



मंगलूर रिफाइनरी एण्ड पेट्रोकेमिकल्स लिमिटेड

MANGALORE REFINERY AND PETROCHEMICALS LIMITED

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

पंजीकृत कार्यालय : कुत्तूर पोस्ट, वाया काटीपल्ला मंगलूर - 575 030 (भारत) दूरभाष: 0824-2270400, फैक्स: 0824-2271404, E-mail: mrplmlr@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/6595
19th August, 2021

The Director
Ministry of Environment, Forest & Climate Change,
4th 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. F. No. J-11011 / 47 / 2016-IA-II (I) dated 10th July, 2017 (BS-VI Project)

Also environment monitoring data of Noise level, Base levels of Ground Water, Ground Water quality, SO₂ 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 एण्ड पेट्रोकेमिकल्स लिमिटेड
For Mangalore Refinery & Petrochemicals Limited,

सुदर्शन
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

बंगलूर कार्यालय : प्लॉट नं. A-1, - के .एस.एस.आई.डी.सी. प्रशासनिक कार्यालय भवन के सामने, इंडस्ट्रीयल एस्टेट, राजाजीनगर, बंगलूर -560 010
Bengaluru Office: Plot A-1, Opp. KSSIDCA. O. Building, Industrial Estate, Rajajinagar, Bengaluru - 560 010.
दूरभाष : Tel: (का.) (O) 080-22642200, फैक्स Fax : 080 - 23505501
दिल्ली कार्यालय : कोर-8, 7th मंजिल, स्कोप कॉम्प्लेक्स, लोधी रोड, नई दिल्ली- 110003 दूरभाष: 011-24306400, फैक्स: 011-24361744
Delhi Office : Core-8, 7th, Floor SCOPE Complex, Lodhi Road, New Delhi - 110003. Tel.: 011-24306400, Fax: 011-24361744
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 BS-VI Auto Fuel Quality Compliance & Associated Projects Facilities issued by Ministry of Environment, Forest & Climate Change, New Delhi

F.No. J-11011 / 47 / 2016-IA-II (I) dated 10.07.2017

| SI. No. | Environmental Clearance conditions | Compliance |
|----------------|---|--|
| A | SPECIFIC CONDITIONS: | |
| (i) | Green belt of atleast 10 m width shall be planted (with trees like Kadamba etc.) along the periphery of the unit. | <p>Please be noted that this BS-VI Auto Fuel Quality project is proposed to be installed within the existing process area, earmarked for future expansion.</p> <p>As the proposed project is being installed within the Refinery complex which already has greenbelt cover all along the periphery of the boundary, hence additional saplings (gap filling) were planted in last two to three years to further strengthen the green cover.</p> |
| (ii) | Atleast 30% of the area of the unit area shall be developed as green area with native tree species. | <p>Noted for compliance.</p> <p>Existing greenbelt at MRPL is spread over 462 acre area out of total 1592 acres. Compensatory afforestation is completed at Pilikula in 50 acres.</p> <p>MRPL is also supporting Govt. of Karnataka (GoK) "<i>Koti Vriksha Andolan</i>" Program by sponsoring and planting sapling in the neighbouring schools and villages</p> |
| (iii) | PP shall undertake tree plantation in village and the Biological Park (flowering/fruit bearing plants). 1000 trees/year for five years shall be planted and maintained. | <p>Noted for compliance.</p> <p>Under the <i>Koti Vriksha Andolan</i> MRPL is carrying out plantation of saplings and seed ball distribution in the nearby villages /schools.</p> <p>Further, Compensatory afforestation is completed at Pilikula Nisarga Dhama in 50 acres.</p> |


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| Sl. No. | Environmental Clearance conditions | Compliance |
|----------------|---|---|
| (iv) | As proposed, 5% of the total amount shall be earmarked for Enterprises Social Commitment. Solar panel, LED light, Drinking water with RO facilities shall be provided to the proposed ten villages. | <p>Noted for compliance.</p> <p>In line with MoEF & CC Office Memorandum, F.No.22-65/2017-IA.III, Dt. 01-05-2018, 0.25% of the total amount has been earmarked for Enterprises Social Commitment.</p> <p>As a part of ESC activity,</p> <p>MRPL has completed the distribution of 32,760 nos. LED bulbs to the residents from 10 neighboring villages, at a cost of around INR 43 Lacs.</p> <p>MRPL has spent INR 58.62 lacs for 5 Nos of ventilators to Wenlock hospital and INR 22.66 lacs for installation of solar street lights at Bala grama panchayat.</p> <p>Out of 4.16 Crs earmarked fund for “Conservation of Biodiversity-Adoption of Wild Animals in Pilikula Biological park” 2.08 Crs was released. Rs 20,400 was spent for drinking water supply in Jokatte village. In addition 29.44 Lacs earmarked for developing roads in Chailaru village.</p> |
| (v) | PP shall explore the possibility of spent clay remediation. | MRPL is continuously exploring the possibilities of alternate use/method for disposal of Hazardous Waste generated in the Refinery. The Spent Clay has been found to be suitable for Co-processing in Cement Industry and it is presently being sent to SPCB authorized Co-processors. |
| (vi) | PP shall reduce the noise level and odour due to project from the proposed level. | Noted for compliance & due care is being taken during project design and implementation stage. |

