JSW Energy Limited

Village : Nandiwade, Post : Jaigad,
Tal. & Dist. : Ratnagiri - 415 614.
Maharashtra, India.
CIN. : L74999MH1994PLC077041
Phone : +91 2357 242501 to 513
Fax : +91 2357 242508
Website : www.jsw.in

Ref: - JSWEL/ENV/734
Date: - 31st August 2020

To

The Director
Ministry of Environment, Forests & Climate Change
Indira Paryavaran Bhavan
Jorbagh Road, Aliganj
New Delhi - 110 003

Sub: Half yearly report on status of implementation of conditions of Environment clearance.

Ref: Environmental Clearance No. J-13012/52/2006-IA-II (T) dated 17/05/2007, 16/4/2010, 28/06/2010 and 10/07/2017.

Dear Sir,

As a part of the conditions prescribed in the clearances cited above, we are enclosing herewith the Half Yearly report on implementation of environmental safeguards & conditions stipulated in the Environmental Clearances for the period January to June 2020

Thanking you

Yours faithfully,
For JSW Energy Ltd

Yatish Chhabra
Vice President & Plant Head

07/09/2020
Sub Regional Office,
M. P. C. Board,
Central Administrative Building-2,
2nd Floor, Collector Office,
Ratnagiri - 415 612

Copy to:

- Additional Director, Regional office MoEF&CC– Nagpur
- Chairman, Central Pollution Control Board Delhi
- Member Secy. MPCB Mumbai.
- SRO, MPCB, Ratnagiri

Regd. Office : JSW Centre,
Bandra Kurla Complex,
Bandra (East), Mumbai - 400 051
Phone : +91 22 4286 1000
Fax : +91 22 4286 3000

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Status of compliance with Environmental Clearance (May 17, '07, Apr 16, '2010, June 28, '2010 & July 10, '2017) conditions by the MOEF for the 4 X 300 MW Power Project at Jaigad, dist. Ratnagiri, Maharashtra

(As on June 2020)

Sr. No.	Environmental Clearance Condition	Status of compliance
1	No Activities in CRZ Area will be taken up without requisite clearance under the provisions of the CRZ Notification, 1991.	Complied. Sea water intake pump house (on shore based) construction work completed in accordance with conditions prescribed in CRZ Clearance granted vide MOEF letter No.11-18/2007-IA-III dated 15.11.07 for seawater intake and outfall. No more activities taken up in CRZ area thereafter.
2	The detailed study regarding the impact of the project if any, on Alphanso mango, and marine fisheries as recommended in the report of Dr. B. S. Konkan Krishi Vidyapeeth (KKVD) shall be undertaken. Based on the same, additional safeguard measures as may be required will be taken by the proponent with prior approval of the Ministry of Environment and Forests. A copy of the report will be submitted to the Ministry. The cost towards undertaking the study and implementation of safeguard measures, if any, will be borne by the project.	Complied. JSW had entered into MOU with KKVD to conduct impact studies on Mango, Cashew and Marine Life on Aug 1, 2007. The copy of the comparative report submitted by KKVD on 13/02/2017 indicating no impact of the project on Mango and cashew plantation is submitted to Ministry on 02nd March 2017.
3	Space provision shall be made for installation of FGD of requisite efficiency of removal of SO2, if required at later stage.	Complied. All 4 units FGD are commissioned as per amended EC dtd.16th April 2010 & all are in operation.
4	Cooling water blowdown will be discharged from the cold water side and not from the hot water side.	Complied. The common blowdown water from four units is being discharged from the cold end of the closed-loop cooling towers.
5	Coal with ash content not exceeding 12 % sulphur content not exceeding 0.6 % shall be used.	EC is amended on 10th July 2017 for use of blended coal with ash content 25% and sulphur content 0.6%.

6	Rain water harvesting should be adopted. Central Ground Water Authority/Board shall be consulted for finalization of appropriate rainwater harvesting technology within a period of three months from the date of clearance.	Complied. CGWB was consulted within three months for rainwater harvesting technology. A rainwater storage structure (capacity: 40,000 m3) has been constructed near the project site. 176 water harvesting structures have been developed in 241 Ha in nearby villages
7	Two bi-flue stacks of 220 m height each with exit velocity of at least 21m/s shall be provided with continuous online monitoring system.	Complied. Stack no1 is in operation, two flues are connected to Unit 1 & 2 The continuous emission monitoring system (CEMS) is provided. Stack no 2 is in operation, two flues are connected to unit # 3 & 4 each. The continuous emission monitoring system (CEMS) is provided
8	High efficiency Electrostatic precipitator (ESPs) having efficiency of 99.9% shall be installed so as to ensure that particulate emissions do not exceed 100 mg/Nm3.	Complied. All four units are provided with high collection efficiency ESPs and Flue Gas Conditioning system to meet the emission level of less than 50 mg/Nm3 as per state pollution control board (MPCB) consent conditions. A copy of report of stack monitoring carried out by MoEF recognized laboratory is enclosed herewith.-Annexure 1
9	Fly ash shall be collected in dry form and its 100% utilization shall be ensured from the day of the commissioning of the plant. In case of emergency, fly ash may be disposed in the ash pond through HCSD system. Borrow earth shall not be taken from ash pond area for construction of ash dyke etc.	Complied. Ash utilization has been started since commissioning. Accordingly, MOUs signed with Ashtech India, Ultra Tech, Ratnagiri, L & T, Prism Johnson and other major players of fly ash for 100% fly ash utilization. Partly, the ash is also being utilized for brick making by nearby entrepreneurs.

10	Regular monitoring of groundwater quality including heavy metals shall be undertaken around ash dyke and the project area to ascertain the change, if any, in the water quality due to leaching of contaminants from ash disposal area.	Complied. Monitoring is done by MoEF recognized laboratory on quarterly basis. A copy of the latest monitoring report is enclosed- Annexure 2
11	Noise level shall be limited to 75 dB A. For people working in the high noise area, protective devices such as earplugs etc. shall be provided.	Complied. Personal protection equipment is provided to people working in noise area. And usage of the same is being ensured. Monitoring of noise level measurement in nearby village areas is done by MoEF recognized laboratory on monthly basis A copy of the report is enclosed- Annexure 3
12	A greenbelt shall be developed all around the plant boundary and ash dyke covering an area of 120 ha.	Complied.
13	Adequate protection measures shall be taken to protect the Jaigad fort, a notified Archaeological site, from the adverse impact of the power plant, if any, in consultation with Archaeological Survey of India (ASI).	Complied. ASI has been approached for guidance on additional protection measures. As per the directions of ASI, a specific report (prepared by NEERI) has been submitted on 22/6/2010.
14	Regular monitoring of the air quality shall be carried out in and around the power plant and records shall be maintained. Six monthly reports shall be submitted to this Ministry.	Complied. Ambient Air Quality is monitored by MoEF recognized laboratory at three locations as per NAAQ norms. Additionally, three continuous Ambient Air Quality monitoring stations installed. A copy of latest monitoring report is enclosed herewith.- Annexure 4

15	For controlling fugitive dust, regular sprinkling of water in vulnerable areas of the plant shall be ensured.	Complied. Dust extraction system is provided at strategic locations Cement roads are made within the plant area. Water sprinkling arrangement is made in ash pond area to avoid fugitive dust emission. Moreover, regular sprinkling of water is being carried out with the help of mobile water tankers in vulnerable areas to suppress the dust.
16	The project proponent should advertise at least in two local newspapers widely circulated in the region around the project, one of which should be in the vernacular language 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 in the Website of the Ministry of Environment and Forests in the http://enfor.nic.in.	Complied. Published in widely circulated local Marathi newspapers, Tarun Bharat and Dainik Pudhari on 30/5/2007 and Indian Express, (English) Mumbai edition on 2/6/2007. Copies of the same have been furnished to the regulatory authorities.
17	A separate environment monitoring cell with suitable qualified staff should be set up for implementation of the stipulated environmental safeguards.	Complied. A dedicated Environment Monitoring cell, with qualified staff, is operational. The implementation of the conditions is being monitored by the Cell.
18	Half yearly report on the status of implementation of the conditions and environmental safeguards should be submitted stipulated to this Ministry, the Regional Office, CPCB and SPCB.	Complied. The reports are submitted regularly to all concerned
19	Regional Office of the Ministry of Environment & Forests located at Bhopal will monitor the implementation of the stipulated conditions. A complete set of documents including Environmental Impact Assessment Report and Management Plan	Complied. The documents have been forwarded on 23-10-07 vide letter no .JSW- MOEF-RO1 /1061/ 07-08 to RO, Bhopal.

	should be forwarded to the Regional Office for their use during monitoring.	
20	Separate funds should be allocated for 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 not be diverted for other purposes and year-wise expenditure should be reported to the Ministry.	Complied. About Rs. 978.18 Cr. spent towards environmental protection measures the details are as follows, ESP 190.08 Cr Chimney 129.03 Cr FGD 393.97 Cr Ash Handling System 127.29 Cr Cooling Towers 121.81 Cr HCSD 16.0 Cr Total 978 Cr The cost of Environment Management in FY 2019-2020 is as follows 1. Environmental monitoring cost – 90 lakhs 2. Environmental Awareness – 2 lakhs 3. Environment Day celebration in company and schools – 2 lakhs 4. Green belt development – 45 lakhs 5. Maintenance of Pollution Control Equipment - 80 lakhs
21	Full cooperation should be extended to the Scientists/Officers from the Ministry and its Regional Office at Bhopal /The CPCB/The SPCB during monitoring of the project.	Complied.
Compliance to Amended EC Conditions dated. 16/04/10		
22	Continuous monitoring of ambient air quality & marine/estuarine environment, plant health parameters & fisheries shall be carried out regularly for the entire life of the power plant & data submitted to the Regional Office of the Ministry & the concerned department in the state government. The data shall be evaluated periodically by a third party viz. College of	Complied. All three continuous ambient air quality monitoring stations are in operations An elaborative study is being carried out by Konkan Krishi Vidyapeeth, Dapoli since 2008.

	fisheries (CoF), Konkan Krishi Vidyapeeth (KKV, Dapoli)	
23	It shall be ensuring that no spillage of seawater on the land from the pipelines of intake & outfall takes place. RCC lined channels along the pipelines shall be provided to avoid any possible contamination of land with sea water	Complied. Cement mortar / Coro coat lining is provided inside of all the sea water pipelines. Moreover guniting is done externally
24	Dense plantation of density not less than 2500 trees/shrubs per ha (and survival rate not less than 70 %) including plantations of Alphanso mango and cashew interspersed with native plant species, shall be raised within and outside the study area to act as buffer. Also plantation of coconut and casurina all along the coast line shall be provided to serve as shelter belt. Sufficient funds earmarked for the same and schedule of implementation shall be submitted within six months to the Ministry,	Complied.
25	Ash dyke for the pond ash shall be lined with impermeable membrane all along the sides and the bottom. A 50 m wide green belt of native species shall be raised all along the Ash Dyke	Complied.
26	Hydro-geological study of the area shall be reviewed annually and results submitted to the Ministry and concerned agency in the State Govt. In case adverse impact on groundwater quantity and quality is observed, immediate mitigating steps to contain any adverse impact on groundwater shall be undertaken.	Complied. The hydrology of the study area is carried out and the same is being reviewed annually, and the groundwater quality and levels are being monitored by MoEF recognized laboratory.
27	Mercury and other heavy metals (As, Hg, Cr, Pb etc.) shall be monitored in the bottom ash as also in the effluents emanating from the existing ash pond. No ash shall be disposed of in low lying area	Complied. There is no effluent from ash dyke as dry ash handling and HCSD systems is provided.

