



Mangalore SEZ Limited

3rd Floor, MUDA Building, Ashok nagar,

Urwa Stores, Mangalore - 575 006

Phone: 0824-2452748 / 2452750

Fax: 0824-2452749

Website: www.mangaloresez.com

CIN: U45209KA2006PLC038590

18 June 2015

MSEZL/MNG/EN/2015-16

To,

The Director,
Southern Region, Regional Office,
Ministry of Environment and Forests,
Kendriya Sadan, 4th Floor, E&F Wings,
17th Main Road, Ist Block, Koramangala,
Bangalore - 560 034

Sir,

Sub: Development of Residential Colony for Rehabilitation and Resettlement for SEZ Complex at Kulai & Thokur village, Mangalore Taluk & District by M/s Mangalore SEZ Limited, Mangalore.

Ref: 1) Environmental Clearance No: SEIAA: 140: CON: 2008, dated 25th June 2008.

With reference to above, we would like to submit the compliance report as on date

A. SPECIFIC CONDITIONS		
I. CONSTRUCTION PHASE		
(i)	Setup an Environment Management cell and ensure that the cell manages/maintains all the environmental aspects such as sewage treatment, solid waste disposal, maintenance of green belt areas etc, and in case the commercial space is sold/leased, then enter into agreement as per the draft agreement copy submitted, with the prospective buyers to ensure that they maintain the cell and take care of all environment concerns during the operation phase of the project. In addition sufficient fees should be levied so as to raise a corpus fund to maintain the Environment Cell.	MSEZL Environment Management cell is established to look after the environmental aspects like sewage treatment, Solid waste disposal & Development and maintenance of Green belt etc. The conditions specified regarding selling or leasing of Commercial space will be complied.
(ii)	Appoint an Environment and Safety Engineer during the construction phase to take care of environment and safety aspects as committed.	Yes. Environmental Engineer and General Manager (Environment & Civil) are in place to take care of Environmental issues and Safety aspects. Horticulture consultant & Horticulture Manager are appointed for development and maintenance of Green belt.

Regd. Office: # 16, 3rd Floor, 'Pranava Park', Infantry Road, Bangalore-560 001, India
Phone: +91-80-22867552, 22867553 Fax: +91-80-22867551 Email: mangaloresezltd@gmail.com

REGIONAL OFFICE
Karnataka State Pollution Control Board
Plot No. 10/645, Bajkarnpady Industrial Area
MANGALORE - 575 011



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S. No.	A. SPECIFIC CONDITIONS	Compliance
(iv)	The project proponent shall not take up any activity in 875 acres of Coastal Regulation Zone land, other than those permissible under the Coastal Regulation Zone Notification 1991 such as pipeline corridors, pipelines roads on stilts.	Will be complied.
(v)	With regard to the containing the suspected contamination of the groundwater near Athurkodi area of Kuthethoor village, MRPL have given an undertaking vide their letter dated 19.3.2008 which is as follows:- a) Implementation of recommendation of NGPRI will be started by MRPL immediately after submission of their report. b) Depending upon the nature of their recommendations, we will make efforts to complete necessary actions within 6 months from the date of receipt of their report. c) In addition to above, a daily vigil is already in place to take samples from different places and to monitor any suspected oil leakage. This will continue till the problem is resolved. d) We are also in continuous contact with the residents in the surround areas with regard to any contamination. KSPCB and MRPL shall ensure that (a) to (d) above is implemented in a time bound manner and a monthly report on the progress of the activities provided to the Regional Office of this Ministry at Bangalore. For this purpose a separate budget would be allocated by MRPL.	This condition pertains to MRPL phase III expansion project. MRPL phase III expansion has been detached from MSEZ phase I project vide EC amendment dated 13th July 2012. MRPL shall be complying conditions relevant to them as part of their existing clearance.
(vi)	The project proponent shall obtain a report from the Wildlife Department with regard to existence of wildlife in the proposed site as claimed by the public before implementing the project.	Report from the Forest Department is obtained and submitted to the MoEF dated June 5, 2008.
(vii)	The R&R package shall be strictly in accordance with the laid down norms of the State Government.	The R&R Package is being implemented strictly as per Approved policy by State Government. Around 1215 families has been compensated with R&R Package out of 1227 families. The 1215 families have vacated their houses and the process is in progress for the balance.
(viii)	A marine Environment Impact Assessment and Risk Assessment along with the Disaster Management Plan shall be prepared for the outfall facilities proposed in the Coastal Regulation Zone and the marine areas.	NIO has carried out EIA, Risk Assessment, DMP and Bathymetry survey along with Marine Outfall pipeline alignment. The detailed design report of



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S. No.	A. SPECIFIC CONDITIONS	Compliance
		the Marine Outfall facility is prepared by Master planning consultants of MSEZ under the guidance of Department of Oceanography, IIT Chennai. The design report was also vetted by NIO, Goa. The detailed project report of the facility is submitted to MoEF during November 2009. MSEZ has taken up the implementation of the above facility and completed the work by July 2014. MSEZ obtained consent for operation of treated waste water discharge line from KSPCB dated 9 Sep 2014.
(ix)	Project proponent shall put up a dedicated website and a display panel to inform the public regarding the Ambient Air Quality along with SO ₂ NO _x and other parameters as prescribed as Central Pollution Control Board (CPCB).	MSEZL will provide the display panel before commissioning of the proposed units. MSEZL has initiated parameter and display panel. Further this will be completed by end of October 2015.
(x)	The gaseous emissions (SO ₂ , NO _x , HC, VOC and Benzene) from various process units shall conform to the standards prescribed by the concerned State Pollution Control Board. All the measures detailed in the EMP and response to the Public Hearing shall be taken to control the point/stack and fugitive gaseous emissions from the proposed facilities, processes and storage units etc., for ensuring that the ambient air quality around the Refinery due to the expansion is maintained at the predicted 24 hourly average maximum concentration.	Noted and will be complied for MSEZ units. MRPL phase III expansion has been detached From MSEZ phase I project vide EC amendment dated 13 th July 2012. MRPL shall be complying conditions relevant to them as part of their existing clearance.
(xi)	The emission levels of the other pollutants shall also remain within the permissible levels	Noted and will be complied.
(xii)	The industrial units in the SEZ and the associated facilities shall be strictly in accordance with the norms laid down by the Karnataka State Government and CPCB.	Will be adhered.
(xiii)	The project proponent shall ensure that the greenery of the area is maintained. Further, 33% of the project area shall be dedicated for green belt development of which at least 5% shall be for mangrove afforestation. The local Forest Department shall be associated for this purpose and requisite budget earmarked.	Since inception MSEZL has completed Green Belt development in 154 acres. In the year 2015-16, during the first phase 24,750 saplings will be planted in 55 acres land. In the 2nd phase another 65 acres will be developed. Green Belt operation & maintenance is for 2-3 years & plants are maintained as per the good package of practises to ensure 100% survival. Slope stabilisation in about 18



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S. No.	A. SPECIFIC CONDITIONS	Compliance
		acres with vetiver grass has been completed.
(xiv)	The project proponent shall ensure that the water requirement of the Mangalore city does not get affected due to the SEZ operation. Adequate provision shall be made in the reservoirs to provide for the water requirement of the cities.	Noted.
(xv)	The project proponent shall ensure that during construction and operation of the project the traffic in the city is not affected.	Noted and will be complied.
(xvi)	All precautions of the highest standards shall be incorporated in the design of the project to ensure that there is no chance of emission/leakage of hazardous chemicals including Benzene. Detailed monitoring programme shall be designed and the information provided to the public through display and dedicated website by means of online monitoring.	Noted and will be complied.
(xvii)	Low Sulphur internal fuel oil and fuel gas shall be fired in process heaters and boilers.	Noted and will be complied.
(xviii)	Quarterly monitoring of fugitive emissions shall be carried out by Fugitive Emission Detectors (GMI Leak Surveyor). Guidelines of CPCB will be followed for monitoring fugitive emissions. For control of fugitive emissions, all unsaturated hydrocarbons shall be routed to the flare system. The flare system shall be designed for smokeless burning. Flare Gas Recovery System shall be installed for reduction of Hydrocarbon loss and emission of VOCs, NO _x , N ₂ O, SO _x & CO ₂ to the environment.	Noted and will be complied.
(xix)	Regular Ambient Air Quality Monitoring shall be carried out. The location and results of existing monitoring stations shall be reviewed in consultation with the concerned State Pollution Control Board based on the occurrence of maximum ground level concentration and downwind direction of wind. Additional Stations shall be set up, if required. It shall be ensured that at least one monitoring station is set up in up-wind & in down-wind direction along with those in other directions.	Ambient Air Quality Monitoring is being carried out regularly. The locations of monitoring are selected in consultation with KSPCB & accordingly carried out the monitoring. The reports of monitored data attached in Annexure-I.
(xx)	On-line data for air emissions shall be transferred to the CPCB and SPCB regularly. The instruments used for ambient air quality monitoring shall be calibrated regularly. The monitoring protocol shall ensure continuous monitoring of all the parameters.	Noted and will be complied.



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S. No.	A. SPECIFIC CONDITIONS	Compliance
(xxi)	The practice of acoustic plant design shall be adopted to limit noise exposure for personnel to an 8 hr time weighted average of 90 dB (A).	Noted and will be complied.
(xxii)	All the pumps and other equipment's, where there is a likelihood of HC leakages, shall be provided with appropriate indicators and detectors. Provision for immediate isolation of such equipment, in case of a leakage shall also be made. The company shall adopt Leak Detection And Repair (LDAR) programme for quantification and control of fugitive emissions.	Noted and will be complied.
(xxiii)	The product loading gantry shall be connected to the product sphere in closed circuit through the vapour arm connected to the tanker. Data on fugitive emissions shall be regularly monitored and records shall be maintained	Noted and will be complied.
(xxiv)	The company shall ensure that no halogenated organic is sent to the flares. If any of the halogenated organic are present, then the respective streams may be incinerated, if there are no technically feasible or economically viable reduction/recovery options. Any stream containing organic carbon, other than halogenated shall be connected to proper flaring system, if not to a recovery device or an incinerator.	Noted and will be complied.
(xxv)	The new standards/norms that are being proposed by the CPCB for Petrochemical Plants and Refineries shall be applicable for the proposed expansion unit. The company shall conform to the process vent standards for organic chemicals including non-VOCs and all possible VOCs i.e., TOCs standards and process vent standards for top priority chemicals. Regular monitoring will be carried out for VOC and HC and On-line monitors for VOC measurements may be installed.	Noted and will be complied.
(xxvi)	Regular monitoring of relevant parameters for the underground water in the surrounding areas shall be undertaken and the results shall be submitted to the relevant States Pollution Control Board.	Monitoring is carried out regularly & the reports are attached in Annexure-I. The locations finalized in consultation with KSPCB.
(xxvii)	Solid waste generated as Pretreater and Reformer Catalysts, Sulphur guard absorbent and Alumina Balls shall be disposed off as per the authorization from the State Pollution Control Board.	Noted and will be complied. During operation stage MSEZL will dispose the solid waste as per the directions of State Pollution Control Board.
(xxviii)	Oily sludge shall be sent to melting pit treatment for recovery of oil. The recovered oil shall be recycled into the refinery system. The residual sludge will be stored in HDPE lined pit for disposal after treatment. The sludge	Noted and will be complied.



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S. No.	A. SPECIFIC CONDITIONS	Compliance
	shall be incinerated in the premises only.	
(xxix)	The company shall strictly follow all the recommendations mentioned in the Charter on Corporate Responsibility for Environmental Protection (CREP).	Noted and will be complied.
(xxx)	The Company shall harvest surface as well as rainwater from the rooftops of the buildings proposed in the expansion project and storm water drains to recharge the ground water and use the same water for the various activities of the project to conserve fresh water.	Noted and will be complied.
(xxxi)	Occupational Health Surveillance of the workers should be done on a regular basis and records maintained as per the Factories Act.	Noted and will be complied.
(xxxii)	The Company shall implement all the recommendations made in the Environmental Impact Assessment /EMP report and risk assessment report.	Noted and will be complied.
(xxxiii)	The company will undertake all relevant measures, as indicated during the Public Hearing for improving the Socio-economic conditions of the surrounding area.	Noted and will be complied.
(xxxiv)	With regard to R&R colony the project proponent shall obtain all requisite clearances as prescribed by the concerned agencies.	The R&R Colonies are developed after obtaining the requisite clearances from the concerned Departments like MoEF, KSPCB, Mangalore Urban Development Authority etc.

S. No	B. GENERAL CONDITIONS	Compliance
(i)	The project authorities shall strictly adhere to the stipulations made by the concerned State Pollution Control Board (SPCB) and the State Government.	Noted and will be complied.
(ii)	No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment and Forests.	MSEZ obtained amendment to EC 1. Dated 13 July 2012 & 2. 27 Aug 2014, this involves widening of existing public road towards river side adjacent to MSEZ proposed pipeline cum road Corridor in Reach-II area. Copy of amendments attached as Annexure-II.
(iii)	At no time, the emissions shall be allowed to go beyond the prescribed standards. In the event of failure of any pollution control system adopted by the units, the	Noted and will be complied.



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S. No	B. GENERAL CONDITIONS	Compliance
	respective unit should be immediately put out of operation and should not be restarted until the desired efficiency has been achieved.	
(iv)	Adequate number of influent and effluent quality monitoring stations shall be set up in consultation with the SPCB. Regular monitoring shall be carried out for relevant parameters for both surface and ground water.	Monitoring is carried out regularly & the reports are attached in Annexure-I. The locations finalized in consultation with KSPCB.
(v)	Industrial wastewater shall be properly collected and treated so as to conform to the standards prescribed under GSR 422 (E) dated 19 th May 1993 and 31 st December, 1993 or as amended from time to time. The treated wastewater shall be utilized for plantation purpose.	Noted and will be complied.
(vi)	The overall noise levels in and around the plant area shall be limited within the prescribed standards (85dBA) by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels should conform to the standards prescribed under EPA Rules, 1989 viz. 75dBA (day time) and 70dBA (night time).	Noted and will be complied.
(vii)	The project authorities shall strictly comply with the provisions made in Manufacture, Storage and Import of Hazardous Chemicals Rules 1989 as amended in 2000 for handling of hazardous chemicals etc. Necessary approvals from Chief Controller of Explosives must be obtained before commission of the expansion project. Requisite On-site and Off-site Disaster Management Plans will be prepared and implemented.	Noted and will be complied. MRPL phase III expansion has been detached From MSEZ phase I project vide EC amendment dated 13 th July 2012. MRPL shall be complying conditions relevant to them as part of their existing clearance.
(viii)	Authorization from the State Pollution Control Board must be obtained for collections/treatment/storage/disposal of hazardous wastes.	Noted and will be complied.
(ix)	The project authorities shall provide adequate funds both recurring and non-recurring to implement the conditions stipulated by the Ministry of Environment and Forests as well as the State Government along with the implementation schedule for all the conditions stipulated herein. The funds so provided shall not be diverted for any other purposes.	Noted and will be complied.
(x)	The stipulated conditions shall be monitored by the concerned Regional Office of this Ministry /Central Pollution Control Board/State Pollution Control Board. A six monthly compliance report and the monitored data shall be submitted to them regularly. It shall also be displayed on the Website of the Company.	For every six month compliance report is submitting to MoEF/KSPCB and it is also displayed in the Company website.



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S. No	B. GENERAL CONDITIONS	Compliance
(xi)	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 State Pollution Control Board/ Committee and may also be seen at Website of the Ministry of Environment and Forests at http://www.envfor.nic.in . This should 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 should be forwarded to the concerned Regional office of this Ministry.	The same was carried out and the information regarding this was submitted to Ministry and KSPCB.
(xii)	The date of Financial Closure and final approval of the project by the concerned authorities and the date of commencing the land development work as well as the commissioning of the project shall be informed to the Ministry and its Regional Office.	MSEZL has taken up the land development & infrastructure works from April 2011. MSEZL Board has approved the Business Plan for Infrastructure Development during Aug. 2012.
(xiii)	Proper Housekeeping and adequate occupational health programmes shall be taken up. Regular Occupational Health Surveillance Programme for the relevant diseases shall be carried out and the records shall be maintained properly for at least 30-40 years. Sufficient preventive measures shall be adopted to avoid direct exposure to emission and other Hydrocarbons etc.	Noted and will be complied.
(xiv)	A separate environment management cell with full fledged laboratory facilities to carry out various management and monitoring functions shall be set up under the control of a Senior Executive.	General Manager (Environment & Civil) & Environmental Engineer are in place to take care of Environmental issues. Horticulture Sr.Manager & Horticulture consultant are appointed for development and maintenance of Green belt. The laboratory facilities will be set up before the Commission of the units taken up in MSEZ.

S. No	EC Amendment conditions dtd. 13 th July 2012	Compliance
(i)	Only the sector Specific shall be permitted in the SEZ & those units shall obtain separate Environmental Clearance as applicable.	Noted and will be complied.
(ii)	Proponent shall enhance the allocation for the CSR activities from 2.5 to 5 % of the total cost & item-wise details along	MSEZL has already taken up CSR activities and details of CSR activity



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S. No	EC Amendment conditions dtd. 13 th July 2012	Compliance
	with time bound action plan shall be prepared & submitted to the Ministry's Regional office at Bangalore. Implementation of such program shall be ensured accordingly in a time bound manner.	is attached as Annexure- III
(iii)	The green belt shall be 33% all along the periphery & width of the green belt shall be minimum 50 mts.	Noted and will be complied.

S. No	EC Amendment conditions dtd. 27 th Sep 2014	Compliance
(i)	The project proponent while carrying out the road widening works towards river side should not cause any impact to the river water flow and should be clear of river water way.	Noted and will be complied.
(ii)	The project proponent to take up the bank protection works like stone pitching etc to avoid soil erosion of the banks.	Noted and will be complied.
(iii)	The project proponent to take up all adequate measures to mitigate the dust pollution during the road widening works.	Noted and will be complied.
(iv)	The proponent shall not dump any construction wastes etc in the river portion.	Noted and will be complied.

With Regards

GM (Civil & Environment)

Mangalore SEZ Ltd.

Encl.:

1. Monitoring reports for Air, Water & Noise Environment.
2. Amendment copies of MSEZ Phase-I project.
3. Environmental compliance report & Environmental Monitoring Reports from OMPL.

Copy to: Member Secretary, Karnataka State Pollution Control Board, Bangalore.



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Southern Region, Regional Office,
Ministry of Environment and Forests,
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Bangalore – 560 034

Sir,

Sub: Development of Residential Colony for Rehabilitation and Resettlement for SEZ Complex at Kulai & Thokur village, Mangalore Taluk & District by M/s Mangalore SEZ Limited, Mangalore.

Ref: 1) Environmental Clearance No: SEIAA: 140: CON: 2008, dated 25th June 2008.

With reference to above, we would like to submit the compliance report as on date

A. SPECIFIC CONDITIONS

I. CONSTRUCTION PHASE

(i)	Setup an Environment Management cell and ensure that the cell manages/maintains all the environmental aspects such as sewage treatment, solid waste disposal, maintenance of green belt areas etc, and in case the commercial space is sold/leased, then enter into agreement as per the draft agreement copy submitted, with the prospective buyers to ensure that they maintain the cell and take care of all environment concerns during the operation phase of the project. In addition sufficient fees should be levied so as to raise a corpus fund to maintain the Environment Cell.	MSEZL Environment Management cell is established to look after the environmental aspects like sewage treatment, Solid waste disposal & Development and maintenance of Green belt etc. The conditions specified regarding selling or leasing of Commercial space will be complied.
(ii)	Appoint an Environment and Safety Engineer during the construction phase to take care of environment and safety aspects as committed.	Yes. Environmental Engineer and General Manager (Environment & Civil) are in place to take care of Environmental issues and Safety aspects. Horticulture consultant & Horticulture Manager are appointed for development and maintenance of Green belt.



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(iii)	All required sanitary and hygienic measures should be in place before starting construction activities and to be maintained throughout the construction phase. Sufficient number of toilets/bathrooms should be provided with required septic tanks and soak pits for construction work force.	Noted and being complied.
(iv)	A First Aid Room should be provided in the project both during construction and operation of the project.	A Doctor, clinic and Medical shop is established at 48 acres R&R colony to look after the Construction workers and Project Rehabilitated People. MSEZL has taken up with GoK for setting up Primary Health centre and agreed to provide 2 acres of land for the setting up the same.
(v)	Adequate drinking water and sanitary facilities should be provided for construction workers at the site. The safe disposal of waste water and solid wastes generated during the construction phase should be ensured.	Work is completed.
(vi)	Provision should be made for the supply of fuel (kerosene or cooking gas) utensils such as pressure cookers etc, to the labourers during the construction phase.	Works is completed.
(vii)	All the labourers to be engaged for construction should be screened for health and adequately treated before engaging them to work at the site and detailed report submitted to SEIAA. Safety standards as per National Building Code (NBC) should be ensured.	Works is completed.
(viii)	For disinfection of waste water meant for uses other than toilet flushing, use ultra violet radiation and not chlorination. For recirculation of treated waste water for toilet flushing, use chlorination.	Works is completed.
(ix)	All the top soil excavated during construction activities should be stored for use in horticulture/Landscape development within the Project site.	Works is completed.
(x)	Disposal of construction waste during construction phase should not create any adverse effect on the neighbouring communities and be disposed taking the necessary precautions for general safety and health aspects of people, only in approved sites with the approval of competent authority.	Noted and being complied.
(xi)	Soil and ground water samples should be tested at the project site during the construction phase to ascertain that there is no threat to ground water quality by leaching of heavy metals and or other toxic contaminants and report	The project is for development of R&R Colony and the scope of works is to develop the graded sites to Project displaced families with water and sanitation facilities. There are



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	submitted to SEIAA.	no chances of heavy metals or toxic contaminants produced from the activity. However MSEZL has carried out the potability test for water & report has been forwarded.
(xii)	Construction spoils, including bituminous material and other hazardous materials, must not be allowed to contaminate water courses and the dumpsites for such material must be secured, so that they should not leach into the ground water.	Noted. The project is development of R&R Colony and the scope of works is to develop the graded sites to Project displaced families with water and sanitation facilities. There are no chances of construction spoils or Hazardous materials produced from the activity.
(xiii)	The diesel generator sets to be used during construction phase should be of low sulphur diesel type and should conform to Environment (Protection) Rules prescribed for air and noise emission standards.	Noted. No Diesel generators were used during the construction works.
(xiv)	Vehicles hired for bringing construction material to the site should be in good condition and should conform to applicable air and noise emission standards and should be operated only during non-peak hours.	Works is completed.
(xv)	Ambient noise levels should conform to residential standards both during day and night. Incremental pollution loads on the ambient air and noise quality should be closely monitored during construction phase. Adequate measures to reduce air and noise pollution during construction keeping in mind CPCB norms on noise limits.	Works is completed.
(xvi)	Fly ash should be used as building material in the construction as per the provisions of Fly Ash Notification of September 1999 and amended as on August 2003	The Project is for development of R&R Colonies with Infrastructure like roads, water & Drainage facilities. There is no requirement of building construction and hence usage of Fly ash does not arise. However in future if MSEZL takes up any building the same will be complied.
(xvii)	Ready mixed concrete must be used in building construction.	The Project is for development of R&R Colonies with Infrastructure like roads, water & Drainage facilities. There is no requirement of building construction and hence usage of Ready mixed concrete does not arise. However in future if MSEZL takes up any building the same will be complied.



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(xviii)	Storm water control and its re-use as per CGWB and BIS standards for various applications.	Noted and will be complied.
(xix)	Water demand during construction should be reduced by use of pre-mixed concrete, curing agents and other best practices.	Noted and being complied.
(xx)	The Project Authorities shall not undertake either drawls of Ground water or drilling of bore wells.	Noted and being complied.
(xxi)	Separation of grey and black water should be done by the use of dual plumbing line for separation of grey and black water.	Noted.
(xxii)	Treatment of 100% grey water by decentralized treatment should be done.	100 cum/day Skid mounted STP is erected already in 48 Acres & 35 Acres colony to treat the grey water. Similar skid mounted STPs will be set up for other phases of R&R Colonies.
(xxiii)	Fixtures for showers, toilet flushing and drinking should be of low flow either by use of aerators or pressure reducing devices or sensor based control.	The Project is for development of R&R Colonies with Infrastructure like roads, water & Drainage facilities. There is no requirement for usage of Showers, toilet flushing etc and the condition is not relevant to project implementation.
(xxiv)	Use of glass may be reduced by up to 40% of exposed area to reduce the electricity consumption and load on air conditioning. If necessary, use high quality double glass with special reflective coating in windows.	The Project is for development of R&R Colonies with Infrastructure like roads, water & Drainage facilities. There is no requirement for usage of glass etc and the condition is not relevant to project implementation.
(xxv)	Roof should meet prescriptive requirement as per Energy Conservation Building Code by using appropriate thermal insulation material.	The Project is for development of R&R Colonies with Infrastructure like roads, water & Drainage facilities. There is no requirement for construction of Building roof etc and the condition is not relevant to project implementation.
(xxvi)	Opaque wall should meet prescriptive requirement as per Energy Conservation Building Code which is proposed to be mandatory for all air conditioned spaces while it is optional for non-air conditioned spaces by use of appropriate thermal insulation material to fulfil the requirement.	The Project is for development of R&R Colonies with Infrastructure like roads, water & Drainage facilities. There is no requirement for construction of Building wall or air conditioned spaces etc and the condition is not relevant to project implementation.



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II. OPERATION PHASE

(i)	The installation of the Sewage Treatment Plant (STP) of 16.5 MLD capacity should be carried out before the construction of the second floor of the main structures is commenced and the plant shall be got certified by an independent expert and a report in this regard should be submitted to the SEIAA immediately. Discharge of treated sewage shall conform to the norms & standards of the Karnataka State Pollution Control Board. Treated sewage should be used for flushing, gardening, etc. as proposed.	It was informed to the Assessment Authority by vide our letter dated 22 nd July 2008, that MSEZL has not proposed installation of 16.5 MLD STP, but however the sewage generated in the proposed Colonies will be taken to the proposed 16.5 MLD STP by Mangalore City Corporation.
(ii)	Rainwater harvesting for roof run-off with sufficient capacity artificial pond at ground level for rainwater collection and also surface run-off harvesting should be implemented. Before recharging the surface runoff, pre-treatment must be done to remove suspended matter, oil and grease. Detailed rainwater harvesting plan should be submitted immediately.	Noted and will be complied.
(iii)	Ensure that the excess runoff rainwater from the green belt area, which is irrigated by treated water, does not get into infiltration pits and contaminate the ground water. Such excess flow should be safely let in to the storm water drains.	Noted and will be complied.
(iv)	The solid waste generated should be properly collected and segregated before disposal to the City Municipality Facility.	Noted and will be complied.
(v)	Any hazardous waste including biomedical waste should be disposed of as per applicable Rules and norms with necessary approvals of the Karnataka State Pollution Control Board.	Noted and will be complied.
(vi)	As agreed to by the project proponent, develop minimum 13% of the project area i.e., minimum 50 acres area for green belt and plant with tree species at an espacement of 3mts x 3mts i.e. 1,111 plants/hectare. The balance 20% shall be made up by taking up tree planting on the road sides in the project and if required outside the project so as to ensure that 33% of the project area covered under green belt. The green belt design along the Periphery of the plot shall achieve attenuation factor conforming to the day and night noise standards prescribed for residential land use. The open spaces inside the plot should be suitably	The green belt development is already taken up in Phase I (48 Acres) colony. Around 3000 trees are planted in an extent of 6.6 acres and 600 trees are planted in Bajpe R&R Colony and 8500 tree samplings are planted in other R&R colonies. The balance tree plantation in 22.5 Acres land will be taken in the year of 2015-16. Slope stabilization by vetiver grass taken up in 3 Acre area to check soil erosion.



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CIN: U45209KA2006PLC038590

	landscaped and covered with vegetation of indigenous variety.	
(vii)	Incremental pollution loads on the ambient air quality; noise and water quality should be periodically monitored after commissioning of the project.	Noted and will be complied.
(viii)	Application of Solar energy should be incorporated for illumination of common areas, lighting for gardens and street lighting in addition to provision for solar water heating. A hybrid system or fully solar system for the complex should be provided. Details in this regard should be submitted to the SEIAA.	The Project is for development of R&R Colonies with Infrastructure like roads, water & Drainage facilities. There is no requirement for solar water heating or lighting for gardens and the condition is not relevant to project implementation. The colony will be handed over to Mangalore City Corporation after development & O&M tenure issued. Hence the street lighting with MESCOM connections are provided.
(ix)	Traffic congestion near the entry and exit points from the roads adjoining the proposed project site must be avoided. Parking must be fully internalized and no public space should be utilized.	Noted and will be complied.
(x)	A Report on the energy conservation measures confirming to energy conservation norms finalized by Bureau of Energy Efficiency should be prepared incorporating details about building materials & technology, R&U Factors etc and submit to the SEIAA in three months time.	The Project is for development of R&R Colonies with Infrastructure like roads, water & Drainage facilities. There is no requirement for energy consumption equipments or Building appliances and the condition is not relevant to project implementation.
B. GENERAL CONDITIONS		
(i)	The Environmental safeguards contained in the EIA Report should be implemented in letter and spirit.	Noted and will be complied.
(ii)	All commitments made by the proponents in their application, and subsequent letters addressed to the SEAC/SEIAA should be accomplished before the construction work of the project is completed.	Noted and will be complied.
(iii)	Six monthly monitoring reports should be submitted to the SEIAA and the Regional Office, MoEF, Bangalore, failing which action may be taken to cancel the Environmental Clearance certificate issued.	Noted and will be complied.
(iv)	Officials from the Department of Ecology and Environment, Bangalore/Regional Office of MoEF, Bangalore/Regional Director (Environment) Dept. of Ecology and Environment, Mangalore/ Regional	The complete sets of documents submitted to MoEF/SEIAA were forwarded as directed in the Conditions. MSEZL will comply in providing the full cooperation to the



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	Officer, KSPCB Mangalore and KSPCB Bangalore who would be monitoring the implementation of Environmental safe guards should be given full cooperation, facilities and documents/data by the project proponents during their inspection. A complete set of all the documents submitted to MoEF/SEIAA should be forwarded to the CCF, Regional Office of MoEF, Bangalore/Department of Ecology and Environment, Bangalore /Regional Director, (Environment) Department of Ecology and Environment, Mangalore/Regional Officer, KSPCB Mangalore and KSPCB Bangalore.	Monitoring officers.
(v)	In the case of any change(s) in the scope of project, the project would require a fresh appraisal by this Authority.	Noted.
(vi)	The Authority reserves the right to add additional safeguard measures subsequently, if found necessary, and to take action including revoking of the environment clearance under the provisions of the Environment (Protection) Act, 1986, to ensure effective implementation of the suggested safeguard measures in a time bound and satisfactory manner.	Noted.
(vii)	All other statutory clearances such as the approvals for storage of diesel from Chief Controller of Explosives, Fire Department, Civil Aviation Department, Forest Conservation Act 1980 and Wildlife (Protection) Act, 1972 etc shall be obtained, as applicable by project proponents from the competent authorities.	Noted.
(viii)	The project proponent should advertise in at least two local Newspapers widely circulated in the region, one of which shall be in vernacular language informing that the project has been accorded environmental clearance and copies of clearance letters are available with the Karnataka State pollution Control board and may also be seen on the website of the Ecology and Environment Department at http://seiaa.kar.nic.in . The advertisement should be made within 7 days from the day of issue of the clearance letter and a copy of the same should be forwarded to the Regional Office of MoEF at Bangalore/Department of Environment and Ecology, Bangalore.	Noted. The advertisement was made in three local News papers and the copy of the same was forwarded to all concerned as directed.
(ix)	These stipulations would be enforced among others under the provisions of water (Prevention and Control of Pollution) Act, 1974, The Air (Prevention and Control	Noted.

Qay



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	of Pollution) act 1981, the Environment (Protection) Act, 1986, the Public Liability (Insurance) Act, 1991 and EIA Notification,2006.	
(x)	Under the provisions of Environment (Protection) Act, 1986, legal action shall be initiated against the project proponent if it was found that construction of the project has been started without obtaining environmental clearance.	Noted.

With Regards

GM (Civil & Environment)

Mangalore SEZ Ltd.

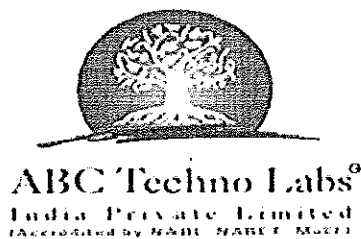
Copy to: 1) Member Secretary, Karnataka State Pollution Control Board, Bangalore.

ENVIRONMENTAL MONITORING REPORT
SPECIAL ECONOMIC ZONE LIMITED, MANGALORE



JANUARY-2015

Prepared by:



An ISO : 9001, ISO : 14001 & OHSAS : 18001 Certified company



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Environmental Monitoring Report – Mangalore Special
Economic zone Limited, Mangalore.

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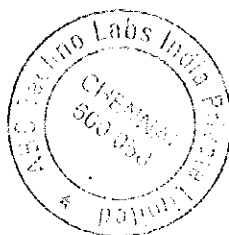
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ANNEXURE

Annexure -I	NABL Certificate.
Annexure -II	Sampling Location Map.





ENVIRONMENTAL MONITORING REPORT

1.0. Introduction

Mangalore Special Economic Zone Limited is located 8 km aeri ally to North East of New Mangalore Port and is adjacent to the existing refinery of MRPL on its West. The Industrial estate of the District, namely Baikampady is located southwest of MSEZ. The Mangalore Airport is about 5 km South East of MSEZ.

1.1. Description of the Organization

M/s. **ABC Techno Labs India Private Limited, Chennai**, an ISO 9001, ISO 14001 & OHSAS 18001 Certified Company has been accredited by,

- National Accreditation Board for Education and Training (NABET), a division of Quality Council of India (QCI).
- National Accreditation Board for Testing and Calibration Laboratories (NABL), an autonomous body under the Department of Science & Technology, Government of India.

The certificate of authorization is enclosed in the Annexure-I.

We offer the following services,

- Environmental Impact Assessment (EIA) & Environmental Management Plan (EMP) for Infrastructure & Industrial Projects.
- Social Impact Assessment Studies including Rehabilitation & Resettlement
- Environmental Monitoring
- Environmental Audits
- Capacity Building for Environmental Management
- Solid Waste Management
- Effective Management of Resources and Wastes
- Risk Assessment & Management Studies



1.2. Scope of Work:

The scope of the work is to conduct Environmental monitoring at Special Economic Zone, Mangalore, following the guidelines and regulations of MoEF/CPCB standards. The scope of the work for the month of **January 2015** is to conduct ambient air quality monitoring at five locations. Sampling Locations each station is given in annexure - II.

2.0. Ambient Air Quality Monitoring Details

Ambient air quality monitoring (AAQM) was carried out at five locations with due consideration to the meteorological conditions of the Project area. Ambient air quality monitoring was carried out at each location on 24 hourly basis on two consecutive days per month. The details of AAQ monitoring stations are given in Table 1.1.

Table - 1.1. Details of Ambient Air Monitoring Locations

STATION CODE	NAME OF THE LOCATIONS	GEOGRAPHICAL LOCATION
AAQ1	120 ML Water Reservoir	N-12°59'13.40" E-74°52'03.00"
AAQ2	MSEZ, Permude	N-12°59'54.00" E-74°52'53.60"
AAQ3	GSS3-10 ML Water Reservoir	N-12°58'57.70" E-74°51'30.10"
AAQ4	CETP Location	N-12°59'51.40" E-74°51'24.70"
AAQ5	Bajpe	N-12°58'32.80" E-74°52'10.40"

2.1.1. Method used for Air Quality Monitoring

Respirable Dust Sampler and Fine Particulate Samplers were used for collecting Particulate Matter of size less than 10 μm (PM_{10}) and 2.5 μm ($\text{PM}_{2.5}$) respectively. Gaseous Samplers were used for sampling gaseous pollutants such as SO_2 , NO_x Ammonia and Ozone (O_3). Organic vapour sampler was used to sample Hydrocarbon. Gas analyzer was used to estimate Carbon monoxide (CO) level in ambient air.



The Analytical techniques used for ambient air quality monitoring and its minimum detectable limit for each parameter is tabulated in Table 1.2.

Table - 1.2. Analytical Techniques Adapted for Ambient Air Quality Sampling and Analysis

S.NO	PARAMETER	TECHNIQUE	MINIMUM DETECTABLE LIMIT
1	Particulate Matter PM ₁₀	Fine Particulate Sampler (Gravimetric method)	5.0 µg/m ³
2	Particulate Matter PM _{2.5}	Fine Particulate Sampler (Gravimetric method)	5.0 µg/m ³
3	Sulphur di Oxide	Modified West & Gaeke Method	5.0 µg/m ³
4	Nitrogen Oxide	Jacob and Hochheiser Method	5.0 µg/m ³
5	Carbon monoxide	Gas Analyser	0.1 ppm
6	Ammonia	Nessler's Method	5 µg/m ³
7	Ozone	KI Absorption and Colorimetric	5 µg/m ³
8	Benzene,	IS 5182: Pt 11: 2006	0.01 µg/m ³
9	Benzo[a]pyrene)	IS 5182: Pt 12: 1991	0.1 ng/m ³
10	Lead,	IS 5182 P 22: 2004	0.1 µg/m ³
11	Arsenic, Nickel	IS 5182 P 22: 2004	1 ng/m ³

2.1.2. Micro-Meteorology

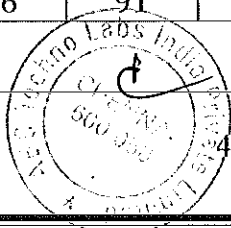
Wind Speed, Predominant Wind Direction, Temperature, Relative Humidity between 01-01-2015 and 31-01-2015 at MSEZ is given in Table 1.3.



Environmental Monitoring Report - Mangalore Special Economic Zone Limited, Mangalore.

Table-1.3- Micro-Meteorology

DATE	TEMPERATURE (°C)		RELATIVE HUMIDITY (%)		WIND SPEED (Km/hr)		PREDOMINANT WIND DIRECTION
	MIN	MAX	MIN	MAX	MIN	MAX	
01-01-2015	22	31	44	84	5.6	11.1	Southwest
02-01-2015	26	32	36	86	5.6	20.4	East
03-01-2015	22	30	29	84	9.3	18.5	East
04-01-2015	26	31	40	84	5.6	16.7	East Northeast
05-01-2015	26	31	39	81	5.6	16.7	East Northeast
06-01-2015	26	32	48	91	5.6	11.1	East
07-01-2015	23	31	49	89	5.6	14.8	East Northeast
08-01-2015	22	31	35	84	5.6	14.8	North Northeast
09-01-2015	20	31	38	76	5.6	18.5	East Northeast
10-01-2015	21	33	24	87	5.6	14.8	East Northeast
11-01-2015	19	33	13	77	9.3	22.2	East
12-01-2015	17	33	18	61	5.6	22.2	East Southeast
13-01-2015	17	32	19	69	5.6	14.8	East
14-01-2015	18	31	34	78	5.6	14.8	East
15-01-2015	19	31	30	84	5.6	16.7	East
16-01-2015	18	33	25	80	5.6	14.8	East
17-01-2015	19	33	30	81	5.6	11.1	East Southeast
18-01-2015	21	33	43	89	5.6	14.8	East Southeast
19-01-2015	22	33	47	89	5.6	14.8	East Southeast
20-01-2015	22	32	38	89	5.6	14.8	East Northeast
21-01-2015	21	32	38	90	5.6	11.1	West Northwest
22-01-2015	20	32	30	64	5.6	18.5	East Northeast
23-01-2015	19	31	31	77	5.6	14.8	North
24-01-2015	20	33	27	82	5.6	14.8	East
25-01-2015	21	34	26	81	5.6	14.8	East
26-01-2015	22	34	30	81	5.6	18.5	Southeast
27-01-2015	21	33	30	85	5.6	16.7	East Southeast
28-01-2015	21	33	30	90	5.6	18.5	East Northeast
29-01-2015	22	32	42	89	5.6	16.7	East
30-01-2015	22	33	43	84	5.6	20.4	East Southeast
31-01-2015	22	34	26	91	3.7	14.8	East Southeast





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2.1.3. Wind Rose

The wind roses diagram for the month of January 2015 at Mangalore SEZ is depicted in Figure 1.1.

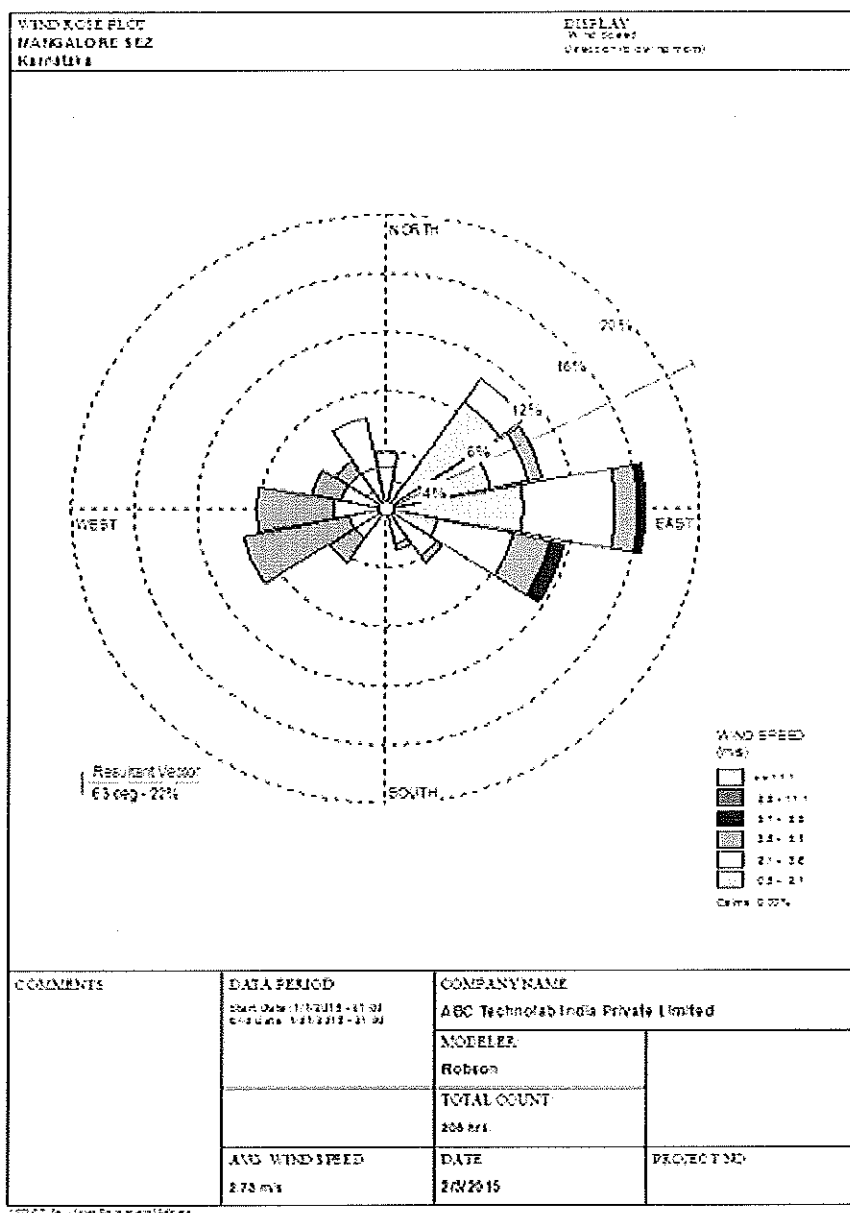
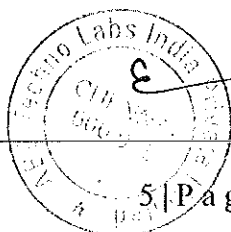


Figure -1.1. Wind Rose Diagram- January 2015





Environmental Monitoring Report – Mangalore Special Economic Zone Limited, Mangalore.

2.1.4. AMBIENT AIR QUALITY RESULTS

The 24 hourly average results of Ambient Air Quality Monitoring of two consecutive days for the month of **January 2015** are presented in Table-1.4(a), 1.4 (b), 1.4(c), 1.4(d), 1.4(e) and 1.4(f). The obtained results are compared with the standards prescribed by Central Pollution Control Board (CPCB) for “Industrial, Rural, Residential and other areas”.

Table 1.4 (a)- AMBIENT AIR QUALITY REPORT

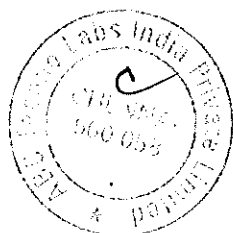
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SAMPLE DESCRIPTION	AMBIENT AIR QUALITY MONITORING.
SAMPLE DRAWN BY	ABC Techno Labs India Private Limited
NAME OF THE CLIENT	MANGALORE SPECIAL ECONOMIC ZONE LIMITED, MANGALORE
DATE SAMPLED	27-01-2015 (Monitoring duration 24hrs/day for 2 days)
REPORT DATE	03-02-2015

S.No	Location	Height GL(m)	Pollutant Concentration in $\mu\text{g}/\text{m}^3$						
			PM _{2.5}	PM ₁₀	SO ₂	NO _x	Pb	NH ₃	O ₃
1	CETP Location	2	25	59	7.7	12.8	BDL (<0.1)	18.3	12.2
2	MSEZ-GSS 3	2	28	69	8.5	16.2	BDL (<0.1)	16.1	11.8
Test Method			EPA- 40 CFR Part 50	IS 5182 Pt.23 : 2006	West & Gaeke	Jacob & Hochheister	IS 5182 P 22	Nessler's Method	KI Absorption Method
CPCB STANDARDS									
Industrial /Residential / Rural and Other Area			60	100	80	80	1	400	100

BDL- Below Detection Limit

Contd.....

For ABC Techno Labs India Private Limited.,



[Signature]
AUTHORIZED SIGNATORY

A. ROBSON CHUMMADURAI
(SENIOR ANALYST)



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Table 1.4(b) - AMBIENT AIR QUALITY REPORT

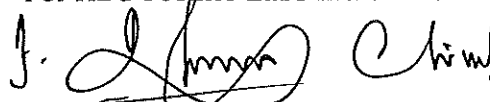
SAMPLE ID NO	ABC/MSEZ/10/AS/270115/A 1667-1668
SAMPLE DESCRIPTION	AMBIENT AIR QUALITY MONITORING.
SAMPLE DRAWN BY	ABC Techno Labs India Private Limited
NAME OF THE CLIENT	MANGALORE SPECIAL ECONOMIC ZONE LIMITED, MANGALORE
DATE SAMPLED	27-01-2015 (Monitoring duration 24hrs/day for 2 days)
REPORT DATE	03-02-2015

S.No	Location	Pollutant Concentration				CO, mg/m ³
		Benzene µg/m ³	Benzo[a]pyrene ng/m ³	Arsenic ng/m ³	Nickel ng/m ³	
1	CETP Location	BDL (<0.01)	BDL (<0.1)	BDL (<1)	BDL (<1)	0.13
2	MSEZ-GSS 3	BDL (<0.01)	BDL (<0.1)	BDL (<1)	BDL (<1)	0.33
Test Method		IS 5182: Pt 11: 2006	IS 5182: Pt 12: 1991	IS 5182 P 22	IS 5182 P 22	Gas Analyser
CPCB STANDARDS						
Industrial /Residential / Rural and Other Area		5	1	6	20	2

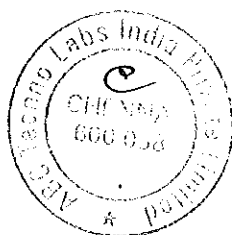
BDL- Below Detection Limit

Contd.....

For ABC Techno Labs India Private Limited.,


02/04/15
AUTHORIZED SIGNATORY

A. ROSEON CHINNADURAI
(SENIOR CHEMIST)





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Table 1.4(c) - AMBIENT AIR QUALITY REPORT

SAMPLE ID NO	ABC/MSEZ/10/AS/270115/A 1669
SAMPLE DESCRIPTION	AMBIENT AIR QUALITY MONITORING.
SAMPLE DRAWN BY	ABC Techno Labs India Private Limited
NAME OF THE CLIENT	MANGALORE SPECIAL ECONOMIC ZONE LIMITED, MANGALORE
DATE SAMPLED	27-01-2015 (Monitoring duration 24hrs/day for 2 days)
REPORT DATE	03-02-2015

S.No	Location	Height GL(m)	Pollutant Concentration in $\mu\text{g}/\text{m}^3$						
			PM _{2.5}	PM ₁₀	SO ₂	NO _x	Pb	NH ₃	O ₃
3	Baipe	2	18	54	5.3	12.2	BDL (<0.1)	BDL(<5)	10.8
Test Method			EPA- 40 CFR Part 50	IS 5182 Pt.23 : 2006	West & Gaeke	Jacob & Hochheister	IS 5182 P 22	Nessler's Method	KI Absorption Method
CPCB STANDARDS									
Industrial /Residential / Rural and Other Area			60	100	80	80	1	400	100

BDL- Below Detection Limit

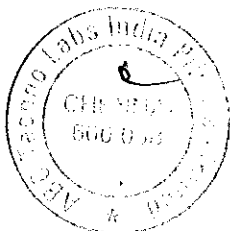
Contd.....

For ABC Techno Labs India Private Limited.,

[Signature]
03/02/15

AUTHORIZED SIGNATORY

A. ROBSON CHINNADURAI
(SENIOR CHEMIST)





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Table 1.4(d) - AMBIENT AIR QUALITY REPORT

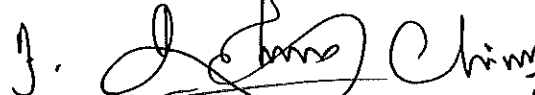
SAMPLE ID NO	ABC/MSEZ/10/AS/270115/A 1669
SAMPLE DESCRIPTION	AMBIENT AIR QUALITY MONITORING.
SAMPLE DRAWN BY	ABC Techno Labs India Private Limited
NAME OF THE CLIENT	MANGALORE SPECIAL ECONOMIC ZONE LIMITED, MANGALORE
DATE SAMPLED	27-01-2015 (Monitoring duration 24hrs/day for 2 days)
REPORT DATE	03-02-2015

S.No	Location	Pollutant Concentration				CO, mg/m ³
		Benzene µg/m ³	Benzo[a]pyrene ng/m ³	Arsenic ng/m ³	Nickel ng/m ³	
3	Baipe	BDL (<0.01)	BDL (<0.1)	BDL (<1)	BDL (<1)	BDL(<0.1)
Test Method		IS 5182: Pt 11: 2006	IS 5182: Pt 12: 1991	IS 5182 P 22	IS 5182 P 22	Gas Analyser
CPCB STANDARDS						
Industrial /Residential / Rural and Other Area		5	1	6	20	2

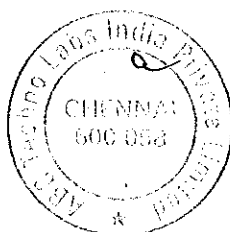
BDL- Below Detection Limit

Contd.....

For ABC Techno Labs India Private Limited,


AUTHORIZED SIGNATORY

A. ROBSON CHINNADURAI
(SENIOR CHEMIST)





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Table 1.4(e) - AMBIENT AIR QUALITY REPORT

SAMPLE ID NO	ABC/MSEZ/10/AS/290115/A 1670-1671
SAMPLE DESCRIPTION	AMBIENT AIR QUALITY MONITORING.
SAMPLE DRAWN BY	ABC Techno Labs India Private Limited
NAME OF THE CLIENT	MANGALORE SPECIAL ECONOMIC ZONE LIMITED, MANGALORE
DATE SAMPLED	29-01-2015 (Monitoring duration 24hrs/day for 2 days)
REPORT DATE	03-02-2015

S.No	Location	Height GL(m)	Pollutant Concentration in $\mu\text{g}/\text{m}^3$						
			PM _{2.5}	PM ₁₀	SO ₂	NO _x	Pb	NH ₃	O ₃
4	120 ML, Water Reservoir	2	23	64	7.3	14.2	BDL (<0.1)	18.1	12.5
5	MSEZ, Permude	2	19	50	6.3	13.1	BDL (<0.1)	BDL (<5)	11.3
Test Method			EPA- 40 CFR Part 50	IS 5182 Pt.23 : 2006	West & Gaeke	Jacob & Hochheister	IS 5182 P 22	Nessler's Method	KI Absorption Method
CPCB STANDARDS									
Industrial /Residential / Rural and Other Area			60	100	80	80	1	400	100

BDL- Below Detection Limit

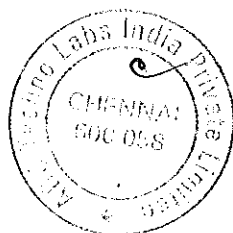
Contd.....

For ABC Techno Labs India Private Limited.,

J. Chinnadurai

AUTHORIZED SIGNATORY

A. ROBSON CHINNADURAI
(SENIOR CHEMIST)





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Table 1.4(f) - AMBIENT AIR QUALITY REPORT

SAMPLE ID NO	ABC/MSEZ/10/AS/290115/A 1670-1671
SAMPLE DESCRIPTION	AMBIENT AIR QUALITY MONITORING.
SAMPLE DRAWN BY	ABC Techno Labs India Private Limited
NAME OF THE CLIENT	MANGALORE SPECIAL ECONOMIC ZONE LIMITED, MANGALORE
DATE SAMPLED	29-01-2015 (Monitoring duration 24hrs/day for 2 days)
REPORT DATE	03-02-2015

S.No	Location	Pollutant Concentration				CO, mg/m ³
		Benzene µg/m ³	Benzo[a]pyrene ng/m ³	Arsenic ng/m ³	Nickel ng/m ³	
4	120 ML, Water Reservoir	BDL (<0.01)	BDL (<0.1)	BDL (<1)	BDL (<1)	0.23
5	MSEZ, Permude	BDL (<0.01)	BDL (<0.1)	BDL (<1)	BDL (<1)	BDL(<0.1)
Test Method		IS 5182: Pt 11: 2006	IS 5182: Pt 12: 1991	IS 5182 P 22	IS 5182 P 22	Gas Analyser
CPCB STANDARDS						
Industrial /Residential / Rural and Other Area		5	1	6	20	2

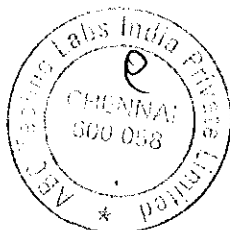
BDL- Below Detection Limit

.....END OF REPORT.....

For ABC Techno Labs India Private Limited.,

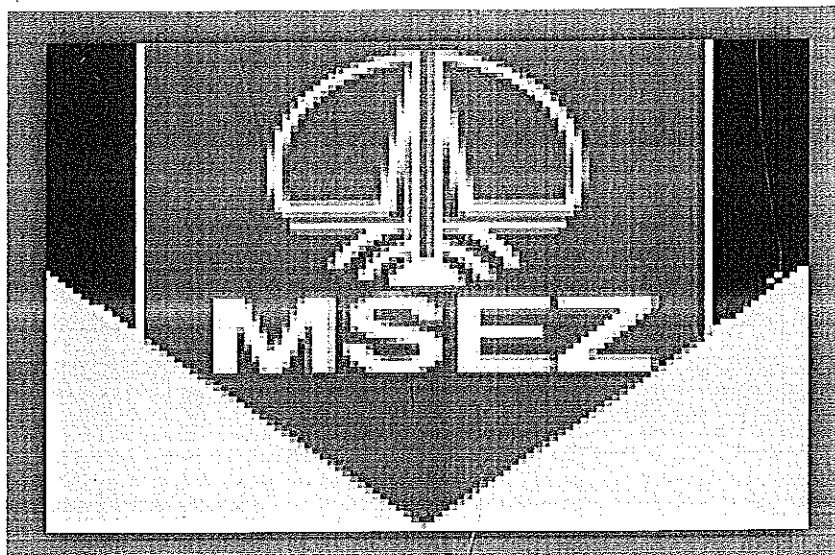

AUTHORIZED SIGNATORY 08/02/15

A. ROBSON CHINNADURAI
(SENIOR CHEMIST)



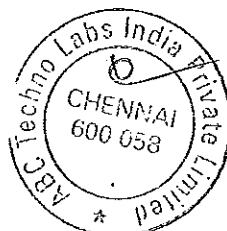
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ENVIRONMENTAL MONITORING REPORT
SPECIAL ECONOMIC ZONE LIMITED, MANGALORE



February - 2015

Prepared by:



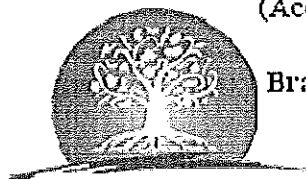
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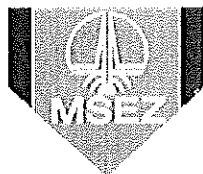
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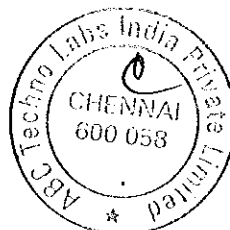
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ANNEXURE

Annexure -I	NABL Certificate.
Annexure -II	Sampling Location Map.





