



इचलकरंजी महानगरपालिका ICHALKARANJI MUNICIPAL CORPORATION



ENVIRONMENTAL STATUS REPORT 2025-26



हरित इचलकरंजी, स्वच्छ इचलकरंजी, शाश्वत इचलकरंजी





List of Awards Received by IMC

The Ichalkaranji Municipal Corporation has consistently demonstrated its commitment to sustainable urban development and environmental governance through the successful implementation of various development programmes and environmental initiatives. In recognition of these efforts, the Municipal Corporation has received several prestigious awards from the Government of Maharashtra. During MVA 4.0 (2023–24), the Corporation was honoured with the 3rd Prize under the AMRUT City category for its commendable performance in urban infrastructure and environmental management. Subsequently, under MVA 5.0 (2024–25), the Corporation secured the 2nd Prize for its overall achievements in municipal governance and sustainable development. Further strengthening its environmental credentials, Ichalkaranji Municipal Corporation also received the Best Work Award under the Bhumi Thematic Area (2024–25).





Ichalkaranji Municipal Corporation, Ichalkaranji
Environmental Status Report 2025-2026





गौरवपत्र

इचलकरंजी महानगरपालिका, महाराष्ट्र

(सिमेंटीक क्षेत्र: भूमी)

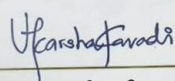
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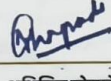
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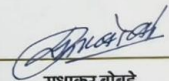
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सुधाकर बोबडे
अभियान संचालक
माझी वसुंधरा अभियान संचालनालय, महाराष्ट्र शासन



Ichalkaranji Municipal Corporation, Ichalkaranji
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Foreword



It gives me great pleasure to present the Environment Status Report (ESR) 2025–26 of Ichalkaranji Municipal Corporation. This report reflects our unwavering commitment towards environmental protection, sustainable urban development, and the well-being of every citizen of our city. Ichalkaranji has earned a distinguished place as the "Manchester of Maharashtra" through its vibrant

textile industry and entrepreneurial spirit. While this industrial and economic progress has brought prosperity, it has also increased our responsibility to safeguard natural resources and maintain ecological balance. Sustainable development can only be achieved when economic growth goes hand in hand with environmental conservation.

The Environment Status Report presents a comprehensive assessment of the city's environmental condition, covering air quality, water resources, wastewater management, municipal solid waste management, green cover, biodiversity, noise environment, land resources, renewable energy initiatives, and climate resilience. It also highlights the various initiatives undertaken by the Municipal Corporation to strengthen environmental infrastructure and improve the quality of urban life. Our vision is to transform Ichalkaranji into a clean, green, healthy, and climate-resilient city. The Municipal Corporation has been actively implementing projects such as augmentation of water supply systems, expansion of sewage treatment facilities, scientific solid waste management, development of Oxygen Parks, promotion of rainwater harvesting, enhancement of urban green spaces, renewable energy adoption, and environmental awareness programmes. These initiatives demonstrate our commitment to creating a sustainable future for present and future generations.

Environmental conservation cannot be achieved by the Municipal Corporation alone. It requires active participation from citizens, industries, educational institutions, social organizations, and every stakeholder. I sincerely appeal to all residents of Ichalkaranji to become partners in protecting our environment by adopting responsible environmental practices and supporting the initiatives of the Municipal Corporation.

I congratulate all officers, engineers, environmental experts, consultants, government departments, and stakeholders who have contributed to the preparation of this report. Their dedication and technical expertise have resulted in a valuable document that will guide environmental planning and sustainable urban governance in the years ahead.

I am confident that the Environment Status Report 2025–26 will serve as an important reference for policymakers, planners, researchers, industries, and citizens, and will strengthen our collective efforts towards building a cleaner, greener, and environmentally sustainable Ichalkaranji.

Mr. Uday Laxmi Ananda Dhatunde
Mayor
Ichalkaranji Municipal Corporation



Foreword



It gives me immense pleasure to present the Environment Status Report (ESR) 2025-26 of Ichalkaranji Municipal Corporation. This report has been prepared in accordance with the provisions of the Maharashtra Municipal Corporations Act. The report provides a comprehensive assessment of the city's environmental resources, existing environmental infrastructure, prevailing environmental

conditions, and the initiatives undertaken by the Municipal Corporation for environmental protection and sustainable urban development.

Ichalkaranji is one of Maharashtra's most important industrial cities, widely recognized as the "Manchester of Maharashtra" due to its globally renowned textile industry. Along with rapid industrialization, urbanization and population growth, the city faces increasing environmental challenges related to air quality, water resources, wastewater management, municipal solid waste, noise pollution, green cover, biodiversity and climate resilience. Addressing these challenges while ensuring sustainable economic growth is one of the foremost responsibilities of the Municipal Corporation.

The Environment Status Report presents an updated environmental profile of the city covering major environmental sectors including Air Environment, Water Resources, Wastewater Management, Municipal Solid Waste Management, Land Resources, Green Spaces and Biodiversity, Noise Environment, Soil Environment and Climate Change. The report also highlights the achievements of Ichalkaranji Municipal Corporation in implementing various environmental initiatives such as expansion of water supply infrastructure, development of sewage treatment facilities, scientific solid waste management, tree plantation programmes, Oxygen Parks, cycling tracks, promotion of renewable energy and pollution control measures.

The Municipal Corporation has already initiated several projects including augmentation of sewage treatment capacity, strengthening of water supply systems, expansion of green infrastructure and adoption of sustainable environmental management practices.

I sincerely appreciate the efforts of all departments of Ichalkaranji Municipal Corporation, environmental experts and all stakeholders who have contributed towards the preparation of this report. Their valuable support and cooperation have made this report comprehensive and informative.

I am confident that this Environment Status Report will serve as an important reference document for planners, administrators, policymakers, researchers and citizens, and will guide the Municipal Corporation in making informed decisions for sustainable environmental management and improving the quality of life of the citizens of Ichalkaranji.

Mrs. Pallavi Anita Chandrakant Patil
Municipal Commissioner
Ichalkaranji Municipal Corporation



Foreword



I am pleased to present the Environment Status Report (ESR) 2025-26 of Ichalkaranji Municipal Corporation, which provides a comprehensive overview of the city's environmental status and the continuous efforts being undertaken to ensure sustainable urban development.

The environment is one of the most valuable assets of any city, and its protection

is essential for the health, prosperity, and overall quality of life of its citizens. As Ichalkaranji continues to expand as a major industrial and commercial centre, it becomes increasingly important to balance economic growth with environmental conservation through responsible planning and effective governance.

This report presents valuable information on various environmental components, including ambient air quality, water resources, sewage management, municipal solid waste management, noise pollution, green spaces, biodiversity, renewable energy, and climate change mitigation measures. It also highlights the progress made by the Municipal Corporation in strengthening environmental infrastructure and implementing sustainable development initiatives.

The Municipal Corporation remains committed to improving environmental services through expansion of wastewater treatment facilities, promotion of scientific waste management, conservation of water resources, enhancement of urban greenery, and adoption of environmentally friendly technologies. At the same time, public awareness and community participation remain the key pillars of successful environmental management.

I appreciate the sincere efforts of the Municipal Commissioner, Additional Municipal Commissioner, officers, technical experts, consultants, and all departments involved in preparing this Environment Status Report. Their dedication has resulted in a comprehensive and informative document that will support future planning and decision-making.

I firmly believe that this report will encourage greater environmental awareness among citizens and inspire collective action towards making Ichalkaranji a cleaner, greener, healthier, and more sustainable city.

Mr. Anil Shantidevi Devkaran Dalva
Deputy Mayor
Ichalkaranji Municipal Corporation



Foreword



The preparation of the Environment Status Report (ESR) 2025–26 represents an important milestone in the environmental planning process of Ichalkaranji Municipal Corporation. The report provides a detailed assessment of the city's environmental assets, identifies key environmental challenges and outlines

the initiatives undertaken for improving environmental quality and promoting sustainable urban development.

Ichalkaranji has experienced significant industrial and economic growth over the past several decades, particularly in the textile sector. While this growth has contributed immensely to the city's prosperity, it has also increased pressure on natural resources and urban infrastructure. Effective environmental planning and scientific management of air, water, wastewater, municipal solid waste, green spaces and natural resources have therefore become essential components of urban governance. The Municipal Corporation has undertaken several important environmental initiatives, including enhancement of water supply infrastructure, expansion of sewage treatment facilities, implementation of scientific solid waste management practices, establishment of Oxygen Parks, extensive tree plantation programmes, development of cycling infrastructure and promotion of environmental awareness among citizens. These initiatives reflect our commitment towards achieving sustainable urban development while protecting natural resources for future generations.

The Environment Status Report has been prepared using environmental monitoring data, field surveys, government records and scientific assessments to provide an accurate picture of the environmental status of Ichalkaranji. The recommendations presented in this report will support informed decision-making and facilitate implementation of future environmental improvement programmes.

I appreciate the dedicated efforts of all officers, engineers, environmental experts, consultants and supporting staff involved in the preparation of this report. Their sincere contributions have resulted in a comprehensive document that will be valuable for environmental planning, policy formulation and sustainable city management.

I hope this report will serve as an effective tool for strengthening environmental governance and promoting active participation of all stakeholders in protecting the environment of Ichalkaranji.

Mrs. Sushma Shakuntala Ganpat Kolhe (Shinde)
Add. Municipal Commissioner
Ichalkaranji Municipal Corporation



Abbreviations

AAQ	:	Ambient Air Quality
ADD	:	Acute Diarrhoeal Disease
AFP	:	Acute Flaccid Paralysis
AES	:	Acute Encephalitic Syndrome
AI	:	Arithmetic Increase
AMRUT	:	Atal Mission for Rejuvenation and Urban Transformation
AQI	:	Air Quality Index
ASP	:	Activated Sludge Process
BOD	:	Biochemical Oxygen Demand
CBSE	:	Central Board of Secondary Education
CETP	:	Common Effluent Treatment Plant
COD	:	Chemical Oxygen Demand
CPCB	:	Central Pollution Control Board
DPSIR	:	Driving Force–Pressure–State–Impact–Response
DO	:	Dissolved Oxygen
ESR	:	Elevated Storage Reservoir
ESR	:	Environment Status Report
EV	:	Electric Vehicle
IEC	:	Information, Education and Communication
ILI	:	Influenza-Like Illness
IMC	:	Ichalkaranji Municipal Corporation
KSRTC	:	Karnataka State Road Transport Corporation
LULC	:	Land Use and Land Cover
MLD	:	Million Litres per Day
MoEF	:	Ministry of Environment and Forests
MPCB	:	Maharashtra Pollution Control Board
MRF	:	Material Recovery Facility
MSL	:	Mean Sea Level
MSRTC	:	Maharashtra State Road Transport Corporation
MSW	:	Municipal Solid Waste
MVA	:	Mazi Vasundhara Abhiyan
NAAQS	:	National Ambient Air Quality Standards
NAQI	:	National Air Quality Index
NIOS	:	National Institute of Open Schooling
NO	:	Nitric Oxide



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NO ₂	:	Nitrogen Dioxide
NO _x	:	Oxides of Nitrogen
OECD	:	Organisation for Economic Co-operation and Development
PM	:	Particulate Matter
PM ₁₀	:	Particulate Matter with aerodynamic diameter ≤ 10 micrometers
PM _{2.5}	:	Particulate Matter with aerodynamic diameter ≤ 2.5 micrometers
PM e-Bus	:	Prime Minister Electric Bus Service Scheme
PPE	:	Personal Protective Equipment
RRR	:	Reduce, Reuse and Recycle
RSPM	:	Respirable Suspended Particulate Matter
SARI	:	Severe Acute Respiratory Infection
SBR	:	Sequencing Batch Reactor
SDGs	:	Sustainable Development Goals
SO ₂	:	Sulphur Dioxide
STP	:	Sewage Treatment Plant
SWM	:	Solid Waste Management
ULB	:	Urban Local Body
WQI	:	Water Quality Index
WTP	:	Water Treatment Plant
ZLD	:	Zero Liquid Discharge



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Executive Summary

The Environment Status Report (ESR) 2025–26 of Ichalkaranji Municipal Corporation (IMC) has been prepared in accordance with the provisions of the Maharashtra Municipal Corporations Act, 1949 and the guidelines issued by the Maharashtra Pollution Control Board (MPCB). The report presents a comprehensive assessment of the city's environmental resources, environmental infrastructure, environmental quality, and the initiatives undertaken by the Municipal Corporation towards sustainable urban development. The ESR serves as an important decision-support document for environmental planning, policy formulation, and implementation of future environmental improvement programmes.

Ichalkaranji, popularly known as the "Manchester of Maharashtra," is one of the state's leading textile and engineering hubs. The Municipal Corporation covers an area of 29.78 sq. km with an estimated population of approximately 3.50 lakh. Rapid industrialization, urbanization, and population growth have significantly contributed to the city's economic development while simultaneously creating environmental challenges related to air quality, water resources, wastewater management, municipal solid waste, transportation, and climate resilience.

The city receives approximately 45 MLD of potable water from Panchganga River and Krishna River and generates about 40 MLD of sewage. Wastewater management infrastructure includes a 20 MLD Conventional Activated Sludge Process (ASP) Sewage Treatment Plant and an 18 MLD Sequencing Batch Reactor (SBR) Sewage Treatment Plant, which collectively contribute towards improving the treatment and disposal of municipal wastewater. Treated effluent quality consistently complies with the standards prescribed by the Maharashtra Pollution Control Board, thereby reducing pollution loads discharged into nearby water bodies.

Ambient air quality monitoring was carried out at eight locations covering residential, commercial, traffic, and industrial areas. The monitored parameters, namely PM₁₀, PM_{2.5}, SO₂, and NO₂, were found to be within the National Ambient Air Quality Standards (NAAQS) during the monitoring period. The overall Air Quality Index (AQI) of the city falls under the "Satisfactory" category, indicating generally acceptable air quality with localized impacts observed mainly in industrial estates and high-traffic corridors.

The report also evaluates the status of surface water, groundwater, wastewater, noise environment, soil quality, biodiversity, and urban green spaces. Environmental monitoring indicates that while the city's environmental quality remains generally satisfactory, continued efforts are required to address pressures arising from industrial activities, increasing vehicular traffic, urban expansion, and climate variability.

Municipal Solid Waste Management has been significantly strengthened through scientific collection, transportation, processing, and disposal systems. Source segregation, door-to-door collection, decentralized waste management, plastic waste management, and public awareness



programmes have been implemented. The Corporation has also promoted the principles of Reduce, Reuse and Recycle (RRR) through dedicated awareness campaigns and RRR Centres to encourage resource recovery and circular economy practices.

Environmental sustainability has been further enhanced through several green initiatives undertaken under Mazi Vasundhara Abhiyan 5.0. During the reporting year, 30,000 saplings were planted across the city to improve urban green cover and biodiversity. The Municipal Corporation has also developed Miyawaki Urban Forests, Dhanvantari Gardens with medicinal plant species, and an Oxygen Park, contributing to carbon sequestration, climate resilience, and improved urban ecology. In addition, 100 kWp rooftop solar photovoltaic systems at the Municipal Headquarters and 100 kWp rooftop solar plants at six municipal buildings have been commissioned, promoting renewable energy adoption and reducing greenhouse gas emissions.

Recognizing the importance of occupational health and safety, the Municipal Corporation organized comprehensive health check-up programmes for 585 sanitation workers and distributed Personal Protective Equipment (PPE) kits to sanitation staff. Various Information, Education and Communication (IEC) activities, including source segregation campaigns, anti-littering drives, plastic-free initiatives, Swachhata awareness programmes, school campaigns, and community participation activities, were conducted throughout the year to promote environmental stewardship and citizen participation.

The efforts of Ichalkaranji Municipal Corporation have received significant recognition at the state level. During Mazi Vasundhara Abhiyan 4.0 (2023–24), the Corporation secured the 3rd Prize in the AMRUT Category. Subsequently, under Mazi Vasundhara Abhiyan 5.0 (2024–25), IMC was awarded the 2nd Prize, along with the Best Work Award under the Bhumi Thematic Area, acknowledging its exemplary performance in environmental management and sustainable urban development.

Overall, the findings of the Environment Status Report indicate that Ichalkaranji has made substantial progress in strengthening environmental infrastructure and improving environmental governance. However, sustained efforts will be required to address emerging environmental challenges through enhanced pollution control measures, conservation of natural resources, expansion of green infrastructure, adoption of renewable energy, promotion of sustainable transportation, and active participation of citizens. The report provides a strategic framework for future environmental planning and reaffirms the commitment of Ichalkaranji Municipal Corporation towards achieving a cleaner, greener, healthier, and climate-resilient city in line with the Sustainable Development Goals (SDGs) and the vision of sustainable urban development.



1 INTRODUCTION AND CITY PROFILE

1.1 ENVIRONMENT STATUS REPORT (ESR)

The Environment Status Report (ESR) is a comprehensive assessment of the environmental conditions prevailing within the jurisdiction of an Urban Local Body (ULB). It evaluates the status of natural resources, environmental infrastructure, ecological assets, pollution sources, and the impact of developmental activities on the environment. The report also identifies key environmental issues and recommends mitigation measures to ensure sustainable urban development.

In accordance with Section 67(A) of the Maharashtra Municipal Corporations Act, 1949 and the guidelines issued by the Environment Department, Government of Maharashtra, all Municipal Corporations are required to prepare and submit an Annual Environment Status Report (ESR) before 31st July every year.

The ESR serves as an important environmental management tool and provides a framework for assessing environmental performance, identifying emerging challenges, and formulating action plans for environmental improvement. The ESR of Ichalkaranji Municipal Corporation has been prepared using the Driving Force–Pressure–State–Impact–Response (DPSIR) framework recommended by the Government of Maharashtra.

1.2 OBJECTIVES OF ESR

The objectives of the Environment Status Report are:

- To assess the current status of environmental resources in Ichalkaranji City.
- To evaluate environmental pressures arising from urbanization and industrialization.
- To identify key environmental concerns and challenges.
- To recommend mitigation and management measures for sustainable urban development.
- To facilitate informed environmental planning and decision-making by the Municipal Corporation.
- To improve public awareness and stakeholder participation in environmental management.

The ESR 2025-26 thus serves as an important environmental planning document for achieving sustainable development and improving the quality of life of the citizens of Ichalkaranji.

1.3 DPSIR FRAMEWORK

The DPSIR Framework was developed by the Organization for Economic Co-operation and Development (OECD), 1994 and subsequently adopted by various national and international environmental agencies for environmental assessment and reporting. The framework establishes a cause-and-effect relationship between socio-economic development and environmental conditions through five interconnected components:

A) Driving Forces (D)

Population growth, urbanization, industrialization, economic development and infrastructure expansion.

B) Pressures (P)

Increased demand on natural resources such as water, land, energy and environmental services, leading to generation of wastewater, solid waste, air emissions and resource depletion.

C) State (S)

Current environmental condition of air, water, land, biodiversity and environmental infrastructure.

D) Impact (I)

Effects of environmental degradation on public health, ecology, economy and quality of life.

E) Response (R)

Policies, programs, projects and corrective actions undertaken by local authorities and stakeholders to address environmental concerns.

The DPSIR framework provides a scientific basis for environmental decision-making and assists policy makers in developing sustainable strategies for urban environmental management.

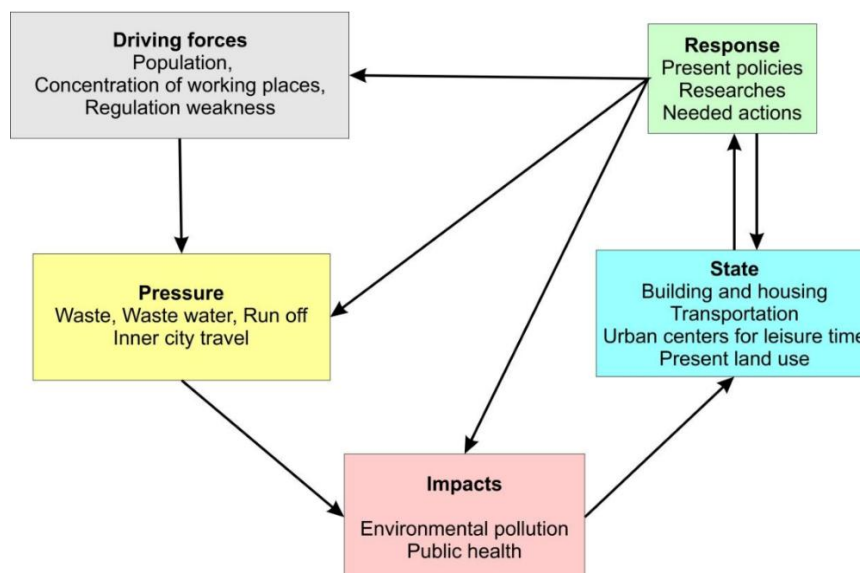


Figure 1-1 DPSIR Framework

It is a most effective form of conveying environmental status to the citizens and government authorities. This framework helps policy/decision makers in getting ground level/real time feedback about the impacts of various pressures on the states thereby helping prepare a forward action plan necessary for implementation of any future changes in policies useful for mitigating environmental issues.



2 CITY PROFILE

2.1 ICHALKARANJI – THE MANCHESTER OF MAHARASHTRA

Ichalkaranji is one of the fastest-growing industrial cities in Western Maharashtra and is renowned as the "Manchester of Maharashtra" due to its extensive textile manufacturing activities. The city is located in Kolhapur District and forms an important industrial, commercial, educational and service centre in the region.

The city has developed into one of India's largest decentralized textile clusters with hundreds of power looms, textile processing units, spinning mills and allied engineering industries. The textile sector serves as the primary economic driver of the city and provides direct and indirect employment to a substantial portion of the population.

The strategic location of Ichalkaranji near the Panchganga River basin and its connectivity to Kolhapur, Sangli, Miraj and Karnataka has contributed significantly to its industrial and commercial growth.

2.2 HISTORICAL BACKGROUND

The origin of Ichalkaranji dates back to the eighteenth century when it was formed by combining seven small villages. The town was developed under the rule of the Ghorpade dynasty and later emerged as an important trade centre. The industrial transformation of the city began during the early twentieth century with the introduction of textile weaving activities. Subsequently, the establishment of cooperative spinning mills accelerated industrial growth. A landmark achievement was the establishment of the Deccan Co-operative Spinning Mill in 1962, recognized as the first cooperative spinning mill in Asia. Over the years, Ichalkaranji has evolved into a nationally recognized textile hub with a strong industrial base and supporting infrastructure.

2.3 ENVIRONMENTAL PRESSURES AND RESOURCE DEMAND

Rapid urbanization, population growth and industrial expansion have increased pressure on the city's environmental resources.

Major environmental challenges include:

- Increasing demand for potable water supply.
- Rising generation of sewage and wastewater.
- Growing quantities of municipal solid waste.
- Increasing traffic density and vehicular emissions.
- Pressure on land resources due to urban expansion.
- Management of industrial and construction-demolition waste.
- Conservation of river water quality and ecological resources.



The present ESR evaluates these pressures and their impacts on the environmental status of Ichalkaranji city and recommends suitable mitigation and management measures.

2.4 CIVIL ADMINISTRATION

The civic administration of the city is managed by the Ichalkaranji Municipal Corporation (IMC), established under Government Resolution dated 05th May 2022.

The Municipal Corporation is responsible for:

- Water Supply Management
- Sewerage and Sanitation Services
- Municipal Solid Waste Management
- Roads and Transportation Infrastructure
- Public Health Services
- Environmental Protection
- Town Planning and Development
- Revenue Collection and Administration

The Municipal Corporation is headed by the Municipal Commissioner and functions through various administrative departments for effective delivery of civic services.

The city is presently divided into administrative wards for governance and service delivery.

Table 2-1 Geographic and Demographic highlights of Ichalkaranji City (2025)

Sr. No.	Particulars	Details
1	Latitude	16.70° N
2	Longitude	74.47° E
3	Average Elevation	539 m above Mean Sea Level
4	Total Municipal Area	29.78 Sq. Km
5	District	Kolhapur
6	State	Maharashtra
7	Population (Census 2011)	2,92,060
8	Estimated Population (2025)	3,50,000
9	Projected Population (2030)	4,02,000
10	Slum Population	28,171
11	Population Density	Approx. 12,317 Persons/Sq. Km
12	Average Annual Rainfall	750 mm
13	Annual Average Maximum Temperature	31.96 °C
14	Annual Average Minimum Temperature	21.63 °C
15	Average Relative Humidity	58.12 %
16	Number of Wards	16
17	Municipal Status	Municipal Corporation



Ichalkaranji Municipal Corporation, Ichalkaranji **Environmental Status Report 2025-2026**



19	Major Industry	Textile, Engineering and Allied Industries
20	Major River Basin	Panchganga River Basin
21	Climate Type	Tropical Semi-Arid Climate

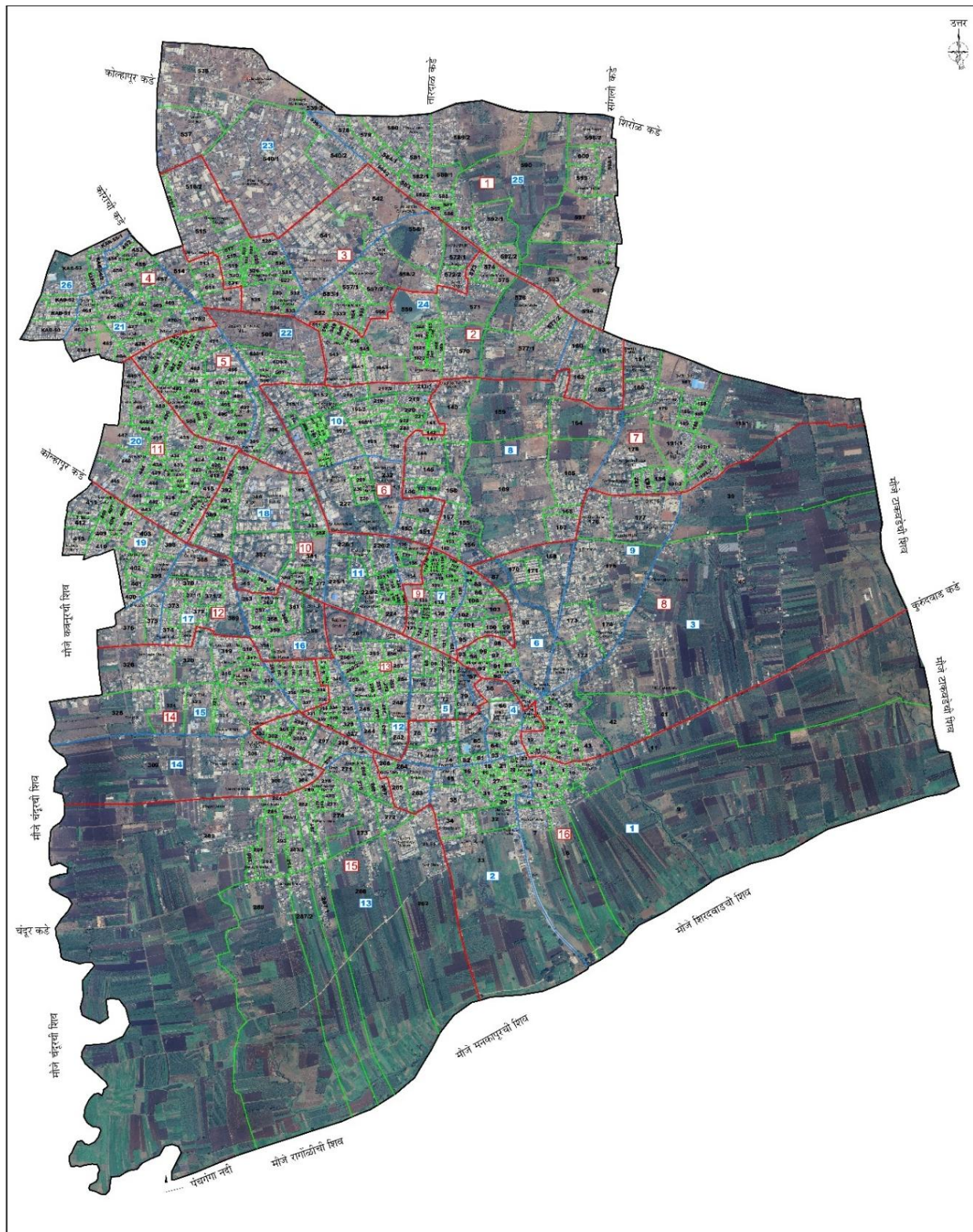


Figure 2-1 Ward Boundary of Ichalkaranji Municipal Corporation



2.5 ECONOMIC PROFILE

The economy of Ichalkaranji is predominantly driven by the textile sector comprising:

- Power Loom Units
- Textile Processing Units
- Spinning Mills
- Garment Manufacturing Units
- Textile Machinery Manufacturing
- Engineering Workshops
- Commercial and Service Establishments

The city contributes significantly to the textile economy of Maharashtra and exports textile products to domestic and international markets.

2.6 GEOGRAPHY AND CLIMATE

2.6.1 Geographic Setting

Ichalkaranji City is situated in the southern part of Maharashtra within Kolhapur District and forms an important component of the Panchganga River Basin. Geographically, the city lies between latitude 16.70° N and longitude 74.47° E at an average elevation of approximately 539 metres above Mean Sea Level (MSL).

The city is strategically located about 25 km east of Kolhapur and enjoys excellent connectivity with major urban centres including Sangli, Miraj, Kolhapur, Nipani and Chikodi through an extensive road network. Its location has contributed significantly to the growth of textile manufacturing, commerce and allied industries.

Geologically, Ichalkaranji forms part of the Deccan Trap region characterized by basaltic lava formations. The terrain consists predominantly of black cotton soils, which possess high moisture retention capacity and support agricultural activities in the surrounding region. The sub-surface strata comprise hard murum and basaltic rock formations that provide suitable foundations for urban infrastructure development.

The city is situated within the alluvial plains of the Panchganga River and experiences relatively flat topography with gentle slopes towards natural drainage channels.

2.6.2 Climate

Ichalkaranji experiences a tropical semi-arid climate characterized by hot summers, moderate monsoons and mild winters. Seasonal climatic variations influence water availability, air quality, energy consumption and urban environmental conditions.



2.6.3 Summer Season

The summer season extends from March to May. During this period, temperatures frequently exceed 35°C, with April and May being the hottest months. The average maximum temperature ranges between 35°C and 38°C.

2.6.4 Monsoon Season

The southwest monsoon generally commences in June and continues until September. Approximately 75–80% of the annual rainfall is received during this period. July and August are typically the wettest months.

2.6.5 Winter Season

The winter season extends from November to February. Weather conditions remain pleasant with cooler nights and warm daytime temperatures. Minimum temperatures generally vary between 15°C and 20°C.

Table 2-2 Climate Characteristics of Ichalkaranji City (2025)

Sr. No.	Parameter	Value
1	Climate Type	Tropical Semi-Arid
2	Average Annual Rainfall	750 mm
3	Average Maximum Temperature	31.96°C
4	Peak Summer Temperature	37-39°C
5	Average Minimum Temperature	21.63°C
6	Winter Minimum Temperature	15-18°C
7	Average Relative Humidity	58.12%
8	Rainiest Month	July
9	Monsoon Contribution	Approx. 80% of Annual Rainfall

The climatic conditions of Ichalkaranji have a direct influence on water resources, urban drainage, public health, vegetation and environmental management practices.

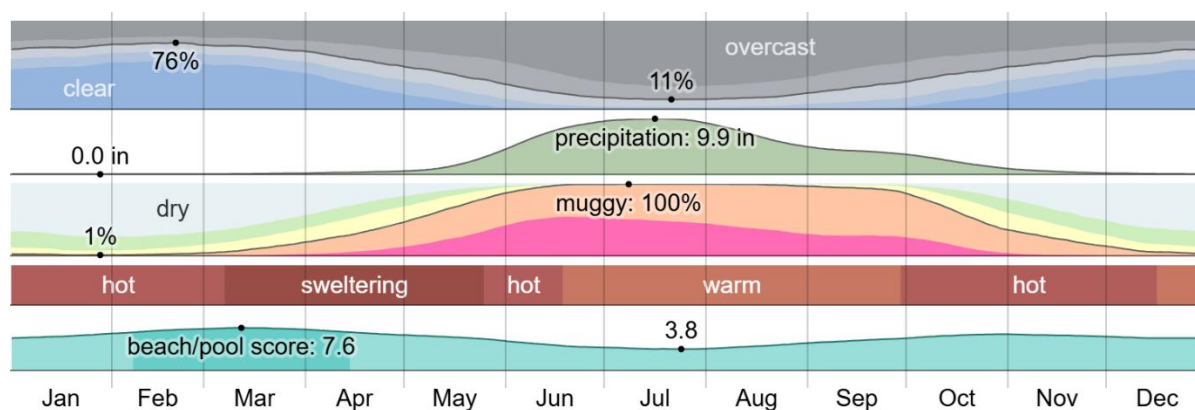


Figure 2-2 Climate in Ichalkaranji City throughout the year



Source: <https://weatherspark.com/y/107881/Average-Weather-in-Ichalkaranji-Maharashtra-India-Year-Round>

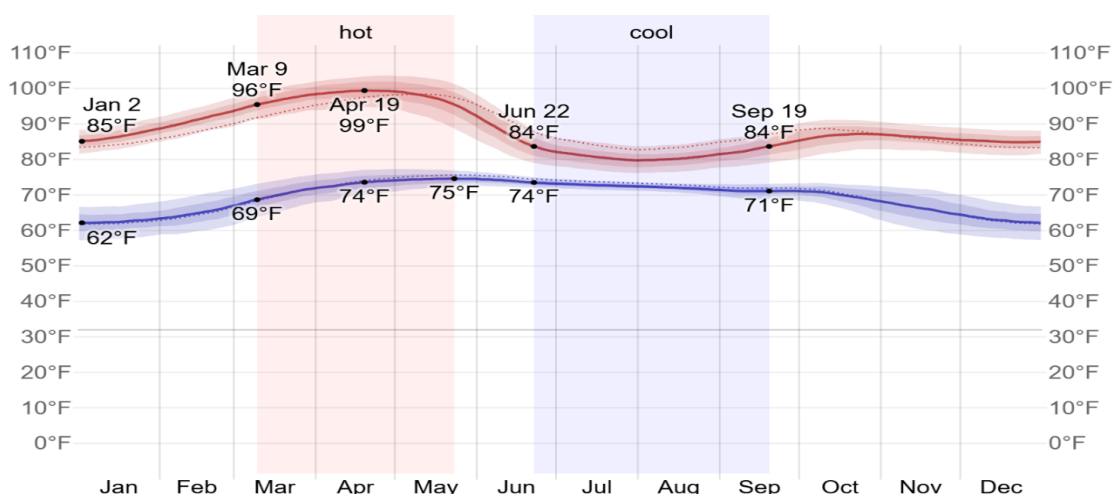


Figure 2-3 Temperature graph of Ichalkaranji City

Source: <https://weatherspark.com/y/107881/Average-Weather-in-Ichalkaranji-Maharashtra-India-Year-Round>

2.7 DRIVING FORCES AND ENVIRONMENTAL PRESSURES

The rapid urbanization and industrial development witnessed by Ichalkaranji over the last several decades have generated substantial environmental pressures on the city's natural resources and infrastructure.

