



# मंगलूर रिफाइनरी एंड पेट्रोकेमिकल्स लिमिटेड

## MANGALORE REFINERY AND PETROCHEMICALS LIMITED

अनुसूची 'अ' के अंतर्गत भारत सरकार का उद्यम SCHEDULE 'A' GOVT. OF INDIA ENTERPRISE.  
(ऑयल एंड नेचुरल गैस कॉरपोरेशन लिमिटेड की सहायक कंपनी A SUBSIDIARY OF OIL AND NATURAL GAS CORPORATION LIMITED)  
सीआईएन/CIN : L23209KA1988GOI008959

पंजीकृत कार्यालय : कुत्तूर पोस्ट, बायां काटीपल्ला मंगलूर - 575 030 (भारत) दूरभाष: 0824-2270400, फैक्स: 0824-2271404, E-mail:mrplmr@mrpl.co.in  
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आई.एस.ओ. 9001, 14001 एवं 50001 प्रमाणित कंपनी AN ISO 9001, 14001 AND 50001 CERTIFIED COMPANY

L/MS/MoEF&CC/6589  
19th August, 2021

The Director  
Ministry of Environment, Forest & Climate Change,  
4<sup>th</sup> Floor, E&F Wing, Kendriya Sadan,  
Koramangala, Bengaluru – 560 034

Dear Sir,

**विषय Subject:- Submission of Compliance to the Environmental Clearance along with monitoring data**

Please find enclosed herewith point wise compliance to the following Environmental Clearance(s) issued to MRPL by Ministry of Environment, Forest & Climate Change (MoEF & CC), New Delhi.

1. Letter No. J-11011/6/89-IA.II dated 1<sup>st</sup> February 1991 (Phase-I Project)

Also environment monitoring data of Noise level, Base levels of Ground Water, Ground Water quality, SO<sub>2</sub> Emission and Ambient Air Quality for the period October, 2020 to March, 2021 is enclosed as **Annexure – I to V.**

धन्यवाद Thanking You,

भवदीय Yours sincerely,

मंगलूर रिफाइनरी एंड पेट्रोकेमिकल्स लिमिटेड  
For Mangalore Refinery & Petrochemicals Limited,

*25/8/2021*  
*19/8/2021*

एम.एस सुदर्शन M.S Sudarsan

मुख्य महा प्रबंधक (स्वास्थ्य, संरक्षा एवं पर्यावरण)

Chief General Manager (Health, Safety and Environment)

Encl: As above

Cc: Zonal Office, CPCB, Bengaluru  
Head Office, KSPCB, Bengaluru  
Regional Office, KSPCB, Mangaluru

बेंगलूर कार्यालय : प्लॉट नं. A-1, - के .एस.एस.आई.डी.सी. प्रशासनिक कार्यालय भवन के सामने, इंडस्ट्रीयल एस्टेट, राजाजीनगर, बेंगलूर -560 010  
Bengaluru Office: Plot A-1, Opp. KSSIDC A. O. Building, Industrial Estate, Rajajinagar, Bengaluru - 560 010.

दूरभाष : Tel: (का.) (O) 080-22642200, फैक्स Fax : 080 - 23505501

दिल्ली कार्यालय : कोर-8, 7<sup>म</sup> मंजिल, स्कोप कांप्लेक्स, लोधी रोड, नई दिल्ली- 110003 दूरभाष: 011-24306400, फैक्स: 011-24361744  
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मुंबई कार्यालय : मेकर टॉवर 'ई' विंग 15वां तल, कफ परेड, मुंबई - 400 005. दूरभाष: 022-22173000, फैक्स: 22173233  
Mumbai Office : Maker Tower, 'E' Wing, 15th Floor, Cuffe Parade, Mumbai-400 005. Tel.: 022-22173000, Fax : 22173233

**Compliance to the Environmental Clearance for setting up New Refinery at Mangalore issued by Ministry of Environment, Forest & Climate Change, New Delhi**

