MONITORING, SAMPLING AND ANALYSIS FOR AMBIENT AIR QUALITY, SURFACE WATER QUALITY AND GROUND WATER QUALITY IN CRITICALLY/SEVERELY/OTHER POLLUTED AREAS

NASHIK

Pre-Monsoon (April 2025 – June 2025)

MAHARASHTRA POLLUTION CONTROL BOARD

महाराष्ट्र प्रदूषण नियंत्रण मंडळ

Index

1. ABBREVIATION

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
CEPI	Comprehensive Environmental Pollution Index
CETP	Common Effluent Treatment Plant
CPA	Critically Polluted Area
CPCB	Central Pollution Control Board
EPA	Environmental Protection Act, 1986
GDP	Gross Domestic Product
MIDC	Maharashtra Industrial Development Corporation
MPCB	Maharashtra Pollution Control Board
NAAQS	National Ambient Air Quality Standard
NWMP	National Water Quality Monitoring Program
SPA	Severely Polluted Area
VOCs	Volatile Organic Compounds
WHO	World Health Organisation
ZLD	Zero Liquid Discharge

2. Executive Summary

The Nashik CEPI area including MIDC Ambad and MIDC Satpur 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. Post-monsoon monitoring was carried out during the period of April 2025 to June 2025 to verify the Ambient Air Quality, Surface water and Groundwater.

The Ambient Air Quality stations were identified considering the upwind and cross wind direction in the CEPI impact area. The concentration of all 12 Parameters is well within the limit prescribed by NAAQS at all locations. In surface water of Nashik, the concentrations of BOD, Fluoride, Total Phosphate, Total Kjeldahl Nitrogen, Iron and Zinc exceeds in some samples are collected. In ground water, BOD, Total Phosphate and Iron exceeded in some of the samples collected.

The CEPI score is the combination of A (Source), B (Pathway), C (Impact on Human Health) and D (Additional High-Risk Element) factors. The Maharashtra Pollution Control Board has worked on controlling and mitigating the air and water pollution with installation of CAAQMS, CETPs, online VOC analyzers etc.

The Maharashtra Pollution Control Board has taken various initiatives in reducing the CPCB CEPI Score of 69.49 of 2018 to 52.41 of June 2025. Based on the study results of April 2025 to June 2025 the CEPI score as per the revised CPCB 2016 guidelines, the CEPI index of Pre Monsoon - Ambient Air is 10.00, Surface Water is 51.25, and Ground Water is 28.75. The overall CEPI score for Nashik area for the Pre Monsoon 2025 is 52.65. Approximately 24.23 % decrease in CEPI score is observed from 69.49 (CPCB CEPI score) in 2018 to 52.65 in June 2025.

3. Introduction

The industrial sector plays a vital role in accelerating a nation's economic growth by contributing significantly to production, fixed capital investment, exports, employment generation, and optimal capacity utilization. Acting as a driving force of economic progress, industries enhance government revenue, strengthen international trade, support social services, and promote job creation. The pace of industrial growth is closely linked to a country’s overall economic performance and prosperity. As per the World GDP Ranking 2024, India has emerged as the fifth-largest economy globally. Various Sustainable Development Goals (SDGs) underscore the importance of economic growth, particularly Goal 8 (Decent Work and Economic Growth) and Goal 9 (Industry, Innovation, and Infrastructure).

Despite the economic advantages, industrial activities have a significant adverse impact on the environment, deteriorating the quality of water, air, and soil. The discharge of untreated industrial wastewater has contaminated drinking water sources with hazardous chemicals, posing serious health risks to humans, animals, and aquatic life. Air pollution caused by industrial emissions is directly associated with various respiratory and cardiovascular illnesses, especially in children, leading to higher rates of infant mortality and chronic health conditions later in life. According to the World Health Organization (WHO), environmental pollution contributes to approximately 9 million premature deaths each year. Moreover, over 90% of the global population is exposed to air pollution levels that exceed WHO's recommended limits. Alarmingly, nearly 2 billion people consume drinking water tainted with fecal matter, resulting in outbreaks of infectious diseases such as cholera and dysentery.

The consequences for biodiversity are equally severe. Industrial pollution has caused widespread habitat destruction, disrupted ecosystems, and led to a decline in species diversity. Toxic substances released into the environment can lead to genetic mutations, reproductive issues, and abnormal behavior in wildlife, threatening the survival of entire species. Additionally, plants exposed to contaminated air and water may suffer from stunted growth, reduced photosynthetic efficiency, and increased vulnerability to pests and diseases, ultimately jeopardizing food security and ecosystem balance.

To address these environmental challenges, the implementation of strong and effective environmental policies is crucial. These policies establish clear regulations for industries and individuals, enforced by relevant government authorities. Core components include continuous monitoring of pollution levels, strict enforcement through fines and penalties for non-compliance, and mandatory environmental impact assessments (EIAs) for proposed projects. Conservation efforts aimed at preserving biodiversity are equally important, and policies must be periodically updated to reflect evolving environmental issues and scientific advancements. A holistic approach—encompassing robust regulatory frameworks, international cooperation, advanced monitoring technologies, and a firm commitment to sustainable practices by both industries and governments—is essential for protecting natural resources and ensuring long-term environmental sustainability.

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 analysing 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.

Nashik, the third-largest industrial hub in Maharashtra, follows Pune and Mumbai in terms of industrial development. With industrial areas such as Satpur, Ambad, Sinnar, Igatpuri, Dindori, and Vinchur, along with proposed areas in Additional Sinnar and Malegaon MIDC, Nashik plays a pivotal role in the state's economy. The district hosts a wide array of large-scale industries, including Mahindra & Mahindra, BOSCH, CEAT Limited, Hindustan Unilever, and many others, contributing significantly to the industrial landscape of Maharashtra.

However, rapid industrialization brings with it the challenge of environmental pollution. To address this, the Comprehensive Environmental Pollution Index (CEPI), introduced in 2016, serves as a crucial tool for evaluating the environmental quality across air, water, and land in industrial areas. The CEPI methodology, which evaluates the source, pathway, and receptor of pollution, provides a clear measure of the environmental impact in specific areas.

This report presents an in-depth assessment of the Monitoring, Sampling, and Analysis for Ambient Air Quality, Surface Water Quality, and Groundwater Quality in the polluted industrial zones of Nashik. It aims to highlight the environmental challenges facing the region and outlines the steps needed to mitigate pollution, safeguard public health, and promote sustainable development through targeted actions based on the CEPI framework.

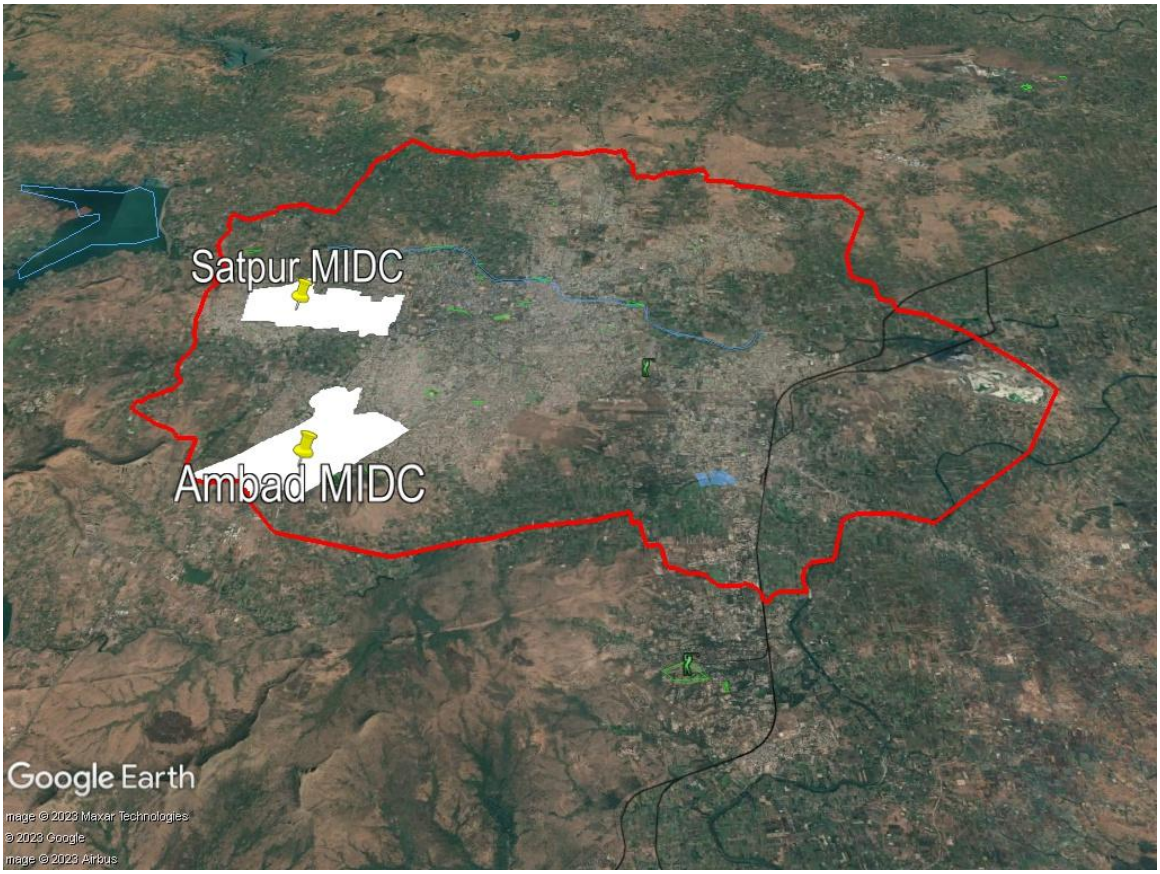


Fig. Nashik region CEPI monitoring zone

4. 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 Nashik, 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 Nashik

Sampling Criteria	Number of sites	Total Sites	Monitoring Parameters
Ambient Air Quality	• MIDC Ambad -04 • MIDC Satpur -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	• MIDC Ambad -02 • MIDC Satpur -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-

Sampling Criteria	Number of sites	Total Sites	Monitoring Parameters
			Trichlorobenzene, 2,2-Dichloropropane, Dibromo 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** • MIDC Ambad -06 • MIDC Satpur -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.
	Ground water • MIDC Ambad -06 • MIDC Satpur -06	**12**	

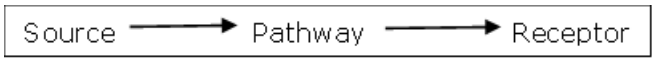
Table 3.2 Frequency of Sampling

	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

	Parameter	Round of Sampling	Frequency in Each Round
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

5. 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:



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

6. Air Environment

For studying the Air Environment of Nashik 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 carried out.

**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 Ambad:** In MIDC Ambad four locations have been monitored of checking the Ambient Air Quality (AAQ). The concentration of all 12 parameters of the ambient air was found well within the limits prescribed by NAAQS at all locations.

Table 5.1 MIDC Ambad - 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 Koso India	$19^0$94'58.4"N	$73^0$72'81.8"E	14.05.2025	16.05.2025	18.05.2025
2.	Near Siemens India Ltd.	$19^0$95'70.1"N	$73^0$73'67.2"E	14.05.2025	16.05.2025	18.05.2025
3.	Near Gemini Instratech Ltd.	$19^0$95'32.5"N	$73^0$74'82.8"E	14.05.2025	16.05.2025	18.05.2025
4.	Near CG Power and Industrial Solutions Ltd.	19°94'62.4"N	73°74'23.6"E	14.05.2025	16.05.2025	18.05.2025

Table 5.2 MIDC Ambad - 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 Rainbow Decoplus Pvt. Ltd.	$19^0$95'46.31"N	$73^0$74'97.71"E	14.05.2025	16.05.2025	18.05.2025
2.	Near Kirloskar oil India Ltd.	$19^0$95'72.27"N	$73^0$73'25.58"E	14.05.2025	16.05.2025	18.05.2025

Fig. Geographical Locations of Ambient Air Quality Monitoring MIDC Ambad

Fig. Geographical Locations of VOCs Monitoring MIDC Ambad

Table 5.3 MIDC Ambad - Ambient Air Quality Monitoring Results

Parameters	Unit	Results			
		Near Koso India	Near Siemens India Ltd.	Near Gemini Instratech Ltd.	Near CG Power and Industrial Solutions Ltd.
Sulphur Dioxide (SO_2)	µg/m³	BLQ	BLQ	BLQ	BLQ
Nitrogen Dioxide (NO_2)	µg/m³	19	21	26	22
Particulate Matter (size less than 10 µm) or PM_{10}	µg/m³	50	47	49	51
Particulate Matter (size less than 2.5 µm) or $PM_{2.5}$	µg/m³	14	12	14	15
Ozone (O_3)	µg/m³	BLQ	BLQ	BLQ	BLQ
Lead (Pb)	µg/m³	BLQ	BLQ	BLQ	BLQ
Carbon Monoxide (CO) (1 h)	mg/m³	1.32	0.98	1.08	1.24
Carbon Monoxide (CO) (8 h)	mg/m³	1.67	1.41	1.44	1.69
Ammonia (NH_3)	µg/m³	21.35	26.20	22.80	26.30
Benzene (C_6H_6)	µg/m³	1.9	1.7	1.9	1.7
Benzo (a) Pyrene (BaP) – particulate phase only	ng/m³	BLQ	BLQ	BLQ	BLQ
Arsenic (As)	ng/m³	BLQ	BLQ	BLQ	BLQ
Nickel (Ni)	ng/m³	7.0	4.1	9.0	7.5

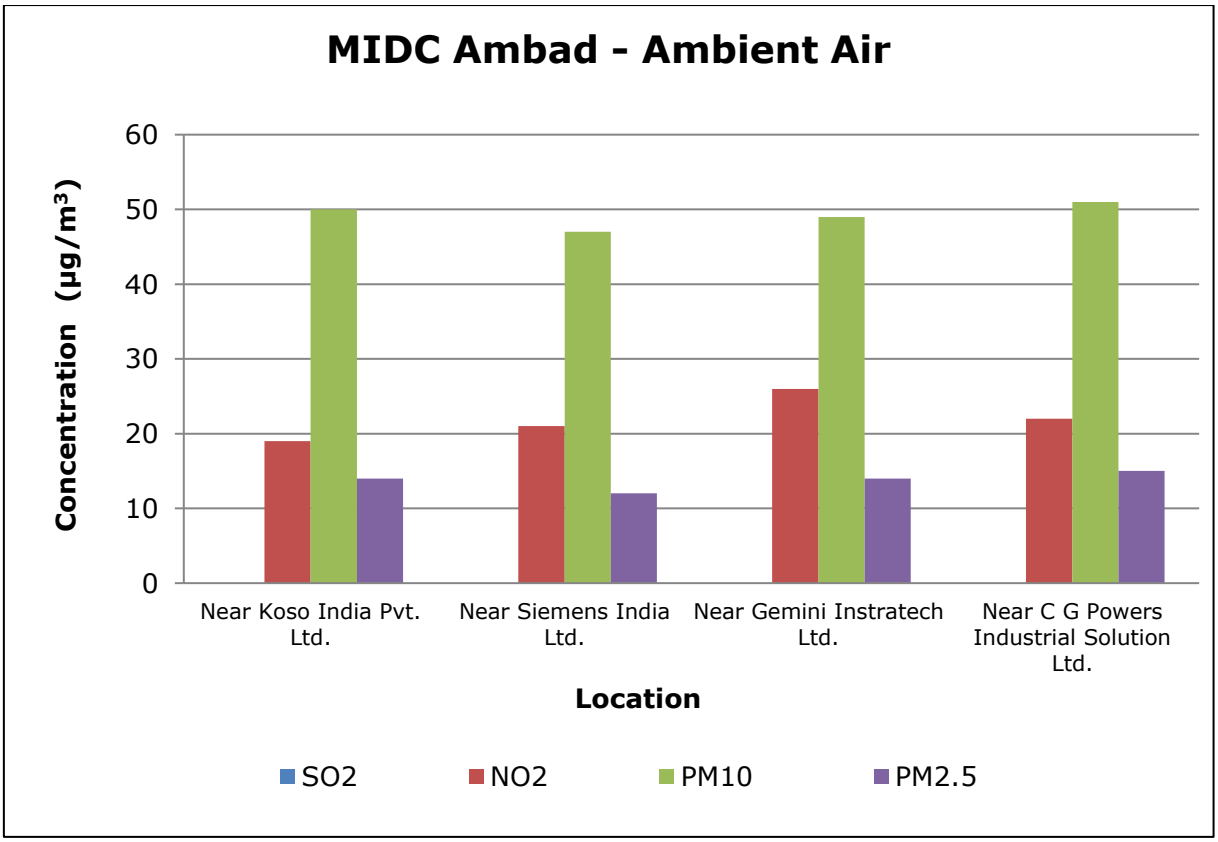
Table 5.4 MIDC Ambad - Volatile Organic Compounds (VOCs) in Ambient Air Results

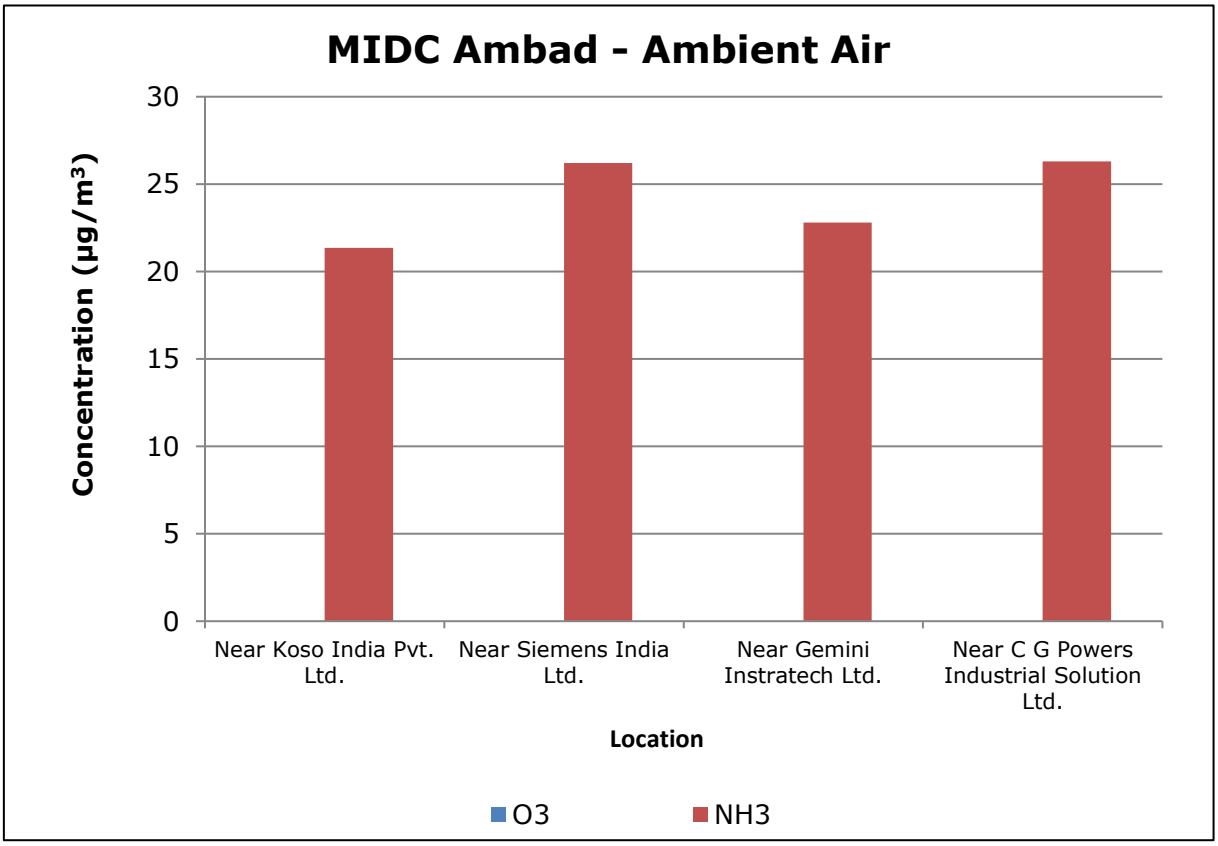
Parameters	Unit	Results	
		Near Rainbow Decoplus Pvt. Ltd.	Near Kirloskar oil India Ltd.
Dichloromethane	µg/m³	0.67	0.74
Chloroform	µg/m³	BLQ	BLQ
Carbon Tetrachloride	µg/m³	BLQ	BLQ
Trichloroethylene	µg/m³	BLQ	BLQ
Bromodichloromethane	µg/m³	BLQ	BLQ
1,3-Dichloropropane	µg/m³	BLQ	BLQ
1,4-Dichlorobenzene	µg/m³	BLQ	0.76
1,3-Dichlorobenzene	µg/m³	BLQ	BLQ
1,2-Dichlorobenzene	µg/m³	BLQ	BLQ

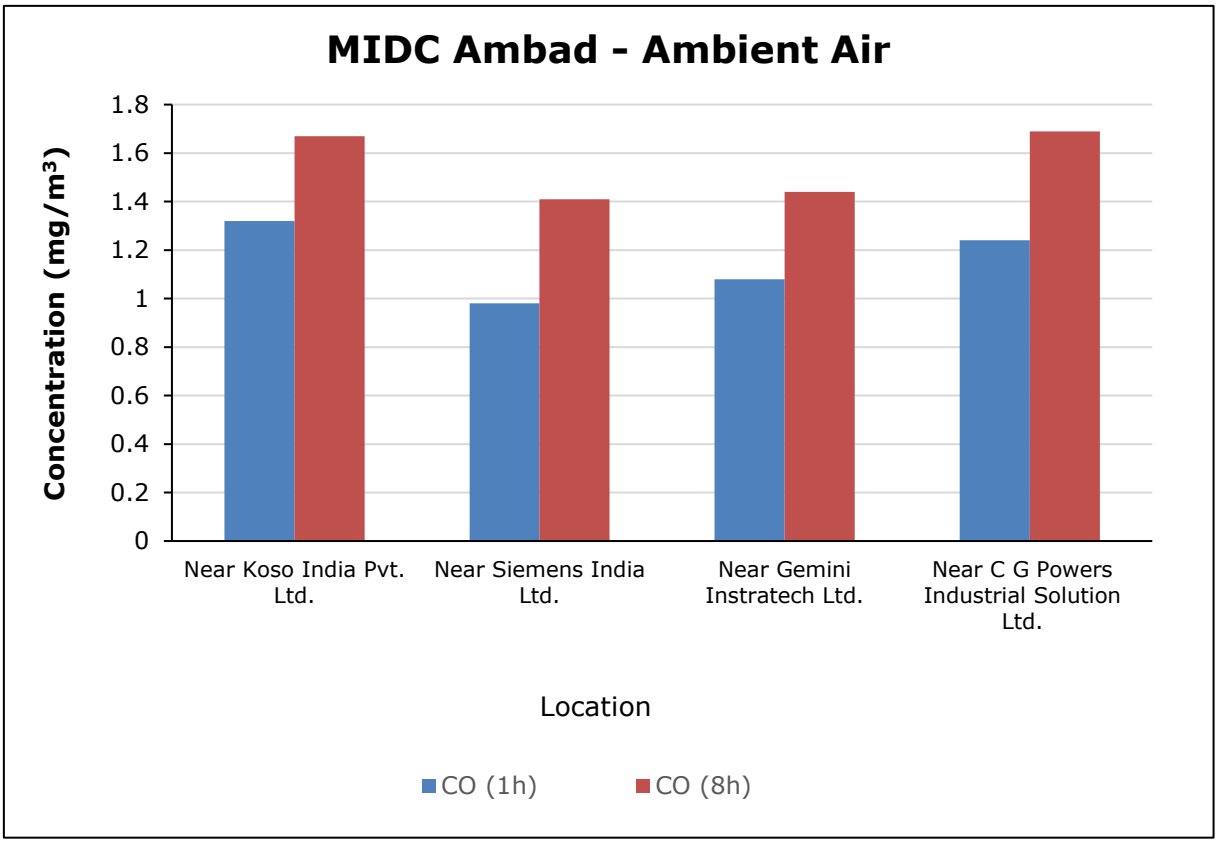
Parameters	Unit	Results	
		Near Rainbow Decoplus Pvt. Ltd.	Near Kirloskar oil India Ltd.
1,2-Dibromo-3-Chloropropane	µg/m³	BLQ	BLQ
Napthalene	µg/m³	BLQ	BLQ
Bromobenzene	µg/m³	BLQ	BLQ
1,2,4-Trimethylbenzene	µg/m³	BLQ	BLQ
2-Chlorotoluene	µg/m³	BLQ	BLQ
Tert-Butylbenzene	µg/m³	BLQ	BLQ
SEC-Butylbenzene	µg/m³	BLQ	BLQ
P-Isopropyltoluene	µg/m³	BLQ	BLQ
M-Xylene	µg/m³	BLQ	BLQ
P-Xylene	µg/m³	BLQ	BLQ
Styrene	µg/m³	BLQ	1.224
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	BLQ	0.62
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

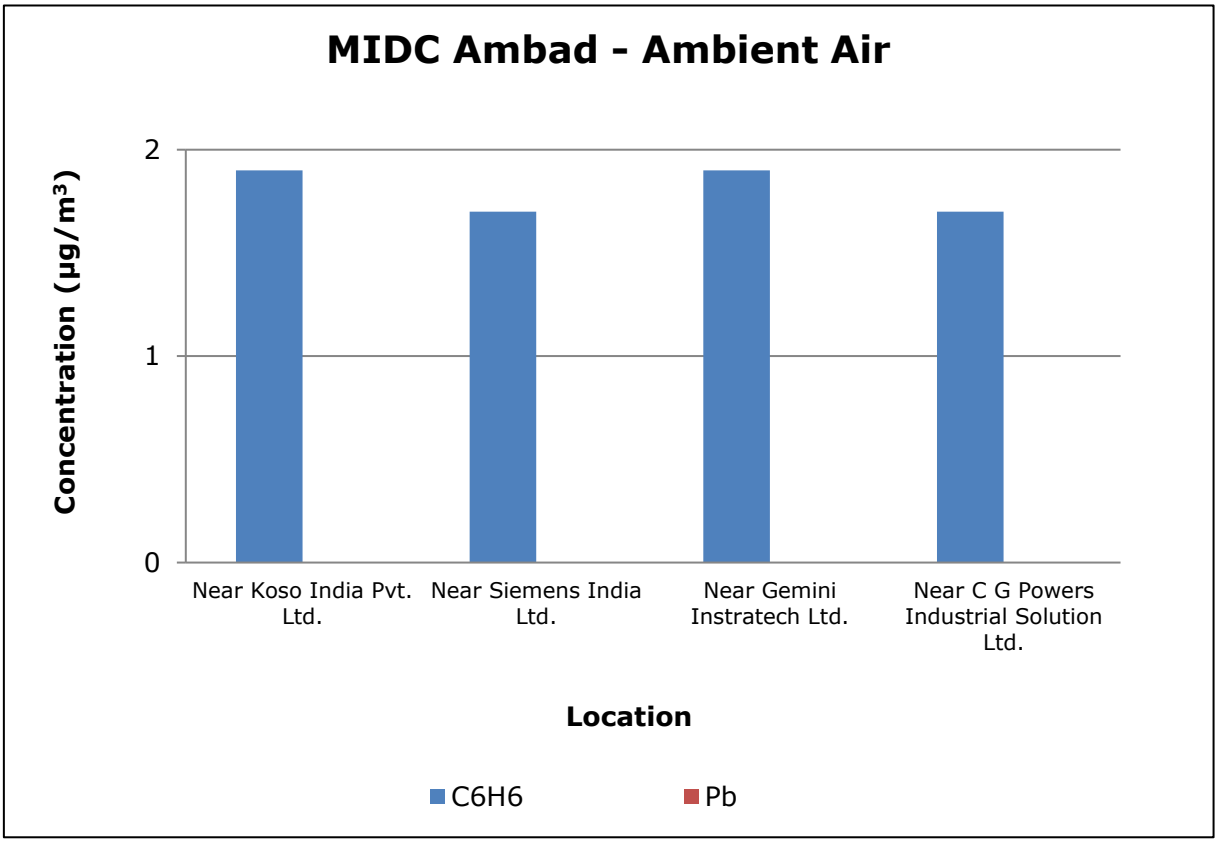
Parameters	Unit	Results	
		Near Rainbow Decoplus Pvt. Ltd.	Near Kirloskar oil India Ltd.
Dibromomethane	µg/m³	BLQ	BLQ
Toluene	µg/m³	BLQ	BLQ
O-Xylene	µg/m³	0.89	0.83
Bromoform	µg/m³	BLQ	BLQ
1,1,2,2-Tetrachloroethane	µg/m³	BLQ	BLQ
4-Chlorotoluene	µg/m³	BLQ	BLQ
1,1-Dichloroethylene	µg/m³	BLQ	BLQ
Trans-1,2-Dichloroethylene	µg/m³	BLQ	BLQ
1,1-Dichloroethane	µg/m³	BLQ	BLQ
CIS-1,2-Dichloroethylene	µg/m³	BLQ	BLQ
Bromochloromethane	µg/m³	BLQ	BLQ
1,1,1-Trichloroethane	µg/m³	BLQ	BLQ