Within the DPSIR Framework, these socio-economic developments are categorized as Driving Forces that create pressures on environmental resources such as water, land, air and biodiversity. The principal driving forces identified for Ichalkaranji include:

2.7.1 Population Growth

Increasing population has resulted in greater demand for housing, water supply, sanitation, transportation and civic infrastructure.

2.7.2 Industrial Development

The city's textile and engineering industries have significantly contributed to economic growth while simultaneously increasing demand for water, energy and land resources.

2.7.3 Urban Expansion

Expansion of residential, commercial and industrial areas has increased pressure on land resources and environmental infrastructure.

2.7.4 Economic Growth

Improved standards of living have led to increased consumption of resources and higher generation of waste.



2.7.5 Transportation Growth

Increasing vehicular population contributes to air pollution, noise pollution and greenhouse gas emissions.

These driving forces create environmental pressures including:

- Increased water demand.
- Increased sewage generation.
- Higher municipal solid waste generation
- Rising energy consumption.
- Air and noise pollution.
- Pressure on surface and groundwater resources.
- Urban flooding due to reduced natural drainage.
- Increased generation of industrial waste.

Understanding these pressures is essential for planning sustainable environmental management interventions.

2.8 POPULATION GROWTH

Population growth remains one of the most significant drivers influencing environmental conditions within Ichalkaranji. Historically, the city has experienced rapid growth due to industrialization, particularly in the textile sector. Employment opportunities generated by power loom units, spinning mills and associated industries have attracted migrants from surrounding rural areas and neighbouring districts. The population of Ichalkaranji has increased substantially from approximately 12,920 persons in 1901 to 2,87,570 persons as per Census 2011.

Due to postponement of the 2021 Census, population estimates have been derived using standard forecasting methods.

2.8.1 Population Growth Trend

The estimated annual growth is primarily attributed to industrial employment opportunities and urban economic activities. Population projections have been prepared using Arithmetic Increase, Geometric Increase, Incremental Increase and Exponential Growth methods

Table 2-3 Population Projection of Ichalkaranji

Sr. No.	Method	2025-26	2031	2036	2041
1	Incremental Increase (II)	315,410	312,982	305,686	296,946
2	Arithmetic Increase (AI)	362,106	384,634	409,883	424,571
3	Geometrical Increase	425,385	478,943	541,291	588,124
4	Exponential Method	417,439	467,317	525,084	568,328
5	Maximum Population	425,385	478,943	541,291	588,124
Average Population		367,634	392,186	418,388	436,963



2.9 LITERACY RATE AND SEX RATIO

Education and social development indicators provide valuable insight into the socio-economic profile of the city. As per Census 2011, Ichalkaranji recorded a literacy rate of approximately 86%, which is higher than the district average and the national average.

2.9.1 Literacy Statistics

Table 2-4 Literacy Rate of Ichalkaranji City

Sr. No.	Description	Percentage
1	Total Literacy Rate	86.00%
2	Male Literacy Rate	90.53%
3	Female Literacy Rate	81.08%

The high literacy rate contributes positively towards environmental awareness, public participation and adoption of sustainable practices.

2.9.2 Sex Ratio

The sex ratio is an important demographic indicator reflecting gender balance within the population.

Table 2-5 Details of Sex Ratio

Sr. No.	Description	Value
1	Sex Ratio	926 Females per 1000 Males
2	Child Sex Ratio	902 Girls per 1000 Boys

Continued social development initiatives are required to improve gender equity and social sustainability.

2.10 INDUSTRIAL, COMMERCIAL AND AGRICULTURAL PROFILE

Ichalkaranji is recognized as one of India's most prominent textile manufacturing centres and is widely known as the “Manchester of Maharashtra”. The city's economy is predominantly driven by textile manufacturing, engineering activities, commercial establishments and supporting service industries.

2.10.1 Textile Industry

The textile sector is the backbone of the local economy and provides direct and indirect employment to thousands of workers.

The textile cluster comprises:

- Spinning Mills



- Power Loom Units
- Shuttle-less Looms
- Textile Processing Units
- Yarn Sizing Units
- Garment Manufacturing Units
- Textile Machinery Manufacturing Units

The textile industry generates substantial economic activity but also exerts pressure on water resources, wastewater management systems, energy consumption and air quality. Currently, in Ichalkaranji city, there are 150 Sizing Industries and 68 Processing units.

2.10.2 Engineering Industry

Engineering is the second-largest industrial sector in Ichalkaranji.

The sector consists of:

- Textile Machinery Manufacturing
- Fabrication Workshops
- Machine Component Manufacturing
- Automobile Service and Repair Units
- Small and Medium Scale Engineering Enterprises

2.10.3 Commercial Sector

The city serves as a major commercial centre for the surrounding region.

Commercial activities include:

- Wholesale Textile Trading
- Retail Markets
- Banking and Financial Services
- Insurance Services
- Warehousing and Logistics
- Hospitality and Service Sector Activities

Almost all major nationalized and private banks maintain branches within the city.

2.11 AGRICULTURE

Agriculture plays a significant role in the economy of the region surrounding Ichalkaranji City. The fertile black cotton soils, favourable climatic conditions, and irrigation facilities provided by the Panchganga River Basin have supported intensive agricultural development in the catchment area. Sugarcane is the predominant crop cultivated in the region and serves as the backbone of the local agro-industrial economy.

The area surrounding Ichalkaranji is home to several cooperative and private sugar industries that process sugarcane produced by farmers from Kolhapur, Sangli and adjoining districts. The region is



surrounded by five major sugar factories that collectively process more than 50 lakh metric tonnes of sugarcane annually.

The sugarcane economy contributes significantly to regional economic growth, generating an estimated annual turnover of more than ₹13,000 crore through sugarcane cultivation, transportation, processing and allied activities.

Major sugar industries located in the influence area include:

- Deshbhakta Ratnappa Kumbhar Panchganga Sahakari Sakhar Karkhana Ltd.
- Other cooperative and private sugar manufacturing units in the Panchganga basin.

Four out of the five sugar factories have established bagasse-based co-generation power plants, contributing towards renewable energy generation and sustainable utilization of agricultural residues. These co-generation facilities not only supply power for captive consumption but also export surplus electricity to the state grid.

The agricultural economy also supports several ancillary sectors including:

- Dairy farming
- Poultry farming
- Agricultural equipment manufacturing
- Fertilizer and pesticide distribution
- Transportation and logistics services

While agriculture contributes significantly to economic development, intensive cultivation practices and agro-industrial activities may exert pressure on water resources, soil quality and environmental sustainability. Therefore, efficient water management, sustainable farming practices and pollution control measures remain important components of environmental planning in the region.

2.12 EDUCATION AND RESEARCH

Ichalkaranji has emerged as an important educational center in Western Maharashtra. The city offers educational facilities ranging from primary schools to higher education institutions and technical training centers. The city has a well-developed educational infrastructure comprising government, municipal, aided and private educational institutions.

2.12.1 Educational Infrastructure

Table 2-6 Details of Educational Institutes in Ichalkaranji

Sr. No.	Description	Approximate Number
1	Primary and Secondary Schools	100+
2	International Schools	3
3	Degree Colleges	20+
4	Engineering Colleges	3



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5	Technical Institutes	1+
6	Research Institutes	1+

Educational institutions in the city provide courses in:

- Arts
- Science
- Commerce
- Engineering
- Management
- Information Technology
- Vocational and Technical Education

The primary medium of instruction is Marathi, followed by English and Hindi. Educational institutions are affiliated with the Maharashtra State Board, Central Board of Secondary Education (CBSE), National Institute of Open Schooling (NIOS), and various universities and technical education boards.

The comparatively high literacy rate of approximately 86% reflects the city's strong educational foundation and contributes positively towards environmental awareness, public participation, sustainable development and improved quality of life.

Educational and research institutions also play a vital role in promoting environmental education, water conservation, waste management awareness and sustainable urban development initiatives.

2.13 CONNECTIVITY AND TRANSPORTATION

Ichalkaranji has regional connectivity through road networks linking it with major cities of Maharashtra and neighbouring Karnataka. Efficient transportation infrastructure has significantly contributed to the industrial and commercial growth of the city.

2.13.1 Road Connectivity

The city is connected to Kolhapur, Sangli, Miraj, Nipani, Chikodi, Pune, Mumbai and other major urban centres through State Highways and National Highway networks.

Public transportation services are provided through:

- Maharashtra State Road Transport Corporation (MSRTC)
- Karnataka State Road Transport Corporation (KSRTC)
- Private Bus Operators

Frequent bus services connect Ichalkaranji with Kolhapur and Sangli, while long-distance services provide connectivity to major cities such as:

- Mumbai
- Pune
- Nagpur
- Chhatrapati Sambhajinagar



- Nashik
- Bengaluru
- Hyderabad
- Surat
- Ahmedabad
- Goa

2.13.2 Rail Connectivity

Although Ichalkaranji does not have a railway station within the municipal limits, it is served by nearby railway stations located at:

- Hatkanangale
- Jaysingpur
- Miraj Junction
- Sangli

These stations provide connectivity to major destinations across India including Mumbai, Delhi, Bengaluru, Pune, Hyderabad, Ahmedabad, Goa and Chennai.

2.13.3 Air Connectivity

The nearest airport is located at Kolhapur, approximately 25 km from Ichalkaranji. Additional domestic and international connectivity is available through Belagavi and Pune airports.

2.13.4 Environmental Implications of Transportation

The growing transportation sector contributes significantly to economic development and mobility. However, increasing vehicle ownership and traffic volumes have also resulted in environmental pressures such as:

- Air pollution from vehicular emissions.
- Noise pollution in urban areas.
- Increased fossil fuel consumption.
- Traffic congestion at major intersections.
- Greenhouse gas emissions.
- Road safety concerns.

The rapid urbanization and economic growth of Ichalkaranji have led to a steady increase in vehicle registrations over the past decade. Consequently, sustainable transportation planning, promotion of public transport, traffic management improvements, non-motorized transport facilities and adoption of electric vehicles are essential for reducing environmental impacts and improving urban mobility. The introduction of electric city buses under various Government of India initiatives is expected to contribute positively towards reduction of vehicular emissions and enhancement of sustainable public transportation within the city.



Ichalkaranji Municipal Corporation, Ichalkaranji
Environmental Status Report 2025-2026



Source:

["Textile mill owners yield to striking workers' demands". The Hindu. 2 March 2013.](#)

["Ichalkaranji Textile Development Cluster Limited". Archived from the original on 11 March 2010. Retrieved 15 August 2010.](#)

["Ichalkaranji Textile Development Cluster Limited". Archived from the original on 11 March 2010. Retrieved 15 August 2010.](#)

⁶[Sunder Iyer \(23 July 2009\). "Deshbhakta Ratnappa Kumbhar Panchaganga SSK, Ichalkaranji Installs 30 MW turbine". Indiaprwire. Archived from the original on 27 July 2009. Retrieved 29 October 2016](#)



3 AIR ENVIRONMENT

3.1 INTRODUCTION

Air is one of the most important natural resources and is essential for sustaining life and maintaining ecological balance. The Earth's atmosphere is composed of a mixture of gases, primarily nitrogen (78%), oxygen (21%), argon (0.93%), carbon dioxide (0.04%) and traces of other gases along with varying amounts of water vapour. Any undesirable change in the natural composition of air due to the presence of harmful solid, liquid or gaseous substances is termed air pollution.

As defined under the Air (Prevention and Control of Pollution) Act, 1981, an air pollutant means any solid, liquid or gaseous substance (including noise) present in the atmosphere in such concentration as may be or tend to be injurious to human beings, other living creatures, plants, property or the environment.

Rapid urbanization, industrialization, increasing vehicular traffic, infrastructure development and growing energy consumption have increased pressure on the ambient air environment. Air pollution has become one of the major environmental concerns because of its adverse effects on human health, ecosystems and climate change.

Ichalkaranji, popularly known as the "Manchester of Maharashtra", is one of the largest textile manufacturing centres in Western India. The city's economy is largely dependent on textile industries, engineering industries, commercial establishments and allied sectors. These activities contribute significantly to the economic development of the region but also generate environmental pressures on ambient air quality.

The major sources of air pollution within Ichalkaranji Municipal Corporation are:

- Vehicular emissions
- Textile processing and sizing units
- Engineering industries
- Road dust and construction activities
- Agricultural and allied activities

The present chapter evaluates the status of ambient air quality in Ichalkaranji Municipal Corporation using monitoring data generated during March, April and May 2026.

3.2 AIR QUALITY

Air quality is an important indicator of environmental health and sustainable urban development. Poor air quality adversely affects human health and contributes to respiratory and cardiovascular diseases.

The principal pollutants monitored under the ambient air quality programme are:

- Particulate Matter (PM10)
- Fine Particulate Matter (PM2.5)



- Sulphur Dioxide (SO₂)
- Oxides of Nitrogen (NO₂)

PM_{2.5} is considered one of the most harmful pollutants because of its ability to penetrate deep into the lungs and bloodstream. Long-term exposure may result in asthma, chronic obstructive pulmonary disease, lung cancer and cardiovascular disorders.

The ambient air quality status of Ichalkaranji indicates that all monitored parameters during the study period were within the National Ambient Air Quality Standards (NAAQS). The highest particulate concentrations were generally observed at industrial and heavy traffic locations, whereas residential locations recorded comparatively lower values.

3.3 AIR QUALITY MONITORING NETWORK

Ambient Air Quality Monitoring is carried out to evaluate the concentration of air pollutants and to assess compliance with National Ambient Air Quality Standards.

At the national level, the monitoring programme is coordinated by the Central Pollution Control Board (CPCB), while the Maharashtra Pollution Control Board (MPCB) supervises the monitoring network within the State. Ichalkaranji Municipal Corporation undertakes periodic ambient air quality monitoring through recognized environmental laboratories.

3.3.1 Monitoring Locations

During the assessment period, ambient air quality monitoring was conducted at representative locations covering residential, commercial, traffic and industrial areas.

The monitoring stations included

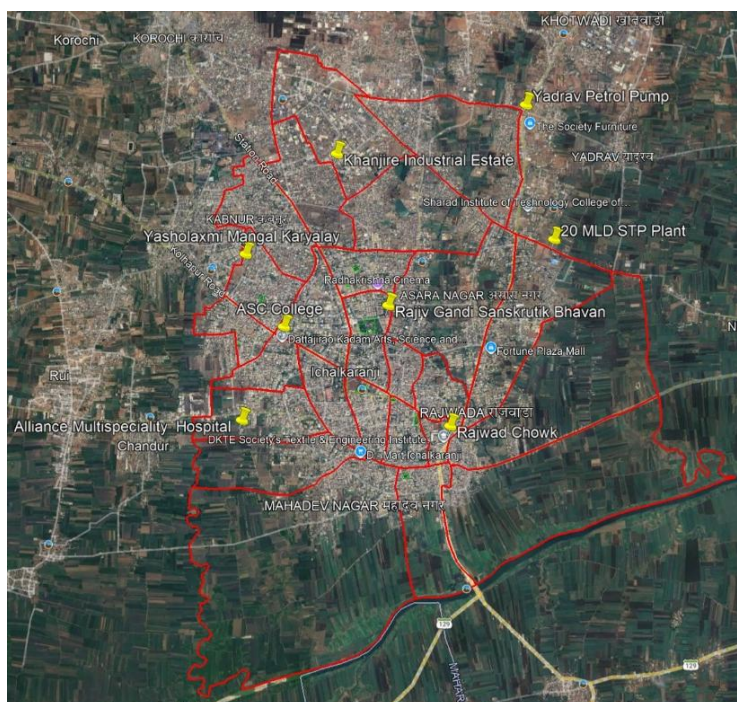


Figure 3-1 Ambient Air Quality Monitoring Locations



Table 3-1 Details of Ambient Air Quality Monitoring Locations

Sr. No.	Location	Latitude	Longitude
1	Yadav Petrol Pump	16°43'4.53"N	74°28'39.62"E
2	20 MLD STP Plant	16°42'12.40"N	74°28'54.79"E
3	Rajwada Chowk	16°40'56.34"N	74°28'17.07"E
4	Rajiv Gandhi Sanskrutik Bhavan	16°41'42.16"N	74°27'48.42"E
5	Alliance Multispeciality Hospital	16°40'53.29"N	74°26'51.27"E
6	ASC College	16°41'31.12"N	74°27'6.09"E
7	Yasholaxmi Mangal Karyalay	16°41'58.69"N	74°26'48.45"E
8	Khanjire Industrial Estate	16°42'40.41"N	74°27'23.28"E

The locations were selected to represent different land use patterns and major pollution sources.

3.3.2 Monitoring Parameters

The following parameters were monitored:

- Sulphur Dioxide (SO₂)
- Oxides of Nitrogen (NO₂)
- PM10
- PM2.5

Monitoring was carried out in accordance with CPCB guidelines for Ambient Air Quality Monitoring.

1) Trends in PM10 Concentration:

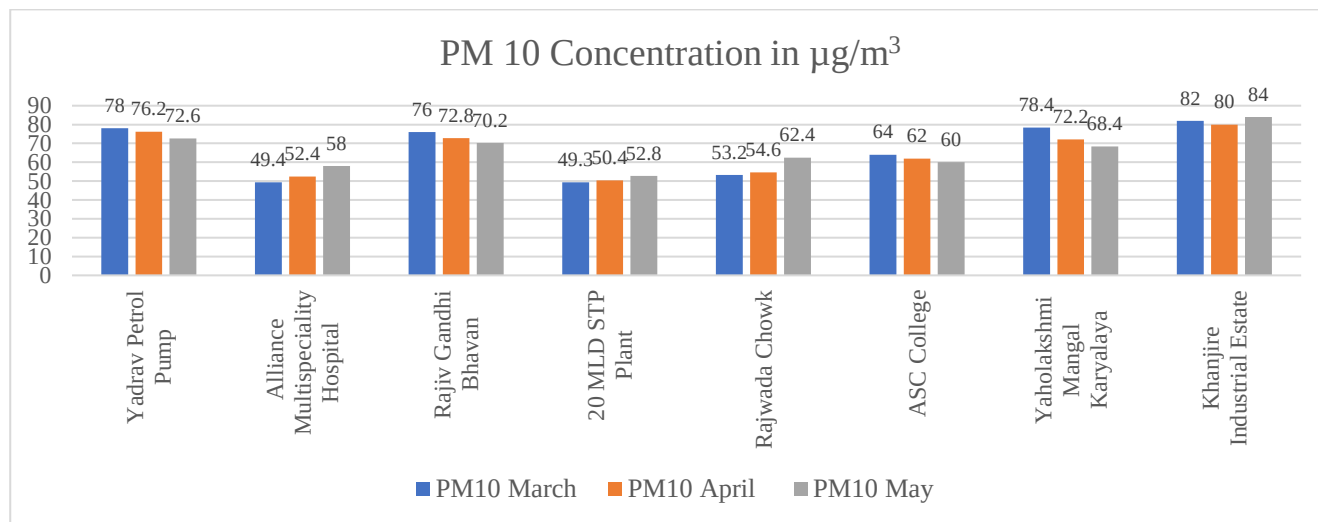


Figure 3-2 Bar Chart of PM 10 Concentration

Particulate matter (PM) is microscopic solid or liquid matter suspended in the Earth's atmosphere. This complex mixture is sum of all solid and liquid particles suspended in air which includes both organic and inorganic particles, such as dust, pollen, soot, smoke, and liquid droplets. Depending on



their size, composition, and origin, these particles are divided into two major categories- Suspended Particulate Matter (SPM) and Respirable Suspended Particulate matter (RSPM).

PM10 concentrations during the study period ranged from 49.3 $\mu\text{g}/\text{m}^3$ to 84.0 $\mu\text{g}/\text{m}^3$.

- Maximum concentration: 84.0 $\mu\text{g}/\text{m}^3$ at Khanjire Industrial Estate during May.
- Minimum concentration: 49.3 $\mu\text{g}/\text{m}^3$ at 20 MLD STP Plant during March.
- Overall average concentration: 65.80 $\mu\text{g}/\text{m}^3$.

Industrial and traffic-dominated locations such as Khanjire Industrial Estate, Yadrav Petrol Pump and Mahalakshmi Mangal Karyalaya recorded comparatively higher PM10 values due to industrial activities and vehicular movement.

All monitored values remained below the NAAQS limit of 100 $\mu\text{g}/\text{m}^3$.

2) Trends in PM2.5 Concentration:

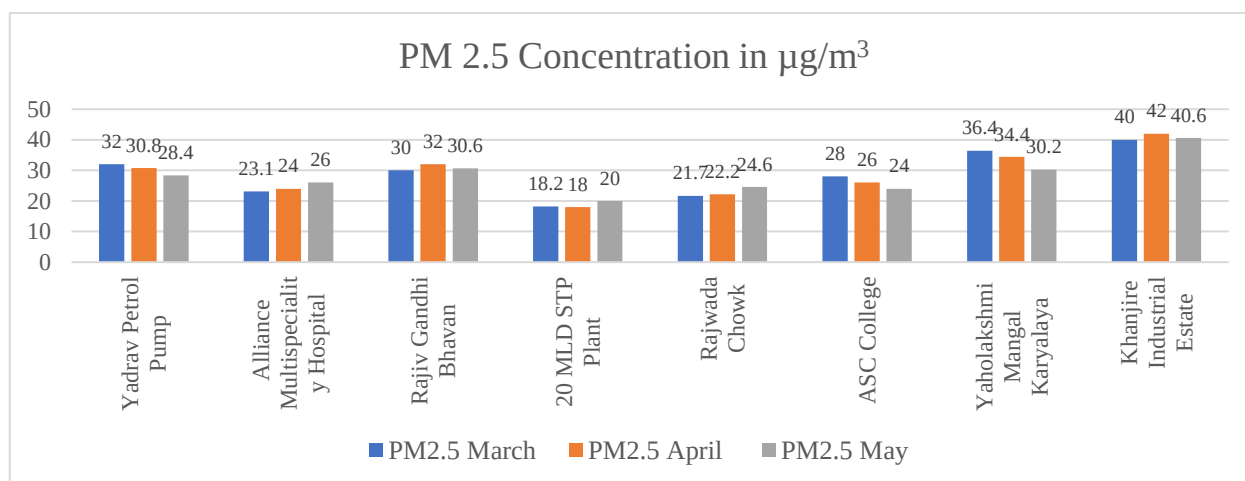


Figure 3-3 Bar Chart of PM2.5 Concentration

PM2.5 concentrations varied between 18.0 $\mu\text{g}/\text{m}^3$ and 42.0 $\mu\text{g}/\text{m}^3$.

- Maximum concentration: 42.0 $\mu\text{g}/\text{m}^3$ at Khanjire Industrial Estate during April.
- Minimum concentration: 18.0 $\mu\text{g}/\text{m}^3$ at 20 MLD STP Plant during April.
- Overall average concentration: 28.47 $\mu\text{g}/\text{m}^3$.

The higher PM2.5 values observed at industrial locations may be attributed to textile and engineering activities, vehicular emissions and road dust.

All values were below the NAAQS limit of 60 $\mu\text{g}/\text{m}^3$.

3) Trends in SO₂ Concentration:

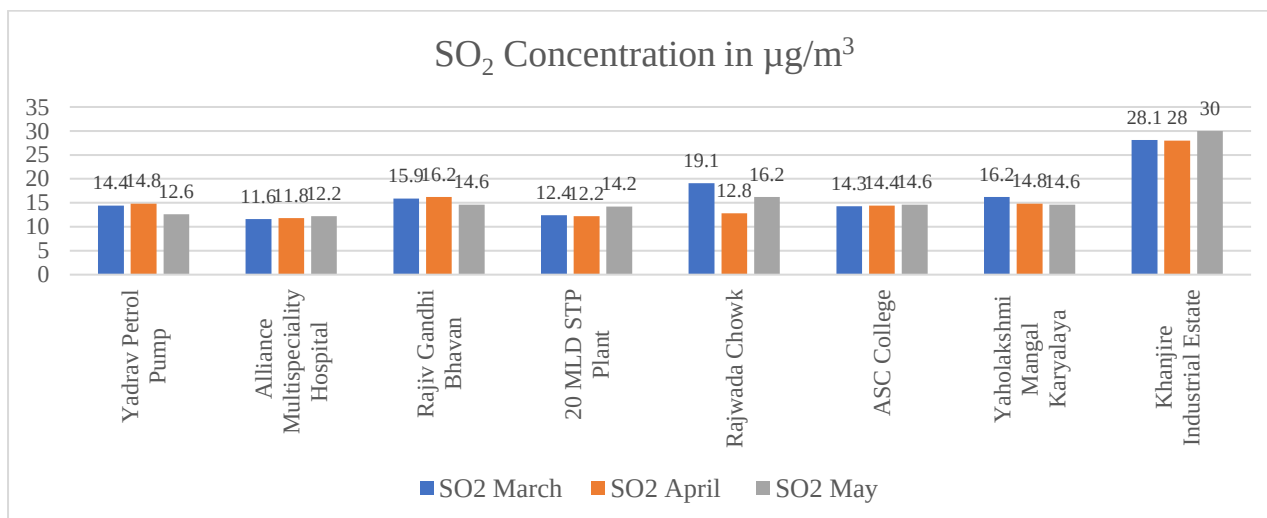


Figure 3-4 Bar Chart of SO₂ Concentration

Sulfur dioxide (SO₂), a non-flammable highly toxic, colourless gas is primarily emitted from anthropogenic sources like burning of fossil fuels by power plants and other industrial facilities as well as fuel combustion in mobile sources such as locomotives, ships, and other equipment. Health effects caused by exposure to high levels of SO₂ include breathing problems, respiratory illness, changes in the lung's defences, and worsening respiratory and cardiovascular diseases. People with asthma or chronic lung or heart disease are the most sensitive to SO₂. It also damages trees and crops. SO₂, along with nitrogen oxides, are the main precursors of acid rain. This contributes to the acidification of lakes and streams, accelerated corrosion of buildings and reduced visibility. SO₂ also causes formation of microscopic acid aerosols, which have serious health implications as well as contribute to climate change

SO₂ concentrations ranged between 11.6 µg/m³ and 30.0 µg/m³.

- Maximum concentration: 30.0 µg/m³ at Khanjire Industrial Estate during May.
- Minimum concentration: 11.6 µg/m³ at Alliance Multispeciality Hospital during March.
- Overall average concentration: 16.08 µg/m³.

The observed SO₂ levels indicate that sulfur emissions from industrial and vehicular sources are presently under control.

All monitored values were significantly lower than the prescribed limit of 80 µg/m³.

4) Trends in NO_x Concentration:

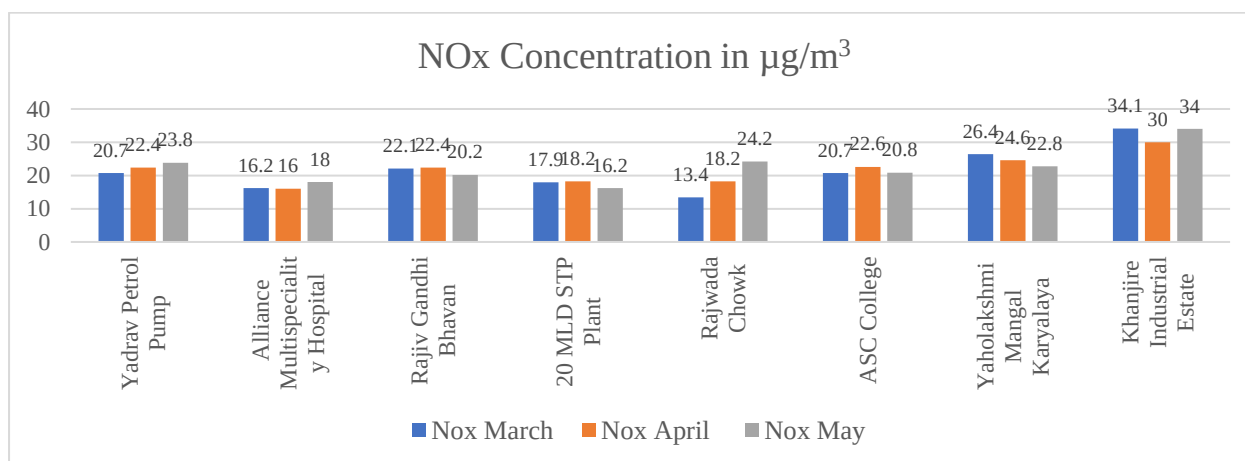


Figure 3-5 Bar Chart of NO_x Concentration

Nitrogen oxides are a group of seven gases and compounds composed of nitrogen and oxygen. The two most common and hazardous nitrogen oxides are nitric oxide (NO) and nitrogen dioxide (NO_x). Vehicular exhaust, emissions from coal-fired power plants, combustion of fossil fuels and solid waste are primary contributors of NO_x. Short term exposure to this pollutant can result in nausea, headache and irritation of eyes and skin, whereas long term exposure can cause asthma and other respiratory disorders

NO_x concentrations during the monitoring period ranged between 13.4 $\mu\text{g}/\text{m}^3$ and 34.1 $\mu\text{g}/\text{m}^3$.

- Maximum concentration: 34.1 $\mu\text{g}/\text{m}^3$ at Khanjire Industrial Estate during March.
- Minimum concentration: 13.4 $\mu\text{g}/\text{m}^3$ at Rajwada Chowk during March.
- Overall average concentration: 21.91 $\mu\text{g}/\text{m}^3$.

Higher NO_x concentrations were observed at industrial and traffic-oriented locations due to combustion processes and vehicular emissions.

All monitored concentrations remained within the NAAQS limit of 80 $\mu\text{g}/\text{m}^3$.

3.3.3 Comparative Analysis

The three-month monitoring programme indicates the following trends:

- Khanjire Industrial Estate consistently recorded the highest concentrations of PM₁₀, PM_{2.5}, SO₂ and NO_x because of industrial activities and movement of heavy vehicles.
- Yadrav Petrol Pump and Mahalakshmi Mangal Karyalaya exhibited elevated particulate concentrations due to traffic density.
- Alliance Multispeciality Hospital and 20 MLD STP Plant showed comparatively lower pollutant levels, indicating relatively cleaner ambient conditions.
- PM₁₀ showed a slight increase during May at several locations due to dry weather conditions and increased dust generation.
- PM_{2.5} concentrations remained relatively stable across the monitoring period.



- SO₂ and NO_x concentrations did not exhibit any abnormal fluctuations and remained well within permissible standards.

3.4 AIR QUALITY INDEX

Air Quality Index (AQI) is an effective tool used to assess and communicate ambient air quality status in a simplified manner. It converts complex air quality data for various pollutants into a single numerical value and corresponding category, making it easier for the public, administrators and policymakers to understand air quality conditions and associated health implications.

The National Air Quality Index (NAQI) developed by the Central Pollution Control Board (CPCB) classifies air quality into six categories namely Good, Satisfactory, Moderate, Poor, Very Poor and Severe based on the concentrations of key pollutants and their potential health impacts.

An AQI is useful for:

the general public to know the air quality in a simplified way,

- a politician to invoke quick actions,
- a decision-maker to know the trend of events and to chalk out corrective pollution control strategies,
- a government official to study the impact of regulatory actions, and
- a scientist who engages in scientific research using air quality data (CPCB).

Central Pollution Control Board (CPCB) and the Ministry of Environment and Forests (MoEF) have initiated this project on National Air Quality Index to strengthen the air quality information dissemination system for larger public awareness and their participation in air quality management. An expert committee was constituted with members drawn from academia, medical fraternity, research institutes, MoEF, advocacy groups, SPCBs and CPCB., discuss and devise consensus on the AQI system that is appropriate for Indian conditions. The report stated that the AQI developed in the study is based on human exposure and health effects and may not be strictly applicable to ecologically sensitive areas (CPCB).

- Primarily two steps are involved in formulating an AQI:
- formation of sub-indices (for each pollutant) and
- aggregation of sub-indices to get an overall AQI.



Ichalkaranji Municipal Corporation, Ichalkaranji Environmental Status Report 2025-2026



AQI Category (Range)	PM ₁₀ (24hr)	PM _{2.5} (24hr)	NO ₂ (24hr)	O ₃ (8hr)	CO (8hr)	SO ₂ (24hr)	NH ₃ (24hr)	Pb (24hr)
Good (0-50)	0-50	0-30	0-40	0-50	0-1.0	0-40	0-200	0-0.5
Satisfactory (51-100)	51-100	31-60	41-80	51-100	1.1-2.0	41-80	201-400	0.5-1.0
Moderately polluted (101-200)	101-250	61-90	81-180	101-168	2.1-10	81-380	401-800	1.1-2.0
Poor (201-300)	251-350	91-120	181-280	169-208	10-17	381-800	801-1200	2.1-3.0
Very poor (301-400)	351-430	121-250	281-400	209-748	17-34	801-1600	1200-1800	3.1-3.5
Severe (401-500)	430+	250+	400+	748+	34+	1600+	1800+	3.5+

*One hourly monitoring (for mathematical calculations only)

Source: CPCB, Ministry for Environment, Forests & Climate Change, Govt. of India

Figure 3-6 Air Quality Index Category

The AQI for Ichalkaranji Municipal Corporation has been assessed using ambient air quality monitoring data collected during March, April and May 2026 at eight representative monitoring locations, namely 1) Yadrav Petrol Pump, 2) Alliance Multispeciality Hospital, 3) Rajiv Gandhi Bhavan, 4) 20 MLD STP Plant, 5) Rajwada Chowk, 6) ASC College, 7) Mahalakshmi Mangal Karyalay and 8) Khanjire Industrial Estate.

The average concentrations of major pollutants observed during the monitoring period are presented below:

Among all monitored pollutants, PM₁₀ was observed to be the dominant pollutant influencing the air quality status of the city. The highest PM₁₀ concentration recorded during the monitoring period was 84.0 µg/m³ at Khanjire Industrial Estate during May 2026, while the lowest concentration was 49.3 µg/m³ at the 20 MLD STP Plant during March 2026.

Based on the observed concentrations of PM₁₀, PM_{2.5}, SO₂ and NO_x and their corresponding CPCB AQI breakpoints, the overall air quality status of Ichalkaranji during March–May 2026 falls under the "Satisfactory" (AQI 51–100) category.

Calculation of AQI							
Pollutants		concentration in $\mu\text{g}/\text{m}^3$ (except for CO)	Sub-Index	check		Air Quality Index	
PM10	24-hr avg	65.80	66	1	AQI =	66	
PM2.5	24-hr avg	28.47	47	1			
SO2	24-hr avg	16.08	20	1			
NOx	24-hr avg	21.91	27	1			
*CO (mg/m3)	max 8-hr	0.00	0	0			
O3	max 8-hr	0.00	0	0			
NH3	24-hr avg	0.00	0	0			
* Concentrations of minimum three pollutants are required; one of them should be PM10 or PM2.5							
* The check displays "1" when a non-zero value is entered							
Good (0-50)	Minimal Impact		Poor (201-300)	Breathing discomfort to people on prolonged exposure			
Satisfactory (51-100)	Minor breathing discomfort to sensitive people		Very Poor (301-400)	Respiratory illness to the people on prolonged exposure			
Moderate (101-200)	Breathing discomfort to the people with lung, heart disease, children and older adults		Severe (>401)	Respiratory effects even on healthy people			

Figure 3-7 AQI For Ichalkaranji City Based on March to May 2026 Monitoring



The observed pollutant concentrations indicate that the ambient air quality within Ichalkaranji Municipal Corporation is generally acceptable. However, sensitive groups such as children, elderly persons and individuals suffering from respiratory ailments may experience minor breathing discomfort during periods of elevated particulate matter concentrations, particularly in industrial and high-traffic areas.

