ µg/m ³	Pb µg/m ³	As ng/m ³	Ni ng/m ³	C ₆ H ₆ µg/m ³	BaP ng/m ³	CO PPM
1.	01.06.2017	52.6	25.1	7.0	18.3	5.3	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
2.	02.06.2017	55.4	26.9	7.6	19.6	5.5	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
3.	08.06.2017	50.3	24.3	7.2	18.1	5.2	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
4.	09.06.2017	58.6	27.5	8.0	20.3	5.6	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
5.	15.06.2017	54.4	26.9	7.5	19.5	5.2	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
6.	16.06.2017	51.7	25.1	6.9	18.6	5.1	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
7.	22.06.2017	62.4	30.3	8.3	20.9	5.5	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
8.	23.06.2017	57.5	27.5	7.6	20.1	5.2	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Arithmetic Mean		55.4	26.7	7.5	19.4	5.3	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Maximum		62.4	30.3	8.3	20.9	5.6	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Minimum		50.3	24.3	6.9	18.1	5.1	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Percentile Values													
50th percentile		54.9	26.9	7.6	19.6	5.3	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
98th percentile		61.9	29.9	8.3	20.8	5.6	BDL	BDL	BDL	BDL	BDL	BDL	<1.0

Monthly Environmental Data Generation Report of 1*135 MW Power Plant **June, 2017**
 VS Lignite Power Private Limited

DETAILS OF AMBIENT AIR QUALITY

NAME OF PROJECT	: M/s: <i>VS Lignite Power Pvt Ltd</i>
TYPE OF SAMPLE	: AMBIENT AIR QUALITY
LOCATION OF SAMPLING SITE	: Chakdadar Village-A6
Latitudes and Longitudes	: 27° 52' 18.3" N, 72° 48' 19.9" E
Mean Sea Level in Meters	: 207
DATE OF SAMPLING	: 01.06.2017 to 23.06.2017.
The concentrations (PM ₁₀ , PM _{2.5} , SO ₂ , NO ₂ , O ₃ , Pb, NH ₃ and C ₆ H ₆) are expressed in µg/m ³ , Concentrations (As, Ni and BaP) are expressed in ng/m ³ and CO Concentration is expressed in PPM.	

TABLE-6

S.No	Date of Sampling	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	O ₃ µg/m ³	NH ₃ µg/m ³	Pb µg/m ³	As ng/m ³	Ni ng/m ³	C ₆ H ₆ µg/m ³	BaP ng/m ³	CO PPM
1.	01.06.2017	50.3	24.3	5.2	15.3	5.1	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
2.	02.06.2017	48.6	23.6	4.9	15.0	5.0	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
3.	08.06.2017	52.7	25.9	5.1	15.8	5.2	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
4.	09.06.2017	43.5	22.4	4.8	14.8	<5.0	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
5.	15.06.2017	48.1	24.0	5.0	15.6	5.2	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
6.	16.06.2017	49.3	25.3	5.2	16.1	5.0	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
7.	22.06.2017	52.8	26.4	5.3	15.5	5.1	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
8.	23.06.2017	45.6	22.9	5.1	15.0	<5.0	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Arithmetic Mean		48.9	24.4	5.1	15.4	5.1	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Maximum		52.8	26.4	5.3	16.1	5.2	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Minimum		43.5	22.4	4.8	14.8	<5.0	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Percentile Values													
50th percentile		49.0	24.2	5.1	15.4	5.1	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
98th percentile		52.8	26.3	5.3	16.1	5.2	BDL	BDL	BDL	BDL	BDL	BDL	<1.0

Monthly Environmental Data Generation Report of 1*135 MW Power Plant **June, 2017**
 VS Lignite Power Private Limited

