Monitoring, Sampling and Analysis for Ambient Air Quality, Surface Water Quality and Ground Water Quality in Critically/Severely/Other Polluted

DOMABIVALI

Post-Monsoon (December 2023 to February 2024)

Maharashtra Pollution Control Board

Kalptaru Point, Sion East, Mumbai – 400 022

Index

ABBREVIATIONS

CPCB	Central Pollution Control Board
MPCB	Maharashtra Pollution Control Board
CEPI	Comprehensive Environmental Pollution Index
EPA	Environmental Protection Act, 1986
APHA	American Public Health Association
ASTM	American Society for Testing and Materials
BIS	Bureau of Indian Standards
BLQ	Below the Limit of Quantification
CAAQMS	Continuous Ambient Air Quality Monitoring Station
CEMS	Continuous Emission Monitoring System
CETP	Common Effluent Treatment Plant
VOCs	Volatile Organic Compounds
MIDC	Maharashtra Industrial Development Corporation
NWMP	National Water Quality Monitoring Program
NAAQS	National Ambient Air Quality Standard
ZLD	Zero Liquid Discharge
CPA	Critically Polluted Area
SPA	Severely Polluted Area

1. Executive Summary

The Dombivali CEPI area including MIDC Phase I and MIDC Phase II and was monitored for Ambient Air Quality, Ground and Surface Waters quality and CEPI Score was calculated based on the Latest directions 120 of Letter No. B-29012/ESS (CPA)/2015-16 dated 26th April 2016 of Central Pollution Control Board (CPCB). Maharashtra Pollution Control Board (MPCB) has carried out monitoring at CPCB location with the additional location of samplings for ambient air, surface and ground water in consideration with the previous CEPI monitoring and covering the entire CEPI Impact Zone. The post monsoon monitoring was carried out during the period of December 2023 to February 2024 to verify the Ambient Air Quality, Surface water and Ground water.

The Ambient Air Quality stations were identified considering the upwind and cross wind direction in the CEPI impact area. The concentration of PM_{10} and $PM_{2.5}$ are found within the limit prescribed by NAAQS, 2009. However, the concentration of Carbon monoxide (CO) is found to exceed the permissible limit at six locations out of the eight monitored locations. This may be due to the high traffic density. Incomplete combustion of fuel in engines, especially those in older vehicles or poorly maintained ones, can release significant amounts of CO into the atmosphere, besides this combustion processes involved in energy generation and manufacturing operations also release carbon monoxide in the atmosphere. The concentration of all the surface water parameters of Dombivali region is observed within the permissible limits except a few exceptions of high levels of total phosphate and BOD at six locations. In ground water, the concentration of Selenium is found to exceed in 2 of the collected water samples. The parmeters of the ground water was compared with the IS10500:2012 drinking water standards.

The study conducted by CPCB during the period January 2018, the CEPI score of Dombivali region (as per the revised guidelines) was 69.67 (Ambient Air–62, Water-63.50, Land–27.25). In this, the concentration of PM10 and PM2.5 were found to be the main contributors in increasing the score. Since then, Maharashtra Pollution Control Board (MPCB) has taken various initiatives like enforcing stricter emission standards and promoting renewable energy adoption to reduce pollution levels, enhancing waste management practices and conducting public awareness campaigns for sustainable practices in reducing the CPCB CEPI Score which has resulted in the present CEPI score (post monsoon season) as 47.8 with Ambient Air Index as 38.5, Surface Water Index as 40.3, and Ground Water Index as 32.5.

2. Introduction

In the vibrant tapestry of India's industrial landscape, the state of Maharashtra stands as a testament to both the promise and perils of rapid economic development. With countless number of industrial clusters, Maharashtra has witnessed unprecedented growth and prosperity in recent decades. However, this surge in industrial activity has come at a significant environmental cost, with pollution emerging as a pressing concern in many regions across the state.

Simultaneously, the Comprehensive Environmental Pollution Index (CEPI) has emerged as a beacon of assessment and action in India's environmental landscape. Introduced as a standardized methodology for evaluating and addressing pollution in industrial clusters across the nation, the CEPI represents a significant step towards achieving the delicate balance between economic growth and environmental sustainability. Developed through collaborative efforts between environmental scientists, regulatory authorities, and community stakeholders, the CEPI serves as a vital instrument for identifying, prioritizing, and mitigating pollution in industrial areas. By systematically monitoring, sampling, and analyzing pollution parameters such as ambient air quality, surface water quality, and groundwater quality, the CEPI empowers policymakers and regulators to make informed decisions and allocate resources effectively.

In Maharashtra, where industrial activities drive economic growth and employment opportunities, the importance of the CEPI cannot be overstated. Through strategic monitoring, sampling, and analysis efforts, the CEPI aims to provide a comprehensive assessment of pollution levels and their impacts on environmental health in critically, severely, and other polluted industrial areas across the state.

Moreover, the application of the CEPI extends beyond mere assessment, serving as a catalyst for targeted interventions and regulatory enforcement in polluted industrial areas. By identifying pollution hotspots and vulnerable communities, the CEPI enables authorities to implement remedial measures, enforce pollution control norms, and monitor progress towards environmental sustainability.

In the following sections, we delve into the methodology, findings, and implications of both the CEPI assessment and the Monitoring, Sampling, and Analysis for Ambient Air Quality, Surface Water Quality, and Groundwater Quality in Polluted Industrial Areas of Chembur in Mumbai, Maharashtra. The present CEPI study includes MIDC Phase I and Phase II of Dombivali. The MIDC established the Dombivali Industrial Area in 1964. In this area, industrial plots and sheds have been developed as Phase-I and II and residential and commercial plots/ area in between & surrounding Phase-I & Phase-II. Dombivali district is known for its rapid industrial growth having major industries such as Textile, chemical & Engineering in both phases.

The present report is also based on the revised CEPI version 2016. The index captures the various dimensions of environment including air, water and land. Comprehensive Environmental Pollution Index (CEPI), which is a rational number to characterize the environmental quality at a given location following the algorithm of source, pathway and receptor have been developed. The CEPI reports serve as a roadmap for targeted interventions, regulatory enforcement, and community

engagement aimed at mitigating pollution and safeguarding public health in the area. Despite the persistent challenges, ongoing initiatives guided by the CEPI action plan reports offer hope for addressing environmental concerns and fostering sustainable development in Dombivali.

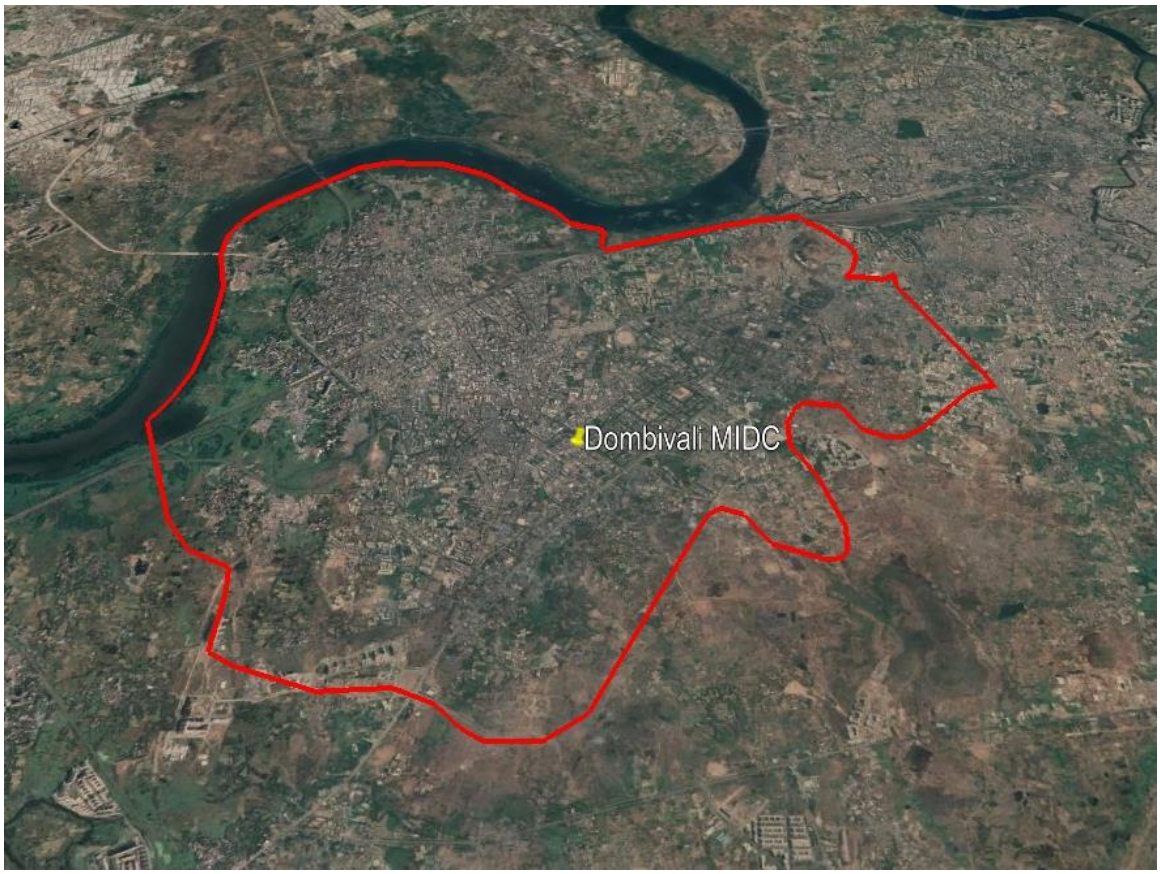


Fig. Dombivali Region CEPI Monitoring Zone

3. Scope of Work

The major scope of work includes:

I. The scope of the present study is to perform three (3) rounds of "Monitoring, Sampling and Analysis for Ambient Air Quality, VOCs in Ambient Air, Surface Water Quality & Ground Water Quality in selected Pollution Industrial Areas (PIAs) of Dombivali, Maharashtra" with a gap of one or two days. The analysis of the collected samples was carried out by the standard methods (CPCB, BIS, APHA, USEPA).

II. To Collect health-related data in the CEPI region.

III. To calculate the Comprehensive Environmental Pollution Index (CEPI) Score as per Revised CEPI-2016 issued by Central Pollution Control Board (CPCB).

The sampling details and frequency of sampling in Ambient Air, VOCs, Surface Water and Ground Water are given in Table 3.1 and Table 3.2 respectively.

Table 3.1 Sampling Details of Dombivali

Sampling Criteria	Number of sites	Total Sites	Monitoring Parameters
Ambient Air Quality	• Phase I-04 • Phase I-04	**08**	PM_{10}, $PM_{2.5}$, SO_2, NO_2, NH_3, O_3, C_6H_6, CO, BaP, Pb, Ni, As
Volatile Organic Compounds (VOCs)	• Phase I-02 • Phase I-02	**04**	Dichloromethane, Chloroform, Carbon Tetrachloride, Trichloroethylene, Bromodichloromethane, 1,3-Dichloropropane, 1,4-Dichlorobenzene, 1,3-Dichlorobenzene, 1,2-Dichlorobenzene, 1,2-Dibromo-3-Chloropropane, Napthalene, Bromobenzene,1,2,4-Trimethylbenzene, 2-Chlorotoluene, Tert-Butylbenzene, SEC-Butylbenzene, P-Isopropyl toluene, M-Xylene, P-Xylene, Styrene, Cumene 1,2,3-Trichloropropane, N-Propyl benzene, Dibromochloromethane, 1,2-Dibromoethane, Chlorobenzene, 1,1,1,2-Tetrachloroethane, Ethylbenzene, 1,1-Dichloropropylene, 1,2-Dichloroethane, 1,2-Dichloropropane, Trans-1,3-Dichloropropene, CIS 1,3-Dichloropropene, 1,1,2-Trichloroethane, Tetrachloroethylene, 1,3,5-Trimethylbenzene, N-Butylbenzene, 1,2,3-Trichlorobenzene, Hexachlorobutadiene, 1,2,4-Trichlorobenzene, 2,2-Dichloropropane, Dibromo

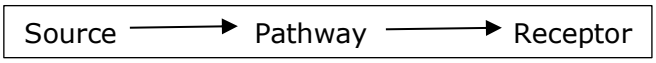
Sampling Criteria	Number of sites	Total Sites	Monitoring Parameters
			methane, Toluene, O-Xylene, Bromoform, 1,1,2,2-Tetrachloroethane, 4-Chlorotoluene, 1,1-Dichloroethylene, Trans-1,2-Dichloroethylene, 1,1-Dichloroethane, CIS-1,2-Dichloroethylene, Bromochloromethane, 1,1,1-Trichloroethane
Water Quality Monitoring	**Surface water** • Phase I-06 • Phase I-06	**12**	**(i) Simple Parameters** Sanitary Survey, General Appearance, Colour, Smell, Transparency and Ecological **(ii) Regular Monitoring Parameters** pH, O & G, Suspended Solids, DO, COD, BOD, TDS, Electrical Conductivity, Total Dissolved Solids, Nitrite–Nitrogen, Nitrate-Nitrogen, (NO_2+NO_3) total nitrogen, Free Ammonia, Total Residual Chlorine, Cyanide, Fluoride, Chloride, Sulphate, Sulphides, Total Hardness, Dissolved Phosphates, SAR, Total Coliforms, Faecal Coliform **(iii) Special Parameters** Total Phosphorous, TKN, Total Ammonia (NH_4+NH_3)-Nitrogen, Phenols, Surface Active Agents, Anionic detergents, Organo-Chlorine Pesticides, PAH, PCB and PCT, Zinc, Nickel, Copper, Hexa-valent Chromium, Chromium (Total), Arsenic (Total), Lead, Cadmium, Mercury, Manganese, Iron, Vanadium, Selenium, Boron **(iv) Bio-assay (zebra Fish)** Test – For specified samples only.
	Groundwater • Phase I-03 • Phase I-03	**06**	

Table 3.2 Frequency of Sampling

	Parameter	Round of Sampling	Frequency in Each Round
A	**Ambient Air Quality Monitoring**		
1.	Particulate Matter (size less than 10 µm) or PM_{10}	03	3 Shifts of 8 hrs each
2.	Particulate Matter (size less than 2.5 µm) or $PM_{2.5}$	03	1 Shift of 24 hrs
3.	Sulphur Dioxide (SO_2)	03	6 Shifts of 4 hrs each
4.	Nitrogen Dioxide (NO_2)	03	6 Shifts of 4 hrs each
5.	Ammonia (NH_3)	03	6 Shifts of 4 hrs each
6.	Ozone (O_3)	03	24 Shifts of 1 hr each
7.	Benzene (C_6H_6)	03	1 Shifts of 24 hrs
8.	Carbon Monoxide (CO)	03	24 Shifts of 1 hr each
9.	Benzo (a) Pyrene (BaP) – particulate phase only	03	3 Shifts of 8 hrs each
10.	Lead (Pb)	03	3 Shifts of 8 hrs each
11.	Arsenic (As)	03	3 Shifts of 8 hrs each
12.	Nickel (Ni)	03	3 Shifts of 8 hrs each
B	**Volatile Organic Compounds (VOCs)**		
	As mentioned in Table 3.1	03	3 Shifts of 24 hrs each
C	**Ground Water**		
	As mentioned in Table 3.1	03	01 sample at each round
D	**Surface Water**		
	As mentioned in Table 3.1	03	01 sample at each round

4. Methodology

The present report is based on the revised Comprehensive Environmental Pollution Index (CEPI) version 2016. The index captures the various dimensions of the environment including air, water and land. Comprehensive Environmental Pollution Index (CEPI) is a rational number, which is used to characterize the environmental quality at a given location. It is three-step process based on the algorithm of Source, pathway and Receptor.



Ambient air stations, Surface water locations and Ground water locations were decided by the respective regional officers. The sampling was done in 3 rounds with an interval of one or two days at each location. Sampling has been done at the potential polluted areas so as to arrive at the CEPI. This will further help the authorities to monitor the areas in order to improve the current status of their environmental components such as air and water quality data, ecological damage and visual environmental conditions.

Methodology for sampling, preservation and analysis have been done according to the CPCB/ EPA/ APHA/ IS/ ASTM standard methods for the samples.

AIR ENVIRONMENT

5. Air Environment

For studying the Air Environment of Dombivali area, monitoring stations were identified considering the upwind and cross wind direction and all 12 parameters as per the notification of National Ambient Air Quality Standards (NAAQS) were determined.

**Kindly note: Volatile Organic Compounds (VOCs) concentration is not detected in most of the Air samples collected; hence it is not shown in the graphs.*

1. **MIDC Phase I:** In MIDC Phase I of Dombivali four locations have been monitored for Ambient Air Quality (AAQ). The AAQ monitoring was carried out by taking samples in triplicate on 20th, 22nd and 24th December, 2023. All twelve parameters are observed well within the limits (except Sulphur dioxide and PM_{10}) at all 4 locations monitored.

Table 5.1 Phase I - Details of Sampling Location of Ambient Air Quality Monitoring

Sr. No.	Name of Monitoring Location	Latitude	Longitude	Date of Sampling		
				Round-1	Round-2	Round-3
1.	Near main gate Gharda Chemicals	19°13'10.45"N	73°6'50.33"E	20.12.2023	22.12.2023	24.12.2023
2.	Near main gate DEBESA CETP	19°13'0.45"N	73°6'18.07"E	20.12.2023	22.12.2023	24.12.2023
3.	Near main gate Balkrishna Industries Ltd.	19°12'36.40"N	73°6'41.92"E	20.12.2023	22.12.2023	24.12.2023
4.	Near main gate Sagar Ice & Cold Storage Pvt. Ltd.	19°12'55.54"N	73°6'26.29"E	20.12.2023	22.12.2023	24.12.2023

Table 5.2 Phase I - Details of Sampling Location of Volatile Organic Compounds (VOCs) Monitoring

Sr. No.	Name of Monitoring Location	Latitude	Longitude	Date of Sampling		
				Round-1	Round-2	Round-3
1.	Near main gate Gharda Chemicals	19°13'10.45"N	73°6'50.33"E	20.12.2023	22.12.2023	24.12.2023
2.	Near main gate DEBESA CETP	19°13'0.45"N	73°6'18.07"E	20.12.2023	22.12.2023	24.12.2023

Fig. Geographical Locations of Ambient Air Quality Monitoring MIDC Dombivali Phase I

Fig. Geographical Locations of VOCs Monitoring MIDC Dombivali Phase I

Table 5.3 Phase I - Results of Ambient Air Quality Monitoring

Parameters	Unit	Results			
		Gharda Chemicals	DEBESA CETP	Balkrishna Industries Ltd.	Sagar Ice & Cold Storage Pvt. Ltd.
Sulphur Dioxide (SO_2)	µg/m^3	18.80	5.98	25.85	26.65
Nitrogen Dioxide (NO_2)	µg/m^3	BLQ	8.38	7.48	13.70
Particulate Matter (size less than 10 µm) or PM_{10}	µg/m^3	51	54	59	52
Particulate Matter (size less than 2.5 µm) or $PM_{2.5}$	µg/m^3	14	17	17	15
Ozone (O_3)	µg/m^3	BLQ	BLQ	BLQ	BLQ
Lead (Pb)	µg/m^3	0.05	0.05	BLQ	0.05
Carbon Monoxide (CO) (1 h)	mg/m^3	0.81	0.83	0.86	0.92
Carbon Monoxide (CO) (8 h)	mg/m^3	1.91	2.01	2.11	2.10
Ammonia (NH_3)	µg/m^3	95.27	91.47	84.43	81.00
Benzene (C_6H_6)	µg/m^3	2.41	1.53	1.85	1.85
Benzo (a) Pyrene (BaP) – particulate phase only	ng/m^3	BLQ	BLQ	BLQ	BLQ
Arsenic (As)	ng/m^3	BLQ	BLQ	1.50	0.61
Nickel (Ni)	ng/m^3	4.22	BLQ	BLQ	BLQ

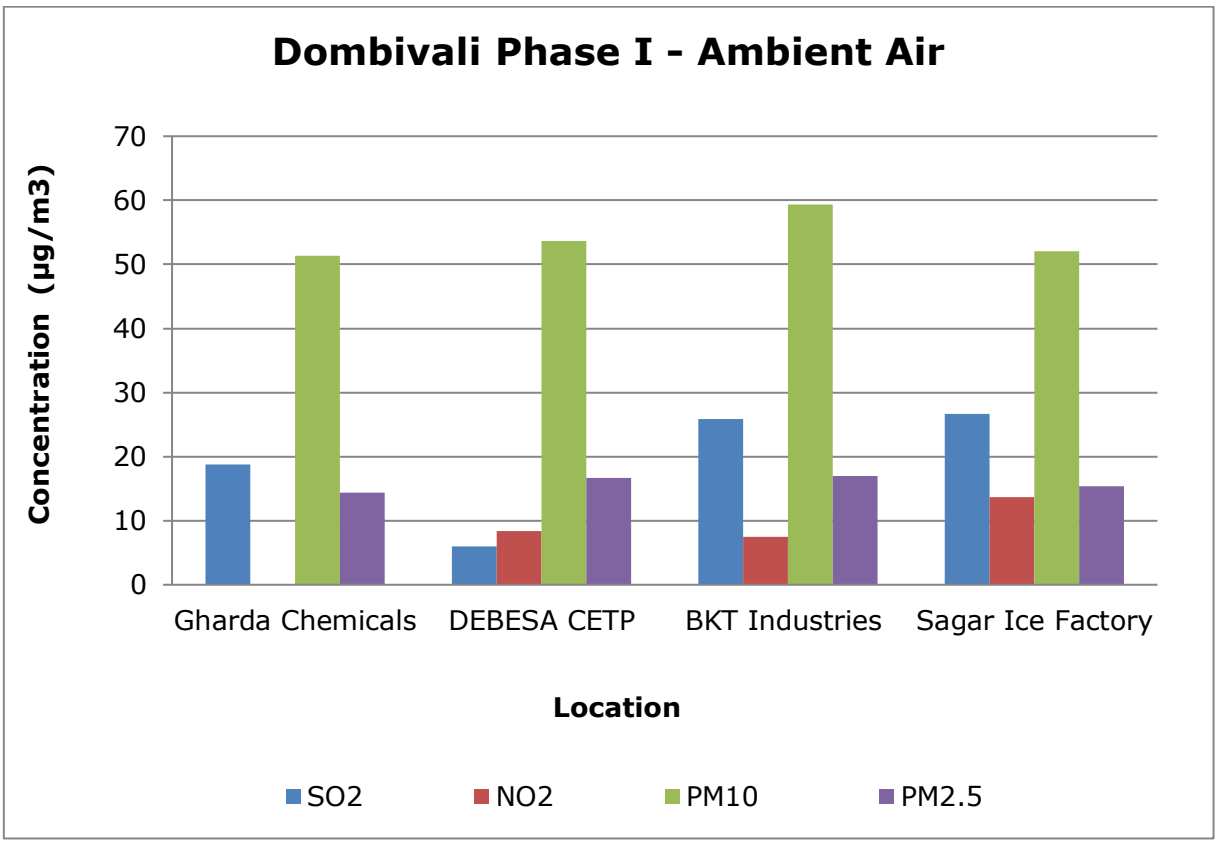
Table 5.4 Phase I - Volatile Organic Compounds (VOCs) in Ambient Air Results

