

**Six Monthly
Environmental Monitoring Report
Of
M/s. Gujarat Industries Power Company Limited
(Vastan Lignite Opencast Mine)
Village: Vastan, Ta: Mangrol,
Di: Surat 394110
For the Month of July-2017 to December-2017**



Prepared By:

M/s. Greenleaf Envirotech Pvt. Ltd.

304, Kankavati Complex, Singanpore Cauzway Road,
Katargam, Surat.

Methodology for Environment Monitoring:

M/s. Gujarat industries Power Company Limited has awarded the work of monthly environmental monitoring of its Vastan Lignite Mine to Greenleaf Envirotech Pvt. Ltd. Greenleaf team visits the Vastan Lignite mines bimonthly to carry out environmental monitoring.

Greenleaf team follows the following methodology for carrying out methodology for carrying out monitoring of various components.

Water & waste quality monitoring:

Ground and surface water samples are collected at their source point using grab sampling. Surface and ground water sample are collected from core and buffer zones located near the mining area. Preserved samples are brought to Greenleaf laboratory for analysis. For sampling & analysis methods various IS & APHA methods are followed. The samples are analyzed for physic-chemical and bacteriological properties mainly.

Ambient air quality monitoring:

The wind direction and wind speed is monitored first and based on that sampling stations for ambient air quality monitoring are installed. The location are chosen such that at least one station falls in opposite wind direction from all stationary sources. The samples are collected using Respirable dust sampler and fine particulate sampler for 24 hours, preserved and brought to Greenleaf's laboratory for analysis. For sampling & analysis methods IS 5182 & CPCB manual is followed. The main pollutants analysed are PM 10, PM2.5, sulfur dioxide, oxides of nitrogen & carbon monoxide .

Weather Monitoring:

Monitoring station for weather is selected based on Wind direction. The station is so selected that it remains unobstructed from upcoming wind. The micrometeorological data is collected on ambient temperature, humidity, wind speed, and direction on hourly basis for 24 hours. For this monitoring IS 8829 is followed. The equipment used are windwane, anemometer and thermo hygrometer.



Noise level Monitoring:

The main sources of noise are lignite handling and transportation equipments and systems in the mines. All the sources of noise are first identified and noise level is monitored in the immediate vicinity of the source. Then the noise level is monitored at distance of aprx. 10-20 mtr. Away and nearby area where the human presence in continuous. Two sets of data are collected for day time and night time monitoring. The noise level is monitored using digital sound level meter.

Dust fall Monitoring:

The dust fall resulting from mining and handling activities of lignite is monitored at several locations in the core and buffer zones. Large and liquid particles (typically greater than 10 μm in aerodynamic diameter) are collected via gravitational settling in an open mouth container for a period of the month. The container is washed with a known volume of distilled water, which is filtered and then evaporated. The mass of insoluble particles are determined by the weight gain of a crucible after evaporation. Total mass gain is measured gravimetrically. The dust fall is measured using jars as per the standard practice as per IS-5182.



Scope of work
(Vastan Lignite Open cast Mine)

1) Water & Waste water quality monitoring:

Sr.No.	Location	No.	Frequency	Parameter
1	8 nos. Bore well water sample located both in core & buffer zones	9	Bimonthly	Physico-Chemical, Heavy Metals, Biological & Microbiological parameter

2) Ambient Air Monitoring:

Sr.No.	Location	No.	Frequency	Duration	Parameter
1	8 Nos. within the radius of 10 km from the core zone	12	Bimonthly	24 hrs.	PM ₁₀ , PM _{2.5} , SO ₂ , NO _x

3) Dust Fall Measurement:

Sr.No.	Location	No.	Frequency	Duration	Parameter
1	7 No. of location within the radius of 10 km from the core Zone	9	Bimonthly	1 month	Dust fall

4) Weather Monitoring :

Sr.No.	Location	Frequency	Duration	Parameter
1	1 No. at site office of the mine	Bimonthly	24 hrs.	Dry & wet Bulb temperature, Rain fall, Relative humidity, Wind speed, & Direction, Max. & Min. Temp.

5) Noise Monitoring:

Sr.No.	Location	Frequency	No.	Duration	Parameter
1	8 No. at various location in plant premises	Bimonthly	11	2 Min/ Location	Day & Night Noise Level



Work order No: SLPP/Mines/Envt.Monitoring 2017-18/3027 Dated 15. 07. 2017

Monthly Variation in July-2017-December-2017

(Vastan Lignite Stone Mine)

Report period: July-2017-December-2017

Sample: Borewell water (Handpump in Dungri village)

Sr. No.	Test Parameters	Unit	Sampling Date			Limits: Ministry of Environment & forests (MoEF), vide notification No. GSR 742 (E),Dt.25/09/2000 Inland surface water
			August-2017 to September-2017	October-2017 to November-2017	December -2017 to January-2018	
			25/08/2017	25/09/2017	05/12/2017	
RESULTS						
1	Temperature	°C	25.5	25.6	25.6	Shall not exceed 5 °C above the receiving water temp.
2	pH @ 25°C	pH unit	8.04	7.13	6.75	5.5-9.0
3	Colour	Pt Co scale	<5.0	<5.0	<5.0	-
4	Total Suspended Solids (TSS @ 105°C)	mg/L	1.5	6.5	13.1	100
5	Total Dissolved Solids (TDS @ 105°C)	mg/L	509	1860.0	1510.0	2100
6	Total volatile solids	mg/L	BDL	BDL	BDL	--
7	BOD (5 days at 20°C)	mg/L	--	--	--	30
8	COD	mg/L	--	--	--	250
9	Oil & Grease	mg/L	7.0	7.4	7.2	10
10	Chloride	mg/L	49.4	304.0	389.3	1000
11	Sulphate	mg/L	78.6	204.5	289.6	300
12	Phosphate	mg/L	BDL	BDL	0.3	--
13	Phenolic Compound	mg/L	BDL	BDL	BDL	1.0
14	Flouride	mg/L	1.2	1.8	BDL	2.0
15	Total residual chlorine	mg/L	Nil	Nil	Nil	1.0
16	Free available chlorine	mg/L	Nil	Nil	Nil	--
17	Total Hardness	mg/L	376.3	683.1	940.5	--
18	Total Alkalinity	mg/L	330.2	405.0	298.4	--
19	Iron	mg/L	BDL	0.18	2.8	3.0
20	Copper	mg/L	BDL	BDL	BDL	3.0
21	Total Chromium	mg/L	BDL	BDL	BDL	2.0
22	Hexavalent Chromium	mg/L	BDL	BDL	BDL	0.1
23	Zinc	mg/L	BDL	BDL	BDL	5.0
24	Lead	mg/L	BDL	BDL	BDL	0.1
25	Calcium	mg/L	75.4	134.9	182.5	--
26	Magnesium	mg/L	45.7	84.2	117.9	--
27	Percent sodium	%	27.5	33.8	22.1	--
28	Coliform organism (MPN)	CFU/100 ml	Nil	Nil	Nil	--
29	Bioassay test	% survival of fish after 96 hrs in 100% effluent	93	92	92	90 % survival of fish after 96 Hrs. in 100 % effluent

MYB
Chemist

Keta
Authorized Signatory
Keta Jariwala



Note:

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CIN : U74140GJ2010PTC059798

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Work order No: SLPP/Mines/Envt.Monitoring 2017-18/3027 Dated 15.07.2017

Monthly Variation in July-2017-December-2017

(Vastan Lignite Stone Mine)

Report period: July-2017-December-2017

Sample: Borewell water (Near Tadkeshwar village)

Sr. No.	Test Parameters	Unit	Sampling Date			Limits: Ministry of Environment & forests (MoEF), vide notification No. GSR 742 (E), Dt.25/09/2000 Inland surface water
			August-2017 to September-2017	October-2017 to November-2017	December -2017 to January-2018	
			25/08/2017	25/09/2017	05/12/2017	
RESULTS						
1	Temperature	°C	25.1	25.3	25.3	Shall not exceed 5 °C above the receiving water temp.
2	pH @ 25°C	pH unit	7.54	7.58	6.49	5.5-9.0
3	Colour	Pt Co scale	<5.0	<5.0	<5.0	-
4	Total Suspended Solids (TSS @ 105°C)	mg/L	5.6	3.7	6.0	100
5	Total Dissolved Solids (TDS @ 105°C)	mg/L	2019.7	1580.0	1140.0	2100
6	Total volatile solids	mg/L	BDL	BDL	BDL	--
7	BOD (5 days at 20°C)	mg/L	--	--	--	30
8	COD	mg/L	--	--	--	250
9	Oil & Grease	mg/L	8.0	7.4	3.5	10
10	Chloride	mg/L	946.4	308.8	335.1	1000
11	Sulphate	mg/L	237.1	174.4	168.2	300
12	Phosphate	mg/L	BDL	BDL	0.3	--
13	Phenolic Compound	mg/L	BDL	BDL	BDL	1.0
14	Flouride	mg/L	1.5	1.5	0.6	2.0
15	Total residual chlorine	mg/L	Nil	Nil	Nil	1.0
16	Free available chlorine	mg/L	Nil	Nil	Nil	--
17	Total Hardness	mg/L	784.0	342.7	524.7	--
18	Total Alkalinity	mg/L	553.8	420.0	314.7	--
19	Iron	mg/L	0.28	BDL	BDL	3.0
20	Copper	mg/L	BDL	BDL	BDL	3.0
21	Total Chromium	mg/L	BDL	BDL	BDL	2.0
22	Hexavalent Chromium	mg/L	BDL	BDL	BDL	0.1
23	Zinc	mg/L	BDL	BDL	BDL	5.0
24	Lead	mg/L	BDL	BDL	BDL	0.1
25	Calcium	mg/L	149.3	130.9	95.2	--
26	Magnesium	mg/L	100.1	48.1	69.8	--
27	Percent sodium	%	83.68	32.9	30.5	--
28	Coliform organism (MPN)	CFU/100 ml	Nil	Nil	Nil	--
29	Bioassay test	% survival of fish after 96 hrs in 100% effluent	94	94	92	90 % survival of fish after 96 Hrs. in 100 % effluent

