MAHARASHTRA METRO RAIL CORPORATION LIMITED

# UPDATION/REVISION OF
# COMPREHENSIVE MOBILITY PLAN (CMP)
# FOR PUNE METROPOLITAN REGION

## FINAL REPORT

OCTOBER 2024








ASSYSTEM INDIA LIMITED
(FORMERLY KNOWN AS L&T INFRASTRUCTURE ENGINEERING LIMITED)

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# ABBREVATION

| | |
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| AAI | Airport Authority of India |
| AMRUT | Atal Mission for Rejuvenation and Urban Transformation |
| ANPR | Automatic Number Plate Recognition |
| ATCC | Automatic Traffic Counter-cum-Classifier |
| ATCS | Adaptive Traffic Control System |
| AVL | Automatic Vehicle Location |
| BAU | Business as Usual |
| BMTC | Bengaluru Metropolitan Transport Corporation |
| BPO | Business Process Outsourcing |
| BRTS | Bus Rapid Transit System |
| CAGR | Compound Annual Growth Rate |
| CBD | Central Business District |
| CBS | City Bus System |
| CCC | Command Control Centre |
| CCTV | Closed Circuit Television |
| CDP | City Development Plan |
| CMP | Comprehensive Mobility Plan |
| CNG | Compressed Natural Gas |
| CoEP | College of Engineering Pune |
| CPCB | Central Pollution Control Board |
| CPI | Consumer Price Index |
| CR | Central Railways |
| CTTS | Comprehensive Traffic and Transportation Study |
| DBFOT | Design Build Finance Operate Transfer |
| DCB | Dehu Cantonment Board |
| DCPR | Development Control and Promotion Regulations |
| DCR | Development Control Rules |
| DDP | Draft Development Plan |
| DMRB | Design Manual for Roads & Bridges |
| DMS | Depot Management System |
| DP | Development Plan |
| DPR | Detailed Project Report |
| ECS | Equivalent Car Space |
| EIRR | Economic Internal Rate of Return |
| ELU | Existing Land Use |
| EMU | Electric Multiple Unit |
| ERP | Electronic Road Pricing |
| ESR | Environmental Status Report |

| | |
|---|---|
| ETC | Electric Toll Collection |
| EV | Electric Vehicles |
| FAME | Faster Adoption and Manufacturing of (Hybrid) and Electric Vehicles |
| FMCG | Fast-Moving Consumer goods |
| FSI | Floor Space Index |
| GC | Generalized Cost |
| GDP | Gross Domestic Product |
| GPRS | General Pocket Radio Service |
| GPS | Global Positioning System |
| GR | Government Resolution |
| GSDP | Gross State Domestic Product |
| GSVA | Gross State Value Added |
| GVW | Gross Vehicle Weight |
| HCMTR | High-Capacity Mass Transit Route |
| HHI/HIS | Household Interview Survey |
| ICD | Inland Container Depot |
| ICT | Information and Communication Technology |
| IPT | Intermediate Public Transport |
| IRC | Indian Road Congress |
| ISBT | Inter State Bus Terminal |
| IT | Information Technology |
| ITES | Information Technology Enabled Services |
| ITMS | Integrated Traffic Management System |
| ITS | Intelligent Transportation System |
| KCB | Khadki Cantonment Board |
| Kmph | Kilometre per hour |
| LA | Land Acquisition |
| LBT | Local Body tax |
| LC | Level Crossing |
| LCV | Light Commercial Vehicle |
| LOS | Level of Service |
| LRTS | Light Rail Transport System |
| LUX | Unit of Luminance |
| MADC | Maharashtra Airport Development Corporation |
| MAV | Multi Axle Vehicle |
| MDR | Major District Roads |
| MEMS | Micro Electro Mechanical Systems |
| MIDC | Maharashtra Industrial Development Corporation |
| MLCP | Multi-Level Car Parking |
| MMH | Multi Modal Hub |
| MMI | Multi Modal Integration |

| | |
|---|---|
| MMR | Mumbai Metropolitan Region |
| MOHUA | Ministry of Housing and Urban Affairs |
| MORTH | Ministry of Road Transport and Highways |
| MPCB | Maharashtra Pollution Control Board |
| MRIDC | Maharashtra Rail Infrastructure Development Corporation Ltd |
| MRTS | Mass Rapid Transit System |
| MRVC | Mumbai Rail Vikas Corporation |
| MSME | Micro Small Medium Enterprises |
| MSRDC | Maharashtra State Road Development Corporation |
| MSRTC | Maharashtra State Road Transport Corporation |
| MTDC | Maharashtra Tourism Development Corporation |
| NDA | National Defense Academy |
| NEMMP | National Electric Mobility Mission Plan |
| NGO | Non-Government Organization |
| NHAI | National Highways Authority of India |
| NMSH | National Mission on Sustainable Habitat |
| NMT | Non-Motorized Transport |
| NUTP | National Urban Transport Policy |
| O&M | Operation and Maintenance |
| OBU | On-Board Unit |
| OD | Origin Destination |
| ODR | Other District Roads |
| PBS | Public Bike Sharing |
| PCB | Pune Cantonment Board |
| PCMC | Pimpri-Chinchwad Municipal Corporation |
| PCTR | Per Capita Trip Rate |
| PCU | Passenger Car Unit |
| PHPDT | Peak Hour Peak Direction Traffic |
| PIS | Passenger Information System |
| PLU | Proposed Land Use |
| PM | Particulate Matter |
| PMC | Pune Municipal Corporation |
| PMPML | Pune Mahanagar Parivahan Mahamandal Limited |
| PMR | Pune Metropolitan Region |
| PMRDA | Pune Metropolitan Region Development Authority |
| PPH | Persons per Hectare |
| PPHPD | Passenger Per Hour Per Direction |
| PPP | Public Private Partnership |
| PSCDCL | Pune Smart City Development Corporation Limited |
| PUMTA | Pune Unified Metropolitan Transport Authority |
| PWD | Public Works Department |

| | |
|---|---|
| Q-GIS | Quantum Geographic Information System (Mapping Software) |
| RFID | Radio-Frequency Identification |
| RLDA | Rail Land Development Authority |
| RLVD | Red-Light Violation Detection |
| ROB | Rail Over Bridge |
| ROW | Right of Way |
| RSI | Road Side Interview |
| RSPM | Respirable Suspended Particulate Matter |
| RTO | Regional Transport Office |
| RuB | Rail Under Bridge |
| SATIS | Station Area Transport Improvement Scheme |
| SEZ | Special Economic Zone |
| SIDBI | Small Industries Development Bank of India |
| SLB | Service Level Benchmark |
| SLVD | Speed Limit Violation System |
| SPA | Special Planning Authority |
| SPM | Suspended Particulate Matter |
| SPV | Special Purpose Vehicles |
| SUT | Sustainable Urban Transport |
| TAZ | Traffic Analysis Zones |
| TDM | Travel Demand Model |
| TDR | Transferrable Development Rights |
| TIDS | Traffic Incident Detection System |
| TIMS | Traffic Information Management System |
| TOD | Transit Oriented Development |
| TPS | Town Planning Scheme |
| TSM | Transportation Systems Management |
| TVC | Traffic Volume Count |
| TVU | Train Vehicle Unit |
| UDCPR | Unified Development Control and Promotion Regulations |
| ULB | Urban Local Bodies |
| UMTA | Unified Metropolitan Transport Authority |
| URDPFI | Urban & Regional Development Plans Formulation & Implementation |
| UTMC | Urban Traffic Management and Control |
| V/C | Volume/Capacity |
| VGF | Viability Gap Funding |
| VMS | Variable Message Sign |
| VOC | Vehicle Operation Cost |
| VOT | Value of Travel Time |
| WFPR | Work Force Participation Rate |

*Executive Summary*

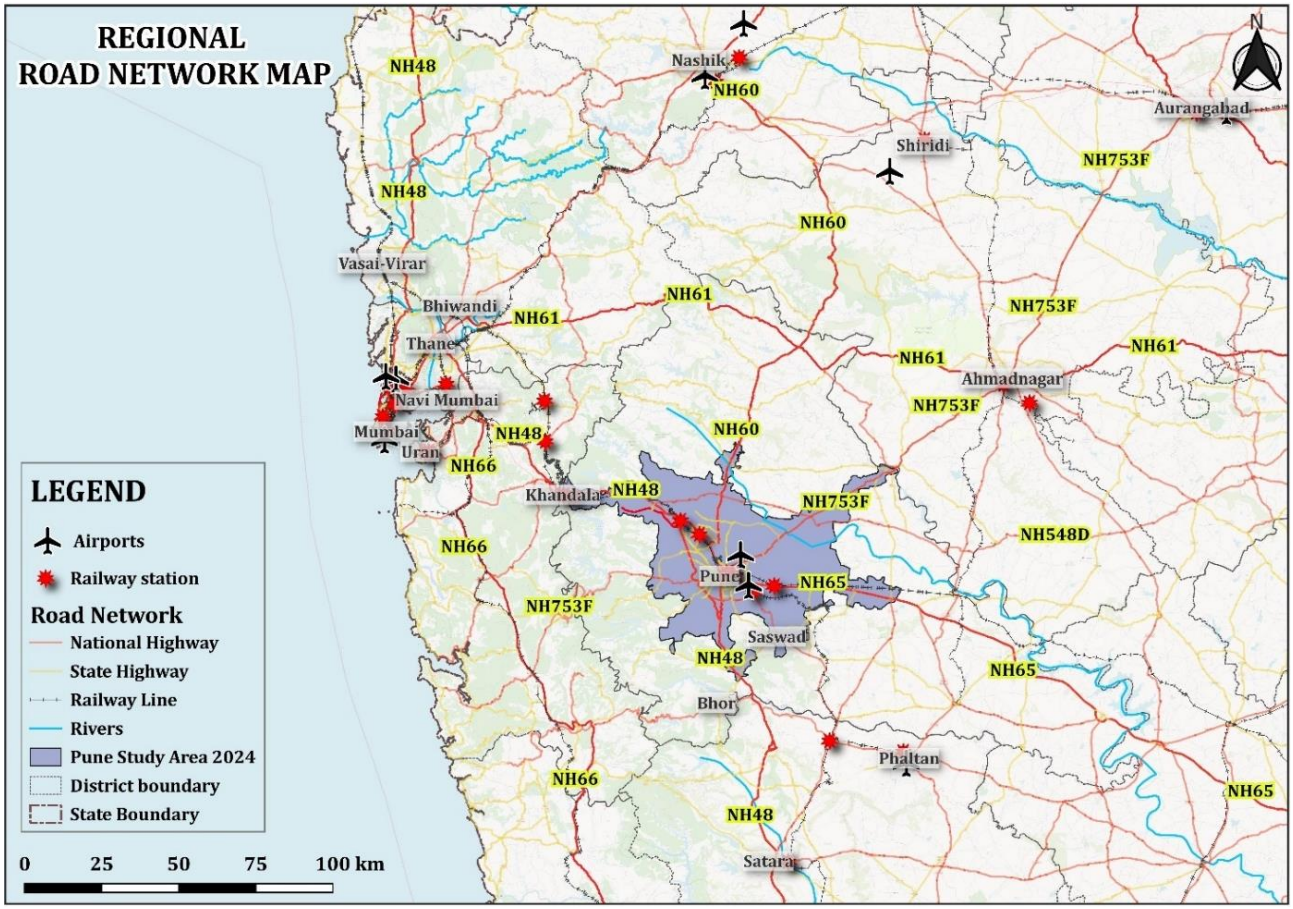
# EXECUTIVE SUMMARY

## E-1. BACKGROUND

**Pune Metropolitan Region (PMR)** is a rapidly growing metropolitan region in India. It is located about 150 km to the south-east of Mumbai. PMR is the largest metropolitan region in terms of area in Maharashtra and fourth largest metropolitan region in India after Delhi, Bengaluru and Hyderabad. PMR boasts a diverse economy with established automobile, IT & ITES, biotech, and pharmaceutical industries. PMR contributes approximately 75% of the GDP of Pune district. Pune is a major IT hub contributing to 45% of the software exports of the state. It is also a major educational and cultural hub of the state. Looking to the future, PMR is well-positioned for continued economic growth due to its proximity to Mumbai, salubrious climate, abundant water resources, large talent pool, and head start in all sectors of economy.

To support this growth, significant infrastructure initiatives are underway, including major transportation projects like the Metro Rail, Inner Ring Road by PMRDA, Outer Ring Road by MSRDC, Smart City Project, Multi-Modal Hubs, redevelopment of Suburban Rail Stations, Greenfield Airport etc., The regional context of Pune, along with its neighbouring districts, is illustrated in **Figure 1.**

**Figure 1 | Regional Setting of Study Area**



Rapid urbanization and economic growth in PMR have led to significant challenges, including traffic congestion, increased reliance on private vehicles, decline in public transport usage, rising vehicular pollution, and road safety concerns. Tackling these issues demands a holistic, multi-modal and sustainable approach to transport planning and governance.

To address the growing travel demand of the current and future population, PMRDA had prepared a Comprehensive Mobility Plan (CMP) in 2018, covering an area of 2,172 sq. km. However, as per Ministry of Housing and Urban Affairs (MoHUA) guidelines, the CMP must be updated every five years. Therefore, the current study is undertaken to update the CMP, 2018 to reflect recent urban transport dynamics and the implementation status of various proposals.

## E-2. STUDY AREA

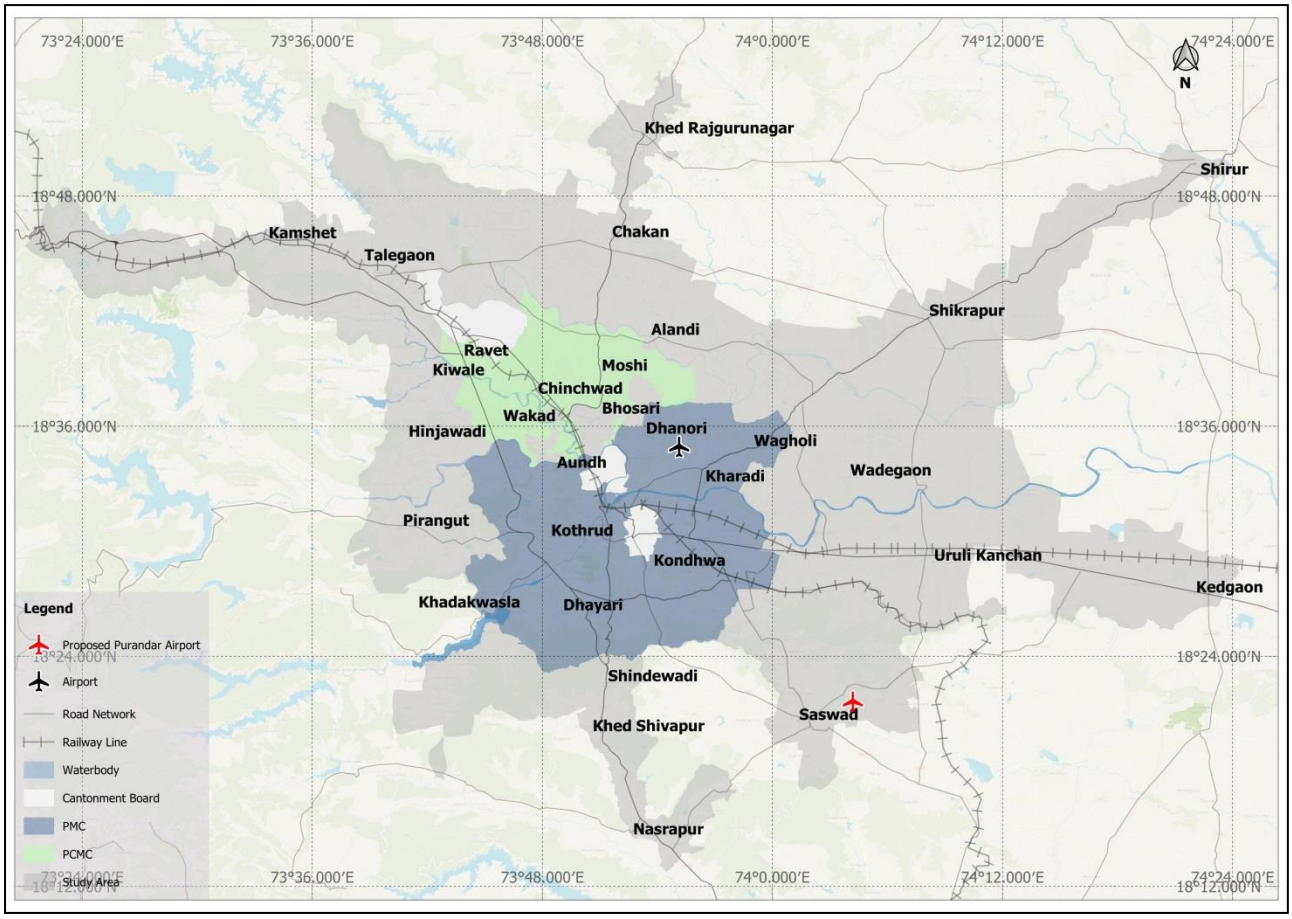
The area considered for the current study is about 2,550 sq.km which comprises of urbanized and future growth centers of Pune Metropolitan Region. This area encompasses two Municipal Corporations, i.e. Pune and Pimpri-Chinchwad, along with 3 Cantonment Areas (Pune, Khadki, and Dehu), 7 Municipal Councils (Alandi, Shirur, Khed, Chakan, Talegaon, Lonavala and Saswad), and 233 villages designated as Urban Growth Centers, existing and upcoming industrial nodes within the Pune Metropolitan Region. The broad breakup of the Study Area by administrative units is presented in **Table 1.**

**Table 1 | Administrative Units in the Study Area**

| No. | Name of Administrative Units | Area in Sq.km |
|---|---|---|
| **A** | **Urban Centre's in PMR** | |
| 1 | Pune Municipal Corporation | 519 |
| 2 | Pimpri Chinchwad Municipal Corporation | 181 |
| 3 | Municipal Councils | 95 |
| 4 | Cantonment Boards | 63 |
| 5 | Urban Growth Centers | 96 |
| | **Sub-Total (A)** | **954** |
| **B** | **Special Planning Area** | |
| 1 | MADC | 9 |
| 2 | MIDC | 98 |
| | **Sub-Total (B)** | **108** |
| **C** | **Villages Under Urban Growth Centers** | |
| | **Sub-Total (C)** | **1483** |
| | **Grand Total (A+B+C)** | **2545** |
| | **Say** | **~2550** |

The map of the Study Area is presented in **Figure 2.**

**Figure 2 | Map of Study Area**




## E-3. POPULATION AND EMPLOYMENT

The population and employment of the Study Area by administrative units is presented in **Table 2.**

**Table 2 | Population and Employment of the Study Area**

| Administrative Unit | Area (Sq.km) | Population (in Lakhs) | | Employment (in Lakhs) | |
|---|---|---|---|---|---|
| | | 2011* | 2024** | 2011 | 2024 |
| PMC | 519 | 35.53 | 46.27 | 14.56 | 19.99 |
| PCMC | 181 | 17.27 | 33.7 | 6.76 | 14.83 |
| Cantonment | 64 | 1.99 | 1.99 | 0.80 | 0.80 |
| Rest of PMR | 1,781 | 12.07 | 21.8 | 5.42 | 10.08 |
| **Total** | **~2550** | **66.87** | **103.78** | **27.54** | **45.69** |

** Based on 2011 Census*
*** Current Study estimates*

## E-4. REGIONAL CONNECTIVITY

The Study Area boasts strong regional connectivity through road, rail, and air transport. However, these are currently saturated and require capacity enhancements. Major roadways connecting the Study Area include the Mumbai-Bengaluru National Highway (NH 48), Pune-Solapur-Hyderabad National Highway (NH 65), Pune-Nashik National Highway (NH 60), Mumbai-Pune Expressway, Pune-Ahmednagar-Aurangabad Highway (NH 753F), Talegaon-Chakan Highway (NH 548D), Pune-Alandi State Highway, and Pune-Saswad-Pandharpur State Highway.

The railway network falls under the Pune Division of Central Railways. The rail routes in the Study Area include Mumbai-Pune Line, Pune-Daund Line, Pune-Solapur Line, and Pune-Kolhapur Line. Notably, the main line from Lonavala to Pune (60 km) is saturated and is proposed for quadrupling by Central Railways to accommodate increasing demand. This line also serves suburban rail passengers, sharing tracks with regional services. Currently, the suburban rail carries around 50,000 passengers daily (2022-23). Several regional rail lines, such as Pune to Satara and Pune to Nashik, are anticipated to be implemented in the near future.

Pune International Airport is located at Lohegaon around 10 km from the city centre. It is operated by the Airports Authority of India (AAI). AAI shares the runway with the Indian Air Force base. In addition to domestic flights to all major Indian cities, the airport serves international direct flights to Dubai and Singapore etc. In 2022-23, the airport handled about 8 million passengers and 39,369 tonnes of cargo. Since the Pune Airport has reached its capacity, a green field international airport has been proposed at Purandar, near Saswad town, about 40 km south of Pune.

## E-5. EXISTING TRAFFIC & TRANSPORTATION CHALLENGES

Some of the major traffic and transportation challenges in the Study Area include:

- **Inadequate Road Network**: There is a lack of a well-defined road hierarchy, insufficient capacity on radial roads, and an absence of ring roads.
- **Steep Increase in Private Vehicles**: As of March 2024, there are 72 lakhs registered vehicles in the Study Area, up from 51.88 lakhs in March 2018. This increase is contributing to rising parking issues, congestion, and pollution.
- **Low Share of Public Transport**: Public transport accounts for only 13% of total transport, far below the desirable 75% for cities with populations over 9 million. This share has remained stagnant since CMP 2018 study.
- **Insufficient Suburban Rail Capacity**: The suburban rail line from Pune to Lonavala shares tracks with long-distance regional rail and is currently saturated, necessitating capacity enhancements.
- **Vehicular Pollution**: Levels of $PM_{2.5}$ exceed permissible limits at Lohegaon, Katraj, Hadapsar, Pashan while $PM_{10}$, CO and $NO_x$ levels remained within acceptable range at all locations.
- **Road Accidents**: In 2023, there were approximately 1,232 accidents, including 334 fatalities. The number of fatalities has risen from 206 in 2019 to 351 in 2023.

## EXISTING TRAFFIC & TRANSPORTATION SCENARIO

In order to assess the existing travel characteristics, comprehensive traffic surveys have been carried out and the details are presented in **Table 3.**

**Table 3 | Details of the Primary Surveys**

| No. | Type of Survey | Quantity/ Details | Survey Duration |
|---|---|---|---|
| | **Past Traffic Survey** | | |
| 1 | Classified Traffic Volume Counts at Inner Cordon Locations | 18 No. | 24 hours |
| 2 | Classified Traffic Volume Counts at Outer Cordon Locations | 12 No. | 24 hours |
| 3 | Classified Traffic Volume Counts at Screen-lines | 63 No. | 24/16/8 hours |
| 4 | Classified Traffic Volume Counts at Mid-blocks | 18 No. | 24/16 hours |
| 5 | Turning Volume Counts at Intersections | 57 No. | 24/16 hours |
| 6 | Vehicle Occupancy Surveys | 59 No. | 16 hours |
| | **Primary Surveys carried out for Updation of CMP** | | |
| 7 | Pedestrian Volume Count Survey | 20 No. | 8 hours |
| 8 | Parking Surveys | 15 No. | 12 hours |
| 9 | Passenger Terminal Survey | 5 No. | 12 hours |
| 10 | Household Interview Survey | 1% of households | - |
| 11 | IPT User and IPT Operator Survey | 300 Samples | - |
| 12 | NMT Opinion Survey | 200 Samples | - |
| 13 | Vehicle Operator Survey | 150 Samples | - |
| 14 | Goods Focal Point Survey | 150 Samples | - |
| 15 | Speed and Delay Survey | 517 km | - |
| 16 | Light Meter Survey | 166 km | - |
| 17 | Updation of Road Network Inventory | 6,547 km | - |

Further, Secondary data was collected from PMC, PCMC, PMRDA, Maha Metro, PMPML, PSCDCL, Traffic Police, RTO, MSRTC, MSRDC, AAI, Directorate of Economics & Statistics, Govt. of Maharashtra, Central Railways, MIDC, MADC, Hinjawadi Industrial Association, etc.

## TRAFFIC & TRANSPORTATION CHARACTERISTICS

### INNER CORDON SURVEYS

- About 14.49 lakh vehicles enter and leave the study area every day out of which 7.97 lakh vehicles are inbound traffic (External to Internal) and 6.52 lakh vehicles are outbound movement (Internal to External).
- Percentage of peak hour traffic ranges from 6.1% to 9.5% and average of 7.8%.

## OUTER CORDON SURVEYS

- About 5.14 lakh vehicles enter and leave the outer cordons every day out of which 2.60 lakh vehicles are the inbound traffic (External to Internal) and 2.54 lakh vehicles are outbound movement (Internal to External).
- The percentage of traffic in peak hours ranges between 5.5% and 9.9% with an average of 7.06%.

## SCREEN LINE SURVEYS

- About 36.27 lakh vehicles (34.85 lakhs PCUs) cross the North- South Screen-line locations and 15.99 lakh vehicles (15.27 lakh PCUs) cross the East- West Screen-line locations every day.
- Peak hour share varies from 6.8% to 17.4% and average peak hour share is 9.7%.

## SOCIO-ECONOMIC & TRAVEL CHARACTERISTICS

The average household sizes for the Study Area based on the Household Interview Surveys are presented in **Table 4**.

**Table 4 | House Hold Size in the Study area and comparison with Census 2011 data**

| Items | As per Household Survey (2024) | | As per Census (2011) | |
|---|---|---|---|---|
| | PMC | PCMC | PMC | PCMC |
| Average Household size | 3.43 | 3.41 | 4.2 | 4.0 |
| Sex Ratio | 932 | 888 | 948 | 833 |
| Employed person per HH | 1.28 | 1.21 | 1.62 | 1.58 |

Average household income is Rs. 35,523 in PMC and Rs. 31,587 in PCMC.

Two-wheelers represent a significant share of vehicle ownership: 65.9% in PMC, 74.5% in PCMC, and 69.0% across the entire study area. Both car and two-wheeler ownership stands at 8.5% in PMC, 9.3% in PCMC, and 9.0% in the overall study area.

Average household expenditure on travel is approximately Rs. 1,331 in PMC, Rs. 1,014 in PCMC, and Rs. 1,194 in the overall study area.

The jurisdiction wise forecasts of Work Force Participation Rate (WFPR) in Study Area are presented in **Table 5**.

**Table 5 | Jurisdiction wise forecast of WFPR in Study Area**

| No. | Jurisdiction | 2011 | 2024 | 2034 | 2044 | 2054 |
|---|---|---|---|---|---|---|
| 1 | PMC | 41% | 43% | 43% | 44% | 45% |
| 2 | PCMC | 39% | 44% | 44% | 45% | 47% |
| 3 | Cantonment | 40% | 40% | 43% | 45% | 45% |
| 4 | Municipal Councils | 38% | 38% | 41% | 43% | 44% |
| 5 | Rest of PMR | 47% | 48% | 51% | 52% | 52% |
| | **Overall Study Area** | **41%** | **44%** | **45%** | **46%** | **47%** |

The overall Per Capita Trip Rates (PCTR) in the Study Area are presented in **Table 6**.

**Table 6 | Per Capital Trip Rate (PCTR) in the Study Area**

| Per Capita Trip Rate (PCTR) | PMC | PCMC | Rest of PMR | Overall Study Area |
|---|---|---|---|---|
| All Modes (including walk & cycle) | 1.30 | 1.17 | 1.47 | 1.32 |
| Motorized modes (excluding walk & cycle) | 0.95 | 0.87 | 0.85 | 0.90 |

The mode share observed in the study area is presented in **Table 7**.

**Table 7 | Mode Wise Distribution of Trips**

| Mode of Travel | Total Trips | | | Motorized Trips | | |
|---|---|---|---|---|---|---|
| | PMC | PCMC | Study Area | PMC | PCMC | Study Area |
| Walk | 26.75% | 25.29% | 31.07% | - | - | - |
| Cycle | 0.37% | 0.80% | 0.78% | - | - | - |
| Two-wheeler | 35.11% | 37.34% | 36.04% | 48.17% | 50.52% | 52.89% |
| IPT | 18.10% | 13.77% | 12.95% | 24.83% | 18.63% | 19.00% |
| Car/Jeep/Van | 10.01% | 12.08% | 11.66% | 13.74% | 16.34% | 17.11% |
| Bus | 8.47% | 9.42% | 7.02% | 11.62% | 12.75% | 10.30% |
| Company/ School Bus | 1.16% | 1.30% | 0.46% | 1.59% | 1.76% | 0.67% |
| Metro | 0.04% | 0.00% | 0.02% | 0.05% | 0.00% | 0.03% |
| Local Train | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| **Total** | **100.00%** | **100.00%** | **100.00%** | **100.00%** | **100.00%** | **100.00%** |

The distributions of trips by trip purposes are presented in **Table 8**.

**Table 8 | Distribution of Trips by Purpose**

| No. | Purpose | PMC | PCMC | Rest of PMR | Overall Study Area |
|---|---|---|---|---|---|
| 1 | Work / Business | 77.0% | 67.5% | 51.3% | 69.5% |
| 2 | Education | 16.6% | 21.0% | 26.3% | 18.9% |
| 3 | Shopping | 4.1% | 8.0% | 14.0% | 7.1% |
| 4 | Social/ Religious/ Recreation | 0.8% | 0.8% | 3.1% | 1.6% |
| 5 | Health/Hospital | 0.2% | 0.2% | 1.5% | 0.8% |
| 6 | Tourism | 0.1% | 1.1% | 0.3% | 0.1% |
| 7 | Other Purpose | 1.2% | 1.4% | 3.5% | 2.0% |
| | **Total** | **100.0%** | **100.0%** | **100.0%** | **100.0%** |

The mode wise average trip lengths for motorized and non-motorized modes are presented in **Table 9**.

**Table 9 | Mode wise average Trip Length (km)**

| Mode | PMC | PCMC | Rest of PMR | Overall Study Area |
|---|---|---|---|---|
| Walk | 0.44 | 0.33 | 0.30 | 0.34 |
| Cycle | 1.48 | 0.44 | 1.05 | 0.99 |
| Two-Wheeler | 6.35 | 8.16 | 8.10 | 7.54 |
| Auto | 5.40 | 4.55 | 4.09 | 4.68 |
| Car/ Jeep/ Van | 11.48 | 9.56 | 5.10 | 8.54 |
| Shared Auto | 2.39 | 2.98 | 2.30 | 2.56 |
| Taxi/Ola/Uber | 8.37 | 12.77 | 13.20 | 11.43 |
| PMPML Bus | 7.04 | 8.06 | 6.10 | 6.25 |
| Company/ School Bus | 4.38 | 9.50 | 3.20 | 5.50 |
| State Bus | 12.95 | 7.29 | 6.70 | 7.24 |
| Private Bus | 5.14 | 3.91 | 3.20 | 4.08 |
| **Average Trip Length (Non-Motorized)** | **1.08** | **0.43** | **0.68** | **0.73** |
| **Average Trip Length (Motorized)** | **6.79** | **7.36** | **5.78** | **5.94** |
| **Average Trip Length (Motorised & Non- motorized)** | **5.84** | **6.14** | **4.85** | **5.38** |

## E-6. SERVICE LEVEL BENCHMARKS

The summary of service level benchmarks for the Study Area are presented in **Table 10.**

**Table 10 | Summary of Service Level Benchmarks**

| No. | Benchmark | LOS | Inference as per MoUD Guidelines |
|---|---|---|---|
| 1 | Public Transport Facilities | **12** | The city has public transport system which may need considerable improvements in terms of supply of buses/coaches and coverage as many parts of the city are not served by it. The frequency of services available may need improvements. The system provided is comfortable |
| 2 | Pedestrian Infrastructure facilities | **7** | The city has pedestrian facilities which may need considerable improvements in terms of improvement in intersections, Footpaths, and street lighting as some parts of the city are not served by it. The footpath available need improvements. The system provided is comfortable and sustainable. |
| 3 | Non-Motorized Transport Facilities | **9** | The city has NMT Facilities which may need considerable improvements as many parts of the city are not served by it. |
| 4 | Level of Usage of ITS Facilities | **16** | The city lacks adequate ITS facilities. |
| 5 | Travel Speed (Motorized and Mass transit) | **4** | Small increases in traffic causing substantial increase in approach delays and hence, decrease in arterial speed. |
| 6 | Availability of Parking Spaces | **6** | Paid Parking Space provided in the city need to be improved upon and to cater to the demand some differential parking rates for the CBD have been adopted. The city authorities need to initiate considerable improvement measures. |
| 7 | Road Safety | **6** | Need considerable improvements in Road design and available road infrastructure, traffic management and in other such reasons which significantly contribute to road safety |
| 8 | Pollution Levels | **8** | Need some improvements in emission standards, checking pollution etc. |
| 9 | Integrated Land use Transport System | **19** | Faint Coherence between city structure and public transport system |
| 10 | Sustainability of Public Transport | **7** | The public transport of a city is financially sustainable but needs some improvements. |

# E-7. REGIONAL GROWTH

## GROWTH DIRECTIONS

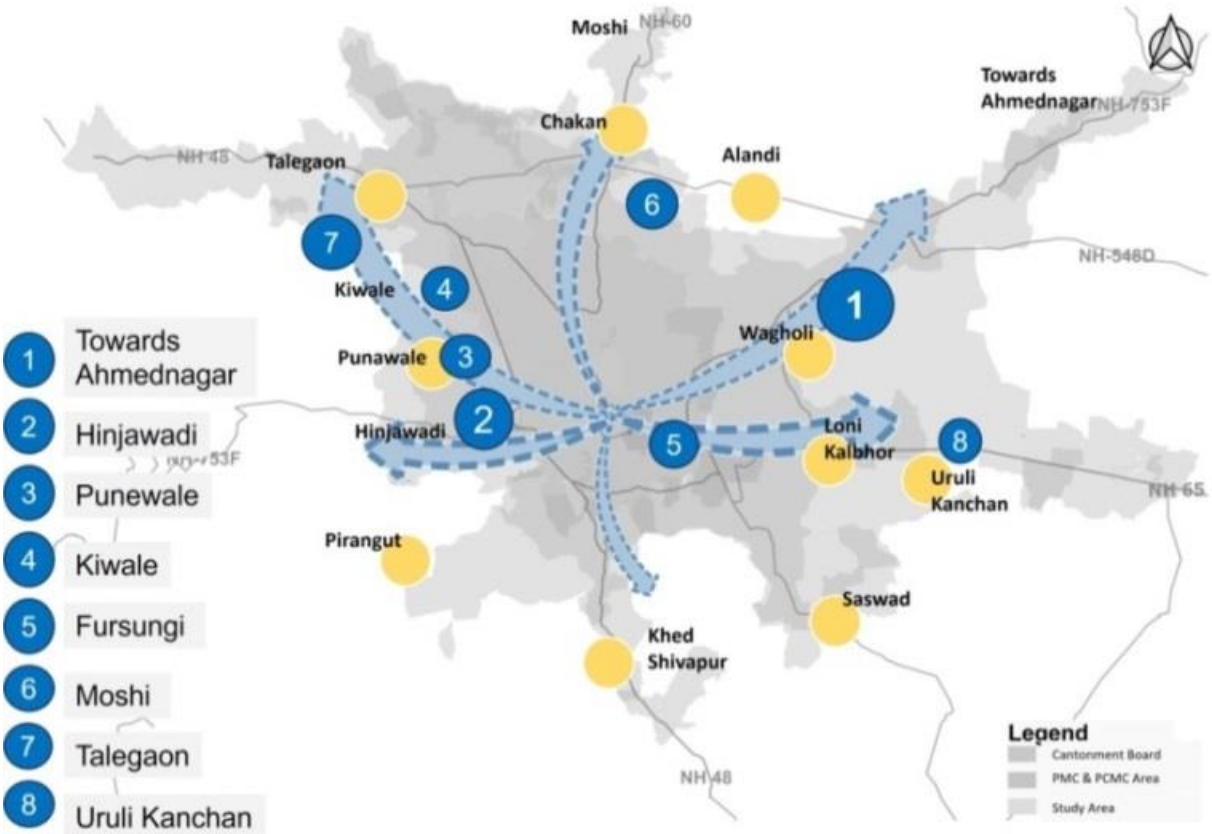
- According to the Pune Development Plan, the growth direction of PMC is envisioned towards Hinjawadi, PCMC, and Hadapsar, with growth corridors primarily extending north, northwest, and east. The southern part of PMC features hilly areas that are less favorable for development.
- Areas such as Undri, Pisola, Handewadi, Manterwadi, and Mohammedwadi along the Eastern bypass, as well as Viman Nagar, Baner-Balewadi, Bavdhan, and Tathawade, have

recently developed and hold potential for further growth.

- PCMC has significant capacity for future population growth due to the availability of large tracts of developable land. Wakad, Punewale, and Kiwale on the western side, along with Charoli, Moshi, Chimbali, and Talwade on the eastern side, are promising areas for development. The road from Charoli to Lohegaon is expected to enhance development around the airport.
- Additionally, industries in the core areas of PCMC may relocate to other parts of PMR in the future. Existing industrial land in these core areas is likely to be converted to mixed-use, which is anticipated to boost population and employment in PCMC.
- The proposed airport at Purandar, near Saswad town, is expected to stimulate development on available lands in the southern direction.

Based on the Development Plan and current trends of development, growth direction of the Study Area is assessed and illustrated in **Figure 3.**

**Figure 3 | Growth Directions of Study Area**




## E-8. POPULATION & EMPLOYMENT FORECAST

The population forecast is carried out by analyzing past trends, growth direction, land availability for development, accessibility, and existing and proposed land use as outlined in the Development Plan. The population forecast is presented in **Table 11.**

**Table 11 | Population Forecast**

| No. | Jurisdiction | 2011 | 2024 | 2034 | 2044 | 2054 |
|---|---|---|---|---|---|---|
| 1 | PMC | 35,53,312 | 46,27,888 | 54,25,983 | 63,27,293 | 71,81,475 |
| 2 | PCMC | 17,27,692 | 33,69,795 | 48,48,041 | 66,05,494 | 77,19,590 |
| 3 | Cantonment | 1,99,426 | 1,99,426 | 2,19,426 | 2,29,426 | 2,39,426 |
| 4 | Municipal Councils | 2,77,969 | 3,90,772 | 4,92,998 | 6,14,775 | 7,72,942 |
| 5 | Rest of PMR | 9,29,051 | 17,90,123 | 23,68,778 | 28,92,064 | 33,60,842 |
| | **Total** | **66,87,450** | **1,03,78,004** | **1,33,55,226** | **1,66,69,052** | **1,92,74,274** |

Employment data has been compiled from census information, household surveys, and industrial employment statistics provided by the Directorate of Industries in Pune. The forecast incorporates current and proposed land use, as well as insights from discussions with various agencies, including PMC, PCMC, MIDC and the Hinjawadi Industrial Association, along with the Workforce Participation Ratio (WFPR). The resulting employment forecast is presented in **Table 12.**

**Table 12 | Employment Forecast**

| No. | Jurisdiction | 2011 | 2024 | 2034 | 2044 | 2054 |
|---|---|---|---|---|---|---|
| 1 | PMC | 14,56,858 | 19,98,692 | 23,58,946 | 28,15,266 | 32,66,853 |
| 2 | PCMC | 6,76,800 | 14,82,710 | 21,33,138 | 29,72,473 | 36,28,208 |
| 3 | Cantonment | 79,770 | 79,770 | 94,353 | 1,03,242 | 1,07,742 |
| 4 | Municipal Councils | 1,05,628 | 1,48,494 | 2,02,129 | 2,64,353 | 3,40,094 |
| 5 | Rest of PMR | 4,36,654 | 8,59,259 | 12,08,077 | 15,03,874 | 17,47,638 |
| | **Total** | **27,52,710** | **45,68,927** | **59,96,643** | **76,71,889** | **91,06,360** |

# E-9. VISION, GOALS AND STRATEGIES FOR PMR

## VISION

***To establish Pune as "India's most liveable habitat, characterized by a people centric sustainable environment with seamlessly integrated land-use and transportation system that prioritize convenient mobility, maximum accessibility & users safety".***

## GOALS

The Goals identified for the Comprehensive Mobility Plan are presented below.

**Table 13 | Goals for Comprehensive Mobility Plan**

| Goal | Description | Target |
|---|---|---|
| **Mode share** | Increasing the public transport share from the existing 13% to 50% | 30 years |
| | Walking and Cycling should account for 35% of all person trips* | 10 years |
| **Accessibility to Public Transport**<br>**Jobs near transit** | At least 80% of the population in the city should be within a walkable distance of 500m from a basic public transport service with a frequency of at least 12 buses/ hour. | 5 years |
| | At least 50% of the population in the city should be within a walkable distance of 500m from a Mass Rapid Transit network. | 10 years |
| | At least 60% of jobs in the city should be within a walkable distance of 500m from a basic public transport service with a frequency of at least 12 buses/ hour. | 5 years |
| | At least 40% of jobs in the city should be within a walk-able distance of 500m from a mass rapid transit network. | 10 years |
| **Parking** | On-street parking on arterial/sub-arterial roads shall be based on parking fees.<br>▪ 30% of the roads<br>▪ 50% of the roads<br>The study area will establish market-based parking fees and implement IT-based systems for fee collection and enforcement | <br>5 years<br>10 years<br>5 years |
| **Electric Vehicle Adoption** | To achieve an EV penetration rate of,<br>• 10% across all vehicle segments<br>• 10% in case of two wheelers<br>• 20% in case of three wheelers<br>• 5% in case of four wheelers | 5 years |
| | • 25% electrification of PMPML Bus Fleet | 2 years |
| **Road Accidents** | To achieve 50% reduction in fatal accidents | 5 years |

** - The 35% share of NMT mentioned is exclusive walk and cycling trips and does not include access trips to public transport. Considering 70% of access trips to public transport is by walking/cycling the total walking/cycling share will go up from 41.4% to 70% in 2054. i.e. from current 56.71 lakh to 240.04 lakh trips. This is due to the significant increase in public transport share in future. This clearly indicates the substantial increase in NMT trips in future.*

## E-10. TRAVEL DEMAND FORECAST

A Travel Demand Model has been developed using CUBE software for the study area, following a four-stage process: Trip Generation, Trip Distribution, Mode Choice, and Assignment. The model incorporates household activities, land use patterns, traffic flow, and regional demographics. The year 2024 is considered the base year, while 2054 is set as the horizon year for planning the long-term strategy, with interim milestones in 2034 and 2044.

The study area is divided into 340 Traffic Analysis Zones (TAZ), including 329 internal zones and 11 external zones, to analyse travel characteristics. Traffic forecasts have been carried out for both the Business-as-Usual (BAU) scenario and the Sustainable Urban Transport (SUT) scenario.

## BUSINESS AS USUAL (BAU) SCENARIO

The Business-as-Usual (BAU) scenario assumes that current trends from the base year will continue into the horizon years, with minimal changes expected in the future. This scenario evaluates the transport system based on existing trends and presumes no significant policy interventions for sustainable development or emissions mitigation, allowing for an assessment of their impacts on travel infrastructure, mode share, and public transport systems in the Study Area.

However, the BAU scenario does incorporate committed infrastructure proposals, the Mass Transit System, and proposed Land use as outlined in Development Plans. The travel characteristics for the BAU scenario for various horizon years are presented in **Table 14**.

**Table 14 | Travel Characteristics of Business as Usual (BAU) Scenario**

| No. | Travel Characteristics | | Base Year (2024) | BAU (2034) | BAU (2044) | BAU (2054) |
|---|---|---|---|---|---|---|
| 1 | Trips Assigned in Peak Hour (excluding external trips) | Total | 10,35,830 | 12,95,124 | 15,93,613 | 21,04,358 |
| | | PMC | 5,03,640 | 5,79,577 | 6,65,683 | 8,62,031 |
| | | PCMC | 3,81,629 | 5,37,434 | 7,22,667 | 9,72,851 |
| 2 | Daily Trips (excluding external trips) | | 1,07,89,895 | 1,34,90,875 | 1,66,00,135 | 2,19,20,395 |
| 3 | Daily Private Vehicle Trips | | 75,52,927 | 97,13,430 | 1,19,52,097 | 16,001,888 |
| 4 | Daily Public Transport Trips | | 18,34,282 | 9,44,361 | 8,30,007 | 6,57,612 |
| 5 | Daily Intermediate Public Transport Trips | | 14,02,686 | 28,33,084 | 38,18,031 | 52,60,895 |
| 6 | Private Vehicle Share (%) | | 70% | 72% | 72% | 73% |
| 7 | Public Transport Share (%) | | 13% | 7% | 5% | 3% |
| 8 | Intermediate Public Transport Share (%) | | 17% | 21% | 23% | 24% |
| 9 | Average Network speed in KMPH | | 25.2 | 22.5 | 21.2 | 19.7 |
| 10 | Average Trip Length in Km | | 8.7 | 10.7 | 9.8 | 8.9 |
| 11 | PCU-Km (Private Vehicles) in Lakhs | | 4,509 | 5,968 | 7,665 | 9,353 |
| 12 | Passenger-Km (Public Transport) in Lakhs | | 1,387 | 1,124 | 767 | 469 |
| 13 | Emission in Tonnes per day | | 132 | 187 | 243 | 330 |

The following observations have been derived from the BAU scenario:

- The share of public transport is projected to decrease from 13% in the base year to 3% by the horizon year of 2054.
- Average network speed is expected to decline by 21%, from 25.2 kmph in the base year to 19.7 kmph in 2054.
- Pollutant emissions are anticipated to increase by 2.5 times, rising from 132 tonnes per day in the base year to 330 tonnes per day by 2054.

## SUSTAINABLE URBAN TRANSPORT (SUT) SCENARIO

The decline in public transport share and increase in pollution levels in the BAU scenario indicate unsustainability for the Study Area. To explore alternative strategies, Sustainable Urban Transport (SUT) scenario is formulated with multiple options and the same are tested in the Travel Demand Model for the horizon years to identify the most suitable scenario for the Study Area.

- **Option 1**: Public Transport Augmentation + Improving Operational Efficiency + Multi-Modal Integration + Augmented Road Network

- **Option 2: Comprehensive Mobility Strategy**: Public Transport Augmentation + Improving Operational Efficiency + Multi-Modal Integration + Augmented Road Network + Transit-Oriented Development (TOD) Scenario + Travel Demand Management

The travel demand model was run for BAU Scenario and alternative options for SUT Scenario, and the results are presented in **Table 15**.

**Table 15 | Travel Characteristics for BAU and SUT Scenarios**

| No. | Travel Characteristics | | Base Year (2024) | BAU (2054) | SUT (2054) – Option 1 | SUT (2054) – Option 2 |
|---|---|---|---|---|---|---|
| 1 | Trips Assigned in Peak Hour (excluding external trips) | Total | 10,35,830 | 21,04,358 | 21,04,358 | 21,04,358 |
| | | PMC | 5,03,640 | 8,62,031 | 8,62,031 | 8,62,031 |
| | | PCMC | 3,81,629 | 9,72,851 | 9,72,851 | 9,72,851 |
| 2 | Daily Trips (excluding external trips) | | 1,07,89,895 | 2,19,20,395 | 2,19,20,395 | 2,19,20,395 |
| 3 | Daily Private Vehicle Trips | | 75,52,927 | 16,001,888 | 1,29,33,033 | 78,91,342 |
| 4 | Daily Public Transport Trips | | 18,34,282 | 6,57,612 | 74,52,934 | 1,33,71,441 |
| 5 | Daily Intermediate Public Transport Trips | | 14,02,686 | 52,60,895 | 15,34,428 | 6,57,612 |
| 6 | Private Vehicle Share (%) | | 70% | 73% | 59% | 36% |
| 7 | Public Transport Share (%) | | 13% | 3% | 34% | 61% |
| 8 | Intermediate Public Transport Share (%) | | 17% | 24% | 7% | 3% |
| 9 | Average Network speed in KMPH | | 25.2 | 19.7 | 23.0 | 27.2 |
| 10 | Average Trip Length in Km | | 8.7 | 8.9 | 9.1 | 6.8 |
| 11 | PCU-Km (Private Vehicles) in Lakhs | | 4,509 | 9,353 | 6,093 | 1,863 |
| 12 | Pass-Km (Public Transport) in Lakhs | | 1,387 | 469 | 9,352 | 18,372 |
| 113 | Emission in Tonnes per day | | 132 | 330 | 300 | 238 |

The recommended scenario, **Option 2**, emerges as the most sustainable, capturing a public transport share of 61% and achieving an average network speed of 27 kmph. This option incorporates several key mobility strategies, including public transport augmentation, enhanced operational efficiency, Multi-Modal Integration, augmentation of road network, Transit-Oriented Development (TOD), and Travel Demand Management. Together, these strategies will promote a more sustainable transport system in

the Study Area, addressing current challenges and supporting future growth.

# E-11. MOBILITY PLAN

Mobility Plan comprises of Public Transport Plan, NMT Plan, Road Development Plan, Traffic Management Plan and Freight Management Plan.

## PUBLIC TRANSPORT IMPROVEMENT PLAN

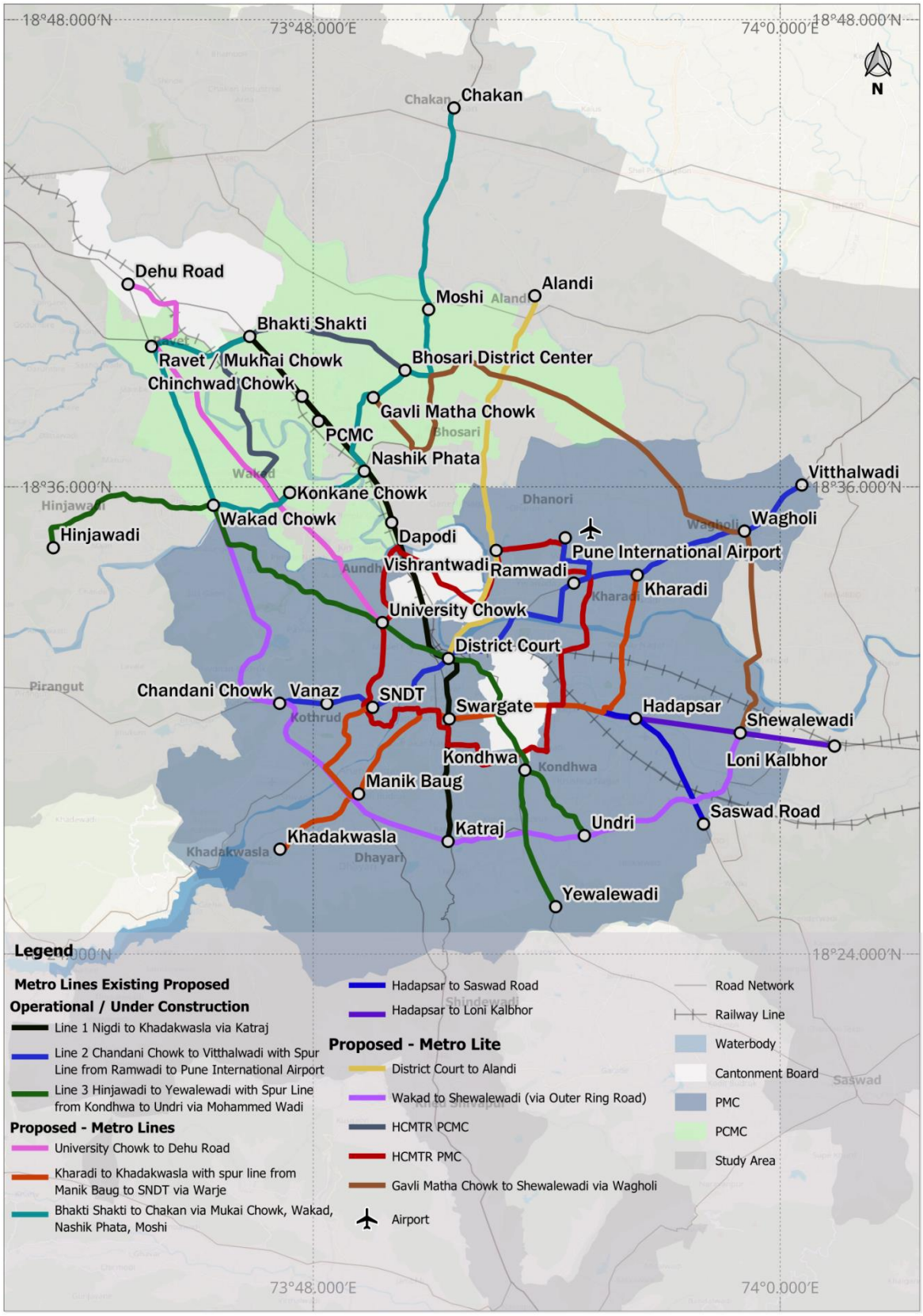
### MASS TRANSIT CORRIDORS

A total of 214 km of Metro (out of which 66 kms are already operational / under construction), 165 km of Metro-Lite, 81 km of BRTS, and 46 km of high-frequency bus corridors have been proposed. Detailed information is presented in **Table 16, Figure 4** and **Table 17, Figure 5** respectively.

**Table 16 | Proposed Metro Corridors**

| No. | Proposed Public Transport Corridor | Length (km) | PHPDT | | | |
|---|---|---|---|---|---|---|
| | | | 2024 | 2034 | 2044 | 2054 |
| | **Metro** | | | | | |
| 1 | Nigdi – Katraj | 27.5 | 20,445 | 23,178 | 34,442 | 41,060 |
| 2 | Chandani Chowk – Vitthalwadi with Spur Line from Ramwadi to Pune International Airport – Lohegaon | 32.7 | 7,538 | 13,206 | 20,398 | 28,831 |
| 3 | Hinjawadi – Yewalewadi via Kondhwa with Spur line from Kondhwa to Undri via Mohammed wadi | 37.0 | 6,553 | 9,058 | 16,442 | 26,122 |
| 4 | University Chowk - Dehu Road | 24.3 | 5,752 | 9,353 | 16,368 | 25,436 |
| 5 | Kharadi – Khadakwasala (with Spur line Manik Baug – SNDT via Warje) | 32.1 | 7,040 | 9,481 | 16,719 | 21,153 |
| 6 | Bhakti Shakti – Chakan (via Mukai Chowk, Wakad, Nashik Phata, Moshi) | 42.6 | 5,717 | 8,457 | 18,508 | 27,521 |
| 7 | Hadapsar - Saswad Road | 7.5 | 3,580 | 5,806 | 8,483 | 10,332 |
| 8 | Hadapsar - Loni Khalbor | 10.7 | 2,635 | 3,939 | 6,993 | 13,695 |
| | **Metro-Lite** | | | | | |
| 9 | District Court – Alandi | 20.4 | 2,673 | 5,600 | 8,784 | 12,313 |
| 10 | Wakad Chowk to Shewalewadi (via Katraj) | 42.4 | 3,636 | 5,411 | 7,780 | 11,040 |
| 11 | HCMTR – PCMC | 20.9 | 2,638 | 4,586 | 9,967 | 13,752 |
| 12 | HCMTR – PMC | 44.2 | 3,196 | 6,321 | 8,006 | 12,076 |
| 13 | Gavli Matha Chowk – Shewalewadi via Wagholi | 36.5 | 2,194 | 4,672 | 7,947 | 9,883 |

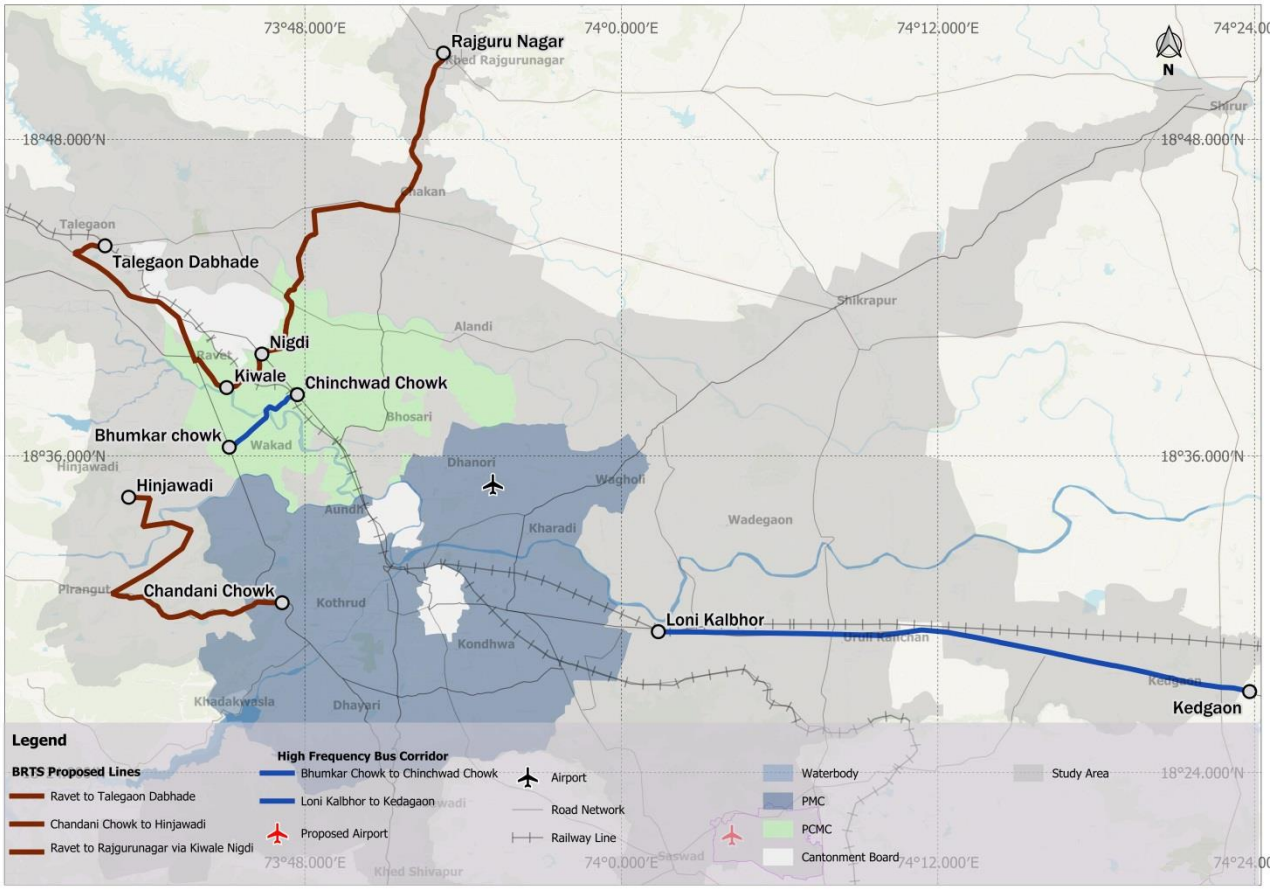
**Figure 4 | Existing and Proposed Metro Lines**



### Table 17 | Proposed BRTS Corridors

| No. | Proposed Public Transport Corridor | Length (in km) | PHPDT | | | |
|---|---|---|---|---|---|---|
| | | | 2024 | 2034 | 2044 | 2054 |
| | **BRTS** | | | | | |
| 1 | Ravet - Rajgurunagar via Chakan | 37.8 | 2,462 | 3,063 | 5,777 | 7,500 |
| 2 | Ravet - Talegaon Dabhade | 14.1 | 971 | 1,826 | 4,091 | 6,289 |
| 3 | Chandani Chowk to Hinjawadi | 28.6 | 658 | 886 | 2,060 | 2,979 |
| | **High Frequency Bus Corridor** | | | | | |
| 4 | Loni Kalbhor - Kedgaon | 40.0 | 794 | 893 | 1,964 | 2,547 |
| 5 | Bhumkar Chowk - Chinchwad Chowk | 6.3 | 667 | 906 | 1,148 | 2,917 |

### Figure 5 | Proposed BRTS Corridors




## AUGMENTATION OF CITY BUS SERVICES

PMPML has an existing fleet size of about 2,030 buses of which 473 are electric buses. It runs on 367 routes, makes 20,466 trips and carries about 12.3 lakh passengers per day. At present 1,880 buses are in operation against the requirement of 6,500 buses. PMPML has a target of electrifying 25% of its Bus fleet by 2025, as outlined in the Maharashtra Electric Vehicle (MEV) Policy 2021. As per the

MoHUA guidelines, 60 buses per lakh population will be required. The assessment of future requirement of buses based on MoHUA guidelines as well as based on travel demand is presented in **Table 18**.