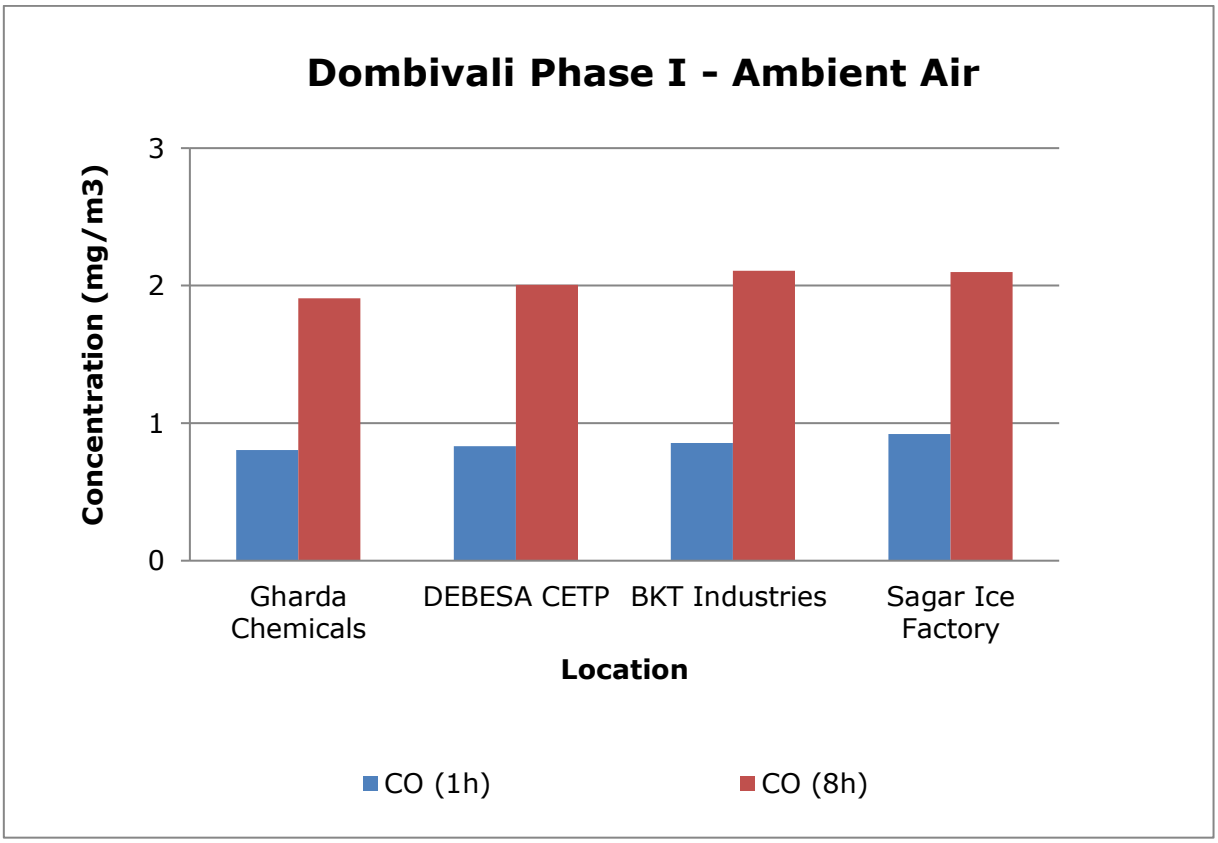
Parameters	Unit	Results	
		Gharda Chemicals	DEBESA CETP
Dichloromethane	µg/m³	4.71	4.00
Chloroform	µg/m³	0.64	0.94
Carbon Tetrachloride	µg/m³	BLQ	2.05
Trichloroethylene	µg/m³	0.53	0.55
Bromodichloromethane	µg/m³	BLQ	BLQ
1,3-Dichloropropane	µg/m³	BLQ	BLQ
1,4-Dichlorobenzene	µg/m³	16.60	BLQ
1,3-Dichlorobenzene	µg/m³	11.60	10.00
1,2-Dichlorobenzene	µg/m³	BLQ	BLQ
1,2-Dibromo-3-Chloropropane	µg/m³	BLQ	BLQ
Napthalene	µg/m³	BLQ	BLQ
Bromobenzene	µg/m³	BLQ	BLQ

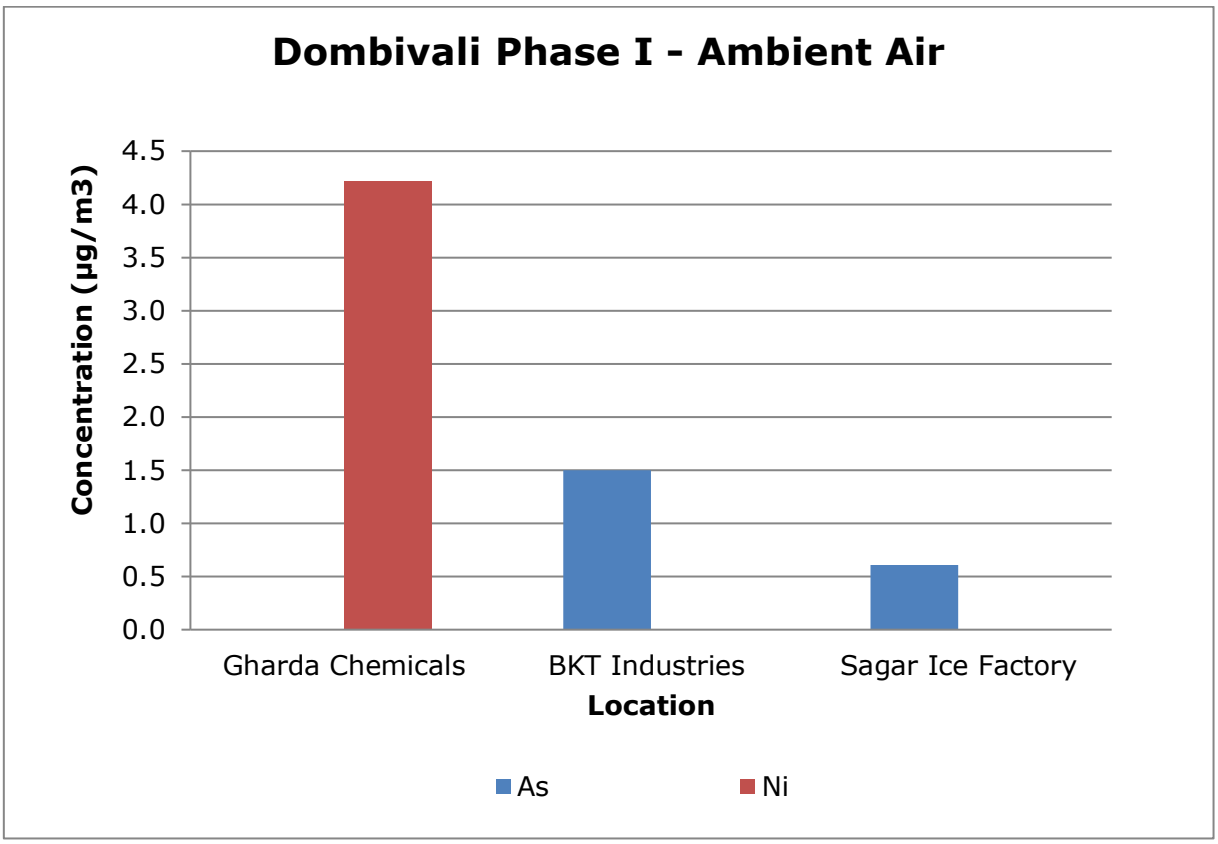
Parameters	Unit	Results	
		Gharda Chemicals	DEBESA CETP
1,2,4-Trimethylbenzene	µg/m³	BLQ	BLQ
2-Chlorotoluene	µg/m³	BLQ	BLQ
Tert-Butylbenzene	µg/m³	BLQ	BLQ
SEC-Butylbenzene	µg/m³	BLQ	BLQ
P-Isopropyltoluene	µg/m³	BLQ	BLQ
M-Xylene	µg/m³	BLQ	BLQ
P-Xylene	µg/m³	11.20	0.98
Styrene	µg/m³	BLQ	BLQ
Cumene	µg/m³	BLQ	BLQ
1,2,3-Trichloropropane	µg/m³	BLQ	BLQ
N-Propylbenzene	µg/m³	BLQ	BLQ
Dibromochloromethane	µg/m³	BLQ	BLQ
1,2-Dibromoethane	µg/m³	BLQ	BLQ
Chlorobenzene	µg/m³	BLQ	BLQ
1,1,1,2-Tetrachloroethane	µg/m³	BLQ	BLQ
Ethylbenzene	µg/m³	BLQ	BLQ
1,1-Dichloropropylene	µg/m³	BLQ	BLQ
1,2-Dichloroethane	µg/m³	0.91	0.83
1,2-Dichloropropane	µg/m³	BLQ	BLQ
Trans-1,3-Dichloropropene	µg/m³	BLQ	BLQ
CIS 1,3-Dichloropropene	µg/m³	BLQ	BLQ
1,1,2-Trichloroethane	µg/m³	BLQ	BLQ
Tetrachloroethylene	µg/m³	BLQ	BLQ
1,3,5-Trimethylbenzene	µg/m³	BLQ	BLQ
N-Butylbenzene	µg/m³	BLQ	BLQ
1,2,3-Trichlorobenzene	µg/m³	BLQ	BLQ
Hexachlorobutadiene	µg/m³	BLQ	BLQ
1,2,4-Trichlorobenzene	µg/m³	BLQ	BLQ
2,2-Dichloropropane	µg/m³	BLQ	BLQ
Dibromomethane	µg/m³	BLQ	BLQ
Toluene	µg/m³	1.47	0.60
O-Xylene	µg/m³	BLQ	BLQ

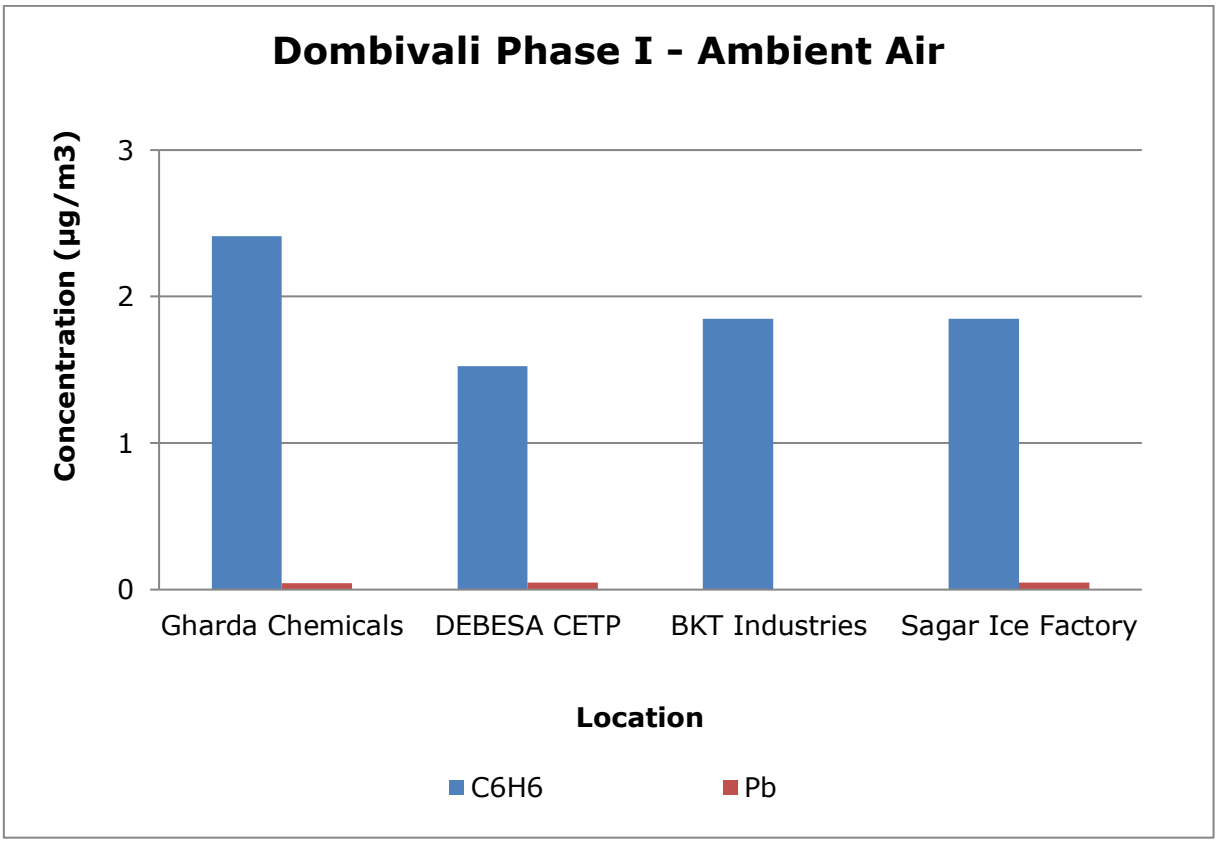
Parameters	Unit	Results	
		Gharda Chemicals	DEBESA CETP
Bromoform	µg/m³	BLQ	BLQ
1,1,2,2-Tetrachloroethane	µg/m³	BLQ	BLQ
4-Chlorotoluene	µg/m³	BLQ	BLQ
1,1-Dichloroethylene	µg/m³	BLQ	BLQ
Trans-1,2-Dichloroethylene	µg/m³	BLQ	BLQ
1,1-Dichloroethane	µg/m³	BLQ	BLQ
CIS-1,2-Dichloroethylene	µg/m³	BLQ	BLQ
Bromochloromethane	µg/m³	0.66	0.72
1,1,1-Trichloroethane	µg/m³	BLQ	BLQ

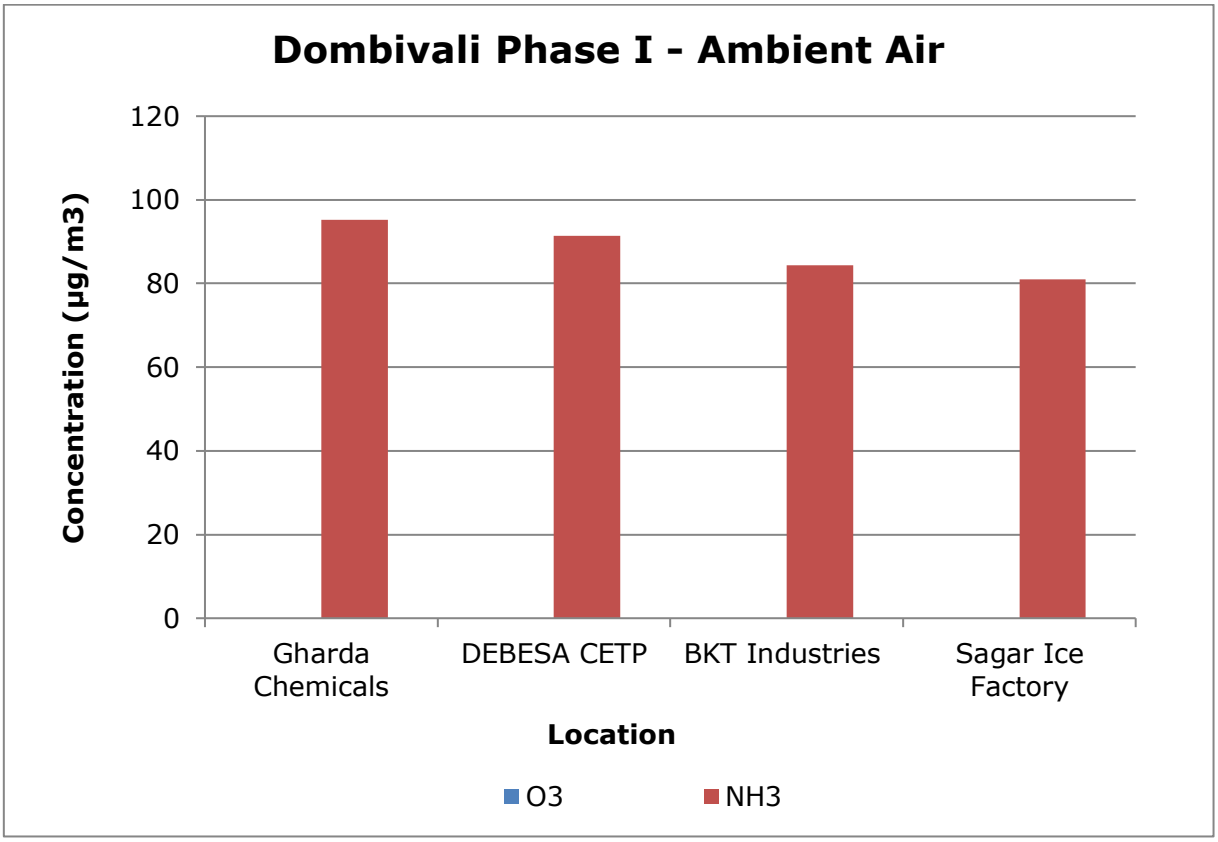
Graphs - Ambient Air Quality of MIDC Dombivali Phase I






Dombivali Phase I - Ambient Air
Concentration (µg/m3)
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Gharda Chemicals
BKT Industries
Sagar Ice Factory
Location
As
Ni


Dombivali Phase I - Ambient Air
Concentration (µg/m3)
3
2
1
0
Gharda Chemicals
DEBESA CETP
BKT Industries
Sagar Ice Factory
Location
C6H6
Pb


Dombivali Phase I - Ambient Air
Concentration (µg/m3)
120
100
80
60
40
20
0
Gharda Chemicals
DEBESA CETP
BKT Industries
Sagar Ice Factory
Location
O3
NH3

2. **MIDC Phase II:** In MIDC Phase II of Dombivali also all 4 locations monitored were well within the limits (except Sulphur dioxide at Apartim Equipments) for all 12 NAAQS parameters.

Table 5.5 Phase II - Details of Sampling Location of Ambient Air Quality Monitoring

Sr. No.	Name of Monitoring Location	Latitude	Longitude	Date of Sampling		
				Round-1	Round-2	Round-3
1.	Near main gate Dombivali Common Effluent Treatment Plant	19°12'17.37"N	73° 5'58.34"E	20.12.2023	22.12.2023	24.12.2023
2.	Behind Connectwell Industries Pvt. Ltd.	19°11'37.12"N	73° 5'39.80"E	20.12.2023	22.12.2023	24.12.2023
3.	Near main gate Metropolitan Eximchem Ltd.	19°12'7.89"N	73° 5'56.18"E	20.12.2023	22.12.2023	24.12.2023
4.	Near main gate Apartim Equipment	19°12'22.33"N	73° 6'1.31"E	20.12.2023	22.12.2023	24.12.2023

Table 5.6 Phase II - Details of Sampling Location of Volatile Organic Compounds (VOCs) Monitoring

Sr. No.	Name of Monitoring Location	Latitude	Longitude	Date of Sampling		
				Round-1	Round-2	Round-3
1.	Near main gate Dombivali Common Effluent Treatment Plant	19°12'17.37"N	73° 5'58.34"E	20.12.2023	22.12.2023	24.12.2023
2.	Behind Connectwell Industries Pvt. Ltd.	19°11'37.12"N	73° 5'39.80"E	20.12.2023	22.12.2023	24.12.2023

Fig. Geographical Locations of Ambient Air Quality Monitoring MIDC Dombivali Phase II

Fig. Geographical Locations of VOCs Monitoring MIDC Dombivali Phase II

Table 5.7 Phase II - Results of Ambient Air Quality Monitoring

Parameters	Unit	Results			
		Dombivali CETP	Connectwell Industries Pvt. Ltd.	Metropolitan Eximchem Ltd.	Apartim Equipment
Sulphur Dioxide (SO_2)	$\mu g/m^3$	43.40	28.10	25.85	26.65
Nitrogen Dioxide (NO_2)	$\mu g/m^3$	BLQ	BLQ	7.48	13.70
Particulate Matter (size less than 10 µm) or PM_{10}	$\mu g/m^3$	46	57	59	52
Particulate Matter (size less than 2.5 µm) or $PM_{2.5}$	$\mu g/m^3$	12	15	17	15
Ozone (O_3)	$\mu g/m^3$	BLQ	BLQ	BLQ	BLQ
Lead (Pb)	$\mu g/m^3$	BLQ	0.03	BLQ	0.05
Carbon Monoxide (CO) (1 h)	mg/m^3	0.86	0.96	0.86	0.92
Carbon Monoxide (CO) (8 h)	mg/m^3	1.86	2.04	2.11	2.10
Ammonia (NH_3)	$\mu g/m^3$	85.80	83.30	84.43	81.00
Benzene (C_6H_6)	$\mu g/m^3$	2.33	1.66	1.85	1.85
Benzo (a) Pyrene (BaP) – particulate phase only	ng/m^3	BLQ	BLQ	BLQ	BLQ
Arsenic (As)	ng/m^3	0.70	1.15	1.50	0.61
Nickel (Ni)	ng/m^3	4.30	BLQ	BLQ	BLQ

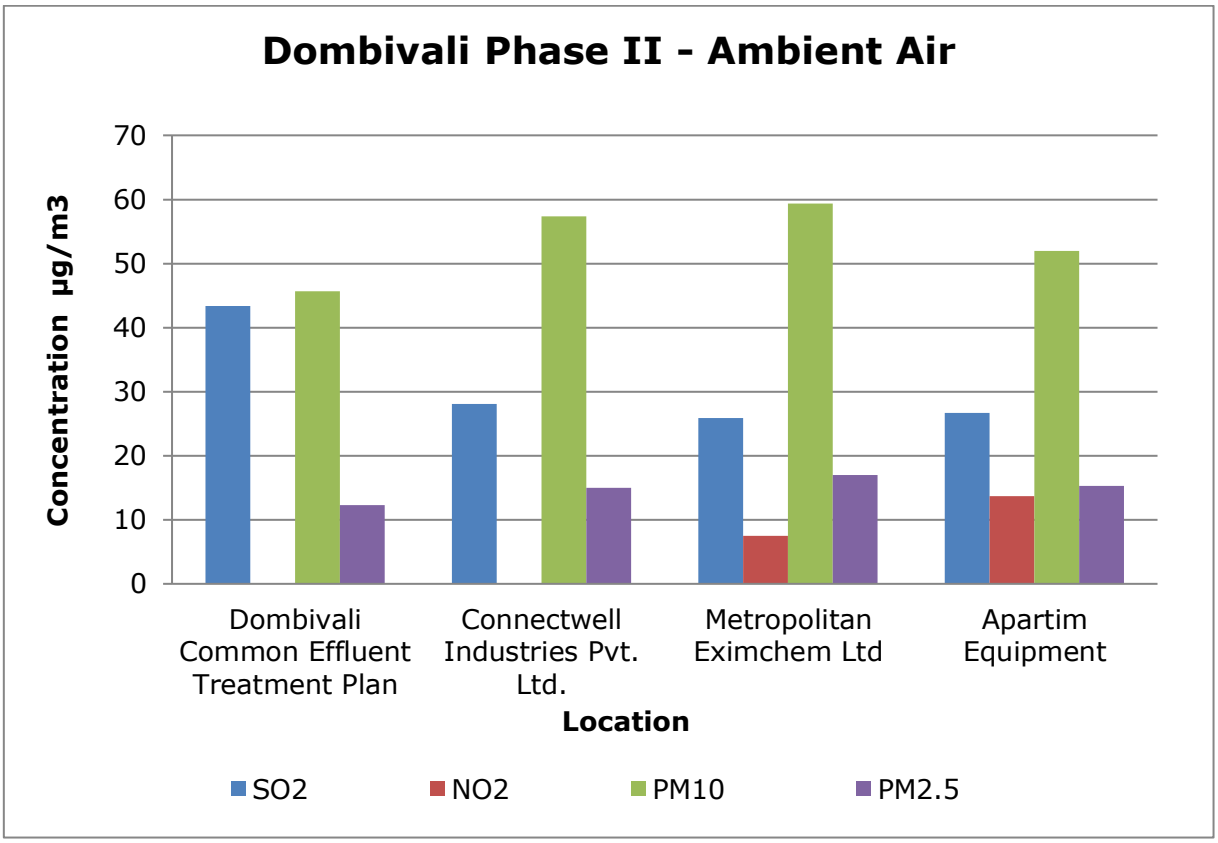
Table 5.8 Phase I - Volatile Organic Compounds (VOCs) in Ambient Air Results

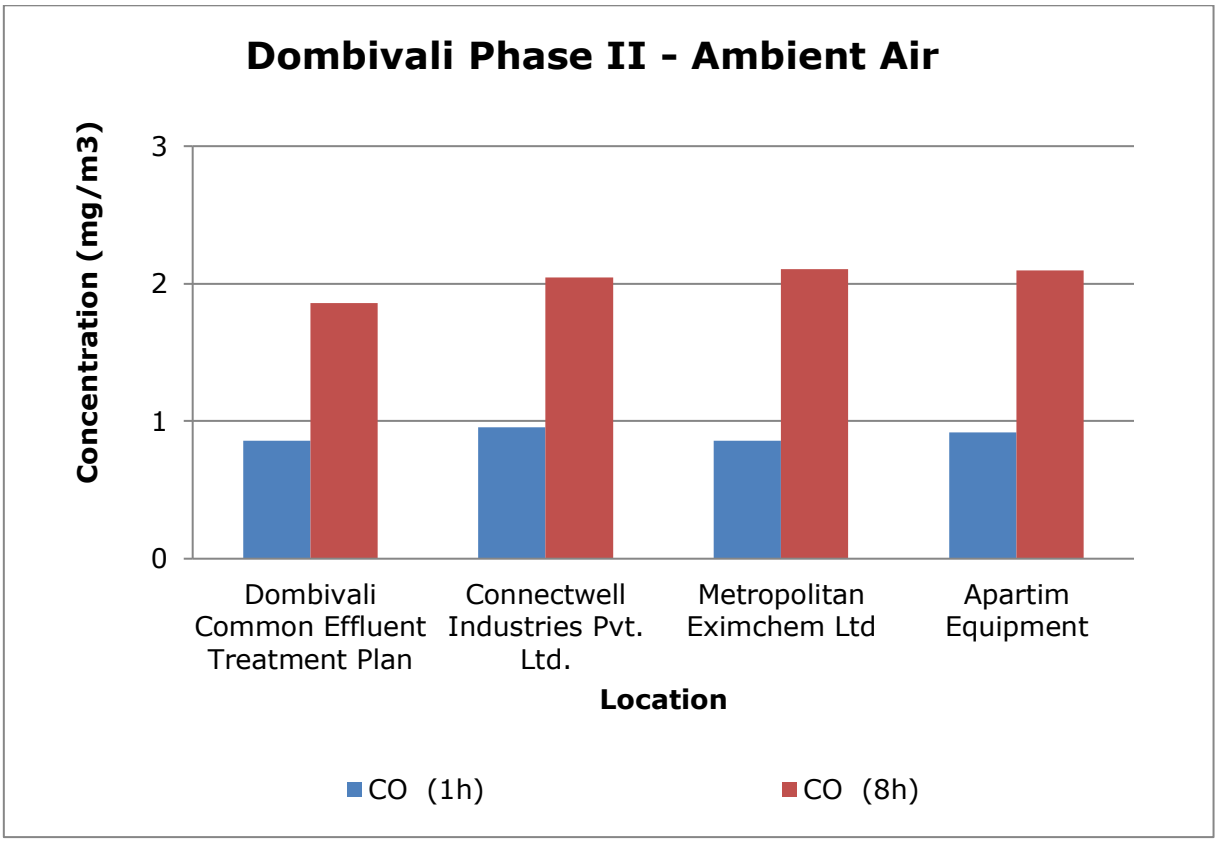
Parameters	Unit	Results	
		Dombivali CETP	Connectwell Industries Pvt. Ltd.
Dichloromethane	$\mu g/m^3$	3.38	2.52
Chloroform	$\mu g/m^3$	0.53	0.83
Carbon Tetrachloride	$\mu g/m^3$	BLQ	BLQ
Trichloroethylene	$\mu g/m^3$	BLQ	BLQ
Bromodichloromethane	$\mu g/m^3$	BLQ	BLQ
1,3-Dichloropropane	$\mu g/m^3$	BLQ	BLQ
1,4-Dichlorobenzene	$\mu g/m^3$	23.60	BLQ
1,3-Dichlorobenzene	$\mu g/m^3$	11.70	BLQ
1,2-Dichlorobenzene	$\mu g/m^3$	BLQ	1.82
1,2-Dibromo-3-Chloropropane	$\mu g/m^3$	BLQ	BLQ
Naphthalene	$\mu g/m^3$	BLQ	BLQ
Bromobenzene	$\mu g/m^3$	BLQ	BLQ
1,2,4-Trimethylbenzene	$\mu g/m^3$	BLQ	BLQ