The monitoring results further indicate that:

- All monitored parameters were within the National Ambient Air Quality Standards (NAAQS) prescribed by CPCB.
- Industrial areas such as Khanjire Industrial Estate recorded comparatively higher concentrations of PM₁₀, PM_{2.5}, SO₂ and NO_x.
- Traffic-influenced locations such as Yadrav Petrol Pump and Mahalakshmi Mangal Karyalaya exhibited relatively higher particulate matter concentrations.
- Residential and institutional locations such as Alliance Multispeciality Hospital and 20 MLD STP Plant recorded comparatively lower pollutant concentrations.
- No location exhibited pollutant levels corresponding to Moderate, Poor, Very Poor or Severe AQI categories.

Overall, the AQI assessment indicates that the air quality of Ichalkaranji Municipal Corporation remains satisfactory and suitable for normal outdoor activities. Continued monitoring, enhancement of urban green cover, promotion of sustainable transportation and effective industrial emission control measures will be essential to maintain and further improve ambient air quality in the city.

3.5 PRESSURE ON AIR ENVIRONMENT

The major pressures influencing ambient air quality in Ichalkaranji are:

3.5.1 Increasing Vehicular Population

Rapid urbanization and economic growth have resulted in continuous growth in vehicle ownership. Vehicular emissions contribute significantly to particulate matter, nitrogen oxides and carbon monoxide concentrations in urban areas. Major traffic corridors such as:

- Yadrav Road
- Rajwada Chowk
- Gandhi Putala Area
- Vikasnagar Area experience higher traffic density and associated air pollution.

3.5.2 Industrial Activities

Ichalkaranji is one of India's largest textile clusters with:

- More than 1.25 lakh power looms
- Textile sizing units



- Processing industries
- Engineering industries
- Ancillary industrial units

Industrial activities contribute particulate matter, gaseous pollutants and fugitive dust emissions. The elevated pollutant concentrations observed at Khanjire Industrial Estate indicate the influence of industrial operations on ambient air quality.

3.5.3 Road Dust and Construction Activities

Ongoing infrastructure development, transportation of construction materials and movement of heavy vehicles contribute significantly to PM10 concentrations.

3.5.4 Nearby Sugar Industries

The region surrounding Ichalkaranji contains several sugar factories and co-generation plants. Emissions from boilers, bagasse combustion and transportation activities contribute to regional air pollution levels.

3.6 IMPACT ON AIR POLLUTION

Although the present air quality is within permissible limits, continued increase in industrialization and vehicular traffic may adversely affect environmental quality.

Potential impacts include:

3.6.1 Environmental Impacts

- Reduced visibility
- Deposition of particulate matter on vegetation
- Deterioration of urban environmental quality
- Contribution to greenhouse gas emissions

3.6.2 Economic Impacts

- Increased healthcare expenditure
- Reduced workforce productivity
- Damage to buildings and infrastructure

3.6.3 Social Impacts

- Reduced quality of life
- Increased environmental concerns among citizens

3.7 HEALTH EFFECTS OF AIR POLLUTION

Air pollutants enter the human body through inhalation and may affect the respiratory and cardiovascular systems.

Major health effects associated with air pollution include:



3.7.1 Respiratory Diseases

- Asthma
- Chronic Obstructive Pulmonary Disease (COPD)
- Bronchitis
- Pneumonia

3.7.2 Cardiovascular Diseases

- Hypertension
- Heart attacks
- Stroke

3.7.3 Other Health Impacts

- Eye irritation
- Allergic reactions
- Reduced lung function
- Increased susceptibility to infections

The Municipal Corporation should establish a mechanism for periodic collection and analysis of health data from government and private hospitals to assess the long-term impact of air pollution on public health.

3.8 INITIATIVES UNDERTAKEN BY ICHALKARANJI MUNICIPAL CORPORATION

To improve ambient air quality and reduce pollution levels, IMC has undertaken several initiatives:

3.8.1 Development of Cycling Infrastructure

Approximately 5 km of dedicated cycling track has been developed to encourage non-motorized transport and reduce vehicular emissions.

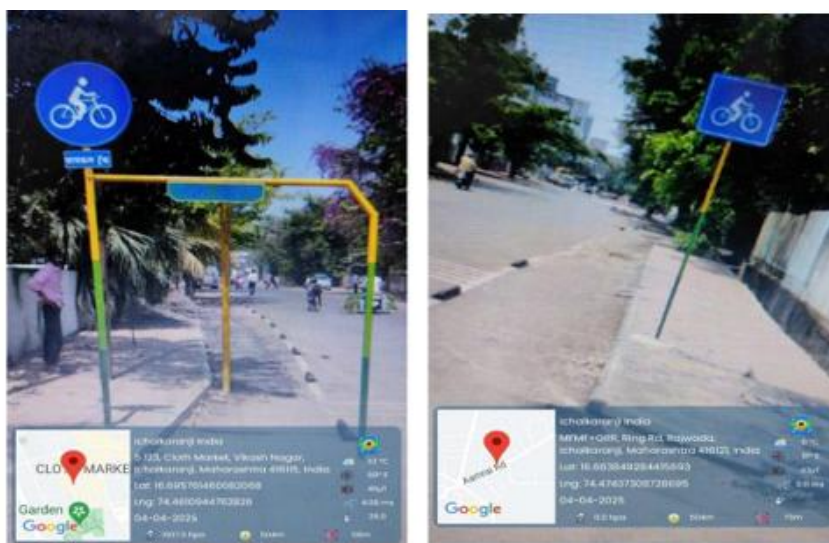


Figure 3-8 Cycle Track developed by IMC



3.8.2 Tree Plantation and Green Cover Development

Under various environmental programmes including Majhi Vasundhara Abhiyan, approximately 30,000 indigenous tree saplings have been planted across the city.

The city presently maintains more than 33% green cover, which contributes significantly towards:

- Carbon sequestration
- Dust suppression
- Urban heat reduction
- Improvement in ambient air quality

3.8.3 Control on Firecracker Emissions

Public notices have been issued regarding restrictions on firecrackers generating excessive noise and toxic emissions containing heavy metals and hazardous chemicals.

इचलकरंजी महानगरपालिका, इचलकरंजी. जाहीर आवाहन

इचलकरंजी शहर हद्दीतील सर्व फटाके विक्री करणारे व्यावसायिक व फटाके वापर करणारे नागरिकांना आवाहन करणेत येते की, भारत सरकार, अधिसूचना क्रमांक G. S. R. 682 (E), दि.5.10.1999 अन्वये 125 dB(A1) पेक्षा जास्त आवाज निर्माण करणाऱ्या फटाक्यांची निर्मिती, विक्री किंवा वापर करण्यास मनाई केली आहे. अशा फटाक्यांचे उत्पादन, विक्री किंवा वापर बेकायदेशिर आहे. मा. सर्वोच्च न्यायालयाने दिलेल्या निर्देशानुसार फटाक्यांमध्ये बेरियम सॉल्ट, लिथियम, असेनिक, लीड, पक्वुरी, यासारखे घटक असणारे फटाके वापरण्यास बंदी आहे. या घटकामुळे विपारी वायु ततार होतात, हे वायु प्राणी व वनस्पती या दोघांना घातक आहेत. तसेच जनहित याचिका क्र. १५२ / २०१५ मध्ये मा. उच्च न्यायालयाने दिलेल्या निर्देशानुसार फटाका विक्रेत्यांनी विस्कोटक व अधिनियम १८८५ आणि त्या अंतर्गत केलेले विस्कोटक नियम २००८ मधील प्रतिबंध व नियम यांची अंमलबजावणी करणे आवश्यक आहे. तरी फटाके विक्रेत्यांनी बंदी अमलेले फटाके विक्री करणेची नाही. तसेच परवानगी असलेले फटाके महानगरपालिकेने निश्चित केलेल्या ठिकाणी परवानगी घेऊनच विक्री करणेची आहे.

महाराष्ट्र शासनाचे माझी वसुंधरा ५.० व इचलकरंजी महानगरपालिकेकडून प्रभावीपणे राबविणेत येत आहे. सदर अभियानांतर्गत नागरिकांनी पर्यावरण पूरक गणेश उत्सव साजरा करावा, फटाक्यांचा वापर टाळावा.

तरी येणारा गणेश उत्सव सोहळा व यातंर येणारे सर्व यमांचे सर्व सण / उत्सव श्रित व पर्यावरणपूरक स्वरूप साजरे कस्वा. तसेच हा गणेश उत्सव सोहळा आनंदी व सुरक्षित राढी असा सर्वांना हार्दिक शुभेच्छा.

दि.०६/१०/२०२५

सही/-
उपायुक्त
इचलकरंजी महानगरपालिका.



3.8.4 Promotion of Sustainable Transportation

IMC promotes:

- Cycling
- Walking infrastructure
- Public transport systems
- Fuel-efficient mobility options

3.9 CONCLUSION

Ambient air quality monitoring conducted at eight locations during March-May 2026 indicates that PM₁₀, PM_{2.5}, SO₂ and NO₂ concentrations are well within the National Ambient Air Quality Standards prescribed by CPCB.

The highest pollutant concentrations were observed at Khanjire Industrial Estate due to industrial activities, whereas Alliance Multispeciality Hospital and 20 MLD STP Plant recorded comparatively lower concentrations.

The overall AQI status of Ichalkaranji can be classified as **Satisfactory**, indicating generally acceptable air quality with minor health concerns only for sensitive individuals. Continued monitoring, expansion of green cover, promotion of sustainable transportation and strict enforcement of pollution control measures will be essential to maintain and improve air quality in the future.

4 WATER ENVIRONMENT

4.1 WATER ENVIRONMENT

Water is one of the most essential natural resources required for sustaining life, supporting economic development, maintaining ecological balance and ensuring public health. Freshwater resources constitute only a small fraction of the total water available on Earth and are increasingly under pressure due to rapid urbanization, population growth, industrial development and climate variability. Therefore, sustainable management and conservation of water resources are critical for ensuring long-term water security

4.2 WATER SOURCES

The city primarily depends upon surface water resources supplemented by groundwater sources

Table 4-1 Water Supply Details of IMC

Sr. No.	Source	Distance form City	Quantity (MLD)
1	Krishna River (Majarewadi Jackwell)	Approx. 18	36
2	Panchganga River	Approx. 3.5	9
Total Water Drawl		--	45

The Krishna River serves as the principal source of water supply, while the Panchganga River provides supplementary water to meet the city's daily requirements.



Figure 4-1 Photographs of Majarewadi and Panchganga Pumping Station

4.2.1 Groundwater Resources

Groundwater serves as a secondary source of water supply and is mainly utilized during emergency situations, low river flows and peak summer demand.

The city has approximately:

- 700 Public Borewells
- 300 Private and Industrial Borewells

Groundwater extraction is significant in peripheral areas and industrial zones where demand occasionally exceeds municipal supply.

4.3 WATER TREATMENT INFRASTRUCTURE

Ichalkaranji is equipped with a 108 MLD Water Treatment Plant (WTP) that employs conventional technology to treat water from the Krishna and Panchganga rivers. This treated water is supplied to 16 nos. of Elevated Service Reservoirs (ESRs) across the city. The WTP has a history of older capacities, with previous plants of 18 MLD and 36 MLD, and a recently constructed facility with a capacity of 54 MLD. Currently, the WTP treats approximately 45 MLD of water daily.



Figure 4-2 Photographs of Water Treatment Plant at IMC

The water supply system in Ichalkaranji has achieved a coverage of 74% in terms of water connections. The distribution network spans an area of 28.9 square kilometres out of a total of 29.78 square kilometres. This extensive network comprises 488 kilometres of pipelines and is supported by



16 elevated service reservoirs distributed in 11 water supply zones. This infrastructure plays a vital role in delivering water to the residents effectively. To cater to future population growth and urban expansion, IMC has initiated a major water infrastructure strengthening programme.

The corporation is currently constructing 7 additional Elevated Service Reservoirs (ESRs) at strategic locations. Upon completion:

- Total ESRs will increase from 16 to 23.
- Storage capacity of the system will significantly increase.
- Water distribution management will improve.
- Supply reliability will improve in newly developed areas.
- Emergency storage availability will increase.
- Distribution losses due to pressure fluctuations are expected to reduce.

The project will substantially enhance the city's capability to meet future water demand.



Figure 4-3 Elevated Service Reservoirs at Ichalkaranji City

In addition to river-sourced supply, certain areas in Ichalkaranji are reliant on public stand posts, which account for a water distribution of 2.6 MLD. The per capita water supply in the city is 101 liters per capita per day (LPCD), delivered over a span of 1.5 hours daily. The limited duration and quantity underscore the urgent need for infrastructure improvements to provide more consistent and sufficient water access to all residents.

In Ichalkaranji, there are over 900 to 1,000 borewells within the city. Of these, approximately 700 are public borewells, while around 300 are private and industrial borewells. This extensive network of borewells is crucial for supplementing the city's water supply, especially during periods when alternate day or intermittent water supply practices are in effect.



To accommodate the rising population and future needs, the IMC is planning to upgrade the capacity of its existing pumping stations. This initiative aims to enhance the efficiency and reliability of the city's water distribution system.

4.4 WATER QUALITY

Water quality is a complex subject, which involves physical, chemical, hydrological and biological characteristics of water and their complex and delicate relations. From the user's point of view, the term "water quality" is defined as "those physical, chemical or biological characteristics of water by which the user evaluates the acceptability of water". For example, for drinking water should be pure, wholesome, and potable. Similarly, for irrigation dissolved solids and toxicants are critical parameters, for outdoor bathing pathogens are critical parameter and water quality is controlled accordingly. Textiles, paper, brewing, and dozens of other industries using water, have their specific water quality needs.

4.4.1 Water Quality Testing

Water quality at the Water Treatment Plant (WTP) is meticulously monitored to ensure safety and compliance with health standards. Weekly tests are conducted to assess residual chlorine levels, as well as physical, chemical, and bacteriological parameters. Additionally, samples are periodically dispatched to accredited government water quality testing laboratories for comprehensive analysis, further ensuring the integrity of the water supplied to residents.

4.4.2 Water Quality Index

The Water Quality Index (WQI) is a tool used to provide a comprehensive understanding of water quality by simplifying complex water quality data into a single numerical value. It reflects the overall status of water quality and helps in assessing the suitability of water for various uses such as drinking, industrial use, or agricultural purposes. The WQI is particularly helpful for public communication and policy-making. The objective of WQI is to turn complex water quality data into information that is understandable and usable by the public.

4.4.3 Parameters for WQI Calculation

The WQI is typically calculated by aggregating multiple water quality parameters, which may include:

- **pH Level:** Indicates the acidity or alkalinity of the water. The ideal range for drinking water is between 6.5 and 8.5.
- **Dissolved Oxygen (DO):** Measures the amount of oxygen available in water, important for aquatic life. Higher DO levels indicate better water quality.
- **Biochemical Oxygen Demand (BOD):** Indicates the amount of organic matter in water. Lower BOD values suggest lower levels of pollution.
- **Total Dissolved Solids (TDS):** Represents the concentration of dissolved substances in water. High TDS levels can affect the taste and safety of water.



- **Nitrates and Phosphates:** Excessive levels can lead to eutrophication, causing harmful algal blooms and deterioration of water quality.
- **Turbidity:** Measures the cloudiness of water, often caused by suspended particles.

Coliform Bacteria: Indicates the presence of harmful pathogens in the water, reflecting contamination from sewage or animal waste.

4.4.4 Water Quality Classification Based on WQI

The WQI generally categorizes water into different quality classes. While the exact numerical ranges can vary, the following is a commonly used classification system

Table 4-2 Water Quality Classification

WQI Range	Water Quality	Suitability for Use
0 – 25	Excellent	Fit for drinking and all uses
26 – 50	Good	Suitable for most purposes
51 – 75	Fair	Suitable for domestic use with treatment
76 – 100	Poor	Not suitable for drinking without treatment
Above 100	Very Poor/Unsuitable	Highly polluted, not suitable for most uses

4.4.5 Water Quality in Ichalkaranji

In the case of Ichalkaranji, monitoring data from sources like the Panchganga River and groundwater can be used to compute the WQI. Due to industrial and domestic wastewater contamination, particularly from textile industries, certain areas may show elevated levels of pollutants like TDS, nitrates, and heavy metals, leading to a higher WQI (indicating poorer water quality).

Here's a summary of the water quality monitoring conducted at the Panchganga River in Ichalkaranji near the MIDC intake well, according to the NWMP (National Water Quality Monitoring Program) data collected over the years 2021-2025.

Table 4-3 Water Quality Index at Monitoring Station

Water Quality Monitored at : Panchganga River at Ichalkaranji near MIDC intake well			
Name of the program	: NWMP	Type of Sample	: Surface
Class	: N/A	Frequency	: Monthly (Trend)
Regional Office	: Kolhapur	Regional Lab	: Chiplun

WQI	Quality classification	Remarks	Colour code
63-100	Good to Excellent	Non Polluted	Green
50-63	Medium to Good	Non Polluted	Yellow
38-50	Bad	Polluted	Orange
38 and less	Bad to very Bad	Heavily Polluted	Red



4.4.6 Interpretation of WQI Trends for Panchganga River (2021-2025)

Table 4-4 Water Quality Index at Monitoring Station for year 2021

Months	Parameters																		
	pH			Dissolved Oxygen (mg/l)			B.O.D. (mg/l)			C.O.D. (mg/l)			Nitrate (mg/l)			Fecal Coliform (MPN/100 ml)			WQI
YEAR : 2021																			
January	7.3			6.5			1.8			20.0			1.6			6.0			91.88
February	7.2			7.1			1.6			20			2.6			5.5			89.26
March	8.2			6.2			1.8			19			3.3			6			83.67
April	7.8			5.9			2.2			20			0.3 (BDL)			5.5			84.37
May	7.8			6.8			1.8			18			3.4			4			87.74
June	7.2			6.9			1.8			28.4			3.17			3.7			90.87
July	7.8			7.1			1.6			16			1.5			6			85.81
August	6.8			7			1.5			19.6			1.48			4.5			87.39
September	7.4			6.5			1.6			11.2			1.37			4			92.18
October	7			6.1			1.8			18.4			1.38			5.6			87.66
November	7.5			6.8			2			13.2			0.3(BDL)			6			88.13
December	7.5			5.9			2			13.6			3.6			6.1			86.27
=====																			
TOTAL	MIN	MAX	AVG	MIN	MAX	AVG	MIN	MAX	AVG	MIN	MAX	AVG	MIN	MAX	AVG	MIN	MAX	AVG	
	6.8	8.2	7.46	5.9	7.1	6.57	1.5	2.2	1.79	11.2	28.4	18.12	0.3 (BDL)	3.6	2	3.7	6.1	5.24	

Table 4-5 Water Quality Index at Monitoring Station for year 2022

Months	Parameters																		
	pH			Dissolved Oxygen (mg/l)			B.O.D. (mg/l)			C.O.D. (mg/l)			Nitrate (mg/l)			Fecal Coliform (MPN/100 ml)			WQI
YEAR : 2022																			
January	6.9			5.5			2.2			18.4			2.43			3.6			84.47
February	7.4			6.2			2.2			14.4			1.82			6			88.39
March	7.8			5			2.4			28.8			1.22			6.8			78.40
April	7.5			4.9			2.6			22.4			2.2			6			79.95
May	7.4			5.7			2.2			20.8			1.94			5.6			85.83
June	7.5			6.7			1.8			20			5.9			6			88.70
July	7.4			6.9			1.8			17.6			1.84			6			88.76
August	8.2			6.9			1.8			18.4			1.66			5.6			83.73
September	7.6			5.8			2.4			18			2.06			6			84.58
October	8.2			6.8			2			18.8			2.22			11			81.58
November	7.7			6.9			1.8			18.4			3.14			6.1			86.74
December	8.2			6.2			2			19.2			2.31			6.1			83.35
=====																			
TOTAL	MIN	MAX	AVG	MIN	MAX	AVG	MIN	MAX	AVG	MIN	MAX	AVG	MIN	MAX	AVG	MIN	MAX	AVG	
	6.9	8.2	7.65	4.9	6.9	6.13	1.8	2.6	2.1	14.4	28.8	19.6	1.22	5.9	2.4	3.6	11	6.23	



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Table 4-6 Water Quality Index at Monitoring Station for year 2023

Months	Parameters																		
	pH			Dissolved Oxygen (mg/l)			B.O.D. (mg/l)			C.O.D. (mg/l)			Nitrate (mg/l)			Fecal Coliform (MPN/100 ml)			WQI
YEAR : 2023																			
January	8.6			7.2			1.8			18			3.43			6.1			79.94
February	7.7			7.1			1.8			19.2			1.88			6.8			85.80
March	7.9			7			1.8			20			1.37			9.2			83.80
April	7.8			6.6			2			19.2			1.59			8.2			85.75
May	7.8			5.6			2.2			19.6			1.41			10			80.77
June	7.3			5.7			2.2			18.4			0.96			6.1			86.83
July	7.4			6			3.8			12			0.9			6			85.15
August	7.5			6.6			3			12			0.82			6.8			86.99
September	8			7.2			2.8			8			0.93			6.1			82.55
October	7.9			6.8			2.5			8			0.95			6.1			84.79
November	7.9			7.8			2.6			8			0.95			6.8			81.35
December	8.3			7.5			2.8			10			0.89			6.1			79.69
=====																			
TOTAL		MIN	MAX	AVG	MIN	MAX	AVG	MIN	MAX	AVG	MIN	MAX	AVG	MIN	MAX	AVG	MIN	MAX	AVG
		7.3	8.6	7.84	5.6	7.8	6.76	1.8	3.8	2.44	8	20	14.37	0.82	3.43	1.34	6	10	7.03

Table 4-7 Water Quality Index at Monitoring Station for year 2024

Months	Parameters																		
	pH			Dissolved Oxygen (mg/l)			B.O.D. (mg/l)			C.O.D. (mg/l)			Nitrate (mg/l)			Fecal Coliform (MPN/100 ml)			WQI
YEAR : 2024																			
January	8			6.7			3			12			0.92			4			85.13
February	7.5			6.5			3			12			0.8			7.8			87.50
March	7.6			4.9			7.5			30			0.74			9.2			71.39
April	7.7			6.7			3			10			0.88			6.1			85.73
May	8.7			7.5			2.8			10			0.92			9.3			75.70
June	7.5			6.6			3.2			14			0.88			9.2			85.75
July	7.9			7.3			3.6			18			0.3(BDL)			6.8			81.50
August	8.1			7.2			2.8			10			0.66			4			83.26
September	7.6			7.3			2.6			16			0.48			6.1			85.15
October	7.6			5.7			3.6			28			0.3(BDL)			6.1			82.37
November	7.6			6.2			3.6			16			1.33			8.1			84.25
December	7.6			6.2			3.2			16			2.47			5.6			85.97
=====																			
TOTAL	MIN	MAX	AVG	MIN	MAX	AVG	MIN	MAX	AVG	MIN	MAX	AVG	MIN	MAX	AVG	MIN	MAX	AVG	
	7.5	8.7	7.78	4.9	7.5	6.57	2.6	7.5	3.49	10	30	16	0.3(BDL)	2.47	0.89	4	9.3	6.86	



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Table 4-8 Water Quality Index at Monitoring Station for year 2025

Months	Parameters																		
	pH			Dissolved Oxygen (mg/l)			B.O.D. (mg/l)			C.O.D. (mg/l)			Nitrate (mg/l)			Fecal Coliform (MPN/100 ml)			WQI
YEAR : 2025																			
January	8			6.6			3.4			28			1.83			8.1			82.61
February	7.8			6.4			3			16			1.73			5.5			86.10
March	7.7			6.5			3			16			1.71			5.6			87.26
April	7.6			4.6			3			20			1.4			8.2			76.08
May	8.3			5.3			3.2			16			1.53			6			76.13
June	8.1			6.9			3			12			3.2			6.1			82.52
July	7.7			6.5			2.8			24			0.88			9.2			85.92
August	7.8			6.8			2.8			12			0.91			9.3			83.68
September	7.3			6.7			2.8			12			0.67			6.8			88.90
October	7.8			6.9			3			12			0.92			4			85.85
November	7.5			6.5			2.6			12			2.25			5.6			89.10
December	7.4			6			2.8			12			2.04			5.6			86.70
=====																			
TOTAL	MIN	MAX	AVG	MIN	MAX	AVG	MIN	MAX	AVG	MIN	MAX	AVG	MIN	MAX	AVG	MIN	MAX	AVG	
	7.3	8.3	7.75	4.6	6.9	6.31	2.6	3.4	2.95	12	28	16	0.67	3.2	1.59	4	9.3	6.67	

Source: <https://www.mpcb.gov.in/water-quality/Kolhapur/22>

The Water Quality Index (WQI) analysis of the Panchganga River near Ichalkaranji indicates that the river has generally maintained a "Medium to Good" water quality status over the last five years. However, a gradual decline in WQI values and increasing fluctuations in organic pollution indicators suggest growing environmental pressures from urbanization, domestic sewage generation and industrial activities within the Panchganga basin

Year 2021 – Good Water Quality Condition

During 2021, the WQI ranged from 83.67 to 92.18, representing the best water quality conditions observed during the assessment period. BOD values reached a maximum of 2.2 mg/L, while COD was recorded up to 28.4 mg/L. These results indicate relatively low organic pollution and good assimilative capacity of the river. The river ecosystem was capable of maintaining adequate dissolved oxygen levels, supporting aquatic life and ensuring suitability of the source water for municipal treatment. Overall, the river exhibited stable ecological conditions and effective self-purification characteristics during this period.

Year 2022 – Beginning of Environmental Stress

In 2022, the WQI ranged from 79.95 to 88.70, indicating a slight decline compared to 2021. BOD concentrations varied between 1.8 and 2.6 mg/L, while COD increased up to 28.8 mg/L. Although the water quality remained within the Medium to Good category, the increasing organic and chemical



load suggests growing anthropogenic pressure on the river. Expansion of urban settlements, increased domestic wastewater generation and intensified industrial activities may have contributed to the observed deterioration. The decline in WQI values serves as an early indication that pollution loads were beginning to exceed the natural assimilative capacity of certain river stretches.

Year 2023 – Increased Organic Pollution

The WQI values during 2023 ranged from 79.94 to 86.99, remaining within the Medium to Good category but showing a continuing downward trend. The most significant observation during this year was the increase in BOD concentrations up to 3.8 mg/L, the highest value recorded during the monitoring period. Elevated BOD levels indicate increased organic pollution and higher oxygen demand in the river water. This condition is generally associated with discharge of untreated or partially treated domestic sewage, organic wastes and urban runoff. Although the river water quality remained acceptable for treatment purposes, the increasing BOD values indicate that the river's self-purification capacity is being progressively challenged.

Year 2024 – Moderate Water Quality with Increased Variability

The available monitoring data for 2024 showed WQI values ranging from 71.39 to 87.50, representing the lowest minimum WQI observed during the study period. BOD values ranged from 1.8 to 3.0 mg/L, indicating variable pollution conditions across different monitoring periods. The reduction in minimum WQI values suggests localized deterioration in water quality, particularly during periods of lower river flow and reduced dilution capacity. The river continued to remain within the Medium to Good category; however, increasing fluctuations indicate that pollution sources are becoming more influential on overall water quality.

Year 2025

The Water Quality Index (WQI) assessment for the Panchganga River during the year 2025 indicates that the river water quality remained predominantly within the "Good" category, with WQI values ranging from 76.08 to 89.10 and an annual average WQI of approximately 84.24. The results suggest that the river continues to possess satisfactory water quality and remains suitable as a source of raw water for municipal water supply after conventional treatment.

- **pH**

The pH values varied between 7.3 and 8.3, with an annual average of 7.75. These values fall within the desirable range prescribed by BIS IS 10500 and indicate that the river water remained slightly alkaline throughout the year. Stable pH values suggest good buffering capacity of the river and absence of significant acidic or alkaline contamination.



- **Dissolved Oxygen (DO)**

Dissolved Oxygen concentrations ranged between 4.6 mg/L and 6.9 mg/L, with an annual average of 6.31 mg/L. DO is one of the most important indicators of river health. Values above 5 mg/L generally indicate healthy aquatic conditions capable of supporting fish and other aquatic organisms. The lowest DO value (4.6 mg/L) was observed during April, coinciding with summer months when river flow is reduced and pollutant concentrations tend to increase. However, DO levels recovered during the monsoon and post-monsoon periods, indicating adequate self-purification capacity of the river.

- **Biochemical Oxygen Demand (BOD)**

BOD values ranged from 2.6 mg/L to 3.4 mg/L, with an annual average of 2.95 mg/L. The highest BOD value (3.4 mg/L) was observed during January, while the lowest value (2.6 mg/L) was observed in November. These values indicate the presence of moderate organic pollution in the river. Although BOD levels remain within acceptable limits for river water, values approaching 3 mg/L suggest inputs from domestic sewage, urban runoff, and organic wastes entering the river system.

The gradual reduction in BOD during the latter half of the year indicates improved dilution and natural purification during monsoon and post-monsoon seasons.

- **Chemical Oxygen Demand (COD)**

COD values ranged between 12 mg/L and 28 mg/L, with an annual average of 16 mg/L.

The maximum COD value (28 mg/L) was recorded during January, indicating higher concentrations of oxidizable organic matter at the beginning of the year. Most of the remaining months exhibited COD values between 12 and 20 mg/L, reflecting relatively low chemical pollution and limited industrial contamination. The decreasing COD trend after January suggests improved water quality conditions and effective dilution due to increased river flow.

- **Nitrate**

Nitrate concentrations varied between 0.67 mg/L and 3.20 mg/L, with an annual average of 1.59 mg/L.

These concentrations are significantly below drinking water standards and indicate that nutrient enrichment of the river is currently under control. Slightly elevated nitrate concentrations during June and November may be attributed to agricultural runoff and leaching of fertilizers from surrounding agricultural areas.

- **Fecal Coliform**

Fecal Coliform counts ranged from 4.0 to 9.3 MPN/100 ml, with an annual average of 6.67 MPN/100 ml.



The highest counts were observed during the monsoon months of July and August, likely due to stormwater runoff carrying domestic and animal wastes into the river. However, the values remain relatively low and indicate limited microbial contamination compared to heavily polluted urban rivers.

4.4.6.1 Seasonal Interpretation for 2025

Summer Season (March–May)

During summer months, WQI values declined from 87.26 in March to 76.08 in April and 76.13 in May.

This reduction can be attributed to:

- Reduced river flow.
- Lower dilution capacity.
- Increased concentration of pollutants.
- Decrease in dissolved oxygen levels.

The minimum annual DO value (4.6 mg/L) observed during April supports this observation.

Monsoon Season (June–September)

The river exhibited significant improvement during the monsoon period, with WQI values ranging between 82.52 and 88.90.

Increased river discharge resulted in:

- Dilution of pollutants.
- Improvement in dissolved oxygen concentrations.
- Reduction in organic load concentrations.

The highest WQI value of 88.90 was recorded during September, indicating excellent river health following the monsoon recharge.

Post-Monsoon and Winter Season (October–December)

Water quality remained stable during this period, with WQI values ranging from 85.85 to 89.10.

The highest annual WQI (89.10) was recorded in November, indicating optimum water quality conditions. Improved flow conditions, lower temperatures and enhanced self-purification mechanisms contributed to the observed improvement.

4.5 WASTEWATER MANAGEMENT

4.5.1 Introduction

Wastewater management is one of the most important urban environmental services necessary for protection of public health, conservation of water resources and prevention of environmental pollution.



With rapid urbanization, population growth and expansion of commercial and industrial activities, the quantity of wastewater generated within Ichalkaranji Municipal Corporation (IMC) has increased significantly over the last two decades.

Ichalkaranji is a major textile manufacturing centre of Maharashtra, popularly known as the "Manchester of Maharashtra". The city's economic growth has led to increased water consumption and consequently higher wastewater generation. If not adequately collected and treated, sewage can adversely affect surface water bodies such as Panchganga River, Yadrav Odha, Kala Odha and Chandur Odha, resulting in deterioration of water quality and ecological degradation.

Recognizing the importance of wastewater management, IMC has developed an underground sewerage system and sewage treatment infrastructure for collection, conveyance and treatment of municipal sewage before its disposal into natural water bodies.

The objective of the wastewater management system is to:

- Prevent pollution of rivers and natural drains.
- Improve public health and sanitation.
- Enhance environmental quality.
- Protect groundwater resources.
- Promote reuse and recycling of treated wastewater.
- Achieve sustainable urban development

4.5.2 Wastewater generation

Water supplied to the city eventually becomes wastewater after domestic, commercial and institutional use. Based on the present water supply and population, Ichalkaranji generates approximately 40 MLD of sewage.

Table 4-9 Existing Water Supply and Wastewater Generation of IMC

Sr. No.	Particular	Quantity
1	Estimated Population (2025)	3,50,000
2	Daily Water Supply	45 MLD
3	Per Capita Water Supply	101 LPCD
4	Estimated Sewage Generation	40 MLD
5	Sewage Generation Factor	80-85% of Water Supply

The quantity of wastewater is expected to increase substantially in future due to population growth, urban expansion and improved water supply services

The city is provided with an underground sewerage system covering major residential, commercial and institutional areas. The sewerage system consists of:

- Underground sewer pipelines.
- House service connections.



- Interception and diversion structures.
- Sewage pumping stations.
- Sewage Treatment Plants (STPs).

The sewerage network has significantly reduced direct discharge of sewage into rivers and drains.

4.5.3 Existing Sewage Treatment Infrastructure

To manage municipal wastewater, IMC has established sewage treatment facilities for treatment of collected sewage before disposal. At present, the city has a total installed treatment capacity of 38 MLD.