28	Regular monitoring of ground level concentration of SO2, NOx, PM 2.5 and PM 10 shall be carried out in the impact zone and records maintained. If at any stage these levels are found to exceed the prescribed limits, 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	Complied. The monitoring data is being up loaded regularly on the JSW web site.
29	As part of CSR program the company shall conduct need based assessment for the nearby villages to study economic measures with action plan which Can help in up-liftment of poor section of society. Income generating projects consistent with the traditional skills of the people besides development of fodder farm, fruit bearing orchards, vocational training etc., can form a part of such program. Company shall provide separate budget for community development activities and income generating programs. This will be in addition to vocational training for individuals imparted to take up self-employment and jobs.	As a part of CSR initiative company is progressive is following areas 1. Up-liftment of local farmers- JSW had supported for livestock development project. (Gir cow project) 2. Farmers training on organic farming, bush pepper & medicinal plantation training -20 farmers. 3. Coconut shell art training-50 women benefited 4. VTC: BPO girls/women new batch-30, fashion desiging-25, marine fitter-35
30	Provision shall be made for the housing of construction labour within the site will all 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 structures to be removed after the completion of the project	Complied. Five nos. of biogas plant are installed in labour colony. This has eliminated the use of jungle wood for cooking. Necessary facilities like safe drinking water, medical health care etc. are provided.
31	The proponent shall upload the status of compliance of the conditions stipulated in the environmental clearance, including results of the continuously monitored data on their website and shall update the Same periodically. It shall simultaneously be sent to the Regional Office of	Complied. A digital display board is installed near main gate of the company

	MOEF, the respective Zonal Office of CPCB and the SPCB. The criteria pollutant levels namely RSPM (PM 2.5 & PM 10) SO2, NOx, (ambient levels as well as stack emissions) shall be displayed at a convenient location near the main gate of the company in the public domain.	
32	The project proponent shall also submit six monthly reports on the status of compliance of the stipulated EC conditions including results of monitored data (both in hard copies as well by e-mail) to the respective Regional Office of MOEF, the respective Zonal Office of CPCB and the SPCB.	Complied.
33	The environment statement for each financial year ending 31st March in Form-V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of EC conditions and shall also be sent to the respective Regional Offices of the Ministry by e-mail.	Complied. The Environment statement for the period 2018-19 is submitted in August 2019. The Statement for FY 2019-20 shall be submitted before September 2020.
34	The project proponent shall submit six monthly reports on the status of the implementation of the stipulated environmental safeguards to the Ministry of Environment & Forest, its regional office, Central Pollution Control Board and State Pollution Control Board. The project proponent shall upload the status of compliance of the Environmental clearance conditions on their website and update the same periodically & simultaneously send the same by email to the Regional office, Ministry of Environment & Forests.	Complied. The reports are submitted regularly to all concerned.
Compliance to Amended EC Conditions dated, 28/06/2010		
35	The company shall strictly follow the schedule for commissioning of FGD i.e 23 months for the first	Complied. All 4 FGD units are commissioned in stipulated time frame. All

	unit form the date of the letter of intent dated 21st June, 2010 followed by interval of three months for the units – 2,3 & 4; till 32 months	4 units are in operation Dates of FGD commissioning are as follows, • Unit 1 FGD - 22 Feb 2013 • Unit 2 FGD - 14 Oct 2012 • Unit 3 FGD - 20 Dec 2012 • Unit 4 FGD - 12 Jan 2013
36	The company shall deposit 10 % of the FGD cost which is Rs 527 Cr. as mentioned vide your letter dated 21st June, 2010 as bank guarantee.	Compiled. A bank guarantee of Rs 52.7 Cr with validity June 2013 was submitted to Regional Officer, Kolhapur, and MPCB on 1st July 2010.
37	M/s JSWERL shall reduce the power generation and/or change to a fuel with low sulphur content or close the power plant , if so required in case the SO2 levels exceed the prescribed standards till the installation of FGD.	All four units are connected with FGD system
38	M/s JSWERL shall provide adequate funds for installation and operation of requisite numbers of SO2 sensors in various locations as may be specified by the Supervisory Committee constituted for the this purpose.	Complied. three continuous ambient air quality monitoring stations are installed Moreover, offline monitoring by MoEF recognized laboratory is being carried out as per NAAQ standards
39	M/s JSWERL will undertake precautionary or remedial measures as may be required in this regard by this Supervisory Committee from time to time till the commissioning of FGD, including prescription of SOx standards or levels.	Complied
40	If at any point of time adverse impacts on Mango orchards are noticed. / established, the plant shall be shut down.	Shall be complied with
41	M/s JSWERL shall comply with all other conditions stipulated vide Ministry's letter of even no. dated 17th May 2009 and dated 16th April 2010.	Complied

Compliance to Amended EC Conditions dated, 10/07/2017		
42	Extraction of Cenospheres from fly ash is to be explored	Will be complied with
43	In case of STPs are located within 50 km distance from the proposed project then the treated water from STPs shall be used in the plant	No any STP is located within 50 km distance of the TPP.
44	Plantation should be raised at the rate of 2500 saplings per hectare. The tree species should be of local variety having hardened and broad leaves types. Plantation should be preferred by using 2-year-old seedlings than new seedlings for better survival of plantation.	Being complied with.
45	Domestic coal will be sourced from Eastern Coal Fields (ECL) Ltd with indicative coal characteristics of GCV > 5,000 Kcal/Kg, Ash content: 22-30%, Moisture Content: 6-10%, Sulphur: 0.4-0.6% and from Mahanadi Coal Fields (MCL/Talcher Coal Fields) with indicative coal characteristics of GCV >4000 kcal/kg, Ash content; 34%, Moisture Content: 7-12%, Sulphur: 0.4-0.5%	Will be complied with.
46	Coal from ECL will be transported by rail (from Sonepur Bazari siding/ Bankola siding/ Jhanjra siding/ Kajora siding (Jampad OCP) up to Paradeep/ Dhamra port and therefore sea route to Jaigad.	Will be complied with.
47	Total coal requirement shall not exceed 5 Million Ton per Annum. Ash and sulphur content in the blended coal (Domestic 50% and Imported 50%) shall be less than 25% and 0.6% respectively.	Being complied with.
48	The preventive health programme be preferred than the curative health programme such as nutrition development of kids, of the girl child be taken up in the area to minimise the health problems among the local people as a part of CSR initiative.	Complied. The Primary health centre "URJA" is in place. Village health check-up programmes are conducted at various location of Village. 1. Health check-up camp at villages-500 2. Health check-up camp at schools-600 students. 3. URJA PHC benefited patients-5074

49	Modern means of agriculture be introduced in and around the project area as a part of CSR activities, Mixed type of irrigation, i.e. flood irrigation/ micro irrigation to be taken up in the area using organic farming as a part of a long livelihood training programme	Complied, new organic rice cultivation technique "SRT" is being promoted in the nearby villages. Moreover, major activities carried out in reporting period are 1. Organic farming training-10 farmers 2. Drip irrigation provided to Eight framers area covered 1.5 Hac. 3. Formed one Organic FPO 4. Distribution of shed net to farmers
50	As a part of CSR, water supply provisions shall be made for all the bio toilets under Swachh Bharat Abhiyan.	Complied, more than 535 toilets are constructed by company under Swachh Bharat Mission. Three community toilets are constructed. All toilers have water supply provision.
51	Groundwater levels at the plant site and in the surrounding villages shall be monitored once in the six months. (pre and post monsoon).	Being complied with. The ground water quality along with water levels around plant area is monitored twice a year. Reports of the same is attached as Annexure 2
52	As a part of revised tariff policy notified by Ministry of Power vide dated 28.01.2016 project proponent shall explore the use of treated sewage water from Sewage Treatment Plant of Municipality/local bodies/ similar organisations located within 50 km radius of the proposed power project.	No any STP located within 50 km distance of the TPP.
53	Compliance to EC condition, E(P) Act, 1986, Rules and MoEF & CC Notifications issued time to time shall be achieved by qualified environment officer to be nominated by the Project Head of the company who shall be responsible for implementation and necessary compliance.	Complied. A dedicated Environment Monitoring cell, with qualified staff, is operational. The implementation of the conditions is being monitored by the Cell.
54	MoEF & CC Notification S.O. 3305(E) dated 07.12.2015 shall be implemented with respect to specific water consumption, zero liquid discharge and revised emission standards.	Being complied with.

55	MoEF & CC Notification G.S.R 02(E) dated 02.01.2014 regarding use of raw or blended or beneficiated or washed coal with ash content not exceeding 34% shall be complied with as applicable	Being complied with.
56	MoEF & CC Notification on fly ash utilization S.O 763 (E) dated 14.09.1999, S.O 979 (E) dated 27.08.2003, S.O 2804 (E) dated 03.01.2009, S.O 254 (E) dated 25.01.2016 and subsequent amendments shall be complied with	Being complied with.
57	All the other conditions stipulated in the Ministry's letters dated 17.05.2007, 16.04.2010, 28.06.2010 and 09.07.2012 remain same as applicable	Being complied with.