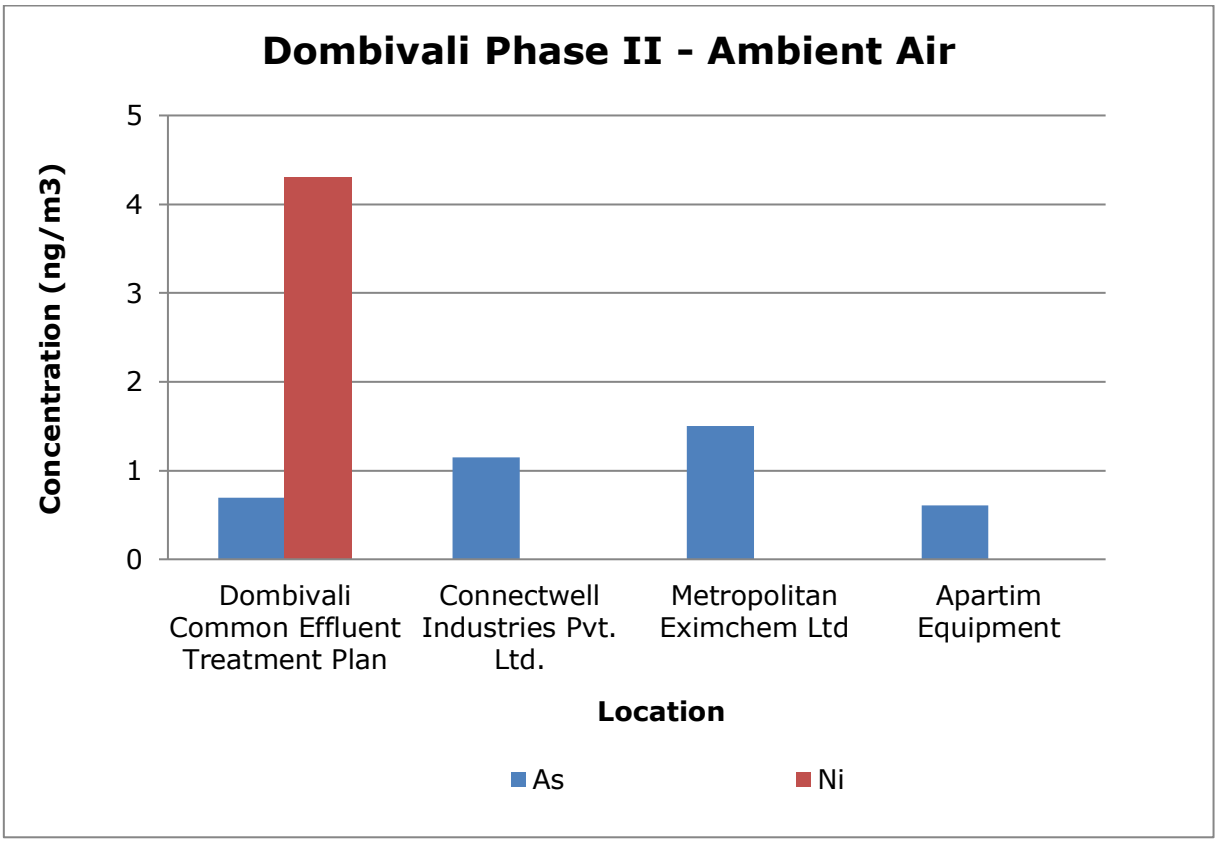
Parameters	Unit	Results	
		Dombivali CETP	Connectwell Industries Pvt. Ltd.
2-Chlorotoluene	µg/m³	BLQ	BLQ
Tert-Butylbenzene	µg/m³	BLQ	BLQ
SEC-Butylbenzene	µg/m³	BLQ	BLQ
P-Isopropyltoluene	µg/m³	BLQ	BLQ
M-Xylene	µg/m³	BLQ	BLQ
P-Xylene	µg/m³	1.00	BLQ
Styrene	µg/m³	BLQ	BLQ
Cumene	µg/m³	BLQ	BLQ
1,2,3-Trichloropropane	µg/m³	BLQ	BLQ
N-Propylbenzene	µg/m³	BLQ	BLQ
Dibromochloromethane	µg/m³	BLQ	BLQ
1,2-Dibromoethane	µg/m³	BLQ	BLQ
Chlorobenzene	µg/m³	BLQ	BLQ
1,1,1,2-Tetrachloroethane	µg/m³	BLQ	BLQ
Ethylbenzene	µg/m³	BLQ	BLQ
1,1-Dichloropropylene	µg/m³	BLQ	BLQ
1,2-Dichloroethane	µg/m³	1.45	1.04
1,2-Dichloropropane	µg/m³	BLQ	BLQ
Trans-1,3-Dichloropropene	µg/m³	BLQ	BLQ
CIS 1,3-Dichloropropene	µg/m³	BLQ	BLQ
1,1,2-Trichloroethane	µg/m³	BLQ	BLQ
Tetrachloroethylene	µg/m³	BLQ	BLQ
1,3,5-Trimethylbenzene	µg/m³	BLQ	BLQ
N-Butylbenzene	µg/m³	BLQ	BLQ
1,2,3-Trichlorobenzene	µg/m³	BLQ	BLQ
Hexachlorobutadiene	µg/m³	BLQ	BLQ
1,2,4-Trichlorobenzene	µg/m³	BLQ	BLQ
2,2-Dichloropropane	µg/m³	BLQ	BLQ
Dibromomethane	µg/m³	BLQ	BLQ
Toluene	µg/m³	1.13	1.47
O-Xylene	µg/m³	BLQ	BLQ
Bromoform	µg/m³	BLQ	BLQ

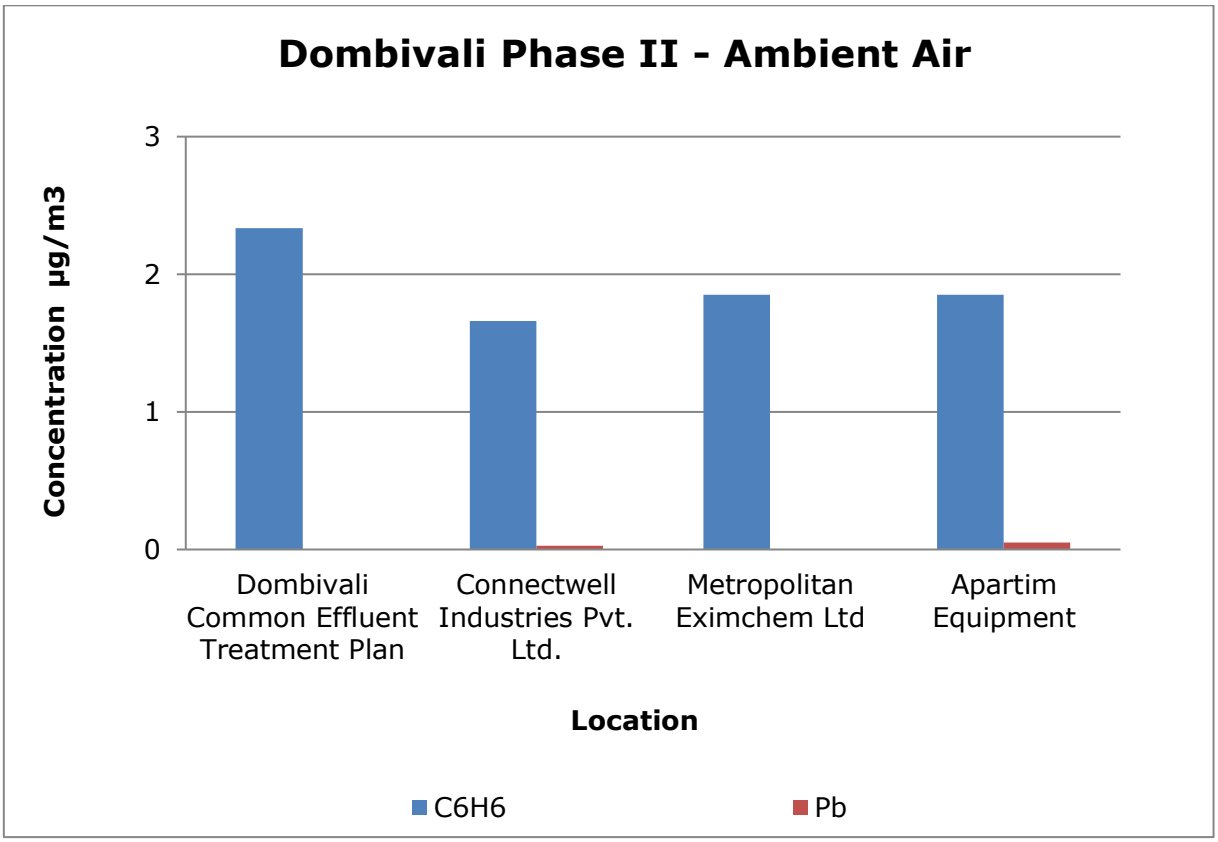
Parameters	Unit	Results	
		Dombivali CETP	Connectwell Industries Pvt. Ltd.
1,1,2,2-Tetrachloroethane	µg/m³	BLQ	BLQ
4-Chlorotoluene	µg/m³	BLQ	BLQ
1,1-Dichloroethylene	µg/m³	BLQ	BLQ
Trans-1,2-Dichloroethylene	µg/m³	BLQ	BLQ
1,1-Dichloroethane	µg/m³	BLQ	BLQ
CIS-1,2-Dichloroethylene	µg/m³	BLQ	BLQ
Bromochloromethane	µg/m³	BLQ	0.59
1,1,1-Trichloroethane	µg/m³	BLQ	BLQ

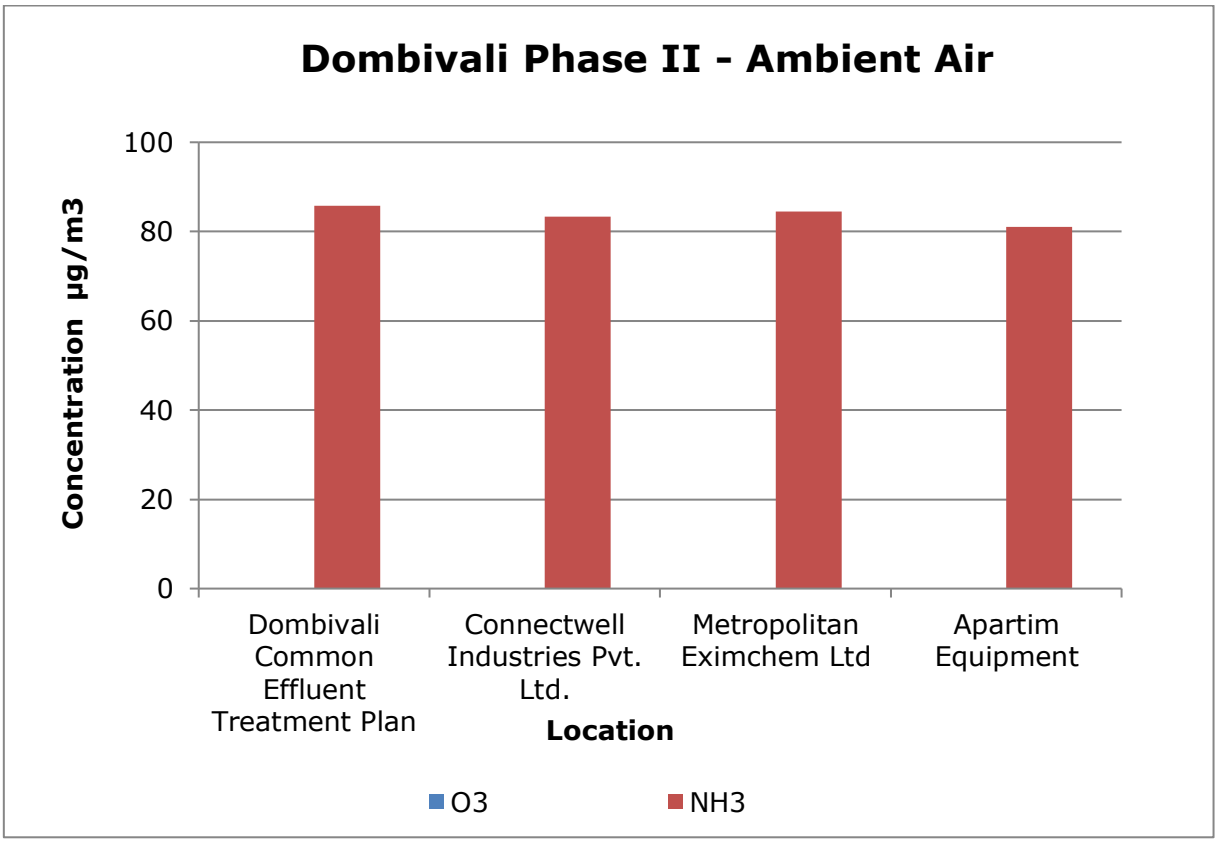
Graphs - Ambient Air Quality of MIDC Dombivali Phase II




Dombivali Phase II - Ambient Air
Concentration (mg/m3)
3
2
1
0
Dombivali Common Effluent Treatment Plan
Connectwell Industries Pvt. Ltd.
Metropolitan Eximchem Ltd
Apartim Equipment
Location
CO (1h)
CO (8h)


Dombivali Phase II - Ambient Air
Concentration (ng/m3)
5
4
3
2
1
0
Dombivali Common Effluent Treatment Plan
Connectwell Industries Pvt. Ltd.
Metropolitan Eximchem Ltd
Apartim Equipment
Location
As
Ni


Dombivali Phase II - Ambient Air
Concentration µg/m3
3
2
1
0
Dombivali Common Effluent Treatment Plan
Connectwell Industries Pvt. Ltd.
Metropolitan Eximchem Ltd
Apartim Equipment
Location
C6H6
Pb


Dombivali Phase II - Ambient Air
Concentration µg/m3
100
80
60
40
20
0
Dombivali Common Effluent Treatment Plan
Connectwell Industries Pvt. Ltd.
Metropolitan Eximchem Ltd
Apartim Equipment
Location
O3
NH3

WATER ENVIRONMENT

6. Water Environment

For studying the water Environment of Dombivali area, surface water was collected from Nallah, Lake, and River and CETP outlet. A total of 12 samples were collected from MIDC Phase I and MIDC Phase II of Dombivali.

1. **MIDC Phase I:** Six surface water samples are collected from the Dombivali MIDC Phase I region.

- No floating matter was observed in any of the water samples. The smell was agreeable in all the samples.
- pH and suspended solids are well within the limits of all the collected samples.
- BOD exceeded in three of the collected samples including DEBESA CETP outlet, Khambal Pada and Thakurli Talav.
- 100% survival was achieved in Fish Bioassay in two of the water samples collected.
- The value of Iron exceeded in five out of six samples. All other metals like Arsenic, Nickel, Copper, Hexavalent Chromium (Cr^{6+}) etc. are observed either below the limit of quantification or below their standard limits.
- Parameters like Total Residual Chlorine, Cyanide, Fluoride, Sulphide, Dissolved Phosphate, Total Ammonical Nitrogen and Phenolic compounds, also meet the criteria as prescribed by CPCB.
- Total phosphate exceeded in all four of the samples collected from MIDC Phase I.
- Polynuclear aromatic hydrocarbons (PAH) and Polychlorinated Biphenyls (PCB) are below the limit of quantification in all 6 samples collected.
- Organo Chlorine Pesticides are also below the limit of quantification (BLQ) in all 6 samples collected.

Table 6.1 Phase I – Details of Sampling Location of Surface Water

Sr. No.	Name of Monitoring Location	Latitude	Longitude	Date of Sampling		
				Round-1	Round-2	Round-3
1.	Drain Flowing from DEBESA CETP	19°12'59.98"N	73°6'21.74"E	20.12.2023	22.12.2023	24.12.2023
2.	Near Khambal Pada	19°13'49.19"N	73°6'19.11"E	20.12.2023	22.12.2023	24.12.2023
3.	Thakurli Talav	19°13'19.42"N	73°5'57.92"E	20.12.2023	22.12.2023	24.12.2023

Sr. No.	Name of Monitoring Location	Latitude	Longitude	Date of Sampling		
				Round-1	Round-2	Round-3
4.	Storm Water DEBESA CETP Nallah	19°12'58.47"N	73°6'56.60"E	20.12.2023	22.12.2023	24.12.2023
5.	Gharda Chemical Ltd.	19°13'2.87"N	73°6'44.41"E	20.12.2023	22.12.2023	24.12.2023
6.	Krishna Alkali Pvt. Ltd.	19°13'1.18"N	73°6'38.89"E	20.12.2023	22.12.2023	24.12.2023
7.	DEBESA CETP Outlet	19°12'57.98"N	73°6'21.74"E	20.12.2023	22.12.2023	24.12.2023

Fig. Geographical Locations of Surface Water Sampling MIDC Dombivali Phase I

Table 6.2 Phase I – Results of Surface Water

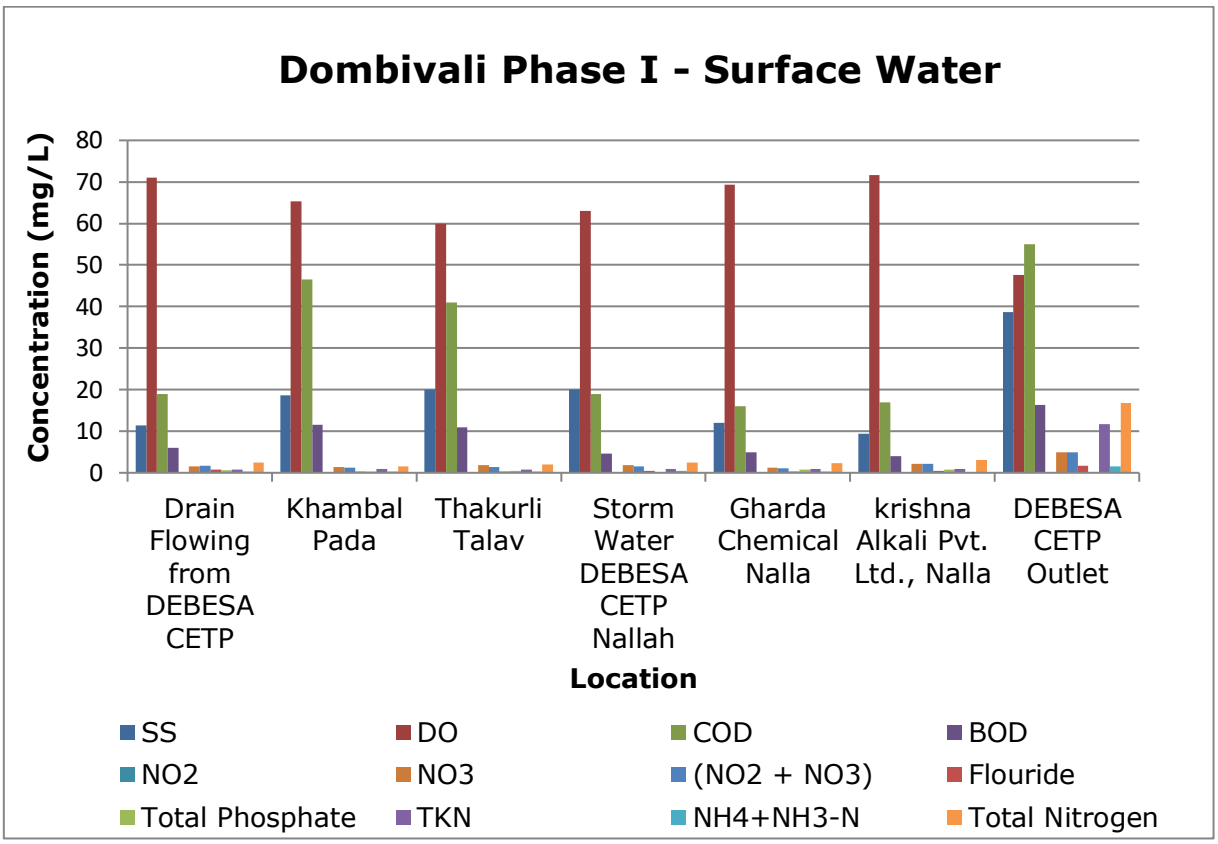
Parameters	Unit	Results						
		Drain Flowing from DEBESA CETP	Near Khambal Pada	Thakurli Talav	Storm Water DEBESA CETP Nallah	Gharda Chemical Ltd.	Krishna Alkali Pvt. Ltd.	DEBESA CETP Outlet
Sanitary Survey		Reasonably clean neighbourhood	Reasonably clean neighbourhood	Reasonably clean neighbourhood	Reasonably clean neighbourhood	Reasonably clean neighbourhood	Reasonably clean neighbourhood	Reasonably clean neighbourhood