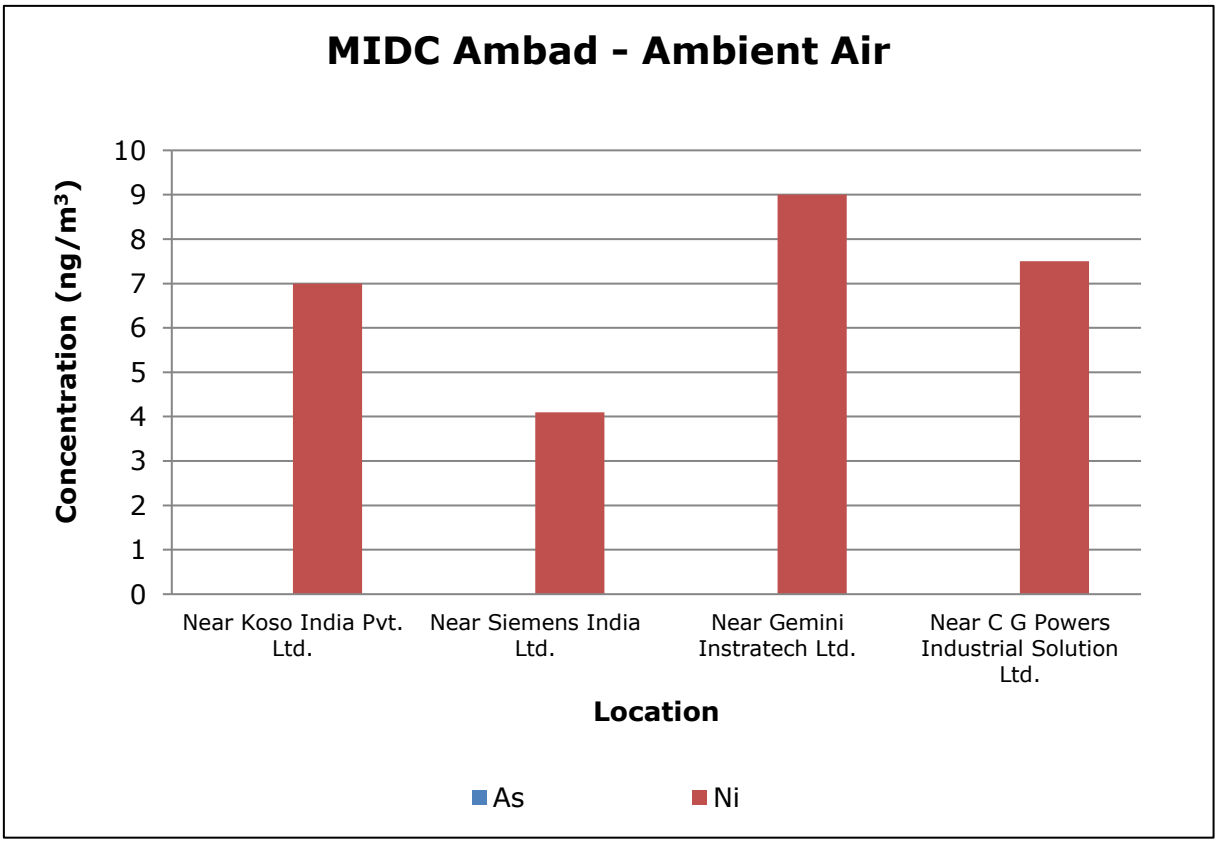
Graphs - Ambient Air Quality Monitoring of MIDC Ambad




MIDC Ambad - Ambient Air
Concentration (µg/m³)
30
25
20
15
10
5
0
Near Koso India Pvt. Ltd.
Near Siemens India Ltd.
Near Gemini Instratech Ltd.
Near C G Powers Industrial Solution Ltd.
Location
O3
NH3


MIDC Ambad - Ambient Air
Concentration (mg/m³)
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
Near Koso India Pvt. Ltd.
Near Siemens India Ltd.
Near Gemini Instratech Ltd.
Near C G Powers Industrial Solution Ltd.
Location
CO (1h)
CO (8h)


MIDC Ambad - Ambient Air
Concentration (µg/m³)
2
1
0
Near Koso India Pvt. Ltd.
Near Siemens India Ltd.
Near Gemini Instratech Ltd.
Near C G Powers Industrial Solution Ltd.
Location
C6H6
Pb


MIDC Ambad - Ambient Air
Concentration (ng/m³)
10
9
8
7
6
5
4
3
2
1
0
Near Koso India Pvt. Ltd.
Near Siemens India Ltd.
Near Gemini Instratech Ltd.
Near C G Powers Industrial Solution Ltd.
Location
As
Ni

MIDC Satpur: In MIDC Satpur four locations have been monitored of checking the Ambient Air Quality (AAQ). The concentration of all the ambient air parameters was found well within the limits prescribed by NAAQS at all locations.

Table 5.5 MIDC Satpur - 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 Mahindra & Mahindra Plant-I	19°99'59.54"N	73°71'63.31"E	08.05.2025	10.05.2025	12.05.2025
2.	Near ABB India Pvt. Ltd.	20°00'04.91"N	73°71'72.53"E	08.05.2025	10.05.2025	12.05.2025
3.	Near ESDS Software Solution Ltd.	20°0'02.85"N	73°74'0.43"E	08.05.2025	10.05.2025	12.05.2025
4.	Near Bosch Ltd.	19°99'78.16"N	73°71'67.76"E	08.05.2025	10.05.2025	12.05.2025

Table 5.6 MIDC Satpur - 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 Mahindra & Mahindra Plant-I	19°99'59.54"N	73°71'63.31"E	08.05.2025	10.05.2025	12.05.2025
2.	Near MSL Drive Line System	19°99'78.16"N	73°71'67.76"E	08.05.2025	10.05.2025	12.05.2025

Fig. Geographical Locations of Ambient Air Quality Monitoring MIDC Satpur

Fig. Geographical Locations of VOCs Monitoring MIDC Satpur

Table 5.7 MIDC Satpur - Ambient Air Quality Monitoring Results

Parameters	Unit	Results			
		Near Mahindra & Mahindra Plant- I	Near ABB India Pvt. Ltd.	Near ESDS Software Solution Ltd.	Near Bosch Ltd.
Sulphur Dioxide (SO_2)	µg/m^3	BLQ	BLQ	BLQ	BLQ
Nitrogen Dioxide (NO_2)	µg/m^3	19.0	16.2	20.8	27.4
Particulate Matter (size less than 10 µm) or PM_{10}	µg/m^3	39	35	37	35
Particulate Matter (size less than 2.5 µm) or $PM_{2.5}$	µg/m^3	11	10	11	11
Ozone (O_3)	µg/m^3	BLQ	BLQ	BLQ	BLQ
Lead (Pb)	µg/m^3	BLQ	BLQ	BLQ	BLQ
Carbon Monoxide (CO) (1 h)	mg/m^3	1.12	1.02	0.92	0.98
Carbon Monoxide (CO) (8 h)	mg/m^3	1.51	1.67	1.49	1.40
Ammonia (NH_3)	µg/m^3	BLQ	BLQ	BLQ	BLQ
Benzene (C_6H_6)	µg/m^3	1.92	1.80	1.83	1.98
Benzo (a) Pyrene (BaP) – particulate phase only	ng/m^3	BLQ	BLQ	BLQ	BLQ
Arsenic (As)	ng/m^3	BLQ	0.39	BLQ	0.39
Nickel (Ni)	ng/m^3	BLQ	BLQ	3.28	BLQ

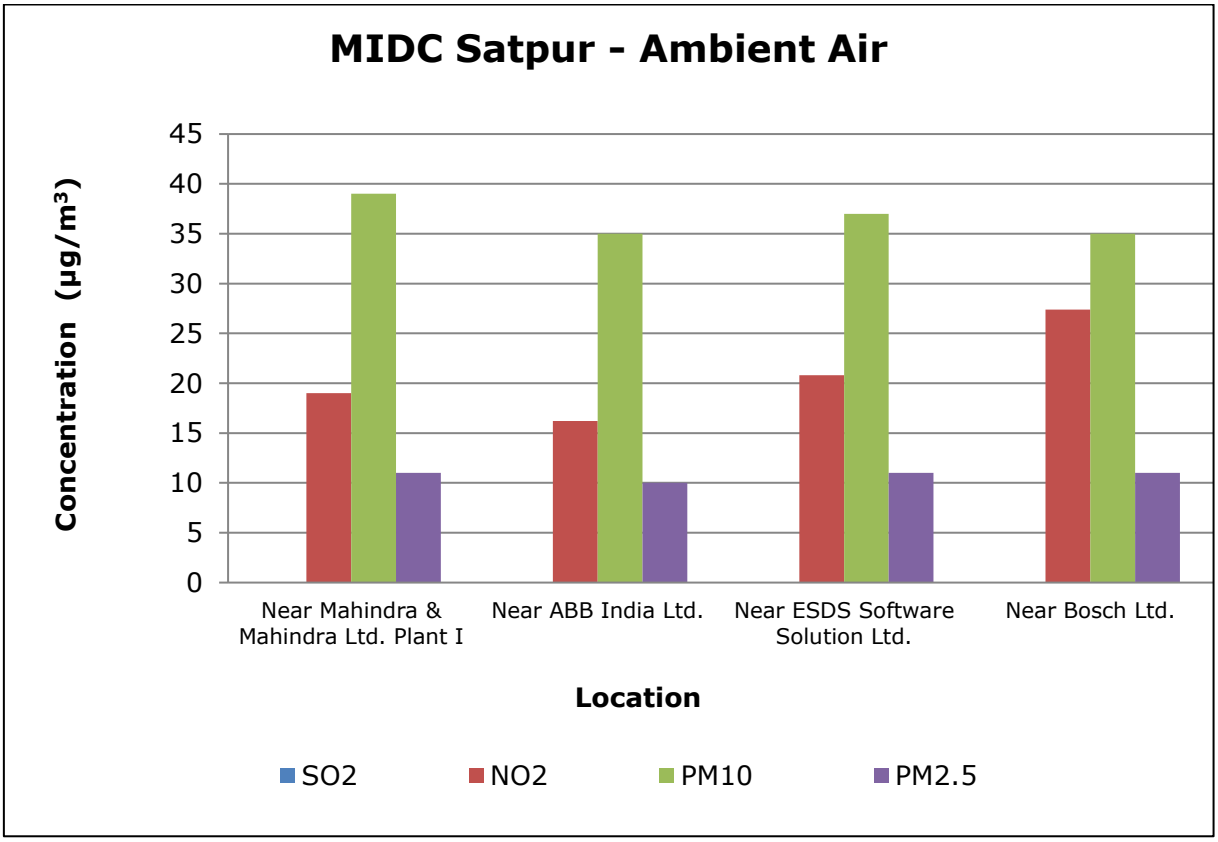
Table 5.8 MIDC Satpur - Volatile Organic Compounds (VOCs) in Ambient Air Results

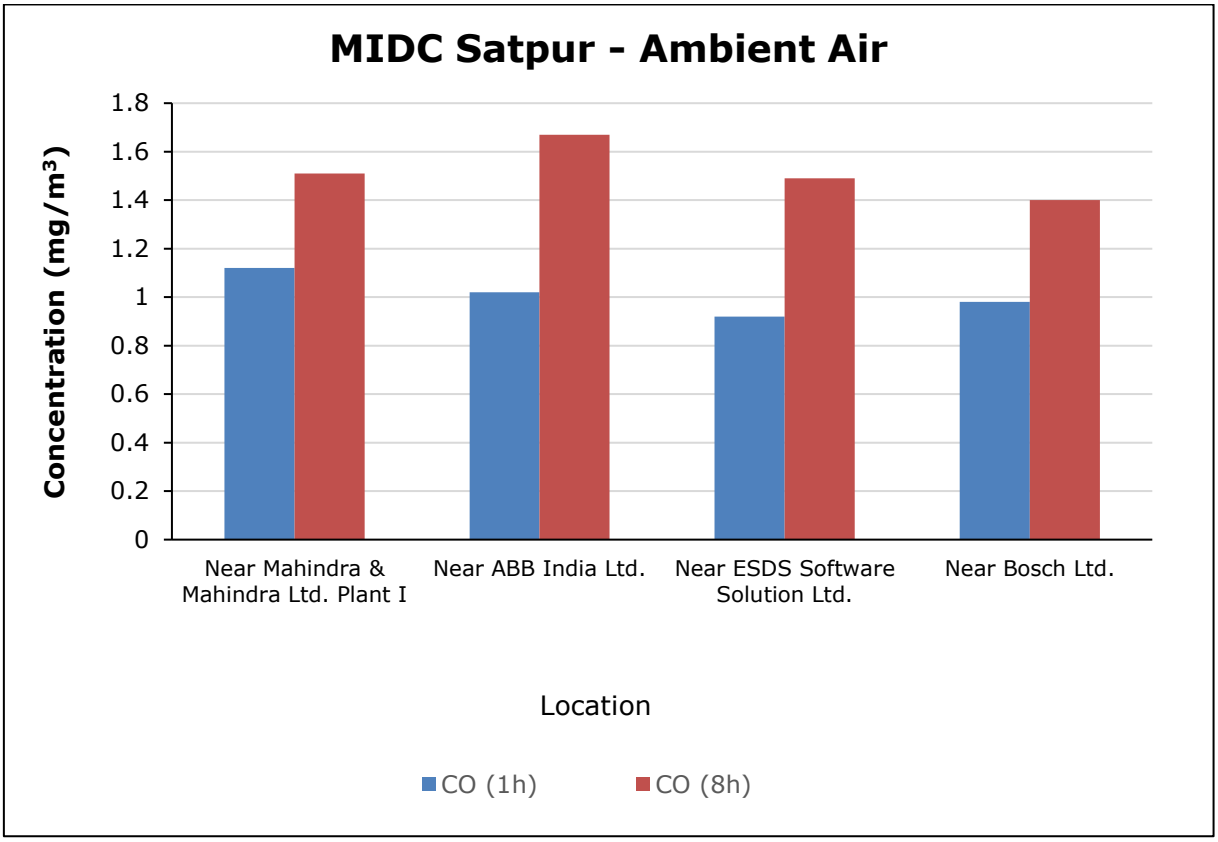
Parameters	Unit	Results	
		Near Mahindra & Mahindra Plant I	Near MSL Drive Line System
Dichloromethane	µg/m³	0.84	0.89
Chloroform	µg/m³	0.51	BLQ
Carbon Tetrachloride	µg/m³	BLQ	BLQ
Trichloroethylene	µg/m³	BLQ	BLQ
Bromodichloromethane	µg/m³	BLQ	BLQ
1,3-Dichloropropane	µg/m³	BLQ	BLQ
1,4-Dichlorobenzene	µg/m³	BLQ	BLQ
1,3-Dichlorobenzene	µg/m³	BLQ	BLQ
1,2-Dichlorobenzene	µg/m³	BLQ	BLQ
1,2-Dibromo-3-Chloropropane	µg/m³	BLQ	BLQ

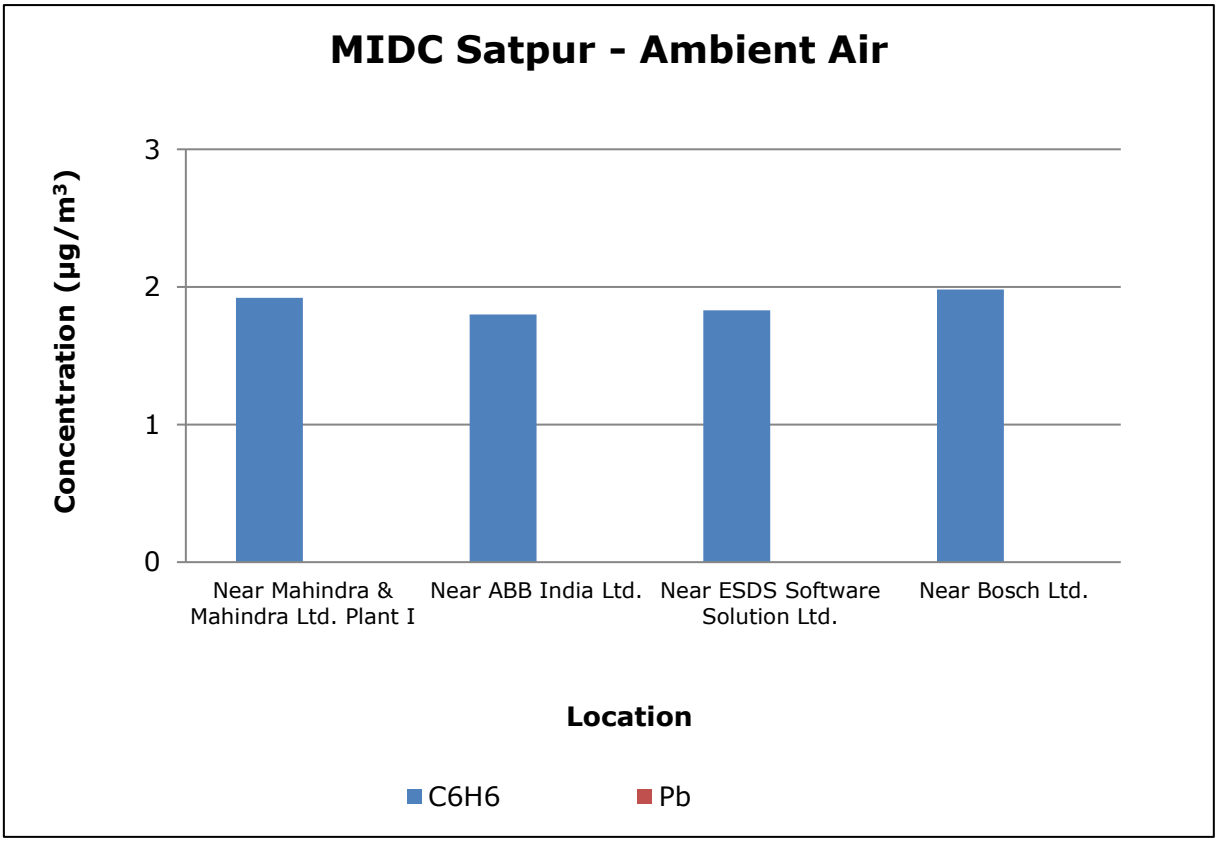
Parameters	Unit	Results	
		Near Mahindra & Mahindra Plant I	Near MSL Drive Line System
Napthalene	µg/m³	BLQ	BLQ
Bromobenzene	µg/m³	BLQ	BLQ
1,2,4-Trimethylbenzene	µg/m³	BLQ	BLQ
2-Chlorotoluene	µg/m³	BLQ	BLQ
Tert-Butylbenzene	µg/m³	BLQ	BLQ
SEC-Butylbenzene	µg/m³	BLQ	BLQ
P-Isopropyltoluene	µg/m³	0.68	BLQ
M-Xylene	µg/m³	BLQ	BLQ
P-Xylene	µg/m³	0.94	BLQ
Styrene	µg/m³	2.43	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	BLQ	BLQ
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
Dibromoethane	µg/m³	BLQ	BLQ

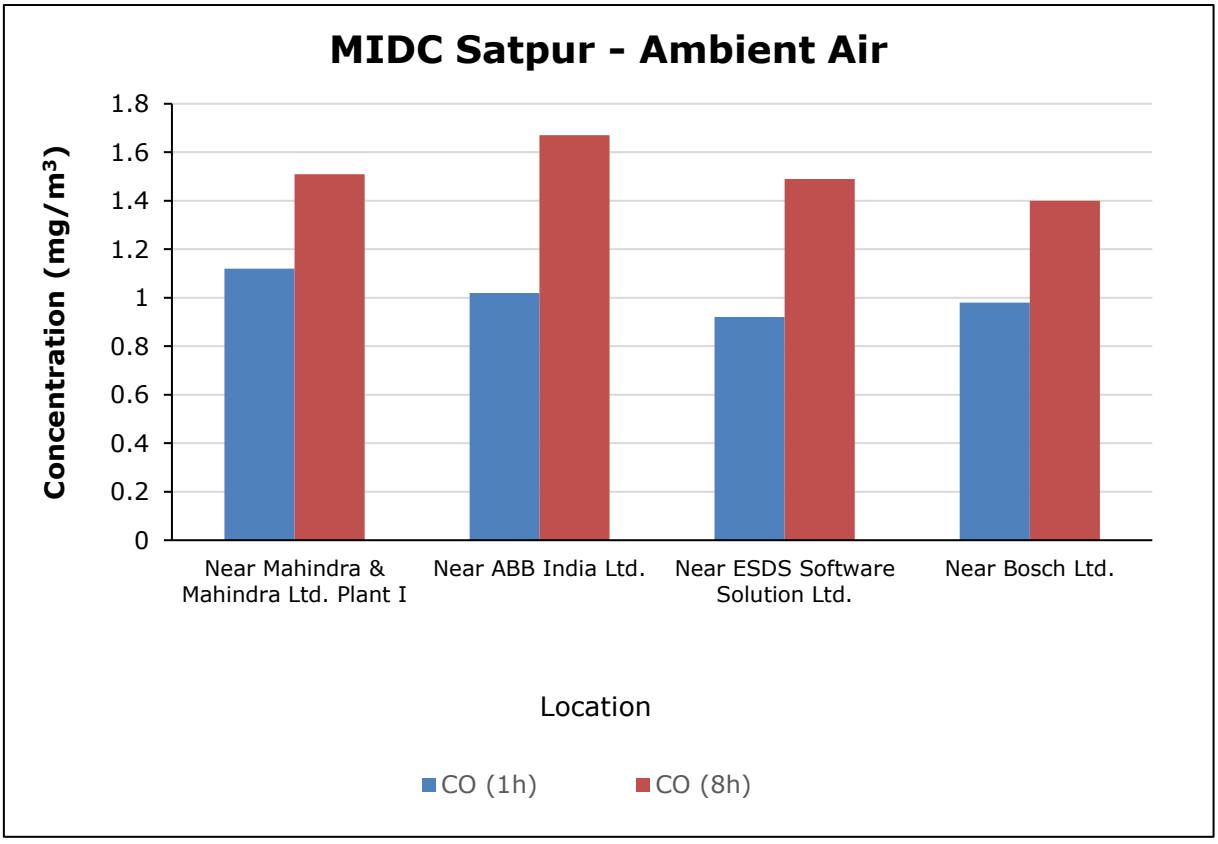
Parameters	Unit	Results	
		Near Mahindra & Mahindra Plant I	Near MSL Drive Line System
Toluene	µg/m³	BLQ	BLQ
O-Xylene	µg/m³	0.81	0.75
Bromoform	µg/m³	BLQ	BLQ
1,1,2,2-Tetrachloroethane	µg/m³	BLQ	BLQ
4-Chlorotoluene	µg/m³	BLQ	BLQ
1,1-Dichloroethylene	µg/m³	BLQ	BLQ
Trans-1,2-Dichloroethylene	µg/m³	BLQ	BLQ
1,1-Dichloroethane	µg/m³	BLQ	BLQ
CIS-1,2-Dichloroethylene	µg/m³	BLQ	BLQ
Bromochloromethane	µg/m³	BLQ	BLQ
1,1,1-Trichloroethane	µg/m³	BLQ	BLQ

Graphs - Ambient Air Quality Monitoring of MIDC Satpur






MIDC Satpur - Ambient Air
Concentration (µg/m³)
3
2
1
0
Near Mahindra & Mahindra Ltd. Plant I
Near ABB India Ltd.
Near ESDS Software Solution Ltd.
Near Bosch Ltd.
Location
C6H6
Pb


MIDC Satpur - Ambient Air
Concentration (mg/m³)
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
Near Mahindra & Mahindra Ltd. Plant I
Near ABB India Ltd.
Near ESDS Software Solution Ltd.
Near Bosch Ltd.
Location
CO (1h)
CO (8h)

WATER ENVIRONMENT

7. Water Environment

For studying the water Environment of Nashik area, surface water was collected from MIDC Ambad and MIDC Satpur. Total 5 samples are collected.

1. **MIDC Ambad:** Two surface water samples are collected from MIDC Ambad region.

- All two samples are acceptable in sanitary survey and smell.
- pH, Suspended Solids and Total Dissolved Solids are well within the limits in both samples collected.
- BOD, Fluoride, Total Phosphate and Total Kjeldahl Nitrogen exceeded at all the locations.
- 100% survival in Fish Bioassay was not observed in both the samples collected.
- Metals like Hexavalent Chromium (Cr^{6+}), Total Arsenic, Manganese, Lead, Cadmium, Nickel, Copper, Total Chromium, Mercury, etc. are observed either below limit of quantification or below their standard limits.
- Metals like Zinc and Iron are found above the standard limits.
- Parameters like Cyanide, Sulphide, Dissolved Phosphate and Phenolic compounds also meet the criteria as prescribed by CPCB.
- Polynuclear aromatic hydrocarbons (PAH) and Polychlorinated Biphenyls (PCB) are either below limit of quantification or below their standard limits
- Organo Chlorine Pesticides are also below the detectable limit in both samples collected.