ANNEXURE - I

lative Payment

1400 17-03-2020
1190 02-05-2020
1360

870
2790
4700

GADARK LAB PVT. LTD.

INDUSTRIAL ANALYSTS & CONSULTANTS

LAB : 1054 Additional M.I.D.C. Kudal, Taluka - Kudal, District - Sindhudurg - 416 525
Tel. : (02362) 223519 • E-mail : info@gadark.in • Website : www.gadark.in
OFF. : 1/8 Hindustan Kohinoor Industrial Complex, L.B.S. Marg, Vikhroli (West), Mumbai - 83
Tel.: (022) 2577 7069 / 2577 7070 / 2085 0091 • +91 93213 12367

TEST CERTIFICATE

Doc. No: GLPL/QF/7.8/02

Organisation	M/s. JSW ENERGY LTD. AT – NANDIVADE, P.O. – JAIGAD, TAL. & DIST. – RATNAGIRI – 415 614	No.	GPA/JSW/0501/2020
		Date	30/05/2020

SAMPLING AND ANALYSIS OF TOTAL PARTICULATE MATTER :

Stack Description	UNIT 1	ATTACHED TO BOILER. I. D. 5000 mm.	
Date of Sampling	27/05/2020	Area (sq.m.)	19.64
Time of Sampling (Hrs)	10:25	Flue Gas Temperature (°C)	144
Duration of Sampling (Min)	40	Ambient Temperature (°C)	28

MOISTURE IN FLUE GAS :

Volume of the flue gas collected	1000 Ltr. at Ambient Temperature
Amount of water collected (ml)	12.0
Water Vapour in the Flue gas (at 25 (°C)	0.989 m^3
Moisture (Water Vapour) [%]	1.59

PITOT TRAVERSE DATA & ISOKINETIC DATA :

No. of Traverse Points	8	Sampling Nozzle (mm i.d.)	7.94

T. P. No.	Water Head	Velocity	Gas Metering Rate		Duration of Sampling
			Theoretical	Actual	
	[mm WCL]	[m/sec]	[LPM]	[LPM]	[Min]
01	46.00	25.5	53.6	53.4	5.0
02	44.00	24.9	52.3	52.1	5.0
03	40.00	23.8	50.0	50.5	5.0
04	38.00	23.2	48.7	48.9	5.0
05	35.00	22.2	46.6	46.6	5.0
06	30.00	20.6	43.3	43.8	5.0
07	28.00	19.9	41.8	41.4	5.0
08	24.00	18.4	38.7	39.1	5.0

Average Velocity of flue gas In the Stack (m/sec)	22.3
Average volume of flue gas Discharged (m^3/hr)	1576699
Average volume of flue gas Discharged (Nm^3/hr)	1126754
Volume of flue gas sampled [Lit at 25°C]	1861
Weight of Suspended Particulate Matter Collected [mg]	58.6
Concentration of TPM in the flue gas [mg/Nm^3]	31.5

SAMPLING AND ANALYSIS GASES :

Concentration of Sulphur Dioxide [mg/Nm^3]	549.7
Concentration of NOx [mg/Nm^3]	319.5

For GADARK LAB PVT. LTD.

AUTHORISED SIGNATORY
[KAILAS V.CHITALKAR]

CHECKED BY

Recognised by Ministry of Environment, Forest and CC, Government of India, under the Environment Protection Act, 1986, vide Gazette Notification No.1357, dated 2nd June 2016, valid upto 1st June 2021
ISO 9001 : 2015 Certified & ISO 45001 : 2018 Certified

GADARK LAB PVT. LTD.

INDUSTRIAL ANALYSTS & CONSULTANTS

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

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

TEST CERTIFICATE

Doc. No: GLPL/QF/7.8/02

Organisation	M/s JSW ENERGY LTD. AT – NANDIVADE, P.O. – JAIGAD, TAL. & DIST. – RATNAGIRI – 415 614	No.	GPA/JSW/0502/2020
		Date	30/05/2020

SAMPLING AND ANALYSIS OF TOTAL PARTICULATE MATTER :

Stack Description	UNIT 2	ATTACHED TO BOILER. I. D. 5000 mm.	
Date of Sampling	27/05/2020	Area (sq.m.)	19.64
Time of Sampling (Hrs)	11:50	Flue Gas Temperature (°C)	146
Duration of Sampling (Min)	40	Ambient Temperature (°C)	28

MOISTURE IN FLUE GAS :

Volume of the flue gas collected	1000 Ltr. at Ambient Temperature
Amount of water collected (ml)	14.0
Water Vapour in the Flue gas (at 25 (°C)	1.011 m^3
Moisture (Water Vapour) [%]	1.84

PITOT TRAVERSE DATA & ISOKINETIC DATA

No. of Traverse Points	8	Sampling Nozzle (mm i.d.)	7.94

T. P. No.	Water Head	Velocity	Gas Metering Rate		Duration of Sampling
			Theoretical	Actual	
	[mm WCL]	[m/sec]	[LPM]	[LPM]	[Min]
01	44.00	25.0	52.3	52.5	5.0
02	43.00	24.7	51.6	51.9	5.0
03	42.00	24.4	51.0	51.3	5.0
04	40.00	23.8	49.8	49.5	5.0
05	38.00	23.2	48.5	48.1	5.0
06	33.00	21.6	45.2	45.7	5.0
07	27.00	19.6	41.0	41.5	5.0
08	22.00	17.7	37.0	36.8	5.0

Average Velocity of flue gas In the Stack (m/sec)	22.5
Average volume of flue gas Discharged (m^3/hr)	1590840
Average volume of flue gas Discharged (Nm^3/hr)	1131433
Volume of flue gas sampled [Lit at 25°C]	1869
Weight of Suspended Particulate Matter Collected [mg]	62.1
Concentration of TPM in the flue gas [mg/Nm^3]	33.2

SAMPLING AND ANALYSIS GASES :

Concentration of Sulphur Dioxide [mg/Nm^3]	544.5
Concentration of NOx [mg/Nm^3]	316.9

For GADARK LAB PVT. LTD.

AUTHORISED SIGNATORY
[KAILAS V.CHITALKAR]

CHECKED BY

GADARK LAB PVT. LTD.

INDUSTRIAL ANALYSTS & CONSULTANTS

LAB. : H-54, Additional M.I.D.C. Kudal, Taluka - Kudal, District - Sindhudurg - 416 525
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Tel.: (022) 2577 7069 / 2577 7070 / 2085 0091 • +91 93213 12367

TEST CERTIFICATE

Doc No: GLPL/QF/7.8/02

Organisation	M/s. JSW ENERGY LTD. AT – NANDIVADE, P.O. – JAIGAD, TAL. & DIST. – RATNAGIRI – 415 614	No.	GPA/JSW/0503/2020
		Date	30/05/2020

SAMPLING AND ANALYSIS OF TOTAL PARTICULATE MATTER :

Stack Description	UNIT 4	ATTACHED TO BOILER. I. D. 5000 mm.	
Date of Sampling	26/05/2020	Area (sq.m.)	19.64
Time of Sampling (Hrs)	11:40	Flue Gas Temperature (°C)	141
Duration of Sampling (Min)	40	Ambient Temperature (°C)	29

MOISTURE IN FLUE GAS :

Volume of the flue gas collected	1000 Ltr. at Ambient Temperature
Amount of water collected (ml)	15.0
Water Vapour in the Flue gas (at 25 (°C)	1 023 m^3
Moisture (Water Vapour) [%]	2.01

PITOT TRAVERSE DATA & ISOKINETIC DATA :

No. of Traverse Points	8	Sampling Nozzle (mm i.d.)	7.94

T. P. No.	Water Head	Velocity	Gas Metering Rate		Duration of Sampling
			Theoretical	Actual	
	[mm WCL]	[m/sec]	[LPM]	[LPM]	[Min]
01	44.00	24.8	52.6	52.8	5 0
02	42.00	24.3	51.6	51.4	5 0
03	40.00	23.7	50.3	50.7	5 0
04	38.00	23.1	49.0	49.3	5 0
05	38.00	23.1	49.0	49.1	5 0
06	33.00	21.5	45.6	45.8	5 0
07	25.00	18.7	39.7	39.5	5 0
08	20.00	16.7	35.5	35.3	5 0

Average Velocity of flue gas In the Stack (m/sec)	22.0
Average volume of flue gas Discharged (m^3/hr)	1555488
Average volume of flue gas Discharged (Nm^3/hr)	1119651
Volume of flue gas sampled [Lit at 25°C]	1843
Weight of Suspended Particulate Matter Collected [mg]	66.0
Concentration of TPM in the flue gas [mg/Nm^3]	35.8

SAMPLING AND ANALYSIS GASES :

Concentration of Sulphur Dioxide [mg/Nm^3]	547.1
Concentration of NOx [mg/Nm^3]	319.0

For GADARK LAB PVT. LTD.

AUTHORISED SIGNATORY
[KAILAS V.CHITALKAR]

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GADARK LAB PVT. LTD.