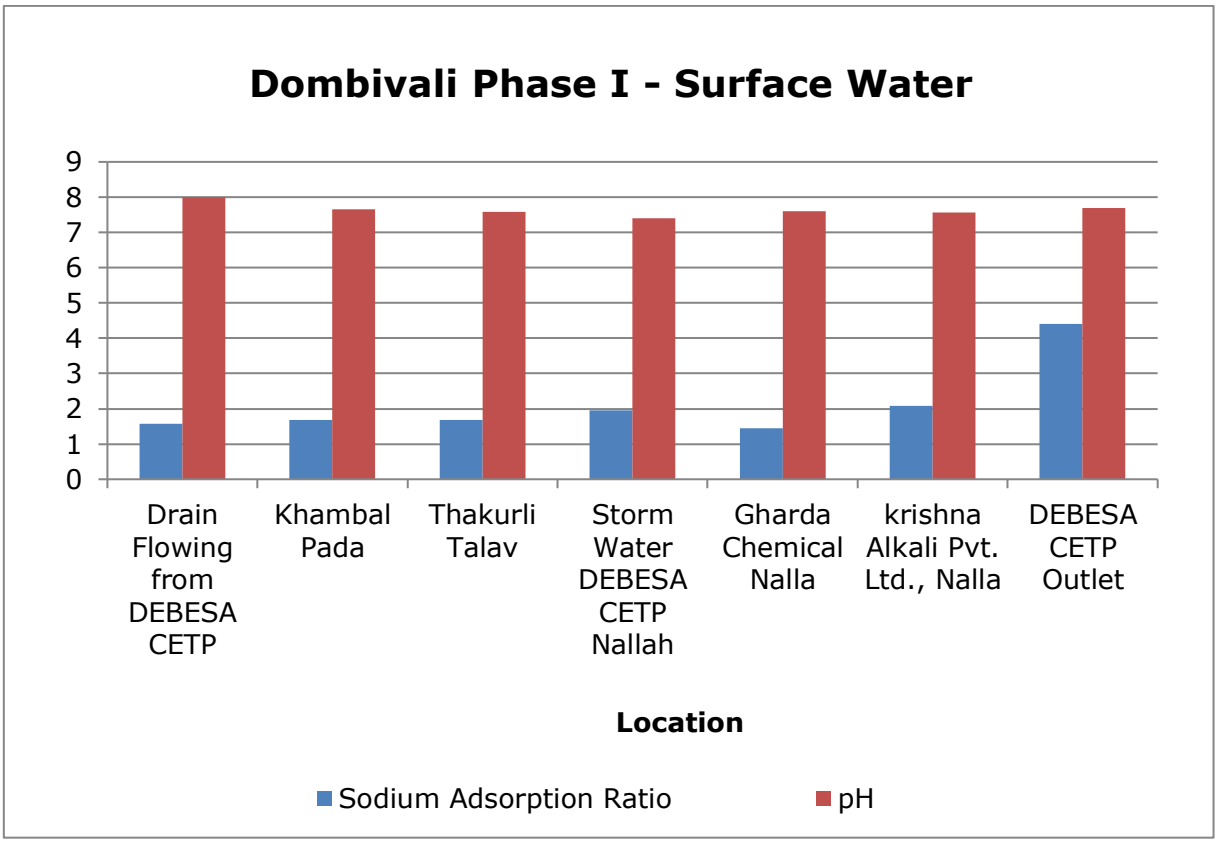
Parameters	Unit	Results						
		Drain Flowing from DEBESA CETP	**Near Khambal Pada**	**Thakurli Talav**	**Storm Water DEBESA CETP Nallah**	**Gharda Chemical Ltd.**	**Krishna Alkali Pvt. Ltd.**	**DEBESA CETP Outlet**
General Appearance		No Floating Matter	No Floating Matter	No Floating Matter	No Floating Matter	No Floating Matter	No Floating Matter	No Floating Matter
Transparency	m	0.40	0.40	0.30	0.40	0.30	0.40	0.30
Temperature	°C	29	30	30	30	30	30	30
Colour	Hazen	1	1	2	1	1	1	9
Smell	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
pH	-	8.00	7.66	7.58	7.40	7.60	7.56	7.69
Oil & Grease	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Suspended Solids	mg/L	11	19	20	20	12	9	39
Total Dissolved Solids	mg/L	469	193	195	265	209	285	1733
Dissolved Oxygen (% Saturation)	%	71	65	60	63	69	72	48
Chemical Oxygen Demand	mg/L	19	47	41	19	16	17	55
Biochemical Oxygen Demand (3 days,27°C)	mg/L	6	12	11	5	5	4	16
Electrical Conductivity (at 25 °C)	µmho/ cm	837	343	346	472	371	507	3093
Nitrite Nitrogen (as NO_2)	mg/L	0.14	BLQ	0.11	BLQ	BLQ	0.07	0.02
Nitrate Nitrogen (as NO_3)	mg/L	1.55	1.36	1.84	1.79	1.27	2.14	4.96
(NO_2 + NO_3)- Nitrogen	mg/L	1.64	1.20	1.40	1.48	1.15	2.17	4.97
Free Ammonia (as NH_3-N)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Total Residual Chlorine	mg/L	0.07	BLQ	BLQ	BLQ	BLQ	BLQ	0.07
Cyanide (as CN)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ

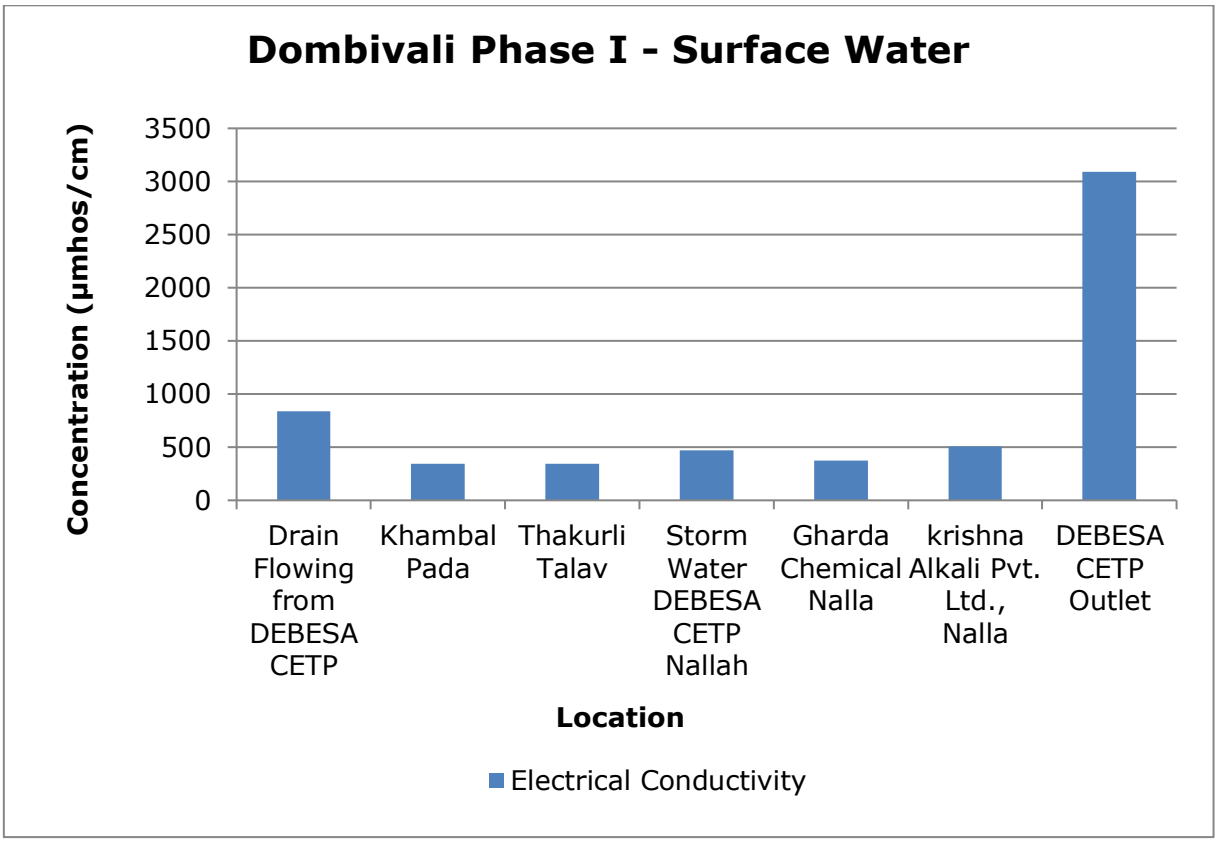
Parameters	Unit	Results						
		Drain Flowing from DEBESA CETP	Near Khambal Pada	Thakurli Talav	Storm Water DEBESA CETP Nallah	Gharda Chemical Ltd.	Krishna Alkali Pvt. Ltd.	DEBESA CETP Outlet
Fluoride (as F)	mg/L	0.73	0.30	0.30	0.43	0.33	0.47	1.73
Sulphide (as H_2S)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Dissolved Phosphate (as P)	mg/L	0.64	0.24	0.44	0.20	0.76	0.72	BLQ
Sodium Adsorption Ratio	-	1.57	1.68	1.68	1.95	1.45	2.09	4.41
Total Coliforms	MPN Index/ 100 ml	1600	285	22	240	865	1600	920
Faecal Coliforms	MPN Index/ 100 ml	134	19	17	51	812	920	205
Total Phosphate (as P)	mg/L	0.66	0.26	0.46	0.22	0.78	0.78	BLQ
Total Kjeldahl Nitrogen (as N)	mg/L	0.78	0.93	0.79	0.93	0.97	0.93	11.76
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	0.26	0.31	0.37	0.43	0.29	0.21	1.47
Phenols (as C_6H_5OH)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Anionic Detergents (as MBAS Calculated as LAS, mol.wt.288.38)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Organo Chlorine Pesticides	µg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Polynuclear aromatic hydrocarbons (as PAH)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Polychlorinated Biphenyls (PCB)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Zinc (as Zn)	mg/L	0.05	BLQ	0.06	0.06	BLQ	BLQ	BLQ

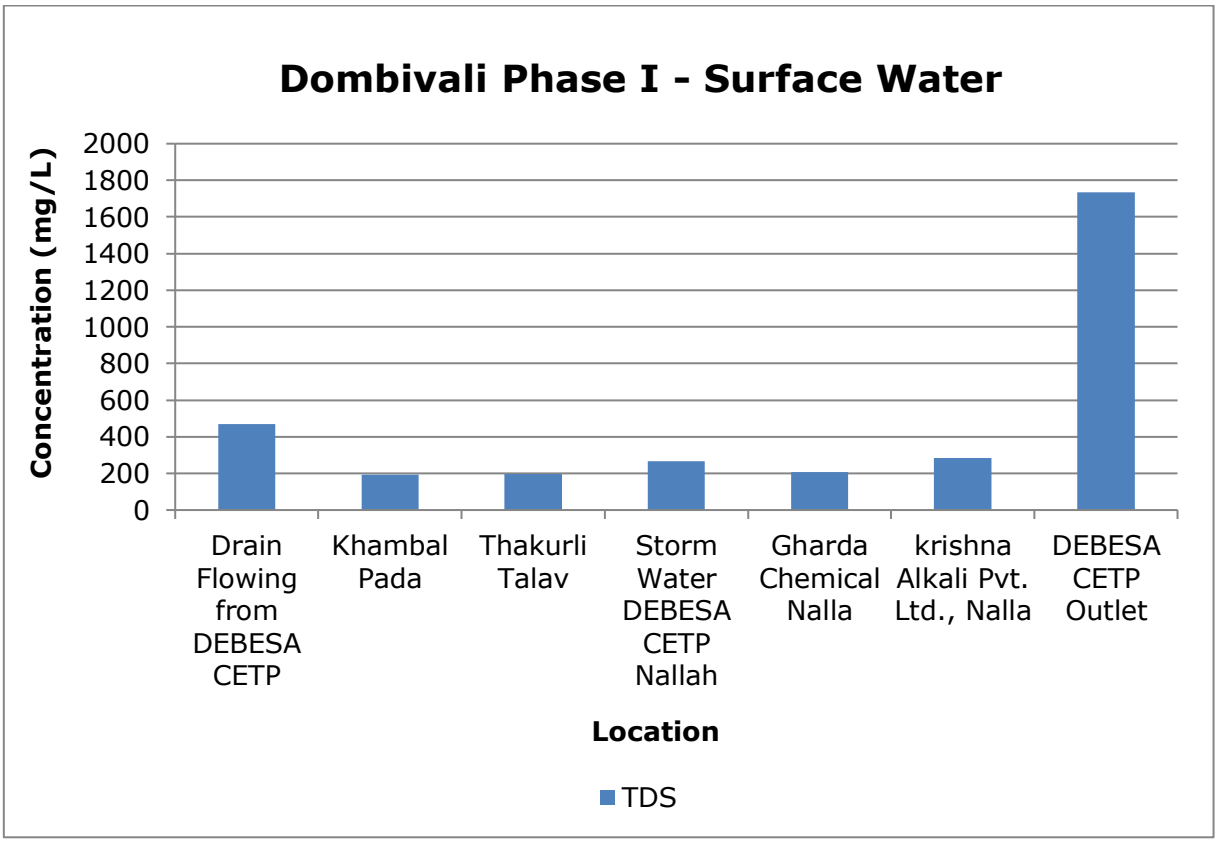
Parameters	Unit	Results						
		Drain Flowing from DEBESA CETP	Near Khambal Pada	Thakurli Talav	Storm Water DEBESA CETP Nallah	Gharda Chemical Ltd.	Krishna Alkali Pvt. Ltd.	DEBESA CETP Outlet
Nickel (as Ni)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	0.01	BLQ
Copper (as Cu)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Hexavalent Chromium (as Cr^{6+})	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Total Chromium (as Cr)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Total Arsenic (as As)	mg/L	BLQ	0.01	BLQ	BLQ	BLQ	BLQ	BLQ
Lead (as Pb)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Cadmium (as Cd)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Mercury (as Hg)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Manganese (as Mn)	mg/L	0.16	0.06	0.08	0.08	0.07	0.05	0.16
Iron (as Fe)	mg/L	0.12	0.18	0.19	0.24	0.20	0.14	0.82
Vanadium (as V)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Selenium (as Se)	mg/L	0.01	BLQ	BLQ	BLQ	0.01	BLQ	BLQ
Boron (as B)	mg/L	BLQ	BLQ	0.13	BLQ	BLQ	BLQ	BLQ
Total Nitrogen	mg/L	2.43	1.47	2.06	2.42	2.32	3.10	16.77
Bioassay Test on fish	% survival	67	93	100	67	87	100	67

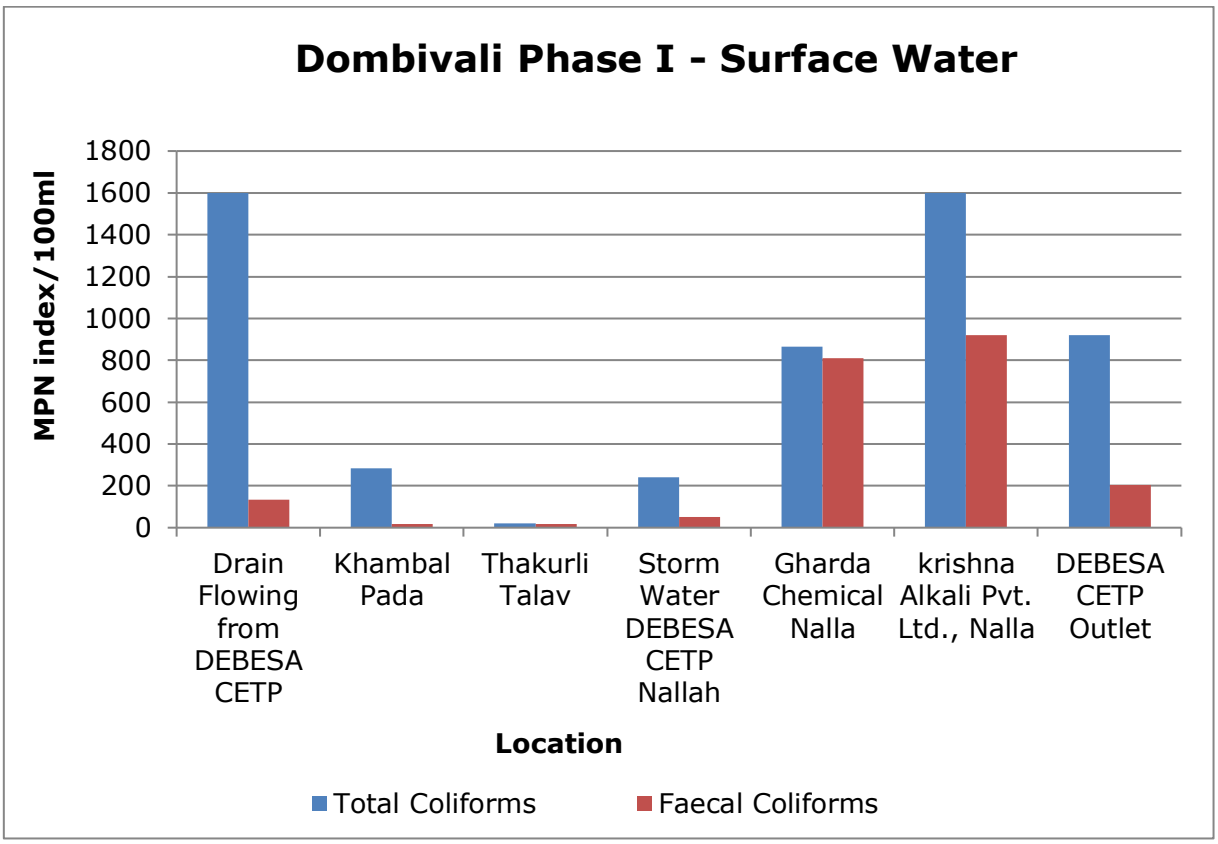
Graphs - Surface Water Quality of MIDC Dombivali Phase I

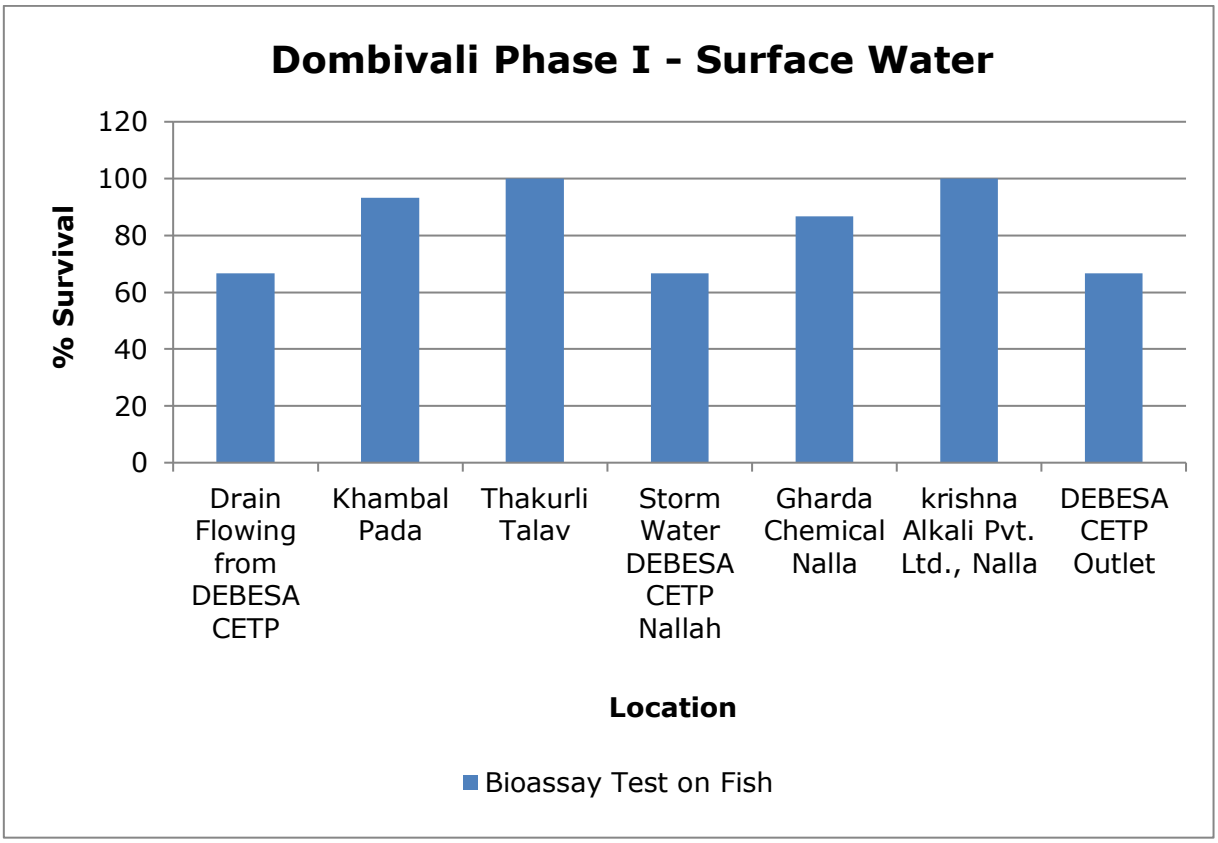





Dombivali Phase I - Surface Water
Concentration (µmhos/cm)
3500
3000
2500
2000
1500
1000
500
0
Drain Flowing from DEBESA CETP
Khambal Pada
Thakurli Talav
Storm Water DEBESA CETP Nallah
Gharda Chemical Nalla
krishna Alkali Pvt. Ltd., Nalla
DEBESA CETP Outlet
Location
Electrical Conductivity


Dombivali Phase I - Surface Water
Concentration (mg/L)
2000
1800
1600
1400
1200
1000
800
600
400
200
0
Drain Flowing from DEBESA CETP
Khambal Pada
Thakurli Talav
Storm Water DEBESA CETP Nallah
Gharda Chemical Nalla
krishna Alkali Pvt. Ltd., Nalla
DEBESA CETP Outlet
Location
TDS


Dombivali Phase I - Surface Water
MPN index/100ml
1800
1600
1400
1200
1000
800
600
400
200
0
Drain Flowing from DEBESA CETP
Khambal Pada
Thakurli Talav
Storm Water DEBESA CETP Nallah
Gharda Chemical Nalla
krishna Alkali Pvt. Ltd., Nalla
DEBESA CETP Outlet
Location
Total Coliforms
Faecal Coliforms


Dombivali Phase I - Surface Water
% Survival
120
100
80
60
40
20
0
Drain Flowing from DEBESA CETP
Khambal Pada
Thakurli Talav
Storm Water DEBESA CETP Nallah
Gharda Chemical Nalla
krishna Alkali Pvt. Ltd., Nalla
DEBESA CETP Outlet
Location
Bioassay Test on Fish

2. **MIDC Phase II:** Six surface water samples are collected from Dombivali MIDC Phase II.

- No floating matter was observed in any of the six samples. The smell was agreeable in all 3 samples out of six samples collected.
- pH and suspended solids of all six samples collected are observed less than the permissible limit.
- BOD exceeded in four samples collected.
- 100% survival was achieved in 3 out of six samples collected for Fish Bioassay.
- All metals like Arsenic, Nickel, Copper, Iron, Hexavalent Chromium (Cr^{6+}) etc. are observed either below the limit of quantification or below their standard limits.
- Parameters like Total Residual Chlorine, Cyanide, Fluoride, Sulphide, Dissolved Phosphate, Total Ammonical Nitrogen and Phenolic compounds, also meet the criteria as prescribed by CPCB.
- Concentration of Total phosphate (TP) exceeded the permissible limit in two of the collected samples i.e. at nallah near Metropolitan Eximchem Ltd., and at Ramchandra Nagar.
- Polynuclear aromatic hydrocarbons (PAH) and Polychlorinated Biphenyls (PCB) are also observed below the limit of quantification (BLQ) in all the water samples.
- Organo Chlorine Pesticides are also determined as below the limit of quantification (BLQ) in all 6 samples collected.