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Monthly Variation in July-2017-December-2017

(Vastan Lignite Stone Mine)

Report period: July-2017-December-2017

Sample: Borewell water (Hand Pump in Surali village)

Sr. No.	Test Parameters	Unit	Sampling Date			Limits: Ministry of Environment & forests (MoEF), vide notification No. GSR 742 (E), Dt.25/09/2000 Inland surface water
			August-2017 to September-2017	October-2017 to November-2017	December -2017 to January-2018	
			25/08/2017	25/09/2017	05/12/2017	
RESULTS						
1	Temperature	°C	25.0	25.3	25.3	Shall not exceed 5 °C above the receiving water temp.
2	pH @ 25°C	pH unit	7.89	7.15	6.95	5.5-9.0
3	Colour	Pt Co scale	15.0	10.0	<5.0	-
4	Total Suspended Solids (TSS @ 105°C)	mg/L	32.0	15.1	30.9	100
5	Total Dissolved Solids (TDS @ 105°C)	mg/L	1610.0	1730.0	1580.0	2100
6	Total volatile solids	mg/L	BDL	BDL	BDL	--
7	BOD (5 days at 20°C)	mg/L	--	--	--	30
8	COD	mg/L	--	--	--	250
9	Oil & Grease	mg/L	9.0	8.4	5.6	10
10	Chloride	mg/L	492.9	422.8	517.3	1000
11	Sulphate	mg/L	224.3	199.4	137.9	300
12	Phosphate	mg/L	BDL	BDL	4.5	--
13	Phenolic Compound	mg/L	BDL	BDL	BDL	1.0
14	Flouride	mg/L	1.39	1.9	0.4	2.0
15	Total residual chlorine	mg/L	Nil	Nil	Nil	1.0
16	Free available chlorine	mg/L	Nil	Nil	Nil	--
17	Total Hardness	mg/L	258.7	683.1	465.3	--
18	Total Alkalinity	mg/L	460.9	99.2	374.3	--
19	Iron	mg/L	BDL	2.7	2.6	3.0
20	Copper	mg/L	BDL	BDL	BDL	3.0
21	Total Chromium	mg/L	BDL	BDL	BDL	2.0
22	Hexavalent Chromium	mg/L	BDL	BDL	BDL	0.1
23	Zinc	mg/L	BDL	BDL	BDL	5.0
24	Lead	mg/L	BDL	BDL	BDL	0.1
25	Calcium	mg/L	24.53	99.2	39.7	--
26	Magnesium	mg/L	48.58	105.9	89.0	--
27	Percent sodium	%	76.79	41.5	47.9	--
28	Coliform organism (MPN)	CFU/100 ml	Nil	Nil	Nil	--
29	Bioassay test	% survival of fish after 96 hrs in 100% effluent	92	94	93	90 % survival of fish after 96 Hrs. in 100 % effluent

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Monthly Variation in July-2017-December-2017

(Vastan Lignite Stone Mine)

Report period: July2017-December-2017

Sample: Borewell water (Mosali Char Rasta)

Sr. No.	Test Parameters	Unit	Sampling Date			Limits: Ministry of Environment & forests (MoEF), vide notification No. GSR 742 (E),Dt.25/09/2000 Inland surface water
			August-2017 to September-2017	October-2017 to November-2017	December -2017 to January-2018	
			25/08/2017	25/09/2017	05/12/2017	
RESULTS						
1	Temperature	°C	25.1	25.4	25.2	Shall not exceed 5 °C above the receiving water temp.
2	pH @ 25°C	pH unit	7.94	7.56	6.80	5.5-9.0
3	Colour	Pt Co scale	<5.0	<5.0	<5.0	-
4	Total Suspended Solids (TSS @ 105°C)	mg/L	8.9	4.3	9.7	100
5	Total Dissolved Solids (TDS @ 105°C)	mg/L	1869.3	2090.0	1340.0	2100
6	Total volatile solids	mg/L	BDL	BDL	BDL	--
7	BOD (5 days at 20°C)	mg/L	--	--	--	30
8	COD	mg/L	--	--	--	250
9	Oil & Grease	mg/L	7.0	8.2	6.5	10
10	Chloride	mg/L	943.8	912.0	379.4	1000
11	Sulphate	mg/L	152.8	131.8	268.0	300
12	Phosphate	mg/L	BDL	BDL	0.08	--
13	Phenolic Compound	mg/L	BDL	BDL	BDL	1.0
14	Flouride	mg/L	1.4	1.6	BDL	2.0
15	Total residual chlorine	mg/L	Nil	Nil	Nil	1.0
16	Free available chlorine	mg/L	Nil	Nil	Nil	--
17	Total Hardness	mg/L	278.3	782.1	970.2	--
18	Total Alkalinity	mg/L	454.1	214.3	227.9	--
19	Iron	mg/L	0.13	BDL	0.13	3.0
20	Copper	mg/L	BDL	BDL	BDL	3.0
21	Total Chromium	mg/L	BDL	BDL	BDL	2.0
22	Hexavalent Chromium	mg/L	BDL	BDL	BDL	0.1
23	Zinc	mg/L	BDL	BDL	BDL	5.0
24	Lead	mg/L	BDL	BDL	BDL	0.1
25	Calcium	mg/L	45.6	214.3	214.3	--
26	Magnesium	mg/L	40.0	60.1	165.9	--
27	Percent sodium	%	88.1	68.6	10.5	--
28	Coliform organism (MPN)	CFU/100 ml	Nil	Nil	Nil	--
29	Bioassay test	% survival of fish after 96 hrs in 100% effluent	92	94	93	90 % survival of fish after 96 Hrs. in100 % effluent


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(Vastan Lignite Stone Mine)

Report period: July-2017-December-2017

Sample: Borewell water (Nani Naroli Village)

Sr. No.	Test Parameters	Unit	Sampling Date			Limits: Ministry of Environment & forests (MoEF), vide notification No. GSR 742 (E), Dt.25/09/2000 Inland surface water
			August-2017 to September-2017	October-2017 to November-2017	December -2017 to January-2018	
			25/08/2017	25/09/2017	05/12/2017	
RESULTS						
1	Temperature	°C	25.5	25.2	25.3	Shall not exceed 5 °C above the receiving water temp.
2	pH @ 25°C	pH unit	7.83	7.62	6.53	5.5-9.0
3	Colour	Pt Co scale	<5.0	<5.0	<5.0	-
4	Total Suspended Solids (TSS @ 105°C)	mg/L	5.5	1.8	1.5	100
5	Total Dissolved Solids (TDS @ 105°C)	mg/L	1232.0	572.0	473.0	2100
6	Total volatile solids	mg/L	BDL	BDL	BDL	--
7	BOD (5 days at 20°C)	mg/L	--	--	--	30
8	COD	mg/L	--	--	--	250
9	Oil & Grease	mg/L	5.0	6.9	5.0	10
10	Chloride	mg/L	232.76	95.0	31.5	1000
11	Sulphate	mg/L	243.4	46.5	44.6	300
12	Phosphate	mg/L	BDL	0.6	1.2	--
13	Phenolic Compound	mg/L	BDL	BDL	BDL	1.0
14	Flouride	mg/L	1.5	1.5	BDL	2.0
15	Total residual chlorine	mg/L	Nil	Nil	Nil	1.0
16	Free available chlorine	mg/L	Nil	Nil	Nil	--
17	Total Hardness	mg/L	568.4	356.4	346.5	--
18	Total Alkalinity	mg/L	350.8	325.0	276.7	--
19	Iron	mg/L	BDL	2.9	BDL	3.0
20	Copper	mg/L	BDL	BDL	BDL	3.0
21	Total Chromium	mg/L	BDL	BDL	BDL	2.0
22	Hexavalent Chromium	mg/L	BDL	BDL	BDL	0.1
23	Zinc	mg/L	BDL	BDL	BDL	5.0
24	Lead	mg/L	BDL	BDL	BDL	0.1
25	Calcium	mg/L	108.4	84.1	63.5	--
26	Magnesium	mg/L	72.3	35.6	45.7	--
27	Percent sodium	%	40.8	28.8	10.3	--
28	Coliform organism (MPN)	CFU/100 ml	Nil	Nil	Nil	--
29	Bioassay test	% survival of fish after 96 hrs in 100% effluent	94	93	92	90 % survival of fish after 96 Hrs. in 100 % effluent


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(Vastan Lignite Stone Mine)

Report period: July-2017-December-2017

Sample: Surface water (Vastan Village- Natural Pond)