INDUSTRIAL ANALYSTS & CONSULTANTS

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TEST CERTIFICATE

Doc. No: GLPL/QF/7.8/02

Organisation	M/s. JSW ENERGY LTD. AT – NANDIVADE, P.O. – JAIGAD, TAL. & DIST. – RATNAGIRI – 415 614	No.	GPA/JSW/0601/2020
		Date	30/06/2020

SAMPLING AND ANALYSIS OF TOTAL PARTICULATE MATTER :

Stack Description	UNIT 1	ATTACHED TO BOILER. I. D. 5000 mm.	
Date of Sampling	25/06/2020	Area (sq.m.)	19.64
Time of Sampling (Hrs)	11:05	Flue Gas Temperature (°C)	146
Duration of Sampling (Min)	40	Ambient Temperature (°C)	30

MOISTURE IN FLUE GAS :

Volume of the flue gas collected	1000 Ltr. at Ambient Temperature
Amount of water collected (ml)	10.0
Water Vapour in the Flue gas (at 25 (°C)	1.011 m^3
Moisture (Water Vapour) [%]	1.37

PITOT TRAVERSE DATA & ISOKINETIC DATA :

No. of Traverse Points	8	Sampling Nozzle (mm i.d.)	7.94

T. P. No.	Water Head	Velocity	Gas Metering Rate		Duration of Sampling
			Theoretical	Actual	
	[mm WCL]	[m/sec]	[LPM]	[LPM]	[Min]
01	45.00	25.3	53.8	53.5	5.0
02	43.00	24.7	52.5	52.1	5.0
03	40.00	23.8	50.6	50.9	5.0
04	38.00	23.2	49.3	49.7	5.0
05	35.00	22.3	47.4	47.5	5.0
06	32.00	21.3	45.3	45.7	5.0
07	26.00	19.2	40.8	40.3	5.0
08	22.00	17.7	37.6	37.2	5.0

Average Velocity of flue gas In the Stack (m/sec)	22.2
Average volume of flue gas Discharged (m^3/hr)	1569629
Average volume of flue gas Discharged (Nm^3/hr)	1116347
Volume of flue gas sampled [Lit at 25°C]	1853
Weight of Suspended Particulate Matter Collected [mg]	65.2
Concentration of TPM in the flue gas [mg/Nm^3]	35.2

SAMPLING AND ANALYSIS GASES :

Concentration of Sulphur Dioxide [mg/Nm^3]	547.1
Concentration of NOx [mg/Nm^3]	317.7

For GADARK LAB PVT. LTD.

AUTHORISED SIGNATORY
[SACHIN B. GAONKAR]

CHECKED BY

GADARK LAB PVT. LTD.

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TEST CERTIFICATE

Doc. No: GLPL/QF/7.8/02

Organisation	M/s. JSW ENERGY LTD. AT – NANDIVADE, P.O. – JAIGAD, TAL. & DIST. – RATNAGIRI – 415 614	No.	GPA/JSW/0602/2020
		Date	30/06/2020

SAMPLING AND ANALYSIS OF TOTAL PARTICULATE MATTER :

Stack Description	UNIT 2	ATTACHED TO BOILER. I. D. 5000 mm.	
Date of Sampling	25/06/2020	Area (sq.m.)	19.64
Time of Sampling (Hrs)	12:20	Flue Gas Temperature (°C)	144
Duration of Sampling (Min)	40	Ambient Temperature (°C)	30

MOISTURE IN FLUE GAS :

Volume of the flue gas collected	1000 Ltr. at Ambient Temperature
Amount of water collected (ml)	10.0
Water Vapour in the Flue gas (at 25 (°C)	1.023 m^3
Moisture (Water Vapour) [%]	1.35

PITOT TRAVERSE DATA & ISOKINETIC DATA :

No. of Traverse Points	8	Sampling Nozzle (mm i.d.)	7.94

T. P. No.	Water Head	Velocity	Gas Metering Rate		Duration of Sampling
			Theoretical	Actual	
	[mm WCL]	[m/sec]	[LPM]	[LPM]	[Min]
01	46.00	25.5	54.5	54.2	5.0
02	44.00	24.9	53.2	53.5	5.0
03	42.00	24.4	52.1	51.9	5.0
04	40.00	23.8	50.8	50.6	5.0
05	37.00	22.9	48.9	49.3	5.0
06	32.00	21.3	45.5	45.7	5.0
07	26.00	19.2	41.0	41.3	5.0
08	21.00	17.2	36.7	36.9	5.0

Average Velocity of flue gas In the Stack (m/sec)	22.4
Average volume of flue gas Discharged (m^3/hr)	1583770
Average volume of flue gas Discharged (Nm^3/hr)	1131807
Volume of flue gas sampled [Lit at 25°C]	1884
Weight of Suspended Particulate Matter Collected [mg]	59.3
Concentration of TPM in the flue gas [mg/Nm^3]	31.5

SAMPLING AND ANALYSIS GASES :

Concentration of Sulphur Dioxide [mg/Nm^3]	555.0
Concentration of NOx [mg/Nm^3]	317.7

For GADARK LAB PVT. LTD.

AUTHORISED SIGNATORY
[SACHIN B. GAONKAR]

CHECKED BY

GADARK LAB PVT. LTD.

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Doc. No: GLPL/QF/7.8/02

Organisation	M/s. JSW ENERGY LTD. AT – NANDIVADE, P.O. – JAIGAD, TAL. & DIST. – RATNAGIRI – 415 614	No.	GPA/JSW/0603/2020
		Date	30/06/2020

SAMPLING AND ANALYSIS OF TOTAL PARTICULATE MATTER :

Stack Description	UNIT 4	ATTACHED TO BOILER. I. D. 5000 mm.	
Date of Sampling	26/06/2020	Area (sq.m.)	19.64
Time of Sampling (Hrs)	10:45	Flue Gas Temperature (°C)	146
Duration of Sampling (Min)	40	Ambient Temperature (°C)	28

MOISTURE IN FLUE GAS :

Volume of the flue gas collected	1000 Ltr. at Ambient Temperature
Amount of water collected (ml)	8.0
Water Vapour in the Flue gas (at 25 (°C)	0.989 m^3
Moisture (Water Vapour) [%]	1.10

PITOT TRAVERSE DATA & ISOKINETIC DATA :

No. of Traverse Points	8	Sampling Nozzle (mm i.d.)	7.94

T. P. No.	Water Head	Velocity	Gas Metering Rate		Duration of Sampling
			Theoretical	Actual	
	[mm WCL]	[m/sec]	[LPM]	[LPM]	[Min]
01	46.00	25.5	53.9	54.1	5.0
02	43.00	24.7	52.2	52.5	5.0
03	40.00	23.8	50.3	50.7	5.0
04	38.00	23.2	49.0	49.3	5.0
05	35.00	22.3	47.1	47.5	5.0
06	30.00	20.6	43.5	43.7	5.0
07	25.00	18.8	39.7	39.2	5.0
08	22.00	17.7	37.4	37.6	5.0

Average Velocity of flue gas In the Stack (m/sec)	22.1
Average volume of flue gas Discharged (m^3/hr)	1562558
Average volume of flue gas Discharged (Nm^3/hr)	1111318
Volume of flue gas sampled [Lit at 25°C]	1853
Weight of Suspended Particulate Matter Collected [mg]	62.4
Concentration of TPM in the flue gas [mg/Nm^3]	33.7

SAMPLING AND ANALYSIS GASES :

Concentration of Sulphur Dioxide [mg/Nm^3]	565.4
Concentration of NOx [mg/Nm^3]	318.0

For GADARK LAB PVT. LTD.

AUTHORISED SIGNATORY
[SACHIN B. GAONKAR]

CHECKED BY

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Doc. No. GLPL/QF/7.8/02

Organisation	M/s. JSW ENERGY LTD. AT – NANDIVADE, P.O. – JAIGAD, TAL. & DIST. – RATNAGIRI – 415 614	No	GPA/JSW/0703/2020
		Date	29/07/2020

SAMPLING AND ANALYSIS OF TOTAL PARTICULATE MATTER :

Stack Description	UNIT 4	ATTACHED TO BOILER. I. D. 5000 mm.	
Date of Sampling	25/07/2020	Area (sq.m.)	19.64
Time of Sampling (Hrs)	11:10	Flue Gas Temperature (°C)	147
Duration of Sampling (Min)	40	Ambient Temperature (°C)	29

MOISTURE IN FLUE GAS :

Volume of the flue gas collected	1000 Ltr. at Ambient Temperature
Amount of water collected (ml)	11.0
Water Vapour in the Flue gas (at 25 (°C)	1.009 m^3
Moisture (Water Vapour) [%]	1.46

PITOT TRAVERSE DATA & ISOKINETIC DATA :

No. of Traverse Points	8	Sampling Nozzle (mm i.d.)	7.94

T. P. No.	Water Head	Velocity	Gas Metering Rate		Duration of Sampling
			Theoretical	Actual	
	[mm WCL]	[m/sec]	[LPM]	[LPM]	[Min]
01	45.00	25.3	53.5	53.2	5.0
02	42.00	24.4	51.6	51.9	5.0
03	40.00	23.8	50.3	50.1	5.0
04	38.00	23.2	49.0	49.6	5.0
05	35.00	22.3	47.1	47.4	5.0
06	32.00	21.3	45.0	45.2	5.0
07	26.00	19.2	40.6	40.9	5.0
08	20.00	16.9	35.7	35.5	5.0

Average Velocity of flue gas In the Stack (m/sec)	22.1
Average volume of flue gas Discharged (m^3/hr)	1562558
Average volume of flue gas Discharged (Nm^3/hr)	1108672
Volume of flue gas sampled [Lit at 25°C]	1843
Weight of Suspended Particulate Matter Collected [mg]	64.7
Concentration of TPM in the flue gas [mg/Nm^3]	35.1

SAMPLING AND ANALYSIS GASES :

Concentration of Sulphur Dioxide [mg/Nm^3]	528.8
Concentration of NOx [mg/Nm^3]	321.4

For GADARK LAB PVT. LTD.