**Letter No. J-11011/6/89-IA.II dated 1<sup>st</sup> February 1991**

SI. No.	Stipulation	Compliance
1.	The Project authority must strictly adhere to the stipulations made by the State Pollution Control Board and the State Government and a comprehensive EIA will be submitted within 18 months.	EIA submitted and all KSPCB stipulations being adhered to.
2	Any expansion of the plant, either with the existing product mix or new products can be taken up only with the prior approval of this Ministry.	Noted and being followed.  Any expansion of the plant either with the existing product mix or new products will be taken up only with the prior approval of this Ministry.
3	The gaseous emissions from various process units should conform to the standard prescribed by the concerned authorities from time to time. At no time, the emission level should go beyond the stipulated standards. In the event of failure of any pollution control system adopted by the unit, the respective unit should be put out of operation immediately and should not be restarted until the control measures are rectified to achieve the desired efficiency.	Noted & being complied.  The gaseous emission from various process units is conformed to the standard prescribed by the concerned authorities from time to time.
4	Adequate number (a minimum of 5) of air quality monitoring stations should be set up in the downwind direction as well as where maximum ground level concentration is anticipated. Also, stack emission should be monitored by setting up of automatic stack monitoring unit. The data on stack emission should be submitted to State Pollution Control Board once in three months and to this Ministry once in six months along with the statistical analysis. The air quality monitoring station should be selected on the basis of modelling exercise to represent the short-term ground level concentration.	Complied. Total- 10 nos. AAQ stations are installed in consultation with KSPCB and readings are being submitted to the Board regularly. Data on stack emission being submitted to State Pollution Control Board once in three months and to this Ministry once in six months along with the statistical analysis. Online Analyzers are provided in all major stacks attached to various heaters. The online data is being

  
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		continuously transferred to CPCB and KSPCB.
5	There should be no change in the stack design without approval of State Pollution Control Board. Alternate Pollution Control System and proper design (Steam injection system) the stack should be provided to take care of excess emission due to failure in any system of the plant	Noted and complied
6	The project authority should recycle the waste to the maximum extent. The recycling plan should be submitted within one year. Liquid effluent coming out of plants should meet the stipulated standards and disposed only into the identified outfall point in the sea as recommended in the NIO study after using for green belt development to the maximum extent possible.	<p>Treated effluent being recycled to cooling towers to the maximum extent and balance is discharged to sea through a submarine pipeline of 650 m length and at 6.5 m depth as identified by NIO. A standby pipeline also provided for any contingency.</p> <p>Healthiness of the Submarine Pipeline is being monitored by M/s. NIO every year.</p>
7	Adequate number of effluent quality monitoring stations must be set up in consultation with the State Pollution Control Board and the effluents monitored, and, should be statistically analysed and the report sent to this Ministry one in six months and to the Pollution Control Board once in three months. If the effluent quality at any time, exceeds the standards prescribed, the corresponding units of the plant which are contributing to the excessive pollutant load shall be immediately stopped from operation till the quality of pollutants discharged from the units are brought down to the required level.	<p>Complied. Daily analysis reports are being submitted to KSPCB on monthly basis. Also, Treated effluent from APMC yard is monitored and analysis reports are submitted to KSPCB on monthly basis.</p> <p>In addition M/s. Central Marine Fisheries Research Institute (CMFRI), Mangalore is monitoring at 10 stations (7 inside the sea at Marine Outfall Point + 3 on the shore) on fortnightly basis. No adverse effects on the marine ecosystem observed till date.</p> <p>Online Monitoring stations installed for continuous monitoring</p>