Table 6.3 Phase II – Details of Sampling Location of Surface Water

Sr. No.	Name of Monitoring Location	Latitude	Longitude	Date of Sampling		
				Round-1	Round-2	Round-3
1.	Nearby Navjeevan Synthetics & Super Casting Nallah	19°11'34.57"N	73°5'20.35"E	21.12.2023	23.12.2023	25.12.2023
2.	Nallah nearby Metropolitan Exichem Ltd.	19°12'1.77"N	73°5'52.83"E	21.12.2023	23.12.2023	25.12.2023
3.	Nallah after DCETP	19°12'14.67"N	73°5'49.60"E	21.12.2023	23.12.2023	25.12.2023
4.	Nallah near Ramchandra Nagar	19°12'16.38"N	73°5'24.75"E	21.12.2023	23.12.2023	25.12.2023
5.	CETP Outlet	19°12'15.32"N	73°5'52.87"E	21.12.2023	23.12.2023	25.12.2023
6.	Tempo Naka Nallah	19°11'50.39"N	73°5'53.34"E	21.12.2023	23.12.2023	25.12.2023

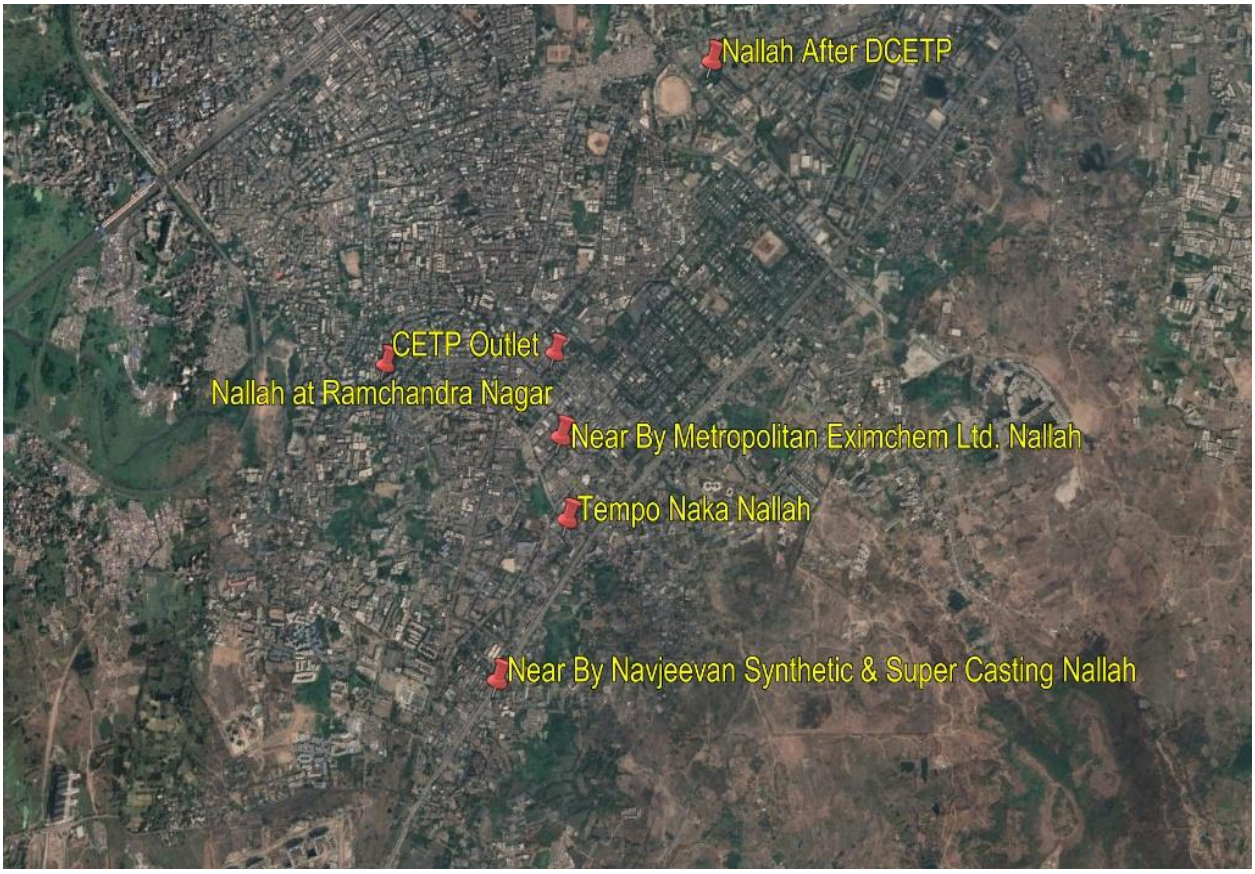


Fig. Geographical Locations of Surface Water Sampling MIDC Dombivali Phase II

Table 6.4 Phase II – Results of Surface Water

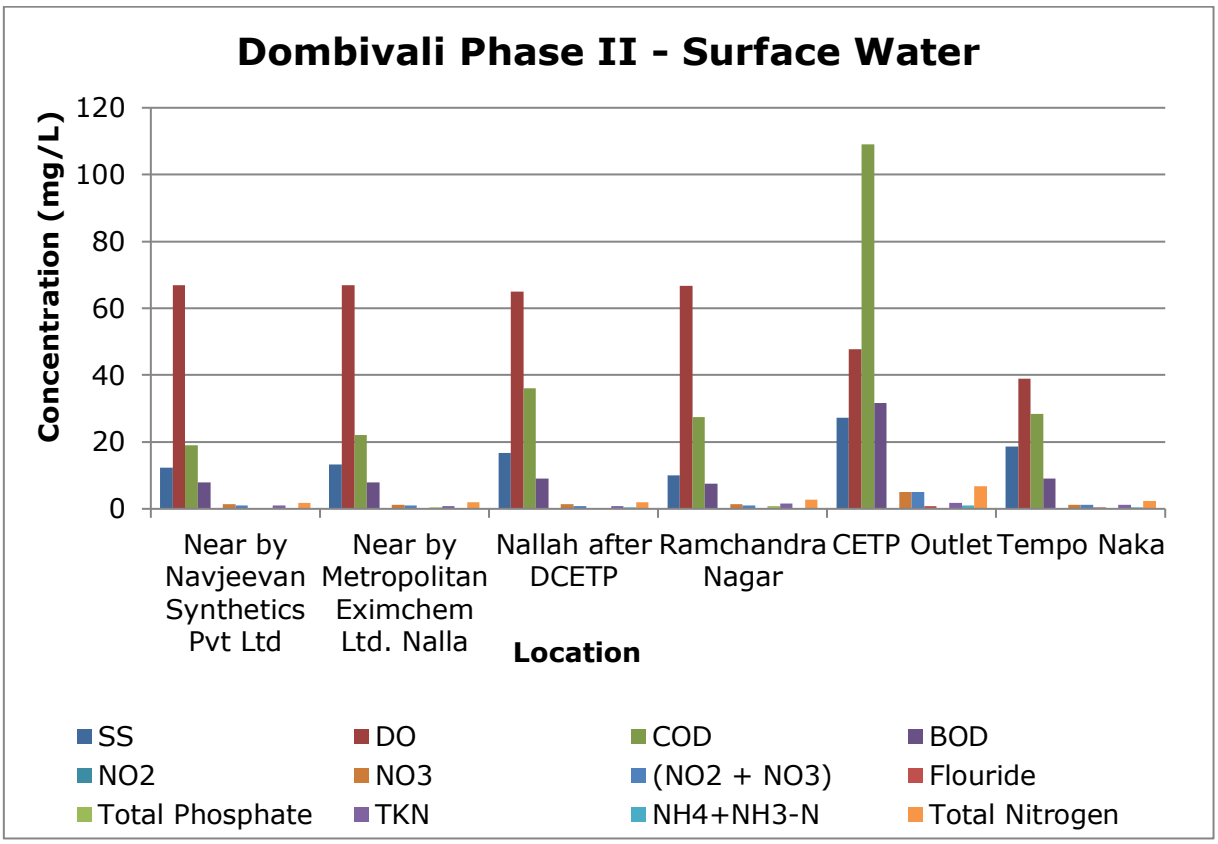
Parameters	Unit	Results					
		Navjeevan Synthetics Pvt Ltd	Metropolitan Eximchem Ltd. Nallah	Nallah after DCETP	Ram chandra Nagar	CETP Outlet	Tempo Naka
Sanitary Survey	-	Reasonably clean neighbourhood	Reasonably clean neighbourhood	Reasonably clean neighbourhood	Reasonably clean neighbourhood	Reasonably clean neighbourhood	Reasonably clean neighbourhood
General Appearance	-	No Floating Matter	No Floating Matter	No Floating Matter	No Floating Matter	No Floating Matter	No Floating Matter
Transparency	m	0.50	0.40	0.30	0.40	0.30	0.40
Temperature	°C	29	29	29	30	30	31
Colour	Hazen	1	2	1	1	3	2
Smell	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
pH	-	7.43	7.63	7.36	7.58	7.63	7.64
Oil & Grease	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Suspended Solids	mg/L	12	13	17	10	27	19
Total Dissolved Solids	mg/L	166	191	171	192	549	245

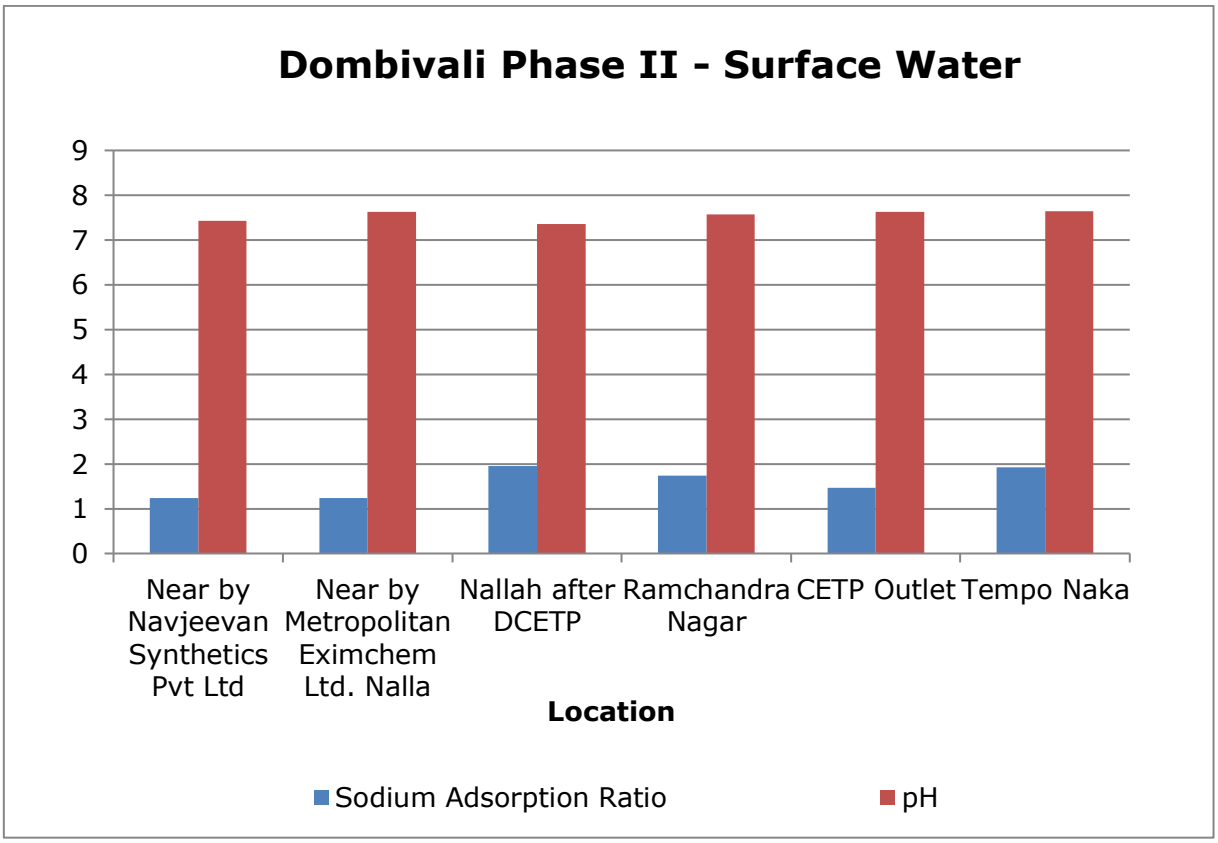
Parameters	Unit	Results					
		Navjeevan Synthetics Pvt Ltd	Metropolitan Eximchem Ltd. Nallah	Nallah after DCETP	Ram chandra Nagar	CETP Outlet	Tempo Naka
Dissolved Oxygen (% Saturation)	%	67	67	65	67	48	39
Chemical Oxygen Demand	mg/L	19	22	36	28	109	29
Biochemical Oxygen Demand (3 days,27°C)	mg/L	8	8	9	8	32	9
Electrical Conductivity (at 25 °C)	µmho/ cm	296	339	302	340	978	436
Nitrite Nitrogen (as NO_2)	mg/L	BLQ	0.03	0.29	0.14	0.02	0.03
Nitrate Nitrogen (as NO_3)	mg/L	1.43	1.22	1.48	1.39	4.95	1.28
(NO_2 + NO_3)-Nitrogen	mg/L	0.94	1.05	0.85	1.08	4.96	1.29
Free Ammonia (as NH_3-N)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Total Residual Chlorine	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Cyanide (as CN)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Fluoride (as F)	mg/L	0.27	0.30	0.23	0.30	0.83	0.40
Sulphide (as H_2S)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Dissolved Phosphate (as P)	mg/L	BLQ	0.50	BLQ	0.70	BLQ	BLQ
Sodium Adsorption Ratio	-	1.24	1.23	1.95	1.74	1.46	1.92
Total Coliforms	MPN Index/ 100 ml	975	1600	1600	817	1070	1600
Faecal Coliforms	MPN Index/ 100 ml	17	472	472	22	920	1600
Total Phosphate (as P)	mg/L	BLQ	0.52	BLQ	0.74	BLQ	BLQ
Total Kjeldahl Nitrogen (as N)	mg/L	0.93	0.86	0.79	1.64	1.72	1.16

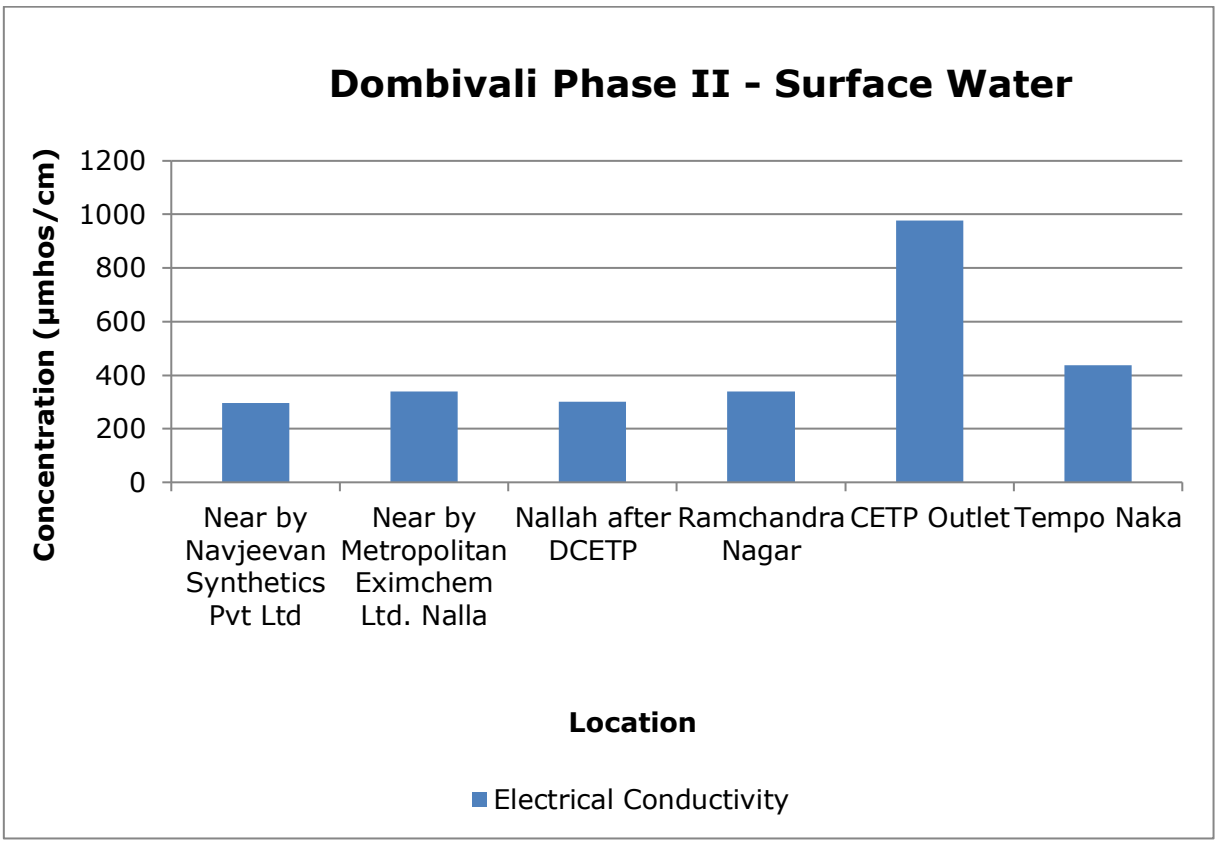
Parameters	Unit	Results					
		Navjeevan Synthetics Pvt Ltd	Metropolitan Eximchem Ltd. Nallah	Nallah after DCETP	Ram chandra Nagar	CETP Outlet	Tempo Naka
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	0.26	0.31	0.39	0.21	0.95	0.38
Phenols (as C_6H_5OH)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Anionic Detergents (as MBAS Calculated as LAS, mol.wt.288.38)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Organo Chlorine Pesticides	µg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Polynuclear aromatic hydrocarbons (as PAH)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Polychlorinated Biphenyls (PCB)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Zinc (as Zn)	mg/L	BLQ	0.12	BLQ	BLQ	BLQ	BLQ
Nickel (as Ni)	mg/L	BLQ	BLQ	BLQ	BLQ	0.02	BLQ
Copper (as Cu)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Hexavalent Chromium (as Cr^{6+})	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Total Chromium (as Cr)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Total Arsenic (as As)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Lead (as Pb)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Cadmium (as Cd)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Mercury (as Hg)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Manganese (as Mn)	mg/L	0.05	0.06	0.04	0.08	0.08	0.06
Iron (as Fe)	mg/L	0.17	0.16	0.16	0.26	0.42	0.19
Vanadium (as V)	mg/L	0.01	BLQ	BLQ	BLQ	BLQ	BLQ
Selenium (as Se)	mg/L	0.01	0.01	0.01	BLQ	0.01	0.01
Boron (as B)	mg/L	BLQ	BLQ	BLQ	BLQ	0.14	BLQ
Total Nitrogen	mg/L	1.87	1.91	1.95	2.73	6.68	2.45

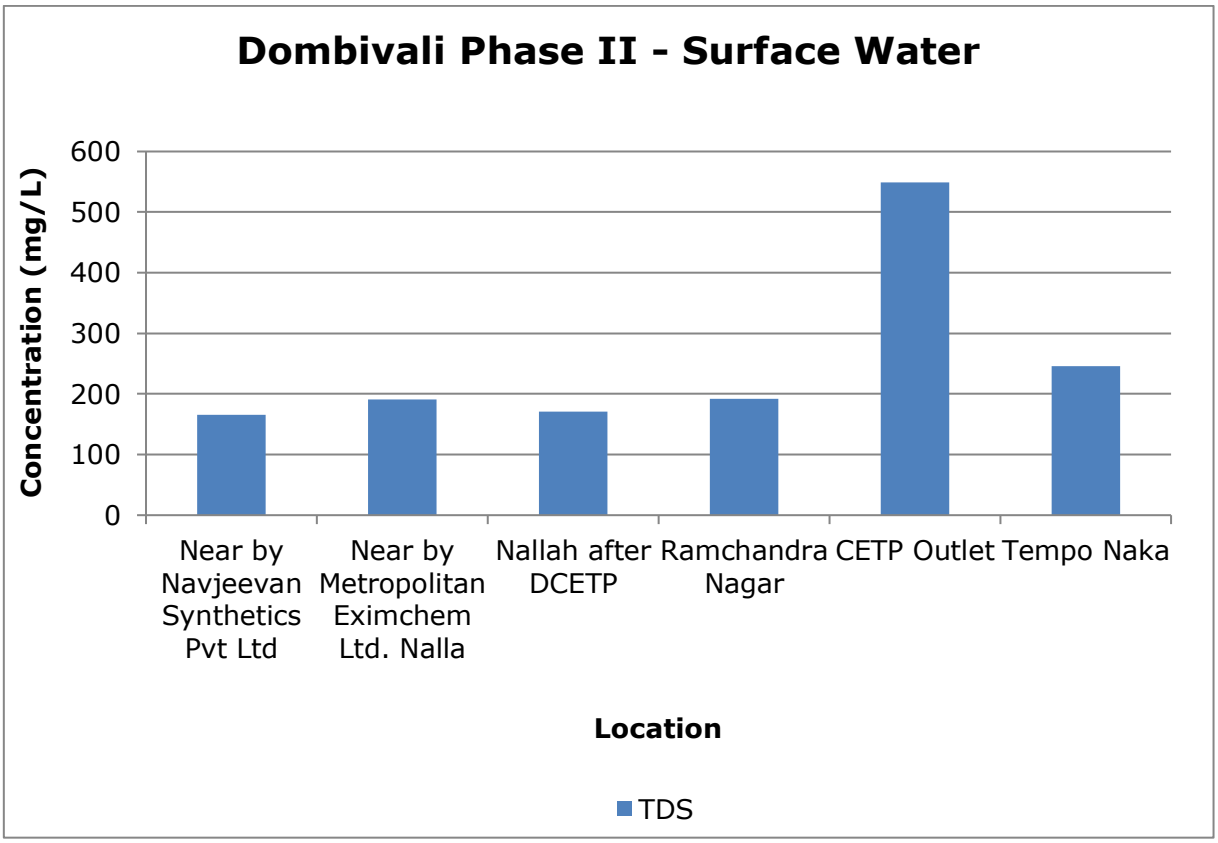
Parameters	Unit	Results					
		Navjeevan Synthetics Pvt Ltd	Metropolitan Eximchem Ltd. Nallah	Nallah after DCETP	Ram chandra Nagar	CETP Outlet	Tempo Naka
Bioassay Test on fish	% survival	87	100	100	87	100	97

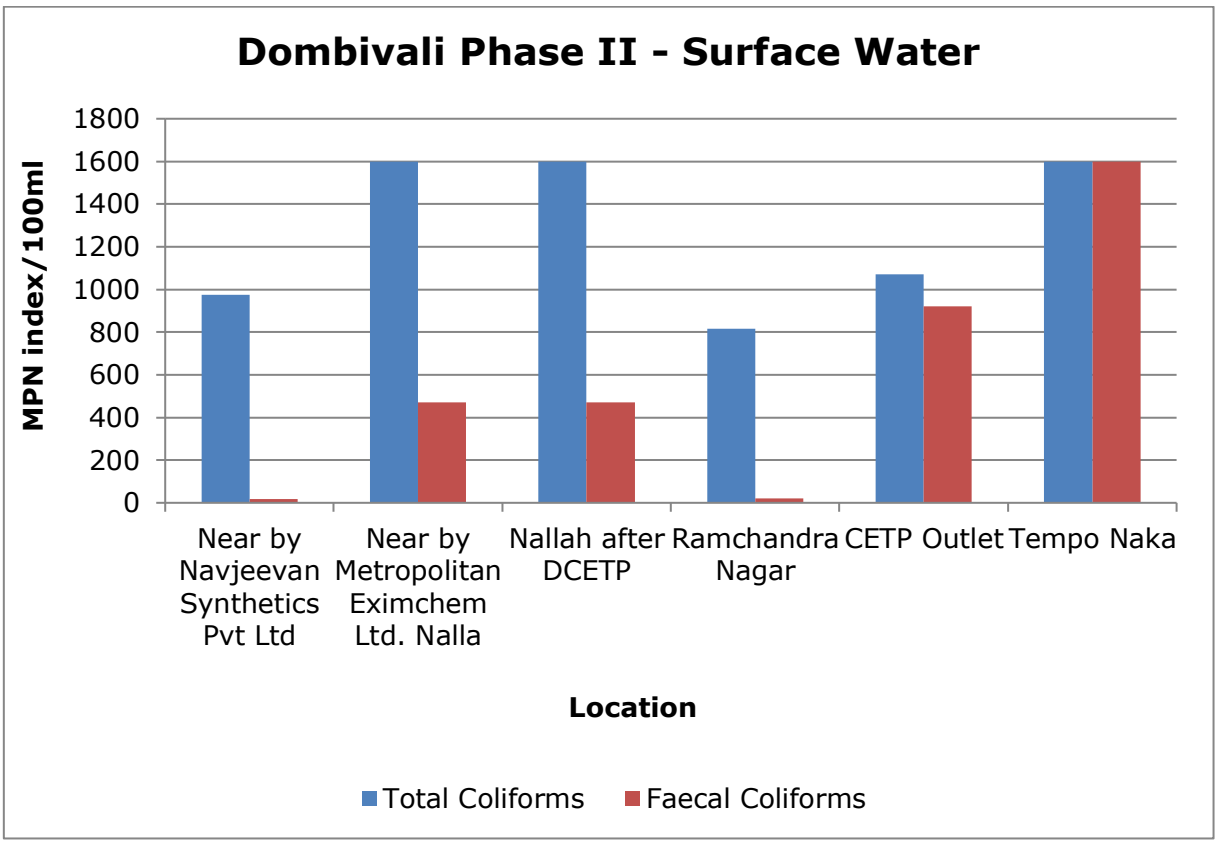
Graphs - Surface Water Quality of MIDC Dombivali Phase II

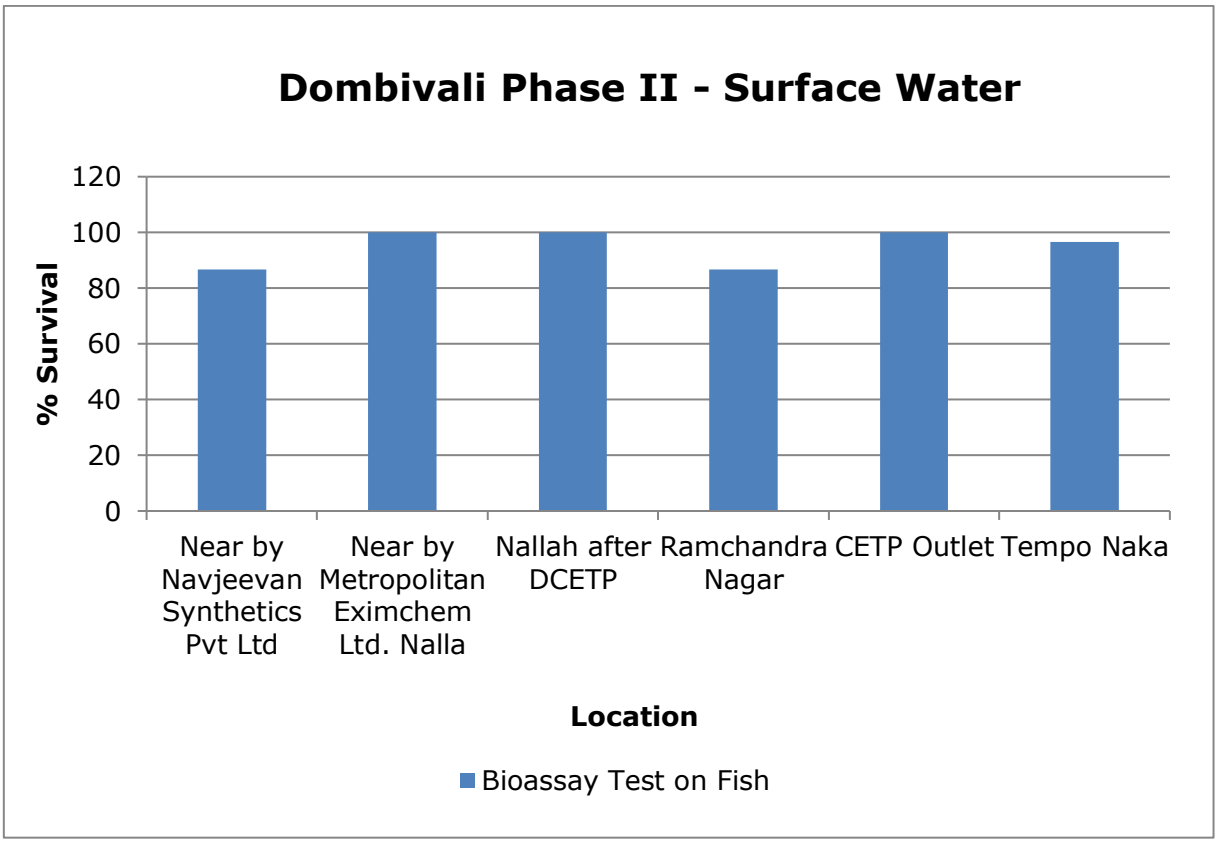





Dombivali Phase II - Surface Water
Concentration (µmhos/cm)
1200
1000
800
600
400
200
0
Near by Navjeevan Synthetics Pvt Ltd
Near by Metropolitan Eximchem Ltd. Nalla
Nallah after DCETP
Ramchandra Nagar
CETP Outlet
Tempo Naka
Location
Electrical Conductivity


Dombivali Phase II - Surface Water
Concentration (mg/L)
600
500
400
300
200
100
0
Near by Navjeevan Synthetics Pvt Ltd
Near by Metropolitan Eximchem Ltd. Nalla
Nallah after DCETP
Ramchandra Nagar
CETP Outlet
Tempo Naka
Location
TDS


Dombivali Phase II - Surface Water
MPN index/100ml
1800
1600
1400
1200
1000
800
600
400
200
0
Near by Navjeevan Synthetics Pvt Ltd
Near by Metropolitan Eximchem Ltd. Nalla
Nallah after DCETP
Ramchandra Nagar
CETP Outlet
Tempo Naka
Location
Total Coliforms
Faecal Coliforms


Dombivali Phase II - Surface Water
% Survival
120
100
80
60
40
20
0
Near by Navjeevan Synthetics Pvt Ltd
Near by Metropolitan Eximchem Ltd. Nalla
Nallah after DCETP
Ramchandra Nagar
CETP Outlet
Tempo Naka
Location
Bioassay Test on Fish

LAND ENVIRONMENT

7. Land Environment

For studying the land Environment of Dombivali area, ground water was collected from Bore well. A total of 6 samples were collected from MIDC Phase I and MIDC Phase II of Dombivali region.