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| Sl. No. | Environmental Clearance conditions | Compliance |
|----------------|---|---|
| (vii) | The by-products which fall under the purview of the Hazardous Waste Rules, be handled as per the provisions of the said Rules and necessary permissions shall be obtained under the said rules. | Noted for compliance Hazardous Waste Rules being followed strictly in the Refinery. Hazardous Waste Authorization is obtained from Karnataka State Pollution Control Board (KSPCB) and is valid till 30-06-2021. HWA further extended by 3 more months vide KSPCB OM No. KSPCB/Corp cell/2021/644 dated 02 June 2021. |
| (viii) | Environmental Management Cell with well -equipped laboratories shall be set up in the unit.A regular environment manager having post graduate qualification in environmental sciences / Environmental engineering to be appointed for looking after the Environmental Management activities of the proposed plant. | A separate Environmental Management Cell headed by Chief General Manager (CGM) is already functioning along with full-fledged laboratory for Environmental Management and Monitoring functions. |
| B. | GENERAL CONDITIONS : | |
| (i) | The project authorities shall strictly adhere to the stipulations made by the State Pollution Control Board, State Governments and any other statutory authority. | Will strictly adhere to KSPCB stipulations. |
| (ii) | No further expansion or modifications in the pipeline shall be carried out without prior approval of the Ministry of Environment, Forest and Climate Change. In case of deviations or alterations in the project proposal from those submitted to this Ministry for clearance, a fresh reference shall be made to the Ministry to assess the adequacy of conditions imposed and to add additional environmental protection measures required, if any. | Noted for compliance No expansion or modifications will be carried out without prior approval of the Ministry of Environment, Forest and Climate Change. |

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| Sl. No. | Environmental Clearance conditions | Compliance |
|----------------|--|---|
| (iii) | The locations of ambient air quality monitoring stations shall be decided in consultation with the State Pollution Control Board (SPCB) and it shall be ensured that at least one station is installed in the upwind and downwind direction as well as where maximum ground level concentrations are anticipated. | Noted for compliance. Ambient Air Quality Monitoring is being carried out at 10 stations, strategically located around the refinery. |
| (iv) | The National Ambient Air Quality Emission Standards issued by the Ministry vide G.S.R. No. 826(E) dated 16 th November, 2009 shall be followed. | Being strictly followed. |
| (v) | The overall noise levels in and around the plant area shall be kept well within the standards by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels shall conform to the standards prescribed under Environment (Protection) Act, 1986 Rules, 1989 viz. 75dBA (day time) and 70dBA (night time). | Complied The average noise level all along the boundary wall found to be within stipulated limit i.e. 75dBA (day time) and 70dBA (night time) |
| (vi) | Training shall be imparted to all employees on safety and health aspects of chemicals handling. Pre-employment and routine periodical medical examinations for all employees shall be undertaken on regular basis. Training to all employees on handling of chemicals shall be imparted. | Periodic training is being conducted for all the employees on safety and health aspects. Pre-employment and routine medical examinations for all employees are being carried out and records are being maintained. |
| (vii) | The company shall also comply with all the environmental protection measures and safeguards proposed in the documents submitted to the Ministry. All the recommendations made in the EIA/EMP in respect of environmental management and risk mitigation measures relating to the project shall be implemented. | Noted for compliance. |

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| SI. No. | Environmental Clearance conditions | Compliance |
|---------|--|--|
| (viii) | The company shall undertake all relevant measures for improving the socio-economic conditions of the surrounding area. ESC activities shall be undertaken by involving local villages and administration. | MRPL's Corporate Social Responsibility (CSR) policy, the company aims at strengthening the existing bond with the local population through <i>Shiksha Samrakshan, Arogya Samrakshan, Bahujan Samrakshan, Prakrithi Samrakshan, Sanskrithi Samrakshan, Swachh Bharat Abhiyan</i> programs and other activities. MRPL is committed to take-up CSR activities in the future years in collaboration with the communities. |
| (ix) | The company shall undertake eco-development measures including community welfare measures in the project area for overall improvement of the environment. | Noted and being complied. |
| (x) | A separate Environmental Management Cell equipped with full-fledged laboratory facilities shall be set up to carry out the Environmental Management and Monitoring functions. | A separate Environmental Management Cell headed by Chief General Manager (CGM) is already functioning along with full-fledged laboratory for Environmental Management and Monitoring functions. |
| (xi) | The company shall earmark sufficient funds towards capital cost and recurring cost per annum to implement the conditions stipulated by the Ministry of Environment, Forest and Climate Change as well as the State Government along with the implementation schedule for all the conditions stipulated herein. The funds so earmarked for environment management / pollution control measures shall not be diverted for any other purpose. | Noted for compliance. |