**Table 18 | Future Requirement of Buses**

| No | Year | Population in Lakhs | Total Number of Buses Required** | Total Number of Buses required based on Demand | E-Bus Requirement |
|---|---|---|---|---|---|
| 1 | 2024 | 103.79 | 6,228 | 6,500 | 1,625 (25%) |
| 2 | 2034 | 133.55 | 8,013 | 8,000 | 2,400 (30%) |
| 3 | 2044 | 166.69 | 10,001 | 10,500 | 5,250 (50%) |
| 4 | 2054 | 192.74 | 11,564 | 15,000 | 15,000 (100%) |

*** based on 60 buses per lakh population,* MoHUA Guidelines

## ROUTE RATIONALIZATION

Bus routes overlapping with 80% of the length of MRT routes (Metro and BRTS) have been selected for route rationalization. Based on this criterion, 89 bus routes have been identified, with details provided in **Section 4.2.2 of Chapter 4**.

## NEW BUS ROUTES

18 new bus routes are proposed to connect various origin-destination pairs that currently lack direct bus service. Details of the identified new routes are presented in **Section 4.2.2** of **Chapter 4**.

## PMPML BUS TERMINALS

Of the existing 27 PMPML bus terminals, 12 are proposed for redevelopment or upgradation. Additionally, 11 new terminals have been identified. Details of terminals for redevelopment and new terminals are presented in **Section 4.2.2** of **Chapter 4**.

- **Proposed Terminals for Redevelopment :** *Wagholi, Pulgate, Bhosarigaon, Chinchwad, Nigdi, Mukhai Chowk, Chikali, Pimple Gurav, Pimple Nilakh, Talegaon, Chakan, Ranjangaon*
- **Proposed New Terminals:** *Dhayari, Talwade MIDC, Nasrapur, Pirangut, Maan Mulshi, Dehugaon, Chakan (Nanekarwadi), Alandi, Ranjangaon, Sanaswadi, Theur*.

## PMPML BUS DEPOTS

Out of existing 16 Bus Depots, 5 PMPML Bus Depots are proposed for redevelopment or upgradation. Additionally, 15 new bus depots are identified. The details of the bus depots for redevelopment and new depots are presented in **Section 4.2.2** of **Chapter 4**.

- **Proposed Bus Depots for Redevelopment:** *Kothrud, Katraj, Hadapsar, Market Yard and Pimpri*
- **Proposed New Bus Depots:** *Holkarwadi, Ravet, Khed Shivapur, Bhukum, Bhaje, Karla, Kanhe, Induri, Nanaekarwadi, Santhosh Nagar- Khed, Karegaon, Rahu-Daund, Yawat, Uruli Kanchan and Maan-Mulshi.*

## INTER-CITY BUS TERMINALS

Out of existing 10 Inter-city terminals, 7 Inter-city terminals are proposed for redevelopment or upgradation. Additionally, 5 new Inter-city terminals are identified. The details of the bus depots for redevelopment and new depots are presented in **Section 4.2.2** of **Chapter 4**.

- **Proposed Inter-city Bus Terminals for Redevelopment:** *Pune Railway Station, Vallabh Nagar, Lonavala, Talegaon, Rajgurunagar, Saswad and Chakan.*
- **Proposed New Inter-city Terminals:** *Vitthalwadi, Loni Kalbhor, Mangdewadi (near Katraj), Moshi, Maan Mulshi (Hinjawadi) and Mukai Chowk*.

## MULTI MODAL INTEGRATION HUBS

26 Multi-Modal hubs are proposed, and the details are presented in **Table 19**.

**Table 19 | Details of Proposed Multi-Modal Hubs**

| No | Locations | Modes that will be integrated |
|---|---|---|
| 1 | Pune Railway Station | Metro, Railways, PMPML, MSRTC |
| 2 | Shivaji Nagar | Metro, Railways, PMPML, MSRTC |
| 3 | Swargate | Metro, PMPML, MSRTC |
| 4 | Bhakti Shakti | Metro, PMPML, MSRTC |
| 5 | Balewadi | Metro, PMPML, MSRTC |
| 6 | Katraj | Metro, PMPML, MSRTC |
| 7 | Hadapsar | Metro, PMPML, MSRTC |
| 8 | Wagholi | Metro, PMPML, MSRTC |
| 9 | Moshi | Metro, PMPML, MSRTC |
| 10 | Sant Tukaram Nagar | Metro, PMPML, MSRTC |
| 11 | Chinchwad | Metro, Railways, PMPML |
| 12 | Mukhai Chowk | Metro, PMPML, MSRTC |
| 13 | Chandani Chowk | Metro, PMPML, MSRTC |
| 14 | Wakad | Metro, PMPML, MSRTC |
| 15 | Chakan | Metro, PMPML, MSRTC |
| 16 | Manjari Budruk | Metro, PMPML, MSRTC |
| 17 | Nashik Phata | Metro, PMPML, Railways |
| 18 | District Court | Metro, PMPML |
| 19 | Vanaz | Metro, PMPML |
| 20 | Godown Chowk | Metro, PMPML |

| No | Locations | Modes that will be integrated |
|---|---|---|
| 21 | Kuruli | Metro, PMPML |
| 22 | Vitthalwadi | Metro, PMPML, MSRTC |
| 23 | Wadhu Budruk | PMPML, Railway |
| 24 | Loni Kalbhor | PMPML, Metro |
| 25 | Khadkale | Railway, PMPML |
| 26 | Purandar | Airport, Railway, PMPML |

In addition to above, 11 Multi-Modal Transfer Stations are proposed, and the details are presented in **Table 20**.

**Table 20 | Details of Proposed Multi-Modal Transfer Stations**

| No | Transfer Station Locations | Modes |
|---|---|---|
| 1 | Kharadi | Metro, PMPML |
| 2 | Jagtap Dairy Chowk | Metro, PMPML |
| 3 | SNDT | Metro, PMPML |
| 4 | University Chowk | Metro, PMPML |
| 5 | Bopodi | Metro, PMPML |
| 6 | Shewalewadi | Metro, PMPML |
| 7 | Waki khurd | Railway, Semi High Speed Rail, PMPML |
| 8 | Bhilarewadi | MSRTC |
| 9 | Khalumbre | PMPML |
| 10 | Solu | PMPML |
| 11 | Bhugaon | PMPML, MSRTC |

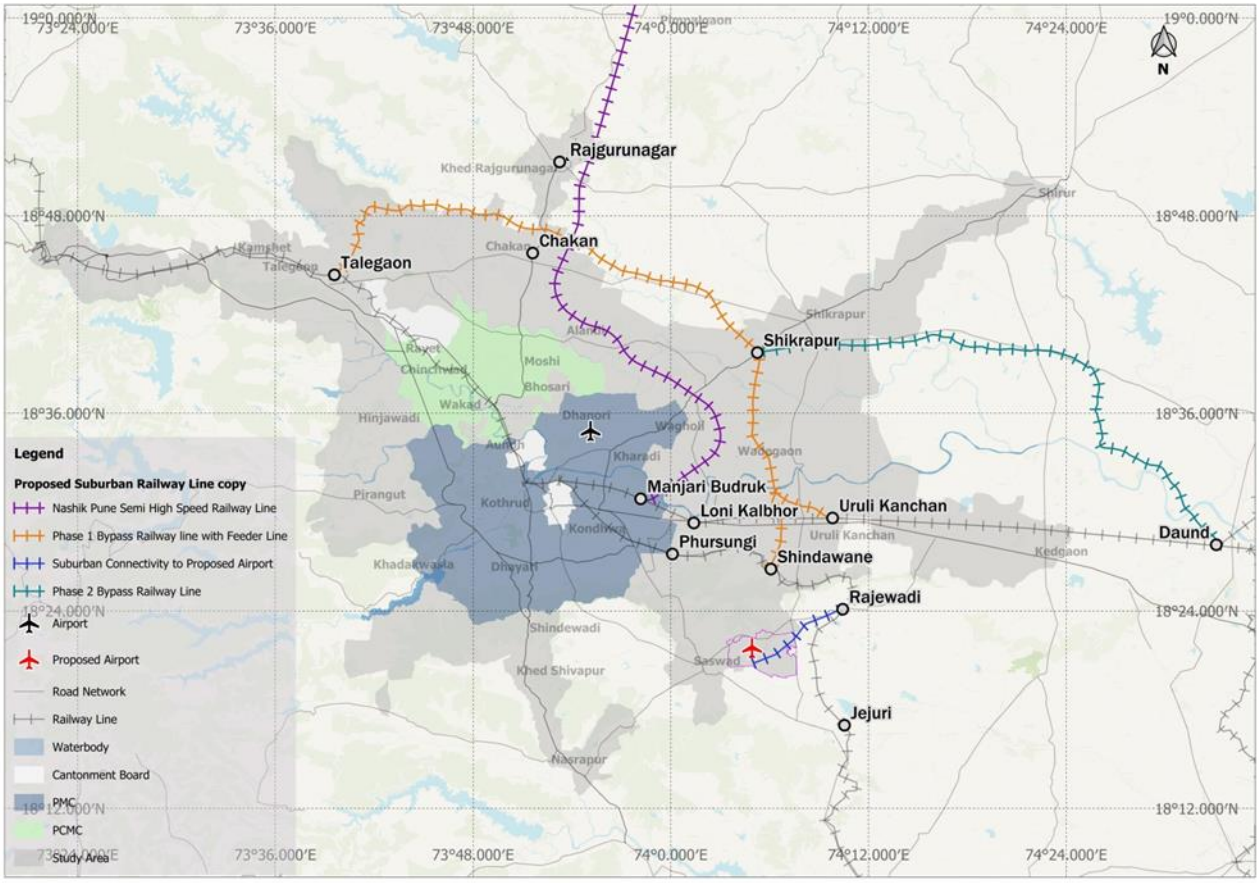
## RAILWAY PROPOSALS

The bypass railway line has been proposed from Talegaon to Daund in two phases.

- Phase-I : Talegaon to Shikrapur and with a feeder line from Shikrapur to Uruli Kanchan on Pune- Solapur line and Uruli Kanchan to Shindawane on Pune-Miraj line
- Phase-II : Shikrapur to Daund

The proposed Bypass Railway line is shown in **Figure 6**.

**Figure 6 | Proposed Bypass Railway line**




Following projects are proposed by Central Railways and the details are presented in **Section 4.3.2** of **Chapter 4,**

- Third and fourth line from Pune to Lonavala
- Doubling of Pune Satara Miraj line
- Pune Nashik Semi-High-Speed Rail
- Redevelopment of Pune and Hadapsar Railway Stations
- Uruli Mega Coaching Terminal
- Development of Goods Shed at Loni
- Expansion of existing railway siding in Saswad
- New railway siding in Patas
- Multi Modal Logistic Park at Mavali near Lonavala
- Railway stations proposed for development under Amrit Bharat Scheme in Pune Division: Dehu Road, Chinchwad, Hadapsar, Uruli, Wathar, Lonand, Kedgaon, Baramati and Karad

In addition to above, Station Area Traffic Improvement Schemes (SATIS) are proposed for 5 major railway stations in the Study Area i.e. Pune, Shivaji Nagar, Talegaon-Dabhade, Pimpri and Chinchwad.

In additional above, a new suburban railway station is proposed between Akurdi and Dehu Road Railway Station as a lot of residential development has taken place near Vikas Nagar. The distance between the two stations is 4.5 kms. Considering the future potential for development around this region, a suburban station is proposed to be constructed near Vikas Nagar along the Ravet highway for better access to the people of Vikas Nagar.

### CONNECTIVITY TO PROPOSED AIRPORT – ROAD AND RAIL

Capacity augmentation of following access roads is proposed for connecting the proposed Airport at Purandar:

- Hadapsar- Saswad Road from Dive Ghat
- Saswad- Bopdev Pune Road from Bopdev Ghat
- Uruli Kanchan Jejuri Road
- Saswad- Kapurhol- Bhor Road
- Khed Shivapur- Saswad Link Road

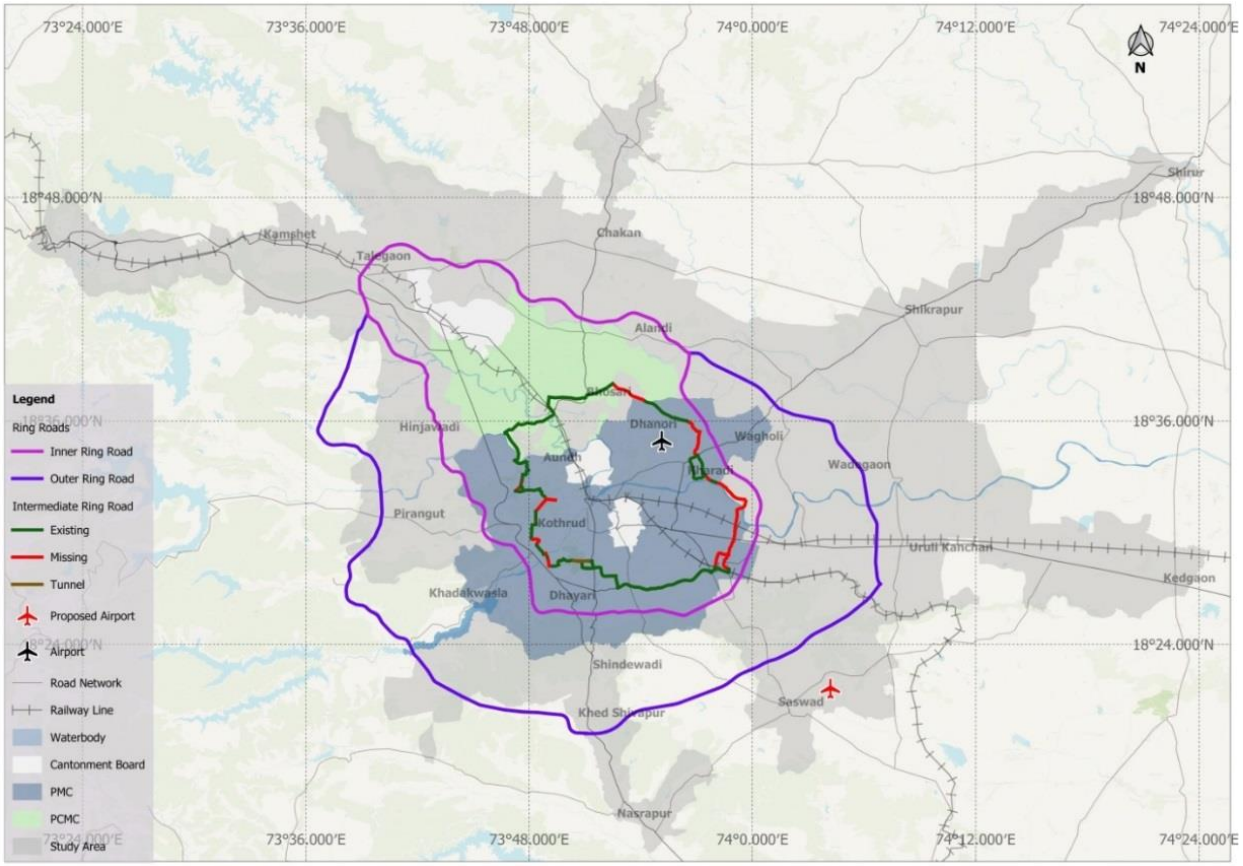
A new suburban line connecting Rajewadi railway station to the proposed airport terminal has been proposed to provide affordable mass transit option.

## ROAD IMPROVEMENT PLAN

### RING ROAD PROPOSAL

A total of 290 km of ring roads are proposed in the Study Area, as illustrated in **Figure 7.** The Intermediate Ring Road (70 km) is in the planning stage, while the Inner Ring Road (83 km) and Outer Ring Road (137 km) are currently under implementation (land acquisition in progress). Details of the ring road proposals can be found in **Section 4.3.1** of **Chapter 4**.

**Figure 7 | Proposed Ring Roads in the Study Area**

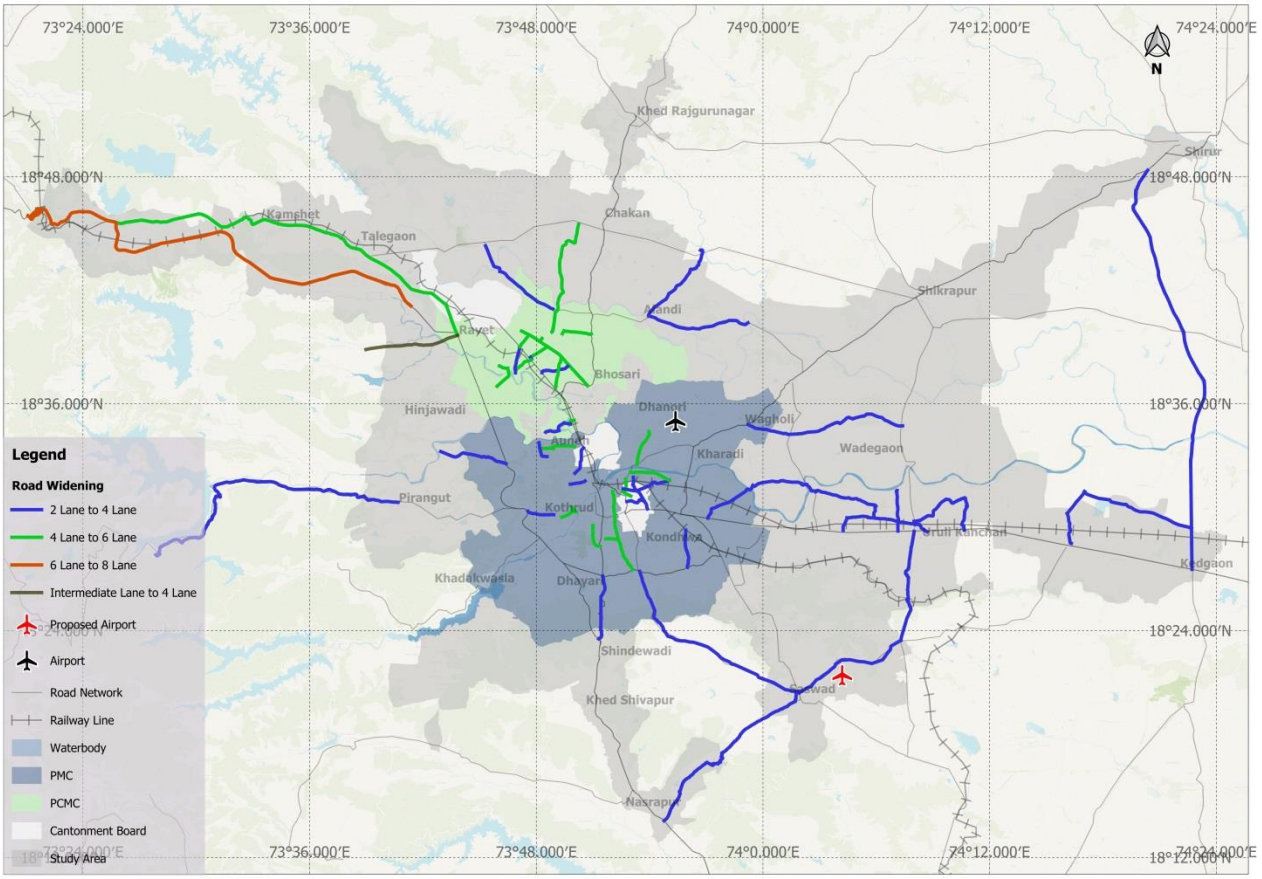



## ROAD WIDENING PROPOSALS

Overall, 438 km of roads are proposed for road widening and the same is shown in **Figure 8.** Among the roads proposed for widening, 6 major roads are listed below,

- Bengaluru-Mumbai Highway from Somatane Shirgaon Bridge to Khandala Ghat Chowk
- Shirur-Satara Road from Kedagaon Junction to Tardobachiwadi Junction
- NH 48 Mumbai-Pandharpur Road from Dehu Phata Chowk to Lonavala Interchange
- NH 753F Mulshi-Paud Road from Ghotewade Phata Chowk to Mulshi
- Pune-Natepute Road from Kondhwa Khadi Machine Chowk to NH 965 Pandharpur Road Junction
- Saswad-Kapurhol-Bhor Road from Tehsildhar Office Purandhar Junction to NH 48, Kapurhol Junction.

**Figure 8 | Proposed Roads for Widening in the Study Area**

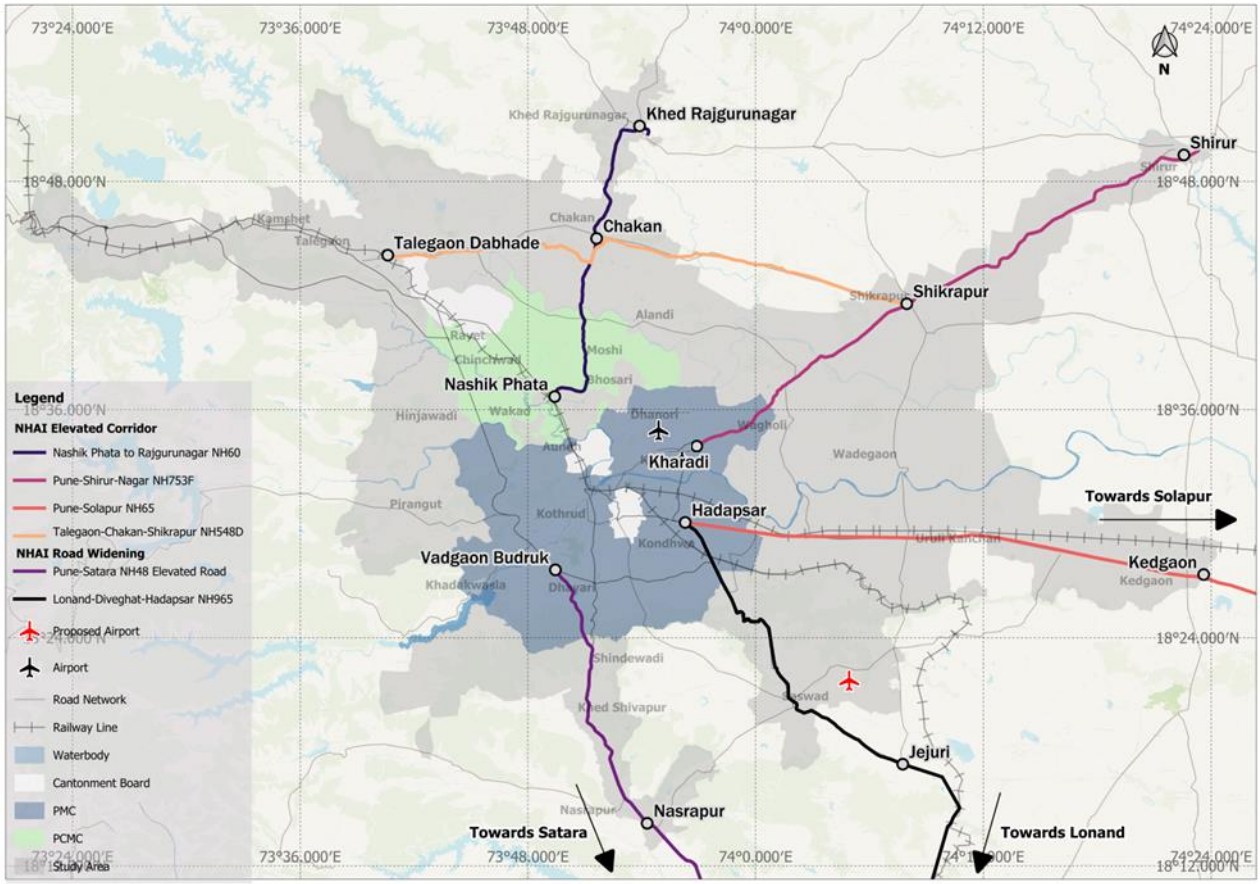



In addition to above, the following National Highways are proposed for road widening and elevated roads. The same is presented in **Figure 9** and is listed below,

- Road Widening Proposals
  - Pune – Satara (NH 48) is proposed for uniform 6-lane configuration
  - Lonand – Diveghat - Hadapsar (NH – 965) for 4-lane configuration
- Elevated Road Proposals by NHAI
  - Pune - Shirur Nagar Road (NH-753F)
  - Nashik Phata - Khed Rajgurunagar (NH-60)
  - Talegaon – Chakan - Shikrapur (NH-548D)
  - Hadapsar - Yavat on Pune – Solapur (NH 65)

The details of road widening and elevated roads are presented in **Section 4.3.2** of **Chapter 4**.

**Figure 9 | Proposed Elevated Roads/ Road widening by NHAI in the Study Area**




## GRADE SEPARATORS - WIDENING & NEW PROPOSAL (FLYOVER/ROB/RUB/ RIVER BRIDGE)

Details of proposed Grade separators are presented in **Section 4.3.3** to **Section 4.3.5** of **Chapter 4**. The summary of the proposals is given below:

- 18 new flyovers/underpass.
- 20 new RoB/RuBs.
- 10 new RoB/RuBs on proposed Bypass railway line and Pune-Nashik Semi-High Speed railway line.
- Widening of 9 RoB/RuBs.
- 19 new river bridges.
- Widening of 10 river bridges.

## MISSING ROAD LINK PROPOSALS

Missing links are proposed to improve the connectivity and traffic dispersal. The details of missing links are presented in **Section 4.3.6** of **Chapter 4**.

- 678 missing links have been proposed in PMC with a total length of 459 kms. Out of these 459 kms, 36 links are prioritized for a length 14 kms.
- 231 missing links have been proposed in PCMC with a total length of 93 kms. Out of these 93 kms, 12 links are prioritized for a length 16 kms.

### JUNCTION IMPROVEMENT PLAN

149 Junctions have been identified for improvement to address geometry, road safety and better traffic dispersal. The details of junctions identified for improvement is presented in **Section 4.3.7** of **Chapter 4**.

## NMT IMPROVEMENT PLAN

### FOOTPATH NETWORK – PMC AND PCMC

341 km of footpaths in PMC and 266 km of footpaths in PCMC are proposed. The details of roads where footpaths are proposed are presented in **Section 4.4.1** of **Chapter 4**.

### BICYCLE NETWORK – PMC AND PCMC

Currently, a total of 62 km of bicycle track is available in PMC and PCMC. A total of 229.8 km of prioritized bicycle track is proposed based on Bicycle Master Plan in PMC. The summary of proposed prioritized bicycle network in PMC is presented in **Table 21**.

**Table 21 | Summary of Proposed Bicycle Network in PMC**

| No | Type | Total (Km.) |
|---|---|---|
| 1 | Segregated Bicycle Track | 119.68 |
| 2 | Retrofit Cycle Track | 18.39 |
| 3 | Painted Cycle Lane | 14.70 |
| 4 | Greenway | 74.03 |
| 5 | Footpath + Bicycle track | 3.00 |
| | **Total** | **229.81** |

170 km of bicycle track are proposed in PCMC in identified areas, and the details are presented in **Table 22**. Currently the bicycle tracks and footpaths are being developed under the Urban Streetscapes Program and Harit Sethu Master Plan. The details of proposed bicycle track are presented in **Section 4.4.2** of **Chapter 4**.

**Table 22 | Locations of Proposed Bicycle Tracks in PCMC**

| No. | Location |
|---|---|
| 1 | Balewadi |
| 2 | Akurdi |

| No. | Location |
|---|---|
| 3 | Kalewadi |
| 4 | Nigdi Pradhikaran |
| 5 | Sudarshan Nagar |
| 6 | Chinchwad Gaon |
| 7 | Pimpri |
| 8 | Wakad |
| 9 | Bhosari |
| 10 | Hinjawadi (connecting Phase 1, Phase 2 and Phase 3) |
| 11 | Ajmera |

## PEDESTRIAN GRADE SEPARATION FACILITIES

Pedestrian grade separators are proposed at 16 locations and the details are presented in **Table 23**.

### Table 23 | Proposed Pedestrian Grade Separator Facilities

| No | Proposed Locations of Pedestrian Grade Separators |
|---|---|
| 1 | Mundhwa Chowk on Magarpatta Road |
| 2 | City Pride Chowk on Satara Road |
| 3 | Katraj Chowk on Satara Road |
| 4 | Sanjeev Gandhi Road to Wellesley Road connecting Pune Railway Station |
| 5 | Alka Talkies Chowk on Lal Bahadur Shastri Road |
| 6 | Dhole Patil Chowk/ Wadia College |
| 7 | Bopodi FOB across Railway Line |
| 8 | Dapodi FOB across the Railway Line |
| 9 | Nashik Phata FOB conneting Bhosari Metro station and Kasarwadi Railwya Station |
| 10 | Near Kalpatharu Society, Pimple Gurav |
| 11 | Pimple Saudagar |
| 12 | Modification of Existing FOB near Poona Public School (Before Bhosari) |
| 13 | Opposite to Chikali Bus Stand |
| 14 | Chakan Chowk, Alandi |
| 15 | Chakan Chowk, Shikrapur |
| 16 | Kapurhol Junction |

The details of proposed pedestrian grade separated facilities are presented in **Section 4.4.3** of **Chapter 4**.

## PEDESTRIAN PRIORITY STREETS – PMC AND PCMC

18 streets in PMC and 4 streets in PCMC are identified for development as pedestrian priority streets. Proposed pedestrian-only streets include MG Road, Phule Mandai Market (Shanipar Mandai Road - Gayakwad Road - Amrale Road - Fruit Market Road), and the Pimpri Market Area and the details are presented in **Section 4.4.4** of **Chapter 4.**

# FREIGHT IMPROVEMENT PLAN

## PROPOSALS FOR TRUCK TERMINALS

14 truck terminals have been proposed at various strategic locations in the Study Area to mitigate the congestion and facilitate loading and unloading activities and the details of the locations are presented in **Table 24.**

**Table 24 | Proposed Truck Terminal locations**

| No. | Proposal | Land Required (Acres) | Jurisdiction |
|---|---|---|---|
| 1 | Mangdewadi | 3.10 | PMC |
| 2 | Nashik Road, Near Chimbali | 3.5 | Rest of PMR |
| 3 | Loni Kand | 5.67 | Rest of PMR |
| 4 | Prayagdham | 3.67 | Rest of PMR |
| 5 | Wadki | 2.77 | Rest of PMR |
| 6 | Kasurdi | 1.2 | Rest of PMR |
| 7 | Daund, Kedgaon | 4.12 | Rest of PMR |
| 8 | Kasar Amboli | 1.09 | Rest of PMR |
| 9 | Ranjangaon on NH753P | 4.81 | Rest of PMR |
| 10 | Satara Road near Nasrapur | 3.5 | Rest of PMR |
| 11 | Parandvadi | 5.75 | Rest of PMR |
| 12 | Bhamboli | 2.54 | Rest of PMR |
| 13 | Solu | 3.17 | Rest of PMR |
| 14 | Saradwadi | 4.81 | Rest of PMR |

## PROPOSALS FOR LOGISTIC PARKS

7 logistic parks are proposed in the Study Area at Talegaon Dabhade, Chakan, Shikrapur, Uruli Kanchan, Vadhu Budruk, Malavli and Saswad to enhance trade and commerce in the Study Area through services including Cargo-handling facilities, warehousing, cold-storage, Multi-Modal Transport Facilities and Container Freight Stations etc.

# MOBILITY MANAGEMENT MEASURES

## OFF-STREET PARKING PROPOSALS

Off-Street parking facilities are proposed at 14 locations and the details are presented in **Table 25**.

**Table 25 | Proposed Locations of Off - Street Parking Facilities**

| No. | Off Street Parking Location | Area |
|---|---|---|
| 1 | Pune Municipal Corporation | PMC |
| 2 | Pune Railway Station | PMC |
| 3 | Shivaji Nagar | PMC |

| No. | Off Street Parking Location | Area |
|---|---|---|
| 4 | Swargate | PMC |
| 5 | Market Yard | PMC |
| 6 | Chinchwad Railway Station | PCMC |
| 7 | Akurdi (Near Railway Station) | PCMC |
| 8 | Vadgaon Railway Station | Rest of PMR |
| 9 | Kanhe Railway Station | Rest of PMR |
| 10 | Kamshet Railway Station | Rest of PMR |
| 11 | Front Side of Talegaon Railway Station | Rest of PMR |
| 12 | Beside Shirur Bus Stand | Rest of PMR |
| 13 | Opposite Ranjangaon Ganapati Temple | Rest of PMR |
| 14 | Kedgaon Railway Station | Rest of PMR |

### ON-STREET PARKING PROPOSALS

On-street parking is proposed on Pay and Park basis at 22 locations, out of which 14 are in PMC and rest 8 are in PCMC. Further, paid parking shall be introduced along all the Mass Transit Corridors.

The details of On-street and Off-street Parking proposals, strategies for parking management are presented in **Section 4.8.1** of **Chapter 4**.

### INTELLIGENT TRANSPORT SYSTEM (ITS)

Intelligent Transport System (ITS) is real-time management of vehicles and transport networks involving the movements of people and goods through information and communication Technology (ICT). ITS can make the transport system safer, secure, efficient and reduce environmental impacts. In the current study, Variable Message Sign (VMS), Adaptive Traffic Control System (ATCS), Traffic Incident Detection System (TIDS), Speed Limit Violation System (SLVD), Red-Light Violation Detection (RLVD) system, Automatic Traffic Counter-cum-Classifier (ATCC) and SMART Parking Management are proposed for the Study Area.

PMPML already implemented ITS, which needs to be expanded in terms of scope and coverage. Further, Depot management system shall be deployed for effective bus operations.

## E-12. STAKEHOLDER CONSULTATIONS

Stakeholder consultations were conducted at three stages during the study.

- The first meeting took place at the Maha Metro office on April 12, 2024. During this meeting, a broad approach to the study was presented to the stakeholders.
- The second stakeholder meeting was conducted as a PUMTA meeting during the Draft Comprehensive Mobility Plan (CMP) stage at the Council Hall, Pune chaired by the Chairman/PUMTA and Divisional Commissioner Pune, on August 26, 2024. During this

meeting, the draft CMP proposals were presented to stakeholders.

- Additionally, a Public Stakeholders' consultation meeting was held during the Draft Comprehensive Mobility Plan (CMP) stage at the Maha Metro Office in Phugewadi, on September 9, 2024. During this meeting, the Draft CMP proposals were presented to public stakeholders, for their feedback and suggestions.

The details of the Stakeholders presentation are presented in **Section 5.5** of **Chapter 5**.

## E-13. IMPLEMENTATION PLAN

The projects in the CMP are prioritized based on the travel demand, cost and budget availability and divided into 3 phases for implementation as follows,

- **Phase I: 2024-34**
- **Phase II: 2035-44**
- **Phase III: 2045-54**

Based on the roles and responsibilities of various institutions, the agencies responsible for implementing CMP Proposals are presented in **Table 26**.

**Table 26 | Proposed Projects and Implementing Agencies**

| No | Projects | Implementing Agency |
|---|---|---|
| 1 | Junction Improvement | PMC / PCMC / PSCDCL / PMRDA / NHAI / PWD / MSRDC |
| 2 | Bus Fleet Augmentation | PMPML |
| 3 | Pedestrian Grade Separators | PMC / PCMC / PMRDA |
| 4 | Footpath | PMC / PCMC / PSCDCL |
| 5 | Bicycle Tracks | PMC / PCMC / PSCDCL |
| 6 | Pedestrian Priority Streets | PMC / PCMC / PMRDA / PSCDCL |
| 7 | Road Widening | PMC / PCMC / PMRDA / MSRDC / NHAI |
| 8 | Road Widening(Airport Connectivity) | PMRDA / NHAI / MSRDC / PWD |
| 9 | Missing Links | PMC / PCMC / PMRDA |
| 10 | ROB/RUBs | PMC / PCMC / PMRDA / PWD / Central Railway / NHAI / MSRDC |
| 11 | ROB/RUB (Widening) | PMC / PMRDA / PWD / Central Railway |
| 12 | Grade Separators | PMC / PCMC |
| 13 | River Bridges (New) | PMC / PCMC / PMRDA / PWD |
| 14 | River Bridges (Widening) | PMRDA / PWD |
| 15 | Railway Station Area Improvement Proposals | Central Railways |
| 16 | PMPML Bus Terminal Redevelopment | PMPML |
| 17 | PMPML Bus Terminal (New) | PMPML |
| 18 | ISBT Bus Terminal Redevelopment | MSRTC |
| 19 | ISBT New Bus Terminal | MSRTC |

| No | Projects | Implementing Agency |
|---|---|---|
| 20 | PMPML Bus Depot Redevelopment | PMPML |
| 21 | ISBT Bus Depots | MSRTC |
| 22 | Truck Terminal and Logistic Hubs | PMRDA / MSRDC / NHAI / PWD / Railways |
| 23 | Off street Parking Facilities | PMC / PCMC / PMRDA / PSCDCL |
| 24 | Ring Roads | PMC / PMRDA / MSRDC |
| 25 | Bypass Railway lines | Central Railways |
| 26 | Conventional Metro | Maha Metro |
| 27 | Metro Lite | Maha Metro |
| 28 | Sub-urban rail connectivity to Proposed Airport | Central Railways |
| 29 | Multi Modal Hubs | PMC / PCMC / Maha Metro / MSRTC / PMPML / Central Railways |
| 30 | BRTS | PMC / PCMC / PMRDA |

## E-14.COST ESTIMATES

The overall cost for implementation of proposals is estimated to be around Rs. 1,33,535 Crore in next 30 years. The phase-wise costing of the proposals is estimated to be Rs. 62,282 Crores for Phase-I, Rs. 47,032 Crores for Phase-II and Rs. 24,221 Crores for Phase-III. The summary of cost estimates is presented in **Table 27**.

**Table 27 | Phase-wise Cost Estimates (in Crore Rs)**

| No | Improvement Proposals | Units | Quantity (sq. m /Kms/No) | Overall Cost in Cr. |
|---|---|---|---|---|
| | **Phase I (2024-34)** | | | |
| 1 | Junction Improvement | | | |
| | i. 3 – Arm | *Nos* | 78 | 17 |
| | ii. 4 – Arm | *Nos* | 68 | 18 |
| | iii. 5 – Arm | *Nos* | 3 | 1 |
| 2 | Bus Fleet Augmentation | *Nos* | 9,068 | 7,254 |
| 3 | E-Bus Augmentation | *Nos* | 3,552 | 5,328 |
| 4 | Pedestrian Grade Separators | *Nos* | 16 | 50 |
| 5 | Footpath | *m* | 10,92,600 | 461 |
| 6 | Bicycle Tracks | | | |
| | i. Painting | *Kms* | 15 | 2 |
| | ii. Construction of new Bicycle track (Paver Block 60mm thick) | *Kms* | 74 | 32 |
| | iii. Segregated Cycle Track | *Kms* | 311 | 133 |
| 7 | Pedestrian Priority Streets | *Kms* | 14 | 43 |
| 8 | New light Facility - Double arm | *Kms* | 5,506 | 42 |

| No | Improvement Proposals | Units | Quantity (sq. m /Kms/No) | Overall Cost in Cr. |
|---|---|---|---|---|
| 9 | Road Widening | | | |
| | i. Intermediate Lane to 4 Lane | *Kms* | 10 | 104 |
| | ii. 2 Lane to 4 Lane | *Kms* | 148 | 1,022 |
| | iii. 4 Lane to 6 Lane | *Kms* | 72 | 508 |
| | iv. 6 Lane to 8 Lane | *Kms* | 47 | 339 |
| 10 | Road Widening (Airport Connectivity) | | | |
| | i. Intermediate Lane to 4Lane | *Kms* | 18 | 188 |
| | ii. 2 Lane to 4 Lane | *Kms* | 59 | 409 |
| | iii. 4 Lane to 6 Lane | *Kms* | 21 | 150 |
| 11 | Missing Links | *Kms* | 402 | 1,921 |
| 12 | ROB/RUBs (new) | *Nos* | 30 | 210 |
| 13 | ROB/RUB(Widening) | *Nos* | 9 | 63 |
| 14 | Grade Separators | *Nos* | 18 | 540 |
| 15 | River Bridges(New) | *Nos* | 9 | 135 |
| 16 | River Bridges (Widening) | *Nos* | 10 | 150 |
| 17 | SATIS | *Nos* | 5 | 150 |
| 18 | Truck Terminals and Logistical hubs | *Nos* | 129 | 258 |
| 19 | Off-street Parking Facilities | *Nos* | 14 | 12 |
| 20 | PMPML Bus Terminal Redevelopment | *Nos* | 12 | 94 |
| 21 | PMPML Bus Terminal (New) | *Nos* | 11 | 127 |
| 22 | ISBT Bus Terminal Redevelopment | *Nos* | 7 | 55 |
| 23 | PMPML Bus depot for Redevelopment | *Nos* | 5 | 28 |
| 24 | PMPML Bus Depots (New) | *Nos* | 15 | 83 |
| 25 | Ring Roads | *Kms* | 290 | 3,582 |
| 26 | Railway Lines | *Kms* | 90 | 2,700 |
| 27 | Metro (Elevated) | *Kms* | 124 | 33,372 |
| 28 | Sub-Urban rail connectivity to Proposed Airport | *Kms* | 12 | 360 |
| 29 | ISBT Bus Terminal -Newly Construction | *Nos* | 6 | 375 |
| 30 | Multi-Modal Hubs | | | |
| | i. Large | *Nos* | 10 | 1,500 |
| | ii. Medium | *Nos* | 4 | 360 |
| | iii. Small | *Nos* | 2 | 100 |
| 31 | Multi-Modal Transfer Stations | *Nos* | 3 | 9 |
| **A.** | **Sub-Total** | | | **62,282** |
| | **Phase II (2035- 44)** | | | |
| 32 | Bus Fleet Augmentation | *Nos* | 5,250 | 4,200 |

| No | Improvement Proposals | Units | Quantity (sq. m /Kms/No) | Overall Cost in Cr. |
|---|---|---|---|---|
| 33 | E-Bus Augmentation | *Nos* | 5,250 | 7,875 |
| 34 | Road Widening | | | |
| | i. 2 Lane to 4 Lane | *Kms* | 46 | 318 |
| | ii. 4 Lane to 6 Lane | *Kms* | 9 | 63 |
| | iii. 6 Lane to 8 Lane | *Kms* | - | - |
| 35 | Missing Links | *Kms* | 107 | 511 |
| 36 | River Bridges(New) | *Nos* | 10 | 150 |
| 37 | Truck Terminals and Logistical hubs | *Nos* | 96 | 192 |
| 38 | Metro (Elevated) | *Kms* | 24 | 6,561 |
| 39 | Metro Lite | *Kms* | 165 | 24,660 |
| 40 | Multi-Modal Hubs | | | |
| | i. Large | *Nos* | 3 | 450 |
| | ii. Medium | *Nos* | 3 | 270 |
| | iii. Small | *Nos* | 4 | 200 |
| 41 | Multi-Modal Transfer Stations | *Nos* | 8 | 24 |
| 42 | BRTS | *Kms* | 52 | 1,557 |
| **B.** | **Sub-Total** | | | **47,032** |
| | ***Phase III (2045- 54)*** | | | |
| 43 | E-Bus Augmentation | *Nos* | 15,000 | 22,500 |
| 44 | Road Widening | | | |
| | i. 2 Lane to 4 Lane | *Kms* | 89 | 614 |
| | ii. 4 Lane to 6 Lane | *Kms* | 17 | 120 |
| | iii. 6 Lane to 8 Lane | *Kms* | - | - |
| 45 | Missing Links | *Kms* | 27 | 129 |
| 46 | BRTS | *Kms* | 29 | 858 |
| **C.** | **Sub-Total** | | | **24,221** |
| **A+B+C** | **Total** | | **In Cr.** | **1,33,535** |

## E-15. INSTITUTIONAL MEASURES

The institutional issues specific to various agencies and suggestions for strengthening their roles is briefly discussed below.

- **PUMTA**, established by a Government Resolution (GR), functions as an umbrella organization tasked with coordinating various transport projects and programs. To improve its performance, PUMTA should be strengthened by
  - Granting it adequate legal authority

- Providing powers of financial control
- Providing implementation powers
- Allocating dedicated staff and resources.

- **PMRDA** is responsible for planning and development of transport infrastructure across the entire PMR area. However, there is no dedicated transport planning division. It is suggested that PMRDA shall establish a transport planning division staffed with experienced transport planners. Additionally, PMRDA shall recruit technical advisors on a needs basis for specialized areas such as Intelligent Transport Systems (ITS) and Public-Private Partnerships (PPP) to fill existing capability gaps. PMRDA shall also develop and disseminate publicity materials to raise public awareness of transport policies, programs, and projects. This new division should act as a technical backbone for PUMTA and engage in exchange programs with other cities both in India and abroad to share best practices and enhance its initiatives.
- **PMC and PCMC** shall establish a dedicated transport planning division, staffed with experienced transport planners and traffic engineers.
- **PMPML** is the public transport bus service provider for the study area. To increase the operational efficiency and ensure the services become operationally profitable, several measures are needed to enhance efficiency, increase ridership, and implement a rational fare policy. To overcome these obstacles the following steps are recommended,
    - **Contracting Selected Routes to Private Operators**: To introduce competition and improve efficiency in urban bus operations, PMPML may consider adopting a model where it acts as a bus planning agency while gradually assigning routes to private operators.
    - **Development of Bus Terminals and Depots via PPP**: To expand the fleet and extend services to new urban areas, PMPML may explore the option of developing bus terminals and depots through Public-Private Partnerships (PPP).
    - **Implementation of Intelligent Transport Systems (ITS)**: Investing in a Command-and-Control system for bus service planning and operations is crucial and needs to be explored.
    - **Capacity Building**: To enhance service quality, technical and managerial staff should be provided training in various key areas, including route planning, route management, service rationalization, fare collection, safety and maintenance, fleet management, and customer engagement. Further, capacity building in electric bus & allied infrastructure and ITS will help in efficient bus operations.

- **The Traffic Police** require technical support to enhance their focus on traffic management and the enforcement of traffic rules. This support should include expertise in traffic management and ITS. To address this need, PUMTA in collaboration with PMC, PCMC and other local bodies in the Study Area should establish a Technical Support Team for the Traffic Police. Additionally, the Traffic Police should initiate road safety education campaigns to address the critical issue of road accidents.

  The Traffic Police should also engage in educating the general public on the importance of

adhering to traffic rules and regulations for road safety. A portion of the budget should be allocated specifically for this purpose.

The details of the Institutional Measures are presented in **Section 5.6 of Chapter 5.**

# *Chapter-1*

*Introduction*

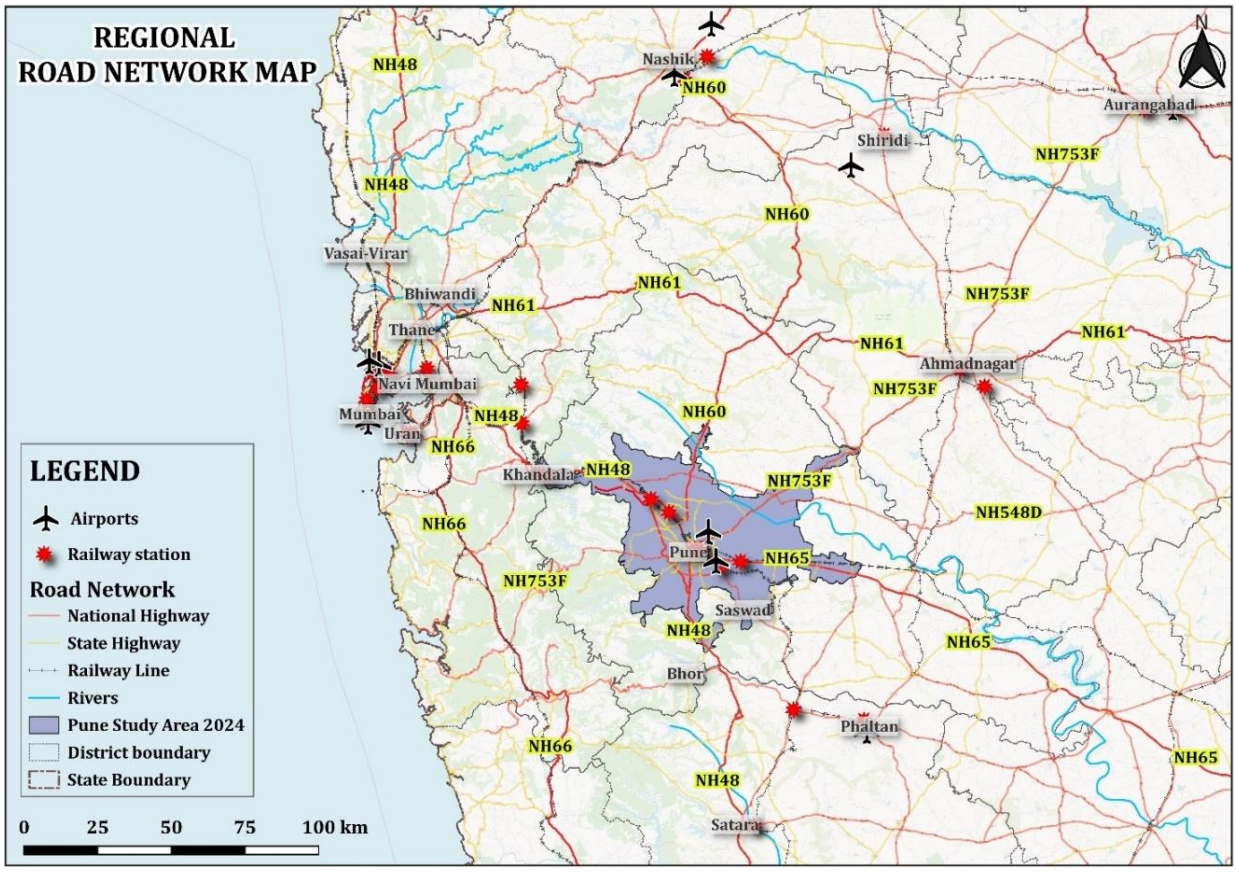
# 1 | INTRODUCTION

**Pune Metropolitan Region (PMR)** is a rapidly growing metropolitan region in India. It is located about 150 km to the south-east of Mumbai. PMR is the largest metropolitan region in Maharashtra and fourth largest metropolitan region in India after Delhi, Bengaluru and Hyderabad. Further, PMR is the second largest urban agglomeration and economy in the state after Mumbai Metropolitan Region (MMR). Pune city is also 7th largest economy in terms of GDP.

PMR has diversified economy due to established automobile, IT & ITES, biotech, and pharmaceutical industries. PMR contributes to approximately 75% of the GDP of the district. Pune is a major IT hub of state contributing about 45% of the total exports and is also a major educational and cultural hub of the state. The factors favorable to its economic growth include proximity to Mumbai, salubrious climate, availability of water, availability of vast pool of talent, head start in all sectors of economy.

The PMR has been experiencing immense economic growth supported by favorable socio-economic conditions and investment climate. There has been a major push for the infrastructure projects in the region, where the major transportation infrastructure has been initiated, including Metro Rail Project, Intermediate Ring Road by PMC, Inner Ring Road by PMRDA, Outer Ring Road by MSRDC, Smart City Project, Multi-Modal Hubs, Redevelopment of Suburban Rail Stations, Greenfield Airport etc. The regional setting of Pune and its neighboring districts is shown in **Figure 1-1**.

**Figure 1-1 | Regional Setting of Study Area**



Due to rapid urbanization and economic growth, the PMR faces many challenges, including traffic congestion, increased use of private vehicles, decline in public transport share and non-motorized transport share, vehicular pollution and road safety. Addressing these challenges requires a holistic approach to transport planning and governance, one that emphasizes sustainable development, inclusive growth, and effective management of resources.

To cater to the increasing travel demand for current and future population, Pune Metropolitan Region Development Authority (PMRDA) had prepared a Comprehensive Mobility Plan in 2018 for Pune Metropolitan area with an area of 2172 sq.km. The study area covered includes Pune Municipal Corporation (PMC), Pimpri Chinchwad Municipal Corporation (PCMC) and adjoining areas. However, as per Ministry of Housing and Urban Affairs (MoHUA) guidelines, updation of CMP is required after every 5 years. Therefore, the current study is undertaken to capture recent urban transport dynamics and implementation status of various proposals. The study aims at developing a long-term strategy for improving sustainable accessibility and mobility within the study area for next 30 years.

**The current study covers an area of 2,550 sq.km which includes all the urban growth centers identified in the Draft Development Plan for Pune Metropolitan Region (PMR) -2041.**

## 1.1 | DEFINE SUSTAINABLE MOBILITY PRINCIPLES

The Sustainable Mobility Principles aim to promote transportation systems and practices that minimize negative environmental, social, and economic impacts while meeting needs of individuals and communities. These principles include:

- **Accessibility and Connectivity |** Accessibility implies the ability of people or goods to reach destinations by different modes of transportation and Connectivity refers to linkage among regions and centers of activity. Design transportation networks shall provide seamless connections between different modes of transportation, such as public transit, cycling paths, and pedestrian walkways. Transportation options shall be convenient, reliable, and interconnected to facilitate efficient travel.
- **Land Use Integration |** Coordinate transportation planning with land use planning to create compact, mixed-use developments that reduce the need for long-distance travel and promote sustainable urban growth patterns. Encourage transit-oriented development and pedestrian-friendly urban design.
- **Social Equity |** Ensure that transportation systems are accessible and affordable for all members of society, regardless of income level, age, differently abled, ability, or location. Address transportation disparities and promote inclusivity in transportation planning and infrastructure development.
- **Environmental Sustainability |** Prioritize transportation modes that have minimal environmental impact, such as walking, cycling, public transportation, and electric vehicles. Minimize emissions of greenhouse gases, air pollutants, and noise pollution.
- **Economic Viability |** Consider the long-term economic costs and benefits of transportation systems, including infrastructure investment, maintenance, and operating costs. Encourage

efficient use of resources and reduce reliance on fossil fuels to enhance economic resilience.

- **Safety and Health |** Prioritize the safety and health of individuals by designing transportation systems that minimize the risk of accidents and injuries. Promote active transportation modes like walking and cycling to improve public health outcomes and reduce reliance on sedentary modes of transportation.
- **Innovation and Technology |** Embrace innovation and technology to improve the efficiency, safety, and sustainability of transportation systems. Explore new mobility solutions, such as shared mobility services, autonomous vehicles, and smart transportation infrastructure.

By adhering to these sustainable mobility principles, communities and policymakers can together work towards creating transportation systems that are environmentally friendly, socially equitable, economically viable, and conducive to public health and well-being.

## 1.2 | IMPACT OF NATIONAL/REGIONAL FRAMEWORKS

The **Comprehensive Mobility Plan (CMP)** shall be prepared taking due cognizance of national and regional frameworks and policies to enhance mobility, promote public transport, non-motorized transport and improve traffic safety. Various National & Regional policies and guidelines are referred to while preparation of comprehensive mobility plans are briefly discussed below.

### 1.2.1 | NATIONAL FRAMEWORKS

#### NATIONAL MISSION ON SUSTAINABLE HABITAT (NMSH), 2021

Under the National Action Plan for Climate Change, the National Mission on Sustainable Habitat is launched to cover various aspects, including better urban planning and modal shift to public transport. The objectives of the National Mission on Sustainable Habitat (NMSH) are:

- To address the issue of mitigating climate change by taking appropriate action with respect to the transport sector such as evolving integrated land use and transportation plans, achieving a modal shift from private to public mode of transportation, encouraging the use of non-motorized transport, improving fuel efficiency, and encouraging use of eco-friendly alternate fuels, etc.
- To evolve strategies for adaptation in terms of realignment and relocation, design standards and planning for roads, rail and other infrastructure to cope with climate change.

NMSH postulated 8 principles for sustainable urban transport planning:

- **Walk |** Develop neighborhoods that promote walking.
- **Cycle |** Prioritize cycle track networks.
- **Connect |** Create dense networks of streets and paths.
- **Transit |** Support high quality transit.
- **Density, Diversity and Compactness |** Optimize density and match transit capacity, Create

compact regions with short commutes.

- **Shift |** Shift from unsustainable mobility to sustainable modes by using technology, regulating road use, parking and fiscal measures.
- **Urban Transport Fund |** Institutionalize fiscal and funding mechanisms to ensure financial sustainability of investments in public transport and non-motorized transport.
- **Impact Assessment |** Evaluation and assessment measures to effectively measure Impacts of urban transport policies and projects.

## NATIONAL ELECTRIC MOBILITY MISSION PLAN (NEMMP), 2013

In 2013, Government of India introduced the National Electric Mobility Mission Plan-2020 to achieve National fuel security by promoting hybrid and electric vehicles in the country. Government aims to provide fiscal and monetary incentives to kick start EV technology. Under the NEMMP, the Government has launched the Faster Adoption and Manufacturing of Electric (FAME) vehicles scheme. This scheme has provided a major thrust towards early adoption of electric and hybrid vehicles. Further, Government has progressed in framing FAME II to boost the EV Ecosystem. The four focus areas of FAME India include:

- Technology Development
- Demand Creation
- Pilot Projects
- Charging Infrastructure

Pune has actively participated in the FAME schemes initiated by the Government of India and achieved a significant progress in adoption of electric vehicles (EVs) across various segments, including two-wheelers, three-wheelers, four-wheelers, and commercial vehicles. There have been efforts to promote electric mobility in public transportation, particularly in the bus segment. Pune has been a front runner as PMPML has already added 500 electric buses to its fleet.

## SMART CITIES MISSION, 2015

The Smart Cities Mission in India, launched by the government in 2015, aims to transform urban areas into more sustainable and citizen-friendly spaces through the deployment of smart solutions and technologies. While the mission covers various sectors including governance, infrastructure, public services, and environment, transportation is a crucial aspect within it. Smart Cities Mission enhances urban transportation through:

- **Integrated Transport Planning |** Combining walking, cycling, public transit, and private vehicles for efficiency and sustainability.
- **Public Transport Enhancement |** Expanding and modernizing public transit systems with BRT and real-time information.
- **Last-Mile Connectivity |** Innovative solutions like bike-sharing and pedestrian-friendly infrastructure.

- **Traffic Management & ITS |** Advanced traffic management technologies to reduce congestion.
- **Multimodal Integration Hubs |** Seamless integration of various transport modes.
- **Smart Parking Solutions |** Technology-driven parking optimization.
- **Promotion of Sustainable Transport |** Encouraging EVs, cycling lanes, and emission reduction policies.

Above initiatives help contribute to environmental sustainability and improve overall quality of urban life.

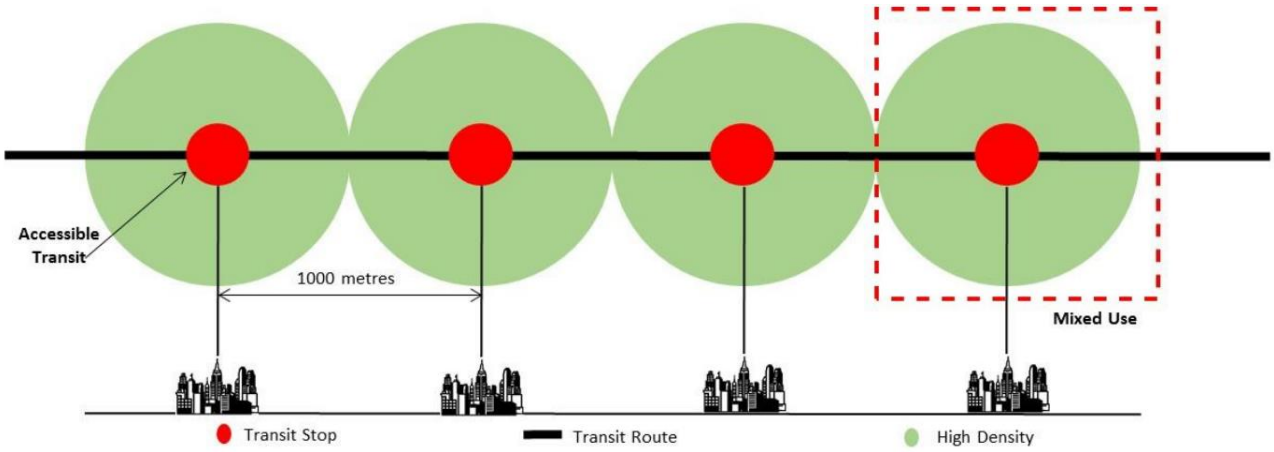
## NATIONAL TRANSIT ORIENTED DEVELOPMENT (TOD) POLICY, 2017

The Indian National TOD Policy of 2017 has a three-fold vision:

- **Enable Transformation |** Shift cities from private vehicle dependence to public transport-oriented development.
- **Accessible Public Transport |** Make public transport more accessible, promote green mobility, and reduce pollution.
- **Compact Walkable Communities |** Create livable, affordable, and walkable neighborhoods around transit hubs.