1. **MIDC Phase I:** Three groundwater samples were collected from MIDC Phase I of the Dombivali region.

   - All three water samples collected are acceptable in general appearance, colour, smell and transparency.
   - pH and suspended solids are observed well within the limits at all three samples collected.
   - BOD of all water samples is found to within the permissible limit.
   - 100% survival was achieved in one water sample (Borewell near Mamta Hospital) during Fish Bioassay.
   - All metals like Arsenic, Nickel, Copper, Iron, Hexavalent Chromium (Cr^{6+}) etc. are observed either below limit of quantification or below their standard limits. However, concentration of the Selenium is found to exceed the permissible limit in one of the collected samples.
   - Parameters like Total Residual Chlorine, Cyanide, Fluoride, Sulphide, Dissolved Phosphate, Total Ammonical Nitrogen and Phenolic compounds, also meet the criteria as prescribed by CPCB.
   - Polynuclear aromatic hydrocarbons (PAH) and Polychlorinated Biphenyls (PCB) were found below the limit of quantification in all 3 samples collected.
   - Organo Chlorine Pesticides were also observed below the limit of quantification in all 3 samples collected.

Table 7.1 Phase I – Details of Sampling Location of Ground Water

Sr. No.	Name of Monitoring Location	Latitude	Longitude	Date of Sampling		
				Round-1	Round-2	Round-3
1.	Bore well opposite Kama Office	19°12'49.14"N	73°6'27.99"E	20.12.2023	22.12.2023	24.10.2023
2.	Bore well Near Mamata Hospital	19°12'27.36"N	73°6'15.12"E	20.12.2023	22.12.2023	24.10.2023
3.	Bore well at Horizon hall	19°11'30.01"N	73°5'31.82"E	20.12.2023	22.12.2023	24.10.2023

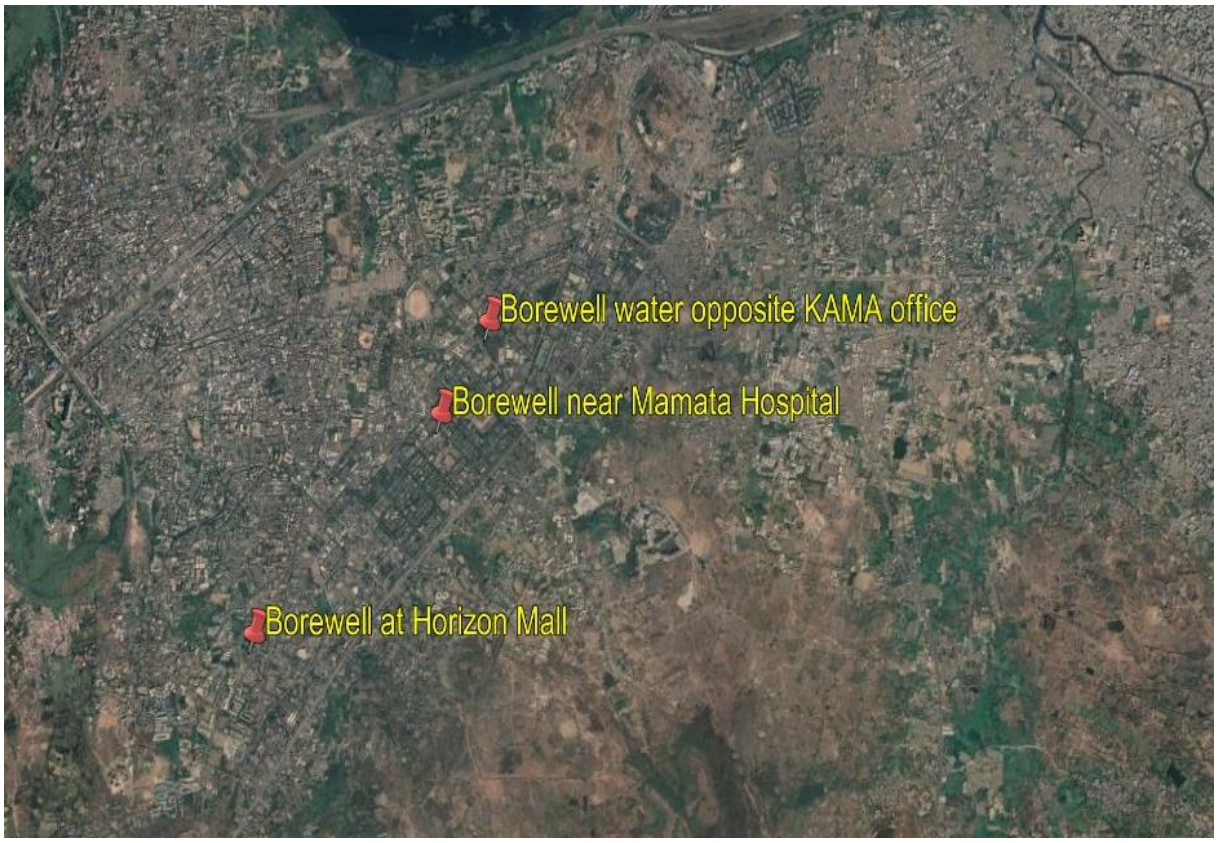


Fig. Geographical Locations of Ground Water Sampling MIDC Dombivali Phase I

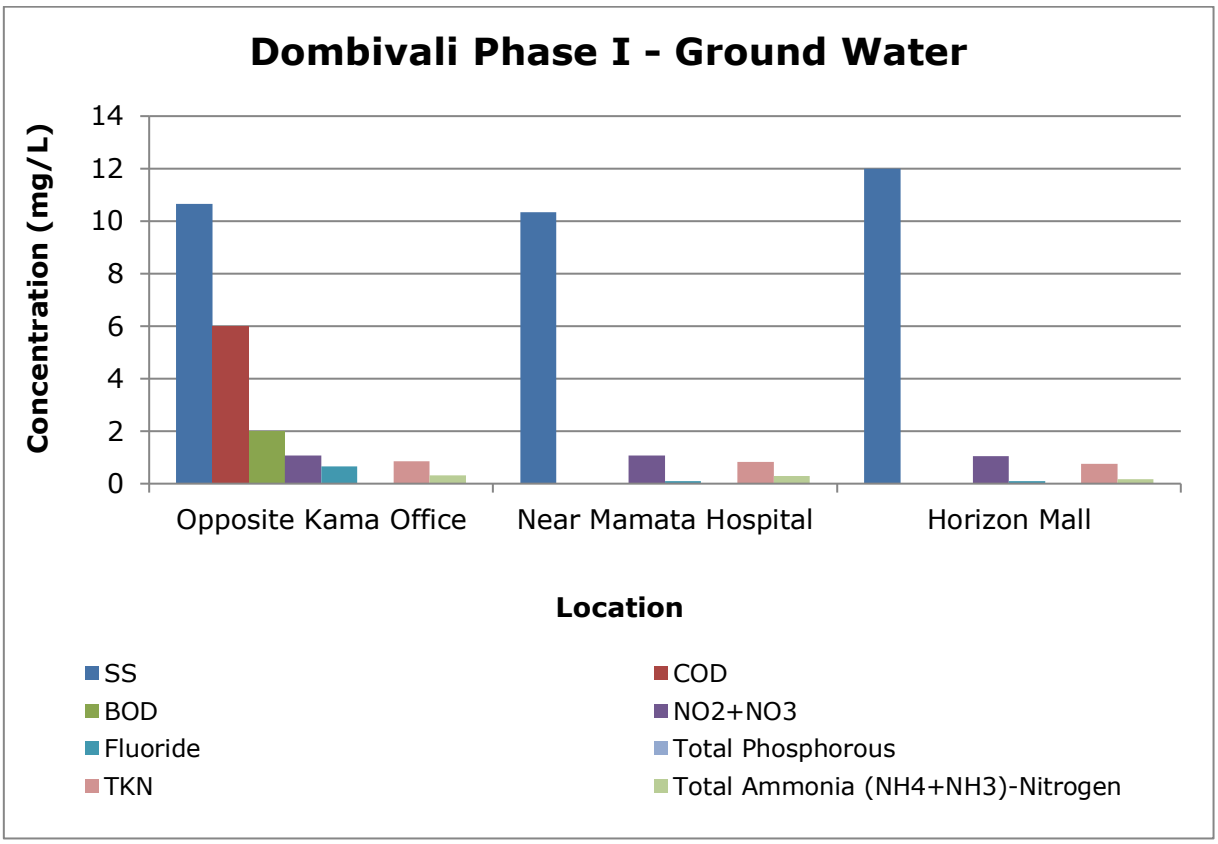
Table 7.2 Phase I – Results of Ground Water

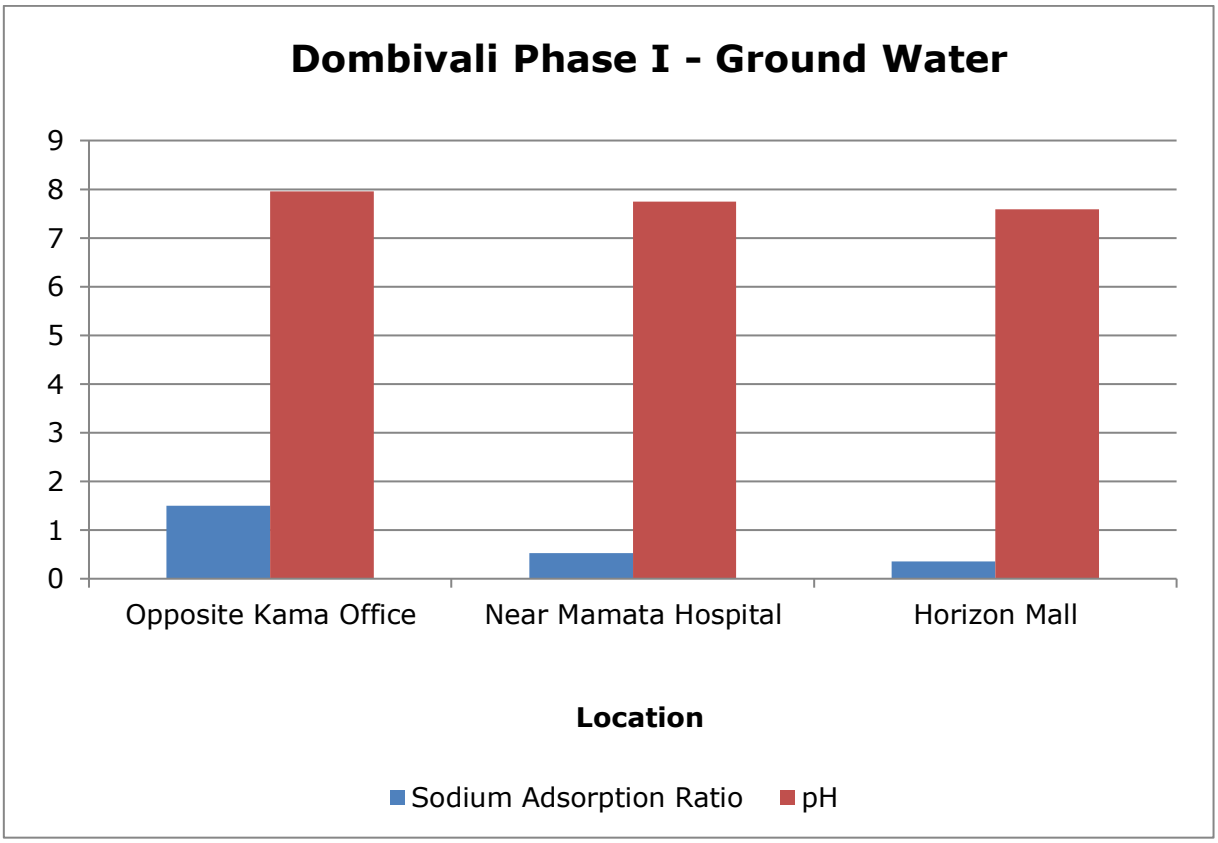
Parameters	Unit	Results		
		Bore well opposite Kama Office	**Bore well Near Mamata Hospital**	**Bore well at Horizon hall**
Sanitary Survey	-	Reasonably clean neighbourhood	Reasonably clean neighbourhood	Reasonably clean neighbourhood
General Appearance	-	No Floating Matter	No Floating Matter	No Floating Matter
Transparency	m	NA	NA	NA
Temperature	°C	30	30	31
Colour	Hazen	3	1	1
Smell	-	Agreeable	Agreeable	Agreeable
pH	-	7.96	7.74	7.59
Oil & Grease	mg/L	BLQ	BLQ	BLQ
Suspended Solids	mg/L	11	10	12
Total Dissolved Solids	mg/L	524	99	86
Chemical Oxygen Demand	mg/L	6	BLQ	BLQ
Biochemical Oxygen Demand (3 days,27°C)	mg/L	2	BLQ	BLQ
Electrical Conductivity (at 25 °C)	µmho/cm	934	175	148
Nitrite Nitrogen (as NO_2)	mg/L	BLQ	0.03	BLQ

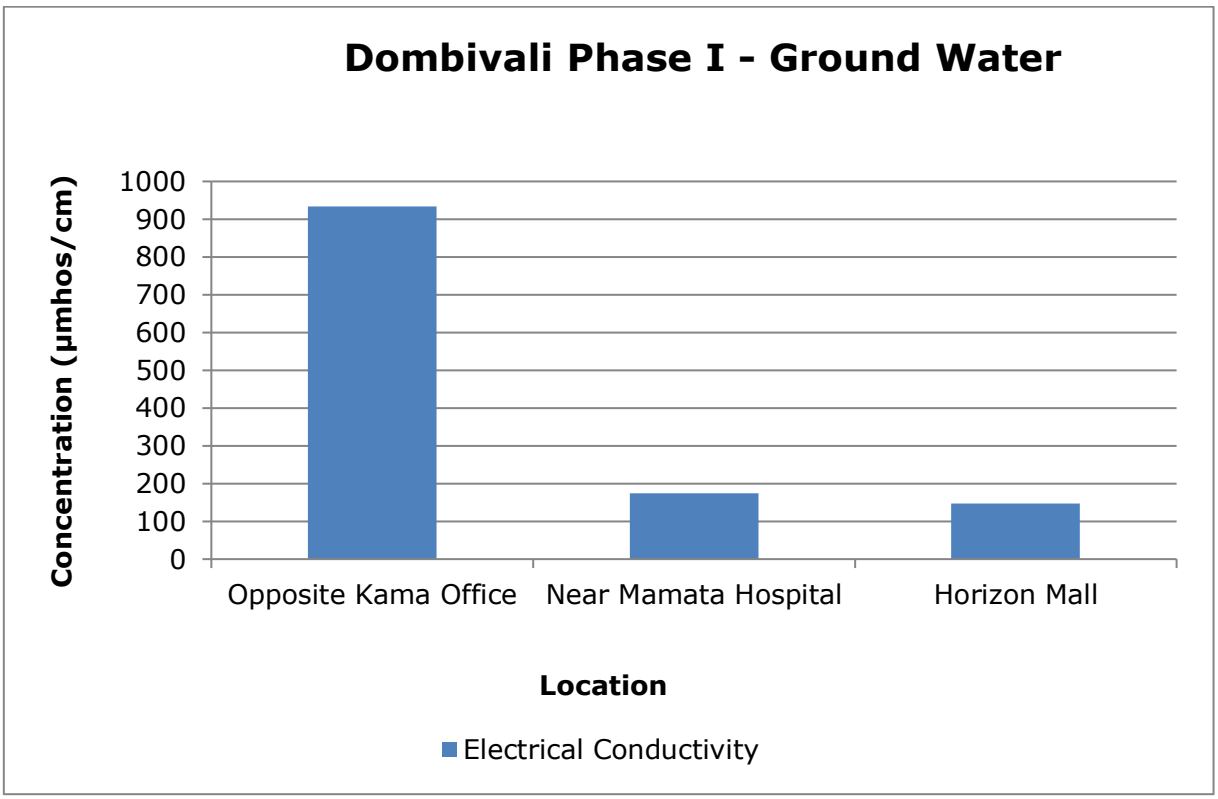
Parameters	Unit	Results		
		Bore well opposite Kama Office	Bore well Near Mamata Hospital	Bore well at Horizon hall
Nitrate Nitrogen (as NO_3)	mg/L	1.20	1.28	1.29
(NO_2 + NO_3)-Nitrogen	mg/L	1.08	1.06	1.05
Free Ammonia (as NH_3-N)	mg/L	BLQ	BLQ	BLQ
Total Residual Chlorine	mg/L	BLQ	BLQ	BLQ
Cyanide (as CN)	mg/L	BLQ	BLQ	BLQ
Fluoride (as F)	mg/L	0.67	0.10	0.10
Sulphide (as H_2S)	mg/L	BLQ	BLQ	BLQ
Dissolved Phosphate (as P)	mg/L	BLQ	BLQ	BLQ
Sodium Adsorption Ratio	-	1.51	0.53	0.35
Total Coliforms	MPN Index/ 100 ml	350	BLQ	BLQ
Faecal Coliforms	MPN Index/ 100 ml	350	BLQ	BLQ
Total Phosphate (as P)	mg/L	BLQ	BLQ	BLQ
Total Kjeldahl Nitrogen (as N)	mg/L	0.86	0.82	0.75
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	0.32	0.28	0.16
Phenols (as C_6H_5OH)	mg/L	BLQ	BLQ	BLQ
Anionic Detergents (as MBAS Calculated as LAS, mol.wt.288.38)	mg/L	BLQ	BLQ	BLQ
Organo Chlorine Pesticides	µg/L	BLQ	BLQ	BLQ
Polynuclear aromatic hydrocarbons (as PAH)	mg/L	BLQ	BLQ	BLQ
Polychlorinated Biphenyls (PCB)	mg/L	BLQ	BLQ	BLQ
Zinc (as Zn)	mg/L	BLQ	0.11	BLQ
Nickel (as Ni)	mg/L	0.02	BLQ	BLQ
Copper (as Cu)	mg/L	BLQ	BLQ	BLQ
Hexavalent Chromium (as Cr^{6+})	mg/L	BLQ	BLQ	BLQ
Total Chromium (as Cr)	mg/L	BLQ	BLQ	BLQ
Total Arsenic (as As)	mg/L	0.01	BLQ	BLQ
Lead (as Pb)	mg/L	BLQ	BLQ	BLQ
Cadmium (as Cd)	mg/L	BLQ	BLQ	BLQ
Mercury (as Hg)	mg/L	BLQ	BLQ	BLQ
Manganese (as Mn)	mg/L	0.20	0.06	0.02
Iron (as Fe)	mg/L	0.10	0.12	0.11
Vanadium (as V)	mg/L	0.01	BLQ	BLQ

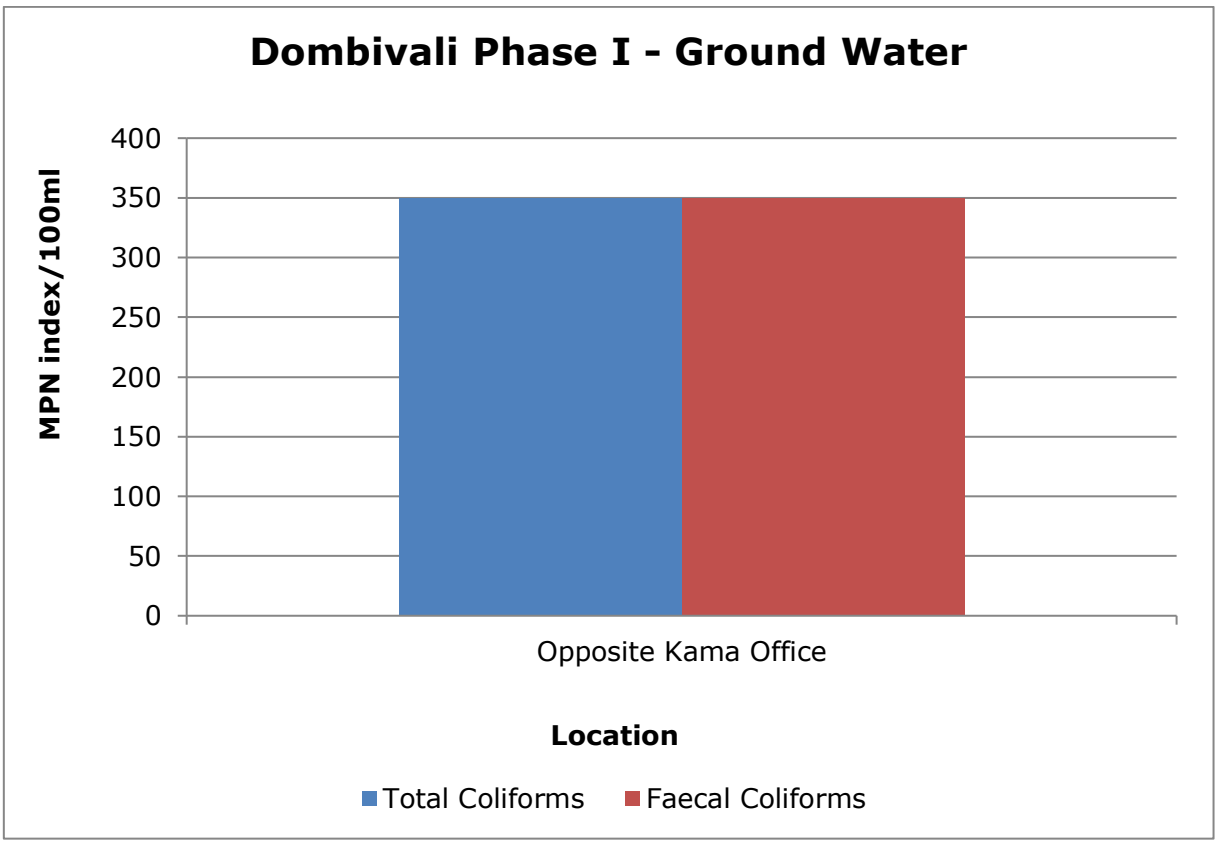
Parameters	Unit	Results		
		Bore well opposite Kama Office	Bore well Near Mamata Hospital	Bore well at Horizon hall
Selenium (as Se)	mg/L	0.02	0.01	BLQ
Total Nitrogen	mg/L	0.20	BLQ	BLQ
Boron (as B)	mg/L	1.94	1.89	1.79
Bioassay Test on fish	% survival	97	100	87