Table 6.1 MIDC Ambad - 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.	Kirloskar Industry back side Nalla	19°95'9.05"N	73°73'2.37"E	08.05.2025	10.05.2025	12.05.2025
2.	Ambadgaon Nalla	19°96'0.91"N	73°74'5.36"E	08.05.2025	10.05.2025	12.05.2025

Fig. Geographical Locations of Surface Water Sampling MIDC Ambad

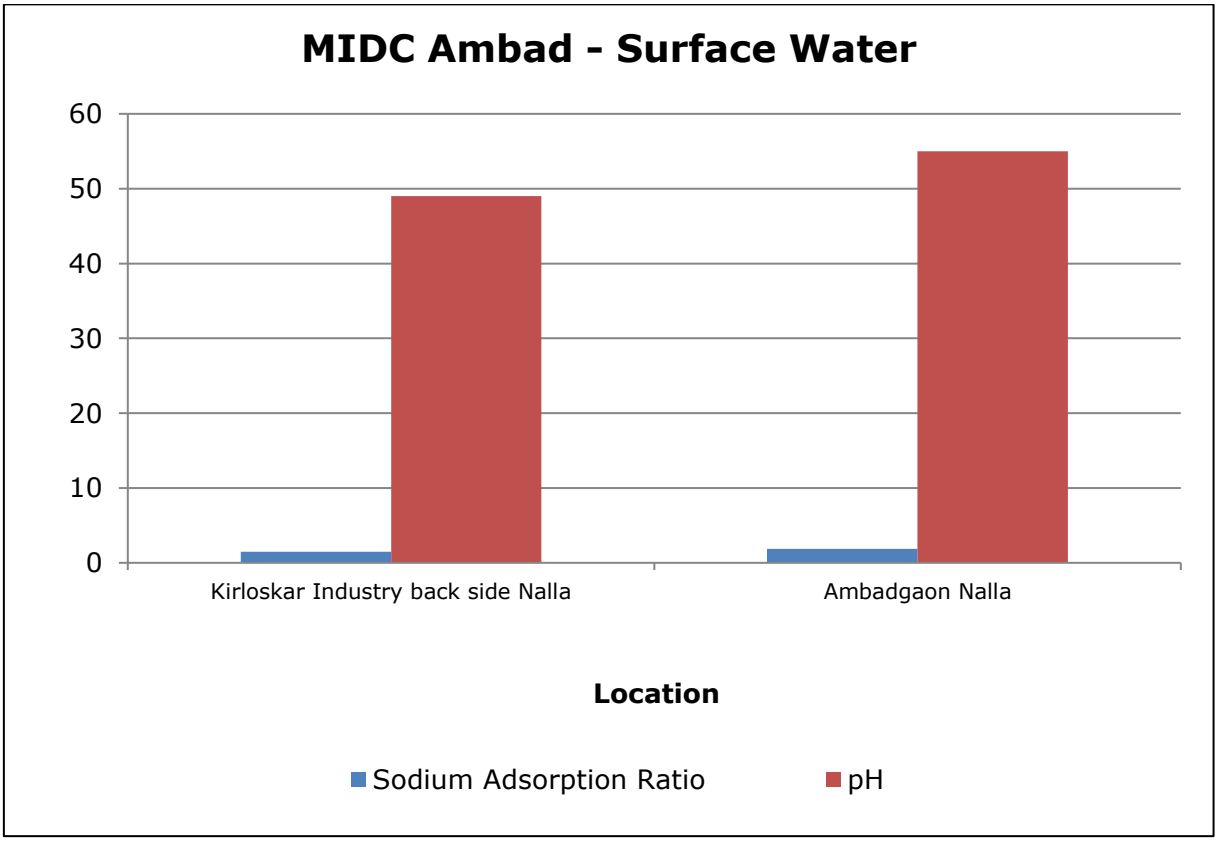
Table 6.2 MIDC Ambad - Results of Surface Water

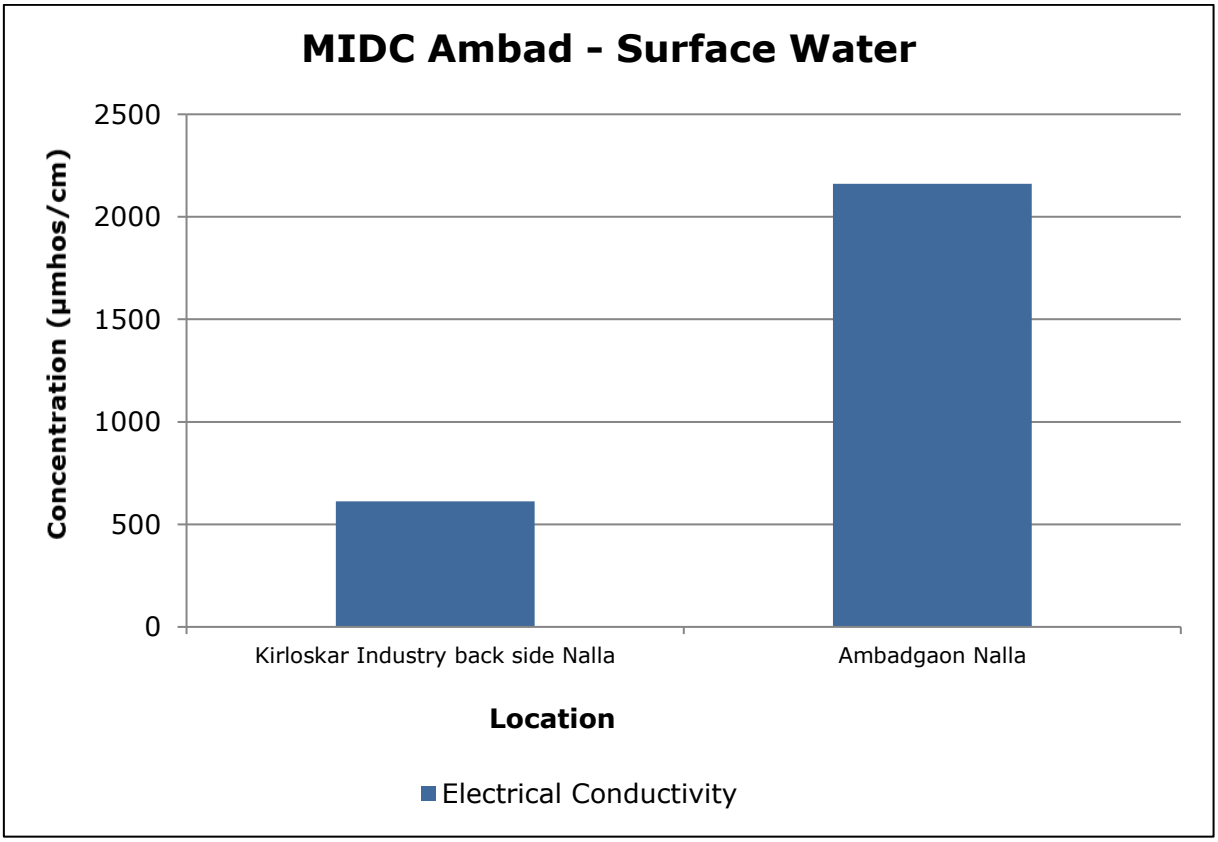
Parameters	Unit	Results	
		Kirloskar Industry back side Nalla	Ambadgaon Nalla
Sanitary Survey	-	Generally clean neighbourhood	Generally clean neighbourhood
General Appearance	-	Floating Matter Evident	Floating Matter Evident
Transparency	m	0.5	0.3
Temperature	^oC	26	27
Colour	Hazen	2	80
Smell	-	Not Agreeable	Not agreeable
pH	-	7.9	4.5
Oil & Grease	mg/L	BLQ	BLQ
Total Suspended Solids	mg/L	49	55
Total Dissolved Solids	mg/L	341	1209
Dissolved Oxygen (% Saturation)	%	53	48
Chemical Oxygen Demand	mg/L	123	203
Biochemical Oxygen Demand (3 days, 27^oC)	mg/L	39	71
Electrical Conductivity (at 25 ^oC)	µmho/cm	612	2161
Nitrite Nitrogen (as NO_2)	mg/L	0.07	0.38

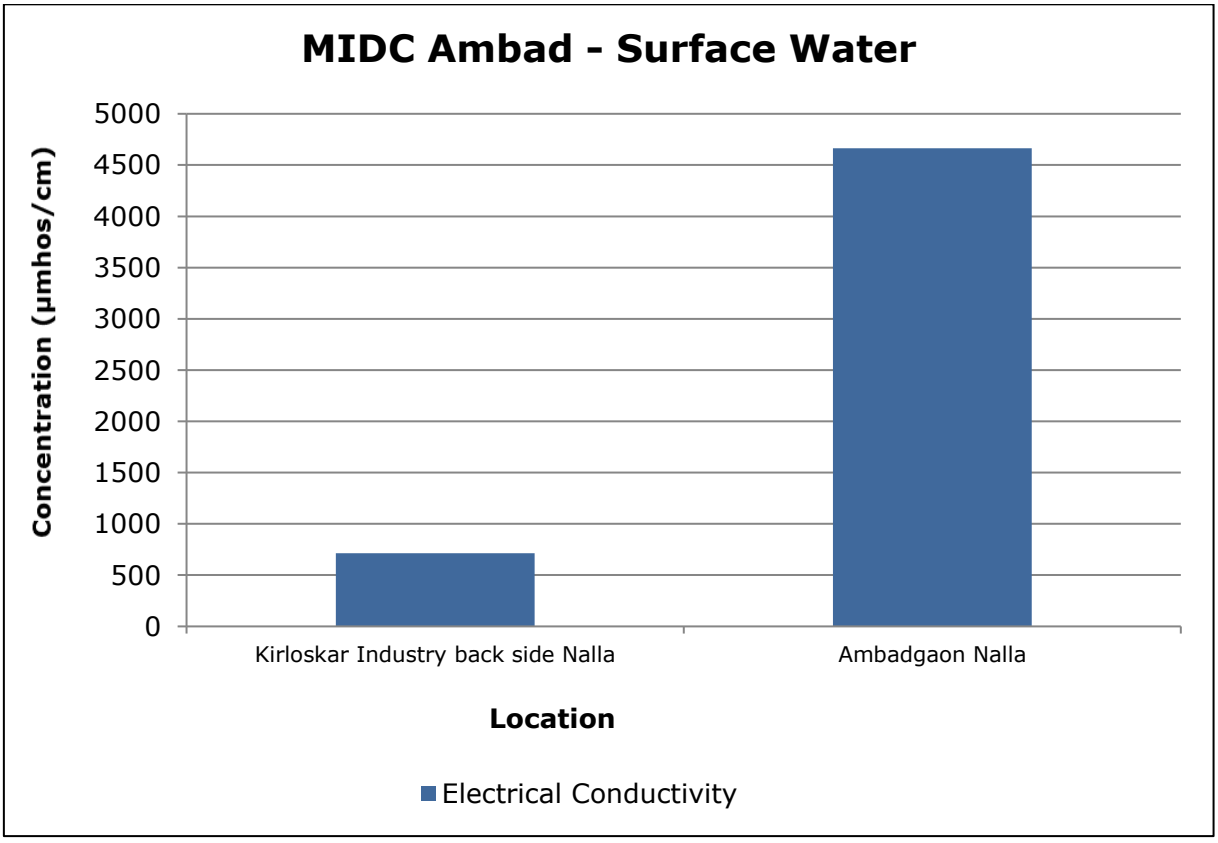
Parameters	Unit	Results	
		Kirloskar Industry back side Nalla	Ambadgaon Nalla
Nitrate Nitrogen (as NO_3)	mg/L	5.25	6.94
(NO_2 + NO_3)-Nitrogen	mg/L	5.31	7.32
Free Ammonia (as NH_3-N)	mg/L	BLQ	BLQ
Free Residual Chlorine	mg/L	BLQ	BLQ
Cyanide (as CN)	mg/L	BLQ	BLQ
Fluoride (as F)	mg/L	0.67	1.89
Sulphide (as H_2S)	mg/L	BLQ	BLQ
Dissolved Phosphate (as P)	mg/L	0.16	0.23
Sodium Adsorption Ratio	-	1.49	1.88
Total Coliforms	MPN Index/ 100 ml	1817	1600
Faecal Coliforms	MPN Index/ 100 ml	211	1600
Total Phosphate (as P)	mg/L	0.28	0.74
Total Kjeldahl Nitrogen (as N)	mg/L	7.89	9.07
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	4.18	4.08
Total Nitrogen	mg/L	13.2	16.3
Phenols (as C_6H_5OH)	mg/L	BLQ	BLQ
Anionic Detergents (as MBAS Calculated as LAS, mol.wt.288.38)	mg/L	BLQ	BLQ
Organo Chlorine Pesticides	µg/L	BLQ	BLQ
Polynuclear aromatic hydrocarbons (as PAH)	mg/L	0.00014	0.00036
Polychlorinated Biphenyls (PCB)	mg/L	BLQ	BLQ
Zinc (as Zn)	mg/L	1.95	9.65
Nickel (as Ni)	mg/L	0.35	0.52
Copper (as Cu)	mg/L	0.15	31.26
Hexavalent Chromium (as Cr^{6+})	mg/L	BLQ	BLQ
Total Chromium (as Cr)	mg/L	0.67	0.69
Total Arsenic (as As)	mg/L	BLQ	BLQ
Lead (as Pb)	mg/L	BLQ	0.015
Cadmium (as Cd)	mg/L	BLQ	0.003
Mercury (as Hg)	mg/L	BLQ	BLQ
Manganese (as Mn)	mg/L	0.16	0.44
Iron (as Fe)	mg/L	1.95	6.06
Vanadium (as V)	mg/L	0.019	0.019
Selenium (as Se)	mg/L	BLQ	BLQ

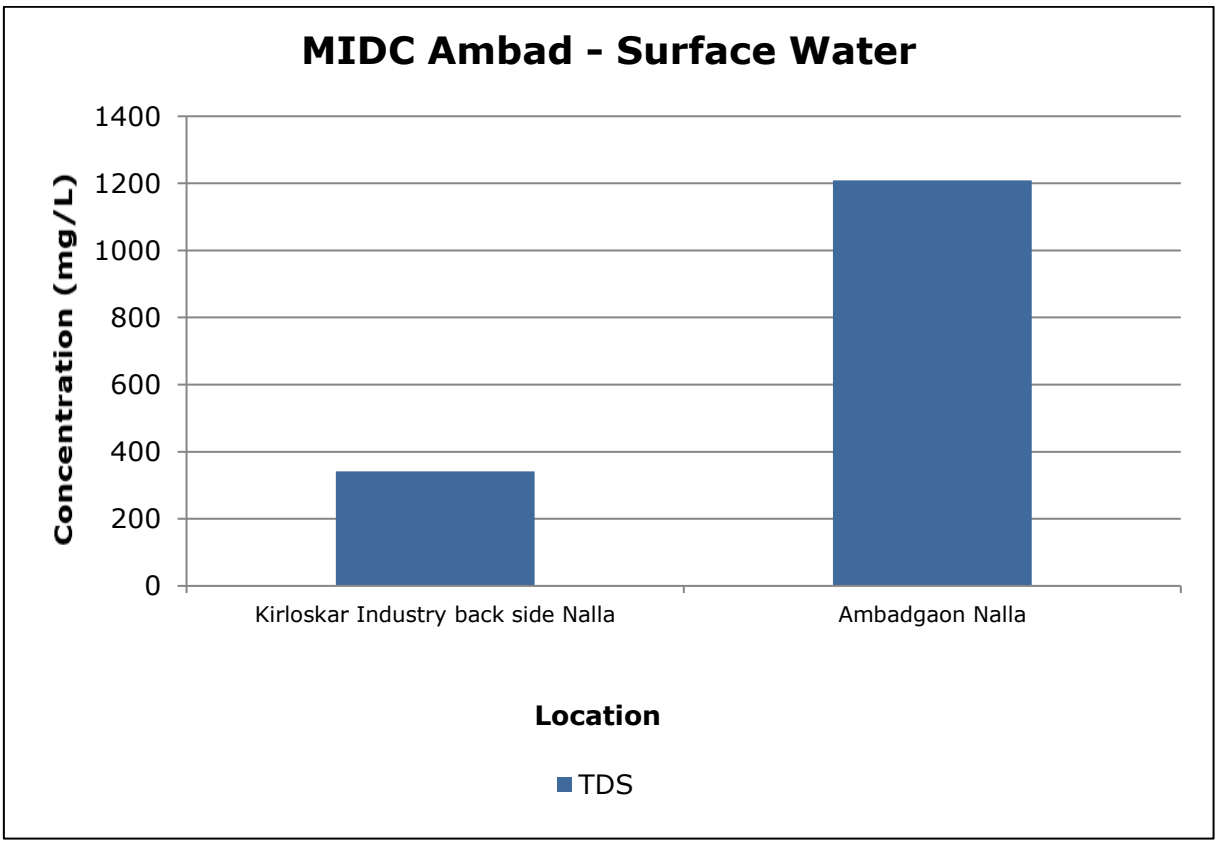
Parameters	Unit	Results	
		Kirloskar Industry back side Nalla	Ambadgaon Nalla
Boron (as B)	mg/L	0.48	0.61
Bioassay Test on fish	% survival	53	33

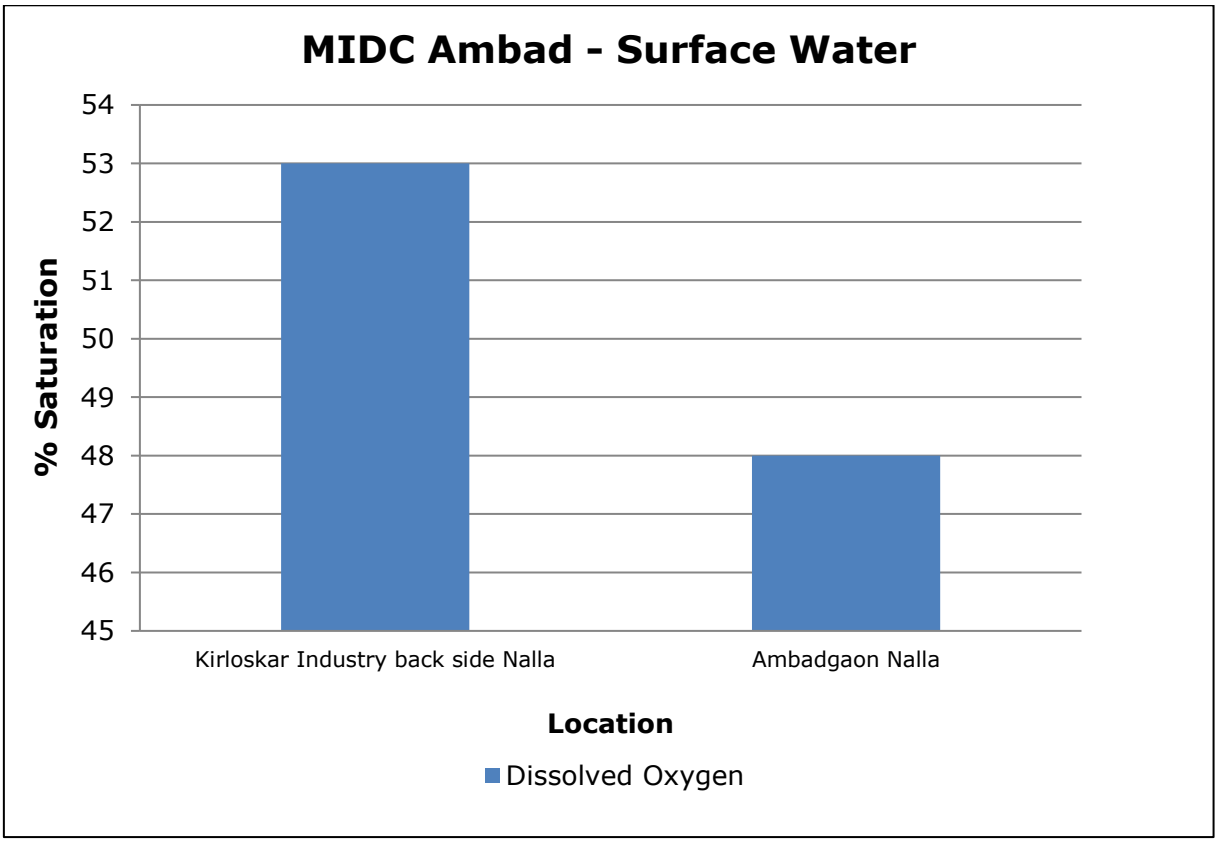
Graphs - Surface Water Quality of MIDC Ambad

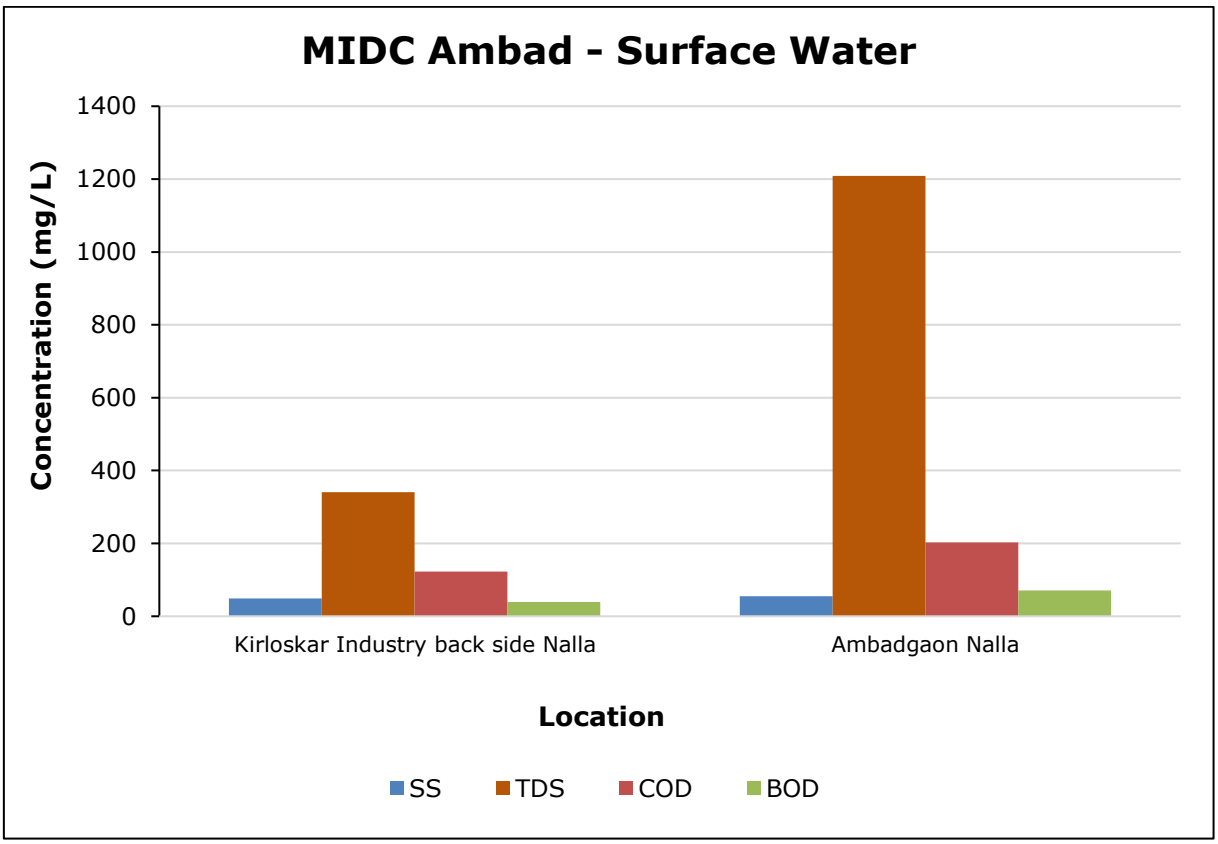


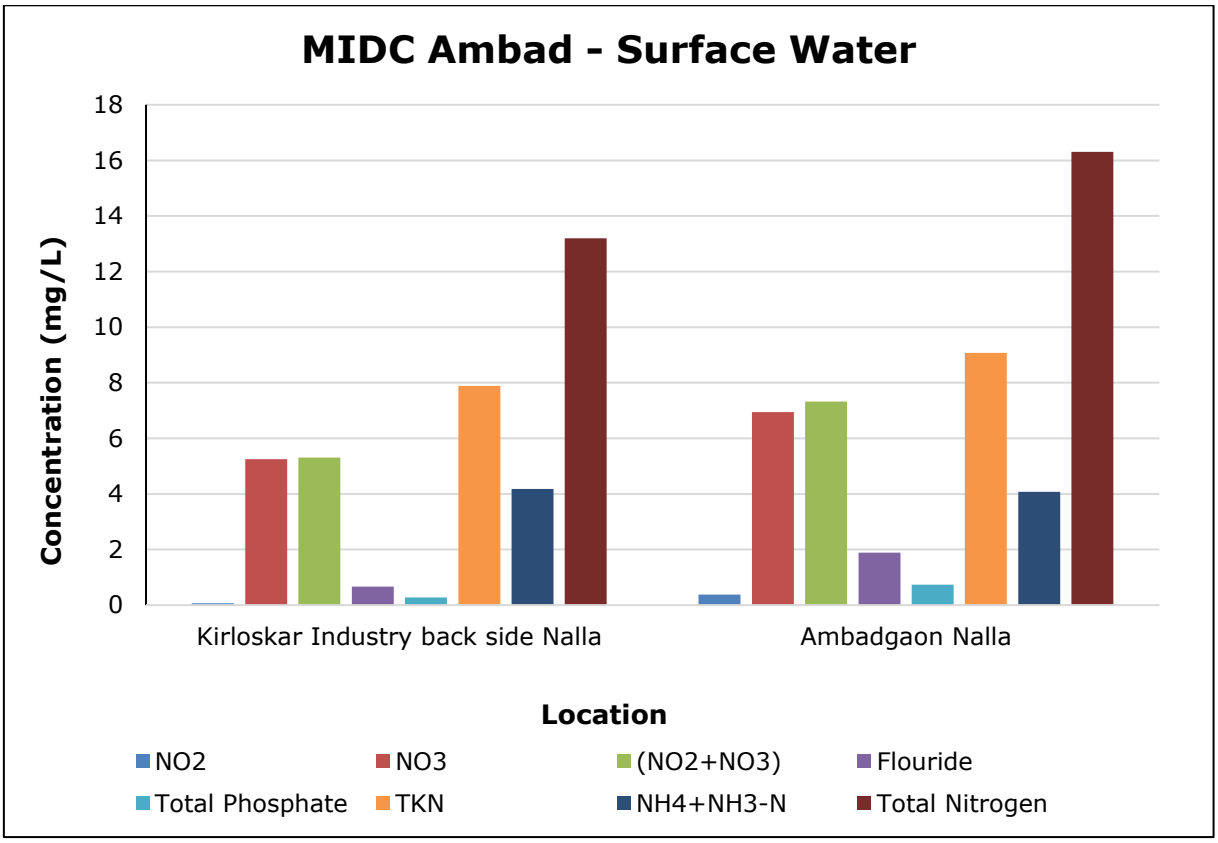

MIDC Ambad - Surface Water
Concentration (µmhos/cm)
2500
2000
1500
1000
500
0
Kirloskar Industry back side Nalla
Ambadgaon Nalla
Location
Electrical Conductivity