TOD emphasizes compact, mixed-use development around transit corridors like metro rail and BRTS. International examples show that while transit systems enable TOD, improving accessibility and creating walkable communities is crucial. The TOD policy aligns with the objectives of the National Urban Transport Policy through 12 guiding principles and 9 supportive tools. Influence zones are either established at transit stations or along the transit corridors. It is generally up to a radius of nearly 500-800 m of the transit station. Where the distance between the transit stations is less than 1 km and there is overlap in the influence area, it can be identified as a delineated zone (around 500m) on either side of the transit corridor within 10 - 12 minutes walking distance. The TOD Policy of PMC is presented in **Annexure 1.1**.

**Figure 1-2 | Concept of Transit Oriented Development**



## METRO RAIL POLICY, 2017

Metro Rail projects provide high-capacity public transit which is capital intensive. It is in this context that the need for a policy on metro rail is necessary to ensure that such systems are proposed, appraised and decided upon in a comprehensive manner and implemented in the most sustainable manner from the social, economic and environmental perspectives.

The Union Cabinet approved the Metro Rail Policy in August 2017. The following are some of the salient features of the 2017 policy:

- Recognition of the fast-growing need for improvements in the public transport system in a large number of cities.
- Evaluation of various options of Mass Rapid Transit Systems (MRTS), along with a comparative analysis of alternate modes of transport to be a vital part.
- Metro Rail system is often considered the most suitable urban transport system due to high capacity and speed, along with comfort.
- Comprehensive Mobility Plan (CMP) is a pre-requisite for planning Metro Rail systems in any city.
- Integration of suburban systems with the proposed Metro Rail.
- Economic Internal Rate of Return (EIRR) of 14% and above is an essential requirement for sanctioning of metro, since metro rail projects have significant economic and social benefits.
- Feeder systems up to a catchment area of 5 km of each metro station, and last mile connectivity to be included in Metro Rail project proposals.
- Focus on maximizing non-fare box revenue and revenue through commercial development at stations and land value capture.
- Efforts to be made towards reducing costs of construction and operations, with the aim of standardizing sub-systems and components.
- Appraisal by an independent agency as identified by the Ministry of Housing and Urban Affairs (MoHUA).

## HARMONIZED GUIDELINES AND STANDARDS FOR UNIVERSAL ACCESSIBILITY, 2021

The "Harmonized Guidelines and Standards for Universal Accessibility" ensure transport environments are accessible to everyone, including those with disabilities and the elderly. Key aspects include:

- **Built Environments |** Inclusive designs for public spaces and buildings.
- **Transportation |** Accessible buses, trains, metro systems, and related facilities.
- **Information and Communication |** Clear and accessible signage using visual, auditory, and tactile elements.

Implementation of these guidelines is essential for various government bodies at the central, state, and

local levels. All public procurement policies shall be aligned with these guidelines to ensure that new infrastructure and services are developed accordingly.

Promoting inclusivity guidelines ensures that all individuals, regardless of their physical abilities, can access and use public spaces and services independently and with dignity.

## 1.2.2 | REGIONAL FRAMEWORKS

In Pune several initiatives have been taken to encourage a shift from personal motor vehicles to more sustainable modes of transport through several programs and projects such as,

- Pune is the first Indian city to implement a Bus Rapid Transit (BRT) system in 2006, it also used the learnings from the pilot to launch the Rainbow BRT system in 2015.
- Development of Urban Street Design Guidelines (USDG), 2016
- Pune Street Program: 100 km of streets were redesigned as per USDG.
- Parking Policy, 2016
- Pedestrian Policy, 2016
- Comprehensive Bicycle Plan, 2017
- Formation of PUMTA, 2019
- Harit Setu initiative by PCMC with the aim of making the public environment clean, beautiful and exciting for pedestrians, cyclists, school children, and residents and to inculcate the importance of daily healthy habits of walking, cycling, and running among the citizens.
- Rolling out E-buses for PMPML
- Initiated preparation of Local Area Plan for the Metro stations

The city has consistently demonstrated its commitment to this vision by allocating a significant amount to its annual transport budget towards improving walking, cycling, and public transport infrastructure. Over the years, the city has forged partnerships with technical experts, civil society groups, and educational institutions to transform Pune as a lighthouse for other cities.

### PUNE UNIFIED METROPOLITAN TRANSPORT AUTHORITY (PUMTA)

The Pune Unified Metropolitan Transport Authority (PUMTA) is an integrated entity responsible for overseeing urban transportation in the Pune Metropolitan Region (PMR). Government of Maharashtra issued a Government Resolution (GR) on 4th June 2019 constituting PUMTA. PUMTA will function as an umbrella organization to coordinate among various agencies responsible for urban transport in PMR. It is a decision-making authority on urban transport policies, plans, projects and provides an integrated management structure. PUMTA aims to enhance coordination and efficiency across various transportation modes, ensuring sustainable and accessible mobility solutions. By working with multiple government authorities/agencies and stakeholders, PUMTA formulates and implements comprehensive transport strategies aimed at reducing congestion, improving public transit, and promoting sustainable transportation practices. This unified approach helps streamline transport

planning and policy execution, ultimately improving the quality of urban mobility for residents.

## MAHARASHTRA ELECTRIC VEHICLE POLICY, 2021

Recognizing the need to mitigate transport-related pollution, Govt. of Maharashtra has initiated the Maharashtra Electric Vehicle Policy 2021. This policy outlines a roadmap for converting public transport, freight vehicles, and personal motor vehicles to electric vehicles by 2030.

It facilitates the necessary infrastructure by supporting the setting up of EV manufacturing plants and charging units. While the EV transition aims to reduce emissions and noise pollution, efforts must continue to manage the growth of motorized vehicles; ensuring dust and noise pollution remain within acceptable limits.

## UNIFIED DEVELOPMENT CONTROL AND PROMOTION REGULATIONS FOR MAHARASHTRA STATE, 2022

The Transit Oriented Development norms for PMC, PCMC and PMRDA area have been mentioned in section 14.2.1, 14.2.5 and 14.2.2 of Unified Development Control and Promotion Regulations for Maharashtra State, 2022. According to the policy, the regulations are applicable when authorities have proposed a rapid transit system i.e., Metro Rail in their development plans or have begun to implement the same. These guidelines aim to provide provisions for promoting dense development in the vicinity of the public transport corridors thereby increasing the patronage and also improve the public transport accessibility to the people. The salient features of TOD norms are as follows:

- TOD Zone is defined as area 500 m around the proposed metro station boundary. Wherever any reservation/amenity space within such distance is utilized for the purpose of transportation as prescribed in these regulations, and the distance of 500 m shall stand relaxed up to 30%.
- The maximum permissible FSI depending upon Road width is as per the **Table 1-1**.

**Table 1-1 | Maximum Permissible FSI in the Study Area**

| No. | Road width (in m) | Maximum Permissible FSI |
|---|---|---|
| 1 | 9 m and upto 12 m | 2.5 |
| 2 | 12 m and upto 15 m | 3.0 |
| 3 | 15 m and upto 24 m | 3.5 |
| 4 | 24 m and above | 4.0 |

The maximum permissible FSI for different road widths and plot sizes have been modified in UDCPR in comparison with the Development Control and Promotion Regulations, 2017. The comparison of FSI, as per Pune DCPR-2017 and UDCPR-2022 is presented in **Annexure 1.2**.

## COMPREHENSIVE BICYCLE PLAN, 2017

The Bicycle plan is a guidance document for the city to allocate resources, undertake projects and evaluate outcomes to improve cycling. The plan proposed creation of over 400 kms of cycling friendly

streets, making Pune the first city to adopt such a plan.

## WALK SMART PEDESTRIAN POLICY, 2016

"Walk Smart Pedestrian Policy" was launched by Pune Municipal Corporation to address pedestrian safety issues and promote responsible behavior among pedestrians. The policy aims to make walking in Pune safer and more convenient by implementing various measures such as

- Infrastructure Improvements
- Public Awareness Campaigns
- Traffic Law Enforcement
- Community Engagement
- Technology Integration

## PARKING POLICY, 2016

Pune's parking policy, prepared in 2016 by Pune Municipal Corporation, aims to manage parking effectively and reduce congestion. The outcome of the Policy is:

- Parking zones with fees.
- Integrated technology for payment and enforcement.
- Encouraging alternative transportation.
- Involving public input, and
- Aligning with urban planning goals for sustainable mobility.

## URBAN STREET DESIGN GUIDELINES, 2016

In 2016, the Urban Street Design Guidelines was adopted to enhance the safety, efficiency, and aesthetics of its streets. A concise summary of the key points is presented below. Several roads have been developed by PMC and PCMC as per the policy.

- **Safety |** Emphasizing pedestrian safety with measures such as wider sidewalks, designated crossings, and traffic calming features.
- **Accessibility |** Ensuring accessibility for all users, including pedestrians, cyclists, and people with disabilities, through features like ramps and tactile paving.
- **Public Transportation |** Integrating provisions for public transportation infrastructure, such as bus stops and dedicated lanes, to encourage the use of sustainable modes of transit.
- **Green Spaces |** Incorporating greenery and landscaping elements to improve the visual appeal and environmental quality of streets.
- **Mixed-Use Development |** Encouraging mixed-use development to create vibrant streetscapes with a mix of commercial, residential, and recreational spaces.

- **Street Furniture and Lighting |** Providing guidelines for the placement of street furniture, lighting, and signage to enhance functionality and aesthetics.
- **Community Engagement |** Involving community input in the planning process to ensure that street design meets the needs and preferences of local residents and businesses.

## 1.3 | NATIONAL URBAN TRANSPORT POLICY, 2014

National Urban Transport Policy (NUTP) has been formulated by the Ministry of Urban Development in 2006 and updated in 2014 with the view of "Moving people rather than vehicles" and to transform the current urban transport system into a safe, convenient, and efficient transportation system across all urban areas in India. The objectives of the NUTP include:

- Integrating land use and transport planning
- Equitable allocation of Road Space
- Priority to the use of public transport
- Integrated public transit system
- Pedestrian facilities and pathways
- Promoting Non- motorized Vehicles
- Parking and Freight Traffic Management
- Capacity building of various institutions responsible for planning and implementation of urban transport projects
- Road safety
- Pollution Reduction

The success of any policy hinges on robust cooperation among governmental agencies, stakeholders, and city residents.

## 1.4 | DELINEATION OF STUDY AREA

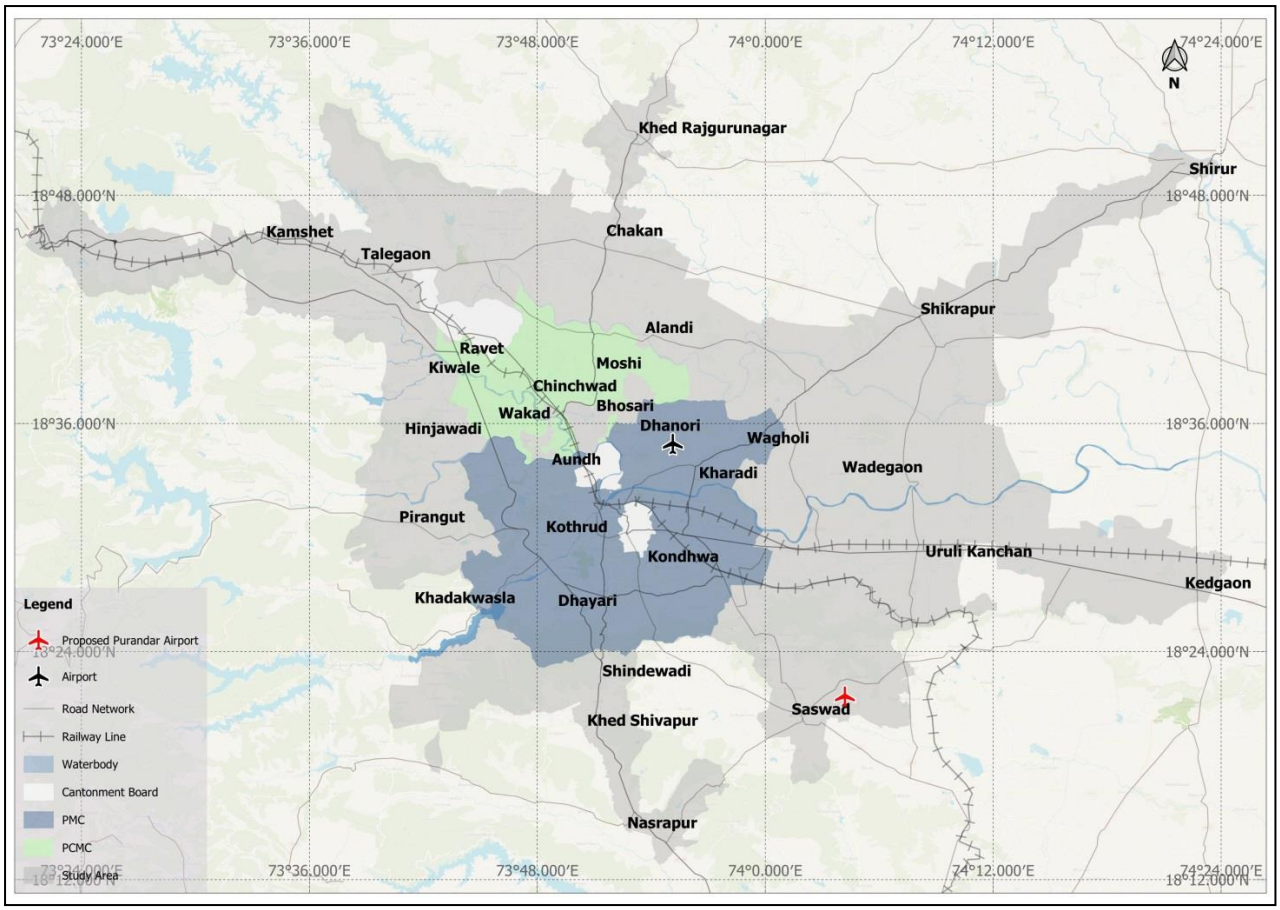
### 1.4.1 | ADMINISTRATIVE BOUNDARY

The study area considered for Updation / Revision of Comprehensive Mobility Plan comprises of urbanized and future growth centers of Pune Metropolitan Region with an area of 2550 sq. km. The area encompasses two Municipal Corporations, namely Pune and Pimpri-Chinchwad, along with three Cantonment Areas (Pune, Khadki, and Dehu Road), seven Municipal Councils, and 233 villages designated as Urban Growth Centers. It also includes urban core area, peri-urban areas, existing and upcoming industrial nodes within the Pune Metropolitan Region. The breakup of the Administrative Units of the study area and the map is presented in **Table 1-2** and **Figure 1-3** respectively. The breakup of study area by administrative units is presented in **Annexure 1-3.**

### Table 1-2 | Administrative Units in the Study Area

| No | Name of Administrative Units | Area in km$^2$ |
|---|---|---|
| **A** | **Urban Centre's in PMR** | |
| 1 | Pune Municipal Corporation | 519 |
| 2 | Pimpri Chinchwad Municipal Corporation | 181 |
| 3 | Municipal Councils | 95 |
| 4 | Cantonment Boards | 63 |
| 5 | Urban Growth Centers | 96 |
| | **Sub-Total (A)** | **954** |
| **B** | **Special Planning Area** | |
| 1 | MADC | 10 |
| 2 | MIDC | 98 |
| | **Sub-Total (B)** | **108** |
| **C** | **Villages Under Urban Growth Centers** | |
| | **Villages Under Urban Growth Centers** | **1483** |
| | **Sub-Total (C)** | **1483** |
| | **Grand Total (A+B+C)** | **2545** |
| | **Total Study Area** | **~2550** |

### Figure 1-3 | Map of the Study Area



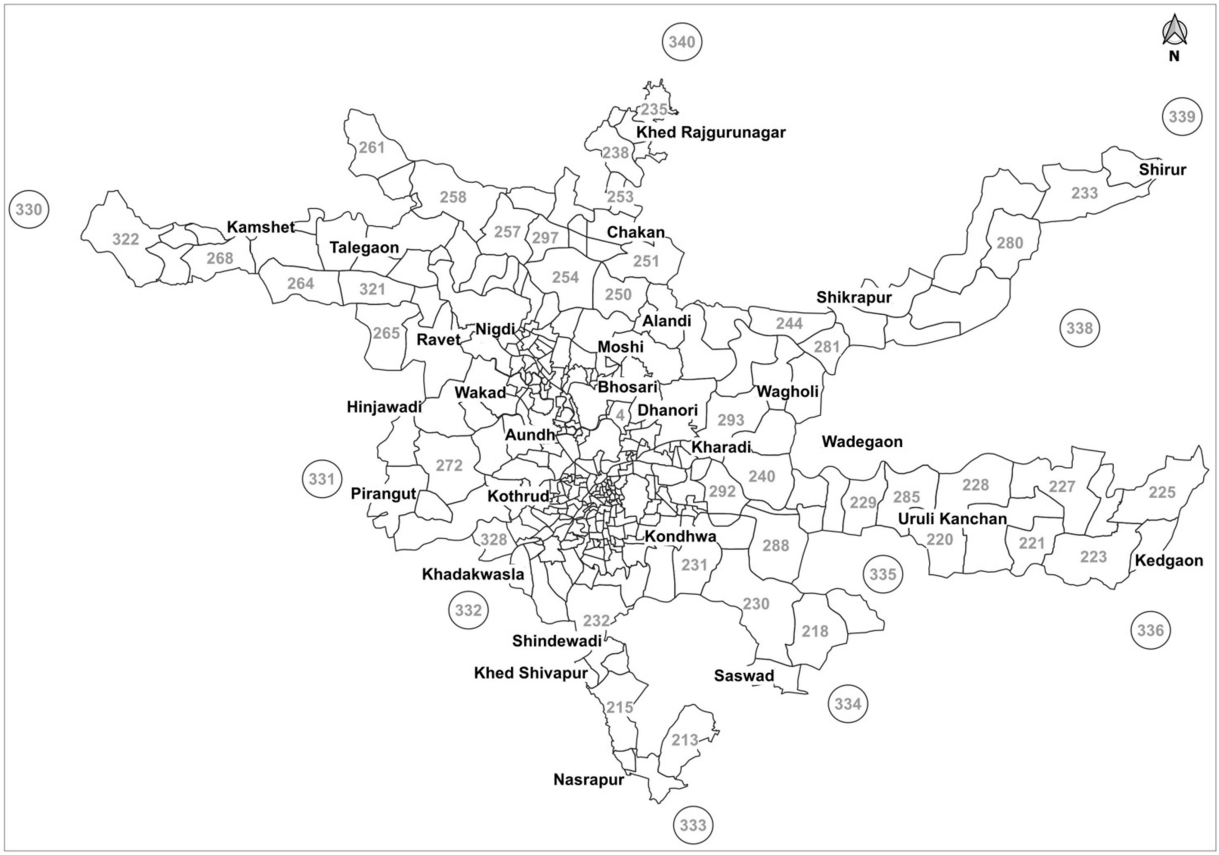
## 1.4.2 | TRAFFIC ANALYSIS ZONES

For modeling purpose, the study area is further divided into smaller Traffic Analysis Zones (TAZ). The TAZ's are split based on a combination of prevailing demarcation of wards / census blocks / villages and the previous CMP 2018 in order to ensure consistency in data and results across various transport planning activities. The external zones are considered based on the cordon roads entering/leaving the study area. The total number of zones adopted for the study area is 340 out of which 329 zones are internal and 11 zones are external. The details of Traffic Analysis Zones are mentioned in **Table 1-3** and **Figure 1-4.**

**Table 1-3 | Traffic Analysis Zones (TAZs) of the Study Area**

| No | Region | No. of TAZ |
|---|---|---|
| 1 | Pune Municipal Corporation (PMC) | 144 |
| 2 | Pimpri-Chinchwad Municipal Corporation (PCMC) | 64 |
| 3 | Cantonments (Khadki, Pune and Dehu Cantonment) | 3 |
| 4 | Rest of Study Area | 118 |
| 5 | External Zones | 11 |
| **Total** | | **340** |

**Figure 1-4 | Traffic Analysis Zones (TAZs) of the Study Area**



# 1.5 | OBJECTIVE AND VISION OF MOBILITY PLAN

## 1.5.1 | VISION

The National Urban Transport Policy, (NUTP) provides policy direction for urban mobility planning. The strategy for crafting vision involves maximizing the utilization of existing resources and seamlessly integrating them into the broader framework to maximize their potential to enhance the overall vision for Pune Metropolitan Region.

**The vision for the Comprehensive Mobility Plan is as follows:**

### Vision for CMP

***To establish Pune as "India's most liveable habitat, characterized by a people centric sustainable environment with seamlessly integrated land-use and transportation system that prioritize convenient mobility, Maximum accessibility & users safety".***

## 1.5.2 | GOALS AND OBJECTIVES

Comprehensive Mobility Plan (CMP) for the city is a long-term strategy to improve the mobility and accessibility for all its residents through holistic and multi-modal approach. Objectives of CMP include prioritizing mobility for all sections of the society, improve the share of public transport and NMT, promote EV vehicles to reduce the carbon footprint, integration of land-use with transport, traffic demand management measures including use of ITS, optimize the movement of goods through development of truck terminals/logistic parks, and improve the road safety. The sustainable transport goals identified for the study area are presented in **Table 1-4**.

**Table 1-4 | Sustainable Transport Goals of CMP for the Study Area**

| Goal | Description | Target |
|---|---|---|
| **Mode share** | Increasing the public transport share from the existing 13% to 50% in the future. | 30 years |
| | Walking and cycling should account for 35% of all person trips* | 10 years |
| **Accessibility to Public Transport Jobs near transit** | At least 80% of the population in the city should be within a walk-able distance of 500m from a basic public transport service with a frequency of at least 12 buses/ hour. | 5 years |
| | At least 50% of the population in the city should be within a walk-able distance of 500m from a mass rapid transit network. | 10 years |
| | At least 60% of jobs in the city should be within a walk-able distance of 500m from a basic public transport service with a frequency of at least 12 buses/ hour. | 5 years |
| | At least 40% of jobs in the city should be within a walk-able distance of 500m from a mass rapid transit network. | 10 years |
| **Parking** | On-street parking on arterial/sub-arterial roads shall be based on parking fees.<br>▪ 30% of the roads<br>▪ 50% of the roads | 5 years<br>10 years<br>5 years |

| Goal | Description | Target |
|---|---|---|
| | The study area will establish market-based parking fees and implement IT-based systems for fee collection and enforcement | |
| **Electric Vehicle Adoption** | To achieve an EV penetration rate of,<br>• 10% across all vehicle segments<br>• 10% in case of two wheelers<br>• 20% in case of three wheelers<br>• 5% in case of four wheelers | 5 years |
| | • 25% electrification of PMPML Bus Fleet | 2 years |
| **Road Accidents** | To achieve 50% reduction in fatal accidents | 5 years |

** - The 35% share of NMT mentioned is exclusive walk and cycling trips and does not include access trips to public transport. Considering 70% of access trips to public transport is by walking/cycling the total walking/cycling share will go up from 41.4% to 70% in 2054. i.e. from current 56.71 lakh to 240.04 lakh trips. This is due to the significant increase in public transport share in future. This clearly indicates the substantial increase in NMT trips in future.*

## 1.6 | REVIEW AVAILABILITY OF RESOURCES

Past studies provide valuable insights on the various Infrastructure Proposals, Development Plans and recommendations for sustainable urban transportation. Integrating findings from these studies into Pune's CMP ensures more effective and sustainable mobility solutions. The documents that have been referred include:

- Comprehensive Traffic & Transportation Study (CTTS) for Pune Metropolitan Region-2020
- Comprehensive Mobility Plan (CMP) for Pune Metropolitan Region - 2018
- Draft Development Plan of Pune Metropolitan Region PMR (2021-2041)
- Revising/ Updating the City Development Plan (CDP) of Pune City-2041 under JNNURM-2012
- Draft Development Plan for Old Pune City (2007-2027) - Pune Municipal Corporation PMC (2013)
- Pimpri Chinchwad City Development Plan 2006-2012
- DPR for Pune Metro Rail Phase 1 (Line 1 & Line 2)
- DPR for Pune Metro – Line 3 (Hinjawadi to Shivaji Nagar)
- DPR for Pune Metro Line 1 Extension from PCMC to Nigdi
- DPR for Pune Metro Line 1 Extension from Swargate to Katraj

### 1.6.1 | CTTS FOR PUNE METROPOLITAN REGION, 2020

The CTTS aims to develop a long-term transport strategy for the Pune Metropolitan Region until 2048, aligning with the National Urban Transport Policy (NUTP), 2006.

Key proposals include the development of five ring roads totaling 465 km, extensive road widening and new links, construction of new railway lines and stations, and recommendation of significant public transport enhancements such as Metro, Light Metro, Suburban, and BRTS routes. Additionally, the plan emphasizes Non-Motorized Transport (NMT) infrastructure, advanced traffic management

strategies, Intelligent Transport Systems (ITS), and freight management improvements to promote sustainable and efficient urban mobility.

### 1.6.2 | CMP FOR PUNE METROPOLITAN REGION, 2018

The Comprehensive Mobility Plan (CMP) undertaken by PMRDA in 2018 provides a strategic long-term transport plan for Pune Metropolitan Region, covering short, medium, and long-term proposals.

- Identification of Network for the development of MRTS systems such as Metro, Light Metro, BRTS covering the major corridors.
- Identification of Multimodal Interchanges for various modes of Transport.
- NMT improvements and a comprehensive traffic management strategy to address the growing transport needs of the region.
- Identification of New ISBT and Intra city Bus terminals, Depot facilities as well as upgradation
- Road development in terms of widening, missing links, new links, development of river bridges to reduce the travel times and ROB/RUB proposals.
- Truck terminals to cater to the growing freight traffic.

The status of proposals provided in CMP 2018 is provided in **Annexure 1.4**.

### 1.6.3 | DRAFT DEVELOPMENT PLAN OF PUNE METROPOLITAN REGION, 2021-2041

PMRDA has prepared the Draft Development Plan for PMR that is envisioned for 2041 with intent to promote integrated and inclusive growth and guide the present and future sustainable development of rural areas, towns and cities. It includes planning jurisdictions of two Municipal Corporations, seven Municipal Councils, three Cantonment Boards, two Nagar Panchayats and SPAs - MIDC, MADC within PMR.

**Vision |** The main vision of Draft Development Plan is to create “India’s most livable habitat.” through simulating prudent growth through development of employment centers, effective resource management, build self-sufficient communities with adequate access to facilities, convenient mobility and accessibility, improving the resilience of the city by reducing vulnerability & disaster mitigation.

**Proposals for Mobility & Accessibility**

- **Interconnectivity |** Interconnectivity with the regional network, Municipal Corporations and councils, industrial areas, TP schemes and integrated townships is considered.
- **Continuity |** Connectivity between adjoining urban growth centers as well as between urban and rural planning areas is considered for effective traffic dispersal.
- **Pragmatic Approach |** Proposed roads took cognizance of contours, forests, water bodies, defense lands, railway buffers, approved building plans, and major existing structures.

- **Dense Urban Grid and Hierarchy |** An urban grid of 500m x 500m is considered for the road network. Hierarchy in the road network is proposed categorizing roads into primary, secondary, collector and local level roads.
- **Multimodal Corridors |** PMRDA Ring Road is proposed as multimodal corridor.
- **Public transport |** 7 Metro corridors identified in the CMP forms the key projects.
- **Non-Motorized Transport |** NMT is proposed for last-mile connectivity from neighborhoods to arterial roads.
- **Accessibility |** Accessibility to major development zones, all proposed amenities and major transit points such as metro, bus terminals, railway stations is provided.
- **Intermodal Integration |** Intermodal integration at intersecting locations between Rail and Roads is proposed to encourage modal shift to rail-based public transport and public transport terminals in urban growth centers.
- **Logistics Planning |** Logistic hubs/Truck terminals are proposed along the Ring Roads and highways at strategic locations.
- The Draft Development Plan also covers the land use planning strategy. It elucidates each Land Use Zone with its objectives and Definition and parameters used to delineate the zone.

### 1.6.4 | REVISING/UPDATION OF CDP FOR PUNE CITY, 2041 (JNNURM, 2012)

City Development Plan (CDP) of Pune City for 2041 was carried out by Pune Municipal Corporation for an area of 243.84 Sq. km under the Jawaharlal Nehru National Urban Renewal Mission (JNNURM).

**Vision |** The development plan's mission is to create “an economically vibrant and sustainable city with diverse opportunities and rich culture, where all citizens enjoy a safe and liveable environment with good connectivity”.

**Road and Transportation Sector**

The aim of CDP is “to provide a safe, efficient and cost-effective multimodal transportation system that is accessible to all residents and visitors, protects environment, promotes economic development and is compatible with and supportive of the city’s future land use plan”. Some of the recommendations of CDP include,

- Focus on strengthening of fleet capacity, quality, and newer systems in outer corridors.
- Introduction of new Modes of public transport such as Metro Rail, Light Rail Transport System (LRTS) and Monorail System.
- Recommendation of Feeder services and NMT network for Metro Rail.
- Establishment of Passenger Information System.
- Implementation of Special projects Like Tunnels, High-Capacity Mass Transit Route (HCMTR) and Flyovers as per CMP.
- Discouraging private modes through traffic management plans such as central area traffic

management, introduction of congestion charges, parking charges, and lowering ROW.

## 1.6.5 | DRAFT DEVELOPMENT PLAN FOR OLD PUNE CITY (2007-2027), PMC (2013)

**Vision |** "An economically vibrant and sustainable city with diverse opportunities and rich culture, where all citizens enjoy a safe and livable environment with good connectivity"

**Broad Policies of Development Plan**

- Policies have been introduced to boost Pune as Special Education hub
- Encourage development of multi-storied parking lots within 200 meters of key transportation hubs and congested areas.
- Policy for Redevelopment of congested area.
- Policy for Densification along Metro Influence zone.
- Policy of granting FSI with premium charge is introduced, which will be helpful for generation of more housing stock in the city.
- Recreation Policy for Creation of more open spaces.
- Heritage Policy for Development of Area around Shaniwarwada.

## 1.6.6 | PIMPRI CHINCHWAD CITY DEVELOPMENT PLAN 2006-2012

**Vision |** Pimpri-Chinchwad will be the place to live, spend and entertain. It will contribute towards maintaining and sustaining the vibrant economic growth of the region through a modern & systematized administration, an optimum level of services and enriched environment.

**Broad Policies of Development Plan**

- Ensure economic development while improving quality of life in Pimpri-Chinchwad.
- Bridge gap between 'haves' and 'have-nots' by providing basic infrastructure to urban poor
- Aim to provide universal access to water, sewerage, and waste management within seven years
- Enhance standard of education to reduce dependency on Pune for quality education
- Establish good educational institutions to boost economic development
- Strive for efficient and transparent governance to support economic growth
- PCMC's mission | Become a digitally governed corporation through smart governance.

## 1.6.7 | DPR FOR PUNE METRO RAIL PHASE 1 (LINE 1 & LINE 2)

The DPR for Pune Metro Rail Phase 1 covers an aggregate length of 31.254 kms through two corridors namely,

- Corridor 1- PCMC to Swargate, a length of 16.589 Km with 5 Km underground and 11.5 Km elevated, comprising 14 stations (9 Elevated and 5 Underground).
- Corridor 2 - Vanaz to Ramwadi, a length of 14.665 Km entirely elevated with 16 stations.

Metro is proposed on a standard gauge with a design speed of 80 kmph and a scheduled speed of 33 kmph. The fares are collected through Automatic Fare Collection System and the trains are equipped with all the latest safety features. The total estimated cost of construction at November 2015 price is Rs. 11,522 Crores. The estimated daily ridership of the two corridors is expected to reach 7.34 lakhs by the year 2031. The stretch between PCMC and District Court and Vanaz to Ramwadi are currently operational.

### 1.6.8 | DPR FOR PUNE METRO – LINE 3 (HINJAWADI TO SHIVAJI NAGAR)

The DPR for line 3 between Hinjawadi to Shivaji Nagar metro station starts from Maan, Hinjawadi and ends at Shivaji Nagar metro station. This is being implemented by a Special Purpose Vehicle 'Pune IT City Metro Rail Ltd.'. The metro line is of 23.3 kms in length and is completely elevated with 23 stations. This line is expected to serve around 3.33 lakh commuters daily by 2028 and is being implemented at a cost of Rs. 8,313 cores. This project is currently under construction and is expected to be operational by March 2025.

### 1.6.9 | DPR FOR PUNE METRO LINE 1 EXTENSION FROM PCMC TO NIGDI

This updated DPR is prepared for the extension of the Pune Metro Phase 1 North South Corridor line 1 from PCMC to Nigdi. It runs for a length of 4.4 kms. It is an elevated stretch with 3 stations and the estimated cost of construction is Rs. 910.18 crores. It is estimated the entire line from Swargate to Nigdi will have a daily ridership of 8.67 lakhs by 2053. The construction of this line is currently underway.

### 1.6.10 | DPR FOR PUNE METRO LINE 1 EXT FROM SWARGATE TO KATRAJ

The DPR of Swargate to Katraj metro line is an extension of the existing line 1 between PCMC and Swargate. The line runs for a length of 5.46 km and consists of 3 stations. This stretch is completely underground and is estimated to become operational by 2027 with an expected daily ridership of 6.68 lakhs in 2027 and serving about 10.5 lakhs by 2057.

## 1.7 | STAKEHOLDERS' IDENTIFICATION

Identifying the stakeholders and understanding their role in the process is important to achieve the overall goals of Comprehensive Mobility Plan. The stakeholders are identified and listed below. The agencies responsible for civic amenities in the study area are,

- **PMC |** Civic body for Pune Municipal Corporation Area.
- **PCMC** | Civic body for Pimpri-Chinchwad Municipal Corporation Area.
- **Cantonment Board** | Pune, Khadki and Dehu Cantonment Boards are responsible for the civic

administration of the respective areas.

- **PMRDA** | Preparation of spatial plans as well as planning and implementation of special projects (Ring Road, TP Schemes, Line 3 metro etc.) in Pune Metropolitan Area.
- **Municipal Councils** | The respective Municipal Councils are responsible for the maintenance and upkeep of civic facilities.
- **MIDC** | Development of industrial areas and acts as a special planning authority, e.g. Hinjawadi area is managed by MIDC.

The list of agencies responsible for urban transport in PMR is described below,

- **PMPML** | Planning and Operation of city bus services in Pune Metropolitan Area.
- **Maha Metro** | Planning, Implementation and Operations of Metro in PMR.

The list of agencies responsible for Regional Connectivity in PMR is described below,

- **MSRTC** | Interstate bus operations and maintenance of Bus stands/Depots.
- **Central Railways** | Planning and Operation of Suburban rail services/Intercity Rail Terminals.

The list of agencies responsible for Road development in PMR is described below,

- **PWD** | Development and Maintenance of State Highways/ MDR/ ODR.
- **MSRDC** | Development and Maintenance of State Highways/Way side amenities assigned by State Government.
- **NHAI** | Development and Maintenance of National Highways.

**RTO** | Responsible for managing driving licensing, vehicle registrations, permits and route licensing.

**Traffic Police** | Responsible for traffic management and enforcement in PMR.

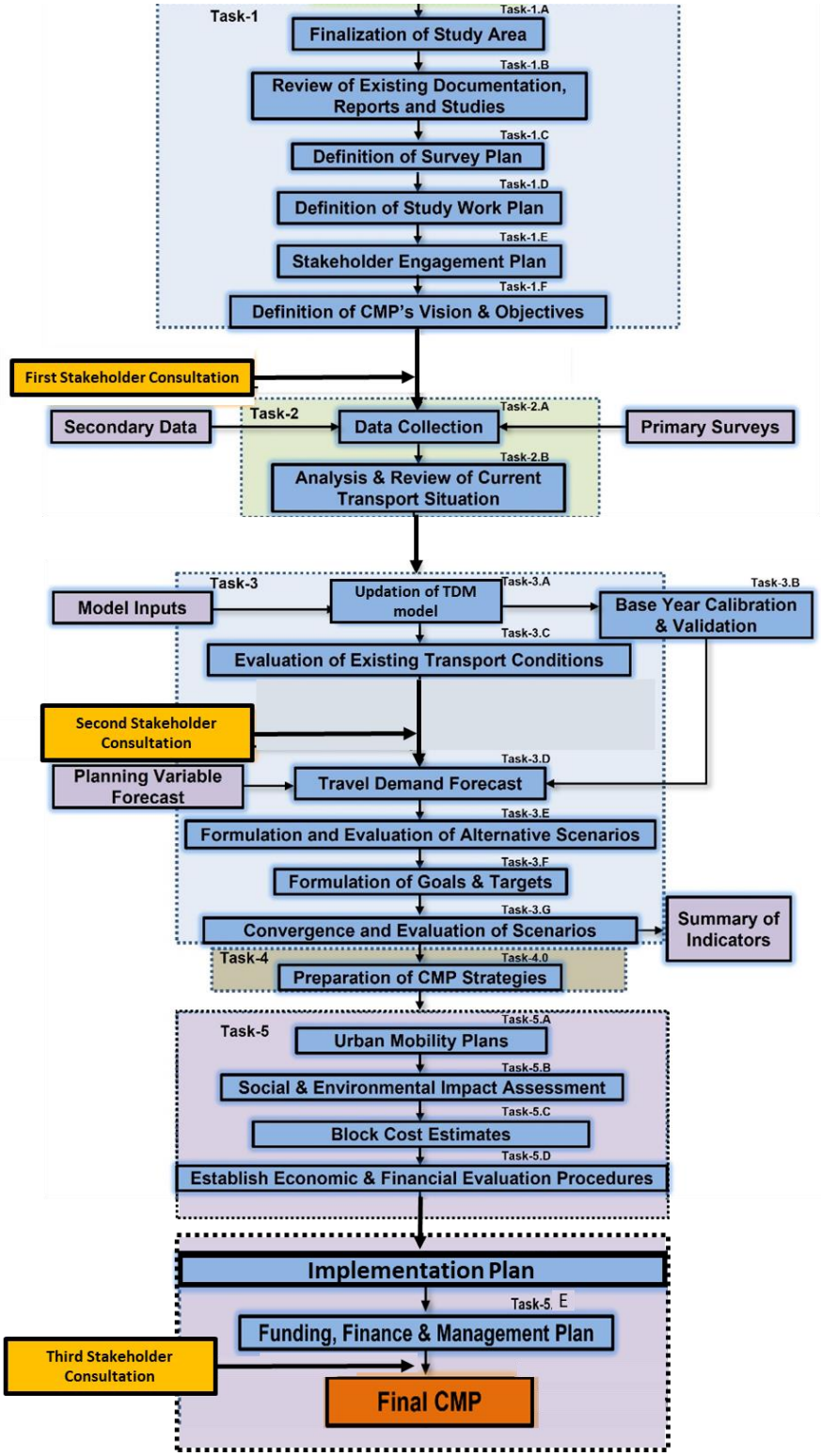
**State Pollution Control Board** | Responsible for the environmental protection by prescribing and monitoring the emission standards.

Other stakeholders include Taxi Operations, Rickshaw Unions, IPT Associations and operators, NGO, Academicians and residents/citizen forums.

## 1.8 | APPROACH AND METHODOLOGY

The brief methodology adopted for preparation of CMP is presented in **Figure 1-5.**

**Figure 1-5 | Approach and Methodology**



# *Chapter-2*

*Review of City Profile*

# 2 | REVIEW OF CITY PROFILE

The Study Area considered for updation of CMP is about 2,550 sq. km covering Pune, Pimpri-Chinchwad Municipal Corporations, Municipal Councils and surrounding Urban Growth Centers[1]. As per 2011 Census, the Study Area has a population of 66.45 lakhs and the estimated current population (2024) of the Study Area is about 103.78 lakhs. The Study Area comprises of:

- Pune Municipal Corporation (PMC)
- Pimpri - Chinchwad Municipal Corporation (PCMC)
- Cantonment Boards (Pune, Khadki, Dehu)
- Municipal Councils (Alandi, Shirur, Khed, Chakan, Talegaon, Lonavala, Saswad)
- MIDC and MADC
- Villages under Urban Growth Centers

Thus, the Study Area can be broadly divided into PMC, PCMC and the rest of Pune Metropolitan Region (PMR). The rest of PMR includes Cantonment areas, Municipal Councils, MIDC/MADC and villages under Urban Growth Centers.

## 2.1 | DEMOGRAPHY

### 2.1.1 | POPULATION

The population of the Study Area is 66.87 lakhs as per 2011 census and the estimated current population (2024) is about 103.78 lakhs. Out of 103.78 lakhs, PMC contributes to 46.27 lakhs followed by PCMC with 33.70 lakhs, Cantonment areas with 1.99 lakhs and rest of PMR with 21.80 lakhs. The estimated population of the Study Area is presented in **Table 2-1**. The past trends of population in the Study Area are shown in **Figure 2-1**.

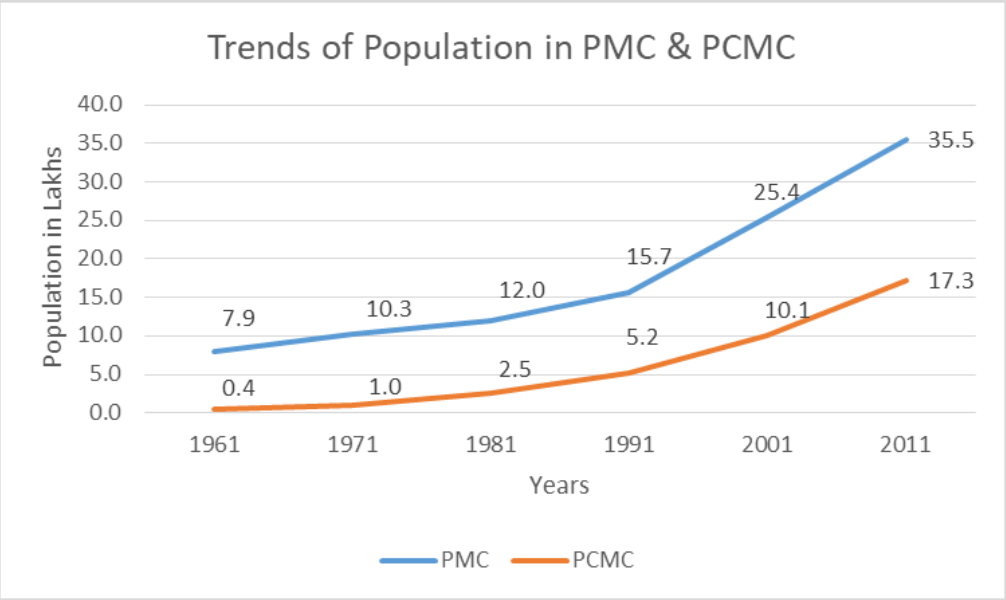
It can be observed that in the last decade PMC and PCMC have added 9.0 lakh and 16.44 lakhs people with a decadal growth rate of 20% and 81% respectively. The overall population growth rate in the Study Area in the last decade has been 34%. The zone-wise population estimates for 2024 are presented in **Annexure 2-1**.

[1] Development Plan prepared by PMRDA has earmarked 18 Growth centers including 233 villages which represent areas with high urbanization potential. Hence, these areas are considered as Urban Growth Centers for the purpose of the current study.

**Table 2-1 | Population of the Study Area**

| Administrative Area | Area (Sq.km) | Population in Lakhs | |
|---|---|---|---|
| | | 2011 | 2024 |
| PMC | 519 | 35.53 | 46.27 |
| PCMC | 181 | 17.27 | 33.70 |
| Cantonment | 64 | 1.99 | 1.99 |
| Rest of PMR | 1781 | 12.07 | 21.80 |
| **Total** | **≈2550** | **66.87** | **103.78** |

**Figure 2-1 | Trends of Population in PMC and PCMC**

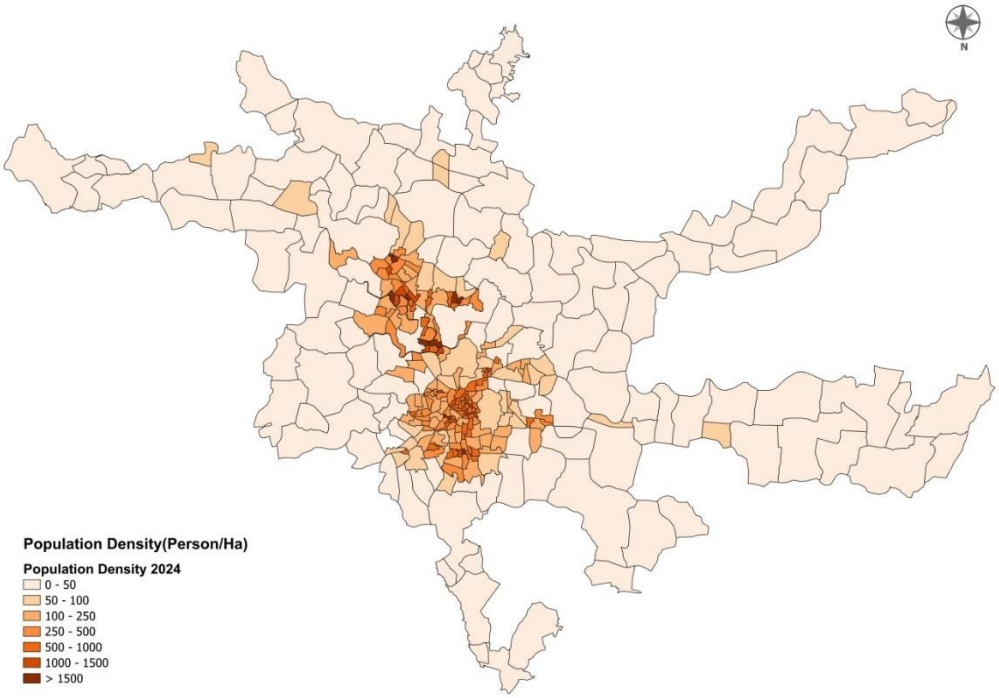



## 2.1.2 | POPULATION DENSITY

Population density of PMC, PCMC, Cantonment and Rest of PMR in 2024 is 89 pph[2],186 pph,31 pph and 12 pph respectively. The population density map for the Study Area is given in **Figure 2-2**.

[2] pph – Persons per hectare

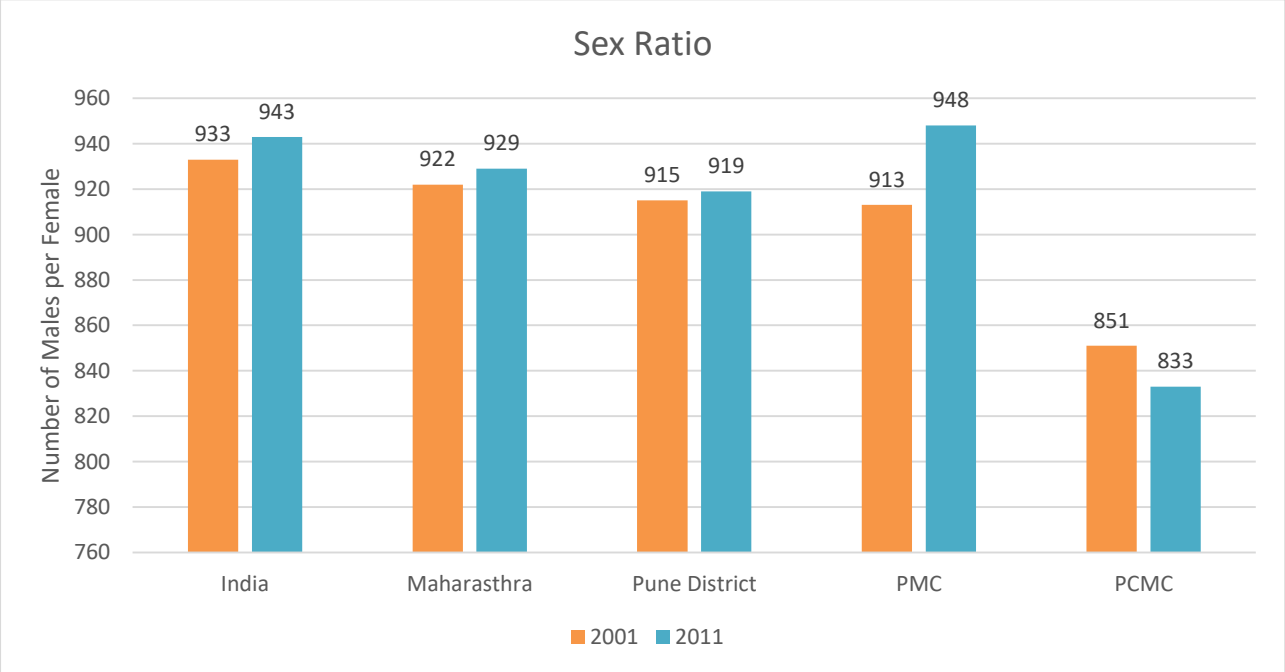
**Figure 2-2 | Map showing Population Density in the Study Area**




## 2.1.3 | SEX RATIO

As per the District Census Handbook – Maharashtra, Census of India 2011, Sex ratio for PMC and PCMC is 948 and 833 respectively.

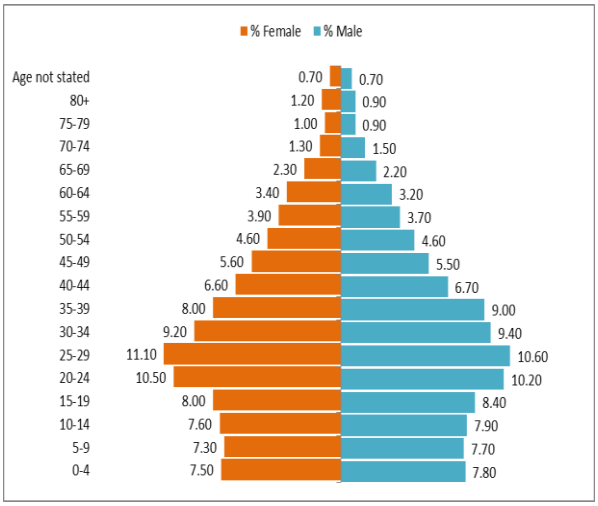
**Figure 2-3 | Sex Ratio for PMC and PCMC**

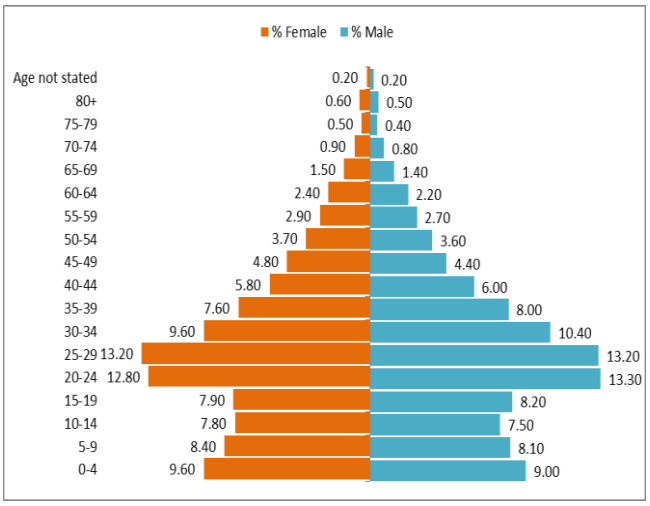


## 2.1.4 | DISTRIBUTION OF POPULATION BY AGE AND SEX

The distribution of age-sex pyramid for PMC and PCMC showed a demographic transition with largest share of population in the age group of 20-29. The age-sex pyramid of both PMC and PCMC are presented in the **Figure 2-4**.

**Figure 2-4 | Age Sex Pyramid for PMC and PCMC**




## 2.1.5 | EMPLOYMENT

As per 2011 census, the working population in PMC and PCMC is 14.56 lakhs and 6.76 lakhs respectively. The past trends of working population in PMC and PCMC is presented in **Table 2-2**. The map showing employment density in the study area is presented in **Figure 2-5**. The detailed list of TAZ wise Employment is provided in **Annexure 2-2**.

**Figure 2-5 | Employment Density for the Study Area**

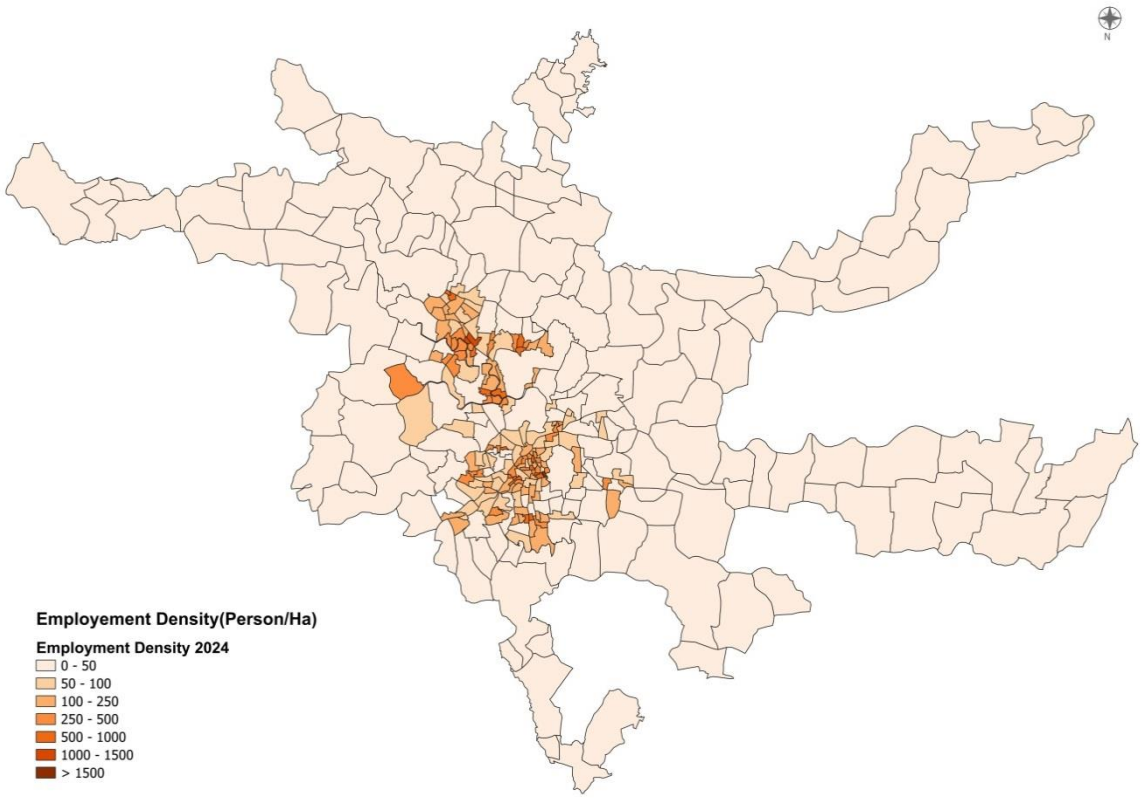



**Table 2-2 | Trends of Working Population in PMC and PCMC**

| Year | PMC | PCMC |
|---|---|---|
| 1991 | 5,31,493 | 1,66,833 |
| 2001 | 8,65,150 | 3,50,260 |
| 2011 | 14,56,858 | 6,76,800 |
| 2024 | 19,98,692 | 14,82,710 |

*Source: Census of India – 1991, 2001, 2011, current study estimates.*

## 2.1.6 | WORK FORCE PARTICIPATION RATE (WFPR)

The Work Force Participation Rate (WFPR) is an important parameter indicating the economic activity of the area. As per Census 2011, the WFPR of male in PMC and PCMC area is 55% and 59% respectively whereas WFPR of female in PMC and PCMC area 21% and 16% respectively. The trends of WFPR for PMC and PCMC are presented in **Table 2-3**.

**Table 2-3 | Trends of Work Force Participation Rate (WFPR) in PMC and PCMC**

| Year | PMC | PCMC |
|---|---|---|
| **1991** | 39% | 22% |
| **2001** | 39% | 36% |

| Year | PMC | PCMC |
|---|---|---|
| **2011** | 41% | 39% |
| **2024** | 43% | 44% |

*Source: Census of India – 1991, 2001, 2011, current study estimates.*

## 2.1.7 | INDUSTRIES

Pune has well-established manufacturing in glass, sugar and forging industries since the 1950-60s. It has a growing industrial hinterland, with many information technology and automotive companies setting up factories in Pune district.

The Kirloskar Group was the first to bring industry to Pune in 1945 by setting up Kirloskar Oil Engines Ltd. at Khadki. Kirloskar Brothers Limited (India's largest manufacturer and exporter of pumps and the largest infrastructure pumping project contractor in Asia), Kirloskar Oil Engines (India's largest diesel engine company), Kirloskar Pneumatics Co. Ltd., and other Kirloskar companies are based in Pune.

Pune is also known as the “Motor City” due to the presence of many automotive companies such as Bajaj Auto, Tata Motors, Mahindra & Mahindra, Mercedes Benz, Force Motors (Firodia-Group), Kinetic Motors, General Motors, Land Rover, Jaguar, Renault, Volkswagen and Fiat etc. The Hinjawadi IT Park (officially called the Rajeev Gandhi IT Park) is developed by MIDC on Western suburb. It is spread over 11 $km^2$. It has over 200 IT companies and employs over 5 lakh people.

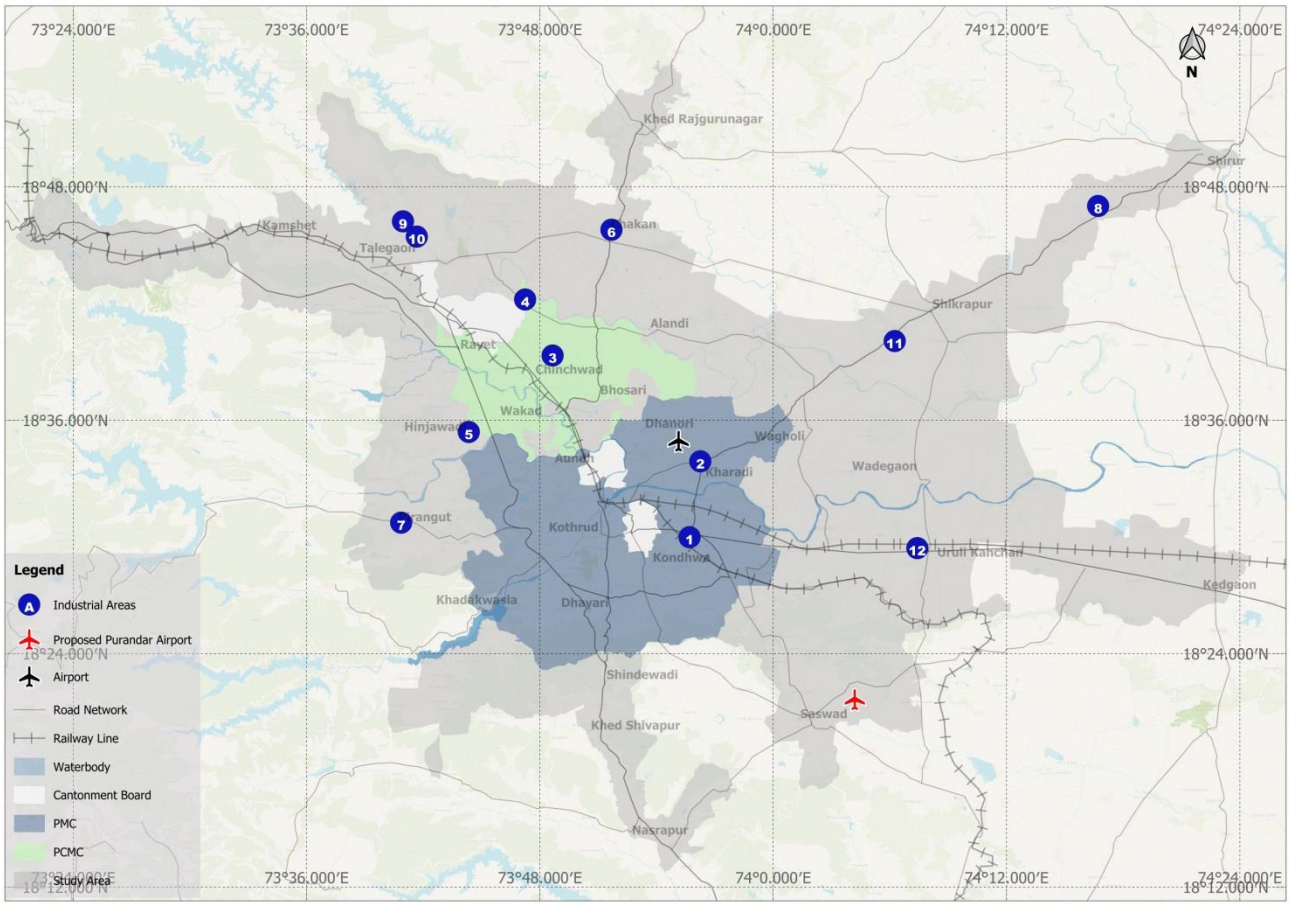
Serum Institute of India, the world's fifth largest vaccine producer by volume has a manufacturing plant located in Pune. According to the Indo-German Chamber of Commerce, Pune has been the single largest hub for German companies for the last 60 years. Over 225 German companies have set up their businesses in Pune. Many industrial areas are located in the Study Area which employs large number of people and details of industrial area by type is presented in **Table 2-4** and **Figure 2-6**. Industrial areas generate large number of commercial and passenger trips.