Sr. No.	Test Parameters	Unit	Sampling Date			Limits: Ministry of Environment & forests (MoEF), vide notification No. GSR 742 (E), Dt.25/09/2000 Inland surface water
			August-2017 to September-2017	October-2017 to November-2017	December -2017 to January-2018	
			25/08/2017	25/09/2017	05/12/2017	
RESULTS						
1	Temperature	°C	25.2	25.4	25.4	Shall not exceed 5 °C above the receiving water temp.
2	pH @ 25°C	pH unit	7.77	7.71	6.90	5.5-9.0
3	Colour	Pt Co scale	<5.0	<5.0	<5.0	-
4	Total Suspended Solids (TSS @ 105°C)	mg/L	4.4	2.5	5.6	100
5	Total Dissolved Solids (TDS @ 105°C)	mg/L	142.2	213.0	230.0	2100
6	Total volatile solids	mg/L	BDL	BDL	BDL	--
7	BOD (5 days at 20°C)	mg/L	--	--	--	30
8	COD	mg/L	--	--	--	250
9	Oil & Grease	mg/L	5.0	9.7	1.7	10
10	Chloride	mg/L	15.31	17.1	15.8	1000
11	Sulphate	mg/L	24.5	35.12	42.8	300
12	Phosphate	mg/L	1.85	BDL	4.2	--
13	Phenolic Compound	mg/L	BDL	BDL	BDL	1.0
14	Flouride	mg/L	0.88	1.51	0.9	2.0
15	Total residual chlorine	mg/L	Nil	Nil	Nil	1.0
16	Free available chlorine	mg/L	Nil	Nil	Nil	--
17	Total Hardness	mg/L	121.5	158.4	198.0	--
18	Total Alkalinity	mg/L	141.1	120.0	135.6	--
19	Iron	mg/L	1.65	BDL	0.2	3.0
20	Copper	mg/L	BDL	BDL	BDL	3.0
21	Total Chromium	mg/L	BDL	BDL	BDL	2.0
22	Hexavalent Chromium	mg/L	BDL	BDL	BDL	0.1
23	Zinc	mg/L	BDL	BDL	BDL	5.0
24	Lead	mg/L	BDL	BDL	BDL	0.1
25	Calcium	mg/L	31.42	46.0	19.2	--
26	Magnesium	mg/L	10.48	10.6	36.1	--
27	Percent sodium	%	35.5	20.5	0.04	--
28	Coliform organism (MPN)	CFU/100 ml	Nil	Nil	Nil	--
29	Bioassay test	% survival of fish after 96 hrs in 100% effluent	94	92	93	90 % survival of fish after 96 Hrs. in 100 % effluent

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Work order No: SLPP/Mines/Envt.Monitoring 2017-18/3027 Dated 15.07.2017

Monthly Variation in July-2017-December-2017

(Vastan Lignite Stone Mine)

Report period: July2017-December-2017

Sample: Borewell water (Vastan Village)

Sr. No.	Test Parameters	Unit	Sampling Date			Limits: Ministry of Environment & forests (MoEF), vide notification No. GSR 742 (E),Dt.25/09/2000 Inland surface water
			August-2017 to September-2017	October-2017 to November-2017	December -2017 to January-2018	
			25/08/2017	25/09/2017	05/12/2017	
RESULTS						
1	Temperature	°C	25.4	25.5	25.3	Shall not exceed 5 °C above the receiving water temp.
2	pH @ 25°C	pH unit	7.90	7.17	6.47	5.5-9.0
3	Colour	Pt Co scale	5.0	5.0	5.0	-
4	Total Suspended Solids (TSS @ 105°C)	mg/L	15.3	27.5	59.6	100
5	Total Dissolved Solids (TDS @ 105°C)	mg/L	1640.0	1724.0	1390.0	2100
6	Total volatile solids	mg/L	BDL	BDL	BDL	--
7	BOD (5 days at 20°C)	mg/L	--	--	--	30
8	COD	mg/L	--	--	--	250
9	Oil & Grease	mg/L	6.55	3.4	3.7	10
10	Chloride	mg/L	550.3	456.0	310.4	1000
11	Sulphate	mg/L	259.0	298.5	207.1	300
12	Phosphate	mg/L	BDL	BDL	0.39	--
13	Phenolic Compound	mg/L	BDL	BDL	BDL	1.0
14	Flouride	mg/L	1.5	1.5	BDL	2.0
15	Total residual chlorine	mg/L	Nil	Nil	Nil	1.0
16	Free available chlorine	mg/L	Nil	Nil	Nil	--
17	Total Hardness	mg/L	270.5	962.3	980.1	--
18	Total Alkalinity	mg/L	240.8	405.0	423.1	--
19	Iron	mg/L	2.8	2.7	1.6	3.0
20	Copper	mg/L	BDL	BDL	BDL	3.0
21	Total Chromium	mg/L	BDL	BDL	BDL	2.0
22	Hexavalent Chromium	mg/L	BDL	BDL	BDL	0.1
23	Zinc	mg/L	BDL	BDL	BDL	5.0
24	Lead	mg/L	BDL	BDL	BDL	0.1
25	Calcium	mg/L	56.6	165.1	166.7	--
26	Magnesium	mg/L	31.4	133.8	137.2	--
27	Percent sodium	%	71.2	22.1	15.3	--
28	Coliform organism (MPN)	CFU/100 ml	Nil	Nil	Nil	--
29	Bioassay test	% survival of fish after 96 hrs in 100% effluent	95	93	92	90 % survival of fish after 96 Hrs. in 100 % effluent


Chemist

Note:

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Authorized Signatory
Keta Jariwala



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BOREWATER'S
COMPARATIVE
ANALYSIS REPORTS



Work order No: SLPP/Mines/Envt.Monitoring 2017-18/3027 Dated 15.07.2017

Comparative Results for the period of July-2017-December-2017

(Vastan Lignite Stone Mine)

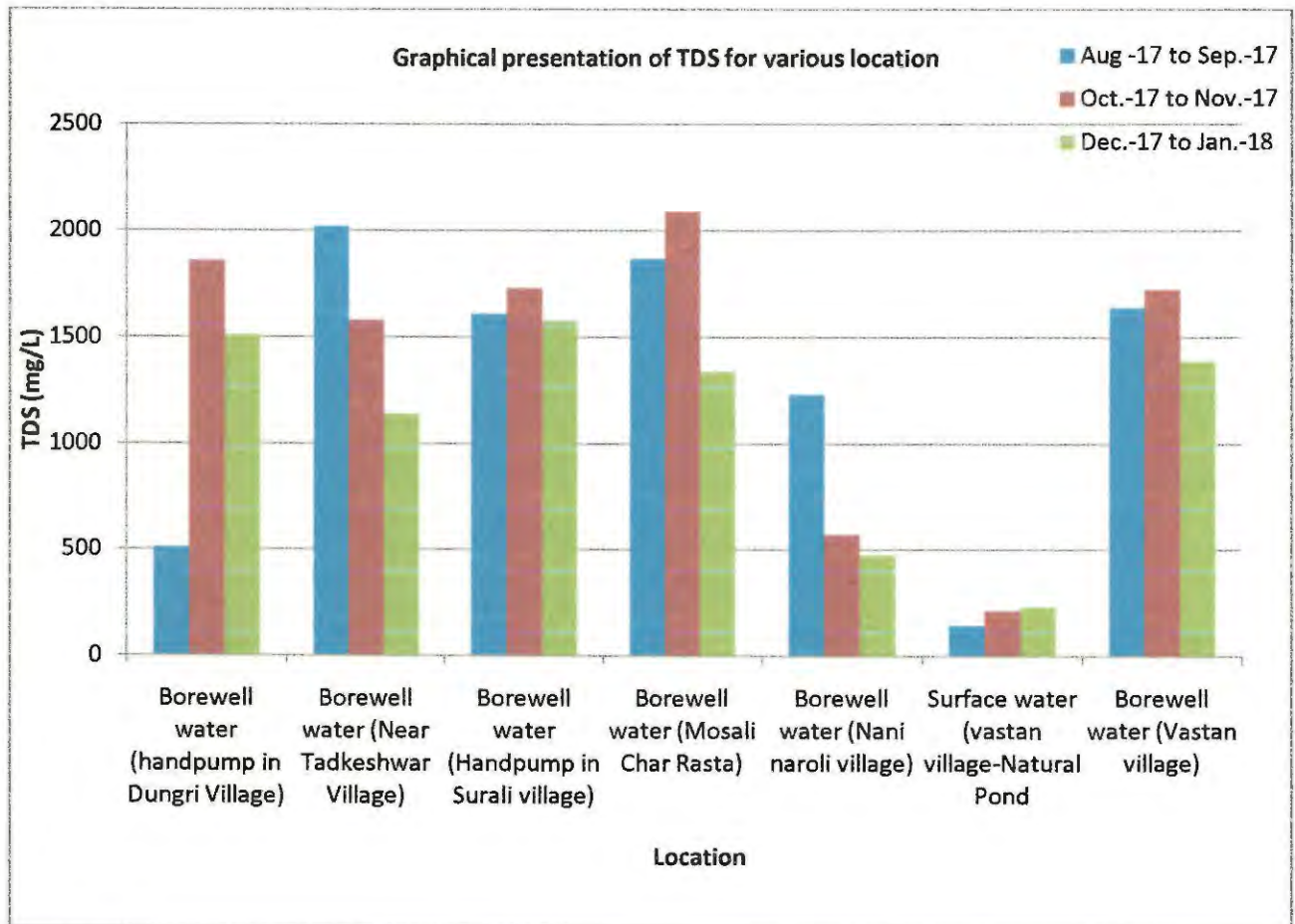
Report period: July-2017-December-2017

Parameter: TDS (mg/L)