  
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		treated effluent as per CPCB guidelines.
8	The project authority should prepare a well-designed scheme for solid waste disposal generated during various processes-operation or in treatment plant. The plan for disposal should be submitted to the Ministry within six months.	MRPL have reduced generation of sludge quantities drastically due to innovative usage of H <sub>2</sub> O <sub>2</sub> in place of Chlorinated Copperas for Refinery Waste Water Treatment.  MRPL has designed a system for reprocessing of oily sludge in Delayed Coking Unit (DCU). Apart from this, we have installed an advanced Closed Bioremediation unit which helps in bioremediation of oily sludge in phased manner.  Further, Oily sludge is being disposed to Cement Industries for Co-processing in their unit.
9	An ecological study at the marine outfall point should be initiated immediately and report submitted within three years. The terms of reference of this study should be finalised in consultation with this Ministry.	Complied.
10	The project authority will relocate residential complexes in keeping with the State Government stipulations and will prepare a well designed township for displaced persons and will submit within six months to this Ministry for review.	The rehabilitation colony has developed at Chelairu village and all project evacuees have been accommodated there.
11	The project proponent must take up with the Government of Karnataka for restriction urban sprawl and growth of ancillaries and growth of informal sector within 5 KMS of project site. A master plan must be submitted within one year.	Complied
12	The project authority will submit to this ministry for review a well designed plan for afforestation in the hill slopes of plateau within six months and will afforest all vacant lands which are not used for plant utility. The land shown for further expansion must also be afforested in consultation with Forest Department. The minimum tree density should be 1000 per acre. A detailed green belt plan which interalia including type	Complied

  
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	of plants, plantations schedule and a monitoring programme (preferably with physical inspection every six month) and indicating milestones on a PERT CHART should be submitted to this department within six months.	
13	The project authorities will maximise the use of well designed pipeline for the transport of input material and finished product to avoid road congestion.	All the input and output materials are transported by well designed pipelines.
14	A detailed risk analysis based on Maximum Credible accident analysis should be done once the process design and lay-out is frozen. Based on this a disaster management plan has to be prepared and after approval by the concerned nodal agency, should be submitted to this Ministry within six months.	Prepared & Submitted.
15	The project authority must set up a laboratory facility for collection and analysis of samples under the supervision of competent technical personnel who will directly report to the Chief Executive.	Complied.  A well established NABL Accredited Laboratory has set up and functioning in the Refinery.
16	A separate environmental management cell with suitably qualified people to carry out various functions should be set up under the control of senior executive who will report directly to the head of the organisation	MRPL is having a separate Environment Management Cell headed by Chief General Manager (CGM) and having required laboratory infrastructure earmarked for Environmental cell activities.
17	The funds earmarked for the environmental protection measures should not be diverted for other purposes and year-wise expenditure should be reported to this Ministry.	Complied
II	The Ministry or any other competent authority may stipulate any further condition after reviewing the comprehensive impact assessment report or any other reports prepared by project authorities.	Noted.
III	The Ministry may revoke clearance if implementation of the conditions is not satisfactory	Noted.
IV	The above conditions will be forced inter-alia along with the Water (Prevention & Control of Pollution) Act, 1974, Air (Prevention & Control of Pollution) Act, 1981 and Environment (Protection). Act, 1986, along with their amendments.	Noted.

  
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## ANNEXURE - I

### AVERAGE MONTHLY EXTRACT OF NOISE LEVEL (IN dB) AROUND REFINERY

MONTH	BOUNDARY WALL NORTH OF THE REFINERY	BOUNDARY WALL SOUTH OF THE REFINERY	BOUNDARY WALL EAST OF THE REFINERY	BOUNDARY WALL WEST OF THE REFINERY
Oct-20	53.7	58.6	58.1	60.4
Nov-20	55.4	60.8	52.8	57.5
Dec-20	57.5	64.8	52.3	63.9
Jan-21	53.6	53.6	53.9	50.9
Feb-21	58.5	69.3	54.9	71.5
Mar-21	46	55	51	55

  
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## Base Levels value (Period 1995) of Ground Water