ENVIRONMENTAL MONITORING REPORT

1.0. Introduction

Mangalore Special Economic Zone Limited is located 8 km aerielly to North East of New Mangalore Port and is adjacent to the existing refinery of MRPL on its West. The Industrial estate of the District, namely Baikampady is located southwest of MSEZ. The Mangalore Airport is about 5 km South East of MSEZ.

1.1. Description of the Organization

M/s. ABC Techno Labs India Private Limited, Chennai, an ISO 9001, ISO 14001 & OHSAS 18001 Certified Company has been accredited by,

- National Accreditation Board for Education and Training (NABET), a division of Quality Council of India (QCI).
- National Accreditation Board for Testing and Calibration Laboratories (NABL), an autonomous body under the Department of Science & Technology, Government of India.

The certificate of authorization is enclosed in the Annexure-I.

We offer the following services,

- Environmental Impact Assessment (EIA) & Environmental Management Plan (EMP) for Infrastructure & Industrial Projects.
- Social Impact Assessment Studies including Rehabilitation & Resettlement
- Environmental Monitoring
- Environmental Audits
- Capacity Building for Environmental Management
- Solid Waste Management
- Effective Management of Resources and Wastes
- Risk Assessment & Management Studies



1.2. Scope of Work:

The scope of the work is to conduct Environmental monitoring at Special Economic Zone, Mangalore, following the guidelines and regulations of MoEF/CPCB standards. The scope of the work for the month of **February 2015** is to conduct ambient air quality monitoring at five locations. Sampling Locations each station is given in annexure - II.

2.0. Ambient Air Quality Monitoring Details

Ambient air quality monitoring (AAQM) was carried out at five locations with due consideration to the meteorological conditions of the Project area. Ambient air quality monitoring was carried out at each location on 24 hourly basis on two consecutive days per month. The details of AAQ monitoring stations are given in **Table 1.1**.

Table - 1.1. Details of Ambient Air Monitoring Locations

STATION CODE	NAME OF THE LOCATIONS	GEOGRAPHICAL LOCATION
AAQ1	120 ML Water Reservoir	N-12°59'13.40" E-74°52'03.00"
AAQ2	MSEZ, Permude	N-12°59'54.00" E-74°52'53.60"
AAQ3	GSS3-10 ML Water Reservoir	N-12°58'57.70" E-74°51'30.10"
AAQ4	CETP Location	N-12°59'51.40" E-74°51'24.70"
AAQ5	Bajpe	N-12°58'32.80" E-74°52'10.40"

2.1.1. Method used for Air Quality Monitoring

Respirable Dust Sampler and Fine Particulate Samplers were used for collecting Particulate Matter of size less than 10 μm (PM_{10}) and 2.5 μm ($\text{PM}_{2.5}$) respectively. Gaseous Samplers were used for sampling gaseous pollutants such as SO_2 , NO_x Ammonia and Ozone (O_3). Organic vapour sampler was used to sample Hydrocarbon. Gas analyzer was used to estimate Carbon monoxide (CO) level in ambient air.



The Analytical techniques used for ambient air quality monitoring and its minimum detectable limit for each parameter is tabulated in Table 1.2.

Table - 1.2. Analytical Techniques Adapted for Ambient Air Quality Sampling and Analysis

S.NO	PARAMETER	TECHNIQUE	MINIMUM DETECTABLE LIMIT
1	Particulate Matter PM ₁₀	Fine Particulate Sampler (Gravimetric method)	5.0 µg/m ³
2	Particulate Matter PM _{2.5}	Fine Particulate Sampler (Gravimetric method)	5.0 µg/m ³
3	Sulphur di Oxide	Modified West & Gaeke Method	5.0 µg/m ³
4	Nitrogen Oxide	Jacob and Hochheiser Method	5.0 µg/m ³
5	Carbon monoxide	Gas Analyser	0.1 ppm
6	Ammonia	Nessler's Method	5 µg/m ³
7	Ozone	KI Absorption and Colorimetric	5 µg/m ³
8	Benzene,	IS 5182: Pt 11: 2006	0.01 µg/m ³
9	Benzo[a]pyrene)	IS 5182: Pt 12: 1991	0.1 ng/m ³
10	Lead,	IS 5182 P 22: 2004	0.1 µg/m ³
11	Arsenic, Nickel	IS 5182 P 22: 2004	1 ng/m ³

2.1.2. Micro-Meteorology

Wind Speed, Predominant Wind Direction, Temperature, Relative Humidity between 01-02-2015 and 28-02-2015 at MSEZ is given in Table 1.3.



Environmental Monitoring Report - Mangalore Special Economic Zone Limited, Mangalore.

Table-1.3- Micro-Meteorology

DATE	TEMPERATURE (°C)		RELATIVE HUMIDITY (%)		WIND SPEED (Km/hr)		PREDOMINANT WIND DIRECTION
	MIN	MAX	MIN	MAX	MIN	MAX	
01-02-2015	17	31	31	88	5.6	14.8	East South East
02-02-2015	23	34	21	86	5.6	16.7	East South East
03-02-2015	23	34	16	84	5.6	18.5	East
04-02-2015	22	35	11	82	5.6	25.9	East
05-02-2015	21	34	18	67	5.6	14.8	East
06-02-2015	22	33	35	81	7.4	20.4	East South East
07-02-2015	23	31	38	90	5.6	18.5	West North West
08-02-2015	24	32	36	88	5.6	14.8	North north west
09-02-2015	23	33	34	73	5.6	16.7	North West
10-02-2015	20	22	40	77	7.4	18.5	East
11-02-2015	23	33	30	84	9.3	14.8	North
12-02-2015	22	34	27	80	5.6	14.8	North east
13-02-2015	22	34	29	84	5.6	18.5	North east
14-02-2015	23	31	29	79	5.6	14.8	West North West
15-02-2015	23	31	52	82	5.6	18.5	North north west
16-02-2015	20	32	45	94	3.7	18.5	East
17-02-2015	24	32	47	92	5.6	14.8	West North West
18-02-2015	24	31	50	94	5.6	18.5	East south east
19-02-2015	24	31	47	88	5.6	18.5	North north west
20-02-2015	23	31	41	88	5.6	18.5	East south east
21-02-2015	23	33	19	85	5.6	22.2	south east
22-02-2012	23	34	13	92	5.6	18.5	North West
23-02-2015	22	35	8	78	5.6	66.7	East south east
24-02-2015	22	33	13	70	7.4	20.4	East south east
25-02-2015	22	32	35	72	5.6	22.8	East
26-02-2015	22	32	35	72	5.6	22.2	West South West
27-02-2015	23	32	43	88	5.6	18.5	North North West
28-02-2015	23	31	41	76	5.6	14.8	South west



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2.1.3. Wind Rose

The wind roses diagram for the month of February 2015 at Mangalore SEZ is depicted in Figure 1.1.

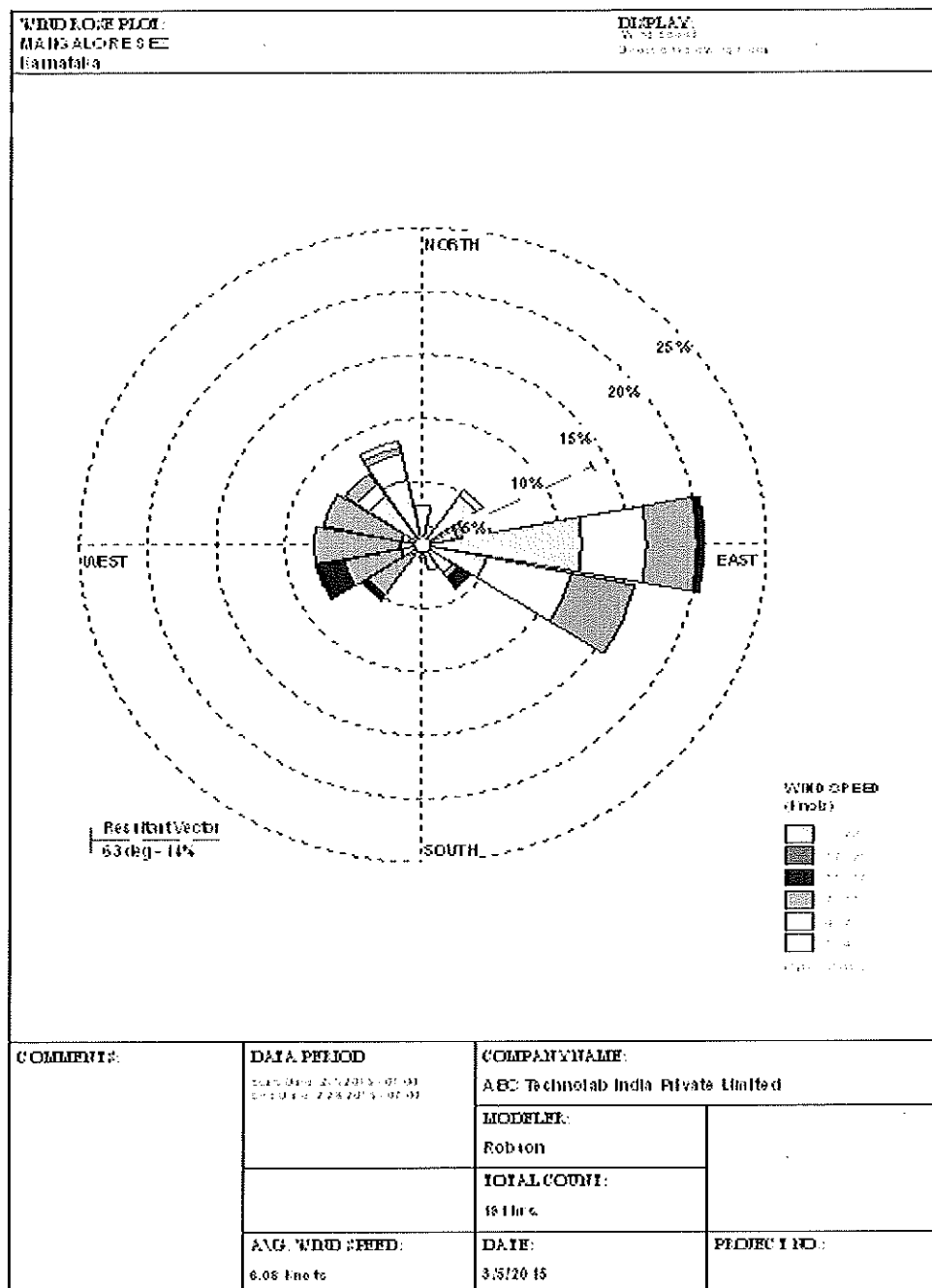
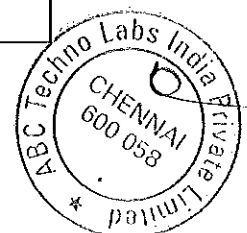


Figure -1.1. Wind Rose Diagram- February 2015





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2.1.4. AMBIENT AIR QUALITY RESULTS

The 24 hourly average results of Ambient Air Quality Monitoring of two consecutive days for the month of **February 2015** are presented in Table-1.4(a), 1.4 (b), 1.4(c), 1.4(d), 1.4(e) and 1.4(f). The obtained results are compared with the standards prescribed by Central Pollution Control Board (CPCB) for "Industrial, Rural, Residential and other areas".

Table 1.4 (a)- AMBIENT AIR QUALITY REPORT

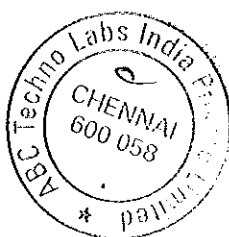
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SAMPLE DESCRIPTION	AMBIENT AIR QUALITY MONITORING.
SAMPLE DRAWN BY	ABC Techno Labs India Private Limited
NAME OF THE CLIENT	MANGALORE SPECIAL ECONOMIC ZONE LIMITED, MANGALORE
DATE SAMPLED	24-02-2015 (Monitoring duration 24hrs/day for 2 days)
REPORT DATE	05-03-2015

S.No	Location	Height GL(m)	Pollutant Concentration in $\mu\text{g}/\text{m}^3$						
			PM _{2.5}	PM ₁₀	SO ₂	NO _x	Pb	NH ₃	O ₃
1	CETP Location	2	22	56	8.2	13.1	BDL (<0.1)	14.2	11.3
2	MSEZ-GSS 3	2	31	65	9.1	5.7	BDL (<0.1)	16.3	12.2
Test Method			EPA- 40 CFR Part 50	IS 5182 Pt.23 : 2006	West & Gaeke	Jacob & Hochheister	IS 5182 P 22	Nessler's Method	KI Absorption Method
CPCB STANDARDS									
Industrial /Residential / Rural and Other Area			60	100	80	80	1	400	100

BDL- Below Detection Limit

Contd.....

For ABC Techno Labs India Private Limited.,



[Signature]

AUTHORIZED SIGNATORY

A. ROBSON CHINNADURAI
(SENIOR CHEMIST)



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Table 1.4(b) - AMBIENT AIR QUALITY REPORT

SAMPLE ID NO	ABC/MSEZ/11/AS/240215/A 1386-1387
SAMPLE DESCRIPTION	AMBIENT AIR QUALITY MONITORING.
SAMPLE DRAWN BY	ABC Techno Labs India Private Limited
NAME OF THE CLIENT	MANGALORE SPECIAL ECONOMIC ZONE LIMITED, MANGALORE
DATE SAMPLED	24-02-2015 (Monitoring duration 24hrs/day for 2 days)
REPORT DATE	05-03-2015

S.No	Location	Pollutant Concentration				CO, mg/m ³
		Benzene µg/m ³	Benzo[a]pyrene ng/m ³	Arsenic ng/m ³	Nickel ng/m ³	
1	CETP Location	BDL (<0.01)	BDL (<0.1)	BDL (<1)	BDL (<1)	0.11
2	MSEZ-GSS 3	BDL (<0.01)	BDL (<0.1)	BDL (<1)	BDL (<1)	0.27
Test Method		IS 5182: Pt 11: 2006	IS 5182: Pt 12: 1991	IS 5182 Pt 22	IS 5182 Pt 22	Gas Analyser
CPCB STANDARDS						
Industrial /Residential / Rural and Other Area		5	1	6	20	2

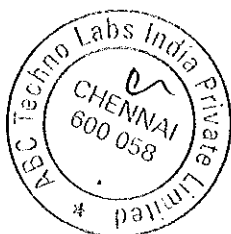
BDL- Below Detection Limit

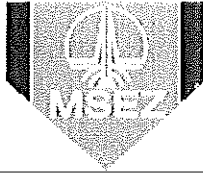
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For ABC Techno Labs India Private Limited,

AUTHORIZED SIGNATORY

A. ROBSON CHINNADURAI
(SENIOR CHEMIST)





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Table 1.4(c) - AMBIENT AIR QUALITY REPORT

SAMPLE ID NO	ABC/MSEZ/11/AS/240215/A 1388
SAMPLE DESCRIPTION	AMBIENT AIR QUALITY MONITORING.
SAMPLE DRAWN BY	ABC Techno Labs India Private Limited
NAME OF THE CLIENT	MANGALORE SPECIAL ECONOMIC ZONE LIMITED, MANGALORE
DATE SAMPLED	24-02-2015 (Monitoring duration 24hrs/day for 2 days)
REPORT DATE	05-03-2015

S.No	Location	Height GL(m)	Pollutant Concentration in $\mu\text{g}/\text{m}^3$						
			PM _{2.5}	PM ₁₀	SO ₂	NO _x	Pb	NH ₃	O ₃
3	Baipe	2	19	50	6.2	13.1	BDL (<0.1)	BDL(<5)	10.8
Test Method			EPA-40 CFR Part 50	IS 5182 Pt.23 : 2006	West & Gaeke	Jacob & Hochheister	IS 5182 P 22	Nessler's Method	KI Absorption Method
CPCB STANDARDS									
Industrial /Residential / Rural and Other Area			60	100	80	80	1	400	100

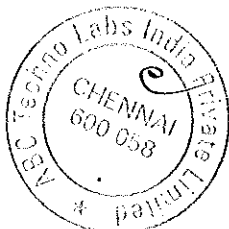
BDL- Below Detection Limit

Contd.....

For ABC Techno Labs India Private Limited.,

AUTHORIZED SIGNATORY

A. ROBSON CHINNADURAI
(SENIOR CONSULTANT)





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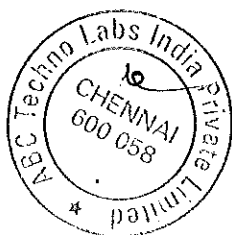
Table 1.4(d) - AMBIENT AIR QUALITY REPORT

SAMPLE ID NO	ABC/MSEZ/11/AS/240215/A 1388
SAMPLE DESCRIPTION	AMBIENT AIR QUALITY MONITORING.
SAMPLE DRAWN BY	ABC Techno Labs India Private Limited
NAME OF THE CLIENT	MANGALORE SPECIAL ECONOMIC ZONE LIMITED, MANGALORE
DATE SAMPLED	24-02-2015 (Monitoring duration 24hrs/day for 2 days)
REPORT DATE	05-03-2015

S.No	Location	Pollutant Concentration				CO, mg/m ³
		Benzene µg/m ³	Benzo[a]pyrene ng/m ³	Arsenic ng/m ³	Nickel ng/m ³	
3	Baipe	BDL (<0.01)	BDL (<0.1)	BDL (<1)	BDL (<1)	BDL(<0.1)
Test Method		IS 5182: Pt 11: 2006	IS 5182: Pt 12: 1991	IS 5182 P 22	IS 5182 P 22	Gas Analyser
CPCB STANDARDS						
Industrial /Residential / Rural and Other Area		5	1	6	20	2

BDL- Below Detection Limit

Contd.....



For ABC Techno Labs India Private Limited.,

AUTHORIZED SIGNATORY

A. ROBSON CHINMADURAI
(SENIOR CHEMIST)



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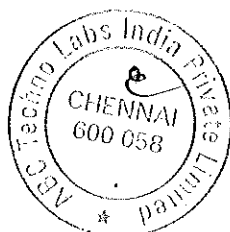
Table 1.4(e) - AMBIENT AIR QUALITY REPORT

SAMPLE ID NO	ABC/MSEZ/11/AS/260215/A 1389-1390
SAMPLE DESCRIPTION	AMBIENT AIR QUALITY MONITORING.
SAMPLE DRAWN BY	ABC Techno Labs India Private Limited
NAME OF THE CLIENT	MANGALORE SPECIAL ECONOMIC ZONE LIMITED, MANGALORE
DATE SAMPLED	26-02-2015 (Monitoring duration 24hrs/day for 2 days)
REPORT DATE	05-03-2015

S.No	Location	Height GL(m)	Pollutant Concentration in $\mu\text{g}/\text{m}^3$						
			PM _{2.5}	PM ₁₀	SO ₂	NO _x	Pb	NH ₃	O ₃
4	120 ML, Water Reservoir	2	25	62	6.8	13.6	BDL (<0.1)	16.3	12.1
5	MSEZ, Permude	2	21	55	7.2	12.8	BDL (<0.1)	BDL (<5)	10.4
Test Method			EPA- 40 CFR Part 50	IS 5182 Pt.23 : 2006	West & Gaeke	Jacob & Hochheister	IS 5182 P 22	Nessler's Method	KI Absorption Method
CPCB STANDARDS									
Industrial /Residential / Rural and Other Area			60	100	80	80	1	400	100

BDL- Below Detection Limit

Contd.....



For ABC Techno Labs India Private Limited.,

AUTHORIZED SIGNATORY

A. ROBSON CHINNADURAI
(SENIOR CHEMIST)



Environmental Monitoring Report - Mangalore Special Economic Zone Limited, Mangalore.

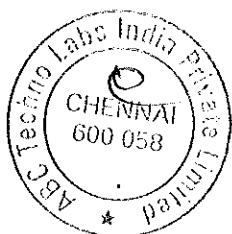
Table 1.4(f) - AMBIENT AIR QUALITY REPORT

SAMPLE ID NO	ABC/MSEZ/11/AS/260215/A 1389-1390
SAMPLE DESCRIPTION	AMBIENT AIR QUALITY MONITORING.
SAMPLE DRAWN BY	ABC Techno Labs India Private Limited
NAME OF THE CLIENT	MANGALORE SPECIAL ECONOMIC ZONE LIMITED, MANGALORE
DATE SAMPLED	26-02-2015 (Monitoring duration 24hrs/day for 2 days)
REPORT DATE	05-03-2015

S.No	Location	Pollutant Concentration				CO, mg/m ³
		Benzene µg/m ³	Benzo[a]pyrene ng/m ³	Arsenic ng/m ³	Nickel ng/m ³	
4	120 ML, Water Reservoir	BDL (<0.01)	BDL (<0.1)	BDL (<1)	BDL (<1)	0.21
5	MSEZ, Permude	BDL (<0.01)	BDL (<0.1)	BDL (<1)	BDL (<1)	BDL(<0.1)
Test Method		IS 5182: Pt 11: 2006	IS 5182: Pt 12: 1991	IS 5182 P 22	IS 5182 P 22	Gas Analyser
CPCB STANDARDS						
Industrial /Residential / Rural and Other Area		5	1	6	20	2

BDL- Below Detection Limit

.....END OF REPORT.....

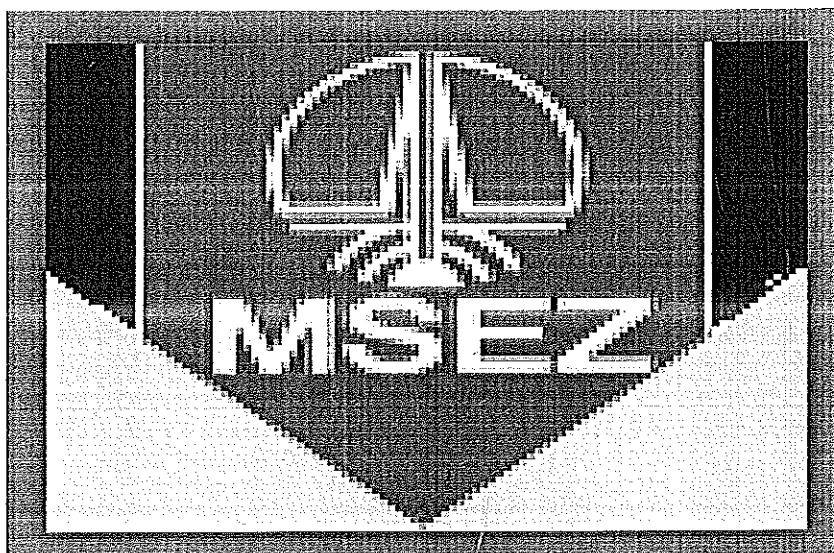


For ABC Techno Labs India Private Limited.,

AUTHORIZED SIGNATORY

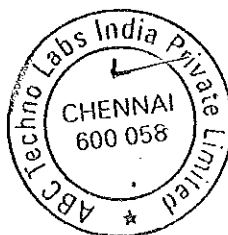
A. ROBSON CHINMADURAI
(SENIOR CHEMIST)

ENVIRONMENTAL MONITORING REPORT
SPECIAL ECONOMIC ZONE LIMITED, MANGALORE



MARCH - 2015

Prepared by:



ABC Techno Labs India Private Limited

An ISO : 9001:2008, ISO :14001:2004 & OHSAS : 18001:2007 Certified Company
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Economic zone Limited, Mangalore.

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FIGURE

S.NO	TITLE	PAGE NO.
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ANNEXURE

Annexure -I	NABL Certificate.
Annexure -II	Sampling Location Map.



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2.1.4. AMBIENT AIR QUALITY RESULTS

The 24 hourly average results of Ambient Air Quality Monitoring of two consecutive days for the month of **MARCH 2015** are presented in Table-1.4(a), 1.4 (b), 1.4(c), 1.4(d), 1.4(e) and 1.4(f). The obtained results are compared with the standards prescribed by Central Pollution Control Board (CPCB) for “Industrial, Rural, Residential and other areas”.

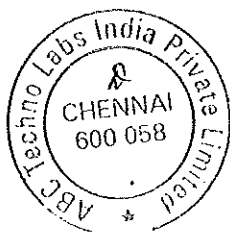
Table 1.4 (a)- AMBIENT AIR QUALITY REPORT

SAMPLE ID NO	ABC/MSEZ/12/AS/240315/A 2129-2130
SAMPLE DESCRIPTION	AMBIENT AIR QUALITY MONITORING.
SAMPLE DRAWN BY	ABC Techno Labs India Private Limited
NAME OF THE CLIENT	MANGALORE SPECIAL ECONOMIC ZONE LIMITED, MANGALORE
DATE SAMPLED	24-03-2015 (Monitoring duration 24hrs/day for 2 days)
REPORT DATE	06-04-2015

S.No	Location	Height GL(m)	Pollutant Concentration in $\mu\text{g}/\text{m}^3$						
			PM _{2.5}	PM ₁₀	SO ₂	Nox	Pb	NH ₃	O ₃
1	120 ML Water Reservoir	2	24	59	8.1	14.2	BDL (<0.1)	15.3	12.6
2	MSEZ-GSS 3	2	28	62	9.4	15.8	BDL (<0.1)	13.2	13.7
Test Method			EPA- 40 CFR Part 50	IS 5182 Pt.23 : 2006	West & Gaeke	Jacob & Hochheister	IS 5182 P 22	Nessler's Method	KI Absorption Method
CPCB STANDARDS									
Industrial /Residential / Rural and Other Area			60	100	80	80	1	400	100

BDL- Below Detection Limit

Contd.....



For ABC Techno Labs India Private Limited.,

[Signature]
AUTHORIZED SIGNATORY

A. ROBSON CHINNADURAI
(SENIOR CHEMIST)

Eto
for n/g
24/4/15



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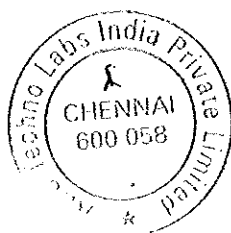
Table 1.4(b) - AMBIENT AIR QUALITY REPORT

SAMPLE ID NO	ABC/MSEZ/12/AS/240315/A 2129-2130
SAMPLE DESCRIPTION	AMBIENT AIR QUALITY MONITORING.
SAMPLE DRAWN BY	ABC Techno Labs India Private Limited
NAME OF THE CLIENT	MANGALORE SPECIAL ECONOMIC ZONE LIMITED, MANGALORE
DATE SAMPLED	24-03-2015 (Monitoring duration 24hrs/day for 2 days)
REPORT DATE	06-04-2015

S.No	Location	Pollutant Concentration				CO, mg/m ³
		Benzene µg/m ³	Benzo[a]pyrene ng/m ³	Arsenic ng/m ³	Nickel ng/m ³	
1	120 ML Water Reservoir	BDL (<0.01)	BDL (<0.1)	BDL (<1)	BDL (<1)	0.13
2	MSEZ-GSS 3	BDL (<0.01)	BDL (<0.1)	BDL (<1)	BDL (<1)	0.25
Test Method		IS 5182: Pt 11: 2006	IS 5182: Pt 12: 1991	IS 5182 Pt 22	IS 5182 Pt 22	Gas Analyser
CPCB STANDARDS						
Industrial /Residential / Rural and Other Area		5	1	6	20	2

BDL- Below Detection Limit

Contd.....



For ABC Techno Labs India Private Limited.,

[Signature]
AUTHORIZED SIGNATORY

A. ROBSON CHINNADURAI
(SENIOR CHEMIST)



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2.1.4. AMBIENT AIR QUALITY RESULTS

The 24 hourly average results of Ambient Air Quality Monitoring of two consecutive days for the month of **MARCH 2015** are presented in Table-1.4(a), 1.4 (b), 1.4(c), 1.4(d), 1.4(e) and 1.4(f). The obtained results are compared with the standards prescribed by Central Pollution Control Board (CPCB) for "Industrial, Rural, Residential and other areas".

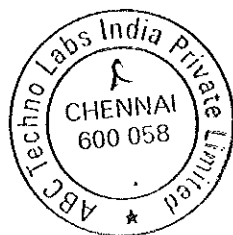
Table 1.4 (a)- AMBIENT AIR QUALITY REPORT

SAMPLE ID NO	ABC/MSEZ/12/AS/240315/A 2129-2130
SAMPLE DESCRIPTION	AMBIENT AIR QUALITY MONITORING.
SAMPLE DRAWN BY	ABC Techno Labs India Private Limited
NAME OF THE CLIENT	MANGALORE SPECIAL ECONOMIC ZONE LIMITED, MANGALORE
DATE SAMPLED	24-03-2015 (Monitoring duration 24hrs/day for 2 days)
REPORT DATE	06-04-2015

S.No	Location	Height GL(m)	Pollutant Concentration in $\mu\text{g}/\text{m}^3$						
			PM _{2.5}	PM ₁₀	SO ₂	Nox	Pb	NH ₃	O ₃
1	120 ML Water Reservoir	2	24	59	8.1	14.2	BDL (<0.1)	15.3	12.6
2	MSEZ-GSS 3	2	28	62	9.4	15.8	BDL (<0.1)	13.2	13.7
Test Method			EPA- 40 CFR Part 50	IS 5182 Pt.23 : 2006	West & Gaeke	Jacob & Hochheister	IS 5182 P 22	Nessler's Method	KI Absorption Method
CPCB STANDARDS									
Industrial /Residential / Rural and Other Area			60	100	80	80	1	400	100

BDL- Below Detection Limit

Contd.....



For ABC Techno Labs India Private Limited.,

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AUTHORIZED SIGNATORY

A. ROBSON CHINNADURAI
(SENIOR CHEMIST)



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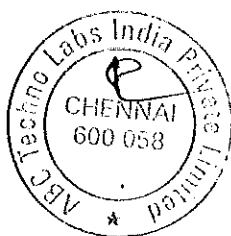
Table 1.4(b) - AMBIENT AIR QUALITY REPORT

SAMPLE ID NO	ABC/MSEZ/12/AS/240315/A 2129-2130
SAMPLE DESCRIPTION	AMBIENT AIR QUALITY MONITORING.
SAMPLE DRAWN BY	ABC Techno Labs India Private Limited
NAME OF THE CLIENT	MANGALORE SPECIAL ECONOMIC ZONE LIMITED, MANGALORE
DATE SAMPLED	24-03-2015 (Monitoring duration 24hrs/day for 2 days)
REPORT DATE	06-04-2015

S.No	Location	Pollutant Concentration				CO, mg/m ³
		Benzene µg/m ³	Benzo[a]pyrene ng/m ³	Arsenic ng/m ³	Nickel ng/m ³	
1	120 ML Water Reservoir	BDL (<0.01)	BDL (<0.1)	BDL (<1)	BDL (<1)	0.13
2	MSEZ-GSS 3	BDL (<0.01)	BDL (<0.1)	BDL (<1)	BDL (<1)	0.25
Test Method		IS 5182: Pt 11: 2006	IS 5182: Pt 12: 1991	IS 5182 Pt 22	IS 5182 Pt 22	Gas Analyser
CPCB STANDARDS						
Industrial /Residential / Rural and Other Area		5	1	6	20	2

BDL- Below Detection Limit

Contd.....



For ABC Techno Labs India Private Limited.,

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A. ROBSON CHINNADURAI
(SENIOR CHEMIST)



ENVIRONMENTAL MONITORING REPORT

1.0. Introduction

Mangalore Special Economic Zone Limited is located 8 km aeri ally to North East of New Mangalore Port and is adjacent to the existing refinery of MRPL on its West. The Industrial estate of the District, namely Baikampady is located southwest of MSEZ. The Mangalore Airport is about 5 km South East of MSEZ.

1.1. Description of the Organization

M/s. ABC Techno Labs India Private Limited, Chennai, an ISO 9001, ISO 14001 & OHSAS 18001 Certified Company has been accredited by,

- National Accreditation Board for Education and Training (NABET), a division of Quality Council of India (QCI).
- National Accreditation Board for Testing and Calibration Laboratories (NABL), an autonomous body under the Department of Science & Technology, Government of India.

The certificate of authorization is enclosed in the Annexure-I.

We offer the following services,

- Environmental Impact Assessment (EIA) & Environmental Management Plan (EMP) for Infrastructure & Industrial Projects.
- Social Impact Assessment Studies including Rehabilitation & Resettlement
- Environmental Monitoring
- Environmental Audits
- Capacity Building for Environmental Management
- Solid Waste Management
- Effective Management of Resources and Wastes
- Risk Assessment & Management Studies



1.2. Scope of Work:

The scope of the work is to conduct Environmental monitoring at Special Economic Zone, Mangalore, following the guidelines and regulations of MoEF/CPCB standards. The scope of the work for the month of **MARCH 2015** is to conduct ambient air quality monitoring at four locations. Sampling Locations each station is given in annexure – II.

2.0. Ambient Air Quality Monitoring Details

Ambient air quality monitoring (AAQM) was carried out at five locations with due consideration to the meteorological conditions of the Project area. Ambient air quality monitoring was carried out at each location on 24 hourly basis on two consecutive days per month. The details of AAQ monitoring stations are given in **Table 1.1**.

Table – 1.1. Details of Ambient Air Monitoring Locations

STATION CODE	NAME OF THE LOCATIONS	GEOGRAPHICAL LOCATION
AAQ1	120 ML Water Reservoir	N-12°59'13.40" E-74°52'03.00"
AAQ2	MSEZ, Permude	N-12°59'54.00" E-74°52'53.60"
AAQ3	GSS3-10 ML Water Reservoir	N-12°58'57.70" E-74°51'30.10"
AAQ4	Bajpe	N-12°58'32.80" E-74°52'10.40"

2.1.1. Method used for Air Quality Monitoring

Respirable Dust Sampler and Fine Particulate Samplers were used for collecting Particulate Matter of size less than 10 μm (PM_{10}) and 2.5 μm ($\text{PM}_{2.5}$) respectively. Gaseous Samplers were used for sampling gaseous pollutants such as SO_2 , NO_x Ammonia and Ozone (O_3). Organic vapour sampler was used to sample Hydrocarbon. Gas analyzer was used to estimate Carbon monoxide (CO) level in ambient air.



The Analytical techniques used for ambient air quality monitoring and its minimum detectable limit for each parameter is tabulated in Table 1.2.

Table – 1.2. Analytical Techniques Adapted for Ambient Air Quality Sampling and Analysis

S.NO	PARAMETER	TECHNIQUE	MINIMUM DETECTABLE LIMIT
1	Particulate Matter PM ₁₀	Fine Particulate Sampler (Gravimetric method)	5.0 µg/m ³
2	Particulate Matter PM _{2.5}	Fine Particulate Sampler (Gravimetric method)	5.0 µg/m ³
3	Sulphur di Oxide	Modified West & Gaeke Method	5.0 µg/m ³
4	Nitrogen Oxide	Jacob and Hochheiser Method	5.0 µg/m ³
5	Carbon monoxide	Gas Analyser	0.1 ppm
6	Ammonia	Nessler's Method	5 µg/m ³
7	Ozone	KI Absorption and Colorimetric	5 µg/m ³
8	Benzene,	IS 5182: Pt 11: 2006	0.01 µg/m ³
9	Benzo[a]pyrene)	IS 5182: Pt 12: 1991	0.1 ng/m ³
10	Lead,	IS 5182 P 22: 2004	0.1 µg/m ³
11	Arsenic, Nickel	IS 5182 P 22: 2004	1 ng/m ³

2.1.2. Micro-Meteorology

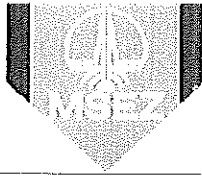
Wind Speed, Predominant Wind Direction, Temperature, Relative Humidity between 01-03-2015 and 31-03-2015 at MSEZ is given in Table 1.3.



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Table-1.3- Micro-Meteorology

DATE	TEMPERATURE (°C)		RELATIVE HUMIDITY (%)		WIND SPEED (Km/hr)		PREDOMINANT WIND DIRECTION
	MIN	MAX	MIN	MAX	MIN	MAX	
01-03-2015	24	26	45	86	5.6	18.5	West Southwest
02-03-2015	23	26	39	89	5.6	20.4	East Southeast
03-03-2015	23	32	32	79	7.4	22.2	East Southeast
04-03-2015	24	31	34	71	7.4	22.2	North Northwest
05-03-2015	22	34	31	74	7.4	18.5	North Northwest
06-03-2015	23	33	35	89	5.6	18.5	North
07-03-2015	24	33	44	86	5.6	14.8	North Northwest
08-03-2015	24	32	40	84	5.6	14.8	East
09-03-2015	23	34	38	75	7.4	18.5	East Southeast
10-03-2015	24	32	44	83	5.6	20.4	East Southeast
11-03-2015	25	34	43	89	5.6	18.5	West Southeast
12-03-2015	24	35	27	94	5.6	14.8	west Northwest
13-03-2015	26	33	38	89	5.6	16.7	West Southwest
14-03-2015	25	34	43	84	5.6	18.5	West Southwest
15-03-2015	25	33	43	81	5.6	25.9	North Northwest
16-03-2015	25	33	44	82	5.6	22.2	North North West
17-03-2015	26	34	38	81	5.6	18.5	Northwest
18-03-2015	25	33	47	70	5.6	14.8	West
19-03-2015	26	32	49	86	5.6	18.5	West Southwest
20-03-2015	26	34	49	86	5.6	18.5	West
21-03-2015	25	34	37	84	5.6	18.5	West Northwest
22-03-2015	26	33	44	89	5.6	20.4	North Northeast
23-03-2015	25	34	39	91	5.6	22.2	West Northwest
24-03-2015	25	33	46	87	5.6	18.5	West
25-03-2015	26	33	52	84	5.6	18.5	Southwest
26-03-2015	26	33	52	88	5.6	16.7	East southeast
27-03-2015	25	33	41	97	5.6	18.5	North Northwest
28-03-2015	27	33	52	89	5.6	18.5	Northwest
29-03-2015	26	33	48	89	5.6	22.2	West
30-03-2015	25	34	48	89	5.6	18.5	West
31-03-2015	25	33	47	91	5.6	18.5	East southeast



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2.1.3. Wind Rose

The wind roses diagram for the month of MARCH 2015 at Mangalore SEZ is depicted in Figure 1.1.

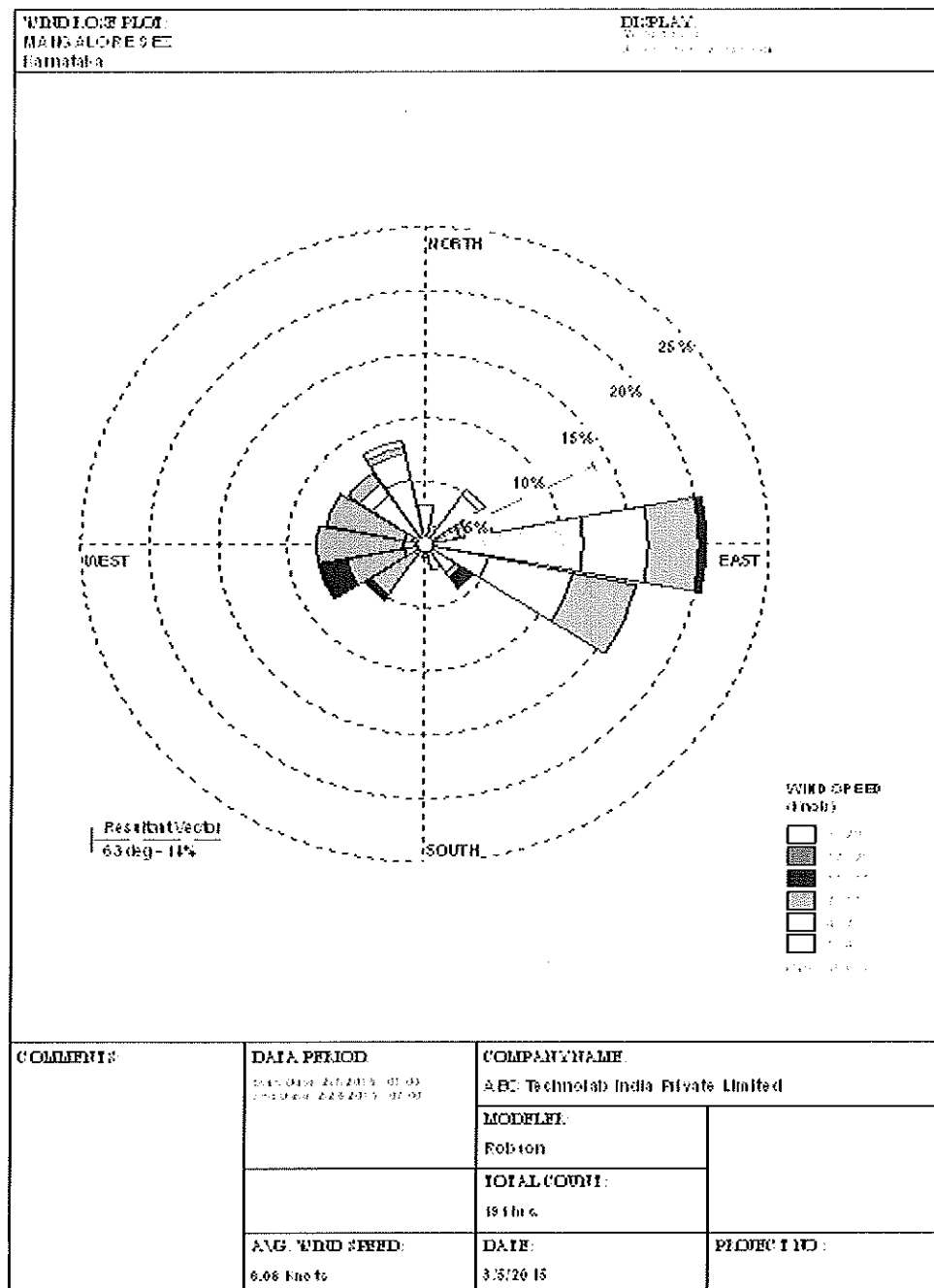
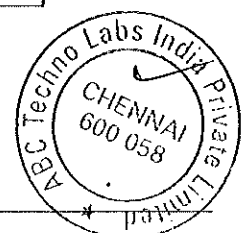


Figure -1.1. Wind Rose Diagram- MARCH 2015





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2.1.4. AMBIENT AIR QUALITY RESULTS

The 24 hourly average results of Ambient Air Quality Monitoring of two consecutive days for the month of **MARCH 2015** are presented in Table-1.4(a), 1.4 (b), 1.4(c), 1.4(d), 1.4(e) and 1.4(f). The obtained results are compared with the standards prescribed by Central Pollution Control Board (CPCB) for "Industrial, Rural, Residential and other areas".

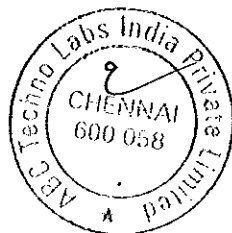
Table 1.4 (a)- AMBIENT AIR QUALITY REPORT

SAMPLE ID NO	ABC/MSEZ/12/AS/240315/A 2129-2130
SAMPLE DESCRIPTION	AMBIENT AIR QUALITY MONITORING.
SAMPLE DRAWN BY	ABC Techno Labs India Private Limited
NAME OF THE CLIENT	MANGALORE SPECIAL ECONOMIC ZONE LIMITED, MANGALORE
DATE SAMPLED	24-03-2015 (Monitoring duration 24hrs/day for 2 days)
REPORT DATE	06-04-2015

S.No	Location	Height GL(m)	Pollutant Concentration in $\mu\text{g}/\text{m}^3$						
			PM _{2.5}	PM ₁₀	SO ₂	Nox	Pb	NH ₃	O ₃
1	CETP Location	2	24	59	8.1	14.2	BDL (<0.1)	15.3	12.6
2	MSEZ-GSS 3	2	28	62	9.4	15.8	BDL (<0.1)	13.2	13.7
Test Method			EPA- 40 CFR Part 50	IS 5182 Pt.23 : 2006	West & Gaeke	Jacob & Hochheister	IS 5182 P 22	Nessler's Method	KI Absorption Method
CPCB STANDARDS									
Industrial /Residential / Rural and Other Area			60	100	80	80	1	400	100

BDL- Below Detection Limit

Contd.....



For ABC Techno Labs India Private Limited.,

[Signature]
AUTHORIZED SIGNATORY

A. ROBSON CHINNADURAI
(SENIOR CHEMIST)



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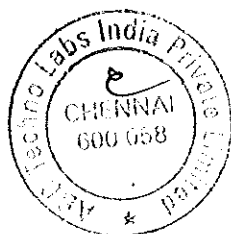
Table 1.4(b) - AMBIENT AIR QUALITY REPORT

SAMPLE ID NO	ABC/MSEZ/12/AS/240315/A 2129-2130
SAMPLE DESCRIPTION	AMBIENT AIR QUALITY MONITORING.
SAMPLE DRAWN BY	ABC Techno Labs India Private Limited
NAME OF THE CLIENT	MANGALORE SPECIAL ECONOMIC ZONE LIMITED, MANGALORE
DATE SAMPLED	24-03-2015 (Monitoring duration 24hrs/day for 2 days)
REPORT DATE	06-04-2015

S.No	Location	Pollutant Concentration				CO, mg/m ³
		Benzene µg/m ³	Benzo[a]pyrene ng/m ³	Arsenic ng/m ³	Nickel ng/m ³	
1	CETP Location	BDL (<0.01)	BDL (<0.1)	BDL (<1)	BDL (<1)	0.13
2	MSEZ-GSS 3	BDL (<0.01)	BDL (<0.1)	BDL (<1)	BDL (<1)	0.25
Test Method		IS 5182: Pt 11: 2006	IS 5182: Pt 12: 1991	IS 5182 Pt 22	IS 5182 Pt 22	Gas Analyser
CPCB STANDARDS						
Industrial /Residential / Rural and Other Area		5	1	6	20	2

BDL- Below Detection Limit

Contd.....



For ABC Techno Labs India Private Limited.,

[Signature]
AUTHORIZED SIGNATORY

09/04/15

A. ROBSON CHINNADURAI
(SENIOR CHEMIST)



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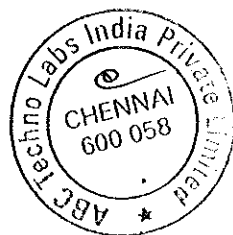
Table 1.4© - AMBIENT AIR QUALITY REPORT

SAMPLE ID NO	ABC/MSEZ/12/AS/260315/A 2131-2132
SAMPLE DESCRIPTION	AMBIENT AIR QUALITY MONITORING.
SAMPLE DRAWN BY	ABC Techno Labs India Private Limited
NAME OF THE CLIENT	MANGALORE SPECIAL ECONOMIC ZONE LIMITED, MANGALORE
DATE SAMPLED	26-03-2015 (Monitoring duration 24hrs/day for 2 days)
REPORT DATE	06-04-2015

S.No	Location	Height GL(m)	Pollutant Concentration in $\mu\text{g}/\text{m}^3$						
			PM _{2.5}	PM ₁₀	SO ₂	Nox	Pb	NH ₃	O ₃
3	Baipe	2	18	53	6.1	11.6	BDL (<0.1)	BDL(<5)	11.1
4	MSEZ, Permude	2	21	57	7.6	13.4	BDL (<0.1)	BDL (<5)	11.8
Test Method			EPA-40 CFR Part 50	IS 5182 Pt.23 : 2006	West & Gaeke	Jacob & Hochheister	IS 5182 P 22	Nessler's Method	KI Absorption Method
CPCB STANDARDS									
Industrial /Residential / Rural and Other Area			60	100	80	80	1	400	100

BDL- Below Detection Limit

Contd.....



For ABC Techno Labs India Private Limited.,

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A. ROBSON CHINNADURAI
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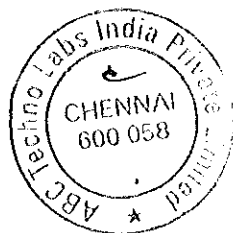
Table 1.4(d) - AMBIENT AIR QUALITY REPORT

SAMPLE ID NO	ABC/MSEZ/12/AS/260315/A 2131-2132
SAMPLE DESCRIPTION	AMBIENT AIR QUALITY MONITORING.
SAMPLE DRAWN BY	ABC Techno Labs India Private Limited
NAME OF THE CLIENT	MANGALORE SPECIAL ECONOMIC ZONE LIMITED, MANGALORE
DATE SAMPLED	26-03-2015 (Monitoring duration 24hrs/day for 2 days)
REPORT DATE	06-04-2015

S.No	Location	Pollutant Concentration				CO, mg/m ³
		Benzene µg/m ³	Benzo[a]pyrene ng/m ³	Arsenic ng/m ³	Nickel ng/m ³	
3	Baipe	BDL (<0.01)	BDL (<0.1)	BDL (<1)	BDL (<1)	BDL(<0.1)
4	MSEZ, Permude	BDL (<0.01)	BDL (<0.1)	BDL (<1)	BDL (<1)	BDL(<0.1)
Test Method		IS 5182: Pt 11: 2006	IS 5182: Pt 12: 1991	IS 5182 P 22	IS 5182 P 22	Gas Analyser
CPCB STANDARDS						
Industrial /Residential / Rural and Other Area		5	1	6	20	2

BDL- Below Detection Limit

.....End of report.....



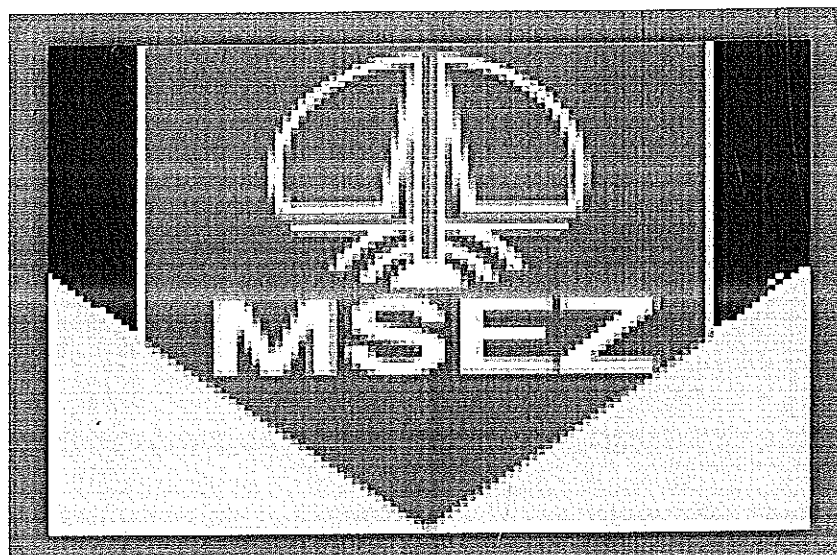
For ABC Techno Labs India Private Limited.,

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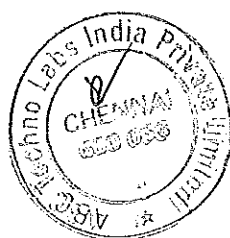
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ENVIRONMENTAL MONITORING REPORT
SPECIAL ECONOMIC ZONE LIMITED, MANGALORE



APRIL - 2015

Prepared by:

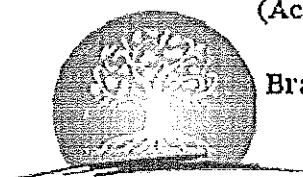


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Economic zone Limited, Mangalore.

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FIGURE

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ANNEXURE

Anneure –I	NABL Certificate.
Anneure –II	Sampling Location Map.



ENVIRONMENTAL MONITORING REPORT

1.0. Introduction

Mangalore Special Economic Zone Limited is located 8 km aeri ally to North East of New Mangalore Port and is adjacent to the existing refinery of MRPL on its West. The Industrial estate of the District, namely Baikampady is located southwest of MSEZ. The Mangalore Airport is about 5 km South East of MSEZ.

1.1. Description of the Organization

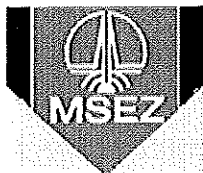
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- National Accreditation Board for Education and Training (NABET), a division of Quality Council of India (QCI).
- National Accreditation Board for Testing and Calibration Laboratories (NABL), an autonomous body under the Department of Science & Technology, Government of India.

The certificate of authorization is enclosed in the Annexure-I.

We offer the following services,

- Environmental Impact Assessment (EIA) & Environmental Management Plan (EMP) for Infrastructure & Industrial Projects.
- Social Impact Assessment Studies including Rehabilitation & Resettlement
- Environmental Monitoring
- Environmental Audits
- Capacity Building for Environmental Management
- Solid Waste Management
- Effective Management of Resources and Wastes
- Risk Assessment & Management Studies



1.2. Scope of Work:

The scope of the work is to conduct Environmental monitoring at Special Economic Zone, Mangalore, following the guidelines and regulations of MoEF/CPCB standards. The scope of the work for the month of April 2015 is to conduct ambient air quality monitoring at five locations. Sampling Locations each station is given in annexure - II.

2.0. Ambient Air Quality Monitoring Details

Ambient air quality monitoring (AAQM) was carried out at five locations with due consideration to the meteorological conditions of the Project area. Ambient air quality monitoring was carried out at each location on 24 hourly basis on two consecutive days per month. The details of AAQ monitoring stations are given in Table 1.1.

Table - 1.1. Details of Ambient Air Monitoring Locations

STATION CODE	NAME OF THE LOCATIONS	GEOGRAPHICAL LOCATION
AAQ1	120 ML Water Reservoir	N-12°59'13.40" E-74°52'03.00"
AAQ2	MSEZ, Permude	N-12°59'54.00" E-74°52'53.60"
AAQ3	GSS3-10 ML Water Reservoir	N-12°58'57.70" E-74°51'30.10"
AAQ4	CETP Location	N-12°59'51.40" E-74°51'24.70"
AAQ5	Bajpe	N-12°58'32.80" E-74°52'10.40"

2.1.1. Method used for Air Quality Monitoring

Respirable Dust Sampler and Fine Particulate Samplers were used for collecting Particulate Matter of size less than 10 μm (PM_{10}) and 2.5 μm ($\text{PM}_{2.5}$) respectively. Gaseous Samplers were used for sampling gaseous pollutants such as SO_2 , NO_x Ammonia and Ozone (O_3). Organic vapour sampler was used to sample Hydrocarbon. Gas analyzer was used to estimate Carbon monoxide (CO) level in ambient air.



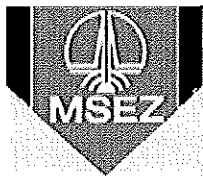
The Analytical techniques used for ambient air quality monitoring and its minimum detectable limit for each parameter is tabulated in Table 1.2.

Table - 1.2. Analytical Techniques Adapted for Ambient Air Quality Sampling and Analysis

S.NO	PARAMETER	TECHNIQUE	MINIMUM DETECTABLE LIMIT
1	Particulate Matter PM ₁₀	Fine Particulate Sampler (Gravimetric method)	5.0 µg/m ³
2	Particulate Matter PM _{2.5}	Fine Particulate Sampler (Gravimetric method)	5.0 µg/m ³
3	Sulphur di Oxide	Modified West & Gaeke Method	5.0 µg/m ³
4	Nitrogen Oxide	Jacob and Hochheiser Method	5.0 µg/m ³
5	Carbon monoxide	Gas Analyser	0.1 ppm
6	Ammonia	Nessler's Method	5 µg/m ³
7	Ozone	KI Absorption and Colorimetric	5 µg/m ³
8	Benzene,	IS 5182: Pt 11: 2006	0.01 µg/m ³
9	Benzo[a]pyrene)	IS 5182: Pt 12: 1991	0.1 ng/m ³
10	Lead,	IS 5182 P 22: 2004	0.1 µg/m ³
11	Arsenic, Nickel	IS 5182 P 22: 2004	1 ng/m ³

2.1.2. Micro-Meteorology

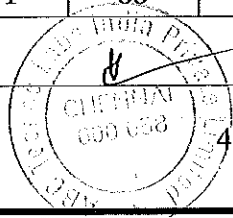
Wind Speed, Predominant Wind Direction, Temperature, Relative Humidity between 01-04-2015 and 30-04-2015 at MSEZ is given in Table 1.3.