Comparative Results of TDS for Various Locations

Description	Borewell water (handpump in Dungri Village)	Borewell water (Near Tadkeshwar Village)	Borewell water (Handpump in Surali village)	Borewell water (Mosali Char Rasta)	Borewell water (Nani naroli village)	Surface water (vastan village-Natural Pond)	Borewell water (Vastan village)
Aug -17 to Sep.-17	509.0	2019.7	1610.0	1869.3	1232.0	142.2	1640.0
Oct.-17 to Nov.-17	1860.0	1580.0	1730.0	2090.0	572.0	213.0	1724.0
Dec.-17 to Jan.-18	1510.0	1140.0	1580.0	1340.0	473.0	230.0	1390.0



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Work order No: SLPP/Mines/Envt.Monitoring 2017-18/3027 Dated 15.07.2017

Comparative Results for the period of July-2017-December-2017

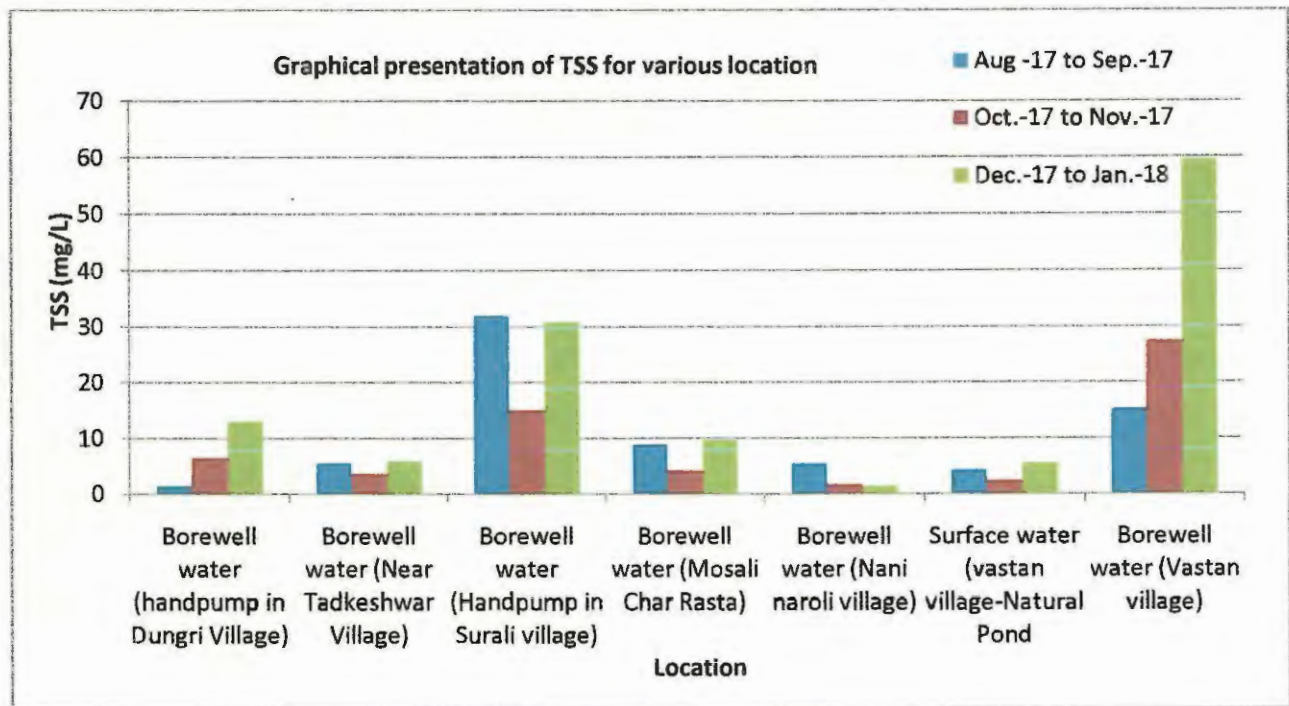
(Vastan Lignite Stone Mine)

Report period: July-2017-December-2017

Parameter: TSS (mg/L)

Comparative Results of TSS for Various Locations

Description	Borewell water (handpump in Dungri Village)	Borewell water (Near Tadkeshwar Village)	Borewell water (Handpump in Surali village)	Borewell water (Mosali Char Rasta)	Borewell water (Nani naroli village)	Surface water (vastan village-Natural Pond)	Borewell water (Vastan village)
Aug -17 to Sep.-17	1.5	5.6	32.0	8.9	5.5	4.4	15.3
Oct.-17 to Nov.-17	6.5	3.7	15.1	4.3	1.8	2.5	27.5
Dec.-17 to Jan.-18	13.1	6.0	30.9	9.7	1.5	5.6	59.6



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AMBIENT AIR
COMPARATIVE
ANALYSIS REPORTS



Work order No: SLPP/Mines/Envt.Monitoring 2017-18/3027 Dated 15.07.2017

Comparative Results for the period of July-2017-December-2017

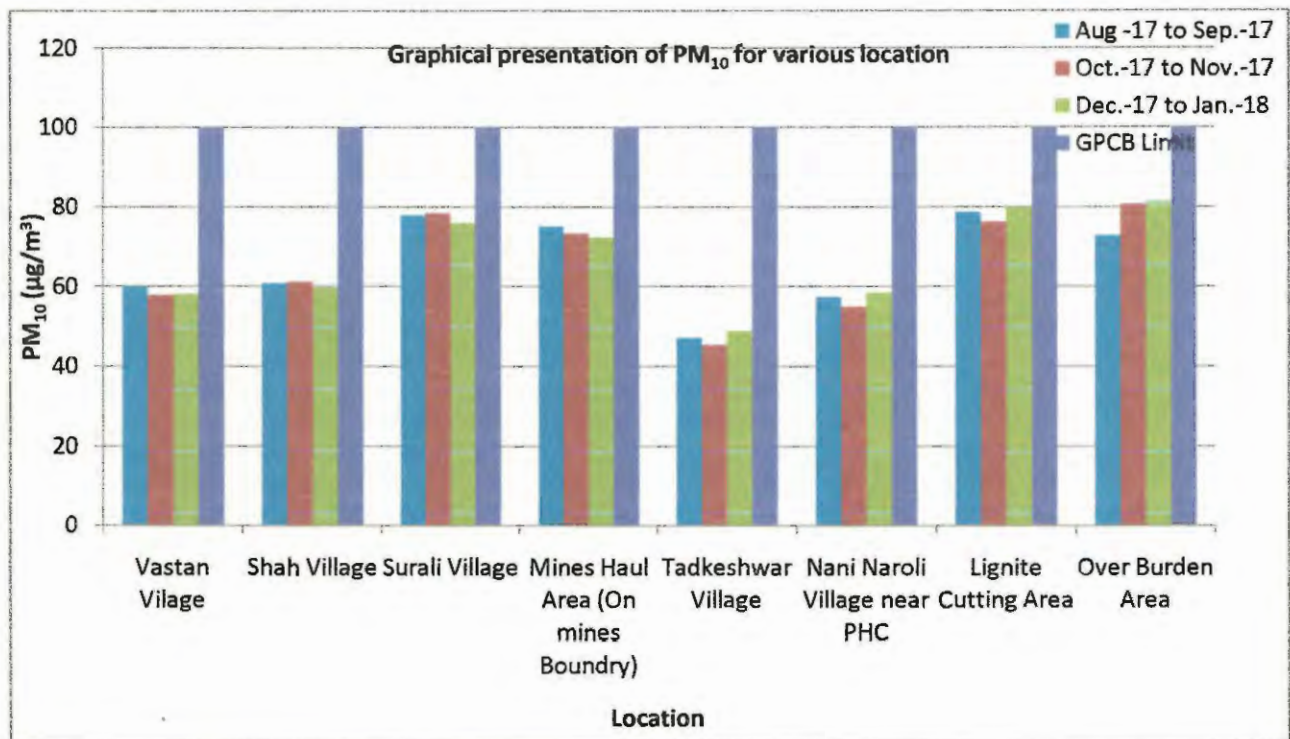
(Vastan Lignite Stone Mine)

Report period: July-2017-December-2017

Parameter: PM₁₀ (Particulate Matter) (µg/m³)

Comparative Results of PM₁₀ for Various Locations

Description	Vastan Vilage	Shah Village	Surali Village	Mines Haul Area (On mines Boundry)	Tadkeshwar Village	Nani Naroli Village near PHC	Lignite Cutting Area	Over Burden Area
Aug -17 to Sep.-17	60.0	60.8	77.9	75.1	47.1	57.4	78.8	72.9
Oct.-17 to Nov.-17	57.9	61.2	78.5	73.4	45.4	54.9	76.3	80.7
Dec.-17 to Jan.-18	58.1	59.7	76.1	72.4	48.9	58.5	79.9	81.4
GPCB Limit	100	100	100	100	100	100	100	100



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Work order No: SLPP/Mines/Envt.Monitoring 2017-18/3027 Dated 15.07.2017