4.5.3.1 Salient Features

Table 4-10 Details of Existing Sewage Treatment Plant

Sr. No	Description	Location	Lat.	Long.
1	20 MLD STP	G. No. 638, Near Solid waste treatment Plant, Asara Nagar, Ichalkaranji	16°42'10.51"N	74°28'56.34"E
2	18 MLD STP	Takwade Ves Ichalkaranji	16°40'46.92"N	74°28'32.17"E

4.5.3.2 20 MLD STP Details

The first sewage treatment plant of Ichalkaranji was constructed under Maharashtra Jeevan Pradhikaran (MJP) and handed over to IMC in November 2001

Table 4-11 Silent Features of 20 MLD STP

Sr. No	Particulars	Details
1	Capacity	20 MLD
2	Year of Commissioning	2001
3	Implementing Agency	Maharashtra Jeevan Pradhikaran
4	Present Status	Operational
5	Type of Sewage	Domestic Municipal Sewage

Routine monitoring indicates that the plant consistently achieves:

Table 4-12 Performance of 20 MLD STP

Sr. No	Parameter	Outlet Quality
1	BOD	< 10 mg/L
2	COD	< 50 mg/L
3	TSS	Within MPCB Standards
4	pH	6.5 – 8.5

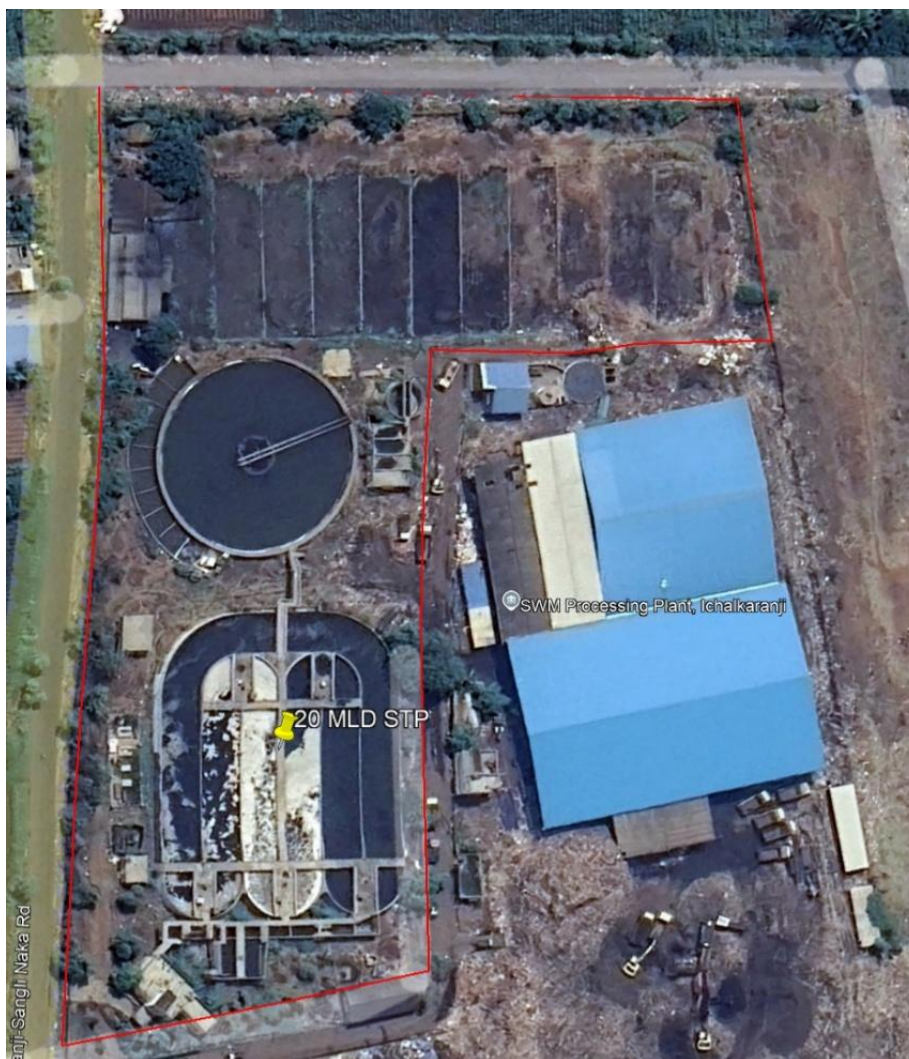


Figure 4-4 Location details of 20 MLD STP

4.5.3.3 18 MLD STP Details

To accommodate increasing wastewater generation and improve environmental protection, IMC commissioned an additional 18 MLD Sewage Treatment Plant located at Takvade Ves, in front of Baudh Vihar

Table 4-13 Silent Features of 18 MLD STP

Sr. No	Particulars	Details
1	Capacity	18 MLD
2	Year of Commissioning	2025
3	Present Status	Operational
4	Type of Sewage	Domestic Municipal Sewage

The plant substantially enhances the city's wastewater treatment capability and reduces pollution load entering natural water bodies.

Table 4-14 Performance of 18 MLD STP

Sr. No	Parameter	Outlet Quality
1	BOD	< 10 mg/L
2	COD	< 50 mg/L
3	TSS	< 10 mg/L
4	pH	6.5 – 8.5

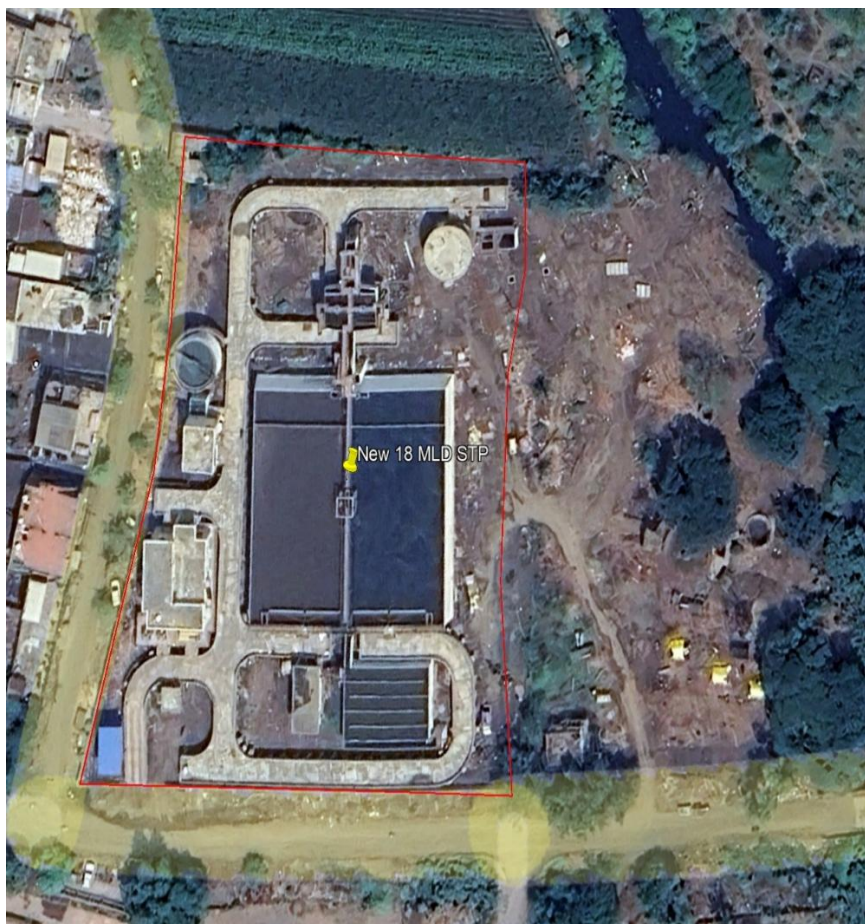


Figure 4-5 Location details of 20 MLD STP

4.5.4 Future Wastewater Management Plan

Considering the projected population growth up to 2054, IMC has prepared a long-term wastewater management strategy to ensure adequate treatment capacity for future sewage generation. The projected population is expected to exceed 5 lakh by the planning horizon year, resulting in increased wastewater generation.

To meet future requirements, IMC has proposed two additional sewage treatment plants



Table 4-15 Details of Proposed STP's

Sr. No	Description	Location	Lat	Long
1	Proposed 19.5 MLD STP	Takwade Ves Ichalkaranji	16°40'47.47"N	74°28'34.27"E
2	Proposed 13 MLD STP	Chandur Road	16°40'7.60"N	74°26'35.52"E

The future treatment capacity of 70.5 MLD will be sufficient to manage projected wastewater generation up to the year 2054.

4.5.5 Water Quality in Industrial Area (Common Effluent Treatment Plant)

Ichalkaranji is recognized as one of the largest textile manufacturing and processing hubs in Maharashtra and India, popularly known as the "Manchester of Maharashtra". The city's textile sector comprises spinning, sizing, weaving, dyeing, bleaching, mercerizing, printing and finishing units that contribute significantly to the local economy and employment generation. However, textile processing activities require substantial quantities of water and generate wastewater containing high concentrations of organic matter, colour, dissolved solids, suspended solids, salts, surfactants, dyes, chemicals, oils and grease. If discharged untreated, these effluents can adversely impact surface water bodies, groundwater resources and agricultural lands. Therefore, effective treatment and management of industrial wastewater is essential for environmental protection and sustainable industrial development. To address this issue, a 12 MLD Common Effluent Treatment Plant (CETP) has been established in the Ichalkaranji textile cluster for collective treatment of wastewater generated from approximately 67 textile processing units and operation since 2012 and operated by The Ichalkaranji Textile CETP Ltd. (TITCL). The CETP provides a centralized treatment facility, enabling member industries to comply with environmental regulations prescribed by the Maharashtra Pollution Control Board (MPCB) and Central Pollution Control Board (CPCB). The plant receives industrial effluent through a dedicated collection network and subjects it to various treatment processes including equalization, physico-chemical treatment, biological treatment, clarification and tertiary treatment before disposal.

The CETP plays a critical role in reducing the pollution load generated by the textile sector. Historically, untreated and partially treated industrial wastewater from textile processing units contributed significantly to the deterioration of water quality in the Panchganga River basin. The establishment and operation of the CETP have considerably reduced the discharge of untreated effluent and improved overall environmental management within the industrial cluster.

As per the Consent to Operate (CTO) granted by the Maharashtra Pollution Control Board (MPCB), the treated effluent generated from the CETP is managed through a dual utilization system. Approximately 50% of the treated wastewater is discharged into the nearby odha (natural drainage channel) after ensuring compliance with prescribed effluent discharge standards. The remaining 50% of treated effluent is supplied for agricultural irrigation purposes, thereby promoting reuse of treated

wastewater and reducing pressure on freshwater resources. This beneficial reuse of treated effluent supports local agriculture while simultaneously contributing to sustainable water resource management practices.

Despite the satisfactory operation of the CETP, increasing environmental concerns, stricter discharge norms and growing water scarcity have necessitated the adoption of advanced wastewater management practices. Accordingly, the CETP management, in coordination with member industries and regulatory authorities, has initiated the process for implementation of a Zero Liquid Discharge (ZLD) Scheme. The proposed ZLD system aims to eliminate the discharge of treated effluent outside the industrial premises by maximizing water recovery and recycling. The implementation of the ZLD project is being coordinated under the guidance of the Maharashtra Industrial Development Corporation (MIDC) for the CETP and ZLD initiative. MIDC is actively coordinating with the CETP management, member industries, Maharashtra Pollution Control Board (MPCB), Government of Maharashtra and other stakeholders for obtaining statutory approvals, technical clearances and financial assistance required for successful implementation of the project.



Figure 4-6 Satellite Image of CETP operated by The Ichalkaranji Textile CETP Ltd

Upon successful implementation, the proposed ZLD system is expected to substantially reduce industrial pollution load entering the Panchganga River basin and adjoining watercourses, improve water quality in downstream stretches, reduce freshwater demand by enhancing water recycling and reuse, ensure long-term compliance with environmental regulations and strengthen the sustainability of the Ichalkaranji textile cluster. The project will represent a major step towards achieving environmentally responsible industrial growth and protection of valuable water resources in the region. The transition from conventional effluent treatment to a Zero Liquid Discharge system demonstrates the commitment of the textile industries, CETP management, MIDC and regulatory authorities towards sustainable industrial development, pollution prevention and conservation of water resources.



4.6 CHALLENGES AFFECTING WATER QUALITY IN ICHALKARANJI

Despite significant investments in water supply, sewerage infrastructure and industrial effluent management, several challenges continue to affect the quality of surface water and groundwater resources within the Ichalkaranji Municipal Corporation (IMC) area.

4.6.1 Industrial Effluent Load

Ichalkaranji is one of the largest textile manufacturing and processing clusters in Maharashtra. Although industrial effluents generated from approximately 67 textile processing units are treated through the 12 MLD Common Effluent Treatment Plant (CETP), historical discharge of untreated and partially treated effluents has impacted the water quality of Panchganga River and adjoining water bodies. High concentrations of colour, dissolved solids, organic matter and processing chemicals continue to pose environmental challenges. The CETP is currently under the process of implementing a Zero Liquid Discharge (ZLD) system under the guidance of MIDC, which is expected to substantially reduce future pollution loads.

4.6.2 Domestic Sewage and Urban Runoff

The city generates approximately 40 MLD of municipal sewage. Although IMC has commissioned 20 MLD and 18 MLD Sewage Treatment Plants, population growth and urban expansion continue to increase wastewater generation. Illegal sewer connections, grey water discharge into natural drains, stormwater contamination and localized gaps in sewerage coverage contribute to deterioration of water quality in Yadrav Odha, Kala Odha and other natural watercourses.

4.6.3 Agricultural Runoff

The areas surrounding Ichalkaranji are dominated by sugarcane cultivation and other agricultural activities. Runoff from agricultural lands carries fertilizers, pesticides and organic matter into nearby streams and rivers during monsoon periods, resulting in increased nutrient loading and occasional deterioration of surface water quality.

4.6.4 Pollution in Natural Water Bodies

Monitoring of Panchganga River, Yadrav Odha and Kala Odha indicates the presence of organic pollution, microbial contamination and elevated nutrient levels at certain locations. Increased Total Coliform and E. coli counts observed in some stretches are primarily attributed to domestic wastewater, grey water discharges and non-point source pollution entering the water bodies.

4.6.5 Increasing Water Demand

Rapid urbanization, population growth and industrial development have resulted in increasing demand for potable water. Dependence on Krishna River and Panchganga River as primary water sources necessitates efficient management of available resources and reduction of water losses within the distribution system.



4.6.6 Climate Variability and Water Security

Irregular rainfall patterns, changing climatic conditions and seasonal fluctuations in river flows may affect long-term water availability. Sustainable water resource planning and conservation measures are therefore essential for ensuring future water security.

4.7 INITIATIVES AND RECOMMENDATIONS FOR IMPROVEMENT OF WATER QUALITY

4.7.1 Expansion of Wastewater Treatment Infrastructure

IMC has already established 20 MLD and 18 MLD Sewage Treatment Plants for treatment of municipal sewage. To cater to future wastewater generation up to the year 2054, IMC has planned additional STPs having capacities of 19.5 MLD at Takawade Ves–Baudh Vihar and 13 MLD at Chandur Odha. These projects will increase the total sewage treatment capacity to approximately 70.5 MLD and significantly improve wastewater management within the city.

4.7.2 Promotion of Treated Wastewater Reuse

Reuse of treated wastewater for gardening, landscaping, industrial purposes, construction activities and green belt development should be further promoted. This will reduce dependence on freshwater resources and support sustainable water management practices.

4.7.3 Implementation of Zero Liquid Discharge (ZLD)

The 12 MLD CETP serving approximately 67 textile processing units is currently moving towards implementation of a Zero Liquid Discharge (ZLD) system. Completion of the ZLD project will substantially reduce industrial wastewater discharge into the environment and improve the water quality of the Panchganga River basin.

4.7.4 Strengthening River and Odha Monitoring

Regular monitoring of Panchganga River, Yadrav Odha, Kala Odha and other water bodies should continue through recognized laboratories. Trend analysis of water quality parameters will help identify pollution sources and support timely corrective actions.

4.7.5 Reduction of Non-Point Source Pollution

Public awareness programs should be strengthened to discourage disposal of domestic wastewater, solid waste and other pollutants into natural drains and watercourses. Sustainable agricultural practices and controlled use of fertilizers and pesticides should also be encouraged in surrounding areas.

4.7.6 Water Conservation and Resource Management

IMC is implementing water supply augmentation projects, construction of additional ESRs and modernization of the water distribution network. Rainwater harvesting, groundwater recharge and water



conservation measures should be promoted at household, institutional and industrial levels to ensure long-term water sustainability.

4.7.7 Public Participation and Environmental Awareness

Protection of water resources requires active participation of citizens, industries, institutions and community organizations. Awareness campaigns on water conservation, wastewater management, river protection and environmental stewardship should be conducted regularly to strengthen community involvement in environmental management.

4.8 CONCLUSION

The wastewater management system of Ichalkaranji Municipal Corporation has shown substantial improvement through establishment of 20 MLD and 18 MLD Sewage Treatment Plants, providing a combined treatment capacity of 38 MLD. Both plants are operating satisfactorily and consistently meeting MPCB discharge standards, achieving high removal efficiencies for BOD, COD and suspended solids.

The treated effluent has significantly reduced pollution loads entering Yadrav Odha, Kala Odha and the Panchganga River basin. Continuous monitoring indicates that the wastewater treatment infrastructure is effectively contributing towards protection of public health and preservation of water resources.

To address future population growth and urban expansion, IMC has planned additional sewage treatment facilities of 19.5 MLD at Takawade Ves–Baudh Vihar and 13 MLD at Chandur. After implementation of these projects, the total wastewater treatment capacity will increase to 70.5 MLD, enabling the city to meet projected wastewater management requirements up to the year 2054.

The planned investments in sewerage infrastructure, sewage treatment, treated wastewater reuse and environmental monitoring reflect IMC's commitment towards achieving 100% sewage treatment coverage, protection of natural water bodies and sustainable urban environmental management.



5 NOISE ENVIROENMTN

5.1 INTRODUCTION

Noise pollution refers to the presence of unwanted or excessive sound in the environment that adversely affects human health, wildlife and the overall quality of life. With rapid urbanization, industrialization and increasing vehicular traffic, noise has emerged as one of the major environmental pollutants in urban areas. Unlike other forms of pollution, noise leaves no visible residue; however, prolonged exposure to elevated noise levels can cause significant physiological, psychological and social impacts.

The major sources of noise pollution include transportation systems, industrial operations, construction activities, commercial establishments, public events, loudspeakers, diesel generator sets and household appliances. In industrial cities such as Ichalkaranji, textile manufacturing activities, engineering industries, power looms, heavy vehicular movement and commercial markets contribute substantially to ambient noise levels.

Noise pollution is recognized as a public nuisance under Sections 268, 290 and 291 of the Indian Penal Code. The Government of India has also framed various legislations for noise control, including:

- The Environment (Protection) Act, 1986
- Noise Pollution (Regulation and Control) Rules, 2000
- The Air (Prevention and Control of Pollution) Act, 1981
- Motor Vehicles Act, 1988
- Factories Act, 1948
- Central Pollution Control Board (CPCB) Ambient Noise Standards

The Environment Status Report evaluates the existing noise environment within Ichalkaranji Municipal Corporation (IMC), identifies major sources of noise pollution, analyses monitoring results and recommends suitable mitigation measures

5.2 NOISE POLLUTION SCENARIO IN ICHALKARANJI

Ichalkaranji is one of Maharashtra's fastest-growing industrial cities and is widely recognized as the "Manchester of Maharashtra" due to its extensive textile manufacturing activities. The city accommodates thousands of power looms, textile processing units, engineering workshops, commercial markets and transport vehicles operating throughout the day.

Rapid urban growth has significantly increased traffic volume, commercial activities and industrial operations, thereby increasing ambient noise levels at several locations. Busy traffic intersections, textile industrial clusters, commercial markets and public gathering places are the major contributors to environmental noise within the municipal limits.



Although industrial activity remains concentrated within designated industrial areas, mixed land use and increasing urbanization have resulted in residential areas being located close to commercial and industrial establishments, thereby increasing public exposure to elevated noise levels.

5.3 SOURCES OF NOISE POLLUTION

The major sources contributing to noise pollution in Ichalkaranji are:

5.3.1 Road Traffic

Road traffic is the dominant source of environmental noise in the city. Increasing numbers of two-wheelers, three-wheelers, cars, buses, heavy commercial vehicles and goods transport vehicles generate continuous traffic noise, particularly at major intersections such as:

- Rajwada Chowk
- Shivaji Chowk
- Deccan Chowk
- Gandhi Camp
- Yadrav Road
- Sangli Road
- Kolhapur Road

Frequent use of pressure horns, traffic congestion and inadequate parking facilities further aggravate noise pollution.

5.3.2 Textile Industries

Ichalkaranji houses one of India's largest textile clusters comprising:

- Power loom units
- Spinning mills
- Sizing units
- Textile processing industries
- Engineering workshops

Operation of weaving machines, compressors, blowers, motors and generators contributes to higher ambient noise levels within industrial areas.

5.3.3 Commercial Activities

Commercial complexes, retail markets, shopping centres and business establishments generate considerable daytime noise due to pedestrian movement, loading-unloading activities and commercial transport.



5.3.4 Construction Activities

Ongoing infrastructure development, road widening, residential construction and commercial projects generate temporary but high-intensity noise from drilling, excavation, concrete mixing and heavy machinery.

5.3.5 Public Address Systems

Noise is also generated during:

- Religious festivals
- Social functions
- Election campaigns
- Processions
- Public meetings
- Loudspeaker usage
- Firecrackers during festivals

Such activities are regulated under the Noise Pollution (Regulation and Control) Rules, 2000.

5.4 AMBIENT NOISE STANDARDS

The Central Pollution Control Board (CPCB) has prescribed ambient noise standards under the Noise Pollution (Regulation and Control) Rules, 2000

Table 5-1 CPCB Ambient Noise Standards

Sr. No.	Area Category	Day Time (6 AM–10 PM) dB(A) Leq	Night Time (10 PM–6 AM) dB(A) Leq
1	Industrial Area	75	70
2	Commercial Area	65	55
3	Residential Area	55	45
4	Silence Zone	50	40

Silence Zones include areas within 100 metres of hospitals, educational institutions, courts and religious places

5.5 NOISE MONITORING PROGRAMME

To assess the prevailing ambient noise scenario, Ichalkaranji Municipal Corporation carried out ambient noise monitoring at the following location and the results are attached below;



Table 5-2 Results of Noise Monitoring

Sr. No.	Locations	Result dB(A) Day	Result dB(A) Night	Specifications (CPCB Standards dB(A))	Method
1.	Near Rajwada Chowk	58.9	51.2	75/70	CPCB Guideline
2.	Takawade Ves	61.4	56.3		
3.	Near Gandhi Putala	67.1	60.8		
4.	Near ASC College	70.0	52.4		
5.	Near Filter House	61.4	55.3		
Remark- ➤ All above Noise level results are within Central Pollution Control Board Standards limit. ➤ Day/Night -75/70 dB.					

5.6 INTERPRETATION OF NOISE MONITORING RESULTS

The ambient noise monitoring results indicate that environmental noise levels within Ichalkaranji Municipal Corporation are generally influenced by vehicular traffic, commercial activities and mixed land use patterns.

Among the monitored locations, Near ASC College recorded the highest daytime noise level of 70.0 dB(A), followed by Near Gandhi Putala with 67.1 dB(A). These locations experience continuous vehicular movement, commercial establishments and pedestrian activities, resulting in comparatively higher noise levels during daytime.

During nighttime, the highest value of 60.8 dB(A) was observed at Near Gandhi Putala, followed by Takawade Ves (56.3 dB(A)) and Near Filter House (55.3 dB(A)). Nighttime noise is mainly attributed to late evening traffic, commercial operations and movement of heavy vehicles.

The comparatively lower daytime noise level was recorded at Rajwada Chowk (58.9 dB(A)), whereas the lowest nighttime value was observed near Rajwada Chowk (51.2 dB(A)).

The monitored locations primarily represent commercial and mixed land use areas. The recorded values are within the applicable CPCB permissible limits for industrial/commercial activity, and no abnormal noise pollution was observed during the monitoring period.

Overall, the monitoring results indicate that ambient noise levels in Ichalkaranji Municipal Corporation are presently under control. However, with increasing urbanization, traffic density and industrial growth, continuous monitoring and suitable noise mitigation measures are necessary to prevent future deterioration



5.7 SILENT ZONE DECLARATION

Recognizing the importance of protecting sensitive receptors from excessive noise, Ichalkaranji Municipal Corporation has passed an Administrative Resolution for declaration of Silent Zones around hospitals, educational institutions and other sensitive establishments.

The proposal has been approved administratively by the Municipal Corporation; however, the notification has not yet been published in the Official Gazette. Therefore, the notified silent zones are presently under administrative implementation and will attain statutory status after Gazette notification. After publication of the Gazette Notification, these areas shall be governed under the Noise Pollution (Regulation and Control) Rules, 2000, wherein the permissible ambient noise limits shall be:

- Daytime : 50 dB(A) Leq
- Nighttime : 40 dB(A) Leq

The declaration of silent zones will strengthen protection of hospitals, educational institutions and other sensitive public facilities from excessive environmental noise

5.8 INITIATIVES BY ICHALKARANJI MUNICIPAL CORPORATION

Ichalkaranji Municipal Corporation has undertaken several initiatives to minimize environmental noise pollution:

- Enforcement of Noise Pollution Rules during festivals.
- Restriction on loudspeaker operation beyond prescribed timings.
- Public awareness campaigns regarding firecracker regulations.
- Development of cycling tracks to reduce vehicular dependency.
- Promotion of green belts and roadside plantations.
- Coordination with Police Department during festivals and public events.
- Monitoring of ambient noise levels through recognized laboratories.
- Plantation under Majhi Vasundhara Abhiyan to provide natural noise barriers

5.9 RECOMMENDATIONS

The following measures are recommended for effective noise management in Ichalkaranji

- Strengthen regular ambient noise monitoring.
- Install permanent noise monitoring stations at major traffic corridors.
- Develop green buffers along highways and industrial areas.
- Strict enforcement of Noise Pollution Rules, 2000.
- Promote electric public transport and non-motorized transport.
- Restrict pressure horns within municipal limits.
- Improve traffic management and signal synchronization.
- Promote silent diesel generator sets.



- Develop silent zones around hospitals and educational institutions.
- Conduct public awareness programmes on noise pollution.

5.10 CONCLUSION

The ambient noise assessment conducted in Ichalkaranji Municipal Corporation indicates that noise levels during the monitoring period were generally within the applicable CPCB standards for the monitored commercial and mixed-use locations. Vehicular traffic remains the dominant contributor to environmental noise, followed by commercial activities and textile-related industrial operations. The administrative declaration of Silent Zones reflects IMC's commitment towards protecting environmentally sensitive areas, and publication of the Gazette notification will further strengthen regulatory enforcement. With continuous monitoring, effective traffic management, public awareness and implementation of the proposed mitigation measures, Ichalkaranji Municipal Corporation is well positioned to maintain a healthy acoustic environment while supporting sustainable urban development.



6 SOIL ENVIRONMENT

6.1 INTRODUCTION

Soil is one of the most valuable natural resources and forms the uppermost layer of the earth's crust that supports plant growth, groundwater recharge, biodiversity and various human activities. It acts as a medium for agriculture, infrastructure development, industries, forests and urban settlements. Soil is composed of mineral particles, organic matter, water, air and living organisms, which together determine its fertility, productivity and ecological functions.

The quality of soil depends upon several natural factors such as parent rock, climate, topography, vegetation and time, as well as anthropogenic activities including agriculture, industrialization, urbanization and waste disposal. Healthy soil plays a significant role in nutrient cycling, carbon sequestration, water filtration and maintaining ecological balance. Conversely, improper land use practices, indiscriminate disposal of solid waste, industrial emissions, untreated wastewater and excessive use of fertilizers and pesticides can deteriorate soil quality, affecting agricultural productivity and public health.

Considering the rapid urbanization and industrial growth of Ichalkaranji, sustainable soil management has become an important component of environmental conservation. Regular assessment of soil characteristics helps identify changes in fertility, contamination levels and land degradation, thereby supporting scientific planning for sustainable development.

6.2 SOIL CHARACTERISTICS OF ICHALKARANJI

Ichalkaranji Municipal Corporation is situated in the fertile Krishna-Panchganga river basin of Kolhapur District. The city lies on the alluvial plains formed by the Panchganga River and is surrounded by highly productive agricultural lands. The soils of the region are predominantly deep black cotton soils (Regur soils) interspersed with medium black soils and recent alluvial deposits along river banks.

The black cotton soil is derived mainly from Deccan Trap basaltic rocks and is characterized by:

- High clay content
- Good moisture retention capacity
- Moderate to high fertility
- Presence of calcium and magnesium
- Moderate permeability
- High shrink-swell characteristics

These soils are particularly suitable for cultivation of sugarcane, maize, soybean, wheat, vegetables and fodder crops. The fertile alluvial deposits along the Panchganga River further enhance agricultural productivity in the peripheral areas of the city.



6.3 SOIL CLASSIFICATION

Based on regional geology and soil surveys carried out in western Maharashtra, the soils surrounding Ichalkaranji can broadly be classified as follows:

1. Deep Black Cotton Soil

This is the dominant soil type in Ichalkaranji and surrounding villages. It possesses excellent moisture-holding capacity and supports intensive agriculture, especially sugarcane cultivation.

2. Medium Black Soil

These soils occur in relatively elevated areas and possess moderate fertility with good agricultural potential.

3. Alluvial Soil

Recent alluvial deposits are found along the Panchganga River and other drainage channels. These soils are comparatively lighter in texture and highly productive due to continuous deposition of fertile sediments.

6.4 SOIL RESOURCES AND LAND USE

The municipal area of Ichalkaranji covers approximately 29.78 sq. km, with nearly 48% of the total area under agricultural use. The remaining area comprises residential, commercial, industrial, transportation corridors, recreational spaces, water bodies and public utilities.

The surrounding agricultural lands are extensively cultivated with:

- Sugarcane
- Maize
- Wheat
- Groundnut
- Soybean
- Vegetables
- Fodder crops

The availability of fertile black soil and irrigation facilities from the Krishna and Panchganga river systems has significantly contributed to agricultural development around the city

6.5 POTENTIAL SOURCES OF SOIL POLLUTION

The major potential sources of soil pollution within Ichalkaranji Municipal Corporation include:

- Textile dyeing and processing industries
- Common Effluent Treatment Plants (CETPs)
- Municipal Solid Waste processing facilities
- Construction and demolition waste



- Domestic sewage leakage
- Vehicular emissions and roadside dust deposition
- Chemical fertilizers and pesticides
- Oil and grease contamination near transport corridors
- Improper disposal of industrial sludge

At present, no major incidences of hazardous soil contamination have been reported within the municipal limits. However, continuous monitoring remains necessary considering the expanding industrial base.

6.6 ISSUES AND CHALLENGES

The important challenges associated with soil management in Ichalkaranji include:

- Rapid urban expansion leading to conversion of agricultural land.
- Increasing industrial activities and generation of chemical sludge.
- Improper disposal of construction and demolition waste.
- Potential contamination due to textile processing chemicals.
- Lack of periodic soil quality monitoring.
- Encroachment on natural drainage channels.
- Excessive application of chemical fertilizers in peri-urban agriculture.
- Localized waterlogging and salinity in wastewater-irrigated areas

6.7 RECOMMENDATIONS

To ensure sustainable management of soil resources, the following measures are recommended:

- Establish a city-wide soil quality monitoring programme with annual sampling at representative locations.
- Monitor heavy metals and hazardous constituents in soils surrounding industrial areas and CETPs.
- Promote organic farming and balanced fertilizer application in peri-urban agricultural areas.
- Ensure scientific disposal of textile sludge and hazardous waste.
- Prevent illegal dumping of municipal and construction waste on open lands.
- Increase green cover and urban forestry to reduce soil erosion.
- Encourage rainwater harvesting and groundwater recharge to maintain soil moisture.
- Integrate soil quality assessment into future environmental planning and land use management



7 LAND RESOURCES

7.1 Introduction

Land is one of the most valuable natural resources and forms the foundation for human settlements, agriculture, industries, transportation, ecological systems and infrastructure development. It supports food production, biodiversity, groundwater recharge and economic activities that are essential for sustainable urban growth. Unlike other renewable resources, land is finite and its quality is directly influenced by human activities. Rapid urbanization, industrialization and population growth have significantly altered land use patterns in cities, leading to reduction in agricultural land, degradation of soil quality, encroachment on natural drainage systems and increased environmental pressures.

Sustainable land management is therefore essential to ensure balanced development while conserving natural resources for future generations. Scientific land use planning, protection of environmentally sensitive areas, development of green infrastructure and efficient utilization of available land are key components of sustainable urban management.

(IMC has experienced rapid industrial and urban growth over the past several decades due to its well-established textile industry. The expansion of residential, commercial and industrial activities has transformed the city's land use pattern, making land resource management one of the important environmental concerns. This chapter assesses the existing land resources, land use pattern, environmental pressures, impacts and municipal initiatives undertaken for sustainable land management.

7.2 Existing Land Resources

Ichalkaranji Municipal Corporation occupies a geographical area of approximately 29.78 km² and is situated on the fertile alluvial plains of the Panchganga River basin. The city is characterized by relatively flat terrain underlain by Deccan Trap basaltic formations with predominantly black cotton soil, making the surrounding region suitable for agriculture.

Land resources within IMC support a wide range of urban and economic activities including:

- Residential development
- Textile industries
- Commercial establishments
- Educational institutions
- Public utilities
- Transportation infrastructure
- Agriculture
- Parks and recreational spaces
- Water supply and wastewater infrastructure



- Public and semi-public amenities

Historically, agriculture dominated the landscape of Ichalkaranji. However, the rapid growth of the textile industry has resulted in gradual conversion of agricultural land into residential colonies, industrial estates, commercial complexes and transportation infrastructure. Today, the city represents a balanced combination of industrial development and agricultural activities

7.3 Land Use Pattern

Land use is one of the most important indicators for assessing the environmental status of an urban area. It reflects the extent of urbanization, industrialization, infrastructure development and conservation of natural resources. Proper land use planning plays an important role in sustainable urban development and environmental protection.

The total geographical area under the jurisdiction of Ichalkaranji Municipal Corporation is 29.78 km². The existing land use pattern is summarized below;

Table 7-1 Break up of Land Use and Land Cover pattern in IMC

Sr. No	Land Use Land Cover	Area in km²	% Area
1	Residential Built-up Area	4.79	16.08
2	Industrial Built-up Area	1.50	5.04
3	Recreational Area	0.29	0.97
4	Agricultural Land	14.36	48.22
5	Water Bodies	0.90	3.02
6	Roads, Public Utilities, Transportation, Institutional, Vacant & Other Uses	7.94	26.66
Grand Total		29.78	100

The increase in population in the Ichalkaranji would pose a challenge for the communities not only in case of land availability but also in case of availability of city's other important natural resources which must be managed and mitigative measures must be in place in advance to reduce the effects of increasing anthropogenic pressures on city's vital natural resources.

While it has modernized significantly in recent years, Ichalkaranji's growth has been more industrial and economically driven, rather than following a pre-established urban plan. However, there have been efforts by local authorities to improve infrastructure, regulate expansion, and ensure sustainable development.