DETAILS OF AMBIENT AIR QUALITY

NAME OF PROJECT	: M/s: VS Lignite Power Pvt Ltd
TYPE OF SAMPLE	: AMBIENT AIR QUALITY
LOCATION OF SAMPLING SITE	: Deh Village - A7
Latitudes and Longitudes	: 27° 54' 11.6" N, 72° 54' 32.6" E
Mean Sea Level in Metres	: 270
DATE OF SAMPLING	: 01.06.2017 to 23.06.2017.
The concentrations (PM ₁₀ , PM _{2.5} , SO ₂ , NO ₂ , O ₃ , Pb, NH ₃ and C ₆ H ₆) are expressed in µg/m ³ , Concentrations (As, Ni and BaP) are expressed in ng/m ³ and CO Concentration is expressed in PPM.	

TABLE-7

S.No	Date of Sampling	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	O ₃ µg/m ³	NH ₃ µg/m ³	Pb µg/m ³	As ng/m ³	Ni ng/m ³	C ₆ H ₆ µg/m ³	BaP ng/m ³	CO PPM
1.	01.06.2017	62.3	30.6	8.0	19.5	5.4	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
2.	02.06.2017	65.4	32.1	8.9	20.1	5.3	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
3.	08.06.2017	57.6	28.4	7.6	18.6	5.5	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
4.	09.06.2017	53.5	26.5	7.3	18.2	5.2	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
5.	15.06.2017	64.2	31.7	8.6	20.4	5.1	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
6.	16.06.2017	59.1	29.6	8.1	19.6	5.3	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
7.	22.06.2017	55.2	27.0	7.2	18.3	5.6	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
8.	23.06.2017	61.8	30.2	8.4	19.4	5.4	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Arithmetic Mean		59.9	29.5	8.0	19.3	5.4	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Maximum		65.4	32.1	8.9	20.4	5.6	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Minimum		53.5	26.5	7.2	18.2	5.1	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
Percentile Values													
50th percentile		60.5	29.9	8.1	19.5	5.4	BDL	BDL	BDL	BDL	BDL	BDL	<1.0
98th percentile		65.2	32.0	8.9	20.4	5.6	BDL	BDL	BDL	BDL	BDL	BDL	<1.0

Observations:

PM₁₀: The maximum value for PM₁₀ observed at Power Plant Area 74.2 µg/m³ and minimum value for PM₁₀ Chakdadar Village 43.5 µg/m³. The 24 hours applicable limit for industrial, Residential Rural and Other Areas is 100 µg/m³.

PM 2.5: The maximum value for PM_{2.5} observed at Power Plant Area 36.8 µg/m³ and minimum value for PM_{2.5} at Chakdadar Village 22.4 µg/m³. The 24 hours applicable limit for industrial, Residential Rural and Other Areas is 60 µg/m³.

SO₂: The maximum value for SO₂ observed at Power Plant Area 12.6 µg/m³ and minimum value for SO₂ at Chakdadar Village 4.8 µg/m³. The 24 hours applicable limit for industrial, Residential Rural and Other Areas is 80 µg/m³.

NO₂: The maximum value for NO₂ observed at Power Plant Area 25.4 µg/m³ and minimum value for NO₂ at Chakdadar Village 14.8 µg/m³. The 24 hours applicable limit for industrial, Residential Rural and Other Areas is 80 µg/m³.

O₃: The maximum value for O₃ observed at Mine Lease Area at Camp 6.0 µg/m³ and minimum value for O₃ at Chakdadar Village <5.0 µg/m³. The 8 hours applicable limit for industrial, Residential Rural and Other Areas is 100 µg/m³.

NH₃: The value of NH₃ observed in All Locations is Below Detectable Limit. The 24 hours applicable limit for industrial, Residential Rural and Other Areas is 400 µg/m³.

Pb: The values of Pb observed in All Locations are Below Detectable Limit. The 24 hours applicable limit for industrial, Residential Rural and Other Areas is 1.0 µg/m³.

As: The value of AS observed in All Locations are Below Detectable Limit. The Annual average applicable limit for industrial, Residential Rural and Other Areas is 6 ng/m³.

