# National Clean Air Program (NCAP)

## Hot Spot Action Plan

**Submitted By:**

## Amravati Municipal Corporation

## 2022-2023

**Prepared By**

**Royal Tiipster Consulting Pvt. Ltd.**

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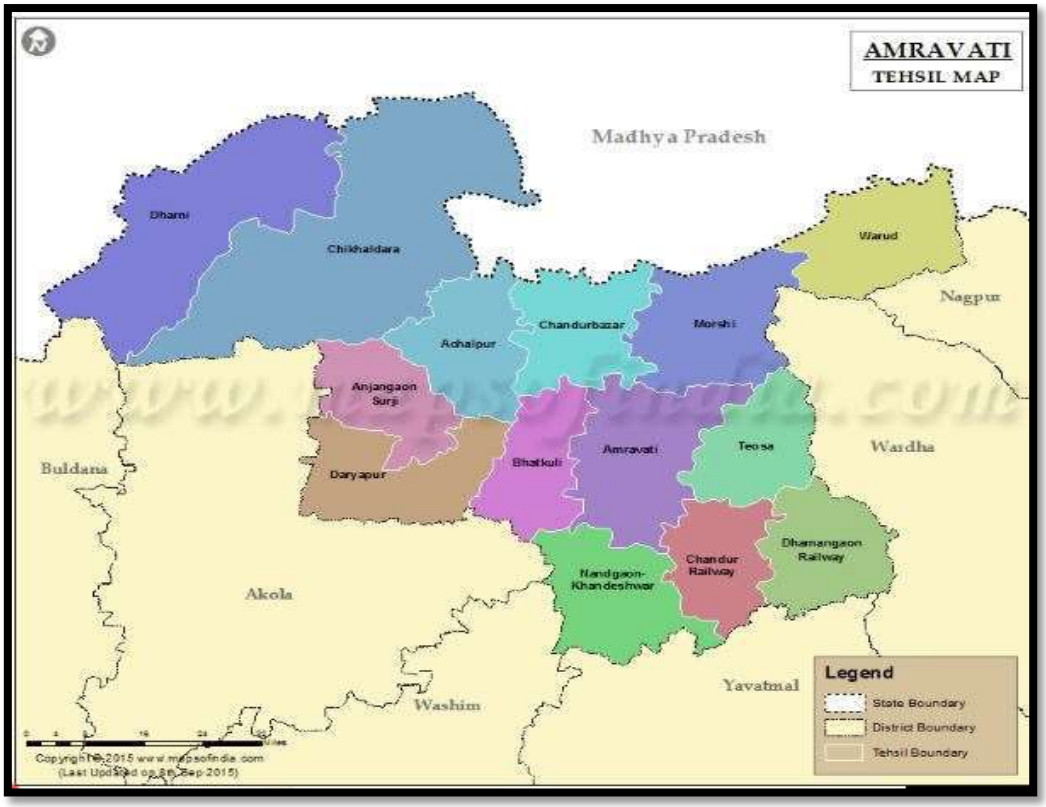
# Information about Amravati Municipal Corporation

**Amravati Municipal Corporation** is the governing body of the city of Amravati in the Indian state of Maharashtra. The municipal corporation consists of democratically elected members, is headed by a mayor and administers the city's infrastructure, public services and police. Members from the state's leading various political parties hold elected offices in the corporation. Municipal Corporation mechanism in India was introduced during British Rule with formation of Municipal Corporation in Madras (Chennai) in 1688, later followed by municipal corporations in Bombay (Mumbai) and Calcutta (Kolkata) by 1762. Amravati Municipal Corporation is headed by Mayor of city and governed by Commissioner.

Amravati Municipal Corporation is located in Amravati City. Amravati Municipal Corporation has been formed with functions to improve the infrastructure of city.

# Map of Amravati Municipal Council

## What is NCAP?

A National Clean Air Program is a collection of regulations, policies, and programmes, which aims to improve air quality and public health by identifying cost-effective measures to reduce emissions from all the known sources.

## Goal of NCAP

The goal of the NCAP is to meet the prescribed annual average ambient air quality standards at all locations in the country in a stipulated time frame.

To ensure stringent implementation of mitigation measures for prevention, control and abatement of air pollution.

To augment and evolve effective and proficient ambient air quality monitoring network across the country for ensuring a comprehensive and reliable database.

To augment public awareness and capacity-building measures encompassing data dissemination and public outreach programmes for inclusive public participation and for ensuring trained manpower and infrastructure on air pollution.

## Information about NCAP?

Evolution of air pollution regulations and control planning in India. Health impact estimates associated with different polluting sources establish the need for a prioritized cost-effective emission mitigation strategy by sector (Venkataraman et al., 2018). Residential biomass combustion contributed to an estimated 268,000 deaths; coal combustion in thermal power plants and industries contributed to 169,000; anthropogenic dust contributed to 100,000; agricultural burning contributed to 66,000; and road transport, non-road

diesel, and brick kilns contributed to over 65,000 (GBD-MAPS, 2018; Balakrishnan et al., 2019). A proposal was prepared by the Ministry of Health and Family Welfare (MoHFW), for an exposure-centric management approach for integrating the health impacts of air pollution into the policy dialogue in India (Sagar et al., 2016). In January 2019, the Ministry of Environment, Forest and Climate Change (MoEFCC) launched the National Clean Air Programme (NCAP) to prepare clean air action plans with an objective to reduce PM2.5 pollution by 20–30% by 2024 as compared to 2017, in 131 cities (NCAP, 2019). This paper presents a review of the approved clean air action plans, review of key elements in case studies from global clean air action plans, and recommendations to strengthen the plans.

Maharashtra submitted 19 distinct city clean air plans. Seven plans for Amravati, Badlapur, Mumbai, Nagpur, Nashik, Pune, Sangli and Solapur also outlined the financial requirements. While plans for Chandrapur, Amravati, Aurangabad and Kolhapur contained emission load estimates, Mumbai's plan contained results of source apportionment studies. As observed in the case of Rajasthan, none of Maharashtra's action plans allude to the need for institutional and administrative arrangements for tackling regional influences.

NCAP designated 131 cities as non-attainment from 21 states and 2 union territories (Chandigarh and Delhi) based on the ambient monitoring data from the network operated by CPCB. Maharashtra has the most cities (18) followed by Uttar Pradesh (15). NCAP in its first round of activities aims to increase the capacity of CPCB and State Pollution Control Board (SPCB)'s to measure, evaluate and manage air pollution. Some specific activities include (a) preparation of an information baseline for emissions and pollution loads and an assessment of source contributions in the non-attainment cities (b) an

air information cell to maintain and disseminate information generated under NCAP (c) a technology assessment cell to support bilateral and multilateral agreements undertaken by the boards (d) a network of technical institutions to provide support for policies and programmes of the Government of India on air pollution (e) a three-tier mechanism at the pollution control boards to review assessment and inspection guidelines for implementation of standards (f) an awareness, training, and capacity building drive at the boards (g) a committee to review the ambient and emission standards and (h) a framework to establish international cooperation to share best practices on air pollution.

## What is the key feature of NCAP?

- The NCAP includes strengthening of air quality monitoring networks
- Control of emissions from key sectors such as transport
- Industry
- Power plants
- Construction
- Promotion of clean energy sources and technologies
- Public awareness and capacity building.

## Objectives of NCAP?

1) To ensure stringent implementation of mitigation measures for prevention.
2) To augment and evolve effective and proficient ambient air quality monitoring network across the country for ensuring a comprehensive and reliable database

3) To augment public awareness and capacity-building measures encompassing data dissemination and public outreach programmes for inclusive public participation and for ensuring trained manpower and infrastructure on air pollution.

## Advices to reduce air pollution

1) Vehicle exhaust is a major source of air pollution in Minnesota. Encourage people for Carpool, Bike, and Bus. Telecommute, Electric vehicles.
2) Encourage people or make rules for people to keep car in good repair. Fix exhaust and oxygen sensor problems ASAP. To check tire pressure monthly; under-inflated tires have been shown to lower gas mileage, particularly at lower speed.
3) Turn off engine. An idling engine creates a hot spot of pollution. Buses and big trucks produce particularly unhealthy exhaust. Parents and teachers can help their schools and day cares develop and implement no-idling policies.
4) Don't burn garbage. Burning household garbage is dangerous to people's health and our environment, and generally against the law in Minnesota.
5) Limit backyards fire in the city. Smoke from backyard fires can cause unhealthy conditions for hundreds of people, especially during stagnant weather conditions. Since cities have elevated levels of pollution compared to rural areas, urban fires are more of a nuisance to people with asthma and other lung conditions. If you do have a campfire:

6) Plant and care for trees. Trees filter pollutants and absorb carbon dioxide. Trees also release oxygen into the atmosphere and help cool our homes.
7) Switch to electric vehicles
8) Use less energy. Turn off electrical stuff you are not using. It all adds up.
9) Become a champion for clean air. Direct local businesses, city offices, and school districts toward program that can help them reduce air pollution and become more sustainable.
10) Green Step Cities: City and county officials governments can help by passing local ordinances, creating incentives for beneficial behaviours, and promoting and educating residents on best practices.
11) Small business assistance: The Small Business Environmental Assistance Program helps Minnesota businesses comply with environmental rules, reduce wastes and emissions, and reduce regulatory obligations.
12) Minnesota Green Corps: An AmeriCorps program coordinated by the MPCA places members with organizations around the state to address environmental issues, including air quality. Non-profit, government and school districts are eligible to host members to work on qualified projects.