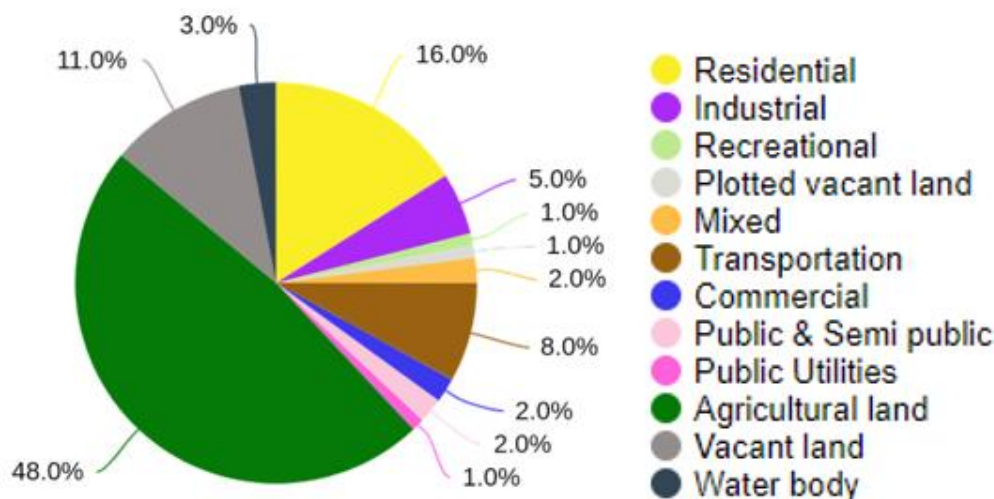


Figure 7-1 LULC Pattern of Ichalkaranji

7.4 Interpretation of Land Use Pattern

The land use distribution indicates that agriculture continues to occupy the largest share of land resources within the municipal limits, accounting for approximately 48% of the total geographical area. These agricultural lands are mainly located along the city periphery and support sugarcane cultivation and other seasonal crops.

Residential development occupies nearly 16% of the municipal area, reflecting the increasing demand for housing due to rapid population growth and industrial employment. High-density residential areas are concentrated within the city core, whereas new residential layouts are expanding towards the outskirts.

Industrial land occupies about 5% of the municipal area and primarily consists of textile weaving units, spinning mills, engineering industries, processing units and associated commercial establishments. Although relatively smaller in area, this sector forms the economic backbone of Ichalkaranji.

Approximately 3% of the land comprises water bodies, including stretches of the Panchganga River, natural streams, reservoirs and water supply infrastructure. These water resources are vital for drinking water supply, groundwater recharge and ecological balance.

Open spaces and recreational areas account for only 1% of the total area, indicating the need for increasing urban green spaces to improve environmental quality and public health.

The remaining 27% consists of transportation corridors, public utilities, institutional areas, roads, mixed-use development, public amenities and vacant lands available for future development. Overall, the land use pattern reflects a rapidly urbanizing industrial city where future development must be carefully balanced with environmental conservation.



8 GREEN COVER

8.1 INTRODUCTION

Urban green spaces constitute an essential component of the urban ecosystem and play a vital role in maintaining environmental quality, ecological balance, and public health. Trees, parks, gardens, roadside plantations and open green areas provide numerous ecosystem services including carbon sequestration, improvement in ambient air quality, reduction in urban heat island effect, groundwater recharge, biodiversity conservation and enhancement of the overall quality of urban life.

In rapidly urbanizing and industrialized cities such as Ichalkaranji, preservation and expansion of green infrastructure are necessary to offset the environmental impacts arising from textile industries, increasing vehicular traffic, commercial activities and continuous urban expansion. Green spaces improve the resilience of cities against climate change while simultaneously enhancing aesthetics and recreational opportunities.

Recognizing the ecological importance of urban forests, Ichalkaranji Municipal Corporation (IMC) has undertaken systematic tree inventory and conservation activities through a comprehensive GPS-based Tree Census carried out under the Maharashtra (Urban Areas) Protection and Preservation of Trees Act. The census provides a scientific database for planning future plantation programmes, biodiversity conservation, maintenance schedules and sustainable urban development

8.2 EXISTING GREEN COVER IN ICHALKARANJI

The GPS-based Tree Census carried out for the entire municipal area reveals that Ichalkaranji possesses a substantial urban tree resource distributed across all municipal wards.

The important findings of the tree census are summarized below.

Table 8-1 Details of Trees in Ichalkaranji

Sr. No.	Particular	No's
1	Total Trees Enumerated	3,02,817
2	Total Tree Species	157
3	Botanical Families	51
4	Native Tree Population	1,32,859
5	Exotic Tree Population	1,69,958
6	Ornamental Trees	1,24,946
7	Fruiting Trees	72,635
8	Medicinal Trees	1,05,236
9	Uncommon Species	29
10	IUCN Listed Species	27



8.3 TREE DIVERSITY

The Tree Census identified 157 different tree species belonging to 51 botanical families, representing ornamental, fruit-bearing, medicinal, avenue and native forest species. The diversity reflects a heterogeneous urban landscape comprising public parks, roadsides, institutional campuses, residential areas, industrial premises and private properties.

The most dominant species recorded during the survey include:

- Babhul (*Acacia nilotica*)
- Agasti (*Sesbania grandiflora*)
- Tuti (*Morus alba*)
- Naral (*Cocos nucifera*)
- Vilayati Chinch
- Karanj (*Pongamia pinnata*)
- Kaduneem
- Subabhul
- Rain Tree
- Gulmohar

These species collectively constitute a major portion of the city's urban forest and contribute significantly towards carbon sequestration, shade generation and improvement of local micro-climate.

8.4 NATIVE AND EXOTIC TREE POPULATION

The tree census reveals that although Ichalkaranji supports a considerable population of indigenous tree species, exotic species presently dominate the urban landscape.

- Native Trees : 1,32,859
- Exotic Trees : 1,69,958

The predominance of exotic species is primarily due to extensive plantation of fast-growing ornamental and avenue trees during previous decades. While exotic trees provide shade and landscape value, increasing the proportion of native species is essential for conserving indigenous biodiversity and supporting native birds, butterflies and pollinators

8.5 Functional Classification of Trees

The municipal tree population has been classified into three broad ecological categories.

8.5.1 Ornamental Trees

The city contains 1,24,946 ornamental trees, planted mainly along roads, public institutions, gardens and residential areas. These species contribute to urban beautification, reduction in dust pollution and mitigation of heat island effects.



8.5.2 Fruiting Trees

A total of 72,635 fruit-bearing trees have been recorded. Species such as Mango, Coconut, Guava, Jamun, Sitaphal, Mulberry and Tamarind contribute towards urban biodiversity while providing food resources for birds and wildlife.

8.5.3 Medicinal Trees

The city possesses 1,05,236 medicinal trees, including Neem, Arjun, Karanj, Bel and several indigenous medicinal species. These trees enhance ecological stability while preserving traditional medicinal plant resources

8.6 DEVELOPMENT OF OXYGEN PARKS BY IMC

As part of its commitment towards enhancing urban green infrastructure, improving ambient air quality and mitigating the impacts of climate change, Ichalkaranji Municipal Corporation (IMC) has developed a network of Oxygen Parks at various locations across the city. These parks have been established on available municipal lands, open spaces and water reservoir premises with the objective of increasing green cover, promoting biodiversity and providing healthy recreational spaces for citizens.

The Oxygen Parks are designed to function as urban carbon sinks, helping in the absorption of atmospheric carbon dioxide, generation of oxygen, reduction of dust pollution, moderation of micro-climatic conditions and enhancement of the city's ecological balance. Besides environmental benefits, these parks also provide aesthetic value, improve the quality of urban life and serve as important habitats for birds, butterflies and other urban fauna.

The parks have been developed by planting a wide variety of native, ornamental, flowering, medicinal and avenue tree species, thereby improving species diversity within the municipal limits. Important species planted include Bakul, Bahava, Kadamb, Karanj, Neem, Pipal, Banyan, Mahogany, Gulmohar, Spathodea, Bottle Palm, Silver Oak, Ashoka, Tamarind, Arjun, Sagwan (Teak), Nagchafa, Sonchafa, Coconut, Amla, Jamun, Kanchan, Cassia, Taman, Cherry, Ficus, Mahipati, Parijat and several other indigenous and ornamental species.

At present, Ichalkaranji Municipal Corporation has developed 13 Oxygen Parks across different parts of the city. These parks collectively accommodate approximately 7,804 trees representing more than 50 different tree species, significantly contributing towards improvement of urban greenery and biodiversity.

Table 8-2 Details of Oxygen Parks

Sr. No.	Location	No. of Trees
1	R.S. No. 618 Aarge Bhavan	349
2	R.S. No.615, 618 Part-1 Oxygen Park	192
3	R.S. No.615, 618 Part-1 Oxygen Park	198



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4	Krishnanagar Oxygen Park	401
5	Shahapur Oxygen Park	1,062
6	R.K. Nagar Park-1	359
7	R.K. Nagar Park-2	146
8	Banakar Hospital Area Oxygen Park	575
9	Kurundwad Road Oxygen Park	373
10	Panchavati Water Tank Oxygen Park	415
11	Indira Colony Water Tank Oxygen Park	210
12	Thorat Chowk Oxygen Park	2,083
13	Shahapur (Survey Nos. 86 & 87) Oxygen Park	1,040

8.7 FUTURE STRATEGY

Ichalkaranji Municipal Corporation proposes to further strengthen its urban forestry programme by expanding Oxygen Parks, increasing plantation of indigenous tree species, improving maintenance of existing plantations and integrating green corridors with roads, riverbanks, public institutions and open spaces. The Corporation also intends to undertake regular monitoring of tree survival, canopy development and biodiversity to ensure long-term sustainability of these green assets.

The development of Oxygen Parks is one of the flagship environmental initiatives of IMC and demonstrates the Corporation's commitment towards achieving sustainable urban development, improving environmental quality and enhancing the overall liveability of Ichalkaranji City.



9 SOLID WASTE MANAGEMENT

9.1 INTRODUCTION

Municipal Solid Waste Management (MSWM) is one of the most important obligatory functions of Urban Local Bodies under the provisions of the Solid Waste Management Rules, 2016, notified under the Environment (Protection) Act, 1986. Rapid urbanization, industrial development and population growth have significantly increased the quantity and complexity of municipal solid waste generated in urban areas. Improper management of solid waste results in deterioration of environmental quality through contamination of air, water and soil resources, generation of greenhouse gases, foul odour, spread of vector borne diseases and degradation of urban aesthetics.

The city generates considerable quantities of municipal solid waste from residential areas, commercial establishments, textile industries, educational institutions, hotels, vegetable markets, healthcare facilities and public places. Effective management of municipal solid waste has therefore become a major environmental priority for the Corporation. IMC has developed an Integrated Municipal Solid Waste Management System comprising 100% door-to-door collection, source segregation, transportation, processing of biodegradable waste, recovery of recyclable materials through Material Recovery Facility (MRF), biomethanation of organic waste and scientific disposal of residual waste. The Corporation has also successfully completed remediation of legacy waste and has adopted resource recovery practices in accordance with the principles of Circular Economy and Swachh Bharat Mission (Urban) 2.0.

The overall objective of IMC is to minimize waste generation, maximize resource recovery and ensure environmentally sound disposal of residual waste while improving public health and environmental quality.



Figure 9-1 Municipal Solid Waste Management Plan



However, the efficiency of MSWM depends heavily on citizen participation, the availability of infrastructure, and the local government's capacity to enforce waste management regulations. Promoting public awareness about waste segregation, reducing single-use plastics, and adopting innovative technologies like waste-to-energy systems can greatly enhance ULBs' ability to manage waste sustainably and mitigate the environmental impact of urban growth.

9.2 MUNICIPAL SOLID WASTE GENERATION

The quantity of municipal solid waste generated in Ichalkaranji has increased over the years due to increasing population, improved living standards, commercial expansion and industrial growth. At present, Ichalkaranji Municipal Corporation generates approximately 42,985.32 Metric Tonnes (MT) of municipal solid waste annually, which corresponds to approximately 118 tonnes per day (TPD). The Corporation has achieved 100% door-to-door collection and 100% source segregation, ensuring efficient downstream processing of different waste streams.

The waste generated within the municipal limits is broadly classified into biodegradable (wet) waste and non-biodegradable (dry) waste.

Table 9-1 Details of Waste Generation per Annum

Sr. No.	Waste Category	Quantity (MT/Annum)
1	Wet Waste	26,651.00
2	Dry Waste	16,242.56
3	Total Municipal Solid Waste	42,985.32

The relatively higher proportion of biodegradable waste indicates good potential for compost production and biomethanation, thereby reducing the burden on landfills

9.3 SOURCE SEGREGATION

Source segregation is the backbone of sustainable solid waste management. IMC has successfully implemented segregation of municipal waste at the source by creating awareness among citizens, commercial establishments, educational institutions and industries.

Waste is segregated into:

- Wet (Biodegradable) Waste
- Dry (Recyclable) Waste
- Domestic Hazardous Waste
- Sanitary Waste
- Garden Waste
- Construction & Demolition Waste
- Biomedical Waste



- Electronic Waste

The city has achieved 100% segregation at source, which has significantly improved the efficiency of composting, recycling and resource recovery operations while minimizing the quantity of waste requiring final disposal.

9.4 COLLECTION AND TRANSPORTATION

Door-to-door collection is carried out across all municipal wards on a daily basis. Waste collection vehicles collect segregated waste separately to avoid mixing during transportation.

The municipal collection system includes:

- Door-to-door waste collection
- Community bins where necessary
- Street sweeping
- Secondary transportation
- Waste transfer to processing facilities

The Corporation has developed an efficient transportation network ensuring timely collection of waste generated from residential, commercial, institutional and market areas.

Regular monitoring of collection efficiency has resulted in nearly complete collection coverage throughout the municipal area.

Ichalkaranji Municipal Corporation (IMC) has a fleet of 68 municipal solid waste collection vehicles for door-to-door collection and transportation of municipal solid waste. These vehicles are equipped with four separate compartments to facilitate source-segregated collection of wet waste, dry waste, domestic hazardous waste, and sanitary waste, ensuring compliance with the Solid Waste Management Rules, 2016. In addition to these vehicles, separate dedicated vehicles are deployed for the collection and transportation of garden (horticultural) waste and Construction & Demolition (C&D) waste, enabling their independent handling and scientific processing without mixing with municipal solid waste



Figure 9-2 Collection of Waste by Vehicles

9.5 WET WASTE MANAGEMENT

Biodegradable waste constitutes nearly 62% of the total municipal solid waste generated in Ichalkaranji.

The wet waste is scientifically processed through:

- Composting
- Biomethanation

The Corporation produces high-quality organic compost from biodegradable waste. A major milestone was achieved on 9th March 2026, when the compost produced by IMC received official branding and is now commercially marketed under the Corporation's own brand. This initiative has transformed organic waste into a valuable agricultural product while reducing the quantity of waste sent for disposal.

The compost produced is suitable for:

- Agriculture
- Horticulture
- Landscaping
- Urban gardening

The initiative promotes sustainable agriculture while supporting the concept of "Waste to Wealth"



Figure 9-3 Wet Waste Processing Unit



Figure 9-4 HARIT MAHA City Compost Certificate

9.6 DRY WASTE MANAGEMENT

Dry waste generated within the city mainly consists of:

- Plastic
- Paper
- Cardboard
- Glass
- Metals
- Textile waste
- Rubber

- Packaging material

The segregated dry waste is transported to the Material Recovery Facility (MRF), where recyclable materials are sorted and sent to authorized recyclers.

The MRF minimizes landfill disposal while promoting resource recovery and circular economy practices. Scientific recycling of dry waste conserves natural resources, reduces greenhouse gas emissions and minimizes environmental pollution.



Figure 9-5 MRF Facility



Figure 9-6 Dry Waste Processing Unit

9.7 BIOMETHANATION PLANT

The Corporation has established a biomethanation plant for processing biodegradable municipal waste.

Organic waste is converted into biogas through anaerobic digestion.

The methane generated from the plant is collected and stored in gas balloons and subsequently utilized for operating generators supplying electricity for:

- Street lighting
- Internal lighting
- Small electrical loads within the Municipal Solid Waste Processing Facility

This innovative initiative reduces dependence on conventional electricity while simultaneously reducing methane emissions into the atmosphere. The project demonstrates IMC's commitment towards renewable energy utilization and climate-resilient urban infrastructure



Figure 9-7 Biomethanation Plant

9.8 BIOMEDICAL WASTE MANAGEMENT

Biomedical waste generated from hospitals, clinics, pathological laboratories and healthcare facilities requires specialized handling due to its infectious nature.

Government healthcare facilities within IMC generate approximately 46.459 MT of biomedical waste annually, which is collected separately and disposed through authorized biomedical waste treatment facilities in accordance with the Bio-Medical Waste Management Rules, 2016.

Segregation at source, colour-coded collection, safe transportation and scientific treatment ensure protection of public health and the environment.



Figure 9-8 Biomedical Waste Processing Facility

9.9 LEGACY WASTE REMEDIATION

One of the major achievements of Ichalkaranji Municipal Corporation is the successful scientific remediation of legacy waste accumulated over several years.

Approximately 3,49,369 Metric Tonnes of legacy waste stored over an area of 20,023 square metres has been scientifically processed through bio-mining and bio-remediation techniques.

The project has resulted in:

- Reclamation of valuable municipal land
- Reduction of groundwater contamination risk
- Elimination of fire hazards
- Reduction in odour nuisance
- Prevention of methane generation
- Improved environmental aesthetics

The reclaimed land can now be utilized for environmentally beneficial public infrastructure

9.10 PLASTIC WASTE MANAGEMENT

Plastic waste generated within municipal limits is segregated and channelized through the Material Recovery Facility.



Single-use plastics are discouraged through awareness campaigns and enforcement under the Plastic Waste Management Rules.

Collected recyclable plastics are supplied to authorized recycling agencies. The Corporation is also promoting reduction, reuse and recycling of plastic waste through community participation

9.11 ACTION ON PLASTIC WASTE

Ichalkaranji Municipal Corporation (IMC) regularly conducts awareness campaigns to discourage the use of Single-Use Plastic (SUP) and promote environmentally sustainable alternatives in accordance with the Plastic Waste Management Rules, 2016 (as amended) and the Government of Maharashtra notifications. Awareness is created through public notices, social media, market campaigns, educational programmes, and direct interaction with citizens, traders, hotels, restaurants, and commercial establishments regarding the adverse environmental impacts of plastic pollution and the importance of reducing plastic consumption.

As part of its enforcement drive, IMC carries out regular inspections and surprise raids at shops, hotels, restaurants, street vendors, markets, and other commercial establishments to ensure strict compliance with the ban on Single-Use Plastic. During the reporting period, the Corporation has taken action against establishments found using banned Single-Use Plastic items and imposed penalties as per the provisions of the Plastic Waste Management Rules, 2016 and the applicable Municipal regulations. These enforcement actions, coupled with continuous awareness programmes, have significantly improved compliance with the plastic ban and reduced plastic litter within the municipal limits.

IMC is committed to further strengthening enforcement, encouraging the adoption of eco-friendly alternatives, and conducting continuous public awareness programmes to achieve a Single-Use Plastic-Free Ichalkaranji, thereby contributing towards a cleaner, healthier, and more sustainable urban environment.



Figure 9-9 Awareness Campaign for discouragement of Single Use Plastic



9.12 ELECTRONIC WASTE (E-WASTE)

Every year millions of electrical and electronic devices are discarded as products break or become obsolete and are thrown away. These discarded devices are considered e-waste and can become a threat to health and the environment if they are not disposed of and recycled appropriately.

Common items in e-waste streams include computers, mobile phones, large household appliances, and medical equipment. Millions of tonnes of e-waste are recycled using unsound activities, as well as being stored in homes and warehouses, dumped, and illegally exported. When e-waste is recycling using unsound activities, it can release up to 1000 different chemical substances into the environment, including known neurotoxins such as lead. Pregnant women and children are particularly vulnerable due to their pathways of exposure and developmental status. The International Labour Organization (ILO) estimates that 16.5 million children were working in the industrial sector in 2020, of which waste processing is a subsector

Electronic waste (e-waste) is one of the fastest growing solid waste streams in the world. Less than a quarter of e-waste produced globally in 2022 was known to be formally recycled; however, e-waste streams contain valuable and finite resources that can be reused if they are recycled appropriately. E-waste has therefore become an important income stream for individuals and some communities. People living in low- and middle-income (LMICs), particularly children, face the most significant risks from e-waste due to lack of appropriate regulations and enforcement, recycling infrastructure and training. Despite international regulations targeting the control of the transport of e-waste from one country to another, its transboundary movement to LMICs continues, frequently illegally. E-waste is considered hazardous waste as it contains toxic materials and can produce toxic chemicals when recycled inappropriately. Many of these toxic materials are known or suspected to cause harm to human health, including dioxins, lead and mercury. Inferior recycling of e-waste is a threat to public health and safety.

Electrical and electronic items contain many different toxic substances. Users are unlikely to have contact with these substances while the items are functional. When they become waste, these toxicants can be released into the environment if the devices are managed using environmentally-unsound practices and activities. Many unsound practices have been observed at e-waste sites including:

- scavenging
- dumping on land or in water bodies
- landfilling along with regular waste
- opening burning or heating
- acid baths or acid leaching
- stripping and shredding plastic coatings
- manual disassembly of equipment.

Awareness camp has been taken to control above mentioned activities. The total E waste generated in IMC as per data is about 0.990 Kgs which is very less in quality and is has been properly disposal in authorised agency.

These activities are considered hazardous to the environment and health as they release toxic pollutants, contaminating the air, soil, dust, and water at recycling sites and in neighbouring communities. Open burning and heating are considered the most hazardous activities due to the toxic fumes created. Once in the environment, these toxic pollutants can travel significant distances from the point of pollution, exposing people in faraway areas to hazardous substances.



Figure 9-10 E-waste Awareness Campaign

9.13 PUBLIC PARTICIPATION

Public participation remains one of the key components of successful municipal solid waste management.

IMC regularly conducts:

- Swachh Bharat awareness campaigns
- Cleanliness drives
- School awareness programmes
- Plastic-free campaigns
- Home composting awareness
- Citizen participation programmes
- Environmental awareness rallies

These initiatives have significantly improved citizen participation in source segregation and waste reduction.

9.14 CHALLENGES

Despite significant achievements, several challenges continue to affect solid waste management within Ichalkaranji.

Major challenges include:



- Continuous increase in municipal solid waste due to urbanization.
- Increasing use of single-use plastics.
- Public awareness regarding waste minimization.
- Management of domestic hazardous waste.
- Seasonal increase in vegetable market waste.
- Requirement for additional decentralized composting facilities.

9.15 FUTURE ACTION PLAN

To strengthen the existing municipal solid waste management system, IMC has proposed the following future initiatives:

- Achieve complete compliance with the Solid Waste Management Rules, 2026.
- Increase decentralized composting at ward level.
- Improve recycling efficiency through advanced Material Recovery Facilities.
- Promote home composting and zero-waste residential societies.
- Increase plantation using city compost.
- Introduce digital monitoring of waste collection through GPS-based tracking.
- Enhance public awareness through Swachh Bharat Mission 2.0 activities.
- Maximize resource recovery and minimize landfill disposal in line with Circular Economy principles.



10 HEALTH

10.1 ENVIRONMENT AND HEALTH

There is a growing tendency of migrating towards urban areas as these areas offer good education and job opportunities and a higher standard of living. Although urban populations, on an average, enjoy better health than their rural counterparts, today's urban environment can concentrate health risks and introduce new health problems.

As per the estimation of the World Health Organization (WHO), around 36 million deaths per year, accounting for 63% of global mortality, is due to the Non-Communicable Diseases (NCD). A major proportion of these deaths can be attributed to risks triggered by urbanization. This could be a result of cardiovascular, pulmonary or respiratory diseases caused due to urban air pollution, heat strokes and heat wave related ailments and lifestyle disorders such as obesity and diabetes due to change in eating habits. Along with NCD, unhealthy and polluted urban environments also give rise to communicable diseases especially vector and water borne diseases that spread due to unsafe potable water and improper sanitation.

To counter these diseases, all urban settlements must have proper healthcare facilities along with a trained workforce in place along with better environmental conditions. Such facilities are important to take care of citizens especially during any medical emergencies or during any epidemic outbreak. Ichalkaranji has several private and government hospitals which are equipped with latest technologies and specialist doctors, experienced staff who can handle any emergency cases. Day and night chemists are also available in the city. Ichalkaranji city with advance healthcare it contains private hospitals, Dispensaries, many Ayurvedic Clinics, Homeopathic clinics, Dental Clinics, Paediatricians, Gynaecologists and Government Hospitals and Dispensaries.

As per data collected from NUHM Ichalkaranji, patients with fever less than 7 days were found 1963 in a year from April 2025 to March 2026, and patients with fever more than 7 days were found 2498 in same year

10.2 WATER BORNE DISEASES

Water borne diseases are caused due to water contamination, either by pathogenic bacteria, viruses or protozoa. These agents are transmitted to people when the water is used for drinking, cooking or other domestic or recreational purposes. Health of an individual gets compromised when such harmful pathogens contaminate drinking water either at source or through seepage of contaminated runoff water or within the piped distribution network. Along with this, unhygienic handling of water during transportation or within home may also contaminate clean water. IMC's Health department has been proactive in tackling the spread of such diseases and its dedicated trained workforce has been working tirelessly towards the mitigation of such diseases through their annual preventive measures



10.3 VECTOR BORNE DISEASES

Diseases are caused by vectors, living organisms that transmit infectious diseases between humans and animals. Many of these vectors are arthropod species and include bloodsucking organisms such as mosquitoes, ticks and fleas. These vectors ingest disease producing microbes from an infected host (human/animal) and later inject it into a new host thereby continuing the spread of such diseases. Malaria, Dengue, Japanese encephalitis, Leishmaniasis and Yellow fever are some of the most common and widespread diseases globally. Malaria The Plasmodium parasites, the cause of malaria, are spread to people through the bites of the infected female Anopheles mosquitoes, active mainly during dusk and dawn. Out of the 5 malaria causing parasite species, *P. falciparum* and *P. vivax* are the most common *P. falciparum* is the most dangerous with the highest rate of mortality.

In 2017, nearly half of the world's population was at risk of malaria. The intensity of transmission of Malaria greatly depends on climatic conditions. Malaria is more common in Tropical and subtropical climates. In 2017, there were an estimated 219 million cases of malaria registered in 87 countries with majority of the cases reported in African countries 54 As per WHO's World Malaria Report 2018, India accounted for 4% of malaria cases out of the total cases registered worldwide

10.3.1 Acute Diarrhoeal Disease:

Acute diarrhoea can be caused by a number of different agents. Common infective causative agents include bacteria such as *Salmonella* and *Vibrio parahaemolyticus*, and viruses such as norovirus, rotavirus, sapovirus and astrovirus. Less common causative agents include the bacteria causing bacillary dysentery, cholera and Shiga toxin-producing *Escherichia coli* infection, etc. Acute diarrhoeal diseases may occur in all ages, with children being more commonly affected.

It sounds like there may have been an outbreak or incident involving diarrheal diseases in Ichalkaranji. In Ichalkaranji City 170 Diarrheal disease patients were found during the report year. Diarrheal diseases can be caused by a variety of factors, including contaminated water, poor sanitation, and viral or bacterial infections.

Patients with acute diarrhoeal diseases present with sudden onset of frequent loose or watery stools, often accompanied by vomiting and fever.

Acute diarrhoeal diseases are usually transmitted by contaminated hands or ingestion of contaminated food or drinks, and occasionally by aerosol spread with contaminated droplets of splashed vomitus. Outbreaks may occur in settings like institutions and child care centres.

10.3.2 Prevention

1. Maintain good personal hygiene

- Perform hand hygiene frequently, especially before handling food or eating, and after using the toilet.
- Wash hands with liquid soap and water, and rub for at least 20 seconds. Then rinse with water and dry with a disposable paper towel or hand dryer. If hand washing facilities are not available,



or when hands are not visibly soiled, hand hygiene with 70 to 80% alcohol-based handrub may be considered. As alcohol does not effectively kill some viruses e.g. norovirus, alcohol-based handrub should not substitute hand hygiene with liquid soap and water.

- Wear gloves and a surgical mask while disposing of or handling vomitus and faeces, and wash hands thoroughly afterwards.
- Refrain from work or attending school, and seek medical advice if suffering from vomiting or diarrhoea.

2. Maintain good food hygiene

- Adopt the 5 Keys to Food Safety in handling food, i.e. Choose (Choose safe raw materials); Clean (Keep hands and utensils clean); Separate (Separate raw and cooked food); Cook (Cook thoroughly); and Safe Temperature (Keep food at safe temperature) to prevent foodborne diseases.
- Drink only boiled water from the mains or bottled drinks from reliable sources.
- Avoid drinks with ice of unknown origin.
- Purchase fresh food from hygienic and reliable sources. Do not patronise illegal hawkers.
- Wash and peel fruit by yourself and avoid eating raw vegetables.
- Cook all food thoroughly before consumption, particularly seafood and shellfish.

3. Maintain good environmental hygiene

- Regularly clean and disinfect frequently touched surfaces such as furniture, toys and commonly shared items with 1:99 diluted household bleach (mixing 1 part of 5.25% bleach with 99 parts of water), leave for 15 to 30 minutes, and then rinse with water and keep dry. For metallic surface, disinfect with 70% alcohol.
- Use absorbent disposable towels to wipe away obvious contaminant such as vomitus or faecal spillage. Then disinfect the surface and neighbouring areas with 1:49 diluted household bleach (mixing 1 part of 5.25% bleach with 49 parts of water), leave for 15 to 30 minutes and then rinse with water and keep dry. For metallic surface, disinfect with 70% alcohol.
- Maintain good indoor ventilation.
- Maintain proper sanitary facilities and drainage system.
- Clean and disinfect toilet used by infected persons and soiled areas.



10.3.3 Dengue:

Dengue or Dengue fever is a mosquito borne viral infection which causes flu like symptoms and occasionally develops into a potentially lethal complication called ‘Severe Dengue’. The occurrence of this disease has grown drastically with about half of the world’s population is at risk of acquiring infection. Dengue virus is transmitted by female mosquitoes mainly of the species *Aedes aegypti* and, to a lesser extent, *Aedes albopictus*. Dengue is spread throughout the tropics and its intensity of occurrence is influenced by rainfall, lack of hygiene and sanitation, unplanned urban growth. Dengue fever is severe with symptoms like severe headache, nausea, vomiting, muscle joints and skin rashes. In the absence of effective medical treatment, it may cause the death of an individual. The disease could be prevented by following good practices like covering and cleaning domestic water storage tanks periodically, preventing the formation of mosquito breeding sites through proper environmental management and so on.

In the financial year the number of persons getting affected by Dengue in IMC area has decreased with only 16 persons having been affected with dengue the previous year (2025-2026). This is due to the sincere efforts made by IMC’s health department to prevent the occurrence of vector borne diseases.

Response IMC has a well-trained group of medical experts and a technical workforce which works continuously to eradicate diseases such as Malaria, Dengue, TB and water borne diseases. The department continuously keeps a check on the status of the diseases mentioned above and implement strategies to prevent the occurrence of such diseases through a variety of preventive and therapeutic measures. The department also conducts several health education camps, seminars and workshops to use education as a tool to support behavioural changes that could enable citizens to protect themselves from infections and to tackle an environmental source of infection. Under the ‘National Vector Borne Disease Control Program’, many preventive measures against malaria and dengue are being undertaken by IMC.

10.3.4 Regular Preventive measures

- Weekly anti-larval spraying and fogging through private contractors
- The promotion and cultivation of guppy fish and their periodic introduction into potential breeding sites to control the growth of mosquito larvae. A detailed inventory of such breeding sites conducted before and after monsoon. Every worker possesses information regarding Mosquito breeding sites, and map locations.

10.4 OVERALL PUBLIC HEALTH STATUS OF ICHALKARANJI

The Public Health Department of Ichalkaranji Municipal Corporation (IMC) continuously monitors communicable and environment-related diseases through its network of Urban Public Health Centres (UPHCs), namely IGGH, Tambe Mal, Gavbhag, Kalawant Gully, Shahapur, Jawahar Nagar



and Lal Nagar. Disease surveillance is carried out under the Integrated Disease Surveillance Programme (IDSP) to identify disease trends, monitor outbreaks and facilitate timely public health interventions.

During the period April 2025 to March 2026, disease surveillance data indicate that fever-related illnesses constituted a significant proportion of reported cases. A total of 2,498 cases of fever lasting seven days or more and 1,963 cases of fever lasting less than seven days were reported from various UPHCs. The majority of prolonged fever cases were recorded from Gavbhag, Kalawant Gully, Jawahar Nagar and Lal Nagar UPHCs, suggesting the need for continuous surveillance and preventive healthcare activities in these densely populated areas.

Only two cases of fever with rash were reported during the reporting period, while no cases of fever with bleeding or fever associated with altered sensorium were recorded, indicating the absence of major outbreaks of severe viral haemorrhagic diseases during the year.

Respiratory illness surveillance showed very few cases of acute respiratory infections. Only one case of cough with fever lasting less than two weeks and 68 cases of cough without fever lasting less than two weeks were reported. No cases of chronic cough exceeding two weeks or Severe Acute Respiratory Infection (SARI) were recorded. Similarly, only two cases of Influenza-Like Illness (ILI) were reported, indicating a relatively low incidence of respiratory infectious diseases.

Water-borne diseases remained under regular surveillance. During the reporting period, 170 cases of Acute Diarrhoeal Disease (ADD) and 239 cases of dysentery were reported across the municipal area. The occurrence of these diseases emphasizes the importance of maintaining safe drinking water supply, proper sanitation infrastructure, efficient sewerage management and regular water quality monitoring. Only three cases each of jaundice and acute hepatitis were reported, indicating comparatively limited incidence of water-borne viral infections.

Vector-borne diseases were effectively monitored throughout the year. A total of 16 cases of dengue and 5 cases of chikungunya were reported, while no major outbreaks of vector-borne diseases occurred. The relatively low number of reported cases reflects the effectiveness of municipal vector control measures including anti-larval activities, fogging operations, elimination of mosquito breeding sites, public awareness campaigns and routine surveillance conducted by the Health Department.

No cases of Acute Flaccid Paralysis (AFP) or Acute Encephalitic Syndrome (AES) were reported during the reporting period, indicating satisfactory disease control and surveillance for these nationally monitored diseases.

Animal bite cases constituted a major component of the reported health events. During the reporting period, 4,801 dog bite cases, 1,255 other animal bite cases, and 12 snake bite cases were reported. The high number of dog bite cases highlights the importance of continued implementation of the Animal Birth Control (ABC) programme, anti-rabies vaccination services, public awareness regarding responsible pet ownership and effective stray animal management within the municipal limits.



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Overall, the disease surveillance data indicate that Ichalkaranji Municipal Corporation has maintained effective monitoring of communicable diseases through its public health infrastructure. Although sporadic cases of water-borne and vector-borne diseases continue to occur, no major epidemic or public health emergency was observed during the reporting year. Continued emphasis on environmental sanitation, safe drinking water supply, solid waste management, wastewater management, vector control measures and public health awareness programmes will further strengthen disease prevention and improve the overall environmental health status of the city.