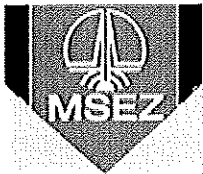


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Table-1.3- Micro-Meteorology

DATE	TEMPERATURE (°C)		RELATIVE HUMIDITY (%)		WIND SPEED (Km/hr)		PREDOMINANT WIND DIRECTION
	MIN	MAX	MIN	MAX	MIN	MAX	
01-04-2015	25	32	51	82	5.6	16.7	East Southeast
02-04-2015	25	33	52	94	5.6	16.7	East
03-04-2015	26	33	53	84	5.6	20.4	Northwest
04-04-2015	25	33	42	84	5.6	20.4	Northwest
05-04-2015	25	33	52	86	5.6	14.8	North Northwest
06-04-2015	25	33	49	85	5.6	22.2	West Southwest
07-04-2015	26	33	47	81	5.6	18.5	North Northwest
08-04-2015	26	33	43	79	5.6	18.5	North Northwest
09-04-2015	26	33	43	85	5.6	14.8	Northwest
10-04-2015	26	34	39	85	5.6	18.5	East
11-04-2015	25	33	57	80	5.6	18.5	East Southeast
12-04-2015	26	34	45	87	5.6	18.5	West
13-04-2015	25	29	52	95	5.6	22.2	West Southwest
14-04-2015	25	32	43	84	5.6	14.8	East
15-04-2015	25	33	42	88	5.6	16.7	East
16-04-2015	26	33	33	75	5.6	18.5	West
17-04-2015	24	33	32	77	5.6	18.5	Northwest
18-04-2015	25	33	42	74	5.6	16.7	Northwest
19-04-2015	25	33	51	79	3.7	20.4	East Southeast
20-04-2015	26	33	53	84	5.6	18.5	west
21-04-2015	24	34	48	89	5.6	29.6	East Southeast
22-04-2015	23	30	56	88	5.6	14.8	West
23-04-2015	23	33	53	94	9.3	18.5	west Northwest
24-04-2015	24	33	52	93	9.3	16.7	West
25-04-2015	25	30	54	92	9.3	14.8	West
26-04-2015	23	33	47	85	7.4	20.4	West
27-04-2015	24	33	49	80	5.6	18.5	East Southeast
28-04-2015	25	33	52	86	5.6	14.8	Northeast
29-04-2015	24	33	52	89	5.6	14.8	South Southwest
30-04-2015	24	33	51	83	5.6	18.5	East Southeast





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2.1.3. Wind Rose

The wind roses diagram for the month of April 2015 at Mangalore SEZ is depicted in Figure 1.1.

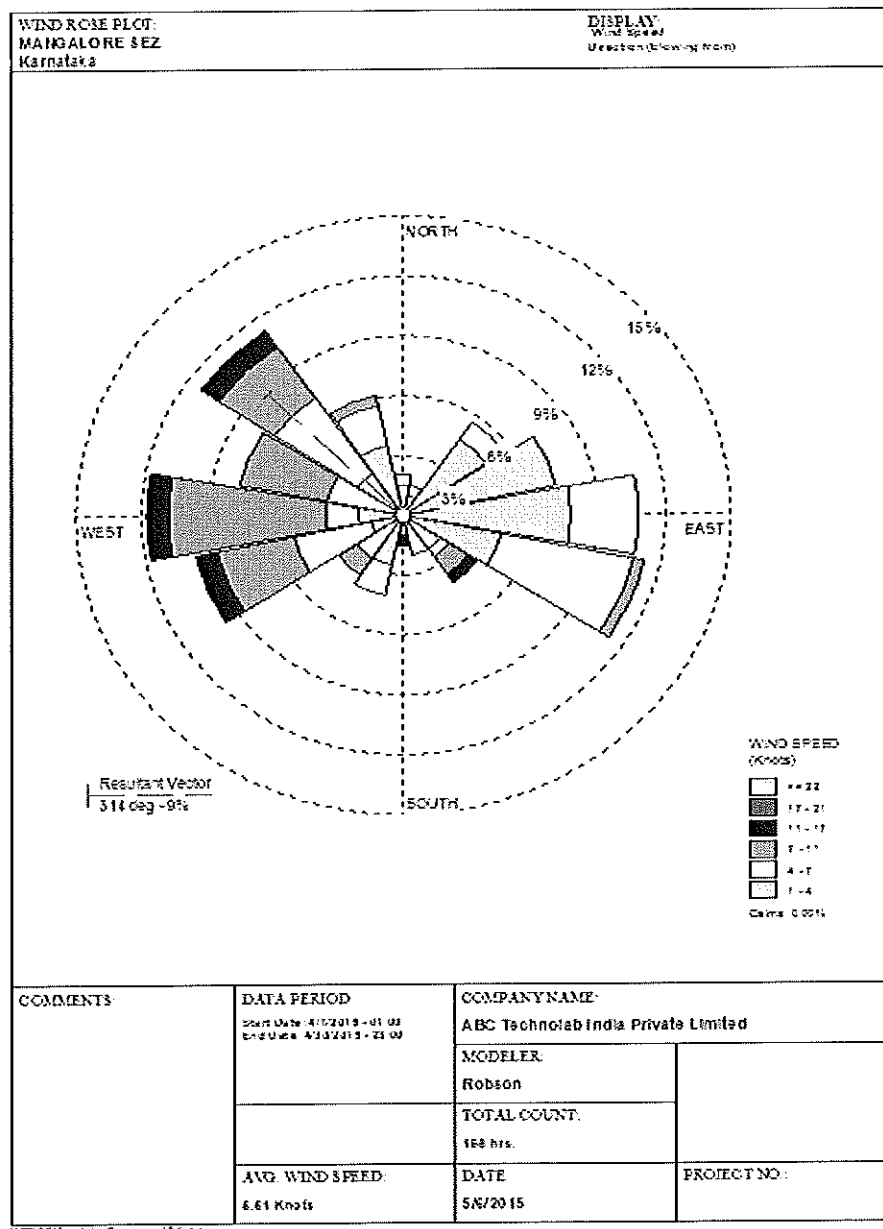
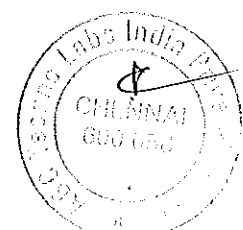


Figure -1.1. Wind Rose Diagram- April 2015





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2.1.4. AMBIENT AIR QUALITY RESULTS

The 24 hourly average results of Ambient Air Quality Monitoring of two consecutive days for the month of April 2015 are presented in Table-1.4(a), 1.4 (b), 1.4(c), 1.4(d), 1.4(e) and 1.4(f). The obtained results are compared with the standards prescribed by Central Pollution Control Board (CPCB) for "Industrial, Rural, Residential and other areas".

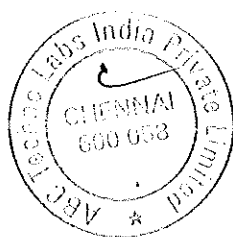
Table 1.4 (a)- AMBIENT AIR QUALITY REPORT

SAMPLE ID NO	ABC/MSEZ/12/AS/280415/A 114-115
SAMPLE DESCRIPTION	AMBIENT AIR QUALITY MONITORING.
SAMPLE DRAWN BY	ABC Techno Labs India Private Limited
NAME OF THE CLIENT	MANGALORE SPECIAL ECONOMIC ZONE LIMITED, MANGALORE
DATE SAMPLED	28-04-2015 (Monitoring duration 24hrs/day for 2 days)
REPORT DATE	07-05-2015

S.No	Location	Height GL(m)	Pollutant Concentration in $\mu\text{g}/\text{m}^3$						
			PM _{2.5}	PM ₁₀	SO ₂	NO _x	Pb	NH ₃	O ₃
1	CETP Location	2	22	58	9.1	14.2	BDL (<0.1)	15.6	10.8
2	MSEZ-GSS 3	2	27	63	7.7	16.8	BDL (<0.1)	10.8	11.3
Test Method			EPA- 40 CFR Part 50	IS 5182 Pt.23 : 2006	West & Gaeke	Jacob & Hochheister	IS 5182 P 22	Nessler's Method	KI Absorption Method
CPCB STANDARDS									
Industrial /Residential / Rural and Other Area			60	100	80	80	1	400	100

BDL- Below Detection Limit

Contd.....

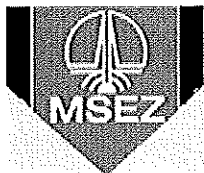


For ABC Techno Labs India Private Limited.,

[Signature] 07/05/15

AUTHORIZED SIGNATORY

A. ROBSON CHINNADURAI
(SENIOR CHEMIST)



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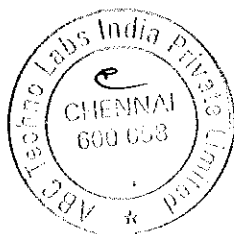
Table 1.4(b) - AMBIENT AIR QUALITY REPORT

SAMPLE ID NO	ABC/MSEZ/12/AS/280415/A 114-115
SAMPLE DESCRIPTION	AMBIENT AIR QUALITY MONITORING.
SAMPLE DRAWN BY	ABC Techno Labs India Private Limited
NAME OF THE CLIENT	MANGALORE SPECIAL ECONOMIC ZONE LIMITED, MANGALORE
DATE SAMPLED	28-04-2015 (Monitoring duration 24hrs/day for 2 days)
REPORT DATE	07-05-2015

S.No	Location	Pollutant Concentration				CO, mg/m ³
		Benzene µg/m ³	Benzo[a]pyrene ng/m ³	Arsenic ng/m ³	Nickel ng/m ³	
1	CETP Location	BDL (<0.01)	BDL (<0.1)	BDL (<1)	BDL (<1)	0.13
2	MSEZ-GSS 3	BDL (<0.01)	BDL (<0.1)	BDL (<1)	BDL (<1)	0.33
Test Method		IS 5182: Pt 11: 2006	IS 5182: Pt 12: 1991	IS 5182 Pt 22	IS 5182 Pt 22	Gas Analyser
CPCB STANDARDS						
Industrial /Residential / Rural and Other Area		5	1	6	20	2

BDL- Below Detection Limit

Contd.....



For ABC Techno Labs India Private Limited.,

A. Bobson Chinnadurai 07/05/15

AUTHORIZED SIGNATORY

A. BOBSON CHINNADURAI
(SENIOR CHEMIST)



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Table 1.4(c) - AMBIENT AIR QUALITY REPORT

SAMPLE ID NO	ABC/MSEZ/12/AS/280415/A 116
SAMPLE DESCRIPTION	AMBIENT AIR QUALITY MONITORING.
SAMPLE DRAWN BY	ABC Techno Labs India Private Limited
NAME OF THE CLIENT	MANGALORE SPECIAL ECONOMIC ZONE LIMITED, MANGALORE
DATE SAMPLED	28-04-2015 (Monitoring duration 24hrs/day for 2 days)
REPORT DATE	07-05-2015

S.No	Location	Height GL(m)	Pollutant Concentration in $\mu\text{g}/\text{m}^3$						
			PM _{2.5}	PM ₁₀	SO ₂	NO _x	Pb	NH ₃	O ₃
3	Baipe	2	18	47	5.7	10.3	BDL (<0.1)	BDL(<5)	9.6
Test Method			EPA-40 CFR Part 50	IS 5182 Pt.23 : 2006	West & Gaeke	Jacob & Hochheister	IS 5182 P 22	Nessler's Method	KI Absorption Method
CPCB STANDARDS									
Industrial / Residential / Rural and Other Area			60	100	80	80	1	400	100

BDL- Below Detection Limit

Contd.....



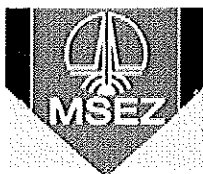
For ABC Techno Labs India Private Limited.,

[Signature] 08/05/15

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A. ROBSON CHINNADURAI
(SENIOR CHEMIST)





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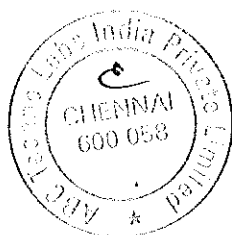
Table 1.4(d) - AMBIENT AIR QUALITY REPORT

SAMPLE ID NO	ABC/MSEZ/12/AS/280415/A 116
SAMPLE DESCRIPTION	AMBIENT AIR QUALITY MONITORING.
SAMPLE DRAWN BY	ABC Techno Labs India Private Limited
NAME OF THE CLIENT	MANGALORE SPECIAL ECONOMIC ZONE LIMITED, MANGALORE
DATE SAMPLED	28-04-2015 (Monitoring duration 24hrs/day for 2 days)
REPORT DATE	07-05-2015

S.No	Location	Pollutant Concentration				CO, mg/m ³
		Benzene µg/m ³	Benzo[a]pyrene ng/m ³	Arsenic ng/m ³	Nickel ng/m ³	
3	Baipe	BDL (<0.01)	BDL (<0.1)	BDL (<1)	BDL (<1)	BDL(<0.1)
Test Method		IS 5182: Pt 11: 2006	IS 5182: Pt 12: 1991	IS 5182 P 22	IS 5182 P 22	Gas Analyser
CPCB STANDARDS						
Industrial /Residential / Rural and Other Area		5	1	6	20	2

BDL- Below Detection Limit

Contd.....



For ABC Techno Labs India Private Limited.,

[Signature] 08/05/15
AUTHORIZED SIGNATORY

A. ROBSON CHINNADURAI
(SENIOR CHEMIST)



Environmental Monitoring Report - Mangalore Special Economic Zone Limited, Mangalore.

Table 1.4(e) - AMBIENT AIR QUALITY REPORT

SAMPLE ID NO	ABC/MSEZ/12/AS/300415/A 116
SAMPLE DESCRIPTION	AMBIENT AIR QUALITY MONITORING.
SAMPLE DRAWN BY	ABC Techno Labs India Private Limited
NAME OF THE CLIENT	MANGALORE SPECIAL ECONOMIC ZONE LIMITED, MANGALORE
DATE SAMPLED	30-04-2015 (Monitoring duration 24hrs/day for 2 days)
REPORT DATE	07-05-2015

S.No	Location	Height GL(m)	Pollutant Concentration in $\mu\text{g}/\text{m}^3$						
			PM _{2.5}	PM ₁₀	SO ₂	NO _x	Pb	NH ₃	O ₃
4	120 ML, Water Reservoir	2	23	56	6.7	12.8	BDL (<0.1)	18	11.7
5	MSEZ, Permude	2	19	50	6.1	12.1	BDL (<0.1)	BDL (<5)	9.3
Test Method			EPA- 40 CFR Part 50	IS 5182 Pt.23 : 2006	West & Gaeke	Jacob & Hochheister	IS 5182 P 22	Nessler's Method	KI Absorption Method
CPCB STANDARDS									
Industrial /Residential / Rural and Other Area			60	100	80	80	1	400	100

BDL- Below Detection Limit

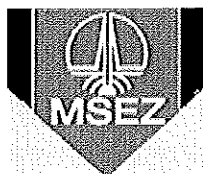
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AUTHORIZED SIGNATORY

A. ROBSON CHINNADURAI
(GENERAL MANAGER)



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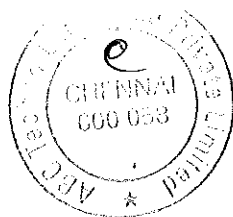
Table 1.4(f) - AMBIENT AIR QUALITY REPORT

SAMPLE ID NO	ABC/MSEZ/12/AS/300415/A 117-118
SAMPLE DESCRIPTION	AMBIENT AIR QUALITY MONITORING.
SAMPLE DRAWN BY	ABC Techno Labs India Private Limited
NAME OF THE CLIENT	MANGALORE SPECIAL ECONOMIC ZONE LIMITED, MANGALORE
DATE SAMPLED	30-04-2015 (Monitoring duration 24hrs/day for 2 days)
REPORT DATE	07-05-2015

S.No	Location	Pollutant Concentration				CO, mg/m ³
		Benzene µg/m ³	Benzo[a]pyrene ng/m ³	Arsenic ng/m ³	Nickel ng/m ³	
4	120 ML, Water Reservoir	BDL (<0.01)	BDL (<0.1)	BDL (<1)	BDL (<1)	0.27
5	MSEZ, Permude	BDL (<0.01)	BDL (<0.1)	BDL (<1)	BDL (<1)	BDL(<0.1)
Test Method		IS 5182: Pt 11: 2006	IS 5182: Pt 12: 1991	IS 5182 P 22	IS 5182 P 22	Gas Analyser
CPCB STANDARDS						
Industrial /Residential / Rural and Other Area		5	1	6	20	2

BDL- Below Detection Limit

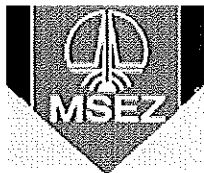
.....END OF REPORT.....



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A. ROBSON CHINNADURAI
(SENIOR CHEMIST)



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3.0. Noise Level Monitoring:

The noise monitoring has been conducted for determination of noise levels at two locations in the project area. The noise levels at each location were recorded for 24 hours for two non-consecutive days for two weeks. The environmental setting of each Noise monitoring locations is given in Table -1.5 and day and night equivalent Noise Levels are tabulated in Table 1.6.

Table 1.5- Details of Noise Monitoring Locations

Station Code	Name of the Station	Geographical Location
N1	CETP location	N-12°59'51.40" E-74°51'24.70"
N2	120 ML water reservoir	N-12°59'13.40" E-74°52'03.00"

Table 1.6 - Ambient Noise Monitoring Results

Station Code	Date of Survey	Location	Leq Day [dB(A)]	Leq Night [dB(A)]
N1	28/04/2015	CETP	51.3	41.5
N2	28/04/2015	120 ML	52.8	42.2
N1	30/04/2015	CETP	50.7	41.3
N2	30/04/2015	120 ML	53.4	42.8
N1	02/05/2015	CETP	51.6	41.9
N2	02/05/2015	120 ML	53.5	41.4
N1	04/05/2015	CETP	50.4	40.8
N2	04/05/2015	120 ML	53	42.1

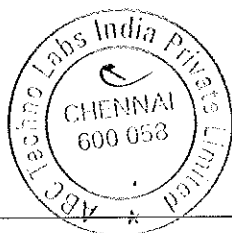
AMBIENT NOISE STANDARDS

AMBIENT NOISE STANDARDS	Lday [dB(A)]	Lnight [dB(A)]
Industrial Area	75	70
Commercial Area	65	55
Residential Area	55	45
Silence Zone	50	40

Note: Day Time is reckoned between 6.0 A.M and 10.0 P.M.

Night time is reckoned between 10.0 P.M to 6.0 A.M.

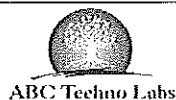
Leq [dB (A)] - Denotes the time weighted average of the level of sound in decibel on Scale A which is relatable to human hearing.



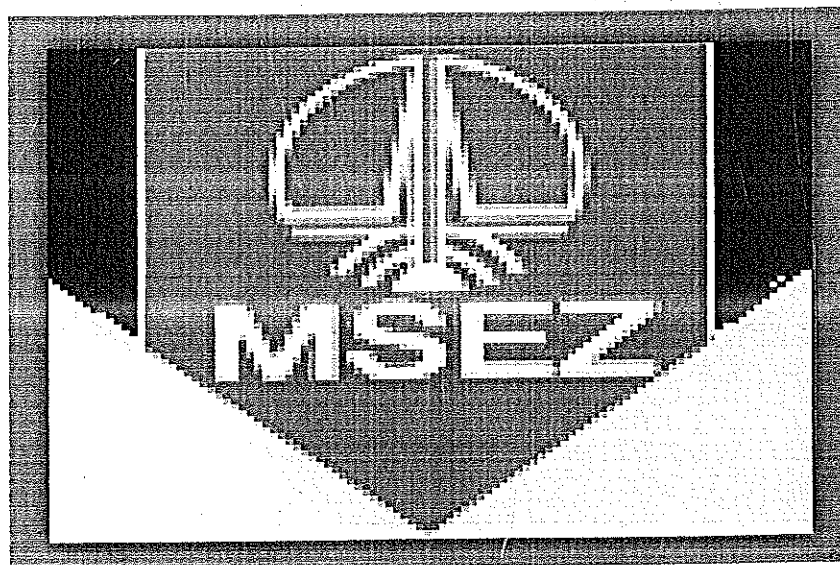
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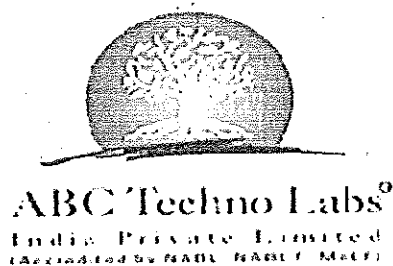


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SPECIAL ECONOMIC ZONE LIMITED, MANGALORE

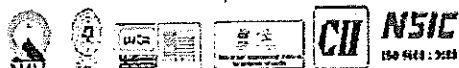


MAY - 2015

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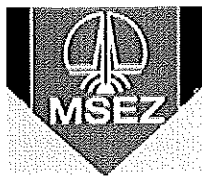
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Tamil Nadu, India - 600 040.
Ph: +91-44-2616 1123/ 24/25. Fax: +91-44-2616 3456
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N0.95DV3, 3rd Cross Street, Sector 2, South Phase, Ambattur
Industrial Estate, Chennai - 600 053.
Ph: +91-44-2625 7788, 2635 7788 Fax: +91-44-2625 7739



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Economic zone Limited, Mangalore.

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1.2	SCOPE OF WORK	2
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2.1.2	MICRO-METEOROLOGY	3
2.1.3	WIND ROSE	5
2.1.4	AMBIENT AIR QUALITY RESULTS	6
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FIGURE

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ANNEXURE

Anneure -I	NABL Certificate.
Anneure -II	Sampling Location Map.





ENVIRONMENTAL MONITORING REPORT

1.0. Introduction:

Mangalore Special Economic Zone Limited is located 8 km aeri ally to North East of New Mangalore Port and is adjacent to the existing refinery of MRPL on its West. The Industrial estate of the District, namely Baikampady is located southwest of MSEZ. The Mangalore Airport is about 5 km South East of MSEZ.

1.1. Description of the Organization:

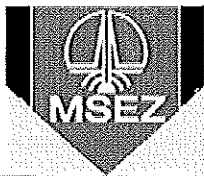
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The certificate of authorization is enclosed in the Annexure-I.

We offer the following services,

- Environmental Impact Assessment (EIA) & Environmental Management Plan (EMP) for Infrastructure & Industrial Projects.
- Social Impact Assessment Studies including Rehabilitation & Resettlement
- Environmental Monitoring
- Environmental Audits
- Capacity Building for Environmental Management
- Solid Waste Management
- Effective Management of Resources and Wastes
- Risk Assessment & Management Studies



1.2. Scope of Work:

The scope of the work is to conduct Environmental monitoring at Special Economic Zone, Mangalore, following the guidelines and regulations of MoEF/CPCB standards. The scope of the work for the month of May 2015 is to conduct ambient air quality monitoring at five locations and ground water quality monitoring at ten locations, Sampling Locations of each category is given in annexure - II.

2.0. Ambient Air Quality Monitoring Details:

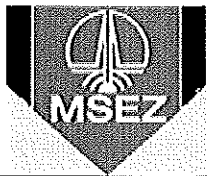
Ambient air quality monitoring (AAQM) was carried out at five locations with due consideration to the meteorological conditions of the Project area. Ambient air quality monitoring was carried out at each location on 24 hourly basis on two consecutive days per month. The details of AAQ monitoring stations are given in Table 1.1.

Table - 1.1. Details of Ambient Air Monitoring Locations

STATION CODE	NAME OF THE LOCATIONS	GEOGRAPHICAL LOCATION
AAQ1	120 ML Water Reservoir	N-12°59'13.40" E-74°52'03.00"
AAQ2	MSEZ, Permude	N-12°59'54.00" E-74°52'53.60"
AAQ3	GSS3-10 ML Water Reservoir	N-12°58'57.70" E-74°51'30.10"
AAQ4	CETP Location	N-12°59'51.40" E-74°51'24.70"
AAQ5	Bajpe	N-12°58'32.80" E-74°52'10.40"

2.1.1. Method used for Air Quality Monitoring:

Respirable Dust Sampler and Fine Particulate Samplers were used for collecting Particulate Matter of size less than 10 µm (PM₁₀) and 2.5 µm (PM_{2.5}) respectively. Gaseous Samplers were used for sampling gaseous pollutants such as SO₂, NO_x Ammonia and Ozone (O₃). Organic vapour sampler



was used to sample Hydrocarbon. Gas analyzer was used to estimate Carbon monoxide (CO) level in ambient air.

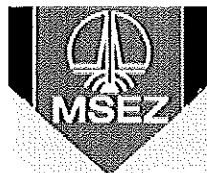
The Analytical techniques used for ambient air quality monitoring and its minimum detectable limit for each parameter is tabulated in Table 1.2.

Table - 1.2. Analytical Techniques Used for Ambient Air Quality Monitoring

S.NO	PARAMETER	TECHNIQUE	MINIMUM DETECTABLE LIMIT
1	Particulate Matter PM ₁₀	Fine Particulate Sampler (Gravimetric method)	5.0 µg/m ³
2	Particulate Matter PM _{2.5}	Fine Particulate Sampler (Gravimetric method)	5.0 µg/m ³
3	Sulphur di Oxide	Modified West & Gaeke Method	5.0 µg/m ³
4	Nitrogen Oxide	Jacob and Hochheiser Method	5.0 µg/m ³
5	Carbon monoxide	Gas Analyser	0.1 ppm
6	Ammonia	Nessler's Method	5 µg/m ³
7	Ozone	KI Absorption and Colorimetric	5 µg/m ³
8	Benzene,	IS 5182: Pt 11: 2006	0.01 µg/m ³
9	Benzo[a]pyrene)	IS 5182: Pt 12: 1991	0.1 ng/m ³
10	Lead,	IS 5182 P 22: 2004	0.1 µg/m ³
11	Arsenic, Nickel	IS 5182 P 22: 2004	1 ng/m ³

2.1.2. Micro-Meteorology :

Wind Speed, Predominant Wind Direction, Temperature, Relative Humidity between 01-05-2015 and 31-05-2015 at MSEZ is given in Table 1.3.



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Table-1.3- Micro-Meteorology

DATE	TEMPERATURE (°C)		RELATIVE HUMIDITY (%)		WIND SPEED (Km/hr)		PREDOMINANT WIND DIRECTION
	MIN	MAX	MIN	MAX	MIN	MAX	
01-05-2015	23	33	50	82	5.6	16.7	Northwest
02-05-2015	26	33	46	81	5.6	14.8	South Southwest
03-05-2015	25	33	49	82	5.6	18.5	Northwest
04-05-2015	26	34	48	80	7.4	22.2	East Southeast
05-05-2015	24	34	48	73	5.6	20.4	East
06-05-2015	24	32	62	93	9.3	22.2	East Southeast
07-05-2015	23	33	55	87	7.4	22.2	East Southeast
08-05-2015	23	33	51	84	5.6	20.4	Northwest
09-05-2015	25	32	63	88	5.6	18.5	East
10-05-2015	25	33	59	79	7.4	18.5	Northwest
11-05-2015	22	33	49	95	9.3	20.4	Northwest
12-05-2015	22	32	54	93	5.6	22.2	North Northwest
13-05-2015	22	29	73	96	9.3	16.7	East Southeast
14-05-2015	23	33	51	95	9.3	18.5	Northeast
15-05-2015	24	29	85	94	7.4	20.4	East Northeast
16-05-2015	23	33	59	93	5.6	18.5	West Southwest
17-05-2015	24	32	62	94	5.6	18.5	East Southeast
18-05-2015	23	31	64	93	5.6	14.8	East Southeast
19-05-2015	23	32	56	91	9.3	22.2	West Northwest
20-05-2015	26	33	54	89	5.6	20.4	West Northwest
21-05-2015	26	33	53	96	5.6	18.5	North Northwest
22-05-2015	26	32	59	90	9.3	20.4	North Northwest
23-05-2015	26	32	63	89	5.6	20.4	West Northwest
24-05-2015	26	33	59	94	5.6	22.2	West Northwest
25-05-2015	26	34	53	94	5.3	22.4	North Northwest
26-05-2015	25	33	59	89	7.4	22.2	Northwest
27-05-2015	26	33	50	94	5.6	22.2	Northwest
28-05-2015	26	29	76	89	5.6	14.8	North Northeast
29-05-2015	25	30	54	94	5.6	25.9	Northeast
30-05-2015	24	33	51	94	5.6	18.5	West
31-05-2015	25	33	53	94	5.6	14.8	West



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2.1.3. Wind Rose:

The wind roses diagram for the month of May 2015 at Mangalore SEZ is depicted in Figure 1.1.

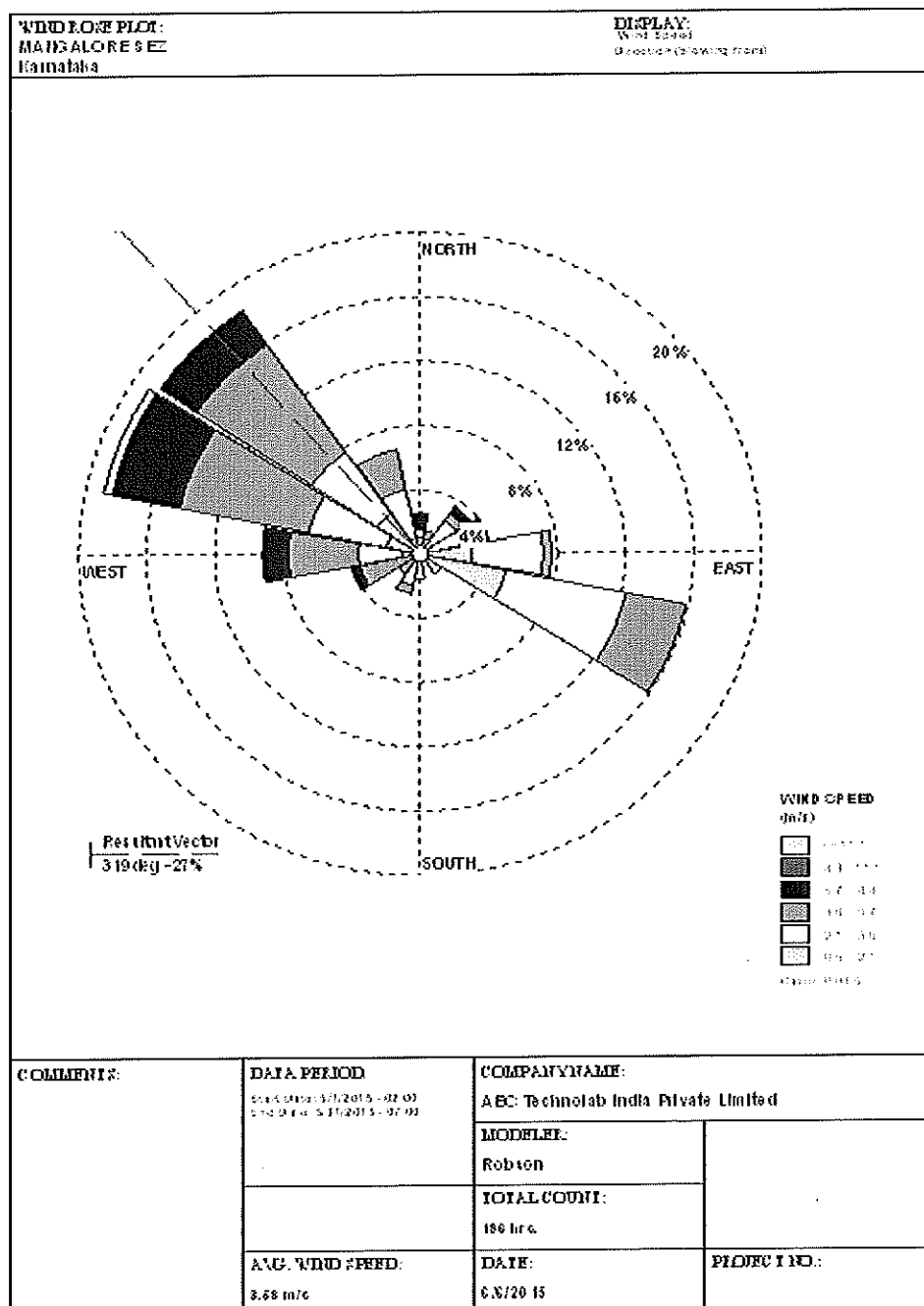


Figure 1.1. Wind Rose Diagram – May 2015



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2.1.4. AMBIENT AIR QUALITY RESULTS:

The 24 hourly average results of Ambient Air Quality Monitoring of two consecutive days for the month of May 2015 are presented in Table-1.4(a), 1.4 (b), 1.4(c), 1.4(d), 1.4(e) and 1.4(f). The obtained results are compared with the standards prescribed by Central Pollution Control Board (CPCB) for “Industrial, Rural, Residential and other areas”.

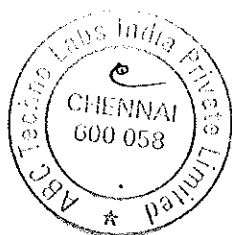
Table 1.4 (a)- AMBIENT AIR QUALITY REPORT

SAMPLE ID NO	ABC/MSEZ/13/AS/270515/A 278-279
SAMPLE DESCRIPTION	AMBIENT AIR QUALITY MONITORING.
SAMPLE DRAWN BY	ABC Techno Labs India Private Limited
NAME OF THE CLIENT	MANGALORE SPECIAL ECONOMIC ZONE LIMITED, MANGALORE
DATE SAMPLED	27-05-2015 (Monitoring duration 24hrs/day for 2 days)
REPORT DATE	06-06-2015

S.No	Location	Height GL(m)	Pollutant Concentration in $\mu\text{g}/\text{m}^3$						
			PM _{2.5}	PM ₁₀	SO ₂	NO _x	Pb	NH ₃	O ₃
1	CETP Location	2	21	53	6.7	12.1	BDL (<0.1)	15.3	12.1
2	MSEZ-GSS 3	2	24	61	8.6	17.4	BDL (<0.1)	13.2	10.7
Test Method			EPA- 40 CFR Part 50	IS 5182 Pt.23 : 2006	West & Gaeke	Jacob & Hochheister	IS 5182 P 22	Nessler's Method	KI Absorption Method
CPCB STANDARDS									
Industrial /Residential / Rural and Other Area			60	100	80	80	1	400	100

BDL- Below Detection Limit

Contd.....



For ABC Techno Labs India Private Limited,

[Signature]

AUTHORIZED SIGNATORY

A. ROBSON CHINNADURAI
(SENIOR CHEMIST)



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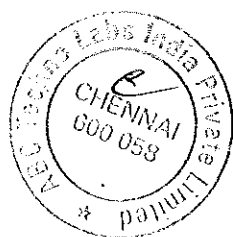
Table 1.4(b) - AMBIENT AIR QUALITY REPORT

SAMPLE ID NO	ABC/MSEZ/13/AS/270515/A 278-279
SAMPLE DESCRIPTION	AMBIENT AIR QUALITY MONITORING.
SAMPLE DRAWN BY	ABC Techno Labs India Private Limited
NAME OF THE CLIENT	MANGALORE SPECIAL ECONOMIC ZONE LIMITED, MANGALORE
DATE SAMPLED	27-05-2015 (Monitoring duration 24hrs/day for 2 days)
REPORT DATE	06-06-2015

S.No	Location	Pollutant Concentration				CO, mg/m ³
		Benzene µg/m ³	Benzo[a]pyrene ng/m ³	Arsenic ng/m ³	Nickel ng/m ³	
1	CETP Location	BDL (<0.01)	BDL (<0.1)	BDL (<1)	BDL (<1)	0.11
2	MSEZ-GSS 3	BDL (<0.01)	BDL (<0.1)	BDL (<1)	BDL (<1)	0.24
Test Method		IS 5182: Pt 11: 2006	IS 5182: Pt 12: 1991	IS 5182 P 22	IS 5182 P 22	Gas Analyser
CPCB STANDARDS						
Industrial /Residential / Rural and Other Area		5	1	6	20	2

BDL- Below Detection Limit

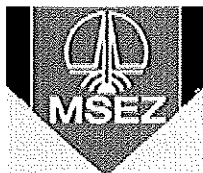
Contd.....



For ABC Techno Labs India Private Limited.,

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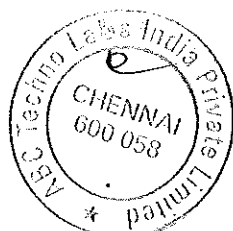
Table 1.4(c) - AMBIENT AIR QUALITY REPORT

SAMPLE ID NO	ABC/MSEZ/13/AS/270515/A 280
SAMPLE DESCRIPTION	AMBIENT AIR QUALITY MONITORING.
SAMPLE DRAWN BY	ABC Techno Labs India Private Limited
NAME OF THE CLIENT	MANGALORE SPECIAL ECONOMIC ZONE LIMITED, MANGALORE
DATE SAMPLED	27-05-2015 (Monitoring duration 24hrs/day for 2 days)
REPORT DATE	06-06-2015

S.No	Location	Height GL(m)	Pollutant Concentration in $\mu\text{g}/\text{m}^3$						
			PM _{2.5}	PM ₁₀	SO ₂	NO _x	Pb	NH ₃	O ₃
3	Baipe	2	17	47	5.1	11.4	BDL (<0.1)	9.4	10.2
Test Method			EPA- 40 CFR Part 50	IS 5182 Pt.23 : 2006	West & Gaeke	Jacob & Hochheister	IS 5182 P 22	Nessler's Method	KI Absorption Method
CPCB STANDARDS									
Industrial /Residential / Rural and Other Area			60	100	80	80	1	400	100

BDL- Below Detection Limit

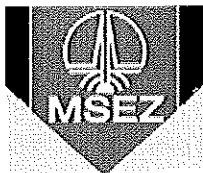
Contd.....



For ABC Techno Labs India Private Limited.,

A. Robson Chinnadurai
06/06/15
AUTHORIZED SIGNATORY

A. ROBSON CHINNADURAI
(SENIOR CHEMIST)



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Table 1.4(d) - AMBIENT AIR QUALITY REPORT

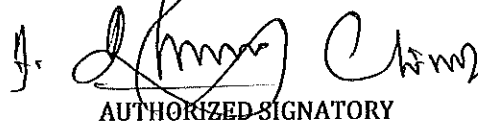
SAMPLE ID NO	ABC/MSEZ/13/AS/270515/A 280
SAMPLE DESCRIPTION	AMBIENT AIR QUALITY MONITORING.
SAMPLE DRAWN BY	ABC Techno Labs India Private Limited
NAME OF THE CLIENT	MANGALORE SPECIAL ECONOMIC ZONE LIMITED, MANGALORE
DATE SAMPLED	27-05-2015 (Monitoring duration 24hrs/day for 2 days)
REPORT DATE	06-06-2015

S.No	Location	Pollutant Concentration				CO, mg/m ³
		Benzene µg/m ³	Benzo[a]pyrene ng/m ³	Arsenic ng/m ³	Nickel ng/m ³	
3	Baipe	BDL (<0.01)	BDL (<0.1)	BDL (<1)	BDL (<1)	BDL(<0.1)
Test Method		IS 5182: Pt 11: 2006	IS 5182: Pt 12: 1991	IS 5182 P 22	IS 5182 P 22	Gas Analyser
CPCB STANDARDS						
Industrial /Residential / Rural and Other Area		5	1	6	20	2

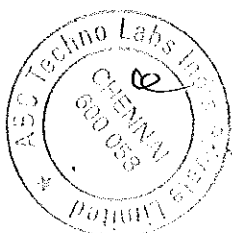
BDL- Below Detection Limit

Contd.....

For ABC Techno Labs India Private Limited.,


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A. ROBSON CHINNADURAI
(SENIOR CHEMIST)





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Table 1.4(e) - AMBIENT AIR QUALITY REPORT

SAMPLE ID NO	ABC/MSEZ/13/AS/290515/A 281-282
SAMPLE DESCRIPTION	AMBIENT AIR QUALITY MONITORING.
SAMPLE DRAWN BY	ABC Techno Labs India Private Limited
NAME OF THE CLIENT	MANGALORE SPECIAL ECONOMIC ZONE LIMITED, MANGALORE
DATE SAMPLED	29-05-2015 (Monitoring duration 24hrs/day for 2 days)
REPORT DATE	06-06-2015

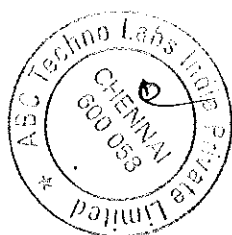
S.No	Location	Height GL(m)	Pollutant Concentration in $\mu\text{g}/\text{m}^3$						
			PM _{2.5}	PM ₁₀	SO ₂	NO _x	Pb	NH ₃	O ₃
4	120 ML, Water Reservoir	2	20	57	6.5	14.5	BDL (<0.1)	14.2	11.3
5	MSEZ, Permude	2	19	50	5.8	12.2	BDL (<0.1)	9.7	9.1
Test Method			EPA- 40 CFR Part 50	IS 5182 Pt.23 : 2006	West & Gaeke	Jacob & Hochheister	IS 5182 P 22	Nessler's Method	KI Absorption Method
CPCB STANDARDS									
Industrial /Residential / Rural and Other Area			60	100	80	80	1	400	100

BDL- Below Detection Limit

Contd.....

For ABC Techno Labs India Private Limited.,

[Signature]
06/06/15
AUTHORIZED SIGNATORY



A. RODSON CHINNADURAI
(SENIOR CHEMIST)



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Table 1.4(f) - AMBIENT AIR QUALITY REPORT

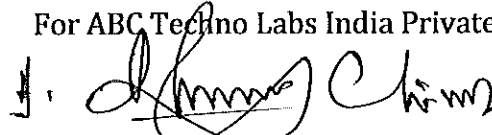
SAMPLE ID NO	ABC/MSEZ/13/AS/290515/A 281-282
SAMPLE DESCRIPTION	AMBIENT AIR QUALITY MONITORING.
SAMPLE DRAWN BY	ABC Techno Labs India Private Limited
NAME OF THE CLIENT	MANGALORE SPECIAL ECONOMIC ZONE LIMITED, MANGALORE
DATE SAMPLED	29-05-2015 (Monitoring duration 24hrs/day for 2 days)
REPORT DATE	06-06-2015

S.No	Location	Pollutant Concentration				CO, mg/m ³
		Benzene µg/m ³	Benzo[a]pyrene ng/m ³	Arsenic ng/m ³	Nickel ng/m ³	
4	120 ML, Water Reservoir	BDL (<0.01)	BDL (<0.1)	BDL (<1)	BDL (<1)	0.15
5	MSEZ, Permude	BDL (<0.01)	BDL (<0.1)	BDL (<1)	BDL (<1)	BDL(<0.1)
Test Method		IS 5182: Pt 11: 2006	IS 5182: Pt 12: 1991	IS 5182 P 22	IS 5182 P 22	Gas Analyser
CPCB STANDARDS						
Industrial /Residential / Rural and Other Area		5	1	6	20	2

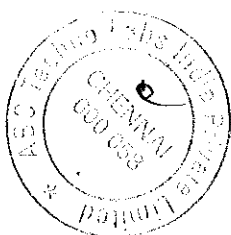
BDL- Below Detection Limit

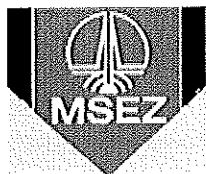
.....END OF REPORT.....

For ABC Techno Labs India Private Limited.,


06/06/15
AUTHORIZED SIGNATORY

A. ROBSON CHINNADURAI
(SENIOR CHEMIST)





3.0. Water Quality Monitoring

Water samples were collected at ten locations to establish baseline water quality in the study area. Water analysis was carried out for physical, chemical parameters as per the methods prescribed in IS and “Standard Methods for the Examination of Water and Wastewater (American Public Health Association)”.

3.1.1. Water Sampling Locations.

The details of the water sampling stations are presented in the Table 1.5

Table 1.5- Water Sampling Locations

Location Code	Date Sampled	Location	Type of water	Geographical Location
W1	30/05/2015	120 ML Water Storage	Ground water	N-12°58'57.70" E-74°51'30.10"
W2	30/05/2015	Near OMPL	Ground water	N-12°58'32.70" E-74°52'10.60"
W3	30/05/2015	Permude Bajpe Village Boundary	Ground water	N-12°59'54.00" E-74°52'53.60"
W4	30/05/2015	Road Cum Pipeline Corridor -Kalavar	Ground water	N-12°58'45.10" E-74°51'16.40"
W5	30/05/2015	Oddidakale- Bajpe	Ground water	N-12°58'32.80" E-74°52'10.40"
W6	30/05/2015	Chandrasahas Nagar	Ground water	N-12°58'44.90" E-74°51'16.50"
W7	30/05/2015	Permude	Ground water	N-12°59'12.50" E-74°52'34.30"
W8	30/05/2015	CETP Location	Ground water	N-12°59'51.40" E-74°51'24.70"
W9	30/05/2015	Shyanti Gudda-Bajpe	Ground water	N-12°59'54.00" E-74°52'53.40"

3.1.2. Water Quality Results

The physicochemical characteristics of water in the project area are presented in the Table 1.6(a) and Table 1.6(b) and are compared with the standards (IS 10500:2012) Indian Standards/Specifications for Drinking Water) reference values.



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Table 1.6(a) - Ground water Quality Results

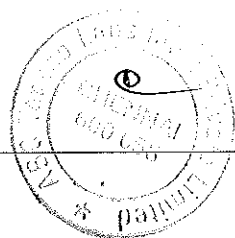
Sl. No	PARAMETERS	UNIT	LIMIT AS PER IS 10500 : 2012	W1	W2	W3	W4
1	Colour	Pt-Co	5	Nil	1	Nil	Nil
2	Odour	-	Unobjectionable	No Odour Observed	No Odour Observed	No Odour Observed	No Odour Observed
3	pH at 25°C	-	6.5-8.5	6.56	6.87	7.22	6.94
4	Electrical Conductivity,	µS/cm	Not Specified	327	386	174	262
5	Turbidity	NTU	1	0.8	1	BDL(<0.5)	BDL(<0.5)
6	Total Dissolved Solids	mg/l	500	168	192	85	138
7	Total Hardness as CaCO ₃	mg/l	200	128	130	52	75
8	Total Alkalinity as CaCO ₃	mg/l	200	110	116	42	66
9	Chloride as Cl	mg/l	250	20	15	18	34
10	Sulphate as SO ₄	mg/l	200	12	22	2	10
11	Fluoride as F	mg/l	1	0.23	BDL(<0.1)	BDL(<0.1)	BDL(<0.1)
12	Nitrate as NO ₃	mg/l	45	2.3	BDL(<1)	7.2	5.4
13	Silica as SiO ₂	mg/l	Not Specified	19.2	12.3	9.4	15.8
14	Copper as Cu	mg/l	0.05	BDL(<0.03)	BDL(<0.03)	BDL(<0.03)	BDL(<0.03)
15	Zinc as Zn	mg/l	5	0.08	0.05	0.32	BDL (<0.005)
16	Manganese as Mn	mg/l	0.10	BDL(<0.02)	BDL(<0.02)	BDL(<0.02)	BDL(<0.02)
17	Sodium as Na	mg/l	Not Specified	13	21	11	23
18	Potassium as K	mg/l	Not Specified	1	2.2	1.2	4.1
19	Calcium as Ca	mg/l	75	38	38	15.6	22
20	Magnesium as Mg	mg/l	30	7.8	8.5	3.1	4
21	Iron as Fe	mg/l	0.3	0.12	0.15	BDL(<0.05)	BDL(<0.05)
22	Lead as Pb	mg/l	0.01	BDL(<0.01)	BDL(<0.01)	BDL(<0.01)	BDL(<0.01)
23	Mercury as Hg	mg/l	0.001	BDL (<0.001)	BDL (<0.001)	BDL (<0.001)	BDL (<0.001)
24	Cadmium as Cd	mg/l	0.003	BDL (<0.001)	BDL (<0.001)	BDL (<0.001)	BDL (<0.001)
25	Arsenic as As	mg/l	0.01	BDL(<0.01)	BDL(<0.01)	BDL(<0.01)	BDL(<0.01)
26	Chromium as Cr ⁶⁺	mg/l	0.05	BDL(<0.01)	BDL(<0.01)	BDL(<0.01)	BDL(<0.01)
27	Volatile Organic Compounds	mg/l	Not Specified	BDL(<0.01)	BDL(<0.01)	BDL(<0.01)	BDL(<0.01)

BDL-Below Detection Limit

.....End of Report.....

For ABC Techno Labs India Private Limited.,

[Signature]
AUTHORIZED SIGNATORY 08/06/14





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Table 1.6(b) - Ground water Quality Results

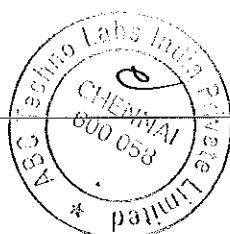
Sl. No	PARAMETERS	UNIT	LIMIT AS PER IS 10500 : 2012	W5	W6	W7	W8	W9
1	Colour	Pt-Co	5	Nil	1	Nil	Nil	Nil
2	Odour	-	Unobjectionable	No Odour Observed	No Odour Observed	No Odour Observed	No Odour Observed	No Odour Observed
3	pH at 25°C	-	6.5-8.5	6.68	7.02	6.94	6.52	6.71
4	Electrical Conductivity,	µS/cm	Not Specified	251	178	246	354	155
5	Turbidity	NTU	1	0.5	0.5	BDL(<0.5)	0.9	0.5
6	Total Dissolved Solids	mg/l	500	132	95	133	185	84
7	Total Hardness as CaCO ₃	mg/l	200	88	60	82	48	46
8	Total Alkalinity as CaCO ₃	mg/l	200	90	56	72	8	48
9	Chloride as Cl	mg/l	250	9	15	21	48	12.5
10	Sulphate as SO ₄	mg/l	200	15	2	12	56	3.6
11	Fluoride as F	mg/l	1	0.43	BDL(<0.1)	BDL(<0.1)	0.22	0.33
12	Nitrate as NO ₃	mg/l	45	BDL(<1)	3.8	7.3	12	5
13	Silica as SiO ₂	mg/l	Not Specified	89	14.3	18.4	7.8	29.3
14	Copper as Cu	mg/l	0.05	BDL(<0.05)	BDL(<0.03)	BDL(<0.03)	BDL(<0.03)	BDL(<0.03)
15	Zinc as Zn	mg/l	5	0.13	BDL(<0.005)	0.08	0.02	0.03
16	Manganese as Mn	mg/l	0.10	BDL(<0.05)	BDL(<0.05)	BDL(<0.05)	BDL(<0.05)	BDL(<0.05)
17	Sodium as Na	mg/l	Not Specified	16	10.2	15	41	12
18	Potassium as K	mg/l	Not Specified	1.2	2.7	2.2	2.4	BDL(<1)
19	Calcium as Ca	mg/l	75	16	16	28	11	14.4
20	Magnesium as Mg	mg/l	30	12	4.9	3	4.9	2.4
21	Iron as Fe	mg/l	0.3	0.08	0.12	BDL(<0.05)	0.10	0.08
22	Lead as Pb	mg/l	0.01	BDL(<0.01)	BDL(<0.01)	BDL(<0.01)	BDL(<0.01)	BDL(<0.01)
23	Mercury as Hg	mg/l	0.001	BDL(<0.001)	BDL(<0.001)	BDL(<0.001)	BDL(<0.001)	BDL(<0.001)
24	Cadmium as Cd	mg/l	0.003	BDL(<0.001)	BDL(<0.001)	BDL(<0.001)	BDL(<0.001)	BDL(<0.001)
25	Arsenic as As	mg/l	0.01	BDL(<0.01)	BDL(<0.01)	BDL(<0.01)	BDL(<0.01)	BDL(<0.01)
26	Chromium as Cr ⁶⁺	mg/l	0.05	BDL(<0.01)	BDL(<0.01)	BDL(<0.01)	BDL(<0.01)	BDL(<0.01)
27	Volatile Organic Compounds	mg/l	Not Specified	BDL(<0.01)	BDL(<0.01)	BDL(<0.01)	BDL(<0.01)	BDL(<0.01)

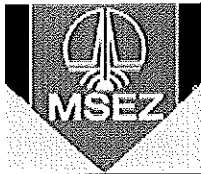
BDL-Below Detection Limit

.....End of Report.....

For ABC Techno Labs India Private Limited.,

[Signature]
AUTHORIZED SIGNATORY





ANNEXURE-I



NABL

National Accreditation Board for Testing and Calibration Laboratories

Department of Science & Technology, India

CERTIFICATE OF ACCREDITATION

ABC TECHNO LABS INDIA PRIVATE LIMITED

has been assessed and accredited in accordance with the standard

ISO/IEC 17025:2005

"General Requirements for the Competence of Testing & Calibration Laboratories"

for its facilities at

No. 95 D/3, SIDCO Industrial Estate, Ambattur, Chennai

in the discipline of

CHEMICAL TESTING

(To see the scope of accreditation of this laboratory, you may also visit NABL website www.nabl-india.org)

Certificate Number T-1586

Issue Date 18/06/2013



Valid Until 17/06/2015

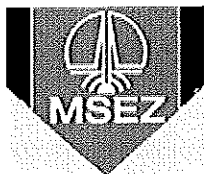
This certificate remains valid for the Scope of Accreditation as specified in the annexure subject to continued satisfactory compliance to the above standard & the additional requirements of NABL.

Signed for and on behalf of NABL

Anuja Anand
Convenor

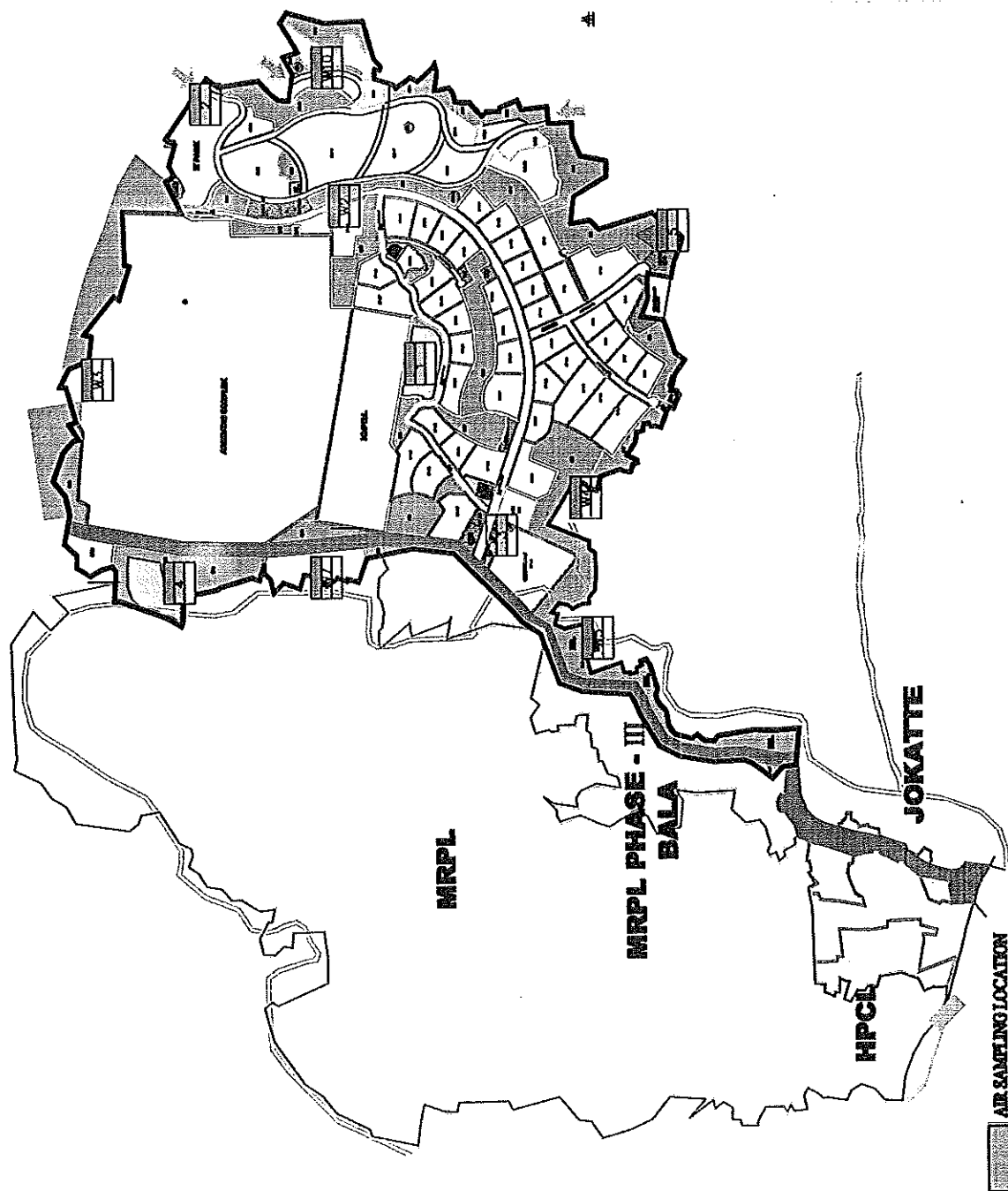
Anil Rella
Director

Dr. T. Ramasami
Chairman



ANNEXURE-II

MSEZ Phase I - ENVIRONMENT MONITORING LOCATIONS



Mangalore S E Z Ltd.
 And Whse, M UDA Building
 Uvesh street, Mangalore



No.21-383/2007-JA-III
Government of India
Ministry of Environment and Forests
(IA-III Division)

Paryavaran Bhawan,
CGO Complex, Lodi Road,
New Delhi - 110003.