Parameter/Location	Kuthethur (Monsoon)	Kuthethur (winter)	Kuthethur (summer)	Kalavar (Monsoon)	Kalavar (winter)	Kalavar (summer)	Jokatte (Monsoon)	Jokatte (winter)	Jokatte (summer)	Malyapada (Monsoon)	Malyapada (winter)	Malyapada (summer)
pH	8.2	8	8.3	7.1	7	7.6	8.1	8.5	7.8	7	7.7	8.1
Conductivity (µS)	220	630	70	60	300	70	100	620	240	70	300	106
TDS, ppm	121	284	30	28	154	45	88	341	127	30	210	23
Turbidity (NTU)	21	1	30	1	1	2	1	8	3	0.2	0	1.1
p-alkalinity, ppm	NA	NA	NA	NA	NA.	NA.	NA	NA	NA	NA	NA	NA
M-alkalinity, ppm	80	130	108	10	30	8	82	116	74	23	30	50
Total Hardness ppm	70.4	100	84	10.8	100	44	87	105	115	23.4	100	62
Ca Hardness ppm	40.2	50	44	10.1	20	13	50.3	85	78	18.8	30	31
Chloride ppm	11	45	10	10	38	10	21	80	11	8	40	18
Phenol ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Iron ppm	0.154	ND	0.24	0.016	ND	0.023	0.013	ND	0.071	0.007	ND	ND
Copper micro gm/l	ND	ND	ND	1	ND	2	1	ND	3	1	ND	ND
Zinc ppm	*0.051	ND	ND	0.024	ND	ND	0.02	ND	ND	0.183	ND	ND
Arsenic, Micro gm/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead micro gm/l	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium: micro gm/l	11	ND	ND	15	ND	ND	14	20	ND	18	ND	ND
Oil ppm	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

ND - Non detectable level

NA - Not applicable




GROUND WATER MONITORING REPORT FOR THE MONTH OF SEPTEMBER-20							
Parameters	D'souza Well	Fernandes Well	Hand Bore	HGIL Bore 5	HGIL Bore 6	MD Bunglow	SRU-II
pH	6.6	6.5	6.4	6.4	6.7	6.7	6
T-Hardness, ppm	28	20	60	70	80	70	36
Ca-Hardness, ppm	16	18	40	38	42	62	24
Mg-Hardness, ppm	12	2	20	32	38	8	12
Chloride, ppm	15.9	13.6	49	54	55	12	26
Sulphate, ppm	30	19	25	20	14	18	12.9
Fluoride, ppm	<0.1	<0.1	<0.1	<1.0	<1.0	<0.1	<0.1
Iron, ppm	<1.0	0.56	0.6	0.2	0.52	<0.1	1.9
Nitrate, ppm	76	<1.0	1.1	1.6	10.6	<1.0	<1.0
TDS, ppm	<0.1	77	255	276	275	82	118
Phenol, ppm	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Lead, ppm	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Cadmium, ppm	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Hexavalent Chromium, ppm	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Copper, ppm	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Zinc, ppm	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel, ppm	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Manganese, ppm	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Chromium, ppm	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
COD, ppm	42	26	105	68	57	10	48
Oil, ppm	<1.0	<1.0	6	3	4.5	<0.1	6.5
Appearance	Clear	Clear	Muddy	Muddy	Muddy	Clear	Muddy
Odour	Odourless	Odourless	HC	HC	HC	Odourless	Odourless