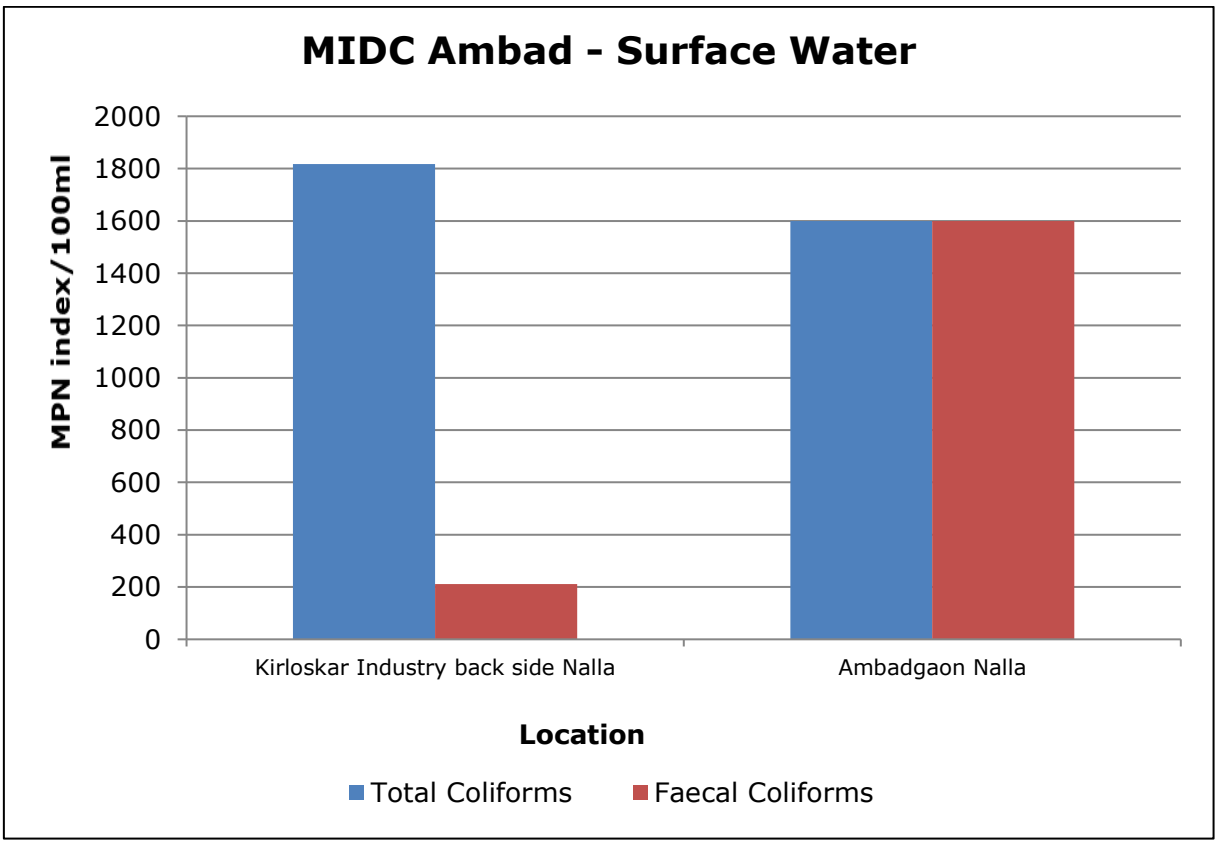

MIDC Ambad - Surface Water
Concentration (µmhos/cm)
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
Kirloskar Industry back side Nalla
Ambadgaon Nalla
Location
Electrical Conductivity

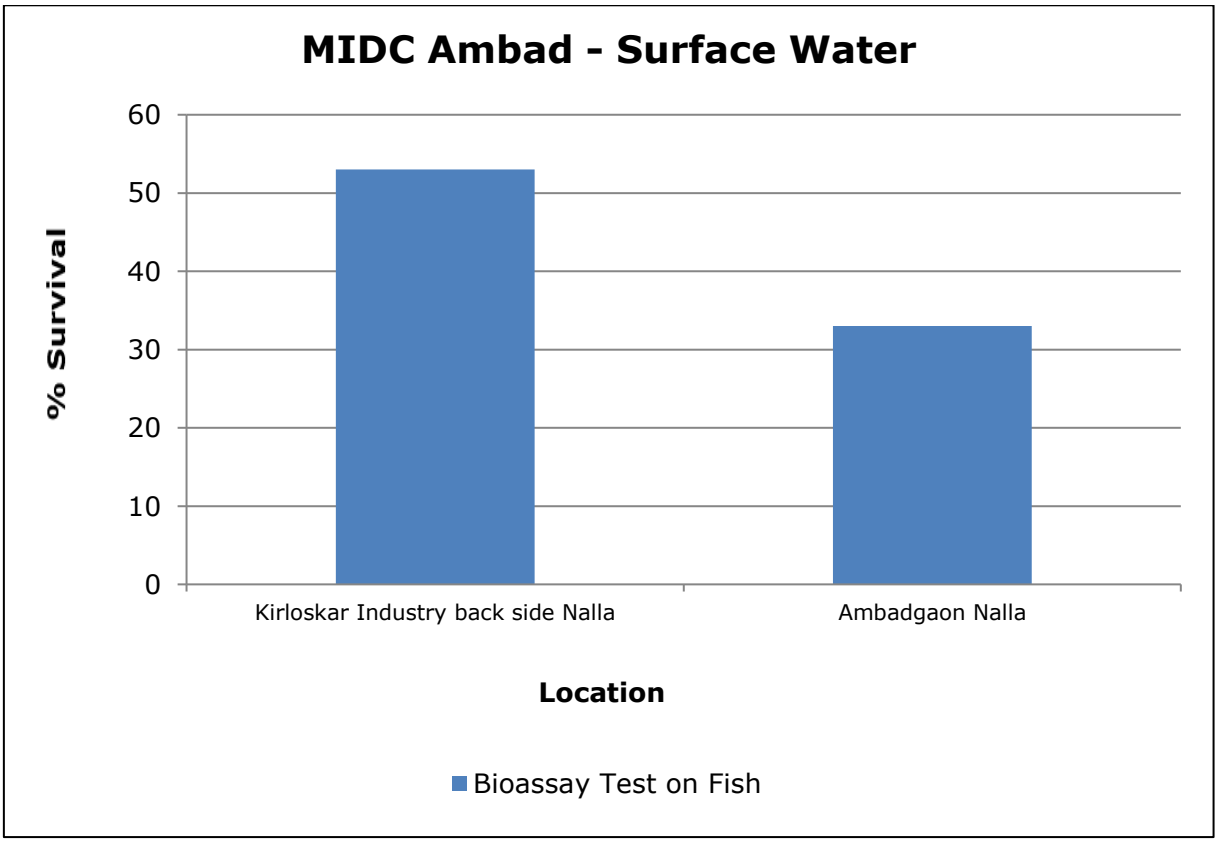

MIDC Ambad - Surface Water
1400
1200
1000
800
600
400
200
0
Concentration (mg/L)
Kirloskar Industry back side Nalla
Ambadgaon Nalla
Location
TDS


MIDC Ambad - Surface Water
54
53
52
51
50
49
48
47
46
45
% Saturation
Kirloskar Industry back side Nalla
Ambadgaon Nalla
Location
Dissolved Oxygen


MIDC Ambad - Surface Water
Concentration (mg/L)
1400
1200
1000
800
600
400
200
0
Kirloskar Industry back side Nalla
Ambadgaon Nalla
Location
SS
TDS
COD
BOD


MIDC Ambad - Surface Water
Concentration (mg/L)
18
16
14
12
10
8
6
4
2
0
Kirloskar Industry back side Nalla
Ambadgaon Nalla
Location
NO2
NO3
(NO2+NO3)
Flouride
Total Phosphate
TKN
NH4+NH3-N
Total Nitrogen


MIDC Ambad - Surface Water
MPN index/100ml
2000
1800
1600
1400
1200
1000
800
600
400
200
0
Kirloskar Industry back side Nalla
Ambadgaon Nalla
Location
Total Coliforms
Faecal Coliforms


MIDC Ambad - Surface Water
% Survival
60
50
40
30
20
10
0
Kirloskar Industry back side Nalla
Ambadgaon Nalla
Location
Bioassay Test on Fish

2. **MIDC Satpur:** Three surface water samples are collected from MIDC Satpur region.

- All three samples are acceptable in sanitary survey and smell.
- pH, Suspended Solids, Total Dissolved Solids are well within the limits in all three samples collected.
- BOD and Total Kjeldahl Nitrogen are exceeding in some samples.
- 100% survival in Fish Bioassay was not achieved in all three samples collected.
- Metals like Zinc, Hexavalent Chromium (Cr^{6+}), Total Arsenic, Lead, Mercury, Copper, Total Chromium, Cadmium, Iron and Selenium etc. are observed either below limit of quantification or below their standard limits.
- Metals like Iron and Zinc are found above the standard limits.
- Parameters like Cyanide, Fluoride, Sulphide, Dissolved Phosphate, Total Phosphate and Phenolic compounds also meet the criteria as prescribed by CPCB.
- Polynuclear aromatic hydrocarbons (PAH) and Polychlorinated Biphenyls (PCB) are observed either below limit of quantification or below their standard limits.
- Organo Chlorine Pesticides are also below the detectable limit in both samples collected.

Table 6.3 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.	Sahid Arun Chittee Pool, Anandvalil Gangapur Road, Satpur	20°02'58.86"N	73°75'5.26"E	07.05.2025	09.05.2025	11.05.2025
2.	Nasardi Pool, Near EPF Office Satpur	19°98'8.99"N	73°75'01.85"E	07.05.2025	09.05.2025	11.05.2025
3.	ALF industry Opposite side Nalla	20°00'6.78"N	73°71'4.04"E	07.05.2025	09.05.2025	11.05.2025

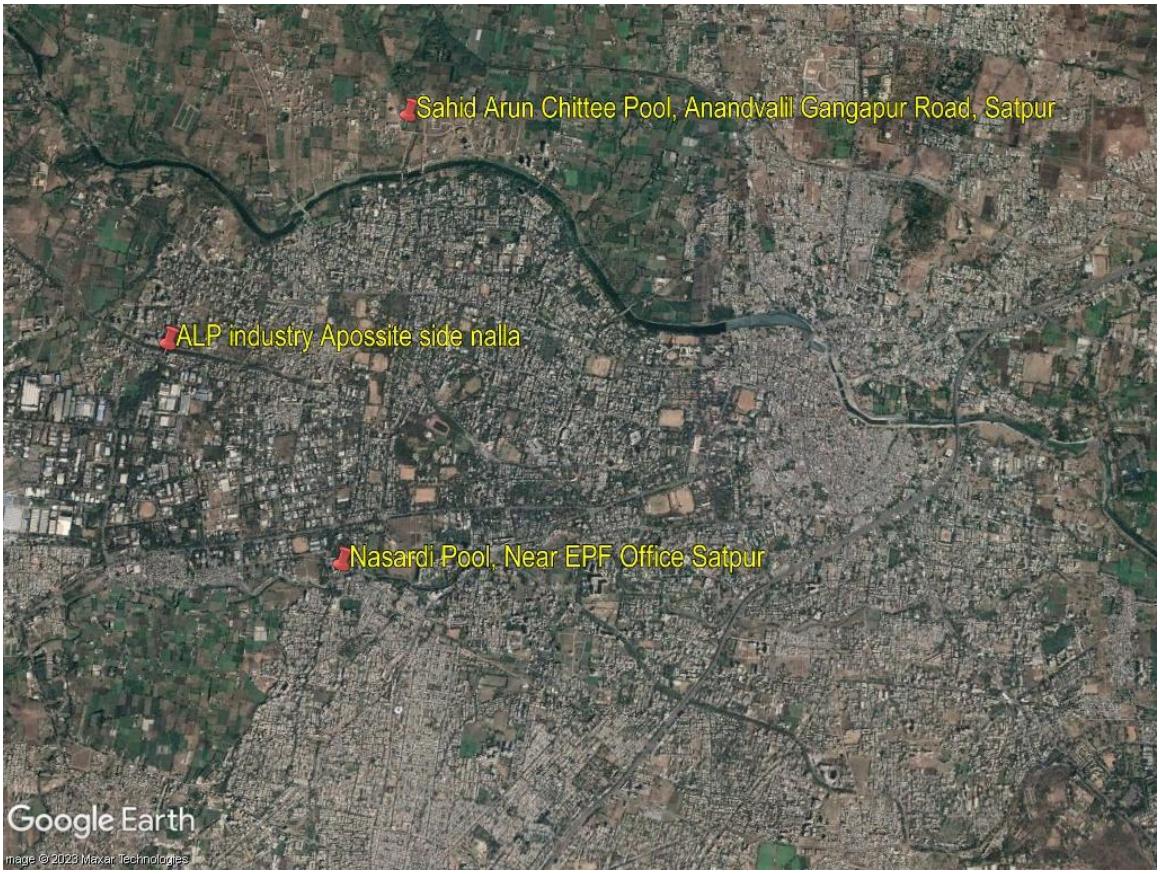


Fig. Geographical Locations of Surface Water Sampling MIDC Satpur

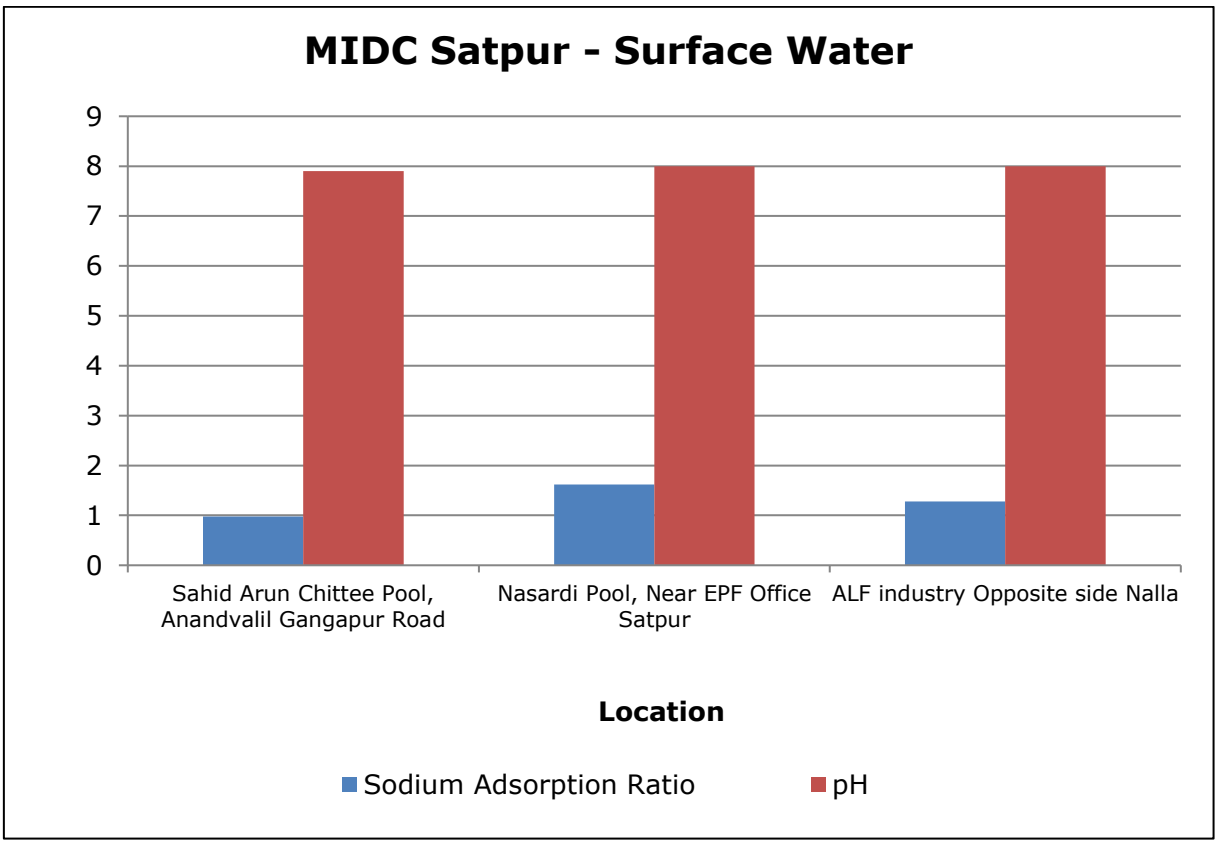
Table 6.4 MIDC Satpur Results of Surface Water

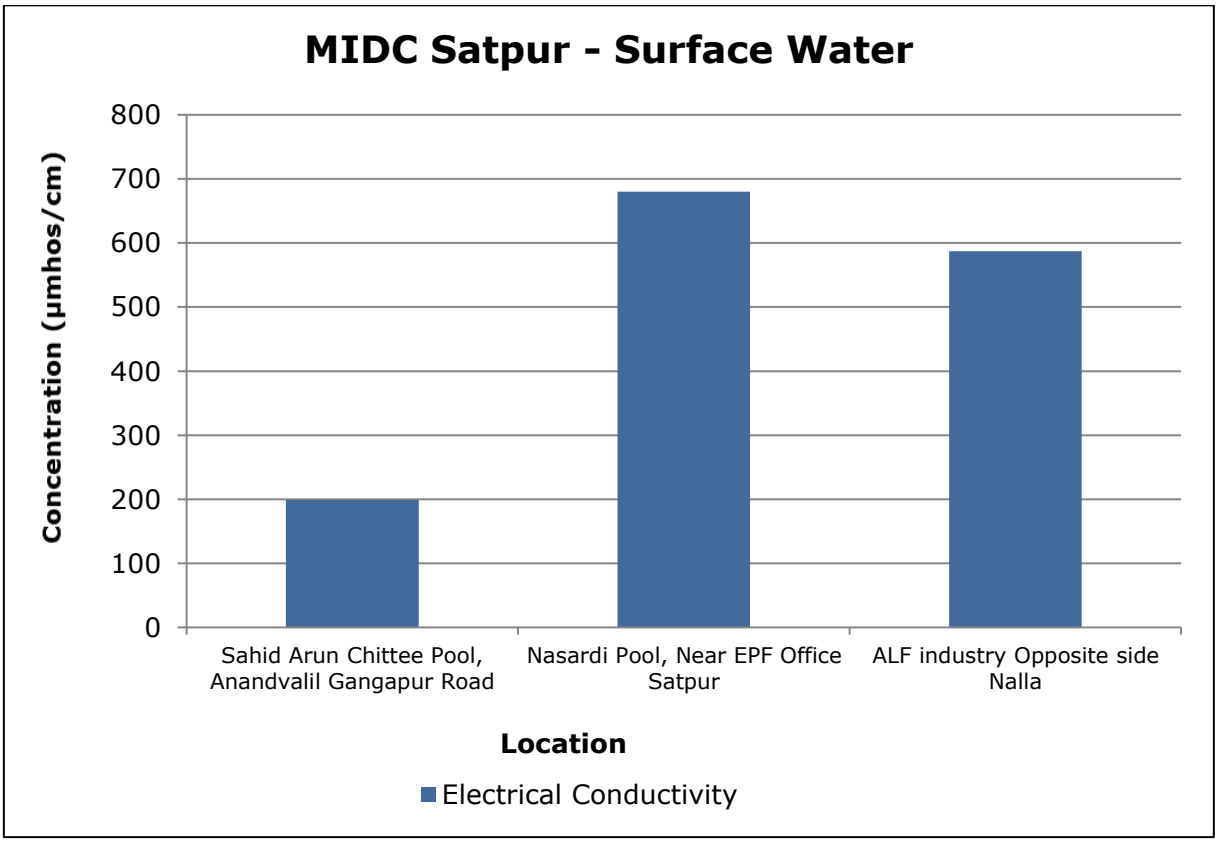
Parameters	Unit	Results		
		Sahid Arun Chittee Pool, Anandvalil Gangapur Road	Nasardi Pool, Near EPF Office Satpur	ALF industry Opposite side Nalla
Sanitary Survey	-	Generally clean neighbourhood	Generally clean neighbourhood	Generally clean neighbourhood
General Appearance	-	Floating Matter Evident	Floating Matter Evident	Floating Matter Evident
Transparency	m	0.6	0.4	0.4
Temperature	^{o}C	27	27	28
Colour	Hazen	1	23	7
Smell	-	Agreeable	Not Agreeable	Not Agreeable
pH	-	7.9	8.0	8.0
Oil & Grease	mg/L	BLQ	BLQ	BLQ
Total Suspended Solids	mg/L	20	69	24
Total Dissolved Solids	mg/L	111	380	329
Dissolved Oxygen (% Saturation)	%	67	58	65
Chemical Oxygen Demand	mg/L	26	56	27

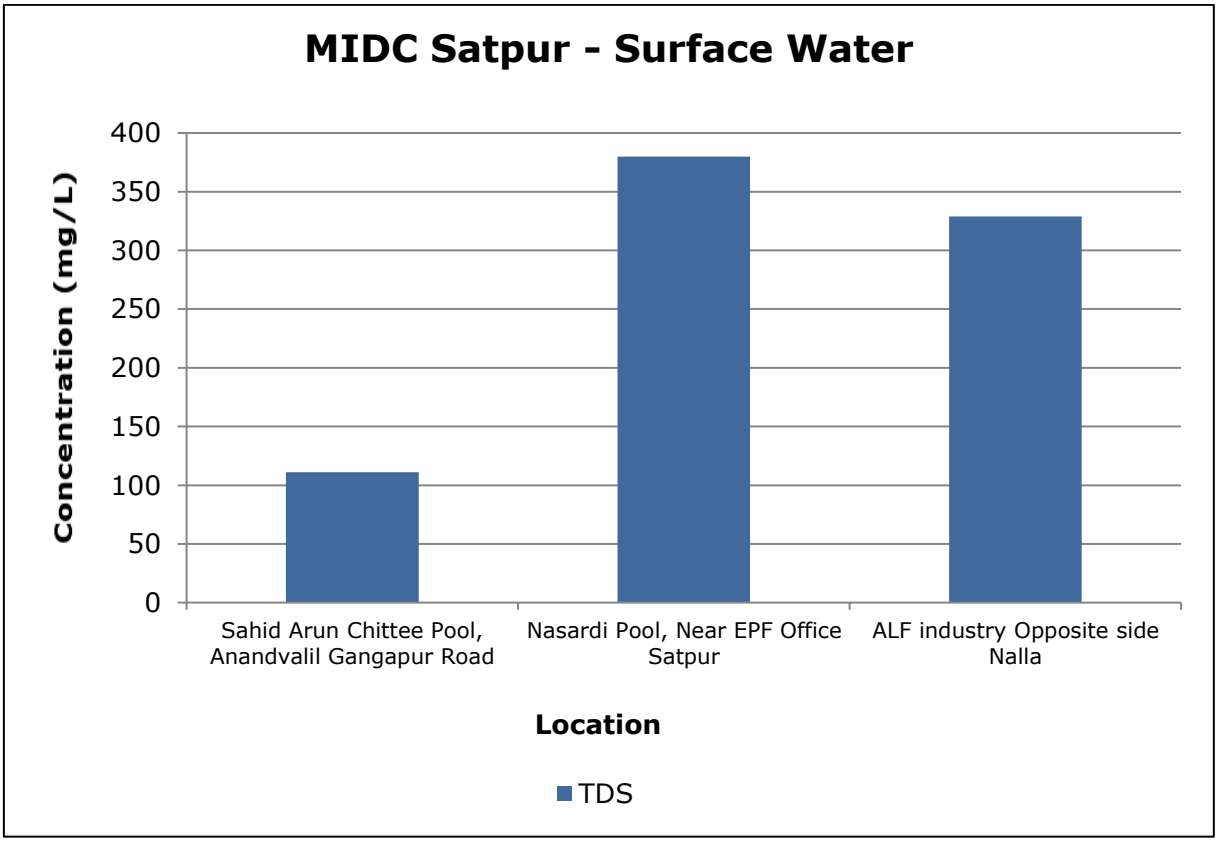
Parameters	Unit	Results		
		Sahid Arun Chittee Pool, Anandvalil Gangapur Road	Nasardi Pool, Near EPF Office Satpur	ALF industry Opposite side Nalla
Biochemical Oxygen Demand (3 days, 27°C)	mg/L	7	13	7
Electrical Conductivity (at 25 °C)	µmho/cm	199	680	587
Nitrite Nitrogen (as NO_2)	mg/L	0.10	0.07	0.12
Nitrate Nitrogen (as NO_3)	mg/L	0.40	5.22	2.06
(NO_2 + NO_3)-Nitrogen	mg/L	0.50	5.29	2.18
Free Ammonia (as NH_3-N)	mg/L	BLQ	BLQ	BLQ
Free Residual Chlorine	mg/L	BLQ	BLQ	BLQ
Cyanide (as CN)	mg/L	BLQ	BLQ	BLQ
Fluoride (as F)	mg/L	1.07	1.37	0.48
Sulphide (as H_2S)	mg/L	BLQ	BLQ	BLQ
Dissolved Phosphate (as P)	mg/L	BLQ	0.19	0.14
Sodium Adsorption Ratio	-	0.98	1.62	1.28
Total Coliforms	MPN Index/ 100 ml	6400	5523	390
Faecal Coliforms	MPN Index/ 100 ml	573	214	213
Total Phosphate (as P)	mg/L	BLQ	0.17	0.20
Total Kjeldahl Nitrogen (as N)	mg/L	BLQ	19.27	1.49
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	2.40	3.27	4.80
Total Nitrogen	mg/L	BLQ	24.6	3.67
Phenols (as C_6H_5OH)	mg/L	BLQ	BLQ	BLQ
Anionic Detergents (as MBAS Calculated as LAS, mol.wt.288.38)	µg/L	BLQ	BLQ	BLQ
Organo Chlorine Pesticides	mg/L	BLQ	BLQ	BLQ
Polynuclear aromatic hydrocarbons (as PAH)	mg/L	BLQ	0.00016	0.00030
Polychlorinated Biphenyls (PCB)	mg/L	BLQ	BLQ	BLQ
Zinc (as Zn)	mg/L	BLQ	0.97	1.16
Nickel (as Ni)	mg/L	BLQ	0.12	0.04
Copper (as Cu)	mg/L	BLQ	0.37	0.10
Hexavalent Chromium (as Cr^{6+})	mg/L	BLQ	BLQ	BLQ
Total Chromium (as Cr)	mg/L	0.031	0.528	0.047
Total Arsenic (as As)	mg/L	BLQ	BLQ	BLQ