Dated the 3rd April, 2008

Sub: Environment clearance for setting up of Phase-I of Special Economic Zone at Mangalore -
regarding.

Reference is invited to letter No.FGE/01CRZ2008, dated 22.1.2008 from Forest, Ecology and Environment Department, Government of Karnataka, letter No.MSEZL/BO/ENV/2007, dated 23.2.2007, dated 24.2.2007, No.MSEZL/COO/MILR/2007-08, dated 2.6.2007, No.MSEZL/COO/187/2007-08, dated 24.12.2007, No.MSEZL/BO/ENV/2008, dated 3.1.2008, No.MSEZL/COO/02/2008, dated 4.1.2008, No.MSEZL/COO/13/08, dated 13.1.2008, No.MSEZL/COO/2007-08, dated 23.2.2008 and No.MSEZL/BO/06/ENV/2008, dated 7.3.2008 from Mangalore SEZ Limited regarding the subject mentioned above. Subsequently, letters No.NII, dated 3.3.2007 from Infrastructure Development Corporation Limited, O.O.No.O-27013/1/2005-ONGC.II (PI.II), dated 14.3.2007, No.O-27013/1/2005-ONGC.II(PI.2), dated 6.6.2007 from Ministry of Petroleum & Natural Gas, No.17CAT/MRPL/2007-08/1185, dated 14.3.2008 and No.17CAT/MRPL-SEZ/2007-08/1230, dated 25.3.2008 from Karnataka State Pollution Control Board (KSPCB) and No.NII, dated 19.3.2008 from Mangalore Refinery and Petrochemicals Limited (MRPL) has been taken into consideration. High Tide Line has been demarcated by NIO, Goa and has super imposed the project layout on the Coastal Regulation Zone map. Public Hearing for the project was held as per EIA Notification, 2006 on 28.11.2007.

2. The Mangalore Special Economic Zone (MSEZ) Phase-I involves a) MRPL Phase-III Refinery, b) Aromatic Complex and c) Olefin Complex are proposed to be developed by the anchor promoter of MSEZ project i.e. M/s ONGC-MRPL in the already acquired land of about 1800 Acres. The proposed MSEZ is planned adjacent to the existing MRPL refinery complex on north & eastern sides and proposed to connect NMPT with a dedicated 70/100 meter wide road-cum-pipeline (Total approx. 15 km long) Corridor for movement of Cargo, Crude and products between New Mangalore Port and MSEZ. The proposed layout has one main entry from the proposed Mangalore MSEZ Corridor connected to the existing New Mangalore Port and National Highway (NH-17). The primary, Secondary and Tertiary roads are planned to give access to the industries falling in the MSEZ Phase-I. Industrial zones for locating the Olefin Complex, Aromatic Complex, D/S Petrochemicals, Indian Strategic Petroleum Reserve Company Limited underground crude oil storage and land for MRPL Phase-III Refinery are effectively placed in the central and southwest part of the proposed MSEZ premises. Further, the SEZ will have necessary road alignment between NMPT, SEZ and network of roads within including service roads for inspection of pipelines on elevated corridors. The pipelines shall be built at elevated corridor locations. Pipelines will be laid on sleepers and pipe racks with sufficient ground clearance. The preferred corridor alignment avoids Coastal Regulation Zone-I & II portion along the Gurupur River and it will have elevated roadway over structures (railways/minor bridges) and reinforced earth walls. However the corridor passes over CRZ III zone along the banks of the Kudumbur rivulet (south of HLP Gas) in the form of a bridge. The proposed Industrial Units in MSEZ Phase-I includes,

1. MRPL Phase-III Refinery (The list of process units proposed in Phase-III refinery project):

Sr. No.	Unit Name	Design Capacity
1.	CDU/YDU-III	3.00 MMTPA
2.	DCU	3.00 MMTPA
3.	Petro FCC/PRUA/CCU NSU	2.2 / 0.72 / 0.8 MMTPA
4.	DIHOT	3.7 MMTPA

5.	CHT (Coker Heavy Gas oil Hydrotreater)	0.65 MMTPA
6.	H ₂ Generation Unit	70 KTPA
7.	SULPHUR Block	3x185 TPD
8.	LOBS FPU/LOBS	0.60 / 0.15 MMTPA
9.	CPP (Power/Steam)	84.0 MW / 606 TPD
10.	LPG, ATF/Kero Mercapton Treatment Unit	0.5 MMTPA
11.	Revamp of Existing HCU s to operate in once through mode.	To produce hydrotreated feed to PFCU.
12.	Utilities	Appropriate facilities, meeting the requirement of above mentioned units.
13.	Offsites	Appropriate facilities to cater to above units.

II. Aromatic Complex

To meet the objective of producing paraxylene, aromatics complex has been considered. To maximize paraxylene, broad cut heavy naphtha streams are selected as feedstock to a new NHT/CCR. Aromatics precursors to the new reformer include constituents that produce toluene, C8-aromatics mix & C9+ aromatics. Whereas a xylene isomerization (ISOMER) unit has been considered to convert other C8-aromatics into paraxylene, a transalkylation & disproportionation (TADP) unit has also been included to convert toluene & C9+ aromatics into C8-aromatics mix. Simulated moving bed adsorption for paraxylene recovery (PXREC) has been incorporated.

Sr. No.	Unit Name	Design Capacity
1.	NHT/CCR	0.95 MMTPA
2.	Isomerization Unit (ISOMER)	3.16 MMTPA
3.	Transalkylation & Disproportionation Unit (TADP)	1.72 MMTPA
4.	Paraxylene Recovery (PXREC)	4.07 MMTPA
5.	Xylene Fractionation Unit	4.64 MMTPA
6.	Aromatics Extraction Unit	0.79 MMTPA
7.	Benzene Toluene Fractionation Unit	2.2 MMTPA
8.	Capitve power plant (CPP)	60 MW

III. Olefin Complex

The primary and major process unit at proposed Olefin Complex will be Naphtha Cracker Unit of 2.168 MMTPA naphtha cracking capacity. It produces ethylene, propylene, mixed C4s and raw pyrolysis gasoline apart from fuel gas and hydrogen which will be used internally. There would be import of polymer grade propylene as feed in addition to Naphtha into Olefin Complex as the proposed Naphtha Cracker capacity fall short to ascertain the envisage design capacity of overall Olefin Complex. The import is planned from adjacent MRPL refinery. There are about seven secondary processing units proposed in the Olefin Complex to manufacture the planned products like HDPE, LLDPE/HDPE, Butene, Polypropylene, C4 mix, Benzene, Pyrolysis gasoline, carbon black feed stock (CBFS) etc.. Proposed major process units in this complex are as follows :

Sr. No.	Unit Name	Design Capacity
1.	Naphtha Cracker	2.168 MMTPA (Feed)
2.	HDPE Unit	350,000 TPA (product)
3.	C4 Hydrogenation Unit	240,000 TPA (Feed)
4.	LLDPE/HDPE Unit	400,000 TPA (product)
5.	Polypropylene unit	750,000 TPA (product)
6.	Butadiene Extraction Unit	12,250 TPA (product)
7.	Pyrolysis Gasoline Hydrogenation Unit (PGHU)	466,000 TPA (Feed)

8. Benzene Extraction Unit	1-14,000 TPA (product)
9. Captive Power Plant (CPP)	168 MW

3. The proposal was considered by Expert Committee for Infrastructure Development and Miscellaneous Projects at its meetings held on 19th to 21st April, 2007, 21st & 22nd June, 2007 and 27th & 28th February, 2008. Further site visit was undertaken by the above Committee 20th June, 2007 and public hearing, as per the Environmental Impact Assessment Notification, 2006 was conducted by the Karnataka State Pollution Control Board on 28.11.2007. To address any other issues which were not considered during the above public hearing the Ministry had constituted a technical Committee, which had public discussions and site visits on 2nd and 3rd February, 2008. Based on the recommendations of the above Expert Committee the Ministry hereby accords environmental clearance to the Phase-I of said project under the provisions of Environmental Impact Assessment Notification, 2006 and Coastal Regulation Zone Notification 1991, subject to the following conditions:-

A. SPECIFIC CONDITIONS:-

- (i) No Objection Certificate from the Karnataka State Pollution Control Board shall be obtained before initiating the project.
- (ii) The MSEZ project shall be restricted to the Phase-I of the project, proposed over 1,800 acres. The phase II of the project shall be considered by Ministry of Environment and Forests only after receipt of all requisite documents/information as laid down in the Environmental Impact Assessment Notification, 2006 and Coastal Regulation Zone Notification, 1991 as applicable.
- (iii) All development in the Coastal Regulation Zone area shall be in accordance with the Coastal Regulation Zone Notification, 1991. No destruction of mangroves shall be undertaken except while undertaking the permissible activities in the Coastal Regulation Zone-I areas.
- (iv) The project proponent shall not take up any activity in 875 acres of Coastal Regulation Zone land, other than those permissible under the Coastal Regulation Zone Notification 1991 such as pipeline corridors, pipelines roads on stilts.
- (v) With regard to the containing the suspected contamination of the groundwater near Athurkoll area of Kuthaloor village, MRPL have given an undertaking vide their letter dated 19.3.2008 which is as follows:-
 - (a) "Implementation of recommendation of NGPRI will be started immediately after submission of their report."
 - (b) Depending upon the nature of their recommendations, we will make efforts to complete necessary actions within 6 months from the date of receipt of their report.
 - (c) In addition to above, a daily vigil is already in place to take samples from different places and to monitor any suspected oil leakage. This will continue till the problem is resolved.
 - (d) We are also in continuous contact with the residents in the surround areas with regard to any contamination."

KSPCB and MRPL shall ensure that (a) to (d) above is implemented in a time bound manner and a monthly report on the progress of the activities provided to the Regional Office of this Ministry at Bangalore. For this purpose a separate budget would be allocated by MRPL.
- (vi) The project proponent shall obtain a report from the Wildlife Department with regard to existence of wildlife in the proposed site as claimed by the public before implementing the project.
- (vii) The R&R package shall be strictly in accordance with the laid down norms of the State Government.
- (viii) A marine Environment Impact Assessment and Risk Assessment alongwith the Disaster Management Plan shall be prepared for the outfall facilities proposed in the Coastal Regulation Zone and the marine areas.

- (ix) Project proponent shall put up a dedicated website and a display panel to inform the public regarding the Ambient Air Quality alongwith SO₂, NO_x and other parameters as prescribed as Central Pollution Control Board (CPCB).
- (x) The gaseous emissions (SO₂, NO_x, HC, VOC and Benzene) from various process units shall conform to the standards prescribed by the concerned State Pollution Control Board. All the measures detailed in the EMP and response to the Public Hearing shall be taken to control the point/stack and fugitive gaseous emissions from the proposed facilities, processes and storage units etc., for ensuring that the ambient air quality around the Refinery due to the expansion is maintained at the predicted 24 hourly average maximum concentration.
- (xi) The emission levels of the other pollutants shall also remain within the permissible levels.
- (xii) The Industrial units in the SEZ and the associated facilities shall be strictly in accordance with the norms laid down by the Karnataka State Government and CPCB.
- (xiii) The project proponent shall ensure that the greenery of the area is maintained. Further, 33% of the project area shall be dedicated for green belt development of which atleast 5% shall be for mangrove afforestation. The local Forest Department shall be associated for this purpose and requisite budget earmarked.
- (xiv) The project proponent shall ensure that the water requirement of the Mangalore city does not get affected due to the SEZ operation. Adequate provision shall be made in the reservoirs to provide for the water requirement of the cities.
- (xv) The project proponent shall ensure that during construction and operation of the project the traffic in the city is not affected.
- (xvi) All precautions of the highest standards shall be incorporated in the design of the project to ensure that there is no chance of emission/leakage of hazardous chemicals including Benzene. Detailed monitoring programme shall be designed and the information provided to the public through display and dedicated website by means of online monitoring.
- (xvii) Low Sulphur Internal fire oil and fuel gas shall be fired in process heaters and boilers.
- (xviii) Quarterly monitoring of fugitive emissions shall be carried out by Fugitive Emission Detectors (GMI Leak Surveyor). Guidelines of CPCB will be followed for monitoring fugitive emissions. For control of fugitive emissions, all unsaturated hydrocarbons shall be routed to the flare system. The flare system shall be designed for smokeless burning. Flare Gas Recovery System shall be installed for reduction of hydrocarbon loss and emission of VOCs, NO_x, N₂O, SO_x & CO₂ to the environment.
- (xix) Regular Ambient Air Quality Monitoring shall be carried out. The location and results of existing monitoring stations shall be reviewed in consultation with the concerned State Pollution Control Board based on the occurrence of maximum ground level concentration and downwind direction of wind. Additional Stations shall be set up, if required. It shall be ensured that at least one monitoring station is set up in up-wind & in down-wind direction along with those in other directions.
- (xx) On-line data for air emissions shall be transferred to the CPCB and SPCCB regularly. The instruments used for ambient air quality monitoring shall be calibrated regularly. The monitoring protocol shall ensure continuous monitoring of all the parameters.
- (xxi) The practice of acoustic plant design shall be adopted to limit noise exposure for personnel to an 8 hr time weighted average of 90 dB(A).

- (xxii) All the pumps and other equipment's, where there is a likelihood of HC leakages, shall be provided with appropriate indicators and detectors. Provision for immediate isolation of such equipment, in case of a leakage shall also be made. The company shall adopt Leak Detection and Repair (LDAR) programme for quantification and control of fugitive emissions.
- (xxiii) The product loading gantry shall be connected to the product sphere in closed circuit through the vapour arm connected to the tanker. Data on fugitive emissions shall be regularly monitored and records shall be maintained.
- (xxiv) The company shall ensure that no halogenated organic is sent to the flares. If any of the halogenated organic are present, then the respective streams may be incinerated, if there are no technically feasible or economically viable reduction/recovery options. Any stream containing organic carbon, other than halogenated shall be connected to proper flaring system, if not to a recovery device or an incinerator.
- (xxv) The new standards/norms that are being proposed by the CPCB for Petrochemical Plants and Refineries shall be applicable for the proposed expansion unit. The company shall conform to the process vent standards for organic chemicals including non-VOCs and all possible VOCs i.e., TOCs standards and process vent standards for top priority chemicals. Regular monitoring will be carried out for VOC and HC and On-line monitors for VOC measurements may be installed.
- (xxvi) Regular monitoring of relevant parameters for the under ground water in the surrounding areas shall be undertaken and the results shall be submitted to the relevant States Pollution Control Board.
- (xxvii) Solid waste generated as Pretreater and Reformer Catalysts, Sulphur guard absorbent and Alumina Balls shall be disposed off as per the authorization from the State Pollution Control Board.
- (xxviii) Oily sludge shall be sent to melting pit treatment for recovery of oil. The recovered oil shall be recycled into the refinery system. The residual sludge will be stored in HDPE lined pit for disposal after treatment. The sludge shall be incinerated in the premises only.
- (xxix) The company shall strictly follow all the recommendations mentioned in the Charter on Corporate Responsibility for Environmental Protection (CREP).
- (xxx) The Company shall harvest surface as well as rainwater from the rooftops of the buildings proposed in the expansion project and storm water drains to recharge the ground water and use the same water for the various activities of the project to conserve fresh water.
- (xxxi) Occupational Health Surveillance of the workers should be done on a regular basis and records maintained as per the Factories Act.
- (xxxii) The Company shall implement all the recommendations made in the Environmental Impact Assessment (EIA) report and risk assessment report.
- (xxxiii) The company will undertake all relevant measures, as indicated during the Public Hearing for improving the Socio-economic conditions of the surrounding area.
- (xxxiv) With regard to R&R colony the project proponent shall obtain all requisite clearances as prescribed by the concerned agencies.

B. GENERAL CONDITIONS:-

- (i) The project authorities shall strictly adhere to the stipulations made by the concerned State Pollution Control Board (SPCB) and the State Government.
- (ii) No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment and Forests.

- (iii) At no time, the emissions shall be allowed to go beyond the prescribed standards. In the event of failure of any pollution control system adopted by the units, the respective unit should be immediately put out of operation and should not be restarted until the desired efficiency has been achieved.
- (iv) Adequate number of influent and effluent quality monitoring stations shall be set up in consultation with the SPCB. Regular monitoring shall be carried out for relevant parameters for both surface and ground water.
- (v) Industrial wastewater shall be properly collected and treated so as to conform to the standards prescribed under GSR 422 (E) dated 19th May 1993 and 31st December, 1993 or as amended from time to time. The treated wastewater shall be utilized for plantation purpose.
- (vi) The overall noise levels in and around the plant area shall be limited within the prescribed standards (85 dBA) by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels should conform to the standards prescribed under BPA Rules, 1989 viz. 75 dBA (day time) and 70 dBA (night time).
- (vii) The project authorities shall strictly comply with the provisions made in Manufacture, Storage and Import of Hazardous Chemicals Rules 1989 as amended in 2000 for handling of hazardous chemicals etc. Necessary approvals from Chief Controller of Explosives must be obtained before commission of the expansion project. Required On-site and Off-site Disaster Management Plans will be prepared and implemented.
- (viii) Authorization from the State Pollution Control Board must be obtained for collection/treatment/storage/disposal of hazardous wastes.
- (ix) The project authorities shall provide adequate funds both recurring and non-recurring to implement the conditions stipulated by the Ministry of Environment and Forests as well as the State Government along with the implementation schedule for all the conditions stipulated herein. The funds so provided shall not be diverted for any other purposes.
- (x) The stipulated conditions shall be monitored by the concerned Regional Office of this Ministry /Central Pollution Control Board/State Pollution Control Board. A six monthly compliance report and the monitored data shall be submitted to them regularly. It shall also be displayed on the Website of the Company.
- (xi) 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 State Pollution Control Board/Committee and may also be seen at Website of the Ministry of Environment and Forests at <http://www.envfor.nic.in>. This should 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 should be forwarded to the concerned Regional office of this Ministry.
- (xii) The date of Final/Partial Closure and final approval of the project by the concerned authorities and the date of commencing the land development work as well as the commissioning of the project shall be informed to the Ministry and its Regional Office.
- (xiii) Proper House keeping and adequate occupational health programmes shall be taken up. Regular Occupational Health Surveillance Programme for the relevant diseases shall be carried out and the records shall be maintained properly for at least 30-40 years. Sufficient preventive measures shall be adopted to avoid direct exposure to emission and other Hydrocarbons etc.
- (xiv) A separate environment management cell with full fledged laboratory facilities to carry out various management and monitoring functions shall be set up under the control of a Senior Executive.

4. The Ministry may revoke or suspend the clearance, if implementation of any of the above conditions is not satisfactory.

5. The Ministry reserves the right to stipulate additional conditions if found necessary. The company shall implement these conditions in a time bound manner.

6. The above conditions will be enforced, inter-alia under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, the Public Liability Insurance Act, 1991, Hazardous Waste (Management & Handling) Rules, 1989 and Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989 along with their amendments and rules.

(Dr. A. Senthil Vel)
Additional Director

To,

Secretary,
Ecology and Environment,
Forest, Ecology and Environment Department,
Government of Karnataka,
Karnataka Government Secretariat,
7th Floor, 4th Stage, Multistoreyed Building,
Dr. B. R. Ambedkar Veedhi, Bangalore - 560001.

Copy to:-

- (i) The Member Secretary, Karnataka State Pollution Control Board, 6,7,8, & 9 Floor (Public Utility Building), Netaji Subhash Chandra Building, M. G. Road, Bangalore-560 001, Karnataka.
- (ii) Shri I. S. N. Prasad, Managing Director and CEO, Mangalore SEZ, No.72/4, 1st Floor, Cunningham Road, Bangalore-560052.
- (iii) M/s Mangalore SEZ Limited, 3rd Floor, Mangalore Urban Development Authority Building, Ashok Nagar, Urwa Stores, Mangalore-575006.
- (iv) Managing Director, Infrastructure Development Corporation Limited, Cora 4B, 4th Floor, India Habitat Centre, Lodhi Road, New Delhi-110003.
- (v) The Chairman, Central Pollution Control Board, Parivesh Bhuvan, CMO-com- Office Complex, East Arjun Nagar, Delhi -110032.
- (vi) The Chief Conservator of Forests (Central), Ministry of Environment & Forests, Regional Office (SZ), Kendriya Sadan, 4th Floor, B&F Wings, 17th Main Road, 1 Block, Koramangla, Bangalore - 560034.
- (vii) Director (E1), Ministry of Environment and Forests.
- (viii) The Regional Office Cell, MoEF.
- (vii) Guard File.
- (viii) Monitoring File

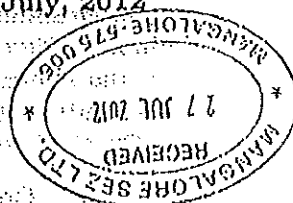
(Dr. A. Senthil Vel)
Additional Director

No.21-383/2007-IA.III
Government of India
Ministry of Environment and Forests
(IA-III Division)

Paryavaran Bhawan,
CGO Complex, Lodhi Road,
New Delhi - 110003.

Dated: 13th July, 2012

To
The Managing Director,
Mangalore SEZ Ltd.,
No.16, Pranava Park, 3rd Floor,
Infantry Road, Bangalore - 560 01



Sub: Amendment to Environment Clearance for setting up of Phase-I of
Special Economic Zone at Mangalore by M/s. Mangalore SEZ Ltd.
regarding.

Sir,

This has reference to your application No. MD/MSEZ/6/2011 dated 17.5.2011 and subsequent letter dated 28.11.2011 seeking amendment to the Environmental Clearance accorded earlier on 3.4.2008 for the above project under the EIA Notification, 2006. The amendment proposal has been appraised as per prescribed procedure in the light of provisions under EIA Notification, 2006 and its subsequent amendment, on the basis of mandatory documents enclosed with the application viz, drawing showing details/site plan, Compliance Status of EC, detailed note giving the proposed change, Greenbelt development of 33% and the additional clarifications furnished in response to the observations of the Expert Appraisal Committee constituted by the competent authority in its meetings held on 17th - 19th August 2011 and 15th - 16th December, 2011.

2. It is interalia, noted that the project involves Mangalore SEZ Phase-I involves (a) MRPL Phase-III Refinery (b) Aromatic Complex and (c) Olefin Complex along with associated infrastructure in 1800 acres of land. The proposed MSEZ is planned adjacent to the existing MRPL refinery complex on north & eastern sides and it is proposed to connect NMPT with a dedicated 70/100 m wide road-cum-pipeline for movement of cargo, crude and products between New Mangalore Port and MSEZ. The revised project details are as follows:

- i. As the Olefin project is shelved due to non-availability of LNG, the area allocated for Olefin complex is proposed for downstream Petrochemical units which will consist of (i) P-Xylene based, O-Xylene based, Benzene based, (ii) Propylene + Benzene based, Pet Coke, Synthetic Gas-I, (iii) Plastic Park, (iv) Specialty Chemicals and (v) Synthetic Textiles.
- ii. To detach MRPL Phase III Expansion project from MSEZ Phase I project as MRPL expansion is not part of MSEZ and is being developed in Domestic Tariff Area (DTA) is not developed as part of MSEZ Phase I project and MRPL to comply all the conditions of EC relevant with MRPL Phase III refinery project as part of their existing clearances.

3. The Expert Appraisal Committee, after due consideration of the relevant documents submitted by the project proponent and additional clarifications furnished in response to its observations, have recommended for the amendment of Environmental Clearance for the project mentioned above. Accordingly, the Ministry hereby accord necessary amendment to the Environmental Clearance for the above project as per the provisions of Environmental Impact Assessment Notification-2006 and its subsequent amendments, subject to strict compliance of the terms and conditions as follows:

- (i) Only the sector specific units shall be permitted in the SEZ and those units shall obtain separate Environmental Clearance as applicable.
 - (ii) Proponent shall enhance the allocation for the CSR activities from 2.5 to 5 % of the total cost and item-wise details along with time bound action plan shall be prepared and submitted to the Ministry's Regional Office at Bangalore. Implementation of such program shall be ensured accordingly in a time bound manner.
 - (iii) The green belt area shall be 33 % all along the periphery and width of the green belt shall be minimum 50 mts.
4. All other terms and conditions of the Environmental Clearance Letter no.21-383/2007-IA.III dated 3.4.2008 remains unchanged.
5. This issues with the approval of Competent Authority.

Yours faithfully,

(Lalit Kapur)
Director (IA.III)

Copy to:-

1. The Member Secretary, Karnataka State Pollution Control Board, 6, 7,8 & 9 Floor (Public Utility Building), Netaji Subhash Chand Building, M. G. Road, Bangalore - 560 001, Karnataka.
- ✓ 2. M/s Mangalore SEZ Limited, 3rd Floor, Mangalore Urban Development Authority Building, Ashok Nagar, Urwa Stores, Mangalore - 575006.
3. Managing Director, Infrastructure Development Corporation Limited, Core 4B, 4th Floor India Habitat Centre, Lodhi Road, New Delhi - 110003.
4. The Chairman, Central Pollution Control Board, Parivesh Bhavan, CBD-cum-office Complex, East Arjun Nagar, Delhi - 110032.
5. The Chief Conservator of Forests (Central), Ministry of Environment & Forests, Regional Office (SZ), Kendriya Sadan, 4th Floor, E&F wings, 17th Main Road, 1 Block, Koranmangala, Bangalore - 560034.
6. Guard File.
7. IA - Division, Monitoring Cell, MoEF, New Delhi - 110003


(Lalit Kapur)
Director (IA.III)

F.No.21-383/2007-IA.III
Government of India
Ministry of Environment and Forests
(IA-III Division)

Paryavaran Bhawan,
CGO Complex, Lodhi Road,
New Delhi - 110003.

Dated: August 27, 2014

To
The Managing Director,
Mangalore SEZ Ltd,
No.16, Pranava Park, 3rd Floor,
Infantry Road, Bangalore - 560 01

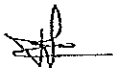
Subject: Amendment to Environment Clearance for setting up of Phase-I of Special Economic Zone at Mangalore by M/s. Mangalore SEZ Ltd- Reg.

Sir,

This has reference to letter No. FEE 20 EAA 2012 dated 13.09.2012 and your subsequent letter dated 19.11.2012 and 05.02.2013 seeking amendment to the Environmental Clearance accorded earlier on 03.04.2008 for the above project under the EIA Notification, 2006. The amendment proposal has been appraised as per prescribed procedure in the light of provisions under EIA Notification, 2006 and its subsequent amendment, on the basis of mandatory documents enclosed with the application viz. Form-1, recommendation of SCZMA and the additional clarifications furnished in response to the observations of the Expert Appraisal Committee constituted by the competent authority in its meetings held on 8th -9th November, 2012 and 18th -19th February, 2013.

2. It is interalia, noted that the Ministry has issued an Environmental Clearance for setting up of Phase-I of Special Economic Zone vide letter No.21-383/2007-IA-III dated 03.04.2008. The Environmental Clearance envisages development of a dedicated 70/100 meter wide pipeline-cum-road (Total approx 15 km) Corridor for movement of Cargo, Crude and products between MSEZL & New Mangalore Port to provide port connectivity to the units. Since the MSEZ Pipeline-cum-road Corridor development was having interface with CRZ, the proposal of Corridor was recommended by Forest, Ecology and Environment Department, Government of Karnataka vide letter dated 22.01.2008 under the provision of Coastal Zone Notification.

3. The present proposal involves widening of existing public road towards river side adjacent to Mangalore SEZ proposed pipeline-cum-road Corridor in the Reach II area. Mangalore SEZ is developing the Pipeline cum road Corridor between SEZ to New Mangalore Port as part of the infrastructure facilities of SEZ. The corridor development is being undertaken by MSEZL in separate stretches in the recent months. In one of the stretches, referred to as Reach-II, during the execution of Corridor works parallel to Gurupur River by Mangalore SEZ Ltd, based on certain complaints, the Regional Office of the MoEF have monitored the project on 10.05.2012. The monitoring report states that road widening works are under progress in various reaches of Corridor and



preliminary ground strengthening/road widening works are being taken up by the project authorities along the Gurupur River in Corridor Reach-II. The report further states that the Ministry in the clearance issued, has not given any specific reference on the issue of widening the existing road along the riverward of the Gurupur River and SEZ authorities do not have any specific permission from the Ministry.

4. The project proponent has carried out impact assessment study for carrying out the Widening works to the Public road towards the river ward side. The Regional Director, Forest, Ecology & Environment Department, Govt. of Karnataka, Mangalore has carried out the site inspection of the Project on 28th December 2012 and submitted his recommendations vide letter dated 31.12.2012. The Regional Director in his letter has stated that the project area falls under CRZ-II and 1400mts of the proposed widening is clear of the river bank, 270mts is on embankment, 30mts on elevated road way.

5. The Secretary, Environment & Ecology Dept of Forest/Karnataka Coastal Zone Management Authority has recommended the proposal vide letter dated 11.01.2013 since, KCZMA does not exists.

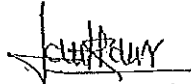
6. The Expert Appraisal Committee, after due consideration of the relevant documents submitted by the project proponent and additional clarifications furnished in response to its observations, have recommended for the amendment of Environmental Clearance for the project mentioned above. Accordingly, the Ministry hereby accords necessary amendment to the Environmental Clearance for the above project as per the provisions of Environmental Impact Assessment Notification-2006 and its subsequent amendments, subject to strict compliance of the terms and conditions as follows:

- (i) The project proponent while carrying out the road widening works towards river side should not cause any impact to the river water flow and should be clear of river water way.
- (ii) The project proponent to take up the bank protection works like stone pitching etc to avoid soil erosion of the banks.
- (iii) The project proponent to take up all adequate measures to mitigate the dust pollution during the road widening works.
- (iv) The proponent shall not dump any construction wastes etc in the river portion.

7. All other terms and conditions of the Environmental Clearance letter no.21-383/2007-IA.III dated 03.04.2008 remains unchanged.

8. This issues with the approval of Competent Authority.

Yours faithfully,


(Lalit Kapur)
Director (IA.III)

Copy to:-

1. The Secretary, Department of Environment, Government of Karnataka, Bangaluru, Karnataka.
2. The Chairman, Central Pollution Control Board, Parivesh Bhavan, CBD-cum-office Complex, East Arjun Nagar, Delhi - 110032.
3. The Member Secretary, Karnataka State Pollution Control Board, 6, 7, 8 & 9 Floor (Public Utility Building), Netaji Subhash Chand Building, M. G. Road, Bangalore - 560 001, Karnataka.
4. The Chief Conservator of Forests (Central), Ministry of Environment & Forests, Regional Office (SZ), Kendriya Sadan, 4th Floor, E&F wings, 17th Main Road, 1 Block, Koramangala, Bangalore - 560034.
5. Guard File.
6. IA - Division, Monitoring Cell, MoEF, New Delhi - 110003


(Lalit Kapur)
Director (IA.III)

Item wise Details of CSR Activities and Proposed time bound Action Plan													
5% of Approved MSEZL Phase I project Cost (Rs 1527.5 Crores)- Rs 76.375 Crores													
S. No.	Description	Proposed CSR Expenses	Amount Incl. in Project Cost	Expenses till Oct 2012	Expenses till Oct2012-Feb 2014	Expenses till Feb 2014-March-2015	Total expense till Date	Balance	2015-16	2016-17	2017-18	2018-19	2019-2020
1	Water Supply Facilities												
	RCC Over Head water tanks including main supply pipeline in Permude, Bajpe & Kulai Villages & 48 Acre, Drain work b/w HPCL colony & ODC road	2.00	1.00	0.85	0.99	0.145	1.99	0.02	0.02	-	-	-	-
	Drinking Water facilities for neighboring Villages, 6 acres & 9.58 Acres R&R Colony	1.50	2.20	1.20	0.26	0.04	1.50	0.00	-	-	-	-	-
	Provision of Bore wells in Permude & Bajpe Villages	0.70		0.17	0.00	0.530	0.70	0.00	-	-	-	-	-
2	Sanitation facilities												
	Development of Under Ground Drainage	4.09	4.09	2.60	1.08		3.68	0.41	0.30	0.11	-	-	-
	Skid mounted STPs for Kulai & Bajpe Villages	0.60	0.60	0.17	0.00	0.235	0.41	0.20	0.13	0.07	-	-	-
3	Community facilities												
	Creation of self employment facilities by provision of suitable shops in Kulai & Permude villages	0.11	0.11	0.11	0.00		0.00	0.00	-	-	-	-	-
	Sponsoring of Community facilities including Primary Health Centre, Play ground, Primary School, Post Office, gravity yard, compound wall, temple, Drain work near Bajana mandir, jolate, road repair near swayamingshewara temple bajpe etc etc	4.00	4.00	0.00	3.85	0.150	4.00	0.00	-	-	-	-	-
	Any Miscellaneous Development works to Local communities	0.50	0.50	0.00	0.00	0.500	0.50	0.00	-	-	-	-	-
4	Educational Sponsorship												
	Up gradation of Skills & Technical training facilities for local youth.	6.00	6.00	5.53	0.00	0.260	5.79	0.21	0.11	0.10	-	-	-
5	Bypass Road for connectivity between Suratkal to Bajpe for Public use.	36.98	36.98	17.84	7.26		25.10	11.88	9.88	2.00	-	-	-
6	Events Sponsorship												
	Improvement of facilities for various Religious places for local communities and sponsoring traditional ceremonies of local communities.	2.00	1.37	1.37	0.00	0.530	1.90	0.10	0.10	-	-	-	-
	Sponsoring of various local events in the major Educational Institutions, Cultural functions, Traditional events, Medical camps, Distribution of Plantations etc in nearby schools & Villages in and around Mangalore.	2.00	0.95	0.95	0.00	0.903	1.85	0.15	0.10	0.05	-	-	-
7	Sponsoring education and cultural activities to local fishermen Community	2.97	2.93	0.93	0.00	0.39	1.32	1.65	1.00	0.65	-	-	-
8	Development roads in surrounding villages & Panchayat roads in Kateel, Permude & Kuthethoor Villages and Villages enroute River water Pipeline	12.93	2.79	2.79	9.54	0.402	12.73	0.20	0.20	-	-	-	-
Total		76.38	63.52	34.51	22.98	4.10	61.59	14.80	11.84	2.98	0.00	0.00	0.00

OMPL Six monthly Compliance report & Environmental
Monitoring Reports

Compliance to Environmental Clearance

Issued by MoEF vide letter No. 21-383/2007-IA-III dated 3rd April, 2008

Sl. No.	Consent Condition	Compliance
2	The Mangalore Special Economic Zone (MSEZ) Phase-I involves a) MRPL Phase -III Refinery b) Aromatic Complex and e) Olefin Complex are proposed to be developed by the anchor promoter of MSEZ i.e M/s ONGC-MRPL in the already acquired land of about 1800 acres. The proposed MSEZ is planned adjacent to the existing MRPL refinery complex on north & eastern sides and proposed to connect NMPT with a dedicated 70/100 meter wide road-cum-pipeline (total approx. 15 km long) corridor for movement of cargo, crude and products between New Mangalore Port and MSEZ. The proposed layout has one main entry from the proposed Mangalore MSEZ corridor connected to the existing New Mangalore Port & National Highway (NH-17). The primary, Secondary and Tertiary roads are planned to give access to the industries falling in the MSEZ Phase -I. Industrial Zones for locating the olefin complex, aromatic complex, D/S Petrochemicals, ISPRCL underground crude oil storage and land for MRPL Phase-III Refinery are effectively placed in the central and southwest part of the proposed MSEZ premises. Further, the SEZ will have necessary road alignment between NMPT, SEZ and network of roads within, including service roads for inspection of pipelines on elevated corridors. The pipelines shall be built at elevated corridor locations. Pipelines will be laid on sleepers and pipe racks with sufficient ground clearance. The preferred corridor alignment avoids Coastal Regulation Zone -I & II portion along the Gurupur River and it will have elevated roadway over structures (railways / minor bridges) and reinforced earth walls. However the corridor passes over CRZ-III zone along the banks of the Kudumbur rivulet (South of ELF gas) in the form of a bridge. The proposed industrial units in MSEZ phase -1	Info.
II	To meet the objective of producing paraxylene, aromatic complex has been considered. To maximize paraxylene, broad cut heavy naptha streams are selected as feedstock to NHT/ CCR. Aromatics precursors to new reformer include constituents that produce toluene, C8-aromatics mix & C9+ aromatics. Whereas a xylene isomerization unit has been considered to convert other C8 - aromatics into paraxylene, a transalkylation & disproportionation (TADP) unit has also been included to convert toluene & C9+ aromatics into C8-aromatics mix. simulated moving bed adsorption for paraxylene recovery (PAREX) has been Incorporated.	Info.
1	NHT/ CCR : 0.95 MMTPA	Complied
2	Isomerization Unit (ISOMER) : 3.16 MMTPA	Complied
3	Transalkylation & Disproportionation Unit (TADP) :1.71 MMTPA	Complied
4	Paraxylene Recovery (PXREC) :4.07 MMTPA	Complied
5	Xylene Fractionation Unit : 4.64 MMTPA	Complied
6	Aromatics Extraction Unit : 0.79 MMTPA	Complied
7	Benzene Toluene Fractionation Unit : 2.2 MMTPA	Complied
8	Captive Power Plant (CPP) : 60 MW	Please note that normal requirement will be in the range of 50- 55 MW, but Gas Turbine is more prone to Maintainance requirements & hence to ensure continuous supply of power to the plant, installed capacity is 72 MW
3. A Specific Conditions:-		



1	No objection Certificate from the Karnataka State Pollution Control Board shall be obtained before initiating the project	Please note that MZEZ has obtained Consent for Establishment (CFE) from the Karnataka State Pollution Control Board (KSPCB) letter No. CFE-CELL/MSEZ/EIA-574/08/20 dated 30th April, 2008 And OMPL on its part has obtained CFE from the KSPCB, vide letter No. PCB/559/CFE/08/252 dated 12th August, 2008 & Extension of validity of CFE vide letter No. PCB/HPI/245/2013-14/1002 dated 5th October, 2013 upto 10.8.2014 from KSPCB, Bangalore
2	The MSEZ project shall be restricted to the Phase -I of the project, proposed over 1,800 acres. The phase-II of the project shall be considered by Ministry of Environment & Forests only after receipt of all requisite documents\ information as laid down in the Environment Impact Assessment Notification, 2006 and Coastal Regulation Zone Notification, 1991 as applicable	NA
3	All development in the Coastal Regulation Zone area shall be in accordance with coastal regulation zone notification, 1991. No destruction of mangroves shall be undertaken except while undertaking the permissible activities in the coastal regulation zone-I areas	NA
4	The project proponent shall not take up any activity in 875 acres of coastal regulation zone land, other than those permissible under the coastal regulation zone notification 1991 such as pipeline corridors, pipelines roads on stilts	NA
5	With regard to the containing the suspected contamination of the groundwater near Athurkodi area of Kuthethoor village, MRPL has given an undertaking vide letter dated 19.3.2008 which is as follows:- *****	NA
6	The project proponent shall obtain a report from the wildlife department with regard to existence of wildlife in the proposed site as claimed by the public before implementing the project	Please note report from Wildlife Department was submitted to the MoEF by MSEZ
7	The R & R package shall be strictly in accordance with the laid down norms of the state Government	NA. However, OMPL has recruited around 221 displaced people and provided employmen, till date(21.5.2015)
8	A marine Environment Impact Assessment and Risk Assessment along with the Disaster Management Plan shall be prepared for the outfall facilities proposed in the Coastal Regulation Zone and the marine areas	NA
9	Project proponent shall put up a dedicated website and a display panel to inform the public regarding the Ambient Air Quality along with SO ₂ , Nox and other parameters as prescribed by central Pollution Control Board (CPCB)	OMPL has a dedicated website 'www.ompl.co.in', wherein Environment Monitoring Parameters are uploaded and made available to the public
10	The gaseous emissions (SO ₂ , Nox, HC, VOC and Benzene) from various process units shall conform to the standards prescribed by the concerned State Pollution Control Board. All the measures detailed in the EMP and response to the Public Hearing shall be taken to control the point / stack and fugitive gaseous emissions from the proposed facilities, processes and storage units etc, for ensuring that the ambient air quality around the Refinery due to the expansion is maintained at the predicted 24 hourly average maximum concentration	Please note as required in CFE, online Monitoring Instruments of relevant parameters are installed for stacks and the readings are made available at DCS, for continuous monitoring. Corrective action will be taken for any deviation, however, plant will be run as per Standard Operating Process (SOP), prepared considering, Standards prescribed by the Regulatory Body. Further Online detectors are available for HC, benzene, and to take up 'Containment work' and 'Repair work' on detection of leak, on priority basis.
11	The emission levels of the other pollutants shall also remain within the permissible levels	Please note apart from the relevant parameters as from Sl. No. '10', online instruments such as for CO & SPM are also installed to stacks, so as to ensure pollutants within the permissible limits
12	The industrial units in the SEZ and the associated facilities shall be strictly in accordance with the norms laid down by the Karnataka State Government and CPCB	Agreed

13	The project proponent shall ensure that the greenery of the area is maintained. Further, 33 % of the project area shall be dedicated for green belt development of which atleast 5 % shall be for mangrove afforestation. The local Forest Department shall be associated for this purpose and requisite budget earmarked	Please note that OMPL has reserved 145.86 Acres for Green Belt Development which comes to around 33% of total land area of Aromatic complex. Please note, Green Belt area is earmarked in the plant layout. Forest Dept. is lined up for this purpose. The species selected for Green Belt are having good amount of 'Crown Width' as recommended in EIA by NEERI, that was subsequently approved by MoEF while giving Environment Clearance. Budget earmarked is about RS 5 crores. Development & Maintenance phase of GBD is approximately 3 years. And, OMPL has floated tender and is in the process of finalizing GBD activity, following discussion with Forest Officer. Some of the species recommended in NEERI are, <i>Acacia ferruginea</i> DC (Mimosaceae), <i>Acacia nilotica</i>* (Mimosaceae), <i>Ailanthus excelsa</i>* (Simaroubiaceae), <i>Albizia amara</i> (Mimosaceae) <i>Albizia labbeck</i>* (Mimosaceae), <i>Albizia doratissima</i>(Mimosaceae), <i>Alstonia scholaris</i>* (Apocynaceae) <i>Annogeissus latifolia</i> (Combretaceae), <i>Artocarpus integrifolia</i> (Moraceae), <i>Artocarpus lacucha</i> (Moraceae), <i>Azadirachta indica</i># (Meliaceae), <i>Bauhinia malabarica</i> (Fabaceae), <i>Bauhinia racemosa</i>* (Caesalpiniaceae), <i>Butea monosperma</i> (Fabaceae), <i>Caesalpinia pulcherrima</i>* (Caesalpiniaceae), <i>Calophyllum tomentosum</i>, <i>Cane sp.</i> (Palmae), <i>Canna orientalis</i> (Cannaceae) <i>Cassia fistula</i># (Caesalpiniaceae), <i>Cassia siamea</i>(Caesalpiniaceae), <i>Casuarina equisetifolia</i>#
14	The project proponent shall ensure that the water requirement of the Mangalore city does not get affected due to the SEZ operation. Adequate provision shall be made in the reservoirs to provide for the water requirement of the cities	Please note, OMPL, on its part has taken up following measures to conserve water. 1. UF RO plant is specifically incorporated to recycle ~ 70% of treated water. 2. The complex Cooling Tower system is designed to use STP water, as make up from MSEZ, apart from the river water. 3. Chemical Treatment Program with Modern Technology has been institutionalised to save water in Cooling Tower Plant 4. Condensate Recovery unit is being installed to conserve water and resources such as chemicals 5. OMPL has under taken rain water harvesting measures for its buildings 6. Further, treated CRWS will be explored for usage into CT system Please note, the plant started its operation in the month of Oct, 14.
15	The project proponent shall ensure that during construction and operation of the project the traffic in the city is not affected	Please note OMPL site is at a distance of ~ 15 KM from the Highway. Hence inconvenience to traffic movement in the city doesn't arise



16	All precautions of the highest standards shall be incorporated in the design of the project to ensure that there is no chance of emission/leakage of hazardous chemicals including Benzene. Detailed monitoring programme shall be designed and the information provided to the public through display and dedicated website by means of online monitoring	Please note following measures are taken to have a check on Emission/ leakage as, *All heaters are installed with LOW NOx Burners *Heaters stacks are fitted with following Online analyzers Carbon monoxide. Sulphur Dioxide Nitrogen Oxides Suspended Particulate matters (SPM) *Benzene Tanks -- Internal Floating Roof Tank with Nitrogen Blanket *Paraffinic Raffinate (Volatile material) designed with Vapor recovery unit to recover vapor *Dispersion Model Analysis was done by Bell Energy India and following Online detectors are being installed Benzene Detectors 27 H2S Detector 21 Hydrocarbon Detectors 193 Hydrogen Detectors 68 Fire Detectors (In case of Fire) 26 *Sample Points are closed system to stop local venting and draining *Hydrocarbons drains are connected to closed Blow down system to recover hydrocarbon. * OMPL has a dedicated website 'www.ompl.co.in', wherein Environment Monitoring Parameters are periodically uploaded and available to the public
17	Low sulphur internal fuel oil and fuel gas shall be fired in process heaters and boilers	OMPL has gone for Low Sulphur fuels with 'S' specification for both LSHS, HSD & FG fuels. HSD with Euro-III specification i.e 50 ppm is being used in Gas Turbine Generators of Captive Power Plant as against design of 0.25 wt % 'S'. Please note 'SO2' emission from EIA report for the project is estimated as 13.68 TPD. Avg SOx emission per day is ~ 3.5 Kg/day.
18	Quarterly monitoring of fugitive emissions shall be carried out by Fugitive Emission Detectors (GMI) leak Surveyor. Guidelines of CPCB will be followed for monitoring fugitive emissions. For control of fugitive emissions, all unsaturated hydrocarbons shall be routed to the flare system. The flare system shall be designed for smokeless burning. Flare gas recovery system shall be installed for reduction of Hydrocarbon loss and emission of VOCs, NOx, N2O, SOx & CO2 to the environment	Please note Quarterly monitoring of fugitive emissions will be done after commissioning & stabilization of the plant. However, Dispersion Model Analysis was done by Bell Energy India and following Online detectors are installed Benzene Detectors 27 Hydrocarbon Detectors 193 *Flare system is designed for smokeless burning by M/s AirOil
19	Regular Ambient Air Quality Monitoring shall be carried out. The Location and results of existing monitoring stations shall be reviewed in consultation with the concerned State Pollution Control Board based on the occurrence of maximum ground level concentration and downwind direction of wind. Additional stations shall be set up, if required. It shall be ensured that at least one monitoring station is set up in up-wind & in Down - wind direction along with those in other directions	AAQM monitoring is carried out as per NAAQM rules, 2009 at 5 locations (since Jan, 2015), at a frequency of weekly twice, at a location, all the year round and Monitoring is done for all parameters as per the rules, as suggested by KSPCB & Monthly Reports are submitted to KSPCB . The values are found to be within the NAAQM Norms.
20	on-line data for air emissions shall be transferred to the CPCB and SPCB regularly. The instruments used for ambient air quality monitoring shall be calibrated regularly. The monitoring protocol shall ensure continuous monitoring of all the parameters	The emissions values are continuously measured & monitored to ensure, well within the limits set by the Regulatory Body. OMPL has dedicated Instrumentation Team and will establish calibration of Instruments

21	The practise of acoustic plant design shall be adopted to limit noise exposure for personnel to an 8 hour time weighted average of 90 db(A)	<i>Please note, as a first step, identified the sources of noise & then taken up Attenuation measures, at the design stage</i> <i>Sources: Pumps, Compressors & Turbines.</i> <i>Attenuation measures: It is ensured at design stage that Noise level at a distance of 1 mt from the equipment is < 90 db (A) & at plant boundry, it is less than 75 dB in daytime & 70 dB in night time as per the Legal requirement.</i>
22	All the pumps and other equipments, where there is a likihood of HC leakages, shall be provided with appropriate indicators and detectors. Provision for immediate isolation of such equipment, in case of a leakage shall also be made. The company shall adopt leak detection and repair (LDAR) programme for quantification and control of fugitive emissions	<i>Please note OMPL, as a first step in leak prevention, hired Bell Energy India, who carried out Dispersion Model Analysis and recommended following Online detectors which are installed at site such as,</i> <i>Benzene Detectors 27 nos</i> <i>Hydrocarbon Detectors 193 nos</i> <i>* Incase of leak, the first step is to contain the leak & simultaneously leak arresting work is carried out</i> <i>* We are evaluating the process of instituting LDAR program</i>
23	The product loading gantry shall be connected to the product sphere in closed circuit through the vapor arm connected to the tanker. Data on fugitive emissions shall be regularly monitored and records shall be maintained	NA
24	The company shall ensure that no halogenated organic is sent to the flares. If any of the halogenated organic are present, then the respective streams may be incinerated, if there are no technically feasible or economically viable reduction / recovery options. Any stream containing organic carbon, other than halogenated shall be connected to proper flaring system, if not to a recovery device or an incinerator	<i>Halogenated organic is used only for chloride dispersion on platinum catalyst and consumed. Halogenated compound is not sent to Flare Stack Chimney. Used catalyst will be disposed to KSPCB authorised recyclers</i>
25	The new standards/ norms that are being proposed by the CPCB for Petrochemical Plants and Refineries shall be applicable for the proposed expansion unit. The company shall conform to the process vent standards for organic chemicals including non-VOCs and all possible VOCs i.e TOCs standards and process vent standards for top priority chemicals. Regular monitoring will be carried out for VOC and HC and on line monitors for VOC measurements may be installed	<i>The new standards/ norms that are being proposed by the CPCB for Petrochemical Plants and Refineries are complied.</i> <i>1. Online Monitoring system is provided to heater stacks</i> <i>2. Online Detectors of HC, Benzene are installed, to check any fugitive emissions</i> <i>3. The process vents are connected to flares through safety pop-up valves</i> <i>4.HC sampling points closed loop systems</i> <i>5. Storage of HC is in Floating roof tanks (as applicable) with double mechanical seals and Nitrogen blanketing</i>
26	Regular monitoring of relevant parameters for the under ground water in the surrounding areas shall be undertaken and the results shall be submitted to the relevant States Pollution Control Board	<i>Please note Regular monitoring of groundwater is carried out at four locations (since Jan, 2015) surrounding the plant as advised by KSPCB & the reports are submitted to KSPCB. The frequency of sampling is once in a month, all the year round, at a location & compared with WHO Drinking Water Standards/ IS 10500 Norms. The values are found to be within Drinking water standards/ Norms.</i>
27	Solid Waste generated as pretreater and Reformer catalysts, Sulphur guard absorbent and alumina Balls shall be disposed off as per the authorization from the State Pollution Control Board	<i>Please note that the Industry has in place proper Solid Waste handling system to collect, treat and dispose off all solid waste generated from the process including Hazardous wastes and the basic Engineering by KSPCB approved consultant M/s Ramky Enviro Engineers India Ltd, Hyderabad. Please note OMPL has obtained 'Authorization under Handling Hazardous Wastes' and will be disposed accordingly. Temporary Waste Storage facility is constructed of about ~ 2000 m2 area with impervious surface, closed shed and leachate collection (for any washings) & transfer (to ETP) system</i>

28	Oily sludge shall be sent to melting pit treatment for recovery of oil. The recovered oil shall be recycled into the refinery system. The residual sludge will be stored in HDPE lined pit for disposal after treatment. The sludge shall be incinerated in the premises only	No oily sludge is handled in OMPL
29	The company shall strictly follow all the recommendations mentioned in the charter on Corporate Responsibility for Environmental Protection (CREP)	Please refer compliance details for CREP enclosed herewith (ref.: Annexure- 1)
30	The company shall harvest surface as well as rainwater from the rooftops of the buildings proposed in the expansion project and storm water drains to recharge the ground water and use the same water for the various activities of the project to conserve fresh water	Rain water harvesting system is implemented for rooftop buildings. During initial project stage, all surface rain water was collected into open wells and the same was utilised for construction purpose
31	Occupational Health Surveillance of the workers should be done on a regular basis and records maintained as per the Factories Act	Complied and is ongoing process
32	The company shall implement all the recommendations made in the Environmental Impact Assessment / EMP report and risk assessment report	Complied
33	The company will undertake all relevant measures, as indicated during the Public Hearing for improving the socio-economic conditions of the surrounding area	Complied
34	With regard to R & R colony the project proponent shall obtain all requisite clearances as prescribed by the concerned agencies	NA
B General Conditions :		
1	The project authorities shall strictly adhere to the stipulations made by the concerned State Pollution Control Board (SPCB) and the State Government	KSPCB stipulations will be adhered to
2	No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment and Forests	Agreed
3	At no time, the emissions shall be allowed to go beyond the prescribed standards. In the event of failure of any pollution control system adopted by the units, the respective unit should be immediately put out of operation and should not be restarted until the desired efficiency has been achieved	Agreed
4	Adequate number of influent and effluent quality monitoring stations shall be set up in consultation with the SPCB. Regular monitoring shall be carried out for relevant parameters for both surface and ground water	Influent parameters & Effluent parameters will be measured through online measuring instruments installed at inlet & outlet of ETP. They include TOC, pH, COD, Oil, DO, Phenol, Benzene. Further regular Surface & Ground water is being monitored as advised by KSPCB. The Ground Water is monitored once in month, at four locations, for all the year round and compared with WHO Drinking Water Standards.
5	Industrial Waste water shall be properly collected and treated so as to conform to the standards prescribed under GSR 422 (E) dated 19th May 1993 and 31st December, 1993 or as amended from time to time. The treated wastewater shall be utilized for plantation purpose	Industrial Waste Water is collected in Slop Tank and then initially treated in EPTP plant to bring down Aromatics to < 20 ppm & Benzene to < 10 ppm, through Distillation & Adsorption methodology. It is treated in ETP comprising of Physical, Chemical, Biological & Tertiary Treatment Section. About 70 % of treated water will be recycled & the remaining, after ensuring Conformance to MINAS standards, will be disposed to sea through MSEZ CETP collection & Disposal system. From the 70 % recycle stream partly will be taken up as make up water for Cooling Tower applications & the remaining will be utilised in Green Belt Development.



6	The overall noise levels in and around the plant area shall be limited within the prescribed standards (85 dBA) by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels should conform to the standards prescribed under EPA rules, 1989 viz. 75 dBA (Day time) and 70 dBA (night time)	<i>Sources: Pumps, Compressors & Turbines. Attenuation measures: It is ensured at design stage that Noise level at a distance of 1 mt from the equipment is < 90 db (A) by providing acoustic hoods, silencers, enclosures etc. as appropriate & at plant boundry is less than 75 dB in daytime & 70 dB in night time as per the Legal requirement</i>
7	The project authorities shall strictly comply with the provisions made in manufacture, storage and import of Hazardous chemicals rules 1989 as amended in 2000 for handling of hazardous chemicals etc..Necessary approvals from Chief Controller of Explosives must be obtained before commission of the expansion project. Requisite On-site and Off - site Disaster Management Plans will be prepared and implemented	<i>Please note that necessary license/ clearance from statutory agencies have been taken such as Approval from Petroleum and Explosives Safety Organization, dated 16th June 2011, Clearance from Department of Factories of Karnataka, dated 19th June 2010. Requisite On-site and Off - site Disaster Management Plans will be adhered to as per Factories Act</i>
8	Authorization from the State Pollution Control Board must be obtained for collections/ treatment/ storage/ disposal of Hazardous wastes	<i>Please note OMPL has obtained 'Authorization under Handling Hazardous Wastes' and will be disposed accordingly</i>
9	The project authorities shall provide adequate funds both recurring and non-recurring to implement the conditions stipulated by the Ministry of Environment and Forests as well as the State Government along with the implementation schedule for all the conditions stipulated herein. The funds so provided shall not be diverted for any other purposes	<i>Agreed. Further the Amount spent/budgeted on Environment Management requirement is RS 182 crores</i>
10	The stipulated conditions shall be monitored by the concerned Regional office of this Ministry / Central Pollution Control Board / State Pollution Control Board. A six monthly compliance report and the monitored data shall be submitted to them regularly. It shall also be displayed on the website of the company	<i>Please note biannually compliance report is submitted on regular basis through MSEZ. The Environment monitored data are being uploaded in the OMPL website</i>
11	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 State Pollution Control Board/ Committee and may also be seen at website of the MoEF at http://www.envfor.nic.in . This should be advertised within seven days from the date of issue of 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 should be forwarded to the concerned Regional office of this Ministry	<i>Please note, the same was ensured by MSEZ</i>
12	The date of Financial closure and final approval of the project by the concerned authorities and the date of commencing the land development work as well as the commissioning of the project shall be informed to the Ministry and its Regional Office	<i>NA</i>
13	Proper House keeping and adequate occupational health programmes shall be taken up. Regular Occupational Health Surveillance Programme for the relevant diseases shall be carried out and the records shall be maintained properly for atleast 30-40 years. Sufficient preventive measures shall be adopted to avoid direct exposure to emission and other hydrocarbons etc..	<i>Agreed</i>
14	A separate environment management cell with full fledged laboratory facilities to carry out various management and monitoring functions shall be set up under the control of a Senior Executive	<i>Complied</i>
15	The Ministry may revoke or suspend the clearance, if implementation of any of the above condition is not satisfactory	<i>info.</i>

16	The Ministry reserves the right to stipulate additional conditions if found necessary. The company shall implement these conditions in a time bound manner	info.
17	The above conditions will be enforced, inter - alia under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air Act, 1981, The Environment Act, 1986, The Public Liability Insurance Act, 1991, Hazardous Waste Rules 1989 and Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989 along with their Amendments and Rules	info.