**Table 2-4 | Industrial Areas in the Study Area**

| No. | Name of the Industrial Area | Developed By | Type of Industries |
|---|---|---|---|
| 1 | Hadapsar | - | Engineering, Auto ancillary, Food, IT |
| 2 | Kharadi | MIDC | IT, Engineering |
| 3 | Pimpri Chinchwad | MIDC | Engineering, Auto, Auto Ancillary, Pharmaceutical |
| 4 | Talawade Software Park | MIDC | IT |
| 5 | Hinjawadi | MIDC | IT, Pharmaceutical, Auto ancillary |
| 6 | Chakan | MIDC | Engineering, Auto, Auto ancillary |
| 7 | Pirangut | - | FMCG, Pharmaceutical, Engineering |
| 8 | Ranjangaon | MIDC | White goods, FMCG, Auto, Engineering, Electronics |
| 9 | Talegaon Dabhade | MIDC | Engineering, Auto, ICD |
| 10 | Talegaon Floriculture Park | MIDC | Floriculture, Inland Container Deport |

| No. | Name of the Industrial Area | Developed By | Type of Industries |
|---|---|---|---|
| 11 | Sanaswadi | - | Steel, Engineering, Auto, Auto Ancillary |
| 12 | Uruli Kanchan | - | Engineering, Paper, Agricultural Research |

**Figure 2-6 | Industrial Areas in the Study Area**




## 2.1.8 | EDUCATION AND RESEARCH CENTRES

Pune is known as the “Oxford of the East" due to the presence of several well-known educational institutions in the city. The city has emerged as major educational hubs with a significant number of international students in the country are studying in Pune. Some institutes of national importance like Fergusson College, Savitribai Phule Pune University of Pune, College of Engineering Pune (COEP), and Symbiosis Group of Institutions are located in Pune.

The details of school and colleges in PMC and PCMC and Pune District is presented in the **Table 2-5**. As per the data from the Education Department, total 156 colleges and 1,810 schools are located within the PMC and PCMC.

**Table 2-5 | Details of Schools and Colleges (2016-2017) in PMC&PCMC and Pune District**

| Institution Type | PMC & PCMC | Pune District |
|---|---|---|
| Schools | 1,810 | 7,198 |
| Colleges | 156 | 374 |

The category wise colleges located within Pune district are presented in the **Table 2-6.**

**Table 2-6 | Category-wise Colleges in Pune District (2016-2017)**

| No. | Colleges | Numbers |
|---|---|---|
| 1 | Engineering and Management | 160 |
| 2 | Arogya Vigyan | 28 |
| 3 | B.Ed. | 32 |
| 4 | Pharmacy | 18 |
| 5 | Law | 14 |
| 6 | Architecture | 7 |
| 7 | Arts, Commerce and Science | 115 |
| | **Total** | **374** |

*Source - ESR 2016-17*

## 2.1.9 | TOURISM

Pune is known as the **Queen of the Deccan** as it is surrounded with green hills and placid lakes with salubrious climate. It is also cultural capital of Maharashtra. Pune Metropolitan Region is dotted with various kinds of tourist locations like historical, spiritual and religious, hill stations, trekking spots, museums, amusement parks, waterfalls etc., which are attracting the tourists of all age groups. Due to the presence of many tourist locations, Pune is visited by vast numbers of domestic and international tourists every year. Pune is the most preferred destination for foreign tourists in Maharashtra after Mumbai. Some of the important tourist destinations in the PMR is presented in the **Table 2-7**.

**Table 2-7 | Tourist Locations in the Study Area**

| No. | Name | Type |
|---|---|---|
| 1 | Shaniwar Wada | Historic |
| 2 | Aga Khan Palace | Historic |
| 3 | Sinhagad Fort | Historic |
| 4 | Bund Garden | Historic |
| 5 | Lal Mahal | Historic |
| 6 | Raja Dinkar Kelkar Museum | Historic |
| 7 | Parvati Hill | Historic |
| 8 | Mahadji Shinde Chhatri | Historic |
| 9 | National War Memorial Southern Command | Historic |

| No. | Name | Type |
|---|---|---|
| 10 | Mahatma Phule Museum | Historic |
| 11 | Pataleshwar Cave Temples | Historic |
| 12 | Vishram Baug Wada | Historic |
| 13 | Tribal Research & Training Institute | Historic |
| 14 | Sarasbaug Ganesh Temple | Leisure |
| 15 | Rajiv Gandhi Zoological Park | Leisure |
| 16 | Khadakwasla Dam | Leisure |
| 17 | Osho International Meditation Resort | Leisure |
| 18 | Pu La Deshpande Garden | Leisure |
| 19 | Morya Gosavi Temple | Religious |
| 20 | Sant Dnyaneshwar Mandir | Religious |
| 21 | Sant Tukaram Maharaj Temple | Religious |
| 22 | Shrimant Dagdusheth Ganpati Temple | Religious |
| 23 | St Mary's Church | Religious |
| 24 | Chaturshrungi Devi Temple | Religious |
| 25 | Shri Mahalaxmi Mandir | Religious |
| 26 | Tulshi Baug | Religious |
| 27 | Ohel David Synagogue | Religious |
| 28 | Shree Chintamani Vinayaka Temple Theur | Religious |
| 29 | Prati Shirdi | Religious |

## 2.2 | REVIEW OF EXISTING TRANSPORT SYSTEM

To understand the existing transport scenario in the Study Area, secondary data related to transport infrastructure and services, travel demand, on-going and proposed projects, is collected and presented in **Table 2-8**.

**Table 2-8 | Details of Secondary Data collected from various Agencies**

| No. | Name of the Agency | Data Collected |
|---|---|---|
| 1 | RTO | ▪ Vehicle Registration Data<br>▪ Vehicles Permits |
| 2 | Traffic Police | ▪ Road Accidents |
| 3 | Airport Authority of India | ▪ Traffic Data |
| 4 | Directorate of Economics & Statistics, GoM | ▪ Employment<br>▪ (MIDC & Other Industrial Areas) |
| 5 | Indian Railways | ▪ Station Wise Ticket Sold<br>▪ Data for Passengers at Station over past 5 years |
| 6 | PMPML | ▪ Route Wise Ridership Details |

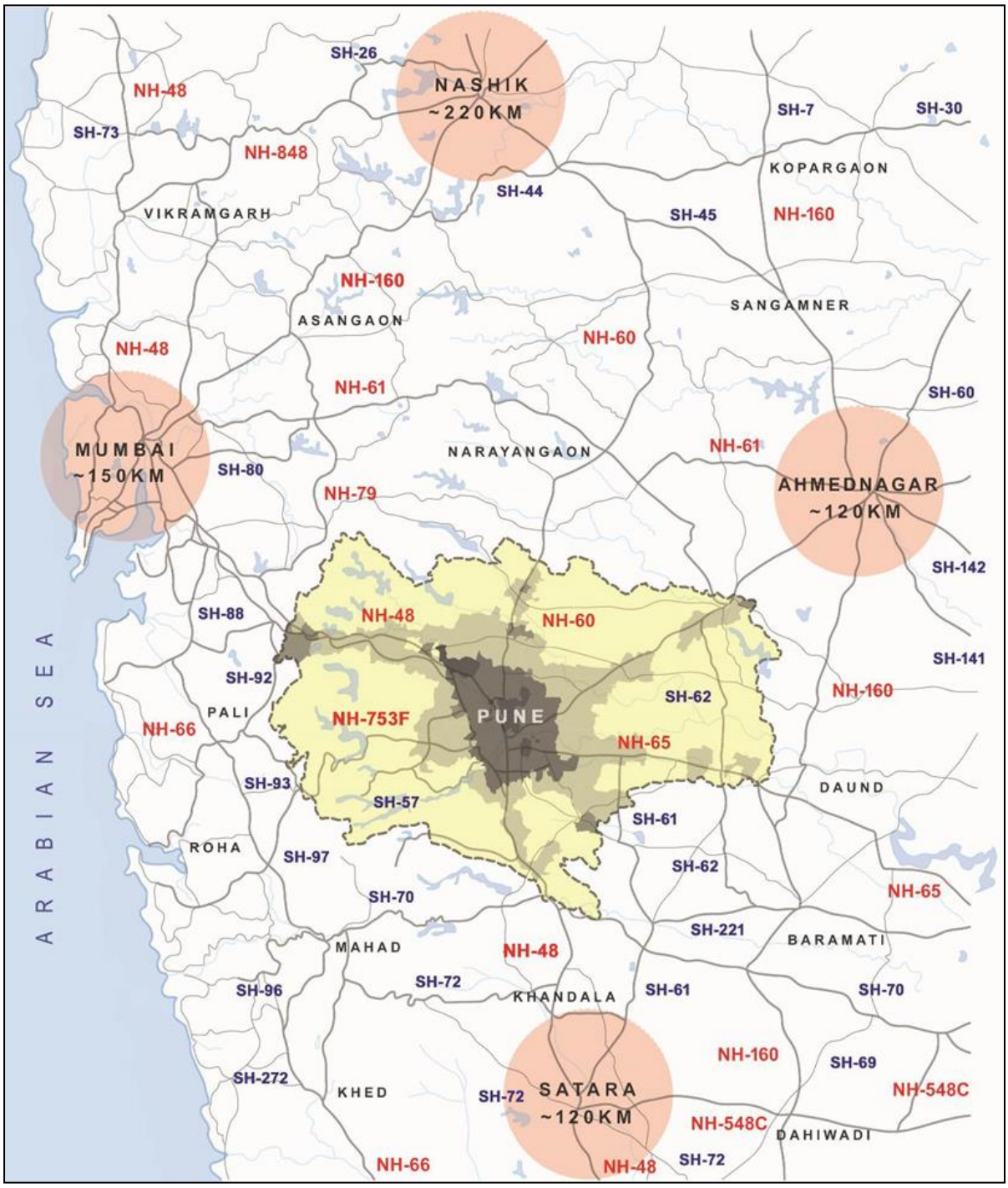
| No. | Name of the Agency | Data Collected |
|---|---|---|
| 7 | MSRTC | ▪ Bus Schedules and Passengers |
| 8 | Maha Metro | ▪ Details of Metro Corridors I and II, DPRs for upcoming Metro lines. |
| 9 | PMC | ▪ Environment Status Report<br>▪ Committed Projects<br>▪ Population Forecast |
| 10 | PCMC | ▪ Committed Projects<br>▪ Population Forecast |
| 11 | Directorate of Economics & Statistics, GoM | ▪ Socio - Economic Data |
| 12 | MIDC, SEZs, Business Parks, Hinjawadi Ind. Association | ▪ Economic Growth<br>▪ Major Investments |
| 13 | PMRDA | ▪ Metro Network Details Line 3 |
| 14 | MPCB | ▪ Air Quality Index Values Details |
| 15 | PSCDCL (Pune Smart City Development Corporation Ltd) | ▪ Details of ITS project implemented such as Advanced Traffic Management system (ATMS), Automatic Number Plate Recognition (ANPR) and Details of Junction Improvements |
| 16 | NHAI | ▪ Committed Projects |
| 17 | Municipal Councils | ▪ Committed Projects |
| 18 | MSRDC | ▪ Committed Projects |
| 19 | Cantonment Board | ▪ Population, Committed Projects |

## 2.2.1 | REGIONAL TRANSPORT LINKAGES

### REGIONAL ROAD NETWORK

Pune is well connected to all the major cities across India via both National and State Highways. The regional road network map is shown in **Figure 2-7**.

**Figure 2-7 | Regional Road Network Map**




Some of the major highways (NH and SH) passing through the study area are as follows:

- Mumbai – Bengaluru National Highway, NH-48 (old NH-4)
- Pune-Solapur Hyderabad National Highway, NH-65 (old NH-9)
- Pune-Nashik National Highway, NH 60 (old NH-50)
- Mumbai-Pune Expressway

- Pune-Ahmednagar-Aurangabad Highway (NH-753F)
- Talegaon-Chakan Highway (NH-548D)

Major State Highways include

- Pune-Alandi State Highway
- Pune-Saswad-Pandharpur State Highway

## RAILWAYS

The Study Area is well connected to major cities of the country through an extensive regional Rail network. The railway network in the Study Area is under the jurisdiction of Pune Division of Central Railways. The key railway routes in the region include Mumbai- Pune Line, Pune-Daund Line and Pune Solapur Line, Pune-Kolhapur Line. Daund a major junction is situated outside the study area links to Baramati and Ahmednagar. Local trains (EMUs) connect Pune to the industrial town of Pimpri-Chinchwad and the hill station of Lonavala.

Some of the major Railway stations in the Study Area are Pune, Shivaji Nagar, Khadki, Kasarwadi, Pimpri, Chinchwad, Akurdi, Dehu Road, Talegaon, Vadgaon, Lonavala, Hadapsar, Loni Kalbhor, Yavat, Khutbav, Kedgaon, Saswad Road and Phursungi. Additionally, Pune-Nashik Semi-High-Speed Rail line is proposed which significantly reduces travel time between Pune and Nashik.

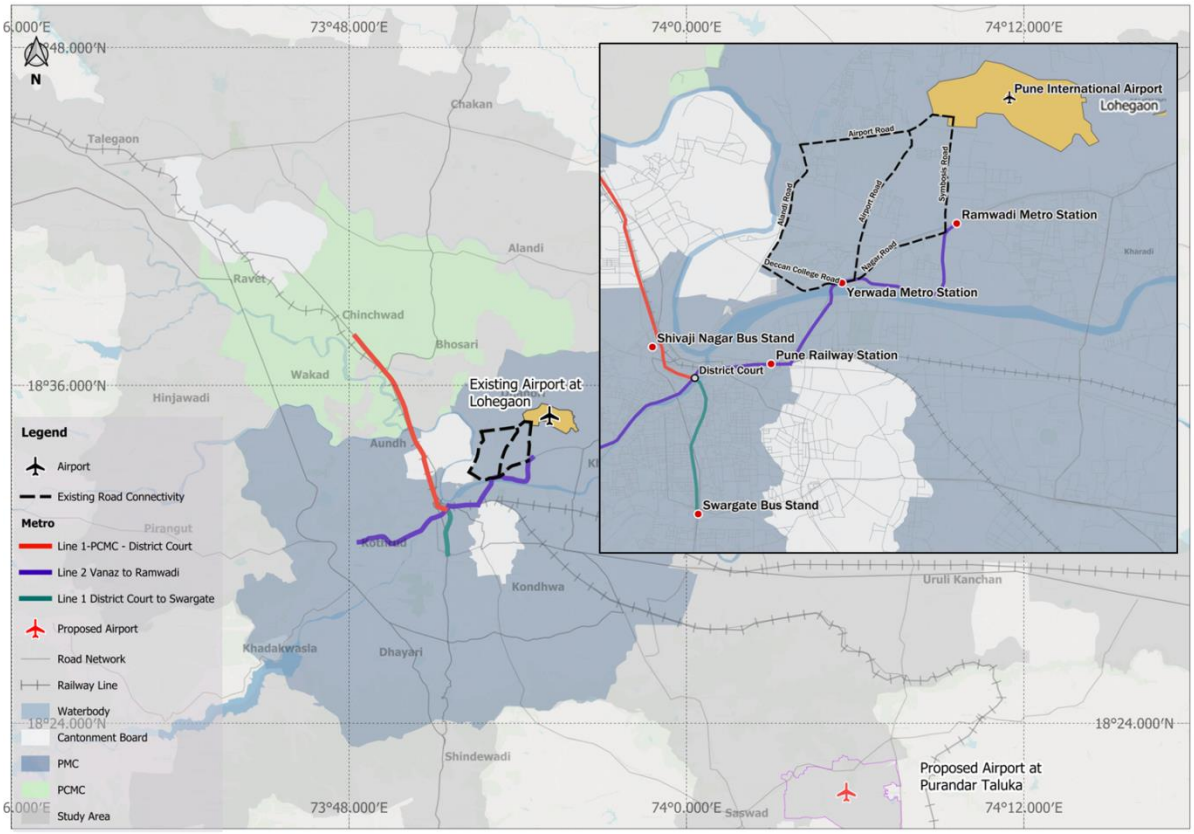
## AIRPORT

Pune International Airport is located at Lohegaon around 10 km from Pune city. It is operated by the Airports Authority of India (AAI). AAI shares the runway with the Indian Air Force base. In addition to domestic flights to all major Indian cities, the airport serves international direct flights to Dubai and Singapore. In 2022-23, the airport handled about 8 million passengers and 39,369 tonnes of cargo. Since the Pune Airport has reached its capacity, a green field international airport has been proposed at Purandar, near Saswad at about 40 km south of Pune. At present, Land Acquisition is in progress.

The existing airport at Lohegaon has good connectivity to various parts of the city and major transport hubs, including Pune Railway Station (8 km), Swargate Bus Stand (13 km), and Shivaji Nagar Bus Stand (11 km), through PMPML bus services. The airport can be accessed from PMC and PCMC through Nagar Road via Symbiosis Road and Alandi Road via Airport Road. Additionally, Yerwada Metro Station (5 km away) and Ramwadi Metro Station (3 kms) is connected to the airport via feeder bus services. The exiting Airport connectivity is presented in **Figure 2-8**. A multilevel car park (Ground plus three storeyed & two basement floors) is located in Aero Mall having a capacity of 1,024 cars connecting to the departure area of existing building with a sky bridge.

The proposed metro connectivity to Pune International Airport at Lohegaon is discussed in detail in **Section 4.2.2** of **Chapter 4**.

**Figure 2-8 | Connectivity to Existing Airport from nearby Major Metro/Railway Station and Bus Stand**




The traffic trends of the Pune Airport are presented in **Table 2-9**. The passenger traffic at Pune Airport has been growing at 12.26% per annum since last 10 years. The current demand is suppressed due to sharing the airport with Air force station.

**Table 2-9 | Traffic Trends of Pune Airport**

| FY | Aircraft Movements (Nos) | Growth in Aircraft Movement (%) | Passenger (Millions) | Passenger Growth Rate (%) | Cargo (Tonnes) | Cargo Growth Rate |
|---|---|---|---|---|---|---|
| 2013-14 | 30,534 | | 3.60 | | 21,145 | |
| 2014-15 | 33,760 | 10.57% | 4.19 | 16.51% | 27,390 | 29.53% |
| 2015-16 | 40,726 | 20.63% | 5.42 | 29.27% | 31,766 | 15.98% |
| 2016-17 | 46,782 | 14.87% | 6.77 | 24.95% | 34,645 | 9.06% |
| 2017-18 | 56,021 | 19.75% | 8.16 | 20.62% | 41,566 | 19.98% |
| 2018-19 | 59,888 | 6.90% | 9.07 | 11.10% | 47,392 | 14.02% |
| 2019-20 | 54,261 | -9.40% | 8.09 | -10.86% | 37,986 | -19.85% |
| 2020-21 | 19,831 | -63.45% | 2.14 | -73.56% | 26,419 | -30.45% |
| 2021-22 | 30,821 | 55.42% | 3.71 | 73.70% | 28,702 | 8.64% |
| 2022-23 | 59,451 | 92.89% | 8.01 | 115.62% | 39,369 | 37.16% |
| 2023-24 (April to Dec) | **47,918** | | **7.10** | | **28,808** | |

| FY | Aircraft Movements (Nos) | Growth in Aircraft Movement (%) | Passenger (Millions) | Passenger Growth Rate (%) | Cargo (Tonnes) | Cargo Growth Rate |
|---|---|---|---|---|---|---|
| Average Growth Rate (2013-14 to 2022-23) | **9.47%** | | **12.26%** | | **8.62%** | |

In order to improve the connectivity to the existing airport few new linkages have been proposed by PMC as presented in **Figure 2-9** and Table 2-10.

**Figure 2-9 | Proposed New Links near Existing Airport**

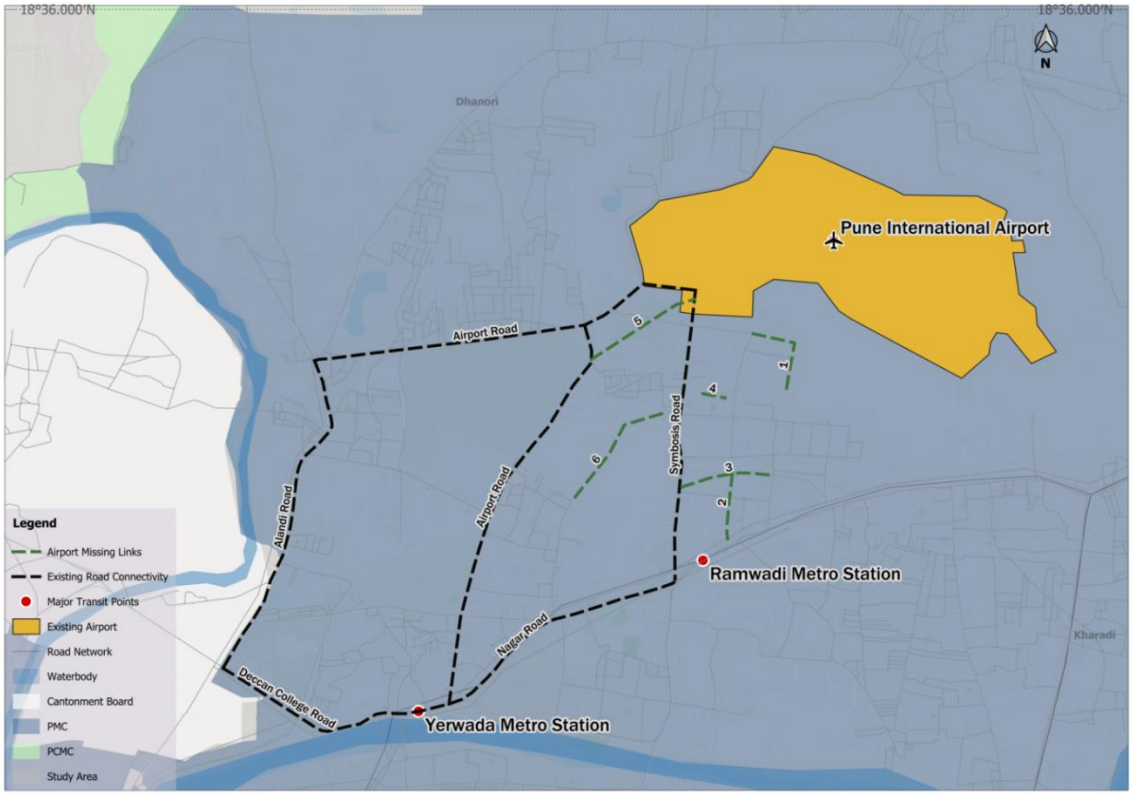



**Table 2-10 | Proposed New Links near Existing Airport**

| No | Name | Length (in m) | DP width |
|---|---|---|---|
| 1 | Camlot Society to Rajiv Nagar South, Viman Nagar | 840 | 18 |
| 3 | Building Opposite to Nexa Showroom to Neco Garden Society HCMTR | 750 | 30 |
| 2 | Oakwood Apartments to behind Weikfield IT Park, Viman Nagar | 600 | 15 |
| 4 | Symbiosis International School Viman Nagar Link | 170 | 18 |
| 5 | Aeromall to Sheetala Mata Mandir, Puru Society Road | 950 | 30 |
| 6 | Ganga Business Park, Viman Nagar to Shashtri Nagar | 1,000 | 20 |
| | **Total** | **4,310** | |

## 2.2.2 | INTRA CITY TRANSPORT LINKAGES

### CITY ROAD NETWORK

The PMC Road network can be categorized as radial road network originating from the core old city situated south of Mula-Mutha River. The major radials of PMC are

- Towards north-west: Old Mumbai Highway,
- Towards north-east: Nagar Road,
- Towards east: Pune-Solapur Road,
- Towards south: Pune-Satara Road, and
- Towards west: Karve-Mulshi Road.

While the radial roads have been well developed, ring roads which are important for effective traffic dispersal could not be developed due to several land-use constraints. Some of core city roads in PMC are Shivaji Road, Bajirao Road, Laxmi Road, NC Kelkar Road, Lokamanya Bal Gangadhar (LBG) Tilak Road and JLN Road etc.

The road network in PCMC can be categorized as a grid pattern. The roads in PCMC are wider as compared to PMC due to planned development. Some of the major roads providing north-south connectivity in PCMC are Westerly Bypass, Old Mumbai Highway, Spine Road, Dehu Moshi Alandi Road, Aundh Ravet Road whereas roads providing east-west connectivity are DYP College Road, Akurdi-Chikhali Road, Kaspate Wasti Road, Wakad Bhosari Road and Talwade Road.

The road network within PMR comprises of National Highways, State Highways, Major District Roads, Other District Roads and village roads which are mostly maintained by PWD.

The major constraints of road network in the Study Area (including PMC and PCMC) are lack of hierarchy of road network, inadequate capacity of radial roads due to limited ROW, lack of ring roads for better traffic dispersal, absence of alternative roads or secondary arterial to major arterials, capacity constraints and congestion at major entry points to urbanized areas resulting in long queues and delays due to merging of regional and local traffic.

### JUNCTIONS

There are an estimated 422 signal-controlled junctions. The balance junctions are uncontrolled which is one of the reasons for congestion and unsafe crossings. While most of these controlled junctions are in the major corridors of movement, it may be safe to consider, an equal number of junctions on these major roads are left un-controlled which is causing congestion and resulting in safety issues. Pune Smart City Development Corporation Limited (PSCDCL) has implemented 125 junctions for installation of Automatic Number Plate Recognition (ANPR) cameras and 50 junctions for improvement.

## 2.2.3 | PUBLIC TRANSPORT

### CITY BUS SERVICES

PMPML operates the bus service in the city and its suburbs. The fleet size of PMPML is around 2,028 (2024). The average age of the fleet is about 8 years. The average number of buses on the road is 1,880 operating on 400 routes.

PMPML on average makes 20,332 trips carries around 12.30 lakh trip passengers per day. It operates various services like Atal Service, Regular service, Night Buses, Darshan, Ladies Special, Tejaswini, Metro feeder service and BRT.

At present, PMPML has 15 bus depots and 4024 bus stops. 15 bus depots are located at Swargate, Shivaji Nagar, Kothrud, Katraj, Hadapsar, Upper Depot, Pune Railway Station, Nigdi, Pimpri, Bhosari, Wagholi, Bhekrai Nagar, Shewalwadi, Balewadi and Baner. Apart from these, the major bus stands are Deccan Gymkhana, PMC Bus Stand, Mahatma Gandhi Bus Stand at Pulgate, Bhakti Shakti Bus Stand in Nigdi and Chinchwad Bus Stand. The historical trend of passengers travelled using PMPML is presented in the **Table 2-11**.

**Table 2-11 | Past Trends of PMPML Bus Passengers**

| Year | Total Passengers | Average Daily Passengers |
|---|---|---|
| 2018-19 | 37,25,49,240 | 10,34,859 |
| 2019-20 | 37,70,70,840 | 10,47,419 |
| 2020-21 | 10,03,77,551 | 2,78,827 |
| 2021-22 | 20,06,95,320 | 5,57,487 |
| 2022-23 | 40,32,19,579 | 11,20,054 |

Service types operated by PMPML are tabulated in **Table 2-12,** in which regular service and BRT services accounts for 85% of the total services operated.

**Table 2-12 | Types of PMPML Services**

| PMPML Service Types | Number of Scheduled Services | Percentage Number of Routes |
|---|---|---|
| Atal | 10 | 2.53% |
| BRT | 158 | 39.90% |
| BRT Ladies Special | 5 | 1.26% |
| Depo Core city | 17 | 4.29% |
| Depo Core city BRT | 1 | 0.25% |
| Metro Feeder | 5 | 1.26% |
| Night Service | 5 | 1.26% |
| PCMC Darshan | 1 | 0.25% |

| PMPML Service Types | Number of Scheduled Services | Percentage Number of Routes |
|---|---|---|
| Pune Darshan | 1 | 0.25% |
| Regular | 182 | 45.96% |
| School | 9 | 2.27% |
| Tejaswini | 2 | 0.51% |
| **Total** | **396** | **100.0%** |

## BRTS

Pune BRTS is the first Bus Rapid Transit System in India which is named as “Rainbow BRT”. BRTS covers both PMC and PCMC. At present, 8 corridors of 76 km are operational. The details of BRTS corridors currently operational in the Study Area are presented in **Table 2-13**.

**Table 2-13 | BRTS Corridors in the Study Area**

| Corridor Name | Length (Km) | Area |
|---|---|---|
| Sangamwadi-Vishrantwadi | 8 | PMC |
| Katraj-Swargate | 7 | PMC |
| Yerwada-Aple Ghar | 8 | PMC |
| Nigdi-Dapodi | 12 | PCMC |
| Chikhali-Kalewadi Phata | 11 | PCMC |
| Dighi-Alandi | 8 | PCMC |
| Sangvi Phata-Kiwale | 14 | PCMC |
| Nashik Phata-Wakad | 8 | PCMC |
| **Total** | **76** | |

The BRT system is neither fully segregated nor closed, facing several challenges such as a lack of exclusive bus lanes on key sections, poor bus conditions, inadequate safe access to stations, low service frequency, unauthorized use of BRT lanes by other vehicles, insufficient bus priority at intersections, and limited multimodal integration facilities. As a result, the system struggles to attract sufficient ridership. To ensure the success of the BRTS, it is essential to address these constraints and enforce BRT lane regulations effectively.

## INTERCITY BUS SERVICE

MSRTC operates a variety of bus services from Pune to other cities and towns across the state, serving approximately 2.15 Lakh passengers daily. These buses depart from four main terminals: Swargate, Shivaji Nagar, Pune Railway Station, and Vallabh Nagar. Key destinations include Mumbai, Solapur, Nashik, and Shirdi. In addition to MSRTC, state transport corporations from neighbouring states, such as Gujarat, Karnataka, and Telangana, also provide bus services to Pune. The trends of

passengers travelling by ST bus in Pune District are presented in **Table 2-14.**

**Table 2-14 | Trends of Passengers Travelling by ST Buses in Pune District**

| Year | Bus Passengers (in Lakhs) | |
|---|---|---|
| | Per Day | Per Annum |
| 2019-20 | 2.62 | 956.00 |
| 2020-21 | 0.45 | 164.11 |
| 2021-22 | 0.52 | 190.35 |
| 2022-23 | 1.91 | 698.87 |
| 2023-24 | 2.15 | 785.89 |

Private bus operators play very important role for inter-city passenger movement, offering connectivity to major cities such as Mumbai, Bengaluru, Nagpur, Nashik, Hyderabad, Ahmedabad, and Surat. Sangamwadi and Akurdi serve as the two bus depots for the parking, operation, and maintenance of private buses. However, there is currently no designated terminal for private buses in the area.

## SUBURBAN RAILWAY

The suburban railway between Pune and Lonavala is operated by Central Railway (CR) on a double-line electrified broad-gauge track spanning 63.84 km. Each day, 18 trains run from Pune to Lonavala, along with 5 trains to Talegaon. The minimum headway between trains is only 30 minutes which is low considering the travel demand. Due to the low frequency of services leads to overcrowding during peak hours. A significant number of students, employees, and industrial workers rely on the service. To improve capacity, the Mumbai Rail Vikas Corporation (MRVC) is planning the addition of a third and fourth line between Pune and Lonavala, exclusively for suburban rail operations. The rail passenger statistics for the last 4 years is presented in **Table 2-15**.

**Table 2-15 | Daily and Annual Railway Commuters in the Study Area (in Lakhs)3**

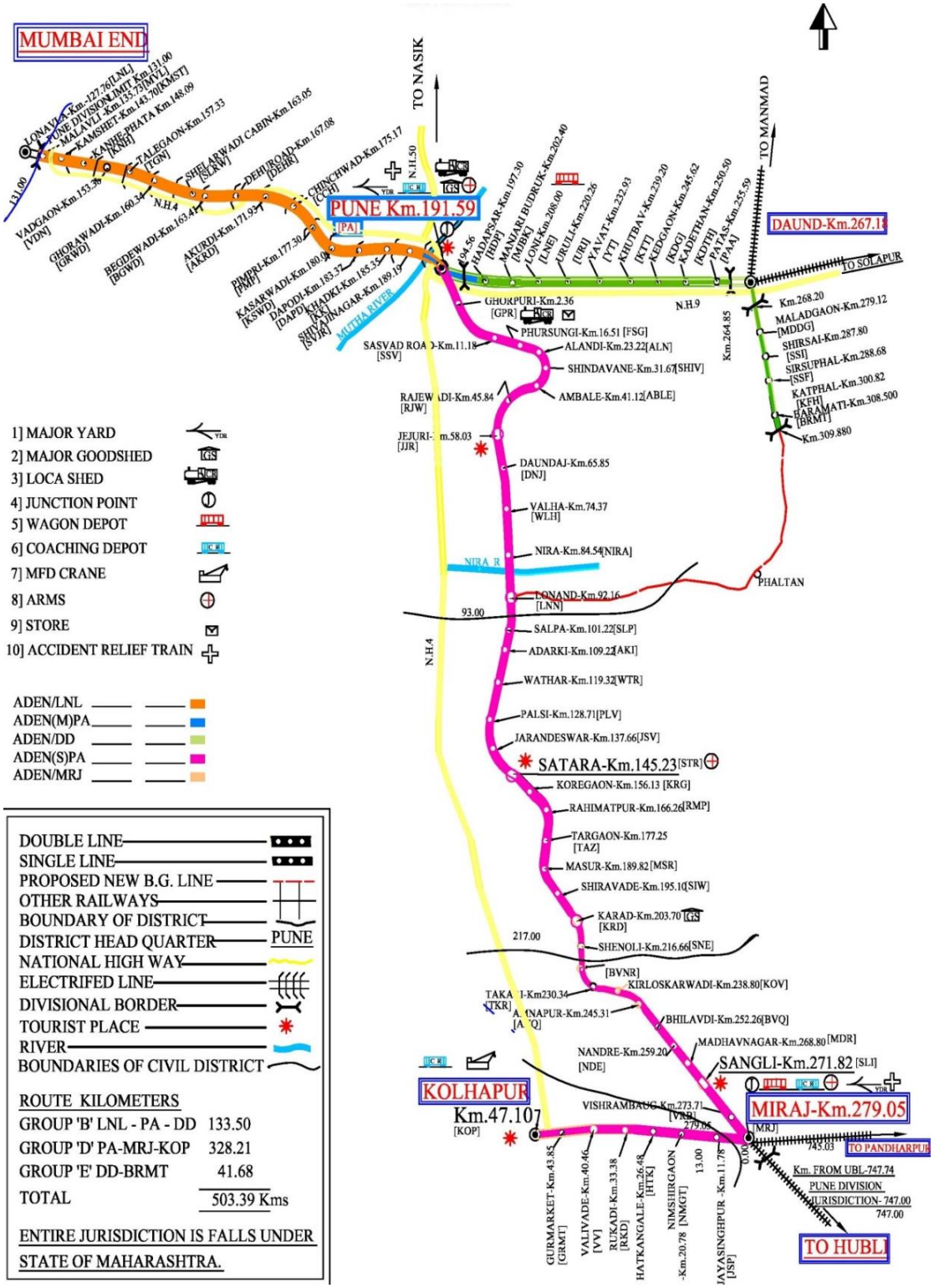
| Year | Railway Passengers | |
|---|---|---|
| | Per Day | Per Annum |
| 2019-20 | 1.03 | 376.17 |
| 2020-21 | 0.01 | 4.79 |
| 2021-22 | 0.13 | 46.49 |
| 2022-23 | 0.56 | 204.68 |

Major stations along Pune-Lonavala railway line are Shivajinagar, Khadki, Pimpri, Chinchwad, Dehu Road  Talegaon and Lonavala. The railway map of Pune Division is shown in the **Figure 2-10**. It covers Lonavala to Daund and Pune to Miraj/ Kolhapur.

3 Railway Passengers is calculated based on the station wise passenger data. Only the stations within the study area are accounted.

There are 8 passenger trains between Pune Junction and Daund section. These trains operate as suburban trains on this route. Pune to Daund section becomes the third route for suburban trains. The important halts on this route are Loni Station and Uruli Station.

**Figure 2-10 | Map of Pune Railway Division**



## METRO

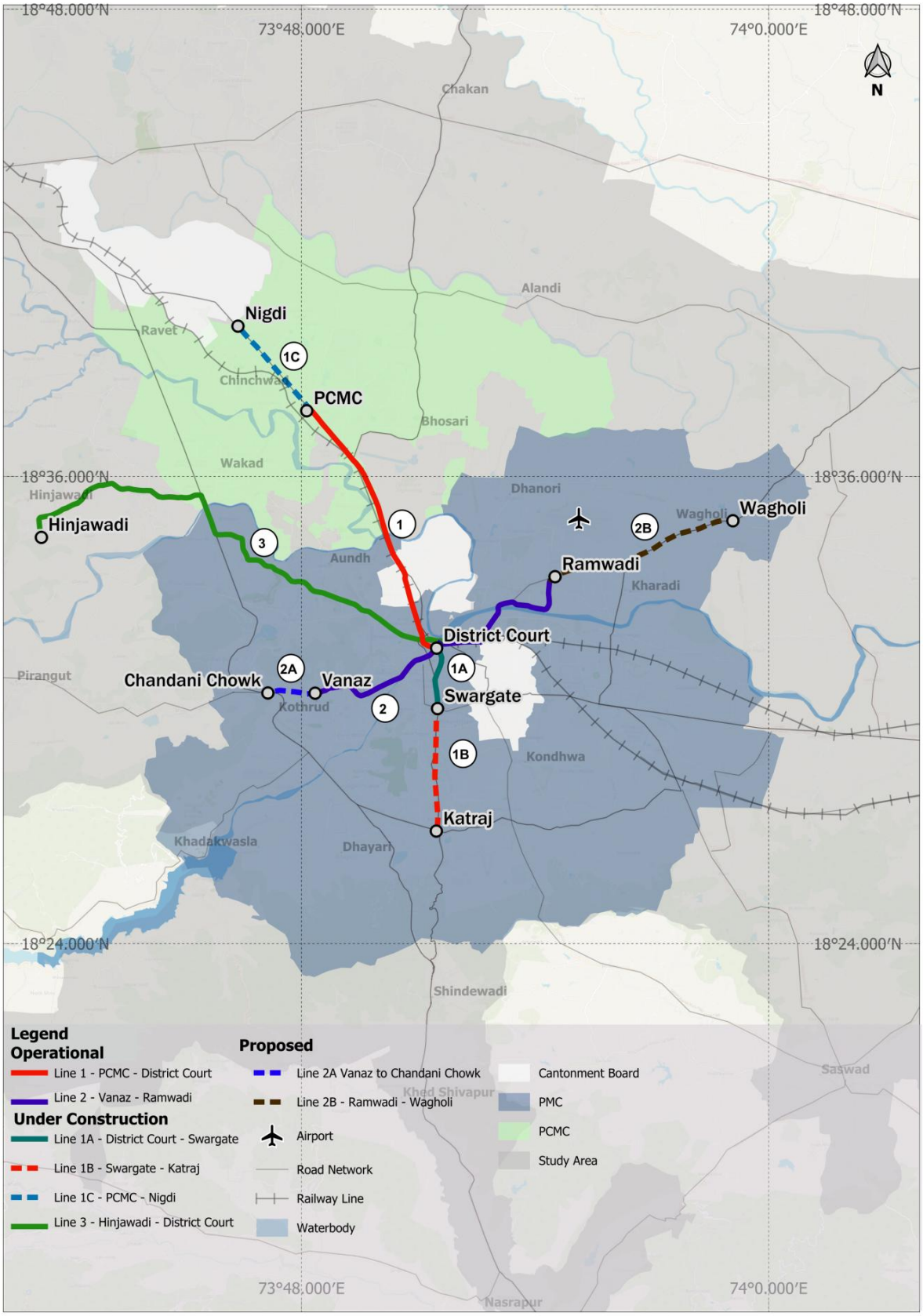
The Metro Rail system is currently operational, covering a total length of 29.47 km. An additional 26.9 km of corridors are under construction. The Metro Rail network is combination of both elevated and underground sections. The Metro corridors under operation/implementation in the Study Area are presented in **Table 2-16**.

The average daily ridership of passengers traveling by Metro Rail is 93,198 (June, 2024). Each train consists of 3 coaches, having a total capacity of 970 passengers. Currently, the Pune Metro operates with a headway of 7 minutes during peak hours and 10 minutes during off peak hours.

**Table 2-16 | Details of Operational and Proposed / Under Construction Metro Network**

| Line No | Route | Distance (km) | No of Stations | Status |
|---|---|---|---|---|
| **Line-1** | PCMC to District Court | 17.4 | 14 | Operational |
| | District Court to Swargate | | | Under Construction |
| | PCMC to Nigdi | 4.4 | 3 | Under Construction |
| | Swargate to Katraj | 5.4 | 3 | Sanctioned |
| **Line-2** | Vanaz to Ramwadi | 15.7 | 16 | Operational |
| | Vanaz to Chandani Chowk | 1.5 | 2 | Proposed |
| | Ramwadi to Wagholi | 12 | 11 | Proposed |
| **Line-3** | Hinjawadi to District Court | 23.20 | 23 | Under Construction |

**Figure 2-11 | Map showing Metro Rail Network in the Study Area**



## 2.2.4 | INTERMEDIATE PUBLIC TRANSPORT (IPT)

In the study area, a variety of intermediate public transport (IPT) options are available, including auto-rickshaws, share autos, and taxi services, such as app-based aggregators like Ola and Uber. Auto-rickshaws operate without specific route restrictions, providing vital connectivity to the city's core areas, which often feature narrow road networks. Many commuters prefer auto-rickshaws over local bus services due to shorter wait times and greater point-to-point convenience. At present, around 922 designated auto rickshaw stands exist in PMC, PCMC and Cantonment areas.

IPT accounts for 17% of motorized trips in the Study Area. In the Pune Municipal Corporation (PMC), 9,056 auto-rickshaw permits were issued in 2022-23, while the Pimpri-Chinchwad Municipal Corporation (PCMC) issued 4,327 permits. Overall, IPT registrations in PMC increased significantly, rising from 5,517 in 2020 to 21,585 in 2023, totalling 40,965 registrations over four years. Similarly, PCMC saw growth from 3,562 in 2020 to 11,120 in 2023[4], resulting in a cumulative total of 22,369 registrations during the same period.

## 2.2.5 | NON-MOTORIZED TRANSPORT

The current share of walk and cycle trips within the Study Area are 31% and 1% respectively. The average walk and cycle trip lengths are 0.34 km and 0.99 km respectively. The total length of cycle tracks in the Study Area is only about 62 km.

PMC proposed to develop 100 km of roads as per the Urban Street Guidelines with footpaths, cycle track and other street amenities, out of which 27 km was developed in the first phase. The roads developed as per Urban Street Guidelines include Fergusson College Road, Jungli Maharaj Road, Baner Road, Aundh Road, Ganesh Khind Road, Satara Road, Hadapsar Road, Nagar Road, Senapati Bapat Road, Karve Road, Law College Road, Tilak Road, Mahadji Shinde, Parihar Chowk, ITI Road, Ambedkar chowk, Nagras road, Bhale chowk and Shastri Road. Further, PMC plans to develop 15 major roads as model roads in the city.

## 2.2.6 | REGISTERED VEHICLES

Currently, **72 lakh** vehicles are registered in the Study Area as of March 2024. The total registered vehicles were **51.88 lakhs** in March 2018.

The total registered vehicles in the year 2022-23 in PMC and PCMC were 2,93,520 and 1,78,234. The analysis of vehicle registration data[5] from the year 2020 to 2023, for various classes of vehicles is presented in the **Table 2-17** and **Table 2-18**.

In PMC, two-wheelers constitute 62.3% of the total vehicles, followed by cars with 24.4% and for PCMC, two-wheelers constitute 59.8% of the total vehicles, followed by cars with 25.9%. The details of registered vehicles by vehicle category are presented in **Annexure 2-3**.

[4] https://vahan.parivahan.gov.in/vahan4dashboard/
[5] Year-wise newly registered vehicles are presented.

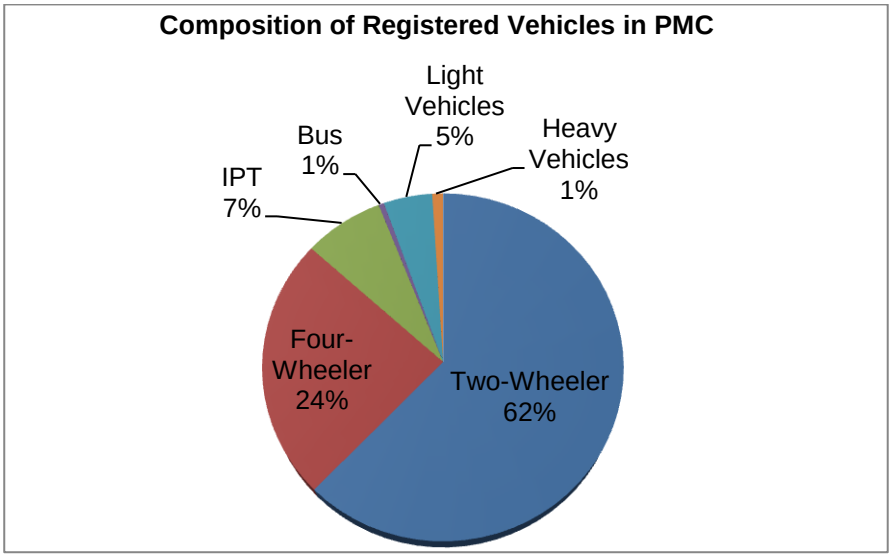
### Table 2-17 | Past Trends of Mode-wise Vehicle Registrations in PMC

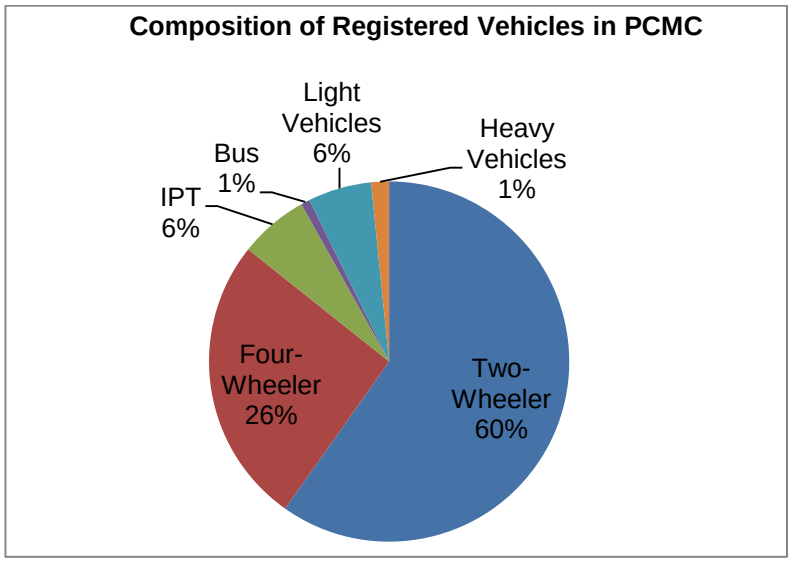
| Vehicle Types | Number of Vehicles Registered in PMC | | | | |
|---|---|---|---|---|---|
| | 2020 | 2021 | 2022 | 2023 | % Share 2023 |
| Two-Wheeler | 96,906 | 1,02,363 | 1,61,605 | 1,82,735 | 62.3% |
| Four-Wheeler | 35,965 | 49,728 | 67,559 | 71,735 | 24.4% |
| IPT | 5,517 | 4,345 | 9,518 | 21,585 | 7.4% |
| Bus | 532 | 196 | 816 | 1,432 | 0.5% |
| Light Vehicles | 6,768 | 9,073 | 12,593 | 13,109 | 4.5% |
| Heavy Vehicles | 2,407 | 2,953 | 2,969 | 2,924 | 1.0% |
| **Total** | **1,48,095** | **1,68,658** | **2,55,060** | **2,93,520** | **100%** |
| **Growth Rate** | | **14%** | **51%** | **15%** | |

### Table 2-18 | Past Trends of Mode-wise Vehicle Registrations in PCMC

| Vehicle Types | Number of Vehicles Registered in PCMC | | | | |
|---|---|---|---|---|---|
| | 2020 | 2021 | 2022 | 2023 | % Share 2023 |
| Two-Wheeler | 66,114 | 63,598 | 89,463 | 1,06,632 | 59.8% |
| Four-Wheeler | 24,106 | 31,269 | 42,179 | 46,122 | 25.9% |
| IPT | 3,562 | 2,754 | 4,933 | 11,120 | 6.2% |
| Bus | 642 | 69 | 486 | 1,346 | 0.8% |
| Light Vehicles | 4,876 | 7,423 | 10,191 | 10,200 | 5.7% |
| Heavy Vehicles | 2,408 | 2,855 | 2,659 | 2,814 | 1.6% |
| **Total** | **1,01,708** | **1,07,968** | **1,49,911** | **1,78,234** | **100.0%** |
| **Growth Rate** | | **6%** | **39%** | **19%** | |

### Figure 2-12 | Composition of Registered Vehicles in PMC/PCMC






## 2.2.7 | ROAD ACCIDENT SCENARIO

### ROAD ACCIDENT TRENDS

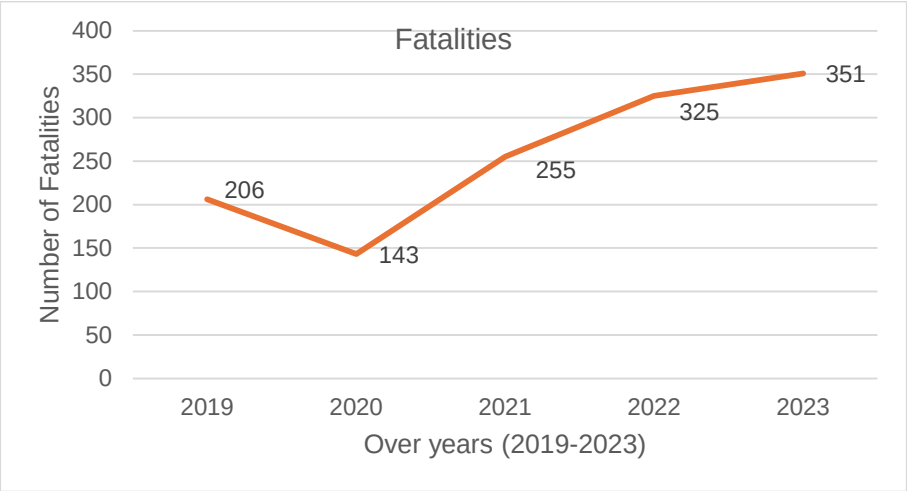
Accident records from the various police stations of PMC and PCMC are collected and analyzed. **Table 2-19** and **Figure 2-13** show the trends of road accidents for the past 5 years. The trends show that there has been a sudden decline due to COVID-19 in 2020 and thereafter a gradual increase in accidents.

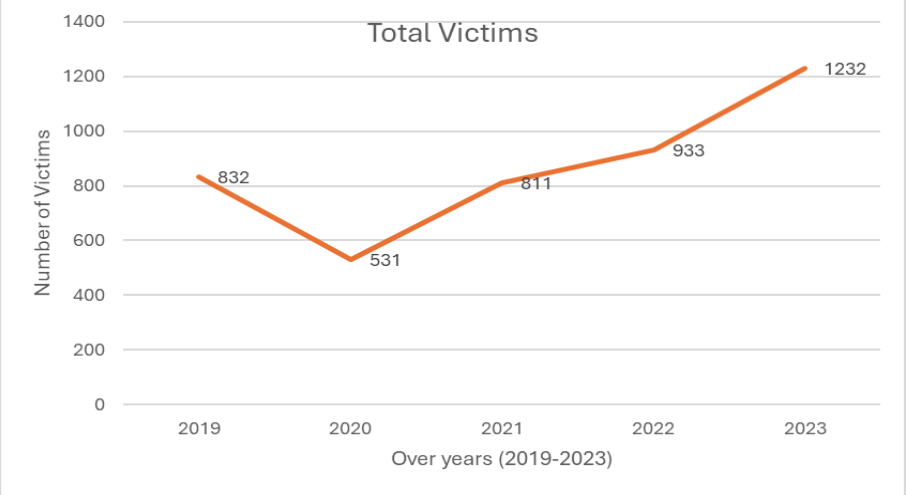
**Table 2-19 | Trend of Road Accidents in the Study Area (2019-23)**

| No. | Year | Fatal | | Grievous | | Minor | | Non-injured | Total Accidents | Total Victims |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Accident | No. of Death | Accident | No. of Injured | Accident | No. of Injured | | | |
| 1 | 2019 | 199 | 206 | 388 | 463 | 142 | 163 | 62 | 729 | 832 |
| 2 | 2020 | 135 | 143 | 245 | 297 | 75 | 91 | 27 | 455 | 531 |
| 3 | 2021 | 239 | 255 | 391 | 457 | 72 | 99 | 39 | 702 | 811 |
| 4 | 2022 | 315 | 325 | 452 | 507 | 60 | 101 | 44 | 827 | 933 |
| 5 | 2023 | 334 | 351 | 607 | 695 | 152 | 186 | 137 | 1,093 | 1,232 |

As per 2023 statistics, 1,093 road accidents reported in which 1,232 victims were involved. Around 334 were fatal accidents and remaining recorded as major or minor injuries. 137 incidents (non-injured) were reported during the same year. The total collisions recorded across various categories in the Study Area are shown in the **Table 2-20**. Based on the data, it can be noted that two-wheelers and cars were involved in around 60% of road accidents.

**Figure 2-13 | Road Accidents Trends in the Study Area**




*Source: Traffic Police, PMC and PCMC*

**Table 2-20 | Mode-wise Total Collisions in the Study Area**

| Road User | Year 2019 | % Share | Year 2020 | % Share | Year 2021 | % Share | Year 2022 | % Share | Year 2023 | % Share |
|---|---|---|---|---|---|---|---|---|---|---|
| TW | 219 | 27.7% | 256 | 53.1% | 420 | 56.7% | 482 | 55.3% | 638 | 51.9% |
| Car | 239 | 30.2% | 47 | 9.8% | 74 | 10.0% | 73 | 8.4% | 134 | 10.9% |
| Auto | 47 | 5.9% | 13 | 2.7% | 17 | 2.3% | 18 | 2.1% | 44 | 3.6% |
| Bus | 77 | 9.7% | 1 | 0.2% | 5 | 0.7% | 15 | 1.7% | 20 | 1.6% |
| Truck | 135 | 17.1% | 12 | 2.5% | 14 | 1.9% | 11 | 1.3% | 6 | 0.5% |
| Tractor | 50 | 6.3% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% |
| Bicyclist | 0 | 0.0% | 13 | 2.7% | 12 | 1.6% | 15 | 1.7% | 15 | 1.2% |
| Pedestrian | 0 | 0.0% | 140 | 29.0% | 199 | 26.9% | 257 | 29.5% | 344 | 28.0% |
| Others | 24 | 3.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 29 | 2.4% |
| **Total** | **791** | **100.0%** | **482** | **100.0%** | **741** | **100.0%** | **871** | **100.0%** | **1230** | **100.0%** |

Statistics of road victims is presented in the **Table 2-21**. As per the 2023 statistics, most of the victims are two-wheelers (54.7%), followed by pedestrians (34.5%).

**Table 2-21 | Mode-wise Road Accident Victims (Fatal) in the Study Area**

| Road -User Victim | Year 2019 | % Share | Year 2020 | % Share | Year 2021 | % Share | Year 2022 | % Share | Year 2023 | % Share |
|---|---|---|---|---|---|---|---|---|---|---|
| Pedestrian | 0 | 0.0% | 41 | 28.7% | 83 | 32.5% | 111 | 34.2% | 121 | 34.5% |
| Bicyclist | 0 | 0.0% | 3 | 2.1% | 7 | 2.7% | 6 | 1.8% | 2 | 0.6% |
| TW | 51 | 24.8% | 87 | 60.8% | 137 | 53.7% | 187 | 57.5% | 192 | 54.7% |
| Car | 24 | 11.7% | 5 | 3.5% | 15 | 5.9% | 10 | 3.1% | 4 | 1.1% |
| Auto | 5 | 2.4% | 4 | 2.8% | 4 | 1.6% | 4 | 1.2% | 9 | 2.6% |
| Bus | 26 | 12.6% | 0 | 0.0% | 2 | 0.8% | 4 | 1.2% | 4 | 1.1% |
| Truck | 78 | 37.9% | 3 | 2.1% | 7 | 2.7% | 3 | 0.9% | 5 | 1.4% |
| Others | 22 | 10.7% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 14 | 4.0% |
| **Total** | **206** | **100.0%** | **143** | **100.0%** | **255** | **100.0%** | **325** | **100.0%** | **351** | **100.0%** |

## IDENTIFICATION OF BLACK SPOTS

Around 32 accident locations (black spots) have been identified by PMC based on the number and severity of the accidents. These accident black spot locations identified by PMC and Traffic Police are presented in the **Figure 2-14** and **Table 2-22**.