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| SI. No. | Environmental Clearance conditions | Compliance |
|---------|---|--|
| (xii) | A copy of the clearance letter shall be sent by the project proponent to concerned Panchayat, Zilla Parishad / Municipal Corporation, Urban local Body and the local NGO, if any, from whom suggestions / representations, if any, were received while processing the proposal. | Copy of the Environmental Clearance submitted on 25-07-2017. |
| (xiii) | The project proponent shall also submit six monthly reports on the status of compliance of the stipulated Environmental Clearance conditions including results of monitored data (both in hard copies as well as by e-mail) to the respective Regional Office of MoEF&CC, the respective Zonal Office of CPCB and SPCB. A copy of Environmental Clearance and six monthly compliance status report shall be posted on the website of the company. | Six monthly report submitted to MoEF&CC Regional Office vide MRPL letter no. L/MS/MoEF/6373 dated 22-12-2020. Copy of the Environmental Clearance and six monthly report is uploaded at MRPL website https://mrpl.co.in/ |
| (xiv) | The environmental statement for each financial year ending 31 st March in Form-V as is mandated shall be submitted 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 compliance of environmental clearance conditions and shall also be sent to the respective Regional Offices of MoEF&CC by e-mail. | Environment Statement (Form-V) is being submitted to KSPCB every year. The latest Environmental Statement for the year 2019-20 was submitted to KSPCB, Regional Office, Mangalore on 28-09-2020. It has also been uploaded at company website https://mrpl.co.in/ and sent to MoEF&CC, RO, Bengaluru by e-mail. |


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| SI. No. | Environmental Clearance conditions | Compliance |
|----------------|---|---|
| (xv) | <p>The project proponent shall inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the SPCB / Committee and may also be seen at Website of the Ministry at http://www.envfor.nic.in. This shall be advertised within seven days from the date of issue of the clearance letter, at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same shall be forwarded to the concerned Regional office of this Ministry.</p> | <p>The relevant advertisement published on 13/07/17 in English and in Kannada. The copy of the advertisement submitted to MoEF&CC Bangalore Office on 28/07/2017.</p> |
| (xvi) | <p>The project authorities shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of start of the project.</p> | <p>Project approval date is 18-08-2016</p> |


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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 |

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| 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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| |
|--|
| Total SO₂ Emission from the Plant (Through Stacks) |
|--|

| MONTH | Total SO ₂ 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

| |
|--|
| Additional SO₂ Emission through flaring as follow; |
|--|

| MONTH | Total SO ₂ 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

118%

118%

Ambient Air Quality Monitoring Data for October- 2020

| LOCATION | SO ₂ | NO ₂ | PM ₁₀ | PM _{2.5} | CO | O ₃ |
|--------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| | µg/m ³ | µg/m ³ | µg/m ³ | µg/m ³ | mg/m ³ | µg/m ³ |
| 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 ₂ | NO ₂ | PM ₁₀ | PM _{2.5} | CO | O ₃ |
|--------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| | µg/m ³ | µg/m ³ | µg/m ³ | µg/m ³ | mg/m ³ | µg/m ³ |
| 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 ₂ | NO ₂ | PM ₁₀ | PM _{2.5} | CO | O ₃ |
|--------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| | µg/m ³ | µg/m ³ | µg/m ³ | µg/m ³ | mg/m ³ | µg/m ³ |
| 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 ₂ | NO ₂ | PM ₁₀ | PM _{2.5} | CO | O ₃ |
|--------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| | µg/m ³ | µg/m ³ | µg/m ³ | µg/m ³ | mg/m ³ | µg/m ³ |
| 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 ₂ | NO ₂ | PM ₁₀ | PM _{2.5} | CO | O ₃ |
|--------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| | µg/m ³ | µg/m ³ | µg/m ³ | µg/m ³ | mg/m ³ | µg/m ³ |
| 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 ₂ | NO ₂ | PM ₁₀ | PM _{2.5} | CO | O ₃ |
|--------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| | µg/m ³ | µg/m ³ | µg/m ³ | µg/m ³ | mg/m ³ | µg/m ³ |
| 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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