Compliance to Charter on Corporate Responsibility for Environmental Protection (CREP)

Sl. No.	Conditions	Compliance
1	Adoption of state-of-art technology State of Art technology will be adopted for both process technology as well sound engineering practices required for control of emission, at the stage of design itself in case of new plants	Please note Process technology is licensed from renowned expert in the field: UOP, America for NHT platforming units, High severity Cyclemax CCR unit for catalyst regeneration, Energy efficient column design for Xylene & BTF units, ISOMER & TADP units for getting high yield of paroxylene per unit of Naptha processed & an efficient, selective PAREX process for paroxylene recovery to get high purity product are considered in the design stage. Also Low NOx burner design for heaters, Low sulphur fuel including provision for usage of Natural Gas are considered.
2	Management of storm water For the storm water generated from process area and tank farm area during initial hours of rain. An arrangement will be made for collection and oil separation including further treatment as required. Such arrangement will include provision for buffer tank (holding tank) and monitoring of effluent quality. This will be accomplished by June 2003.	Please note OMPL has envisaged 2 numbers of collection tanks: one at ISBL area with capacity of 12,000 m3 & the other at OSBL area with 6000 m3 capacity for collection of initial hours of rain from process area & tank farm area respectively. This is then treated in ETP with an treatment capacity of 150 m3/ hr. The treatment section includes Physical treatment, chemical, Biological & Tertiary treatment sections
3	Effective detoxification and waste water treatment scheme In order to control high COD and persistent organic pollution including toxic constituents, the industry will select appropriate unit operations for pre-treatment of effluent within inside battery limit (ISBL) before sending to the biological treatment system(BTS) for better functioning of ETps. Action plan for the same will be submitted within 6 months and Implemented within one year (March,2004)	OMPL has installed & commissioned Effluent Pre-Treatment Plant at a cost of RS 11.39 crores. The units consists of Distillation column & carbon adsorption beds to remove CODs, so that effluent entering BTS will be having Max. upto 20 ppm of aromatics
4	Control of emission from combustion The Industry will submit an action plan within six months for improving thermal efficiency and control of Nox	OMPL has installed Low Nox burners for its heaters & flue gas is let out just above H2SO4 dew point after heating the incoming fuel, air or Steam production in HRSG as the case may be, for Improving thermal inspection
5	Proper functioning of point source emission control systems The industry will make efforts for proper operation of pollution control system (mostly scrubbers) and attainment of desired efficiency within six months. The will include backup of power supply to the control equipment and arrangement for frequent sampling and analysis of all critical pollution in the tail gases	NA
6	Leak detection and repair (LDAR) programme As a good operating, the industry will adopt periodically leak detection and repair (LDAR) programme to check fugitive emissions within six months. The frequency of the programme will be proportionate to the risk potential of carrying fluid. Based on leak detection as per LDAR programme, action will be taken to eliminate fugitive emissions, this will be a continuous activity.	We are in the process of instituting LDAR program. Please note OMPL as first step in leak prevention, hired Bell Energy India, who carried out Dispersion Model Analysis and recommended following Online detectors which are already installed at site such as, Benzene Detectors 27 nos, Hydrocarbon Detectors 193 nos
7	Handling of halogenated organics The Industry will submit an action plan within 6 months to ensure that no halogenated organics is sent to the flares in order to avoid formation of persistent organic pollutants. All HAPs had halongenated organics will be routed to the incineration system having end-on pollution control facility.	Halogenated organic is used only for chloride dispersion on platinum catalyst and consumed. Used catalyst will be disposed to KSPCB authorised recyclers
8	Control of fugitive emissions of carcinogenic compounds Fugitive emission of carcinogenic compounds (e.g Benzene) will be controlled by closed vapor collection and recovery system. Measures will be taken to monitor health of the workers	Please note double mechanical seal is provided for the purpose & periodical health check up is looked after by dedicated occupational Health Centre
9	Management of solid waste Proper facilities will be provided for handling and storage of hazardous waste with manifest system in case transported to other places. For incinerable waste, properly designed Incinerator will be installed within the premises or as a common facility. The non-incinerable hazardous waste should be disposed of in a secure-land fill.	OMPL has installed Solid Waste Management facility at an estimated cost of RS 3.73 crore for handling and storage of hazardous waste until disposal & manifest system will be followed during disposal of Hazardous Wastes. Temporary Waste Storage facility is constructed of about ~ 2000 m2 area with impervious surface, closed shed and leachate collection (for any washings) & transfer (to ETP) system

10	Proper operation of Incinerator Industry will check the design and will adopt sound engineering practices for proper operation of incinerators. Continuous monitoring will be done for operational parameters and specific parameters in tail gas to ensure the efficient functioning. This will be implemented within 3 months.	NA
11	Optimising the inventory of hazardous chemicals Efforts will be made to optimize the inventory, particularly of hazardous chemicals. Such information will be made available to the Regulatory Agencies (SBCBs) Inspector of Factory & District Collector	<i>Agreed. Further Petroleum & Explosives Safety Organization (PESO) approvals are being taken for bulk storage of Hazardous chemicals (Petroleum) wherein requirements of the MSIH Rules, 1989 is considered</i>
12	Self- regulation by industry through monitoring and environmental auditing Industry will go for self-assessment and regulation by conducting environmental auditing regularly, besides having regular monitoring of pollutants in air emission, liquid effluent and receiving environment.	<i>Monitoring is an ongoing process . Further Industry has taken up other measures on its own for improving the Environment. 1. Construction of Sanitary system in nearby area 2. Sophisticated, capital intensive Oil Recovery system upstream of ETP 3. Condensate Recovery Unit etc..</i>
13	Organizational restructuring and accreditation of environmental manager of industry. For self-evaluation, organizational restructuring will be done and the environmental manager of the industry will be accredited to bring professionalism in environmental management.	<i>Agreed</i>





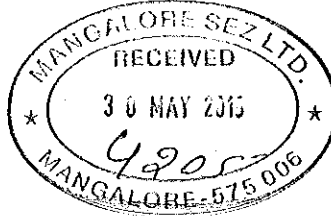
ONGC Mangalore Petrochemicals Ltd.

2nd Floor, MUDA Building, Urwa Stores, Mangalore - 575 006
Phone +91-824 2451001-04 Fax +91-824 2451005

REF: OMPL/PCB/RS/2015-16/

Date: 9.5.2015

To:
The Environmental Officer
Regional Office
KSPCB
Baikampady, Mangalore-11



Dear Sir,

Sub: Submission of Environmental Monitoring Report for the Month of April 2015,
Production Report for April & Returns Regarding Water Consumed for the Month of
April

Ref: CFO No. PCB/245/HPI/ONGC/2014-15/593 dated 18th August 2014

With respect to the above subject; we are herewith submitting the following Environmental Monitoring Reports, production report & Returns Regarding Water Consumed in the Month of April 2015 respectively, enclosed herewith.

1. Ambient Air Quality Monitoring at 5 different locations in and around OMPL, enclosed as Annexure- A
2. Water Analysis Reports at 9 different locations in and around OMPL, as Annexure-B
3. Noise Level Monitoring Report at OMPL, as Annexure-C
4. Returns Regarding Water Consumed, for the Month of April 2015, as Annexure-D
5. Production Report as Annexure-E
6. Treated Effluent Analysis Report - F

Thanking You,


R Sridharan
Chief of Operations


Etc
for n/a
30/5/15

CC: Member Secretary, KSPCB, Bangalore
CC: Head (Technical), MSEZ
CC: CEO, OMPL for info

Test Report

ANALYSIS REPORT OF AMBIENT AIR QUALITY

1. Name of the location : OMPL East Side
2. Name of the industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Spécial Economic Zone, Permude
Mangalore-574509.
3. Sample Collected By : M/s Environmental Health & Safety Research and Development
Centre, Bangalore - 560 010.
4. Particulars of Sample Collected : Ambient Air collected through
Fine Particulate Sampler - APM 550/APM 550 Mini
Respirable Dust Sampler - 460NL,
CO & O₃ Analyzers.
5. Date of collection : For the Month of April- 2015 (Monitored for 24 hours)
6. Sample Number : BHSRDC/OMPL/A/15/03/

PARAMETERS	DATE	WK 14		WK 15		WK 16		WK 17	
		01/04/2015	02/04/2015	06/04/2015	07/04/2015	13/04/2015	14/04/2015	20/04/2015	21/04/2015
	CODE	79	221	374	413	860	919	1138	1198
	LIMITS								
PM ₁₀ (µg/m ³)	100	68	59	69	61	64	58	70	68
PM _{2.5} (µg/m ³)	60	23	19	16	17	19	16	21	20
SO ₂ (µg/m ³)	80	2.57	2.65	2.55	3.12	2.61	2.62	2.66	2.57
NO ₂ (µg/m ³)	80	3.41	3.12	3.44	3.96	3.19	3.79	3.05	3.41
CO (mg/m ³)	4	0.78	0.74	0.79	0.86	0.81	0.90	0.79	0.78
O ₃ (µg/m ³)	180	0.80	0.78	0.83	0.90	0.79	0.94	0.83	0.81



Authorized Signatory

Note :

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Test Report

PARAMETERS	DATE	WK 14		WK 15		WK 16		WK 17	
		01/04/2015	02/04/2015	06/04/2015	07/04/2015	13/04/2015	14/04/2015	20/04/2015	21/04/2015
	CODE	79	221	374	413	860	919	1138	1198
	LIMITS								
NH ₃ (µg/m ³)	400	1.68	1.63	1.53	2.15	1.60	1.88	1.78	1.68
Lead (g/m ³)	1	0.0793	0.1213	0.0581	0.0143	0.0765	0.012	0.010	0.062
Arsenic (ng/m ³)	6	0.871	BDL	0.633	0.478	0.4053	0.263	0.830	0.144
Nickel (ng/m ³)	20	0.657	0.356	0.445	0.185	0.979	0.128	BDL	0.332
Benzene (µg/m ³)	5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
B(a)P (ng/m ³)	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

End of Report


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Test Report

ANALYSIS REPORT OF AMBIENT AIR QUALITY

1. Name of the location : Shantigudda
2. Name of the industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Spécial Economic Zone, Permude
Mangalore-574509.
3. Sample Collected By : M/s Environmental Health & Safety Research and
Development Centre, Bangalore – 560 010.
4. Particulars of Sample Collected : Ambient Air collected through
Fine Particulate Sampler – APM 550/APM 550 Mini
Respirable Dust Sampler – 460NL,
CO & O₃ Analyzers.
5. Date of collection : For the Month of April- 2015
6. Sample Number : EHSRDC/OMPL/A/15/03/

PARAMETERS	DATE	WK 14		WK 15		WK 16		WK 17	
		01/04/2015	02/04/2015	06/04/2015	07/04/2015	13/04/2015	14/04/2015	20/04/2015	21/04/2015
	CODE	80	222	375	414	861	920	1139	1199
	LIMITS								
PM ₁₀ (µg/m ³)	100	66	61	59	62	65	63	63	59
PM _{2.5} (µg/m ³)	60	18	18	15	19	17	16	16	19
SO ₂ (µg/m ³)	80	2.10	2.49	2.74	2.88	2.66	2.46	3.16	2.65
NO ₂ (µg/m ³)	80	3.65	3.43	3.59	3.92	3.15	3.13	2.78	3.12
CO (mg/m ³)	4	0.87	0.63	0.72	0.89	0.70	0.81	0.68	0.74
O ₃ (µg/m ³)	180	0.88	0.74	0.81	0.77	0.78	0.84	0.72	0.80

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PARAMETERS	DATE	WK 14		WK 15		WK 16		WK 17	
		01/04/2015	02/04/2015	06/04/2015	07/04/2015	13/04/2015	14/04/2015	20/04/2015	21/04/2015
	CODE	80	222	375	414	861	920	1139	1199
	LIMITS								
NH ₃ (µg/m ³)	400	1.69	2.51	1.66	1.90	1.29	2.02	1.15	1.63
Lead (µg/m ³)	1	0.0474	0.0314	0.023	0.084	0.0123	0.035	0.007	0.007
Arsenic (ng/m ³)	6	0.549	0.6521	0.916	BDL	BDL	0.289	0.72	0.384
Nickel (ng/m ³)	20	0.375	0.655	0.529	0.492	0.338	0.886	BDL	BDL
Benzene (µg/m ³)	5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
B(a)P (ng/m ³)	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

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Test Report

ANALYSIS REPORT OF AMBIENT AIR QUALITY

1. Name of the location : Tenka- Ekkar
2. Name of the industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Spécial Economic Zone, Permude
Mangalore-574509.
3. Sample Collected By : M/s Environmental Health & Safety Research and
Development Centre, Bangalore – 560 010.
4. Particulars of Sample Collected : Ambient Air collected through
Fine Particulate Sampler – APM 550/APM 550 Mini
Respirable Dust Sampler – 460NL,
CO & O₃ Analyzers.
5. Date of collection : For the Month of April- 2015
6. Sample Number : EHSRDC/OMPL/A/15/03/

PARAMETERS	LIMITS	WK 14		WK 15		WK 16		WK 17	
		03/04/2015	04/04/2015	08/04/2015	09/04/2015	15/04/2015	16/04/2015	22/04/2015	23/04/2015
	CODE	333	335	474	610	965	1056	1249	1291
	DATE								
PM ₁₀ (µg/m ³)	100	64	68	58	63	15	63	70	61
PM _{2.5} (µg/m ³)	60	19	17	16	22	2.55	16	19	28
SO ₂ (µg/m ³)	80	2.61	2.85	2.71	2.58	3.22	2.46	2.88	2.78
NO ₂ (µg/m ³)	80	3.19	3.26	3.33	4.99	1.63	3.15	3.92	2.82
CO (mg/m ³)	4	0.81	0.83	0.85	0.67	0.84	0.73	0.82	0.79
O ₃ (µg/m ³)	180	0.79	0.87	0.93	0.76	0.80	0.88	0.88	0.85

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PARAMETERS	DATE	WK 14		WK 15		WK 16		WK 17	
		03/04/2015	04/04/2015	08/04/2015	09/04/2015	15/04/2015	16/04/2015	22/04/2015	23/04/2015
	CODE LIMITS	333	335	474	610	965	1056	1249	1291
NH ₃ (µg/m ³)	400	1.60	2.01	1.81	2.45	0.79	2.02	1.80	2.10
Lead (µg/m ³)	1	0.0571	0.0832	0.0488	0.043	0.012	0.013	0.053	0.018
Arsenic (ng/m ³)	6	0.6704	0.6226	0.201	BDL	0.215	1.06	1.66	0.24
Nickel (ng/m ³)	20	0.225	0.529	0.424	0.313	0.113	BDL	0.586	BDL
Benzene (µg/m ³)	5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
B(a)P (ng/m ³)	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

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Test Report

ANALYSIS REPORT OF AMBIENT AIR QUALITY

1. Name of the location : Permude
2. Name of the industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Spécial Economic Zone, Permude
Mangalore-574509
3. Sample Collected By : M/s Environmental Health & Safety Research and
Development Centre, Bangalore – 560 010.
4. Particulars of Sample Collected : Ambient Air collected through
Fine Particulate Sampler – APM 550/APM 550 Mini
Respirable Dust Sampler – 460NL,
CO & O₃ Analyzers.
5. Date of collection : For the Month of April- 2015
6. Sample Number : EHSRDC/OMPL/A/15/03/

PARAMETERS	DATE	WK 14		WK 15		WK 16		WK 17	
		03/04/2015	04/04/2015	09/04/2015	10/04/2015	16/04/2015	17/04/2015	23/04/2015	24/04/2015
	CODE LIMITS	334	336	611	802	1057	1091	1292	1306
PM ₁₀ (µg/m ³)	100	61	67	60	66	68	68	70	66
PM _{2.5} (µg/m ³)	60	11	16	14	13	23	23	19	18
SO ₂ (µg/m ³)	80	2.48	3.13	3.09	3.88	2.57	2.15	2.88	2.10
NO ₂ (µg/m ³)	80	2.89	4.14	4.15	4.59	3.41	3.39	3.92	3.65
CO (mg/m ³)	4	0.75	0.74	0.77	0.84	0.78	0.80	0.89	0.82
O ₃ (µg/m ³)	180	0.82	0.79	0.82	0.92	0.82	0.87	0.72	0.77

Note :

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PARAMETERS	DATE	WK 14		WK 15		WK 16		WK 17	
		03/04/2015	04/04/2015	09/04/2015	10/04/2015	16/04/2015	17/04/2015	23/04/2015	24/04/2015
	CODE	334	336	611	802	1057	1091	1292	1306
	LIMITS								
NH ₃ (µg/m ³)	400	1.45	1.75	1.25	2.20	1.68	1.25	1.80	1.69
Lead (µg/m ³)	1	0.0167	0.0633	0.004	0.020	0.041	0.010	0.014	0.081
Arsenic (ng/m ³)	6	0.5797	0.4589	0.45	BDL	0.264	0.67	0.76	0.251
Nickel (ng/m ³)	20	0.179	0.296	BDL	0.261	0.319	BDL	BDL	0.841
Benzene (µg/m ³)	5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
B(a)P (ng/m ³)	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

End of Report



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Test Report

ANALYSIS REPORT OF AMBIENT AIR QUALITY

1. Name of the location : OMPL West Side
2. Name of the industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Spécial Economic Zone, Permude
Mangalore-574509
3. Sample Collected By : M/s Environmental Health & Safety Research and
Development Centre, Bangalore - 560 010.
4. Particulars of Sample Collected : Ambient Air collected through
Fine Particulate Sampler - APM 550/APM 550 Mini
Respirable Dust Sampler - 460NL,
CO & O₃ Analyzers.
5. Date of collection : For the Month of April- 2015
6. Sample Number : EHSRDC/OMPL/A/15/03/

PARAMETERS	DATE	WK 14		WK 15		WK 16		WK 17	
		01/04/2015	02/04/2015	06/04/2015	10/03/2015	16/03/2015	17/03/2015	23/03/2015	24/03/2015
	CODE	81	223	376	415	862	921	1140	1200
	LIMITS	100	60	63	69	60	68	70	68
PM ₁₀ (µg/m ³)	100	60	63	69	60	68	70	68	63
PM _{2.5} (µg/m ³)	60	15	14	16	20	19	20	23	16
SO ₂ (µg/m ³)	80	3.21	2.73	2.55	2.82	2.89	3.65	2.57	3.16
NO ₂ (µg/m ³)	80	4.09	3.19	3.44	3.82	3.35	4.09	3.41	2.78
CO (mg/m ³)	4	0.81	0.87	0.79	0.72	0.75	0.90	0.78	1.66
O ₃ (µg/m ³)	180	0.85	0.90	0.83	0.78	0.84	0.92	0.81	0.68

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Test Report

PARAMETERS	DATE	WK 14		WK 15		WK 16		WK 17	
		01/04/2015	02/04/2015	06/04/2015	10/03/2015	16/03/2015	17/03/2015	23/03/2015	24/03/2015
	CODE	81	223	376	415	862	921	1140	1200
	LIMITS								
NH ₃ (µg/m ³)	400	1.65	1.56	1.53	1.90	1.98	2.11	1.68	3.99
Lead (µg/m ³)	1	0.0190	0.0703	0.140	0.036	0.037	0.0147	0.077	0.012
Arsenic (ng/m ³)	6	0.205	1.654	0.288	BDL	0.221	0.354	0.291	0.76
Nickel (ng/m ³)	20	0.215	0.433	0.621	2.61	0.434	0.886	0.567	0.695
Benzene (µg/m ³)	5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
B(a)P (ng/m ³)	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

End of Report

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Test Report

ANALYSIS REPORT OF FRESH WATER QUALITY

1. Name of the Location : GW1: Narayana GuruCommunity Hall,Permude
2. Name of the Industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore SpecialEconomic Zone, Permude
Mangalore-574509.
3. Sample Collected By : M/s Environmental Health and Safety Research and
Development Centre, Bangalore - 560 010.
4. Date of Collection : 10.04.2015
5. Particulars of Sample Collected : Bore well water, Grab Sampling
6. Date of Sample Receipt : 11.04.2015
7. Sample Number : EHSRDC/OMPL/W/15/04 /594
8. Protocol : APHA, 22nd Edition

Sl.No	PARAMETERS	UNIT	Test Methods	Std. IS 10500:2012 (Second Revision)		Code
				DL	PL	GW1 594
1.	pH	--	4500H ⁺ B	6.5-8.5		7.32
2.	Colour	Hazen	--	5	15	<1
3.	Odour	--	--	Unobjectionable		Unobjectionable
4.	Taste	--	--	Agreeable		Agreeable
5.	Turbidity	NTU	2130 B	1	5	0.14
6.	Total Dissolved Solids	mg/L	2540 C	500	2000	161
7.	Total Hardness	mg/L	2340 C	200	600	92
8.	Calcium as Ca	mg/L	3500-Ca	75	200	22.4
9.	Magnesium as Mg	mg/L	3500 Mg B	30	100	8.74
10.	Sulphate as SO ₄	mg/L	4500-SO ₄ ²⁻	200	400	6.81
11.	Fluoride as F	mg/L	4500F D	1	1.5	0.51
12.	Nitrate as NO ₃	mg/L	4500-NO ₃ E	45		BDL
13.	Chloride as Cl	mg/L	4500-Cl B	250	1000	5.87
14.	Iron as Fe	mg/L	3500-Fe B	0.3		0.02
15.	Alkalinity	mg/L	2320 B	200	600	84.0
16.	Chromium Hexavalent	mg/L	3500 Cr B'	---		BDL
17.	E-Coli	CFU/100ml	IS:15185	Absent		Absent
18.	Total Coliform	CFU/100ml	9222 B	10		<1

Note:- BDL- Below Detectable Limit, DL - Desirable Limit, PL - Permissible Limit.

End of Report


Authorized Signatory

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Test Report

ANALYSIS REPORT OF FRESH WATER QUALITY

1. Name of the Location : GW2: GagnetLabour Colony
2. Name of the Industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore SpecialEconomicZone,Permude
Mangalore-574509.
3. Sample Collected By : M/s Environmental Health and Safety Research and
Development Centre, Bangalore - 560 010.
4. Date of Collection : 10.04.2015
5. Particulars of Sample : Bore well water, Grab Sampling
Collected
6. Date of Sample Receipt : 11.04.2015
7. Sample Number : EHSRDC/OMPL/W/15/04 /595
8. Protocol : APHA, 22nd Edition

Sl.No	PARAMETERS	UNIT	Test Methods	Std. IS 10500:2012 (Second Revision)		Code
				DL	PL	
						GW2
						595
1.	pH	--	4500H ⁺ B	6.5-8.5		7.86
2.	Colour	Hazen	--	5	15	<1
3.	Odour	--	--	Unobjectionable		Unobjectionable
4.	Taste	--	--	Agreeable		Agreeable
5.	Turbidity	NTU	2130 B	1	5	0.18
6.	Total Dissolved Solids	mg/L	2540 C	500	2000	164.0
7.	Total Hardness	mg/L	2340 C	200	600	120
8.	Calcium as Ca	mg/L	3500-Ca	75	200	25.6
9.	Magnesium as Mg	mg/L	3500 Mg B	30	100	13.6
10.	Sulphate as SO ₄	mg/L	4500-SO ₄ ²⁻	200	400	15.24
11.	Fluoride as F	mg/L	4500F D	1	1.5	0.61
12.	Nitrate as NO ₃	mg/L	4500-NO ₃ E	45		BDL
13.	Chloride as Cl	mg/L	4500-Cl B	250	1000	11.74
14.	Iron as Fe	mg/L	3500-Fe B	0.3		0.3
15.	Alkalinity	mg/L	2320 B	200	600	96.0
16.	Chromium Hexavalent	mg/L	3500 Cr B	---		BDL
17.	E-Coli	CFU/100ml	IS:15185	Absent		Absent
18.	Total Coliform	CFU/100ml	9222 B	10		<1

Note:- BDL- Below Detectable Limit, DL - Desirable Limit, PL - Permissible Limit.

End of Report


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Test Report

ANALYSIS REPORT OF FRESH WATER QUALITY

1. Name of the Location : OW1: Tenka-Ekkar
2. Name of the Industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore SpecialEconomic Zone, Permude
Mangalore-574509
3. Sample Collected By : M/s Environmental Health and Safety Research and
Development Centre, Bangalore - 560 010.
4. Date of Collection : 10.04.2015
5. Particulars of Sample : Open well water, Grab Sampling
Collected
6. Date of Sample Receipt : 11.04.2015
7. Sample Number : EHSRDC/OMPL/W/15/04 /596
8. Protocol : APHA, 22nd Edition

Sl.No	PARAMETERS	UNIT	Test Methods	Std. IS 10500:2012 (Second Revision)		Code
				DL	PL	OW1 596
1.	pH	--	4500H ⁺ B	6.5-8.5		7.41
2.	Colour	Hazen	--	5	15	<1
3.	Odour	--	--	Unobjectionable		Unobjectionable
4.	Taste	--	--	Agreeable		Agreeable
5.	Turbidity	NTU	2130 B	1	5	0.21
6.	Total Dissolved Solids	mg/L	2540 C	500	2000	136
7.	Total Hardness	mg/L	2340 C	200	600	96.0
8.	Calcium as Ca	mg/L	3500-Ca	75	200	19.2
9.	Magnesium as Mg	mg/L	3500 Mg B	30	100	11.66
10.	Sulphate as SO ₄	mg/L	4500-SO ₄ ²⁻	200	400	5.81
11.	Fluoride as F	mg/L	4500F D	1	1.5	0.02
12.	Nitrate as NO ₃	mg/L	4500-NO ₃ E	45		1.4
13.	Chloride as Cl	mg/L	4500-Cl B	250	1000	11.74
14.	Iron as Fe	mg/L	3500-Fe B	0.3		0.23
15.	Alkalinity	mg/L	2320 B	200	600	92.0
16.	Chromium Hexavalent	mg/L	3500 Cr B	---		BDL
17.	E-Coli	CFU/100ml	IS:15185	Absent		Absent
18.	Total Coliform	CFU/100ml	9222 B	10		<1

Note:- BDL- Below Detectable Limit, DL - Desirable Limit, PL - Permissible Limit.

End of Report


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Test Report

ANALYSIS REPORT OF FRESH WATER QUALITY

1. Name of the Location : OW2: Shanthiguda Village
2. Name of the Industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Special Economic Zone, Permude
Mangalore-574509
3. Sample Collected By : M/s Environmental Health and Safety Research and
Development Centre, Bangalore - 560 010.
4. Date of Collection : 10.04.2015
5. Particulars of Sample Collected : Open well water, Grab Sampling
6. Date of Sample Receipt : 11.04.2015
7. Sample Number : EHSRDC/OMPL/W/15/04 /597
8. Protocol : APHA, 22nd Edition

Sl.No	PARAMETERS	UNIT	Test Methods	Std. IS 10500:2012 (Second Revision)		Code
				DL	PL	OW2 597
1.	pH	--	4500H ⁺ B	6.5-8.5		7.43
2.	Colour	Hazen	--	5	15	<1
3.	Odour	--	--	Unobjectionable		Unobjectionable
4.	Taste	--	--	Agreeable		Agreeable
5.	Turbidity	NTU	2130 B	1	5	0.09
6.	Total Dissolved Solids	mg/L	2540 C	500	2000	92.0
7.	Total Hardness	mg/L	2340 C	200	600	48
8.	Calcium as Ca	mg/L	3500-Ca	75	200	8.0
9.	Magnesium as Mg	mg/L	3500 Mg B	30	100	6.8
10.	Sulphate as SO ₄	mg/L	4500-SO ₄ ²⁻	200	400	4.91
11.	Fluoride as F	mg/L	4500F D	1	1.5	0.28
12.	Nitrate as NO ₃	mg/L	4500-NO ₃ E	45		0.16
13.	Chloride as Cl	mg/L	4500-Cl B	250	1000	7.82
14.	Iron as Fe	mg/L	3500-Fe B	0.3		BDL
15.	Alkalinity	mg/L	2320 B	200	600	44.0
16.	Chromium Hexavalent	mg/L	3500 Cr B	---		BDL
17.	E-Coli	CFU/100ml	IS:15185	Absent		Absent
18.	Total Coliform	CFU/100ml	9222 B	10		2

Note:- BDL- Below Detectable Limit, DL - Desirable Limit, PL - Permissible Limit.

End of Report


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Test Report

ANALYSIS REPORT OF FRESH WATER QUALITY

1. Name of the Location : SW1: Near Flare Area, Ompl
2. Name of the Industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Special Economic Zone, Pernude
Mangalore-574509.
3. Sample Collected By : M/s Environmental Health and Safety Research and Development
Centre, Bangalore - 560 010.
4. Date of Collection : 10.04.2015
5. Particulars of Sample Collected : Surface outlet water, Grab Sampling
6. Date of Sample Receipt : 11.04.2015
7. Sample Number : EHSRDC/OMPL/W/15/04 /598
8. Protocol : APHA, 22nd Edition

Sl.No	PARAMETERS	UNIT	Test Methods	Std. IS 10500:2012 (Second Revision)		Code
				DL	PL	
						SW1
						598
1.	pH	--	4500H ⁺ B	6.5-8.5		7.10
2.	Colour	Hazen	--	5	15	<1
3.	Odour	--	--	Unobjectionable		Unobjectionable
4.	Taste	--	--	Agreeable		Agreeable
5.	Turbidity	NTU	2130 B	1	5	0.11
6.	Total Dissolved Solids	mg/L	2540 C	500	2000	191.0
7.	Total Hardness	mg/L	2340 C	200	600	76
8.	Calcium as Ca	mg/L	3500-Ca	75	200	17.6
9.	Magnesium as Mg	mg/L	3500 Mg B	30	100	7.77
10.	Sulphate as SO ₄	mg/L	4500-SO ₄ ²⁻	200	400	23.06
11.	Fluoride as F	mg/L	4500F D	1	1.5	0.23
12.	Nitrate as NO ₃	mg/L	4500-NO ₃ E	45		BDL
13.	Chloride as Cl	mg/L	4500-Cl B	250	1000	42.11
14.	Iron as Fe	mg/L	3500-Fe B	0.3		0.16
15.	Alkalinity	mg/L	2320 B	200	600	32.0
16.	Chromium Hexavalent	mg/L	3500 Cr B	---		BDL
17.	E-Coli	CFU/100ml	IS:15185	Absent		Absent
18.	Total Coliform	CFU/100ml	9222 B	10		2

Note:- BDL- Below Detectable Limit, DL - Desirable Limit, PL - Permissible Limit.

End of Report

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Test Report

ANALYSIS REPORT OF FRESH WATER QUALITY

1. Name of the Location : SW2 : Near Central Warehouse, Ompl
2. Name of the Industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore SpecialEconomicZone,Permude
Mangalore-574509
3. Sample Collected By : M/s Environmental Health and Safety Research and
Development Centre, Bangalore - 560 010.
4. Date of Collection : 10.04.2015
5. Particulars of Sample Collected : Surface inlet water, Grab Sampling
6. Date of Sample Receipt : 11.04.2015
7. Sample Number : EHSRDC/OMPL/W/15/04 /599
8. Protocol : APHA, 22nd Edition

Sl.No	PARAMETERS	UNIT	Test Methods	Std. IS 10500:2012 (Second Revision)		Code
				DL	PL	SW2
						599
1.	pH	--	4500H ⁺ B	6.5-8.5		7.47
2.	Colour	Hazen	--	5	15	<1
3.	Odour	--	--	Unobjectionable		Unobjectionable
4.	Taste	--	--	Agreeable		Agreeable
5.	Turbidity	NTU	2130 B	1	5	0.14
6.	Total Dissolved Solids	mg/L	2540 C	500	2000	201
7.	Total Hardness	mg/L	2340 C	200	600	116
8.	Calcium as Ca	mg/L	3500-Ca	75	200	24.0
9.	Magnesium as Mg	mg/L	3500 Mg B	30	100	13.60
10.	Sulphate as SO ₄	mg/L	4500-SO ₄ ²⁻	200	400	37.40
11.	Fluoride as F	mg/L	4500F D	1	1.5	0.15
12.	Nitrate as NO ₃	mg/L	4500-NO ₃ E	45		0.28
13.	Chloride as Cl	mg/L	4500-Cl B	250	1000	19.56
14.	Iron as Fe	mg/L	3500-Fe B	0.3		0.21
15.	Alkalinity	mg/L	2320 B	200	600	52
16.	Chromium Hexavalent	mg/L	3500 Cr B	---		BDL
17.	E-Coli	CFU/100ml	IS:15185	Absent		Absent
18.	Total Coliform	CFU/100ml	9222 B	10		1

Note:- BDL- Below Detectable Limit, DL - Desirable Limit, PL - Permissible Limit.

End of Report


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Test Report

ANALYSIS REPORT OF FRESH WATER QUALITY

1. Name of the Location : GW3: L&T New Labour Colony
2. Name of the Industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Special Economic Zone, Perumde
Mangalore-574509
3. Sample Collected By : M/s Environmental Health and Safety Research and
Development Centre, Bangalore - 560 010.
4. Date of Collection : 10.04.2015
5. Particulars of Sample Collected : Bore well water ,Grab Sampling
6. Date of Sample Receipt : 11.04.2015
7. Sample Number : EHSRDC/OMPL/W/15/04 /600
8. Protocol : APHA, 22nd Edition

Sl.No	PARAMETERS	UNIT	Test Methods	Std. IS 10500:2012 (Second Revision)		Code
				DL	PL	GW3
1.	pH	--	4500H+ B	6.5-8.5		7.48
2.	Colour	Hazen	--	5	15	<1
3.	Odour	--	--	Unobjectionable		Unobjectionable
4.	Taste	--	--	Agreeable		Agreeable
5.	Turbidity	NTU	2130 B	1	5	0.21
6.	Total Dissolved Solids	mg/L	2540 C	500	2000	167
7.	Total Hardness	mg/L	2340 C	200	600	112.0
8.	Calcium as Ca	mg/L	3500-Ca	75	200	24.0
9.	Magnesium as Mg	mg/L	3500 Mg B	30	100	12.63
10.	Sulphate as SO ₄	mg/L	4500-SO ₄ ²⁻	200	400	14.44
11.	Fluoride as F	mg/L	4500F D	1	1.5	0.59
12.	Nitrate as NO ₃	mg/L	4500-NO ₃ E	45		BDL
13.	Chloride as Cl	mg/L	4500-Cl B	250	1000	11.74
14.	Iron as Fe	mg/L	3500-Fe B	0.3		0.28
15.	Alkalinity	mg/L	2320 B	200	600	64
16.	Chromium Hexavalent	mg/L	3500 Cr B	---		BDL
17.	E-Coli	CFU/100ml	IS:15185	Absent		Absent
18.	Total Coliform	CFU/100ml	9222 B	10		<1

Note:- BDL- Below Detectable Limit, DL - Desirable Limit, PL - Permissible Limit.

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Test Report

ANALYSIS REPORT OF FRESH WATER QUALITY

1. Name of the Location : GW4: OMPL (Near ETP)
2. Name of the Industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Special Economic Zone, Permude
Mangalore-574509.
3. Sample Collected By : M/s Environmental Health and Safety Research and
Development Centre, Bangalore - 560 010.
4. Date of Collection : 25.04.2015
5. Particulars of Sample Collected : Ground water, Grab Sampling
6. Date of Sample Receipt : 27.04.2015
7. Sample Number : EHSRDC/OMPL/W/15/04 /1307
8. Protocol : APHA, 22nd Edition

Sl.No	PARAMETERS	UNIT	Test Methods	Std. IS 10500:2012 (Second Revision)		Code
				DL	PL	GW4 1307
1.	pH	--	4500H+ B	6.5-8.5		7.35
2.	Colour	Hazen	--	5	15	<1
3.	Odour	--	--	Unobjectionable		Unobjectionable
4.	Taste	--	--	Agreeable		Agreeable
5.	Turbidity	NTU	2130 B	1	5	0.08
6.	Total Dissolved Solids	mg/L	2540 C	500	2000	72.0
7.	Total Hardness	mg/L	2340 C	200	600	40.0
8.	Calcium as Ca	mg/L	3500-Ca	75	200	8.0
9.	Magnesium as Mg	mg/L	3500 Mg B	30	100	4.86
10.	Sulphate as SO ₄	mg/L	4500-SO ₄ ²⁻	200	400	BDL
11.	Fluoride as F	mg/L	4500F D	1	1.5	BDL
12.	Nitrate as NO ₃	mg/L	4500-NO ₃ E	45		BDL
13.	Chloride as Cl	mg/L	4500-Cl B	250	1000	15.31
14.	Iron as Fe	mg/L	3500-Fe B	0.3		0.02
15.	Alkalinity	mg/L	2320 B	200	600	48.0
16.	Chromium Hexavalent	mg/L	3500 Cr B	---		BDL
17.	E-Coli	CFU/100ml	IS:15185	Absent		Absent
18.	Total Coliform	CFU/100ml	9222 B	10		<1

Note:- BDL- Below Detectable Limit, DL - Desirable Limit, PL - Permissible Limit.

End of Report


Authorized Signatory

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ANALYSIS REPORT **Test Report** **WATER QUALITY**

1. Name of the Location : OW3: Permude Village
2. Name of the Industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Special Economic Zone, Permude
Mangalore-574509
3. Sample Collected By : M/s Environmental Health and Safety Research and
Development Centre, Bangalore - 560 010.
4. Date of Collection : 10.04.2015
5. Particulars of Sample Collected : Open well water, Grab Sampling
6. Date of Sample Receipt : 11.04.2015
7. Sample Number : EHSRDC/OMPL/W/15/04 /601
8. Protocol : APHA, 22nd Edition

Sl.No	PARAMETERS	UNIT	Test Methods	Std. IS 10500:2012 (Second Revision)		Code
				DL	PL	
						OW3
						601
1.	pH	--	4500H ⁺ B	6.5-8.5		7.93
2.	Colour	Hazen	--	5	15	<1
3.	Odour	--	--	Unobjectionable		Unobjectionable
4.	Taste	--	--	Agreeable		Agreeable
5.	Turbidity	NTU	2130 B	1	5	0.18
6.	Total Dissolved Solids	mg/L	2540 C	500	2000	164
7.	Total Hardness	mg/L	2340 C	200	600	96
8.	Calcium as Ca	mg/L	3500-Ca	75	200	19.2
9.	Magnesium as Mg	mg/L	3500 Mg B	30	100	11.66
10.	Sulphate as SO ₄	mg/L	4500-SO ₄ ²⁻	200	400	6.71
11.	Fluoride as F	mg/L	4500F D	1	1.5	0.32
12.	Nitrate as NO ₃	mg/L	4500-NO ₃ E	45		BDL
13.	Chloride as Cl	mg/L	4500-Cl B	250	1000	46.96
14.	Iron as Fe	mg/L	3500-Fe B	0.3		0.15
15.	Alkalinity	mg/L	2320 B	200	600	96.0
16.	Chromium Hexavalent	mg/L	3500 Cr B	---		BDL
17.	E-Coli	CFU/100ml	IS:15185	Absent		Absent
18.	Total Coliform	CFU/100ml	9222 B	10		<1

Note:- BDL- Below Detectable Limit, DL - Desirable Limit, PL - Permissible Limit.

End of Report


Authorized Signatory

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Test Report

AMBIENT NOISE LEVEL MONITORING REPORT

1. Name of the Project : M/s. ONGC Mangalore Petrochemicals Limited,
Mangalore Spécial Economic Zone,
Permude,
Mangalore-574509.
2. Sample Collected by : M/s. Environmental Health and Safety Research &
Development Centre, Bangalore - 560 010.
3. Date of Collection : 13.04.2015
4. Particulars of Sample Collected : Ambient Noise Level collected through
Sound Level Meter EQ-8852/C-322
5. Date of Sample Receipt : 14.03.2015
6. Sample Number : EHSRDC/OMPL/N/15/04/ 803-806
7. Method Adopted : Instrument Method

Code No	Sample Location	Parameters		Std.
		Day Time dB(A)	Night Time dB(A)	
803	OMPL East Side Boundary	65.76	46.73	75.0 dB(A) Day
804	OMPL South Side Boundary	54.91	48.72	
805	OMPL North Side Boundary	64.98	51.38	70 dB(A) Night
806	OMPL West Side Boundary	63.50	46.69	

Note :

- Day Time is reckoned between 6 A.M and 10 P.M
- Night Time is reckoned between 10 P.M and 6 A.M
- L_{eq} : It is energy mean of the noise level over a specified period.
- *dB (A) L_{eq} denotes the time weighted average of the level of sound in decibels on scale A which is relatable to human hearing.
- A "decibel" is a unit in which noise is measured.
- "A", in dB (A) L_{eq} , denotes the frequency weighting in the measurement of noise and corresponds to Frequency response characteristics of the human ear.

End of Report



Authorized Signatory

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ANNEXURE - D

Form-1 (Rule 4)
Returns Regarding Water Consumed during the Month of Apr., 2015

Name and address of the Consumer	Purpose for which water consumed	Reading at the beginning of the first day of the calendar month under report	Reading at the end of the last day of the calendar month under report	Quantity of Water Consumed in Kilo Liters	If the meter was out of order, the monthly average consumption of water for the previous 3 months of the working period	Quantity of water qualifying for rebate according to the assessee	Remarks
M/s ONGC Mangalore Petrochemicals Limited, Mangalore Special Economic Zone, Permude, Mangalore -574 509	Industrial cooling, spraying in mine pits or boiler feed						
	Cooling Water			91485			Readings from Flow Totalizer
	Boiler Feed Water			66720			Readings from Flow Totalizer
	Fire Water			21294			Flow through Running hour of pumps recorded
	Domestic purpose						
	Drinking Water & Sanitation			6498			Flow through Running hours of pumps recorded
	Processing whereby water gets polluted and the pollutants are easily bio-degradable						
	Service Water			8411			Subtracting total flow (by running hours of pumps) from BFW & CT consumption
Total Consumption				194408			

Signature of the Consumer

Name

Address

: R. Sridharan, Chief of Operations

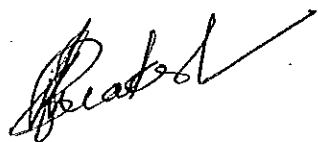
M/s ONGC Mangalore Petrochemicals Limited, Mangalore Special Economic Zone, Permude, Mangalore -574 509

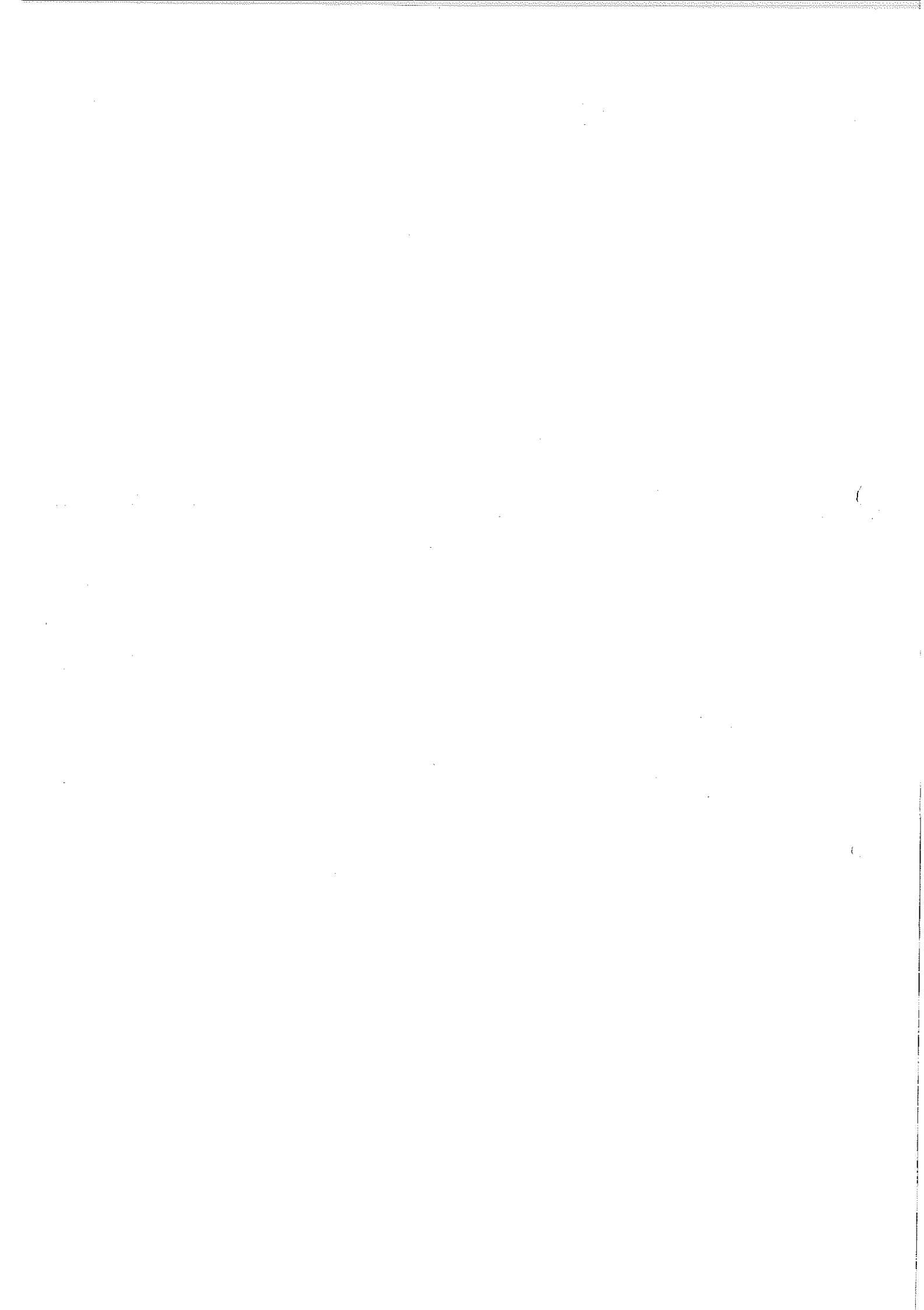
ONGC Mangalore Petrochemicals Limited

Production Details for April – 2015

Net Naptha Processed – 47389 MT

Sl. No.	Name of the Product	Quantity, MT
1	Paraxylene (Product)	22933.31
2	Benzene (Co product)	6173.35





Test Report

ANALYSIS REPORT OF FRESH WATER QUALITY / TREATED EFFLUENT QUALITY

1. Name of the Location : Guard pond Pump Discharge
2. Name of the Project : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Spécial Economic Zone,
Permude Mangalore-574509.
3. Sample Collected by : M/s. Environmental Health and Safety
Research & Development Centre,
Bangalore - 560 010.
4. Date of Collection : 20.03.2015
5. Particulars of Sample Collected : ETP Guard Pond Discharge Treated
Effluent, Grab Sampling
6. Date of Sample Receipt : 23.03.2015
7. Sample Number : EHSRDC/OMPL/ W/15/03/11805
8. Analysis started on : 23.03.2015
9. Analysis Completed on : 30.03.2015
10. Page No. : 01 of 2
11. Sent to be Report : 03.04.2015
12. Protocol : APHA, 22nd Edition/IS Method

Sl.No	Parameters	Test Methods	Unit	Result	Tolerance limit
1.	pH	IS 3025(Part-11) :1983	-	7.86	6.0-8.5
2.	Colour	IS 3025(Part-4) :1983	Hazen	<1	All efforts should be made to remove colour and unpleasant odour as for as practicable.
3.	Odour	IS 3025(Part-5) :1983	--	Unobjectionable	
4.	Temperature	APHA 2550 B	^o C	25 ^o C	Shall not exceed 5 ^o C above the receiving water temperature.
5.	Particle Size of suspended solids	-	-	passes	(a) Settle able solids Max. 850 microns
6.	Conductivity	2510 B	µs/cm	619	2250
7.	B.O.D (3 days in 27 ^o C)	5210 B	mg/L	Not Detected	15
8.	C.O.D	5220 B	mg/L	8	125
9.	Total Suspended Solids	2540 D	mg/L	12	20
10.	Dissolved oxygen	APHA 4500-O C	mg/l	5.9	-
11.	Phosphate as PO ₄	4500- P D	mg/L	0.43	3
12.	Total Kjeldahl Nitrogen	4500- Norg B	mg/L	3.08	40
13.	Oil & Grease	5520 B	mg/L	BDL	5
14.	Total residual chlorine	APHA 4500- Cl	mg/l	BDL	1
15.	Free ammonia	IS 3025 (part 34)	mg/L	Not Detected	5

Praveena
Authorized Signatory

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Test Report

16.	Ammonical Nitrogen	4500- NH ₃ ,B,C	mg/L	1.96	15
17.	Hexavalent Chromium	3500- Cr B	mg/L	BDL	0.1
18.	Sulphide	IS 3025 (part 29): 1986	mg/L	BDL	0.5
19.	Fluoride as F	IS 3025(Part 60): 2008	mg/L	0.13	1.5
20.	Nitrate as NO ₃	IS 3025(Part 34) :1988	mg/L	BDL	20
21.	Iron as Fe	IS 3025(Part 53):2003	mg/L	0.81	3
22.	Mercury as Hg	IS 3025(Part-48):1994	mg/L	BDL	0.01
23.	Lead as Pb	IS 3025(Part 47):1994	mg/L	BDL	2
24.	Cadmium as Cd	IS 3025(Part 41):1992	mg/L	BDL	0.1
25.	Selenium as Se	IS 3025(Part 56):2003	mg/L	BDL	0.05
26.	Arsenic as As	IS 3025(Part 37):1988	mg/L	0.006	0.2
27.	Zinc as Zn	IS 3025(Part 49):1994	mg/L	0.0314	5
28.	Copper as Cu	IS 3025(Part-42):1992	mg/L	0.009	1
29.	Manganese as Mn	3111 B	mg/L	BDL	2
30.	Vanadium	3500 -V	mg/l	0.004	0.1
31.	Nickel as Ni	IS13428:2005 (Annex L)	mg/l	0.002	1
32.	Total chromium	IS 13428:2005(Annex J)	mg/l	0.002	2
33.	Benzene	APHA 6200 B	µg/l	BDL	0.1
34.	Benzo (a) pyrene (PAH)	APHA 6440	µg/l	BDL	0.2
35.	Bioassay	IS 6582	% survivability	100	90% survival of fish after 96 hrs, in 100% effluent
36.	Phenolic compounds	IS 3025 (part 43):1992	mg/l	BDL	0.35
37.	Cyanide	IS 3025 (Part 27):1986	mg/l	BDL	0.2

INFERENCE

As per IS 10500:2012(Second Revision),
Report Status: - The measured values for the above parameters for those standards have been specified were observed to be within the said standards.

End of Report

Praveena
Authorized Signatory

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ONGC Mangalore Petrochemicals Ltd.

2nd Floor, MUDA Building, Uwa Stores, Mangalore - 575 006
Phone +91-824 2451001-04 Fax +91-824 2451005

REF: OMPL/PCB/RS/2015-16/

Date: 20.4.2015

To:
The Environmental Officer
Regional Office
KSPCB
Baikampady, Mangalore-11

Dear Sir,

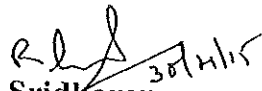
Sub: Submission of Environmental Monitoring Report for the Month of March, 2015,
Returns Regarding Water Consumed for the Month of March, 2015 & and Stack
Monitoring (Manual) Reports

Ref: CFO No. PCB/245/HPI//ONGC/2014-15/593 dated 18th August 2014

With respect to the above subject; we are herewith submitting the following Environmental Monitoring Reports, Returns Regarding Water Consumed & Stack Monitoring Report carried out in the Month of February 2015 respectively, enclosed herewith.