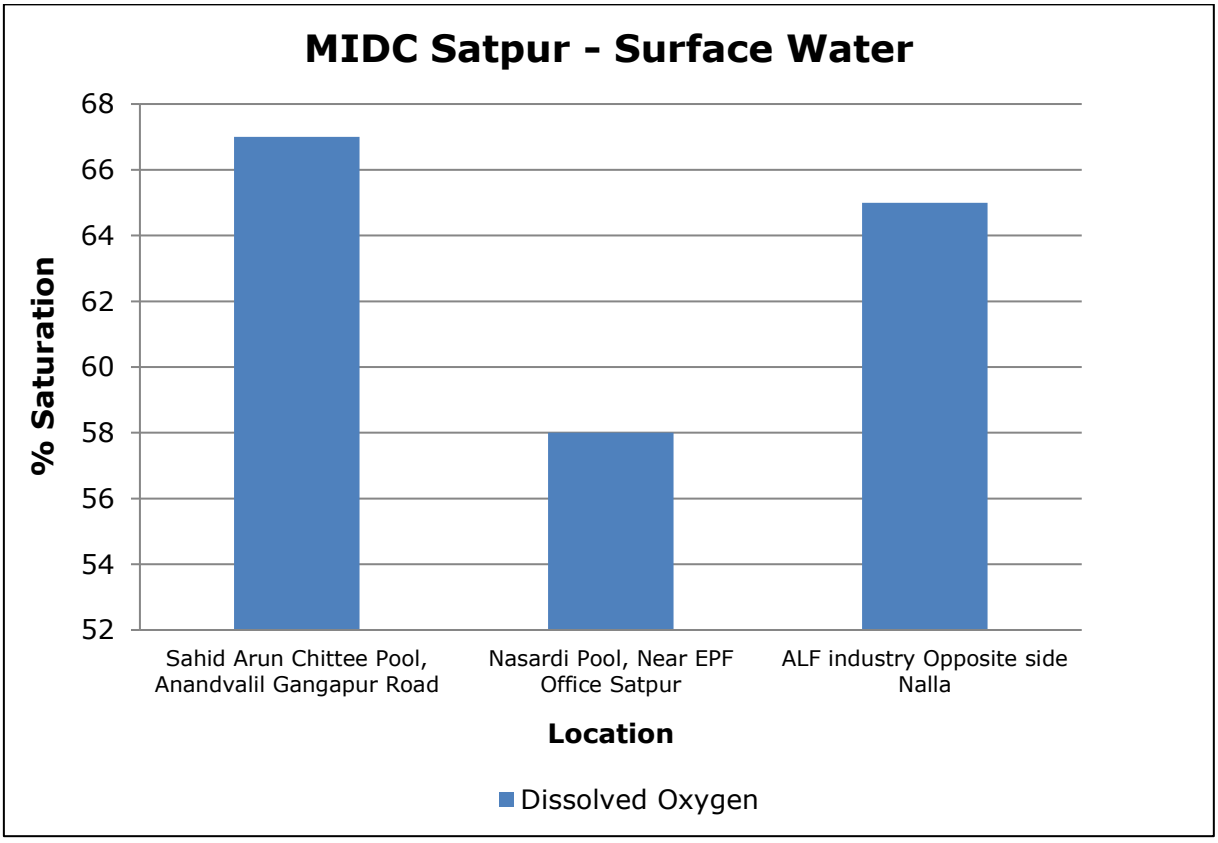
Parameters	Unit	Results		
		Sahid Arun Chittee Pool, Anandvalil Gangapur Road	Nasardi Pool, Near EPF Office Satpur	ALF industry Opposite side Nalla
Lead (as Pb)	mg/L	BLQ	0.024	0.054
Cadmium (as Cd)	mg/L	BLQ	0.003	BLQ
Mercury (as Hg)	mg/L	BLQ	BLQ	BLQ
Manganese (as Mn)	mg/L	BLQ	0.173	0.048
Iron (as Fe)	mg/L	0.094	4.19	2.33
Vanadium (as V)	mg/L	BLQ	0.027	0.022
Selenium (as Se)	mg/L	BLQ	BLQ	BLQ
Boron (as B)	mg/L	BLQ	0.14	0.26
Bioassay Test on fish	% survival	87	80	93

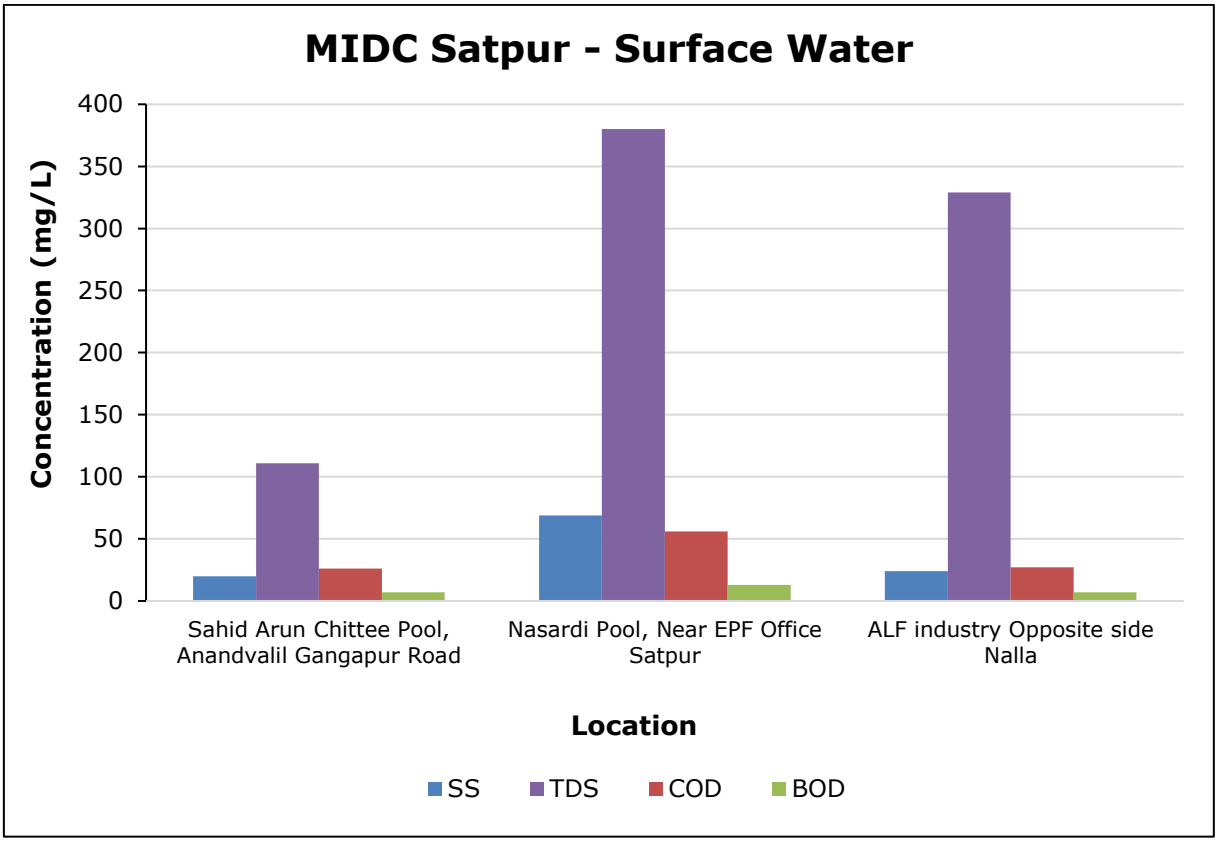
Graphs - Surface Water Quality of MIDC Satpur

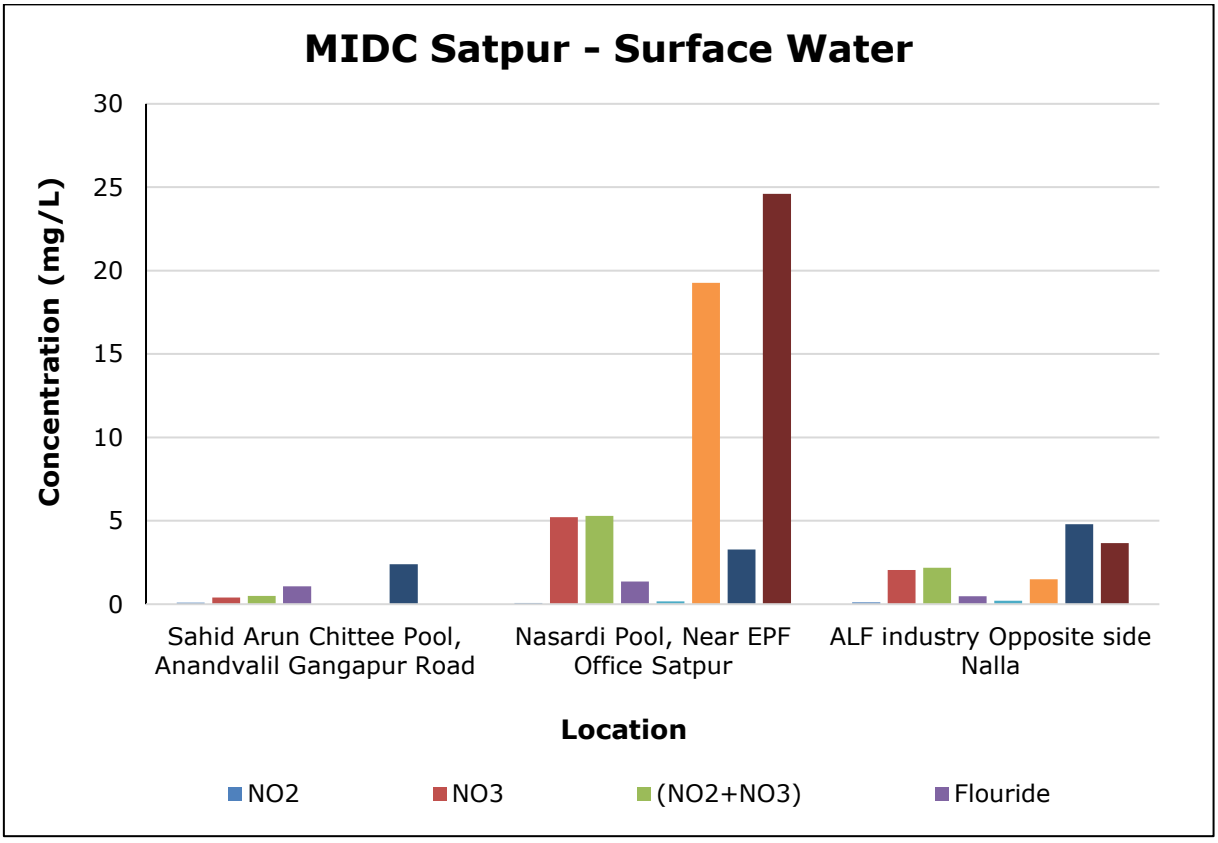


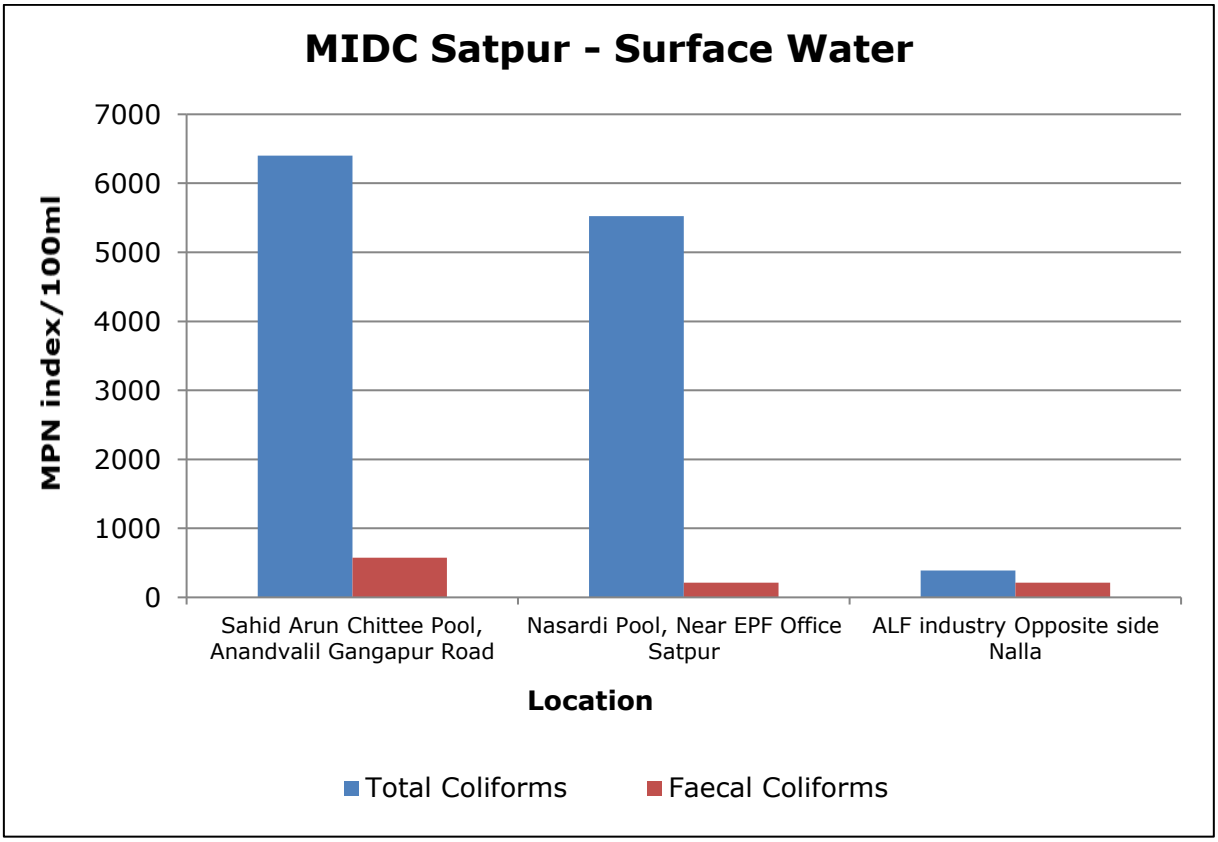


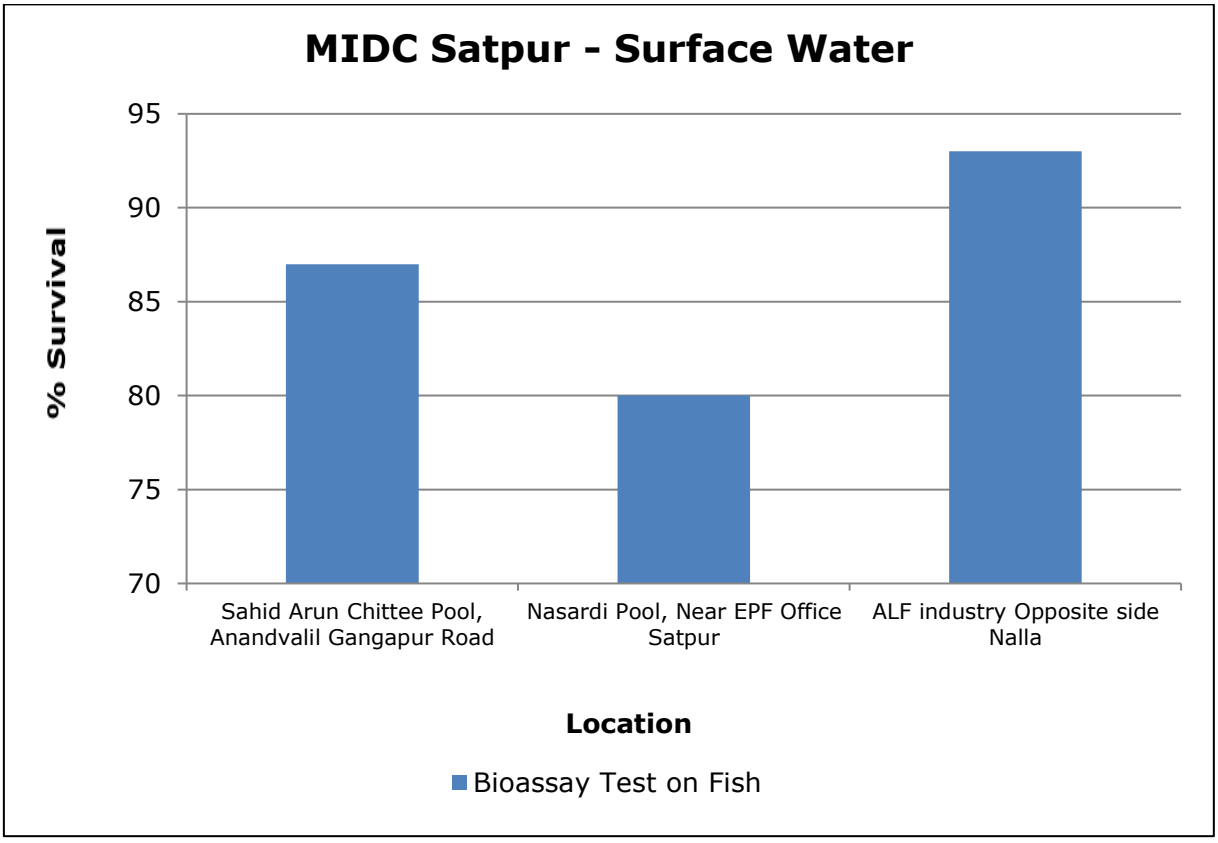

MIDC Satpur - Surface Water
Concentration (mg/L)
400
350
300
250
200
150
100
50
0
Sahid Arun Chittee Pool, Anandvalil Gangapur Road
Nasardi Pool, Near EPF Office Satpur
ALF industry Opposite side Nalla
Location
TDS


MIDC Satpur - Surface Water
% Saturation
68
66
64
62
60
58
56
54
52
Sahid Arun Chittee Pool, Anandvalil Gangapur Road
Nasardi Pool, Near EPF Office Satpur
ALF industry Opposite side Nalla
Location
Dissolved Oxygen


MIDC Satpur - Surface Water
Concentration (mg/L)
400
350
300
250
200
150
100
50
0
Sahid Arun Chittee Pool, Anandvalil Gangapur Road
Nasardi Pool, Near EPF Office Satpur
ALF industry Opposite side Nalla
Location
SS
TDS
COD
BOD


MIDC Satpur - Surface Water
Concentration (mg/L)
30
25
20
15
10
5
0
Sahid Arun Chittee Pool, Anandvalil Gangapur Road
Nasardi Pool, Near EPF Office Satpur
ALF industry Opposite side Nalla
Location
NO2
NO3
(NO2+NO3)
Flouride


MIDC Satpur - Surface Water
MPN index/100ml
7000
6000
5000
4000
3000
2000
1000
0
Sahid Arun Chittee Pool, Anandvalil Gangapur Road
Nasardi Pool, Near EPF Office Satpur
ALF industry Opposite side Nalla
Location
Total Coliforms
Faecal Coliforms


MIDC Satpur - Surface Water
% Survival
95
90
85
80
75
70
Sahid Arun Chittee Pool, Anandvalil Gangapur Road
Nasardi Pool, Near EPF Office Satpur
ALF industry Opposite side Nalla
Location
Bioassay Test on Fish

LAND ENVIRONMENT

8. Land Environment

For studying the land Environment of Nashik area, ground water was collected from Bore well, open well and hand pumps. A total of 12 samples were collected.

1. **MIDC Ambad:**

- All six water samples collected are acceptable in general appearance, colour, smell and transparency.
- pH, suspended solids, Total Dissolved Solids and BOD are also well within the limits at all six samples collected.
- 100% survival was achieved in Fish Bioassay in two samples out of 6 samples collected.
- Metals like Zinc, Iron, Copper, Hexavalent Chromium (Cr^{6+}), Total Arsenic, Lead, Cadmium, Mercury, Selenium, Nickel, Total Chromium, Manganese, etc. are observed either below limit of quantification or below their standard limits.
- Parameters like Free Residual Chlorine, Cyanide, Sulphide, Dissolved Phosphate, Total Kjeldahl Nitrogen, Fluoride Total Ammonical Nitrogen and Phenolic compounds, also meet the criteria as prescribed by CPCB.
- Total Phosphate is exceeded in the two samples out of six samples collected.
- Polynuclear aromatic hydrocarbons (PAH) and Polychlorinated Biphenyls (PCB) are below the limit of quantification in all six samples collected.
- Organo Chlorine Pesticides are also below the limit of quantification in all six samples collected.

Table 7.1 MIDC Ambad - 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.	Hotel Tapovan Garvare Point (Bore well Water)	19°34'37.86"N	73°74'34.08"E	08.05.2025	10.05.2025	12.05.2025
2.	Shivaji Kachru Chavan, Gat No 154/3, Village Vilholi (Well Water)	19°95'75.31"N	73°75'45.12"E	08.05.2025	10.05.2025	12.05.2025
3.	Dashrath Pandit Nikam, Plot No. 4, Mauli Chowk, Datta Nagar, Village Chinchale (Bore well Water)	19°95'72.04"N	73°72'13.06"E	08.05.2025	10.05.2025	12.05.2025

Sr. No.	Name of Monitoring Location	Latitude	Longitude	Date of Sampling		
				Round-1	Round-2	Round-3
4.	Pancharatna Farm, Maruti Sankul, Datta Nagar, Backside Kirloskar Oil India Pvt. Ltd. (Bore well Water)	19°95'14.02"N	73°72'88.58"E	08.05.2025	10.05.2025	12.05.2025
5.	Govind Vitthoba Shirsath, Sirshat Vasti, Ambad Gaon (Well Water)	19°95'31.15"N	73°73'89.06"E	08.05.2025	10.05.2025	12.05.2025
6.	Sai Eknath Park (Near Indoline Furniture) (Bore Well Water)	19°96'08.35"N	73°75'02.32"E	08.05.2025	10.05.2025	12.05.2025

Fig. Geographical Locations of Ground Water Sampling MIDC Ambad

Table 7.2 MIDC Ambad - Results of Ground Water

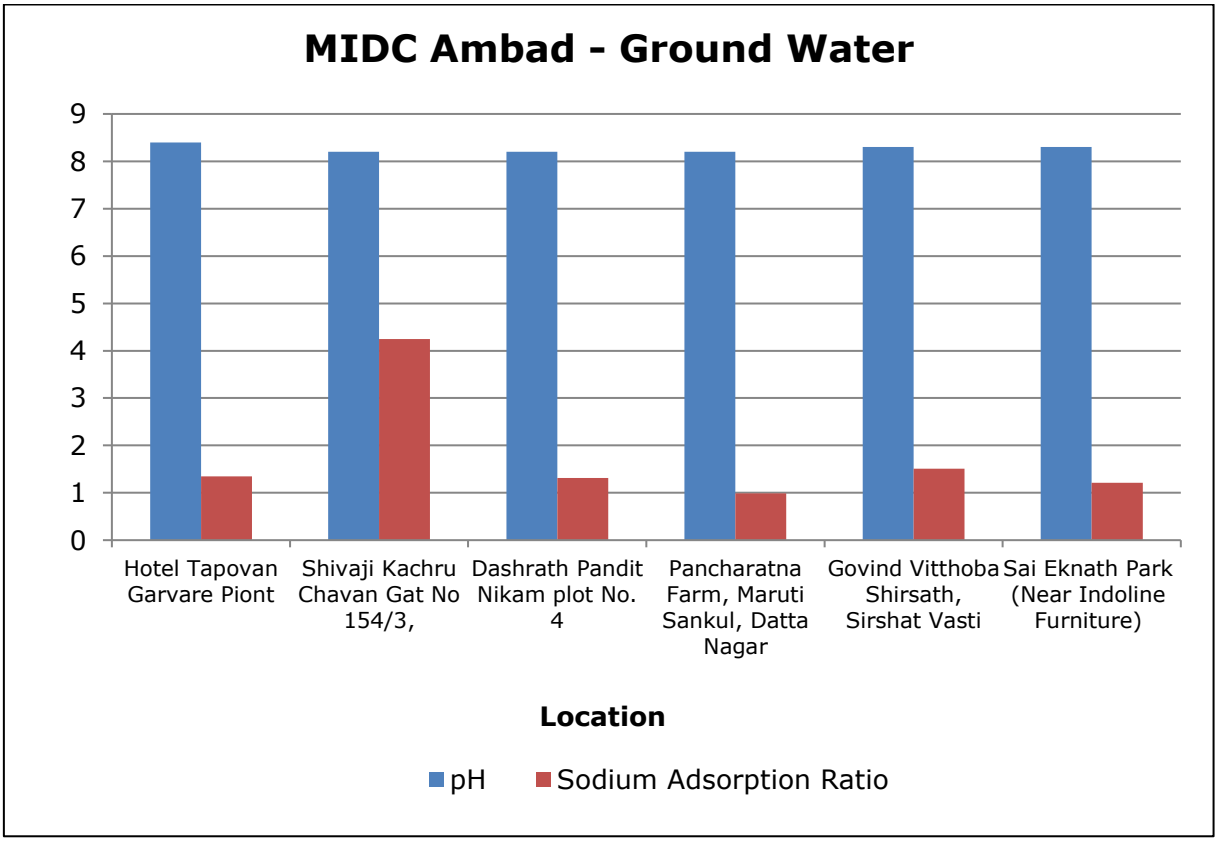
Parameters	Unit	Results		
		Hotel Tapovan Garvare Point (Bore well Water)	Shivaji Kachru Chavan, Gat No 154/3, Village Vilholi (Well Water)	Dashrath Pandit Nikam, Plot No. 4, Mauli Chowk, Datta Nagar, Village Chinchale (Bore well Water)
Sanitary Survey	-	Very Clean Neighbourhood and Catchment	Very Clean Neighbourhood and Catchment	Very Clean Neighbourhood and Catchment
General Appearance	-	No Floating Matter	No Floating Matter	No Floating Matter
Transparency	m	Not Applicable	Not Applicable	Not Applicable
Temperature	^oC	26	26	26
Colour	Hazen	1	2	1
Odour	-	Agreeable	Agreeable	Not Agreeable
pH	-	8.4	8.2	8.2
Oil & Grease	mg/L	BLQ	BLQ	BLQ
Suspended Solids	mg/L	14	17	15
Total Dissolved Solids	mg/L	431	645	305
Chemical Oxygen Demand	mg/L	40	23	25
Biochemical Oxygen Demand (3 days, 27^oC)	mg/L	11	6	7
Electrical Conductivity (at 25^oC)	µmhos/cm	771	1153	546
Nitrite Nitrogen (as NO_2)	mg/L	BLQ	0.09	0.02
Nitrate Nitrogen (as NO_3)	mg/L	6.22	6.87	3.15
(NO_2+ NO_3)-Nitrogen	mg/L	6.22	6.97	3.16
Free Ammonia (as NH_3-N)	mg/L	BLQ	BLQ	BLQ
Free Residual Chlorine	mg/L	BLQ	BLQ	BLQ
Cyanide (as CN)	mg/L	BLQ	BLQ	BLQ
Fluoride (as F)	mg/L	1.06	0.95	1.31
Sulphide (as H_2S)	mg/L	BLQ	BLQ	BLQ
Dissolved Phosphate (as P)	mg/L	0.22	0.115	0.13
Sodium Adsorption Ratio	-	1.35	4.25	1.31
Total Coliforms	MPN Index/ 100 ml	5452	6400	244
Faecal Coliforms	MPN Index/ 100 ml	194	616	178
Total Phosphate (as PO_4)	mg/L	0.29	0.28	0.31
Total Kjeldahl Nitrogen	mg/L	2.05	1.08	0.61