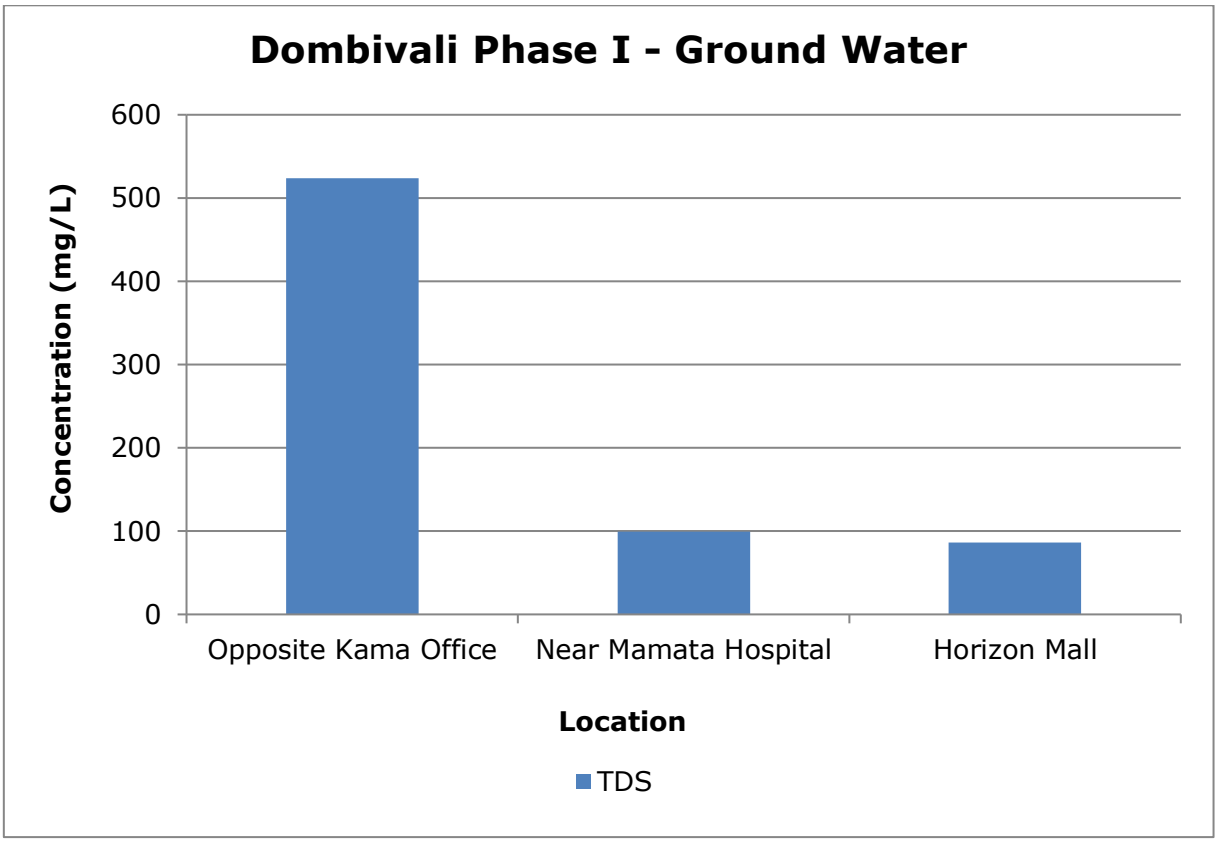
Graphs - Ground water Quality of MIDC Dombivali Phase I

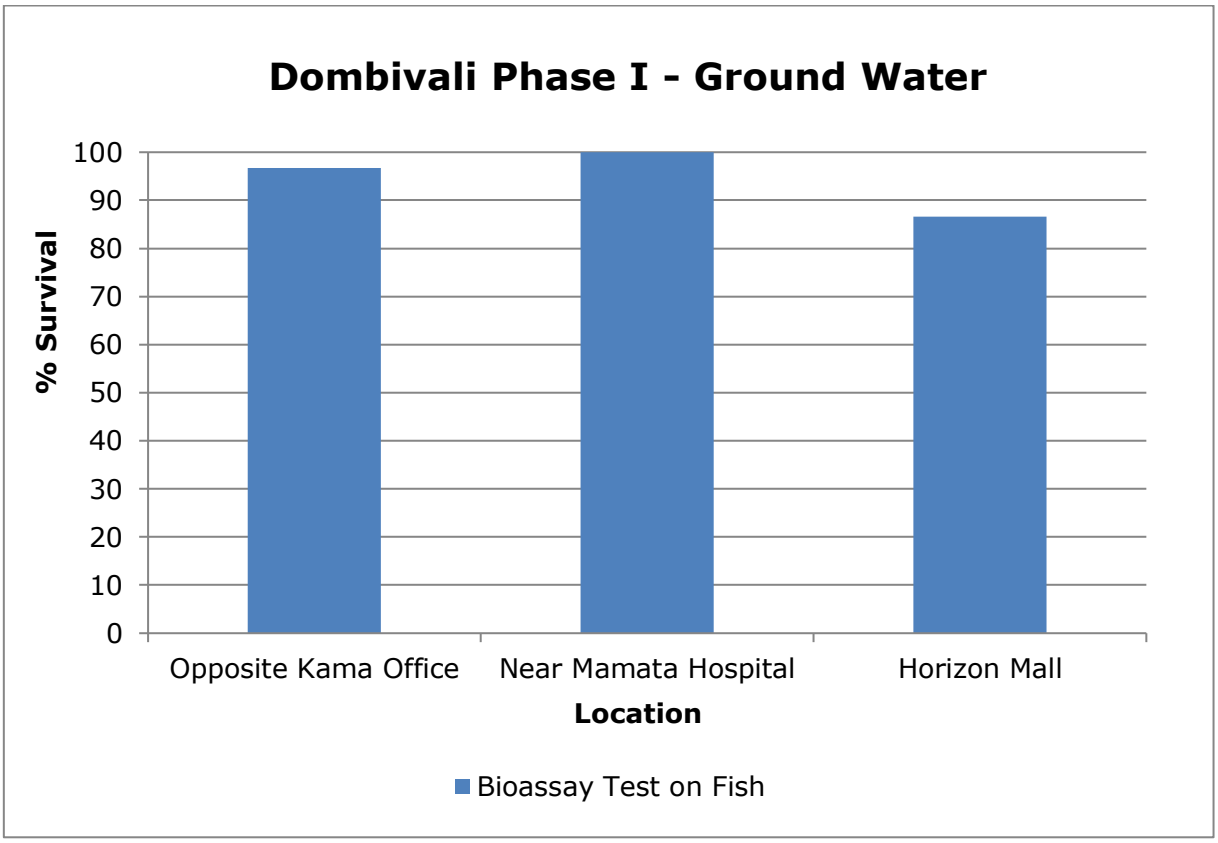





Dombivali Phase I - Ground Water
Concentration (µmhos/cm)
1000
900
800
700
600
500
400
300
200
100
0
Opposite Kama Office
Near Mamata Hospital
Horizon Mall
Location
Electrical Conductivity


Dombivali Phase I - Ground Water
MPN index/100ml
400
350
300
250
200
150
100
50
0
Opposite Kama Office
Location
Total Coliforms
Faecal Coliforms


Dombivali Phase I - Ground Water
600
500
400
300
200
100
0
Concentration (mg/L)
Opposite Kama Office
Near Mamata Hospital
Horizon Mall
Location
TDS


Dombivali Phase I - Ground Water
100
90
80
70
60
50
40
30
20
10
0
% Survival
Opposite Kama Office
Near Mamata Hospital
Horizon Mall
Location
Bioassay Test on Fish

2. **MIDC Phase II:** From MIDC Phase II, three ground water samples are collected.

- All three water samples collected were found acceptable in general appearance, colour, smell and transparency.
- pH and suspended solids were observed within the limits at both the samples collected.
- 100% survival was achieved in two water samples during Bioassay test.
- All metals like Arsenic, Nickel, Copper, Hexavalent Chromium (Cr6+) etc. are observed either below the limit of quantification or below their standard limits.
- However, concentration of Iron is observed to exceed the permissible limit in one water sample.
- Parameters like Total Residual Chlorine, Cyanide, Fluoride, Sulphide, Dissolved Phosphate, Total Phosphate, Total Ammonical Nitrogen and Phenolic compounds, also meet the criteria as prescribed by CPCB.
- The concentration of Selenium exceeded the permissible limit in one of the ground water samples collected from MIDC Phase II.
- Polynuclear aromatic hydrocarbons (PAH) and Polychlorinated Biphenyls (PCB) were also observed below the limit of quantification in all 3 samples collected.
- Organo Chlorine Pesticides was found below the detectable limit in both samples collected.

Table 7.3 Phase II – Details of Sampling Location of Ground Water

Sr. No.	Name of Monitoring Location	Latitude	Longitude	Date of Sampling		
				Round-1	Round-2	Round-3
1.	Bore well water Pimpleshwar Mahadev Temple	19°11'37.88"N	73° 5'41.06"E	21.12.2023	23.12.2023	25.12.2023
2.	Bore well Hardikar Hospital	19°12'21.16"N	73° 5'28.58"E	21.12.2023	23.12.2023	25.12.2023
3.	Borewell at Lodha Vihar	19°11'27.55"N	73° 5'15.26"E	21.12.2023	23.12.2023	25.12.2023

Fig. Geographical Locations of Ground Water Sampling MIDC Dombivali Phase II

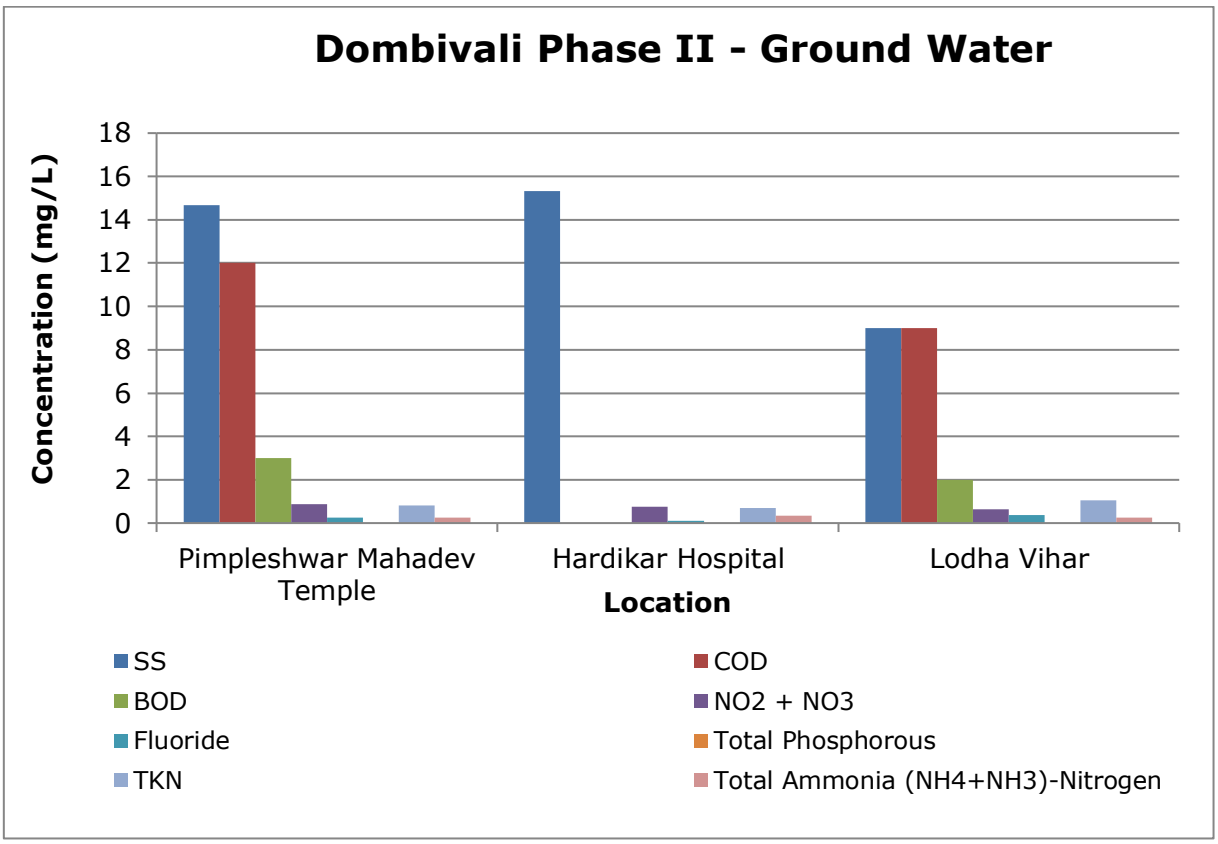
Table 7.4 Phase II – Results of Ground Water

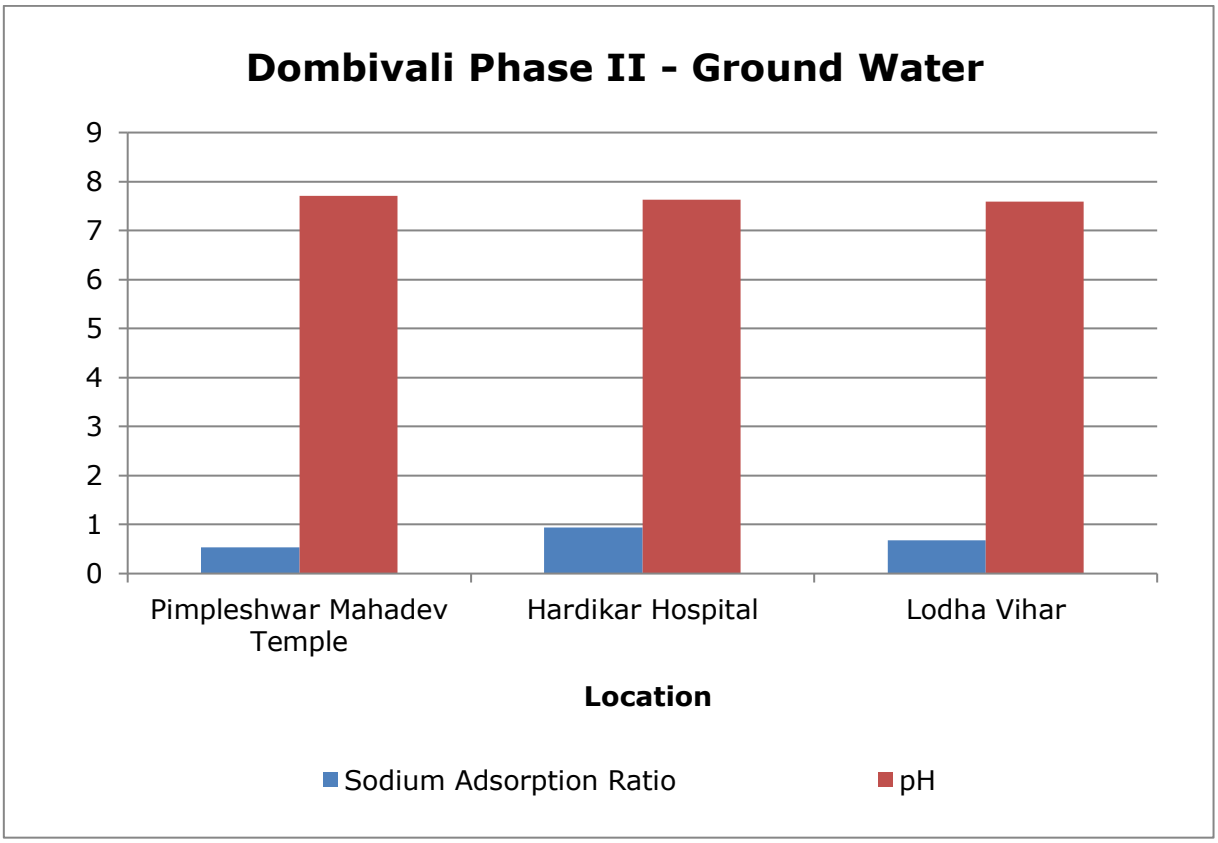
Parameters	Unit	Results		
		Pimpleshwar Mahadev Temple	Hardikar Hospital	Lodha Vihar
Sanitary Survey	-	Reasonably clean neighbourhood	Reasonably clean neighbourhood	Reasonably clean neighbourhood
General Appearance	-	No Floating Matter	No Floating Matter	No Floating Matter
Transparency	m	NA	NA	NA
Temperature	°C	29	31	30
Colour	Hazen	1	1	1
Smell	-	Agreeable	Agreeable	Agreeable
pH	-	7.71	7.63	7.60
Oil & Grease	mg/L	BLQ	BLQ	BLQ
Suspended Solids	mg/L	15	15	9
Total Dissolved Solids	mg/L	178	94	279
Chemical Oxygen Demand	mg/L	12	BLQ	9
Biochemical Oxygen Demand (3 days, 27°C)	mg/L	3	BLQ	2
Electrical Conductivity (at 25 °C)	µmho/cm	317	165	497
Nitrite Nitrogen (as NO_2)	mg/L	0.03	0.05	0.03

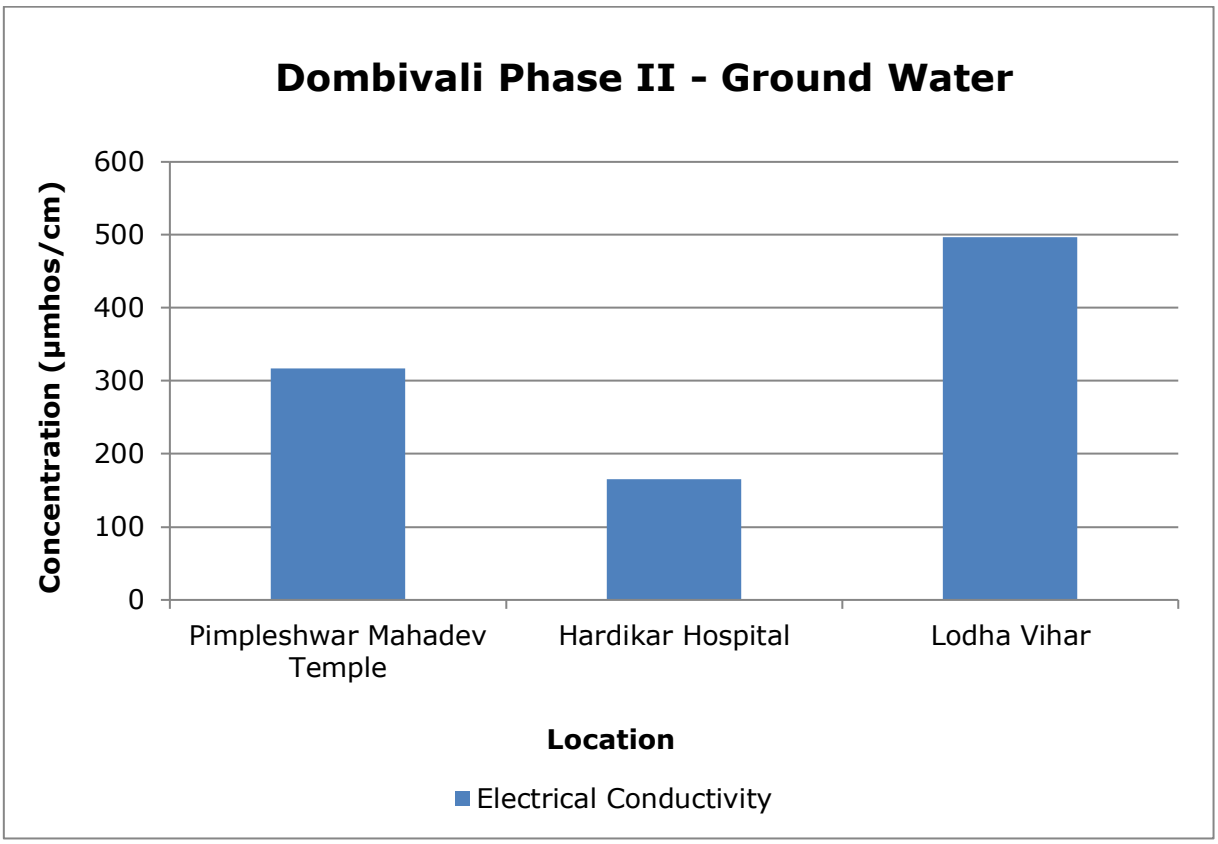
Parameters	Unit	Results		
		Pimpleshwar Mahadev Temple	Hardikar Hospital	Lodha Vihar
Nitrate Nitrogen (as NO_3)	mg/L	1.28	BLQ	BLQ
(NO_2 + NO_3)-Nitrogen	mg/L	0.89	0.75	0.63
Free Ammonia (as NH_3-N)	mg/L	BLQ	BLQ	BLQ
Total Residual Chlorine	mg/L	BLQ	BLQ	0.06
Cyanide (as CN)	mg/L	BLQ	BLQ	BLQ
Fluoride (as F)	mg/L	0.27	0.10	0.37
Sulphide (as H_2S)	mg/L	BLQ	BLQ	BLQ
Dissolved Phosphate (as P)	mg/L	BLQ	BLQ	BLQ
Sodium Adsorption Ratio	-	0.53	0.94	0.67
Total Coliforms	MPN Index/ 100 ml	BLQ	BLQ	BLQ
Faecal Coliforms	MPN Index/ 100 ml	BLQ	BLQ	BLQ
Total Phosphate (as P)	mg/L	BLQ	BLQ	BLQ
Total Kjeldahl Nitrogen (as N)	mg/L	0.82	0.71	1.05
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	0.27	0.35	0.24
Phenols (as C_6H_5OH)	mg/L	BLQ	BLQ	BLQ
Anionic Detergents (as MBAS Calculated as LAS, mol.wt.288.38)	mg/L	BLQ	BLQ	BLQ
Organo Chlorine Pesticides	µg/L	BLQ	BLQ	BLQ
Polynuclear aromatic hydrocarbons (as PAH)	mg/L	BLQ	BLQ	BLQ
Polychlorinated Biphenyls (PCB)	mg/L	BLQ	BLQ	BLQ
Zinc (as Zn)	mg/L	BLQ	BLQ	BLQ
Nickel (as Ni)	mg/L	BLQ	BLQ	BLQ
Copper (as Cu)	mg/L	BLQ	BLQ	BLQ
Hexavalent Chromium (as Cr^{6+})	mg/L	BLQ	BLQ	BLQ
Total Chromium (as Cr)	mg/L	0.03	BLQ	BLQ
Total Arsenic (as As)	mg/L	BLQ	BLQ	BLQ
Lead (as Pb)	mg/L	BLQ	BLQ	BLQ
Cadmium (as Cd)	mg/L	BLQ	BLQ	BLQ
Mercury (as Hg)	mg/L	BLQ	BLQ	BLQ
Manganese (as Mn)	mg/L	0.54	0.04	0.04
Iron (as Fe)	mg/L	0.65	0.11	0.12

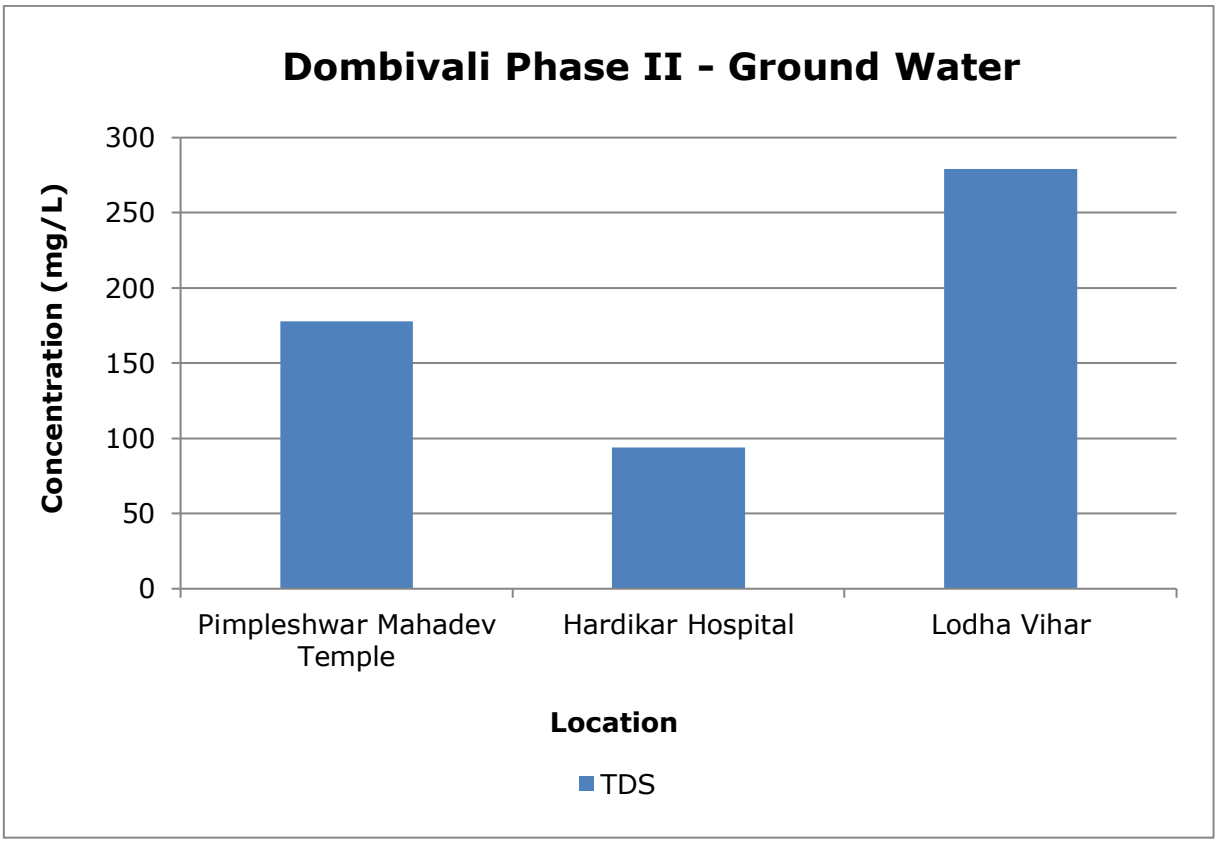
Parameters	Unit	Results		
		Pimpleshwar Mahadev Temple	Hardikar Hospital	Lodha Vihar
Vanadium (as V)	mg/L	BLQ	BLQ	BLQ
Selenium (as Se)	mg/L	0.02	BLQ	BLQ
Total Nitrogen	mg/L	BLQ	BLQ	BLQ
Boron (as B)	mg/L	1.72	1.46	2.08
Bioassay Test on fish	% survival	93	100	100