Ni: The values of Ni observed in All Locations are Below Detectable Limit. The Annual average applicable limit for industrial, Residential Rural and Other Areas is 20 ng/m³.

C₆H₆: The values of C₆H₆ observed in All Locations are Below Detectable Limit. The Annual average applicable limit for industrial, Residential Rural and Other Areas is 5 µg/m³.

Benzo (a) Pyrene (BaP): The values of BaP observed in All Locations are Below Detectable Limit. The Annual average applicable limit for industrial, Residential Rural and Other Areas is 1 ng/m³.

CO: The value of CO observed in all locations are <1.0 PPM . The 8 hours applicable limit for Industrial, Residential Rural and other areas is 09 PPM.

Noise Monitoring

Inside the Premises:

The spot noise levels observed inside the premises at locations is given in Table-8, Date of Monitoring 14.06.2017 to 15.06.2017.

**TABLE-8
INDUSTRIAL NOISE LEVELS-INSIDE THE PREMISES**

Sr.No	Code	Location	Noise Level L_{eq} [dB(A)]
1.	N1	Power Plant (Turbine area)	56.5
2.	N2	Near Entrance Gate-1	50.4
3.	N3	Near DM Plant 3 rd Floor	52.6

Observations:

The Industrial noise levels within the premises at various equipment are observed to be in the range of 50.4 to 56.5 dB (A).

Outside the premises:

The statistical analysis is done for measured noise levels at four locations in the study area. The parameters are analyzed for L_{day} , L_{night} , and L_{dn} . The statistical analysis results are given in **TABLE-9** Date of Monitoring 20.06.2017 to 24.06.2017.

**TABLE-9
AMBIENT NOISE LEVELS IN THE STUDY AREA**

All the values are given in dB(A)

Sr.No	Code	Location	L_{day}	L_{night}	L_{dn}
1.	N4	Gurha Village	50.6	39.5	48.5
2.	N5	Sankhala ki basti	52.5	41.7	51.4
3.	N6	Reshmadhaniya	49.6	40.4	50.6
4.	N7	Madh	53.7	42.1	52.4

Observations:

a) Day Time Noise Levels (L_{day})

Residential Area

The daytime (L_{day}) noise levels are observed to be in the range of 49.6- 53.7 dB(A) which are within the prescribed limit of 55 dB(A).

b) Night time Noise Levels (L_{night})

Residential Area

The nighttime (L_{night}) Noise levels are observed to be in the range of 39.5 – 42.1 dB(A) Which are within the prescribed limit of 45 dB(A).

Monthly Environmental Data Generation Report of 1*135 MW Power Plant June, 2017
VS Lignite Power Private Limited

Ground Water Quality:

Five Ground water samples inside 10 km radius Mine Area was collected and analyzed. The analytical results are given in TABLE-10 to TABLE-12

TABLE-10
Ground Water Test Results as per IS 10500

Date of Sample Collection: 14.07.2017

Sr.No.	Parameter	Requirement Desirable Limits	Permissible Limits in the Absence of Alternate Source	Units	GW1 Deh Village Bore Water	GW2 Gurha Village Bore Water
1.	PH	6.5 – 8.5	NR	-	7.12	7.05
2.	Turbidity (NTU)	1	5	NTU	1.20	1.10
3.	Total Dissolve solids	500	2000	mg/L	2632	2262
4.	Dissolved Oxygen	-	-	mg/L	--	--
5.	Total Suspended Solids	Nil	Nil	mg/L	Nil	Nil
6.	Total Hardness as CaCO ₃	200	600	mg/L	780	740
7.	Residual Chlorine	0.2	-	mg/L	< 0.02	< 0.02
8.	Chloride as Cl	250	1000	mg/L	500	430
9.	Sulphate as SO ₄	200	400	mg/L	282.6	261.2
10.	Copper as Cu	0.05	1.5	mg/L	0.06	0.04
11.	Iron as Fe	0.3	1.0	mg/L	0.08	0.06
12.	Chromium as Cr ⁶⁺	0.05	NR	mg/L	0.10	0.08
13.	Zinc as Zn	5	15	mg/L	0.08	0.04
14.	Phosphates as PO ₄	-	-	mg/L	0.10	0.06
15.	Chemical oxygen Demand	-	-	mg/L	Nil	Nil
16.	Biochemical Oxygen Demand (3 days 27°C)	-	-	mg/L	<03	<03
17.	Oil & Grease	Nil	Nil	mg/L	< 0.01	< 0.01