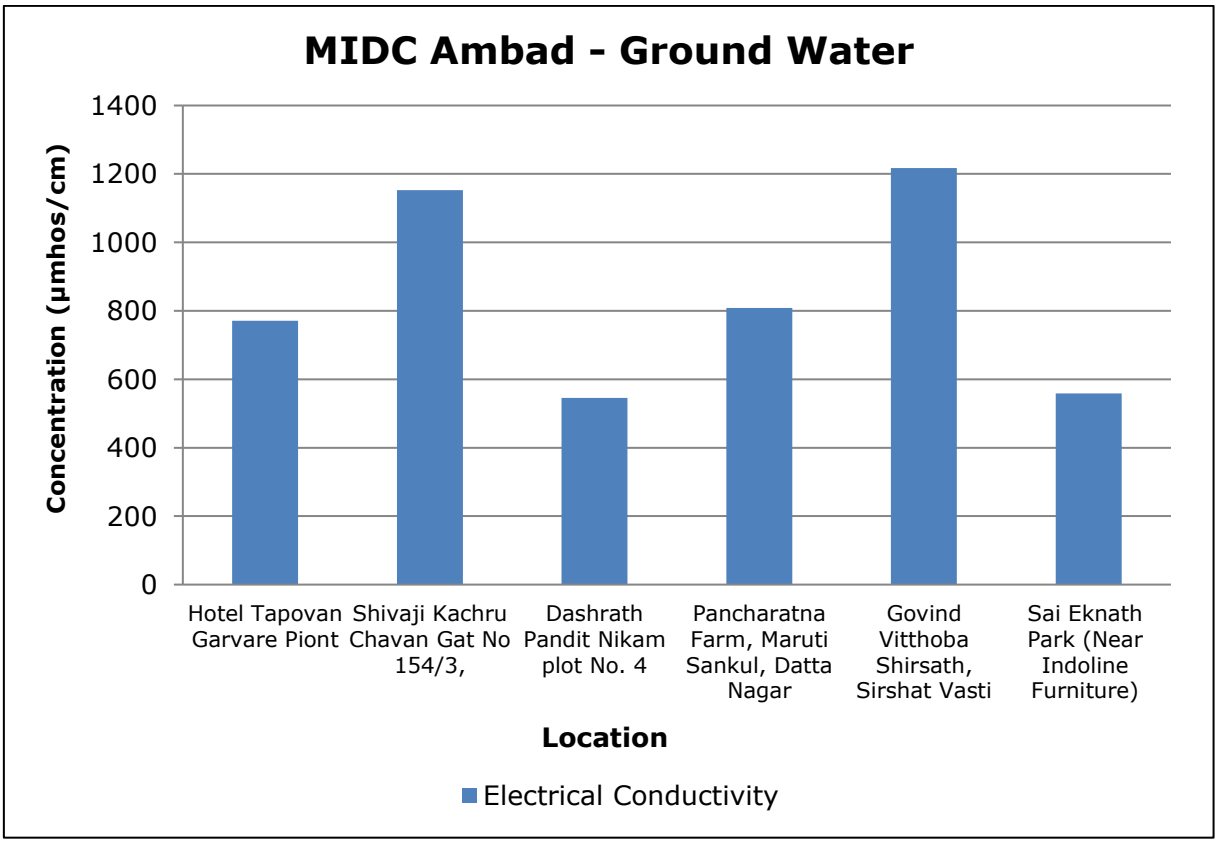
Parameters	Unit	Results		
		Hotel Tapovan Garvare Point (Bore well Water)	Shivaji Kachru Chavan, Gat No 154/3, Village Vilholi (Well Water)	Dashrath Pandit Nikam, Plot No. 4, Mauli Chowk, Datta Nagar, Village Chinchale (Bore well Water)
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	0.27	0.47	0.13
Total Nitrogen	mg/L	8.27	8.04	5.19
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	BLQ	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	BLQ	BLQ	BLQ
Iron (as Fe)	mg/L	0.088	0.103	0.075
Vanadium (as V)	mg/L	BLQ	BLQ	BLQ
Selenium (as Se)	mg/L	BLQ	BLQ	BLQ
Boron (as B)	mg/L	BLQ	BLQ	BLQ
Bioassay Test on fish	% survival	83	97	100

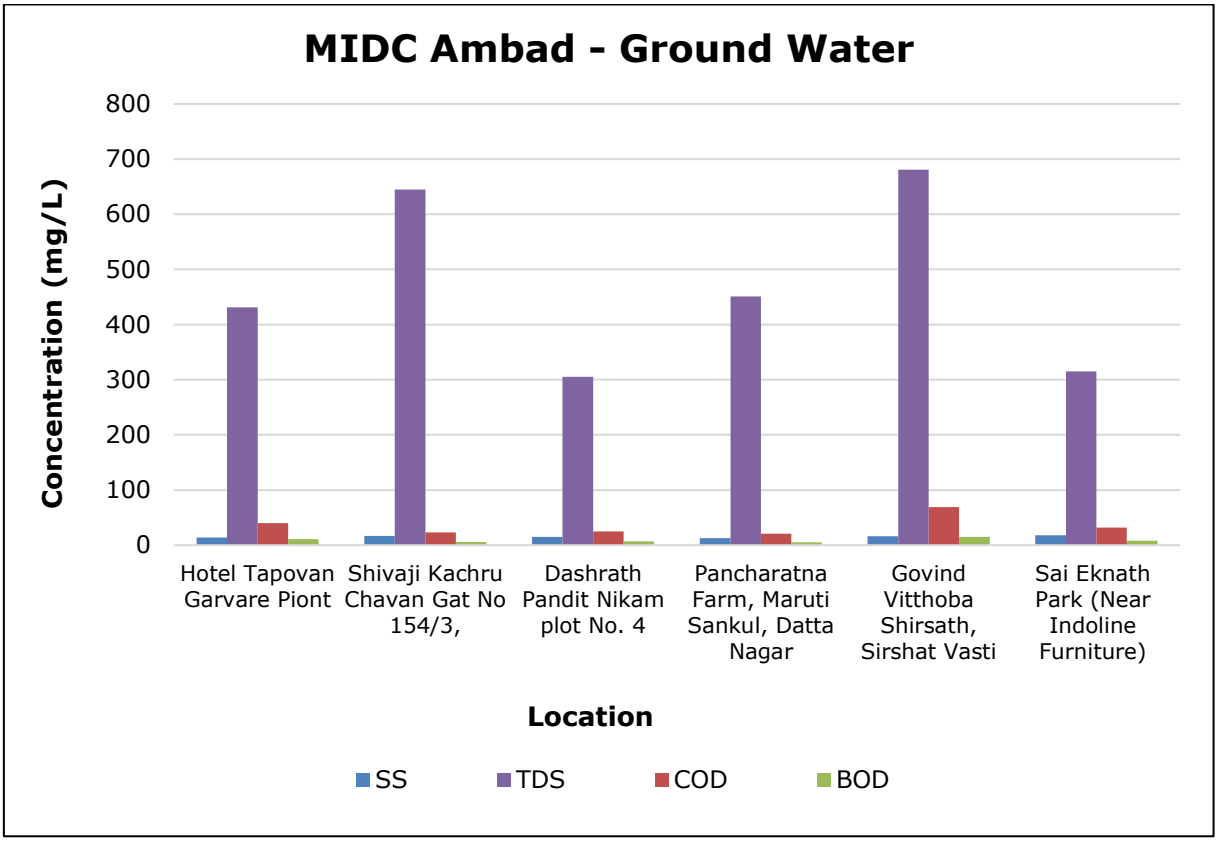
Parameters	Unit	Results		
		Pancharatna Farm, Maruti Sankul, Datta Nagar, Backside Kirloskar Oil India Pvt. Ltd. (Bore well Water)	**Govind Vitthoba Shirsath, Sirshat Vasti, Ambad Gaon (Well Water)**	**Sai Eknath Park (Near Indoline Furniture) (Bore Well Water)**
Sanitary Survey	-	Very Clean Neighbourhood and Catchment	Generally Clean Neighbourhood	Very Clean Neighbourhood and Catchment
General Appearance	-	No Floating Matter	Floating Matter Evident	No Floating Matter
Transparency	m	Not Applicable	Not Applicable	Not Applicable
Temperature	^{o}C	27	26	27
Colour	Hazen	3	2	2
Odour	-	Agreeable	Agreeable	Agreeable
pH	-	8.2	8.3	8.3
Oil & Grease	mg/L	BLQ	BLQ	BLQ
Suspended Solids	mg/L	13	16	18
Total Dissolved Solids	mg/L	451	681	315
Chemical Oxygen Demand	mg/L	21	69	32
Biochemical Oxygen Demand (3 days, $27^{o}C$)	mg/L	5	15	8
Electrical Conductivity (at $25^{o}C$)	µmhos/cm	808	1217	559
Nitrite Nitrogen (as NO_2)	mg/L	0.02	0.13	0.02
Nitrate Nitrogen (as NO_3)	mg/L	5.14	5.21	3.36
(NO_2+ NO_3)-Nitrogen	mg/L	5.15	5.30	3.37
Free Ammonia (as NH_3-N)	mg/L	BLQ	BLQ	BLQ
Free Residual Chlorine	mg/L	BLQ	BLQ	BLQ
Cyanide (as CN)	mg/L	BLQ	BLQ	BLQ
Fluoride (as F)	mg/L	1.17	1.48	1.14
Sulphide (as H_2S)	mg/L	BLQ	BLQ	BLQ
Dissolved Phosphate (as P)	mg/L	0.25	0.18	BLQ
Sodium Adsorption Ratio	-	0.99	1.51	1.21
Total Coliforms	MPN Index/ 100 ml	5342	661	5913
Faecal Coliforms	MPN Index/ 100 ml	179	425	638
Total Phosphate (as PO_4)	mg/L	0.30	0.51	0.16
Total Kjeldahl Nitrogen	mg/L	0.48	0.70	0.85
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	0.11	0.12	0.86

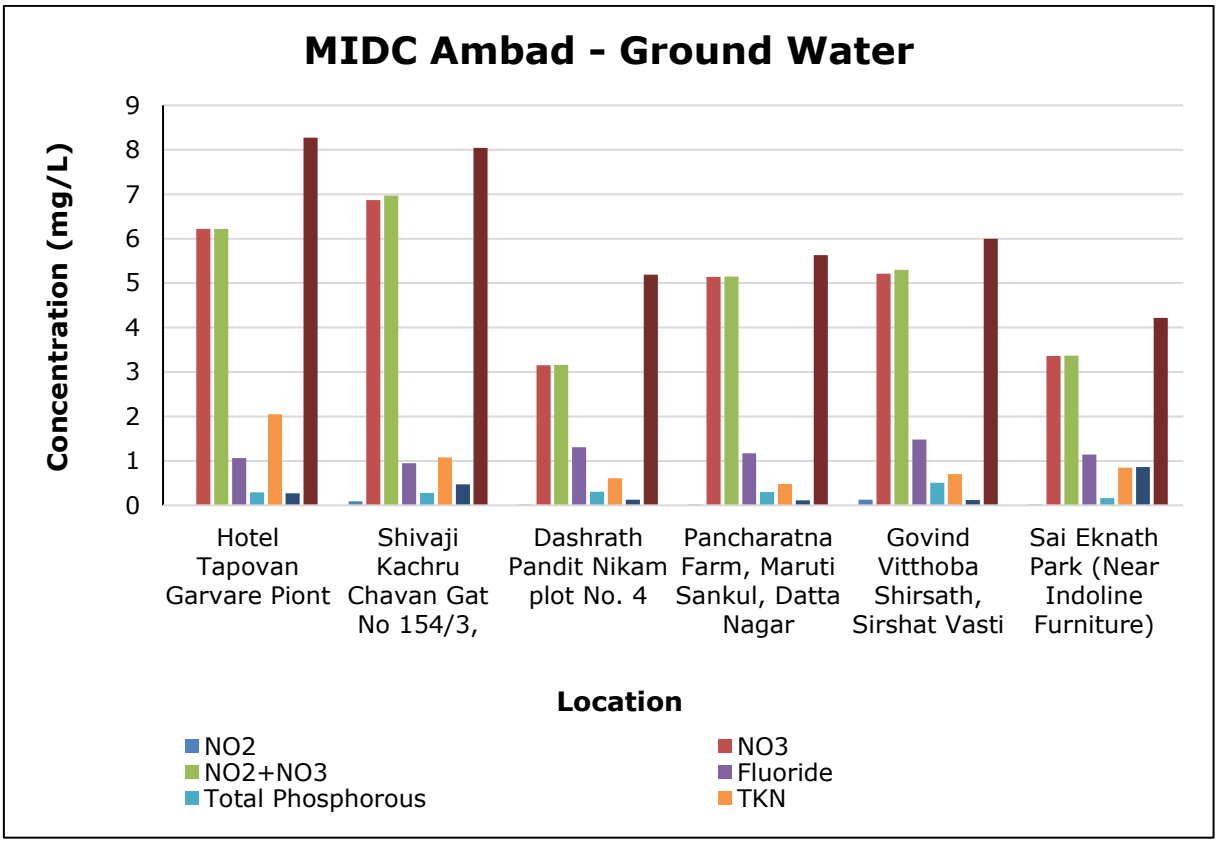
Parameters	Unit	Results		
		Pancharatna Farm, Maruti Sankul, Datta Nagar, Backside Kirloskar Oil India Pvt. Ltd. (Bore well Water)	Govind Vitthoba Shirsath, Sirshat Vasti, Ambad Gaon (Well Water)	Sai Eknath Park (Near Indoline Furniture) (Bore Well Water)
Total Nitrogen	mg/L	5.63	6.00	4.22
Phenols (as 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	0.441	BLQ
Nickel (as Ni)	mg/L	0.026	0.162	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	0.067	0.053	0.033
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	0.04	BLQ	BLQ
Iron (as Fe)	mg/L	0.186	0.209	0.172
Vanadium (as V)	mg/L	0.027	0.046	BLQ
Selenium (as Se)	mg/L	BLQ	BLQ	BLQ
Boron (as B)	mg/L	BLQ	BLQ	BLQ
Bioassay Test on fish	% survival	97	90	100

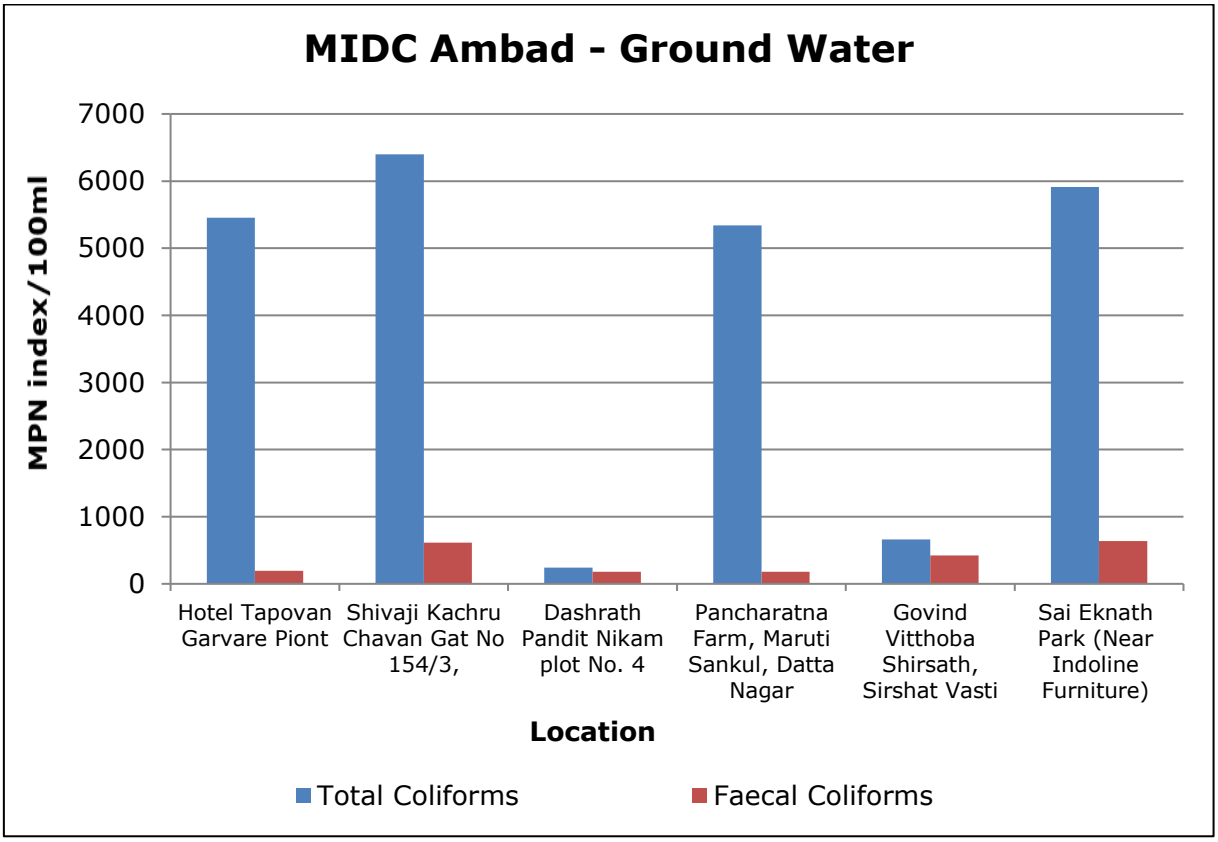
Graph - Ground Water Quality Monitoring for MIDC Ambad

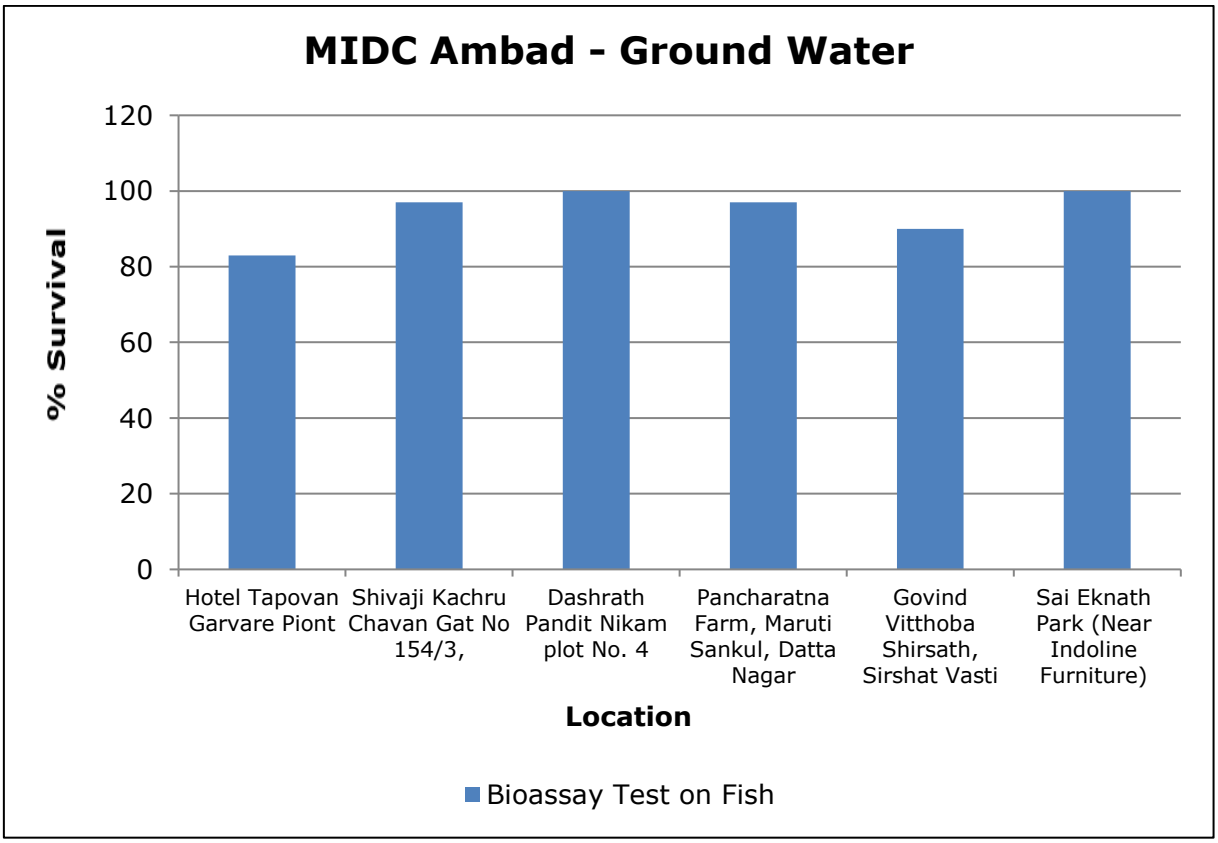





MIDC Ambad - Ground Water
Concentration (mg/L)
800
700
600
500
400
300
200
100
0
Hotel Tapovan Garvare Piont
Shivaji Kachru Chavan Gat No 154/3,
Dashrath Pandit Nikam plot No. 4
Pancharatna Farm, Maruti Sankul, Datta Nagar
Govind Vitthoba Shirsath, Sirshat Vasti
Sai Eknath Park (Near Indoline Furniture)
Location
SS
TDS
COD
BOD


MIDC Ambad - Ground Water
Concentration (mg/L)
9
8
7
6
5
4
3
2
1
0
Hotel Tapovan Garvare Piont
Shivaji Kachru Chavan Gat No 154/3,
Dashrath Pandit Nikam plot No. 4
Pancharatna Farm, Maruti Sankul, Datta Nagar
Govind Vitthoba Shirsath, Sirshat Vasti
Sai Eknath Park (Near Indoline Furniture)
Location
NO2
NO2+NO3
Total Phosphorous
NO3
Fluoride
TKN


MIDC Ambad - Ground Water
MPN index/100ml
7000
6000
5000
4000
3000
2000
1000
0
Hotel Tapovan Garvare Piont
Shivaji Kachru Chavan Gat No 154/3,
Dashrath Pandit Nikam plot No. 4
Pancharatna Farm, Maruti Sankul, Datta Nagar
Govind Vitthoba Shirsath, Sirshat Vasti
Sai Eknath Park (Near Indoline Furniture)
Location
Total Coliforms
Faecal Coliforms


MIDC Ambad - Ground Water
% Survival
120
100
80
60
40
20
0
Hotel Tapovan Garvare Piont
Shivaji Kachru Chavan Gat No 154/3,
Dashrath Pandit Nikam plot No. 4
Pancharatna Farm, Maruti Sankul, Datta Nagar
Govind Vitthoba Shirsath, Sirshat Vasti
Sai Eknath Park (Near Indoline Furniture)
Location
Bioassay Test on Fish

2. MIDC Satpur:

- All six water samples collected are acceptable in general appearance, colour, smell and transparency.
- pH, Suspended Solids, Total Dissolved Solids and Total Kjeldahl Nitrogen are also well within the limits at all six samples collected.
- BOD exceeds in two samples out of six samples.
- 100% survival was achieved in Fish Bioassay in one sample out of six samples collected.
- All metals like Zinc, Iron, Copper, Hexavalent Chromium (Cr^{6+}), Total Chromium, Total Arsenic, Lead, Cadmium, Mercury, Nickel, Manganese, etc. are observed either below limit of quantification or below their standard limits.
- Total Phosphate exceeds in one sample out of six 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) are below the limit of quantification in all six samples collected.
- Organo Chlorine Pesticides are also below the limit of quantification in all six samples collected.

Table 7.3 MIDC Satpur - 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.	Ramesh Chandra Kale, Near ESI Hospital Bore Well Water)	19°99'0.94"N	73°71'12.79"E	07.05.2025	09.05.2025	11.05.2025
2.	Seva Developers Pvt. Ltd. (Bore Well Water)	20°00'29.42"N	73°74'96.97"E	07.05.2025	09.05.2025	11.05.2025
3.	Shivaji Nagar, Shushila Hospital, Plot No 55/6 (Bore Well Water)	20°00'16.34"N	73°71'12.79"E	07.05.2025	09.05.2025	11.05.2025
4.	Shradha Farmhouse, Shardha Motors (Back Side) (Well Water)	20°00'5.16"N	73°72'69.48"E	07.05.2025	09.05.2025	11.05.2025

Sr. No.	Name of Monitoring Location	Latitude	Longitude	Date of Sampling		
				Round-1	Round-2	Round-3
5.	Amit Deelip Yadav, Plot No 50, Ganesh Nagar (Bore Well Water)	20°00'57.45"N	73°73'80.03"E	07.05.2025	09.05.2025	11.05.2025
6.	Virshab Industries Back Side, Vanvihar Colony (Bore Well Water)	20°00'57.45"N	73°73'80.03"E	07.05.2025	09.05.2025	11.05.2025