11 HIGHLIGHTS OF THE INITIATIVES UNDERTAKEN BY IMC

Ichalkaranji Municipal Corporation (IMC) has undertaken numerous environment friendly initiatives towards the Sustainable development of the city and the betterment of its citizens. In the year 2023-24, IMC took some major initiatives, primarily in the field of Renewable Energy, Municipal Solid waste Management, Air and Water pollution and Public Health. Section wise highlights of these initiatives are highlighted in the below sections

11.1 RENEWABLE ENERGY

11.1.1 Solar Rooftop Power Plant at Water Treatment Plant (WTP)

In line with its commitment towards sustainable development and reduction of greenhouse gas emissions, Ichalkaranji Municipal Corporation (IMC) has successfully implemented a solar rooftop power generation project at its Water Treatment Plant (WTP). The Water Treatment Plant requires approximately 1.60 MW of electrical power to operate pumps, treatment units and associated infrastructure. Considering the available financial resources under the Corporate Social Responsibility (CSR) initiative, an 81 kW grid-connected solar rooftop power plant was installed as the first phase towards meeting the renewable energy requirements of the facility.

The solar photovoltaic system has been established over an area of approximately 8,200 sq. ft. on the roof of the Rapid Sand Filter Unit of the Water Treatment Plant. The utilization of the existing rooftop space ensured optimum land use without requiring any additional land acquisition.

The project was implemented with technical assistance from the Center for Water and Sanitation (CWAS), CRDF and CEPT University, while financial assistance was provided by HSBC Bank under its Corporate Social Responsibility (CSR) programme. The total capital investment for the project was Rs. 47.50 lakh, entirely funded through CSR support, resulting in no financial burden on the Municipal Corporation.

The project demonstrates an excellent example of public-private partnership for promoting renewable energy and sustainable urban infrastructure. Since the capital expenditure was borne through CSR funding, municipal financial resources could be conserved and diverted towards other priority civic infrastructure and public welfare projects.





Figure 11-1 Installation of Rooftop Solar System at WTP

11.1.1.1 Performance of Solar Rooftop Plant

During the financial year 2023–24, the 81 kW solar rooftop system generated approximately 110,234 kWh of electricity, resulting in a direct electricity cost saving of approximately Rs. 9.95 lakh for the Municipal Corporation.

The installed solar photovoltaic modules have an expected operational life of approximately 25 years, ensuring long-term generation of clean energy and significant reduction in electricity expenditure. Considering routine maintenance costs and an assumed annual increase of 5% in electricity tariffs, the Municipal Corporation is expected to achieve cumulative savings of approximately Rs.1.25 crore over the first ten years (2023–24 to 2033–34).

Apart from financial savings, the project contributes towards:

- Reduction in dependence on conventional electricity.
- Reduction in greenhouse gas emissions and carbon footprint.
- Promotion of renewable energy in municipal infrastructure.
- Improvement in operational sustainability of the Water Treatment Plant.
- Achievement of Sustainable Development Goals (SDGs), particularly SDG-7 (Affordable and Clean Energy) and SDG-13 (Climate Action).

The project serves as a successful demonstration model for integrating renewable energy into urban water infrastructure and highlights IMC's commitment towards environmentally responsible governance.

To promote clean and renewable energy, Ichalkaranji Municipal Corporation has installed grid-connected rooftop solar photovoltaic (PV) systems on various municipal buildings under Mazi Vasundhara Abhiyan 5.0. A 800 kWp rooftop solar power plant has been commissioned at the Municipal Corporation Headquarters at six municipal offices, including Shahupuri Zone Office, Saraswati High School Zone Office, Shahu Putala Zone Office, Old Municipal Corporation Building, Shahu High School Zone Office, and another municipal facility.

These solar installations contribute to reducing dependence on conventional energy sources, lowering greenhouse gas emissions, and minimizing electricity expenditure. The initiative supports the Government of Maharashtra's objective of promoting renewable energy and sustainable urban development.

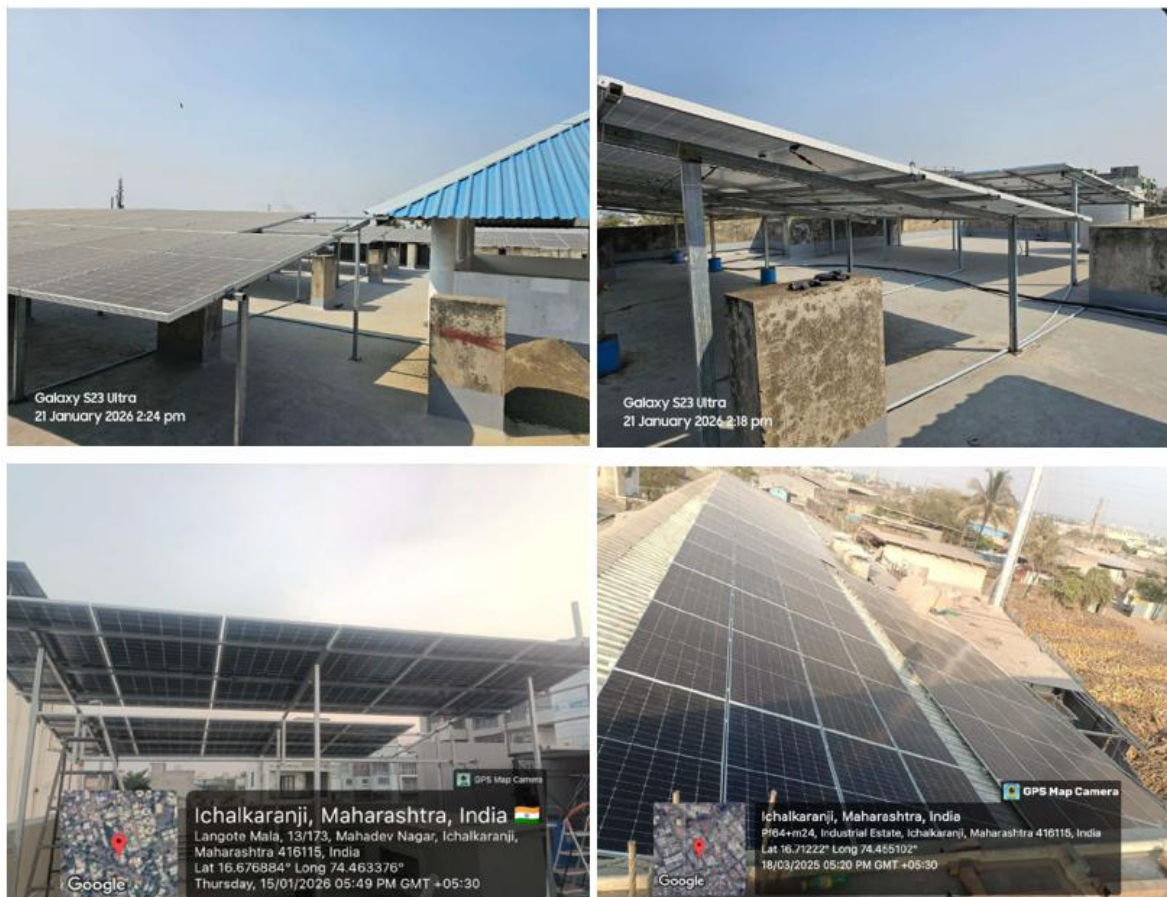


Figure 11-2 Photographs of Rooftop Solar Installation

11.1.2 Installation of Solar High Mast Lighting System

As part of its efforts to improve public infrastructure while promoting renewable energy, Ichalkaranji Municipal Corporation has undertaken the installation of Solar High Mast Lighting Systems across various locations in the city.

Under the financial assistance received from the Ministry of Urban Development, Government of Maharashtra, IMC has received a grant of Rs. 10.00 crore for the development of basic urban infrastructure and public amenities. The Municipal Corporation is the implementing agency for these works.

Under this programme, IMC has installed a total of 80 Solar High Mast Lighting Systems across the municipal area, comprising:

- 36 Solar High Mast Lights of 9-metre height
- 44 Solar High Mast Lights of 12.5-metre height

The total project cost is approximately Rs. 9.98 crore.

The installation of solar-powered high mast lights has significantly enhanced illumination in major roads, public spaces, junctions and community areas while reducing dependence on conventional electricity. The project has contributed towards improving public safety, reducing energy consumption, lowering annual electricity expenditure and minimizing carbon emissions.

The initiative aligns with the Municipal Corporation's vision of developing a clean, energy-efficient and climate-resilient urban environment. By utilizing renewable solar energy for public lighting, IMC has taken a significant step towards sustainable urban infrastructure and environmental conservation



Figure 11-3 Solar high mast

11.2 ELECTRIC VEHICLE PROMOTION & SUSTAINABLE URBAN MOBILITY

The transportation sector is one of the major contributors to greenhouse gas emissions and urban air pollution. Promoting electric mobility has emerged as an effective strategy for reducing carbon emissions, improving urban air quality and achieving sustainable transportation. In line with the National Electric Mobility Mission, the Government of Maharashtra's Electric Vehicle Policy and the Sustainable Development Goals (SDGs), Ichalkaranji Municipal Corporation (IMC) is actively encouraging the adoption of electric vehicles and supporting the development of charging infrastructure within the city.

11.2.1 Electric Vehicle Charging Infrastructure

As of the reporting year 2025–26, Ichalkaranji city has approximately 233 operational Electric Vehicle (EV) charging stations established by private agencies, commercial establishments and fuel stations. These charging facilities are supporting the increasing number of electric vehicles operating within the city and neighbouring areas.

Although the existing charging stations primarily draw electricity from the conventional power grid, IMC recognizes the importance of integrating renewable energy into the charging infrastructure. The Corporation has therefore initiated awareness programmes encouraging commercial establishments,

industries and citizens to adopt solar-powered EV charging systems, thereby reducing dependence on fossil fuel-based electricity and promoting clean energy.

11.2.2 Growth of Electric Vehicles

The adoption of electric vehicles in Ichalkaranji has shown a steady increase in recent years owing to improved charging infrastructure, favourable government policies and growing public awareness regarding environmental protection.

As of March 2024, approximately 2,329 private electric vehicles were registered within the Ichalkaranji region. The increasing number of EVs reflects a positive shift towards cleaner transportation and reduced dependence on conventional fossil fuels.

The Municipal Corporation anticipates a significant increase in EV ownership over the coming years and therefore supports the expansion of charging infrastructure, renewable energy integration and sustainable mobility planning.

11.2.3 Electric Vehicles for Municipal Services

To promote environmentally sustainable municipal operations, Ichalkaranji Municipal Corporation has deployed four Electric Vehicles (EVs) exclusively for the collection and transportation of electronic waste (E-waste) within the city.

The use of electric vehicles for municipal solid waste management has reduced fuel consumption, minimized operational emissions and demonstrated IMC's commitment towards green municipal governance. This initiative integrates clean transportation with scientific e-waste management and serves as a model for environmentally responsible municipal services.



Figure 11-4 Electric Vehicles for Municipal Services



11.2.4 PM e-Bus Sewa Scheme

The PM e-Bus Sewa Scheme, launched by the Government of India, is a flagship programme aimed at transforming urban public transportation through the deployment of electric buses. The scheme seeks to improve urban mobility while reducing greenhouse gas emissions, fossil fuel consumption and urban air pollution.

Recognizing the importance of sustainable public transport, Ichalkaranji Municipal Corporation has been selected under the PM e-Bus Sewa Scheme.

The proposal submitted by IMC has received approval from the State Level Technical Committee for the development of the necessary electrical and transport infrastructure, including:

- Development of an E-Bus Depot.
- Installation of High Tension (HT) Electrical Substation and Metering System.
- Installation of Low Tension (LT) Electrical Infrastructure.
- Development of allied charging infrastructure.
- Operation of 25 Electric Buses under the PM e-Bus Sewa Scheme.

The implementation of this project will significantly strengthen the city's public transportation network while reducing dependence on diesel-operated buses.

11.2.5 Expected Environmental Benefits

The promotion of electric mobility and implementation of the PM e-Bus Sewa Scheme are expected to provide multiple environmental and socio-economic benefits, including:

- Reduction in greenhouse gas emissions and urban air pollution.
- Decrease in dependence on fossil fuels and imported petroleum products.
- Improvement in ambient air quality by reducing emissions of PM_{2.5}, PM₁₀, NO_x and other vehicular pollutants.
- Reduction in traffic-related noise pollution.
- Promotion of renewable energy integration through future solar-powered charging infrastructure.
- Improvement in public transportation efficiency and commuter convenience.
- Support to India's Net Zero and Climate Action commitments.
- Generation of employment opportunities in EV operation, charging infrastructure and maintenance.
- Strengthening of the city's sustainable urban mobility framework.



Figure 11-5 Proposed Site for PM e--BUS Depot

11.2.6 Future Roadmap

To accelerate the transition towards sustainable transportation, Ichalkaranji Municipal Corporation proposes the following initiatives:

- Expansion of public EV charging infrastructure at strategic locations.
- Promotion of rooftop solar-powered EV charging stations.
- Electrification of additional municipal vehicles used for solid waste management and public utility services.
- Development of dedicated EV parking and charging facilities in commercial areas.
- Public awareness programmes promoting electric mobility and clean transportation.
- Integration of electric buses into the city's future public transport system under the PM e-Bus Sewa Scheme.
- Adoption of smart energy management systems for EV charging infrastructure.

11.3 WATERBODY REJUVENATION AND CONSERVATION INITIATIVES

Water bodies are among the most valuable natural resources supporting urban ecology, groundwater recharge, biodiversity and climate resilience. However, rapid urbanization, silt deposition, disposal of municipal waste, growth of invasive aquatic weeds and anthropogenic activities have adversely affected the carrying capacity and ecological health of many urban water bodies. Waterbody



rejuvenation involves restoring rivers, lakes, ponds and other natural water resources to improve their ecological condition, enhance storage capacity, restore biodiversity and ensure sustainable management.

Recognizing the environmental significance of its water resources, Ichalkaranji Municipal Corporation (IMC) has undertaken several initiatives for the rejuvenation and conservation of important water bodies within its jurisdiction. These initiatives include desilting, removal of invasive aquatic weeds (water hyacinth), cleaning of river stretches and quarry lakes, and restoration of water holding capacity, thereby improving water quality and enhancing the ecological value of these resources.

11.3.1.1 Major Waterbody Rejuvenation Works

During the reporting period, Ichalkaranji Municipal Corporation (IMC) undertook annual waterbody rejuvenation and maintenance activities to improve the ecological health and hydraulic efficiency of major water bodies within the city. The primary focus was on the systematic removal of invasive water hyacinth), which adversely affects water quality, obstructs the natural flow of water, reduces dissolved oxygen levels and hampers aquatic biodiversity.

Table 11-1 Details of Water Body Rejuvenation work

Sr. No.	Water Body	Nature of Work	Area Covered	Additional Water Storage Capacity Created
1	Panchganga River	Removal of Water Hyacinth and Cleaning of River Stretch	60,000 m ²	90,000 m ³
2	Shahapur Quarry	Removal of Water Hyacinth and Cleaning of Quarry Water Body	36,000 m ²	54000 m ³

The Panchganga River is cleaned annually by removing water hyacinth from approximately 60,000 square metres of the river surface. This activity restores the natural flow of the river, improves dissolved oxygen levels, enhances aquatic habitat, prevents mosquito breeding and improves the overall ecological condition of the river.

Similarly, Shahapur Quarry, which is designated by IMC as the official Ganesh Idol Immersion Site (Ganapati Visarjan), undergoes comprehensive cleaning every year before and after the Ganesh festival. During the reporting year 2025–26, the quarry was thoroughly cleaned by removing idol remains, floating waste, decorative materials and water hyacinth covering approximately 36,000 square metres. These activities help maintain water quality, increase storage efficiency and prevent secondary pollution of the water body



Figure 11-6 Removal of Water Hyacinth from Panchganga River



Figure 11-7 Removal of Water Hyacinth from Shahpur Query

11.3.1.2 Environmental Benefits

The waterbody rejuvenation programme has resulted in several environmental and ecological benefits, including:

- Restoration of natural water holding capacity through systematic desilting.
- Improvement in river flow characteristics and reduction in localized flooding.
- Enhanced groundwater recharge and increased water availability.
- Regular removal of water hyacinth, leading to improved water quality and healthier aquatic ecosystems.
- Reduction in mosquito breeding and associated public health risks.
- Prevention of pollution caused by idol immersion through post-festival cleaning of Shahapur Quarry.
- Conservation of aquatic biodiversity and restoration of ecological balance.
- Improvement in the aesthetic value and recreational potential of urban water bodies.
- Strengthening of climate resilience by increasing stormwater storage capacity.



- Promotion of sustainable urban water resource management through periodic maintenance and community participation.

11.4 TREE PLANTATION DRIVE

As part of the Mazi Vasundhara Abhiyan 5.0 Ichalkaranji Municipal Corporation undertook an extensive tree plantation drive to enhance the city's green cover, improve air quality, and promote ecological sustainability. The initiative was implemented with active participation from municipal departments, educational institutions, government organizations, industries, non-governmental organizations, and citizens.

During the campaign, 30,000 saplings of native and suitable ornamental species were planted at various locations across the city, including roadsides, public parks, open spaces, educational institutions, government premises, and other available public lands. The plantation programme aimed to increase urban green cover, strengthen biodiversity, mitigate the urban heat island effect, improve carbon sequestration, and create a healthier urban environment.

The Municipal Corporation has also emphasized the post-plantation care and maintenance of the saplings through regular watering, protection measures, and monitoring to ensure higher survival rates. This initiative reflects the Corporation's commitment towards achieving the objectives of the Mazi Vasundhara Abhiyan and promoting sustainable environmental management.





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Figure 11-8 Tree Plantation Drive by IMC

11.5 HEALTH CHECK-UP OF SANITATION WORKERS

Ichalkaranji Municipal Corporation is committed to ensuring the health, safety, and well-being of its sanitation workforce. During the reporting year, comprehensive health check-up camps were organized for sanitation workers, wherein 585 sanitation workers underwent medical examinations. The health screening included general physical examinations, blood pressure, blood sugar, haemoglobin estimation, vision assessment, respiratory health evaluation, and other essential diagnostic tests. Workers requiring further medical attention were referred to appropriate healthcare facilities for treatment and follow-up.

To enhance occupational safety and minimize health risks associated with municipal sanitation activities, the Municipal Corporation also distributed Personal Protective Equipment (PPE) kits to sanitation workers. The PPE kits included safety gloves, face masks, safety shoes, reflective jackets, protective clothing, and other essential safety gear to ensure safe handling of municipal solid waste and sanitation operations.



Figure 11-9 Health Checkup of Sanitation Workers



Figure 11-10 PPE Kit Distribution for Sanitation Workers

11.6 PROGRAMMES ORGANIZED ON THE OCCASION OF IMC FOUNDATION DAY

On the occasion of the Foundation Day of Ichalkaranji Municipal Corporation, a series of environmental conservation and public awareness programmes were organized to encourage community participation in creating a cleaner, greener and more sustainable city. The programmes witnessed active participation from public representatives, municipal officers, employees, educational institutions, social organizations, volunteers and citizens.

11.6.1 Plastic-Free City Campaign

As part of the Foundation Day celebrations and World Environment Day initiatives, IMC launched a Plastic-Free City Campaign to eliminate plastic pollution and promote sustainable alternatives. A public pledge was administered to municipal officers, employees and citizens to reduce the use of single-use plastics and adopt environmentally friendly practices.

The campaign included awareness programmes, plastic waste collection drives, removal of litter from public places, segregation of collected plastic waste and its scientific disposal through the Municipal Solid Waste Management system. Citizens were also encouraged to use reusable cloth bags and environmentally friendly materials in their daily lives.

The initiative contributed towards reducing plastic pollution, improving urban cleanliness and enhancing environmental awareness among the community



Figure 11-11 Plastic-Free Campaign and Public Awareness Programme organized by IMC

11.6.2 Mega Cleanliness Drive

A city-wide Mega Cleanliness Drive (Maha Swachhata Abhiyan) was organized during the Foundation Day celebrations to improve public cleanliness and encourage community participation in maintaining a clean urban environment.

Municipal officers, sanitation workers, public representatives, educational institutions, NGOs and local citizens actively participated in the cleanliness campaign. The drive covered major roads, commercial

areas, public places, parks and institutional premises, where litter, roadside waste, plastic waste and accumulated debris were removed.

The campaign promoted the message of "Clean City – Healthy City" and strengthened the objectives of Swachh Bharat Mission (Urban) 2.0 by encouraging citizens to take collective responsibility for maintaining cleanliness in their neighbourhoods.

The programme significantly enhanced public awareness regarding waste segregation, responsible waste disposal and civic responsibility while improving the overall aesthetic appearance of the city.



Figure 11-12 Mega Cleanliness Drive (Maha Swachhata Abhiyan) organized by IMC

11.7 PROMOTION OF SUSTAINABLE FESTIVALS

11.7.1 Eco-Friendly Ganesh Festival Management

Ichalkaranji Municipal Corporation (IMC) has been consistently promoting environmentally sustainable celebration of Ganesh Chaturthi by implementing comprehensive awareness programmes, community participation initiatives and scientific idol immersion management practices. The objective of the initiative is to minimize environmental pollution caused by traditional idol immersion, reduce waste generation, conserve water quality, and encourage citizens to celebrate festivals in an eco-friendly manner.

The Corporation implemented the programme in accordance with the guidelines issued by the MPCB for environmentally sound management of Ganesh festivals. A series of Information, Education and Communication (IEC) activities were organized before and during the festival to educate citizens about sustainable practices.

11.7.1.1 Awareness Programme in Schools

Environmental awareness programmes were conducted in schools across the city to educate students about the importance of celebrating Eco-friendly Ganesh Festival. Students were encouraged to use natural clay (Shadu) idols, natural colours and biodegradable decoration materials instead of Plaster of Paris (POP) idols and chemical paints.

The awareness sessions focused on:

- Importance of eco-friendly Ganesh idols.
- Protection of rivers and lakes from pollution.
- Use of biodegradable decoration materials.
- Proper segregation and disposal of festival waste.
- Conservation of water resources.
- Role of students as environmental ambassadors.

The participation of school children helped in spreading awareness among families and society, thereby increasing public acceptance of sustainable festival practices

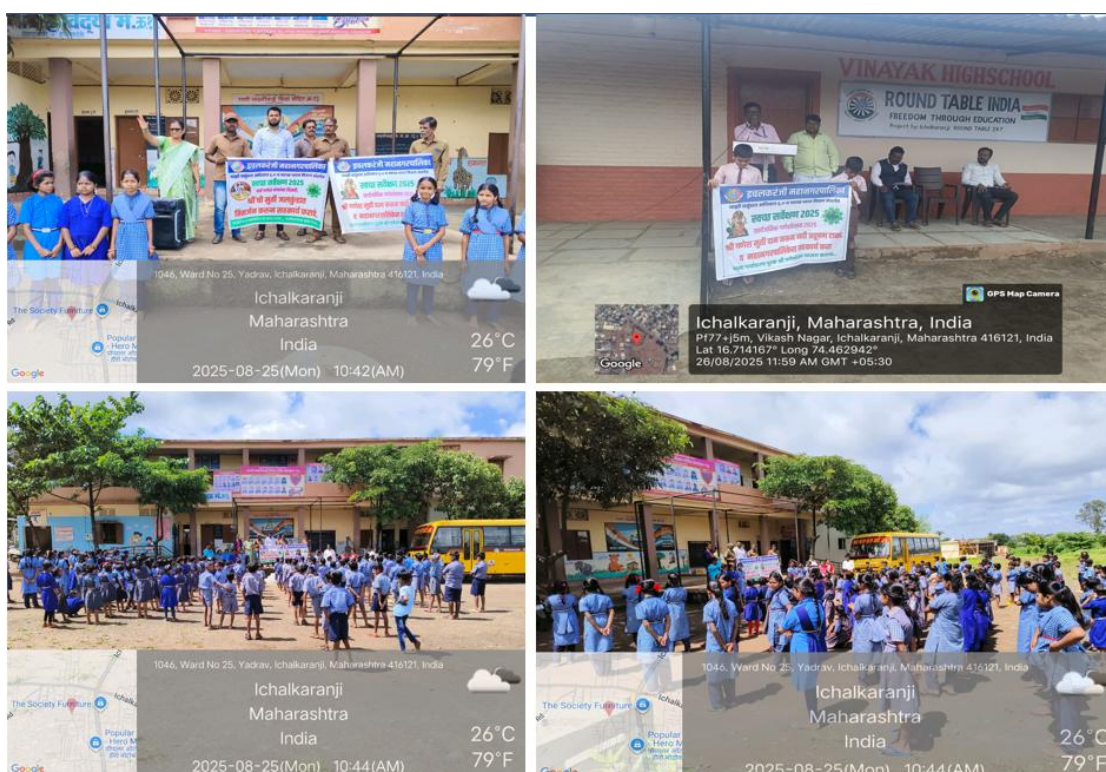


Figure 11-13 School awareness programme on Eco-friendly Ganesh Festival

11.7.1.2 Community Awareness Campaign

Extensive awareness campaigns were conducted at the community level involving Resident Welfare Associations, Ganesh Mandals, traders, NGOs, youth organizations and citizens.

The campaigns included:

- Distribution of awareness pamphlets.
- Public meetings.
- Street awareness programmes.
- Display of environmental messages.
- Social media awareness.
- Appeals through local newspapers.
- Public announcements.

Citizens were encouraged to:

- Install eco-friendly Ganesh idols.
- Avoid Plaster of Paris idols.
- Minimize plastic decorations.
- Use reusable decorative materials.
- Perform idol immersion in artificial ponds.
- Segregate Nirmalya and other festival waste.

These campaigns significantly enhanced public participation and improved awareness regarding environmentally responsible celebrations.



Figure 11-14 Community awareness campaign promoting sustainable festivals

11.7.1.3 Artificial Immersion Pond Management

To protect rivers and other natural water bodies from pollution during the Ganesh festival, IMC implemented a comprehensive Eco-friendly Ganesh Idol Immersion Management Programme during FY 2025–26. In accordance with the guidelines of the MPCB, the Municipal Corporation established an extensive network of 52 artificial immersion ponds and one artificial immersion lake at strategically selected locations across the city. These facilities were developed to provide citizens with convenient and environmentally safe alternatives to direct idol immersion in natural water bodies, thereby preventing water pollution and safeguarding aquatic ecosystems.

Extensive public awareness campaigns were conducted before and during the festival to encourage the use of these artificial immersion facilities. Citizens were educated about the environmental impacts of immersing Plaster of Paris (POP) idols and chemically painted idols in rivers and streams, while promoting the adoption of eco-friendly clay idols, natural colours, and sustainable celebration practices.

During Ganesh Chaturthi 2025, IMC successfully managed the immersion process through these artificial facilities, resulting in the collection of 11,355 Ganesh idols. Simultaneously, approximately 15 tonnes of festival waste generated during the celebrations was scientifically collected and managed. The collected waste included Nirmalya (floral offerings), decorative materials, plastic waste, packaging materials, bamboo and wooden structures, as well as other biodegradable and non-biodegradable materials associated with the festival.

The Municipal Corporation ensured systematic collection, segregation, transportation, and environmentally sound processing of the collected waste through its scientific Solid Waste Management system. Recyclable materials were recovered wherever feasible, while biodegradable waste was processed appropriately to minimize environmental impacts. This integrated approach significantly reduced pollution of natural water bodies, promoted resource recovery, improved urban cleanliness, and demonstrated IMC's commitment to sustainable festival management and environmental conservation.





Figure 11-15 Artificial immersion ponds created by IMC

इचलकरंजी मनपाच्या आवाहनास गणेश मंडळांचा प्रतिसाद

■ राष्ट्रीय वृत्तसेवा-इचलकरंजी ■

इ च ल क रं जी महानगरपालिकेच्या पर्यावरण पूरक गणेशोत्सवाच्या पार्श्वभूमीवर इचलकरंजी शहरामध्ये शनिवार ६ सप्टेंबर अनेक चतुर्थी दिवशी सार्वजनिक मंडळांच्या गणेश मूर्तीचे विसर्जन यावर्षी आयुक्त तथा प्रशासक पल्लवी पाटील यांनी शहापूर खणीमध्ये करावे असे आवाहन शहरातील सार्वजनिक गणेशोत्सव मंडळांना केले होते. सार्वजनिक मंडळांच्या गणेश मूर्ती विसर्जनाची व्यवस्था शहापूर हायस्कूल मागील विसर्जन स्थळ, ओपन जीमजवळ आणि बालाजीनगर पद्मा पॅलेसमोर येथे त्रेनसह विसर्जनाची व्यवस्था



करणेत आलेली होती. इचलकरंजी मनपाच्यावतीने शहापूर खण येथे करण्यात आलेल्या पर्यावरण पूरक विसर्जन स्थळी शहराचे आमदार डॉ. राहुल आवाडे, जिल्हाधिकारी अमोल येडगे यांनी आयुक्त तथा प्रशासक पल्लवी पाटील यांच्या समवेत भेट देऊन महानगरपालिका प्रशासनाचे कौतुक करून अभिनंदन केले. महानगरपालिकेच्या या आवाहनाला प्रतिसाद देऊन शहरातील जवळपास १५२ सार्वजनिक गणेशोत्सव मंडळांनी आपल्या गणेश मूर्तीचे विसर्जन शहापूर खणीमध्ये केले. अनेक चतुर्दशी दिवशी शनिवारी १५२ सार्वजनिक गणेश मूर्ती तसेच शहापूर खण येथे ३०३ गणेश मूर्ती आणि नदी घाट येथील कृत्रिम तलावात ४५ घरगुती गणेश मूर्ती अशा एकूण ५०० गणेश

मूर्तीचे पर्यावरण पूरक विसर्जन शनिवारी झाले. या गणेश विसर्जन व्यवस्थेसाठी सहा. आयुक्त विजय राजापुरे, आरोग्य अधिकारी डॉ. सुनिलदत्त संगेवार, शहर अभियंता महेंद्र क्षिरसागर, कार्यकारी अभियंता अभय शिरोलीकर, शाखा अभियंता बाजी कांबळे, विद्युत अभियंता इसरार बेग, घनकचरा विभाग प्रमुख सुनील शिंदे, सहा. आरोग्य अधिकारी मंगेश दुरगकर, भांडार अधिकारी सुजाता दाभोळे, आपत्ती व्यवस्थापन प्रमुख संजय कांबळे, स्वच्छता निरीक्षक विजय पाटील, रफिक पेंढारी, महादेव मिसाळ, बबन कांबळे, संदीप मधाळे, सचिन भुते, करण लाखे, सुरज माळो,

विशाल आवळे, सुरज पांगरे, संग्राम भोरे यांचेसह सर्व विभाग प्रमुख, स्वच्छता निरीक्षक, प्रभाग अधिकारी, अतिक्रमण विभाग, आपत्ती व्यवस्थापन विभाग, आरोग्य विभागाकडील एकूण २०० अधिकारी, कर्मचाऱ्यांसह आधार रेस्क्यू फोर्स, स्पेशल फोर्स, शहरातील पट्टिचे पोहणारे स्वयंसेवक तसेच २ यांत्रिक बोटी, ३ त्रेन, १ अग्निशमन वाहन, ४ रुग्णवाहिका (इचलकरंजी महानगरपालिका, इंदिरा गांधी सामान्य रुग्णालय, एन.यु.एच.एम. विभाग, सेवाभारती रुग्णालय, क.बा. आवाडे चॅरिटेबल ट्रस्ट) यांचा समावेश होता.

वस्त्रनगरीत पर्यावरणपूरक विसर्जनाला बळ गतवर्षीपेक्षा २ हजार मूर्तींच्या संख्येत वाढ : १५ टन निर्मात्य संकलित

■ सकाळ वृत्तसेवा

इचलकरंजी, ता. ३ : वस्त्रनगरीतील नागरिकांनी सामाजिक भान जपत यंदाही गणेशमूर्तींच्या पर्यावरणपूरक विसर्जनाला चांगला प्रतिसाद दिला. गेल्यावर्षीपेक्षा दोन हजार जादा गणेशमूर्तीचे पर्यावरणपूरक विसर्जन झाले आहे. त्यामुळे अनेक वर्षांपासून सुरू असलेल्या महापालिकेच्या प्रयत्नांना विशेष बळ मिळाले आहे. यावर्षी तब्बल ११३५५ गणेशमूर्तीचे शहापूर खण, कृत्रिम कुंड, कृत्रिम तलावात विसर्जन झाले आहे. १५ टन निर्मात्य जमा झाले आहे.



इचलकरंजी : शहापूर खणीवर दिवसभर गणेशमूर्ती विसर्जनासाठी गर्दी झाली होती.

महापालिकेने नवीनघाटवळ कृत्रिम तलाव तयार केला होता. तेथेही काही भाविकांनी गणेशमूर्तीचे विसर्जन करीत पर्यावरण समृद्धीला हातभार लावला. महापालिका आयुक्त पल्लवी पाटील, उपायुक्त अशोक कुंभार, नंदू पाळकर, राहुल मोंडकर, विष्णू कदम यांनी संघीत सर्व ठिकाणी भेट देऊन पाहणी केली. शहापूर खणीसाठी महापालिकेने यंदा विशेष प्रयत्न केले होते. जलयंत्रांनी व्यापलेली खाण होती;

पण अत्यावधीतच जखमी दूर करीत खाणीत रोंगट काढा बसविला होता. पारिसाची स्वच्छता केली होती. त्यामुळे यावर्षी गणेशमूर्ती विसर्जनाला येथे दिवसभर गर्दी पाहिल्यास मिळाली.



गेवळगाँव सुमारे नऊ हजार गणेशमूर्तीचे पर्यावरणपूरक विसर्जन झाले होते. यंदा त्यामध्ये लक्षणीय वाढ झाली आहे. याबाबत प्रशासनाकडून निवेदन पाठवले नव्हते. तरीही नागरिकांनी जसजसून प्रतिसाद देत महापालिकेच्या आवाहनाला चांगला प्रतिसाद दिला. अनेकांनी जखजख कृत्रिम

कुंडात महाकुटुंब येऊन गणेशमूर्तीचे पर्यावरणपूरक विसर्जन केले. तसेच निर्मात्यही जमा केले. वस्त्रोद्योगात हा एक चांगला पर्याय पडत चालला आहे. सर्व ५२ कृत्रिम कुंडांच्या ठिकाणी नागरिक स्वयंसेवेने येऊन गणेशमूर्तीचे विसर्जन करीत असल्याचे सुखद चित्र पाहण्यास मिळाले.

पर्यावरणपूरक गणेशोत्सव साजरा करण्यास शहरवासीयांनी चांगले सहकार्य केले. त्यांनी महापालिकेच्या पर्यावरणपूरक विसर्जनाच्या आवाहनाला चांगला प्रतिसाद दिला. त्याबद्दल शहरवासीयांचे आम्ही आपारी आहोत. - पल्लवी पाटील, आयुक्त, इचलकरंजी महापालिका

11.8 INFORMATION, EDUCATION AND COMMUNICATION (IEC) ACTIVITIES

Ichalkaranji Municipal Corporation (IMC) has undertaken a wide range of Information, Education and Communication (IEC) activities to promote environmental awareness, sustainable waste management, public health, and citizen participation. These initiatives aim to encourage behavioural change among citizens and strengthen community involvement in environmental conservation.

The major IEC activities undertaken during the reporting year include:

11.8.1 Source Segregation Awareness

Regular door-to-door campaigns, school awareness programmes, demonstrations, and Resident Welfare Association meetings were organized to promote segregation of wet and dry waste at source. Awareness activities were conducted among households, bulk waste generators, schools, commercial establishments, and market associations to improve segregation efficiency and encourage responsible waste management. IMC conducted 274 source segregation campaigns during the assessment year.