Note: NR= No Relaxation.

Monthly Environmental Data Generation Report of 1*135 MW Power Plant **June, 2017**

VS Lignite Power Private Limited

TABLE-11

Date of Sample Collection: 14.07.2017

Sr.No.	Parameter	Requirement (Desirable Limits)	Permissible Limits in the Absence of Alternate Source	Units	GW3 Madh Village Bore Water	GW4 Sankhalaki basti Bore Water
1.	pH	6.5 – 8.5	NR	-	7.10	7.19
2.	Turbidity (NTU)	1	5	NTU	1.00	1.12
3.	Total Dissolve solids	500	2000	mg/L	2360	2294
4.	Dissolved Oxygen	-	-	mg/L	--	--
5.	Total Suspended Solids	Nil	Nil	mg/L	Nil	Nil
6.	Total Hardness as CaCO ₃	200	600	mg/L	590	454
7.	Residual Chlorine	0.2	-	mg/L	< 0.02	< 0.02
8.	Chloride as Cl	250	1000	mg/L	480	530
9.	Sulphate as SO ₄	200	400	mg/L	258.4	242.6
10.	Copper as Cu	0.05	1.5	mg/L	0.12	0.08
11.	Iron as Fe	0.3	1.0	mg/L	0.06	0.10
12.	Chromium as Cr ⁶⁺	0.05	NR	mg/L	0.08	0.12
13.	Zinc as Zn	5	15	mg/L	0.06	0.08
14.	Phosphates as PO ₄	-	-	mg/L	0.08	0.06
15.	Chemical Oxygen Demand	-	-	mg/L	Nil	Nil
16.	Biochemical Oxygen Demand (3 days 27°C)	-	-	mg/L	<03	<03
17.	Oil & Grease	Nil	Nil	mg/L	< 0.01	< 0.01

TABLE-12

Sr.No.	Parameter	Requirement (Desirable Limits)	Permissible Limits in the Absence of Alternate Source	Units	GW5 Rasamadaniya Bore Water
1.	PH	6.5 – 8.5	NR	-	7.52
2.	Turbidity (NTU)	1	5	NTU	1.16
3.	Total Dissolve solids	500	2000	mg/L	2265
4.	Dissolved Oxygen	-	-	mg/L	--
5.	Total Suspended Solids	Nil	Nil	mg/L	Nil
6.	Total Hardness as CaCO ₃	200	600	mg/L	440
7.	Residual Chlorine	0.2	-	mg/L	< 0.02
8.	Chloride as Cl	250	1000	mg/L	200
9.	Sulphate as SO ₄	200	400	mg/L	213.6
10.	Copper as Cu	0.05	1.5	mg/L	0.12
11.	Iron as Fe	0.3	1.0	mg/L	0.06
12.	Chromium as Cr ⁶⁺	0.05	NR	mg/L	0.10
13.	Zinc as Zn	5	15	mg/L	0.12
14.	Phosphates as PO ₄	-	-	mg/L	0.08
15.	Chemical Oxygen Demand	-	-	mg/L	Nil
16.	Biochemical Oxygen Demand (3 days 27°C)	-	-	mg/L	<03
17.	Oil & Grease	Nil	Nil	mg/L	< 0.01

Note: NR= NO Relaxation.