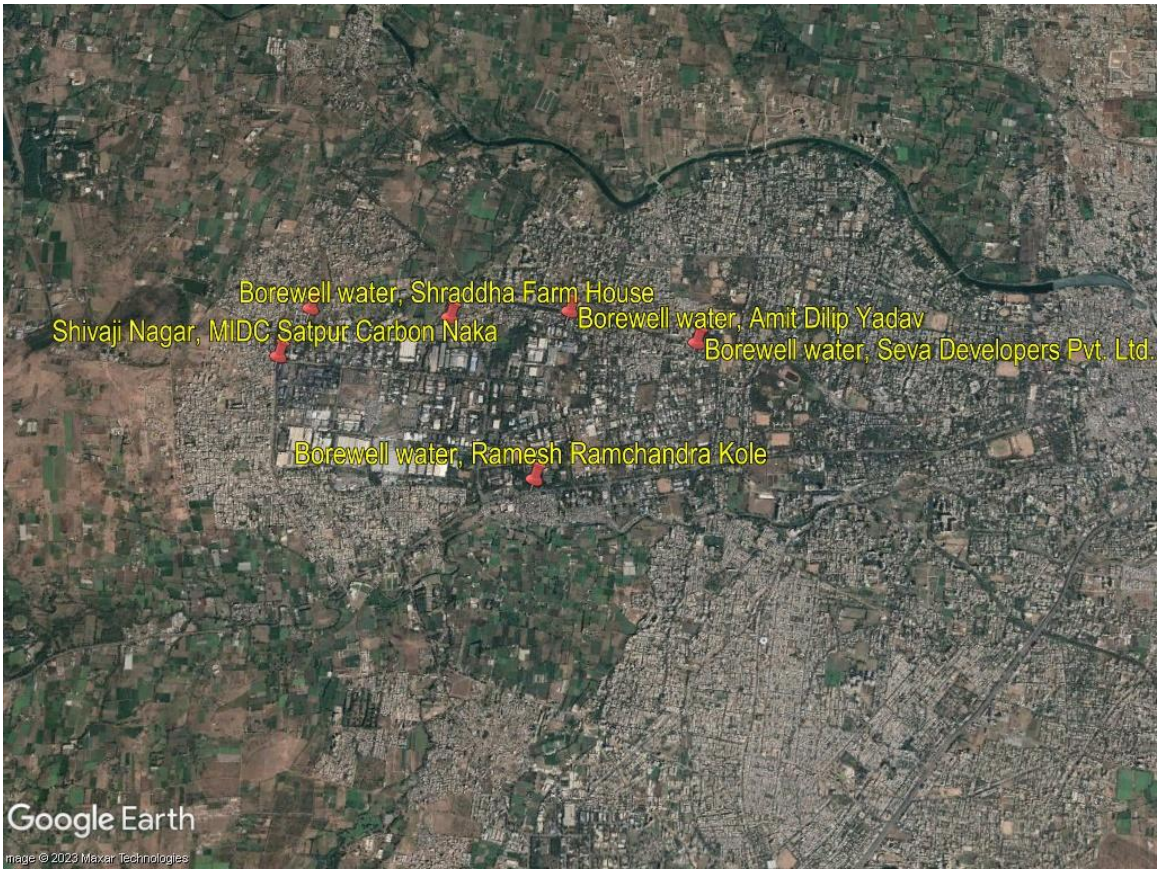


Fig. Geographical Locations of Ground Water Sampling MIDC Satpur

Table 7.4 MIDC Satpur - Results of Ground Water

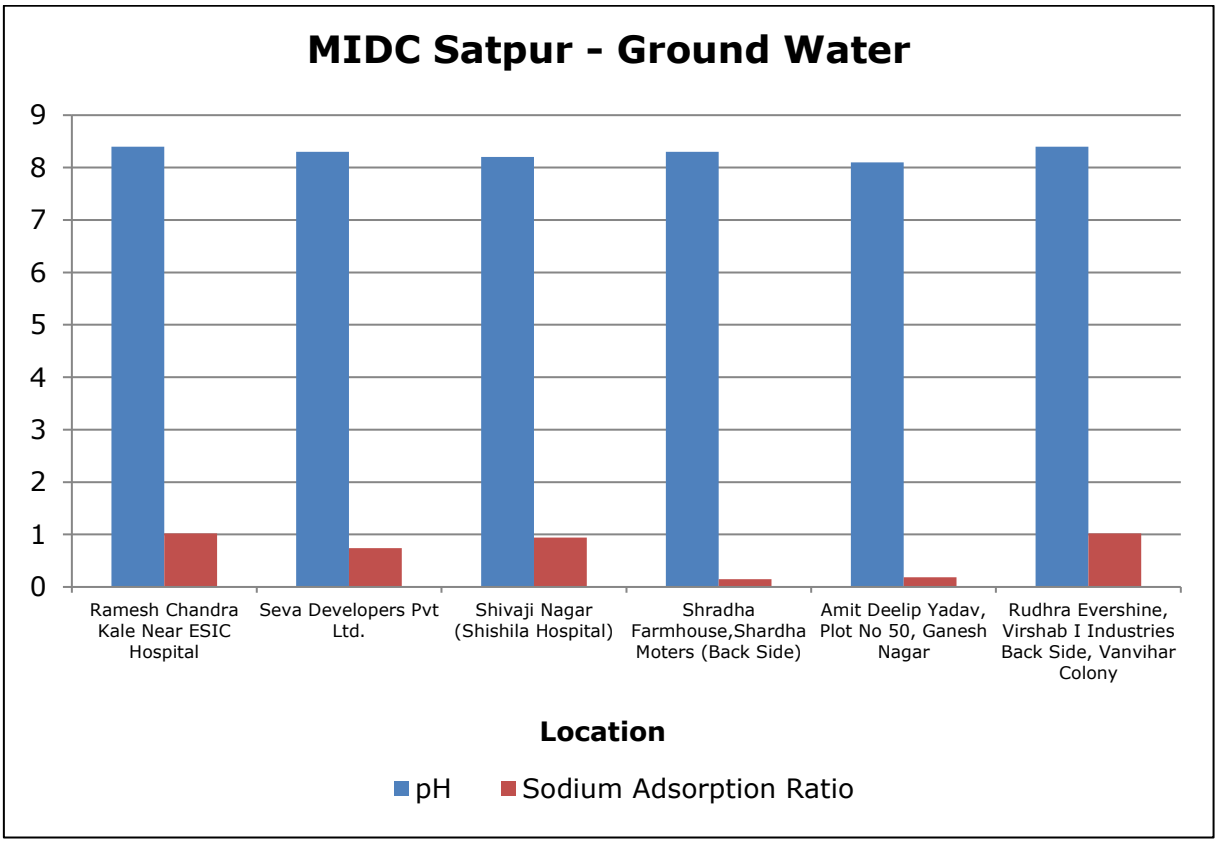
Parameters	Unit	Results		
		Ramesh Chandra Kale Near ESI Hospital, Satpur (Bore Well Water)	**Seva Developers Pvt. Ltd., Satpur (Bore Well Water)**	**Shivaji Nagar (Shishila Hospital), Plot No 55/6, Satpur Carbon Naka) (Bore Well Water)**
Sanitary Survey	-	Very clean neighbourhood and Catchment	Very clean neighbourhood and Catchment	Very clean neighbourhood and Catchment
General Appearance	-	No floating matter	No floating matter	No floating matter
Transparency	M	Not Applicable	Not Applicable	Not Applicable
Temperature	^oC	28	27	27
Colour	Hazen	1	2	1
Odour	-	Agreeable	Not Agreeable	Agreeable
pH	-	8.4	8.3	8.2
Oil & Grease	mg/L	BLQ	BLQ	BLQ
Suspended Solids	mg/L	18	15	35
Total Dissolved Solids	mg/L	411	339	259
Chemical Oxygen Demand	mg/L	32	26	24
Biochemical Oxygen Demand (3 days, 27^oC)	mg/L	8	7	6
Electrical Conductivity (at 25^oC)	µmhos/cm	736	606	465
Nitrite Nitrogen (as NO_2)	mg/L	0.02	0.05	0.02
Nitrate Nitrogen (as NO_3)	mg/L	1.83	2.07	2.92
(NO_2+ NO_3)-Nitrogen	mg/L	1.85	2.08	2.93
Free Ammonia (as NH_3-N)	mg/L	BLQ	BLQ	BLQ
Free Residual Chlorine	mg/L	BLQ	BLQ	BLQ
Cyanide (as CN)	mg/L	BLQ	BLQ	BLQ
Fluoride (as F)	mg/L	0.89	1.27	0.50
Sulphide (as H_2S)	mg/L	BLQ	BLQ	BLQ
Dissolved Phosphate (as P)	mg/L	BLQ	BLQ	BLQ
Sodium Adsorption Ratio	-	1.02	0.74	0.94
Total Coliforms	MPN Index/ 100 ml	119	5515	6173
Faecal Coliforms	MPN Index/ 100 ml	82	134	629
Total Phosphate (as PO_4)	mg/L	0.20	0.22	0.10
Total Kjeldahl Nitrogen	mg/L	0.18	1.12	1.45

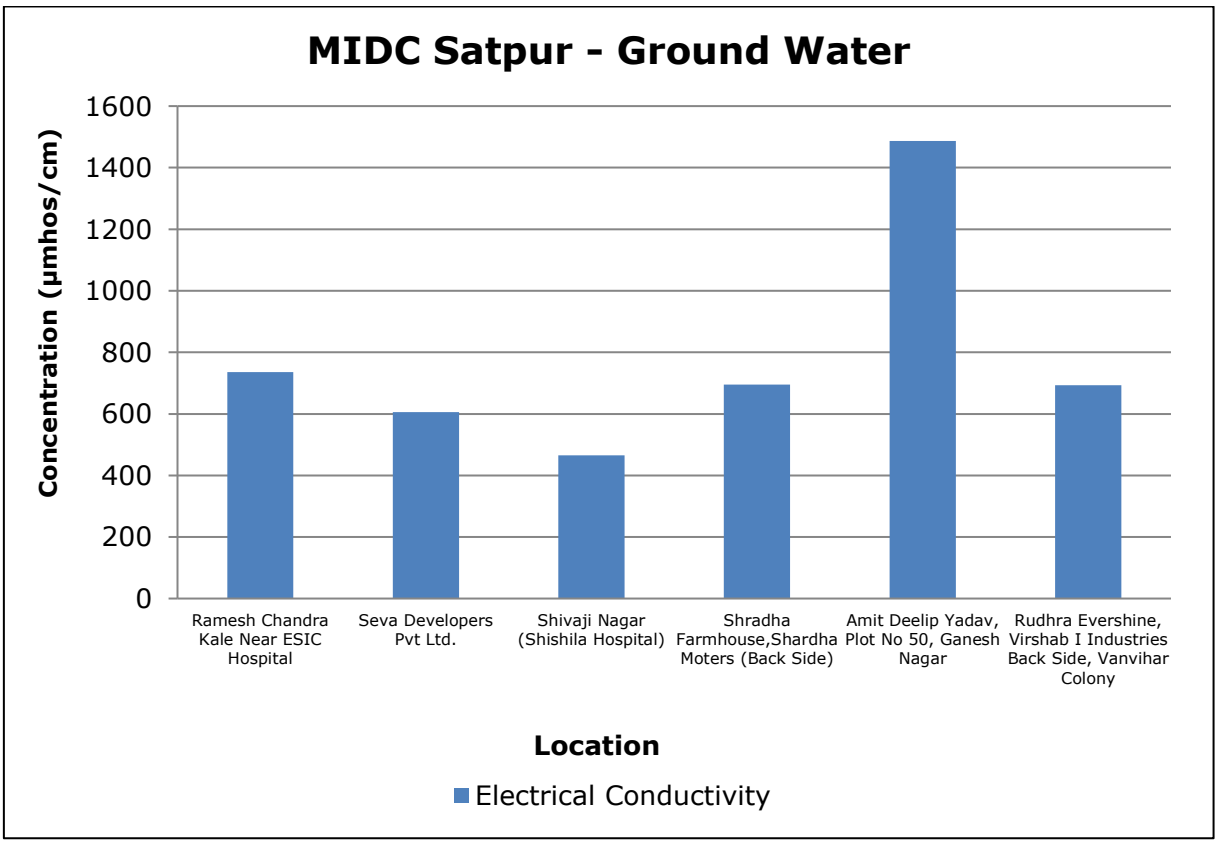
Parameters	Unit	Results		
		Ramesh Chandra Kale Near ESI Hospital, Satpur (Bore Well Water)	Seva Developers Pvt. Ltd., Satpur (Bore Well Water)	Shivaji Nagar (Shishila Hospital), Plot No 55/6, Satpur Carbon Naka) (Bore Well Water)
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	0.73	0.27	0.60
Total Nitrogen	mg/L	2.03	4.09	4.38
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	0.055	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	0.024	BLQ	BLQ
Total Arsenic (as As)	mg/L	BLQ	BLQ	BLQ
Lead (as Pb)	mg/L	BLQ	BLQ	0.015
Cadmium (as Cd)	mg/L	BLQ	BLQ	0.003
Mercury (as Hg)	mg/L	BLQ	BLQ	BLQ
Manganese (as Mn)	mg/L	0.03	BLQ	BLQ
Iron (as Fe)	mg/L	0.119	0.114	BLQ
Vanadium (as V)	mg/L	0.024	BLQ	BLQ
Selenium (as Se)	mg/L	BLQ	BLQ	BLQ
Boron (as B)	mg/L	0.135	BLQ	BLQ
Bioassay Test on fish	% survival	97	97	100

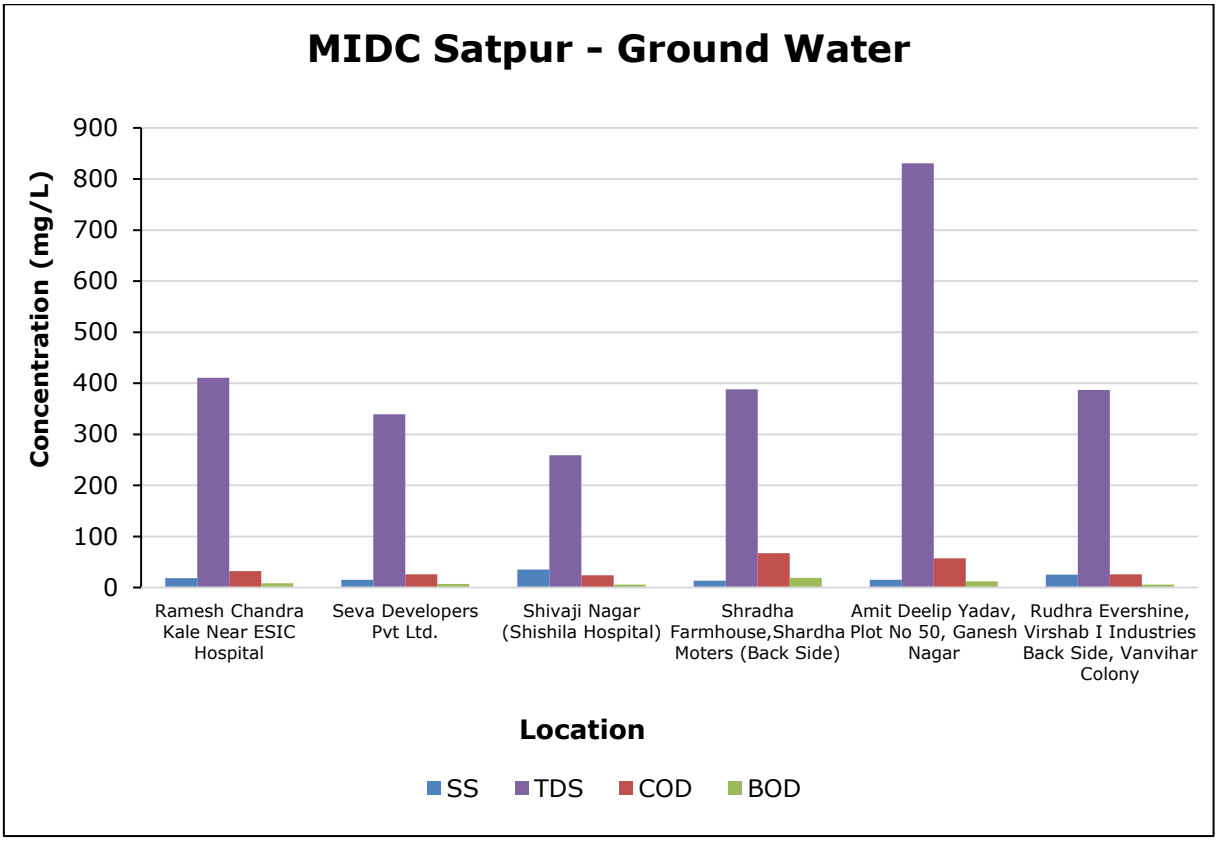
Parameters	Unit	Results		
		Shradha Farmhouse, Shardha Moters (Back Side) MIDC Satpur (Well Water)	**Amit Deelip Yadav, Plot No 50, Ganesh Nagar, Satpur (Bore Well Water)**	**Rudhra Evershine, Virshab I Industries Back Side, Vanvihar Colony, Satpur (Bore Well Water)**
Sanitary Survey	-	Very clean neighbourhood and Catchment	Very clean neighbourhood and Catchment	Very clean neighbourhood and Catchment
General Appearance	-	floating matter Evident	No floating matter	No floating matter
Transparency	M	Not Applicable	Not Applicable	Not Applicable
Temperature	^oC	28	28	28
Colour	Hazen	1	2	1
Odour	-	Agreeable	Agreeable	Agreeable
pH	-	8.3	8.1	8.4
Oil & Grease	mg/L	BLQ	BLQ	BLQ
Suspended Solids	mg/L	13	15	25
Total Dissolved Solids	mg/L	388	831	387
Chemical Oxygen Demand	mg/L	67	57	26
Biochemical Oxygen Demand (3 days, 27^oC)	mg/L	19	12	6
Electrical Conductivity (at 25^oC)	µmhos/cm	695	1487	693
Nitrite Nitrogen (as NO_2)	mg/L	0.02	BLQ	0.03
Nitrate Nitrogen (as NO_3)	mg/L	4.30	2.41	2.70
(NO_2+ NO_3)-Nitrogen	mg/L	4.33	2.41	2.71
Free Ammonia (as NH_3-N)	mg/L	BLQ	BLQ	BLQ
Free Residual Chlorine	mg/L	BLQ	BLQ	BLQ
Cyanide (as CN)	mg/L	BLQ	BLQ	BLQ
Fluoride (as F)	mg/L	1.00	1.04	0.49
Sulphide (as H_2S)	mg/L	BLQ	BLQ	BLQ
Dissolved Phosphate (as P)	mg/L	0.15	0.185	0.115
Sodium Adsorption Ratio	-	0.66	1.06	1.02
Total Coliforms	MPN Index/ 100 ml	270	623	6502
Faecal Coliforms	MPN Index/ 100 ml	270	550	121
Total Phosphate (as PO_4)	mg/L	0.23	0.31	0.20
Total Kjeldahl Nitrogen	mg/L	1.63	2.39	0.26
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	0.73	0.93	0.25

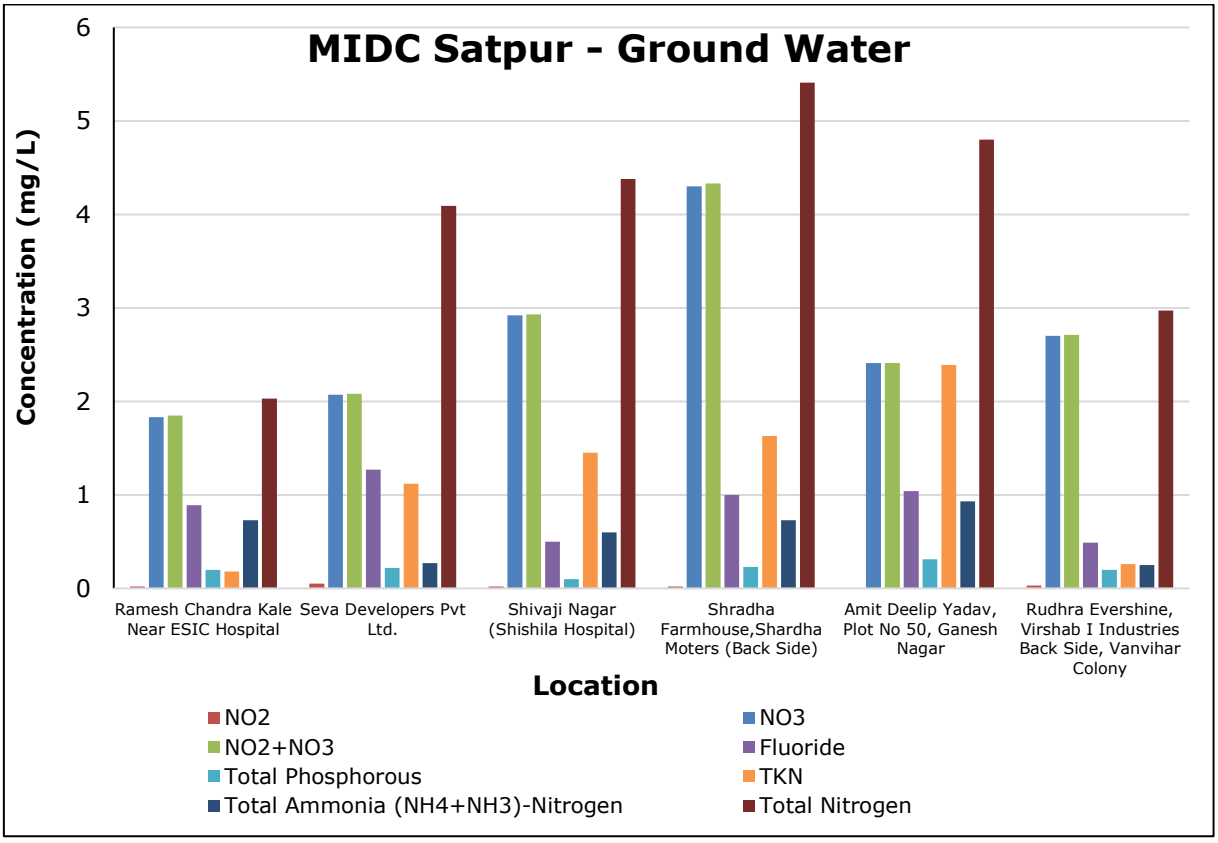
Parameters	Unit	Results		
		Shradha Farmhouse, Shardha Moters (Back Side) MIDC Satpur (Well Water)	**Amit Deelip Yadav, Plot No 50, Ganesh Nagar, Satpur (Bore Well Water)**	**Rudhra Evershine, Virshab I Industries Back Side, Vanvihar Colony, Satpur (Bore Well Water)**
Total Nitrogen	mg/L	5.41	4.80	2.97
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	0.000099	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	BLQ	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	0.032	BLQ	BLQ
Iron (as Fe)	mg/L	0.188	BLQ	0.126
Vanadium (as V)	mg/L	BLQ	BLQ	BLQ
Selenium (as Se)	mg/L	BLQ	BLQ	BLQ
Boron (as B)	mg/L	BLQ	BLQ	BLQ
Bioassay Test on fish	% survival	87	90	97

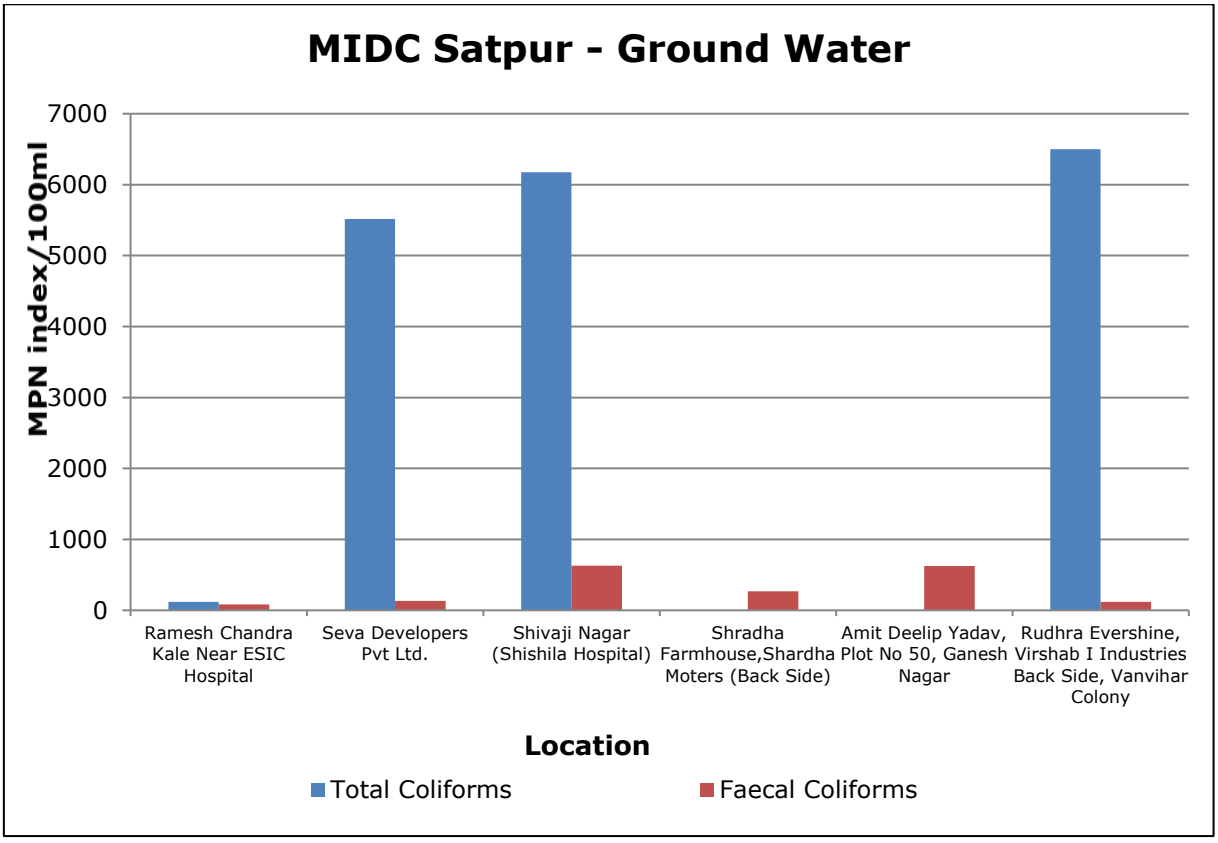
Ground - Ground Water Quality Monitoring for MIDC Satpur

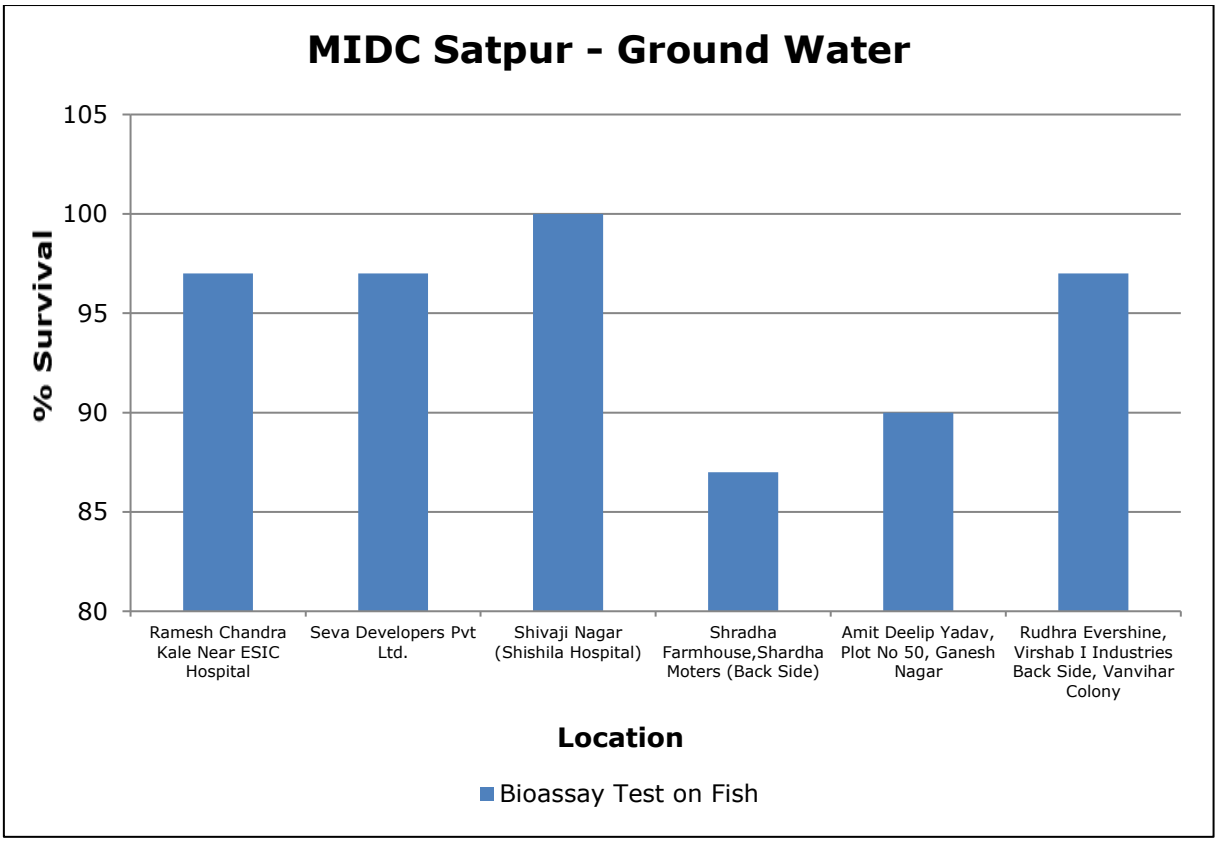





MIDC Satpur - Ground Water
Concentration (mg/L)
900
800
700
600
500
400
300
200
100
0
Ramesh Chandra Kale Near ESIC Hospital
Seva Developers Pvt Ltd.
Shivaji Nagar (Shishila Hospital)
Shradha Farmhouse,Shardha Moters (Back Side)
Amit Deelip Yadav, Plot No 50, Ganesh Nagar
Rudhra Evershine, Virshab I Industries Back Side, Vanvihar Colony
Location
SS
TDS
COD
BOD


MIDC Satpur - Ground Water
Concentration (mg/L)
6
5
4
3
2
1
0
Ramesh Chandra Kale Near ESIC Hospital
Seva Developers Pvt Ltd.
Shivaji Nagar (Shishila Hospital)
Shradha Farmhouse,Shardha Moters (Back Side)
Amit Deelip Yadav, Plot No 50, Ganesh Nagar
Rudhra Evershine, Virshab I Industries Back Side, Vanvihar Colony
Location
NO2
NO3
NO2+NO3
Fluoride
Total Phosphorous
TKN
Total Ammonia (NH4+NH3)-Nitrogen
Total Nitrogen


MIDC Satpur - Ground Water
MPN index/100ml
7000
6000
5000
4000
3000
2000
1000
0
Ramesh Chandra Kale Near ESIC Hospital
Seva Developers Pvt Ltd.
Shivaji Nagar (Shishila Hospital)
Shradha Farmhouse,Shardha Moters (Back Side)
Amit Deelip Yadav, Plot No 50, Ganesh Nagar
Rudhra Evershine, Virshab I Industries Back Side, Vanvihar Colony
Location
Total Coliforms
Faecal Coliforms


MIDC Satpur - Ground Water
% Survival
105
100
95
90
85
80
Ramesh Chandra Kale Near ESIC Hospital
Seva Developers Pvt Ltd.
Shivaji Nagar (Shishila Hospital)
Shradha Farmhouse,Shardha Moters (Back Side)
Amit Deelip Yadav, Plot No 50, Ganesh Nagar
Rudhra Evershine, Virshab I Industries Back Side, Vanvihar Colony
Location
Bioassay Test on Fish

9. Health Related Data

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 causes 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.