1. Ambient Air Quality Monitoring at 5 different locations in and around OMPL, enclosed as Annexure- A
2. Water Analysis Reports at 9 different locations in and around OMPL, as Annexure-B
3. Noise Level Monitoring Report at OMPL, as Annexure-C
4. Returns Regarding Water Consumed, for the Month of March 2015, as Annexure-D
5. Stack Monitoring Report as Annexure-E

Thanking You,


R Sridharan
Chief of Operations

CC: Member Secretary, KSPCB, Bangalore

CC: Head (Technical), MSEZ

CC: CEO, OMPL for info

Test Report

ANALYSIS REPORT OF AMBIENT AIR QUALITY

1. Name of the location : OMPL East Side
2. Name of the industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Spécial Economic Zone, Permude
Mangalore-574509.
3. Sample Collected By : M/s Environmental Health & Safety Research and Development
Centre, Bangalore - 560 010.
4. Particulars of Sample Collected : Ambient Air collected through
Fine Particulate Sampler - APM 550/APM 550 Mini
Respirable Dust Sampler - 460NL,
CO & O₃ Analyzers.
5. Date of collection : For the Month of March- 2015 (Monitored for 24 hours)
6. Sample Number : EHSRDC/OMPL/A/15/03/

PARAMETERS	DATE	WK 10		WK 11		WK 12		WK 13	
		02/03/2015	03/03/2015	09/03/2015	10/03/2015	16/03/2015	17/03/2015	23/03/2015	24/03/2015
	CODE	10882	10911	11192	11281	11512	11615	11894(a)	11937
	LIMITS								
PM ₁₀ (µg/m ³)	100	65	68	58	63	71	59	68	65
PM _{2.5} (µg/m ³)	60	17	19	16	16	21	14	16	15
SO ₂ (µg/m ³)	80	2.66	2.89	2.62	2.46	2.65	2.70	2.85	3.19
NO ₂ (µg/m ³)	80	3.15	3.35	3.79	3.15	3.24	3.18	3.12	4.09
CO (mg/m ³)	4	0.70	0.75	0.90	0.81	0.74	0.84	0.86	0.79
O ₃ (µg/m ³)	180	0.76	0.79	0.95	0.89	0.86	0.92	0.92	0.83

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PARAMETERS	DATE	WK 10		WK 11		WK 12		WK 13	
		02/03/2015	03/03/2015	09/03/2015	10/03/2015	16/03/2015	17/03/2015	23/03/2015	24/03/2015
	CODE	10882	10911	11192	11281	11512	11615	11894(a)	11937
	LIMITS								
NH ₃ (µg/m ³)	400	1.29	1.98	1.88	2.02	1.56	2.09	1.66	2.15
Lead (µg/m ³)	1	0.030	0.015	0.027	0.05	0.065	0.027	0.081	0.0494
Arsenic (ng/m ³)	6	0.71	1.92	BDL	1.89	1.5669	0.237	1.22	1.3
Nickel (ng/m ³)	20	BDL	0.913	0.71	0.4	BDL	0.562	BDL	0.85
Benzene (µg/m ³)	5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
B(a)P (ng/m ³)	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

End of Report

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Test Report

ANALYSIS REPORT OF AMBIENT AIR QUALITY

1. Name of the location : Shantigudda
2. Name of the industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Spécial Economic Zone, Permude
Mangalore-574509.
3. Sample Collected By : M/s Environmental Health & Safety Research and
Development Centre, Bangalore – 560 010.
4. Particulars of Sample Collected : Ambient Air collected through
Fine Particulate Sampler – APM 550/APM 550 Mini
Respirable Dust Sampler – 460NL,
CO & O₃ Analyzers.
5. Date of collection : For the Month of March- 2015
6. Sample Number : EHSRDC/OMPL/A/15/03/

PARAMETERS	DATE	WK 10		WK 11		WK 12		WK 13	
		02/03/2015	03/03/2015	09/03/2015	10/03/2015	16/03/2015	17/03/2015	23/03/2015	24/03/2015
	CODE	10883	10912	11193	11282	11513	11616	11894(b)	11938
	LIMITS	100	70	66	66	62	68	70	70
PM ₁₀ (µg/m ³)	100	61	70	66	66	62	68	70	70
PM _{2.5} (µg/m ³)	60	16	20	15	13	12	17	19	19
SO ₂ (µg/m ³)	80	3.09	3.65	3.09	2.78	2.39	2.66	2.78	2.88
NO ₂ (µg/m ³)	80	3.88	4.09	3.95	3.24	2.92	3.16	3.03	3.46
CO (mg/m ³)	4	0.80	0.90	0.92	0.78	0.88	0.69	0.82	0.75
O ₃ (µg/m ³)	180	0.83	0.94	0.94	0.84	0.96	0.78	0.87	0.82

Note :

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PARAMETERS	DATE	WK 10		WK 11		WK 12		WK 13	
		02/03/2015	03/03/2015	09/03/2015	10/03/2015	16/03/2015	17/03/2015	23/03/2015	24/03/2015
	CODE	10883	10912	11193	11282	11513	11616	11894(b)	11938
	LIMITS	10883	10912	11193	11282	11513	11616	11894(b)	11938
NH ₃ (µg/m ³)	400	1.22	2.11	1.88	1.22	1.67	2.19	1.07	1.68
Lead (µg/m ³)	1	0.060	0.024	0.048	0.049	0.0497	0.141	0.042	0.0255
Arsenic (ng/m ³)	6	0.69	2.6	1.81	1.92	BDL	BDL	2.27	1.1303
Nickel (ng/m ³)	20	BDL	BDL	1.82	BDL	BDL	1.97	BDL	1.3
Benzene (µg/m ³)	5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
B(a)P (ng/m ³)	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

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Test Report

ANALYSIS REPORT OF AMBIENT AIR QUALITY

1. Name of the location : Tenka- Ekkar
2. Name of the industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Spécial Economic Zone, Permude
Mangalore-574509.
3. Sample Collected By : M/s Environmental Health & Safety Research and
Development Centre, Bangalore – 560 010.
4. Particulars of Sample Collected : Ambient Air collected through
Fine Particulate Sampler – APM 550/APM 550 Mini
Respirable Dust Sampler – 460NL,
CO & O₃ Analyzers.
5. Date of collection : For the Month of March- 2015
6. Sample Number : BHSRDC/OMPL/A/15/03/

PARAMETERS	DATE	WK 10		WK 11		WK 12		WK 13	
		04/03/2015	05/03/2015	11/03/2015	12/03/2015	18/03/2015	19/03/2015	25/03/2015	26/03/2015
	CODE	11030	11106	11355(a)	11420	11637	11698	11990(a)	12011
	LIMITS								
PM ₁₀ (µg/m ³)	100	66	67	69	72	67	60	68	62
PM _{2.5} (µg/m ³)	60	16	18	15	16	18	11	18	17
SO ₂ (µg/m ³)	80	2.62	2.99	2.39	3.01	3.29	3.05	2.89	2.98
NO ₂ (µg/m ³)	80	3.89	3.09	3.01	3.76	4.15	3.65	3.80	3.20
CO (mg/m ³)	4	0.89	0.95	0.77	0.82	0.90	0.83	0.81	0.78
O ₃ (µg/m ³)	180	0.91	0.98	0.88	0.91	0.94	0.95	0.83	0.84

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PARAMETERS	DATE	WK 10		WK 11		WK 12		WK 13	
		04/03/2015	05/03/2015	11/03/2015	12/03/2015	18/03/2015	19/03/2015	25/03/2015	26/03/2015
	CODE LIMITS	11030	11106	11355(a)	11420	11637	11698	11990(a)	12011
NH ₃ (µg/m ³)	400	1.50	1.10	1.28	2.02	1.82	2.05	2.05	1.77
Lead (µg/m ³)	1	0.006	0.031	0.024	0.083	0.036	0.066	0.0667	0.0415
Arsenic (ng/m ³)	6	0.24	2.71	BDL	0.23	0.38	BDL	BDL	0.5268
Nickel (ng/m ³)	20	BDL	1.6	BDL	0.89	2.22	1.54	0.91	0.96
Benzene (µg/m ³)	5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
B(a)P (ng/m ³)	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

End of Report

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Test Report

ANALYSIS REPORT OF AMBIENT AIR QUALITY

1. Name of the location : Permude
2. Name of the industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Spécial Economic Zone, Permude
Mangalore-574509
3. Sample Collected By : M/s Environmental Health & Safety Research and
Development Centre, Bangalore – 560 010.
4. Particulars of Sample Collected : Ambient Air collected through
Fine Particulate Sampler – APM 550/APM 550 Mini
Respirable Dust Sampler – 460NL,
CO & O₃ Analyzers.
5. Date of collection : For the Month of March- 2015
6. Sample Number : EHSRDC/OMPL/A/15/03/

PARAMETERS	LIMITS	WK 10		WK 11		WK 12		WK 13	
		DATE		DATE		DATE		DATE	
		05/03/2015	06/03/2015	12/03/2015	13/03/2015	19/03/2015	20/03/2015	26/03/2015	27/03/2015
		11106(a)	11120	11421	11444	11699	11756	12012	12058
PM ₁₀ (µg/m ³)	100	63	68	65	67	68	64	60	63
PM _{2.5} (µg/m ³)	60	16	17	12	19	18	17	16	18
SO ₂ (µg/m ³)	80	2.81	2.62	2.17	2.55	2.71	2.89	2.98	2.61
NO ₂ (µg/m ³)	80	3.32	3.09	2.79	2.98	3.19	3.42	3.68	3.58
CO (mg/m ³)	4	0.76	0.78	0.71	0.83	0.78	0.84	0.70	0.82
O ₃ (µg/m ³)	180	0.80	0.81	0.79	0.94	0.83	0.90	0.82	0.89

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Test Report

PARAMETERS	DATE	WK 10		WK 11		WK 12		WK 13	
		05/03/2015	06/03/2015	12/03/2015	13/03/2015	19/03/2015	20/03/2015	26/03/2015	27/03/2015
	CODE	11106(a)	11120	11421	11444	11699	11756	12012	12058
	LIMITS								
NH ₃ (µg/m ³)	400	1.95	1.45	1.54	1.84	2.05	1.19	2.03	1.78
Lead (µg/m ³)	1	0.013	0.058	0.010	0.184	0.022	0.035	0.0579	0.1328
Arsenic (ng/m ³)	6	1.23	0.72	0.990	1.20	0.48	0.31	BDL	0.545
Nickel (ng/m ³)	20	0.72	2.4	BDL	BDL	BDL	BDL	1.47	1.86
Benzene (µg/m ³)	5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
B(a)P (ng/m ³)	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

End of Report

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Test Report

ANALYSIS REPORT OF AMBIENT AIR QUALITY

1. Name of the location : OMPL West Side
2. Name of the industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Spécial Economic Zone, Permude
Mangalore-574509
3. Sample Collected By : M/s Environmental Health & Safety Research and
Development Centre, Bangalore - 560 010.
4. Particulars of Sample Collected : Ambient Air collected through
Fine Particulate Sampler - APM 550/APM 550 Mini
Respirable Dust Sampler - 460NL,
CO & O₃ Analyzers.
5. Date of collection : For the Month of March- 2015
6. Sample Number : EHSRDC/OMPL/A/15/03/

PARAMETERS		WK 10		WK 11		WK 12		WK 13	
	DATE	02/03/2015	03/03/2015	09/03/2015	10/03/2015	16/03/2015	17/03/2015	23/03/2015	24/03/2015
	CODE	10884	10913	11194	11283	11514	11617	11894(c)	11939
	LIMITS								
PM ₁₀ (µg/m ³)	100	63	69	70	60	58	63	65	66
PM _{2.5} (µg/m ³)	60	15	18	20	14	15	13	14	18
SO ₂ (µg/m ³)	80	2.79	2.77	2.71	2.78	2.55	2.59	2.35	2.69
NO ₂ (µg/m ³)	80	3.15	3.30	3.19	3.32	3.22	2.99	2.98	3.37
CO (mg/m ³)	4	0.78	0.88	0.90	0.72	0.79	0.91	0.87	0.96
O ₃ (µg/m ³)	180	0.81	0.94	0.94	0.83	0.86	0.96	0.94	0.99

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Test Report

PARAMETERS	DATE	WK 10		WK 11		WK 12		WK 13	
		02/03/2015	03/03/2015	09/03/2015	10/03/2015	16/03/2015	17/03/2015	23/03/2015	24/03/2015
	CODE	10884	10913	11194	11283	11514	11617	11894(c)	11939
	LIMITS								
NH ₃ (µg/m ³)	400	1.60	1.96	1.82	1.31	1.63	2.12	1.56	1.98
Lead (µg/m ³)	1	0.1440	0.046	0.073	0.065	0.1831	0.043	0.083	0.0422
Arsenic (ng/m ³)	6	0.9416	0.35	0.52	0.23	BDL	0.72	BDL	BDL
Nickel (ng/m ³)	20	0.6355	BDL	2.44	0.38	BDL	0.505	BDL	0.482
Benzene (µg/m ³)	5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
B(a)P (ng/m ³)	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

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Test Report

AMBIENT NOISE LEVEL MONITORING REPORT

1. Name of the Project : M/s. ONGC Mangalore Petrochemicals Limited,
Mangalore Spécial Economic Zone,
Permude,
Mangalore-574509.
2. Sample Collected by : M/s. Environmental Health and Safety Research &
Development Centre, Bangalore - 560 010.
3. Date of Collection : 15.03.2015
4. Particulars of Sample : Ambient Noise Level collected through
Collected Sound Level Meter EQ-8852/C-322
5. Date of Sample Receipt : 16.03.2015
6. Sample Number : EHSRDC/OMPL/N/15/03/ 11514(a) - 11517
7. Method Adopted : Instrument Method

Code No	Sample Location	Parameters		Std.
		Day Time dB(A)	Night Time dB(A)	
11514(a)	OMPL East Side Boundary	69.53	50.48	75.0 dB(A) Day
11515	OMPL South Side Boundary	71.14	53.17	70 dB(A) Night
11516	OMPL North Side Boundary	68.45	49.26	
11517	OMPL West Side Boundary	71.97	51.32	

Note :

- Day Time is reckoned between 6 A.M and 10 P.M
- Night Time is reckoned between 10 P.M and 6 A.M
- L_{eq} : It is energy mean of the noise level over a specified period.
- *dB (A) L_{eq} denotes the time weighted average of the level of sound in decibels on scale A which is relatable to human hearing.
- A "decibel" is a unit in which noise is measured.
- "A", in dB (A) L_{eq} , denotes the frequency weighting in the measurement of noise and corresponds to Frequency response characteristics of the human ear.

End of Report

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Test Report

ANALYSIS REPORT OF FRESH WATER QUALITY

1. Name of the Location : GW1: OMPL (Near BTP)
2. Name of the Industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Special Economic Zone, Permude
Mangalore-574509.
3. Sample Collected By : M/s Environmental Health and Safety Research and
Development Centre, Bangalore - 560 010.
4. Date of Collection : 15.03.2015
5. Particulars of Sample Collected : Bore well water, Grab Sampling
6. Date of Sample Receipt : 16.03.2015
7. Sample Number : BHSRDC/OMPL/W/15/03/11518
8. Protocol : APHA, 22nd Edition

Sl.No	PARAMETERS	UNIT	Test Methods	Std. IS 10500:2012 (Second Revision)		Code
				DL	PL	GW1 11518
1.	pH	--	4500H+ B	6.5-8.5		7.64
2.	Colour	Hazen	--	5	15	<1
3.	Odour	--	--	Unobjectionable		Unobjectionable
4.	Taste	--	--	Agreeable		Agreeable
5.	Turbidity	NTU	2130 B	1	5	0.74
6.	Total Dissolved Solids	mg/L	2540 C	500	2000	156
7.	Total Hardness	mg/L	2340 C	200	600	68.0
8.	Calcium as Ca	mg/L	3500-Ca	75	200	23.2
9.	Magnesium as Mg	mg/L	3500 Mg B	30	100	2.43
10.	Sulphate as SO ₄	mg/L	4500-SO ₄ ²⁻	200	400	13.33
11.	Fluoride as F	mg/L	4500F D	1	1.5	0.55
12.	Nitrate as NO ₃	mg/L	4500-NO ₃ E	45		2.62
13.	Chloride as Cl	mg/L	4500-Cl B	250	1000	47.97
14.	Iron as Fe	mg/L	3500-Fe B	0.3		BDL
15.	Alkalinity	mg/L	2320 B	200	600	30.0
16.	Chromium Hexavalent	mg/L	3500 Cr B	---		BDL
17.	E-Coli	CFU/100ml	IS:15185	Absent		Absent
18.	Total Coliform	CFU/100ml	9222 B	10		<1

Note:- BDL- Below Detectable Limit, DL - Desirable Limit, PL - Permissible Limit.

End of Report

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Test Report

ANALYSIS REPORT OF FRESH WATER QUALITY

1. Name of the Location : GW2: Narayana Guru Community Hall, Permude
2. Name of the Industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Special Economic Zone, Permude
Mangalore-574509.
3. Sample Collected By : M/s Environmental Health and Safety Research and
Development Centre, Bangalore - 560 010.
4. Date of Collection : 15.03.2015
5. Particulars of Sample Collected : Bore well water, Grab Sampling
6. Date of Sample Receipt : 16.03.2015
7. Sample Number : EHSRDC/OMPL/W/15/03/11519
8. Protocol : APHA, 22nd Edition

Sl.No	PARAMETERS	UNIT	Test Methods	Std. IS 10500:2012 (Second Revision)		Code
				DL	PL	GW2 11519
1.	pH	--	4500H ⁺ B	6.5-8.5		6.76
2.	Colour	Hazen	--	5	15	<1
3.	Odour	--	--	Unobjectionable		Unobjectionable
4.	Taste	--	--	Agreeable		Agreeable
5.	Turbidity	NTU	2130 B	1	5	0.16
6.	Total Dissolved Solids	mg/L	2540 C	500	2000	91.0
7.	Total Hardness	mg/L	2340 C	200	600	52.0
8.	Calcium as Ca	mg/L	3500-Ca	75	200	18.4
9.	Magnesium as Mg	mg/L	3500 Mg B	30	100	1.4
10.	Sulphate as SO ₄	mg/L	4500-SO ₄ ²⁻	200	400	2.9
11.	Fluoride as F	mg/L	4500F D	1	1.5	0.09
12.	Nitrate as NO ₃	mg/L	4500-NO ₃ E	45		1.5
13.	Chloride as Cl	mg/L	4500-Cl B	250	1000	11.4
14.	Iron as Fe	mg/L	3500-Fe B	0.3		0.06
15.	Alkalinity	mg/L	2320 B	200	600	40.0
16.	Chromium Hexavalent	mg/L	3500 Cr B	---		BDL
17.	E-Coli	CFU/100ml	IS:15185	Absent		Absent
18.	Total Coliform	CFU/100ml	9222 B	10		2

Note:- BDL- Below Detectable Limit, DL - Desirable Limit, PL - Permissible Limit.

End of Report

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Test Report

ANALYSIS REPORT OF FRESH WATER QUALITY

1. Name of the Location : GW3: Gagnet Labor Colony
2. Name of the Industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Special Economic Zone, Perumde
Mangalore-574509
3. Sample Collected By : M/s Environmental Health and Safety Research and Development Centre, Bangalore - 560 010.
4. Date of Collection : 15.03.2015
5. Particulars of Sample Collected : Bore well water, Grab Sampling
6. Date of Sample Receipt : 16.03.2015
7. Sample Number : EHSRDC/OMPL/W/15/03/11520
8. Protocol : APHA, 22nd Edition

Sl.No	PARAMETERS	UNIT	Test Methods	Std. IS 10500:2012 (Second Revision)		Code
				DL	PL	
1.	pH	--	4500H+ B	6.5-8.5		7.95
2.	Colour	Hazen	--	5	15	<1
3.	Odour	--	--	Unobjectionable		Unobjectionable
4.	Taste	--	--	Agreeable		Agreeable
5.	Turbidity	NTU	2130 B	1	5	0.37
6.	Total Dissolved Solids	mg/L	2540 C	500	2000	192.0
7.	Total Hardness	mg/L	2340 C	200	600	116.0
8.	Calcium as Ca	mg/L	3500-Ca	75	200	28.8
9.	Magnesium as Mg	mg/L	3500 Mg B	30	100	10.69
10.	Sulphate as SO ₄	mg/L	4500-SO ₄ ²⁻	200	400	18.05
11.	Fluoride as F	mg/L	4500F D	1	1.5	0.87
12.	Nitrate as NO ₃	mg/L	4500-NO ₃ E	45		3.3
13.	Chloride as Cl	mg/L	4500-Cl B	250	1000	36.37
14.	Iron as Fe	mg/L	3500-Fe B	0.3		0.08
15.	Alkalinity	mg/L	2320 B	200	600	76.0
16.	Chromium Hexavalent	mg/L	3500 Cr B	---		BDL
17.	E-Coli	CFU/100ml	IS:15185	Absent		Absent
18.	Total Coliform	CFU/100ml	9222 B	10		<1

Note:- BDL- Below Detectable Limit, DL - Desirable Limit, PL - Permissible Limit.

End of Report

Praveena
Authorized Signatory

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Test Report

ANALYSIS REPORT OF FRESH WATER QUALITY

1. Name of the Location : OW1: Tenka-Ekkar
2. Name of the Industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Special Economic Zone, Permude
Mangalore-574509
3. Sample Collected By : M/s Environmental Health and Safety Research and Development Centre, Bangalore - 560 010.
4. Date of Collection : 15.03.2015
5. Particulars of Sample Collected : Open well water, Grab Sampling
6. Date of Sample Receipt : 16.03.2015
7. Sample Number : EHSRDC/OMPL/W/15/03/11521
8. Protocol : APHA, 22nd Edition

Sl.No	PARAMETERS	UNIT	Test Methods	Std. IS 10500:2012 (Second Revision)		Code
				DL	PL	
						OW1 11521
1.	pH	--	4500H* B	6.5-8.5		8.11
2.	Colour	Hazen	--	5	15	<1
3.	Odour	--	--	Unobjectionable		Unobjectionable
4.	Taste	--	--	Agreeable		Agreeable
5.	Turbidity	NTU	2130 B	1	5	0.09
6.	Total Dissolved Solids	mg/L	2540 C	500	2000	82.0
7.	Total Hardness	mg/L	2340 C	200	600	48.0
8.	Calcium as Ca	mg/L	3500-Ca	75	200	10.4
9.	Magnesium as Mg	mg/L	3500 Mg B	30	100	5.3
10.	Sulphate as SO ₄	mg/L	4500-SO ₄ ²⁻	200	400	2.40
11.	Fluoride as F	mg/L	4500F D	1	1.5	0.14
12.	Nitrate as NO ₃	mg/L	4500-NO ₃ E	45		5.32
13.	Chloride as Cl	mg/L	4500-Cl B	250	1000	13.3
14.	Iron as Fe	mg/L	3500-Fe B	0.3		BDL
15.	Alkalinity	mg/L	2320 B	200	600	28.0
16.	Chromium Hexavalent	mg/L	3500 Cr B	---		BDL
17.	E-Coli	CFU/100ml	IS:15185	Absent		Absent
18.	Total Coliform	CFU/100ml	9222 B	10		2

Note:- BDL- Below Detectable Limit, DL - Desirable Limit, PL - Permissible Limit.

End of Report

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Test Report

ANALYSIS REPORT OF FRESH WATER QUALITY

1. Name of the Location : OW2: Shanthiguda Village
2. Name of the Industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Special Economic Zone, Pernude
Mangalore-574509.
3. Sample Collected By : M/s Environmental Health and Safety Research and
Development Centre, Bangalore - 560 010.
4. Date of Collection : 15.03.2015
5. Particulars of Sample Collected : Open well water, Grab Sampling
6. Date of Sample Receipt : 16.03.2015
7. Sample Number : EHSRDC/OMPL/W/15/03/11522
8. Protocol : APHA, 22nd Edition

Sl.No	PARAMETERS	UNIT	Test Methods	Std. IS 10500:2012 (Second Revision)		Code
				DL	PL	
						OW2
						11522
1.	pH	--	4500H ⁺ B	6.5-8.5		7.47
2.	Colour	Hazen	--	5	15	<1
3.	Odour	--	--	Unobjectionable		Unobjectionable
4.	Taste	--	--	Agreeable		Agreeable
5.	Turbidity	NTU	2130 B	1	5	0.20
6.	Total Dissolved Solids	mg/L	2540 C	500	2000	67.0
7.	Total Hardness	mg/L	2340 C	200	600	40
8.	Calcium as Ca	mg/L	3500-Ca	75	200	11.2
9.	Magnesium as Mg	mg/L	3500 Mg B	30	100	2.91
10.	Sulphate as SO ₄	mg/L	4500-SO ₄ ²⁻	200	400	2.90
11.	Fluoride as F	mg/L	4500F D	1	1.5	BDL
12.	Nitrate as NO ₃	mg/L	4500-NO ₃ E	45		2.92
13.	Chloride as Cl	mg/L	4500-Cl B	250	1000	10.45
14.	Iron as Fe	mg/L	3500-Fe B	0.3		0.03
15.	Alkalinity	mg/L	2320 B	200	600	26.0
16.	Chromium Hexavalent	mg/L	3500 Cr B	---		BDL
17.	E-Coli	CFU/100ml	IS:15185	Absent		Absent
18.	Total Coliform	CFU/100ml	9222 B	10		7

Note:- BDL- Below Detectable Limit, DL - Desirable Limit, PL - Permissible Limit.

End of Report

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Test Report

ANALYSIS REPORT OF FRESH WATER QUALITY

1. Name of the Location : SW1: Near Central Warehouse, OMPL
2. Name of the Industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Special Economic Zone, Permude
Mangalore-574509
3. Sample Collected By : M/s Environmental Health and Safety Research and
Development Centre, Bangalore - 560 010.
4. Date of Collection : 15.03.2015
5. Particulars of Sample Collected : Surface water, Grab Sampling
6. Date of Sample Receipt : 16.03.2015
7. Sample Number : BHSRDC/OMPL/W/15/03/11523
8. Protocol : APHA, 22nd Edition

Sl.No	PARAMETERS	UNIT	Test Methods	Std. IS 10500:2012 (Second Revision)		Code
				DL	PL	SW1
						11523
1.	pH	--	4500H* B	6.5-8.5		7.88
2.	Colour	Hazen	--	5	15	<1
3.	Odour	--	--	Unobjectionable		Unobjectionable
4.	Taste	--	--	Agreeable		Agreeable
5.	Turbidity	NTU	2130 B	1	5	0.17
6.	Total Dissolved Solids	mg/L	2540 C	500	2000	328.0
7.	Total Hardness	mg/L	2340 C	200	600	120
8.	Calcium as Ca	mg/L	3500-Ca	75	200	30.4
9.	Magnesium as Mg	mg/L	3500 Mg B	30	100	10.69
10.	Sulphate as SO ₄	mg/L	4500-SO ₄ ²⁻	200	400	25.47
11.	Fluoride as F	mg/L	4500F D	1	1.5	0.45
12.	Nitrate as NO ₃	mg/L	4500-NO ₃ E	45		1.27
13.	Chloride as Cl	mg/L	4500-Cl B	250	1000	142.5
14.	Iron as Fe	mg/L	3500-Fe B	0.3		0.067
15.	Alkalinity	mg/L	2320 B	200	600	54.0
16.	Chromium Hexavalent	mg/L	3500 Cr B	---		BDL
17.	E-Coli	CFU/100ml	IS:15185	Absent		Absent
18.	Total Coliform	CFU/100ml	9222 B	10		1

Note:- BDL- Below Detectable Limit, DL - Desirable Limit, PL - Permissible Limit.

End of Report

Praveena
Authorized Signatory

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Test Report

ANALYSIS REPORT OF FRESH WATER QUALITY

1. Name of the Location : SW2: Near Flare area, OMPL
2. Name of the Industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Special Economic Zone, Perumde
Mangalore-574509
3. Sample Collected By : M/s Environmental Health and Safety Research and
Development Centre, Bangalore - 560 010.
4. Date of Collection : 15.03.2015
5. Particulars of Sample Collected : Bore well water/Open well water/Surface water,
Grab Sampling
6. Date of Sample Receipt : 16.03.2015
7. Sample Number : EHSRDC/OMPL/W/15/03/11524
8. Protocol : APHA, 22nd Edition

Sl.No	PARAMETERS	UNIT	Test Methods	Std. IS 10500:2012 (Second Revision)		Code
				DL	PL	SW2
1.	pH	--	4500H+ B	6.5-8.5		11524
2.	Colour	Hazen	--	5	15	7.05
3.	Odour	--	--	Unobjectionable		<1
4.	Taste	--	--	Agreeable		Unobjectionable
5.	Turbidity	NTU	2130 B	1	5	Agreeable
6.	Total Dissolved Solids	mg/L	2540 C	500	2000	0.09
7.	Total Hardness	mg/L	2340 C	200	600	366.0
8.	Calcium as Ca	mg/L	3500-Ca	75	200	120
9.	Magnesium as Mg	mg/L	3500 Mg B	30	100	32.0
10.	Sulphate as SO ₄	mg/L	4500-SO ₄ ²⁻	200	400	9.72
11.	Fluoride as F	mg/L	4500F D	1	1.5	29.08
12.	Nitrate as NO ₃	mg/L	4500-NO ₃ E	45		0.86
13.	Chloride as Cl	mg/L	4500-Cl B	250	1000	1.2
14.	Iron as Fe	mg/L	3500-Fe B	0.3		127.30
15.	Alkalinity	mg/L	2320 B	200	600	0.13
16.	Chromium Hexavalent	mg/L	3500 Cr B	---		72.0
17.	E-Coli	CFU/100ml	IS:15185	Absent		BDL
18.	Total Coliform	CFU/100ml	9222 B	10		Absent
Note:- BDL- Below Detectable Limit, DL - Desirable Limit, PL - Permissible Limit.						5

End of Report

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Authorized Signatory

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Test Report

ANALYSIS REPORT OF FRESH WATER QUALITY

1. Name of the Location : GW4; L&T New Labour Colony
2. Name of the Industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Special Economic Zone, Permude
Mangalore-574509
3. Sample Collected By : M/s Environmental Health and Safety Research and
Development Centre, Bangalore - 560 010.
4. Date of Collection : 15.03.2015
5. Particulars of Sample Collected : Bore well water, Grab Sampling
6. Date of Sample Receipt : 16.03.2015
7. Sample Number : EHSRDC/OMPL/W/15/03/11525
8. Protocol : APHA, 22nd Edition

Sl.No	PARAMETERS	UNIT	Test Methods	Std. IS 10500:2012 (Second Revision)		Code
				DL	PL	GW4 11525
1.	pH	--	4500H+ B	6.5-8.5		7.67
2.	Colour	Hazen	--	5	15	<1
3.	Odour	--	--	Unobjectionable		Unobjectionable
4.	Taste	--	--	Agreeable		Agreeable
5.	Turbidity	NTU	2130 B	1	5	0.21
6.	Total Dissolved Solids	mg/L	2540 C	500	2000	142
7.	Total Hardness	mg/L	2340 C	200	600	90.0
8.	Calcium as Ca	mg/L	3500-Ca	75	200	19.2
9.	Magnesium as Mg	mg/L	3500 Mg B	30	100	10.20
10.	Sulphate as SO ₄	mg/L	4500-SO ₄ ²⁻	200	400	2.40
11.	Fluoride as F	mg/L	4500F D	1	1.5	0.53
12.	Nitrate as NO ₃	mg/L	4500-NO ₃ E	45		2.47
13.	Chloride as Cl	mg/L	4500-Cl B	250	1000	12.35
14.	Iron as Fe	mg/L	3500-Fe B	0.3		0.07
15.	Alkalinity	mg/L	2320 B	200	600	62.0
16.	Chromium Hexavalent	mg/L	3500 Cr B	---		BDL
17.	E-Coli	CFU/100ml	IS:15185	Absent		Absent
18.	Total Coliform	CFU/100ml	9222 B	10		<1

Note:- BDL- Below Detectable Limit, DL - Desirable Limit, PL - Permissible Limit.

End of Report

P. Raveena
Authorized Signatory

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Test Report

ANALYSIS REPORT OF FRESH WATER QUALITY

1. Name of the Location : Permuda Village
2. Name of the Industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Special Economic Zone, Permuda
Mangalore-574509
3. Sample Collected By : M/s Environmental Health and Safety Research and
Development Centre, Bangalore - 560 010.
4. Date of Collection : 15.03.2015
5. Particulars of Sample Collected : Open well water, Grab Sampling
6. Date of Sample Receipt : 16.03.2015
7. Sample Number : EHSRDC/OMPL/W/15/03/11526
8. Protocol : APHA, 22nd Edition

Sl.No	PARAMETERS	UNIT	Test Methods	Std. IS 10500:2012 (Second Revision)		Code
				DL	PL	
1.	pH	--	4500H ⁺ B	6.5-8.5		OW3 11526
2.	Colour	Hazen	--	5	15	7.87
3.	Odour	--	--	Unobjectionable		Unobjectionable
4.	Taste	--	--	Agreeable		Agreeable
5.	Turbidity	NTU	2130 B	1	5	0.10
6.	Total Dissolved Solids	mg/L	2540 C	500	2000	70.0
7.	Total Hardness	mg/L	2340 C	200	600	42.0
8.	Calcium as Ca	mg/L	3500-Ca	75	200	10.4
9.	Magnesium as Mg	mg/L	3500 Mg B	30	100	3.88
10.	Sulphate as SO ₄	mg/L	4500-SO ₄ ²⁻	200	400	2.20
11.	Fluoride as F	mg/L	4500F D	1	1.5	0.39
12.	Nitrate as NO ₃	mg/L	4500-NO ₃ E	45		BDL
13.	Chloride as Cl	mg/L	4500-Cl B	250	1000	9.5
14.	Iron as Fe	mg/L	3500-Fe B	0.3		BDL
15.	Alkalinity	mg/L	2320 B	200	600	36
16.	Chromium Hexavalent	mg/L	3500 Cr B	---		BDL
17.	E-Coli	CFU/100ml	IS:15185	Absent		Absent
18.	Total Coliform	CFU/100ml	9222 B	10		1

Note:- BDL- Below Detectable Limit, DL - Desirable Limit, PL - Permissible Limit.

End of Report

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Test Report

ANALYSIS REPORT OF FRESH WATER QUALITY

1. Name of the Location : Guard pond Pump Discharge
2. Name of the Project : M/s. ONGC Mangalore
Petrochemicals Limited
Mangalore Spécial Economic Zone,
Permude Mangalore-574509.
3. Sample Collected by : M/s. Environmental Health and Safety
Research & Development Centre,
Bangalore – 560 010.
4. Date of Collection : 20.03.2015
5. Particulars of Sample Collected : ETP Guard Pond Discharge Treated
Effluent, Grab Sampling
6. Date of Sample Receipt : 23.03.2015
7. Sample Number : EHSRDC/OMPL/ W/15/03/11805
8. Analysis started on : 23.03.2015
9. Analysis Completed on : 30.03.2015
10. Page No. : 01 of 2
11. Sent to be Report : 03.04.2015
12. Protocol : APHA, 22nd Edition/IS Method

Sl.No	Parameters	Test Methods	Unit	Result	Tolerance limit
1.	pH	IS 3025(Part-11) :1983	-	7.86	6.0-8.5
2.	Colour	IS 3025(Part-4) :1983	Hazen	<1	All efforts should be made to remove colour and unpleasant odour as for as practicable.
3.	Odour	IS 3025(Part-5) :1983	--	Unobjectionable	
4.	Temperature	APHA 2550 B	⁰ C	25 ⁰ C	Shall not exceed 5 ⁰ C above the receiving water temperature.
5.	Particle Size of suspended solids	-	-	passes	(a)Settle able solids Max.850 microns
6.	Conductivity	2510 B	µs /cm	619	2250
7.	B.O.D (3 days in 27 ⁰ C)	5210 B	mg/L	Not Detected	15
8.	C.O.D	5220 B	mg/L	8	125
9.	Total Suspended Solids	2540 D	mg/L	12	20
10.	Dissolved oxygen	APHA 4500-O C	mg/l	5.9	-
11.	Phosphate as PO ₄	4500- P D	mg/L	0.43	3
12.	Total Kjeldahl Nitrogen	4500- Norg B	mg/L	3.08	40
13.	Oil & Grease	5520 B	mg/L	BDL	5
14.	Total residual chlorine	APHA 4500- Cl	mg/l	BDL	1
15.	Free ammonia	IS 3025 (part 34)	mg/L	Not Detected	5

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Test Report

16.	Ammonical Nitrogen	4500- NH ₃ ,B,C	mg/L	1.96	15
17.	Hexavalent Chromium	3500- Cr B	mg/L	BDL	0.1
18.	Sulphide	IS 3025 (part 29): 1986	mg/L	BDL	0.5
19.	Fluoride as F	IS 3025(Part 60): 2008	mg/L	0.13	1.5
20.	Nitrate as NO ₃	IS 3025(Part 34) :1988	mg/L	BDL	20
21.	Iron as Fe	IS 3025(Part 53):2003	mg/L	0.81	3
22.	Mercury as Hg	IS 3025(Part-48):1994	mg/L	BDL	0.01
23.	Lead as Pb	IS 3025(Part 47):1994	mg/L	BDL	2
24.	Cadmium as Cd	IS 3025(Part 41):1992	mg/L	BDL	0.1
25.	Selenium as Se	IS 3025(Part 56):2003	mg/L	BDL	0.05
26.	Arsenic as As	IS 3025(Part 37):1988	mg/L	0.006	0.2
27.	Zinc as Zn	IS 3025(Part 49):1994	mg/L	0.0314	5
28.	Copper as Cu	IS 3025(Part-42):1992	mg/L	0.009	1
29.	Manganese as Mn	3111 B	mg/L	BDL	2
30.	Vanadium	3500 -V	mg/l	0.004	0.1
31.	Nickel as Ni	IS13428:2005 (Annex L)	mg/l	0.002	1
32.	Total chromium	IS 13428:2005(Annex J)	mg/l	0.002	2
33.	Benzene	APHA 6200 B	µg/l	BDL	0.1
34.	Benzo (a) pyrene (PAH)	APHA 6440	µg/l	BDL	0.2
35.	Bioassay	IS 6582	% survivability	100	90% survival of fish after 96 hrs, in 100% effluent
36.	Phenolic compounds	IS 3025 (part 43):1992	mg/l	BDL	0.35
37.	Cyanide	IS 3025 (Part 27):1986	mg/l	BDL	0.2

INFERENCE	As per IS 10500:2012(Second Revision), Report Status: - The measured values for the above parameters for those standards have been specified were observed to be within the said standards.
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End of Report

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Test Report

ANALYSIS REPORT FOR SOURCE EMISSION

1. Name of the Industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Special Economic Zone, Permude
Mangalore-574509.
2. Stack ID : ISOMER Charge Heater
3. Sample Collected by : M/s. Environmental Health and Safety Research &
Development Centre, Bangalore - 560 010.
4. Date of Collection : 18.03.2015
5. Particulars of Sample : Emissions from stack collected through
Collected Stack Sampler VSS1
6. Date of Sample Receipt : 23.03.2015
7. Sample Number : EHSRDC/OMPL/S/03/15/11796
8. Report to be Sent : 03.04.2015
9. Page No : 1 of 9

GENERAL DETAILS

Date of Monitoring	20.03.2015
Ambient Temperature (°C)	34
Stack Temperature (°C)	222
Velocity (m/s)	7.30
Diameter (m)	2.3
Cross Sectional Area in meter square (m²)	4.15
Quantity of flue gas discharged into atmosphere (Nm³/h)	594.65

RESULTS

Parameters	Protocol	Unit	Result	Standard
Particulate matter	IS: 11255(P1)	mg/Nm³	2.02	5
Nitrogen dioxide	IS: 11255 (P7)	mg/ Nm³	34.22	250
Sulphur dioxide	IS: 11255, (P2)	mg/Nm³	9.60	50
Carbon Monoxide	EPA method (10)	mg/Nm³	22.3	100

INFERENCE	As per KSPCB Standards, Report Status: - The measured value for above parameters are within the standard.
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End of Report

Praveena
Authorized Signatory

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Test Report

ANALYSIS REPORT FOR SOURCE EMISSION

1. Name of the Industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Special Economic Zone, Permude
Mangalore-574509;
2. Stack ID : Tatory charge heater
3. Sample Collected by : M/s. Environmental Health and Safety Research &
Development Centre, Bangalore - 560 010.T
4. Date of Collection : 18.03.2015
5. Particulars of Sample Collected : Emissions from stack collected through
Stack Sampler VSS1
6. Date of Sample Receipt : 23.03.2015
7. Sample Number : EHSRDC/OMPL/S/03/15/11797
8. Report to be Sent : 03.04.2015
9. Page No : 2 of 9

GENERAL DETAILS

Date of Monitoring	20.03.2015
Ambient Temperature (°C)	35
Stack Temperature (°C)	212
Velocity (m/s)	7.55
Diameter (m)	1.75
Cross Sectional Area in meter square (m ²)	2.40
Quantity of flue gas discharged into atmosphere (Nm ³ /h)	146703.6

RESULTS

Parameters	Protocol	Unit	Result	Standard
Particulate matter	IS: 11255(P1)	mg/Nm ³	2.6	5
Nitrogen dioxide	IS: 11255 (P7)	mg/ Nm ³	41.63	50
Sulphur dioxide	IS: 11255, (P2)	mg/Nm ³	13.52	50
Carbon Monoxide	EPA method (10)	mg/Nm ³	32.01	100

INFERENCE	As per KSPCB Standards, Report Status: - The measured values for above parameters are within the standard.
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End of Report

Phaveena
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Test Report

ANALYSIS REPORT FOR SOURCE EMISSION

1. Name of the Industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Special Economic Zone, Permude
Mangalore-574509.
2. Stack ID : BTF(Toluene Column Reboiler heater)
3. Sample Collected by : M/s. Environmental Health and Safety Research &
Development Centre, Bangalore - 560 010.
4. Date of Collection : 18.03.2015
5. Particulars of Sample : Emissions from stack collected through
Collected Stack Sampler VSS1
6. Date of Sample Receipt : 23.03.2015
7. Sample Number : EHSRDC/OMPL/S/03/15/11798
8. Report to be Sent : 03.04.2015
9. Page No : 3 of 9

GENERAL DETAILS

Date of Monitoring	20.03.2015
Ambient Temperature (°C)	35
Stack Temperature (°C)	179
Velocity (m/s)	6.82
Diameter (m)	3.29
Cross Sectional Area in meter square (m ²)	8.49
Quantity of flue gas discharged into atmosphere (Nm ³ /h)	600.713

RESULTS

Parameters	Protocol	Unit	Result	Standard
Particulate matter	IS: 11255(P1)	mg/Nm ³	19.60	50
Nitrogen dioxide	IS: 11255 (P7)	mg/ Nm ³	32.80	350
Sulphur dioxide	IS: 11255, (P2)	mg/Nm ³	13.44	850
Carbon Monoxide	EPA method (10)	mg/Nm ³	27.21	150

INFERENCE

As per KSPCB Standards,
Report Status: - The measured value for above parameters are within the standard.

End of Report

Praveena

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Test Report

ANALYSIS REPORT FOR SOURCE EMISSION

1. Name of the Industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Special Economic Zone, Permude
Mangalore-574509.
2. Stack ID : Xylene column Reboiler Heater (Part A)
3. Sample Collected by : M/s. Environmental Health and Safety Research &
Development Centre, Bangalore - 560 010.
4. Date of Collection : 19.03.2015
5. Particulars of Sample : Emissions from stack collected through
Collected Stack Sampler VSS1
6. Date of Sample Receipt : 23.03.2015
7. Sample Number : EHSRDC/OMPL/S/03/15/11799
8. Report to be Sent : 03.04.2015
9. Page No : 4 of 9

GENERAL DETAILS

Date of Monitoring	20.03.2015
Ambient Temperature (°C)	35
Stack Temperature (°C)	181
Velocity (m/s)	7.67
Diameter (m)	3.69
Cross Sectional Area in meter square (m ²)	10.6
Quantity of flue gas discharged into atmosphere (Nm ³ /h)	115350.76

RESULTS

Parameters	Protocol	Unit	Result	Standard
Particulate matter	IS: 11255(P1)	mg/Nm ³	27.40	50
Nitrogen dioxide	IS: 11255 (P7)	mg/ Nm ³	27.09	350
Sulphur dioxide	IS: 11255, (P2)	mg/Nm ³	7.68	850
Carbon Monoxide	EPA method (10)	mg/Nm ³	26.5	150

INFERENCE	As per KSPCB Standards, Report Status: - The measured value for above parameters are within the standard.
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End of Report

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Test Report

ANALYSIS REPORT FOR SOURCE EMISSION

1. Name of the Industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Special Economic Zone, Permude
Mangalore-574509.
2. Stack ID : NHT Charge Heater
3. Sample Collected by : M/s. Environmental Health and Safety Research &
Development Centre, Bangalore - 560 010.
4. Date of Collection : 19.03.2014
5. Particulars of Sample : Emissions from stack collected through
Collected Stack Sampler VSS1
6. Date of Sample Receipt : 23.03.2015
7. Sample Number : EHSRDC/OMPL/S/03/15/11800
8. Report to be Sent : 03.04.2015
9. Page No : 5 of 9

GENERAL DETAILS

Date of Monitoring	19.12.2014
Ambient Temperature (°C)	36
Stack Temperature (°C)	242
Velocity (m/s)	6.50
Diameter (m)	1.94
Cross Sectional Area in meter square (m²)	2.95
Quantity of flue gas discharged into atmosphere (Nm³/h)	185169.4

RESULTS

Parameters	Protocol	Unit	Result	Standard
Particulate matter	IS: 11255(P1)	mg/Nm³	3.10	5
Nitrogen dioxide	IS: 11255 (P7)	mg/ Nm³	26.14	250
Sulphur dioxide	IS: 11255, (P2)	mg/Nm³	14.40	50
Carbon Monoxide	EPA method (10)	mg/Nm³	36.3	100

INFERENCE	As per KSPCB Standards, Report Status: - The measured value for above parameters are within the standard.
-----------	--

End of Report

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Test Report

ANALYSIS REPORT FOR SOURCE EMISSION

1. Name of the Industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Special Economic Zone, Permude
Mangalore-574509.
2. Stack ID : Xylene column Reboiler Heater (Part B)
3. Sample Collected by : M/s. Environmental Health and Safety Research &
Development Centre, Bangalore - 560 010.
4. Date of Collection : 19.03.2014
5. Particulars of Sample : Emissions from stack collected through
Collected Stack Sampler VSS1
6. Date of Sample Receipt : 23.03.2015
7. Sample Number : EHSRDC/OMPL/S/03/15/11801
8. Report to be Sent : 03.04.2015
9. Page No : 6 of 9

GENERAL DETAILS

Date of Monitoring	19.12.2014
Ambient Temperature (°C)	36
Stack Temperature (°C)	188
Velocity (m/s)	5.43
Diameter (m)	3.69
Cross Sectional Area in meter square (m ²)	10.68
Quantity of flue gas discharged into atmosphere (Nm ³ /h)	38710.87

RESULTS

Parameters	Protocol	Unit	Result	Standard
Particulate matter	IS: 11255(P1)	mg/Nm ³	30.20	50
Nitrogen dioxide	IS: 11255 (P7)	mg/ Nm ³	16.85	350
Sulphur dioxide	IS: 11255, (P2)	mg/Nm ³	10.47	850
Carbon Monoxide	EPA method (10)	mg/Nm ³	29.25	150

INFERENCE	As per KSPCB Standards, Report Status: - The measured value for above parameters are within the standard.
-----------	--

End of Report

Praveena
Authorized Signatory

Note :

1. The results refer only to the tested samples & applicable parameters.
2. This report not to be reproduced wholly or in part & cannot be used as an evidence in the Court of Law & should be not used in any advertising media without our special permission.
3. Sample(S) not drawn by us unless stated.
4. Total liability of our laboratory is to invoiced amount. Any dispute arising out of this report is subjected to Bangalore jurisdiction only.
5. The Report Shall not be reproduced partially without the consent of the laboratory.
6. After 15 days of report submission the samples will be discarded.

Test Report

ANALYSIS REPORT FOR SOURCE EMISSION

1. Name of the Industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Special Economic Zone, Permude
Mangalore-574509.
2. Stack ID : Platformer Unit Charge Heater
3. Sample Collected by : M/s. Environmental Health and Safety Research &
Development Centre, Bangalore - 560 010.
4. Date of Collection : 19.03.2014
5. Particulars of Sample : Emissions from stack collected through
Collected Stack Sampler VSS1
6. Date of Sample Receipt : 23.03.2015
7. Sample Number : EHSRDC/OMPL/S/03/15/11802
8. Report to be Sent : 03.04.2015
9. Page No : 7 of 9

GENERAL DETAILS

Date of Monitoring	19.12.2014
Ambient Temperature (°C)	37
Stack Temperature (°C)	352
Velocity (m/s)	11.34
Diameter (m)	4.10
Cross Sectional Area in meter square (m ²)	13.19
Quantity of flue gas discharged into atmosphere (Nm ³ /h)	48683.97

RESULTS

Parameters	Protocol	Unit	Result	Standard
Particulate matter	IS: 11255(P1)	mg/Nm ³	1.6	5
Nitrogen dioxide	IS: 11255 (P7)	mg/ Nm ³	25.35	250
Sulphur dioxide	IS: 11255, (P2)	mg/Nm ³	19.20	50
Carbon Monoxide	EPA method (10)	mg/Nm ³	29.8	100

INFERENCE	As per KSPCB Standards, Report Status: - The measured value for above parameters are within the standard.
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End of Report

haveena
Authorized Signatory

Note :

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5. The Report Shall not be reproduced partially without the consent of the laboratory.
6. After 15 days of report submission the samples will be discarded.

Test Report

ANALYSIS REPORT FOR SOURCE EMISSION

1. Name of the Industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Special Economic Zone, Permude
Mangalore-574509.
2. Stack ID : CPP Utility Boiler
3. Sample Collected by : M/s. Environmental Health and Safety Research &
Development Centre, Bangalore - 560 010.
4. Date of Collection : 20.03.2015
5. Particulars of Sample : Emissions from stack collected through
Collected Stack Sampler VSS1
6. Date of Sample Receipt : 23.03.2015
7. Sample Number : EHSRDC/OMPL/S/03/15/11803
8. Report to be Sent : 03.04.2015
9. Page No : 8 of 9

GENERAL DETAILS

Date of Monitoring	20.03.2015
Ambient Temperature (°C)	36
Stack Temperature (°C)	128
Velocity (m/s)	11.01
Diameter (m)	2.74
Cross Sectional Area in meter square (m²)	5.89
Quantity of flue gas discharged into atmosphere (Nm³/h)	126863.34

RESULTS

Parameters	Protocol	Unit	Result	Standard
Particulate matter	IS: 11255(P1)	mg/Nm³	24.20	50
Nitrogen dioxide	IS: 11255 (P7)	mg/ Nm³	19.74	350
Sulphur dioxide	IS: 11255, (P2)	mg/Nm³	11.82	850
Carbon Monoxide	EPA method (10)	mg/Nm³	32.22	150

INFERENCE	As per KSPCB Standards, Report Status: - The measured value for above parameters are within the standard.
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End of Report

Praveena
Authorized Signatory

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6. After 15 days of report submission the samples will be discarded.

Test Report

ANALYSIS REPORT FOR SOURCE EMISSION

1. Name of the Industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Special Economic Zone, Permude
Mangalore-574509.
2. Stack ID : CCP (GTG & HSRG) -1
3. Sample Collected by : M/s. Environmental Health and Safety Research &
Development Centre, Bangalore - 560 010.
4. Date of Collection : 20.03.2015
5. Particulars of Sample : Emissions from stack collected through
Collected Stack Sampler VSS1
6. Date of Sample Receipt : 23.03.2015
7. Sample Number : EHSRDC/OMPL/S/03/15/11804
8. Report to be Sent : 03.04.2015
9. Page No : 9 of 9

GENERAL DETAILS

Date of Monitoring	20.03.2015
Ambient Temperature (°C)	36
Stack Temperature (°C)	149
Velocity (m/s)	13.98
Diameter (m)	2.8
Cross Sectional Area in meter square (m²)	6.15
Quantity of flue gas discharged into atmosphere (Nm³/h)	393853.3

RESULTS

Parameters	Protocol	Unit	Result	Standard
Particulate matter	IS: 11255(P1)	mg/Nm³	17.80	50
Nitrogen dioxide	IS: 11255 (P7)	mg/ Nm³	35.00	350
Sulphur dioxide	IS: 11255, (P2)	mg/Nm³	12.22	850
Carbon Monoxide	EPA method (10)	mg/Nm³	39.5	150

INFERENCE	As per KSPCB Standards, Report Status: - The measured value for above parameters are within the standard.
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End of Report

P.aveena
Authorized Signatory

Note :

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6. After 15 days of report submission the samples will be discarded.