11.8.2 Anti-Littering Campaigns

Public awareness campaigns, street plays, public pledge drives, signage installation, and enforcement activities were organized in major commercial areas and public places to discourage littering and



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improve urban cleanliness. Anti-littering campaigns were conducted in all seven major market and commercial areas within the city.



11.8.3 Promotion of Single-Use Plastic (SUP) Elimination

IMC carried out extensive awareness campaigns to eliminate Single-Use Plastics by promoting cloth bags and other eco-friendly alternatives. Market inspections, vendor engagement programmes, awareness rallies, and cloth bag distribution drives were organized throughout the city. Approximately 3,500–4,000 shops and commercial establishments adopted SUP-free alternatives. SUP-free initiatives were also integrated with World Environment Day campaigns.



11.8.4 Promotion of Reduce, Reuse and Recycle (RRR) Centres

To promote the circular economy, IMC organized awareness campaigns encouraging citizens to donate reusable items such as clothes, books, furniture, toys, and household materials through RRR



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Centres. Awareness was created through IEC boards, public announcements, reusable item collection drives, and community outreach programmes. A total of 54 IEC campaigns were conducted to promote RRR Centres

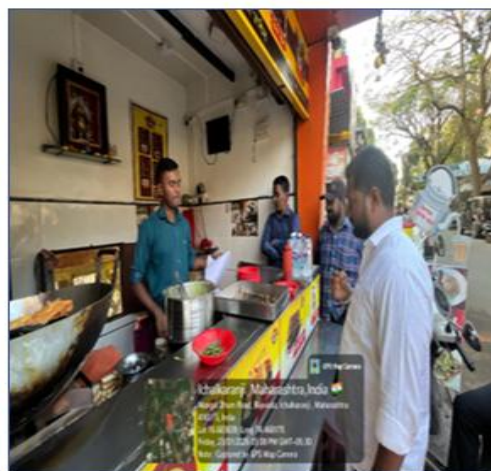


11.8.5 Zero-Waste Events and Swachh Food Streets Initiative

IMC promoted environmentally responsible celebrations by organizing awareness campaigns on zero-waste events. Citizens, event organizers, and institutions were encouraged to minimize waste generation, avoid single-use plastics, segregate waste, and adopt sustainable practices during public functions and festivals

Training and awareness programmes were organized for street food vendors to promote food hygiene, waste management, sanitation, and cleanliness in food vending areas. Vendor hygiene training sessions and cleanliness audits were conducted periodically to improve food safety and public health.





11.8.6 School Environmental Awareness Programmes

Schools actively participated in awareness programmes on source segregation, handwashing, environmental conservation, cleanliness, and waste reduction. All 33 schools participated in the “Safai Apnao Bimari Bhagao” campaign, helping to instil environmental responsibility among students.





12 CONCLUSION AND FUTURE ROADMAP

The Environment Status Report (ESR) 2025–26 presents a comprehensive assessment of the environmental status of Ichalkaranji Municipal Corporation. The findings indicate that the city has made significant progress in strengthening environmental infrastructure through improvements in water supply, wastewater treatment, municipal solid waste management, renewable energy adoption, urban green spaces, and environmental awareness programmes.

Ambient air quality remained within the National Ambient Air Quality Standards (NAAQS), while treated sewage from existing STPs complies with the prescribed discharge standards. Scientific solid waste management practices, expansion of green cover, implementation of rooftop solar projects, promotion of electric mobility, and active public participation under Mazi Vasundhara Abhiyan have contributed substantially towards environmental sustainability.

Despite these achievements, rapid urbanization, industrial growth, increasing vehicular traffic, climate change, and pollution loads entering natural drains continue to exert pressure on the city's environment. Therefore, continuous investment in environmental infrastructure, adoption of nature-based solutions, pollution prevention, resource efficiency, and climate-resilient planning will be essential to transform Ichalkaranji into a sustainable and Net Zero Carbon city.

12.1 Future Action Plan

12.1.1 Air Environment

- Increase urban green cover to more than 35%.
- Develop green buffers along major roads and industrial areas.
- Promote electric vehicles and charging infrastructure.
- Introduce low-emission public transport.
- Roadside dust suppression and mechanized road sweeping.
- Conduct continuous ambient air quality monitoring at fixed stations.

12.1.2 Water Environment

- Implement rainwater harvesting in all public buildings.
- Prepare Water Audit report for each financial year.
- Achieve 100% sewage collection and treatment.
- Complete all proposed STPs before projected population growth.
- Promote reuse of treated wastewater for industries, gardening and agriculture.
- Nature based Solution such as Floating wetland for all Nalas flowing through the city. This low-cost, nature-based solution should be integrated with desilting, interception of sewage, and regular monitoring to rejuvenate the city's natural drainage network and protect the Panchganga River.



12.1.3 Solid Waste Management

- Achieve 100% source segregation.
- Eliminate open dumping.
- Strengthen Material Recovery Facilities (MRFs).
- Increase composting and bio methanation capacity. Promote circular economy and resource recovery.
- Reduce single-use plastics.

12.1.4 Green Cover and Biodiversity

- Develop additional Miyawaki forests.
- Increase avenue plantation.
- Protect native species.
- Develop biodiversity parks.
- Expand Oxygen Parks.
- Increase urban carbon sinks.

12.1.5 Noise Environment

- Promote noise barriers along major roads at sensitive receptors viz. schools, colleges and hospitals.
- Strict enforcement of Noise Pollution Rules.
- Encourage low-noise public transport.

12.1.6 Renewable Energy

- Install rooftop solar systems on all municipal buildings.
- Promote solar street lighting.
- Utilize biogas from organic waste.
- Improve energy efficiency of STPs and pumping stations.
- Replace conventional lighting with LED systems.

The Environment Status Report is not merely a record of the present environmental status of Ichalkaranji but a strategic roadmap for achieving sustainable urban development. By strengthening environmental infrastructure, promoting renewable energy, conserving natural resources, adopting nature-based solutions such as Floating Treatment Wetlands for rejuvenation of polluted nala, enhancing climate resilience, and encouraging responsible public participation, the city can significantly reduce its environmental footprint. Ichalkaranji Municipal Corporation reaffirms its commitment to protecting the Panchganga River, improving environmental quality, and creating a cleaner, greener, healthier, and climate-resilient city that ensures a high quality of life for present and future generations while contributing to the Sustainable Development Goals (SDGs) and India's long-term vision of sustainable development.



Ichalkaranji Municipal Corporation, Ichalkaranji
Environmental Status Report 2025-2026



ANNEXURE-I MONITORING REPORTS



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TEST REPORT					
Report No:	EFEL/2026/03/753		Issue Date	28/03/2026	
Name and Address of Customer	M/s. Ichalkaranji Municipal Corporation, Ichalkaranji				
Sample Name	Air	Sample Description	Ambient Air		
Date of Sampling	23/03/2026	Sampling duration	1440 Min		
Start Date of Analysis	24/03/2026	End Date of Analysis	28/03/2026		
Sampling Location	Yadrav Petrol Pump	Sampling Procedure	CPCB Guideline for measurement of Ambient Air pollutants Volume I		
Dry bulb temperature	36°C	Wet bulb temperature	31 °C		
Relative Humidity	48 %	Sampling done by	Eurofine Enviro Lab Pvt. Ltd.		
Results					
Sr. No.	Parameters	Results	Unit(s)	Specifications (NAAQ Standards)	Methods
1	Sulphur Dioxide(SO ₂)	14.4	µg/m ³	≤ 80	IS 5182(Part 2)
2	Oxides of Nitrogen(NO ₂)	20.7	µg/m ³	≤ 80	IS 5182 (Part 6)
3	Particulate Matter PM ₁₀	78.00	µg/m ³	≤ 100	CPCB Guideline for measurement of Ambient Air pollutants Volume I
4	Particulate Matter PM _{2.5}	32.00	µg/m ³	≤ 60	
Remark- All above results are within National Ambient Air Quality standards. BDL – Below Detectable Limit.					



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TEST REPORT

TEST REPORT					
Report No:		EFEL/2026/03/754		Issue Date	28/03/2026
Name and Address of Customer		M/s. Ichalkaranji Municipal Corporation, Ichalkaranji			
Sample Name		Air	Sample Description		Ambient Air
Date of Sampling		23/03/2026	Sampling duration		1440 Min
Start Date of Analysis		24/03/2026	End Date of Analysis		28/03/2026
Sampling Location		Near Rajiv gandhi Bhavan, Kapad Market	Sampling Procedure		CPCB Guideline for measurement of Ambient Air pollutants Volume I
Dry bulb temperature		36°C	Wet bulb temperature		31 °C
Relative Humidity		48 %	Sampling done by		Eurofine Enviro Lab Pvt. Ltd.
Results					
Sr. No.	Parameters	Results	Unit(s)	Specifications (NAAQ Standards)	Methods
1	Sulphur Dioxide(SO ₂)	15.9	µg/m ³	≤ 80	IS 5182(Part 2)
2	Oxides of Nitrogen(NO ₂)	22.1	µg/m ³	≤ 80	IS 5182 (Part 6)
3	Particulate Matter PM ₁₀	76.00	µg/m ³	≤ 100	CPCB Guideline for measurement of Ambient Air pollutants Volume I
4	Particulate Matter PM _{2.5}	30.00	µg/m ³	≤ 60	
Remark- All above results are within National Ambient Air Quality standards. BDL – Below Detectable Limit.					



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TEST REPORT

TEST REPORT					
Report No:		EFEL/2026/03/755		Issue Date	
				28/03/2026	
Name and Address of Customer		M/s. Ichalkaranji Municipal Corporation, Ichalkaranji			
Sample Name		Air	Sample Description		Ambient Air
Date of Sampling		23/03/2026	Sampling duration		1440 Min
Start Date of Analysis		24/03/2026	End Date of Analysis		28/03/2026
Sampling Location		Yasholakhshi Mangal karyalaya.	Sampling Procedure		CPCB Guideline for measurement of Ambient Air pollutants Volume I
Dry bulb temperature		36°C	Wet bulb temperature		31 °C
Relative Humidity		48 %	Sampling done by		Eurofine Enviro Lab Pvt. Ltd.
Results					
Sr. No.	Parameters	Results	Unit(s)	Specifications (NAAQ Standards)	Methods
1	Sulphur Dioxide(SO ₂)	16.20	µg/m ³	≤ 80	IS 5182(Part 2)
2	Oxides of Nitrogen(NO ₂)	26.40	µg/m ³	≤ 80	IS 5182 (Part 6)
3	Particulate Matter PM ₁₀	78.40	µg/m ³	≤ 100	CPCB Guideline for measurement of Ambient Air pollutants Volume I
4	Particulate Matter PM _{2.5}	36.40	µg/m ³	≤ 60	
Remark- All above results are within National Ambient Air Quality standards. BDL – Below Detectable Limit.					



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TEST REPORT

TEST REPORT					
Report No:		EFEL/2026/03/756		Issue Date	28/03/2026
Name and Address of Customer		M/s. Ichalkaranji Municipal Corporation, Ichalkaranji			
Sample Name		Air	Sample Description		Ambient Air
Date of Sampling		23/03/2026	Sampling duration		1440 Min
Start Date of Analysis		24/03/2026	End Date of Analysis		28/03/2026
Sampling Location		Near ASC College	Sampling Procedure		CPCB Guideline for measurement of Ambient Air pollutants Volume I
Dry bulb temperature		36°C	Wet bulb temperature		31 °C
Relative Humidity		48 %	Sampling done by		Eurofine Enviro Lab Pvt. Ltd.
Results					
Sr. No.	Parameters	Results	Unit(s)	Specifications (NAAQ Standards)	Methods
1	Sulphur Dioxide(SO ₂)	14.3	µg/m ³	≤ 80	IS 5182(Part 2)
2	Oxides of Nitrogen(NO ₂)	20.7	µg/m ³	≤ 80	IS 5182 (Part 6)
3	Particulate Matter PM ₁₀	64.00	µg/m ³	≤ 100	CPCB Guideline for measurement of Ambient Air pollutants Volume I
4	Particulate Matter PM _{2.5}	28.00	µg/m ³	≤ 60	
Remark- All above results are within National Ambient Air Quality standards. BDL – Below Detectable Limit.					



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TEST REPORT

TEST REPORT					
Report No:	EFEL/2026/03/757		Issue Date	28/03/2026	
Name and Address of Customer	M/s. Ichalkaranji Municipal Corporation, Ichalkaranji				
Sample Name	Air	Sample Description		Ambient Air	
Date of Sampling	24/03/2026	Sampling duration		1440 Min	
Start Date of Analysis	25/03/2026	End Date of Analysis		28/03/2026	
Sampling Location	Alliance Multispecialty Hospital	Sampling Procedure		CPCB Guideline for measurement of Ambient Air pollutants Volume I	
Dry bulb temperature	36°C	Wet bulb temperature		31 °C	
Relative Humidity	48 %	Sampling done by		Eurofine Enviro Lab Pvt. Ltd.	
Results					
Sr. No.	Parameters	Results	Unit(s)	Specifications (NAAQ Standards)	Methods
1	Sulphur Dioxide(SO ₂)	11.6	µg/m ³	≤ 80	IS 5182(Part 2)
2	Oxides of Nitrogen(NO ₂)	16.2	µg/m ³	≤ 80	IS 5182 (Part 6)
3	Particulate Matter PM ₁₀	49.4	µg/m ³	≤ 100	CPCB Guideline for measurement of Ambient Air pollutants Volume I
4	Particulate Matter PM _{2.5}	23.1	µg/m ³	≤ 60	
Remark- All above results are within National Ambient Air Quality standards. BDL – Below Detectable Limit.					



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TEST REPORT

TEST REPORT					
Report No:		EFEL/2026/03/758		Issue Date	28/03/2026
Name and Address of Customer		M/s. Ichalkaranji Municipal Corporation, Ichalkaranji			
Sample Name		Air	Sample Description		Ambient Air
Date of Sampling		24/03/2026	Sampling duration		1440 Min
Start Date of Analysis		25/03/2026	End Date of Analysis		28/03/2026
Sampling Location		Rajwada Chowk	Sampling Procedure		CPCB Guideline for measurement of Ambient Air pollutants Volume I
Dry bulb temperature		36°C	Wet bulb temperature		31 °C
Relative Humidity		48 %	Sampling done by		Eurofine Enviro Lab Pvt. Ltd.
Results					
Sr. No.	Parameters	Results	Unit(s)	Specifications (NAAQ Standards)	Methods
1	Sulphur Dioxide(SO ₂)	13.4	µg/m ³	≤ 80	IS 5182(Part 2)
2	Oxides of Nitrogen(NO ₂)	19.1	µg/m ³	≤ 80	IS 5182 (Part 6)
3	Particulate Matter PM ₁₀	53.2	µg/m ³	≤ 100	CPCB Guideline for measurement of Ambient Air pollutants Volume I
4	Particulate Matter PM _{2.5}	21.7	µg/m ³	≤ 60	
Remark- All above results are within National Ambient Air Quality standards. BDL – Below Detectable Limit.					



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TEST REPORT

TEST REPORT					
Report No:		EFEL/2026/03/759		Issue Date	28/03/2026
Name and Address of Customer		M/s. Ichalkaranji Municipal Corporation, Ichalkaranji			
Sample Name		Air	Sample Description		Ambient Air
Date of Sampling		24/03/2026	Sampling duration		1440 Min
Start Date of Analysis		25/03/2026	End Date of Analysis		28/03/2026
Sampling Location		Khanjire Industrial Estate	Sampling Procedure		CPCB Guideline for measurement of Ambient Air pollutants Volume I
Dry bulb temperature		36°C	Wet bulb temperature		31 °C
Relative Humidity		48 %	Sampling done by		Eurofine Enviro Lab Pvt. Ltd.
Results					
Sr. No.	Parameters	Results	Unit(s)	Specifications (NAAQ Standards)	Methods
1	Sulphur Dioxide(SO ₂)	28.1	µg/m ³	≤ 80	IS 5182(Part 2)
2	Oxides of Nitrogen(NO ₂)	34.1	µg/m ³	≤ 80	IS 5182 (Part 6)
3	Particulate Matter PM ₁₀	82.00	µg/m ³	≤ 100	CPCB Guideline for measurement of Ambient Air pollutants Volume I
4	Particulate Matter PM _{2.5}	40.00	µg/m ³	≤ 60	
Remark- All above results are within National Ambient Air Quality standards. BDL – Below Detectable Limit.					



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TEST REPORT

TEST REPORT					
Report No:	EFEL/2026/03/760		Issue Date	28/03/2026	
Name and Address of Customer	M/s. Ichalkaranji Municipal Corporation, Ichalkaranji				
Sample Name	Air	Sample Description	Ambient Air		
Date of Sampling	24/03/2026	Sampling duration	1440 Min		
Start Date of Analysis	25/03/2026	End Date of Analysis	28/03/2026		
Sampling Location	Near 20 MLD STP Plant	Sampling Procedure	CPCB Guideline for measurement of Ambient Air pollutants Volume I		
Dry bulb temperature	36°C	Wet bulb temperature	31 °C		
Relative Humidity	48 %	Sampling done by	Eurofine Enviro Lab Pvt. Ltd.		
Results					
Sr. No.	Parameters	Results	Unit(s)	Specifications (NAAQ Standards)	Methods
1	Sulphur Dioxide(SO ₂)	12.4	µg/m ³	≤ 80	IS 5182(Part 2)
2	Oxides of Nitrogen(NO ₂)	17.9	µg/m ³	≤ 80	IS 5182 (Part 6)
3	Particulate Matter PM ₁₀	49.3	µg/m ³	≤ 100	CPCB Guideline for measurement of Ambient Air pollutants Volume I
4	Particulate Matter PM _{2.5}	18.2	µg/m ³	≤ 60	
Remark- All above results are within National Ambient Air Quality standards. BDL – Below Detectable Limit.					



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TEST REPORT

TEST REPORT					
Report No:		EFEL/PRO/2026/04/1784		Issue Date	13/04/2026
Name and Address of Customer		M/s. Ichalkaranji Municipal Corporation, Ichalkaranji			
Sample Name		Air	Sample Description		Ambient Air
Date of Sampling		06/04/2026	Sampling duration		1440 Min
Start Date of Analysis		07/04/2026	End Date of Analysis		11/04/2026
Sampling Location		Yadrav Petrol Pump	Sampling Procedure		CPCB Guideline for measurement of Ambient Air pollutants Volume I
Dry bulb temperature		36°C	Wet bulb temperature		31 °C
Relative Humidity		48 %	Sampling done by		Eurofine Enviro Lab Pvt. Ltd.
Results					
Sr. No.	Parameters	Results	Unit(s)	Specifications (NAAQ Standards)	Methods
1	Sulphur Dioxide(SO ₂)	14.8	µg/m ³	≤ 80	IS 5182(Part 2)
2	Oxides of Nitrogen(NO ₂)	22.4	µg/m ³	≤ 80	IS 5182 (Part 6)
3	Particulate Matter PM ₁₀	76.20	µg/m ³	≤ 100	CPCB Guideline for measurement of Ambient Air pollutants Volume I
4	Particulate Matter PM _{2.5}	30.80	µg/m ³	≤ 60	
Remark- All above results are within National Ambient Air Quality standards. BDL – Below Detectable Limit.					



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TEST REPORT

TEST REPORT					
Report No:	EFEL/PRO/2026/04/1785	Issue Date	13/04/2026		
Name and Address of Customer	M/s. Ichalkaranji Municipal Corporation, Ichalkaranji				
Sample Name	Air	Sample Description	Ambient Air		
Date of Sampling	06/04/2026	Sampling duration	1440 Min		
Start Date of Analysis	07/04/2026	End Date of Analysis	11/04/2026		
Sampling Location	Near Rajiv gandhi Bhavan, Kapad Market	Sampling Procedure	CPCB Guideline for measurement of Ambient Air pollutants Volume I		
Dry bulb temperature	34 ⁰ C	Wet bulb temperature	31 ⁰ C		
Relative Humidity	46 %	Sampling done by	Eurofine Enviro Lab Pvt. Ltd.		
Results					
Sr. No.	Parameters	Results	Unit(s)	Specifications (NAAQ Standards)	Methods
1	Sulphur Dioxide(SO ₂)	16.2	µg/m ³	≤ 80	IS 5182(Part 2)
2	Oxides of Nitrogen(NO ₂)	22.4	µg/m ³	≤ 80	IS 5182 (Part 6)
3	Particulate Matter PM ₁₀	72.80	µg/m ³	≤ 100	CPCB Guideline for measurement of Ambient Air pollutants Volume I
4	Particulate Matter PM _{2.5}	32.00	µg/m ³	≤ 60	
Remark- All above results are within National Ambient Air Quality standards. BDL – Below Detectable Limit.					



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TEST REPORT

TEST REPORT					
Report No:		EFEL/PRO/2026/04/1786		Issue Date	13/04/2026
Name and Address of Customer		M/s. Ichalkaranji Municipal Corporation, Ichalkaranji			
Sample Name		Air	Sample Description		Ambient Air
Date of Sampling		06/04/2026	Sampling duration		1440 Min
Start Date of Analysis		07/04/2026	End Date of Analysis		11/04/2026
Sampling Location		Yasholakshmi Mangal karyalaya.	Sampling Procedure		CPCB Guideline for measurement of Ambient Air pollutants Volume I
Dry bulb temperature		36 ⁰ C	Wet bulb temperature		31 °C
Relative Humidity		48 %	Sampling done by		Eurofine Enviro Lab Pvt. Ltd.
Results					
Sr. No.	Parameters	Results	Unit(s)	Specifications (NAAQ Standards)	Methods
1	Sulphur Dioxide(SO ₂)	14.80	µg/m ³	≤ 80	IS 5182(Part 2)
2	Oxides of Nitrogen(NO ₂)	24.60	µg/m ³	≤ 80	IS 5182 (Part 6)
3	Particulate Matter PM ₁₀	72.20	µg/m ³	≤ 100	CPCB Guideline for measurement of Ambient Air pollutants Volume I
4	Particulate Matter PM _{2.5}	34.40	µg/m ³	≤ 60	
Remark- All above results are within National Ambient Air Quality standards. BDL – Below Detectable Limit.					



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TEST REPORT

TEST REPORT					
Report No:	EFEL/PRO/2026/04/1787			Issue Date	13/04/2026
Name and Address of Customer	M/s. Ichalkaranji Municipal Corporation, Ichalkaranji				
Sample Name	Air	Sample Description		Ambient Air	
Date of Sampling	06/04/2026	Sampling duration		1440 Min	
Start Date of Analysis	07/04/2026	End Date of Analysis		11/04/2026	
Sampling Location	Near ASC College	Sampling Procedure		CPCB Guideline for measurement of Ambient Air pollutants Volume I	
Dry bulb temperature	34 ⁰ C	Wet bulb temperature		30 ⁰ C	
Relative Humidity	47 %	Sampling done by		Eurofine Enviro Lab Pvt. Ltd.	
Results					
Sr. No.	Parameters	Results	Unit(s)	Specifications (NAAQ Standards)	Methods
1	Sulphur Dioxide(SO ₂)	14.40	µg/m ³	≤ 80	IS 5182(Part 2)
2	Oxides of Nitrogen(NO ₂)	22.60	µg/m ³	≤ 80	IS 5182 (Part 6)
3	Particulate Matter PM ₁₀	62.00	µg/m ³	≤ 100	CPCB Guideline for measurement of Ambient Air pollutants Volume I
4	Particulate Matter PM _{2.5}	26.00	µg/m ³	≤ 60	
Remark- All above results are within National Ambient Air Quality standards. BDL – Below Detectable Limit.					



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TEST REPORT

TEST REPORT					
Report No:		EFEL/PRO/2026/04/1788		Issue Date	
				13/04/2026	
Name and Address of Customer		M/s. Ichalkaranji Municipal Corporation, Ichalkaranji			
Sample Name		Air		Sample Description	
				Ambient Air	
Date of Sampling		07/04/2026		Sampling duration	
				1440 Min	
Start Date of Analysis		08/04/2026		End Date of Analysis	
				11/04/2026	
Sampling Location		Alliance Multispecialty Hospital		Sampling Procedure	
				CPCB Guideline for measurement of Ambient Air pollutants Volume I	
Dry bulb temperature		35 ^o C		Wet bulb temperature	
				30 ^o C	
Relative Humidity		48 %		Sampling done by	
				Eurofine Enviro Lab Pvt. Ltd.	
Results					
Sr. No.	Parameters	Results	Unit(s)	Specifications (NAAQ Standards)	Methods
1	Sulphur Dioxide(SO ₂)	11.80.	µg/m ³	≤ 80	IS 5182(Part 2)
2	Oxides of Nitrogen(NO ₂)	16.00	µg/m ³	≤ 80	IS 5182 (Part 6)
3	Particulate Matter PM ₁₀	52.00	µg/m ³	≤ 100	CPCB Guideline for measurement of Ambient Air pollutants Volume I
4	Particulate Matter PM _{2.5}	24.00	µg/m ³	≤ 60	
Remark- All above results are within National Ambient Air Quality standards. BDL – Below Detectable Limit.					



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TEST REPORT

TEST REPORT					
Report No:		EFEL/PRO/2026/04/1789		Issue Date	13/04/2026
Name and Address of Customer		M/s. Ichalkaranji Municipal Corporation, Ichalkaranji			
Sample Name		Air	Sample Description		Ambient Air
Date of Sampling		07/04/2026	Sampling duration		1440 Min
Start Date of Analysis		08/04/2026	End Date of Analysis		11/04/2026
Sampling Location		Rajwada Chowk	Sampling Procedure		CPCB Guideline for measurement of Ambient Air pollutants Volume I
Dry bulb temperature		36 ^o C	Wet bulb temperature		31 ^o C
Relative Humidity		48 %	Sampling done by		Eurofine Enviro Lab Pvt. Ltd.
Results					
Sr. No.	Parameters	Results	Unit(s)	Specifications (NAAQ Standards)	Methods
1	Sulphur Dioxide(SO ₂)	12.80	µg/m ³	≤ 80	IS 5182(Part 2)
2	Oxides of Nitrogen(NO ₂)	18.20	µg/m ³	≤ 80	IS 5182 (Part 6)
3	Particulate Matter PM ₁₀	54.60	µg/m ³	≤ 100	CPCB Guideline for measurement of Ambient Air pollutants Volume I
4	Particulate Matter PM _{2.5}	22.20	µg/m ³	≤ 60	
Remark- All above results are within National Ambient Air Quality standards. BDL – Below Detectable Limit.					



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TEST REPORT

TEST REPORT					
Report No:		EFEL/PRO/2026/04/1790		Issue Date	13/04/2026
Name and Address of Customer		M/s. Ichalkaranji Municipal Corporation, Ichalkaranji			
Sample Name		Air	Sample Description	Ambient Air	
Date of Sampling		07/04/2026	Sampling duration	1440 Min	
Start Date of Analysis		08/04/2026	End Date of Analysis	11/04/2026	
Sampling Location		Khanjire Industrial Estate	Sampling Procedure	CPCB Guideline for measurement of Ambient Air pollutants Volume I	
Dry bulb temperature		36 ^o C	Wet bulb temperature	31 ^o C	
Relative Humidity		48 %	Sampling done by	Eurofine Enviro Lab Pvt. Ltd.	
Results					
Sr. No.	Parameters	Results	Unit(s)	Specifications (NAAQ Standards)	Methods
1	Sulphur Dioxide(SO ₂)	28.00	µg/m ³	≤ 80	IS 5182(Part 2)
2	Oxides of Nitrogen(NO ₂)	30.00	µg/m ³	≤ 80	IS 5182 (Part 6)
3	Particulate Matter PM ₁₀	80.00	µg/m ³	≤ 100	CPCB Guideline for measurement of Ambient Air pollutants Volume I
4	Particulate Matter PM _{2.5}	42.00	µg/m ³	≤ 60	
Remark- All above results are within National Ambient Air Quality standards. BDL – Below Detectable Limit.					



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TEST REPORT

Report No:	EFEL/PRO/2026/04/1791	Issue Date	13/04/2026
Name and Address of Customer	M/s. Ichalkaranji Municipal Corporation, Ichalkaranji		
Sample Name	Air	Sample Description	Ambient Air
Date of Sampling	07/04/2026	Sampling duration	1440 Min
Start Date of Analysis	08/04/2026	End Date of Analysis	11/04/2026
Sampling Location	Near 20 MLD STP Plant	Sampling Procedure	CPCB Guideline for measurement of Ambient Air pollutants Volume I
Dry bulb temperature	36°C	Wet bulb temperature	31 °C
Relative Humidity	48 %	Sampling done by	Eurofine Enviro Lab Pvt. Ltd.

Results

Sr. No.	Parameters	Results	Unit(s)	Specifications (NAAQ Standards)	Methods
1	Sulphur Dioxide(SO ₂)	12.20	µg/m ³	≤ 80	IS 5182(Part 2)
2	Oxides of Nitrogen(NO ₂)	18.20	µg/m ³	≤ 80	IS 5182 (Part 6)
3	Particulate Matter PM ₁₀	50.40	µg/m ³	≤ 100	CPCB Guideline for measurement of Ambient Air pollutants Volume I
4	Particulate Matter PM _{2.5}	18.00	µg/m ³	≤ 60	

Remark- All above results are within National Ambient Air Quality standards.
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TEST REPORT

TEST REPORT					
Report No:		EFEL/PRO/2026/05/1652		Issue Date	09/05/2026
Name and Address of Customer		M/s. Ichalkaranji Municipal Corporation, Ichalkaranji			
Sample Name		Air	Sample Description		Ambient Air
Date of Sampling		04/05/2026	Sampling duration		1440 Min
Start Date of Analysis		05/05/2026	End Date of Analysis		07/05/2026
Sampling Location		Yadrav Petrol Pump	Sampling Procedure		CPCB Guideline for measurement of Ambient Air pollutants Volume I
Dry bulb temperature		36°C	Wet bulb temperature		31 °C
Relative Humidity		48 %	Sampling done by		Eurofine Enviro Lab Pvt. Ltd.
Results					
Sr. No.	Parameters	Results	Unit(s)	Specifications (NAAQ Standards)	Methods
1	Sulphur Dioxide(SO ₂)	12.60	µg/m ³	≤ 80	IS 5182(Part 2)
2	Oxides of Nitrogen(NO ₂)	23.80	µg/m ³	≤ 80	IS 5182 (Part 6)
3	Particulate Matter PM ₁₀	72.60	µg/m ³	≤ 100	CPCB Guideline for measurement of Ambient Air pollutants Volume I
4	Particulate Matter PM _{2.5}	28.40	µg/m ³	≤ 60	
Remark- All above results are within National Ambient Air Quality standards. BDL – Below Detectable Limit.					



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TEST REPORT

TEST REPORT					
Report No:		EFEL/PRO/2026/05/1653		Issue Date	09/05/2026
Name and Address of Customer		M/s. Ichalkaranji Municipal Corporation, Ichalkaranji			
Sample Name		Air	Sample Description		Ambient Air
Date of Sampling		04/05/2026	Sampling duration		1440 Min
Start Date of Analysis		05/05/2026	End Date of Analysis		07/05/2026
Sampling Location		Near Rajiv gandhi Bhavan, Kapad Market	Sampling Procedure		CPCB Guideline for measurement of Ambient Air pollutants Volume I
Dry bulb temperature		34 ^o C	Wet bulb temperature		31 ^o C
Relative Humidity		46 %	Sampling done by		Eurofine Enviro Lab Pvt. Ltd.
Results					
Sr. No.	Parameters	Results	Unit(s)	Specifications (NAAQ Standards)	Methods
1	Sulphur Dioxide(SO ₂)	14.60	µg/m ³	≤ 80	IS 5182(Part 2)
2	Oxides of Nitrogen(NO ₂)	20.20	µg/m ³	≤ 80	IS 5182 (Part 6)
3	Particulate Matter PM ₁₀	70.20	µg/m ³	≤ 100	CPCB Guideline for measurement of Ambient Air pollutants Volume I
4	Particulate Matter PM _{2.5}	30.60	µg/m ³	≤ 60	
Remark- All above results are within National Ambient Air Quality standards. BDL – Below Detectable Limit.					



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TEST REPORT

TEST REPORT					
Report No:		EFEL/PRO/2026/05/1654		Issue Date	09/05/2026
Name and Address of Customer		M/s. Ichalkaranji Municipal Corporation, Ichalkaranji			
Sample Name		Air	Sample Description		Ambient Air
Date of Sampling		04/05/2026	Sampling duration		1440 Min
Start Date of Analysis		05/05/2026	End Date of Analysis		07/05/2026
Sampling Location		Yasholakshmi Mangal karyalaya.	Sampling Procedure		CPCB Guideline for measurement of Ambient Air pollutants Volume I
Dry bulb temperature		36 ⁰ C	Wet bulb temperature		31 ⁰ C
Relative Humidity		48 %	Sampling done by		Eurofine Enviro Lab Pvt. Ltd.
Results					
Sr. No.	Parameters	Results	Unit(s)	Specifications (NAAQ Standards)	Methods
1	Sulphur Dioxide(SO ₂)	14.60	µg/m ³	≤ 80	IS 5182(Part 2)
2	Oxides of Nitrogen(NO ₂)	22.80	µg/m ³	≤ 80	IS 5182 (Part 6)
3	Particulate Matter PM ₁₀	68.40	µg/m ³	≤ 100	CPCB Guideline for measurement of Ambient Air pollutants Volume I
4	Particulate Matter PM _{2.5}	30.20	µg/m ³	≤ 60	
Remark- All above results are within National Ambient Air Quality standards. BDL – Below Detectable Limit.					



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TEST REPORT

TEST REPORT					
Report No:		EFEL/PRO/2026/05/1655		Issue Date	
		09/05/2026			
Name and Address of Customer		M/s. Ichalkaranji Municipal Corporation, Ichalkaranji			
Sample Name		Air		Sample Description	
				Ambient Air	
Date of Sampling		04/05/2026		Sampling duration	
				1440 Min	
Start Date of Analysis		05/05/2026		End Date of Analysis	
				07/05/2026	
Sampling Location		Near ASC College		Sampling Procedure	
				CPCB Guideline for measurement of Ambient Air pollutants Volume I	
Dry bulb temperature		34°C		Wet bulb temperature	
				30 °C	
Relative Humidity		47 %		Sampling done by	
				Eurofine Enviro Lab Pvt. Ltd.	
Results					
Sr. No.	Parameters	Results	Unit(s)	Specifications (NAAQ Standards)	Methods
1	Sulphur Dioxide(SO ₂)	14.60	µg/m ³	≤ 80	IS 5182(Part 2)
2	Oxides of Nitrogen(NO ₂)	20.80	µg/m ³	≤ 80	IS 5182 (Part 6)
3	Particulate Matter PM ₁₀	60.00	µg/m ³	≤ 100	CPCB Guideline for measurement of Ambient Air pollutants Volume I
4	Particulate Matter PM _{2.5}	24.00	µg/m ³	≤ 60	
Remark- All above results are within National Ambient Air Quality standards. BDL – Below Detectable Limit.					