Comparative Results for the period of July-2017-December-2017

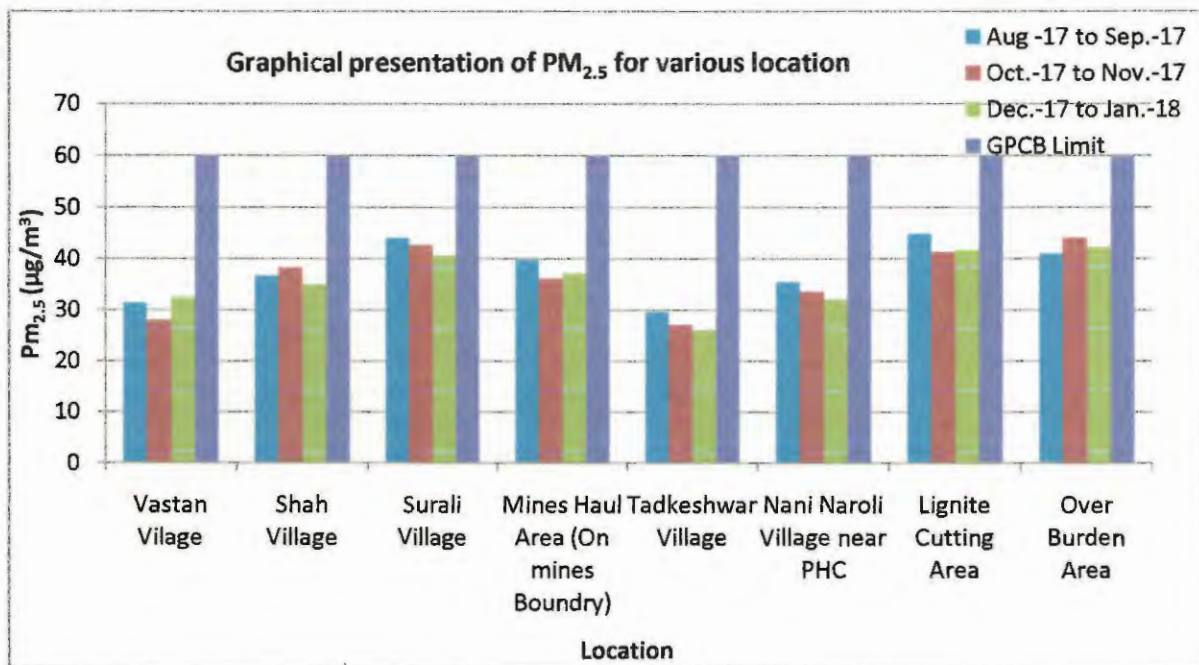
(Vastan Lignite Stone Mine)

Report period: July-2017-December-2017

Parameter: PM_{2.5} (Particulate Matter) (µg/m³)

Comparative Results of PM_{2.5} for Various Locations

Description	Vastan Vilage	Shah Village	Surali Village	Mines Haul Area (On mines Boundry)	Tadkeshwar Village	Nani Naroli Village near PHC	Lignite Cutting Area	Over Burden Area
Aug -17 to Sep.-17	31.4	36.7	44.1	39.8	29.6	35.6	44.9	41.1
Oct.-17 to Nov.-17	28.1	38.4	42.7	36.2	27.1	33.7	41.4	44.2
Dec.-17 to Jan.-18	32.4	35.1	40.8	37.2	26.2	32.1	41.8	42.3
GPCB Limit	60	60	60	60	60	60	60	60



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Work order No: SLPP/Mines/Envt.Monitoring 2017-18/3027 Dated 15.07.2017

Comparative Results for the period of July-2017-December-2017

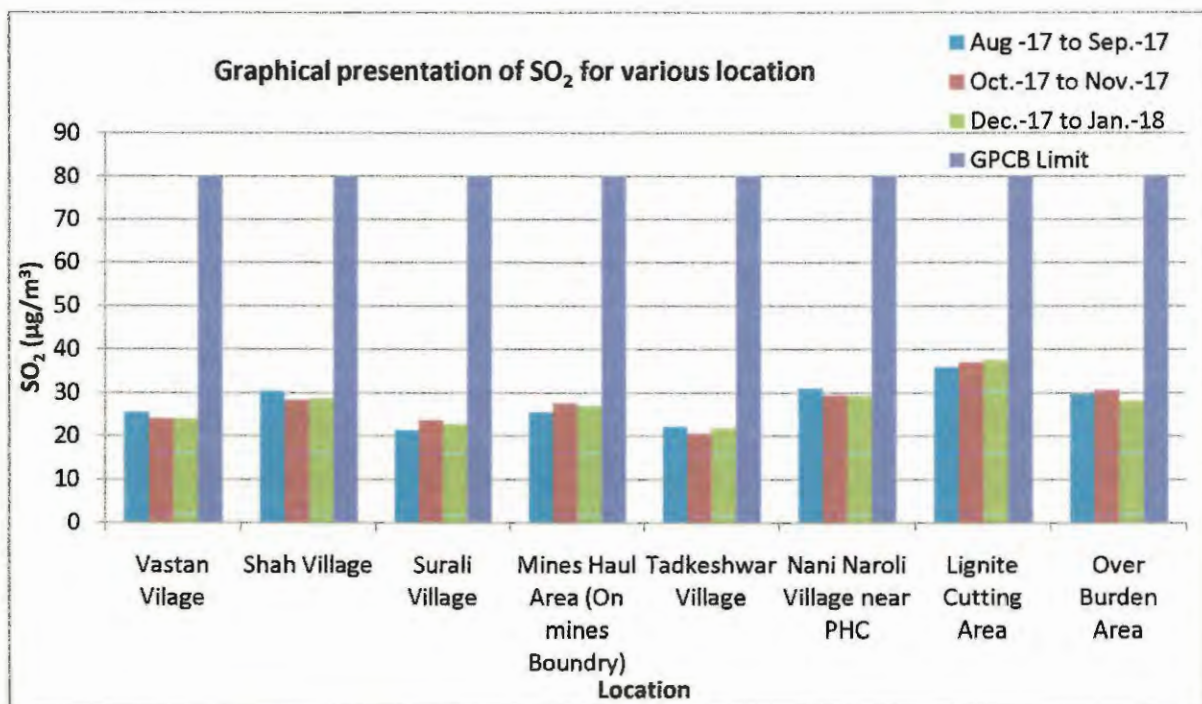
(Vastan Lignite Stone Mine)

Report period: July-2017-December-2017

Parameter: SO₂ (Sulphur Dioxide) (µg/m³)

Comparative Results of SO₂ for Various Locations

Description	Vastan Vilage	Shah Village	Surali Village	Mines Haul Area (On mines Boundry)	Tadkeshwar Village	Nani Naroli Village near PHC	Lignite Cutting Area	Over Burden Area
Aug -17 to Sep.-17	25.4	30.3	21.3	25.4	22.1	31.0	35.9	29.6
Oct.-17 to Nov.-17	24.0	28.2	23.6	27.5	20.5	29.4	36.9	30.6
Dec.-17 to Jan.-18	23.9	28.6	22.7	26.9	21.7	29.2	37.4	28.1
GPCB Limit	80	80	80	80	80	80	80	80



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Comparative Results for the period of July-2017-December-2017

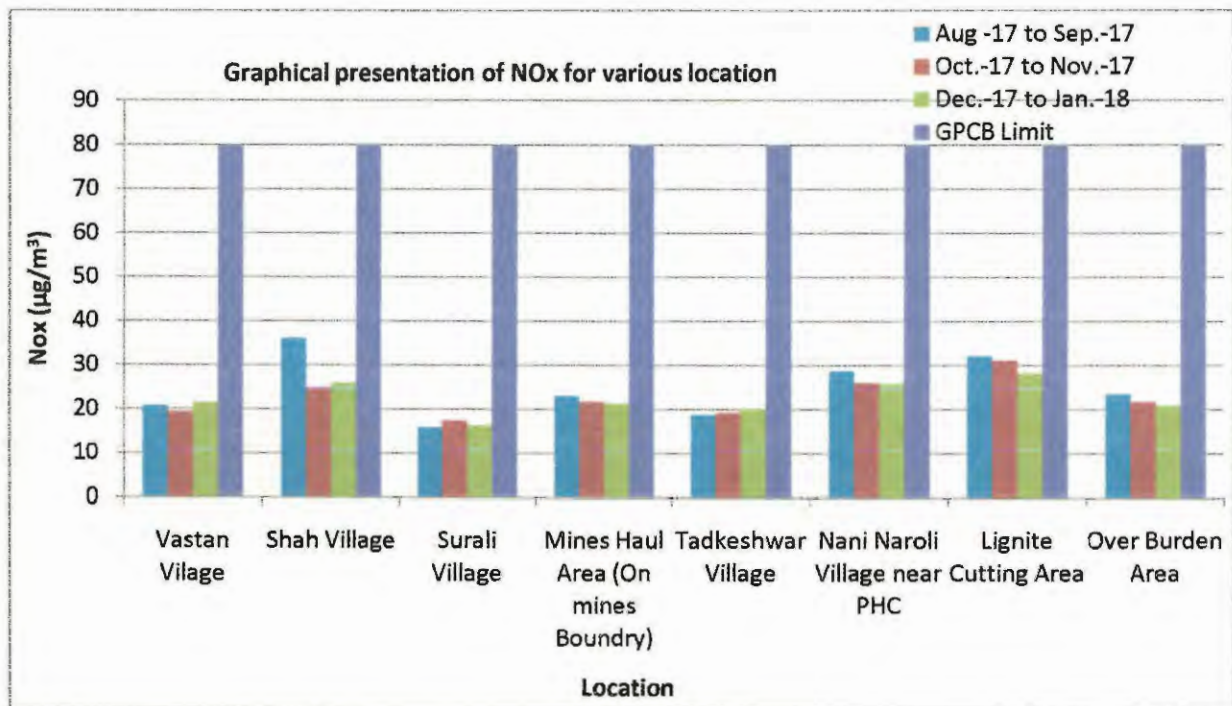
(Vastan Lignite Stone Mine)