AUTHORISED SIGNATORY
[KAILAS V.CHITALKAR]

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Doc. No: GLPL/QF/7.8/02

Organisation	M/s. JSW ENERGY LTD. AT – NANDIVADE, P.O. – JAIGAD, TAL. & DIST. – RATNAGIRI – 415 614	No.	GPA/JSW/0702/2020
		Date	29/07/2020

SAMPLING AND ANALYSIS OF TOTAL PARTICULATE MATTER :

Stack Description	UNIT 2	ATTACHED TO BOILER. I. D. 5000 mm.	
Date of Sampling	24/07/2020	Area (sq.m.)	19.64
Time of Sampling (Hrs)	12:50	Flue Gas Temperature (°C)	142
Duration of Sampling (Min)	40	Ambient Temperature (°C)	29

MOISTURE IN FLUE GAS :

Volume of the flue gas collected	1000 Ltr. at Ambient Temperature
Amount of water collected (ml)	15.0
Water Vapour in the Flue gas (at 25 (°C)	1.011 m^3
Moisture (Water Vapour) [%]	2.03

PITOT TRAVERSE DATA & ISOKINETIC DATA :

No. of Traverse Points	8	Sampling Nozzle (mm i.d.)	7.94

T. P. No.	Water Head	Velocity	Gas Metering Rate		Duration of Sampling
			Theoretical	Actual	
	[mm WCL]	[m/sec]	[LPM]	[LPM]	[Min]
01	44.00	24.9	52.7	52.8	5.0
02	42.00	24.3	51.5	51.7	5.0
03	40.00	23.7	50.2	49.6	5.0
04	40.00	23.7	50.2	50.8	5.0
05	37.00	22.8	48.3	48.1	5.0
06	32.00	21.2	44.9	45.3	5.0
07	26.00	19.1	40.4	40.6	5.0
08	22.00	17.6	37.3	37.3	5.0

Average Velocity of flue gas In the Stack (m/sec)	22.2
Average volume of flue gas Discharged (m^3/hr)	1569629
Average volume of flue gas Discharged (Nm^3/hr)	1127107
Volume of flue gas sampled [Lit at 25°C]	1855
Weight of Suspended Particulate Matter Collected [mg]	62.1
Concentration of TPM in the flue gas [mg/Nm^3]	33.5

SAMPLING AND ANALYSIS GASES :

Concentration of Sulphur Dioxide [mg/Nm^3]	552.4
Concentration of NOx [mg/Nm^3]	315.8

For GADARK LAB PVT. LTD.

AUTHORISED SIGNATORY
[KAILAS V.CHITALKAR]

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TEST CERTIFICATE

Doc. No: GLPL/QF/7 8/02

Organisation	M/s. JSW ENERGY LTD. AT – NANDIVADE, P.O. – JAIGAD, TAL. & DIST. – RATNAGIRI – 415 614	No.	GPA/JSW/0701/2020
		Date	29/07/2020

SAMPLING AND ANALYSIS OF TOTAL PARTICULATE MATTER :

Stack Description	UNIT 1	ATTACHED TO BOILER. I. D. 5000 mm.	
Date of Sampling	24/07/2020	Area (sq.m.)	19.64
Time of Sampling (Hrs)	11:35	Flue Gas Temperature (°C)	143
Duration of Sampling (Min)	40	Ambient Temperature (°C)	29

MOISTURE IN FLUE GAS :

Volume of the flue gas collected	1000 Ltr. at Ambient Temperature
Amount of water collected (ml)	13.0
Water Vapour in the Flue gas (at 25 (°C)	1.023 m^3
Moisture (Water Vapour) [%]	1.73

PITOT TRAVERSE DATA & ISOKINETIC DATA

No. of Traverse Points	8	Sampling Nozzle (mm i.d.)	7.94

T. P. No.	Water Head	Velocity	Gas Metering Rate		Duration of Sampling
			Theoretical	Actual	
	[mm WCL]	[m/sec]	[LPM]	[LPM]	[Min]
01	46.00	25.5	53.9	54.1	5.0
02	44.00	24.9	52.6	52.6	5.0
03	42.00	24.3	51.3	51.6	5.0
04	40.00	23.7	50.1	50.3	5.0
05	38.00	23.1	48.8	48.9	5.0
06	33.00	21.6	45.6	45.1	5.0
07	28.00	19.9	42.0	42.4	5.0
08	20.00	16.8	35.5	35.7	5.0

Average Velocity of flue gas In the Stack (m/sec)	22.5
Average volume of flue gas Discharged (m^3/hr)	1590840
Average volume of flue gas Discharged (Nm^3/hr)	1139592
Volume of flue gas sampled [Lit at 25°C]	1879
Weight of Suspended Particulate Matter Collected [mg]	57.9
Concentration of TPM in the flue gas [mg/Nm^3]	30.8

SAMPLING AND ANALYSIS GASES :

Concentration of Sulphur Dioxide [mg/Nm^3]	549.7
Concentration of NOx [mg/Nm^3]	319.5

For GADARK LAB PVT. LTD.

AUTHORISED SIGNATORY
[KAILAS V.CHITALKAR]

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ANNEXURE - II

GADARK LAB PVT. LTD.

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TEST CERTIFICATE

Doc. No: GLPL/QF/7.8/01

Test Certificate No.	GW/K/20/0227	T.C. Date:	12/06/2020
Customer Name and Address	**M/s. JSW ENERGY LTD.** **AT – NANDIVADE, P.O. – JAIGAD, TAL. & DIST. – RATNAGIRI – 415 614**		
Letter Ref/Date	---		
Lab Reference No.	GW/K/20/0227	Page No.	1 of 1
Sampling Plan	GLPL/QF/7.3/06	Sampling Method	APHA 1060
Sampling Done By	GLPL On 29/05/2020	Sample Received on	05/06/2020
Sample Collected by	GLPL	Analysis Period	05/06/2020 To 12/06/2020
Sample Description	Open well water sample from Nandiwade Village		

ANALYSIS REPORTS:

Parameters	Units	Test Results	Methods
Water Level	Meter	1.2	---
pH	---	8.05	APHA 4500 H+
Conductivity	µS/cm	198	APHA 2510 B
Temperature	°c	28	APHA 2550 B
Turbidity	NTU	0.7	APHA 2130 B
Magnesium	mg/ltr	6.33	APHA 3500 Mg B
Total Alkalinity	mg/ltr	50.25	APHA 2320 B
Nitrate	mg/ltr	0.15	APHA 4500 NO_3 B
COD	mg/ltr	12.0	APHA 5220 B
BOD 3 days 27°C	mg/ltr	< 2.0	IS 3025 (Part 44) : 1993
Dissolved Oxygen	mg/ltr	5.8	APHA 4500 O C
Chlorides	mg/ltr	23.16	APHA 4500 Cl^- B
Sulphate	mg/ltr	3.25	APHA 4500 SO_4^{2-} E
Total Dissolved Solids	mg/ltr	142	APHA 2540 C
Fluoride	mg/ltr	0.012	APHA 4500 F^-
Sodium	mg/ltr	9	APHA 3500 Na
Potassium	mg/ltr	3	APHA 3500 K
Salinity	‰	0.041	Calculation
Total Nitrogen	mg/ltr	0.28	APHA 4500-Norg
Phenolic Compound	mg/ltr	< 0.001	IS 3025
Copper	mg/ltr	< 0.0049	APHA 3111 B
Chromium	mg/ltr	0.023	APHA 3111 B
Cadmium	mg/ltr	< 0.0037	APHA 3111 B
Iron	mg/ltr	0.052	APHA 3111 B
Manganese	mg/ltr	0.029	APHA 3111 B
Lead	mg/ltr	0.045	APHA 3111 B
Zinc	mg/ltr	< 0.0096	APHA 3111 B
Arsenic	mg/ltr	< 0.001	APHA 3114 B
Mercury	mg/ltr	< 0.001	APHA 3112 B & C
BACTERIOLOGICAL TEST :			
Total Coliform	/ 100 ml	27	APHA 9221 C

End

For GADARK LAB PVT. LTD.

AUTHORISED SIGNATORY
[SACHIN B. GAONKAR]

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Note:
1. Results relate only to the sample/s tested, only in case of samples submitted by customer & not drawn by GLPL.
2. Test certificate shall not be reproduced except in full, without written approval of the laboratory.
3. Samples will be preserved for a period 15 days from the delivery of Test Certificate.
4. Customer complaint register is available at laboratory.

GADARK LAB PVT. LTD.

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TEST CERTIFICATE

Doc. No: GLPL/QF/7.8/01
A

Test Certificate No.	GW/K/20/0228	T.C. Date:	12/06/2020
Customer Name and Address	**M/s. JSW ENERGY LTD. AT – NANDIVADE, P.O. – JAIGAD, TAL. & DIST. – RATNAGIRI – 415 614**		
Letter Ref/Date	---		
Lab Reference No.	GW/K/20/0228	Page No.	1 of 1
Sampling Plan	GLPL/QF/7.3/06	Sampling Method	APHA 1060
Sampling Done By	GLPL On 29/05/2020	Sample Received on	05/06/2020
Sample Collected by	GLPL	Analysis Period	05/06/2020 To 12/06/2020
Sample Description	Open well water sample from Sadewadi		

ANALYSIS REPORTS:

Parameters	Units	Test Results	Methods
Water Level	Meter	3.2	---
pH	---	7.76	APHA 4500 H^+
Conductivity	µS/cm	68	APHA 2510 B
Temperature	°c	28	APHA 2550 B
Turbidity	NTU	0.3	APHA 2130 B
Magnesium	mg/ltr	7.48	APHA 3500 Mg B
Total Alkalinity	mg/ltr	24.36	APHA 2320 B
Nitrate	mg/ltr	Nil	APHA 4500 NO_3 B
COD	mg/ltr	8.0	APHA 5220 B
BOD 3 days 27°C	mg/ltr	< 2.0	IS 3025 (Part 44) : 1993
Dissolved Oxygen	mg/ltr	5.8	APHA 4500 O C
Chlorides	mg/ltr	11.11	APHA 4500 Cl^- B
Sulphate	mg/ltr	3.0	APHA 4500 SO_4^{2-} E
Total Dissolved Solids	mg/ltr	48	APHA 2540 C
Fluoride	mg/ltr	< 0.001	APHA 4500 F^-
Sodium	mg/ltr	7	APHA 3500 Na
Potassium	mg/ltr	3	APHA 3500 K
Salinity	‰	0.02	Calculation
Total Nitrogen	mg/ltr	0.11	APHA 4500-Norg
Phenolic Compound	mg/ltr	< 0.001	IS 3025
Copper	mg/ltr	< 0.0049	APHA 3111 B
Chromium	mg/ltr	< 0.014	APHA 3111 B
Cadmium	mg/ltr	< 0.0037	APHA 3111 B
Iron	mg/ltr	0.058	APHA 3111 B
Manganese	mg/ltr	< 0.010	APHA 3111 B
Lead	mg/ltr	0.035	APHA 3111 B
Zinc	mg/ltr	0.022	APHA 3111 B
Arsenic	mg/ltr	< 0.001	APHA 3114 B
Mercury	mg/ltr	< 0.001	APHA 3112 B & C
BACTERIOLOGICAL TEST :			
Total Coliform	/ 100 ml	91	APHA 9221 C

End

For GADARK LAB PVT. LTD.