(Signature)
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TEST REPORT

Report No:	EFEL/PRO/2026/05/1656	Issue Date	09/05/2026
Name and Address of Customer	M/s. Ichalkaranji Municipal Corporation, Ichalkaranji		
Sample Name	Air	Sample Description	Ambient Air
Date of Sampling	05/05/2026	Sampling duration	1440 Min
Start Date of Analysis	06/05/2026	End Date of Analysis	07/05/2026
Sampling Location	Alliance Multispecialty Hospital	Sampling Procedure	CPCB Guideline for measurement of Ambient Air pollutants Volume I
Dry bulb temperature	35°C	Wet bulb temperature	30 °C
Relative Humidity	48 %	Sampling done by	Eurofine Enviro Lab Pvt. Ltd.

Results

Sr. No.	Parameters	Results	Unit(s)	Specifications (NAAQ Standards)	Methods
1	Sulphur Dioxide(SO ₂)	12.20	µg/m ³	≤ 80	IS 5182(Part 2)
2	Oxides of Nitrogen(NO ₂)	18.00	µg/m ³	≤ 80	IS 5182 (Part 6)
3	Particulate Matter PM ₁₀	58.00	µg/m ³	≤ 100	CPCB Guideline for measurement of Ambient Air pollutants Volume I
4	Particulate Matter PM _{2.5}	26.00	µg/m ³	≤ 60	

Remark- All above results are within National Ambient Air Quality standards.
BDL – Below Detectable Limit.



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TEST REPORT

Report No:	EFEL/PRO/2026/05/1657	Issue Date	09/05/2026
Name and Address of Customer	M/s. Ichalkaranji Municipal Corporation, Ichalkaranji		
Sample Name	Air	Sample Description	Ambient Air
Date of Sampling	05/05/2026	Sampling duration	1440 Min
Start Date of Analysis	06/05/2026	End Date of Analysis	07/05/2026
Sampling Location	Rajwada Chowk	Sampling Procedure	CPCB Guideline for measurement of Ambient Air pollutants Volume I
Dry bulb temperature	36°C	Wet bulb temperature	31 °C
Relative Humidity	48 %	Sampling done by	Eurofine Enviro Lab Pvt. Ltd.

Results

Sr. No.	Parameters	Results	Unit(s)	Specifications (NAAQ Standards)	Methods
1	Sulphur Dioxide(SO ₂)	16.20	µg/m ³	≤ 80	IS 5182(Part 2)
2	Oxides of Nitrogen(NO ₂)	24.20	µg/m ³	≤ 80	IS 5182 (Part 6)
3	Particulate Matter PM ₁₀	62.40	µg/m ³	≤ 100	CPCB Guideline for measurement of Ambient Air pollutants Volume I
4	Particulate Matter PM _{2.5}	24.60	µg/m ³	≤ 60	

Remark- All above results are within National Ambient Air Quality standards.
BDL – Below Detectable Limit.



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TEST REPORT

TEST REPORT					
Report No:		EFEL/PRO/2026/05/1658		Issue Date	09/05/2026
Name and Address of Customer		M/s. Ichalkaranji Municipal Corporation, Ichalkaranji			
Sample Name		Air	Sample Description		Ambient Air
Date of Sampling		05/05/2026	Sampling duration		1440 Min
Start Date of Analysis		06/05/2026	End Date of Analysis		07/05/2026
Sampling Location		Khanjire Industrial Estate	Sampling Procedure		CPCB Guideline for measurement of Ambient Air pollutants Volume I
Dry bulb temperature		36°C	Wet bulb temperature		31 °C
Relative Humidity		48 %	Sampling done by		Eurofine Enviro Lab Pvt. Ltd.
Results					
Sr. No.	Parameters	Results	Unit(s)	Specifications (NAAQ Standards)	Methods
1	Sulphur Dioxide(SO ₂)	30.00	µg/m ³	≤ 80	IS 5182(Part 2)
2	Oxides of Nitrogen(NO ₂)	34.00	µg/m ³	≤ 80	IS 5182 (Part 6)
3	Particulate Matter PM ₁₀	84.00	µg/m ³	≤ 100	CPCB Guideline for measurement of Ambient Air pollutants Volume I
4	Particulate Matter PM _{2.5}	40.60	µg/m ³	≤ 60	
Remark- All above results are within National Ambient Air Quality standards. BDL – Below Detectable Limit.					



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TEST REPORT

TEST REPORT					
Report No:		EFEL/PRO/2026/05/1659		Issue Date	
		09/05/2026			
Name and Address of Customer		M/s. Ichalkaranji Municipal Corporation, Ichalkaranji			
Sample Name		Air		Sample Description	
				Ambient Air	
Date of Sampling		05/05/2026		Sampling duration	
				1440 Min	
Start Date of Analysis		06/05/2026		End Date of Analysis	
				07/05/2026	
Sampling Location		Near 20 MLD STP Plant		Sampling Procedure	
				CPCB Guideline for measurement of Ambient Air pollutants Volume I	
Dry bulb temperature		36 ^o C		Wet bulb temperature	
				31 ^o C	
Relative Humidity		48 %		Sampling done by	
				Eurofine Enviro Lab Pvt. Ltd.	
Results					
Sr. No.	Parameters	Results	Unit(s)	Specifications (NAAQ Standards)	Methods
1	Sulphur Dioxide(SO ₂)	14.20	µg/m ³	≤ 80	IS 5182(Part 2)
2	Oxides of Nitrogen(NO ₂)	16.20	µg/m ³	≤ 80	IS 5182 (Part 6)
3	Particulate Matter PM ₁₀	52.80	µg/m ³	≤ 100	CPCB Guideline for measurement of Ambient Air pollutants Volume I
4	Particulate Matter PM _{2.5}	20.00	µg/m ³	≤ 60	
Remark- All above results are within National Ambient Air Quality standards. BDL – Below Detectable Limit.					



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TEST REPORT

Report No:	EFEL/PRO/2026/05/1648	Issue Date	05/06/2026
Name and Address of Customer	M/s. Ichalkaranji Municipal Corporation, Ichalkaranji		
Sample Name	Waste Water	Sample Description	18 MLD STP Inlet
Date of Sampling	29/05/2026	Sample Duration	--
Start Date of Analysis	30/05/2026	End Date of Analysis	05/06/2026
Sampling Location	--	Sampling Procedure	APHA 1060
Sampling done by	Eurofine Enviro Lab Pvt. Ltd.	Sample Quantity	2 L

Results

Sr. No.	Parameters	Results	Unit(s)	Methods
1	pH	7.05	--	APHA 4500 H+ A, 24 th Ed. 2023
2	Total Dissolved Solids TDS	260	mg/L	APHA 4500 H+ A, 24 th Ed. 2023
3	Total Suspended Solids TSS	760	mg/L	APHA 2540 D, 24 th Ed. 2023
4	Chemical Oxygen Demand COD	420	mg/L	IS 3025 (Part 58)
5	Biochemical Oxygen Demand BOD at 27°C for 3 days	220	mg/L	IS 3025 (Part 44)
6	Oil & Grease	<5.0	mg/L	APHA 5520 B, 24 th Ed. 2023
7	Chloride (as Cl)	200.	mg/L	IS 3025 (Part 32): 1988
8	Sulphate (as SO ₄)	78.6	mg/L	APHA 4500 SO ₄ ²⁻ -E, 24 th Ed. 2023



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TEST REPORT

Report No:	EFEL/PRO/2026/05/1649	Issue Date	05/06/2026
Name and Address of Customer	M/s. Ichalkaranji Municipal Corporation, Ichalkaranji		
Sample Name	Waste Water	Sample Description	18 MLD STP Outlet
Date of Sampling	29/05/2026	Sample Duration	--
Start Date of Analysis	30/05/2026	End Date of Analysis	05/06/2026
Sampling Location	--	Sampling Procedure	APHA 1060
Sampling done by	Eurofine Enviro Lab Pvt. Ltd.	Sample Quantity	2 L

Results

Sr. No.	Parameters	Results	Unit(s)	MPCB Limit	Methods
1	pH	7.32	--	5.5 - 9.0	APHA 4500 H+ A, 24 th Ed. 2023
2	Total Suspended Solids TSS	10.0	mg/L	≤100	APHA 2540 D, 24 th Ed. 2023
3	Total Dissolved Solids TDS	510.0	mg/L	≤2100	APHA 4500 H+ A, 24 th Ed. 2023
4	Chemical Oxygen Demand COD	48	mg/L	≤50	IS 3025 (Part 58)
5	Biochemical Oxygen Demand BOD at 27°C for 3 days	8	mg/L	≤10	IS 3025 (Part 44)
6	Oil & Grease	<5.0	mg/L	≤10	APHA 5520 B, 24 th Ed. 2023
7	Chloride (as Cl)	72.4	mg/L	<600	IS 3025 (Part 32): 1988
8	Sulphate (as SO ₄)	52.6	mg/L	≤1000	APHA 4500 SO ₄ ²⁻ E, 24 th Ed. 2023

Remark- All Parameters are Within MPCB Limit.



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TEST REPORT

Report No:	EFEL/2026/05/525	Issue Date	05/06/2026
Name and Address of Customer	M/s. Ichalkaranji Municipal Corporation, Ichalkaranji		
Sample Name	Water	Sample Description	Kala Nala before mixing of 18 MLD STP Treated Water
Date of Sampling	29/05/2026	Sampling duration	--
Start Date of Analysis	30/05/2026	End Date of Analysis	05/06/2026
Sampling Location	--	Sampling Procedure	APHA 1060
Sampling done by	Eurofine Enviro Lab Pvt. Ltd.	Sample Quantity	2 Ltr

Results

Sr. No.	Parameter	Results	Unit(s)	Methods
1	pH at 25°C	6.95	--	APHA 4500 H+ A, 24 th Ed. 2023
2	Total Dissolved Solids TDS	3120	mg/L	IS 3025 (Part 16): 2023
3	Total Hardness (as CaCO ₃)	1480	mg/L	IS 3025 (Part 21)
4	Total Alkalinity	680	mg/L	IS 3025 (Part 23)
5	Chemical Oxygen Demand COD	658	mg/L	IS 3025 (Part 58)
6	Biochemical Oxygen Demand BOD at 27°C for 3 days	328	mg/L	IS 3025 (Part 44)
7	Sulphate (as SO ₄)	240	mg/L	APHA 4500 SO ₄ -E, 24 th Ed. 2023
8	Nitrate (as NO ₃)	6.54	mg/L	APHA 4500 NO ₃ - B, 24 th Ed. 2023
9	Fluoride (as F)	0.22	mg/L	APHA 4500-F- D, 24 th Ed. 2023
10	Residual Free Chlorine	<0.05	mg/L	IS 3025 (Part-26) Reaff 2019
11	Chloride (as Cl)	1280	mg/L	IS 3025 (Part 32)
12	Calcium (as Ca)	430	mg/L	IS 3025 (Part 40)
13	Magnesium (as Mg)	138	mg/L	IS 3025 (Part 46)
14	Iron (as Fe)	0.40	mg/L	APHA 3111, 24 th Ed. 2023
15	Total Coliform	<2	MPN/100ml	IS 1622:1981
16	E.coli.	<2	MPN/100m	IS 1622:1981



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TEST REPORT

Report No:	EFEL/PRO/2026/05/1650	Issue Date	05/06/2026
Name and Address of Customer	M/s. Ichalkaranji Municipal Corporation, Ichalkaranji		
Sample Name	Water	Sample Description	Kala Nala After mixing of 18 MLD STP Treated Water
Date of Sampling	29/05/2026	Sampling duration	--
Start Date of Analysis	30/05/2026	End Date of Analysis	05/06/2026
Sampling Location	--	Sampling Procedure	APHA 1060
Sampling done by	Eurofine Enviro Lab Pvt. Ltd.	Sample Quantity	2 Ltr

Results

Sr. No.	Parameter4	Results	Unit(s)	Methods
1	pH at 25°C	6.95	--	APHA 4500 H+ A, 24 th Ed. 2023
2	Total Dissolved Solids TDS	2580	mg/L	IS 3025 (Part 16): 2023
3	Total Hardness (as CaCO ₃)	1210	mg/L	IS 3025 (Part 21)
4	Total Alkalinity	540	mg/L	IS 3025 (Part 23)
5	Chemical Oxygen Demand COD	408	mg/L	IS 3025 (Part 58)
6	Biochemical Oxygen Demand BOD at 27°C for 3 days	232	mg/L	IS 3025 (Part 44)
7	Sulphate (as SO ₄)	185	mg/L	APHA 4500 SO ₄ -E, 24 th Ed. 2023
8	Nitrate (as NO ₃)	7.8	mg/L	APHA 4500 NO ₃ - B, 24 th Ed. 2023
9	Fluoride (as F)	0.15	mg/L	APHA 4500-F- D, 24 th Ed. 2023
10	Residual Free Chlorine	1.8	mg/L	IS 3025 (Part-26) Reaff 2019
11	Chloride (as Cl)	980	mg/L	IS 3025 (Part 32)
12	Calcium (as Ca)	340	mg/L	IS 3025 (Part 40)
13	Magnesium (as Mg)	108	mg/L	IS 3025 (Part 46)
14	Iron (as Fe)	0.22	mg/L	APHA 3111, 24 th Ed. 2023
15	Total Coliform	<2	MPN/100ml	IS 1622:1981
16	E.coli.	<2	MPN/100m	IS 1622:1981



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TEST REPORT

Report No:	EFEL/2026/05/523	Issue Date	05/06/2026
Name and Address of Customer	M/s. Ichalkaranji Municipal Corporation, Ichalkaranji.		
Sample Name	Water	Sample Description	Yadrav Nala before mixing of 20 MLD STP Treated Water
Date of Sampling	29/05/2026	Sampling duration	--
Start Date of Analysis	30/05/2026	End Date of Analysis	05/06/2026
Sampling Location	--	Sampling Procedure	APHA 1060
Sampling done by	Eurofine Enviro Lab Pvt. Ltd.	Sample Quantity	2 Ltr

Results

Sr. No.	Parameter4	Results	Unit(s)	Methods
1	pH at 25°C	7.18	--	APHA 4500 H+ A, 24 th Ed. 2023
2	Total Dissolved Solids TDS	2450	mg/L	IS 3025 (Part 16): 2023
3	Total Hardness (as CaCO ₃)	1120	mg/L	IS 3025 (Part 21)
4	Total Alkalinity	520	mg/L	IS 3025 (Part 23)
5	Chemical Oxygen Demand COD	448	mg/L	IS 3025 (Part 58)
6	Biochemical Oxygen Demand BOD at 27°C for 3 days	210	mg/L	IS 3025 (Part 44)
7	Sulphate (as SO ₄)	210	mg/L	APHA 4500 SO ₄ 2-,E,24th Ed.2023
8	Nitrate(as NO ₃)	8.8	mg/L	APHA 4500 NO ₃ – B ,24 th Ed.2023
9	Fluoride (as F)	0.18	mg/L	APHA 4500-F- D, 24th Ed.2023
10	Residual Free Chlorine	<0.05	mg/L	IS 3025 (Part-26) Reaff 2019
11	Chloride (as Cl)	910	mg/L	IS 3025 (Part 32)
12	Calcium (as Ca)	315	mg/L	IS 3025 (Part 40)
13	Magnesium (as Mg)	104	mg/L	IS 3025 (Part 46)
14	Iron (as Fe)	0.28	mg/L	APHA 3111, 24th Ed. 2023
15	Total Coliform	<2	MPN/100ml	IS 1622:1981
16	E.coli.	<2	MPN/100m	IS 1622:1981



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TEST REPORT

Report No:	EFEL/PRO/2026/05/1651	Issue Date	05/06/2026
Name and Address of Customer	M/s. Ichalkaranji Municipal Corporation, Ichalkaranji		
Sample Name	Water	Sample Description	Yadrav Odha after Mixing of 20 MLD STP Treated Water
Date of Sampling	29/05/2026	Sampling duration	--
Start Date of Analysis	30/05/2026	End Date of Analysis	05/06/2026
Sampling Location	--	Sampling Procedure	APHA 1060
Sampling done by	Eurofine Enviro Lab Pvt. Ltd.	Sample Quantity	2 Ltr

Results

Sr. No.	Parameter4	Results	Unit(s)	Methods
1	pH at 25°C	7.18	--	APHA 4500 H+ A, 24 th Ed. 2023
2	Total Dissolved Solids TDS	1620	mg/L	IS 3025 (Part 16): 2023
3	Total Hardness (as CaCO ₃)	760.0	mg/L	IS 3025 (Part 21)
4	Total Alkalinity	355	mg/L	IS 3025 (Part 23)
5	Chemical Oxygen Demand COD	228	mg/L	IS 3025 (Part 58)
6	Biochemical Oxygen Demand BOD at 27°C for 3 days	144	mg/L	IS 3025 (Part 44)
7	Sulphate (as SO ₄)	145	mg/L	APHA 4500 SO4 ²⁻ , E, 24 th Ed. 2023
8	Nitrate(as NO ₃)	5.2	mg/L	APHA 4500 NO ₃ – B, 24 th Ed. 2023
9	Fluoride (as F)	0.12	mg/L	APHA 4500-F- D, 24 th Ed. 2023
10	Residual Free Chlorine	2.1	mg/L	IS 3025 (Part-26) Reaff 2019
11	Chloride (as Cl)	610	mg/L	IS 3025 (Part 32)
12	Calcium (as Ca)	220	mg/L	IS 3025 (Part 40)
13	Magnesium (as Mg)	72	mg/L	IS 3025 (Part 46)
14	Iron (as Fe)	0.16	mg/L	APHA 3111, 24 th Ed. 2023
15	Total Coliform	<2	MPN/100ml	IS 1622:1981
16	E.coli.	<2	MPN/100m	IS 1622:1981



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TEST REPORT					
Report No:	EFEL/2026/05/522	Issue Date	05/06/2026		
Name and Address of Customer	M/s. Ichalkaranji Municipal Corporation, Ichalkaranji				
Sample Name	Noise	Sample Description	Ambient Noise		
Date of Sampling	29/05/2026	Sampling duration	Spot Time		
Sampling done by	Eurofine Enviro Lab Pvt. Ltd.				
Results					
Sr. No.	Locations	Result dB(A) Day	Result dB(A) Night	Specifications (CPCB Standards dB(A))	Method
1.	Near Rajwada Chowk	58.9	51.2	75/70	CPCB Guideline
2.	Takawade Ves	61.4	56.3		
3.	Near Gandhi Putala	67.1	60.8		
4.	Near ASC College	70.0	52.4		
5.	Near Filter House	61.4	55.3		
Remark-					
➤ All above Noise level results are within Central Pollution Control Board Standards limit.					
➤ Day/Night -75/70 dB.					



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TEST REPORT

Report No:	EFEL/2026/05/524	Issue Date	05/06/2026
Name and Address of Customer	M/s. Ichalkaranji Municipal Corporation, Ichalkaranji		
Sample Name	Water	Sample Description	Chandur Nala
Date of Sampling	29/05/2026	Sampling duration	--
Start Date of Analysis	30/05/2026	End Date of Analysis	05/06/2026
Sampling Location	--	Sampling Procedure	APHA 1060
Sampling done by	Eurofine Enviro Lab Pvt. Ltd.	Sample Quantity	2 Ltr

Results

Sr. No.	Parameter4	Results	Unit(s)	Methods
1	pH at 25°C	6.90	--	APHA 4500 H+ A, 24 th Ed. 2023
2	Total Dissolved Solids TDS	850	mg/L	IS 3025 (Part 16): 2023
3	Total Hardness (as CaCO ₃)	360	mg/L	IS 3025 (Part 21)
4	Total Alkalinity	170	mg/L	IS 3025 (Part 23)
5	Chemical Oxygen Demand COD	325	mg/L	IS 3025 (Part 58)
6	Biochemical Oxygen Demand BOD at 27°C for 3 days	126	mg/L	IS 3025 (Part 44)
7	Sulphate (as SO ₄)	62	mg/L	APHA 4500 SO ₄ -E, 24 th Ed. 2023
8	Nitrate(as NO ₃)	2.1	mg/L	APHA 4500 NO ₃ - B, 24 th Ed. 2023
9	Fluoride (as F)	<0.05	mg/L	APHA 4500-F- D, 24 th Ed. 2023
10	Residual Free Chlorine	<0.05	mg/L	IS 3025 (Part-26) Reaff 2019
11	Chloride (as Cl)	540	mg/L	IS 3025 (Part 32)
12	Calcium (as Ca)	96	mg/L	IS 3025 (Part 40)
13	Magnesium (as Mg)	30	mg/L	IS 3025 (Part 46)
14	Iron (as Fe)	0.20	mg/L	APHA 3111, 24 th Ed. 2023
15	Total Coliform	<2	MPN/100ml	IS 1622:1981
16	E.coli.	<2	MPN/100m	IS 1622:1981



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TEST REPORT

Report No:	EFEL/2026/05/526	Issue Date	05/06/2026
Name and Address of Customer	M/s. Ichalkaranji Municipal Corporation, Ichalkaranji		
Sample Name	Water	Sample Description	Panchganga Jackwell (River Water) Inlet/Outlet
Date of Sampling	29/05/2026	Sampling duration	--
Start Date of Analysis	30/05/2026	End Date of Analysis	05/06/2026
Sampling Location	--	Sampling Procedure	APHA 1060
Sampling done by	Eurofine Enviro Lab Pvt. Ltd.	Sample Quantity	2 Ltr

Results

Sr. No.	Parameter4	Results	Unit(s)	Methods
1	pH at 25°C	7.70	--	APHA 4500 H+ A, 24 th Ed. 2023
2	Total Dissolved Solids TDS	108.9	mg/L	IS 3025 (Part 16): 2023
3	Total Hardness (as CaCO ₃)	44.0	mg/L	IS 3025 (Part 21)
4	Total Alkalinity	19.0	mg/L	IS 3025 (Part 23)
5	Chemical Oxygen Demand COD	<4.00	mg/L	IS 3025 (Part 58)
6	Biochemical Oxygen Demand BOD at 27°C for 3 days	<1.00	mg/L	IS 3025 (Part 44)
7	Sulphate (as SO ₄)	10.0	mg/L	APHA 4500 SO4 ²⁻ , E, 24 th Ed. 2023
8	Nitrate(as NO ₃)	0.83	mg/L	APHA 4500 NO ₃ – B, 24 th Ed. 2023
9	Fluoride (as F)	<0.05	mg/L	APHA 4500-F- D, 24 th Ed. 2023
10	Residual Free Chlorine	<0.05	mg/L	IS 3025 (Part-26) Reaff 2019
11	Chloride (as Cl)	24.9	mg/L	IS 3025 (Part 32)
12	Calcium (as Ca)	9.61	mg/L	IS 3025 (Part 40)
13	Magnesium (as Mg)	3.24	mg/L	IS 3025 (Part 46)
14	Iron (as Fe)	<0.05	mg/L	APHA 3111, 24 th Ed. 2023
15	Total Coliform	<2	MPN/100ml	IS 1622:1981
16	E.coli.	<2	MPN/100m	IS 1622:1981



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TEST REPORT

Report No:	EFEL/2026/05/527	Issue Date	05/06/2026
Name and Address of Customer	M/s. Ichalkaranji Municipal Corporation, Ichalkaranji		
Sample Name	Waste Water	Sample Description	20 MLD STP Inlet
Date of Sampling	29/05/2026	Sample Duration	--
Start Date of Analysis	30/05/2026	End Date of Analysis	05/06/2026
Sampling Location	--	Sampling Procedure	APHA 1060
Sampling done by	Eurofine Enviro Lab Pvt. Ltd.	Sample Quantity	2 L

Results

Sr. No.	Parameters	Results	Unit(s)	Methods
1	pH	7.10	--	APHA 4500 H+ A, 24 th Ed. 2023
2	Total Dissolved Solids TDS	780	mg/L	APHA 4500 H+ A, 24 th Ed. 2023
3	Total Suspended Solids TSS	280	mg/L	APHA 2540 D, 24 th Ed. 2023
4	Chemical Oxygen Demand COD	338	mg/L	IS 3025 (Part 58)
5	Biochemical Oxygen Demand BOD at 27°C for 3 days	212	mg/L	IS 3025 (Part 44)
6	Oil & Grease	<5.0	mg/L	APHA 5520 B, 24 th Ed. 2023
7	Chloride (as Cl)	149.9	mg/L	IS 3025 (Part 32): 1988
8	Sulphate (as SO ₄)	62.5	mg/L	APHA 4500 SO ₄ ²⁻ E, 24 th Ed. 2023



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TEST REPORT

Report No:	EFEL/2026/05/528	Issue Date	05/06/2026
Name and Address of Customer	M/s. Ichalkaranji Municipal Corporation, Ichalkaranji		
Sample Name	Waste Water	Sample Description	20 MLD STP Outlet
Date of Sampling	29/05/2026	Sample Duration	--
Start Date of Analysis	30/05/2026	End Date of Analysis	05/06/2026
Sampling Location	--	Sampling Procedure	APHA 1060
Sampling done by	Eurofine Enviro Lab Pvt. Ltd.	Sample Quantity	2 L

Results

Sr. No.	Parameters	Results	Unit(s)	MPCB Limit	Methods
1	pH	7.32	--	5.5 - 9.0	APHA 4500 H+ A, 24 th Ed. 2023
2	Total Suspended Solids TSS	10.0	mg/L	≤100	APHA 2540 D, 24 th Ed. 2023
3	Total Dissolved Solids TDS	458.0	mg/L	≤2100	APHA 4500 H+ A, 24 th Ed. 2023
4	Chemical Oxygen Demand COD	42	mg/L	≤250	IS 3025 (Part 58)
5	Biochemical Oxygen Demand BOD at 27°C for 3 days	8	mg/L	≤100	IS 3025 (Part 44)
6	Oil & Grease	<5.0	mg/L	≤10	APHA 5520 B, 24 th Ed. 2023
7	Chloride (as Cl)	84.9	mg/L	≤600	IS 3025 (Part 32): 1988
8	Sulphate (as SO ₄)	46.7	mg/L	≤1000	APHA 4500 SO ₄ ²⁻ -E, 24 th Ed. 2023

Remark- All Parameters are Within MPCB Limit.



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(Managing Director)

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**EUROFINE ENVIRO
LAB PVT. LTD.**

Office Address: Gate No.1414, Near Ranjangaon Bus Stop
Ranjangaon, Tal. Shirur, Dist. Pune - 412209.
eurofinelab@gmail.com 9922474646 / 9637345858

TEST REPORT

Report No:	EFEL/2026/05/529	Issue Date	05/06/2026
Name and Address of Customer	M/s. Ichalkaranji Municipal Corporation, Ichalkaranji		
Sample Name	Waste Water	Sample Description	WTP Inlet
Date of Sampling	29/05/2026	Sample Duration	--
Start Date of Analysis	30/05/2026	End Date of Analysis	05/06/2026
Sampling Location	--	Sampling Procedure	APHA 1060
Sampling done by	Eurofine Enviro Lab Pvt. Ltd.	Sample Quantity	2 L

Results

Sr. No.	Parameters	Results	Unit(s)	Methods
1	pH	7.31	--	APHA 4500 H+ A, 24 th Ed. 2023
2	Total Dissolved Solids TDS	201.0	mg/L	APHA 4500 H+ A, 24 th Ed. 2023
3	Total Suspended Solids TSS	19.0	mg/L	APHA 2540 D, 24 th Ed. 2023
4	Chemical Oxygen Demand COD	<4.00	mg/L	IS 3025 (Part 58)
5	Biochemical Oxygen Demand BOD at 27°C for 3 days	<1.00	mg/L	IS 3025 (Part 44)
6	Oil & Grease	<5.0	mg/L	APHA 5520 B, 24 th Ed. 2023
7	Chloride (as Cl)	39.98	mg/L	IS 3025 (Part 32): 1988
8	Sulphate (as SO ₄)	55.6	mg/L	APHA 4500 SO ₄ ²⁻ -E, 24 th Ed. 2023



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TEST REPORT

Report No:	EFEL/2026/05/530	Issue Date	05/06/2026
Name and Address of Customer	M/s. Ichalkaranji Mahanagar Palika. Kolhapur.		
Sample Name	Waste Water	Sample Description	WTP Outlet
Date of Sampling	29/05/2026	Sample Duration	--
Start Date of Analysis	30/05/2026	End Date of Analysis	05/06/2026
Sampling Location	--	Sampling Procedure	APHA 1060
Sampling done by	Eurofine Enviro Lab Pvt. Ltd.	Sample Quantity	2 L

Results

Sr. No.	Parameters	Results	Unit(s)	MPCB Limit	Methods
1	pH	7.55	--	5.5 - 9.0	APHA 4500 H+ A, 24 th Ed. 2023
2	Total Suspended Solids TSS	16.0	mg/L	≤100	APHA 2540 D, 24 th Ed. 2023
3	Total Dissolved Solids TDS	398.0	mg/L	≤2100	APHA 4500 H+ A, 24 th Ed. 2023
4	Chemical Oxygen Demand COD	<4.00	mg/L	≤250	IS 3025 (Part 58)
5	Biochemical Oxygen Demand BOD at 27°C for 3 days	<1.00	mg/L	≤100	IS 3025 (Part 44)
6	Oil & Grease	<5.0	mg/L	≤10	APHA 5520 B, 24 th Ed. 2023
7	Chloride (as Cl)	34.9	mg/L	≤600	IS 3025 (Part 32): 1988
8	Sulphate (as SO ₄)	48.5	mg/L	≤1000	APHA 4500 SO ₄ ²⁻ -E, 24 th Ed. 2023

Remark- All Parameters are Within MPCB Limit.



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TEST REPORT

Report No:	EFEL/2026/05/531	Issue Date	05/06/2026
Name and Address of Customer	M/s. Ichalkaranji Mahanagar Palika. Kolhapur.		
Sample Name	Waste Water	Sample Description	SWM Lichate
Date of Sampling	29/05/2026	Sample Duration	--
Start Date of Analysis	30/05/2026	End Date of Analysis	05/06/2026
Sampling Location	--	Sampling Procedure	APHA 1060
Sampling done by	Eurofine Enviro Lab Pvt. Ltd.	Sample Quantity	2 L

Results

Sr. No.	Parameters	Results	Unit(s)	Methods
1	pH	5.94	--	APHA 4500 H+ A, 24 th Ed. 2023
2	Total Suspended Solids TSS	172.0	mg/L	APHA 2540 D, 24 th Ed. 2023
3	Total Dissolved Solids TDS	133120.0	mg/L	APHA 4500 H+ A, 24 th Ed. 2023
4	Chemical Oxygen Demand COD	50,000.0	mg/L	IS 3025 (Part 58)
5	Biochemical Oxygen Demand BOD at 27°C for 3 days	14726.0	mg/L	IS 3025 (Part 44)
6	Oil & Grease	24.00	mg/L	APHA 5520 B, 24 th Ed. 2023
7	Chloride (as Cl)	9996.0	mg/L	IS 3025 (Part 32): 1988
8	Sulphate (as SO ₄)	3720.0	mg/L	APHA 4500 SO ₄ ²⁻ -E, 24 th Ed. 2023



(Signature)

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eurofinelab@gmail.com 9922474646 / 9637345858

ANALYSIS REPORT

Report No:	EFEL/2026/05/532	Issue Date	05/06/2026
Name and Address of Customer	M/s. Ichalkaranji Mahanagar Palika. Kolhapur.		
Sample Name	Compost Sample	Sample Description	SWM Compost
Date of Sampling	29/05/2026	Sampling duration	---
Start Date of Analysis	30/05/2026	End Date of Analysis	05/06/2026
Sampling Location	----	Sample Quantity	1 Kg
Sampling done by	Eurofine Enviro Lab Pvt. Ltd.		

Results

Sr. No.	Parameter	Result	Unit(s)
1	pH	7.51	---
2	Moisture	24.0	% by Weight
3	Total Organic Carbon	2.36	% by Weight
4	Total Nitrogen as N	5.78	% by Weight
5	Total Organic Carbon	25.6	% by Weight
6	Total Phosphate as P2O5	0.87	% by Weight
7	Potash, as K2O	1.52	% by Weight



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TEST REPORT

Report No:	EFEL/2026/05/533	Issue Date	05/06/2026
Name and Address of Customer	M/s. Ichalkaranji Mahanagar Palika. Kolhapur.		
Sample Name	Soil	Sample Description	Soil
Date of Sampling	29/05/2026	Sampling Time	12: 30 PM
Start Date of Analysis	30/05/2026	End Date of Analysis	05/06/2026
Sampling Location	Near SWM Plant	Sampling Procedure	--
Sampling done by	Eurofine Enviro Lab Pvt. Ltd.	Sample Quantity	01 kg

Results

Sr. No.	Parameters	Results	Unit(s)	Methods
1	Soil Texture	Sand, Silt, Clay		Manual Of Soil Testing
2	pH at 25°C	7.36	--	IS 2720(Part 26) 1987
3	EC at 25°C	1014	µS/cm	IS 14767 : 2000
4	Moisture Content	9.65	%	Manual Of Soil Testing
5	Organic Matter	1.07	%	IS 2720(Part 22) 1972
6	Cation Exchange Capacity	18.3	meq/100g	Manual Of Soil Testing
7	Total Soluble Sulphate	10.2	mg/Kg	Manual Of Soil Testing
8	Available Phosphorus	6.4	mg/Kg	Manual Of Soil Testing
9	Available Nitrogen	258.1	mg/Kg	Manual Of Soil Testing
10	Water Holding	32.9	%	Manual Of Soil Testing
11	Calcium as (Ca)	16.3	mg/Kg	Manual Of Soil Testing
12	Magnesium as (Mg)	9.84	mg/Kg	Manual Of Soil Testing
13	Lead (as Pb)	0.10	mg/Kg	Manual Of Soil Testing
14	Chlorides as Cl	21.7	mg/Kg	Manual Of Soil Testing
15	Zinc (as Zn)	1.32	mg/Kg	Manual Of Soil Testing
17	Iron (as Fe)	3.64	mg/Kg	Manual Of Soil Testing




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ANNEXURE-II PHOTOGRAPHS OF MONITORING





Ichalkaranji Municipal Corporation, Ichalkaranji
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Ichalkaranji Sangli Road, Yadrav, Ichalkaranji ,
416146, Maharashtra, India

Latitude 16.701520° Longitude 74.489030°
Local 11:51:16 AM Altitude 555.4 meters
GMT 06:21:16 AM Monday, 23-03-2026



Kurundwad Ichalkaranji Road, Rajwada,
Ichalkaranji , 416115, Maharashtra, India

Latitude 16.688382° Longitude 74.495121°
Local 05:16:08 PM Altitude 546.9 meters
GMT 11:46:08 AM Monday, 23-03-2026



Ichalkaranji Sangli Road, Yadrav, Ichalkaranji ,
416146, Maharashtra, India

Latitude 16.719664° Longitude 74.468844°
Local 11:06:14 AM Altitude 570.7 meters
GMT 05:36:14 AM Monday, 23-03-2026



Hulageshwari Road, Kagwade Mala, Ichalkaranji ,
416115, Maharashtra, India

Latitude 16.678089° Longitude 74.477522°
Local 04:40:15 PM Altitude 536.5 meters
GMT 11:10:15 AM Monday, 23-03-2026



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