Report period: July-2017-December-2017

Parameter: NO_x (Oxide of Nitrogen) (µg/m³)

Comparative Results of NO_x for Various Locations

Description	Vastan Vilage	Shah Village	Surali Village	Mines Haul Area (On mines Boundry)	Tadkeshwar Village	Nani Naroli Village near PHC	Lignite Cutting Area	Over Burden Area
Aug -17 to Sep.-17	20.8	36.1	15.8	23.0	18.7	28.7	32.1	23.5
Oct.-17 to Nov.-17	19.3	24.9	17.4	21.7	19.2	26.0	31.1	21.7
Dec.-17 to Jan.-18	21.5	25.9	16.3	21.3	20.1	25.8	28.2	20.9
GPCB Limit	80	80	80	80	80	80	80	80



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Work order No: SLPP/Mines/Envt.Monitoring 2017-18/3027 Dated 15.07.2017

Comparative Results for the period of July-2017-December-2017

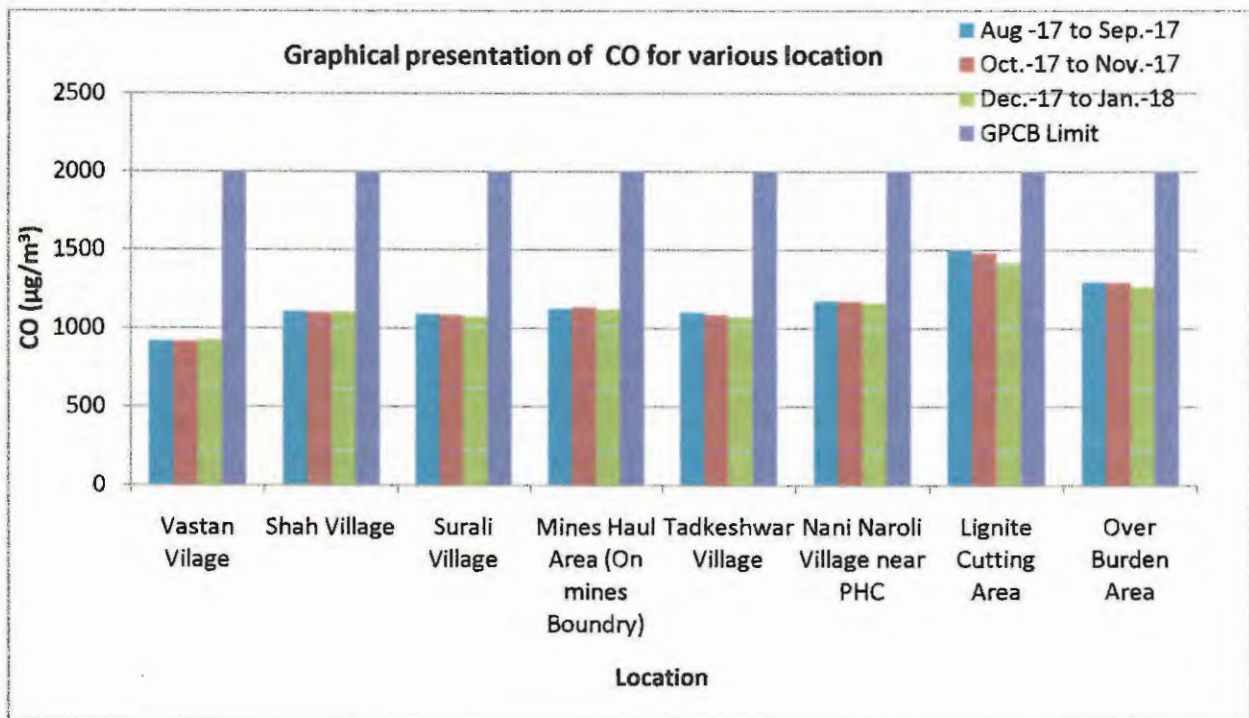
(Vastan Lignite Stone Mine)

Report period: July-2017-December-2017

Parameter: CO (Carbon Monoxide) ($\mu\text{g}/\text{m}^3$)

Comparative Results of CO for Various Locations

Description	Vastan Village	Shah Village	Surali Village	Mines Haul Area (On mines Boundry)	Tadkeshwar Village	Nani Naroli Village near PHC	Lignite Cutting Area	Over Burden Area
Aug -17 to Sep.-17	915	1104	1089	1123	1099	1174	1498	1296
Oct.-17 to Nov.-17	911	1100	1082	1132	1085	1170	1480	1292
Dec.-17 to Jan.-18	921	1102	1074	1118	1073	1161	1421	1267
GPCB Limit	2000	2000	2000	2000	2000	2000	2000	2000



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DUSTFALL
MONITORING
COMPARATIVE
ANALYSIS REPORTS



Work order No: SLPP/Mines/Envt.Monitoring 2017-18/3027 Dated 15.07.2017

Comparative Results for the period of July-2017-December-2017

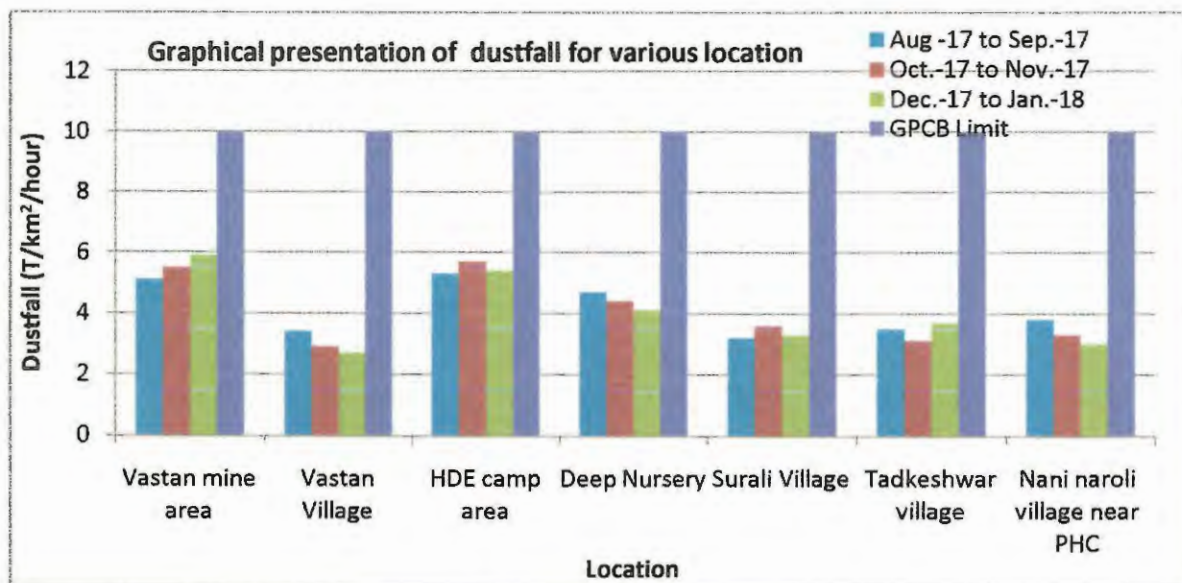
(Vastan Lignite Stone Mine)

Report period: July-2017-December-2017

Parameter: Dust fall (T/km²/month)

Comparative Results of Dustfall for Various Locations

Description	Vastan mine area	Vastan Village	HDE camp area	Deep Nursery	Surali Village	Tadkeshwar village	Nani naroli village near PHC
Aug -17 to Sep.-17	5.1	3.4	5.3	4.7	3.2	3.5	3.8
Oct.-17 to Nov.-17	5.5	2.9	5.7	4.4	3.6	3.1	3.3
Dec.-17 to Jan.-18	5.9	2.7	5.4	4.1	3.3	3.7	3.0
GPCB Limit	10	10	10	10	10	10	10