AUTHORISED SIGNATORY
[SACHIN B. GAONKAR]

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Note:
1. Results relate only to the sample/s tested, only in case of samples submitted by customer & not drawn by GLPL.
2. Test certificate shall not be reproduced except in full, without written approval of the laboratory.
3. Samples will be preserved for a period 15 days from the delivery of Test Certificate.
4. Customer complaint register is available at laboratory.

GADARK LAB PVT. LTD.

INDUSTRIAL ANALYSTS & CONSULTANTS

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

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

TEST CERTIFICATE

Doc. No: GLPL/QF/7.8/01

Test Certificate No.	GW/K/20/0229	T.C. Date:	12/06/2020
Customer Name and Address	**M/s. JSW ENERGY LTD.** **AT – NANDIVADE, P.O. – JAIGAD, TAL. & DIST. – RATNAGIRI – 415 614**		
Letter Ref/Date	---		
Lab Reference No.	GW/K/20/0229	Page No.	1 of 1
Sampling Plan	GLPL/QF/7.3/06	Sampling Method	APHA 1060
Sampling Done By	GLPL On 29/05/2020	Sample Received on	05/06/2020
Sample Collected by	GLPL	Analysis Period	05/06/2020 To 12/06/2020
Sample Description	Open well water sample from Kasari		

ANALYSIS REPORTS:

Parameters	Units	Test Results	Methods
Water Level	Meter	1.0	---
pH	---	8.13	APHA 4500 H^+
Conductivity	µS/cm	258	APHA 2510 B
Temperature	°c	28	APHA 2550 B
Turbidity	NTU	0.3	APHA 2130 B
Magnesium	mg/ltr	6.33	APHA 3500 Mg B
Total Alkalinity	mg/ltr	46.69	APHA 2320 B
Nitrate	mg/ltr	0.028	APHA 4500 NO_3 B
COD	mg/ltr	12	APHA 5220 B
BOD 3 days 27°C	mg/ltr	3	IS 3025 (Part 44) : 1993
Dissolved Oxygen	mg/ltr	6.0	APHA 4500 O C
Chlorides	mg/ltr	16.68	APHA 4500 Cl^- B
Sulphate	mg/ltr	3.0	APHA 4500 SO_4^{2-} E
Total Dissolved Solids	mg/ltr	184	APHA 2540 C
Fluoride	mg/ltr	< 0.001	APHA 4500 F^-
Sodium	mg/ltr	14	APHA 3500 Na
Potassium	mg/ltr	5	APHA 3500 K
Salinity	‰	0.03	Calculation
Total Nitrogen	mg/ltr	0.56	APHA 4500-Norg
Phenolic Compound	mg/ltr	< 0.001	IS 3025
Copper	mg/ltr	< 0.0049	APHA 3111 B
Chromium	mg/ltr	< 0.014	APHA 3111 B
Cadmium	mg/ltr	< 0.0037	APHA 3111 B
Iron	mg/ltr	< 0.049	APHA 3111 B
Manganese	mg/ltr	< 0.010	APHA 3111 B
Lead	mg/ltr	< 0.035	APHA 3111 B
Zinc	mg/ltr	0.035	APHA 3111 B
Arsenic	mg/ltr	< 0.001	APHA 3114 B
Mercury	mg/ltr	< 0.001	APHA 3112 B & C
BACTERIOLOGICAL TEST :			
Total Coliform	/ 100 ml	72	APHA 9221 C

End

For GADARK LAB PVT. LTD.

AUTHORISED SIGNATORY
[SACHIN B. GAONKAR]

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3. Samples will be preserved for a period 15 days from the delivery of Test Certificate.
4. Customer complaint register is available at laboratory.

GADARK LAB PVT. LTD.

INDUSTRIAL ANALYSTS & CONSULTANTS

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

TEST CERTIFICATE

Doc. No: GLPL/QF/7.8/01

Test Certificate No.	GW/K/20/0230	T.C. Date:	12/06/2020
Customer Name and Address	**M/s. JSW ENERGY LTD. AT – NANDIVADE, P.O. – JAIGAD, TAL. & DIST. – RATNAGIRI – 415 614**		
Letter Ref/Date	---		
Lab Reference No.	GW/K/20/0230	Page No.	1 of 1
Sampling Plan	GLPL/QF/7.3/06	Sampling Method	APHA 1060
Sampling Done By	GLPL On 29/05/2020	Sample Received on	05/06/2020
Sample Collected by	GLPL	Analysis Period	05/06/2020 To 12/06/2020
Sample Description	Bore well water sample from Chaferi		

ANALYSIS REPORTS:

Parameters	Units	Test Results	Methods
pH	---	8.36	APHA 4500 H^+
Conductivity	µS/cm	281	APHA 2510 B
Temperature	°c	28	APHA 2550 B
Turbidity	NTU	0.5	APHA 2130 B
Magnesium	mg/ltr	5.84	APHA 3500 Mg B
Total Alkalinity	mg/ltr	50.75	APHA 2320 B
Nitrate	mg/ltr	0.046	APHA 4500 NO_3 B
COD	mg/ltr	16	APHA 5220 B
BOD 3 days 27°C	mg/ltr	3	IS 3025 (Part 44) : 1993
Dissolved Oxygen	mg/ltr	5.6	APHA 4500 O C
Chlorides	mg/ltr	56.52	APHA 4500 Cl^- B
Sulphate	mg/ltr	4.0	APHA 4500 SO_4^{2-} E
Total Dissolved Solids	mg/ltr	182	APHA 2540 C
Fluoride	mg/ltr	0.025	APHA 4500 F^-
Sodium	mg/ltr	14	APHA 3500 Na
Potassium	mg/ltr	3	APHA 3500 K
Salinity	‰	0.10	Calculation
Total Nitrogen	mg/ltr	0.17	APHA 4500-Norg
Phenolic Compound	mg/ltr	< 0.001	IS 3025
Copper	mg/ltr	< 0.0049	APHA 3111 B
Chromium	mg/ltr	< 0.014	APHA 3111 B
Cadmium	mg/ltr	< 0.0037	APHA 3111 B
Iron	mg/ltr	0.218	APHA 3111 B
Manganese	mg/ltr	0.038	APHA 3111 B
Lead	mg/ltr	0.074	APHA 3111 B
Zinc	mg/ltr	0.059	APHA 3111 B
Arsenic	mg/ltr	< 0.001	APHA 3114 B
Mercury	mg/ltr	< 0.001	APHA 3112 B & C
BACTERIOLOGICAL TEST :			
Total Coliform	/ 100 ml	52	APHA 9221 C

End

For GADARK LAB PVT. LTD.

AUTHORISED SIGNATORY
[SACHIN B. GAONKAR]

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

TEST CERTIFICATE

Doc. No: GLPL/QF/7.8/01

Test Certificate No.	GW/K/20/0231	T.C. Date:	12/06/2020
Customer Name and Address	**M/s. JSW ENERGY LTD. AT – NANDIVADE, P.O. – JAIGAD, TAL. & DIST. – RATNAGIRI – 415 614**		
Letter Ref/Date	---		
Lab Reference No.	GW/K/20/0231	Page No.	1 of 1
Sampling Plan	GLPL/QF/7.3/06	Sampling Method	APHA 1060
Sampling Done By	GLPL On 29/05/2020	Sample Received on	05/06/2020
Sample Collected by	GLPL	Analysis Period	05/06/2020 To 12/06/2020
Sample Description	Water Sample sample from Sea Outfall		

ANALYSIS REPORTS:

Parameters	Units	Test Results	Methods
pH	---	8.32	APHA 4500 H^+
Temperature	°c	28	APHA 2550 B
Conductivity	µS/cm	49300	APHA 2510 B
Turbidity	NTU	42	APHA 2130 B
Total Hardness	mg/ltr	7100	APHA 2340 C
Calcium	mg/ltr	881.76	APHA 3500 Ca B
Magnesium	mg/ltr	1193.87	APHA 3500 Mg B
Total Alkalinity	mg/ltr	111.65	APHA 2320 B
Chlorides	mg/ltr	24850	APHA 4500 Cl^- B
Sulphate	mg/ltr	1180	APHA 4500 SO_4^{2-} E
Phosphates as PO_4	mg/ltr	0.16	APHA 4500 P D
COD	mg/ltr	182	APHA 5220 B
BOD 3 days 27°C	mg/ltr	35	IS 3025 (Part 44) : 1993
Dissolved Oxygen	mg/ltr	5.6	APHA 4500 O C
Total Suspended Solids	mg/ltr	64	APHA 2540 D
Total Dissolved Solids	mg/ltr	38700	APHA 2540 C
Oil & Grease	mg/ltr	1.0	APHA 5520 B
Fluoride	mg/ltr	< 0.001	APHA 4500 F^-
Ammonical Nitrogen	mg/ltr	2.91	APHA 4500 A
Phenolic Compound	mg/ltr	< 0.001	IS 3025
Sodium	mg/ltr	4200	APHA 3500 Na
Potassium	mg/ltr	190	APHA 3500 K
Nickel	mg/ltr	< 0.075	APHA 3111 B
Zinc	mg/ltr	0.058	APHA 3111 B
Chromium	mg/ltr	< 0.014	APHA 3111 B
Iron	mg/ltr	< 0.049	APHA 3111 B
Lead	mg/ltr	0.026	APHA 3111 B
Manganese	mg/ltr	0.018	APHA 3111 B
Copper	mg/ltr	0.026	APHA 3111 B
Mercury	mg/ltr	< 0.001	APHA 3112 B & C
Salinity	‰	44.73	Calculation

End

For GADARK LAB PVT. LTD.

AUTHORISED SIGNATORY
[SACHIN B. GAONKAR]

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ANNEXURE III

GADARK LAB PVT. LTD.

INDUSTRIAL ANALYSTS & CONSULTANTS
GOVERNMENT APPROVED, ISO 9001 : 2008 AND OHSAS 18001 : 2007 CERTIFIED
LAB. : H-54, Additional M.I.D.C. Kudal, Taluka - Kudal, District - Sindhudurg - 416 525
Tel. : (02362) 223519 • E-mail : info@gadark.in • Website : www.gadark.in
OFF. : 15, Hindustan Kohinoor Industrial Complex, L.B.S. Marg, Vikhroli (West), Mumbai - 83
Tel. No. : (022) 25777069 / 70

Ref. : GLPL/JSWRL/0601/2020 Date : 13/06/2020

Organisation : M/s. JSW ENERGY LTD.
AT – NANDIVADE, P.O. – JAIGAD,
TAL. & DIST. – RATNAGIRI – 415 614

The Noise monitoring was carried out for the month of June 2020. The results of the monitoring are summerised below.