10.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 Pre monsoon season 2025

	A1	A2	A	B	C	D	CEPI
Air Index	3.5	1	3.5	1.5	0	5	**10.00**
Water Index	2.75	1	2.75	33.5	10	5	**51.25**
Land Index	2.5	1	2.5	11.25	10	5	**28.75**
						Aggregated CEPI	**52.65**

Table 8.2 Comparison of CEPI Scores

	Air Index	Water Index	Land Index	CEPI
CEPI Score June 2025	10.00	51.25	28.75	**51.65**
CEPI Score March 2025	11.50	54.00	27.00	**55.43**
CEPI Score June 2024	10.00	53.25	45.00	**55.35**
CEPI Score March 2024	17.00	46.75	22.00	**48.74**
CEPI Score June 2023	22.75	52.50	44.25	**57.28**
CEPI Score March 2023	32.50	52.50	42.80	**59.10**
CEPI Score June 2021	20.00	46.00	48.30	**53.10**
CEPI Score March 2021	33.30	46.00	27.00	**50.90**
CEPI score March 2020	50.00	32.80	37.80	**56.20**

	Air Index	Water Index	Land Index	CEPI
CEPI score June 2019	36.30	43.30	40.60	**47.49**
CEPI score March 2019	35.50	42.70	38.50	**46.10**
CEPI score June 2018	39.00	31.00	41.30	**46.80**
CEPI score March 2018	26.98	31.81	30.10	**33.96**
CPCB CEPI score March 2018	56.50	60.00	42.00	**69.49**

The result shows that CEPI score of present report is 52.65. The present study is the compilation of post-monsoon season, which also affects the score value. This time CEPI score is observed lower than the CPCB CEPI score March 2018 which was 69.49.

CEPI score calculation:

Ambient Air Analysis Report

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

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	1.54	2	0.77	0	8	0.00	L	1.5
PM_{10}	42.88	100	0.43	0	8	0.00	L	0
Benzene	1.84	5	0.37	0	8	0.00	L	0
B score = (B1+B2+B3)							**B**	**1.5**

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

Air CEPI Score	**(A+B+C+D)**	**10.00**

Water Quality Analysis Report

Pollutant	Group	A1	A2	A (A1 X A2)
BOD	B	2	Limited	
TP	B	0.5		

TN	A	0.25		
		2.75	**1**	**2.75**

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)**	
BOD	27.40	8	3.43	4	5	2.74	C	30
TP	0.28	0.3	0.93	1	5	0.19	M	3.5
TN	4.12	15	0.27	0	5	0.00	L	0
B score = (B1+B2+B3)							**B**	**33.5**

C	**10**	**<5 %**
D	**5**	**A-IA-A**

Water CEPI Score	**(A+B+C+D)**	**51.25**

Ground Water Quality Analysis Report

Pollutant	**Group**	**A1**	**A2**	**A (A1 X A2)**
TP	B	2	Limited	
Fe	A	0.25		
TDS	A	0.25		
		2.5	**1**	**2.5**

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	0.26	0.3	0.86	3	12	0.22	M	11.25
Fe	0.12	0.3	0.318	0	12	0.00	L	0
TDS	453.58	2000	0.23	0	12	0.00	L	0
B score = (B1+B2+B3)							**B**	**11.25**

C	**10**	**<5 %**
D	**5**	**A-IA-A**

Land CEPI Score	**(A+B+C+D)**	**28.75**

Water CEPI Score (im) **51.25**

Land CEPI Score (i2) **28.75**

Air CEPI Score (i3) **10.00**

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 = **52.65**

11.Conclusion

Ambient Air Quality

- The AAQ stations were identified in the CEPI impact area to cover both upwind and crosswind directions and AAQ survey was conducted.
- All parameters are well within the limits as per NAAQS at all locations of MIDC Ambad and Satpur.
- Concentration of PM_{10} is observed in the range of 35.00 to 51.0 µg/m^3 and $PM_{2.5}$ in the range of 10.00 to 15.00 µg/m^3 at the studied locations.
- In the CEPI score calculated for Air Environment by CPCB in March 2018, the concentration of PM_{10} has exceeded at 22 location out of 24 studied locations and which contributed to higher air index (56.50). However, in the present report, concentration of both PM_{10} and $PM_{2.5}$ are found below permissible levels resulted in less exceedance factor, hence lower air index (10.00).

Surface Water Quality

- Higher concentration of BOD, Total Kjeldahl Nitrogen, Fluoride, Total Phosphate, Zinc and Iron was observed in the surface water samples collected which may be due to increase in microbial activity, poor agricultural practices, leaking septic systems or discharges from sewage treatment plants.
- All the industries in Nashik region are either reusing the treated trade effluent as sewage in their process or gardening.
- In the CEPI score calculated for Water Environment by CPCB in March 2018 is 60.0.

Ground Water Quality

- 12 ground water samples were collected from different well and Borewell in the region.
- BOD and Total Phosphate also exceeded in few of the samples collected.

CEPI Score

- The CEPI Score Pre-monsoon season is 52.65.
- In comparison with the CEPI Score of March 2025, a decrease in the Water Index and increase in Air Index and Land Index is observed in the present study.
- During calculation of CEPI score, water Index is calculated highest with 51.00, followed by the Land Index 28.75 and Air index is 10.00. The parameters of surface water and ground water in Nashik region is well within the limits. Hence, aggregated CEPI score is calculated as 52.41, which is lower than the CPCB CEPI score 2018 i.e. 66.49.
- As per the CPCB CEPI calculation revised in 2016, Health statistics represented by Receptor C in CEPI Calculation, also plays an important role.
- For analysing the health data collected from hospitals, less than 5% increase in air and water borne disease cases is observed in the consecutive years of 2022-2023 and 2023-2024. Hence score for receptor C is considered as 0 for air, ground as well as surface water environments.
- Collective efforts of regional office of MPCB, NMC, administration and environmental organizations are resulting in significant reduction in pollution level.
- Efforts taken to reduce the pollution level is represents factor D in CEPI Calculation, which also affects the overall CEPI score.
- The present study is the compilation of pre-monsoon season, which results in dilution of environmental samples resulting in lower pollution load, hence also affects the total score.
- In conclusion, approximately 24.23 % decrease in CEPI score is observed from 69.49 in 2018 to 52.65 in June 2025.

12.Efforts taken by MPCB to control and reduce Environmental Pollution Index

- Drive against open burning of biomass, crop residue, garbage, leaves, etc.: Directions issued by Board to ULB for not to allow open burning.
- **Organic Waste Compost machines**: 08 machines are installed.
- **Waste collection and segregation centers**:
  - ✓ **Domestic Solid Waste**: NMC has provided on site waste collection and segregation facility for residential area.
  - ✓ **Industrial Non Hazardous waste**: Recyclable waste is sent to authorized waste recyclers and other waste collected by corporations.
  - ✓ **Hazardous Waste:** Industrial hazardous waste sent to common hazardous treatment and disposal facility by industries.
- **Construction of Common Effluent Treatment plant (CETP)**: Yet not established proposal under consideration.
- **Installation of CEMS installed for Air and Water in Large and Medium scale RED category industries**: 04 no.
- Arrangement of scientific collection and treatment of sewage generated: Nashik Municipal Corporation has provided Sewage network and collection system in residential area and provided Sewage 11 number of STP.
- Installation of CAAQMS station: 04 stations
- Establishment of Monitoring stations under National Water Quality Monitoring Programme (NWMP) are 10.
- Steps are taken for industrial area/other units to recycle 100% treated effluent to achieve zero liquid discharge (ZLD): Directions were issued to the unit to provide ZLD and use 100% treated water for the secondary purpose. About 110 units have been provided by ZLD system. Large Scale Industry provided ZLD for treated effluent no discharge outside factory.
- Steps taken to reduce dust emission:
  1. Conservation of traditional crematorium to electric based technology and three are converted to electricity and solar power.
  2. Conversion 100% city transport bus in to CNG. At present 120 buses are in operation.
  3. Conversion of Auto into PNG and CNG based fuel.
  4. The industries have changed their fuel F.O. to low Sulphur fuel and Green fuel like LPG, PNG and Electricity.
  5. Regular cleaning of roads and traffic diversions and signals shall be installed by the corporation.
  6. Road swiping machine provided.
- Tree plantation in last one year : 9350 nos.
- Other initiatives taken to control and reduce pollution in air, surface water and ground water in last one year:

a) Presently 04 CAAQM stations are installed at 1. KTHM College, Nashik 2. Guru Govind Singh Collage, Pathardi, Nashik 3. AIIMA Ambad, Nashik 4. Swargiya Sadashiv Gngaram Bhore Natyagruhu Hirawadi, Nashik and 4 manual stations at 1. Old NMC Building, Main Road, Nashik 2. RTO Office old, Sharanpur Road 3. VIP Industries Ltd. MIDC Satpur and 4. Udyog Bhavan, ITI Signal, Nashik. As per the population criteria proposed 4 locations of CAAQMS are installed and are in operation for monitoring of air quality.

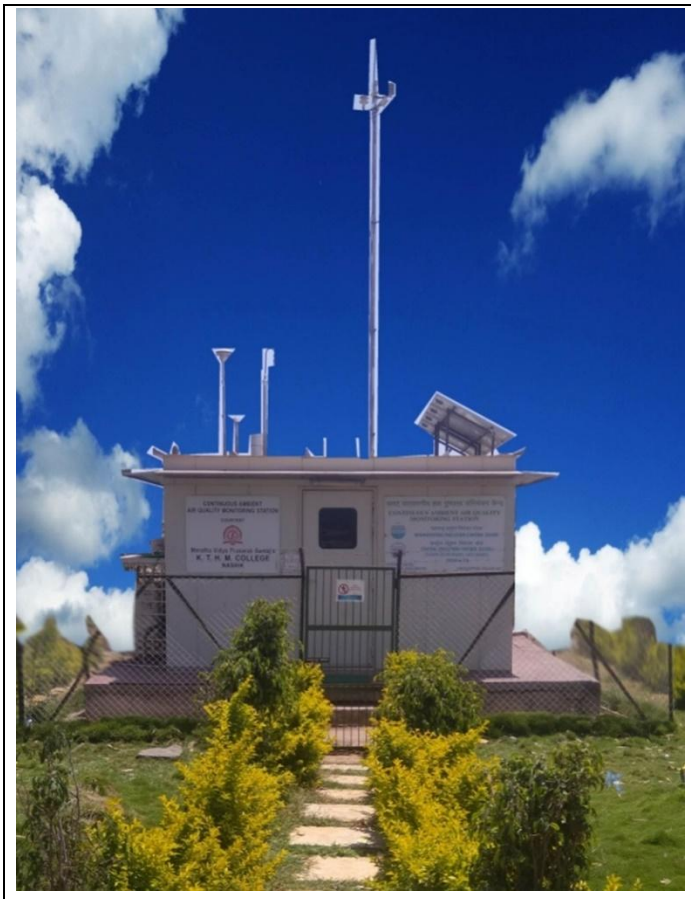
b) The ZP has installed three STP (in-situ nalla) treatments at four village and waste work on other villages is in progress.

c) A clean up drive of Darna River back water and collection of plastic waste from river.

d) Public awareness campaign on the Godavari River pollution control.

e) Clean up drive in MIDC Satpur.

f) Tree Plantation drive in MIDC Ambad and Satpur.

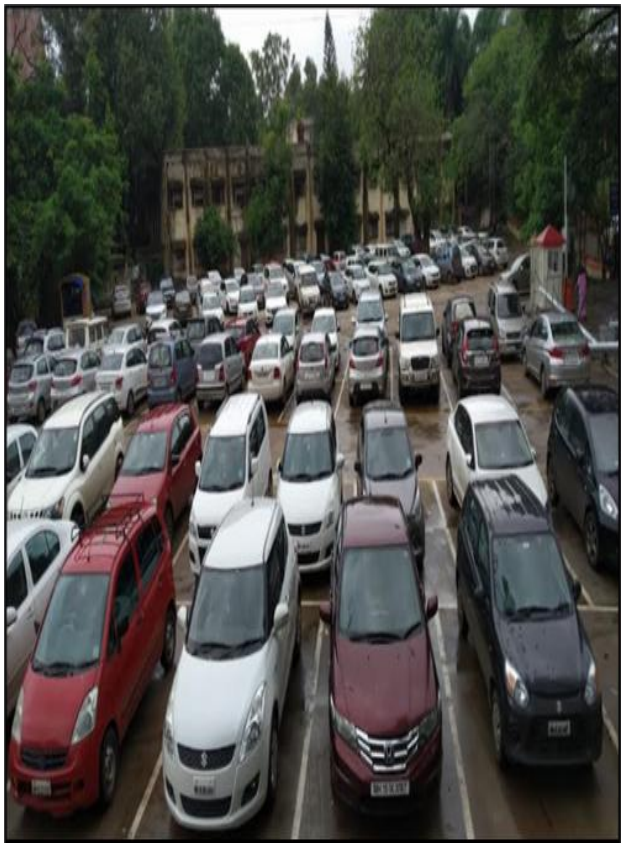


Continuous Ambient Air Quality Monitoring Station

MPC Board: Mobile Monitoring Vans for Hotspot Monitoring

Advanced Waste Management Plant

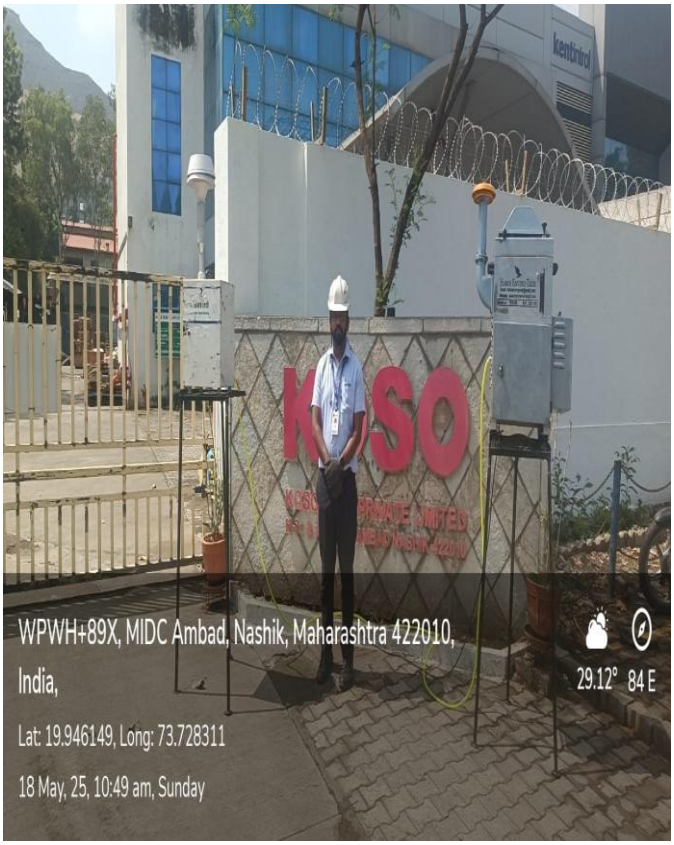
C&D Waste Processing Facility: 50 TPD Capacity, 80 Ton Per Hour Process, Output is paving blocks & crushed sand



Smart Parking management - Total 35 smart parking locations (28 on street, 7 off street) for 6000 vehicles

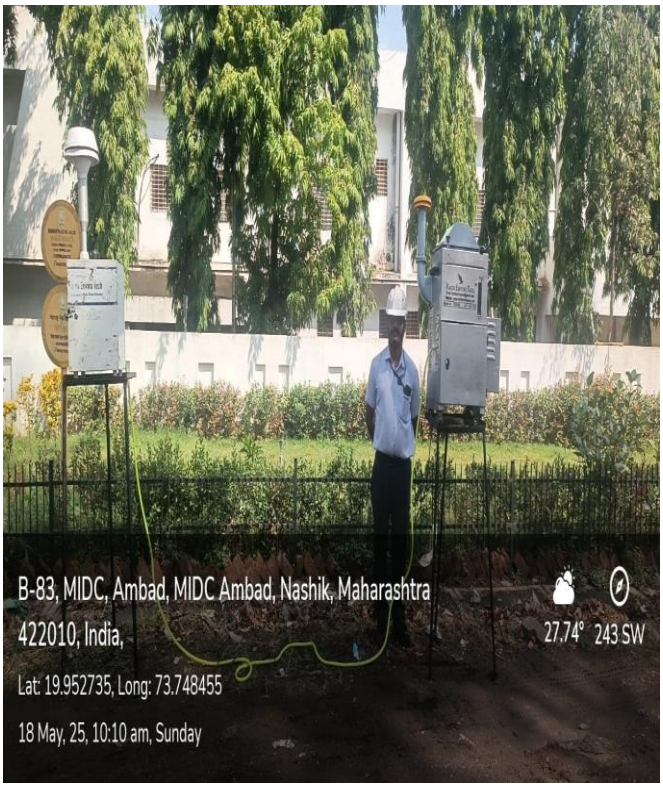
Public Awareness Activities

13.Photographs

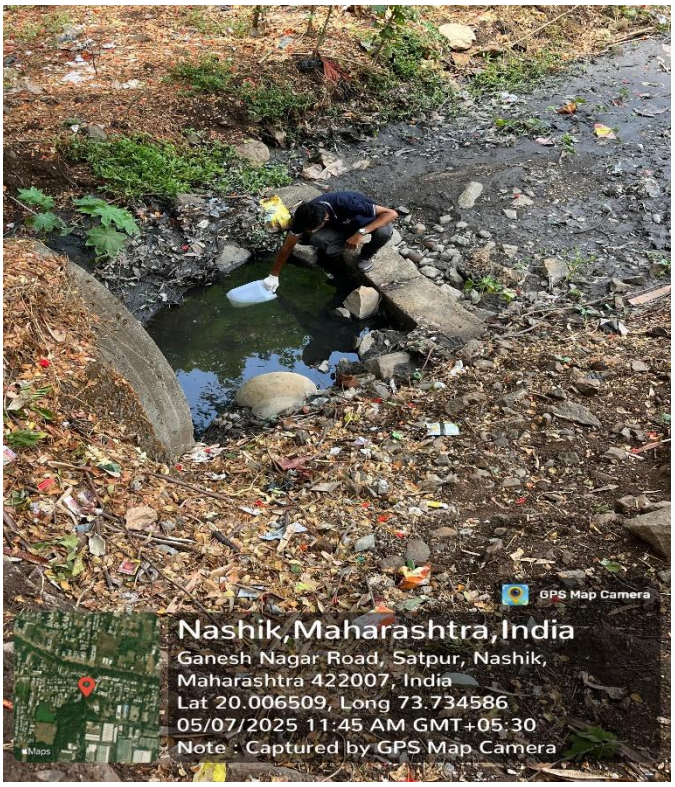


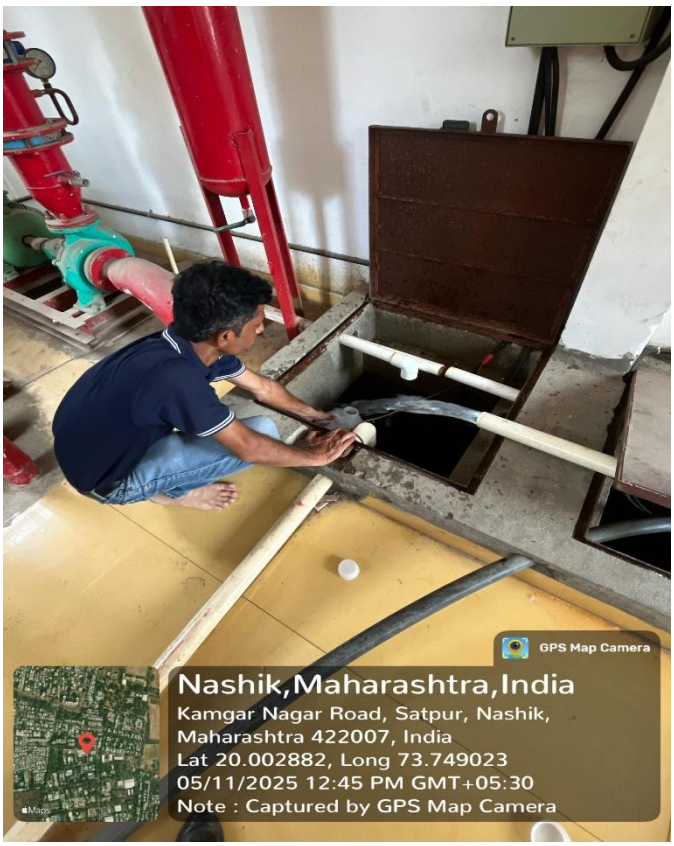
MIDC Ambad - Ambient Air Sampling Near Koso India

MIDC Ambad - Ambient Air Sampling Near Siemens India Limited



MIDC Ambad - Ambient Air Sampling Near Gemini Instratech Ltd.	MIDC Satpur - Ambient Air Sampling Near Mahindra & Mahindra Ltd. P-I
	
MIDC Satpur - Ambient Air Sampling Near Bosch Ltd.	**MIDC Satpur - Ambient Air Sampling Near ESDS Software Solution Ltd.**
	

MIDC Satpur – Surface water Sampling Sahid Arun Chittee Pool, Anandvalil Gangapur Road	MIDC Satpur – Surface water Sampling Nasardi Pool, Near EPF Office
	
MIDC Satpur – Surface water Sampling ALP industry Opposite side Nalla	**MIDC Ambad – Ground water Sampling Dashrath Pandit Nikam, Plot No. 4, Mauli Chowk, Datta Nagar, Village Chinchale (Bore well Water)**
	

MIDC Ambad – Ground water Sampling Pancharatna Farm, Maruti Sankul, Datta Nagar, Backside Kirloskar Oil India Pvt. Ltd. (Bore well Water)	MIDC Satpur – Ground water Sampling Ramesh Chandra Kale Near ESI Hospital, Satpur (Bore Well Water)
	
MIDC Satpur – Ground water Sampling Seva Developers Pvt. Ltd., Satpur (Bore Well Water)	**MIDC Satpur – Ground water Sampling Shivaji Nagar (Shishila Hospital), Plot No 55/6, Satpur Carbon Naka) (Bore Well Water)**

Annexure – I Health Related Data

HEALTH STATISTICS

Required for Comprehensive Environmental Pollution Index (CEPI) Pre-monsoon Season (December-2024-February 2025) Study by Maharashtra Pollution Control Board (MPCB), MAHARASHTRA

Name of the Polluted Industrial Area (PIA)	NASHIK
Name of the major health center/ organization	Civil Hospital, Nashik,
Name and designation of the Contact person	
Address	Trimbakeshwar Road, Nashik.

S No.	Diseases	No. of Patients Reported	
		Year 2023-2024	Year 2024-2025
AIRBORNE DISEASES			
1.	Asthma	1151	668
2.	Acute Respiratory Infection	388	311
3.	Bronchitis	955	492
4.	Cancer	0	0
WATERBORNE DISEASES			
1.	Gastroenteritis	471	524
2.	Diarrhea	502	856
3.	Renal diseases	187	364
4.	Cancer	0	0

Date:

Signature

M.M.&H.S. CL-1(Class-1)
Medical Officer
Civil Hospital, Nashik

HEALTH STATISTICS

Required for Comprehensive Environmental Pollution Index (CEPI) Pre-monsoon Season (December-2024-February 2025) Study by Maharashtra Pollution Control Board (MPCB), MAHARASHTRA

Name of the Polluted Industrial Area (PIA)	NASHIK
Name of the major health center/ organization	**ESIC Hospital**
Name and designation of the Contact person	
Address	**Satpur Trimbak Road,**

S No.	Diseases	No. of Patients Reported	
		Year 2023-2024 (Dec-23 & Feb-24)	Year 2024-2025 (Dec-24 & Feb-25)
AIRBORNE DISEASES			
1.	Asthma	6	5
2.	Acute Respiratory Infection	95	74
3.	Bronchitis	19	10
4.	Cancer	2	1
WATERBORNE DISEASES			
1.	Gastroenteritis	39	16
2.	Diarrhea	26	19
3.	Renal diseases	33	23
4.	Cancer	1	0

Date: 3/2/2025

Signature

वैद्यकीय अधिक्षक
महाराष्ट्र राज्य कामगार विमा सो[illegible]ी
रुग्णालय नाशिक सातपुर-७

HEALTH STATISTICS

Required for Comprehensive Environmental Pollution Index (CEPI) Pre-monsoon Season (December-2024-February 2025) Study by Maharashtra Pollution Control Board (MPCB), MAHARASHTRA

Name of the Polluted Industrial Area (PIA)	NASHIK
Name of the major health center/ organization	**Life Care Super Specialty Hospital**
Name and designation of the Contact person	
Address	**Lekha Nagar, CIDCO, Nashik-422007**

S No.	Diseases	No. of Patients Reported	
		Year 2023-2024	Year 2024-2025
AIRBORNE DISEASES			
1.	Asthma	48	45
2.	Acute Respiratory Infection	118	124
3.	Bronchitis	54	58
4.	Cancer	3	1
WATERBORNE DISEASES			
1.	Gastroenteritis	28	24
2.	Diarrhea	32	26
3.	Renal diseases	24	20
4.	Cancer	4	2

Date: 06/02/2025

Signature

Life Care Hospital ★ Reg. No.491 ★ Lekha Nagar Nashik-9