**Figure 2-14 | Identified Black Spots in the Study Area**

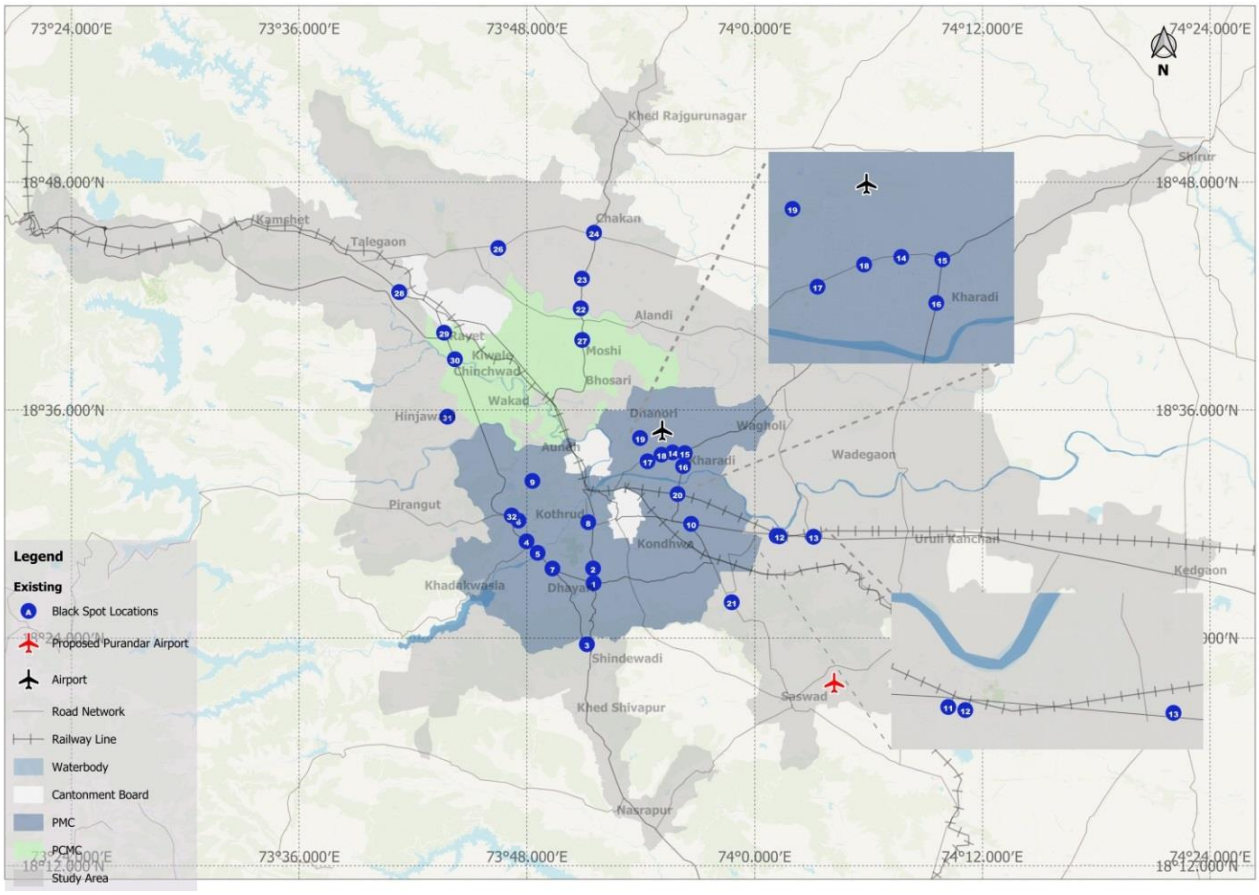


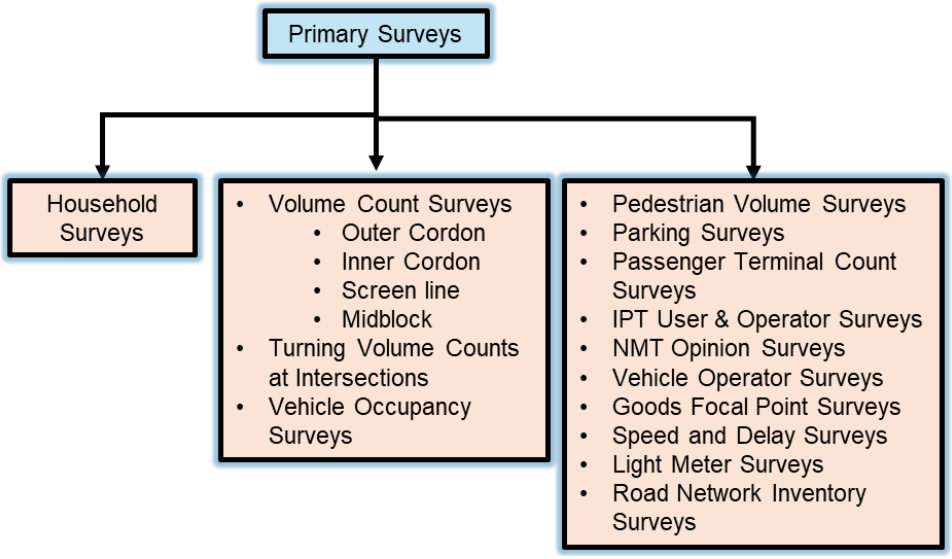

**Table 2-22 | Identified Black Spots in the Study Area (2012-17)**

| No | Name | Jurisdiction |
|---|---|---|
| 1 | Katraj Chowk | Bharti Vidyapeeth |
| 2 | Darji Bridge | Bharti Vidyapeeth |
| 3 | New Katraj Tunnel | Bharti Vidyapeeth |
| 4 | Mai Mangeshkar Hospital | Warje Malwadi |
| 5 | Mutha River Bridge | Warje Malwadi |
| 6 | Dukkar Khind | Warje Malwadi |
| 7 | New Bridge | Sinhagad Road |
| 8 | Selfie Point | Sinhagad Road |
| 9 | IMB Colony | Hadapsar |
| 10 | Ravi Darshan Chowk | Hadapsar |
| 11 | Kadam Vasti | Loni Kalbhor |
| 12 | Loni Station Vasti | Loni Kalbhor |
| 13 | Theur Phata Chowk | Loni Kalbhor |
| 14 | Tata Guardroom Chowk | Airport |
| 15 | Kharadi Jakat Naka | Airport |

| No | Name | Jurisdiction |
|---|---|---|
| 16 | Viman Nagar Chowk | Airport |
| 17 | 509 Chowk | Airport |
| 18 | Kharadi Bypass Chowk | Chandra Nagar |
| 19 | Reliance Mart | Chandra Nagar |
| 20 | Mundhwa Railway Bridge | Mundhwa Chowk |
| 21 | Palkhi Visava Wadaki | Handewadi |
| 22 | Chimbli Phata | Chakan |
| 23 | Kuruli Phata | Chakan |
| 24 | Chakan – Talegaon Chowk | Chakan |
| 25 | Sabalewadi | Chakan |
| 26 | Khalumbre | Mhalunge |
| 27 | Borade Vasti | Bhosari |
| 28 | Somatane Phata | Talegaon Dabhade |
| 29 | Shinde Pump | Dehu Road |
| 30 | Punawale (Mumbai – Bengaluru Highway) | Hinjawadi |
| 31 | Wakad Bridge (Mumbai – Bengaluru Highway) | Hinjawadi |
| 32 | Bavdhan (Mumbai – Bengaluru Highway) | Hinjawadi |

## 2.3 | TRANSPORT DEMAND SURVEYS

Traffic and transportation characteristics help in appreciating the spatial and temporal characteristics of travel within the study area, network capacity and level of service. To understand the travel characteristics, wide range of traffic surveys were carried out. In the current study, which is updation of CMP-2018, we have utilized both primary survey data collected as part of the study supplemented by data collected during CMP 2018 to analyze the traffic patterns.



Several classified volume counts have been carried out at strategic locations to assess the vehicular traffic growth rates. The details of traffic volume count surveys carried out are presented in **Table 2-23**.

**Table 2-23 | Details of the Traffic Counts carried out for Assessing the Growth Rate**

| No | Type of Survey | Quantity/ Details | Survey Duration |
|---|---|---|---|
| 1 | Classified Traffic Volume Counts at Outer Cordon Locations | 8 No. | 8 hours |
| 2 | Classified Traffic Volume Counts at Screen-lines | 8 No. | 8 hours |
| 3 | Classified Traffic Volume Counts at Mid-blocks | 4 No. | 8 hours |

The estimated traffic growth rates at the outer cordon and screen line locations from 2018 to 2024 are presented in **Table 2-24**.

**Table 2-24 | Past Growth Rates of Traffic on Screen line and Outer Cordon (2018- 2024)**

| Type of Mode | Growth Rate per annum (%) | |
|---|---|---|
| | Screen line | Outer Cordon |
| Car/Jeep/Van | 4.0 | 7.0 |
| Two-wheeler | 4.0 | 2.0 |
| IPT/Auto | 10.0 | 10.0 |
| Mini Bus | 2.0 | 2.0 |
| Bus | 2.0 | 2.0 |
| Truck | 5.0 | 5.0 |
| Others | 1.0 | 1.0 |

The above growth rates have been used to arrive at the base year traffic. The details of primary survey data collected is presented in **Table 2-25**.

**Table 2-25 | Details of the Primary Surveys carried out/ synthesized for Updation of CMP**

| No. | Type of Survey | Quantity/ Details | Survey Duration |
|---|---|---|---|
| | **Traffic Surveys (CMP-2018)** | | |
| 1 | Classified Traffic Volume Counts at Inner Cordon Locations | 18 No. | 24 hours |
| 2 | Classified Traffic Volume Counts at Outer Cordon Locations | 12 No. | 24 hours |
| 3 | Classified Traffic Volume Counts at Screen-lines | 63 No. | 24/16/8 hours |
| 4 | Classified Traffic Volume Counts at Mid-blocks | 18 No. | 24/16 hours |
| 5 | Turning Volume Counts at Intersections | 57 No. | 24/16 hours |
| 6 | Vehicle Occupancy Surveys | 59 No. | 16 hours |
| | **Primary Surveys carried out for Updation of CMP** | | |
| 7 | Pedestrian Volume Count Survey | 20 No. | 8 hours |
| 8 | Parking Surveys | 15 No. | 12 hours |
| 9 | Passenger Terminal Survey | 5 No. | 12 hours |

| No. | Type of Survey | Quantity/ Details | Survey Duration |
|---|---|---|---|
| 10 | Household Interview Survey | 1% of households | - |
| 11 | IPT User and IPT Operator Survey | 300 Samples | - |
| 12 | NMT Opinion Survey | 200 Samples | - |
| 13 | Vehicle Operator Survey | 150 Samples | - |
| 14 | Goods Focal Point Survey | 150 Samples | - |
| 15 | Speed and Delay Survey | 517 km | - |
| 16 | Light Meter Survey | 166 km | - |
| 17 | Updation of Road Network Inventory | 6,547 km | - |

The list of traffic survey locations and maps are presented in **Annexure 2-4**.

## 2.4 | REVIEW OF EXISTING LAND USE PATTERN

### 2.4.1 | EXISTING LAND USE OF PMC

The Development Plan 2001 was specifically designed for the newly incorporated fringe areas of the Pune Municipal Corporation. According to the 1987 Development Plan, the residential land use covered 50.58 sq. km, which has since increased by 53.16 sq. km.

As a result, share of residential land use has risen from 37% to 42.53% to accommodate the growing demand for housing. The land use details according to the PMC Development Plan are presented in **Table 2-26.**

**Table 2-26 | Existing Land use of PMC**

| Land use | Area (in Sq.km) | | Total | Area in % |
|---|---|---|---|---|
| | 1987 DP | Newly Merged Areas | | |
| Residential | 50.58 | 53.16 | 103.74 | 42.53 |
| Commercial | 2.35 | 1.57 | 3.92 | 1.61 |
| Industrial | 7.26 | 2.62 | 9.88 | 4.05 |
| Public and Semi Public | 15.22 | 1.45 | 16.67 | 6.83 |
| Public Utilities | 1.38 | 0.00 | 1.38 | 0.57 |
| Transport | 22.00 | 9.81 | 31.81 | 13.04 |
| Reserved, Forest &Agri. | 2.35 | 26.70 | 29.05 | 11.91 |
| Water Bodies | 12.04 | 2.48 | 14.52 | 5.95 |
| Hills and Hill Slopes | 12.45 | 0.00 | 12.45 | 5.10 |
| Recreational | 12.73 | 7.79 | 20.52 | 8.41 |
| **Total** | **138.36** | **105.58** | **243.94** | **100** |

*Source | City Sanitation Plan 2001, PMC*

**Figure 2-15 | Existing Land use Distribution – PMC Area**

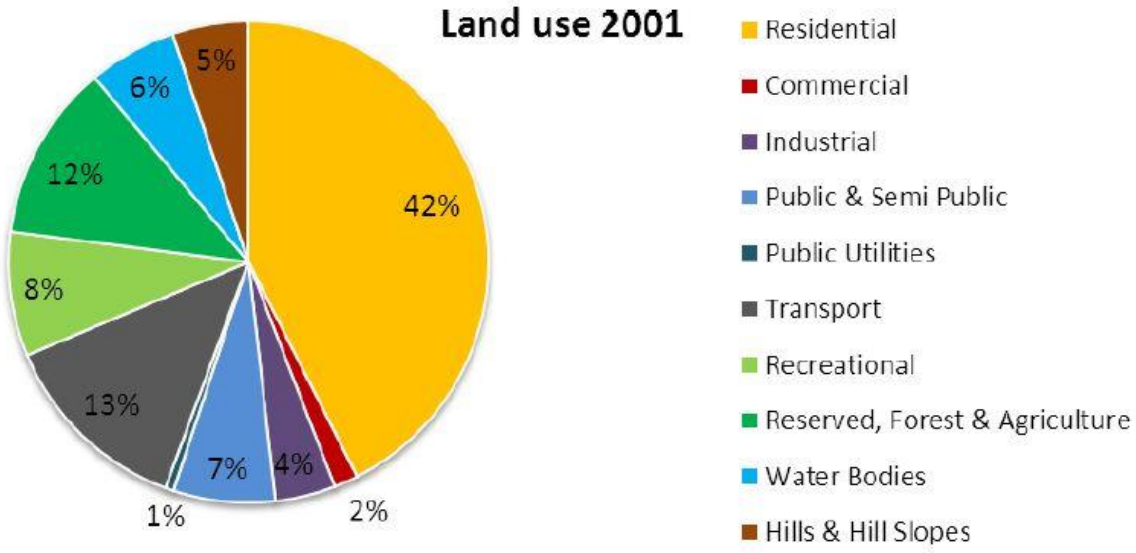
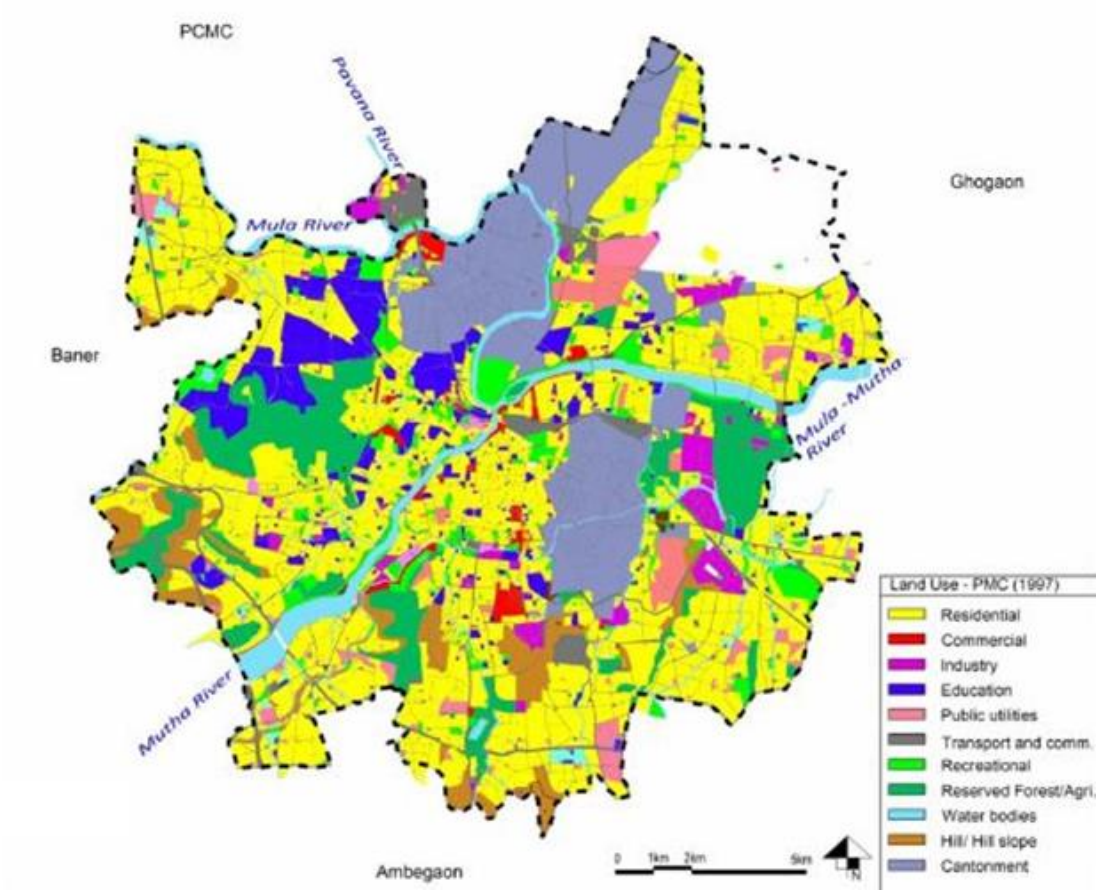



**Figure 2-16 | Existing Land use Map of PMC Area**




Urban growth in Pune city has followed a radial pattern with organic development along the highways. While radials have been well developed, the circular road development is lagging resulting in detour, and congestion in central areas.

Due to strong economic activities in the city and region, Pune is attracting a significant number of migrant populations, especially young people. The migration is likely to maintain or increase further due to better employment opportunities[6]. As compared to 1987 DP, the 2001 DP shows an increase of 14% in residential use favoring the growing demand of housing.

## 2.4.2 | EXISTING LAND USE OF PCMC

The existing land use of PCMC is presented in **Table 2-27** and **Figure 2-17**. The total area of PCMC is 170.5 sq.km in which Development Plan has been prepared for 86 sq.km (as per old limit in 1991) and also for additional 84.51 sq.km (as per extended city limit in 1997) and Tathawade village with 6.49 sq.km.

**Table 2-27 | Existing Land use of PCMC**

| Land use | Area in Sq.km | | | Total | Area in % |
|---|---|---|---|---|---|
| | 1987 DP | Newly Merged areas | Tathawade | | |
| Residential | 10.16 | 22.26 | 0.40 | 32.42 | 19.01 |
| Commercial | 0.40 | 0.19 | 0.05 | 0.59 | 0.35 |
| Industrial | 10.85 | 1.48 | 0.41 | 12.33 | 7.23 |
| Public and Semi Public | 0.84 | 0.82 | 1.16 | 1.66 | 0.97 |
| Public Utilities | 0.42 | 0.39 | 0.00 | 0.81 | 0.48 |
| Transport | 4.26 | 2.38 | 0.35 | 6.64 | 3.89 |
| Reserved, Forest & Agri. | 26.27 | 33.27 | 3.91 | 59.54 | 34.92 |
| Water Bodies | 1.89 | 0.95 | 0.10 | 2.84 | 1.67 |
| Quarry | 0.22 | 2.46 | | 2.68 | 1.57 |
| Recreational /Open spaces | 0.69 | 0.01 | | 0.70 | 0.41 |
| Barren /Vacant Lands | 30.01 | 20.29 | | 50.30 | 29.50 |
| **Total** | **86.01** | **84.50** | **6.37** | **176.88** | **100.00** |

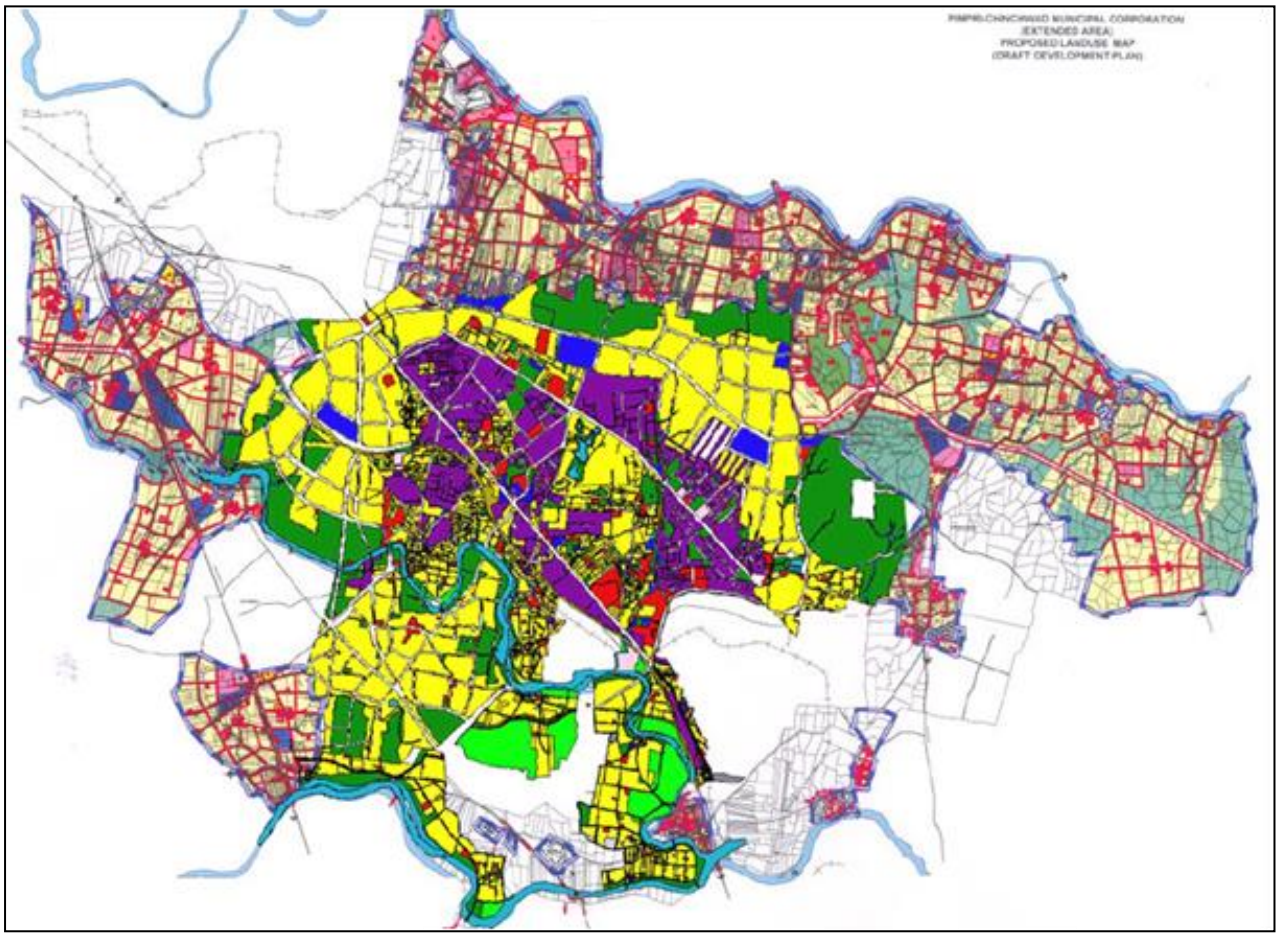
*Source | Draft Development Plan-1997, PCMC, DP 2031 for Newly merged areas of Tathawade in PCMC.*

PCMC has large developable lands. Wakad, Punawale, Kiwale, Ravet, Tathawade and Nigdi have potential for development located on western side of PCMC. On eastern side areas like Charoli, Moshi, Chimbali, Dighi, Bhosari, Alandi, Chikhali and Talwade have potential for development.

Residential areas have been proposed in the extended areas to absorb the future population. Commercial uses have been distributed at the vantage locations mainly along the intersection of major roads in the proposed residential uses. The Development Regulations of PCMC also reveal that the mixed land use concept has been adopted.

[6] https://s3-ap-southeast-1.amazonaws.com/ijmer/pdf/volume11/volume11-issue4(3)/15.pdf

**Figure 2-17 | Existing Land use Map of PCMC Area**



*Source | Draft Development Plan-1997, PCMC*

## 2.4.3 | EXISTING LAND USE OF PMR

The existing land use of the Pune Metropolitan Region (PMR), as outlined in the Development Plan (DDP) for 2041 prepared by PMRDA, encompasses 814 villages within the PMR jurisdiction, including areas managed by the Maharashtra Industrial Development Corporation (MIDC) and the Maharashtra Airport Development Company (MADC).

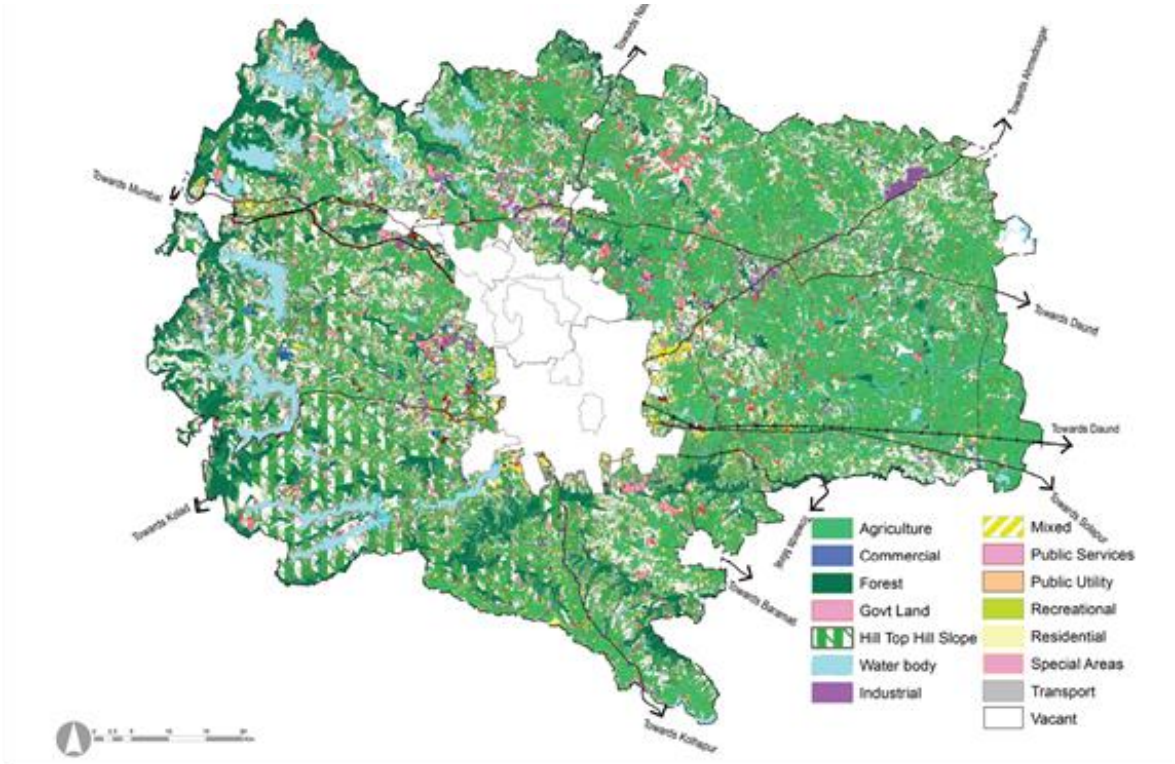
However, it does not include areas under the jurisdictions of the Pune Municipal Corporation (PMC) and Pimpri-Chinchwad Municipal Corporation (PCMC), as well as seven Municipal Councils, two Nagar Panchayats, three Cantonment Boards, and the National Defense Academy (NDA). Consequently, the total study area considered for preparation of Development Plan is approximately 6,159.32 sq.km.

Currently, the major land use in PMR consist of agricultural activities, forests, slope areas, and vacant lands, with urban activities primarily occurring along major transport corridors and the periphery of Pune and Pimpri-Chinchwad cities. break-up of land use breakdown is presented in **Table 2-28**.

### Table 2-28 | Existing Land use of PMR

| Land-Use Category | Existing Area (Sq.km) | Percentage (%) |
|---|---|---|
| Residential land use | 80.83 | 1.31% |
| Mixed land use | 2.40 | 0.04% |
| Commercial land use | 25.66 | 0.42% |
| Industrial land use | 37.47 | 0.61% |
| Public semi-public use | 25.49 | 0.41% |
| Public utility | 1.87 | 0.03% |
| Agricultural use | 2221.81 | 36.07% |
| Recreation | 5.89 | 0.10% |
| Forest | 824.28 | 13.40% |
| Hilltop/hill slope area | 889.95 | 14.45% |
| Government land | 111.29 | 1.81% |
| Special areas | 7.35 | 0.12% |
| Vacant land | 1447.14 | 23.50% |
| Mines/quarries | 12.51 | 0.20% |
| Water Bodies | 375.14 | 6.08% |
| Transportation | 90.23 | 1.45% |
| **Total** | **6,159.32** | **100.00%** |

### Figure 2-18 | Existing Land use Map of PMR




*Source | Draft Development Plan of Pune Metropolitan Region 2021-2041*

# 2.5 | ANALYSIS OF EXISTING TRAFFIC/TRANSPORT CONDITIONS

## 2.5.1 | HOUSEHOLD INTERVIEW SURVEY

Household Interview Surveys are carried out on sample basis to understand the socio-economic and travel characteristics of the Study Area. A total of 1% of households (considering the base year population) are collected by random stratified sampling method. The Household Survey format covers the socio-economic characteristics such as household size, education levels, income, employment sector, vehicle ownership and expenditure on transport etc., and travel characteristics include modal share, trip length, travel time and cost of trip etc.,

Comparison of socio-economic parameters based on household survey and Census-2011 is presented in **Table 2-29**. It is observed that the results from household survey are within comparable limits with the Census 2011. Hence, the sample data collected through household survey forms representative data of the respective wards/ zones.

**Table 2-29 | Comparison of Household Survey (2024) and 2011 Census Data**

| Items | As per Household Survey (2024) | | As per Census (2011) | |
|---|---|---|---|---|
| | PMC | PCMC | PMC | PCMC |
| Average Household size | 3.43 | 3.41 | 4.2 | 4.0 |
| Sex Ratio | 932 | 888 | 948 | 833 |
| Employed person per HH | 1.28 | 1.21 | 1.62 | 1.58 |
| Per Capita Trip Rate (including walk & cycle) | 1.30 | 1.17 | - | - |

### SOCIO-ECONOMIC CHARACTERISTICS

#### HOUSEHOLD SIZE

Average household size in PMC and PCMC are 3.43 and 3.41 respectively. Average household size in the Study Area is 3.58. Distribution of household size in PMC and PCMC is presented in **Table 2-30**.

**Table 2-30 | Distribution of Households by Size**

| Household Size | PMC | PCMC | Study Area |
|---|---|---|---|
| 1 | 2.9% | 1.2% | 1.7% |
| 2 | 24.3% | 26.0% | 21.5% |
| 3 | 25.1% | 37.4% | 27.4% |
| 4 | 29.3% | 17.6% | 22.3% |
| 5 | 12.2% | 3.9% | 7.9% |
| 6 | 1.1% | 11.7% | 14.0% |
| 7 | 3.4% | 2.1% | 4.4% |
| 8 | 1.6% | 0.0% | 0.8% |
| 9 | 0.0% | 0.1% | 0.0% |

| Household Size | PMC | PCMC | Study Area |
|---|---|---|---|
| 10 | 0.1% | 0.0% | 0.0% |
| >10 | 0.0% | 0.0% | 0.0% |
| **Total** | **100.0%** | **100.0%** | **100.0%** |

## HOUSEHOLD INCOME

Average household income in PMC, PCMC is observed to be Rs. 35,523 and Rs. 31,587 respectively. Distribution of the household income for PMC, PCMC and the Study Area is presented in **Table 2-31**.

### Table 2-31 | Distribution of Households by Income

| Income Range (Rs.) | PMC | PCMC | Study Area |
|---|---|---|---|
| Less than 2,000 | 3.3% | 1.0% | 2.1% |
| 2,000 - 5,000 | 0.1% | 0.1% | 0.3% |
| 5,001 - 7,500 | 0.3% | 0.3% | 0.9% |
| 7,501-10,000 | 1.5% | 19.0% | 10.4% |
| 10,001-15,000 | 8.2% | 7.0% | 9.3% |
| 15,001-20,000 | 17.9% | 18.1% | 17.5% |
| 20,001-30,000 | 23.1% | 22.9% | 22.0% |
| 30,001-40,000 | 22.1% | 6.2% | 14.2% |
| 40,001-50,000 | 9.5% | 11.9% | 10.1% |
| 50,000 - 1 lakh | 10.1% | 10.2% | 9.5% |
| Greater than 1 lakh | 3.9% | 3.3% | 3.8% |
| **Total** | **100.0%** | **100.0%** | **100.0%** |

## EXPENDITURE ON TRANSPORT

The average household monthly expenditure on transport is Rs.1,331 in PMC, Rs.1,014 in PCMC, and Rs.1,194 for the Study Area.

## VEHICLE OWNERSHIP

The distribution of Households by vehicle ownership is presented in **Table 2-32** and **Figure 2-19.**

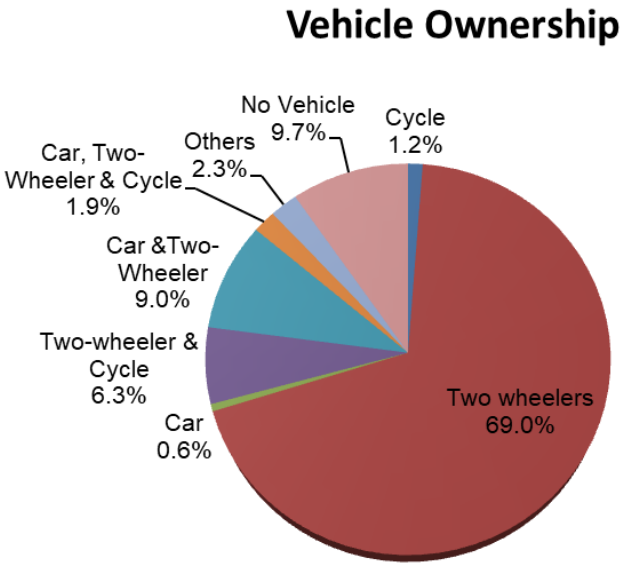
### Table 2-32 | Distribution of Households by Mode-wise Vehicle Ownership

| Mode | PMC | PCMC | Study Area |
|---|---|---|---|
| Cycle | 1.5% | 0.8% | 1.2% |
| Two-Wheeler | 65.9% | 74.5% | 69.0% |
| Car | 0.4% | 0.7% | 0.6% |

| Mode | PMC | PCMC | Study Area |
|---|---|---|---|
| Two-Wheeler & Cycle | 6.8% | 5.1% | 6.3% |
| Car & Two-Wheeler | 8.5% | 9.3% | 9.0% |
| Car, Two-Wheeler & Cycle | 2.0% | 1.6% | 1.9% |
| Others* | 2.5% | 1.5% | 2.3% |
| No Vehicle | 12.3% | 6.5% | 9.7% |
| **Total** | **100.0%** | **100.0%** | **100.0%** |

** Others includes auto rickshaw, tempos and other vehicle combination*

**Figure 2-19 | Distribution of Type of Vehicle Ownership in the Study Area**




## PERSONAL CHARACTERISTICS

### EDUCATION PROFILE

Overall, 95.2%, 93.5% and 93.2% of the total population is literate in PMC, PCMC and the Study Area respectively. Distribution of education level of population is presented in **Table 2-33**.

**Table 2-33 | Distribution of Population by Education Level**

| Education Level | PMC | PCMC | Study Area |
|---|---|---|---|
| Illiterate | 4.8% | 6.5% | 6.8% |
| Primary School(5th) | 6.7% | 13.4% | 12.1% |
| Secondary School (10th) | 20.7% | 18.4% | 21.4% |
| Higher Secondary (12th) | 19.6% | 21.6% | 21.5% |
| Technical Diploma | 10.3% | 8.4% | 8.2% |
| Graduation | 31.7% | 28.5% | 25.7% |
| Post- Graduation | 5.9% | 3.1% | 4.1% |

| Education Level | PMC | PCMC | Study Area |
|---|---|---|---|
| Doctorate (PhD) | 0.3% | 0.2% | 0.2% |
| **Total** | **100.0%** | **100.0%** | **100.0%** |

## EMPLOYMENT SECTOR

The distribution of population by employment sector for PMC, PCMC and the Study Area is presented in **Table 2-34**.

### Table 2-34 | Distribution of Population by Employment Sector

| Employment Sector | PMC | PCMC | Study Area |
|---|---|---|---|
| Agro based/Farming | 7.5% | 1.4% | 11.0% |
| Construction/ Mining | 5.4% | 4.9% | 4.4% |
| Educational | 2.6% | 1.5% | 2.5% |
| Finance/Insurance/Real Estate | 2.3% | 0.6% | 1.4% |
| Informal Employment | 3.4% | 2.8% | 8.0% |
| IT/ITES | 2.7% | 1.4% | 1.9% |
| Manufacturing (Household) | 2.2% | 1.1% | 1.7% |
| Manufacturing (Others) | 3.0% | 4.8% | 4.4% |
| Retail/ Wholesale Trade | 8.9% | 4.8% | 7.2% |
| Service (Govt. Sector) | 4.4% | 2.8% | 3.7% |
| Service Sector (Private) | 51.1% | 71.9% | 49.7% |
| Tourism | 0.1% | 0.3% | 0.3% |
| Transport/Communication/Utilities | 6.4% | 1.7% | 3.9% |
| **Total** | **100.0%** | **100.0%** | **100.0%** |

## WORK FORCE PARTICIPATION RATE (WFPR)

The estimated work force participation rate (WFPR) in the study area is presented in **Table 2-35**.

### Table 2-35 | Gender wise Work Force Participation Rate

| Work Force Participation Rate (WFPR) | PMC | PCMC | Rest of the PMR | Overall Study Area |
|---|---|---|---|---|
| Male | 65% | 76% | 67% | 67% |
| Female | 20% | 8% | 22% | 18% |

# TRAVEL CHARACTERISTICS

## PER CAPITA TRIP RATE

The per capita trip rate for the overall study area is presented in **Table 2-36.**

**Table 2-36 | Per Capita Trip Rate (PCTR)**

| Per Capita Trip Rate (PCTR) | PMC | PCMC | Rest of PMR | Overall Study Area |
|---|---|---|---|---|
| All Modes (including walk & cycle) | 1.30 | 1.17 | 1.47 | 1.32 |
| Motorized modes (excluding walk & cycle) | 0.95 | 0.87 | 0.85 | 0.90 |

## PURPOSE WISE DISTRIBUTION OF TRIPS

The purpose-wise distribution of trips for PMC, PCMC and the Study Area is presented in **Table 2-37**.

**Table 2-37 | Distribution of Trips by Purpose**

| No. | Purpose | PMC | PCMC | Rest of PMR | Overall Study Area |
|---|---|---|---|---|---|
| 1 | Work / Business | 77.0% | 67.5% | 51.3% | 69.5% |
| 2 | Education | 16.6% | 21.0% | 26.3% | 18.9% |
| 3 | Shopping | 4.1% | 8.0% | 14.0% | 7.1% |
| 4 | Social/ Religious/ Recreation | 0.8% | 0.8% | 3.1% | 1.6% |
| 5 | Health/Hospital | 0.2% | 0.2% | 1.5% | 0.8% |
| 6 | Tourism | 0.1% | 1.1% | 0.3% | 0.1% |
| 7 | Other Purpose | 1.2% | 1.4% | 3.5% | 2.0% |
| **Total** | | **100.0%** | **100.0%** | **100.0%** | **100.0%** |

## MODE WISE DISTRIBUTION OF TRIPS BY TRIP LENGTH

The mode-wise trip length for PMC, PCMC and the Study Area is presented in **Table 2-38**.

**Table 2-38 | Mode-wise Trip Length (km)**

| Mode | PMC | PCMC | Rest of PMR | Overall Study Area |
|---|---|---|---|---|
| Walk | 0.44 | 0.33 | 0.30 | 0.34 |
| Cycle | 1.48 | 0.44 | 1.05 | 0.99 |
| Two-Wheeler | 6.35 | 8.16 | 8.10 | 7.54 |
| Auto | 5.40 | 4.55 | 4.09 | 4.68 |
| Car/ Jeep/ Van | 11.48 | 9.56 | 5.10 | 8.54 |
| Shared Auto | 2.39 | 2.98 | 2.30 | 2.56 |
| Taxi/Ola/Uber | 8.37 | 12.77 | 13.20 | 11.43 |

| Mode | PMC | PCMC | Rest of PMR | Overall Study Area |
|---|---|---|---|---|
| PMPML Bus | 7.04 | 8.06 | 6.10 | 6.25 |
| Company/ School Bus | 4.38 | 9.50 | 3.20 | 5.50 |
| State Bus | 12.95 | 7.29 | 6.70 | 7.24 |
| Private Bus | 5.14 | 3.91 | 3.20 | 4.08 |
| **Average Trip Length (Non-Motorized)** | **1.08** | **0.43** | **0.68** | **0.73** |
| **Average Trip Length (Motorized)** | **6.79** | **7.36** | **5.78** | **5.94** |
| **Average Trip Length (Motorised & Non- motorized)** | **5.84** | **6.14** | **4.85** | **5.38** |

## 2.5.2 | OPINION SURVEY ANALYSIS

### INTERMEDIATE PUBLIC TRANSPORT SURVEY

Based on IPT Survey, operational characteristics i.e. maintenance cost, income, occupancy per trip etc., of various IPT modes are estimated and presented in **Table 2-39**.The detailed analysis of opinion surveys is attached in **Annexure 2-5**.

**Table 2-39 | Operational Characteristics of various IPT modes**

| Vehicle Type | Auto Rickshaw | Share Auto | Tata Magic | Taxi |
|---|---|---|---|---|
| Average Age of vehicle (in Years) | 6.4 | 5.3 | 7.0 | 5.3 |
| Average Operational Hours/day | 8 | 9 | 8 | 8 |
| Average Distance covered (km/day) | 115 | 86 | 113 | 123 |
| Average Number of Passengers/trips | 2 | 6 | 4 | 2 |
| Average Number of trips/days | 12 | 11 | 12 | 9 |
| Average Gross Earning per Day (in Rs.) | 1,092 | 1,130 | 1,050 | 2,100 |
| Gross Earnings/ trip (in Rs.) | 105 | 149 | 211 | 215 |
| Average Monthly Maintenance Expense (in Rs.) | 1,530 | 1,621 | 1,375 | 1,838 |
| Average No. of Breakdowns in previous Month | 1.3 | 0.7 | 0.5 | 0.9 |
| Average Fuel Expense (Rs. /Day) | 359 | 380 | 350 | 742 |

### INTERMEDIATE PUBLIC TRANSPORT (IPT) USER SURVEY

Based on the IPT User Survey, the average monthly income of taxi users (Ola / Uber / Private taxis) is Rs.50,850, followed by auto-rickshaw users at R.30,488. The major issues identified by various IPT users are as follows,

- For individual auto-rickshaw users, high fares are the primary concern, followed by overcrowding and poor frequency.
- Share auto and Tata Magic users cite overcrowding as their main issue, along with poor

frequency and untidiness.

- Taxi users also report high fares as a significant concern, followed by poor frequency and overcrowding.

Notably, around 80% of all IPT users are willing to switch to public transport, compared to 56% of taxi users. Many users suggested improvements to public transport facilities to shift to public transport which include:

- Improving bus frequency (34%)
- Introducing new bus routes (11.7%)
- Ensuring punctuality of bus services (10.6%)
- Enhancing traffic flow and management (8.5%)

The detailed analysis of the Intermediate Public Transport (IPT) User Survey with graphs is presented in **Annexure 2.5**.

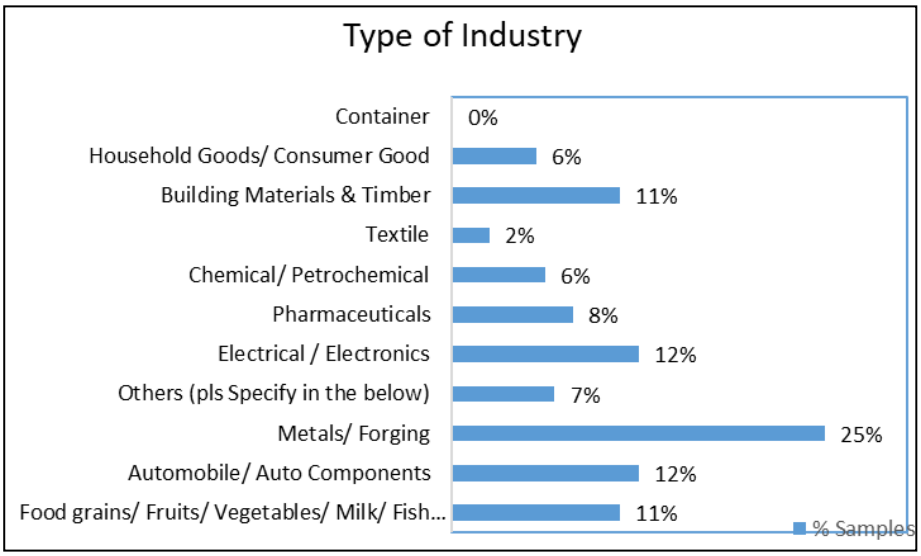
## VEHICLE OPERATORS' SURVEY (PETROL PUMP SURVEY)

Vehicle operator survey is carried out for private vehicle modes (2-Wheeler, 3-wheeler and Car) to understand the characteristics of the vehicles. The drivers of the vehicles are interviewed at petrol pumps. The outcome of the survey is presented in **Annexure 2.5**.

## GOODS FOCAL POINT SURVEY

A goods focal point survey was conducted for various industries and establishments to assess the characteristics of goods movement from large operators. This data will serve as input for model development and for planning truck routing and terminals. The industry-wise sample distribution is presented in **Figure 2-20**. Based on random and stratified sampling, the survey reveals that the sample share is predominantly from the metals and forging sector (25%), followed by the automobile industry (12%) and the electrical and electronic industries (12%).

**Figure 2-20 | Share of Industry-wise Samples for Goods Focal Point Survey**




Entry/Exit surveys are carried out at major Goods Focal Point locations are presented in **Table 2-40**.

**Table 2-40 | Entry/Exit of Goods Vehicles at Goods Focal Point Survey Locations**

| No. | Area | Entry/ Exit | LCV | 2 Axle | 3 Axle | Multi Axle | Tractor/ Others |
|---|---|---|---|---|---|---|---|
| 1 | Pune Station | Entry | 56 | 33 | 51 | 51 | 105 |
| | | Exit | 64 | 38 | 32 | 46 | 103 |
| 2 | Undri | Entry | 39 | 14 | 14 | 10 | 14 |
| | | Exit | 44 | 12 | 12 | 14 | 10 |
| 3 | Pimpri Market | Entry | 32 | 22 | 16 | 14 | 20 |
| | | Exit | 23 | 20 | 19 | 18 | 21 |
| 4 | Bhosari MIDC | Entry | 578 | 367 | 244 | 89 | 9 |
| | | Exit | 533 | 327 | 230 | 134 | 19 |
| 5 | Nigdi | Entry | 49 | 50 | 39 | 49 | 49 |
| | | Exit | 43 | 51 | 35 | 45 | 25 |
| 6 | Ranjangaon | Entry | - | - | - | - | - |
| | | Exit | - | - | - | - | - |
| 7 | Hinjawadi | Entry | 104 | 42 | 39 | 42 | 30 |
| | | Exit | 69 | 35 | 39 | 38 | 45 |
| 8 | Pirangut | Entry | - | - | - | - | - |
| | | Exit | - | - | - | - | - |
| 9 | Hadapsar | Entry | 17 | 16 | 17 | 17 | 18 |
| | | Exit | 16 | 17 | 14 | 15 | 18 |
| 10 | Market Yard | Entry | 58 | 28 | 49 | 59 | 41 |
| | | Exit | 48 | 30 | 23 | 70 | 39 |
| 11 | Mahatma Phule Mandai | Entry | 47 | 19 | 20 | 12 | 21 |
| | | Exit | 30 | 17 | 21 | 18 | 20 |
| 12 | Chakan | Entry | 206 | 40 | 45 | 37 | 29 |
| | | Exit | 125 | 19 | 39 | 41 | 47 |

| No. | Area | Entry/ Exit | LCV | 2 Axle | 3 Axle | Multi Axle | Tractor/ Others |
|---|---|---|---|---|---|---|---|
| 13 | Laxmi Road | Entry | 52 | 36 | 35 | 32 | 33 |
| | | Exit | 45 | 31 | 20 | 33 | 36 |
| 14 | Pimpri-Chinchwad MIDC | Entry | 221 | 176 | 81 | 10 | - |
| | | Exit | 190 | 111 | 28 | 20 | 25 |
| 15 | Saswad Railway Siding | Entry | 132 | 53 | 17 | 1 | 1 |
| | | Exit | 104 | 36 | 17 | 2 | 3 |

The details of availability of off-street parking facilities for various firms operating in the industry locations surveyed and the area availability (in sq. ft.) of parking at each location surveyed during the Goods focal point survey is presented in **Figure 2-21** and **Figure 2-22**.

**Figure 2-21 | Availability of Off-street Parking Facilities among the firms surveyed in each location**

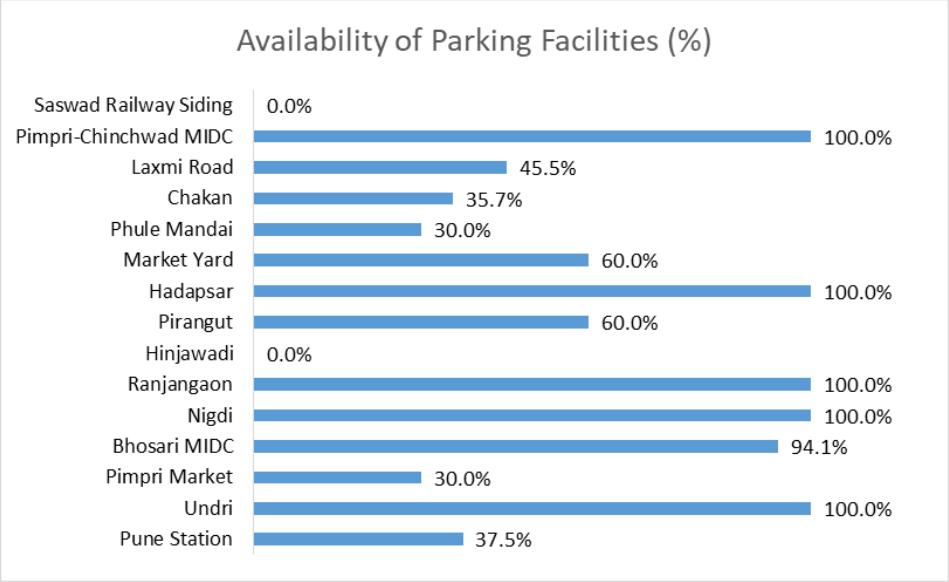
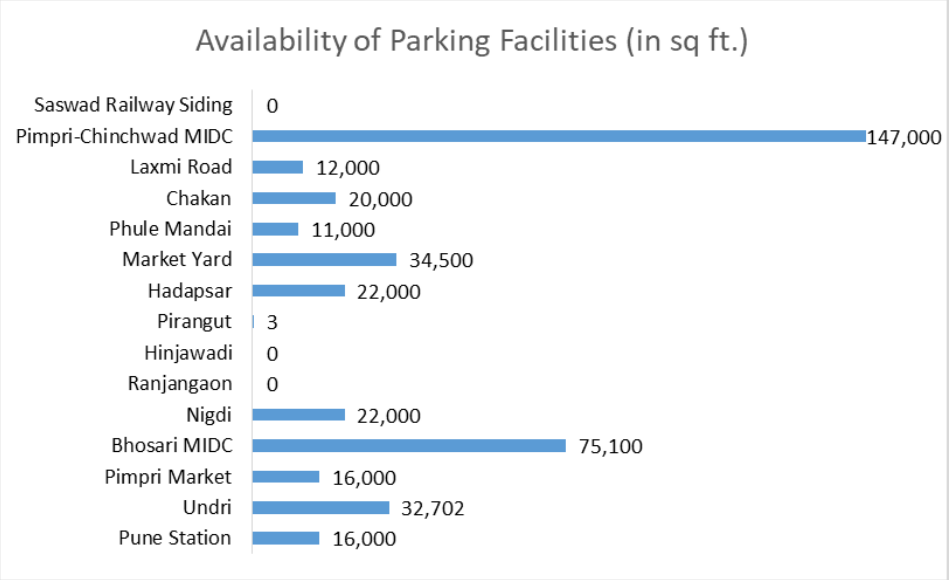


**Figure 2-22 | Availability of Off-street Parking Facilities (in sq. ft.)**




## 2.5.3 | LIGHT METER SURVEY

The recommended levels of LUX values for various road type and public places as per Bureau of Indian Standards (IS:1944 (Parts I and II) – 1970 Code of Practice for Lighting of Public Thoroughfares) and Urban Street Design Guidelines are presented below.

**Table 2-41 | Recommended levels of LUX values for Carriageway**

| Road Type | Road Characteristics | Average Luminance level at the road surface in LUX |
|---|---|---|
| A-1 | Important Traffic routes Carrying fast traffic | 30 |
| A-2 | Main roads carrying mixed traffic like city main roads/streets, arterial roads, throughways | 15 |
| B-1 | Secondary roads with considerable traffic like local traffic routes, shopping streets | 08 |
| B-2 | Secondary Roads with light traffic | 04 |

For pedestrian walkways the recommended LUX value is considered as 25, which is as per the Urban Street Design Guidelines. Average LUX value calculated for each road and the road wise information of recommended values of luminance are presented in **Table 2-42**.

**Table 2-42 | Average Luminance levels on Carriageway and Footpath in the Study Area**

| No. | Name of Road | Length (Km) | Lux Value - Carriageway | Standard for Carriageway | Achieved | Lux Value for Footpath | Standard for Footpath | Achieved | PMC/PCMC/ PMRDA |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Shivaji Nagar to Market Yard | 4.69 | 28 | 30 | No | 20 | 25 | No | PMC |
| 2 | Shivaji Nagar to Mitra Madal Chowk | 2.70 | 22 | 30 | No | 17 | 25 | No | PMC |
| 3 | RTO to Solapur Chowk | 4.00 | 16 | 30 | No | 3 | 25 | No | PMC |
| 4 | Shivaji Nagar to Bund Garden | 5.32 | 24 | 30 | No | 4 | 25 | No | PMC |
| 5 | Shivaji Nagar to Chandani Chowk | 8.29 | 15 | 30 | No | 10 | 25 | No | PMC |
| 6 | Shivaji Nagar to Baner Road | 9.55 | 21 | 30 | No | 12 | 25 | No | PMC |
| 7 | Solapur Highway | 6.34 | 13 | 30 | No | 3 | 25 | No | PMC |
| 8 | Kondhwa Road | 2.19 | 14 | 15 | No | 3 | 25 | No | PMC |
| 9 | Shivaji Nagar to Camp via Swargate | 8.00 | 17 | 15 | Yes | 6 | 25 | No | PMC |
| 10 | Gokhale Nagar Road | 5.45 | 28 | 15 | Yes | 13 | 25 | No | PMC |
| 11 | Laxmi Road | 2.69 | 23 | 15 | Yes | 15 | 25 | No | PMC |
| 12 | Market Yard | 2.94 | 12 | 15 | No | 4 | 25 | No | PMC |
| 13 | Sinhagad Road | 5.10 | 13 | 15 | No | 3 | 25 | No | PMC |
| 14 | Magarpatta road | 12.00 | 25 | 30 | No | 7 | 25 | No | PMC |
| 15 | Wakad -Chinchwad | 6.28 | 18 | 30 | No | 5 | 25 | No | PCMC |
| 16 | Bhosari Road | 10.40 | 23 | 30 | No | 24 | 25 | No | PCMC |
| 17 | Bhosari Nigdi Road | 8.20 | 22 | 30 | No | 3 | 25 | No | PCMC |
| 18 | Kalewadi Phata | 4.18 | 22 | 15 | Yes | 7 | 25 | No | PCMC |
| 19 | University Chowk to Sant Tukaram Bridge | 14.20 | 43 | 30 | Yes | 20 | 25 | No | PMC/PCMC |
| 20 | COEP Bridge to Bhakti Shakti | 17.70 | 30 | 30 | Yes | 21 | 25 | No | PMC/PCMC |
| 21 | Deccan College to Vishrantwadi | 5.50 | 29 | 15 | Yes | 18 | 25 | No | PMC/PCMC |
| 22 | Kharadi Bypass | 6.36 | 24 | 30 | No | 16 | 25 | No | PMC/PCMC |
| 23 | Bopodi-Yerwada | 5.92 | 20 | 30 | No | 16 | 25 | No | PMC/PCMC |
| 24 | Hinjawadi-Chinchwad Road | 7.66 | 22 | 15 | Yes | 7 | 25 | No | PMC/PCMC / Rest of PMR |

# 2.6 | TRAFFIC VOLUME COUNT

## 2.6.1 | CLASSIFIED TRAFFIC VOLUME COUNTS - INNER CORDONS

Classified traffic volume counts are conducted at 18 inner cordon locations for 24 hours. Video graphic counting method used to count the vehicles. The vehicles counted are converted to Passenger Car Units (PCU) by adopting equivalent PCUs. PCUs corresponding to urban roads as per IRC: 106-1990 is used. The traffic Intensity observed at the inner cordon locations is presented in the **Table 2-43**.

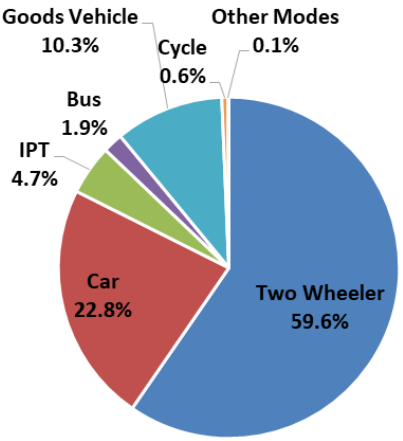
**Table 2-43 | Traffic Intensity at Inner Cordon Locations**

| No. | Name of Road/ Location | Daily Traffic | | Peak Hour Traffic | | |
|---|---|---|---|---|---|---|
| | | Vehicles | PCUs | Peak Hour | PCUs | (%) |
| 1 | Nashik Highway - Moshi Toll Plaza | 1,10,409 | 1,14,553 | 08.30-09.30 | 8,492 | 7.4 |
| 2 | Near Sambhaji Chowk, Alandi Road | 78,891 | 72,619 | 18.15-19.15 | 4,815 | 6.6 |
| 3 | Nagar Road – Janak Baba Dargah Chowk | 2,02,930 | 1,94,843 | 09:00-10:00 | 5,215 | 7.2 |
| 4 | Solapur Road – Kawadipath Toll Plaza | 97,293 | 1,03,853 | 08.30-09.30 | 6,366 | 6.1 |
| 5 | Saswad Road – Near Wadki | 49,620 | 52,120 | 18.00-19.00 | 3,857 | 7.4 |
| 6 | Saswad - Bopdev Road- Near Singhad Nursery School | 50,580 | 47,535 | 09.00-10.00 | 3,570 | 7.5 |
| 7 | Sinhagad Road- Near Nanded City | 89,403 | 84,791 | 09.00-10.00 | 8,040 | 9.5 |
| 8 | NDA Academy Road - Dudane Wasti | 1,08,416 | 93,852 | 08.45-09.45 | 8,071 | 8.6 |
| 9 | Mulshi Road - Near Bhugaon | 60,340 | 55,612 | 09.30-10.30 | 4,140 | 7.4 |
| 10 | Hinjawadi Road - Shivaji Chowk | 2,16,784 | 1,99,424 | 09.30-10.30 | 9,312 | 9.0 |
| 11 | Old Mumbai Highway - Dehu Road Toll Plaza | 78,902 | 84,448 | 17.30-18.30 | 5,581 | 6.6 |
| 12 | Talwade Road- Near Talwade MIDC Junction | 1,19,070 | 1,18,396 | 08.30-09.30 | 8,895 | 7.5 |
| 13 | Katraj - Satara Road- Near Mangdewadi | 67,207 | 67,801 | 18.15-19.15 | 4,628 | 6.8 |
| 14 | Sus road - Near Sus Village | 42,604 | 38,973 | 09.00-10.00 | 3,560 | 9.1 |
| 15 | Nande-Balewadi Road - Near Hinjawadi Police Chowk | 24,845 | 21,658 | 11.30-12.30 | 1,807 | 8.3 |
| 16 | Manjari Road - Near Mula Mutha River Bridge | 27,017 | 25,490 | 09.15-10.15 | 2,184 | 8.6 |
| 17 | Nirgudi-Lohegaon Road-Near CS Maharaj Statue | 2,218 | 2,147 | 11.15-12.15 | 175 | 8.2 |
| 18 | Lohegaon- Wagholi Road - Near Yojana Nagar | 23,377 | 22,477 | 09.00-10.00 | 2,010 | 8.9 |
| | **Total** | **14,49,908** | **14,00,590** | | | |

- About 14.50 lakh vehicles enter and leave the Study Area on a typical day out of which 7.97 lakh vehicles are inbound traffic (External to Internal) and 6.52 lakh vehicles are out bound movement (Internal to External).
- The highest traffic volume of about 2,16,784 vehicles are observed at Hinjawadi Road-Shivaji Chowk followed by Nagar Road-Janak Baba Dargah Chowk with a traffic volume of 2,02,930 vehicles.
- Percentage of traffic during peak hour ranges between 6.1% and 9.5% with an average of 7.8%.