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NOISE LEVEL
COMPARATIVE
ANALYSIS REPORTS



Work order No: SLPP/Mines/Envt.Monitoring 2017-18/3027 Dated 15.07.2017

Comparative Results for the period of July-2017-December-2017

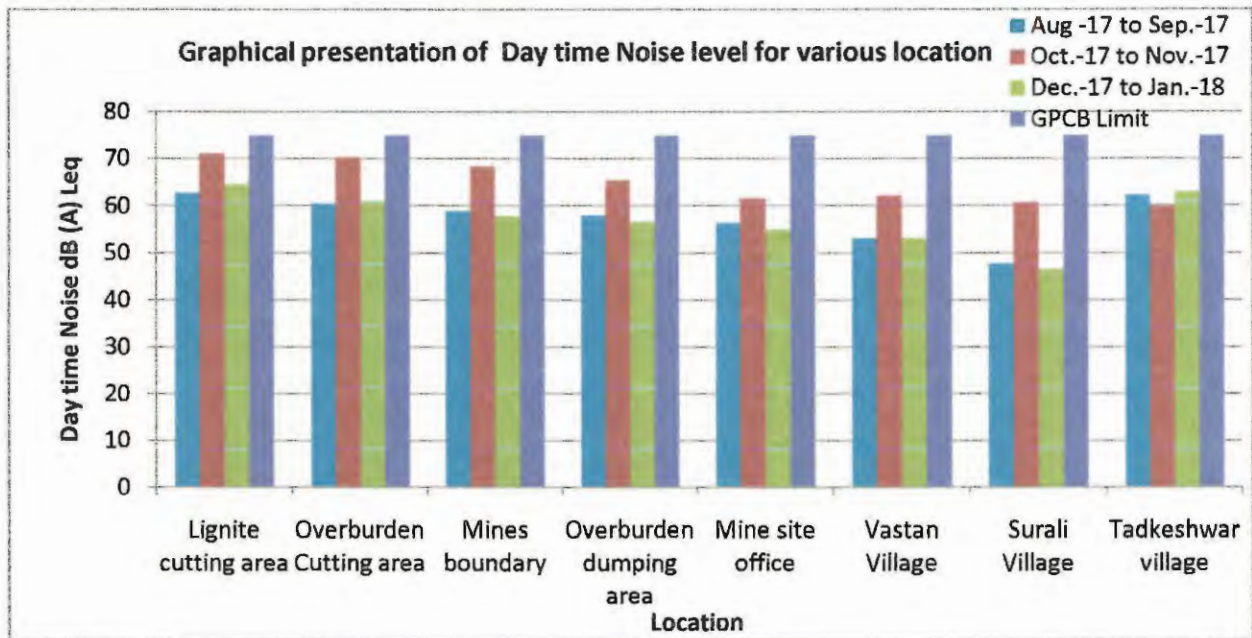
(Vastan Lignite Stone Mine)

Report period: July-2017-December-2017

Parameter: Noise level (dB(A)) (For day time)

Comparative Results of Noise level for Various Locations (Day time)

Description	Lignite cutting area	Overburden Cutting area	Mines boundary	Overburden dumping area	Mine site office	Vastan Village	Surali Village	Tadkeshwar village
Aug -17 to Sep.-17	62.7	60.5	58.9	58.0	56.4	53.1	47.8	62.3
Oct.-17 to Nov.-17	71.2	70.4	68.4	65.5	61.6	62.2	60.7	59.9
Dec.-17 to Jan.-18	64.6	61.1	57.9	56.6	55.0	53.2	46.5	63.0
GPCB Limit	75	75	75	75	75	75	75	75



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Comparative Results for the period of July-2017-December-2017

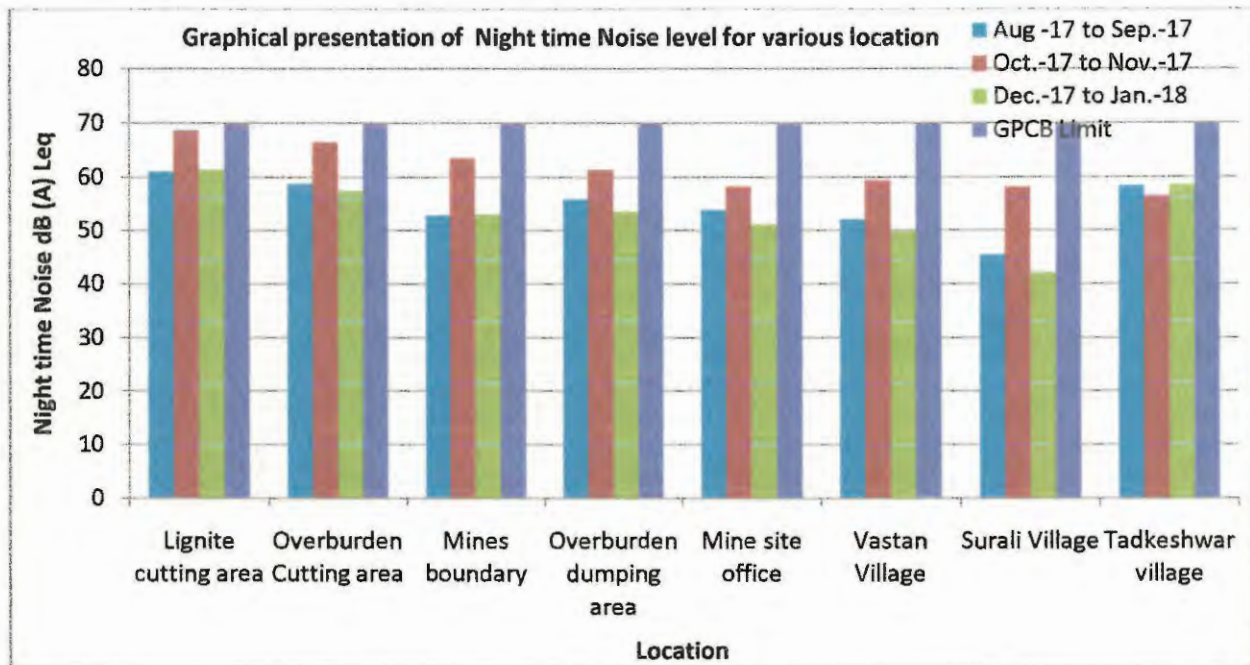
(Vastan Lignite Stone Mine)

Report period: July-2017-December-2017

Parameter: Noise level (dB(A)) (For Night time)

Comparative Results of Noise level for Various Locations (Night time)

Description	Lignite cutting area	Overburden Cutting area	Mines boundary	Overburden dumping area	Mine site office	Vastan Village	Surali Village	Tadkeshwar village
Aug -17 to Sep.-17	61.0	58.8	52.9	55.9	53.9	52.1	45.5	58.4
Oct.-17 to Nov.-17	68.7	66.5	63.5	61.3	58.3	59.4	58.2	56.5
Dec.-17 to Jan.-18	61.4	57.5	53.1	53.6	51.2	49.8	42.2	58.6
GPCB Limit	70	70	70	70	70	70	70	70



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WEATHER
MONITORING DATA



Work order No: SLPP/Mines/Envt.Monitoring 2017-18/3027 Dated 15.07.2017

Variation in Temperature for the period of July-2017 to Dec-2017

Sr.No.	Times in Hrs.	Monitoring Date		
		Aug-17 to Sept-17	Oct-17 to Nov.-17	Dec-17 to Jan-18
		24/08/2017 25/08/2017	26/09/2017- 27/09/2017	05/12/2017- 06/12/2017
1.	09.00	30	28	21
2.	10.00	30	28	21
3.	11.00	31	28	22
4.	12.00	32	29	21
5.	13.00	32	29	22
6.	14.00	33	29	21
7.	15.00	33	29	21
8.	16.00	32	28	22
9.	17.00	32	28	22
10.	18.00	31	28	21
11.	19.00	30	27	20
12.	20.00	29	27	21
13.	21.00	29	27	20
14.	22.00	29	27	20
15.	23.00	28	27	19
16.	00.00	28	27	19
17.	01.00	28	26	18
18.	02.00	28	26	19
19.	03.00	28	26	19
20.	04.00	29	26	20
21.	05.00	29	26	20
22.	06.00	28	26	19
23.	07.00	28	26	20
24.	08.00	28	26	21
24 Hrs. Max.		33	29	22
24 Hrs. Min.		28	26	18
24 Hrs. Avg.		29.7	27.3	20.4



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Work order No: SLPP/Mines/Envt.Monitoring 2017-18/3027 Dated 15.07.2017

Variation in Relative Humidity for the period of July-2017 to Dec-2017

Sr.No.	Times in Hrs.	Monitoring Date		
		Aug-17 to Sept-17	Oct-17 to Nov.-17	Dec-17 to Jan-18
		24/08/2017- 25/08/2017	26/09/2017- 27/09/2017	05/12/2017- 06/12/2017
1.	09.00	79	73	79
2.	10.00	75	72	79
3.	11.00	74	70	78
4.	12.00	73	66	77
5.	13.00	73	67	75
6.	14.00	74	67	75
7.	15.00	74	67	73
8.	16.00	76	69	73
9.	17.00	78	72	72
10.	18.00	80	74	70
11.	19.00	83	75	70
12.	20.00	85	76	71
13.	21.00	86	79	72
14.	22.00	86	81	73
15.	23.00	87	82	75
16.	00.00	87	82	75
17.	01.00	87	83	75
18.	02.00	87	83	77
19.	03.00	87	83	77
20.	04.00	86	82	77
21.	05.00	85	82	75
22.	06.00	85	82	71
23.	07.00	85	82	70
24.	08.00	85	82	70
24 Hrs. Max.		87	83	79
24 Hrs. Min.		73	66	70
24 Hrs. Avg.		81.5	76.3	74.1