REF: OMPL/PCB/RS/2014-15/

Date: 19.3.2015

To:
The Environmental Officer
Divisional Office
KSPCB
Baikampady, Mangalore-11

Dear Sir,

Sub: Submission of Environmental Monitoring Report for the Month of February, 2015 & Returns Regarding Water Consumed for the Month of February, 2015

Ref: CFO No. PCB/245/HPI//ONGC/2014-15/593 dated 18th August 2014

With respect to the above subject, we are herewith submitting the following Environmental Monitoring Reports & Returns Regarding Water Consumed enclosed herewith, as Annexure-A & Annexure-B respectively for the Month of February, 2015

1. Ambient Air Quality Monitoring at 5 different locations in and around OMPL
2. Water Analysis Reports at 9 different locations in and around OMPL
3. Noise Level Monitoring Report at OMPL
4. Returns Regarding Water Consumed, for the Month of February, 2015

Thanking You,

SD

R Sridharan
Chief of Operations



CC: Member Secretary, KSPCB, Bangalore
CC: Head (Technical), MSEZ
CC: CEO, OMPL for info

Test Report

ANALYSIS REPORT OF AMBIENT AIR QUALITY

1. Name of the location : OMPL East Side
2. Name of the industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Spécial Economic Zone, Permude
Mangalore-574509.
3. Sample Collected By : M/s Environmental Health & Safety Research and
Development Centre, Bangalore - 560 010.
4. Particulars of Sample Collected : Ambient Air collected through
Fine Particulate Sampler - APM 550/APM 550 Mini
Respirable Dust Sampler - 460NL,
CO & O₃ Analyzers.
5. Date of collection : For the Month of February- 2015 (Monitored for 24 hours)
6. Sample Number : EHSRDC/OMPL/A/15/02/

PARAMETERS		WK 6		WK 7		WK 8		WK 9	
	DATE	02/02/2015	03/02/2015	09/02/2015	10/02/2015	16/02/2015	17/02/2015	23/02/2015	24/02/2015
	CODE	9703	9757(a)	9990	10064	10281	10313	10560	10594
	LIMITS								
PM ₁₀ (µg/m³)	100	62	70	69	58	60	58	70	63
PM _{2.5} (µg/m³)	60	19	25	16	14	12	19	25	14
SO ₂ (µg/m³)	80	3.15	3.09	2.55	2.62	2.71	2.86	2.66	2.76
NO ₂ (µg/m³)	80	4.22	3.99	3.44	3.81	3.44	3.39	3.80	3.19
CO (mg/m³)	4	0.98	0.80	0.79	0.73	0.83	0.65	0.80	0.87
O ₃ (µg/m³)	180	0.90	0.76	0.83	0.79	0.90	0.79	0.86	0.90

Dr. Siddalingeshwar K.
Authorized Signatory

Name : Dr. Siddalingeshwar K.
Designation : Head of Laborator

Test Report

PARAMETERS	DATE	WK 6		WK 7		WK 8		WK 9	
		02/02/2015	03/02/2015	09/02/2015	10/02/2015	16/02/2015	17/02/2015	23/02/2015	24/02/2015
	CODE LIMITS	9703	9757(a)	9990	10064	10281	10313	10560	10594
NH ₃ (µg/m ³)	400	2.15	1.92	1.53	1.29	2.09	1.33	1.98	1.56
Lead (µg/m ³)	1	0.0519	0.123	0.095	0.019	0.16	0.0316	0.050	0.059
Arsenic (ng/m ³)	6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Nickel (ng/m ³)	20	5.27	BDL	3.55	4.68	BDL	2.74	6.9	1.96
Benzene (µg/m ³)	5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
B(a)P (ng/m ³)	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

End of Report

Authorized Signatory

Name : Dr. Siddalingeshwar K G
Designation : Head of Laboratory

Test Report

ANALYSIS REPORT OF AMBIENT AIR QUALITY

1. Name of the location : Shantigudda
2. Name of the industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Special Economic Zone, Pernude
Mangalore-574509.
3. Sample Collected By : M/s Environmental Health & Safety Research and
Development Centre, Bangalore - 560 010.
4. Particulars of Sample Collected : Ambient Air collected through
Fine Particulate Sampler - APM 550/APM 550 Mini
Respirable Dust Sampler - 460NL,
CO & O₃ Analyzers.
5. Date of collection : For the Month of February- 2015
6. Sample Number : EHSRDC/OMPL/A/15/02/

PARAMETERS	DATE	WK 6		WK 7		WK 8		WK 9	
		02/02/2015	03/02/2015	09/02/2015	10/02/2015	16/02/2015	17/02/2015	23/02/2015	24/02/2015
	CODE	9704	9757(b)	9991	10065	10282	10314	10561	10595
	LIMITS								
PM ₁₀ (µg/m ³)	100	65	69	61	59	66	63	69	65
PM _{2.5} (µg/m ³)	60	18	18	13	15	13	22	18	16
SO ₂ (µg/m ³)	80	3.25	3.62	2.75	2.19	3.88	2.58	2.80	2.99
NO ₂ (µg/m ³)	80	4.10	3.88	3.35	3.72	4.59	4.99	3.29	3.46
CO (mg/m ³)	4	0.88	0.70	0.79	0.85	0.84	0.60	0.83	0.82
O ₃ (µg/m ³)	180	0.78	0.78	0.84	0.82	0.92	0.87	0.89	0.88

Test Report

PARAMETERS	DATE	WK 6		WK 7		WK 8		WK 9	
		02/02/2015	03/02/2015	09/02/2015	10/02/2015	16/02/2015	17/02/2015	23/02/2015	24/02/2015
	CODE LIMITS	9704	9757(b)	9991	10065	10282	10314	10561	10595
NH ₃ (µg/m ³)	400	2.11	1.62	1.80	1.19	2.20	2.45	1.90	1.45
Lead (µg/m ³)	1	0.0269	0.033	0.049	0.012	0.075	BDL	0.029	0.016
Arsenic (ng/m ³)	6	BDL	BDL	0.48	0.47	BDL	BDL	BDL	BDL
Nickel (ng/m ³)	20	6.37	BDL	3.26	9.07	BDL	4.06	4.76	2.16
Benzene (µg/m ³)	5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
B(a)P (ng/m ³)	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

End of Report

Test Report

ANALYSIS REPORT OF AMBIENT AIR QUALITY

1. Name of the location : Tenka- Ekkar
2. Name of the industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Spécial Economic Zone, Permude
Mangalore-574509.
3. Sample Collected By : M/s Environmental Health & Safety Research and
Development Centre, Bangalore - 560 010.
4. Particulars of Sample Collected : Ambient Air collected through
Fine Particulate Sampler - APM 550/APM 550 Mini
Respirable Dust Sampler - 460NL,
CO & O₃ Analyzers.
5. Date of collection : For the Month of February- 2015
6. Sample Number : EHSRDC/OMPL/A/15/02/

PARAMETERS	DATE	WK 6		WK 7		WK 8		WK 9	
		04/02/2015	05/02/2015	11/02/2015	12/02/2015	18/02/2015	19/02/2015	25/02/2015	26/02/2015
	CODE	9832	9877	10083(a)	10137	10400	10455	10629	10711
	LIMITS								
PM ₁₀ (µg/m ³)	100	64	66	60	64	56	58	68	66
PM _{2.5} (µg/m ³)	60	17	21	14	19	17	16	17	15
SO ₂ (µg/m ³)	80	3.25	3.09	3.09	2.61	2.44	2.71	2.85	2.77
NO ₂ (µg/m ³)	80	5.13	3.92	4.15	3.19	3.10	3.33	3.26	3.05
CO (mg/m ³)	4	0.77	0.73	0.77	0.81	0.73	0.85	0.83	0.80
O ₃ (µg/m ³)	180	0.79	0.76	0.82	0.79	0.91	0.93	0.91	0.87

Test Report

PARAMETERS	DATE	WK 6		WK 7		WK 8		WK 9	
		04/02/2015	05/02/2015	11/02/2015	12/02/2015	18/02/2015	19/02/2015	25/02/2015	26/02/2015
	CODE LIMITS	9832	9877	10083(a)	10137	10400	10455	10629	10711
NH ₃ (µg/m ³)	400	2.24	2.02	1.25	1.60	2.08	1.81	2.01	1.78
Lead (µg/m ³)	1	BDL	0.026	0.010	0.017	BDL	BDL	0.033	0.035
Arsenic (ng/m ³)	6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Nickel (ng/m ³)	20	BDL	BDL	BDL	BDL	BDL	3.12	BDL	2.10
Benzene (µg/m ³)	5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
B(a)P (ng/m ³)	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

End of Report

Authorized Signatory

Name : Dr. Siddalingeshwar K G
Designation : Head of Laboratory

Test Report

ANALYSIS REPORT OF AMBIENT AIR QUALITY

1. Name of the location : Permude
2. Name of the industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Spécial Economic Zone, Permude
Mangalore-574509
3. Sample Collected By : M/s Environmental Health & Safety Research and
Development Centre, Bangalore - 560 010.
4. Particulars of Sample Collected : Ambient Air collected through
Fine Particulate Sampler - APM 550/APM 550 Mini
Respirable Dust Sampler - 460NL,
CO & O₃ Analyzers.
5. Date of collection : For the Month of February- 2015
6. Sample Number : EHSRDC/OMPL/A/15/02/

PARAMETERS	DATE	WK 6		WK 7		WK 8		WK 9	
		05/02/2015	06/02/2015	12/02/2015	13/02/2015	19/02/2015	20/02/2015	26/02/2015	27/02/2015
	CODE	9878	9942	10138	10194	10456	10478	10712	10746
	LIMITS								
PM ₁₀ (µg/m ³)	100	65	71	67	64	61	66	62	61
PM _{2.5} (µg/m ³)	60	16	23	23	14	15	19	12	11
SO ₂ (µg/m ³)	80	2.95	3.15	2.50	3.19	2.27	2.79	2.59	2.48
NO ₂ (µg/m ³)	80	3.45	4.26	3.39	4.56	3.83	3.01	2.98	2.89
CO (mg/m ³)	4	0.81	0.82	0.90	0.77	0.69	0.88	0.78	0.75
O ₃ (µg/m ³)	180	0.85	0.90	0.92	0.80	0.85	0.92	0.80	0.82

Test Report

PARAMETERS	DATE	WK 6		WK 7		WK 8		WK 9	
		05/02/2015	06/02/2015	12/02/2015	13/02/2015	19/02/2015	20/02/2015	26/02/2015	27/02/2015
	CODE LIMITS	9878	9942	10138	10194	10456	10478	10712	10746
NH ₃ (µg/m ³)	400	1.78	1.88	1.52	1.83	1.89	1.85	1.23	1.45
Lead (µg/m ³)	1	BDL	0.166	0.011	BDL	BDL	BDL	0.0193	0.016
Arsenic (ng/m ³)	6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Nickel (ng/m ³)	20	BDL	5.65	BDL	BDL	3.82	5.95	1.98	2.09
Benzene (µg/m ³)	5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
B(a)P (ng/m ³)	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

End of Report

Authorized Signatory

Name : Dr. Siddalingeshwar K G
Designation : Head of Laboratory

Test Report

ANALYSIS REPORT OF AMBIENT AIR QUALITY

1. Name of the location : OMPL West Side
2. Name of the industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Spécial Economic Zone, Pernude
Mangalore-574509
3. Sample Collected By : M/s Environmental Health & Safety Research and
Development Centre, Bangalore - 560 010.
4. Particulars of Sample Collected : Ambient Air collected through
Fine Particulate Sampler - APM 550/APM 550 Mini
Respirable Dust Sampler - 460NL,
CO & O₃ Analyzers.
5. Date of collection : For the Month of February- 2015
6. Sample Number : EHSRDC/OMPL/A/15/02/

PARAMETERS	DATE	WK 6		WK 7		WK 8		WK 9	
		02/02/2015	03/02/2015	09/02/2015	10/02/2015	16/02/2015	17/02/2015	23/02/2015	24/02/2015
	CODE	9705	9757(c)	9992	10066	10283	10315	10562	10596
	LIMITS								
PM ₁₀ (µg/m ³)	100	67	63	62	62	67	61	62	60
PM _{2.5} (µg/m ³)	60	20	19	15	17	16	18	25	12
SO ₂ (µg/m ³)	80	3.19	2.75	2.74	2.62	3.13	2.49	3.81	3.08
NO ₂ (µg/m ³)	80	4.50	3.19	3.59	3.11	4.14	3.43	2.99	3.76
CO (mg/m ³)	4	0.78	0.80	0.72	0.90	0.74	0.63	0.92	0.75
O ₃ (µg/m ³)	180	0.93	0.85	0.81	0.85	0.79	0.74	0.98	0.82

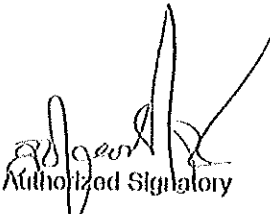

Authorized Signatory

Name : Dr. Siddalingeshwar K G
Designation : Head of Laboratory

Test Report

PARAMETERS	DATE	WK 6		WK 7		WK 8		WK 9	
		02/02/2015	03/02/2015	09/02/2015	10/02/2015	16/02/2015	17/02/2015	23/02/2015	24/02/2015
	CODE	9705	9757(c)	9992	10066	10283	10315	10562	10596
	LIMITS								
NH ₃ (µg/m ³)	400	2.09	2.18	1.66	1.89	1.75	2.51	1.90	1.79
Lead (µg/m ³)	1	0.0116	0.059	0.038	0.028	0.093	BDL	0.030	0.063
Arsenic (ng/m ³)	6	BDL	BDL	BDL	0.52	BDL	BDL	BDL	BDL
Nickel (ng/m ³)	20	2.19	BDL	2.46	BDL	BDL	4.42	2.25	1.83
Benzene (µg/m ³)	5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
B(a)P (ng/m ³)	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

End of Report


Authorized Signatory

Name : Dr. Siddalingeshwar K G
Designation : Head of Laboratory

Test Report

ANALYSIS REPORT OF FRESH WATER QUALITY

1. Name of the Location : GW1: OMPL (Near ETP)
2. Name of the Industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Spécial Economic Zone, Perumde
Mangalore-574509.
3. Sample Collected By : M/s Environmental Health and Safety Research and
Development Centre, Bangalore - 560 010.
4. Date of Collection : 12.02.2015
5. Particulars of Sample Collected : Bore well water, Grab Sampling
6. Date of Sample Receipt : 16.02.2015
7. Sample Number : EHSRDC/OMPL/W/15/02/10139
8. Protocol : APHA, 22nd Edition

Sl.No	PARAMETERS	UNIT	Test Methods	Std. IS 10500:2012 (Second Revision)		Code
				DL	PL	GW1 10139
1.	pH	--	4500H+ B	6.5-8.5		7.47
2.	Colour	Hazen	--	5	15	<1
3.	Odour	--	--	Unobjectionable		Unobjectionable
4.	Taste	--	--	Agreeable		Agreeable
5.	Turbidity	NTU	2130 B	1	5	0.09
6.	Total Dissolved Solids	mg/L	2540 C	500	2000	157.0
7.	Total Hardness	mg/L	2340 C	200	600	64.0
8.	Calcium as Ca	mg/L	3500-Ca	75	200	20.8
9.	Magnesium as Mg	mg/L	3500 Mg B	30	100	2.91
10.	Sulphate as SO ₄	mg/L	4500-SO ₄ ²⁻	200	400	2.36
11.	Fluoride as F	mg/L	4500F D	1	1.5	0.11
12.	Nitrate as NO ₃	mg/L	4500-NO ₃ E	45		2.77
13.	Chloride as Cl	mg/L	4500-Cl B	250	1000	47.85
14.	Iron as Fe	mg/L	3500-Fe B	0.3		0.11
15.	Alkalinity	mg/L	2320 B	200	600	32.0
16.	Chromium Hexavalent	mg/L	3500 Cr B	---		BDL
17.	E-Coli	CFU/100ml	IS:15185	Absent		Absent
18.	Total Coliform	CFU/100ml	9222 B	10		<1

Note:- BDL- Below Detectable Limit, DL - Desirable Limit, PL - Permissible Limit.

End of Report


Authorized Signatory

Name : Dr. Siddalingeshwar K G
Designation : Head of Laboratory

Test Report

ANALYSIS REPORT OF FRESH WATER QUALITY

1. Name of the Location : GW2: Narayana Guru Community Hall, Permude
2. Name of the Industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Spécial Economic Zone, Permude
Mangalore-574509.
3. Sample Collected By : M/s Environmental Health and Safety Research and
Development Centre, Bangalore - 560 010.
4. Date of Collection : 12.02.2015
5. Particulars of Sample Collected : Bore well water, Grab Sampling
6. Date of Sample Receipt : 16.02.2015
7. Sample Number : EHSRDC/OMPL/W/15/02/10140
8. Protocol : APHA, 22nd Edition

Sl. No	PARAMETERS	UNIT	Test Methods	Std. IS 10500:2012 (Second Revision)		Code
				DL	PL	
						GW2
						10140
1.	pH	--	4500H* B	6.5-8.5		6.96
2.	Colour	Hazen	--	5	15	<1
3.	Odour	--	--	Unobjectionable		Unobjectionable
4.	Taste	--	--	Agreeable		Agreeable
5.	Turbidity	NTU	2130 B	1	5	0.16
6.	Total Dissolved Solids	mg/L	2540 C	500	2000	102.0
7.	Total Hardness	mg/L	2340 C	200	600	72.0
8.	Calcium as Ca	mg/L	3500-Ca	75	200	20.8
9.	Magnesium as Mg	mg/L	3500 Mg B	30	100	4.86
10.	Sulphate as SO ₄	mg/L	4500-SO ₄ ²⁻	200	400	3.13
11.	Fluoride as F	mg/L	4500F D	1	1.5	BDL
12.	Nitrate as NO ₃	mg/L	4500-NO ₃ E	45		1.65
13.	Chloride as Cl	mg/L	4500-Cl B	250	1000	13.4
14.	Iron as Fe	mg/L	3500-Fe B	0.3		0.10
15.	Alkalinity	mg/L	2320 B	200	600	16.0
16.	Chromium Hexavalent	mg/L	3500 Cr B	---		BDL
17.	E-Coli	CFU/100ml	IS:15185	Absent		Absent
18.	Total Coliform	CFU/100ml	9222 B	10		<1

Note:- BDL- Below Detectable Limit, DL - Desirable Limit, PL - Permissible Limit.

End of Report


Authorized Signatory

Name :

Dr. Siddalingeshwar K G
Designation : Head of Laboratory

Test Report

ANALYSIS REPORT OF FRESH WATER QUALITY

1. Name of the Location : GW3: Gagnet Labor Colony
2. Name of the Industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Spécial Economic Zone, Permude
Mangalore-574509
3. Sample Collected By : M/s Environmental Health and Safety Research and
Development Centre, Bangalore - 560 010.
4. Date of Collection : 12.02.2015
5. Particulars of Sample Collected : Bore well water, Grab Sampling
6. Date of Sample Receipt : 16.02.2015
7. Sample Number : EHSRDC/OMPL/W/15/02/10141
8. Protocol : APHA, 22nd Edition

Sl.No	PARAMETERS	UNIT	Test Methods	Std. IS 10500:2012 (Second Revision)		Code
				DL	PL	
						GW3
						10141
1.	pH	--	4500H ⁺ B	6.5-8.5		7.18
2.	Colour	Hazen	--	5	15	<1
3.	Odour	--	--	Unobjectionable		Unobjectionable
4.	Taste	--	--	Agreeable		Agreeable
5.	Turbidity	NTU	2130 B	1	5	0.24
6.	Total Dissolved Solids	mg/L	2540 C	500	2000	146.0
7.	Total Hardness	mg/L	2340 C	200	600	100.0
8.	Calcium as Ca	mg/L	3500-Ca	75	200	27.2
9.	Magnesium as Mg	mg/L	3500 Mg B	30	100	7.77
10.	Sulphate as SO ₄	mg/L	4500-SO ₄ ²⁻	200	400	24.71
11.	Fluoride as F	mg/L	4500P D	1	1.5	0.37
12.	Nitrate as NO ₃	mg/L	4500-NO ₃ E	45		1.35
13.	Chloride as Cl	mg/L	4500-Cl B	250	1000	28.71
14.	Iron as Fe	mg/L	3500-Fe B	0.3		0.09
15.	Alkalinity	mg/L	2320 B	200	600	28.0
16.	Chromium Hexavalent	mg/L	3500 Cr B	---		BDL
17.	E-Coli	CFU/100ml	IS:15185	Absent		Absent
18.	Total Coliform	CFU/100ml	9222 B	10		2

Note:- BDL- Below Detectable Limit, DL - Desirable Limit, PL - Permissible Limit.

End of Report

Authorized Signatory

Name : Dr. Siddalingeshwar K G
Designation : Head of Laboratory

Test Report

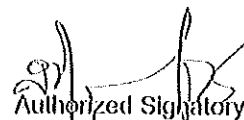
ANALYSIS REPORT OF FRESH WATER QUALITY

1. Name of the Location : OW1: Tenka-Ekkar
2. Name of the Industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Spécial Economic Zone, Permude
Mangalore-574509
3. Sample Collected By : M/s Environmental Health and Safety Research and
Development Centre, Bangalore - 560 010.
4. Date of Collection : 12.02.2015
5. Particulars of Sample Collected : Open well water, Grab Sampling
6. Date of Sample Receipt : 16.02.2015
7. Sample Number : EHSRDC/OMPL/W/15/02/10142
8. Protocol : APHA, 22nd Edition

Sl.No	PARAMETERS	UNIT	Test Methods	Std. IS 10500:2012 (Second Revision)		Code
				DL	PL	OW1 10142
1.	pH	--	4500H+ B	6.5-8.5		6.93
2.	Colour	Hazen	--	5	15	<1
3.	Odour	--	--	Unobjectionable		Unobjectionable
4.	Taste	--	--	Agreeable		Agreeable
5.	Turbidity	NTU	2130 B	1	5	0.09
6.	Total Dissolved Solids	mg/L	2540 C	500	2000	88.0
7.	Total Hardness	mg/L	2340 C	200	600	61.0
8.	Calcium as Ca	mg/L	3500-Ca	75	200	12.8
9.	Magnesium as Mg	mg/L	3500 Mg B	30	100	7.04
10.	Sulphate as SO ₄	mg/L	4500-SO ₄ ²⁻	200	400	1.94
11.	Fluoride as F	mg/L	4500F D	1	1.5	0.28
12.	Nitrate as NO ₃	mg/L	4500-NO ₃ E	45		11.1
13.	Chloride as Cl	mg/L	4500-Cl B	250	1000	11.96
14.	Iron as Fe	mg/L	3500-Fe B	0.3		BDL
15.	Alkalinity	mg/L	2320 B	200	600	20.0
16.	Chromium Hexavalent	mg/L	3500 Cr B	---		BDL
17.	E-Coli	CFU/100ml	IS:15185	Absent		Absent
18.	Total Coliform	CFU/100ml	9222 B	10		<1

Note:- BDL- Below Detectable Limit, DL - Desirable Limit, PL - Permissible Limit.

End of Report


Authorized Signatory

Name : Dr. Siddalingeshwar K G
Designation : Head of Laboratory

Test Report

ANALYSIS REPORT OF FRESH WATER QUALITY

1. Name of the Location : OW2: Shanthiguda Village
2. Name of the Industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Spécial EconomicZone,Permude
Mangalore-574509.
3. Sample Collected By : M/s Environmental Health and Safety Research and
Development Centre, Bangalore - 560 010.
4. Date of Collection : 12.02.2015
5. Particulars of Sample Collected : Open well water, Grab Sampling
6. Date of Sample Receipt : 16.02.2015
7. Sample Number : EHSRDC/OMPL/W/15/02/10143
8. Protocol : APHA, 22nd Edition

Sl.No	PARAMETERS	UNIT	Test Methods	Std. IS 10500:2012 (Second Revision)		Code
				DL	PL	OW2 10143
1.	pH	--	4500H+ B	6.5-8.5		6.98
2.	Colour	Hazen	--	5	15	<1
3.	Odour	--	--	Unobjectionable		Unobjectionable
4.	Taste	--	--	Agreeable		Agreeable
5.	Turbidity	NTU	2130 B	1	5	0.14
6.	Total Dissolved Solids	mg/L	2540 C	500	2000	83.0
7.	Total Hardness	mg/L	2340 C	200	600	48.0
8.	Calcium as Ca	mg/L	3500-Ca	75	200	14.4
9.	Magnesium as Mg	mg/L	3500 Mg B	30	100	2.91
10.	Sulphate as SO ₄	mg/L	4500-SO ₄ ²⁻	200	400	1.94
11.	Fluoride as F	mg/L	4500F D	1	1.5	0.47
12.	Nitrate as NO ₃	mg/L	4500-NO ₃ E	45		3.07
13.	Chloride as Cl	mg/L	4500-Cl B	250	1000	9.57
14.	Iron as Fe	mg/L	3500-Fe B	0.3		BDL
15.	Alkalinity	mg/L	2320 B	200	600	20.0
16.	Chromium Hexavalent	mg/L	3500 Cr B	---		BDL
17.	E-Coli	CFU/100ml	IS:15185	Absent		Absent
18.	Total Coliform	CFU/100ml	9222 B	10		<1

Note:- BDL- Below Detectable Limit, DL - Desirable Limit, PL - Permissible Limit.

End of Report


Authorized Signatory

Name : Dr. Siddalingeshwar K G
Designation : Head of Laboratory

Test Report

ANALYSIS REPORT OF FRESH WATER QUALITY

1. Name of the Location : SW1: Near Central Warehouse, OMPL
2. Name of the Industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Spécial Economic Zone, Perumde
Mangalore-574509
3. Sample Collected By : M/s Environmental Health and Safety Research and
Development Centre, Bangalore - 560 010.
4. Date of Collection : 12.02.2015
5. Particulars of Sample Collected : Surface water, Grab Sampling
6. Date of Sample Receipt : 16.02.2015
7. Sample Number : EHSRDC/OMPL/W/15/02/10144
8. Protocol : APHA, 22nd Edition

Sl.No	PARAMETERS	UNIT	Test Methods	Std. IS 10500:2012 (Second Revision)		Code
				DL	PL	SW1
						10144
1.	pH	--	4500H ⁺ B	6.5-8.5		7.88
2.	Colour	Hazen	--	5	15	<1
3.	Odour	--	--	Unobjectionable		Unobjectionable
4.	Taste	--	--	Agreeable		Agreeable
5.	Turbidity	NTU	2130 B	1	5	0.26
6.	Total Dissolved Solids	mg/L	2540 C	500	2000	71.0
7.	Total Hardness	mg/L	2340 C	200	600	31.0
8.	Calcium as Ca	mg/L	3500-Ca	75	200	8.8
9.	Magnesium as Mg	mg/L	3500-Mg B	30	100	2.18
10.	Sulphate as SO ₄	mg/L	4500-SO ₄ ²⁻	200	400	10.40
11.	Fluoride as F	mg/L	4500F D	1	1.5	BDL
12.	Nitrate as NO ₃	mg/L	4500-NO ₃ E	45		2.17
13.	Chloride as Cl	mg/L	4500-Cl B	250	1000	11.48
14.	Iron as Fe	mg/L	3500-Fe B	0.3		0.13
15.	Alkalinity	mg/L	2320 B	200	600	36.0
16.	Chromium Hexavalent	mg/L	3500 Cr B	---		BDL
17.	E-Coli	CFU/100ml	IS:15185	Absent		Absent
18.	Total Coliform	CFU/100ml	9222 B	10		1

Note:- BDL- Below Detectable Limit, DL - Desirable Limit, PL - Permissible Limit.

End of Report

Authorized Signatory

Name

Dr. Siddalingeshwar K G

Designation : Head of Laboratory

ANALYSIS REPORT OF FRESH WATER QUALITY

TEST REPORT

1. Name of the Location : SW2: Near Flare area, OMPL
2. Name of the Industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Spécial Economic Zone, Pernude
Mangalore-574509
3. Sample Collected By : M/s Environmental Health and Safety Research and
Development Centre, Bangalore - 560 010.
4. Date of Collection : 12.02.2015
5. Particulars of Sample Collected : Bore well water/Open well water/Surface water,
Grab Sampling
6. Date of Sample Receipt : 16.02.2015
7. Sample Number : EHSRDC/OMPL/W/15/02/10145
8. Protocol : APHA, 22nd Edition

Sl.No	PARAMETERS	UNIT	Test Methods	Std. IS 10500:2012 (Second Revision)		Code
				DL	PL	SW2
						10145
1.	pH	--	4500H+ B	6.5-8.5		7.52
2.	Colour	Hazen	--	5	15	<1
3.	Odour	--	--	Unobjectionable		Unobjectionable
4.	Taste	--	--	Agreeable		Agreeable
5.	Turbidity	NTU	2130 B	1	5	1.06
6.	Total Dissolved Solids	mg/L	2540 C	500	2000	112.0
7.	Total Hardness	mg/L	2340 C	200	600	55
8.	Calcium as Ca	mg/L	3500-Ca	75	200	14.4
9.	Magnesium as Mg	mg/L	3500 Mg B	30	100	4.61
10.	Sulphate as SO ₄	mg/L	4500-SO ₄ ²⁻	200	400	11.93
11.	Fluoride as F	mg/L	4500F D	1	1.5	0.11
12.	Nitrate as NO ₃	mg/L	4500-NO ₃ E	45		1.65
13.	Chloride as Cl	mg/L	4500-Cl B	250	1000	14.83
14.	Iron as Fe	mg/L	3500-Fe B	0.3		0.14
15.	Alkalinity	mg/L	2320 B	200	600	42.0
16.	Chromium Hexavalent	mg/L	3500 Cr B	---		BDL
17.	E-Coli	CFU/100ml	IS:15185	Absent		Absent
18.	Total Coliform	CFU/100ml	9222 B	10		2

Note:- BDL- Below Detectable Limit, DL - Desirable Limit, PL - Permissible Limit.

End of Report

Authorized Signatory

Name : Dr. Siddalingeshwar K G
Designation : Head of Laboratory

ANALYSIS REPORT OF DRINKING WATER QUALITY

1. Name of the Location : GW4: L&T New Labour Colony
2. Name of the Industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Spécial Economic Zone, Perumde
Mangalore-574509
3. Sample Collected By : M/s Environmental Health and Safety Research and
Development Centre, Bangalore - 560 010.
4. Date of Collection : 12.02.2015
5. Particulars of Sample Collected : Bore well water, Grab Sampling
6. Date of Sample Receipt : 16.02.2015
7. Sample Number : EHSRDC/OMPL/W/15/02/10146
8. Protocol : APHA, 22nd Edition

Sl.No	PARAMETERS	UNIT	Test Methods	Std. IS 10500:2012 (Second Revision)		Code
				DL	PL	
						GW4
						10146
1.	pH	--	4500H+ B	6.5-8.5		7.65
2.	Colour	Hazen	--	5	15	<1
3.	Odour	--	--	Unobjectionable		Unobjectionable
4.	Taste	--	--	Agreeable		Agreeable
5.	Turbidity	NTU	2130 B	1	5	0.09
6.	Total Dissolved Solids	mg/L	2540 C	500	2000	146.0
7.	Total Hardness	mg/L	2340 C	200	600	90.0
8.	Calcium as Ca	mg/L	3500-Ca	75	200	21.6
9.	Magnesium as Mg	mg/L	3500 Mg B	30	100	8.74
10.	Sulphate as SO ₄	mg/L	4500-SO ₄ ²⁻	200	400	24.45
11.	Fluoride as F	mg/L	4500F D	1	1.5	0.33
12.	Nitrate as NO ₃	mg/L	4500-NO ₃ E	45		1.4
13.	Chloride as Cl	mg/L	4500-Cl B	250	1000	10.52
14.	Iron as Fe	mg/L	3500-Fe B	0.3		0.47
15.	Alkalinity	mg/L	2320 B	200	600	56.0
16.	Chromium Hexavalent	mg/L	3500 Cr B	---		BDL
17.	E-Coli	CFU/100ml	IS:15185	Absent		Absent
18.	Total Coliform	CFU/100ml	9222 B	10		<1

Note: BDL- Below Detectable Limit, DL - Desirable Limit, PL - Permissible Limit.

End of Report


Authorized Signatory

Name: Dr. Siddalingeshwar K G
Designation: Head of Laboratory

ANALYSIS REPORT OF FRESH WATER QUALITY

Test Report

1. Name of the Location : Perumda Village
2. Name of the Industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Spécial Economic Zone, Perumda
Mangalore-574509
3. Sample Collected By : M/s Environmental Health and Safety Research and
Development Centre, Bangalore - 560 010.
4. Date of Collection : 12.02.2015
5. Particulars of Sample Collected : Open well water, Grab Sampling
6. Date of Sample Receipt : 16.02.2015
7. Sample Number : BHSRDC/OMPL/W/15/02/10147
8. Protocol : APHA, 22nd Edition

Sl.No	PARAMETERS	UNIT	Test Methods	Std. IS 10500:2012 (Second Revision)		Code
				DL	PL	
						OW3
						10147
1.	pH	--	4500H ⁺ B	6.5-8.5		7.53
2.	Colour	Hazen	--	5	15	<1
3.	Odour	--	--	Unobjectionable		Unobjectionable
4.	Taste	--	--	Agreeable		Agreeable
5.	Turbidity	NTU	2130 B	1	5	0.02
6.	Total Dissolved Solids	mg/L	2540 C	500	2000	136.0
7.	Total Hardness	mg/L	2340 C	200	600	96.0
8.	Calcium as Ca	mg/L	3500-Ca	75	200	30.4
9.	Magnesium as Mg	mg/L	3500 Mg B	30	100	4.86
10.	Sulphate as SO ₄	mg/L	4500-SO ₄ ²⁻	200	400	5.5
11.	Fluoride as F	mg/L	4500F D	1	1.5	8DL
12.	Nitrate as NO ₃	mg/L	4500-NO ₃ E	45		1.95
13.	Chloride as Cl	mg/L	4500-Cl B	250	1000	24.88
14.	Iron as Fe	mg/L	3500-Fe B	0.3		0.01
15.	Alkalinity	mg/L	2320 B	200	600	80.0
16.	Chromium Hexavalent	mg/L	3500 Cr B	---		BDL
17.	E-Coli	CFU/100ml	IS:15185	Absent		Absent
18.	Total Coliform	CFU/100ml	9222 B	10		<1

Note:- BDL- Below Detectable Limit, DL - Desirable Limit, PL - Permissible Limit.

End of Report

Authorized Signatory

Name : Dr. Siddalingeshwar K G
Designation : Head of Laboratory

Test Report

AMBIENT NOISE LEVEL MONITORING REPORT

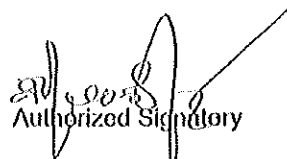
1. Name of the Project : M/s. ONGC Mangalore Petrochemicals Limited,
Mangalore Spécial Economic Zone,
Pernude,
Mangalore-574509.
2. Sample Collected by : M/s. Environmental Health and Safety Research &
Development Centre, Bangalore - 560 010.
3. Date of Collection : 10.02.2015
4. Particulars of Sample : Ambient Noise Level collected through
Collected Sound Level Meter EQ-8852/C-322
5. Date of Sample Receipt : 12.02.2015
6. Sample Number : EHSRDC/OMPL/N/15/02/ 10060 - 10063
7. Method Adopted : Instrument Method

Code No	Sample Location	Parameters		Std.
		Day Time dB(A)	Night Time dB(A)	
10060	OMPL East Side Boundary	67.57	54.50	75.0 dB(A) Day
10061	OMPL South Side Boundary	63.83	57.82	
10062	OMPL North Side Boundary	69.82	56.25	70 dB(A) Night
10063	OMPL West Side Boundary	66.85	53.82	

Note :

- * Day Time is reckoned between 6 A.M and 10 P.M
- * Night Time is reckoned between 10 P.M and 6 A.M
- * L_{eq} : It is energy mean of the noise level over a specified period.
- * $^{*}dB(A)$ L_{eq} denotes the time weighted average of the level of sound in decibels on scale A which is relatable to human hearing.
- * A "decibel" is a unit in which noise is measured.
- * "A", in dB (A) L_{eq} denotes the frequency weighting in the measurement of noise and corresponds to Frequency response characteristics of the human ear.

End of Report


Authorized Signatory

Name : Dr. Siddalingeshwar K G
Designation : Head of Laboratory

REF: OMPL/PCB/RS/2014-15/

Date: 19.2.2015

To:

The Environmental Officer

Divisional Office

KSPCB

Baikampady, Mangalore-11

Dear Sir,

Sub: Submission of Environmental monitoring report, Water Cess Returns for the Month of January, 2014, and Stack Monitoring (Manual) Reports

Ref: CFO No. PCB/245/HPI/ONGC/2014-15/593 dated 18th August 2014

With respect to the above subject; we are herewith submitting the following Environmental monitoring reports, Water Cess Returns for the Month of January, 2015, & Stack Monitoring Report carried out in the Month of December, 2014, as Annexure-A, Annexure-B and Annexure-C, respectively enclosed herewith.

1. Ambient air analysis at 5 different locations in and around OMPL
2. Water analysis reports at 8 different locations in and around OMPL
3. Noise level report at OMPL
4. Water Cess Returns, for the Month of January, 2014
5. Stack Monitoring Report

Thanking You,

SP

R Sridharan
COO



CC: Member Secretary, KSPCB, Bangalore
CC: Head (Technical), MSEZ
CC: CEO, OMPL for info

Test Report

ANALYSIS REPORT OF AMBIENT AIR QUALITY

1. Name of the location : OMPL East Side
2. Name of the industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Spécial Economic Zone, Permude
Mangalore-574509.
3. Sample Collected By : M/s Environmental Health & Safety Research and
Development Centre, Bangalore - 560 010.
4. Particulars of Sample Collected : Ambient Air collected through
Fine Particulate Sampler - APM 550/APM 550 Mini
Respirable Dust Sampler - 460NL,
CO & O₃ Analyzers.
5. Date of collection : For the Month of January- 2015 (Monitored for 24 hours)
6. Sample Number : EHSRDC/OMPL/A/15/01/

PARAMETERS		WK 2		WK 3		WK 4		WK 5	
	DATE	05/01/2015	06/01/2015	12/01/2015	13/01/2015	19/01/2015	20/01/2015	26/01/2015	27/01/2015
	CODE	8715	8838	9013	9086	9200	9311	9472	9483
	LIMITS								
PM ₁₀ (µg/m ³)	100	61	78	59	68	66	60	63	65
PM _{2.5} (µg/m ³)	60	15	17	27	25	19	16	16	16
SO ₂ (µg/m ³)	80	2.32	2.20	2.32	2.39	2.88	2.35	2.66	3.11
NO ₂ (µg/m ³)	80	3.63	3.45	3.47	3.36	3.92	3.42	3.72	3.89
CO (mg/m ³)	4	0.69	0.88	0.88	0.85	0.89	0.82	0.80	0.89
O ₃ (µg/m ³)	180	0.85	0.70	0.87	0.83	0.77	0.88	0.88	0.78

Authorized Signatory

Name : Dr. Siddalingeshwar K.G.

Designation : Head of Laboratory

Note :

1. The results refer only to the tested samples & applicable parameters.
2. This report not to be reproduced wholly or in part & cannot be used as an evidence in the Court of Law & should be not used in any advertising media without our special permission.
3. Sample(S) not drawn by us unless stated.
4. Total liability of our laboratory is to invoiced amount. Any dispute arising out of this report is subjected to Bangalore jurisdiction only.
5. The Report Shall not be reproduced partially without the consent of the laboratory.
6. After 15 days of report submission the samples will be discarded.

Test Report

PARAMETERS	DATE	WK 2		WK 3		WK 4		WK 5	
		05/01/2015	06/01/2015	12/01/2015	13/01/2015	19/01/2015	20/01/2015	26/01/2015	27/01/2015
	CODE LIMITS	8715	8838	9013	9086	9200	9311	9472	9483
NH ₃ (µg/m ³)	400	1.54	1.85	1.98	1.87	1.80	1.24	1.88	1.70
Lead (µg/m ³)	1	0.112	0.082	0.042	0.042	0.24	0.10	0.028	0.043
Arsenic (ng/m ³)	6	0.238	0.23	0.47	BDL	BDL	0.33	BDL	BDL
Nickel (ng/m ³)	20	8.87	6.3	3.06	3.40	6.60	5.74	9.26	BDL
Benzene (µg/m ³)	5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
B(a)P (ng/m ³)	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

End of Report

Authorized Signatory

Name: Dr. Siddalingeshwar K.G.

Designation : Head of Laboratory

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Test Report

ANALYSIS REPORT OF AMBIENT AIR QUALITY

1. Name of the location : Shantigudda
2. Name of the industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Spécial Economic Zone, Perinude
Mangalore-574509.
3. Sample Collected By : M/s Environmental Health & Safety Research and
Development Centre, Bangalore - 560 010.
4. Particulars of Sample Collected : Ambient Air collected through
Fine Particulate Sampler - APM 550/APM 550 Mini
Respirable Dust Sampler - 460NL,
CO & O₃ Analyzers.
5. Date of collection : For the Month of January- 2015
6. Sample Number : EHSRDC/OMPL/A/15/01/

PARAMETERS	LIMITS	WK 2		WK 3		WK 4		WK 5	
		05/01/2015	06/01/2015	12/01/2015	13/01/2015	19/01/2015	20/01/2015	26/01/2015	27/01/2015
		8716	8839	9014	9087	9202	9313	9474	9485
PM ₁₀ (µg/m ³)	100	59	66	60	69	68	63	60	58
PM _{2.5} (µg/m ³)	60	19	20	18	24	20	17	19	20
SO ₂ (µg/m ³)	80	2.65	2.22	2.98	2.67	2.82	2.88	2.90	2.75
NO ₂ (µg/m ³)	80	3.12	3.64	3.80	3.71	3.82	3.99	3.11	3.11
CO (mg/m ³)	4	0.74	0.75	0.74	0.80	0.72	0.68	0.82	0.72
O ₃ (µg/m ³)	180	0.80	0.81	0.80	0.72	0.78	0.75	0.91	0.76

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Test Report

PARAMETERS	DATE	WK 2		WK 3		WK 4		WK 5	
		05/01/2015	06/01/2015	12/01/2015	13/01/2015	19/01/2015	20/01/2015	26/01/2015	27/01/2015
	CODE	8716	8839	9014	9087	9202	9313	9474	9485
	LIMITS								
NH ₃ (µg/m ³)	400	1.63	1.85	1.77	1.66	1.90	1.66	1.49	1.81
Lead (µg/m ³)	1	0.042	0.028	0.013	0.22	0.021	0.016	BDL	0.019
Arsenic (ng/m ³)	6	0.72	0.24	0.24	BDL	BDL	BDL	BDL	BDL
Nickel (ng/m ³)	20	6.14	6.40	8.44	6.01	13.93	8.40	7.98	12.37
Benzene (µg/m ³)	5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
B(a)P (ng/m ³)	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

End of Report

Authorized Signatory

Name : Dr. Siddalingeshwar K.G.

Designation : Head of Laboratory

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Test Report

ANALYSIS REPORT OF AMBIENT AIR QUALITY

1. Name of the location : Tenka- Ekkar
2. Name of the industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Spécial Economic Zone, Permude
Mangalore-574509.
3. Sample Collected By : M/s Environmental Health & Safety Research and
Development Centre, Bangalore - 560 010.
4. Particulars of Sample Collected : Ambient Air collected through
Fine Particulate Sampler - APM 550/ APM 550 Mini
Respirable Dust Sampler - 460NL,
CO & O₃ Analyzers.
5. Date of collection : For the Month of January- 2015
6. Sample Number : EHSRDC/OMPL/A/15/01/

PARAMETERS	DATE	WK 2		WK 3		WK 4		WK 5	
		07/01/2015	08/01/2015	14/01/2015	15/01/2015	21/01/2015	22/01/2015	28/01/2015	29/01/2015
		CODE	8840	8906	9089	9127	9364	9382	9571
		LIMITS							9571(b)
PM ₁₀ (µg/m ³)	100	62	63	66	70	64	62	69	66
PM _{2.5} (µg/m ³)	60	24	19	21	28	16	16	22	23
SO ₂ (µg/m ³)	80	2.54	2.36	2.66	2.78	2.88	3.16	2.67	2.37
NO ₂ (µg/m ³)	80	3.14	3.78	3.05	2.82	3.99	2.78	3.19	3.29
CO (mg/m ³)	4	0.83	0.78	0.77	0.79	0.68	0.68	0.66	0.88
O ₃ (µg/m ³)	180	0.72	0.82	0.8	0.85	0.75	0.72	0.79	0.95

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Test Report

PARAMETERS	DATE	WK 2		WK 3		WK 4		WK 5	
		07/01/2015	08/01/2015	14/01/2015	15/01/2015	21/01/2015	22/01/2015	28/01/2015	29/01/2015
	CODE	8840	8906	9089	9127	9364	9382	9571	9571(b)
	LIMITS								
NH ₃ (µg/m ³)	400	1.55	2.08	1.78	2.10	1.66	1.15	2.02	1.91
Lead (µg/m ³)	1	0.009	0.022	0.017	0.093	0.005	0.086	0.032	0.079
Arsenic (ng/m ³)	6	1.91	0.96	BDL	0.50	1.09	BDL	BDL	BDL
Nickel (ng/m ³)	20	5.19	8.69	10.53	8.70	4.08	12.79	6.01	10.48
Benzene (µg/m ³)	5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
B(a)P (ng/m ³)	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

End of Report


Authorized Signatory

Name : Dr. Siddalingeshwar K.G.

Designation : Head of Laboratory

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Test Report

ANALYSIS REPORT OF AMBIENT AIR QUALITY

1. Name of the location : Permude
2. Name of the industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Spécial Economic Zone, Permude
Mangalore-574509
3. Sample Collected By : M/s Environmental Health & Safety Research and
Development Centre, Bangalore - 560 010.
4. Particulars of Sample Collected : Ambient Air collected through
Fine Particulate Sampler - APM 550/APM 550 Mini
Respirable Dust Sampler - 460NL,
CO & O₃ Analyzers.
5. Date of collection : For the Month of January- 2015
6. Sample Number : EHSRDC/OMPL/A/15/01/

PARAMETERS		WK 2		WK 3		WK 4		WK 5	
	DATE	08/01/2015	09/01/2015	15/01/2015	16/01/2015	22/01/2015	23/01/2015	29/01/2015	30/01/2015
	CODE	8905	8960	9128	9172	9383	9391	9571(a)	9575(a)
	LIMITS								
PM ₁₀ (µg/m³)	100	60	65	61	65	63	70	61	69
PM _{2.5} (µg/m³)	60	22	21	20	17	19	25	19	25
SO ₂ (µg/m³)	80	2.58	2.10	2.95	3.12	3.75	2.96	2.52	2.85
NO ₂ (µg/m³)	80	3.68	3.45	3.63	3.96	4.05	3.19	3.79	3.19
CO (mg/m³)	4	0.72	0.85	0.80	0.86	0.80	0.70	0.82	0.76
O ₃ (µg/m³)	180	0.82	0.79	0.82	0.90	0.85	0.78	0.89	0.95

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Test Report

PARAMETERS	DATE	WK 2		WK 3		WK 4		WK 5	
		08/01/2015	09/01/2015	15/01/2015	16/01/2015	22/01/2015	23/01/2015	29/01/2015	30/01/2015
		CODE							
		LIMITS	8905	8960	9128	9172	9383	9391	9571(a) 9575(a)
NH ₃ (µg/m ³)	400		2.01	1.78	1.63	2.15	1.98	2.03	2.06 1.66
Lead (µg/m ³)	1		0.023	0.0228	0.17	0.0017	BDL	BDL	0.094 0.0070
Arsenic (ng/m ³)	6		0.9%	1.062	1.16	0.26	BDL	BDL	BDL BDL
Nickel (ng/m ³)	20		12.17	10.69	5.99	9.32	BDL	BDL	13.80 6.068
Benzene (µg/m ³)	5		BDL	BDL	BDL	BDL	BDL	BDL	BDL BDL
B(a)P (ng/m ³)	1		BDL	BDL	BDL	BDL	BDL	BDL	BDL BDL

End of Report

Authorized Signatory

Name : Dr. Siddalingeshwar K.G.

Designation : Head of Laboratory

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Test Report

ANALYSIS REPORT OF AMBIENT AIR QUALITY

1. Name of the location : OMPL West Side
2. Name of the industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Spécial Economic Zone, Permude
Mangalore-574509
3. Sample Collected By : M/s Environmental Health & Safety Research and
Development Centre, Bangalore - 560 010.
4. Particulars of Sample Collected : Ambient Air collected through
Fine Particulate Sampler - APM 550/APM 550 Mini
Respirable Dust Sampler - 460NL,
CO & O₃ Analyzers.
5. Date of collection : For the Month of January- 2015
6. Sample Number : EHSRDC/OMPL/A/15/01/

PARAMETERS		WK 2		WK 3		WK 4		WK 5	
	DATE	10/01/2015	11/01/2015	12/01/2015	13/01/2015	19/01/2015	20/01/2015	26/01/2015	27/01/2015
	CODE	8961	8985	9015	9088	9201	9312	9473	9484
	LIMITS								
PM ₁₀ (µg/m ³)	100	65	61	64	62	70	59	59	67
PM _{2.5} (µg/m ³)	60	21	26	23	18	23	15	17	19
SO ₂ (µg/m ³)	80	2.57	3.21	2.57	2.10	2.15	2.61	2.92	3.51
NO ₂ (µg/m ³)	80	3.69	3.11	3.41	3.65	3.39	3.72	3.82	3.77
CO (mg/m ³)	4	0.81	0.77	0.78	0.82	0.80	0.92	0.80	0.92
O ₃ (µg/m ³)	180	0.74	0.84	0.81	0.77	0.85	0.82	0.79	0.85

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Test Report

PARAMETERS	DATE	WK 2		WK 3		WK 4		WK 5	
		10/01/2015	11/01/2015	12/01/2015	13/01/2015	19/01/2015	20/01/2015	26/01/2015	27/01/2015
	CODE	8961	8985	9015	9088	9201	9312	9473	9484
	LIMITS								
NH ₃ (µg/m ³)	400	1.47	1.65	1.68	1.69	1.25	1.95	1.32	1.88
Lead (µg/m ³)	1	0.027	0.164	0.046	0.119	0.017	0.13	0.15	0.023
Arsenic (ng/m ³)	6	0.23	BDL	0.48	0.24	BDL	0.28	BDL	BDL
Nickel (ng/m ³)	20	12.65	10.80	10.7	5.23	11.89	6.42	9.05	5.87
Benzene (µg/m ³)	5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
B(a)P (ng/m ³)	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

End of Report

Authorized Signatory

Name : Dr. Siddalingeshwar K.G.

Designation : Head of Laboratory

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Test Report

AMBIENT NOISE LEVEL MONITORING REPORT

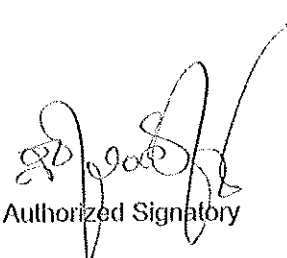
1. Name of the Project : M/s. ONGC Mangalore Petrochemicals Limited,
Mangalore Spécial Economic Zone,
Permude,
Mangalore-574509.
2. Sample Collected by : M/s. Environmental Health and Safety Research &
Development Centre, Bangalore - 560 010.
3. Date of Collection : 16.01.2015
4. Particulars of Sample : Ambient Noise Level collected through
Collected Sound Level Meter EQ-8852/C-322
5. Date of Sample Receipt : 19.01.2015
6. Sample Number : EHSRDC/OMPL/N/15/01/ 9173- 9176
7. Method Adopted : Instrument Method

Code No	Sample Location	Parameters		Std.
		Day Time dB(A)	Night Time dB(A)	
9173	OMPL East Side Boundary	64.04	55.21	75.0 dB(A) Day
9174	OMPL West Side Boundary	57.8	50.12	
9175	OMPL South Side Boundary	61.12	49.2	70 dB(A) Night
9176	OMPL North Side Boundary	64.52	53.12	

Note :

- Day Time is reckoned between 6 A.M and 10 P.M
- Night Time is reckoned between 10 P.M and 6 A.M
- L_{eq} It is energy mean of the noise level over a specified period.
- *dB (A) L_{eq} denotes the time weighted average of the level of sound in decibels on scale A which is relatable to human hearing.
- A "decibel" is a unit in which noise is measured.
- "A", in dB (A) L_{eq} , denotes the frequency weighting in the measurement of noise and corresponds to Frequency response characteristics of the human ear.

End of Report


Authorized Signatory

Name : Dr. Siddalingeshwar K.G.

Designation : Head of Laboratory

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Test Report

ANALYSIS REPORT OF FRESH WATER QUALITY

1. Name of the Location : GW1: OMPL (Near ETP)
2. Name of the Industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Spécial Economic Zone, Pernude
Mangalore-574509.
3. Sample Collected By : M/s Environmental Health and Safety Research and
Development Centre, Bangalore - 560 010.
4. Date of Collection : 05.01.2015
5. Particulars of Sample Collected : Bore well water, Grab Sampling
6. Date of Sample Receipt : 06.01.2015
7. Sample Number : EHSRDC/OMPL/W/15/01/8668
8. Protocol : APHA, 22nd Edition

Sl.No	PARAMETERS	UNIT	Test Methods	Std. IS 10500:2012 (Second Revision)		Code
				DL	PL	GW1 8668
1.	pH	--	4500H ⁺ B	6.5-8.5		7.37
2.	Colour	Hazen	--	5	15	<1
3.	Odour	--	--	Unobjectionable		Unobjectionable
4.	Taste	--	--	Agreeable		Agreeable
5.	Turbidity	NTU	2130 B	1	5	0.19
6.	Total Dissolved Solids	mg/L	2540 C	500	2000	164.0
7.	Total Hardness	mg/L	2340 C	200	600	71.0
8.	Calcium as Ca	mg/L	3500-Ca	75	200	25.6
9.	Magnesium as Mg	mg/L	3500 Mg B	30	100	1.7
10.	Sulphate as SO ₄	mg/L	4500-SO ₄ ²⁻	200	400	13.83
11.	Fluoride as F	mg/L	4500F D	1	1.5	0.74
12.	Nitrate as NO ₃	mg/L	4500-NO ₃ E	45		14.5
13.	Chloride as Cl	mg/L	4500-Cl B	250	1000	15.67
14.	Iron as Fe	mg/L	3500-Fe B	0.3		0.23
15.	Alkalinity	mg/L	2320 B	200	600	29.0
16.	Chromium Hexavalent	mg/L	3500 Cr B	---		BDL
17.	E-Coli	CFU/100ml	IS:15185	Absent		Absent
18.	Total Coliform	CFU/100ml	9222 B	10		<1

Note:- BDL- Below Detectable Limit, DL - Desirable Limit, PL - Permissible Limit.

End of Report

Authorized Signatory

Name : Dr. Siddalingeshwar K.G.

Designation : Head of Laboratory

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Test Report

ANALYSIS REPORT OF FRESH WATER QUALITY

1. Name of the Location : GW2: Narayana Guru Community Hall, Pernude
2. Name of the Industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Spécial Economic Zone, Pernude
Mangalore-574509.
3. Sample Collected By : M/s Environmental Health and Safety Research and
Development Centre, Bangalore - 560 010.
4. Date of Collection : 05.01.2015
5. Particulars of Sample Collected : Bore well water, Grab Sampling
6. Date of Sample Receipt : 06.01.2015
7. Sample Number : EHSRDC/OMPL/W/15/01/8669
8. Protocol : APHA, 22nd Edition

Sl.N o	PARAMETERS	UNIT	Test Methods	Std. IS 10500:2012 (Second Revision)		Code
				DL	PL	GW2
						8669
1.	pH	--	4500H ⁺ B	6.5-8.5		6.54
2.	Colour	Hazen	--	5	15	<1
3.	Odour	--	--	Unobjectionable		Unobjectionable
4.	Taste	--	--	Agreeable		Agreeable
5.	Turbidity	NTU	2130 B	1	5	0.26
6.	Total Dissolved Solids	mg/L	2540 C	500	2000	94.0
7.	Total Hardness	mg/L	2340 C	200	600	64.0
8.	Calcium as Ca	mg/L	3500-Ca	75	200	20.8
9.	Magnesium as Mg	mg/L	3500 Mg B	30	100	2.91
10.	Sulphate as SO ₄	mg/L	4500-SO ₄ ²⁻	200	400	5.79
11.	Fluoride as F	mg/L	4500F D	1	1.5	0.13
12.	Nitrate as NO ₃	mg/L	4500-NO ₃ E	45		2.1
13.	Chloride as Cl	mg/L	4500-Cl B	250	1000	13.3
14.	Iron as Fe	mg/L	3500-Fe B	0.3		0.02
15.	Alkalinity	mg/L	2320 B	200	600	14.0
16.	Chromium Hexavalent	mg/L	3500 Cr B	---		BDL
17.	E-Coli	CFU/100ml	IS:15185	Absent		Absent
18.	Total Coliform	CFU/100ml	9222 B	10		<1

Note:- BDL- Below Detectable Limit, DL - Desirable Limit, PL - Permissible Limit.

End of Report

Authorized Signatory

Name : Dr. Siddalingeshwar K.G.

Designation : Head of Laboratory

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Test Report

ANALYSIS REPORT OF FRESH WATER QUALITY

1. Name of the Location : GW3: Gagnet Labor Colony
2. Name of the Industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Spécial Economic Zone,Permude
Mangalore-574509
3. Sample Collected By : M/s Environmental Health and Safety Research and
Development Centre, Bangalore - 560 010.
4. Date of Collection : 05.01.2015
5. Particulars of Sample Collected : Bore well water, Grab Sampling
6. Date of Sample Receipt : 06.01.2015
7. Sample Number : EHSRDC/OMPL/W/15/01/8670
8. Protocol : APHA, 22nd Edition

Sl.No	PARAMETERS	UNIT	Test Methods	Std. IS 10500:2012 (Second Revision)		Code
				DL	PL	
						GW3
						8670
1.	pH	--	4500H ⁺ B	6.5-8.5		7.57
2.	Colour	Hazen	--	5	15	<1
3.	Odour	--	--	Unobjectionable		Unobjectionable
4.	Taste	--	--	Agreeable		Agreeable
5.	Turbidity	NTU	2130 B	1	5	0.44
6.	Total Dissolved Solids	mg/L	2540 C	500	2000	156.0
7.	Total Hardness	mg/L	2340 C	200	600	104.0
8.	Calcium as Ca	mg/L	3500-Ca	75	200	26.4
9.	Magnesium as Mg	mg/L	3500 Mg B	30	100	9.23
10.	Sulphate as SO ₄	mg/L	4500-SO ₄ ²⁻	200	400	20.28
11.	Fluoride as F	mg/L	4500F D	1	1.5	0.63
12.	Nitrate as NO ₃	mg/L	4500-NO ₃ E	45		2.45
13.	Chloride as Cl	mg/L	4500-Cl B	250	1000	27.07
14.	Iron as Fe	mg/L	3500-Fe B	0.3		0.14
15.	Alkalinity	mg/L	2320 B	200	600	31.0
16.	Chromium Hexavalent	mg/L	3500 Cr B	---		BDL
17.	E-Coli	CFU/100ml	IS:15185	Absent		Absent
18.	Total Coliform	CFU/100ml	9222 B	10		<1

Note:- BDL- Below Detectable Limit, DL - Desirable Limit, PL - Permissible Limit.

End of Report

Authorized Signatory

Name: Dr. Siddalingeshwar K.G.

Designation : Head of Laboratory

See NOTE overleaf

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Test Report

ANALYSIS REPORT OF FRESH WATER QUALITY

1. Name of the Location : GW4: L&T New Labour Colony
2. Name of the Industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Spécial Economic Zone, Pernude
Mangalore-574509
3. Sample Collected By : M/s Environmental Health and Safety Research and
Development Centre, Bangalore - 560 010.
4. Date of Collection : 05.01.2015
5. Particulars of Sample Collected : Bore well water, Grab Sampling
6. Date of Sample Receipt : 06.01.2015
7. Sample Number : EHSRDC/OMPL/W/15/01/8675
8. Protocol : APHA, 22nd Edition

Sl.No	PARAMETERS	UNIT	Test Methods	Std. IS 10500:2012 (Second Revision)		Code
				DL	PL	
						GW4
						8675
1.	pH	--	4500H ⁺ B	6.5-8.5		7.59
2.	Colour	Hazen	--	5	15	<1
3.	Odour	--	--	Unobjectionable		Unobjectionable
4.	Taste	--	--	Agreeable		Agreeable
5.	Turbidity	NTU	2130 B	1	5	0.13
6.	Total Dissolved Solids	mg/L	2540 C	500	2000	137.0
7.	Total Hardness	mg/L	2340 C	200	600	86
8.	Calcium as Ca	mg/L	3500-Ca	75	200	20
9.	Magnesium as Mg	mg/L	3500 Mg B	30	100	8.74
10.	Sulphate as SO ₄	mg/L	4500-SO ₄ ²⁻	200	400	BDL
11.	Fluoride as F	mg/L	4500F D	1	1.5	0.77
12.	Nitrate as NO ₃	mg/L	4500-NO ₃ E	45		1.12
13.	Chloride as Cl	mg/L	4500-Cl B	250	1000	9.5
14.	Iron as Fe	mg/L	3500-Fe B	0.3		0.18
15.	Alkalinity	mg/L	2320 B	200	600	62
16.	Chromium Hexavalent	mg/L	3500 Cr B	---		BDL
17.	E-Coli	CFU/100ml	IS:15185	Absent		Absent
18.	Total Coliform	CFU/100ml	9222 B	10		<1

Note:- BDL- Below Detectable Limit, DL - Desirable Limit, PL - Permissible Limit.

End of Report

Authorized Signatory

Name / Dr. Siddalingeshwar K.G.

Designation : Head of Laboratory

See NOTE overleaf

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Test Report

ANALYSIS REPORT OF FRESH WATER QUALITY

1. Name of the Location : OW1: Tenka-Ekhar
2. Name of the Industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Spécial Economic Zone, Permude
Mangalore-574509
3. Sample Collected By : M/s Environmental Health and Safety Research and
Development Centre, Bangalore - 560 010.
4. Date of Collection : 05.01.2015
5. Particulars of Sample Collected : Open well water, Grab Sampling
6. Date of Sample Receipt : 06.01.2015
7. Sample Number : EHSRDC/OMPL/W/15/01/8671
8. Protocol : APHA, 22nd Edition

Sl.No	PARAMETERS	UNIT	Test Methods	Std. IS 10500:2012 (Second Revision)		Code
				DL	PL	
						OW1
						8671
1.	pH	--	4500H+ B	6.5-8.5		7.71
2.	Colour	Hazen	--	5	15	<1
3.	Odour	--	--	Unobjectionable		Unobjectionable
4.	Taste	--	--	Agreeable		Agreeable
5.	Turbidity	NTU	2130 B	1	5	0.14
6.	Total Dissolved Solids	mg/L	2540 C	500	2000	76.0
7.	Total Hardness	mg/L	2340 C	200	600	53.0
8.	Calcium as Ca	mg/L	3500-Ca	75	200	11.2
9.	Magnesium as Mg	mg/L	3500 Mg B	30	100	6.07
10.	Sulphate as SO ₄	mg/L	4500-SO ₄ ²⁻	200	400	2.15
11.	Fluoride as F	mg/L	4500F D	1	1.5	0.23
12.	Nitrate as NO ₃	mg/L	4500-NO ₃ E	45		5.02
13.	Chloride as Cl	mg/L	4500-Cl B	250	1000	10.45
14.	Iron as Fe	mg/L	3500-Fe B	0.3		0.08
15.	Alkalinity	mg/L	2320 B	200	600	18.0
16.	Chromium Hexavalent	mg/L	3500 Cr B	---		BDL
17.	E-Coli	CFU/100ml	IS:15185	Absent		Absent
18.	Total Coliform	CFU/100ml	9222 B	10		<1

Note:- BDL- Below Detectable Limit, DL - Desirable Limit, PL - Permissible Limit.