## Air Quality Index :

| AQI | Associated Health Impacts |
|---|---|
| Good (0-50) | Minimal Impact |
| Satisfactory (51-100) | May cause minor breathing discomfort to sensitive people |
| Moderate (101-200) | May cause breathing discomfort to the people with lung disease such as asthma and discomfort to people with heart disease, children and older adults |
| Poor (201-300) | May cause breathing discomfort to people on prolonged exposure and discomfort to people with heart disease with short exposure |
| Very Poor (301-400) | May cause respiratory illness to the people on prolonged exposure. Effect may be more pronounced in people with lung and heart diseases. |
| Severe (401-500) | May cause respiratory effects even on healthy people and serious health impacts on people with lung/heart diseases.<br>The health impacts may be experienced even during light physical activity |

## Air Quality Standards:

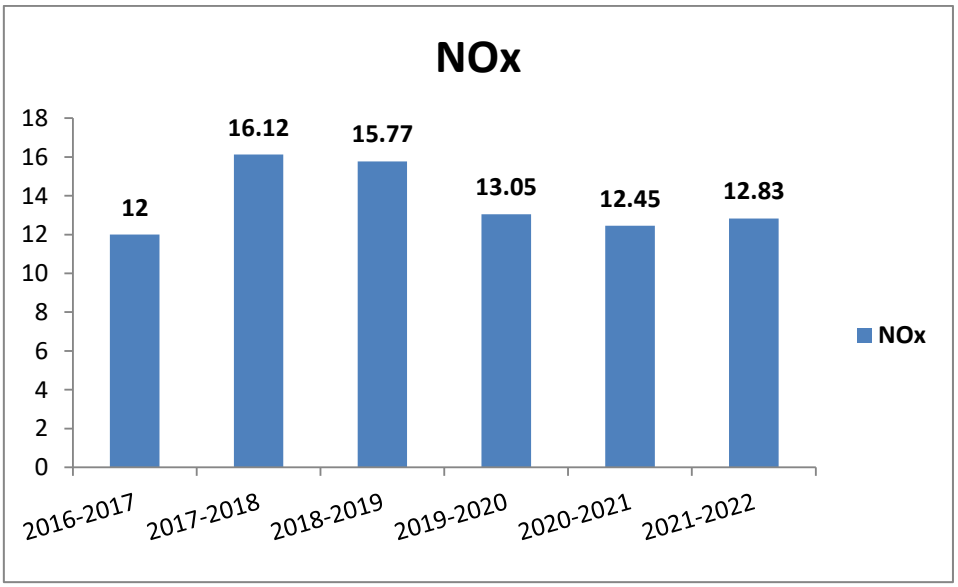
| Sr. No | Pollutants | Time Weighted Average | Concentration in Ambient Air | |
|---|---|---|---|---|
| | | | Industrial, Residential, Rural, and Other Areas | Ecologically Sensitive Area |
| 1 | Sulphur dioxide ($SO_2$), µg/m3 | Annual* | 50 | 20 |
| 2 | Nitrogen dioxide ($NO_2$), µg/m3 | 24 hours** | 80 | 80 |
| 3 | Particulate matter (Size <10 µm) or PM10 µg/m3 | Annual* | 60 | 60 |
| 4 | Particulate matter (Size<2.5 µm) or PM2.5 µg/m3 | 24 hours** | 100 | 100 |
| 5 | Ozone ($O_3$), µg/m3 | Annual* | 40 | 40 |
| | | 24 hours** | 60 | 60 |
| | | 8 hours** | 100 | 100 |
| | | 1 hours ** | 180 | 180 |
| 6 | Lead (Pb), µg/m3 | Annual* | 0.50 | 0.50 |
| | | 24 hours** | 1.0 | 1.0 |
| 7 | Carbon monoxide (CO), mg/m3 | 8 hours** | 02 | 02 |
| | | 1 hours** | 04 | 04 |
| 8 | Ammonia ($NH_3$), µg/m3 | Annual* | 400 | 100 |
| | | Annual* | 100 | 400 |
| 9 | Benzene ($C_6H_6$), µg/m3 | | 05 | 05 |
| 10 | Benzo(a) pyrene (BaP)- particulate phase only, ng/m3 | | 01 | 01 |
| 11 | Arsenic (As), ng/m3 | Annual* | 06 | 06 |
| 12 | Nickel (Ni), ng/m3 | Annual* | 20 | 20 |

# Air Quality Report Showing Continuous Reduction in pollution load since last 6 years in Amravati Municipal Corporation.

## 1) Air quality in residential area of Amravati Municipal Corporation.

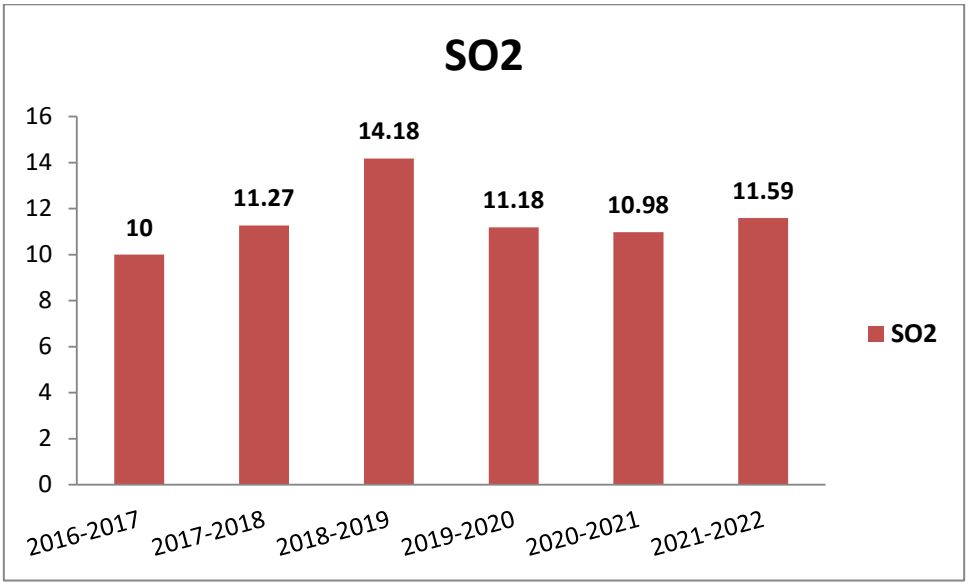
## $NO_x$

| Residential | | |
|---|---|---|
| Sr. No. | Year | $NO_x$ (Permissible Limit 80mg/$m^3$ ) |
| 1 | 2016-2017 | 12 mg/$m^3$ |
| 2 | 2017-2018 | 16.12 mg/$m^3$ |
| 3 | 2018-2019 | 15.77mg/$m^3$ |
| 4 | 2019-2020 | 13.05mg/$m^3$ |
| 5 | 2020-2021 | 12.45mg/$m^3$ |
| 6 | 2021-2022 | 12.83mg/$m^3$ |



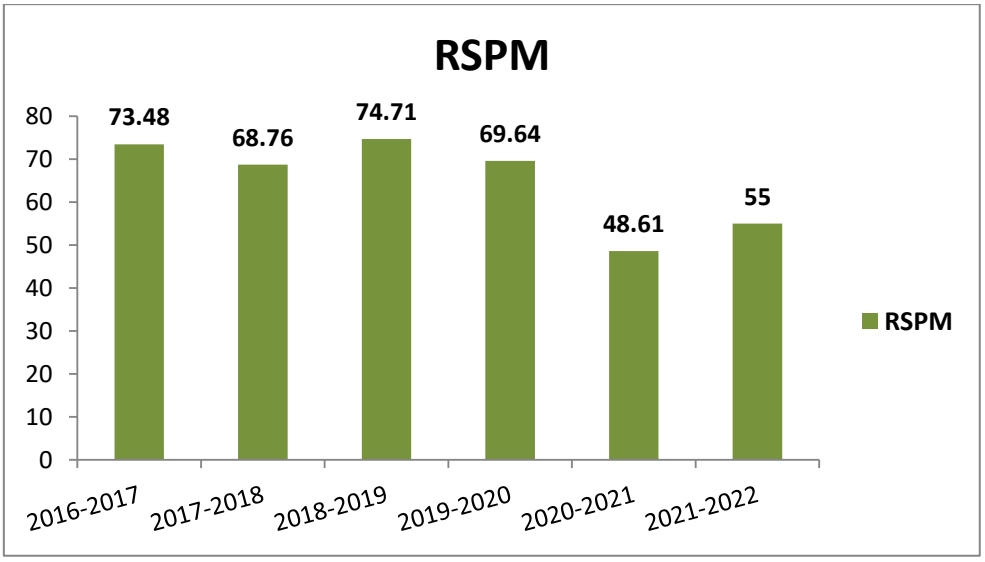
# $SO_2$

| Residential | | |
|---|---|---|
| Sr. No. | Year | $SO_2$ ( Permissible Limit 80mg/$m^3$ ) |
| 1 | 2016-2017 | 10 mg/$m^3$ |
| 2 | 2017-2018 | 11.27 mg/$m^3$ |
| 3 | 2018-2019 | 14.18 mg/$m^3$ |
| 4 | 2019-2020 | 11.18 mg/$m^3$ |
| 5 | 2020-2021 | 10.98 mg/$m^3$ |
| 6 | 2021-2022 | 11.59 mg/$m^3$ |