	Noise Level dB (A)		
	Nandivade Village	Jaigad Fort	JSW Plant
Date of Sampling	08/06/2020	08/06/2020	08/06/2020
Max. Value	58.7	60.7	69.3
Min. value	49.3	48.9	60.4
L_d	56.6	57.4	65.9
L_n	54.0	53.1	63.7
L_{dn}	60.9	60.4	70.5

For **GADARK LAB PVT. LTD.**

AUTHORISED SIGNATORY
[SACHIN B. GOANKAR]

GADARK LAB PVT. LTD.

INDUSTRIAL ANALYSTS & CONSULTANTS
GOVERNMENT APPROVED, ISO 9001 : 2008 AND OHSAS 18001 : 2007 CERTIFIED
LAB. : H-54, Additional M.I.D.C. Kudal, Taluka - Kudal, District - Sindhudurg - 416 525.
Tel. : (02362) 223519 • E-mail : info@gadark.in • Website : www.gadark.in
OFF. : 15, Hindustan Kohinoor Industrial Complex, L.B.S. Marg, Vikhroli (West), Mumbai - 83.
Tel. No. : (022) 25777069 / 70

Ref. : GLPL/JSWRL/0501/2020 Date : 21/05/2020

Organisation : M/s. JSW ENERGY LTD.
AT – NANDIVADE, P.O. – JAIGAD,
TAL. & DIST. – RATNAGIRI – 415 614

The Noise monitoring was carried out for the month of May 2020. The results of the monitoring are summerised below.

	Noise Level dB (A)		
	Nandivade Village	Jaigad Fort	JSW Plant
Date of Sampling	18/05/2020	18/05/2020	18/05/2020
Max. Value	59.2	60.1	69.5
Min. value	50.1	51.9	58.9
L_d	55.9	57.1	67.0
L_n	54.6	55.5	63.2
L_{dn}	61.2	60.7	70.4

For **GADARK LAB PVT. LTD.**

AUTHORISED SIGNATORY
[KAILAS V.CHITALKAR]

GADARK LAB PVT. LTD.

INDUSTRIAL ANALYSTS & CONSULTANTS
GOVERNMENT APPROVED, ISO 9001 : 2008 AND OHSAS 18001 : 2007 CERTIFIED
LAB. : H-54, Additional M.I.D.C. Kudal, Taluka - Kudal, District - Sindhudurg - 416 525.
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OFF. : 15, Hindustan Kohinoor Industrial Ccmplex, L.B.S. Marg, Vikhroli (West), Mumbai - 83.
Tel. No. : (022) 25777069 / 70

Ref. : GLPL/JSWRL/0701/2020

Date : 17/07/2020

Organisation : M/s. JSW ENERGY LTD.
AT – NANDIVADE, P.O. – JAIGAD,
TAL. & DIST. – RATNAGIRI – 415 614

The Noise monitoring was carried out for the month of July 2020. The results of the monitoring are summerised below.

	Noise Level dB (A)		
	Nandivade Village	Jaigad Fort	JSW Plant
Date of Sampling	13/07/2020	13/07/2020	13/07/2020
Max. Value	58.3	59.9	69.8
Min. value	48.7	49.9	57.9
L_d	55.8	58.0	67.3
L_n	52.3	52.9	62.0
L_{dn}	59.4	60.5	69.7

For **GADARK LAB PVT. LTD.**

AUTHORISED SIGNATORY
[KAILAS V.CHITALKAR]

ANNEXURE - IV

SUMMARY

OF

AMBIENT AIR QUALITY MONITORING

FOR

JSW ENERGY LIMITED
VILLAGE – NANDIVADE, POST – JAIGAD,
TAL. & DIST. – RATNAGIRI – 415 614

BY

GADARK LAB PVT. LTD.

PLOT NO. H-54, ADDITIONAL M.I.D.C. KUDAL,
TALUKA - KUDAL, DIST. – SINDHUDURG – 416 525

JANUARY 2020 TO MAY 2020

GADARK LAB PVT. LTD.

INDUSTRIAL ANALYSTS & CONSULTANTS
GOVERNMENT APPROVED, ISO 9001 : 2008 AND OHSAS 18001 : 2007 CERTIFIED
LAB. : H-54, Additional M.I.D.C. Kudal, Taluka - Kudal, District - Sindhudurg - 416 525.
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OFF. : 15, Hindustan Kohinoor Industrial Complex, L.B.S. Marg, Vikhroli (West), Mumbai - 83.
Tel. No. : (022) 25777069 / 70

Location : Jaigad Fort										
Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	CO (mg/m^3)	Lead ($\mu g/m^3$)	Ozone ($\mu g/m^3$)	Mercury ($\mu g/m^3$)	Arsenic (ng/m^3)	Nickel (ng/m^3)
06.01.2020	58.6	29.4	7.5	8.9	0.69	0.00150	5.1	< 0.005	< 0.4	0.54
07.01.2020	53.1	30.7	6.2	8.6	0.71	0.00090	4.9	< 0.005	< 0.4	0.49
13.01.2020	55.3	27.5	5.9	9.9	0.65	0.00600	6.8	< 0.005	< 0.4	0.66
14.01.2020	61.9	29.3	5.5	9.3	0.88	0.00130	5.3	< 0.005	< 0.4	0.54
20.01.2020	47.5	27.4	5.9	7.7	0.44	0.00230	8.9	< 0.005	< 0.4	0.61
21.01.2020	49.3	29.1	6.8	9.5	0.92	0.00140	5.3	< 0.005	< 0.4	0.65
27.01.2020	60.3	32.8	5.1	8.5	0.86	0.00720	6.6	< 0.005	< 0.4	0.44
28.01.2020	55.9	30.7	6.8	9.2	0.91	0.00830	7.2	< 0.005	< 0.4	0.58
03.02.2020	63.7	36.7	4.2	8.4	0.62	0.00150	6.3	< 0.005	< 0.4	0.42
04.02.2020	51.2	29.4	4.9	9.2	0.78	0.00110	5.1	< 0.005	< 0.4	0.63
10.02.2020	59.7	34.7	4.5	8.6	0.64	0.00080	7.5	< 0.005	< 0.4	0.38
11.02.2020	65.1	32.7	4.8	8.9	0.82	0.00150	6.8	< 0.005	< 0.4	0.55
17.02.2020	44.4	25.9	3.9	7.7	0.48	0.00190	7.2	< 0.005	< 0.4	0.48
18.02.2020	47.1	28.5	5.1	10.2	0.84	0.00760	5.9	< 0.005	< 0.4	0.56
24.02.2020	57.2	33.5	4.9	8.5	0.89	0.00680	6.1	< 0.005	< 0.4	0.39
25.02.2020	51.3	30.9	4.4	8.5	0.91	0.00520	6.8	< 0.005	< 0.4	0.44
02.03.2020	44.3	26.5	5.2	10.8	0.73	0.00150	6.3	< 0.005	< 0.4	0.52
03.03.2020	48.7	28.3	4.8	9.1	0.79	0.00110	5.7	< 0.005	< 0.4	0.59
09.03.2020	42.6	25.5	4.4	8.5	0.66	0.00080	6.9	< 0.005	< 0.4	0.68
10.03.2020	49.2	28.4	4.6	8.7	0.81	0.00150	6.6	< 0.005	< 0.4	0.46
16.03.2020	53.2	30.3	4.9	9.2	0.35	0.00190	5.8	< 0.005	< 0.4	0.51
17.03.2020	48.9	28.2	5.2	10.4	0.58	0.00760	6.3	< 0.005	< 0.4	0.58
Min.	**42.6**	**25.5**	**3.9**	**7.7**	**0.35**	**0.0008**	**4.9**	**< 0.005**	**< 0.4**	**0.38**
Max.	**65.1**	**36.7**	**7.5**	**10.8**	**0.92**	**0.0083**	**8.9**	**< 0.005**	**< 0.4**	**0.68**
Avg.	**53.1**	**29.8**	**5.3**	**9.0**	**0.73**	**0.0032**	**6.3**	**< 0.005**	**< 0.4**	**0.53**