Average traffic composition at inner cordon locations is presented in the **Figure 2-23.**

**Figure 2-23 | Average Traffic Composition at Inner Cordon Locations**




## 2.6.2 | CLASSIFIED TRAFFIC VOLUME COUNT - OUTER CORDONS

Classified traffic volume counts are conducted at 12 outer cordon locations for 24 hours. Video graphic counting method is used to count the vehicles. The traffic intensity observed at outer cordon locations are presented in the **Table 2-44**.

**Table 2-44 | Traffic Intensity at Outer Cordon Locations**

| No. | Name of Road/ Location | Daily Traffic | | Peak Hour Traffic | | |
|---|---|---|---|---|---|---|
| | | Vehicles | PCUs | Peak Hour | PCUs | (%) |
| 1 | Khed Shivapur Toll Plaza, Satara Road | 1,38,868 | 1,59,785 | 08:45-09:45 | 10,427 | 6.5 |
| 2 | Saswad - Jejuri Road and Indraprastha Road Junction | 60,361 | 61,619 | 18:00-19:00 | 4,388 | 7.1 |
| 3 | Solapur Highway- Patas Toll Plaza | 64,635 | 86,254 | 18:00-19:00 | 5,113 | 5.9 |
| 4 | Nagar Road - Shirur | 98,083 | 116,201 | 16:00-17:00 | 6,398 | 5.5 |
| 5 | Nashik Highway- Peth | 73,618 | 80,740 | 17:15-18:15 | 5,009 | 6.2 |
| 6 | Mumbai-Pune Exp.- Lonavala Toll Plaza | 10,968 | 29,729 | 03:45-04:45 | 2,240 | 7.5 |
| 7 | Mumbai - Pune Highway (Lonavala) | 32,317 | 37,295 | 10:00-11:00 | 2,328 | 6.2 |
| 8 | Vile - Bhagad MIDC, Mulshi Road | 6,251 | 7,069 | 09:45-10:45 | 515 | 7.3 |
| 9 | Nirvi - Nhavare Road | 5,525 | 4,798 | 16:00-17:00 | 381 | 7.9 |
| 10 | Kedgaon - Supa Road | 15,157 | 17,946 | 09:00-10:00 | 1,246 | 6.9 |
| 11 | Uruli Kanchan- Jejuri Road | 6,330 | 7,890 | 17:45-18:45 | 613 | 7.8 |
| 12 | Velhe Budruk Village Road | 2,714 | 2,540 | 11:00-12:00 | 252 | 9.9 |
| | **Total** | **5,14,827** | **6,11,866** | | | |

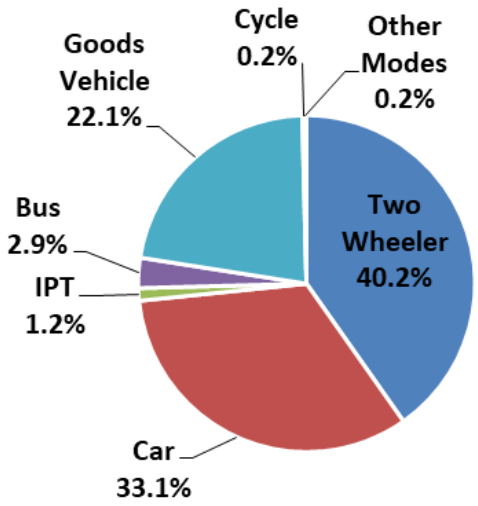
- About **5.14 lakh vehicles** enter and leave the outer cordons on a typical day out of which 2.60 lakh vehicles are the inbound traffic (External to Internal) and 2.54 lakh vehicles are out bound movement (Internal to External).
- Amongst Outer Cordon locations, highest traffic volume of 1,38,868 vehicles (159,785 PCUs) is

observed on Khed Shivapur Toll Plaza on Satara Road which is about 27% of total vehicles observed at all cordon locations followed by Nagar Road - Shirur (98,083 vehicles).

- The percentage of traffic in peak hour ranges between 5.5% and 9.9% with an average of 7.06%.

Average traffic composition at Outer Cordon locations is presented in **Figure 2-24.**

**Figure 2-24 | Average Traffic Composition at Outer Cordon Locations**




## 2.6.3 | CLASSIFIED TRAFFIC VOLUME COUNT - SCREEN-LINE

Two Screen-lines are considered in the Study Area i.e. North-South and East-West screen-line. Pune-Solapur/Satara Railway line and Mutha river are considered as North-South screen-line and Mula and Mula Mutha rivers as the East-West screen-line. Classified traffic volume counts are conducted at 63 screen-line locations for a duration of 24/16/8 hours. The collected data is used to validate the travel demand model. Video graphic counting method used to count the vehicles. The location-wise traffic intensity is presented in **Table 2-45**.

**Table 2-45 | Traffic Intensity at Screen line locations**

| No | Name of Road/ Location | Total Traffic | | Peak Hour | | |
|---|---|---|---|---|---|---|
| | | Vehicles | PCUs | Peak Hour | PCUs | (%) |
| 1 | Main Bazar Road (Lonavala) | 46,576 | 42,559 | 10.30-11.30 | 3,779 | 8.9 |
| 2 | Kamshet | 8,295 | 7,016 | 11.15-12.15 | 624 | 8.9 |
| 3 | Kanhe | 12,119 | 11,874 | 14.45-15.45 | 1,050 | 8.8 |
| 4 | Talegaon Industrial Area | 20,724 | 29,668 | 08.00-09.00 | 2,516 | 8.5 |
| 5 | Talegaon Chakan Road | 81,826 | 77,070 | 17.45-18.45 | 5,983 | 7.8 |
| 6 | Begdaewadi | 5,939 | 5,223 | 17.15-18.15 | 492 | 9.4 |
| 7 | Dehu | 65,028 | 61,299 | 18.00-19.00 | 4,993 | 8.1 |
| 8 | Manjari Village | 27,017 | 25,490 | 09.15-10.15 | 2,184 | 8.6 |
| 9 | Theur Kesnand Road | 14,236 | 17,548 | 10.30-11.30 | 1,371 | 7.8 |

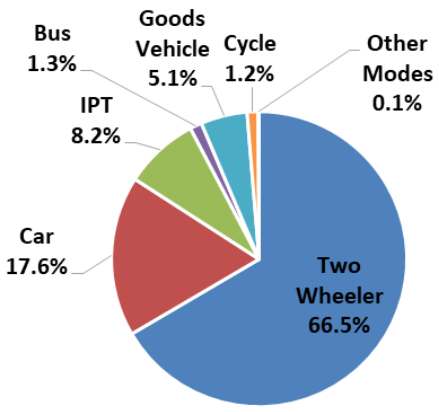
| No | Name of Road/ Location | Total Traffic | | Peak Hour | | |
|---|---|---|---|---|---|---|
| | | Vehicles | PCUs | Peak Hour | PCUs | (%) |
| 10 | Uruli Ashtapur Road | 3,813 | 3,256 | 09.15-10.15 | 285 | 8.8 |
| 11 | Pimpalgaon Rahu Road | 8,745 | 7,548 | 10.45-11.45 | 659 | 8.7 |
| 12 | SH 62, Pargaon | 11,646 | 13,305 | 17.30-18.30 | 1,077 | 8.1 |
| 13 | Western Bypass Road | 2,40,417 | 2,40,330 | 09.00-10.00 | 18,310 | 7.6 |
| 14 | Mahatma Jyotiba Phule Bridge | 56,234 | 48,123 | 09.15-10.15 | 4,529 | 9.4 |
| 15 | Mahadji Shinde Road (Aundh) | 71,770 | 63,803 | 09.30-10.30 | 5,747 | 9.0 |
| 16 | Rajiv Gandhi Bridge (Aundh Ravet Road) | 99,927 | 93,401 | 09:15-10:15 | 15,022 | 16.1 |
| 17 | Jai Ganesh Chowk | 92,152 | 79,980 | 09.15-10.15 | 6,776 | 8.5 |
| 18 | Old Sangavi Nera Petrol Pump | 87,150 | 86,866 | 09.30-10.30 | 7,870 | 9.1 |
| 19 | Harris Bridge (Old Mumbai Highway) | 2,18,198 | 2,08,881 | 18.45-19.45 | 14,247 | 6.8 |
| 20 | Bhanu Patil Road | 37,029 | 36,867 | 09.15-10.15 | 4,365 | 11.8 |
| 21 | Yashwantrao Chavan Path | 4,851 | 4,308 | 09.30-10.30 | 526 | 12.2 |
| 22 | Khadki Police Chowk | 75,164 | 68,842 | 09.30-10.30 | 5,781 | 8.4 |
| 23 | Dhanori Alandi Road | 36,645 | 32,881 | 09.30-10.30 | 3,402 | 10.3 |
| 24 | KB Joshi Path | 99,804 | 91,764 | 09.15-10.15 | 8,198 | 8.9 |
| 25 | HK Firodia Bridge | 2,39,450 | 2,33,547 | 09.30-10.30 | 16,367 | 7.0 |
| 26 | Juna Bazar | 1,30,938 | 1,31,573 | 09.30-10.30 | 11,361 | 8.6 |
| 27 | Connaught Road (RoB) | 58,060 | 66,469 | 09.45-10.45 | 5,305 | 8.0 |
| 28 | Bund Garden Road | 1,06,473 | 1,12,935 | 09.45-10.45 | 9,395 | 8.3 |
| 29 | Koregaon Park Road | 1,47,788 | 1,40,155 | 18.15-19.15 | 11,908 | 8.5 |
| 30 | Ghorpadi Road | 62,819 | 59,923 | 19.00-20.00 | 5,006 | 8.4 |
| 31 | BT Kawade Road (RoB) | 59,316 | 54,735 | 18.00-19.00 | 4,540 | 8.3 |
| 32 | Solapur Road (RoB) Kirloskar Bridge | 2,56,750 | 2,59,448 | 09.15-10.15 | 18,880 | 7.3 |
| 33 | Hadapsar Road | 1,01,667 | 1,03,467 | 09.00-10.00 | 8,323 | 8.0 |
| 34 | Western Bypass (After Warje) | 1,86,853 | 1,75,573 | 09:00-10:00 | 27,413 | 15.6 |
| 35 | Rajaram Bridge | 1,73,479 | 1,50,399 | 09.15-10.15 | 13,970 | 9.3 |
| 36 | Mhatre Bridge | 1,42,379 | 1,35,626 | 18.15-19.15 | 11,728 | 8.6 |
| 37 | SM Joshi Bridge | 81,579 | 77,491 | 09.30-10.30 | 7,503 | 9.7 |
| 38 | Shivaram Mhatre Road (Chavan Bridge) | 56,535 | 42,262 | 09.45-10.45 | 3,716 | 8.8 |
| 39 | Sambhaji Bridge | 68,402 | 75,446 | 18:30-19:30 | 10,962 | 14.5 |
| 40 | Kakasaheb Gadgil Bridge (Z Bridge) | 23,896 | 17,794 | 18.15-19.15 | 1,831 | 10.3 |
| 41 | Baba Bhide Bridge | 1,25,928 | 99,687 | 10.00-11.00 | 8,722 | 8.7 |
| 42 | Maha Rishi Shinde Bridge | 93,473 | 88,629 | 10.00-11.00 | 8,030 | 9.1 |
| 43 | PMC Bhavan Bridge | 77,761 | 73,365 | 17.45-18.45 | 6,453 | 8.8 |
| 44 | Shivaji Bridge-Nava Pool | 63,052 | 64,281 | 10:00-11:00 | 9,122 | 14.2 |
| 45 | Dengale Bridge Road | 1,00,031 | 1,05,687 | 10.45-11.45 | 9,242 | 8.7 |
| 46 | Sangam Bridge 1 | 1,53,110 | 1,58,176 | 09.15-10.15 | 12,710 | 8.0 |
| 47 | Sangam Bridge 2 | 1,04,613 | 1,06,488 | 09:30-10:30 | 16,369 | 15.4 |

| No | Name of Road/ Location | Total Traffic | | Peak Hour | | |
|---|---|---|---|---|---|---|
| | | Vehicles | PCUs | Peak Hour | PCUs | (%) |
| 48 | Yerwada Bridge 1 | 110,705 | 112,188 | 18:00-19:00 | 17,859 | 15.9 |
| 49 | Yerwada Bridge 2 | 112,843 | 112,447 | 09:30-10:30 | 19,583 | 17.4 |
| 50 | HH Aga Khan Bridge | 1,39,564 | 1,36,819 | 09.15-10.15 | 11,369 | 8.3 |
| 51 | Mundhwa Bridge | 1,30,966 | 1,26,779 | 09.30-10.30 | 11,003 | 8.7 |
| 52 | Ravat Nigdi Raod | 81,586 | 72,110 | 18.45-19.45 | 6,088 | 8.4 |
| 53 | Akurdi Chikhali Road | 81,235 | 72,987 | 17.45-18.45 | 5,789 | 7.9 |
| 54 | Chinchwad Akurdi Link Road | 79,175 | 70,906 | 18.15-19.15 | 6,170 | 8.7 |
| 55 | Kaspate Wasti Road | 79,857 | 74,787 | 19:00-20:00 | 12,272 | 16.4 |
| 56 | Karachi Chowk | 1,35,429 | 1,36,317 | 18.00-19.00 | 10,691 | 7.8 |
| 57 | Jawaharlal Nehru Road | 37,339 | 30,539 | 18.45-19.45 | 2,766 | 9.1 |
| 58 | Power House Road | 22,352 | 18,812 | 18.30.19.30 | 1,628 | 8.7 |
| 59 | Pimple Gurav Road | 33,890 | 27,925 | 08.45-09.45 | 2,989 | 10.7 |
| 60 | Nashik Phata | 43,323 | 40,620 | 09:00-10:00 | 16,901 | 16.7 |
| 61 | From Jai Maharashtra Chowk | 22,458 | 19,416 | 09.30-10.30 | 1,617 | 8.3 |
| 62 | Dapodi Bridge | 65,114 | 60,004 | 18.15-19.15 | 5,565 | 9.3 |
| 63 | Sangam Cross Road | 10,145 | 8,824 | 12.15-13.15 | 783 | 8.9 |
| | **Total** | **52,25,638** | **50,12,538** | **100.0%** | | |

- About 36.27 lakh vehicles (34.85 lakhs PCU) cross the North- South screen-line locations and 15.99 lakh vehicles (15.27 lakh PCU) cross the East- West on a typical day.
- Solapur Road (RoB) Kirloskar Bridge is observed to have the highest share of vehicles among all the screen-line locations followed by Westerly Bypass Road.
- Peak hour share varies from 6.8% to 17.4% and average peak hour share is 9.7%.

The average traffic composition at screen-line is presented in the **Figure 2-25**.

**Figure 2-25 | Average Traffic Composition at Screen line Locations**



- Passenger vehicles contribute around 95% of total traffic whereas goods vehicles contribute around 5% of total traffic.

## 2.6.4 | CLASSIFIED TRAFFIC VOLUME COUNT - MID-BLOCK LOCATIONS

Classified traffic volume counts are conducted at 18 mid-block locations with the duration of 16/24 hours. Video graphic counting method is used to count the vehicles. The location-wise traffic intensity is presented in **Table 2-46.**

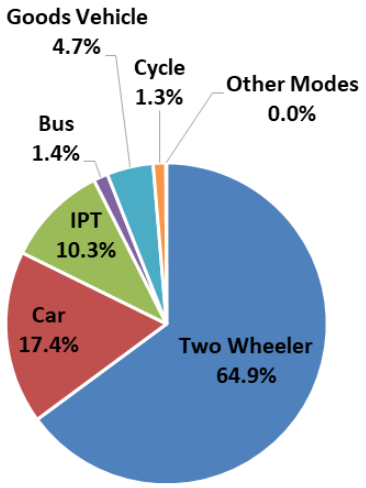
**Table 2-46 | Location wise Traffic on Mid-block Locations**

| No | Name of Road/ Location | Total Traffic | | Peak Hour | | |
|---|---|---|---|---|---|---|
| | | Vehicles | PCUs | Peak Hour | PCUs | (%) |
| 1 | Main Road - Lonavala | 39,422 | 37,199 | 10.30-11.30 | 3,147 | 8.5 |
| 2 | Shirur Main Road (Near Bus Stand) | 42,930 | 36,932 | 10.30-11.30 | 2,985 | 8.1 |
| 3 | Baner Road (Dhanwantari Hospital) | 2,23,932 | 2,05,434 | 09.15-10.15 | 16,883 | 8.2 |
| 4 | Pune – Alandi Road | 1,03,893 | 95,660 | 09.00-10.00 | 7,859 | 8.2 |
| 5 | Timber Market Road | 1,34,306 | 1,46,827 | 11.15-12.15 | 11,818 | 8.0 |
| 6 | Kondhwa Road (Near Kondhwa Chowk) | 1,73,363 | 1,77,610 | 09.45-10.45 | 14,637 | 8.2 |
| 7 | Pashan Road (NCL) | 90,859 | 84,669 | 09.15-10.15 | 8,421 | 9.9 |
| 8 | Jagannath Shankarsheth Road (Meera Hospital) | 1,78,015 | 1,76,942 | 09.30-10.30 | 15,103 | 8.5 |
| 9 | Lal Bahadur Shastri Road (Near Ahilya Library) | 1,13,711 | 1,13,361 | 18.00-19.00 | 9,063 | 8.0 |
| 10 | Senapati Bapat Road (Near JW Marriot) | 1,17,003 | 1,07,211 | 09.30-10.30 | 9,395 | 8.8 |
| 11 | Bal Gangadhar Tilak Road (Near SP College) | 98,046 | 96,384 | 10.00-11.00 | 8,322 | 8.6 |
| 12 | RB Kumthekar Road (Near Phadhatre Chowk) | 30,551 | 34,118 | 11.30-12.30 | 3,186 | 9.3 |
| 13 | Spine Road | 71,627 | 66,264 | 18.15-19.15 | 5,414 | 8.2 |
| 14 | Nashik Road (Near Alandi Chowk)- Below flyover | 1,11,433 | 1,02,069 | 19.00-20.00 | 7,907 | 7.7 |
| 15 | Dehu Alandi-Akrudi Chikhali Road (Opp Chikali Bus Stand) | 75,807 | 71,975 | 18.00-19.00 | 5,773 | 8.0 |
| 16 | PCMC Link Road (Near Shagun Chowk) | 7,479 | 6,136 | 11.30-12.30 | 487 | 7.9 |
| 17 | Morewadi Road | 41,308 | 39,404 | 18.30-19.30 | 3,182 | 8.1 |
| 18 | Aundh - Ravet Road | 67,966 | 60,522 | 09.00-10.00 | 5,313 | 8.8 |
| | **Total** | **17,21,651** | **16,58,717** | | | |

- Traffic on Baner Road is 2,23,932 vehicles (2,05,434 PCUs) followed by Jagannath Shankar Seth Road (1,78,015 vehicles).
- Peak hour traffic share is observed to vary between 7.7% and 9.9%.

The traffic composition at mid-block locations is presented in **Figure 2-26.**

**Figure 2-26 | Average Traffic Composition at Mid-block Locations**




## 2.6.5 | TURNING MOVEMENT VOLUME COUNTS - JUNCTIONS

Turning Movement Volume Counts are carried out at 57 junctions for a period of 24/16 hours (6 a.m. to 10 p.m.) on a typical working day covering both morning and evening peak periods. Video graphic counting method is adopted to count the vehicles. Daily and Peak hour traffic at all the junctions is presented in **Table 2-47**.

**Table 2-47 | Daily and Peak Hour Traffic at Major Junctions**

| No. | Name of Intersection | Type | Peak Hour Traffic (PCUs) | | Total PCUs |
|---|---|---|---|---|---|
| | | | Morning | Evening | |
| 1 | Ambethan Chowk | 4-Arm | 7,457 | 7,224 | 97,166 |
| 2 | Wada Road-Nashik Road Junction | 3-Arm | 6,274 | 6,059 | 83,320 |
| 3 | Shikrapur Junction (24 hours) | 4-Arm | 4,615 | 4,956 | 81,994 |
| 4 | Pabal Road – Nashik Road Junction | 3-Arm | 5,837 | 6,084 | 82,094 |
| 5 | Main Bazar Road Junction | 4-Arm | 5,625 | 4,990 | 67,466 |
| 6 | Station Chowk | 4-Arm | 7,503 | 7,313 | 95,122 |
| 7 | Saswad Police Chowk | 4-Arm | 5,254 | 4,972 | 66,731 |
| 8 | Uruli Kanchan | 4-Arm | 6,456 | 6,230 | 84,936 |
| 9 | Chakan Chowk | 4-Arm | 2,461 | 2,335 | 31,523 |
| 10 | Hinjawadi – Pirangut Road | 4-Arm | 4,684 | 4,998 | 62,170 |
| 11 | Kolwan – Paud Road Junction | 3-Arm | 1,968 | 1,711 | 22,361 |
| 12 | Kharadi Bypass Junction | 3-Arm | 17,011 | 16,130 | 213,629 |
| 13 | Viman Corner Junction | 3-Arm | 20,267 | 19,300 | 250,236 |
| 14 | Netaji Chowk Junction | 4-Arm | 17,294 | 15,061 | 198,291 |
| 15 | Vishrantwadi | 4-Arm | 15,293 | 13,617 | 183,037 |
| 16 | Pune University | 5-Arm | 30,143 | 28,708 | 334,805 |
| 17 | Karve Chowk | 3-Arm | 15,471 | 14,743 | 188,897 |

| No. | Name of Intersection | Type | Peak Hour Traffic (PCUs) | | Total PCUs |
|---|---|---|---|---|---|
| | | | Morning | Evening | |
| 18 | Nalstop Chowk | 3-Arm | 17,325 | 15,426 | 206,059 |
| 19 | Collectorate Junction | 4-Arm | 17,280 | 16,009 | 210,932 |
| 20 | Shimla Office Chowk | 4-Arm | 25,326 | 22,028 | 319,701 |
| 21 | Market Yard Junction | 3-Arm | 13,801 | 12,948 | 175,848 |
| 22 | Sant Kabir Chowk | 4-Arm | 18,552 | 17,283 | 235,506 |
| 23 | Kadimasjid Chowk (24 hours) | 4-Arm | 7,937 | 6,752 | 98,362 |
| 24 | Mundhwa Chowk | 4-Arm | 16,545 | 13,721 | 201,207 |
| 25 | Koregoan Park East Avenue Junction | 4-Arm | 16,081 | 14,082 | 198,137 |
| 26 | Nagarkar Talim Chowk | 4-Arm | 12,011 | 11,676 | 147,945 |
| 27 | Belbaug Chowk | 4-Arm | 8,793 | 9,405 | 122,161 |
| 28 | Saras Baug Junction | 3-Arm | 18,916 | 17,213 | 222,043 |
| 29 | Bopodi Junction | 4-Arm | 17,276 | 17,359 | 221,844 |
| 30 | Khadki Police Chowk | 4-Arm | 14,391 | 13,110 | 171,632 |
| 31 | RTO Junction | 4-Arm | 17,699 | 16,216 | 221,166 |
| 32 | Juna Bazar Chowk | 4-Arm | 21,509 | 19,243 | 264,759 |
| 33 | Shahbagh Baba Dargah Chowk | 4-Arm | 14,614 | 13,297 | 168,338 |
| 34 | Dhole Patil Chowk | 4-Arm | 17,225 | 16,367 | 216,072 |
| 35 | Jhansi Lakshmi Bai Chowk | 4-Arm | 17,593 | 18,112 | 223,748 |
| 36 | Khanduji Baba Chowk | 3-Arm | 16,535 | 15,757 | 212,768 |
| 37 | Alka Chowk | 4-Arm | 11,620 | 11,550 | 146,191 |
| 38 | Dandekar Chowk | 4-Arm | 18,385 | 19,118 | 239,817 |
| 39 | Rajaram Chowk | 3-Arm | 26,259 | 24,671 | 295,751 |
| 40 | Shivaji Chowk (24 hours) | 4-Arm | 14,303 | 12,344 | 201,823 |
| 41 | Bhumkar Chowk | 3-Arm | 11,155 | 10,885 | 128,572 |
| 42 | Wakad Chowk | 4-Arm | 16,405 | 15,701 | 193,777 |
| 43 | Kaspate Chowk | 3-Arm | 16,061 | 16,470 | 190,005 |
| 44 | Nashik Road Spine Road Junction | 4-Arm | 10,204 | 9,340 | 127,409 |
| 45 | Nashik Road Dehu Alandi Road Junction | 4-Arm | 10,436 | 10,892 | 142,226 |
| 46 | Chikhali | 3-Arm | 8,612 | 8,598 | 102,936 |
| 47 | Talewadi Chowk | 4-Arm | 9,371 | 9,138 | 116,422 |
| 48 | Chinchwad Station Chowk | 4-Arm | 15,012 | 16,117 | 209,475 |
| 49 | Nigdi Flyover | 4-Arm | 15,226 | 15,624 | 199,925 |
| 50 | Thermax Chowk | 4-Arm | 12,344 | 11,405 | 151,537 |
| 51 | Mahatma Jyotiba Phule Chowk | 4-Arm | 10,525 | 9,452 | 124,274 |
| 52 | Philips Road Nigdi Bhosari Road Junction | 4-Arm | 8,626 | 8,734 | 104,935 |
| 53 | Spine Road Akurdi Chikhali Road Junction | 4-Arm | 8,557 | 9,864 | 120,322 |
| 54 | Adithya Birla Hospital Road | 3-Arm | 10,191 | 10,270 | 128,253 |
| 55 | Sant Tukaram Bridge | 3-Arm | 9,950 | 9,788 | 112,091 |
| 56 | Lt. Baburao Habaji Saykar Chowk | 5-Arm | 9,350 | 9,386 | 108,704 |
| 57 | SKP Chowk | 4-Arm | 4,704 | 4,936 | 52,380 |

- Among the 57 junctions, highest number of vehicles and PCUs is observed at Pune University Junction (3,34,805 PCUs) followed by Shimla Office Chowk (3,19,701 PCUs).
- The highest peak hour PCUs is observed at Pune University Junction (30,143 PCUs) followed by Rajaram Chowk (26,259 PCUs) and Shimla Office Chowk (25,326 PCUs).
- Out of 57 junctions, 37 junctions have traffic volume more than 10,000 PCUs, indicating saturation levels and points towards need for a grade separation subject to satisfying other criteria.

## 2.7 | ROAD NETWORK INVENTORY

The objective of the Road Inventory survey is to assess the physical characteristics and condition of road network. The collected data is used to develop the transport network for the travel demand model.

### 2.7.1 | RIGHT OF WAY (ROW)

A Right of Way is the land reserved for road formation including utilities. The distribution of road length with respect to ROW is presented in **Table 2-48**.

**Table 2-48 | Distribution of Road Length by Right of Way**

| No. | ROW (m) | Study Area | |
|---|---|---|---|
| | | Length in Km | % of Road Length |
| 1 | <10 | 4,265.8 | 65.2% |
| 2 | 10-20 | 1,610.2 | 24.6% |
| 3 | 20-30 | 457.2 | 7.0% |
| 4 | 30-40 | 142.3 | 2.2% |
| 5 | 40-60 | 70.3 | 1.1% |
| 6 | >60 | 1.3 | 0.0% |
| | **Total** | **6,547.1** | **100.0%** |

### 2.7.2 | CARRIAGEWAY WIDTH

Distribution of road length by lane configuration is presented in **Table 2-49**.

**Table 2-49 | Distribution of Road Length by Lane Configuration**

| No. | Lane Configuration | Study Area | |
|---|---|---|---|
| | | Length in Km | % of Road Length |
| 1 | Single Lane | 3,081.9 | 47.1% |
| 2 | Intermediate Lane | 1,579.7 | 24.1% |
| 3 | Two Lane | 925.6 | 14.1% |
| 4 | Three Lane | 121.2 | 1.9% |

| No. | Lane Configuration | Study Area | |
|---|---|---|---|
| | | Length in Km | % of Road Length |
| 5 | Four Lane | 600.4 | 9.2% |
| 6 | Six Lane and Above | 238.2 | 3.6% |
| | **Total** | **6,547.1** | **100.0%** |

## 2.7.3 | CARRIAGEWAY TYPE

The distribution of road length by type of carriageway i.e. divided/undivided is presented in **Table 2-50**.

**Table 2-50 | Distribution of Road Length by Type of Carriageway (Divided / Undivided)**

| No. | Type of Carriageway | Length in Km | % of Road Length |
|---|---|---|---|
| 1 | Divided | 766.6 | 11.7% |
| 2 | Un-Divided | 5,780.6 | 88.3% |
| | **Total** | **6,547.1** | **100.0%** |

## 2.7.4 | BUS ROUTE

The length of Road by Bus Route availability is assessed and presented in **Table 2-51.**

**Table 2-51 | Distribution of Road Length by Availability of Bus Routes**

| No. | Bus Route Availability | Study Area | |
|---|---|---|---|
| | | Length in Km | % of Road Length |
| 1 | Yes | 1,832.0 | 28.0% |
| 2 | No | 4,715.2 | 72.0% |
| | **Total** | **6,547.1** | **100.0%** |

## 2.7.5 | ENCROACHMENTS

The road length based on availability of encroachment presented in **Table 2-52**.

**Table 2-52 | Distribution of Road Length by Encroachments**

| No. | Encroachment | Study Area | |
|---|---|---|---|
| | | Length in Km | % of Road Length |
| 1 | Encroached | 1,702.2 | 26.0% |
| 2 | Free of Encroachment | 4,844.9 | 74.0% |
| | **Total** | **6,547.1** | **100.0%** |

### 2.7.6 | FOOTPATH

The details on availability of footpath are presented in **Table 2-53**.

**Table 2-53 | Distribution of Road Length by Availability of Footpath**

| No. | Footpath Availability | Study Area | |
|---|---|---|---|
| | | Length in Km | % of Road Length |
| 1 | Both Sides | 491.4 | 7.5% |
| 2 | One Side | 214.0 | 3.3% |
| 3 | Not Available | 5,841.7 | 89.2% |
| | **Total** | **6,547.1** | **100%** |

### 2.7.7 | ON-STREET PARKING

On-street parking reduces the effective carrying capacity of the roads. Distribution of road length by parking is presented in **Table 2-54**.

**Table 2-54 | Distribution of Road Length by Parking**

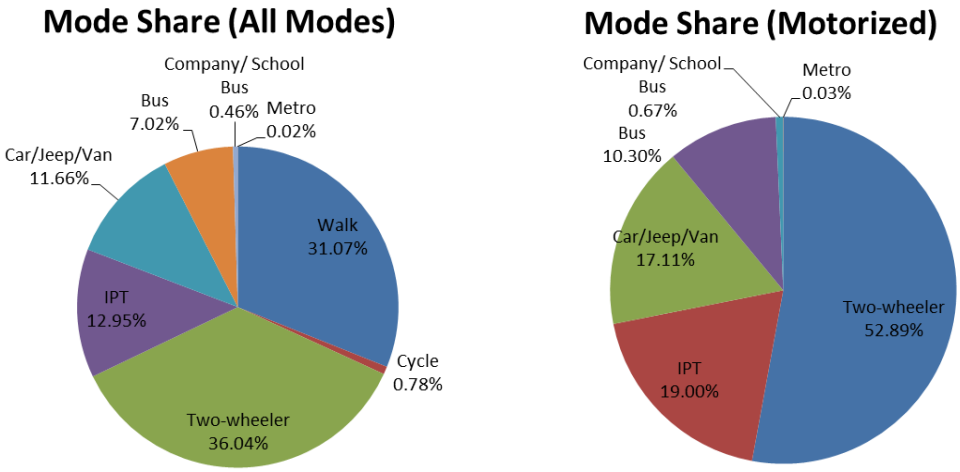
| No. | On-Street Parking | Study Area | |
|---|---|---|---|
| | | Length in Km | % of Road Length |
| 1 | Available | 1,767.7 | 27.0% |
| 2 | Not Available | 4,779.4 | 73.0% |
| | **Total** | **6,547.1** | **100.0%** |

## 2.8 | MODAL SHARE

### 2.8.1 | MODE WISE DISTRIBUTION OF TRIPS

The mode–wise distribution of trips for all modes and motorized modes for overall study area is presented in **Figure 2-27**.

**Figure 2-27 | Mode wise Distribution of Trips in the Study Area**




The mode–wise distribution of trips for study area is shown in **Table 2-55**.

**Table 2-55 | Mode–Wise Distribution of Trips in the Study Area**

| Mode of Travel | Total Trips | | | Motorized Trips | | |
|---|---|---|---|---|---|---|
| | PMC | PCMC | Study Area | PMC | PCMC | Study Area |
| Walk | 26.75% | 25.29% | 31.07% | - | - | - |
| Cycle | 0.37% | 0.80% | 0.78% | - | - | - |
| Two-wheeler | 35.11% | 37.34% | 36.04% | 48.17% | 50.52% | 52.89% |
| IPT | 18.10% | 13.77% | 12.95% | 24.83% | 18.63% | 19.00% |
| Car/Jeep/Van | 10.01% | 12.08% | 11.66% | 13.74% | 16.34% | 17.11% |
| Bus | 8.47% | 9.42% | 7.02% | 11.62% | 12.75% | 10.30% |
| Company/ School Bus | 1.16% | 1.30% | 0.46% | 1.59% | 1.76% | 0.67% |
| Metro | 0.04% | 0.00% | 0.02% | 0.05% | 0.00% | 0.03% |
| Local Train | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| Total | **100.00%** | **100.00%** | **100.00%** | **100.00%** | **100.00%** | **100.00%** |

## 2.9 | SPEED AND DELAY SURVEYS

Data collected is analyzed to assess the speed characteristics along the major roads. Speed and delay analysis is presented in **Table 2-56**.

**Table 2-56 | Average Journey Speeds in the Study Area**

| No. | Area | Length (km) | Average of Journey Speed (kmph) |
|---|---|---|---|
| 1 | PMC | 188.51 | 20.28 |
| 2 | PCMC | 122.56 | 25.36 |
| 3 | Cantonment | 30.30 | 22.24 |
| 4 | PMRDA | 175.78 | 28.07 |
| | **Total/Average** | **517.15** | **23.03** |

Based on the survey results, it is noted that Journey speed varies from 8.8 kmph to 59.55 kmph.

## 2.10 | PARKING SURVEYS

On-street parking surveys are carried out at 15 locations to understand the parking pattern and demand. This survey is carried out for 12 hours at each location covering morning and evening peak periods. The Equivalent Car Space (ECS) units used for various categories of vehicles is considered as per ***IRC: SP: 12-2015- Guidelines for Parking Facilities in Urban Areas*** and the same is presented in **Table 2-57**.

**Table 2-57 | Equivalent Car Space (ECS) units for various types of Vehicles**

| Vehicle Type | ECS | Vehicle Type | ECS |
|---|---|---|---|
| Big Car | 1 | Share Auto | 0.5 |
| Two-Wheeler | 0.25 | Trucks | 2.5 |
| Van/Maxi cab/Minibus | 1.75 | MAV | 2.5 |
| Bus | 2.5 | LCV | 1.75 |
| Auto Rickshaw | 0.5 | Cycles | 0.1 |
| Shared Auto | 1.75 | Cycle Rickshaws | 0.8 |

Parking accumulation at these locations in ECS units is presented in **Table 2-58** and Parking characteristics based on parking duration at various locations are presented in **Table 2-59**.

**Table 2-58 | Parking Accumulation at Various Locations**

| No. | Name of Location | Parking Accumulation (ECS) | | |
|---|---|---|---|---|
| | | LHS | RHS | Total |
| 1 | Bazar Peth Road – Talegaon (L1) | 361 | 358 | 719 |
| 2 | Main Road (Opp Bus Terminal)- Saswad (L2) | 548 | 535 | 1,083 |
| 3 | Solapur Highway - Loni Kalbor | 431 | 291 | 722 |
| 4 | Solapur Highway - Uruli Kanchan | 440 | 610 | 1,050 |
| 5 | Alandi Road (Dehu Phata to Sambhaji Chowk) (L5) | 614 | 416 | 1,030 |
| 6 | Along Dange Chowk Road from Shivaji Chowk – Hinjawadi (L6) | 402 | 326 | 728 |
| 7 | Satara Road from Katraj Chowk to Hotel Kinara (L7) | 531 | - | 531 |

| No. | Name of Location | Parking Accumulation (ECS) | | |
|---|---|---|---|---|
| | | LHS | RHS | Total |
| 8 | Vanaz Metro Station (L8) | 525 | 481 | 1,006 |
| 9 | Bajirao Road (L9) | 568 | 126 | 694 |
| 10 | Laxmi Road (L10) | 603 | 514 | 1,117 |
| 11 | Pimpri Chinchwad Link Road, Near Chinchwad Bus Stand (L11) | 433 | 617 | 1,050 |
| 12 | Near PCMC Office (L12) | 390 | 352 | 742 |
| 13 | Magarpatta Road (L13) | 273 | 529 | 802 |
| 14 | Balewadi High Street (L14) | 380 | 609 | 989 |
| 15 | Lonavala (L15) | 232 | 264 | 496 |

Among all the locations, on-street parking is observed to be highest along the Laxmi Road (1,117 ECS) followed by Main Road (Opp Bus Terminal)- Saswad (1,083 ECS) and Solapur Highway - Uruli Kanchan (1,050 ECS).

**Table 2-59 | Parking Duration Distribution at various Locations**

| No | ID | Quick Parkers (upto 30 min) | | Short Stay Parking B/w 0.5 hr & 1 hr | | Medium Stay Parking B/w 1 hr & 2 hr | | Long Stay Parking B/w 2 hr & 3 hr | | Very Long Stay Parking >3 hr | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | LHS | RHS | LHS | RHS | LHS | RHS | LHS | RHS | LHS | RHS |
| 1 | L1 | 86% | 74% | 12% | 17% | 2% | 8% | - | 1% | - | 1% |
| 2 | L2 | 81% | 92% | 8% | 4% | 7% | 2% | 4% | 2% | - | - |
| 3 | L3 | 88% | 82% | 9% | 11% | 3% | 5% | - | 1% | - | 1% |
| 4 | L4 | 63% | 82% | 17% | 8% | 12% | 7% | 5% | 2% | 3% | 1% |
| 5 | L5 | 50% | 76% | 20% | 15% | 18% | 8% | 6% | 1% | 5% | - |
| 6 | L6 | 82% | 89% | 10% | 7% | 6% | 4% | 2% | - | - | - |
| 7 | L7 | 75% | - | 17% | - | 7% | - | 1% | - | - | - |
| 8 | L8 | 77% | 54% | 17% | 25% | 5% | 14% | 1% | 3% | - | 4% |
| 9 | L9 | 57% | 90% | 19% | 9% | 11% | 1% | 4% | - | 10% | - |
| 10 | L10 | 70% | 65% | 13% | 18% | 8% | 12% | 4% | 3% | 4% | 2% |
| 11 | L11 | 60% | 75% | 23% | 12% | 11% | 7% | 4% | 3% | 3% | 3% |
| 12 | L12 | 62% | 74% | 18% | 15% | 10% | 7% | 4% | 2% | 6% | 1% |
| 13 | L13 | 89% | 55% | 8% | 23% | 2% | 12% | - | 3% | - | 7% |
| 14 | L14 | 74% | 84% | 14% | 11% | 8% | 4% | 2% | 1% | 1% | - |
| 15 | L15 | 83% | 69% | 11% | 20% | 5% | 9% | 1% | 1% | - | 2% |

- Among the parking locations, the observed parking duration is mostly for short durations i.e. up to 30 min.

- It was observed that a significant percentage of vehicles are parked for extended durations at locations such as Alandi Road (Dehu Phata to Sambhaji Chowk), Vanaz Metro Station, Bajirao Road, Pimpri Chinchwad Link Road, near Chinchwad Bus Stand, near PCMC Office, and Magarpatta Road. This is primarily due to commercial activities, leading to on-street parking by shopkeepers and local residents. The lack of off-street parking facilities at these locations further exacerbates the situation.

## 2.11 | NON-MOTORIZED TRANSPORT SURVEYS

### 2.11.1 | PEDESTRIAN VOLUME COUNT SURVEYS

Pedestrian counts are carried out at 20 locations at Junctions, midblock crossings for a period of 8 hours covering both morning and evening peak periods. Pedestrians moving along and across the roads during peak hour are presented in **Table 2-60**.

**Table 2-60 | Peak Hour Pedestrian Flows at various Locations (in Nos.)**

| No. | Name of Section | Along | Across |
|---|---|---|---|
| 1 | Station Chowk,Talegaon | 489 | 230 |
| 2 | Chakan Chowk, Alandi | 3,618 | 813 |
| 3 | Dange Chowk Road, Shivaji Chowk | 4,221 | 1,788 |
| 4 | Samrat Ashok Road, Kharadi Bypass Junction | 2,579 | 887 |
| 5 | Samrat Ashok Road, Viman Corner Junction | 2,619 | 1,117 |
| 6 | Alandi Road, Vishrantwadi Junction | 5,247 | 1,313 |
| 7 | Maharishi Karve Road, Karve Chowk | 2,314 | 568 |
| 8 | Jawaharlal Nehru Road, Market Yard Chowk | 832 | 141 |
| 9 | Magarpatta Road, Mundhawa Chowk | 4,314 | 1,633 |
| 10 | Old Mumbai Highway, Bopodi Junction | 757 | 373 |
| 11 | Deccan College Road, Shahabagh Baba Dargha Chowk | 725 | 314 |
| 12 | JM Road, Khanduji Baba Chowk | 3,522 | 608 |
| 13 | Sinhgad Road, Dhandekar Chowk | 2,404 | 790 |
| 14 | Sinhgad Road, Rajaram Chowk | 1,134 | 366 |
| 15 | Baner Road, Dhanwantari Hospital | 692 | 220 |
| 16 | Philips Road Nigdi Bhosari Road Junction | 4,160 | 973 |
| 17 | Nashik Road, Dehu Alandi Road Junction | 9,854 | 3,181 |
| 18 | Wakad Bhosari Road, Wakad Chowk | 1,451 | 520 |
| 19 | Old Mumbai Road, Nigdi Flyover | 7,669 | 5,493 |
| 20 | Dehu Alandi Akrudi Chikhali Road, Opposite to Chikhali Bus Stand | 3,770 | 1,339 |

The highest pedestrian crossings was observed at Old Mumbai Road- Nigdi Flyover (5,493 pedestrians) followed by Nashik Road- Dehu Alandi Road Junction (3,181 pedestrians) during peak hour due to presence of large-scale commercial activities in the vicinity.

## 2.11.2 | PASSENGER COUNTS AT TERMINALS

Passenger count surveys are carried out 12 hours at 5 terminals in the study area to assess the trip characteristics of passengers and details are presented in **Table 2-61**.

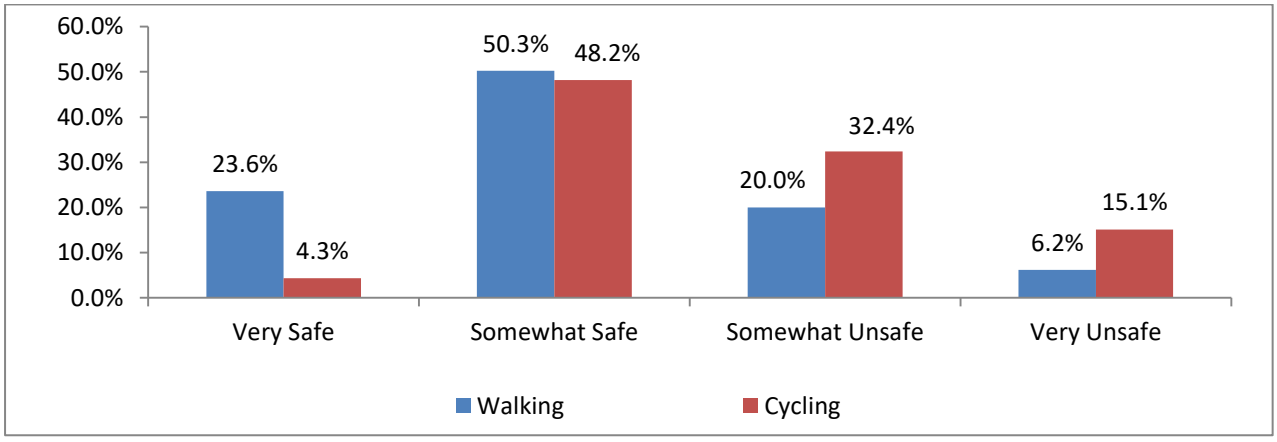
**Table 2-61 | Passenger Counts at Bus Terminals**

| No. | Inter-city /Intra-city | Name of Location | Total Count (12 hours) | | | | Peak Hour Count | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Inflow | Outflow | Total | Peak Hour | Inflow | Out-flow | Total |
| 1 | Inter-city | MSRTC Bus Stand (near Pune Railway Station) | 6,176 | 4,523 | 10,699 | 17.45-18.45 | 749 | 457 | 1,206 |
| 2 | Inter-city | Shivaji Nagar MSRTC Bus Stand (near Wakdewadi) | 13,718 | 9,998 | 23,716 | 16.30-17.30 | 1,151 | 1,149 | 2,300 |
| 4 | Inter-city | Swargate MSRTC Bus Stand | 32,273 | 24,929 | 57,202 | 15.15-16.15 | 3,334 | 2,430 | 5,764 |
| 3 | Intra-city | Hadapsar PMPML Bus Stand | 35,202 | 23,697 | 58,899 | 09.15-10.15 | 4,001 | 2,611 | 6,612 |
| 5 | Intra-city | Nigdi Bus Stand (Bhakti Shakti Bus Stop) | 3,668 | 2,039 | 5,707 | 08.45-09.45 | 581 | 164 | 745 |

## 2.11.3 | NON-MOTORIZED TRANSPORT (NMT) OPINION SURVEY

The perception of the NMT road users on the safety of existing walking and cycling facilities is presented in **Figure 2-28**.

**Figure 2-28 | Perception of Safety of Users of NMT**

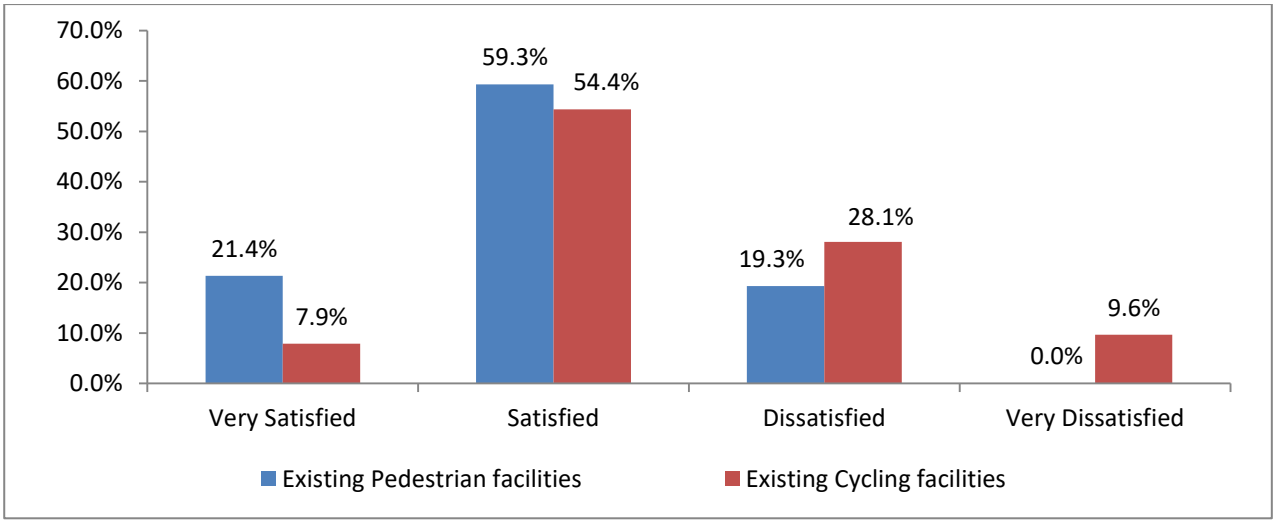



About 74% of the pedestrians and 52% of the cyclists felt that it is safe to walk/cycle.

Further, it is asked to rate their pedestrian and cycling facilities in the Study Area and the results of the

same are presented in **Figure 2-29**.

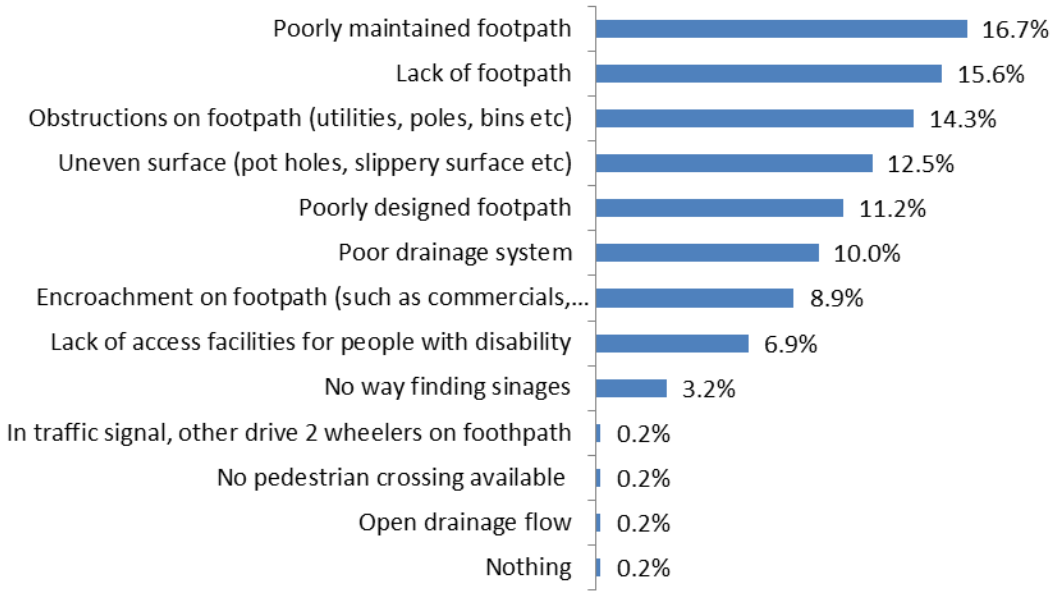
**Figure 2-29 | Satisfaction levels of NMT users on Facilities**




It was observed that 80% of respondents are satisfied with the existing pedestrian facilities, while 62% are satisfied with the cycling facilities provided in the study area.

The major difficulties/challenges faced by the pedestrians and cyclists in the city is presented in **Figure 2-30**.

**Figure 2-30 | Difficulties/Challenges faced by pedestrians and cyclist**



# 2.12 | FUTURE LAND USE DEVELOPMENTS PLAN

## 2.12.1 | PROPOSED LAND USE AND GROWTH DIRECTION OF PMC AREA

The proposed land use of PMC area for 2027 by Development Plan (2007-2027) is presented in **Table 2-62**.

**Table 2-62 | Proposed Land use of PMC area for 2027 by DP (2007-2027)**

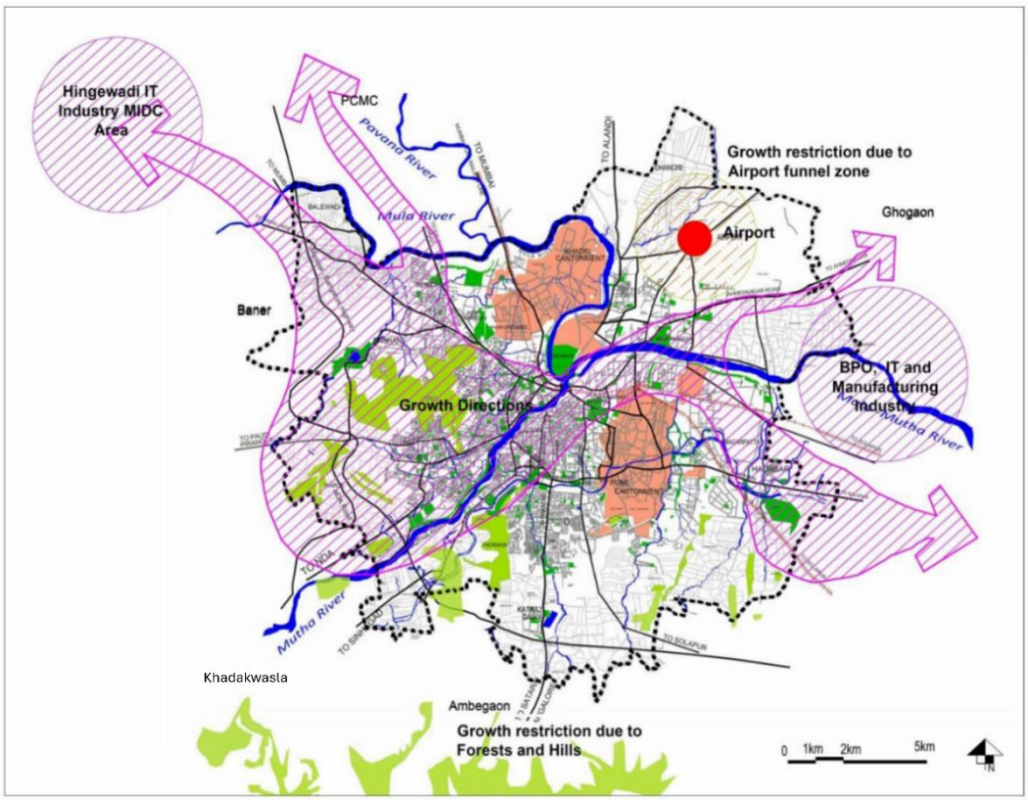
| Type of Land use | Area in Sq.km | % of Share |
|---|---|---|
| Residential | 104.60 | 35.44% |
| Commercial | 4.08 | 1.38% |
| Industrial | 5.58 | 1.89% |
| Public & Semi Public | 39.07 | 13.24% |
| Public Utilities | 3.21 | 1.09% |
| Transport | 45.03 | 15.26% |
| Reserved, Forest & Agriculture | 42.48 | 14.39% |
| Water bodies | 13.92 | 4.72% |
| Hill and Hill slopes | 16.86 | 5.71% |
| Recreational | 20.34 | 6.89% |
| **Total** | **295.17** | **100.00%** |

The growth direction outlined in the Development Plan is as follows:

- The Pune Municipal Corporation (PMC) is expected to grow towards Hinjawadi, PCMC, and Hadapsar. This growth is primarily driven by the IT industry in Hinjawadi, the automobile industry in PCMC, and the BPO, IT, and manufacturing sectors in Hadapsar.
- The growth corridors predominantly extend in the north, west, and east directions. The southern part of PMC is characterized by hilly terrain, making it less favorable for development. Additionally, growth in the northeast direction is significantly restricted due to the presence of the airport funnel area. However, several major proposals may alter the anticipated growth direction of PMC as stated in the Development Plan.
- The proposed road connecting Charoli to Lohegaon is likely to stimulate development in the areas surrounding the airport. Additionally, various Town Planning schemes along the ring road are expected to redefine growth patterns. The proposed airport at Purandar, near Saswad, may further encourage development in the available areas to the south.

**Undri, Pisoli, Handewadi, and Manterwadi along the eastern bypass, as well as Viman Nagar, Baner-Balewadi, Bavdhan, Tathawade, Chakan, and Talegaon, are developing areas with significant potential for further growth. Recently, the Pune Municipal Corporation (PMC) expanded its area from 340 sq. km to 519 sq. km, incorporating several villages. These villages represent potential growth areas, contingent upon accessibility and other factors.**

**Figure 2-31 | Future Urban Growth Direction of PMC**




*Source | Revised City Development Plan for Pune-2041*

## 2.12.2 | PROPOSED LAND-USE OF PCMC AREA

Residential areas have been proposed in the extended areas to absorb the future population. Commercial uses have been distributed at the vantage locations mainly along the intersection of major roads in the proposed residential uses. The Development Regulations of PCMC also reveals that mixed land use concept has been adopted. The proposed land use of PCMC is shown in **Table 2-63**.

**Table 2-63 | Proposed Land use for the Extended Areas of PCMC**

| No. | Land-Use Category | Existing | | | Proposed | | |
|---|---|---|---|---|---|---|---|
| | | Area (sq. km) | % of Developed Land | % of Total Land | Area (sq. km) | % of Developed Land | % of Total Land |
| 1 | Residential | 22.26 | 80.84 | 26.34 | 47.28 | 67.25 | 55.94 |
| 2 | Commercial | 0.19 | 0.70 | 0.23 | 2.68 | 3.81 | 3.17 |
| 3 | Industrial | 1.48 | 5.37 | 1.75 | 3.22 | 4.58 | 3.81 |
| 4 | Public Utilities | 0.39 | 1.43 | 0.47 | 0.97 | 1.37 | 1.14 |
| 5 | Public & Semi Public | 0.82 | 2.99 | 0.97 | 2.66 | 3.78 | 3.15 |
| 6 | Transportation | 2.38 | 8.63 | 2.81 | 10.94 | 15.57 | 12.95 |
| 7 | Recreational | 0.01 | 0.05 | 0.01 | 2.56 | 3.64 | 3.03 |

| No. | Land-Use Category | Existing | | | Proposed | | |
|---|---|---|---|---|---|---|---|
| | | Area (sq. km) | % of Developed Land | % of Total Land | Area (sq. km) | % of Developed Land | % of Total Land |
| 8 | Water Bodies | 0.95 | | 1.13 | 1.33 | | 1.57 |
| 9 | Quarry | 2.46 | | 2.91 | | | 0 |
| 10 | Vacant Land | 20.29 | | 24 | | | 0 |
| 11 | Agriculture & Reserve Forest | 33.27 | | 39.37 | 12.89 | | 15.25 |
| **Total Developed Area** | | **27.54** | **100.00** | **32.59** | **70.29** | **100.00** | **83.18** |
| **Un-Developed Land** | | **56.97** | | **67.41** | **14.22** | | **16.82** |
| **Total** | | **84.51** | | **100.00** | **84.51** | | **100.00** |

*Source | Development Plan-1997, PCMC*

Based on the above, 33% of area is developed. The Development Plan has proposed to develop 83% of the total area, in which about 56% of the land is proposed for residential areas, followed by 13% area for transportation.

## 2.12.3 | PROPOSED LAND-USE AND GROWTH DIRECTION OF PMR

The proposed Land-use of PMR suggests potential Urban Growth centers in 233 villages. Compared to existing land-use residential land use is significantly increased from 80.83 sq.km (1.31%) to 401.87 sq.km (6.52%), indicating a major focus on expanding residential spaces. While Agricultural land use remains largely stable, changing from 2,221.81 sq.km (36.07%) to 2287.81 sq.km (37.14%). This suggests a continued emphasis on agriculture, with a slight increase in the percentage of total area. Commercial land use sees a modest increase from 25.66 sq.km (0.42%) to 33.65 sq.km (0.55%). While Industrial land use has been increased substantially from 37.47 sq.km (0.61%) to 125.07 sq.km (2.03%). The area for transportation-related uses notably increased from 90.23 sq.km to 223.53 sq.km (3.63%), indicating a focus on improving transportation infrastructure.