Surface Water Quality:

Two surface Water samples inside 10 km radius Mine area was collected and analyzed. The analytical results are given in TABLE-13.

TABLE-13
SURFACE WATER

Date of Sample Collection: 14.07.2017

Sr.No	Parameter	Units	IS:2296 Limits	SW1 Chekdadar Talab Water	SW2 Jogera Talab Water	SW3 Power Plant Reservoir water
1.	pH	-	6.5 – 8.5	Chekdadar Talab Was Dry	7.90	7.54
2.	Total Dissolved Solids	mg/L	1500		296	252
3.	Dissolved Oxygen	mg/L	4 min		5.4	5.8
4.	Total Suspended Solids	mg/L	-		05	10
5.	Total Hardness	mg/L	-		60	80
6.	Chloride as Cl	mg/L	600		50	35
7.	Sulphate as SO ₄ ²⁻	mg/L	400		20.6	18.3
8.	Residual Chlorine	mg/L	0.2		< 0.02	< 0.02
9.	Iron as Fe	mg/L	-		< 0.04	< 0.04
10.	Chromium as Cr	mg/L	50		< 0.005	< 0.005
12.	Copper as Cu	mg/L	0.1		< 0.002	< 0.002
12.	Zinc as Zn	mg/L	1.5		< 0.01	< 0.01
13.	Phosphates as PO ₄	mg/L	15		< 0.01	< 0.01
14.	Chemical oxygen Demand	mg/L	-		Nil	Nil
15.	Biochemical Oxygen Demand (3 days at 27°C)	mg/L	3		< 03	< 03
16.	Oil and grease	mg/L	0.1		< 0.1	< 0.1

Waste Water Quality:

Two Waste water samples (ETP/ STP Outlet) streams inside the Plant premises are collected and analyzed for various parameters. The Survey analytical results are given in TABLE-14

TABLE-14
WASTE WATER QUALITY RESULTS

Date of Sample Collection: 14.07.2017

S.No.	Parameter	Units	WW-1 ETP Outlet	WW-2 STP Outlet
1.	PH	-	7.50	7.42
2.	Total Dissolve solids	mg/L	612	730
3.	Dissolved Oxygen	mg/L	5.5	5.9
4.	Total Suspended Solids	mg/L	10	14
5.	Residual Free Chlorine	mg/L	< 0.02	0.32
6.	Chloride as Cl	mg/L	160	135
7.	Sulphate as SO ₄	mg/L	50.5	43.8
8.	Copper as Cu	mg/L	0.08	0.06
9.	Iron as Fe	mg/L	0.12	0.10
10.	Chromium as Cr ⁶⁺	mg/L	0.08	0.07
11.	Zinc as Zn	mg/L	0.06	0.04
12.	Phosphates as PO ₄	mg/L	0.06	0.05
13.	Chemical Oxygen Demand	mg/L	60	70
14.	Biochemical Oxygen Demand (3 days 27°C)	mg/L	20	24
15.	Oil & Grease	mg/L	< 1.0	<1.0

Note: NR= NO Relaxation.

Stack Emission Monitoring

The power plant has a stack of height 100m, which is the major source of air pollution. The stack emission has been carried out and results are given in **Table-15**

TABLE-15
STACK EMISSION MONITORING

Date of Monitoring:

S.NO	Parameters	Results
1	Diameter of stack (m)	Plant was shut down
2	Cross Sectional Area(m ²)	
3	Flue Gas Temperature °C (Ts)	
4	Velocity(m/s)	
5	Volumetric Flow Rate(m ³ /s)	
6	Particulate Emissions (mg/Nm ³)	

Green Belt Development at VS Lignite Power Pvt. Ltd.



Location: Greenbelt on East side of Cooling Tower



Location: Greenbelt Nr. Switchyard with clear chimney at full load



Location: Greenbelt Nr. Conveyor Belts



Location: Greenbelt at South-west area of Plant