## GROUND WATER MONITORING REPORT FOR THE MONTH OF OCTOBER-2020

Sampling not done due to COVID-19 as KSPCB official not come for sampling

## GROUND WATER MONITORING REPORT FOR THE MONTH OF November-2020

Sampling not done due to COVID-19 as KSPCB official not come for sampling

GROUND WATER MONITORING REPORT FOR THE MONTH OF DECEMBER-20							
Parameters	D'souza Well	ETP-2 Bore	Fernandes Well	Hand Bore	Kalavar Church	MD Bunglow	SRU-II
pH	6.1	5.7	5	7.1	6.2	7.2	5.6
T-Hardness, ppm	48	54	52	86	44	50	60
Ca-Hardness, ppm	20	22	16	46	10	26	30
Mg-Hardness, ppm	28	32	36	40	34	24	30
Chloride, ppm	49.5	5.1	45.1	56	32.9	11.1	3
Sulphate, ppm	22.9	6.5	25.1	6	3.3	11.8	1.1
Fluoride, ppm	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Iron, ppm	0.38	1.7	0.23	0.24	0.73	0.14	2.3
Nitrate, ppm	<1.0	<1.0	1.5	<1.0	28.3	<1.0	<1.0
TDS, ppm	136	144	129	311	134	64	143
Phenol, ppm	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Lead, ppm	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Cadmium, ppm	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Hexavalent Chromium, ppm	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Copper, ppm	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Zinc, ppm	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel, ppm	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Manganese, ppm	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Chromium, ppm	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
COD, ppm	10	56	28	48	22	10	48
Oil, ppm	<1.0	2	<1.0	3	<1.0	<1.0	2
Appearance	Clear	Muddy	Clear	Muddy	Clear	Clear	Muddy
Odour	Odourless	Odourless	Odourless	HC	Odourless	Odourless	Odourless



**GROUND WATER MONITORING REPORT FOR THE MONTH OF JANUARY-21**

Parameters	D'souza Well	Fernandes Well	Hand Bore	HGIL Bore 5	HGIL Bore 6	Kalavar Church	MD Bunglow	SRU-II
pH	6.1	6.1	7.1	6.1	6	5.2	7.2	5.9
T-Hardness, ppm	38	46	52	30	38	32	32	40
Ca-Hardness, ppm	18	26	36	14	18	20	24	30
Mg-Hardness, ppm	20	20	16	16	20	12	8	10
Chloride, ppm	59	26	60	29	27	40	13.8	34
Sulphate, ppm	16.8	ND	ND	ND	ND	ND	ND	ND
Fluoride, ppm	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Iron, ppm	0.15	<0.1	3.2	8.5	14	0.41	<0.1	12.7
Nitrate, ppm	6.4	1.6	<1.0	<1.0	<1.0	20.6	<1.0	<1.0
TDS, ppm	133	133	289	115	144	127	58	148
Phenol, ppm	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Lead, ppm	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Cadmium, ppm	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Hexavalent Chromium, ppm	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Copper, ppm	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Zinc, ppm	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel, ppm	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Manganese, ppm	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Chromium, ppm	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
COD, ppm	81	37	44	81	72	41	56	51
Oil, ppm	<1.0	<1.0	14	19	18	<1.0	<1.0	6.5
Appearance	Clear	Clear	Muddy	Muddy	Muddy	Clear	Clear	Muddy
Odour	Odourless	Odourless	HC	Odourless	Odourless	Odourless	Odourless	Odourless

**GROUND WATER MONITORING REPORT FOR THE MONTH OF FEBRUARY-21**

Parameters	D'souza Well	Fernandes Well	Hand Bore	HGIL Bore 5	HGIL Bore 6	MD Bunglow	Kalavar Church
pH	6.6	6.8	8.2	6.8	7	8.2	7.2
T-Hardness, ppm	44	64	40	50	40	32	<1.0
Ca-Hardness, ppm	30	38	30	24	32	26	10
Mg-Hardness, ppm	14	26	10	26	8	6	34
Chloride, ppm	41	43	43	43	22	15.5	25
Sulphate, ppm	27	17.6	13.5	15.7	8.8	14.3	12.3
Fluoride, ppm	<0.1	<0.1	2.2	<0.1	<0.1	<0.1	<0.1
Iron, ppm	0.16	1.4	8.2	10	14.1	0.24	1.4
Nitrate, ppm	1	2.6	<1.0	<1.0	1.2	1.1	29
TDS, ppm	162	209	262	145	150	73	135
Phenol, ppm	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Lead, ppm	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Cadmium, ppm	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Hexavalent Chromium, ppm	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Copper, ppm	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Zinc, ppm	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel, ppm	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Manganese, ppm	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Chromium, ppm	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
COD, ppm	24	20	48	34	20	24	87
Oil, ppm	<1.0	<1.0	13	7	4.5	5	<1.0
Appearance	Clear	Clear	Muddy	Muddy	Muddy	Clear	Clear
Odour	Odourless	Odourless	Odourless	HC	HC	Odourless	Odourless