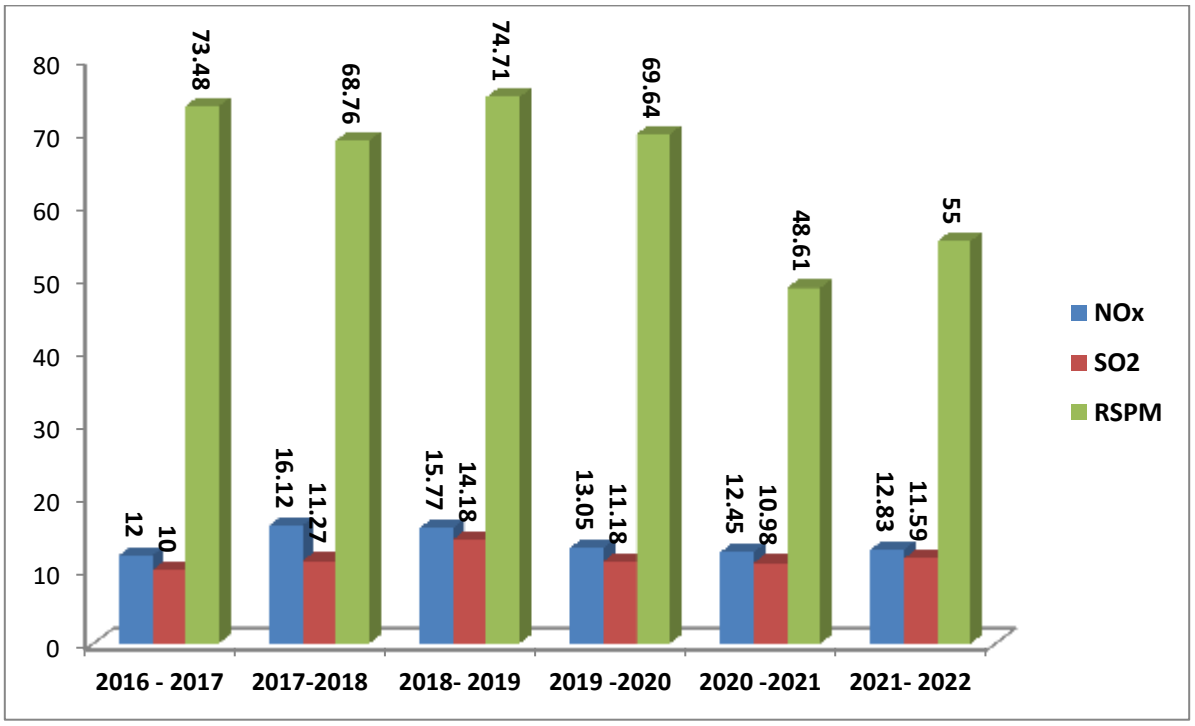
**RSPM:-**

| Residential | | |
|---|---|---|
| Sr. No. | Year | RSPM ( Permissible Limit 100mg/$m^3$ ) |
| 1 | 2016-2017 | 73.48 mg/$m^3$ |
| 2 | 2017-2018 | 68.76 mg/$m^3$ |
| 3 | 2018-2019 | 74.71g/$m^3$ |
| 4 | 2019-2020 | 69.64 mg/$m^3$ |
| 5 | 2020-2021 | 48. 61 mg/$m^3$ |
| 6 | 2021-2022 | 55.0 g/$m^3$ |



## Total Residential Air Quality Report Showing:-

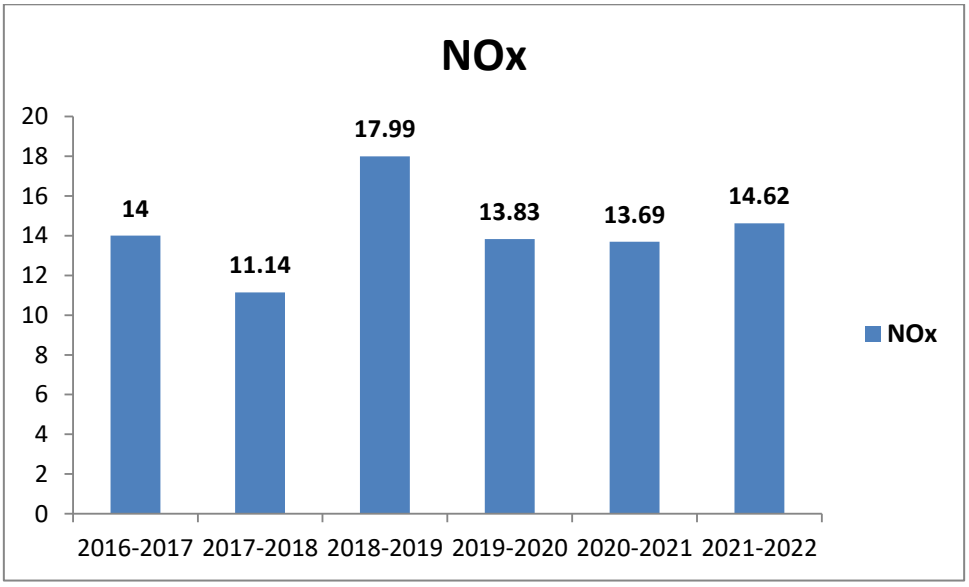
| Residential | | | | |
|---|---|---|---|---|
| Sr. No. | Year | $NO_x$ (Permissible Limit 80mg/$m^3$ ) | $SO_2$ ( Permissible Limit 80mg/$m^3$ ) | RSPM ( Permissible Limit 100mg/$m^3$ ) |
| 1 | 2016-2017 | 12 mg/$m^3$ | 10 mg/$m^3$ | 73.48 mg/$m^3$ |
| 2 | 2017-2018 | 16.12 mg/$m^3$ | 11.27 mg/$m^3$ | 68.76 mg/$m^3$ |
| 3 | 2018-2019 | 15.77mg/$m^3$ | 14.18 mg/$m^3$ | 74.71g/$m^3$ |
| 4 | 2019-2020 | 13.05mg/$m^3$ | 11.18 mg/$m^3$ | 69.64 mg/$m^3$ |
| 5 | 2020-2021 | 12.45mg/$m^3$ | 10.98 mg/$m^3$ | 48. 61 mg/$m^3$ |
| 6 | 2021-2022 | 12.83mg/$m^3$ | 11.59 mg/$m^3$ | 55.0 g/$m^3$ |



## 2) Air quality in industrial area of Amravati Municipal Corporation.

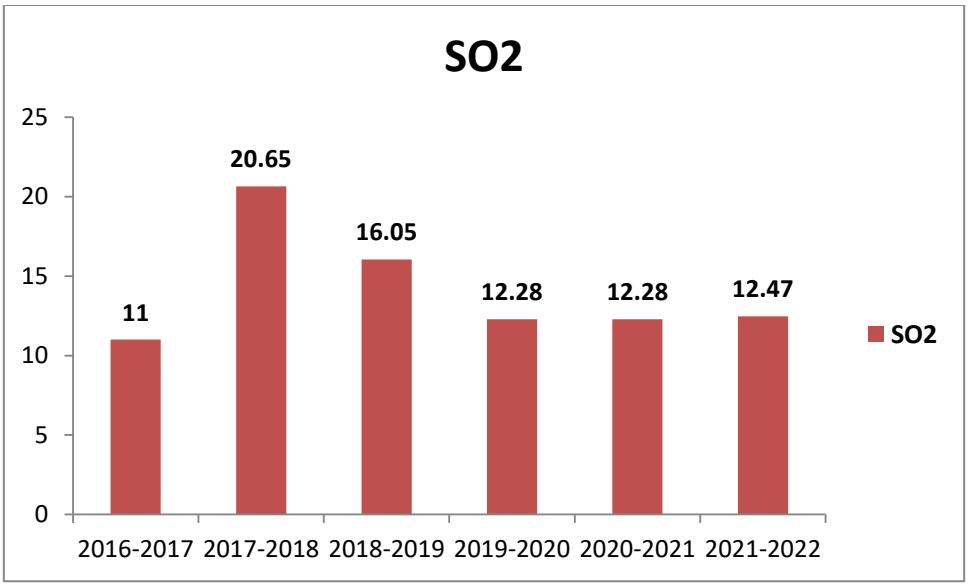
## $NO_x$

| Industrial | | |
|---|---|---|
| Sr. No. | Year | $NO_x$ ( Permissible Limit 80mg/$m^3$ ) |
| 1 | 2016-2017 | 14 mg/$m^3$ |
| 2 | 2017-2018 | 11.14 mg/$m^3$ |
| 3 | 2018-2019 | 17.99mg/$m^3$ |
| 4 | 2019-2020 | 13.83 mg/$m^3$ |
| 5 | 2020-2021 | 13.69 mg/$m^3$ |
| 6 | 2021-2022 | 14.62 mg/$m^3$ |



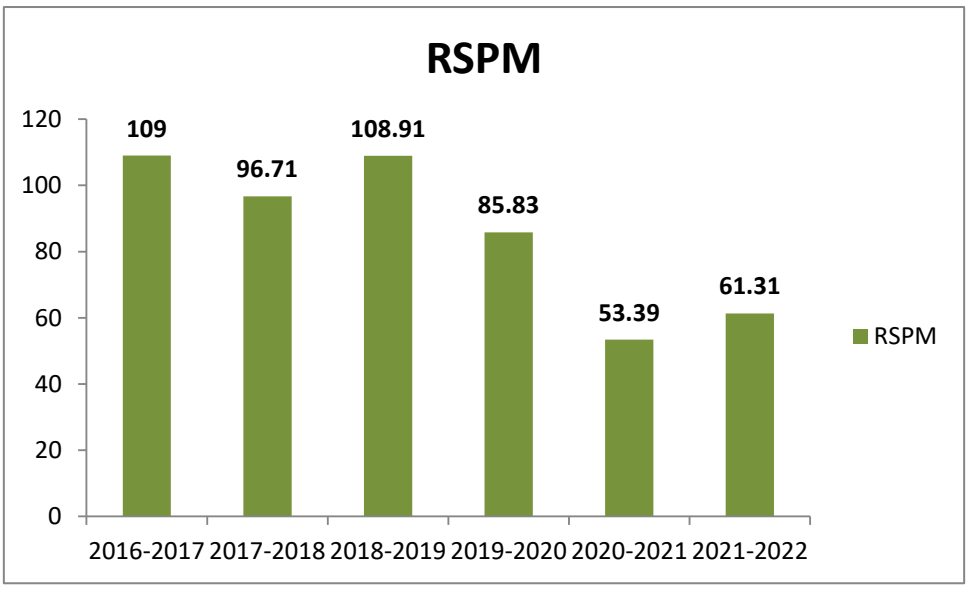
## $SO_2$

| Industrial | | |
|---|---|---|
| Sr. No. | Year | $SO_2$ ( Permissible Limit 80mg/$m^3$ ) |
| 1 | 2016-2017 | 11 mg/$m^3$ |
| 2 | 2017-2018 | 20.65 mg/$m^3$ |
| 3 | 2018-2019 | 16.05mg/$m^3$ |
| 4 | 2019-2020 | 12.28 mg/$m^3$ |
| 5 | 2020-2021 | 12.28 mg/$m^3$ |
| 6 | 2021-2022 | 12.47mg/$m^3$ |