**Table 2-64 | Proposed Land-use of PMR**

| Land-Use Category | Proposed Area (Sq.km) | Percentage % |
|---|---|---|
| Residential land use | 401.87 | 6.52% |
| Gaothan | 23.66 | 0.38% |
| Commercial land use | 33.65 | 0.55% |
| Industrial land use | 125.07 | 2.03% |
| Logistic Zone | 19.93 | 0.32% |
| Tourism Development Zone | 11.65 | 0.19% |
| Public and Semi Public | 38.57 | 0.63% |
| Public Utility | 4.24 | 0.07% |
| Traffic and Transportation Zone | 223.53 | 3.63% |
| MIDC | 98.15 | 1.59% |
| MADC | 9.55 | 0.16% |

| Land-Use Category | Proposed Area (Sq.km) | Percentage % |
|---|---|---|
| SEZ | 21.21 | 0.34% |
| Defense | 8.03 | 0.13% |
| **Total Developed Area** | **1,019.11** | **16.55%** |
| Agriculture Zone7 | 2,287.81 | 37.14% |
| Water Body Zone | 368.08 | 5.98% |
| Green Belt Zone 8 | 88.89 | 1.44% |
| Green Zone G-29 | 565.65 | 9.18% |
| Forest Zone | 824.39 | 13.38% |
| Hill Top Hill Slope Zone | 547.47 | 8.89% |
| Recreational Zone | 18.79 | 0.31% |
| Quarry Zone | 8.99 | 0.15% |
| Afforestation Zone 10 | 430.17 | 6.98% |
| **Total Non-Developable Area** | **5,140.21** | **83.45%** |
| **Total Area** | **6,159.32** | |

*Source | Draft Development Plan of Pune Metropolitan Region 2021-2041*

The recreation area is maintained at a same level with a slight increase, and a new category for Tourism Development Zone is introduced with 11.65 sq. km (0.19%). New designations such as MIDC, MADC, SEZ, and Logistic Zone are introduced, reflecting an emphasis on economic development and logistics. Several new zones are introduced focusing on environmental conservation, including Green Belt Zone, Green Zone G-2, Hill Top Hill Slope Zone, Recreational Zone, Quarry Zone, and Afforestation Zone. These collectively account for a significant portion of the land. The total developed area increases to 1019.11 sq. km (16.55%), while the total non-developable area remains at 5140.21 sq. km (83.45%). Overall, proposed land-use plan indicates a strategic focus on expanding residential, industrial, and transportation areas, while still maintaining a strong emphasis on agricultural use and environmental conservation.

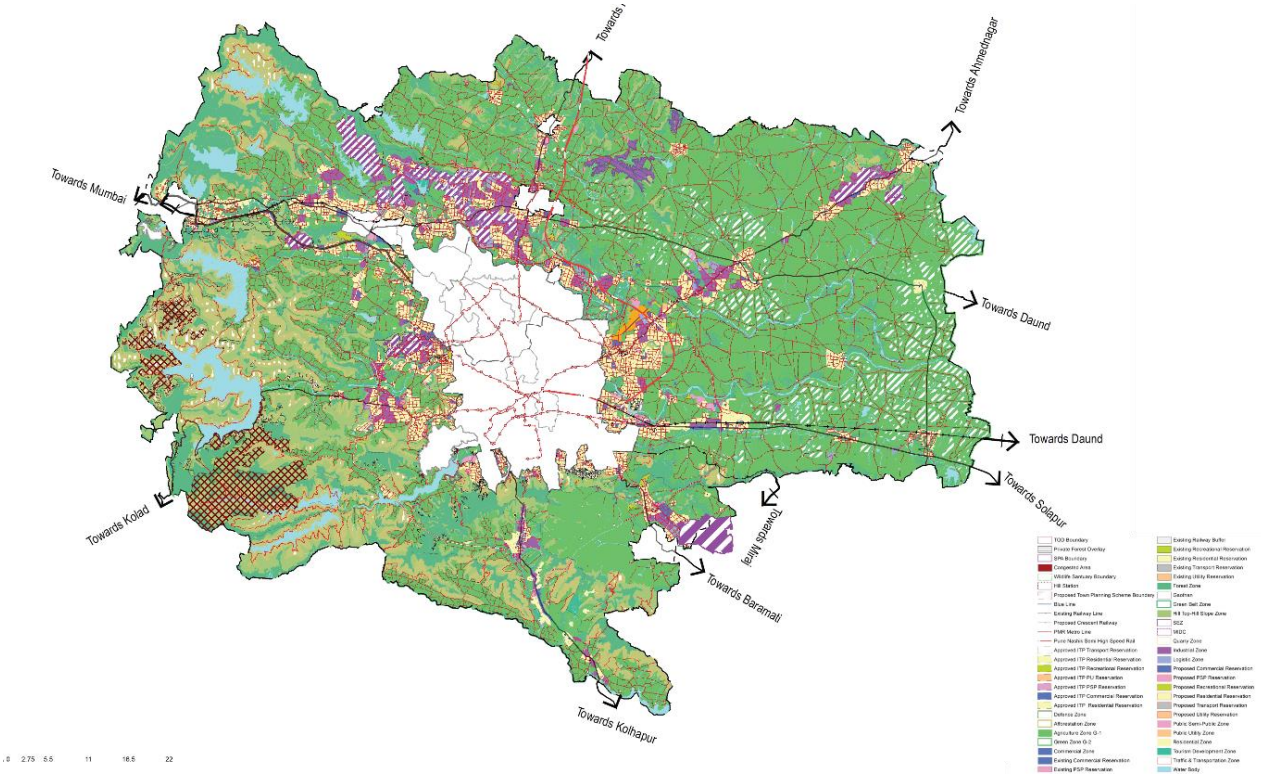
[7] Already permitted but not implemented zone conversions until the date of declaration of PMR DP intent, shall be deemed as Agriculture Zone

[8] Near rivers. Park and other uses mentioned in U-DCPR shall be allowed within this zone

[9] Restricted development will be allowed. Zone conversion activity will not be allowed. Agri activities will be permitted.

[10] Land surrounding lakes and reservoirs.

**Figure 2-32 | Proposed Land-Use Plan of Pune Metropolitan Area**




## 2.12.4 | SOCIO-ECONOMIC TRANSITIONS

PMR is the cultural capital of Maharashtra and has emerged as one of the leading industrial regions of the country. The region has evolved around Pune city (PMC) which has grown from a political center of Maratha Empire to a military base of British, to a manufacturing and educational hub post-independence. Post liberalization, it has become one of the leading IT and Automobile hub of the country.

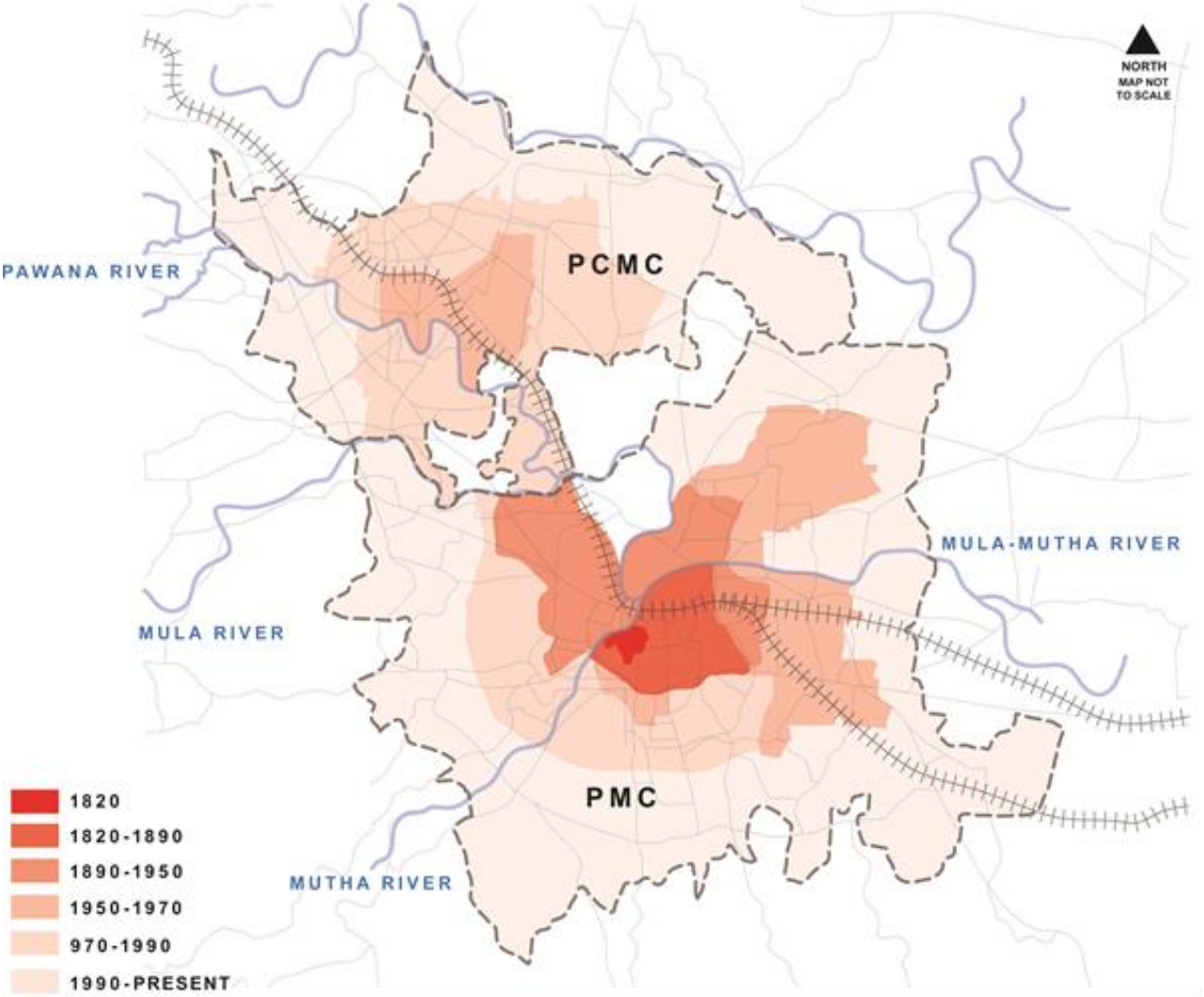
### EVOLUTION OF STUDY AREA

Pune City originated along the banks of Mula-Mutha River and was primarily confined to the southern side of area where two rivers Mula and Mutha merged. This is where the present core city prevails. However, the later developments were restricted to the eastern side due to establishment of military cantonment, leading to the city's growth to the north and west side across the river.

The core city of Pune was established during Maratha and Peshwa rule, consisting of 17 peths with an area of 5 sq. km. The evolution of Pune and areas is described below (in box) and is presented below,

**1860 |** Establishment of Pune Municipality and Cantonments Areas with an area of 7.6 sq.km
**1940 |** Establishment of Dehu Cantonment
**1950 |** Establishment of PMC with an area of 125.75 sq.km
**1970 |** Establishment of Pimpri-Chinchwad Municipal Council
**1982 |** Up-gradation of Pimpri-Chinchwad Municipal Council to Corporation
**1997 |** 38 villages in PMC fringes merged with PMC
**2001 |** 15 villages and 5 part villages were delinked from PMC.
**2011 |** Total area of PCMC becomes 170.5 sqm with addition of new areas of about 84.5 sqkm
**2016 |** Establishment of PMRDA
**2017 |** 11 Villages with a total area of 80.7 sq km is added to PMC
**2021 |** 23 villages with a total area of 184.61 sq km is added to PMC

**Figure 2-33 | Evolution of PMC and PCMC**



## GROWTH DIRECTION OF PMC

According to the Pune Development Plan, the growth direction of the Pune Municipal Corporation (PMC) is aimed at Hinjawadi, PCMC, and Hadapsar, driven primarily by the IT and ITES sectors in Hinjawadi, the automobile industry in PCMC, and BPO, IT, and manufacturing in Hadapsar. Growth corridors extend north, west, and east, while the hilly southern region is less favorable for development, and the northeast direction is restricted by the airport funnel area.

The Development Plan does not account for developments beyond PMC boundaries, and recent proposals may alter the envisioned growth direction. The Charoli-Lohegaon road is expected to boost development near the airport, and various Town Planning schemes along the ring road will redefine growth patterns. Additionally, areas like Undri, Pisoli, Mohammed Wadi, Viman Nagar, Baner, and Balewadi have recently developed and show potential for further growth.

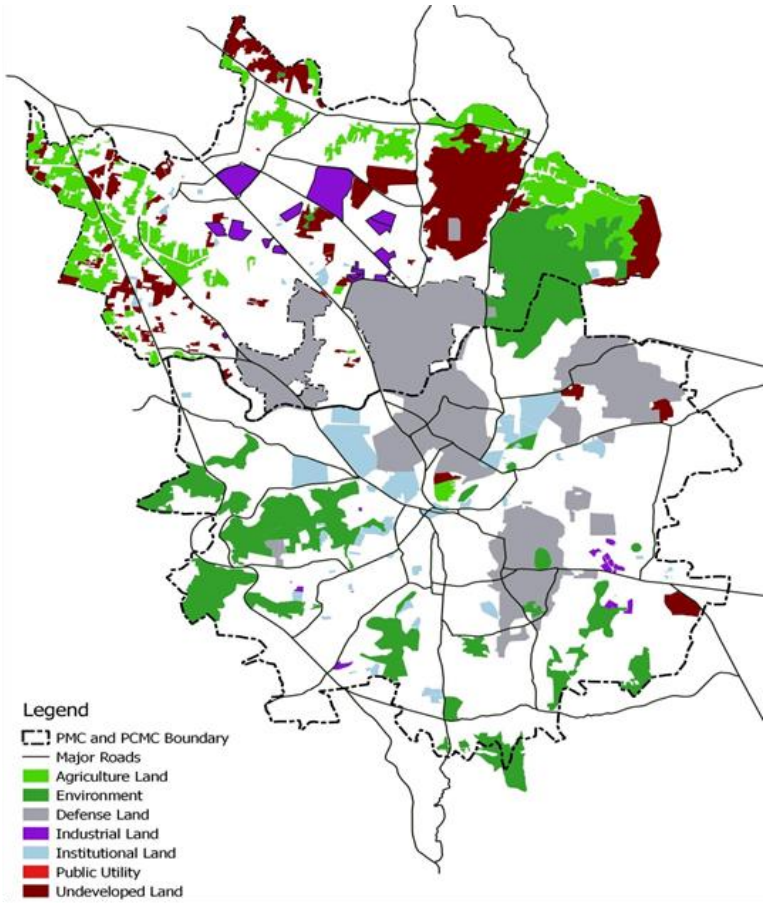
## GROWTH DIRECTION OF PCMC

PCMC can accommodate significant future population growth due to its large developable lands. Potential development areas include Wakad, Punawale, and Kiwale on the western side, as well as Charoli, Moshi, Chimbali, and Talwade on the eastern side. Additionally, industries in PCMC's core areas may shift to other parts of the Pune Metropolitan Region (PMR), leading to a conversion of existing industrial land into mixed-use areas. This transition is expected to boost both population and employment in PCMC.

## LAND USE RESTRICTIONS

Several land uses, both natural and man-made, restrict development in the core urban areas of the Pune Metropolitan Region (PMR). Natural land uses include environmentally sensitive areas such as hills and water bodies, while man-made land uses encompass agricultural, defense, and industrial lands. These factors hinder the development of contiguous land parcels and transport networks, negatively impacting traffic dispersal and circulation.

**Figure 2-34 | Land-use Restrictions in PMC and PCMC**




## PMR GROWTH CENTRES

PMRDA has identified 18 Growth Centers i.e. Planning Areas, in PMR Draft Development Plan. Some of the salient features are mentioned below:

- Planning Areas are located in 5-10 km radius from PMC and PCMC limits.
- 8 of the Planning Areas are located along the proposed Ring Road.
- 8 of the Planning Areas are located along MSRDC Ring Road.
- All the Planning Areas have regional connectivity by National Highways passing through them.
- 8 Planning Areas have independent development plan.
- 3 Rural Planning Areas to serve higher order amenities for rural catchment.
- Preservation of the natural character of the Planning Areas.

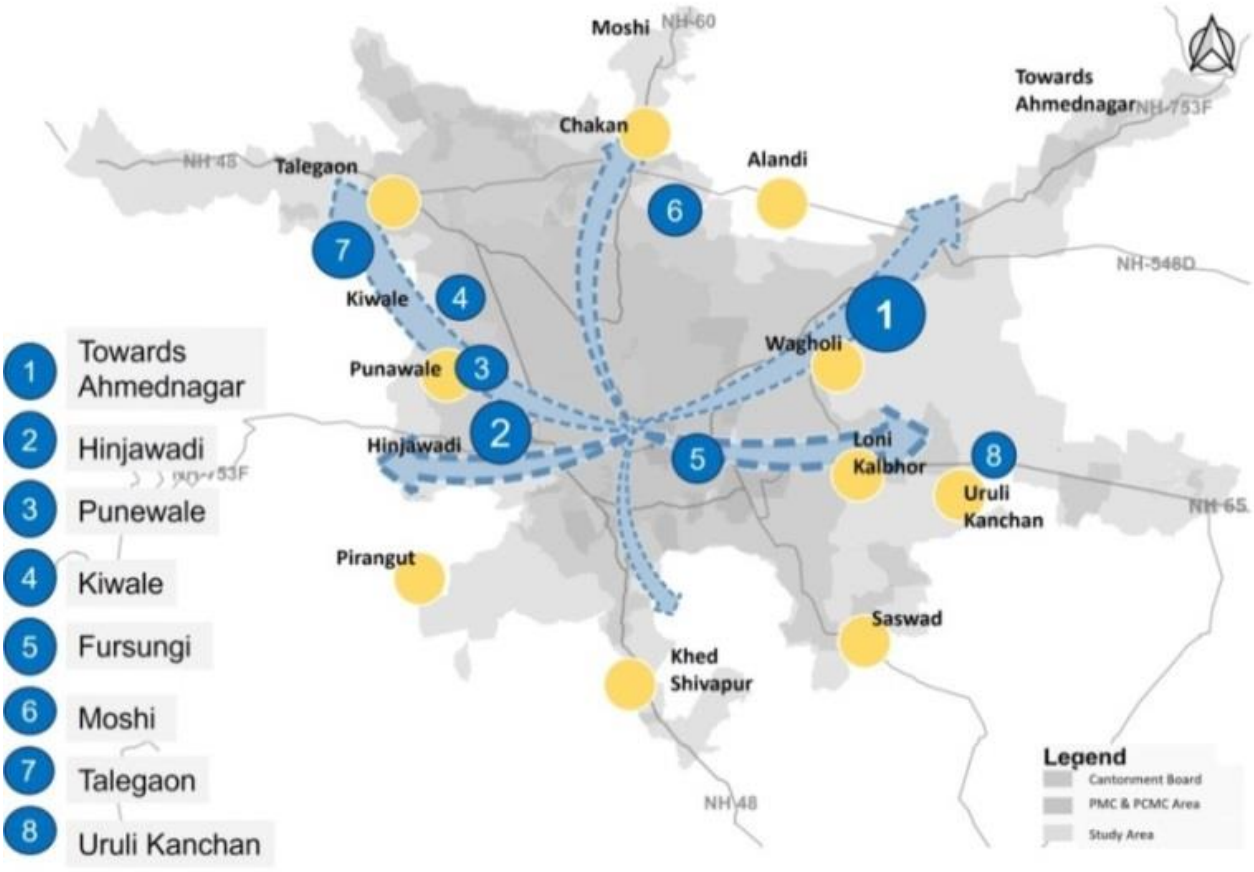
The list of growth centers proposed in PMR Development Plan is presented in **Table 2-65**.

**Table 2-65 | Growth Centers and its Economic Role as per PMR Development Plan**

| No | Growth Center | Area (sq.km) | Economic Role | No. of Villages |
|---|---|---|---|---|
| 1 | Chakan | 257 | Automobile Hub & Sub-regional Centre | 37 |
| 2 | Alandi | 102 | Riverfront Pilgrimage Hub | 13 |
| 3 | Wagholi | 103 | Sub-regional Centre & IT Hub | 9 |
| 4 | Loni-Kalbhor | 141 | Life Sciences & Smart Agriculture Hub | 11 |
| 5 | Khadakwasla | 59 | Commuter town | 13 |
| 6 | Pirangut | 110 | Knowledge Hub | 13 |
| 7 | Hinjawadi | 118 | Sub-regional Centre & IT Hub | 21 |
| 8 | Talegaon | 127 | Industry 4.0 Hub | 26 |
| 9 | Malavali | 73 | Wellness Tourism & Education Hub | 19 |
| 10 | Khed-Rajgurunagar | 49 | Integrated Residential Town | 12 |
| 11 | Shikrapur | 91 | Logistic & Industrial Hub | 6 |
| 12 | Uruli-Kanchan | 72 | Agro Processing Hub | 9 |
| 13 | Saswad | 84 | Aerotropolis | 12 |
| 14 | Khed Shivapur | 38 | Agro Processing Hub | 8 |
| 15 | Nasrapur | 58 | Heritage Tourism & Education Hub | 12 |
| 16 | Ranjangaon | 75 | Integrated Residential Town | 5 |
| 17 | Yavat | 41 | Commuter town | 2 |
| 18 | Kedgaon | 28 | Commuter town | 5 |
| | **Total Area** | **1,626** | | **233** |

Based on the Master Plan and Current development trends, Growth Direction of development is assessed and presented in **Figure 2-35.** Major population expansion has happened in the North-Western and North directions. Proposed ring road will redefine the boundary of urban growth.

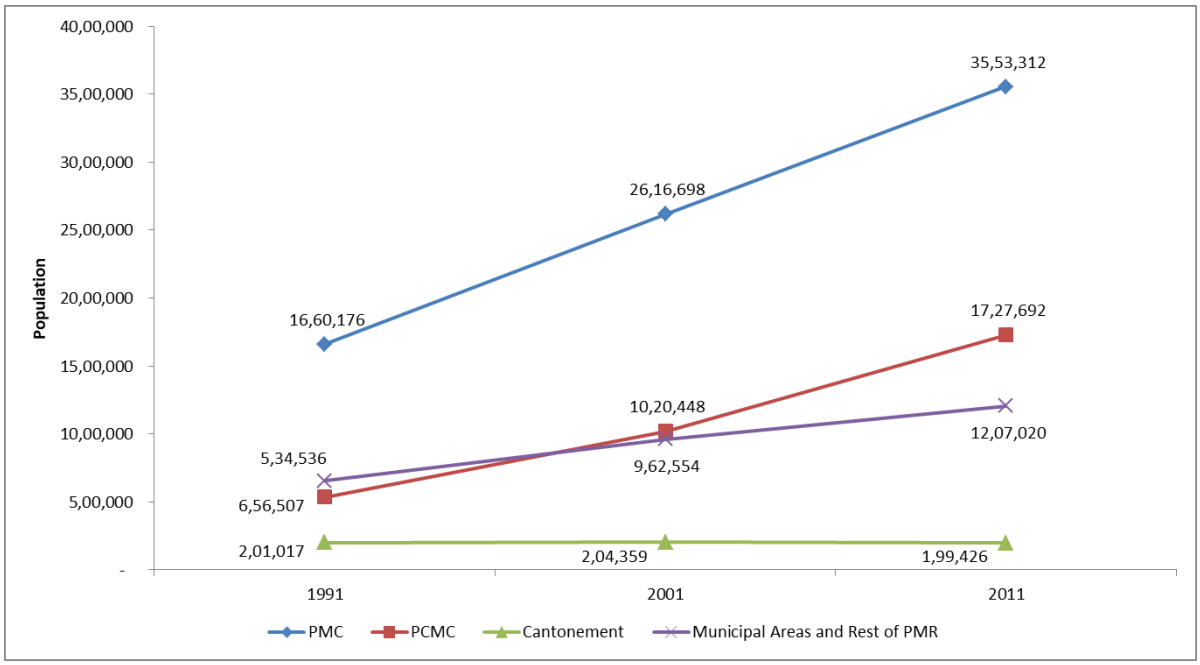
**Figure 2-35 | Growth Direction of Study Area**




## 2.12.5 | PAST GROWTH TRENDS OF THE STUDY AREA

The population growth trends of Study Area reveal that the population growth rate in PMC is declining due to saturation, whereas in PCMC, absolute population is increasing due to availability of developable land. While municipal councils have witnessed a constant growth rate in the last two decades, the rest of the Study Area has witnessed higher growth due to establishment of industries attracting local and migrated population. The past growth trends in the Study Area is presented in **Figure 2-36**.

**Figure 2-36 | Past Growth Trends of the Study Area (1991-2011)**




## 2.12.6 | FORECAST OF PLANNING VARIABLES

Population forecasts for the study area are made using statistical methods at an aggregate level, with further distribution at the Traffic Analysis Zone (TAZ) level based on proposed land use (PLU) and factors such as accessibility and growth potential. Employment forecasts are derived from the projected workforce participation rate (WFPR). The Pune Metropolitan Region (PMR) is divided into five sectors for population forecasting, based on administrative jurisdiction:

- PMC
- PCMC
- Cantonments
- Municipal Councils
- Rest of PMR

For the Rest of PMR, population projections from the Draft Development Plan are used. While statistical methods can provide reasonable forecasts at the broad sector level, they may not be as effective at the TAZ level. For TAZ-level forecasts, factors such as existing and proposed land use, road density, public transport availability, proximity to major terminals, and access to water are considered. A multi-criteria matrix with appropriate weightings is employed for distribution at TAZ levels.

Various statistical methods, including arithmetic, geometric, incremental, and simple graphical approaches, are used for sector-wise population forecasts. Given significant variations in development potential across sectors, different methods are applied as to different sectors as appropriate. Sector-

wise population forecast for the horizon years is presented in **Table 2-66**.

**Table 2-66 | Sector Wise Population Forecast for the Study Area (Statistical Methods & Draft PMR DP)**

| No. | Jurisdiction | 2011 | 2024 | 2034 | 2044 | 2054 |
|---|---|---|---|---|---|---|
| 1 | PMC | 35,53,312 | 46,27,888 | 54,25,983 | 63,27,293 | 71,81,475 |
| 2 | PCMC | 17,27,692 | 33,69,795 | 48,48,041 | 66,05,494 | 77,19,590 |
| 3 | Cantonment | 1,99,426 | 1,99,426 | 2,19,426 | 2,29,426 | 2,39,426 |
| 4 | Municipal Councils | 2,77,969 | 3,90,772 | 4,92,998 | 6,14,775 | 7,72,942 |
| 5 | Rest of PMR | 9,29,051 | 17,90,123 | 23,68,778 | 28,92,064 | 33,60,842 |
| | **Total** | **66,87,450** | **1,03,78,004** | **1,33,55,226** | **1,66,69,052** | **1,92,74,274** |

Employment forecasts are based on a comparison of past trends in the Workforce Participation Ratio (WFPR) of metropolitan cities in India, along with a series of assumptions regarding formal and informal employment. For estimating formal employment, attractions identified from the Household Interviews survey and the proposed land use are utilized. In contrast, informal employment estimates are derived from trend-based population distribution. The past WFPR trends in the Pune Metropolitan Region (PMR) are presented in **Table 2-67.**

**Table 2-67 | Trends of WFPR in the Study Area**

| No. | Jurisdiction | WFPR | | |
|---|---|---|---|---|
| | | 1991 | 2001 | 2011 |
| 1 | PMC* | 39% | 39% | 41% |
| 2 | PCMC** | 22% | 36% | 39% |
| 3 | Cantonments | 28% | 36% | 40% |
| 4 | Rest of PMR*** | 39% | 38% | 41% |
| | **PMR** | **35.0%** | **38.2%** | **40.8%** |

** Original PMC Area; excludes land parcels/ villages between PMC and Planning Areas*

*** Original PCMC Area; excludes defense lands located south to PCMC*

**** Includes Planning Areas, Municipal Councils and Rest of PMR*

The forecast of WFPR for the study area is carried out taking into account WFPR for major Indian cities as well as rural areas. Further, the WFPR achieved for male, female as well as urban and rural areas are duly considered. The potential changes in the socio-economic conditions in PMR are assumed based on the insights of the developed countries. Based on the above, the forecasted WFPR is presented in **Table 2-68**.

**Table 2-68 | Sector-wise Forecast of WFPR in the Study Area**

| No. | Jurisdiction | 2011 | 2024 | 2034 | 2044 | 2054 |
|---|---|---|---|---|---|---|
| 1 | PMC | 41% | 43% | 43% | 44% | 45% |
| 2 | PCMC | 39% | 44% | 44% | 45% | 47% |
| 3 | Cantonment | 40% | 40% | 43% | 45% | 45% |
| 4 | Municipal Councils | 38% | 38% | 41% | 43% | 44% |
| 5 | Rest of PMR | 47% | 48% | 51% | 52% | 52% |
| | **Overall Study Area** | **41%** | **44%** | **45%** | **46%** | **47%** |

Based on the forecasted WFPR, employment is projected at the sector level for the horizon years, as shown in **Table 2-69**. This employment is distributed at TAZ level using a multi-criteria matrix. For estimating base year employment, data from various secondary sources, including industrial reports, employment statistics, the Census, and household interview data, is utilized. For horizon year employment, the proposed land use (PLU) serves as the primary input.

**Table 2-69 | Sector Wise Employment Forecast for the Study Area**

| No. | Jurisdiction | 2011 | 2024 | 2034 | 2044 | 2054 |
|---|---|---|---|---|---|---|
| 1 | PMC | 14,56,858 | 19,98,692 | 23,58,946 | 28,15,266 | 32,66,853 |
| 2 | PCMC | 6,73,800 | 14,82,710 | 21,33,138 | 29,85,155 | 36,44,032 |
| 3 | Cantonment | 79,770 | 79,770 | 94,353 | 1,03,242 | 1,07,742 |
| 4 | Municipal Councils | 1,05,628 | 1,48,494 | 2,02,129 | 2,64,353 | 3,40,094 |
| 5 | Rest of PMR | 4,36,654 | 8,59,259 | 12,08,077 | 15,03,874 | 17,47,638 |
| | Total | **27,52,710** | **45,68,932** | **59,96,611** | **76,71,853** | **91,06,353** |

# 2.13 | REVIEW OF ENERGY AND ENVIRONMENT

## 2.13.1 | VEHICULAR POLLUTION

The standards for various air pollutants according to National Ambient Air Quality Standards (NAAQS) for Industrial, Residential, Rural and Other Areas are presented in **Table 2-70**.

**Table 2-70 | National Ambient Air Quality Standards (NAAQS, notification dated 18th November 2009)**

| No | Pollutant | Unit | Prescribed Limit |
|---|---|---|---|
| 1 | Particulate Matter Size < 10µm – ($PM_{10}$) | $\mu g/m^3$ | 100 |
| 2 | Particulate Matter Size < 2.5µm – ($PM_{2.5}$) | $\mu g/m^3$ | 60 |
| 3 | Nitrogen Dioxide (as $NO_2$) | $\mu g/m^3$ | 80 |
| 4 | Carbon Monoxide (as CO) | $\mu g/m^3$ | 2 |

*Source: NAAQS notification dated 18th November 2009*

The recorded air pollution levels at 8 locations across PMC and PCMC are presented in **Table 2-71**.

**Table 2-71 | Air Quality Levels at various Locations of the Study Area**

| No. | Location | $PM_{2.5}$ µg/m³ | $PM_{10}$ µg/m³ | CO µg/m³ | $NO_2$ µg/m³ |
|---|---|---|---|---|---|
| 1 | Shivajinagar | 55.24 | 85.3 | 1.25 | 36.5 |
| 2 | Lohegaon | 82 | 82 | 1.2 | 41 |
| 3 | Katraj | 70 | 70 | 1.2 | 14 |
| 4 | Hadapsar | 75 | 75 | 1.25 | 19 |
| 5 | Pashan | 76 | 76 | 1.43 | 7 |
| 6 | Chinchwad | 26.1 | 59.5 | 0.7 | 12.7 |
| 7 | Kasarwadi | 31.5 | 65.4 | 0.51 | 12.8 |
| 8 | Moshi | 29.6 | 62.5 | 0.9 | 16.4 |

*Source: ESR Report, 2022-23*

The $PM_{10}$ levels are found to be within the ambient limits at all eight locations. In case of $PM_{2.5}$ it was observed to be more than the ambient limit at Lohegaon, Katraj, Hadapsar and Pashan. The maximum value of $PM_{2.5}$ and $PM_{10}$ was observed at Lohegaon and Shivajinagar respectively. $PM_{2.5}$ can cause severe respiratory diseases and needs to be controlled. The CO and $NO_2$ levels are found to be within the prescribed limits.

# 2.14 | ANALYSIS AND INDICATORS

## 2.14.1 | SERVICE LEVEL BENCHMARKS

The Service Level Benchmarks (SLB) issued by Ministry of Housing and Urban Affairs (MoHUA) specify parameters to measure the effectiveness of land use transport planning. Ten areas identified for assessing the service level performance are presented below:

### 1. PUBLIC TRANSPORT (PT) FACILITIES

a. Presence of organized public transport system
b. Extent of supply availability of public transport
c. Service coverage of public transport in the city
d. Average waiting time for public transport users
e. Level of comfort in public transport.
f. % of fleet as per urban bus specification

### 2. PEDESTRIAN INFRASTRUCTURE FACILITIES

a. Signalized intersection delay (%)
b. Street lighting (LUX)
c. % of city covered by footpaths

### 3. NON-MOTORIZED TRANSPORT (NMT) FACILITIES

a. % of network covered
b. Encroachment on NMT roads by vehicle parking (%)
c. NMT parking facilities at interchanges (%)

### 4. LEVEL OF USAGE OF INTELLIGENT TRANSPORT SYSTEM (ITS) FACILITIES

a. Availability of traffic surveillance (%)
b. Passenger Information System (%)
c. Global Positioning System (GPS)/ General Pocket Radio Service (GPRS) (%)
d. Signal synchronization (%)
e. Integrated ticketing system (%)

### 5. TRAVEL SPEED (MOTORIZED AND MASS TRANSIT) ALONG MAJOR CORRIDORS

a. Average travel speed of personal vehicles (kmph)
b. Average travel speed of public transport (kmph)

### 6. AVAILABILITY OF PARKING PLACES

a. Availability of on-street paid public parking spaces (%)
b. Ratio of maximum and minimum parking fee in the city

### 7. ROAD SAFETY

a. Fatality rate per lakh population
b. Fatality rate for pedestrian and NMT (%)

### 8. POLLUTION LEVELS

a. Sulphur Dioxide (SO2)
b. Oxides of Nitrogen
c. Suspended Particulate matter (SPM)
d. Respirable Suspended Particulate Matter (RSPM) (Size less than 10 microns)

### 9. INTEGRATED LAND USE TRANSPORT SYSTEM

a. Financial population density – Gross (Persons/developed area in hectare)
b. Mixed land use on major transit corridors / network (% area under non-residential use)
c. Intensity of development citywide (FSI)
d. Intensity of development along transit corridor (FSI transit corridor/FSI)
e. Clear pattern and completeness of the network
f. % of area under roads
g. % network having exclusive ROW for transit network

### 10. FINANCIAL SUSTAINABILITY OF PUBLIC TRANSPORT

a. Extent of non-fare revenue
b. Staff/bus ratio
c. Operating ratio

The detailed calculations of Service level benchmark are presented in **Annexure 2.6**.

## 2.14.2 | SUMMARY OF BENCHMARKS

Service Level Benchmarks are calculated for 10 focus areas in the Study Area and the summary of results is presented in **Table 2-72**.

**Table 2-72 | Summary of Service Level Benchmarks for the Study Area**

| No | Benchmark | LOS for Study Area | Inference as per MoUD Guidelines |
|---|---|---|---|
| 1 | Public Transport Facilities | 12 | The city has public transport system which may need considerable improvements in terms of supply of buses/coaches and coverage as many parts of the city are not served by it. The frequency of services available may need improvements. The system provided is comfortable |
| 2 | Pedestrian Infrastructure facilities | 7 | The city has pedestrian facilities which may need considerable improvements in terms of improvement in intersections, Footpaths, and street lighting as some parts of the city are not served by it. The footpath available need improvements. The system provided is comfortable and sustainable. |
| 3 | Non-Motorised Transport Facilities | 9 | The city has NMT Facilities which may need considerable improvements as many parts of the city are not served by it. |
| 4 | Level of usage of Intelligent Transport System (ITS) Facilities | 16 | The city lacks adequate ITS facilities. |
| 5 | Travel speed (Motorized and Mass transit) | 4 | Small increases in traffic causing substantial increase in approach delays and hence, decrease in arterial speed. |

| No | Benchmark | LOS for Study Area | Inference as per MoUD Guidelines |
|---|---|---|---|
| 6 | Availability of Parking Spaces | 6 | Paid Parking Space provided in the city need to be improved upon and to cater to the demand some differential parking rates for the CBD have been adopted. The city authorities need to imitative considerable improvement measures. |
| 7 | Road Safety | 6 | Need considerable improvements in Road design and available road infrastructure, traffic management and in other such reasons which significantly contribute to road safety |
| 8 | Pollution Levels | 8 | Need some improvements in emission standards, checking pollution etc. |
| 9 | Integrated Land use Transport System | 19 | Faint Coherence between city structure and public transport system |
| 10 | Sustainability of Public Transport | 7 | The public transport of a city is financially sustainable but needs some improvements. |

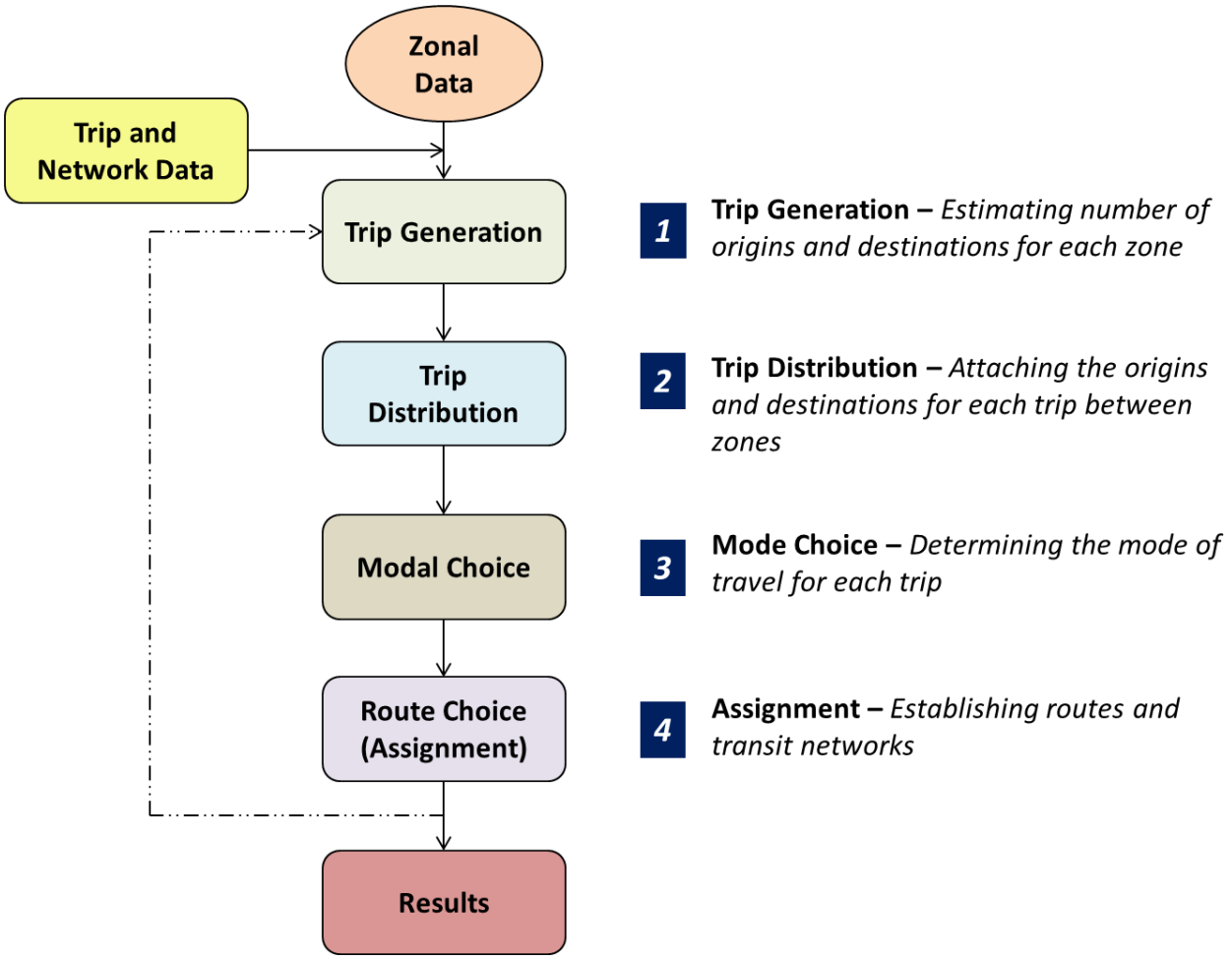
# *Chapter-3*

## *Travel Demand Assessment*

# 3 | TRAVEL DEMAND ASSESSMENT

This chapter discusses the development of alternative scenarios and evaluation based on the outputs from the Travel Demand Model developed for the Study Area. The model follows the four-stage transportation modelling process shown in **Figure 3-1**.

**Figure 3-1 | Four Stage Travel Demand Model Process**




Travel demand model developed for past CMP study carried out in 2018 was updated, validated and calibrated for the base year 2024 based on the primary surveys conducted as part of present study.

The developed model integrates the household activities, land use patterns, traffic flow, and regional demographics of the study area. This model is capable of estimating travel behavior in response to economic conditions, network conditions and facilities, the residential and employment location, land use and adaptive to the changes in transportation system, including fare and pricing policy.

The model is developed using CUBE Voyager software. The software is capable of modelling mode split, transit assignment, and assessing the variations in speeds due to changes in overall traffic

volume and fares.

## SALIENT FEATURES OF THE URBAN TRANSPORT MODEL

- The modes that are modelled under the study are Two wheelers, Cars, Intermediate Public Transport (IPT) i.e., Auto and Taxi, Public Transport i.e., Bus and Share Auto Rickshaws, even includes Non-motorized Transport mode i.e. Cycles.
- Commercial Vehicles such as Trucks, Multi Axle Vehicles and Light Commercial Vehicles are loaded in the network as Pre-load.
- The highway (road) network is built considering all the major roads and all the key minor roads. The transit system is built with the existing public transport system in all its forms with their routes, frequency, fare structure etc.
- The model is responsive to street congestion, travel costs, availability of competing transport modes and the growth of the city.
- The model is responsive to general costs that include out of pocket costs i.e., fare, vehicle operating cost etc. and perceived user costs such as value of travel time, cost of waiting time for transit etc.
- The model is responsive to the economic development of the region. A comprehensive data on economic development in the form of land-use and transport development proposals are collected and translated into the growth of population and employment and is used in the model.
- Model is validated and calibrated for peak hour. Model focuses on peak period conditions because these conditions include the most important recurrent congestion period and tend to guide transportation system design. Peak period models provide much more accurate indications of directional travel patterns during design conditions when compared to daily models.

## PLANNING PERIOD

Year 2024 is considered as the base year and 2054 has been set as the horizon year for the planning of the long-term strategy. Therefore, forecast is provided for 2034, 2044 and 2054.

## ZONING

The Study area is divided into a number of Traffic Analysis Zones (TAZ) for analyzing the travel characteristics. The total number of zones adopted for the study area is 340 out of which 329 zones are internal and 11 zones are external.

## NETWORK DEVELOPMENT

The base year transportation networks for PMR are developed separately for,

- Highway Network (i.e., Commercial Vehicles, Two-wheeler, Car, IPT (Taxi and Auto Rickshaw) and Cycle)
- Transit Network (i.e., Bus, Train, Metro Rail and Share Auto Rickshaw)

## HIGHWAY NETWORK

The arterials, sub arterials and major collector roads are considered in the development of the network. All links are coded as one way links having A – node (after node) and B – node (before node) with its own characteristics.

The link attributes include road names, capacity, lane configuration, length, toll details (if any), volume count information at junction, screen line and cordon locations, free flow speed, bus preload. These link characteristics are compiled and categorized based on functional class for the basic network for study area. The capacity of the links and PCU values are according to the IRC standards and Design Manual for Roads and Bridges (DMRB) standards.

The form of the BPR function for speed flow is:

$$T_C = T_0 * (1 + \alpha * (v/c)^{\beta})$$

Where,
$T_c$ – Congested Link Travel time
$T_0$ – Link Free flow time
v - Link Volumes
c – Link Capacity
$\alpha$ and $\beta$ – calibrated speed flow parameters

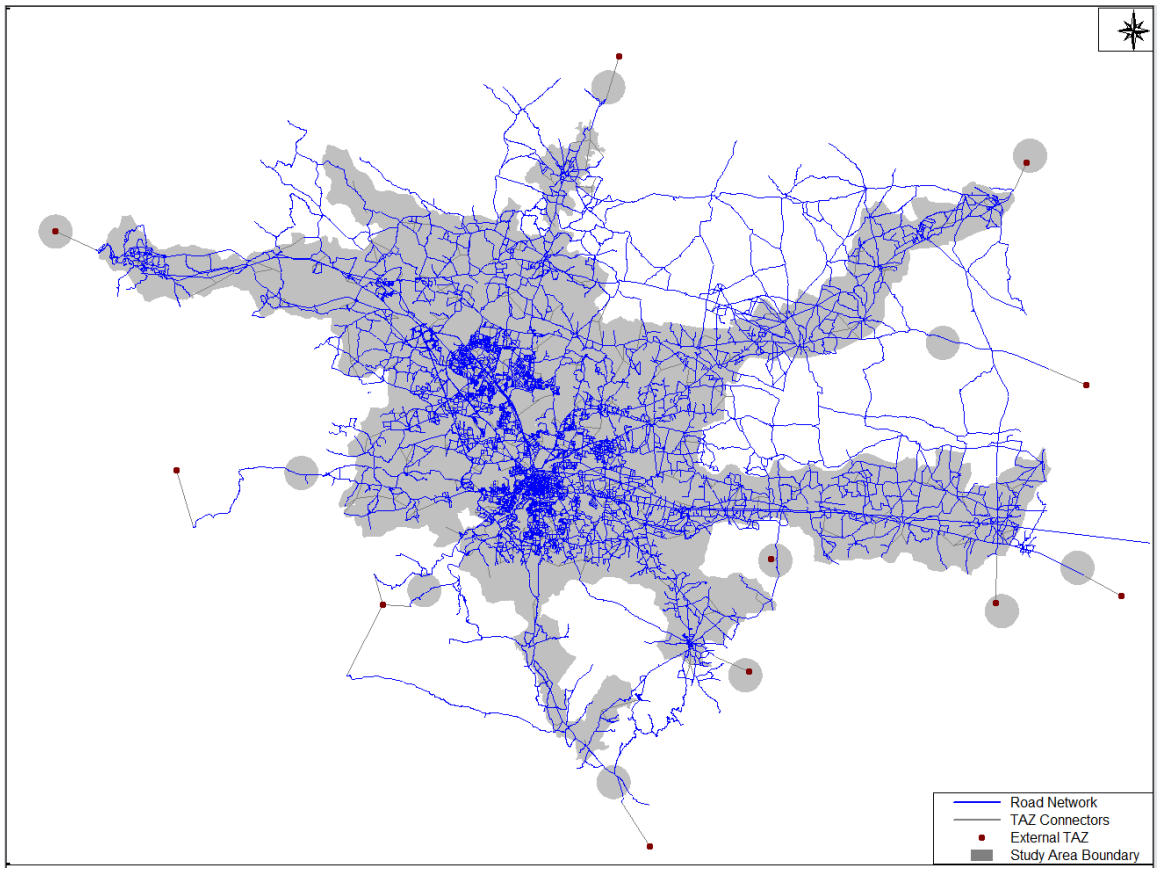
The salient features of coded highway network are given in **Table 3-1. The existing coded** highway network is presented in **Figure 3-2.**

**Table 3-1 | Salient Features of Coded Highway Network**

| Function Class | Lane Configuration | Urban | | | | Rural | | | | Hilly | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Capacity PCUs | Speed Flow Parameters | | Free Flow Speed | Capacity PCUs | Speed Flow Parameters | | Free Flow Speed | Capacity PCUs | Speed Flow Parameters | | Free Flow Speed |
| | | | α | β | | | α | β | | | α | β | |
| 1 | 1L-2W-UD | 1,200 | 1.8 | 3 | 22 | 400 | 0.6 | 4.5 | 30 | 320 | 1.0 | 6.0 | 20 |
| 2 | 1L-1W-UD | 1,920 | 1.8 | 3 | 25 | 640 | 0.6 | 4.5 | 35 | - | - | - | - |
| 3 | 1.5L-2W-UD | 1,800 | 1.7 | 3 | 27 | 1,200 | 4.3 | 3 | 37 | 1,040 | 1.0 | 6.0 | 25 |
| 4 | 1.5L-1W-UD | 2,880 | 1.7 | 3 | 30 | 1,920 | 4.3 | 3 | 40 | - | - | - | - |
| 5 | 2L-2W-UD | 2,400 | 2.2 | 2 | 36 | 3,000 | 0.8 | 1.5 | 48 | 1,400 | 4.0 | 3.1 | 30 |
| 6 | 2L-1W-UD | 3,840 | 3.8 | 3 | 40 | 4,800 | 4.2 | 3.1 | 42 | 2,240 | 4.0 | 3.1 | 38 |
| 7 | 3L-2W-UD | 3,600 | 2.2 | 2 | 35 | 4,500 | 0.8 | 1.5 | 49 | 2,250 | 2.0 | 4.4 | 37 |
| 8 | 3L-1W-UD | 5,760 | 2.1 | 4 | 42 | 7,200 | 2.1 | 4.4 | 44 | - | - | - | - |
| 9 | 3L-2W-D | 3,600 | 2.2 | 2 | 38 | 4,500 | 0.8 | 1.5 | 52 | 2,250 | 2.0 | 4.4 | 40 |
| 10 | 4L-2W-UD | 4,800 | 1.9 | 2 | 37 | 7,600 | 0.4 | 1.0 | 67 | - | - | - | - |
| 11 | 4L-1W-UD | 7,680 | 2.9 | 4 | 45 | 12,160 | 3.5 | 4.0 | 75 | - | - | - | - |
| 12 | 4L-2W-D | 4,800 | 1.9 | 2 | 40 | 7,600 | 0.4 | 1.0 | 70 | - | - | - | - |
| 13 | 4L-1W-D | 7,680 | 2.9 | 4 | 45 | 12,160 | 3.5 | 4.0 | 75 | - | - | - | - |
| 14 | 6L-2W-UD | 7,200 | 2.0 | 2 | 47 | 12,000 | 0.2 | 1.0 | 77 | 5,600 | 5.0 | 3.8 | 47 |
| 15 | 6L-2W-D | 7,200 | 2.0 | 2 | 50 | 12,000 | 0.2 | 1.0 | 80 | 5,600 | 5.0 | 3.8 | 50 |
| 16 | 6L-2W-D | 13,200 | 0.2 | 1 | - | 13,200 | 0.2 | 1.0 | 100 | 13,200 | 0.0 | 1.0 | - |

*L-Lane, 1 W-One Way, 2 W-Two Way, D- Divided, UD- Undivided*

**Figure 3-2 | Coded Highway Network in the Study Area**




## PUBLIC TRANSPORT NETWORK

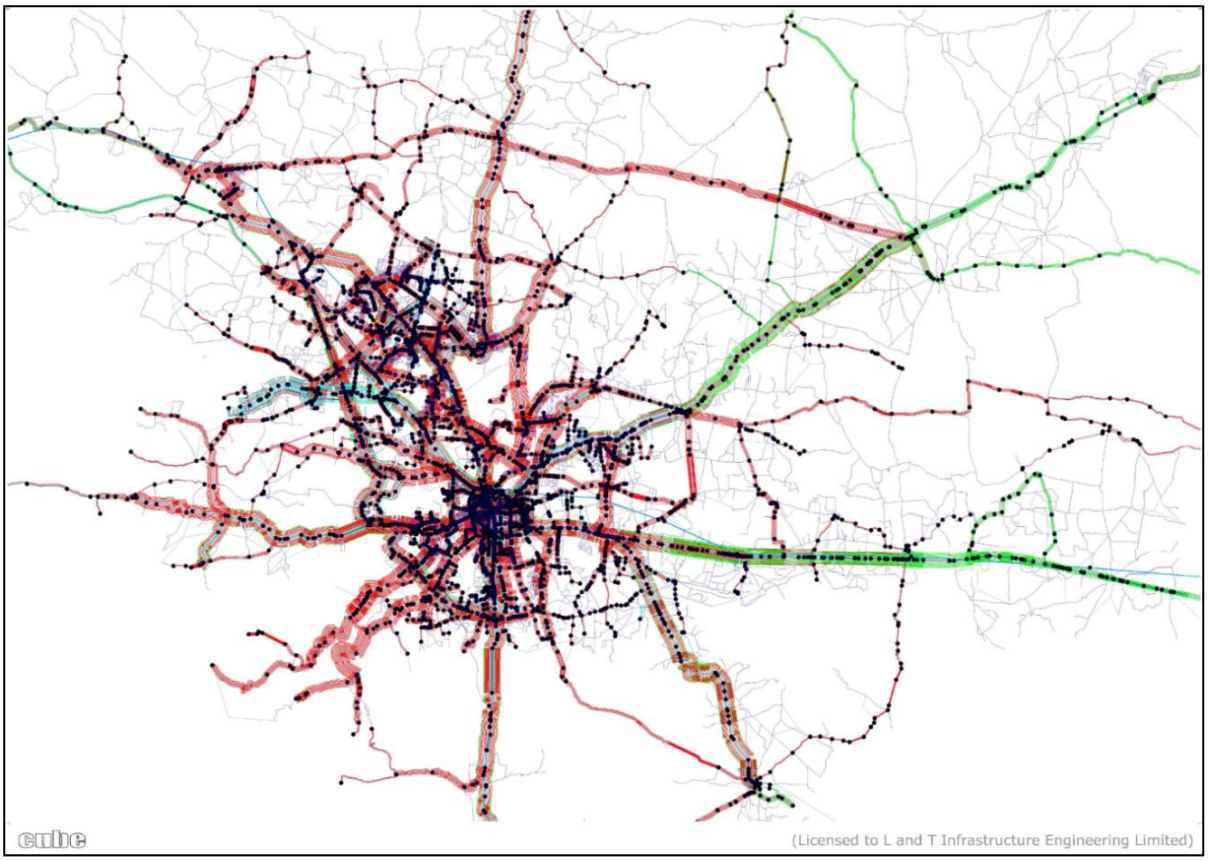
The existing Public Transport network includes Bus, BRTS, Metro Rail and Suburban rail. The public transport network represents the access/ egress connectivity, headways, speeds and accessibility of transit services to support estimation of travel times on individual links and passenger volumes on individual transit lines and links.

- Number of PMPML Bus Routes : 400
- Number of BRT Routes : 7
- Number of Metro Routes : 2
- No of Suburban Routes : 1

The public transport schedules, fare structure with reference to different services are obtained from the respective organizations and are coded.

The coded existing public transport network is presented in **Figure 3-3.**

**Figure 3-3 | Existing Public Transport Network in the Study Area**




## DEVELOPMENT OF MATRICES

Mode wise matrices (Two-wheeler, Car, IPT, Public Transport, LCV, Truck and MAV) are developed from Household Interview Survey (HHI). The approach shown in **Table 3-2** is considered for developing the matrices.

**Matrix merging:** The matrices developed from Household Interview Survey were merged with the matrices generated from the Road-side Interview (RSI) Surveys conducted at cordon locations from the previous CMP study carried out in 2018 by applying external growth rates (growth rates based on past growth trends) to obtain the observed Private Vehicles and Public Transport matrices for validation. For commercial vehicles RSI matrices were used for validation. Internal to internal trips for private vehicle obtained from household interview survey (HHI).

**Table 3-2 | Data Sources for Development of Matrices**

| Category | Data Source |
|---|---|
| Internal-Internal | HHI |
| Internal-External | RSI (growth rates applied) and supplemented by HHI |
| External-Internal | RSI (growth rates applied) |
| External-External | RSI (growth rates applied) |

*HHI: Household Interview; RSI: Road Side Interview*

External to Internal and External to External trips for private vehicles and public transports are obtained by applying growth rates to the RSI data from past study. Internal to external trips for private vehicles and public transport are obtained by applying growth rates to the RSI data from past study and supplemented by HHI. The mode wise matrices are developed for morning peak hour. From the primary surveys, morning peak is observed to be during 09:30 a.m. to 10:30 a.m. Based on traffic surveys the **peak hour factor** was observed to be **9.6%**. The Summary of Base Year Trips by mode for the study area is presented in **Table 3-3.**

**Table 3-3 | Summary of Base Year Daily Trips by Mode**

| Trip Component* | TW | CAR | IPT (Auto + Taxi) | PT | Total |
|---|---|---|---|---|---|
| Internal-Internal | 50,23,401 | 17,36,236 | 21,68,147 | 14,57,161 | 1,03,84,946 |
| Internal-External | 32,195 | 69,766 | 11,740 | 90,352 | 2,04,054 |
| External-Internal | 40,529 | 87,832 | 3,066 | 1,10,117 | 2,41,545 |
| External-External | 12,154 | 10,782 | 3,329 | 1,679 | 27,944 |
| **Total** | **51,08,281** | **19,04,617** | **21,86,282** | **16,59,309** | **1,08,58,489** |

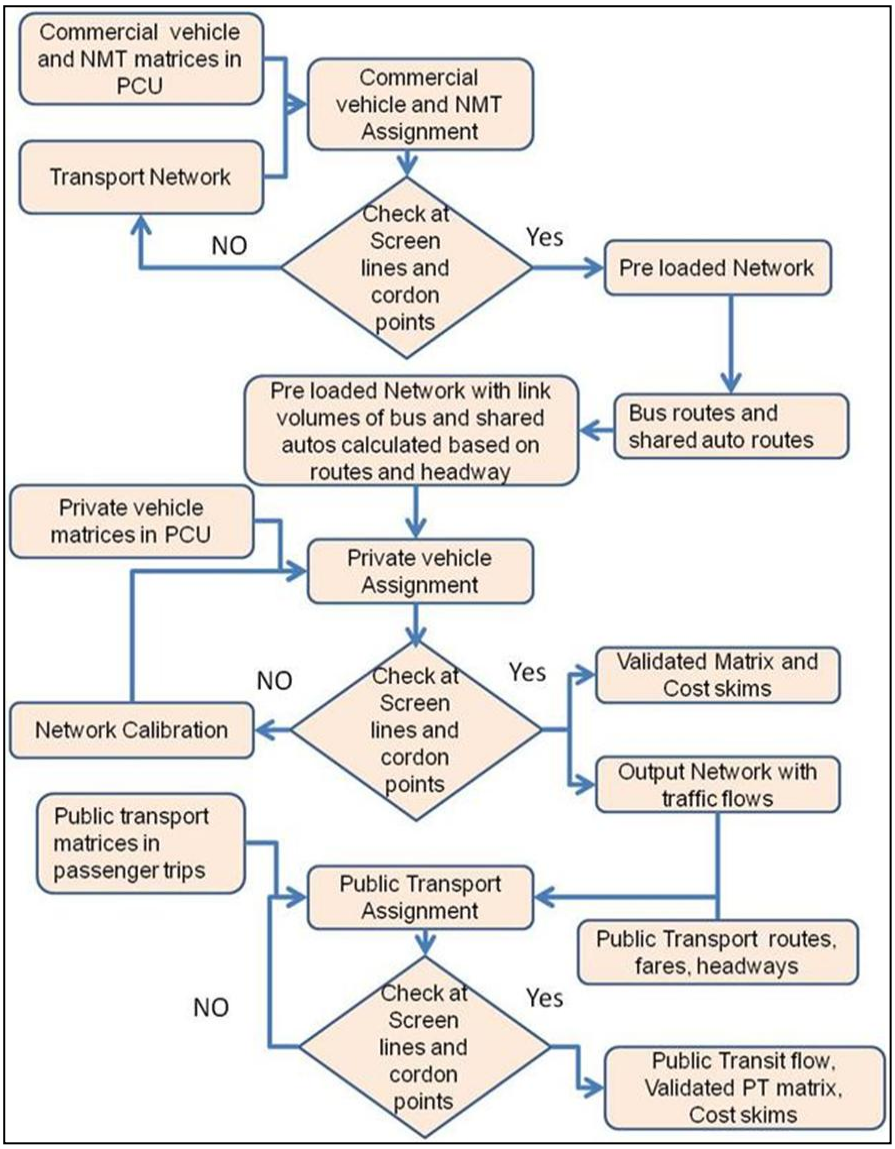
## VALIDATION OF BASE YEAR TRAVEL DEMAND MODEL

The validation of base year travel demand model follows three stages as presented below:

- Commercial Vehicle Assignment
- Private Vehicle Assignment
- Public Transport Assignment

The validation process is presented in **Figure 3-4.**

**Figure 3-4 | Travel Demand Model - Validation Process**




## COMMERCIAL VEHICLE ASSIGNMENT

Commercial vehicles matrices (Trucks, MAV, and LCV) are assigned on to the transport network. The mode-wise assigned traffic volumes are compared with observed traffic volumes at junction, screen line and cordon locations. The network and matrices are checked and corrected until the difference between assigned traffic volumes and observed traffic volumes comes with in allowable limit of +/-15%. This process is automated by the CUBE ANALYST software. The commercial vehicle validation results are presented in **Table 3-4** to **Table 3-6.**

**CUBE ANALYST**: CUBE Analyst is a tool used in the validation process of Travel Demand Modelling for optimising the trip matrices obtained from primary surveys with traffic volume counts observed at screen line locations and outer cordon locations.