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**GROUND WATER MONITORING REPORT FOR THE MONTH OF MARCH-21**

Parameters	D'souza Well	Fernandes Well	Hand Bore	HGIL Bore 5	HGIL Bore 6	Kalavar Church	MD Bunglow
pH	6.1	5.8	6.5	6.6	6.5	5.5	7.6
T-Hardness, ppm	52	36	54	64	64	38	40
Ca-Hardness, ppm	30	14	38	36	40	12	28
Mg-Hardness, ppm	22	22	16	28	24	26	12
Chloride, ppm	38	31	18	18	39	31	14.5
Sulphate, ppm	20.3	10.9	15.7	8.4	11.4	9.8	13.5
Fluoride, ppm	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Iron, ppm	0.1	<0.1	10.1	8.9	9.8	0.1	0.21
Nitrate, ppm	1.3	6.3	<1.0	<1.0	<1.0	21.9	<1.0
TDS, ppm	152	103	185	195	187	119	63
Phenol, ppm	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Lead, ppm	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Cadmium, ppm	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Hexavalent Chromium, ppm	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Copper, ppm	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Zinc, ppm	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel, ppm	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Manganese, ppm	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Chromium, ppm	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
COD, ppm	49	24	29	29	20	20	29
Oil, ppm	<1.0	<1.0	2	4.5	2	3.5	3
Appearance	Clear	Clear	Muddy	Muddy	Muddy	Clear	Clear
Odour	Odourless	Odourless	Odourless	HC	Odourless	Odourless	Odourless

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<b>Total SO<sub>2</sub> Emission from the Plant (Through Stacks)</b>
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MONTH	Total SO <sub>2</sub> Emission (TPD)
Oct-20	36.20
Nov-20	37.60
Dec-20	31.20
Jan-21	27.10
Feb-21	31.20
Mar-21	29.50

Note: TPD - Tonnes per Day

<b>Additional SO<sub>2</sub> Emission through flaring as follow;</b>
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MONTH	Total SO <sub>2</sub> Emission (TPD)
Oct-20	9.7
Nov-20	10.0
Dec-20	22.7
Jan-21	18.0
Feb-21	11.6
Mar-21	11.6

Note: TPD - Tonnes per Day

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## Ambient Air Quality Monitoring Data for October- 2020

LOCATION	SO <sub>2</sub>	NO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	CO	O <sub>3</sub>
	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	mg/m <sup>3</sup>	µg/m <sup>3</sup>
Permude	12.1	15.1	27	19	BDL	BDL
Perara	12.2	15.6	26	18	BDL	BDL
Ganeshpura	12.6	15.8	30	18	BDL	BDL
Cooling Tower	12.9	16.7	27	19	BDL	BDL
ETP	14.3	18.5	25	17	BDL	BDL
Benkinatheswara Temple	12.3	14.5	35	21	BDL	BDL
Substation - 45 area	13.2	16.2	33	20	BDL	BDL
Near CL area Weighbridge	12.1	14.8	39	26	BDL	BDL
Substation - 40 area	13.4	16.9	31	20	BDL	BDL
CISF Quarters	10.5	12.1	22	16	BDL	BDL

BDL : Below Detectable Limit

## Ambient Air Quality Monitoring Data for November - 2020

LOCATION	SO <sub>2</sub>	NO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	CO	O <sub>3</sub>
	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	mg/m <sup>3</sup>	µg/m <sup>3</sup>
Permude	12.3	15.4	30	22	BDL	BDL
Perara	12.3	15.8	28	20	BDL	BDL
Ganeshpura	12.6	16.2	36	23	BDL	BDL
Cooling Tower	13.2	16.9	30	21	BDL	BDL
ETP	14.3	18.6	29	21	BDL	BDL
Benkinatheswara Temple	12.4	14.8	37	23	BDL	BDL
Substation - 45 area	12.9	16.3	35	22	BDL	BDL
Near CL area Weighbridge	12.5	15.0	40	27	BDL	BDL
Substation - 40 area	13.5	17.2	33	22	BDL	BDL
CISF Quarters	11.0	12.4	25	19	BDL	BDL