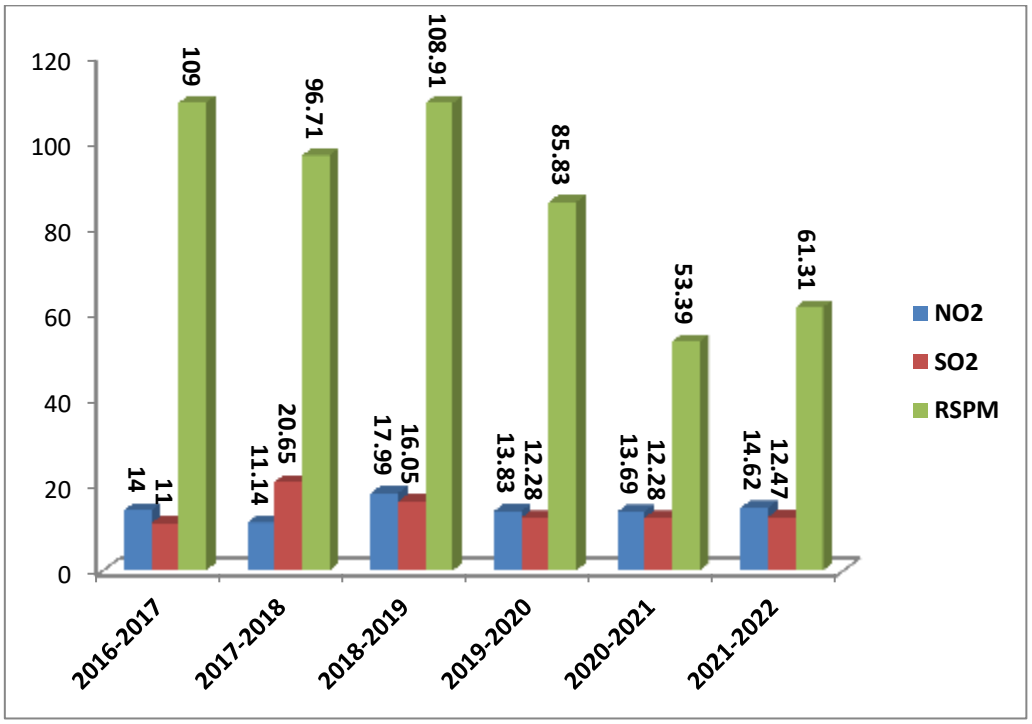
**RSPM**

| Industrial | | |
|---|---|---|
| Sr. No. | Year | RSPM ( Permissible Limit 100mg/$m^3$ ) |
| 1 | 2016-2017 | 109 mg/$m^3$ |
| 2 | 2017-2018 | 96.71mg/$m^3$ |
| 3 | 2018-2019 | 108.91mg/$m^3$ |
| 4 | 2019-2020 | 85.83mg/$m^3$ |
| 5 | 2020-2021 | 53.39mg/$m^3$ |
| 6 | 2021-2022 | 61.31 mg/$m^3$ |



## Total Industrial Air Quality Report Showing:-

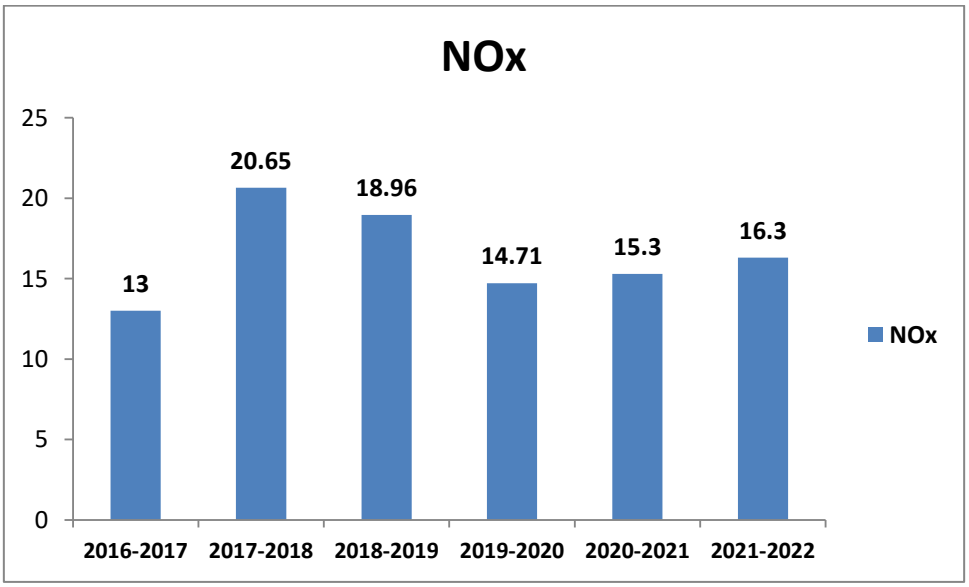
| Industrial | | | | |
|---|---|---|---|---|
| Sr. No. | Year | $NO_x$ ( Permissible Limit 80mg/$m^3$ ) | $SO_2$ ( Permissible Limit 80mg/$m^3$ ) | RSPM ( Permissible Limit 100mg/$m^3$ ) |
| 1 | 2016-2017 | 14 mg/$m^3$ | 11 mg/$m^3$ | 109 mg/$m^3$ |
| 2 | 2017-2018 | 11.14 mg/$m^3$ | 20.65 mg/$m^3$ | 96.71mg/$m^3$ |
| 3 | 2018-2019 | 17.99mg/$m^3$ | 16.05mg/$m^3$ | 108.91mg/$m^3$ |
| 4 | 2019-2020 | 13.83 mg/$m^3$ | 12.28 mg/$m^3$ | 85.83mg/$m^3$ |
| 5 | 2020-2021 | 13.69 mg/$m^3$ | 12.28 mg/$m^3$ | 53.39mg/$m^3$ |
| 6 | 2021-2022 | 14.62 mg/$m^3$ | 12.47mg/$m^3$ | 61.31 mg/$m^3$ |



## 3) Air quality in Commercial area of Amravati Municipal Corporation.

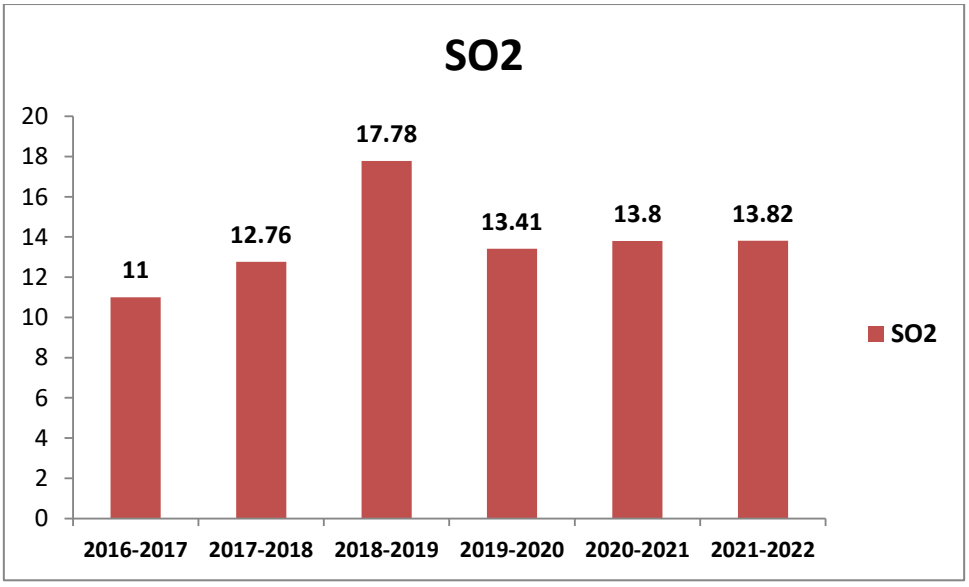
**$NO_x$**

| Commercial | | |
|---|---|---|
| Sr. No. | Year | $NO_x$ ( Permissible Limit 80mg/$m^3$ ) |
| 1 | 2016-2017 | 13 mg/$m^3$ |
| 2 | 2017-2018 | 20.65 mg/$m^3$ |
| 3 | 2018-2019 | 18.96 mg/$m^3$ |
| 4 | 2019-2020 | 14.71mg/$m^3$ |
| 5 | 2020-2021 | 15.3 mg/$m^3$ |
| 6 | 2021-2022 | 16.30mg/$m^3$ |