End of Report

Authorized Signatory

Name : Dr. Siddalingeshwar K.G.

Designation : Head of Laboratory

See NOTE overleaf

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Test Report

ANALYSIS REPORT OF FRESH WATER QUALITY

1. Name of the Location : OW2: Shanthiguda Village
2. Name of the Industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Spécial Economic Zone, Permude
Mangalore-574509.
3. Sample Collected By : M/s Environmental Health and Safety Research and
Development Centre, Bangalore - 560 010.
4. Date of Collection : 05.01.2015
5. Particulars of Sample Collected : Open well water, Grab Sampling
6. Date of Sample Receipt : 06.01.2015
7. Sample Number : EHSRDC/OMPL/W/15/01/8672
8. Protocol : APHA, 22nd Edition

Sl.No	PARAMETERS	UNIT	Test Methods	Std. IS 10500:2012 (Second Revision)		Code
				DL	PL	
1.	pH	--	4500H ⁺ B	6.5-8.5		OW2
2.	Colour	Hazen	--	5	15	8672
3.	Odour	--	--	Unobjectionable		Unobjectionable
4.	Taste	--	--	Agreeable		Agreeable
5.	Turbidity	NTU	2130 B	1	5	0.20
6.	Total Dissolved Solids	mg/L	2540 C	500	2000	78
7.	Total Hardness	mg/L	2340 C	200	600	44
8.	Calcium as Ca	mg/L	3500-Ca	75	200	12.8
9.	Magnesium as Mg	mg/L	3500 Mg B	30	100	2.91
10.	Sulphate as SO ₄	mg/L	4500-SO ₄ ²⁻	200	400	1.4
11.	Fluoride as F	mg/L	4500F D	1	1.5	0.64
12.	Nitrate as NO ₃	mg/L	4500-NO ₃ E	45		1.57
13.	Chloride as Cl	mg/L	4500-Cl B	250	1000	6.17
14.	Iron as Fe	mg/L	3500-Fe B	0.3		0.08
15.	Alkalinity	mg/L	2320 B	200	600	26.0
16.	Chromium Hexavalent	mg/L	3500 Cr B	---		BDL
17.	E-Coli	CFU/100ml	IS:15185	Absent		Absent
18.	Total Coliform	CFU/100ml	9222 B	10		<1

Note:- BDL- Below Detectable Limit, DL - Desirable Limit, PL - Permissible Limit.

End of Report

Authorized Signatory

Name : Dr. Siddalingeshwar K.G.

Designation : Head of Laboratory

See NOTE overleaf

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Test Report
ANALYSIS REPORT OF FRESH WATER QUALITY

1. Name of the Location : SW1: Near Central Warehouse, OMPL
2. Name of the Industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Spécial Economic Zone, Perumde
Mangalore-574509
3. Sample Collected By : M/s Environmental Health and Safety Research and
Development Centre, Bangalore - 560 010.
4. Date of Collection : 05.01.2015
5. Particulars of Sample Collected : Surface water,
Grab Sampling
6. Date of Sample Receipt : 06.01.2015
7. Sample Number : EHSRDC/OMPL/W/15/01/8673
8. Protocol : APHA, 22nd Edition

Sl.No	PARAMETERS	UNIT	Test Methods	Std. IS 10500:2012 (Second Revision)		Code
				DL	PL	SW1
1.	pH	--	4500H ⁺ B	6.5-8.5		7.88
2.	Colour	Hazen	--	5	15	<1
3.	Odour	--	--	Unobjectionable		Unobjectionable
4.	Taste	--	--	Agreeable		Agreeable
5.	Turbidity	NTU	2130 B	1	5	0.97
6.	Total Dissolved Solids	mg/L	2540 C	500	2000	62
7.	Total Hardness	mg/L	2340 C	200	600	28
8.	Calcium as Ca	mg/L	3500-Ca	75	200	8.0
9.	Magnesium as Mg	mg/L	3500 Mg B	30	100	1.9
10.	Sulphate as SO ₄	mg/L	4500-SO ₄ ²⁻	200	400	BDL
11.	Fluoride as F	mg/L	4500F D	1	1.5	0.82
12.	Nitrate as NO ₃	mg/L	4500-NO ₃ E	45		2.02
13.	Chloride as Cl	mg/L	4500-Cl B	250	1000	9.02
14.	Iron as Fe	mg/L	3500-Fe B	0.3		0.05
15.	Alkalinity	mg/L	2320 B	200	600	40.0
16.	Chromium Hexavalent	mg/L	3500 Cr B	---		BDL
17.	E-Coli	CFU/100ml	IS:15185	Absent		Absent
18.	Total Coliform	CFU/100ml	9222 B	10		<1

Note:- BDL- Below Detectable Limit, DL - Desirable Limit, PL - Permissible Limit.

End of Report

Authorized Signatory

Name: Dr. Siddalingeshwar K.G.

Designation : Head of Laboratory

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Test Report

ANALYSIS REPORT OF FRESH WATER QUALITY

1. Name of the Location : SW2: Near Flare area, OMPL
2. Name of the Industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Spécial Economic Zone, Pernude
Mangalore-574509
3. Sample Collected By : M/s Environmental Health and Safety Research and
Development Centre, Bangalore - 560 010.
4. Date of Collection : 05.01.2015
5. Particulars of Sample Collected : Bore well water/Open well water/Surface water,
Grab Sampling
6. Date of Sample Receipt : 06.01.2015
7. Sample Number : EHSRDC/OMPL/W/15/01/8674
8. Protocol : APHA, 22nd Edition

SL.No	PARAMETERS	UNIT	Test Methods	Std. IS 10500:2012 (Second Revision)		Code
				DL	PL	SW2
						8674
1.	pH	--	4500H ⁺ B	6.5-8.5		7.45
2.	Colour	Hazen	--	5	15	<1
3.	Odour	--	--	Unobjectionable		Unobjectionable
4.	Taste	--	--	Agreeable		Agreeable
5.	Turbidity	NTU	2130 B	1	5	1.12
6.	Total Dissolved Solids	mg/L	2540 C	500	2000	104
7.	Total Hardness	mg/L	2340 C	200	600	59
8.	Calcium as Ca	mg/L	3500-Ca	75	200	15.2
9.	Magnesium as Mg	mg/L	3500-Mg B	30	100	9.96
10.	Sulphate as SO ₄	mg/L	4500-SO ₄ ²⁻	200	400	10.47
11.	Fluoride as F	mg/L	4500F D	1	1.5	0.73
12.	Nitrate as NO ₃	mg/L	4500-NO ₃ E	45		2.85
13.	Chloride as Cl	mg/L	4500-Cl B	250	1000	12.89
14.	Iron as Fe	mg/L	3500-Fe B	0.3		0.24
15.	Alkalinity	mg/L	2320 B	200	600	39.0
16.	Chromium Hexavalent	mg/L	3500 Cr B	---		BDL
17.	E-Coli	CFU/100ml	IS:15185	Absent		Absent
18.	Total Coliform	CFU/100ml	9222 B	10		<1

Note:- BDL- Below Detectable Limit, DL - Desirable Limit, PL - Permissible Limit.

End of Report

Authorized Signatory

Name : Dr. Siddalingeshwar K.G.

Designation : Head of Laboratory

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Test Report

ANALYSIS REPORT FOR SOURCE EMISSION

1. Name of the Industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Spécial Economic Zone, Permude
Mangalore-574509.
2. Stack ID : Xylene column Reboiler heater(Part B)
3. Sample Collected by : M/s. Environmental Health and Safety Research &
Development Centre, Bangalore - 560 010.
4. Date of Collection : 20.12.2014
5. Particulars of Sample : Emissions from stack collected through
Collected Stack Sampler VSS1
6. Date of Sample Receipt : 23.12.2014
7. Sample Number : EHSRDC/OMPL/S/14/12/7918
8. Report to be Sent : 01.05.2015
9. Page No : 1 of 9

GENERAL DETAILS

Date of Monitoring	20.12.2014
Ambient Temperature (°C)	33
Stack Temperature (°C)	175
Velocity (m/s)	6.79
Diameter (m)	3.69
Cross Sectional Area in meter square (m ²)	10.68
Quantity of flue gas discharged into atmosphere (Nm ³ /h)	594.65
Dust Emission Rate of PM, kg/hr	0.016858

RESULTS

Parameters	Protocol	Unit	Result	Standard
Particulate matter	IS: 11255(P1)	mg/Nm ³	28.35	50
Nitrogen dioxide	IS: 11255 (P7)	mg/ Nm ³	31.37	350
Sulphur dioxide	IS: 11255, (P2)	mg/Nm ³	17.28	850
Carbon Monoxide	EPA method (10)	mg/Nm ³	26.2	150

INFERENCE	As per KSPCB Standards, Report Status: - The measured value for above parameters are within the standard..
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End of Report

Authorized Signatory

Name : Dr. Siddalingeshwar K.G.

Designation : Head of Laboratory



Recognised by Ministry of Environment & Forests (MoEF),
Govt. of India, New Delhi, Dated : 28-07-2011 to 27-07-2016

ISO 9001:2008,

ISO 14001 : 2004

BS OHSAS 18001:2007

No.13/2, 1st Main Road, Near Fire Station,
Industrial Town, Rajanagar, Bangalore - 560 010.
Tel : 080 23012100/ 121/122 Fax: 080 23012111
E-mail : info@ehsrdc.in / ehsrdc2010@gmail.com
Website : www.ehsrdc.in

Test Report

ANALYSIS REPORT FOR SOURCE EMISSION

1. Name of the Industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Spécial Economic Zone, Permude
Mangalore-574509.
2. Stack ID : BTF (Toluene Column Reboiler heater)
3. Sample Collected by : M/s. Environmental Health and Safety Research &
Development Centre, Bangalore - 560 010.
4. Date of Collection : 20.12.2014
5. Particulars of Sample : Emissions from stack collected through
Collected Stack Sampler VSS1
6. Date of Sample Receipt : 23.12.2014
7. Sample Number : EHSRDC/OMPL/S/14/12/7919
8. Report to be Sent : 01.05.2015
9. Page No : 2 of 9

GENERAL DETAILS

Date of Monitoring	20.12.2014
Ambient Temperature (°C)	34
Stack Temperature (°C)	186
Velocity (m/s)	8.07
Diameter (m)	3.29
Cross Sectional Area in meter square (m ²)	8.49
Quantity of flue gas discharged into atmosphere (Nm ³ /h)	165086.6
Dust Emission Rate of PM, kg/hr	5.844065

RESULTS

Parameters	Protocol	Unit	Result	Standard
Particulate matter	IS: 11255(P1)	mg/Nm ³	35.40	50
Nitrogen dioxide	IS: 11255 (P7)	mg/ Nm ³	47.53	350
Sulphur dioxide	IS: 11255, (P2)	mg/Nm ³	14.93	850
Carbon Monoxide	EPA method (10)	mg/Nm ³	34.07	150

INFERENCE	As per KSPCB Standards, Report Status: - The measured values for above parameters are within the standard.
-----------	---

End of Report

Authorized Signatory

Name : Dr. Siddalingeshwar K.G.

Designation : Head of Laboratory

Test Report

ANALYSIS REPORT FOR SOURCE EMISSION

1. Name of the Industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Spécial Economic Zone, Permude
Mangalore-574509.
2. Stack ID : CPP Utility Boiler
3. Sample Collected by : M/s. Environmental Health and Safety Research &
Development Centre, Bangalore - 560 010.
4. Date of Collection : 20.12.2014
5. Particulars of Sample Collected : Emissions from stack collected through
Stack Sampler VSS1
6. Date of Sample Receipt : 23.12.2014
7. Sample Number : EHSRDC/OMPL/S/14/12/7920
8. Report to be Sent : 01.05.2015.
9. Page No : 3 of 9

GENERAL DETAILS

Date of Monitoring	20.12.2014
Ambient Temperature (°C)	31
Stack Temperature (°C)	130
Velocity (m/s)	11.39
Diameter (m)	2.74
Cross Sectional Area in meter square (m²)	5.89
Quantity of flue gas discharged into atmosphere (Nm³/h)	600.713
Dust Emission Rate of PM, kg/hr	0.008891

RESULTS

Parameters	Protocol	Unit	Result	Standard
Particulate matter	IS: 11255(P1)	mg/Nm³	14.80	50
Nitrogen dioxide	IS: 11255 (P7)	mg/ Nm³	24.13	350
Sulphur dioxide	IS: 11255, (P2)	mg/Nm³	5.91	850
Carbon Monoxide	EPA method (10)	mg/Nm³	23.98	150

INFERENCE	As per KSPCB Standards, Report Status: - The measured value for above parameters are within the standard.
-----------	--

End of Report


Authorized Signatory

Name : Dr. Siddalingeshwar K.G.

Designation : Head of Laboratory

Test Report

ANALYSIS REPORT FOR SOURCE EMISSION

1. Name of the Industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Spécial Economic Zone, Permude
Mangalore-574509.
2. Stack ID : CPP (GTG & HRSG)-I
3. Sample Collected by : M/s. Environmental Health and Safety Research &
Development Centre, Bangalore - 560 010.
4. Date of Collection : 20.12.2014
5. Particulars of Sample : Emissions from stack collected through
Collected Stack Sampler VSS1
6. Date of Sample Receipt : 23.12.2014
7. Sample Number : EHSRDC/OMPL/S/14/12/7921
8. Report to be Sent : 01.05.2015
9. Page No : 4 of 9

GENERAL DETAILS

Date of Monitoring	20.12.2014
Ambient Temperature (°C)	32
Stack Temperature (°C)	155
Velocity (m/s)	14.44
Diameter (m)	2.8
Cross Sectional Area in meter square (m²)	6.15
Quantity of flue gas discharged into atmosphere (Nm³/h)	228013.23
Dust Emission Rate of PM, kg/hr	0.024

RESULTS

Parameters	Protocol	Unit	Result	Standard
Particulate matter	IS: 11255(P1)	mg/Nm³	38.40	50
Nitrogen dioxide	IS: 11255 (P7)	mg/ Nm³	24.24	350
Sulphur dioxide	IS: 11255, (P2)	mg/Nm³	15.36	850
Carbon Monoxide	EPA method (10)	mg/Nm³	28.7	150

INFERENCE	As per KSPCB Standards, Report Status: - The measured value for above parameters are within the standard.
------------------	--

End of Report


Authorized Signatory

Name : Dr. Siddalingeshwar K.G.

Designation : Head of Laboratory

Test Report

ANALYSIS REPORT FOR SOURCE EMISSION

1. Name of the Industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Spécial Economic Zone, Permude
Mangalore-574509.
2. Stack ID : Platformer Unit Charge Heater
3. Sample Collected by : M/s. Environmental Health and Safety Research &
Development Centre, Bangalore - 560 010.
4. Date of Collection : 19.12.2014
5. Particulars of Sample : Emissions from stack collected through
Collected Stack Sampler VSS1
6. Date of Sample Receipt : 23.12.2014
7. Sample Number : EHSRDC/OMPL/S/14/12/7922
8. Report to be Sent : 01.05.2015
9. Page No : 5 of 9

GENERAL DETAILS

Date of Monitoring	19.12.2014
Ambient Temperature (°C)	38
Stack Temperature (°C)	359
Velocity (m/s)	14.64
Diameter (m)	4.10
Cross Sectional Area in meter square (m²)	13.19
Quantity of flue gas discharged into atmosphere (Nm³/h)	342266.73
Dust Emission Rate of PM, kg/hr	15.64

RESULTS

Parameters	Protocol	Unit	Result	Standard
Particulate matter	IS: 11255(P1)	mg/Nm³	4.70	5
Nitrogen dioxide	IS: 11255 (P7)	mg/ Nm³	17.11	250
Sulphur dioxide	IS: 11255, (P2)	mg/Nm³	6.40	50
Carbon Monoxide	EPA method (10)	mg/Nm³	35.1	100

INFERENCE	As per KSPCB Standards, Report Status: - The measured value for above parameters are within the standard.
------------------	--

End of Report

Authorized Signatory

Name : Dr. Siddalingeshwar K.G.

Designation : Head of Laboratory

Test Report

ANALYSIS REPORT FOR SOURCE EMISSION

1. Name of the Industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Spécial Economic Zone, Permude
Mangalore-574509.
2. Stack ID : NHT Charge Heater
3. Sample Collected by : M/s. Environmental Health and Safety Research &
Development Centre, Bangalore - 560 010.
4. Date of Collection : 19.12.2014
5. Particulars of Sample : Emissions from stack collected through
Collected Stack Sampler VSS1
6. Date of Sample Receipt : 23.12.2014
7. Sample Number : EHSRDC/OMPL/S/14/12/7923
8. Report to be Sent : 01.05.2015
9. Page No : 6 of 9

GENERAL DETAILS

Date of Monitoring	19.12.2014
Ambient Temperature (°C)	35
Stack Temperature (°C)	235
Velocity (m/s)	5.43
Diameter (m)	1.94
Cross Sectional Area in meter square (m²)	2.95
Quantity of flue gas discharged into atmosphere (Nm³/h)	35015.671
Dust Emission Rate of PM, kg/hr	0.75984

RESULTS

Parameters	Protocol	Unit	Result	Standard
Particulate matter	IS: 11255(P1)	mg/Nm³	1.7	5
Nitrogen dioxide	IS: 11255 (P7)	mg/ Nm³	24.96	250
Sulphur dioxide	IS: 11255, (P2)	mg/Nm³	16.80	50
Carbon Monoxide	EPA method (10)	mg/Nm³	25.3	100

INFERENCE	As per KSPCB Standards, Report Status: - The measured value for above parameters are within the standard.
-----------	--

End of Report


Authorized Signatory

Name : Dr. Siddalingeshwar K.G.

Designation : Head of Laboratory

Test Report

ANALYSIS REPORT FOR SOURCE EMISSION

1. Name of the Industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Spécial Economic Zone, Permude
Mangalore-574509.
2. Stack ID : Tatoray Charge Heater
3. Sample Collected by : M/s. Environmental Health and Safety Research &
Development Centre, Bangalore - 560 010.
4. Date of Collection : 19.12.2014
5. Particulars of Sample : Emissions from stack collected through
Collected Stack Sampler VSS1
6. Date of Sample Receipt : 23.12.2014
7. Sample Number : EHSRDC/OMPL/S/14/12/7924
8. Report to be Sent : 01.05.2015
9. Page No : 7 of 9

GENERAL DETAILS

Date of Monitoring	19.12.2014
Ambient Temperature (°C)	31
Stack Temperature (°C)	225
Velocity (m/s)	7.36
Diameter (m)	1.75
Cross Sectional Area in meter square (m²)	2.40
Quantity of flue gas discharged into atmosphere (Nm³/h)	38884.37
Dust Emission Rate of PM, kg/hr	1.287

RESULTS

Parameters	Protocol	Unit	Result	Standard
Particulate matter	IS: 11255(P1)	mg/Nm³	3.10	5
Nitrogen dioxide	IS: 11255 (P7)	mg/ Nm³	41.48	250
Sulphur dioxide	IS: 11255, (P2)	mg/Nm³	13.96	50
Carbon Monoxide	EPA method (10)	mg/Nm³	26.8	100

INFERENCE	As per KSPCB Standards, Report Status: - The measured value for above parameters are within the standard.
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End of Report


Authorized Signatory

Name : Dr. Siddalingeshwar K.G.

Designation : Head of Laboratory



Recognised by Ministry of Environment & Forests (MoEF),
Govt. of India, New Delhi, Dated : 28-07-2011 to 27-07-2016

ISO 9001:2008,

ISO 14001 : 2004

BS OHSAS 18001:2007

No.13/2, 1st Main Road, Near Fire Station,
Industrial Town, Rajajinagar, Bangalore - 560 010.
Tel : 080 23012100/ 121/122 Fax : 080 23012111
E-mail : info@ehsrdc.in / ehsrdc2010@gmail.com
Website : www.ehsrdc.in

Test Report

ANALYSIS REPORT FOR SOURCE EMISSION

1. Name of the Industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Spécial Economic Zone, Permude
Mangalore-574509.
2. Stack ID : ISOMER Charge Heater
3. Sample Collected by : M/s. Environmental Health and Safety Research &
Development Centre, Bangalore - 560 010.
4. Date of Collection : 20.12.2014
5. Particulars of Sample : Emissions from stack collected through
Collected Stack Sampler VSS1
6. Date of Sample Receipt : 23.12.2014
7. Sample Number : EHSRDC/OMPL/S/14/12/7925
8. Report to be Sent : 01.05.2015
9. Page No : 8 of 9

GENERAL DETAILS

Date of Monitoring	20.12.2014
Ambient Temperature (°C)	35
Stack Temperature (°C)	205
Velocity (m/s)	7.09
Diameter (m)	2.3
Cross Sectional Area in meter square (m²)	4.15
Quantity of flue gas discharged into atmosphere (Nm³/h)	68276.26
Dust Emission Rate of PM, kg/hr	1.870

RESULTS

Parameters	Protocol	Unit	Result	Standard
Particulate matter	IS: 11255(P1)	mg/Nm³	2.4	5
Nitrogen dioxide	IS: 11255 (P7)	mg/ Nm³	27.09	250
Sulphur dioxide	IS: 11255, (P2)	mg/Nm³	7.68	50
Carbon Monoxide	EPA method (10)	mg/Nm³	32.0	100

INFERENCE	As per KSPCB Standards, Report Status: - The measured value for above parameters are within the standard.
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End of Report

Authorized Signatory

Name : Dr. Siddalingeshwar K.G.,

Designation : Head of Laboratory

Test Report

ANALYSIS REPORT FOR SOURCE EMISSION

1. Name of the Industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Spécial Economic Zone, Permude
Mangalore-574509.
2. Stack ID : Xylene column Reboiler heater (Part A)
3. Sample Collected by : M/s. Environmental Health and Safety Research &
Development Centre, Bangalore - 560 010.
4. Date of Collection : 20.12.2014
5. Particulars of Sample : Emissions from stack collected through
Collected Stack Sampler VSS1
6. Date of Sample Receipt : 23.12.2014
7. Sample Number : EHSRDC/OMPL/S/14/12/7926
8. Report to be Sent : 01.05.2015
9. Page No : 9 of 9

GENERAL DETAILS

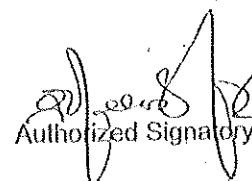
Date of Monitoring	20.12.2014
Ambient Temperature (°C)	34
Stack Temperature (°C)	175
Velocity (m/s)	9.60
Diameter (m)	3.69
Cross Sectional Area in meter square (m²)	10.6
Quantity of flue gas discharged into atmosphere (Nm³/h)	253186.4
Dust Emission Rate of PM, kg/hr	4.152

RESULTS

Parameters	Protocol	Unit	Result	Standard
Particulate matter	IS: 11255(P1)	mg/Nm³	16.40	50
Nitrogen dioxide	IS: 11255 (P7)	mg/ Nm³	44.56	350
Sulphur dioxide	IS: 11255, (P2)	mg/Nm³	21.60	850
Carbon Monoxide	EPA method (10)	mg/Nm³	41.5	150

INFERENCE	As per KSPCB Standards, Report Status: - The measured value for above parameters are within the standard.
------------------	--

End of Report



Authorized Signatory

Name : Dr. Siddalingeshwar K.G.

Designation : Head of Laboratory



ONGC Mangalore Petrochemicals Ltd.

2nd Floor, MUDA Building, Urwa Store, Mangalore - 575 006
Phone +91 824 2451001-02 Fax +91 824 2451005

REF: OMPL/PCB/RS/2014-15/

Date: 27.1.2015

To:
The Environmental Officer
Divisional Office
KSPCB
Baikampady, Mangalore-11

Dear Sir,

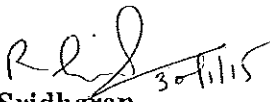
Sub: Submission of Environmental monitoring report for the Month of December, 2014 & Water Cess Report for the Month of December, 2014

Ref: CFO No. PCB/245/HPI//ONGC/2014-15/593 dated 18th August 2014

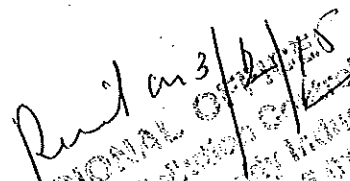
With respect to the above subject; we are herewith submitting the following Environmental monitoring reports & Water Cess Report enclosed herewith, as Annexure-A & Annexure-B respectively for the Month of December, 2014

1. Ambient air analysis at 4 different locations in and around OMPL
2. Water analysis reports at 8 different locations in and around OMPL
3. Noise level report at OMPL
4. Water Cess Report, for the Month of December, 2014

Thanking You,


R Sridharan
COO

CC: Member Secretary, KSPCB, Bangalore
CC: Head (Technical), MSEZ
CC: CEO, OMPL for info


REGIONAL OFFICE
Mangalore State Pollution Control Board
Plot No. 10-2, Baikampady Industrial Area
Mangalore - 575 011

Form-1 (Rule 4)
Returns Regarding Water Consumed during the Month of Dec., 2014

Name and address of the Consumer	Purpose for which water consumed	Reading at the beginning of the first day of the calendar month under report	Reading at the end of the last day of the calendar month under report	Quantity of Water Consumed in Kilo Letters	If the meter was out of order, the monthly average consumption of water for the previous 3 months of the working period	Quantity of water qualifying for rebate according to the assessee	Remarks
M/s ONGC Mangalore Petrochemicals Limited, Mangalore Special Economic Zone, Permude, Mangalore -574 509	Industrial cooling, spraying in mine pits or boiler feed						
	Cooling Water			80270			Flow Transmitter yet to be commissioned. Taken from Average flow from Flow meter.
	Boiler Feed Water			97200			Taken from daily average of ACF inlet water
	Fire Water			48239			Taken from running hour of pumps
	Domestic purpose						
	Drinking Water & Sanitation			4989			Flow meter yet to be commissioned. Taken from pump running hours
	Processing whereby water gets polluted and the pollutants are easily bio-degradable						
	Service Water			6324			Flow meter yet to be commissioned. Taken from difference of pump running hours and DM Plant and cooling tower consumption.
Total Consumption				237022			

Signature of the Consumer

Name

Address

R. S. Sudhakar
21/12/15
R. S. Sudhakar, COO

M/s ONGC Mangalore Petrochemicals Limited, Mangalore Special Economic Zone, Permude, Mangalore -574 509

[Signature]

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Test Report

ANALYSIS REPORT OF FRESH WATER QUALITY

1. Name of the Location : GW1: OMPL (Near ETP)
2. Name of the Industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Spécial Economic Zone, Permude
Mangalore-574509.
3. Sample Collected By : M/s Environmental Health and Safety Research and
Development Centre, Bangalore - 560 010.
4. Date of Collection : 09.12.2014
5. Particulars of Sample Collected : Bore well water, Grab Sampling
6. Date of Sample Receipt : 11.12.2014
7. Sample Number : EHSRDC/OMPL/W/14/12/7507
8. Protocol : APHA, 22nd Edition

Sl.No	PARAMETERS	UNIT	Test Methods	Std. IS 10500:2012 (Second Revision)		Code
				DL	PL	GW1 7507
1.	pH	--	4500H ⁺ B	6.5-8.5		7.33
2.	Colour	Hazen	--	5	15	<1
3.	Odour	--	--	Unobjectionable		Unobjectionable
4.	Taste	--	--	Agreeable		Agreeable
5.	Turbidity	NTU	2130 B	1	5	0.81
6.	Total Dissolved Solids	mg/L	2540 C	500	2000	166.0
7.	Total Hardness	mg/L	2340 C	200	600	70.0
8.	Calcium as Ca	mg/L	3500-Ca	75	200	26.4
9.	Magnesium as Mg	mg/L	3500 Mg B	30	100	0.97
10.	Sulphate as SO ₄	mg/L	4500-SO ₄ ²⁻	200	400	13.27
11.	Fluoride as F	mg/L	4500F D	1	1.5	0.63
12.	Nitrate as NO ₃	mg/L	4500-NO ₃ E	45		2.17
13.	Chloride as Cl	mg/L	4500-Cl B	250	1000	50.72
14.	Iron as Fe	mg/L	3500-Fe B	0.3		2.02
15.	Alkalinity	mg/L	2320 B	200	600	33.0
16.	Chromium Hexavalent	mg/L	3500 Cr B	---		BDL
17.	E-Coli	CFU/100ml	IS:15185	Absent		Absent
18.	Total Coliform	CFU/100ml	9222 B	10		<1

Note:- BDL- Below Detectable Limit, DL - Desirable Limit, PL - Permissible Limit.

End of Report


Authorized Signatory

Name : Dr. Siddalingeshwar K.G.

Designation : Head of Laboratory

Test Report

ANALYSIS REPORT OF FRESH WATER QUALITY

1. Name of the Location : GW2: Narayana Guru Community Hall, Permude
2. Name of the Industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Spécial Economic Zone, Permude
Mangalore-574509.
3. Sample Collected By : M/s Environmental Health and Safety Research and
Development Centre, Bangalore - 560 010.
4. Date of Collection : 09.12.2014
5. Particulars of Sample Collected : Bore well water, Grab Sampling
6. Date of Sample Receipt : 11.12.2014
7. Sample Number : EHSRDC/OMPL/W/14/12/7508
8. Protocol : APHA, 22nd Edition

Sl.N o	PARAMETERS	UNIT	Test Methods	Std. IS 10500:2012 (Second Revision)		Code
				DL	PL	GW2
1.	pH	--	4500H ⁺ B	6.5-8.5		6.55
2.	Colour	Hazen	--	5	15	<1
3.	Odour	--	--	Unobjectionable		Unobjectionable
4.	Taste	--	--	Agreeable		Agreeable
5.	Turbidity	NTU	2130 B	1	5	0.35
6.	Total Dissolved Solids	mg/L	2540 C	500	2000	88.0
7.	Total Hardness	mg/L	2340 C	200	600	52.0
8.	Calcium as Ca	mg/L	3500-Ca	75	200	19.6
9.	Magnesium as Mg	mg/L	3500 Mg B	30	100	0.72
10.	Sulphate as SO ₄	mg/L	4500-SO ₄ ²⁻	200	400	BDL
11.	Fluoride as F	mg/L	4500F D	1	1.5	BDL
12.	Nitrate as NO ₃	mg/L	4500-NO ₃ E	45		1.2
13.	Chloride as Cl	mg/L	4500-Cl B	250	1000	11.96
14.	Iron as Fe	mg/L	3500-Fe B	0.3		0.07
15.	Alkalinity	mg/L	2320 B	200	600	57.0
16.	Chromium Hexavalent	mg/L	3500 Cr B	---		BDL
17.	E-Coli	CFU/100ml	IS:15185	Absent		Absent
18.	Total Coliform	CFU/100ml	9222 B	10		<1

Note:- BDL - Below Detectable Limit, DL - Desirable Limit, PL - Permissible Limit.

End of Report

Authorized Signatory

Name : Dr. Siddalingeshwar K.G.

Designation : Head of Laboratory

Test Report

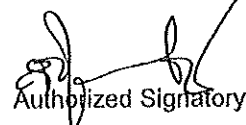
ANALYSIS REPORT OF FRESH WATER QUALITY

1. Name of the Location : GW3: Gagnet Labor Colony
2. Name of the Industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Spécial Economic Zone, Permude
Mangalore-574509
3. Sample Collected By : M/s Environmental Health and Safety Research and
Development Centre, Bangalore - 560 010.
4. Date of Collection : 09.12.2014
5. Particulars of Sample Collected : Bore well water, Grab Sampling
6. Date of Sample Receipt : 11.12.2014
7. Sample Number : EHSRDC/OMPL/W/14/12/7509
8. Protocol : APHA, 22nd Edition

Sl.No	PARAMETERS	UNIT	Test Methods	Std. IS 10500:2012 (Second Revision)		Code
				DL	PL	GW3 7509
1.	pH	--	4500H ⁺ B	6.5-8.5		7.9
2.	Colour	Hazen	--	5	15	<1
3.	Odour	--	--	Unobjectionable		Unobjectionable
4.	Taste	--	--	Agreeable		Agreeable
5.	Turbidity	NTU	2130 B	1	5	0.41
6.	Total Dissolved Solids	mg/L	2540 C	500	2000	188.0
7.	Total Hardness	mg/L	2340 C	200	600	124.0
8.	Calcium as Ca	mg/L	3500-Ca	75	200	26.8
9.	Magnesium as Mg	mg/L	3500 Mg B	30	100	13.85
10.	Sulphate as SO ₄	mg/L	4500-SO ₄ ²⁻	200	400	20.47
11.	Fluoride as F	mg/L	4500F D	1	1.5	0.91
12.	Nitrate as NO ₃	mg/L	4500-NO ₃ E	45		2.7
13.	Chloride as Cl	mg/L	4500-Cl B	250	1000	36.37
14.	Iron as Fe	mg/L	3500-Fe B	0.3		0.16
15.	Alkalinity	mg/L	2320 B	200	600	88.0
16.	Chromium Hexavalent	mg/L	3500 Cr B	---		BDL
17.	E-Coli	CFU/100ml	IS:15185	Absent		Absent
18.	Total Coliform	CFU/100ml	9222 B	10		<1

Note:- BDL- Below Detectable Limit, DL - Desirable Limit, PL - Permissible Limit.

End of Report


Authorized Signatory

Name : Dr. Siddalingeshwar K.G.

Designation : Head of Laboratory

See NOTE overleaf

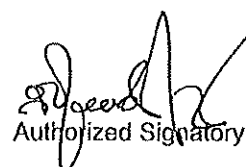
ANALYSIS REPORT OF TEST REPORT
WATER QUALITY

1. Name of the Location : OW1: Tenka-Ekkar
2. Name of the Industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Spécial Economic Zone, Permude
Mangalore-574509
3. Sample Collected By : M/s Environmental Health and Safety Research and
Development Centre, Bangalore - 560 010.
4. Date of Collection : 09.12.2014
5. Particulars of Sample Collected : Open well water, Grab Sampling
6. Date of Sample Receipt : 11.12.2014
7. Sample Number : EHSRDC/OMPL/W/14/12/7510
8. Protocol : APHA, 22nd Edition

Sl.No	PARAMETERS	UNIT	Test Methods	Std. IS 10500:2012 (Second Revision)		Code
				DL	PL	
1.	pH	--	4500H+ B	6.5-8.5		OW1 7510 7.88
2.	Colour	Hazen	--	5	15	<1
3.	Odour	--	--	Unobjectionable		Unobjectionable
4.	Taste	--	--	Agreeable		Agreeable
5.	Turbidity	NTU	2130 B	1	5	0.07
6.	Total Dissolved Solids	mg/L	2540 C	500	2000	71.0
7.	Total Hardness	mg/L	2340 C	200	600	42.0
8.	Calcium as Ca	mg/L	3500-Ca	75	200	11.6
9.	Magnesium as Mg	mg/L	3500 Mg B	30	100	3.15
10.	Sulphate as SO ₄	mg/L	4500-SO ₄ ²⁻	200	400	BDL
11.	Fluoride as F	mg/L	4500F D	1	1.5	0.22
12.	Nitrate as NO ₃	mg/L	4500-NO ₃ E	45		6.9
13.	Chloride as Cl	mg/L	4500-Cl B	250	1000	9.09
14.	Iron as Fe	mg/L	3500-Fe B	0.3		0.08
15.	Alkalinity	mg/L	2320 B	200	600	26.0
16.	Chromium Hexavalent	mg/L	3500 Cr B	---		BDL
17.	E-Coli	CFU/100ml	IS:15185	Absent		Absent
18.	Total Coliform	CFU/100ml	9222 B	10		<1

Note:- BDL- Below Detectable Limit, DL - Desirable Limit, PL - Permissible Limit.

End of Report


Authorized Signatory

Name : Dr. Siddalingeshwar K.G.

Designation : Head of Laboratory

Test Report

ANALYSIS REPORT OF FRESH WATER QUALITY

1. Name of the Location : OW2: Shanthiguda Village
2. Name of the Industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Spécial EconomicZone,Permude
Mangalore-574509.
3. Sample Collected By : M/s Environmental Health and Safety Research and
Development Centre, Bangalore - 560 010.
4. Date of Collection : 09.12.2014
5. Particulars of Sample Collected : Open well water, Grab Sampling
6. Date of Sample Receipt : 11.12.2014
7. Sample Number : EHSRDC/OMPL/W/14/12/7511
8. Protocol : APHA, 22nd Edition

Sl.No	PARAMETERS	UNIT	Test Methods	Std. IS 10500:2012 (Second Revision)		Code
				DL	PL	OW2 7511
1.	pH	--	4500H+ B	6.5-8.5		7.6
2.	Colour	Hazen	--	5	15	<1
3.	Odour	--	--	Unobjectionable		Unobjectionable
4.	Taste	--	--	Agreeable		Agreeable
5.	Turbidity	NTU	2130 B	1	5	0.15
6.	Total Dissolved Solids	mg/L	2540 C	500	2000	61.0
7.	Total Hardness	mg/L	2340 C	200	600	38.0
8.	Calcium as Ca	mg/L	3500-Ca	75	200	12.0
9.	Magnesium as Mg	mg/L	3500 Mg B	30	100	1.94
10.	Sulphate as SO ₄	mg/L	4500-SO ₄ ²⁻	200	400	BDL
11.	Fluoride as F	mg/L	4500F D	1	1.5	0.59
12.	Nitrate as NO ₃	mg/L	4500-NO ₃ E	45		0.67
13.	Chloride as Cl	mg/L	4500-Cl B	250	1000	7.17
14.	Iron as Fe	mg/L	3500-Fe B	0.3		0.14
15.	Alkalinity	mg/L	2320 B	200	600	28.0
16.	Chromium Hexavalent	mg/L	3500 Cr B	---		BDL
17.	E-Coli	CFU/100ml	IS:15185	Absent		Absent
18.	Total Coliform	CFU/100ml	9222 B	10		<1

Note:- BDL- Below Detectable Limit, DL - Desirable Limit, PL - Permissible Limit.

End of Report


Authorized Signatory

Name : Dr. Siddalingeshwar K.G.

Designation : Head of Laboratory

See NOTE overleaf

ANALYSIS REPORT ~~Test Report~~ WATER QUALITY

1. Name of the Location : SW1: Near Central Warehouse, OMPL
2. Name of the Industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Spécial Economic Zone, Permude
Mangalore-574509
3. Sample Collected By : M/s Environmental Health and Safety Research and
Development Centre, Bangalore - 560 010.
4. Date of Collection : 09.12.2014
5. Particulars of Sample Collected : Surface water,
Grab Sampling
6. Date of Sample Receipt : 11.12.2014
7. Sample Number : EHSRDC/OMPL/W/14/12/7512
8. Protocol : APHA, 22nd Edition

Sl.No	PARAMETERS	UNIT	Test Methods	Std IS:2296 (Class C)	Code
					SW1
					7512
1.	pH	--	4500H ⁺ B	6.5 - 8.5	7.6
2.	Colour	Hazen	--	300	<1
3.	Odour	--	--	--	Unobjectionable
4.	Taste	--	--	--	Agreeable
5.	Turbidity	NTU	2130 B	--	0.16
6.	Total Dissolved Solids	mg/L	2540 C	--	54.0
7.	Total Hardness	mg/L	2340 C	--	33.0
8.	Calcium as Ca	mg/L	3500-Ca	--	8.0
9.	Magnesium as Mg	mg/L	3500 Mg B	--	3.15
10.	Sulphate as SO ₄	mg/L	4500-SO ₄ ²⁻	400	BDL
11.	Fluoride as F	mg/L	4500F D	1.5	BDL
12.	Nitrate as NO ₃	mg/L	4500-NO ₃ E	50	1.4
13.	Chloride as Cl	mg/L	4500-Cl B	600	7.17
14.	Iron as Fe	mg/L	3500-Fe B	50	0.07
15.	Alkalinity	mg/L	2320 B	--	31.0
16.	Chromium Hexavalent	mg/L	3500 Cr B	--	BDL
17.	E-Coli	CFU/100ml	IS:15185	--	Absent
18.	Total Coliform	CFU/100ml	9222 B	5000	<1

Note:- BDL- Below Detectable Limit, DL - Desirable Limit, PL - Permissible Limit.

End of Report

Authorized Signatory

Name : Dr. Siddalingeshwar K.G.

Designation : Head of Laboratory

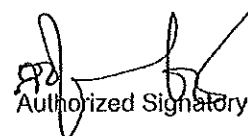
Test Report
ANALYSIS REPORT OF FRESH WATER QUALITY

1. Name of the Location : SW2: Near Flare area, OMPL
2. Name of the Industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Spécial Economic Zone, Permude
Mangalore-574509
3. Sample Collected By : M/s Environmental Health and Safety Research and
Development Centre, Bangalore - 560 010.
4. Date of Collection : 09.12.2014
5. Particulars of Sample Collected : Bore well water/Open well water/Surface water,
Grab Sampling
6. Date of Sample Receipt : 11.12.2014
7. Sample Number : EHSRDC/OMPL/W/14/12/7513
8. Protocol : APHA, 22nd Edition

Sl.No	PARAMETERS	UNIT	Test Methods	Std IS: 2296 (Class C)	Code
					SW2
					7513
1.	pH	--	4500H ⁺ B	6.5 - 8.5	7.1
2.	Colour	Hazen	--	300	<1
3.	Odour	--	--	--	Unobjectionable
4.	Taste	--	--	--	Agreeable
5.	Turbidity	NTU	2130 B	--	1.11
6.	Total Dissolved Solids	mg/L	2540 C	--	94.0
7.	Total Hardness	mg/L	2340 C	--	46.0
8.	Calcium as Ca	mg/L	3500-Ca	--	11.6
9.	Magnesium as Mg	mg/L	3500 Mg B	--	4.13
10.	Sulphate as SO ₄	mg/L	4500-SO ₄ ²⁻	400	13.27
11.	Fluoride as F	mg/L	4500F D	1.5	0.46
12.	Nitrate as NO ₃	mg/L	4500-NO ₃ E	50	2.17
13.	Chloride as Cl	mg/L	4500-Cl B	600	12.92
14.	Iron as Fe	mg/L	3500-Fe B	50	0.91
15.	Alkalinity	mg/L	2320 B	--	34.0
16.	Chromium Hexavalent	mg/L	3500 Cr B	--	BDL
17.	E-Coli	CFU/100ml	IS:15185	--	Absent
18.	Total Coliform	CFU/100ml	9222 B	5000	<1

Note:- BDL- Below Detectable Limit, DL - Desirable Limit, PL - Permissible Limit.

End of Report


Authorized Signatory

Name : Dr. Siddalingeshwar K.G.

Designation : Head of Laboratory

Test Report

ANALYSIS REPORT OF FRESH WATER QUALITY

1. Name of the Location : GW4: L&T New Labour Colony
2. Name of the Industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Spécial EconomicZone,Permude
Mangalore-574509
3. Sample Collected By : M/s Environmental Health and Safety Research and
Development Centre, Bangalore - 560 010.
4. Date of Collection : 09.12.2014
5. Particulars of Sample Collected : Bore well water, Grab Sampling
6. Date of Sample Receipt : 11.12.2014
7. Sample Number : EHSRDC/OMPL/W/14/12/7514
8. Protocol : APHA, 22nd Edition

Sl.No	PARAMETERS	UNIT	Test Methods	Std. IS 10500:2012 (Second Revision)		Code
				DL	PL	
1.	pH	--	4500H+ B	6.5-8.5		GW4 7514
2.	Colour	Hazen	--	5	15	7.4
3.	Odour	--	--	Unobjectionable		<1
4.	Taste	--	--	Agreeable		Unobjectionable
5.	Turbidity	NTU	2130 B	1	5	Agreeable
6.	Total Dissolved Solids	mg/L	2540 C	500	2000	0.19
7.	Total Hardness	mg/L	2340 C	200	600	128.0
8.	Calcium as Ca	mg/L	3500-Ca	75	200	82.0
9.	Magnesium as Mg	mg/L	3500 Mg B	30	100	16.0
10.	Sulphate as SO ₄	mg/L	4500-SO ₄ ²⁻	200	400	10.20
11.	Fluoride as F	mg/L	4500F D	1	1.5	BDL
12.	Nitrate as NO ₃	mg/L	4500-NO ₃ E	45		0.82
13.	Chloride as Cl	mg/L	4500-Cl B	250	1000	1.42
14.	Iron as Fe	mg/L	3500-Fe B	0.3		9.09
15.	Alkalinity	mg/L	2320 B	200	600	0.09
16.	Chromium Hexavalent	mg/L	3500 Cr B	---		82.0
17.	E-Coli	CFU/100ml	IS:15185	Absent		BDL
18.	Total Coliform	CFU/100ml	9222 B	10		Absent
Note:- BDL- Below Detectable Limit, DL - Desirable Limit, PL - Permissible Limit.						<1

End of Report

Authorized Signatory

Name : Dr. Siddalingeshwar K.G.

Designation : Head of Laboratory

See NOTE overleaf

Test Report

ANALYSIS REPORT OF AMBIENT AIR QUALITY

1. Name of the location : OMPL
2. Name of the industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Spécial Economic Zone, Permude
Mangalore-574509.
3. Sample Collected By : M/s Environmental Health & Safety Research and
Development Centre, Bangalore - 560 010.
4. Particulars of Sample Collected : Ambient Air collected through
Fine Particulate Sampler - APM 550/ APM 550 Mini
Respirable Dust Sampler - 460NL,
CO & O₃ Analyzers.
5. Date of collection : For the Month of December- 2014 (Monitored for 24 hours)
6. Sample Number : EHSRDC/OMPL/A/14/12/

PARAMETERS	DATE	WK 49		WK 50		WK 51		WK 52		WK 1	
		01/12/2014	02/12/2014	08/12/2014	09/12/2014	15/12/2014	16/12/2014	22/12/2014	23/12/2014	29/12/2014	30/12/2014
		7048	7120	7432	7501	7723	7806	8017	8041	8390	8501
		LIMITS									
PM ₁₀ (µg/m ³)	100	63	68	63	58	60	65	66	55	61	58
PM _{2.5} (µg/m ³)	60	18	21	20	22	15	14	18	19	22	27
SO ₂ (µg/m ³)	80	1.83	1.76	2.23	2.65	1.89	2.87	2.65	2.80	2.98	2.87
NO ₂ (µg/m ³)	80	2.68	3.63	3.44	3.78	2.13	3.78	3.22	3.33	3.54	3.47
CO (mg/m ³)	4	0.66	0.85	0.76	0.70	0.82	0.95	0.77	0.69	0.96	0.77
O ₃ (µg/m ³)	180	0.93	0.65	0.84	0.91	0.75	0.25	0.69	0.88	0.74	0.92

Authorized Signatory

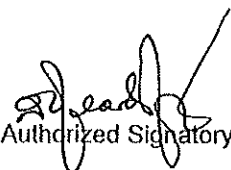
Name : Dr. Siddalingeshwar K.G.

Designation : Head of Laboratory

Test Report

PARAMETERS	DATE	WK 49		WK 50		WK 51		WK 52		WK1	
		01/12/2014	02/12/2014	08/12/2014	09/12/2014	15/12/2014	16/12/2014	22/12/2014	23/12/2014	29/12/2014	30/12/2014
	CODE	7048	7120	7432	7501	7723	7806	8017	8041	8390	8501
	LIMITS										
NH ₃ (µg/m³)	400	1.54	1.85	1.58	1.88	2.00	2.17	1.45	1.36	1.78	1.33
Lead (µg/m³)	1	0.1307	0.1158	0.061	0.12	0.086	0.134	0.064	0.017	0.019	0.124
Arsenic (ng/m³)	6	2.71	1.64	2.80	BDL	0.94	BDL	BDL	BDL	BDL	BDL
Nickel (ng/m³)	20	5.92	3.46	3.19	6.90	6.49	3.62	3.9	5.03	6.13	5.05
Benzene (µg/m³)	5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
B(a)P (ng/m³)	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

End of Report


Authorized Signatory

Name : Dr. Siddalingeshwar K.G.

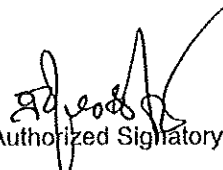
Designation : Head of Laboratory

Test Report

ANALYSIS REPORT OF AMBIENT AIR QUALITY

1. Name of the location : Shantigudda
2. Name of the industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Spécial Economic Zone, Permude
Mangalore-574509.
3. Sample Collected By : M/s Environmental Health & Safety Research and
Development Centre, Bangalore - 560 010.
4. Particulars of Sample Collected : Ambient Air collected through
Fine Particulate Sampler - APM 550/APM 550 Mini
Respirable Dust Sampler - 460NL,
CO & O₃ Analyzers.
5. Date of collection : For the Month of December- 2014
6. Sample Number : EHSRDC/OMPL/A/14/12/

PARAMETERS		WK 49		WK 50		WK 51		WK 52		WK1	
		DATE		DATE		DATE		DATE		DATE	
		01/12/2014	02/12/2014	08/12/2014	09/12/2014	15/12/2014	16/12/2014	22/12/2014	23/12/2014	29/12/2014	30/12/2014
		CODE		CODE		CODE		CODE		CODE	
	LIMITS	7049	7121	7433	7502	7724	7807	8018	8042	8389	8503
PM ₁₀ (µg/m ³)	100	66	70	61	65	62	69	59	61	70	60
PM _{2.5} (µg/m ³)	60	20	19	16	24	19	18	21	26	19	20
SO ₂ (µg/m ³)	80	1.51	1.99	2.17	2.42	2.17	2.20	3.05	1.78	2.65	2.64
NO ₂ (µg/m ³)	80	4.24	3.78	3.19	4.23	2.51	3.96	3.78	3.62	3.10	2.99
CO (mg/m ³)	4	0.77	0.69	0.66	0.72	0.77	0.71	0.85	0.70	0.88	0.71
O ₃ (µg/m ³)	180	0.85	0.85	0.87	0.94	0.85	0.74	0.74	0.81	0.79	0.89


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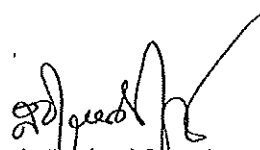
Name : Dr. Siddalingeshwar K.G.

Designation : Head of Laboratory

Test Report

PARAMETERS	DATE	WK 49		WK 50		WK 51		WK 52		WK1	
		03/12/2014	04/12/2014	10/12/2014	11/12/2014	17/12/2014	18/12/2014	24/12/2014	25/12/2014	30/12/2014	31/12/2014
	CODE	7180	7251	7523	7571	7837	7855	8043	8111	8500	8554
	LIMITS										
NH ₃ (µg/m³)	400	1.47	2.01	2.21	2.14	2.54	1.55	2.23	1.69	1.57	2.20
Lead (µg/m³)	1	0.010	0.083	0.064	0.026	0.008	0.016	0.008	0.045	0.016	0.017
Arsenic (ng/m³)	6	1.86	2.82	0.60	1.28	6.78	0.75	0.60	BDL	BDL	0.98
Nickel (ng/m³)	20	10.08	4.94	3.66	5.4	4.3	6.40	5.23	2.38	5.06	3.32
Benzene (µg/m³)	5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
B(a)P (ng/m³)	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

End of Report


Authorized Signatory

Name : Dr. Siddalingeshwar K.G.

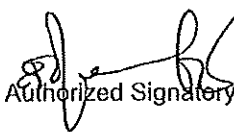
Designation : Head of Laboratory

Test Report

ANALYSIS REPORT OF AMBIENT AIR QUALITY

1. Name of the location : Permude
2. Name of the industry : M/s. ONGC Mangalore Petrochemicals Limited
Mangalore Spécial Economic Zone, Permude
Mangalore-574509
3. Sample Collected By : M/s Environmental Health & Safety Research and
Development Centre, Bangalore - 560 010.
4. Particulars of Sample Collected : Ambient Air collected through
Fine Particulate Sampler - APM 550/APM 550 Mini
Respirable Dust Sampler - 460NL,
CO & O₃ Analyzers.
5. Date of collection : For the Month of December- 2014
6. Sample Number : EHSRDC/OMPL/A/14/12/

PARAMETERS		WK 49		WK 50		WK 51		WK 52		WK1	
	DATE	04/12/2014	05/12/2014	11/12/2014	12/12/2014	18/12/2014	19/12/2014	25/12/2014	26/12/2014	30/12/2014	31/12/2014
	CODE	7252	7259	7572	7610	7856	7894	8112	8295	8502	8555
	LIMITS										
PM ₁₀ (µg/m³)	100	71	60	70	59	61	67	66	68	59	66
PM _{2.5} (µg/m³)	60	26	17	18	20	17	22	28	25	17	23
SO ₂ (µg/m³)	80	2.26	2.57	2.10	2.38	1.74	2.54	2.68	2.17	2.56	3.45
NO ₂ (µg/m³)	80	3.55	4.27	3.65	3.41	3.01	3.16	3.11	3.55	3.55	3.36
CO (mg/m³)	4	0.98	0.85	0.81	0.81	0.75	0.78	0.81	0.87	0.74	0.91
O ₃ (µg/m³)	180	0.68	0.92	0.79	0.70	0.80	0.72	0.79	0.85	0.79	0.85


Authorized Signatory

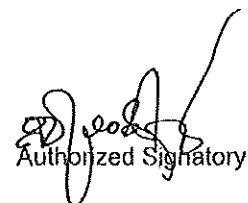
Name : Dr. Siddalingeshwar K.G.

Designation : Head of Laboratory

Test Report

PARAMETERS	DATE	WK 49		WK 50		WK 51		WK 52		WK1	
		04/12/2014	05/12/2014	11/12/2014	12/12/2014	18/12/2014	19/12/2014	25/12/2014	26/12/2014	30/12/2014	31/12/2014
	CODE	7252	7259	7572	7610	7856	7894	8112	8295	8502	8555
	LIMITS										
NH ₃ (µg/m ³)	400	2.35	1.87	1.98	1.78	1.25	2.35	2.68	2.22	1.87	1.14
Lead (µg/m ³)	1	0.027	0.013	0.007	0.041	0.031	0.027	0.002	0.013	0.009	0.007
Arsenic (ng/m ³)	6	1.23	2.3	2.022	0.97	0.68	0.43	BDL	0.96	BDL	BDL
Nickel (ng/m ³)	20	9.06	7.97	5.94	2.69	8.46	6.29	5.89	6.78	5.24	10.9
Benzene (µg/m ³)	5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
B(a)P (ng/m ³)	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

End of Report


Authorized Signatory

Name : Dr. Siddalingeshwar K.G.

Designation : Head of Laboratory

Test Report

AMBIENT NOISE LEVEL MONITORING REPORT

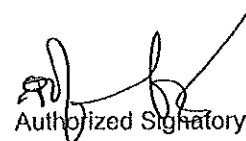
1. Name of the Project : M/s. ONGC Mangalore Petrochemicals Limited,
Mangalore Spécial Economic Zone,
Permude,
Mangalore-574509.
2. Sample Collected by : M/s. Environmental Health and Safety Research &
Development Centre, Bangalore - 560 010.
3. Date of Collection : 09.12.2014
4. Particulars of Sample : Ambient Noise Level collected through
Collected Sound Level Meter EQ-8852/C-322
5. Date of Sample Receipt : 11.12.2014
6. Sample Number : EHSRDC/OMPL/N/14/12/ 7503 - 7506
7. Method Adopted : Instrument Method

Code No	Sample Location	Parameters		Std.
		Day Time dB(A)	Night Time dB(A)	
7503	OMPL East Side Boundary	64.29	46.77	75.0 dB(A) Day
7504	OMPL West Side Boundary	63.87	48.90	
7505	OMPL South Side Boundary	62.78	51.22	70 dB(A) Night
7506	OMPL North Side Boundary	64.64	46.89	

Note :

- Day Time is reckoned between 6 A.M and 10 P.M
- Night Time is reckoned between 10 P.M and 6 A.M
- L_{eq} : It is energy mean of the noise level over a specified period.
- *dB (A) L_{eq} denotes the time weighted average of the level of sound in decibels on scale A which is relatable to human hearing.
- A "decibel" is a unit in which noise is measured.
- "A", in dB (A) L_{eq} , denotes the frequency weighting in the measurement of noise and corresponds to Frequency response characteristics of the human ear.

End of Report


Authorized Signatory

Name : Dr. Siddalingeshwar K.G.

Designation : Head of Laboratory