GADARK LAB PVT. LTD. KUDAL

Contd..2/-

Location : Tavsal Village										
Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	CO (mg/m^3)	Lead ($\mu g/m^3$)	Ozone ($\mu g/m^3$)	Mercury ($\mu g/m^3$)	Arsenic (ng/m^3)	Nickel (ng/m^3)
06.01.2020	44.5	27.9	5.3	8.3	0.58	0.0008	4.5	< 0.005	< 0.4	0.53
07.01.2020	51.3	29.7	5.1	8.9	0.35	0.0005	3.8	< 0.005	< 0.4	0.46
13.01.2020	54.7	31.5	4.9	7.3	0.72	0.0010	5.3	< 0.005	< 0.4	0.44
14.01.2020	52.3	30.9	5.3	8.5	0.87	0.0006	5.7	< 0.005	< 0.4	0.49
20.01.2020	46.8	27.8	5.5	9.1	0.62	0.0009	4.3	< 0.005	< 0.4	0.51
21.01.2020	54.9	31.5	4.9	9.8	0.59	0.0015	5.9	< 0.005	< 0.4	0.66
27.01.2020	56.1	27.9	4.7	8.9	0.55	0.0063	6.3	< 0.005	< 0.4	0.54
28.01.2020	45.5	26.9	4.5	8.6	0.89	0.0051	5.1	< 0.005	< 0.4	0.42
03.02.2020	39.1	24.9	4.5	8.6	0.52	0.0011	5.7	< 0.005	< 0.4	0.58
04.02.2020	43.6	26.4	4.8	8.9	0.35	0.0048	6.2	< 0.005	< 0.4	0.53
10.02.2020	47.5	28.1	4.3	8.6	0.78	0.0023	6.5	< 0.005	< 0.4	0.36
11.02.2020	51.6	30.7	4.9	8.8	0.49	0.0012	5.9	< 0.005	< 0.4	0.42
17.02.2020	41.4	25.7	5.5	10.7	0.61	0.0036	4.6	< 0.005	< 0.4	0.59
18.02.2020	46.3	27.8	4.5	8.6	0.59	0.0021	5.1	< 0.005	< 0.4	0.63
24.02.2020	50.9	29.5	4.4	8.4	0.88	0.0015	4.9	< 0.005	< 0.4	0.60
25.02.2020	44.6	26.8	4.1	8.2	0.68	0.0023	5.3	< 0.005	< 0.4	0.38
02.03.2020	36.4	22.8	4.3	8.4	0.45	0.0011	4.9	< 0.005	< 0.4	0.65
03.03.2020	42.9	25.6	4.5	8.7	0.54	0.0048	5.3	< 0.005	< 0.4	0.58
09.03.2020	46.3	27.7	5.3	9.3	0.75	0.0023	4.7	< 0.005	< 0.4	0.42
10.03.2020	39.9	24.9	4.7	8.9	0.72	0.0012	5.6	< 0.005	< 0.4	0.56
16.03.2020	45.6	26.1	5.1	7.4	0.55	0.0036	6.3	< 0.005	< 0.4	0.59
17.03.2020	34.1	23.9	4.9	9.4	0.48	0.0021	5.5	< 0.005	< 0.4	0.48
Min.	**34.1**	**22.8**	**4.1**	**7.3**	**0.35**	**0.0005**	**3.8**	**< 0.005**	**< 0.4**	**0.36**
Max.	**56.1**	**31.5**	**5.5**	**10.7**	**0.89**	**0.0063**	**6.5**	**< 0.005**	**< 0.4**	**0.66**
Avg.	**46.2**	**27.5**	**4.8**	**8.7**	**0.62**	**0.0023**	**5.3**	**< 0.005**	**< 0.4**	**0.52**

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Location : Nandivade Village										
Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	CO (mg/m^3)	Lead ($\mu g/m^3$)	Ozone ($\mu g/m^3$)	Mercury ($\mu g/m^3$)	Arsenic (ng/m^3)	Nickel (ng/m^3)
06.01.2020	55.6	32.7	5.9	9.4	0.68	0.0023	6.2	< 0.005	< 0.4	0.42
07.01.2020	62.4	30.3	5.4	8.5	0.75	0.0019	5.5	< 0.005	< 0.4	0.68
13.01.2020	64.1	34.9	7.2	8.3	0.52	0.0006	5.3	< 0.005	< 0.4	0.53
14.01.2020	61.9	29.8	6.3	8.4	0.92	0.0009	4.7	< 0.005	< 0.4	0.46
20.01.2020	53.4	27.3	7.5	8.7	0.44	0.0015	6.0	< 0.005	< 0.4	0.65
21.01.2020	57.6	32.5	7.2	8.7	0.87	0.0018	7.3	< 0.005	< 0.4	0.59
27.01.2020	51.9	30.4	6.5	10.8	0.76	0.0011	5.1	< 0.005	< 0.4	0.55
28.01.2020	58.7	33.3	6.9	9.7	0.84	0.0007	4.3	< 0.005	< 0.4	0.48
03.02.2020	51.9	29.4	4.5	8.7	0.62	0.0013	5.7	< 0.005	< 0.4	0.38
04.02.2020	57.4	32.5	4.2	8.1	0.75	0.0016	6.3	< 0.005	< 0.4	0.46
10.02.2020	52.9	30.7	4.9	9.3	0.55	0.0011	6.1	< 0.005	< 0.4	0.66
11.02.2020	61.5	35.6	4.6	8.8	0.39	0.0016	4.9	< 0.005	< 0.4	0.34
17.02.2020	57.8	33.3	5.5	10.6	0.41	0.0012	5.3	< 0.005	< 0.4	0.72
18.02.2020	50.8	30.8	4.9	9.1	0.89	0.0019	6.8	< 0.005	< 0.4	0.63
24.02.2020	52.6	30.7	4.7	8.9	0.78	0.0011	7.1	< 0.005	< 0.4	0.55
25.02.2020	60.4	32.6	4.5	8.7	0.84	0.0009	6.5	< 0.005	< 0.4	0.49
02.03.2020	45.4	26.8	4.8	8.4	0.56	0.0013	5.3	< 0.005	< 0.4	0.42
03.03.2020	48.2	28.5	5.1	8.7	0.72	0.0011	6.5	< 0.005	< 0.4	0.36
09.03.2020	54.6	31.9	6.3	9.1	0.54	0.0007	5.9	< 0.005	< 0.4	0.46
10.03.2020	58.2	33.6	5.5	10.5	0.44	0.0016	5.5	< 0.005	< 0.4	0.69
16.03.2020	53.4	30.2	5.1	10.3	0.48	0.0012	6.3	< 0.005	< 0.4	0.42
17.03.2020	46.1	27.9	4.7	9.2	0.78	0.0016	5.1	< 0.005	< 0.4	0.55
04.05.2020	52.1	29.3	4.9	9.1	0.87	0.0006	3.2	< 0.005	< 0.4	0.51
05.05.2020	54.8	31.7	4.5	8.6	0.75	0.0013	2.8	< 0.005	< 0.4	0.56
11.05.2020	48.2	27.2	4.3	9.4	0.52	0.0015	4.6	< 0.005	< 0.4	0.42
12.05.2020	55.7	25.9	5.1	10.3	0.88	0.0011	5.1	< 0.005	< 0.4	0.59
18.05.2020	59.3	32.7	5.4	10.6	0.39	0.0009	5.9	< 0.005	< 0.4	0.46
19.05.2020	45.2	27.9	4.8	9.1	0.71	0.0013	4.2	< 0.005	< 0.4	0.42
25.05.2020	55.9	31.3	4.6	8.8	0.80	0.0008	3.7	< 0.005	< 0.4	0.49
26.05.2020	51.9	29.1	4.5	8.8	0.91	0.0009	4.6	< 0.005	< 0.4	0.53
Min.	**45.2**	**25.9**	**4.2**	**8.1**	**0.39**	**0.0006**	**2.8**	**< 0.005**	**< 0.4**	**0.34**
Max.	**64.1**	**35.6**	**7.5**	**10.8**	**0.92**	**0.0023**	**7.3**	**< 0.005**	**< 0.4**	**0.72**
Avg.	**54.7**	**30.7**	**5.3**	**9.2**	**0.68**	**0.0012**	**5.4**	**< 0.005**	**< 0.4**	**0.52**

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Location : Saitwade Village										
Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	CO (mg/m^3)	Lead ($\mu g/m^3$)	Ozone ($\mu g/m^3$)	Mercury ($\mu g/m^3$)	Arsenic (ng/m^3)	Nickel (ng/m^3)
04.05.2020	45.7	24.7	5.3	7.2	0.62	0.0009	2.4	< 0.005	< 0.4	0.46
05.05.2020	47.2	26.1	4.7	8.5	0.83	0.0006	3.1	< 0.005	< 0.4	0.51
11.05.2020	49.4	22.9	4.5	8.8	0.65	0.0008	3.9	< 0.005	< 0.4	0.44
12.05.2020	44.8	25.2	5.1	8.3	0.88	0.0011	2.7	< 0.005	< 0.4	0.49
18.05.2020	48.1	23.6	4.8	9.1	0.43	0.0009	3.3	< 0.005	< 0.4	0.46
19.05.2020	42.6	24.2	5.6	10.7	0.52	0.0007	4.6	< 0.005	< 0.4	0.51
25.05.2020	53.5	25.8	4.1	8.3	0.65	0.0013	3.2	< 0.005	< 0.4	0.42
26.05.2020	48.4	28.1	4.6	8.9	0.78	0.0009	2.7	< 0.005	< 0.4	0.48
Min.	**42.6**	**22.9**	**4.1**	**7.2**	**0.43**	**0.0006**	**2.4**	**< 0.005**	**< 0.4**	**0.42**
Max.	**53.5**	**28.1**	**5.6**	**10.7**	**0.88**	**0.0013**	**4.6**	**< 0.005**	**< 0.4**	**0.51**
Avg.	**47.5**	**25.1**	**4.8**	**8.7**	**0.67**	**0.0009**	**3.2**	**< 0.005**	**< 0.4**	**0.47**

Location : Narvan Village										
Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	CO (mg/m^3)	Lead ($\mu g/m^3$)	Ozone ($\mu g/m^3$)	Mercury ($\mu g/m^3$)	Arsenic (ng/m^3)	Nickel (ng/m^3)
04.05.2020	49.5	24.9	4.5	8.8	0.48	0.0005	3.2	< 0.005	< 0.4	0.46
05.05.2020	45.3	26.2	5.7	8.4	0.51	0.0008	2.4	< 0.005	< 0.4	0.51
11.05.2020	55.4	26.4	5.1	7.5	0.56	0.0010	2.2	< 0.005	< 0.4	0.44
12.05.2020	47.2	26.9	4.9	9.5	0.42	0.0012	3.1	< 0.005	< 0.4	0.49
18.05.2020	42.5	24.7	5.3	8.1	0.49	0.0009	4.6	< 0.005	< 0.4	0.41
19.05.2020	46.1	26.2	5.1	6.9	0.62	0.0015	2.7	< 0.005	< 0.4	0.53
25.05.2020	39.1	22.9	4.9	8.3	0.54	0.0006	2.3	< 0.005	< 0.4	0.56
26.05.2020	44.9	25.4	4.6	8.5	0.61	0.0009	3.9	< 0.005	< 0.4	0.42
Min.	**39.1**	**22.9**	**4.5**	**6.9**	**0.42**	**0.0005**	**2.2**	**< 0.005**	**< 0.4**	**0.41**
Max.	**55.4**	**26.9**	**5.7**	**9.5**	**0.62**	**0.0015**	**4.6**	**< 0.005**	**< 0.4**	**0.56**
Avg.	**46.3**	**25.5**	**5.0**	**8.3**	**0.53**	**0.0009**	**3.1**	**< 0.005**	**< 0.4**	**0.48**

For GADARK LAB PVT. LTD.

AUTHORISED SIGNATORY
[KAILAS V. CHITALKAR]

GADARK LAB PVT. LTD. KUDAL

CHECKED BY