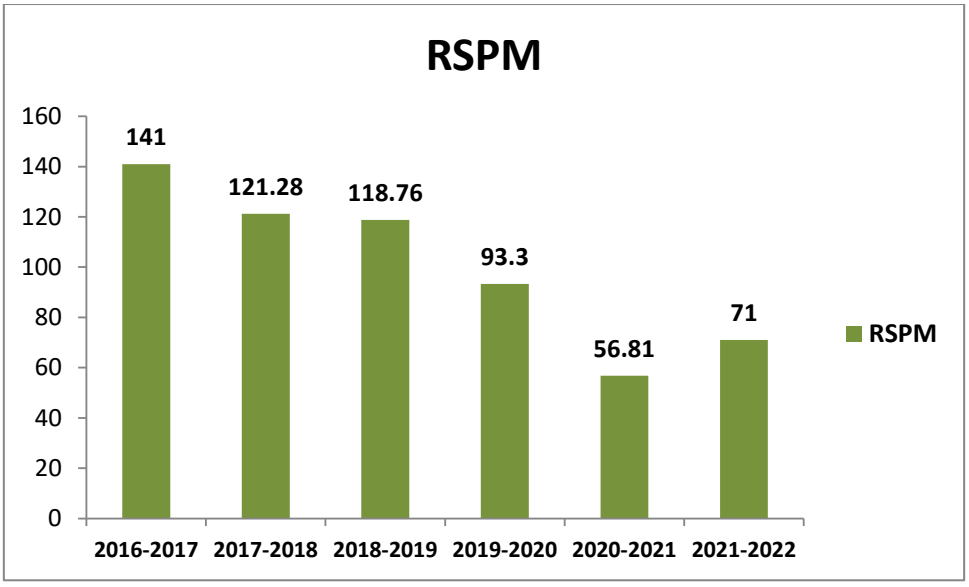
## $SO_2$

| Commercial | | |
|---|---|---|
| Sr. No. | Year | $SO_2$ ( Permissible Limit 80mg/$m^3$ ) |
| 1 | 2016-2017 | 11 mg/$m^3$ |
| 2 | 2017-2018 | 12.76 mg/$m^3$ |
| 3 | 2018-2019 | 17.78 mg/$m^3$ |
| 4 | 2019-2020 | 13.41mg/$m^3$ |
| 5 | 2020-2021 | 13.80mg/$m^3$ |
| 6 | 2021-2022 | 13.82mg/$m^3$ |



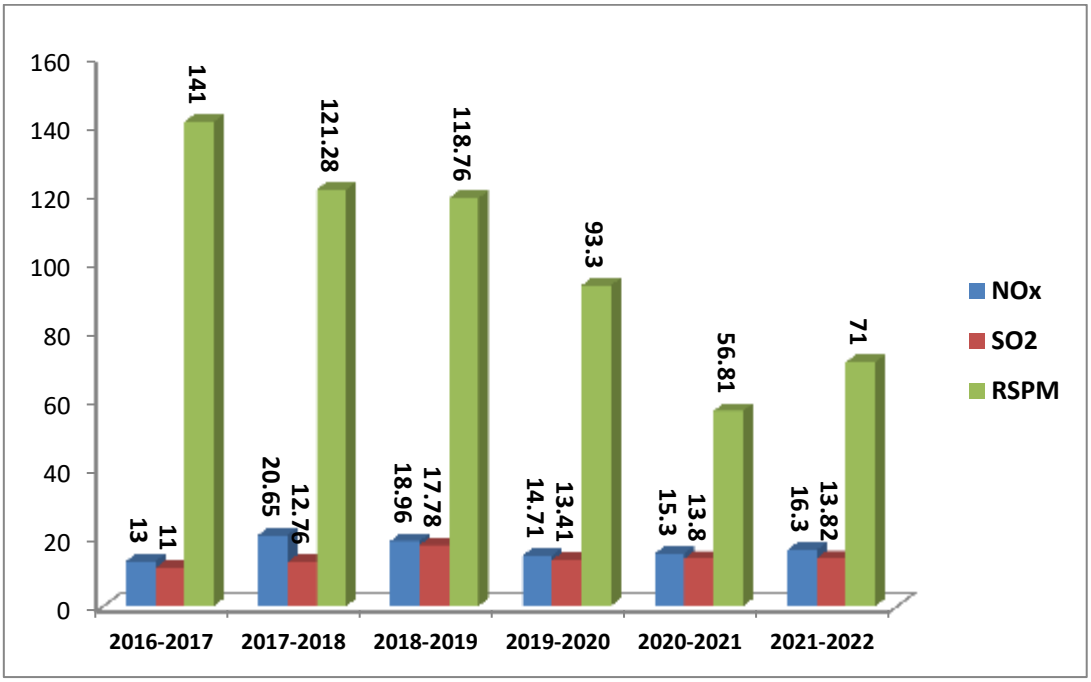
# RSPM

| Commercial | | |
|---|---|---|
| Sr. No. | Year | RSPM ( Permissible Limit 100mg/$m^3$ ) |
| 1 | 2016-2017 | 141 mg/$m^3$ |
| 2 | 2017-2018 | 121.28 mg/$m^3$ |
| 3 | 2018-2019 | 118.76mg/$m^3$ |
| 4 | 2019-2020 | 93.30 mg/$m^3$ |
| 5 | 2020-2021 | 56.81 mg/$m^3$ |
| 6 | 2021-2022 | 71.00mg/$m^3$ |



## Total Commercial Air Quality Report Showing:-

| Commercial | | | | |
|---|---|---|---|---|
| Sr. No. | Year | $NO_x$ ( Permissible Limit 80mg/$m^3$ ) | $SO_2$ ( Permissible Limit 80mg/$m^3$ ) | RSPM ( Permissible Limit 100mg/$m^3$ ) |
| 1 | 2016-2017 | 13 mg/$m^3$ | 11 mg/$m^3$ | 141 mg/$m^3$ |
| 2 | 2017-2018 | 20.65 mg/$m^3$ | 12.76 mg/$m^3$ | 121.28 mg/$m^3$ |
| 3 | 2018-2019 | 18.96 mg/$m^3$ | 17.78 mg/$m^3$ | 118.76mg/$m^3$ |
| 4 | 2019-2020 | 14.71mg/$m^3$ | 13.41mg/$m^3$ | 93.30 mg/$m^3$ |
| 5 | 2020-2021 | 15.3 mg/$m^3$ | 13.80mg/$m^3$ | 56.81 mg/$m^3$ |
| 6 | 2021-2022 | 16.30mg/$m^3$ | 13.82mg/$m^3$ | 71.00mg/$m^3$ |



# Action plan to reduce pollution in area of Amravati Municipal Corporation.

1 Action plan to reduce air pollution in Transportation.

2 Action plan to reduce air pollution by Industry


3. Action plan to reduce air pollution produce by road dust.

3. Measures to abate dust from Construction and Demolition waste.

5. Strengthening of AAQ( Ambient Air Quality)

6. Performing public awareness activities to abate air pollution.

7. Measures to abate emissions frombiomass and garbage burning.

5. Measures to abate domestic Emissions.

9. Measures to abate Other Emissions.

| Sr. No | SECTOR | ACTION POINTS | Technology/ Infrastructure requirement (TR/IR)/ Methods (M)/ Outcome (OC) | Implementation period (Short – 6 months, Med-<2 yrs.), long – (>2 yrs.) | Implementation agency |
|---|---|---|---|---|---|
| 1 | **Transportation** | Addition of new buses to public transport system – Electric buses, Hybrid diesel buses, CNG buses | Introduction of Electric buses with proper support infrastructure (charging stations) OC—Public transportation in play will reduce the number of private vehicles plying in the city. This will reduce the total emission load form tail-pipe missions | Long | Maharashtra State Road Transport Corporation (MSRTC),<br><br>Private Bus Owners<br><br>Transport Department<br><br>AMC |
| | | | TR—Introduction of CNG buses OC—Public transportation in play will reduce the number of private vehicles plying in the city. This will reduce the total emission load form tail-pipe emissions | Long | |

| Sl. No | SECTOR | ACTION POINTS | Technology/ Infrastructure requirement (TR/IR)/ Methods (M)/ Outcome (OC) | Implementation period (Short – 6 months, Med- <2 yrs.), long – (>2 yrs.) | Implementation agency |
|---|---|---|---|---|---|
| 1 | **Transportation** | Check on more than 15 years diesel commercial vehicles | | Short | Transport Dept. Govt. of Maharashtra. |
| | | Restriction on plying and phasing out of 15 years old commercial diesel driven vehicles. | OC- Reduction In black carbon emissions<br>M-Policy reforms | Medium | |
| | | Ban on registration of diesel driven auto rickshaw's and tempo. | OC- Reduction In black carbon emissions<br>M-Policy reforms | Medium | |
| | | Complete ban on 2-stroke autos and replacing them with CNG based vehicle or EV | TR—E-rickshaws<br>OC—Reduction of emission load from autos | Medium | |
| | | | TR—CNG based autos<br>OC—Reduction of emission load from autos | Long | |
| | | 1) PUC check (every 6 months) and<br>2) Better PUC check infrastructure and management (Hon'ble Supreme court of India in W.P.(C) no 13029/1985 that pollution testing centres should be set up with in premises of all petrol pumps) | OC—With better PUC infrastructure and strict pollution norms emission from private and public vehicle will decrease | Medium | |

| Sl. No | SECTOR | ACTION POINTS | Technology/ Infrastructure requirement (TR/IR)/ Methods (M)/ Outcome (OC) | Implementation period (Short – 6 months, Med-<2 yrs.), long –(>2 yrs.) | Implementation agency |
|---|---|---|---|---|---|
| 1 | **Transportation** | Incentivising the use of cleaner fuels - electric vehicle and (CNG/LPG) for private vehicles | TR—Proper infrastructure to increase the adoption rate of cleaner fuels. OC—Reduction of emission load from private vehicles which switched to Electric/CNG/LPG based vehicle from Petrol/Diesel based vehicles | Medium | Transport Dept. Govt. of Maharashtra. |
| | | Installation of Diesel Particulate Filter (DPF) in all the diesel vehicles | M—Installing DPF filters to existing diesel vehicles OC— Reduction of emission load from diesel vehicles | Medium | Transport Dept. Govt. of Maharashtra. |
| | | Good traffic management including re-direction of traffic movement to avoid congestion. | OC- Reduction in Emission due non congestion TR- Policy Intervention | Medium | Traffic police |
| | | Demarcated lanes for E rickshaw's plying for public commuting | OC- Reduction in Emission due non congestion TR- Policy Intervention | Short | Traffic police |
| | | Development of Multi level parking | OC- Traffic congestion & road encroachment reduction, emission reduction M- Land space demarcation around public transportation hotspots | Long | Amravati Municipal Corporation |