CIN : U74140GJ2010PTC059798

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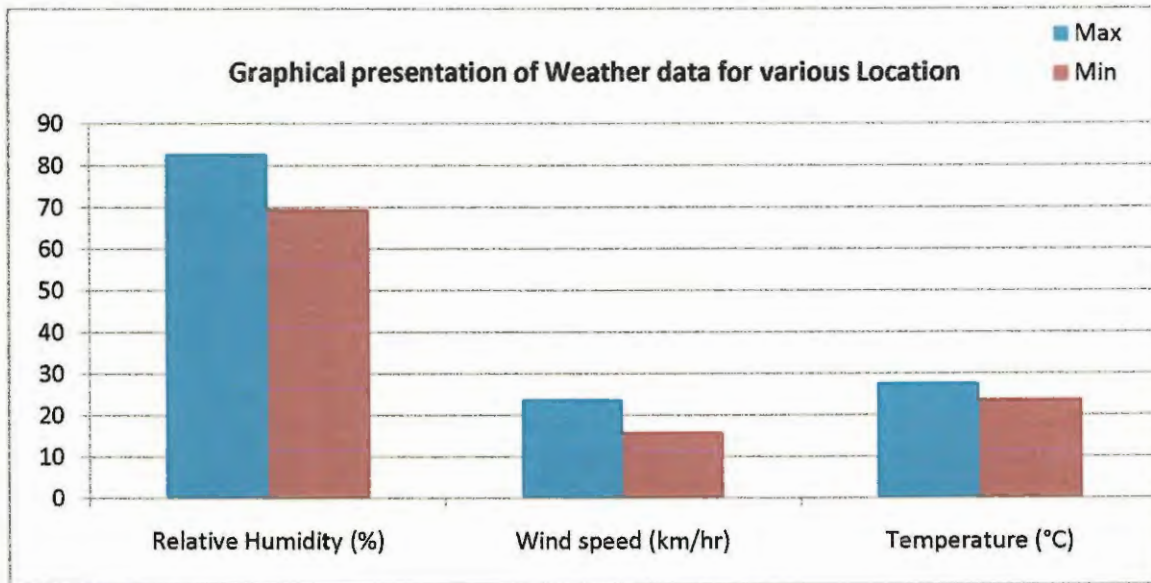
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Comparative Results for the period of July-2017 to Dec-2017

WEATHER MONITORING AT VASTAN LIGNITE STONE MINE

Description	Relative Humidity (%)	Wind speed (km/hr)	Temperature (°C)
Max	83	24	28
Min	69.6	16	24

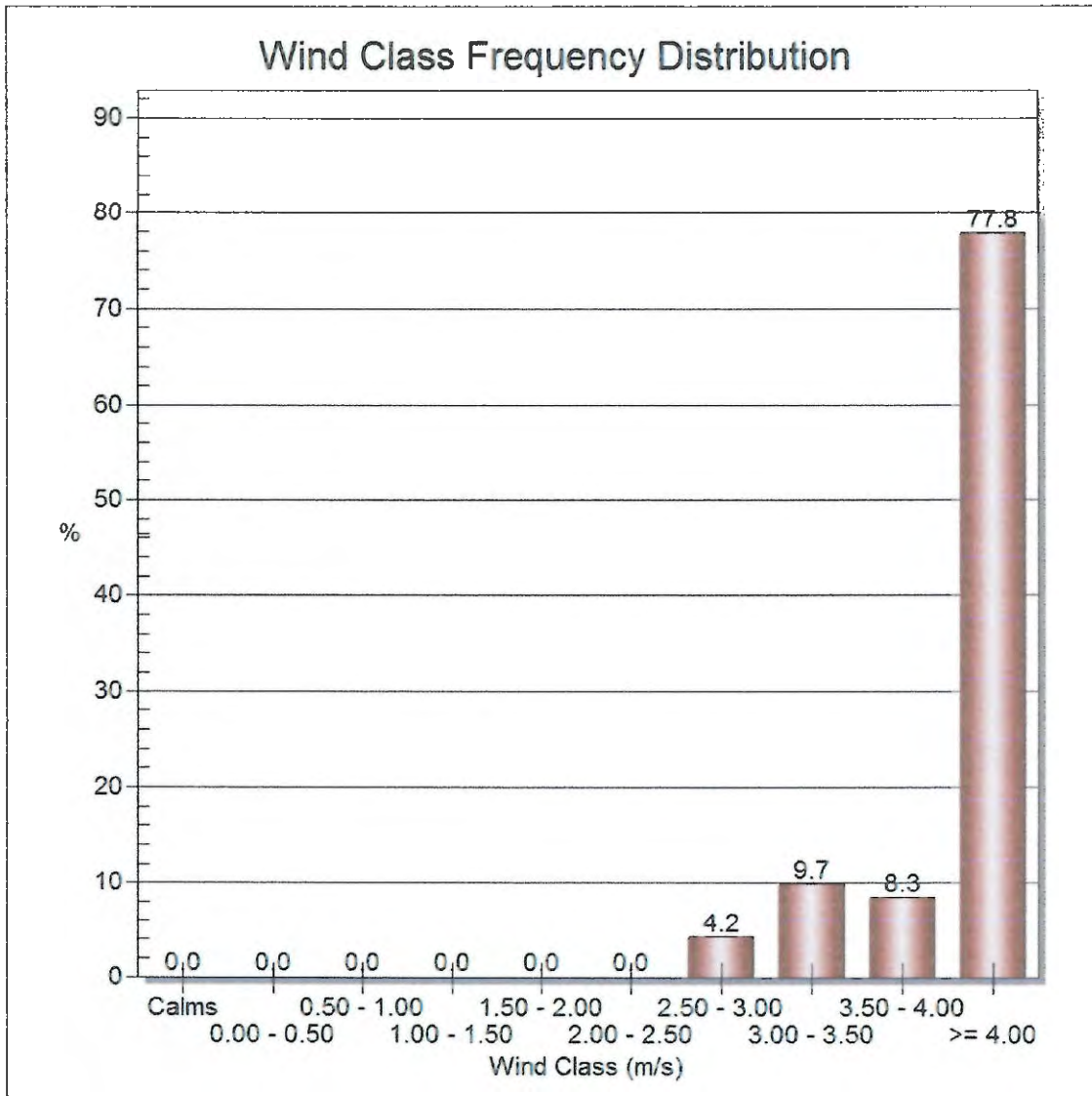


CIN : U74140GJ2010PTC059798

Greenleaf Envirotech Pvt. Ltd., Nr. Rangoli Flats, Radhanpur Road, Mehsana - 384002. Gujarat, India.

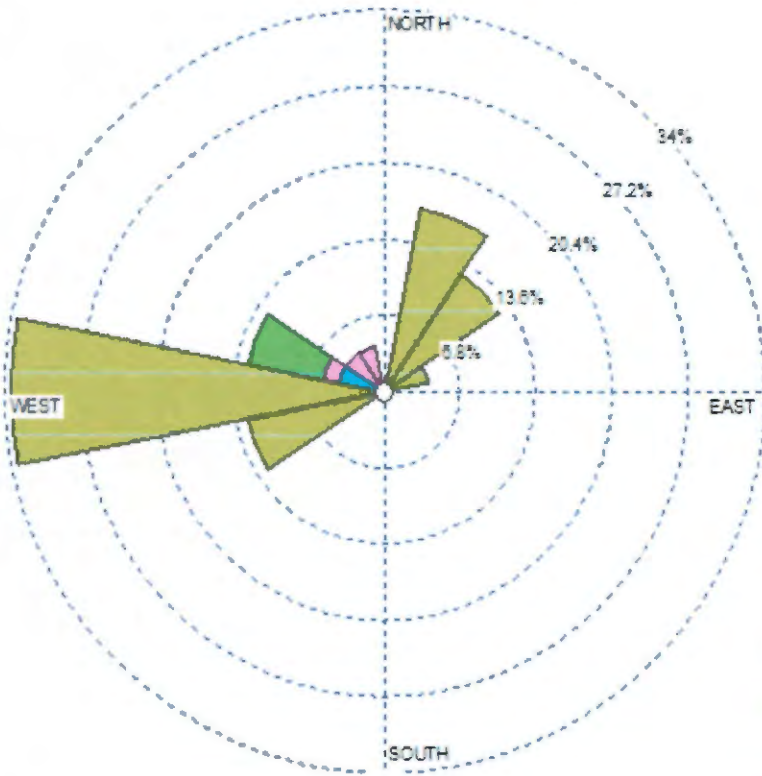
Tel : +91-9712989446, E-mail : info@glepl.com, Web : www.greenleafenvirotech.com

Branch Office : 304, Kankavati Complex, Singanpor-Cauzway Road, Katargam, Surat - 395004, Tel : +91-9725519974.



WIND ROSE PLOT
GIPCL Vastan

WIND
Wind Speed
Direction (blowing from)



WIND SPEED
(m/s)

- >= 4.00
- 3.50 - 4.00
- 3.00 - 3.50
- 2.50 - 3.00
- 2.00 - 2.50
- 1.50 - 2.00
- 1.00 - 1.50
- 0.50 - 1.00
- 0.00 - 0.50

Calm: 0.00%

COMMENTS	OUT PERIOD	GIPCL Vastan	
	Start Date: 24/08/2017 - 00:00 End Date: 06/12/2017 - 00:00	ISSUER	
		Greenleaf Envirotech Pvt. Ltd.	
	CALM WIND	TOTAL COUNT	
	0.00%	72 hrs.	
	Avg WIND SPEED	DATE	PROJECT NO.
	5.31 m/s	01/01/2018	03

REPORT Issued by: Greenleaf Envirotech Pvt. Ltd.