BDL : Below Detectable Limit

## Ambient Air Quality Monitoring Data for December - 2020

LOCATION	SO <sub>2</sub>	NO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	CO	O <sub>3</sub>
	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	mg/m <sup>3</sup>	µg/m <sup>3</sup>
Permude	12.7	15.9	32	24	BDL	BDL
Perara	12.9	16.2	31	21	BDL	BDL
Ganeshpura	13.2	16.7	36	24	BDL	BDL
Cooling Tower	13.4	17.1	31	23	BDL	BDL
ETP	14.6	18.8	31	22	BDL	BDL
Benkinatheswara Temple	12.9	15.0	37	24	BDL	BDL
Substation - 45 area	13.4	16.7	36	24	BDL	BDL
Near CL area Weighbridge	12.8	15.4	41	28	BDL	BDL
Substation - 40 area	13.6	17.4	34	23	BDL	BDL
CISF Quarters	11.3	12.7	28	20	BDL	BDL

BDL : Below Detectable Limit




**Ambient Air Quality Monitoring Data for January - 2021**

LOCATION	SO <sub>2</sub>	NO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	CO	O <sub>3</sub>
	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	mg/m <sup>3</sup>	µg/m <sup>3</sup>
Permude	13.0	16.2	34	25	BDL	BDL
Perara	13.1	16.5	32	22	BDL	BDL
Ganeshpura	13.5	17.0	37	25	BDL	BDL
Cooling Tower	13.7	17.4	32	24	BDL	BDL
ETP	14.9	19.1	32	23	BDL	BDL
Benkinatheswara Temple	13.2	15.3	39	25	BDL	BDL
Substation - 45 area	13.7	17.0	37	25	BDL	BDL
Near CL area Weighbridge	13.1	15.7	42	29	BDL	BDL
Substation - 40 area	13.9	17.7	35	25	BDL	BDL
CISF Quarters	11.6	13.1	30	21	BDL	BDL

BDL : Below Detectable Limit

**Ambient Air Quality Monitoring Data for February - 2021**

LOCATION	SO <sub>2</sub>	NO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	CO	O <sub>3</sub>
	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	mg/m <sup>3</sup>	µg/m <sup>3</sup>
Permude	13.1	16.3	34	26	BDL	BDL
Perara	13.2	16.7	33	23	BDL	BDL
Ganeshpura	13.6	17.1	38	26	BDL	BDL
Cooling Tower	14.0	17.8	33	25	BDL	BDL
ETP	15.0	19.4	33	24	BDL	BDL
Benkinatheswara Temple	13.3	15.6	39	26	BDL	BDL
Substation - 45 area	13.8	17.2	38	26	BDL	BDL
Near CL area Weighbridge	13.3	15.9	43	30	BDL	BDL
Substation - 40 area	14.3	18.1	37	26	BDL	BDL
CISF Quarters	11.9	13.3	31	23	BDL	BDL

BDL : Below Detectable Limit

**Ambient Air Quality Monitoring Data for March- 2021**

LOCATION	SO <sub>2</sub>	NO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	CO	O <sub>3</sub>
	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	mg/m <sup>3</sup>	µg/m <sup>3</sup>
Permude	13.6	16.7	36	27	BDL	BDL
Perara	13.7	17.2	34	25	BDL	BDL
Ganeshpura	14.1	17.6	40	27	BDL	BDL
Cooling Tower	14.3	18.0	34	26	BDL	BDL
ETP	15.4	19.7	34	25	BDL	BDL
Benkinatheswara Temple	13.8	15.8	40	27	BDL	BDL
Substation - 45 area	14.3	17.6	39	27	BDL	BDL
Near CL area Weighbridge	13.6	16.3	44	31	BDL	BDL
Substation - 40 area	14.4	18.3	38	27	BDL	BDL
CISF Quarters	12.2	13.7	32	23	BDL	BDL

BDL : Below Detectable Limit

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