| Sl. No | SECTOR | ACTION POINTS | Technology/ Infrastructure requirement (TR/IR)/ Methods (M)/ Outcome (OC) | Implementation period (Short – 6 months, Med- <2 yrs.), long – (>2 yrs.) | Implementation agency |
|---|---|---|---|---|---|
| 1 | **Transportation** | Monitoring of Vehicle fitness | OC- Reduction in emission<br>M- Audit systems | Short-Medium | Transport & Traffic dept. |
| | | Checking on fuel adulteration | OC- Reduction in emission<br>M- Audit systems | Short | District Administration & Oil companies |
| | | Periodic calibration test of vehicular emission monitoring instrument. | OC- Reduction in emission<br>M- Audit systems | Short | MPCB & Transport |
| | | Complete ban of carriage transport, heavy vehicles, during peak hours (8:00 - 11:00 am & 5:00 - 8 pm). (Arranging alternate routes to all carriage transports between) | OC—Reduction in peak hour traffic will facilitate faster vehicle movement and reduce tail- pipe emission | Short | Traffic police |
| | | Launch drive against any vehicle with visible smoke coming out of it and ensure strict compliances | | Short | Traffic police |
| | | Adapting new technologies for Brick kilns | Adapting Cleaner technology | Medium | Maharashtra State Pollution Control Board (MPCB) |

| Sl. No | SECTOR | ACTION POINTS | Technology/ Infrastructure requirement (TR/IR)/ Methods (M)/ Outcome (OC) | Implementation period (Short – 6 months, Med-<2 yrs.), long –(>2 yrs.) | Implementation agency |
|---|---|---|---|---|---|
| **2** | **Industry** | Random auditing for<br>1) Air pollution measures<br>2) Online reporting systems in the industries | Setting up of policies and Institutions that<br>1) Conduct Random auditing for air pollution control measures<br>2) Prevents opening up of new industries that fall under Red Category and Orange Category. | Medium | Maharashtra State Pollution Control Board (MPCB) |
| | | Introduction and shifting towards cleaner fuels in Induction and casting industries | M- Regulatory requirements | Medium | Dept. of Industries (Maharashtra) |
| | | Shifting of Polluting Industries | M- Regulatory requirements | Long | |
| | | Ban on Polluting Industries | M- Regulatory requirements | Short | |
| 3 | **Road Dust** | To take appropriate action to remove road dust/silt regularly by using mechanical sweepers | Mechanical sweeping<br>1) Identifying the road stretch with high silt content<br>2) Procuring the mechanical sweepers | Medium | Amravati Municipal Corporation , PWD Govt. of Maharashtra |
| | | End to end road pavement | OC—Reduction in re-suspension of dust<br>M—Improvement in Infrastructure | Medium | Amravati Municipal Corporation, PWD Govt. of Maharashtra |
| | | Creating green buffer along the roads. | | | |
| | | Urban Greening including vertical garden | | | |

| Sl. No | SECTOR | ACTION POINTS | Technology/ Infrastructure requirement (TR/IR)/ Methods (M)/ Outcome (OC) | Implementation period (Short – 6 months, Med-<2 yrs.), long – (>2 yrs.) | Implementation agency |
|---|---|---|---|---|---|
| 4 | Construction & Demolition | Construction materials should be transported in covered vehicles | OC—Reduction in emission load from dust | Short | Traffic Police |
| | | To mandate facility of tar road inside the construction site for movement of vehicles carrying construction material | OC—Reduction in emission load from dust | Medium | Amravati Municipal Corporation |
| | | Promotion of the use of prefabricated blocks for building construction | OC—Reduction in emission load from dust | Long | |
| | | Strict enforcement of CPCB guidelines for construction (use of green screens, side covering of digging sites, etc. | OC—Reduction in emission load from dust | Short | MPCB |
| | | Demolition & Construction Sites should be covered from all sides | OC- Reduction in Road Dust | Short | Amravati Municipal Corporation |
| | | Restriction on storage of construction materials along the road. | OC- reduction in road dust | Short | Amravati Municipal Corporation |
| 5 | Strengthening of AAQ monitoring | Installation of Two CAAQMS (Continuous Ambient Air Quality Monitoring Stations) at Amravati. . | OC- Proper Evidence on sectorial contributions with primary baseline surveys to update the emissions inventory.<br>OC- Efficient Monitoring | Short | MPCB |
| | | Source apportionment study (Dispersion + Receptor Modelling) | OC- identification of pollutants | Medium | MPCB |

| Sl. No | SECTOR | ACTION POINTS | Technology/Infrastructure requirement (TR/IR)/ Methods (M)/ Outcome (OC) | Implementation period (Short – 6 months, Med- <2 yrs.), long – (>2 yrs.) | Implementation agency |
|---|---|---|---|---|---|
| 6 | Public Awareness | Issue of advisory to public for prevention and control of air pollution | OC-Awareness and better implementation of policy | Short | MPCB & Dept. of Environment, forest & Climate Change |
| | | Launch public awareness programme campaign to control air pollution | OC—Through awareness, public participation for air pollution reduction will increase | Short | MPCB Amravati Municipal Corporation & Dept. of Environment, forest & Climate Change |
| 7 | Biomass & Garbage Burning | Check Stubble burning | OC- Reduction in emission from stubble burnings<br>M- Regulatory as well as Awareness Sensitization | Medium | Dept. Of Agriculture |
| | | Identify Garbage burning locations and strict enforcement of NGT (2018) rules regarding prohibition of garbage burning. | OC—Reduction in emission load from garbage burning | Short | Amravati Municipal Corporation |
| | | Promoting waste composting plants at city level | | | |
| | | Recycling plants for dry waste. | | | |
| | | Establishing waste to energy plants (WTE) | | | |

| Sr. No | SECTOR | ACTION POINTS | Technology/Infrastructure requirement (TR/IR)/ Methods (M)/ Outcome (OC) | Implementation period (Short – 6 months, Med-<2 yrs.), long – (>2 yrs.) | Implementation agency |
|---|---|---|---|---|---|
| 8 | Domestic | Increasing the LPG connections in low income strata. To mandate LPG/Bio gas in commercial eateries. | M—Increase in LPG connection OC—Reduction in emission load | Medium | Food And Civil Supplies Department |
| | | Ensuring uninterrupted electric supply with in the city. | OC—Reduction in total emission load from kerosene lamps (as power cut backup will not be required) | Medium | Maharashtra State Power Distribution Company Limited |
| | | Ensure easy availability of affordable cleaner cooking fuels (LPG in urban areas & biogas in rural areas) | M—Improvement in LPG/Bio gas infrastructure | Medium | Food & Civil supplies Dept. |
| 9 | Other | Compliance of guidelines on D.G. sets and action against violation | OC- Reduction in Black carbon<br>TR- DPF (Diesel Particulate Filters installation) | Short | MPCB & Amravati Municipal Corporation |
| | | Help line to oversee non compliances on aforesaid issues. | OC- Awareness and better implementation of policy | Short | MPCB & Amravati Municipal Corporation |
| | | Hospital incinerators for bio-medical incineration | OC—Reduction in bio-hazardous materials being dumped into the landfill | Short | MPCB & Amravati Municipal Corporation |

| Sl. No | SECTOR | ACTION POINTS | Technology/ Infrastructure requirement (TR/IR)/ Methods (M)/ Outcome (OC) | Implementation period (Short – 6 months, Med-<2 yrs.), long –(>2 yrs.) | Implementation agency |
|---|---|---|---|---|---|
| 9 | **Other** | City wise cap on coal use | OC-Reduction in coal consumption will reduce the emission load | Medium | MPCB<br><br>Food And Civil Supplies Department |
| | | Polluter pay principle | OC—Will act as a deterrent against polluters | Medium | MPCB |
| | | Transportation of municipal solid wastes, construction materials and debris in covered system. | OC- Minimization in road dust<br>M- Monitoring of Implementation | Short | Amravati Municipal Corporation |
| | | Immediate lifting of solid wastes generated from de-silting and cleaning of municipal drains for its disposal. | OC- Minimization of Road dust<br>M- Monitoring of Implementation | Short | Amravati Municipal Corporation |

## Action should be taken by Amravati Municipal Corporation to control air pollution:

- End To End Pavement.
- Construction of flyover.
- Planting of climbers near the pole of flyover
- Use of fogging machine to reduce air pollution
- Awareness about air pollution in people.
- Introduction of cleaner/alternate fuel like CNG, LPG.
- Promotion of public transport network
- Avoid burning of garbage in public area.
- Establish air filter at hotspot areas.

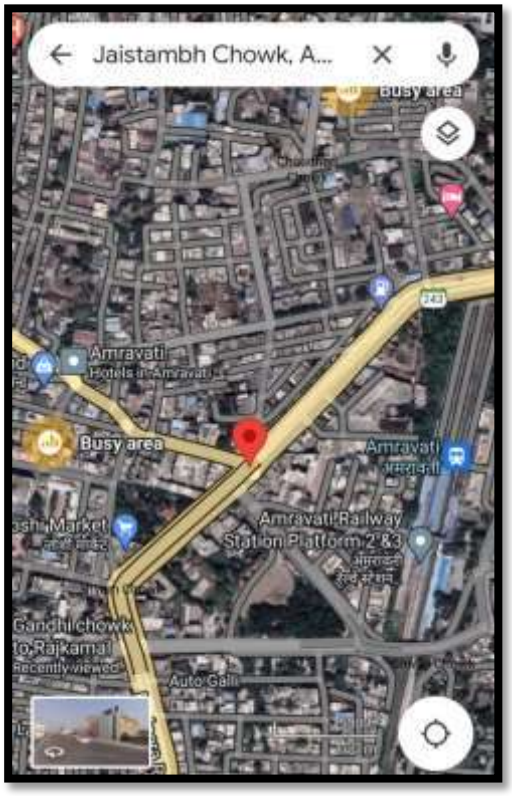
## Declared Hot spot of found in Amravati City to control air pollution:

- **Rajkamal Square**

| Sr.no | Hot Spot Area | Measure Project Taken | Status/Project |
|---|---|---|---|
| 1 | Rajkamal Square | Flyover | Completed |
| 2 | | End To End Pavement | Completed |
| 3 | | Climbers | Proposed |
| 4 | | Fogging Equipment | Proposed |

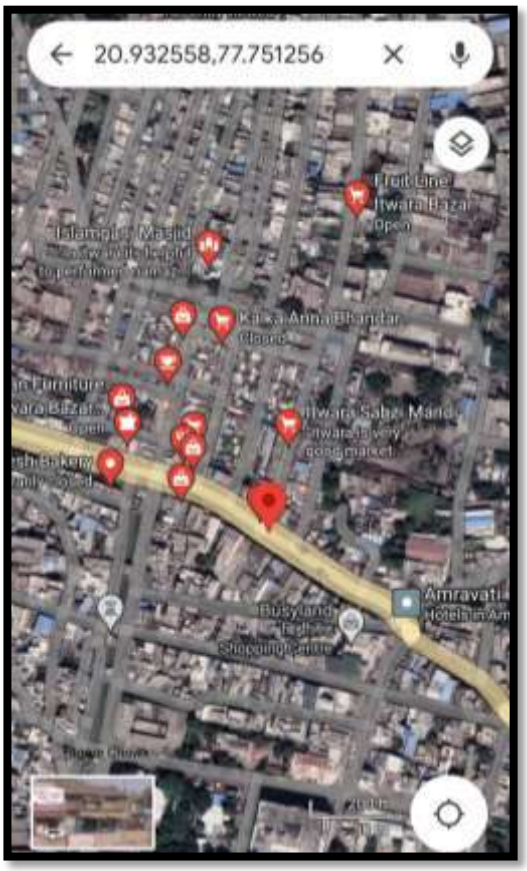
| Ambient Air Monitoring test report | | | | | | | |
|---|---|---|---|---|---|---|---|
| Location- Rajkamal square Amravati. | | | | | | | |
| Sr. No | Months | Parameters Result | | | | | |
| | | Sulphur Dioxide (SO2) | Oxides of Nitrogen (NO2) | Particulate Matter PM10 | Particulate Matter PM2.5 | Carbon Monoxide (CO) | Remark |
| Max limit- | | ≤ 80 | ≤ 80 | ≤ 100 | ≤ 60 | ≤ 04(1 hr.) | |
| 1 | Apr-22 | 10.23 | 12.48 | 72.12 | 37.69 | 1.08 | Complies |
| 2 | May-22 | 10.82 | 11.95 | 68.6 | 34.81 | 1.02 | Complies |
| 3 | Jun-22 | 11.53 | 12.79 | 69.81 | 30.09 | 0.92 | Complies |
| 4 | Jul-22 | 10.05 | 11.33 | 54.79 | 21.11 | 0.88 | Complies |
| 5 | Aug-22 | 10.73 | 11.87 | 44.51 | 17.91 | 0.62 | Complies |
| 6 | Sep-22 | 11.63 | 12.92 | 44.51 | 17.91 | 0.74 | Complies |
| 7 | Oct-22 | 11.88 | 12.73 | 62.27 | 23.82 | 0.82 | Complies |
| 8 | Nov-22 | 12.1 | 13.08 | 62.27 | 23.82 | 0.69 | Complies |
| 9 | Dec-22 | 12.3 | 13.14 | 60.12 | 26.08 | 0.58 | Complies |
| 10 | Jan-23 | 11.85 | 12.02 | 59.39 | 26.84 | 0.72 | Complies |
| 11 | Feb-23 | 11.23 | 12.45 | 61.09 | 24.65 | 0.65 | Complies |
| 12 | Mar-23 | 12.28 | 13.32 | 70.09 | 27.08 | 0.75 | Complies |

- **Jaistambh Square**




| Sr.no | Hot Spot Area | Measure Project Taken | Project Status |
|---|---|---|---|
| 1 | Jaistambh square | Flyover | Completed |
| 2 | | Fixing Flyover Block | Completed |
| 3 | | Climbers | Proposed |
| 4 | | Fogging Equipment | Proposed |

- **Itwara Square**




| Sr.no | Hot Spot Area | Measure Project Taken | Project Status |
|---|---|---|---|
| 1 | Itwara Square | Flyover | Work in Progress |
| 2 | | Fixing Flyover Block | Work in Progress |
| 3 | | Climbers | Proposed |
| 4 | | Fogging Equipment | Proposed |

## Itwara Estimated Cost

## (Flyover & Paving Block)

| Work | Location | Total Amount | Expected Date | Project Status |
|---|---|---|---|---|
| Flyover (3 Km) | Itwara | 45 Cr. | Dec - 2025 | Proposed |
| Paving Block (3 Km) | Itwara | (3 Km * 1.4 Cr) 4.2 Cr | Dec - 2025 | Proposed |
| **Total Estimated Amount :- 49.2 Cr.** | | | | |

## Below is the abstract and measurement of Climbers plantation near flyover poles in Amravati Municipal Corporation.

| Amravati Municipal Corporation | | | | | |
|---|---|---|---|---|---|
| **Name of Work - Establishing plants climbers near flyover poles of Rajkamal square to itwara square in Amravati Municipal Corporation** | | | | | |
| **1) Plant Climbers** | | | | | |
| **ABSTRACT** | | | | | |
| **Sr. No** | **Description Of Item** | **Qty.** | **Rate** | **Unit** | **Total Amount In Rs.** |
| 1 | Planting Climber in well drain soil in FRI planter at road side to reduce air pollution | 2 | 456.00 | Number | 912.00 |
| 2 | Potting mixture of well drain soil, FYM, fertilizers and micronutrient required for planting of climbers at road site near the flyover poles | 72 | 32.00 | Cubic Cm | 2304.00 |
| 3 | Climber plastic coated metal net of size 8 meter by 9 meter | 8*9 meter | 250/meter square | Number | 18000.00 |
| 4 | Indoor Outdoor FRP Planters – Light weight and Durable Matte Black Rectangle Flower Pot , Tree Planter for Plants Size 60.96X30.48X30.48CM | 1 | 7125.00 | Number | 7125.00 |
| 5 | Material cost required for establishment of 48 climbers near flyover pole side. | 48 | 28341.00 | Number | 1360368.00 |
| 6 | Labour cost required for planting of climbers in 48 planter | 10 | 576/labour/day | Day | 5760.00 |
| 7 | Labour cost required for fixing of metal for climbing of climbers in 48 planter | 10 | 576/labour/day | Day | 5760.00 |
| 8 | Cost of water tanker/ hour required for watering to climbers. | 365(3 hrs) | 844/hour | hour | 924180 |
| 9 | Labour cost required for watering of climbers in 48 planter for one year | 365 | 576/labour/day | Day | 210240.00 |
| 10 | Total Amount | | | | 2534649 |
| 11 | GST 18% | | | | 456236.82 |
| 12 | Labour insurance 1% | | | | 25346 |
| | **Grand Total** | | | | **3016231.82** |

| Amravati Municipal Corporation | | | | |
|---|---|---|---|---|
| **Name of Work - Establishing plants climbers near flyover poles of Rajkamal square to itwara square in Amravati Municipal Corporation** | | | | |
| **1) Plant Climbers** | | | | |
| **MEASUREMENT** | | | | |
| **Sr. No** | **Description of Item** | **Length** | **Height** | **Width** |
| 1 | Planting Climber in well drain soil in FRI planter at road side to reduce air pollution | 0 | 5 meter | 0 |
| 2 | Potting mixture of well drain soil, FYM, fertilizers and micronutrient required for planting of climbers at road site near the flyover poles | 60 | 40 | 30 |
| 3 | Climber plastic coated metal net of size 8 meter by 9 meter | 8 | 9 | 0 |
| 4 | Indoor Outdoor FRP Planters - Lightweight and Durable Matte Black Rectangle Flower Pot , Tree Planter for Plants Size 60X30.48X30.48CM | 60 | 48 | 30 |

## Below are some recommendation of climbers plantation near flyover poles in Amravati Municipal Corporation.

| Sr. No | Climbers Name | Botanical Name | Uses |
|---|---|---|---|
| 1 | Rangoon Creeper | Combretum indicum | Use for ornamental purpose, air purifier, and hardy climber |
| 2 | Flame Vine | Pyrostegia venusta | Use for ornamental purpose, air purifier, and hardy climber |
| 3 | Boganvellia | Bougainvillea glabra | Use for ornamental purpose, air purifier, and hardy climber |
| 4 | Jaint Money Plant | Epipremnum aureum | Air purifies and Acts as an Anti-radiator |