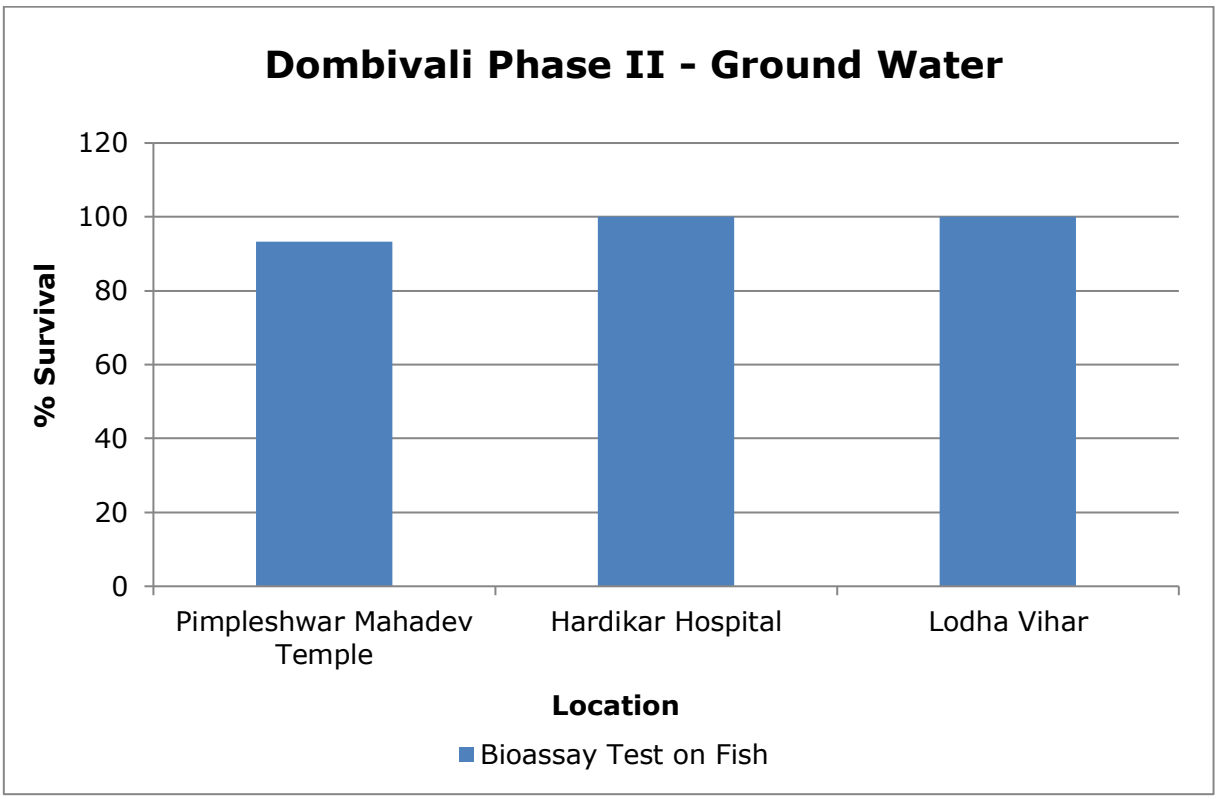
Graphs - Ground water Quality of MIDC Dombivali Phase II






Dombivali Phase II - Ground Water
Concentration (µmhos/cm)
600
500
400
300
200
100
0
Pimpleshwar Mahadev Temple
Hardikar Hospital
Lodha Vihar
Location
Electrical Conductivity


Dombivali Phase II - Ground Water
Concentration (mg/L)
300
250
200
150
100
50
0
Pimpleshwar Mahadev Temple
Hardikar Hospital
Lodha Vihar
Location
TDS


Dombivali Phase II - Ground Water
120
100
80
60
40
20
0
% Survival
Pimpleshwar Mahadev Temple
Hardikar Hospital
Lodha Vihar
Location
Bioassay Test on Fish

C: Receptor

Component C (Impact on Human Health)	
Main - 10	
% increase in cases	**Marks**
<5%	**0**
5-10%	**5**
>10%	**10**

- % increase is evaluated based on the total no. of cases recorded during two consecutive years.
- For Air Environment, total no. of cases related to Asthma, Bronchitis, Cancer, Acute respiratory infections etc. are to be considered.
- For surface water/ ground water Environment, cases related to Gastroenteritis, Diarrhoea, renal (kidney) malfunction, cancer etc are to be considered.
- For the above evaluation, the previous 5 years records of 3-5 major hospitals of the area shall be considered.

Annexure – I Health Related Data enclosed.

9. CEPI Score

Comprehensive Environmental Pollution Index (CEPI) is intended to act as early warning tool which helps in categorization of industrial clusters/ areas in terms of priority of needing attention. The CEPI score have been calculated based on CPCB Letter No. B-29012/ESS (CPA)/2015-16 dated 26th April 2016. The scoring system involves an algorithm that considers the basic selection criteria. It is proposed to develop the CEPI based on Sources of pollution, real time observed values of the pollutants in the ambient air, surface water and ground water in & around the industrial cluster and health related statistics.

Table 8.1 CEPI score of the Post monsoon season (March 2024) is given below

	A1	A2	A	B	C	D	CEPI
Air Index	3.5	4	14	19.5	0	5	**38.50**
Water Index	2.75	4	11	24.25	0	5	**40.30**
Land Index	2.5	4	10	17.5	0	5	**32.50**
						Aggregated CEPI	**47.80**

Among all Environment Pollution Indices (EPI), Water Environment Pollution Index is the highest with a score of 40.30. The reason for the higher Water EPI is the exceedance of Total Phosphate and BOD concentration in most of the surface water samples. The increase in BOD may be due to microbial activity in surface water. Total Phosphate (TP) is the indicator of sewage and manure discharges in the water body.

Table 8.2 Comparison of CEPI Scores

	Air Index	Water Index	Land Index	CEPI
CEPI Score March 2024	38.50	40.30	32.50	**47.80**
CEPI score June 2023	28.30	54.80	30.00	**58.60**
CEPI Score March 2023	34.25	57.50	45.00	**64.05**
CEPI score June 2021	21.00	56.00	45.00	**60.20**
CEPI Score March 2021	21.00	59.80	48.00	**63.90**
CEPI score March 2020	57.30	49.00	29.30	**63.40**
CEPI score June 2019	44.10	38.50	42.30	**53.20**
CEPI score March 2019	45.90	41.55	40.90	**55.09**
CEPI score June 2018	46.31	40.60	46.20	**46.20**

CEPI score March 2018	54.88	48.63	46.04	**64.98**
CPCB CEPI score March 2018	62.00	63.50	27.25	**69.67**

The result indicates that the CEPI score of the Dombivali region stands at 47.80. This study encompasses data collected during the post-monsoon season, influencing the score due to pollutant dilution in the environment. The present score for the Dombivali region is 47.80, whereas it was 69.67 in March 2018 during the study done by CPCB, indicating a decrease of approximately 31.34%.

CEPI Score Calculation:

Dombivali, Maharashtra - CEPI - March 2024

Ambient Air Analysis report

Pollutant	Group	A1	A2	A (A1 X A2)
CO	B	2	Large	
Benzene	C	1		
PM_{10}	B	0.5		
		3.5	**4**	**14**

Pollutant	Avg (1)	Std (2)	EF (3) [(3)=(1)/(2)]	No. of samples Exceeding (4)	Total no. of samples (5)	SNLF Value (6) [(6)=(4)/(5)x(3)]	SNLF score (B)	
CO	2.03	2	1.02	6	8	0.76	H	19.50
Benzene	1.92	5	0.38	0	8	0.00	L	0.00
PM_{10}	53.83	100	0.54	0	8	0.00	L	0.00
B score = (B1+B2+B3)							**B**	**19.5**

C	**0**	**<5 %**
D	**5**	**A-IA-A**

Air CEPI	**(A+B+C+D)**	**38.5**

Water Quality Analysis report

Pollutant	Group	A1	A2	A (A1 X A2)
TP	B	2	Large	
BOD	B	0.5		
TKN	A	0.25		
		2.75	**4**	**11**

Pollutant	Avg (1)	Std (2)	EF (3) [(3)=(1)/(2)]	No. of samples Exceeding (4)	Total no. of samples (5)	SNLF Value (6) [(6)=(4)/(5)x(3)]	SNLF score (B)	
TP	0.34	0.3	1.13	6	13	0.52	H	15.75
BOD	10.13	8	1.27	6	13	0.58	H	5.50
TKN	1.86	3	0.62	1	13	0.05	M	3.00
B score = (B1+B2+B3)							**B**	**24.25**

C	**0**	**<5 %**
D	**5**	**A-IA-A**

Water CEPI	**(A+B+C+D)**	**40.3**

Ground Water Quality Analysis report

Pollutant	Group	A1	A2	A (A1 X A2)
Se	B	2	Large	
F	A	0.25		
Fe	A	0.25		
		2.5	**4**	**10**

Pollutant	Avg (1)	Std (2)	EF (3) [(3)=(1)/(2)]	No. of samples Exceeding (4)	Total no. of samples (5)	SNLF Value (6) [(6)=(4)/(5)x(3)]	SNLF score (B)	
Se	0.01	0.01	1.33	2	6	0.44	M	14.25
F	0.27	1.5	0.18	0	6	0.00	L	0.00
Fe	0.20	0.3	0.67	1	6	0.11	M	3.25
B score = (B1+B2+B3)							**B**	**17.5**

C	**0**	**<5 %**
D	**5**	**A-IA-A**

Land CEPI	**(A+B+C+D)**	**32.5**

Water CEPI Score (im) **40.30**

Air CEPI score (i2) **38.50**

Land CEPI Score (i3) **32.50**

Aggregated CEPI Score = **im + {(100-im)*i2/100)*i3/100)}**

where, im = maximum sub index; and i2 and i3 are sub indices for other media

CEPI Score **47.8**

10. Conclusion

Ambient Air Quality

- The AAQ stations were identified in the CEPI impact area to cover both upwind and cross wind directions and AAQ survey was conducted.
- All parameters are well within the limits as per NAAQS, except carbon monoxide, which is found to exceed the standard limit at six of the studied locations.
- The present score for Air Index is observed as 38.5.

Surface Water Quality

- Higher concentration of BOD and Total Phosphate was observed in the surface water samples collected which may be due to increase in microbial activity, leaking septic systems or discharges from sewage treatment plants.
- All the industries in the Dombivali region are either reusing the treated trade effluent as sewage in their process or gardening or are disposed into Sea.
- The present score for Water Index is observed as 40.3.

Ground Water Quality

- Ground water samples were collected from different Bore well in the region.
- Concentration of Selenium and Iron is found to exceed in few of the collected samples.
- In the CEPI score calculated for Land Environment by CPCB in March 2018, BOD and Total Ammonia Nitrogen have exceeded in all the samples collected.
- The present score for Land Index is observed as 32.5.

CEPI Score

- The CEPI Score post monsoon season is 47.8.
- In comparison with the CEPI Score of March 2023, the Air index is increased, however a decrease is observed in the Land and the Water Index this year.
- Collective efforts of MPCB, administration and environmental organizations have resulted in improved and safer groundwater. This shows a decline in pollution levels in Dombivali.
- The present study is the compilation of post monsoon season, which results in dilution of environmental samples resulting in lower pollution load, hence also affects the total score.
- In conclusion, the present CEPI score for the Dombivali region is 47.80, whereas it was 69.67 in March 2018, indicating a decrease of approximately 31.34% over the past five years.

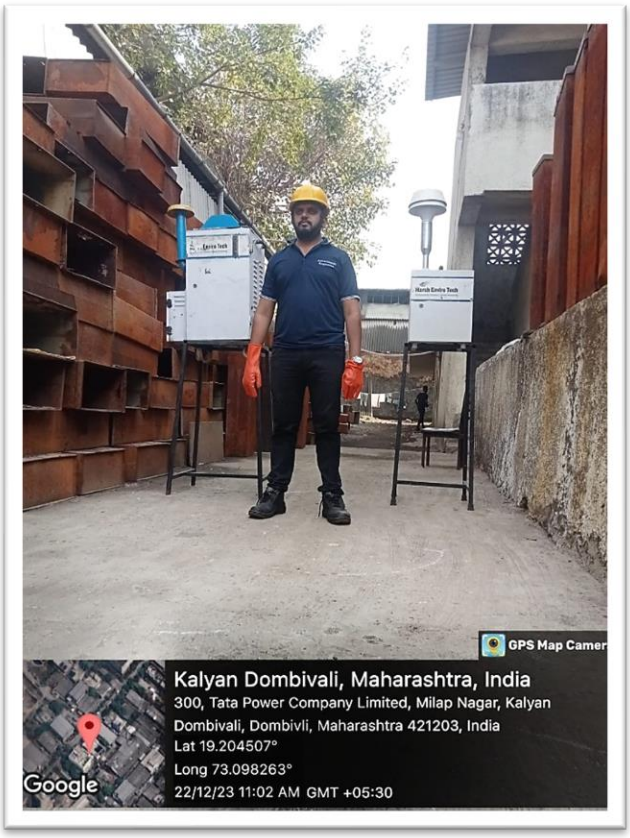
11. Efforts Taken by MPCB to Control and Reduce Environmental Pollution Index

- Drive against open burning of bio-mass, crop residue, garbage, leaves, etc.
- **Organic Waste Compost machines**: Residential complexes or Commercial complexes more than 20,000 sqm BUA has installed organic waste compost machines individually.
- **Waste collection and segregation centres**: KDMC has provided waste collection segregation centres at various places and also segregation is carried out at MSW processing sites.
- **Construction of Common Effluent Treatment plant (CETP)**: Two CETPs are in operation. 1. CETP having capacity 16 MLD for textile effluent 2, CETP having capacity 1.5 MLD for chemical effluent.
- **Installation of CEMS installed for Air and Water in Large and Medium scale RED category industries**: Online monitoring system with SCADA and NRV system provided by the industries.
- Arrangement of scientific collection and treatment of sewage generated: KDMC has provided 9 STPs, out of which 6 STPs are in operation. Rest will be brought into operation till December 2023, so as to cater entire 216 MLD domestic effluent.
- Installation of CAAQMS station: Two stations
- Number of CAAQMS proposed for future: Two stations are installed one is at Pimpleshwar Temple, MIDC Dombivali, Phase-II and second at 'B' Ward KDMC, Kalyan (W).
- Two Monitoring stations under National Water Quality Monitoring Programme (NWMP) are established.
- Steps are taken for industrial area/other units to recycle 100% treated effluent to achieve zero liquid discharge (ZLD)- Forty units have achieved Zero Liquid Discharge.
- Steps taken to reduce dust emission:

  1. Board has changed the norms of TPM from 150 mg/Nm^3 to 50 mg/Nm^3 in consent.
  2. Board is promoting to use PNG as fuel to boiler.
  3 Concreted road with tree plantation along the road is going on
- Tree plantation in last one year (2021-2022): 6000 nos.
- Other initiatives taken to control and reduce pollution in air, surface water and groundwater in last one year (2021-2022):
  a) To know the status of air quality in Kalyan Dombivali area MPC Board has installed two CAAQM stations and two AAQM stations. Out of which two are installed in MIDC area and other two are installed other than MIDC area.
  b) MPC Board is continuously in touch with industry to use proper quantity of fuel to the boiler to avoid the overload and thereby emission. As well as ensure that air pollution control system provided by industry are continuously operation are not
  c) Night monitoring also been carried out to check the status during night period.
  d) Industries located in MIDC area are discharging partially treated effluent to CETP through underground pipeline. No direct discharged of effluent to the nallah by the industries. MPCB and MIDC combine visited area to see the leakages or overflow of chambers and if found it get repaired immediately to avoid effluent discharged to nearby nallah.

	
Continuous Ambient Air Quality Monitoring Station (CAAQMS)	**Ambient Air Quality Monitoring (AAQM) Van**

12. Photographs



Dombivali Phase – I - Ambient Air Sampling Sagar Ice & Cold Storage Pvt. Ltd.

Dombivali Phase – I- Ambient Air Sampling at Balkrishna Industries Ltd.

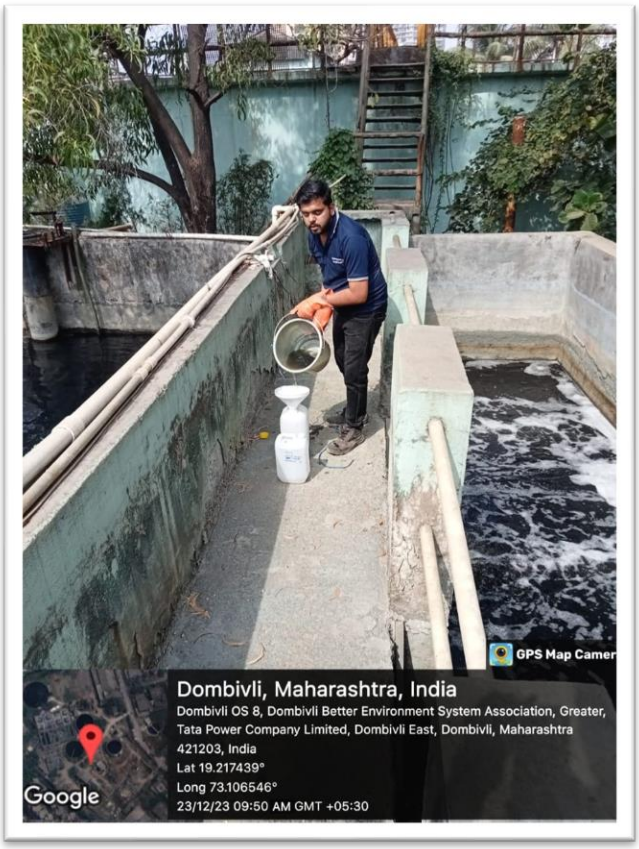
Dombivali Phase – I - Ambient Air Sampling at DEBESA CETP

Dombivali Phase – II- Ambient Air Sampling at ombivali Common Effluent Treatment Plant

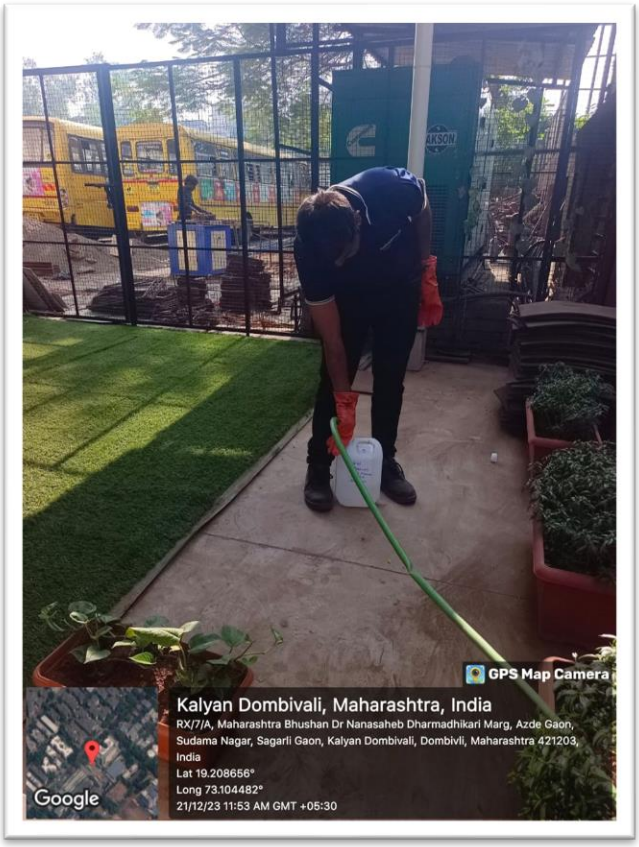
Dombivali Phase – I- Surface water sampling at Gharda Chemical Ltd.

Dombivali Phase – I- Surface water sampling of Krishna Alkali Pvt. Ltd.

Dombivali Phase – I- Surface water Sampling from a Thakurli Talav



Dombivali Phase – II- DEBESA CETP Outlet



Dombivali Phase – I- Ground water Sampling at Bore well Near Mamata Hospital

Dombivali Phase – I- Ground water Sampling at borewell opposite Kama Office

Dombivali Phase – II- Ground water Sampling at Borewell at Lodha Vihar

Dombivali Phase – II- Ground water Sampling at Pimpleshwar Mahadev Temple

Annexure – I Health Related Data

HEALTH STATISTICS

Required for Comprehensive Environmental Pollution Index (CEPI)
Post-monsoon Season (December 2023- February 2024) Study by
Maharashtra Pollution Control Board (MPCB), MAHARASHTRA

Name of the Polluted Industrial Area (PIA)	DOMBIVALI
Name of the major health center/ organization	Municipal Hospital
Name and designation of the Contact person	
Address	

JAN -2022 TO DEC 2022
JAN - 2023 TO DEC 2023.

S No.	Diseases	No. of Patients Reported	
		Year 2021-2022 JAN 2022 TO DEC 2022	Year 2022-2023 JAN 2023 TO DEC 2023.
AIRBORNE DISEASES			
1.	Asthma	06	04
2.	Acute Respiratory Infection	14	12
3.	Bronchitis	04	01
4.	Cancer	Nil	Nil.
WATERBORNE DISEASES			
1.	Gastroenteritis	36	24
2.	Diarrhea	62	52
3.	Renal diseases	01	01
4.	Cancer	01	01

Date: 24/1/2024

24/1/24.

Signature

Chief Medical Officer
Shastrinagar Hospital, Dombivli (W)
Kalyan Dombivali Municipal Corporation

24/1/2024.

HEALTH STATISTICS

Required for Comprehensive Environmental Pollution Index (CEPI) Post-monsoon Season (December 2023- February 2024) Study by Maharashtra Pollution Control Board (MPCB), MAHARASHTRA

Name of the Polluted Industrial Area (PIA)	DOMBIVALI
Name of the major health center/ organization	Mamta Hospital
Name and designation of the Contact person	DR. APEKSHA KANCHAN, MANAGER-MEDICAL SERVICES
Address	P43, Phase 2, Next to ICICI Bank, MIDC, Dombivli E 421203

S No.	Diseases	No. of Patients Reported	
		Year 2021-2022	Year 2022-2023
AIRBORNE DISEASES			
1.	Asthma	52	43
2.	Acute Respiratory Infection	206	189
3.	Bronchitis	152	140
4.	Cancer	—	—
WATERBORNE DISEASES			
1.	Gastroenteritis	131	114
2.	Diarrhea	88	78
3.	Renal diseases	—	—
4.	Cancer	—	—

Date: 22/1/2024

SRV MULTISPECIALITY HOSPITAL DOMBIVLI (E)

Signature

HEALTH STATISTICS

Required for Comprehensive Environmental Pollution Index (CEPI) Post-monsoon Season (December 2023- February 2024) Study by Maharashtra Pollution Control Board (MPCB), MAHARASHTRA

Name of the Polluted Industrial Area (PIA)	DOMBIVALI
Name of the major health center/ organization	Hambarde Hospital
Name and designation of the Contact person	
Address	Tal Pingle Chowk OPP Sadvesh Hall Dom (E)

S No.	Diseases	No. of Patients Reported	
		Year 2021-2022	Year 2022-2023
AIRBORNE DISEASES			
1.	Asthma	20	22
2.	Acute Respiratory Infection	6	4
3.	Bronchitis	6	4
4.	Cancer		6
WATERBORNE DISEASES			
1.	Gastroenteritis	21	23
2.	Diarrhea	21	23
3.	Renal diseases	18	17
4.	Cancer	4	6

Date: 22.1.24

Signature

Dr. Rafiq [illegible] Hamb

HAMBARDE HOSPITAL