# Below is the location of Climbers plantation near flyover poles in Amravati Municipal Corporation.

| Amravati Municipal Corporation | | |
|---|---|---|
| **Name of Work - Establishing plants climbers near flyover poles from Rajapeth to Irvin square in Amravati Municipal Corporation** | | |
| **1) Plant Climbers** | | |
| **Sr. No** | **Location No.** | **Description** |
| 1 | Location 1: | Pole no .1 between Rajapeth and Irvin square |
| 2 | Location 2: | Pole no .2 between Rajapeth and Irvin square |
| 3 | Location 3: | Pole no .3 between Rajapeth and Irvin square |
| 4 | Location 4: | Pole no .4 between Rajapeth and Irvin square |
| 5 | Location 5: | Pole no .5 between Rajapeth and Irvin square |
| 6 | Location 6: | Pole no .6 between Rajapeth and Irvin square |
| 7 | Location 7: | Pole no .7 between Rajapeth and Irvin square |
| 8 | Location 8: | Pole no .8 between Rajapeth and Irvin square |
| 9 | Location 9: | Pole no .9 between Rajapeth and Irvin square |
| 10 | Location 10: | Pole no .10 between Rajapeth and Irvin square |
| 11 | Location 11: | Pole no .11 between Rajapeth and Irvin square |
| 12 | Location 12: | Pole no .12 between Rajapeth and Irvin square |
| 13 | Location13: | Pole no .13 between Rajapeth and Irvin square |
| 14 | Location 14: | Pole no .14 between Rajapeth and Irvin square |
| 15 | Location 15: | Pole no .15 between Rajapeth and Irvin square |
| 16 | Location 16: | Pole no .16 between Rajapeth and Irvin square |
| 17 | Location 17: | Pole no .17 between Rajapeth and Irvin square |
| 18 | Location 18: | Pole no .18 between Rajapeth and Irvin square |
| 19 | Location 19: | Pole no .19 between Rajapeth and Irvin square |
| 20 | Location 20: | Pole no .20 between Rajapeth and Irvin square |
| 21 | Location 21: | Pole no .21 between Rajapeth and Irvin square |
| 22 | Location 22: | Pole no .22 between Rajapeth and Irvin square |
| 23 | Location 23: | Pole no .23 between Rajapeth and Irvin square |
| 24 | Location 24: | Pole no .24 between Rajapeth and Irvin square |
| 25 | Location 25: | Pole no .25 between Rajapeth and Irvin square |
| 26 | Location 26: | Pole no .26 between Rajapeth and Irvin square |
| 27 | Location 27: | Pole no .27 between Rajapeth and Irvin square |
| 28 | Location 28: | Pole no 28 between Rajapeth and Irvin square |
| 29 | Location 29: | Pole no .29 between Rajapeth and Irvin square |
| 30 | Location 30: | Pole no .30 between Rajapeth and Irvin square |
| 31 | Location 31: | Pole no .31 between Rajapeth and Irvin square |
| 32 | Location 32: | Pole no .32 between Rajapeth and Irvin square |
| 33 | Location 33: | Pole no .33 between Rajapeth and Irvin square |
| 34 | Location 34: | Pole no .34 between Rajapeth and Irvin square |
| 35 | Location 35: | Pole no .35 between Rajapeth and Irvin square |

| Sr. No | Location No. | Description |
|---|---|---|
| 36 | Location 36: | Pole no .36 between Rajapeth and Irvin square |
| 37 | Location 37: | Pole no .37 between Rajapeth and Irvin square |
| 38 | Location 38: | Pole no .38 between Rajapeth and Irvin square |
| 39 | Location 39: | Pole no .39 between Rajapeth and Irvin square |
| 40 | Location 40: | Pole no .40 between Rajapeth and Irvin square |
| 41 | Location 41: | Pole no .41 between Rajapeth and Irvin square |
| 42 | Location 42: | Pole no .42 between Rajapeth and Irvin square |
| 43 | Location 43: | Pole no .43 between Rajapeth and Irvin square |
| 44 | Location 44: | Pole no .44 between Rajapeth and Irvin square |
| 45 | Location 45: | Pole no .45 between Rajapeth and Irvin square |
| 46 | Location 46: | Pole no .46 between Rajapeth and Irvin square |
| 47 | Location 47: | Pole no 47 between Rajapeth and Irvin square |
| 48 | Location 48: | Pole no .48 between Rajapeth and Irvin square |


H.M.D.A


GPS Map Camera
Amravati, Maharashtra, India
WQH3+76G, Amrawati Tahsil, Amravati, Maharashtra
444601, India
Lat 20.928402°
Long 77.753042°
24/05/23 08:34 PM GMT +05:30
Google


Amravati
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India
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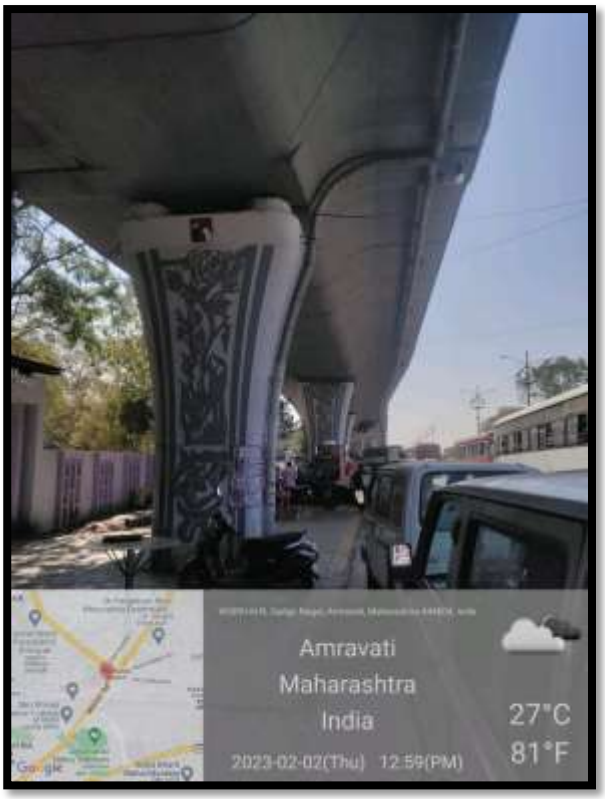
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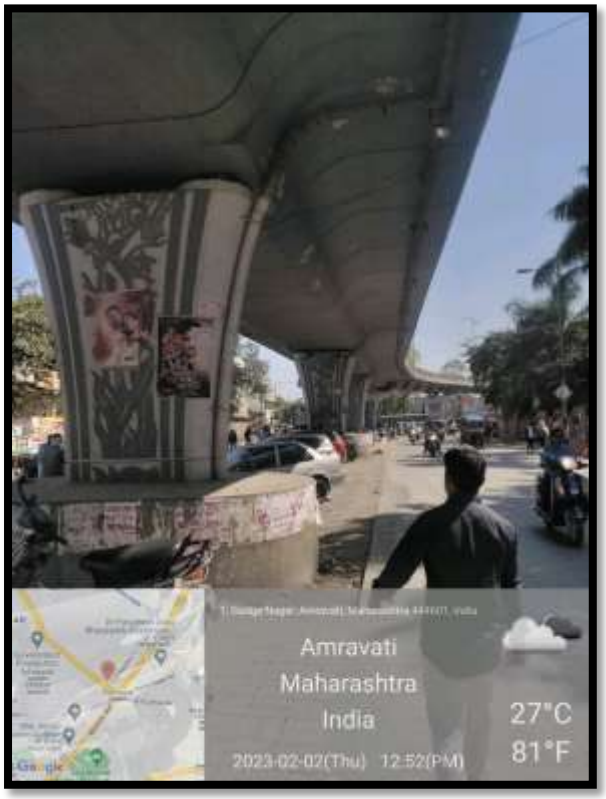
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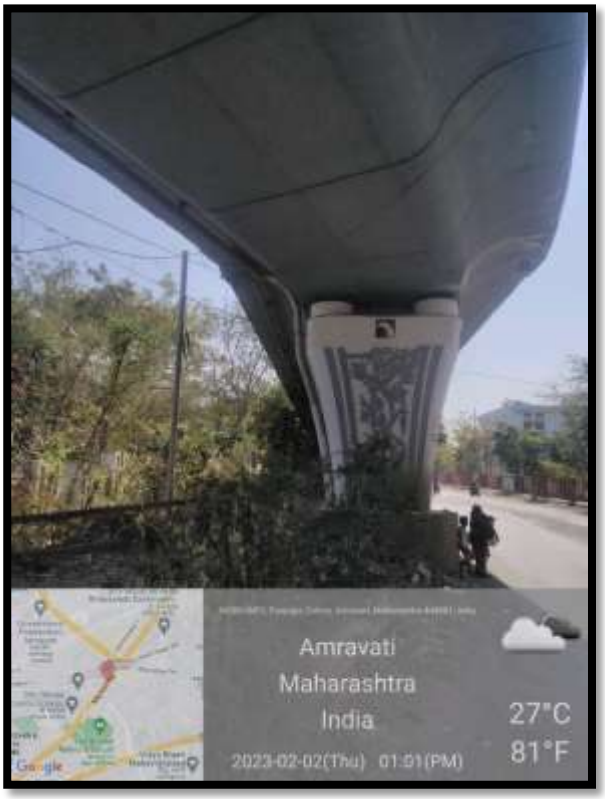
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Maharashtra
India
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81°F
2023-02-02(Thu) 01:01(PM)

## Below is the abstract and fogging machine near flyover poles in Amravati Municipal Corporation.

| Amravati Municipal Corporation | | | | | |
|---|---|---|---|---|---|
| **Name of Work - Use of fogging machine for Rajkamal square, Jaistambh Square & Itwara square in Amravati Municipal Corporation** | | | | | |
| **2) Use of fogging machine** | | | | | |
| **ABSTRACT** | | | | | |
| **Sr. No** | **Description of Item** | **Qty.** | **Rate** | **Unit** | **Total Amount In Rs.** |
| 1 | New Holland 3037 NX Agriculture Tractor, 3 Cylinder, 39 HP | 1 | 627838 | Number | 6,27838 |
| 2 | Fogging Machine with Cast Iron Water Tanker, Capacity: 3000 To 5000 Litre | 1 | 50,000 +95000 | Number | 145000 |
| 3 | Labour cost required for operating of fogging machine for one year | 365 | 576/ labour/ day | Day | 210240.00 |
| 4 | Cost of diesel for operating of fogging machine for one year | 730 | 97 | Litre | 70810.00 |
| | Total Amount | | | | 1053888 |
| | GST 18% | | | | 189699.84 |
| | Labour insurance 1% | | | | 10538 |
| | **Grand Total** | | | | **1254125.85** |

| Amravati Municipal Corporation | | |
|---|---|---|
| 1) Plant Climbers and fogging machine | | |
| ABSTRACT | | |
| **Sr. No** | **Description** | **Total Amount In Rs.** |
| 1 | Establishing plants climbers near flyover poles from Rajkamal square, Jaistambh Square & Itwara square in Amravati Municipal Corporation | 3016231.82 |
| 2 | Use of fogging machine Rajkamal square, Jaistambh Square & Itwara square in Amravati Municipal Corporation | 1254125.84 |
| | **Grand Total** | **4270357.66** |

# THANK YOU……