### Table 3-4 | Commercial Vehicle Validation Results at Cordons

| Cordon Type | Direction | Observed PCUs | | | Modelled PCUs | | | % Error | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | TRUCK | MAV | LCV | TRUCK | MAV | LCV | TRUCK | MAV | LCV |
| Outer Cordon | Towards Pune | 869 | 634 | 1,717 | 906 | 590 | 1,805 | 4% | -7% | 5% |
| | Away from Pune | 597 | 450 | 1,517 | 675 | 492 | 1,730 | 13% | 9% | 14% |
| Inner Cordon | Towards Pune | 1,462 | 269 | 3,400 | 1,551 | 268 | 3,717 | 6% | -1% | 9% |
| | Away from Pune | 1,686 | 277 | 4,067 | 1,814 | 279 | 4,567 | 8% | 1% | 12% |

### Table 3-5 | Commercial Vehicle Validation Results at Screen-lines

| Survey Type | Direction | Observed PCUs | | | Modelled PCUs | | | % Error | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | TRUCK | MAV | LCV | TRUCK | MAV | LCV | TRUCK | MAV | LCV |
| Screen-line | North to South | 806 | 276 | 2,532 | 687 | 243 | 2,313 | -15% | -12% | -9% |
| | South to North | 566 | 186 | 2,503 | 544 | 172 | 2,315 | -4% | -7% | -8% |
| | East to West | 1,309 | 258 | 5,745 | 1,129 | 221 | 4,968 | -14% | -14% | -14% |
| | West to East | 1,470 | 238 | 4,883 | 1,371 | 203 | 4,756 | -7% | -15% | -3% |

### Table 3-6 | Commercial Vehicle Validation (Truck and MAV) Results at Junctions

| No | Direction | Location | Observed PCUs | | | Modelled PCUs | | | % Error | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | TRUCK | MAV | LCV | TRUCK | MAV | LCV | TRUCK | MAV | LCV |
| 1 | Towards Junction | Ambethan Chowk | 228 | 74 | 1067 | 257 | 78 | 1060 | 13% | 6% | -1% |
| 2 | Away from Junction | Ambethan Chowk | 226 | 72 | 1067 | 257 | 78 | 1060 | 13% | 8% | -1% |
| 3 | Towards Junction | Wada Road – Nashik Road Junction | 236 | 55 | 650 | 227 | 62 | 599 | -4% | 14% | -8% |
| 4 | Away from Junction | Wada Road – Nashik Road Junction | 236 | 55 | 650 | 227 | 62 | 599 | -4% | 14% | -8% |
| 5 | Towards Junction | Shikarpur Junction | 405 | 241 | 791 | 401 | 242 | 726 | -1% | 0% | -8% |
| 6 | Away from Junction | Shikarpur Junction | 406 | 240 | 791 | 401 | 242 | 726 | -1% | 1% | -8% |

| No | Direction | Location | Observed PCUs | | | Modelled PCUs | | | % Error | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | TRUCK | MAV | LCV | TRUCK | MAV | LCV | TRUCK | MAV | LCV |
| 7 | Towards Junction | Pabal Road – Nashik Road Junction | 228 | 74 | 697 | 236 | 62 | 618 | 4% | -15% | -11% |
| 8 | Away from Junction | Pabal Road – Nashik Road Junction | 226 | 74 | 697 | 236 | 62 | 618 | 4% | -15% | -11% |
| 9 | Towards Junction | Station Chowk | 263 | 47 | 805 | 247 | 42 | 674 | -6% | -11% | -15% |
| 10 | Away from Junction | Station Chowk | 261 | 47 | 805 | 247 | 42 | 674 | -5% | -11% | -15% |
| 11 | Towards Junction | Saswad Police Chowk | 118 | 36 | 328 | 101 | 30 | 355 | -14% | -15% | 8% |
| 12 | Away from Junction | Saswad Police Chowk | 118 | 36 | 328 | 101 | 30 | 355 | -14% | -15% | 8% |
| 13 | Towards Junction | Uruli Kanchan | 312 | 153 | 909 | 354 | 161 | 911 | 13% | 5% | 0% |
| 14 | Away from Junction | Uruli Kanchan | 312 | 153 | 909 | 354 | 161 | 911 | 13% | 5% | 0% |
| 15 | Towards Junction | Chakan Chowk | 169 | 8 | 484 | 149 | 8 | 436 | -12% | -1% | -10% |
| 16 | Away from Junction | Chakan Chowk | 168 | 9 | 484 | 149 | 8 | 436 | -11% | -15% | -10% |
| 17 | Towards Junction | Hinjawadi – Pirangut Road | 159 | 13 | 469 | 169 | 11 | 397 | 6% | -15% | -15% |
| 18 | Away from Junction | Hinjawadi – Pirangut Road | 159 | 13 | 468 | 169 | 11 | 397 | 6% | -15% | -15% |
| 21 | Towards Junction | Kharadi Bypass Junction | 200 | 0 | 848 | 171 | 0 | 831 | -14% | 0% | -2% |
| 22 | Away from Junction | Kharadi Bypass Junction | 200 | 0 | 848 | 171 | 0 | 831 | -14% | 0% | -2% |
| 23 | Towards Junction | Pune University | 102 | 0 | 563 | 94 | 0 | 544 | -8% | 0% | -3% |
| 24 | Away from Junction | Pune University | 105 | 0 | 563 | 94 | 0 | 544 | -10% | 0% | -3% |
| 25 | Towards Junction | Nalstop Chowk | 3 | 0 | 289 | 3 | 0 | 272 | -2% | 0% | -6% |
| 26 | Away from Junction | Nalstop Chowk | 3 | 0 | 289 | 3 | 0 | 272 | -2% | 0% | -6% |
| 27 | Towards Junction | Shimla Office Chowk | 54 | 0 | 600 | 45 | 0 | 615 | -15% | 0% | 2% |
| 28 | Away from Junction | Shimla Office Chowk | 54 | 0 | 599 | 45 | 0 | 615 | -15% | 0% | 3% |
| 29 | Towards Junction | Khadi Masjid Chowk | 347 | 76 | 1616 | 334 | 74 | 1617 | -4% | -3% | 0% |
| 30 | Away from Junction | Khadi Masjid Chowk | 348 | 76 | 1616 | 334 | 74 | 1617 | -4% | -3% | 0% |
| 31 | Towards Junction | Mundhwa Chowk | 180 | 3 | 722 | 168 | 3 | 708 | -6% | 6% | -2% |
| 32 | Away from Junction | Mundhwa Chowk | 181 | 3 | 722 | 168 | 3 | 708 | -7% | 6% | -2% |
| 33 | Towards Junction | Belbaug Chowk | 3 | 0 | 190 | 3 | 0 | 180 | 12% | 0% | -5% |

| No | Direction | Location | Observed PCUs | | | Modelled PCUs | | | % Error | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | TRUCK | MAV | LCV | TRUCK | MAV | LCV | TRUCK | MAV | LCV |
| 34 | Away from Junction | Belbaug Chowk | 3 | 0 | 198 | 3 | 0 | 180 | 12% | 0% | -9% |
| 35 | Towards Junction | Bopodi Junction | 83 | 0 | 728 | 72 | 0 | 817 | -14% | 0% | 12% |
| 36 | Away from Junction | Bopodi Junction | 82 | 0 | 728 | 72 | 0 | 817 | -12% | 0% | 12% |
| 37 | Towards Junction | Khadki Police Chowk | 74 | 0 | 486 | 62 | 0 | 421 | -15% | 0% | -14% |
| 38 | Away from Junction | Khadki Police Chowk | 74 | 0 | 486 | 62 | 0 | 421 | -15% | 0% | -14% |
| 39 | Towards Junction | Dhole Patil Chowk | 28 | 0 | 503 | 31 | 0 | 524 | 9% | 0% | 4% |
| 40 | Away from Junction | Dhole Patil Chowk | 27 | 0 | 503 | 31 | 0 | 524 | 15% | 0% | 4% |
| 41 | Towards Junction | Shivaji Chowk | 80 | 0 | 332 | 73 | 0 | 376 | -9% | 0% | 13% |
| 42 | Away from Junction | Shivaji Chowk | 80 | 0 | 332 | 73 | 0 | 376 | -9% | 0% | 13% |
| 43 | Towards Junction | Bhumkar Chowk | 172 | 11 | 563 | 148 | 10 | 486 | -14% | -7% | -14% |
| 44 | Away from Junction | Bhumkar Chowk | 170 | 11 | 563 | 148 | 10 | 486 | -13% | -7% | -14% |
| 45 | Towards Junction | Nashik Road Spine Road Junction | 385 | 46 | 1075 | 391 | 44 | 1062 | 2% | -3% | -1% |
| 46 | Away from Junction | Nashik Road Spine Road Junction | 382 | 44 | 1073 | 391 | 44 | 1062 | 2% | 0% | -1% |
| 47 | Towards Junction | Nashik Road Dehu  Alandi Road Junction | 330 | 74 | 1569 | 369 | 77 | 1494 | 12% | 4% | -5% |
| 48 | Away from Junction | Nashik Road Dehu  Alandi Road Junction | 331 | 75 | 1569 | 369 | 77 | 1494 | 12% | 2% | -5% |
| 49 | Towards Junction | Chikhali | 322 | 56 | 1513 | 347 | 49 | 1774 | 8% | -13% | 15% |
| 50 | Away from Junction | Chikhali | 320 | 56 | 1512 | 347 | 49 | 1774 | 8% | -13% | 15% |
| 51 | Towards Junction | Thermax Chowk | 194 | 76 | 706 | 177 | 65 | 735 | -9% | -15% | 4% |
| 52 | Away from Junction | Thermax Chowk | 194 | 76 | 705 | 177 | 65 | 735 | -9% | -15% | 4% |
| 53 | Towards Junction | Mahatma Jyotiba Phule Chowk | 207 | 31 | 952 | 183 | 27 | 933 | -11% | -14% | -2% |
| 54 | Away from Junction | Mahatma Jyotiba Phule Chowk | 207 | 31 | 1079 | 183 | 27 | 933 | -11% | -13% | -14% |
| 55 | Towards Junction | Spine Road Akurdi Chikhali Road Junction | 138 | 0 | 587 | 146 | 0 | 576 | 6% | 0% | -2% |
| 56 | Away from Junction | Spine Road Akurdi Chikhali Road Junction | 138 | 0 | 584 | 146 | 0 | 576 | 6% | 0% | -1% |

## PRIVATE VEHICLE ASSIGNMENT

The validated commercial vehicles are assigned as a preload to the Transport Network. From the coded public transport routes (Bus and Shared Auto) and headway information, link wise count of buses and shared auto rickshaws are calculated and added to the preloaded transport network to induce the congestion caused by buses and shared auto rickshaws.

Mode wise matrices of private vehicles (Two wheelers, Cars and IPT) are assigned on the preloaded network. The mode-wise assigned traffic volumes are compared with observed traffic volumes at junction, screen line and cordon locations. The network/matrices are checked and corrected until the difference between assigned traffic volumes and observed traffic volumes comes with in allowable limit of +/-15%. This process is automated by the CUBE ANALYST software. The results of private vehicle validation are presented in **Table 3-7** to **Table 3-9**.

**CUBE ANALYST**: CUBE Analyst is a tool used in the validation process of Travel Demand Modelling for optimising the trip matrices obtained from primary surveys with traffic volume counts observed at screen line locations and outer cordon locations.

### Table 3-7 | Private Vehicle Validation Results at Cordons

| Cordon Type | Direction | Observed PCUs | | | Modelled PCUs | | | % Error | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 2W | Car | IPT* | 2W | Car | IPT* | 2W | Car | IPT* |
| Outer Cordon | Towards Pune | 5,219 | 5,514 | 781 | 5,057 | 5,471 | 860 | -3% | -1% | 10% |
| | Away from Pune | 4,270 | 6,036 | 1,414 | 4,735 | 5,774 | 1,248 | 11% | -4% | -12% |
| Inner Cordon | Towards Pune | 17,041 | 8,670 | 3,574 | 17,907 | 7,735 | 3,200 | 5% | -11% | -10% |
| | Away from Pune | 18,926 | 11,266 | 3,824 | 18,650 | 9,831 | 3,300 | -1% | -13% | -14% |

### Table 3-8 | Private Vehicle Validation Results at Screen-line Locations

| Survey Type | Direction | Observed PCUs | | | Modelled PCUs | | | % Error | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 2W | Car | IPT* | 2W | Car | IPT* | 2W | Car | IPT* |
| Screen-line | North to South | 38,208 | 11,526 | 14,779 | 33,820 | 10,674 | 13,727 | -11% | -7% | -7% |
| | South to North | 23,941 | 10,376 | 12,605 | 24,953 | 9,896 | 11,318 | 4% | -5% | -10% |
| | East to West | 91,756 | 25,980 | 37,045 | 88,113 | 29,408 | 35,634 | -4% | 13% | -4% |
| | West to East | 73,133 | 18,514 | 34,981 | 74,220 | 19,750 | 32,905 | 1% | 7% | -6% |

**IPT includes (Auto-Rickshaw and taxi)*

### Table 3-9 | Private Vehicle Validation (Two-wheeler, Car, IPT) Results at Junctions

| No | Direction | Location | Observed PCUs | | | Modelled PCUs | | | % Error | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 2W | Car | IPT* | 2W | Car | IPT* | 2W | Car | IPT* |
| 1 | Towards Junction | Ambethan Chowk | 3,443 | 1,530 | 177 | 3,531 | 1,737 | 200 | 3% | 13% | 13% |
| 2 | Away from Junction | Ambethan Chowk | 3,442 | 1,530 | 177 | 3,531 | 1,737 | 200 | 3% | 13% | 13% |
| 3 | Towards Junction | Wada Road – Nashik Road Junction | 2,589 | 1,006 | 217 | 2,349 | 950 | 226 | -9% | -6% | 4% |

| No | Direction | Location | Observed PCUs | | | Modelled PCUs | | | % Error | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 2W | Car | IPT* | 2W | Car | IPT* | 2W | Car | IPT* |
| 4 | Away from Junction | Wada Road – Nashik Road Junction | 2,589 | 1,006 | 219 | 2,349 | 950 | 226 | -9% | -6% | 3% |
| 5 | Towards Junction | Shikrapur Junction | 969 | 1,286 | 202 | 1,074 | 1,317 | 190 | 11% | 2% | -6% |
| 6 | Away from Junction | Shikrapur Junction | 968 | 1,286 | 206 | 1,074 | 1,317 | 190 | 11% | 2% | -7% |
| 7 | Towards Junction | Pabal Road – Nashik Road Junction | 2,842 | 1,361 | 128 | 2,846 | 1,196 | 137 | 0% | -12% | 7% |
| 8 | Away from Junction | Pabal Road – Nashik Road Junction | 2,843 | 1,361 | 125 | 2,846 | 1,196 | 137 | 0% | -12% | 10% |
| 9 | Towards Junction | Station Chowk | 3,328 | 846 | 544 | 2,859 | 737 | 501 | -14% | -13% | -8% |
| 10 | Away from Junction | Station Chowk | 3,328 | 846 | 542 | 2,859 | 737 | 501 | -14% | -13% | -8% |
| 11 | Towards Junction | Saswad Police Chowk | 3,251 | 940 | 154 | 3,251 | 1,022 | 167 | 0% | 9% | 8% |
| 12 | Away from Junction | Saswad Police Chowk | 3,252 | 940 | 158 | 3,251 | 1,022 | 167 | 0% | 9% | 6% |
| 13 | Towards Junction | Uruli Kanchan | 3,224 | 982 | 158 | 2,848 | 1,111 | 141 | -12% | 13% | -11% |
| 14 | Away from Junction | Uruli Kanchan | 3,224 | 982 | 158 | 2,848 | 1,111 | 141 | -12% | 13% | -11% |
| 15 | Towards Junction | Chakan Chowk | 1,289 | 400 | 52 | 1,434 | 330 | 44 | 11% | -15% | -14% |
| 16 | Away from Junction | Chakan Chowk | 1,287 | 400 | 52 | 1,434 | 330 | 44 | 11% | -15% | -14% |
| 17 | Towards Junction | Hinjawadi – Pirangut Road | 2,306 | 869 | 122 | 1,918 | 820 | 106 | -15% | -6% | -13% |
| 18 | Away from Junction | Hinjawadi – Pirangut Road | 2,304 | 869 | 121 | 1,918 | 820 | 106 | -15% | -6% | -12% |
| 21 | Towards Junction | Kharadi Bypass Junction | 8,208 | 4,650 | 2,053 | 7,160 | 4,703 | 1,725 | -13% | 1% | -15% |
| 22 | Away from Junction | Kharadi Bypass Junction | 8,208 | 4,650 | 2,053 | 7,160 | 4,703 | 1,725 | -13% | 1% | -15% |
| 23 | Towards Junction | Pune University | 12,785 | 6,399 | 2,816 | 13,486 | 6,896 | 2,963 | 5% | 8% | 5% |
| 24 | Away from Junction | Pune University | 12,783 | 6,399 | 2,814 | 13,486 | 6,896 | 2,963 | 5% | 8% | 5% |
| 25 | Towards Junction | Nalstop Chowk | 7,978 | 2,776 | 4,991 | 7,367 | 2,693 | 5,027 | -8% | -3% | 1% |
| 26 | Away from Junction | Nalstop Chowk | 7,978 | 2,776 | 4,991 | 7,367 | 2,693 | 5,027 | -8% | -3% | 1% |
| 27 | Towards Junction | Shimla Office Chowk | 11,061 | 5,204 | 7,405 | 9,742 | 4,771 | 7,070 | -12% | -8% | -5% |

| No | Direction | Location | Observed PCUs | | | Modelled PCUs | | | % Error | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 2W | Car | IPT* | 2W | Car | IPT* | 2W | Car | IPT* |
| 28 | Away from Junction | Shimla Office Chowk | 11,065 | 5,204 | 7,405 | 9,742 | 4,771 | 7,070 | -12% | -8% | -5% |
| 29 | Towards Junction | Khadi Masjid Chowk | 3,191 | 1,393 | 859 | 3,368 | 1,276 | 798 | 6% | -8% | -7% |
| 30 | Away from Junction | Khadi Masjid Chowk | 3,191 | 1,393 | 859 | 3,368 | 1,276 | 798 | 6% | -8% | -7% |
| 31 | Towards Junction | Mundhwa Chowk | 9,459 | 3,917 | 2,902 | 11,011 | 4,419 | 2,397 | 15% | 13% | -15% |
| 32 | Away from Junction | Mundhwa Chowk | 9,459 | 3,917 | 2,902 | 11,011 | 4,419 | 2,397 | 15% | 13% | -15% |
| 33 | Towards Junction | Belbaug Chowk | 3,096 | 357 | 2,847 | 3,543 | 401 | 3,233 | 14% | 12% | 14% |
| 34 | Away from Junction | Belbaug Chowk | 3,330 | 363 | 2,946 | 3,543 | 401 | 3,233 | 6% | 10% | 10% |
| 35 | Towards Junction | Bopodi Junction | 7,994 | 4,240 | 2,071 | 7,072 | 4,390 | 1,858 | -11% | 4% | -10% |
| 36 | Away from Junction | Bopodi Junction | 7,994 | 4,240 | 2,073 | 7,072 | 4,390 | 1,858 | -11% | 4% | -10% |
| 37 | Towards Junction | Khadki Police Chowk | 7,520 | 3,844 | 1,553 | 7,343 | 3,402 | 1,341 | -2% | -11% | -14% |
| 38 | Away from Junction | Khadki Police Chowk | 7,520 | 3,844 | 1,555 | 7,343 | 3,402 | 1,341 | -2% | -11% | -14% |
| 39 | Towards Junction | Dhole Patil Chowk | 7,080 | 2,676 | 5,934 | 7,812 | 2,507 | 6,683 | 10% | -6% | 13% |
| 40 | Away from Junction | Dhole Patil Chowk | 7,080 | 2,676 | 5,934 | 7,812 | 2,507 | 6,683 | 10% | -6% | 13% |
| 41 | Towards Junction | Shivaji Chowk | 6,798 | 3,847 | 2,857 | 6,300 | 3,492 | 2,628 | -7% | -9% | -8% |
| 42 | Away from Junction | Shivaji Chowk | 6,797 | 3,847 | 2,856 | 6,300 | 3,492 | 2,628 | -7% | -9% | -8% |
| 43 | Towards Junction | Bhumkar Chowk | 6,283 | 2,532 | 1,059 | 5,746 | 2,512 | 889 | -9% | -1% | -15% |
| 44 | Away from Junction | Bhumkar Chowk | 6,283 | 2,532 | 1,061 | 5,746 | 2,512 | 889 | -9% | -1% | -15% |
| 45 | Towards Junction | Nashik Road Spine Road Junction | 4,211 | 2,097 | 373 | 3,815 | 1,964 | 331 | -9% | -6% | -11% |
| 46 | Away from Junction | Nashik Road Spine Road Junction | 4,211 | 2,097 | 374 | 3,815 | 1,964 | 331 | -9% | -6% | -12% |
| 47 | Towards Junction | Nashik Road Dehu  Alandi Road Junction | 3,847 | 2,126 | 346 | 3,792 | 1,838 | 372 | -1% | -14% | 8% |
| 48 | Away from Junction | Nashik Road Dehu  Alandi Road Junction | 3,847 | 2,126 | 346 | 3,792 | 1,838 | 372 | -1% | -14% | 8% |
| 49 | Towards Junction | Chikhali | 3,833 | 1,102 | 554 | 4,328 | 1,001 | 620 | 13% | -9% | 12% |

| No | Direction | Location | Observed PCUs | | | Modelled PCUs | | | % Error | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 2W | Car | IPT* | 2W | Car | IPT* | 2W | Car | IPT* |
| 50 | Away from Junction | Chikhali | 3,831 | 1,102 | 554 | 4,328 | 1,001 | 620 | 13% | -9% | 12% |
| 51 | Towards Junction | Thermax Chowk | 5,575 | 1,759 | 3,310 | 6,369 | 1,993 | 3,720 | 14% | 13% | 12% |
| 52 | Away from Junction | Thermax Chowk | 5,575 | 1,759 | 3,310 | 6,369 | 1,993 | 3,720 | 14% | 13% | 12% |
| 53 | Towards Junction | Mahatma Jyotiba Phule Chowk | 5,962 | 1,787 | 1,930 | 5,389 | 1,554 | 1,620 | -9% | -13% | -15% |
| 54 | Away from Junction | Mahatma Jyotiba Phule Chowk | 5,392 | 1,739 | 1,879 | 5,389 | 1,554 | 1,620 | 0% | -11% | -14% |
| 55 | Towards Junction | Spine Road Akurdi Chikhali Road Junction | 4,739 | 898 | 1,238 | 5,016 | 801 | 1,066 | 5% | -11% | -14% |
| 56 | Away from Junction | Spine Road Akurdi Chikhali Road Junction | 4,739 | 898 | 1,238 | 5,016 | 801 | 1,066 | 5% | -11% | -14% |

**IPT includes (Auto-Rickshaw and taxi)*

## PUBLIC TRANSPORT ASSIGNMENT

The output network of the private vehicle assignment is used for public transport assignment. The public transport (buses, metro rail, sub-urban rail and share autos) assignment process considers the following parameters for route enumeration and evaluation:

- Access and Egress Travel Time
- Initial Wait Time
- In-vehicle Travel Time
- Fare
- Transfer Penalty

The public transport assignment is carried out in terms of passenger trips. The estimated sectional loads are compared with observed sectional loads (from occupancy survey) at junction, screen line and cordon locations. The network and matrices are checked and corrected until the difference between estimated sectional load and observed sectional load comes with in allowable limit of +/-15%. The results of Public Transport Validation is presented in **Table 3-10** to **Table 3-12.**

**Table 3-10 | Public Transport (Bus, Metro, Suburban and Share Auto) Validation Results at Cordon**

| No | Cordon Type | Direction | Observed PT Passengers | Modelled PT Passengers | % Error |
|---|---|---|---|---|---|
| 1 | Outer Cordon | Towards Pune | 7,773 | 7,826 | 1% |
| | | Away from Pune | 8,209 | 8,119 | -1% |
| 2 | Inner Cordon | Towards Pune | 11,460 | 12,978 | 13% |
| | | Away from Pune | 11,825 | 12,577 | 6% |

**Table 3-11 | Public Transport (Bus, Metro, Suburban & Share Auto) Validation Results at Screen line**

| No | Cordon Type | Direction | Observed PT Passengers | Modelled PT Passengers | % Error |
|---|---|---|---|---|---|
| 1 | Outer Cordon | North to South | 17,864 | 15,960 | -11% |
| | | South to North | 15,608 | 15,379 | -1% |
| 2 | Inner Cordon | East to West | 27,680 | 26,207 | -5% |
| | | West to East | 26,052 | 26,527 | 2% |

**Table 3-12 | Public Transport Validation Results at Junctions**

| No | Direction | Location | Observed PT Passengers | Modelled PT Passengers | % Error |
|---|---|---|---|---|---|
| 1 | Towards Junction | Ambethan Chowk | 3,038 | 3,174 | 4% |
| 2 | Away from Junction | Ambethan Chowk | 3,018 | 2,959 | -2% |
| 3 | Towards Junction | Wada Road – Nashik Road Junction | 2,041 | 2,334 | 14% |
| 4 | Away from Junction | Wada Road – Nashik Road Junction | 2,048 | 2,317 | 13% |
| 5 | Towards Junction | Shikrapur Junction | 2,033 | 1,924 | -5% |

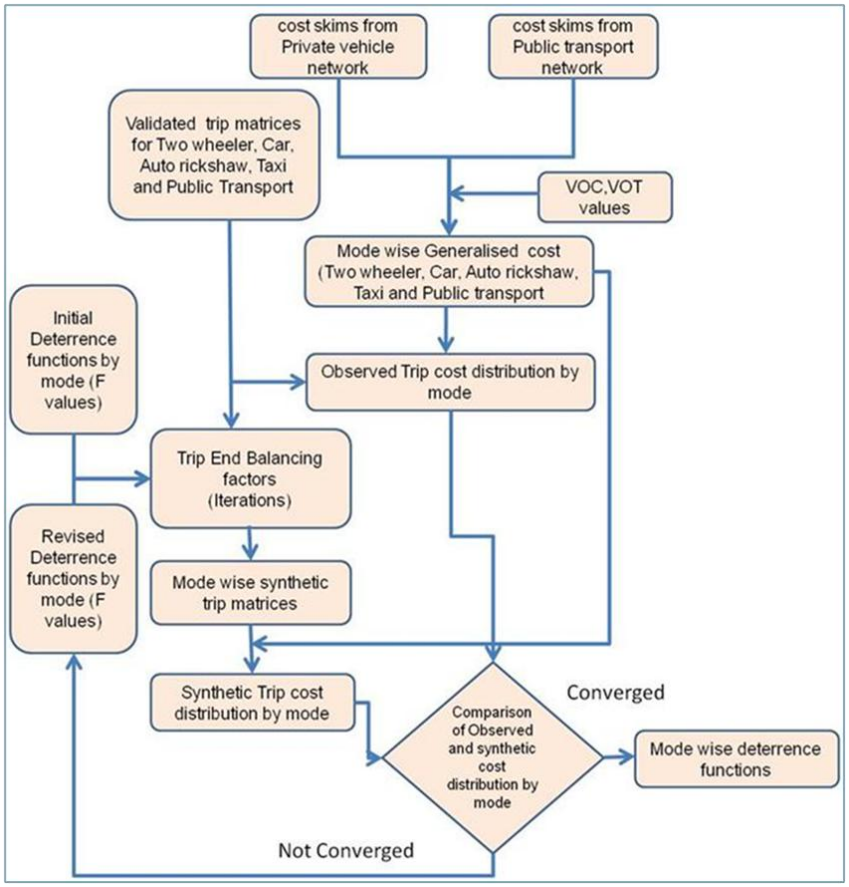
| No | Direction | Location | Observed PT Passengers | Modelled PT Passengers | % Error |
|---|---|---|---|---|---|
| 6 | Away from Junction | Shikrapur Junction | 2,033 | 1,925 | -5% |
| 7 | Towards Junction | Pabal Road – Nashik Road Junction | 2,332 | 2,405 | 3% |
| 8 | Away from Junction | Pabal Road – Nashik Road Junction | 2,316 | 2,425 | 5% |
| 9 | Towards Junction | Station Chowk | 2,101 | 2,414 | 15% |
| 10 | Away from Junction | Station Chowk | 2,118 | 2,449 | 15% |
| 11 | Towards Junction | Saswad Police Chowk | 1,681 | 1,878 | 12% |
| 12 | Away from Junction | Saswad Police Chowk | 1,689 | 1,919 | 14% |
| 13 | Towards Junction | Uruli Kanchan | 1,619 | 1,610 | -1% |
| 14 | Away from Junction | Uruli Kanchan | 1,608 | 1,610 | 0% |
| 15 | Towards Junction | Chakan Chowk | 13 | 11 | -19% |
| 16 | Away from Junction | Chakan Chowk | 14 | 13 | -8% |
| 17 | Towards Junction | Hinjawadi – Pirangut Road | 862 | 762 | -12% |
| 18 | Away from Junction | Hinjawadi – Pirangut Road | 849 | 762 | -10% |
| 21 | Towards Junction | Kharadi Bypass Junction | 5,766 | 5,281 | -8% |
| 22 | Away from Junction | Kharadi Bypass Junction | 5,762 | 5,323 | -8% |
| 23 | Towards Junction | Pune University | 5,101 | 5,369 | 5% |
| 24 | Away from Junction | Pune University | 5,083 | 5,464 | 8% |
| 25 | Towards Junction | Nalstop Chowk | 5,922 | 5,475 | -8% |
| 26 | Away from Junction | Nalstop Chowk | 5,911 | 5,473 | -7% |
| 27 | Towards Junction | Shimla Office Chowk | 9,110 | 8,791 | -3% |
| 28 | Away from Junction | Shimla Office Chowk | 9,105 | 8,874 | -3% |
| 29 | Towards Junction | Khadki Masjid Chowk | 1,263 | 1,395 | 10% |
| 30 | Away from Junction | Khadki Masjid Chowk | 1,275 | 1,411 | 11% |
| 31 | Towards Junction | Mundhwa Chowk | 2,469 | 2,204 | -11% |
| 32 | Away from Junction | Mundhwa Chowk | 2,485 | 2,204 | -11% |
| 33 | Towards Junction | Belbaug Chowk | 2,354 | 2,227 | -5% |
| 34 | Away from Junction | Belbaug Chowk | 2,354 | 2,191 | -7% |
| 35 | Towards Junction | Bopodi Junction | 8,070 | 7,883 | -2% |
| 36 | Away from Junction | Bopodi Junction | 8,061 | 7,833 | -3% |
| 37 | Towards Junction | Khadki Police Chowk | 5,156 | 5,283 | 2% |
| 38 | Away from Junction | Khadki Police Chowk | 5,128 | 5,285 | 3% |
| 39 | Towards Junction | Dhole Patil Chowk | 5,808 | 5,277 | -9% |
| 40 | Away from Junction | Dhole Patil Chowk | 5,831 | 5,337 | -8% |
| 41 | Towards Junction | Shivaji Chowk | 6,621 | 7,581 | 15% |
| 42 | Away from Junction | Shivaji Chowk | 6,626 | 7,653 | 15% |
| 43 | Towards Junction | Bhumkar Chowk | 2,797 | 3,081 | 10% |
| 44 | Away from Junction | Bhumkar Chowk | 2,786 | 3,061 | 10% |
| 45 | Towards Junction | Nashik Road Spine Road Junction | 3,845 | 4,072 | 6% |

| No | Direction | Location | Observed PT Passengers | Modelled PT Passengers | % Error |
|---|---|---|---|---|---|
| 46 | Away from Junction | Nashik Road Spine Road Junction | 3,840 | 4,111 | 7% |
| 47 | Towards Junction | Nashik Road Dehu Alandi Road Junction | 4,901 | 4,197 | -14% |
| 48 | Away from Junction | Nashik Road Dehu Alandi Road Junction | 4,930 | 4,196 | -15% |
| 49 | Towards Junction | Chikhali | 1,433 | 1,444 | 1% |
| 50 | Away from Junction | Chikhali | 1,446 | 1,468 | 2% |
| 51 | Towards Junction | Thermax Chowk | 2,211 | 2,194 | -1% |
| 52 | Away from Junction | Thermax Chowk | 2,207 | 2,221 | 1% |
| 53 | Towards Junction | Mahatma Jyothiba Phule Chowk | 2,712 | 2,487 | -8% |
| 54 | Away from Junction | Mahatma Jyothiba Phule Chowk | 2,358 | 2,487 | 5% |
| 55 | Towards Junction | Spine Road Akurdi Chikhali Road Junction | 1,060 | 1,169 | 10% |
| 56 | Away from Junction | Spine Road Akurdi Chikhali Road Junction | 1,051 | 1,175 | 12% |

## CALIBRATION OF BASE YEAR TRAVEL DEMAND MODEL

The cost skims and validated matrix obtained from the validation process will be used for calibrating trip end and trip distribution cum mode choice model. The calibration process is presented in **Figure 3-5**.

**Figure 3-5 | Travel Demand Model - Calibration Process**



## TRIP END MODELS

Trip generation and attraction models are developed by regressing the generations/attractions of the validated matrices with planning variables such as population and employment. The trip end model built for the Study Area is presented in **Table 3-13**.

**Table 3-13 | Trip End Model**

| No. | Area | Equation | $R^2$ Value | F-Value | T-Value | % Error |
|---|---|---|---|---|---|---|
| | | **Trip Production** | | | | |
| 1 | Urban Area | 413.389 + 0.105*Population | 0.71 | 139 | 1.79, 14.44 | -7% |
| 2 | Rural Area | 56.207 + 0.037* Population + 4498.13*Special Zone[#] | 0.68 | 65 | 0.44, 7.14, 9.1 | -10% |
| | | **Trip Attraction** | | | | |
| 1 | Urban Area | 402.005 + 0.241*Employment | 0.72 | 155 | 2.13, 17.56 | -4% |
| 2 | Rural Area | 581.118 + 0.072*Emp-2024 + 407.6*Special Zone[#] | 0.83 | 186 | 3.74, 5.36, 0.15 | -10% |

[#] *Special Zones include Hinjawadi, Bhorivadi, Gandhi Nagar & Bavdhan*

## TRIP DISTRIBUTION AND MODE CHOICE FUNCTION

The trip distribution and mode choice are combined to form a combined trip distribution and modal split phase using a conventional doubly constrained gravity model of the form:

$$T_{ijm} = r_i G_i s_j A_j F_{ijm}$$

Where,
- T = number of inter zonal trips between zone i& j and by mode m
- G = Total generation trip ends by zone
- A = Total attraction trip ends by zone
- I = Generation Zone
- j = Attraction Zone
- r,s = Balancing factors (constants)
- $F_{ijm}$ = Deterrence function for mode m

$$F_{ijm} = K_m\, e^{-\beta c_{ijm}} C_{ijm}^{\ \alpha}$$

Where,
- K = Constant Factor
- C = Generalized Cost
- b = Calibration Constant –Exponential function
- α = Calibration Constant- Power function

Double Constraints are imposed by ensuring that

$\Sigma_{jm} T_{ij} = G_i$ and $\Sigma_{im} T_{ij} = A_i$

The mode wise calibrated parameters are presented in **Table 3-14**.

**Table 3-14 | Mode Wise Calibrated Parameters for Trip Distribution & Mode Choice**

| Mode Type | K | α | β |
|---|---|---|---|
| TW | 14.5 | 0.03 | 21 |
| Car | 5.5 | 0.05 | 10 |
| IPT (Auto & Taxi) | 7.75 | 0.02 | 8.5 |
| Public Transport | 4 | 0.04 | 17 |

## GENERALISED COST ESTIMATION

Generalised cost consists of the monetary and non-monetary costs of a journey. The generalised cost is equivalent to the price of the good in supply and demand theory. Demand for journeys can be related to the generalised cost of those journeys using the price elasticity of demand. Supply is equivalent to capacity (and, for roads, road quality) on the network.

The generalized cost, GC, is worked out for PT as

**GC = PT Comp Cost x VOT**

The generalized cost, GC, is worked out for Private Vehicles (TW, Car) as

**GC = Distance Travelled x VOC + VOT x Travel Time**

The Generalized cost for IPT modes (Auto Rickshaw, Taxi)

**GC = Distance Travelled x Fare per Km + VOT x Travel Time**

Where,

GC = Generalized Cost in Rs

VOT= Value of Time in Rs/hr

VOC= Vehicle operating cost in Rs/ Km

VOC for base year is given in table

The mode wise Vehicle Operating Cost (VOC) and Value of Travel Time (VOT) for peak hour and is given in **Table 3-15** and **Table 3-16** respectively.

**Table 3-15 | Mode wise Vehicle Operating Cost (VOC) (Rs. per Km) for Base Year**

| Mode | Rs./km |
|---|---|
| Two Wheeler | 2.22 |
| Car | 6.38 |
| Bus/ Train/ Auto/ Taxi | Actual Fare |

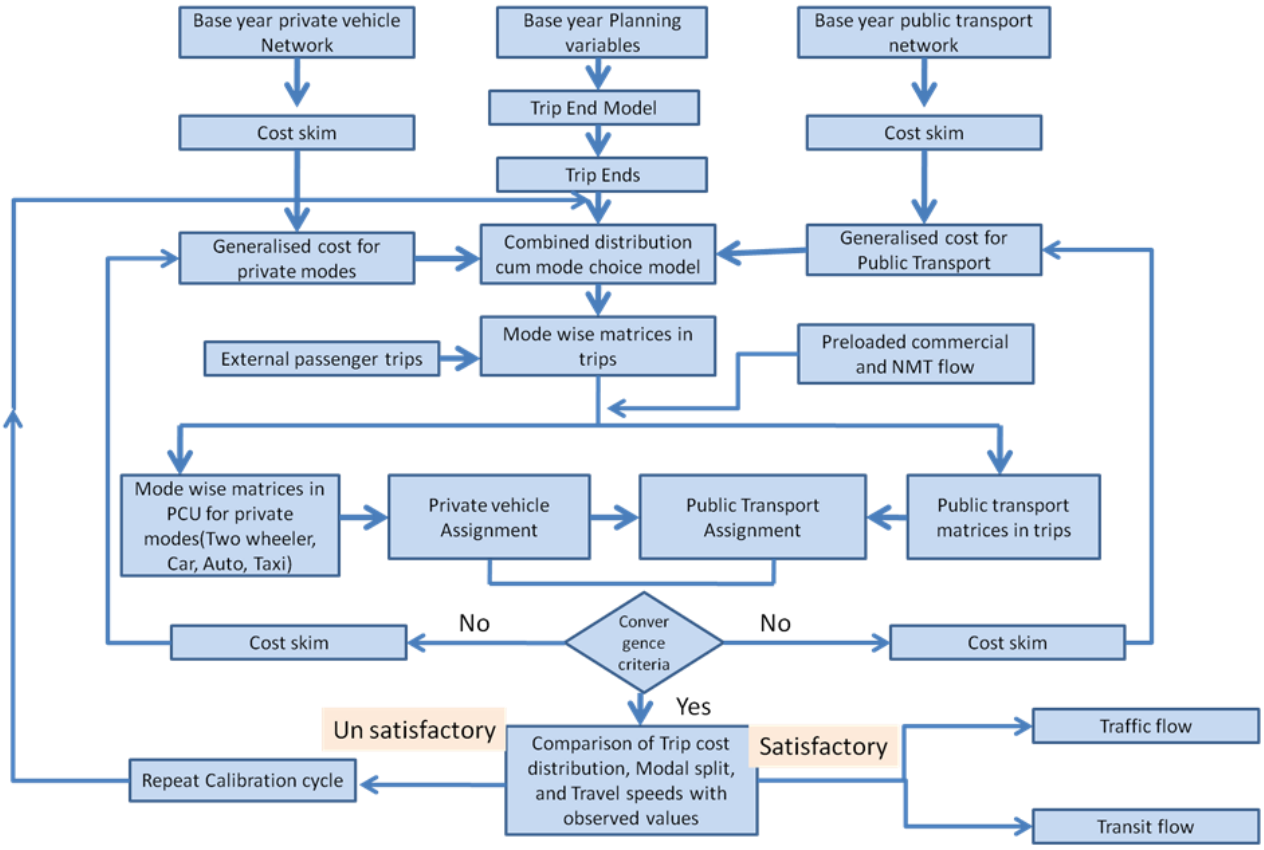
**Table 3-16 | Mode wise Value of Travel Time (VOT) (Rs. per minute) for Base Year**

| Mode | Rs. per minute |
|---|---|
| Two Wheeler | 2.13 |
| Car | 3.22 |
| Auto | 2.27 |
| Bus | 1.87 |
| Taxi | 2.96 |

## BASE YEAR TRAVEL CHARACTERISTICS

The calibrated trip end and distribution cum mode choice functions is used to produce synthetic trip matrices for base year. The observed travel characteristics such as mode share, Trip length distribution, travel speed along major corridors is compared with the travel characteristics estimated through synthetic model to check the reliability of the base year model. The calibration procedure of trip end, distribution cum mode choice functions is repeated until the comparison results are satisfactory. Once satisfactory results are achieved then the model is ready for forecasting the future travel demand. The base year travel demand modelling process is presented in **Figure 3-6.**

**Figure 3-6 | Base Year Travel Demand Model**



## COMPARISON OF OBSERVED AND MODELLED TRAVEL CHARACTERISTICS

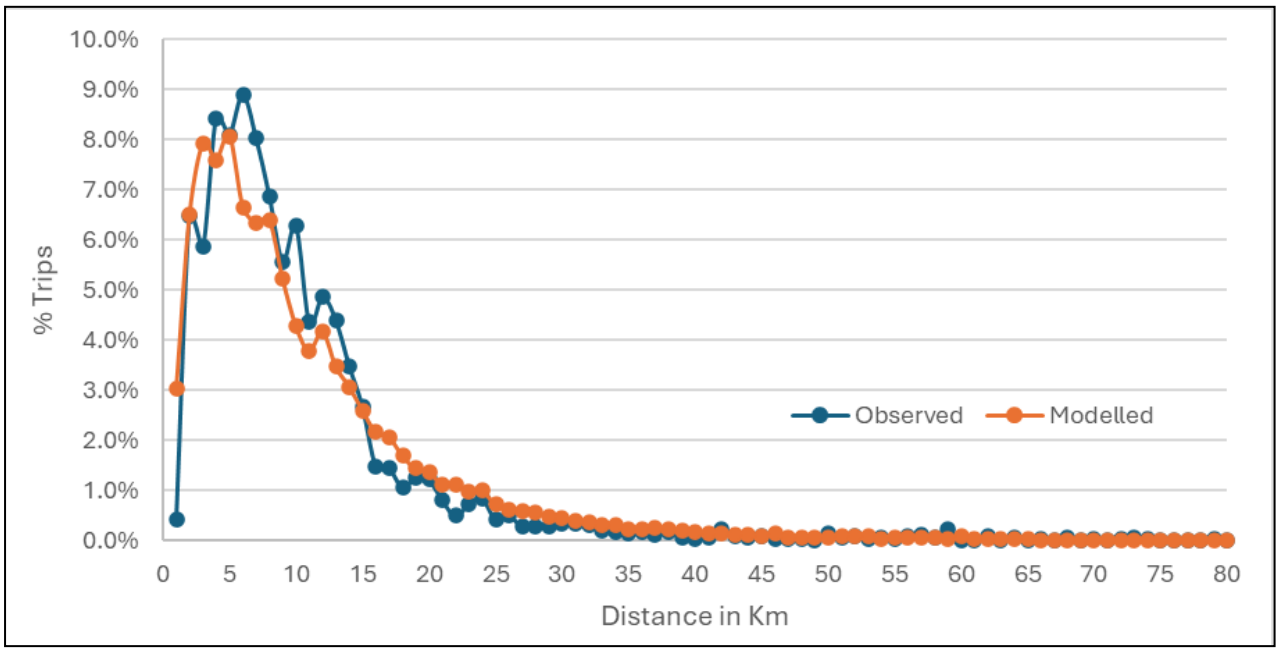
The comparison of various travel characteristics of the observed and synthetic model is presented in **Table 3-17**.

**Table 3-17 | Comparison of Observed and Estimated Travel Characteristics**

| Mode Type | Mode share | | Average Trip Length (in km) | | |
|---|---|---|---|---|---|
| | Observed (%) | Estimated (%) | Observed | Estimated | % Error |
| Two-Wheeler | 49% | 49% | 10.5 | 10.4 | -1% |
| Car | 22% | 22% | 11.0 | 11.3 | 3% |
| IPT (Auto and Taxi) | 17% | 17% | 8.0 | 8.3 | 4% |
| Public Transport | 13% | 13% | 12.0 | 12.2 | 2% |

The comparison of trip length distribution is presented in **Figure 3-7.**

**Figure 3-7 | Comparison of Trip Length Distribution**




From above comparisons, it is observed that the synthetic model replicates the travel characteristics observed at ground. Therefore, the model is calibrated well and can be used for forecasting the travel demand in the future. Model will be further fine-tuned to replicate the ground conditions more accurately during the forecast stage. The base year travel characteristics are presented in **Table 3-18**.

The base year PCU flow diagram, public transport passenger flow diagram and desire line diagram (all modes) is presented from **Figure 3-8** to **Figure 3-10** respectively.

### Table 3-18 | Base Year (2024) Travel Characteristics

| Travel Characteristics | | | Year-2024 |
|---|---|---|---|
| | Trips Assigned in Peak Hour (excluding external trips) | Total | 10,35,830 |
| | | PMC | 5,03,640 |
| | | PCMC | 3,81,629 |
| | Daily Trips (excluding external trips) | | 1,07,89,895 |
| | Private Vehicle Trips (Passenger Trips) | | 7,17,548 (70%) |
| | IPT Vehicle Trips (Passenger Trips) | | 1,80,360 (17%) |
| | Public Transport Trips (Passenger Trips) | | 1,37,922 (13%) |
| | Average Trip Length in km | | 8.7 |
| | Average Network Speed in Kmph | | 25 |
| | Vehicle Kilometres in PCU-km (Excluding PT) in Lakhs | | 4,509 |
| | Passenger Kilometres (Public Transport) in Lakhs | | 1,387 |

### Figure 3-8 | Base Year (2024) – PCU Flows Diagram

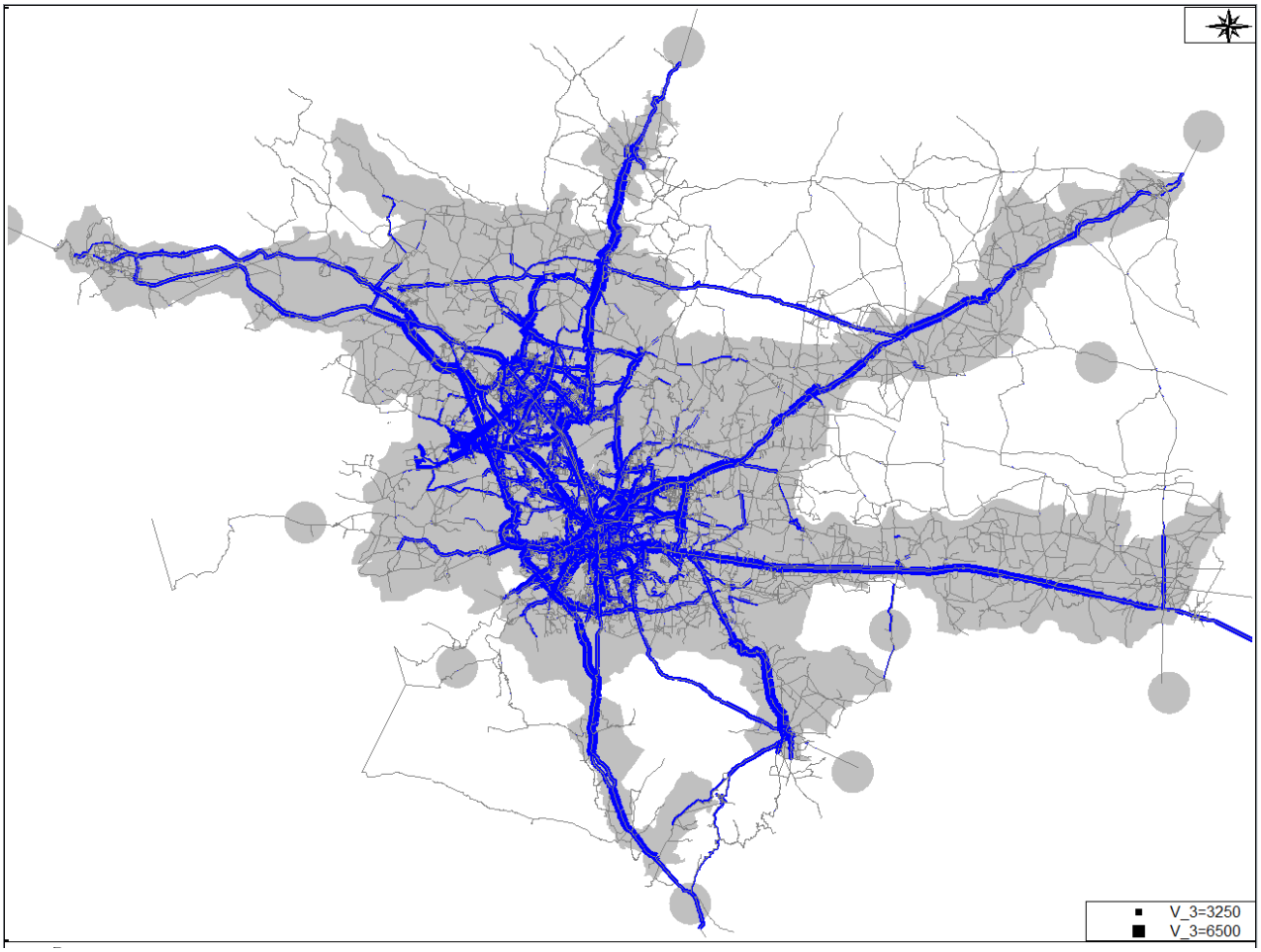


**Figure 3-9 | Base Year(2024) – Public Transit Passenger Flow Diagram**

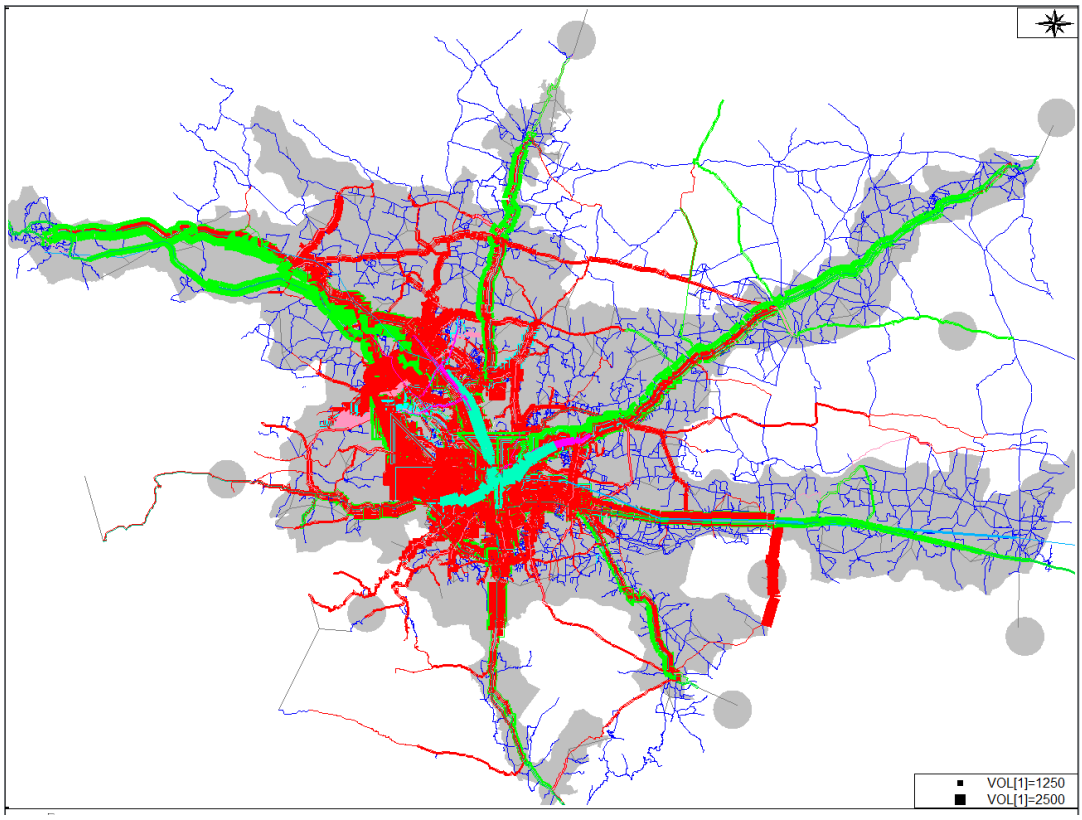
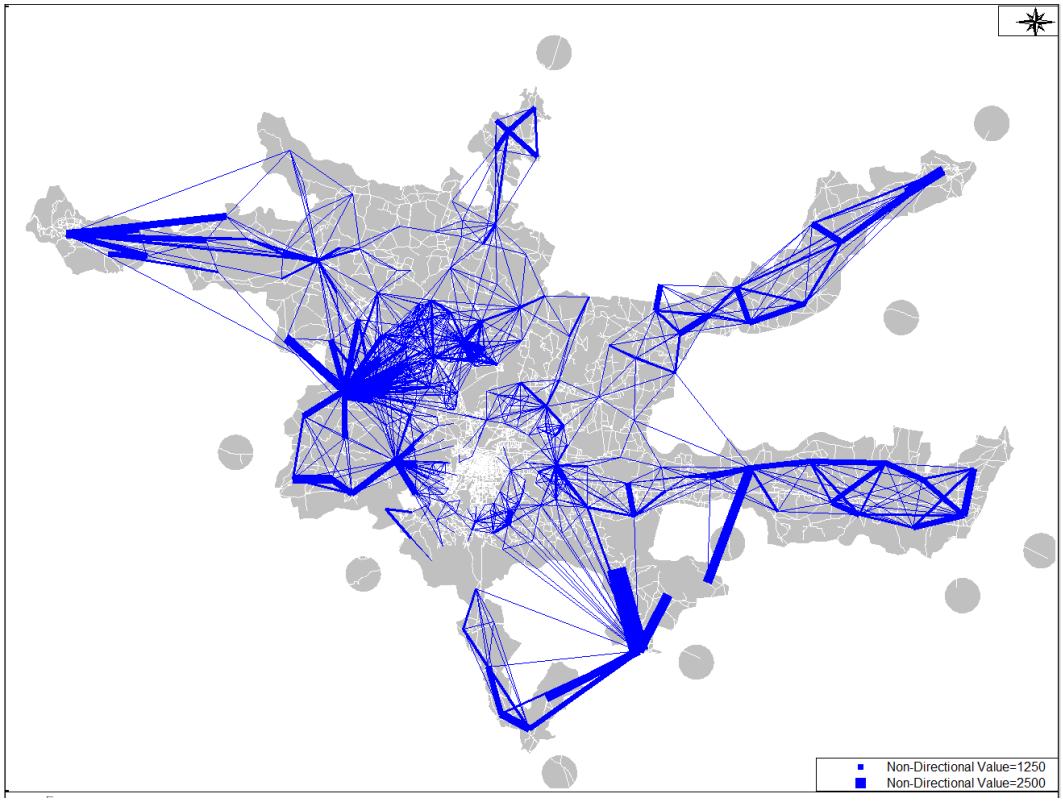



**Figure 3-10 | Base Year(2024) – Desire Line Diagram (All Modes)**



# 3.1 | DEVELOPMENT OF BUSINESS AS USUAL (BAU) SCENARIO

Business as Usual (BAU) Scenario considers the transport system with base year trends and assumes no radical policy interventions for sustainable development and emission mitigations to identify the effects on travel infrastructure, mode share and PT systems in the study area. However, BAU scenario incorporates committed infrastructure proposals, Mass Transit System and proposed Land Use according to the Master plan/ Development Plans.

## 3.1.1 | PLANNING VARIABLES

Population and employment are the planning variables considered for travel demand forecast. Planning variable forecast considered in travel demand forecast is presented in **Section 2.12.6 of Chapter 2**. Population and employment of 192.7 lakhs and 91 lakhs respectively is considered for travel demand forecast in the horizon year 2054.

## 3.1.2 | MAJOR TRANSPORT INFRA PROJECTS (COMMITTED & ON-GOING)

The list of committed projects proposed by various departments/transport authorities includes the following,

### MASS TRANSIT PROPOSALS FROM MAHA METRO

Metro Corridor Extension from PCMC to Nigdi, Swargate to Katraj, Vanaz to Chandani Chowk, Ramwadi to Vitthalwadi, new Metro Corridors from Khadakwasla to Kharadi with Spur line from Paud Phata to Manik Baug via Warje, Hadapsar to Loni Kalbhor, Hadapsar to Saswad Road, HCMTR PMC and PCMC are considered as committed mass transit network.

### RING ROADS

Intermediate ring road proposed by PMC, Inner Ring Road by PMRDA and Outer Ring Road by MSRDC are considered as the committed ring road projects.

### NHAI PROPOSALS

Elevated corridor from Nashik Phata to Khed, Wagholi to Shirur, Hadapsar to Yavat and Talegaon to Shikrapur are considered as committed projects. In addition to this the road widening proposal of Pune Satara (NH 48) and Lonand Diveghat Hadapsar (NH965) are also considered as committed projects.

## 3.1.3 | FORECAST ASSUMPTIONS

The forecast assumptions considered in the travel demand Modelling are as follows:

- The trip rate will grow at the rate of 1% per annum, the assumption is based on the study

conducted by "Ministry of Urban Development on Traffic and Transportation Policies and Strategies in Urban areas in India", 2008 for the cities with population greater than 80 lakhs will grow at 1% per annum for the forecast years.

- Vehicle Operating Cost (VOC) for Two-wheeler will grow at -1% per annum and car will grow at -0.5% per annum considering that the efficiency of Engines will improve in the future due to improved vehicle technology resulting in fuel efficiency and better road conditions. The maintenance costs have also decreased due to technology.
- Value of Travel Time (VOT) will grow at 2% per annum in line with per capita income growth in real terms (above inflation).
- The public transport fare and Auto-rickshaw fare will grow with respect to inflation.
- The fare considered for metro is same as that of operational metro fare. The frequencies of metro services are assumed with headway of 5 minutes.

### 3.1.4 | TRAVEL DEMAND MODEL RESULTS FOR BAU SCENARIO

The BAU scenario for various horizon years is assessed using the Travel Demand Model. The travel characteristics of Base year and BAU Scenario for various horizon years are presented in **Table 3-19**.

**Table 3-19 | Travel Characteristics for Base Year and BAU Scenario (2054)**

| No. | Travel Characteristics | | Base Year (2024) | BAU (2034) | BAU (2044) | BAU (2054) |
|---|---|---|---|---|---|---|
| 1 | Trips Assigned in Peak Hour (excluding external trips) | Total | 10,35,830 | 12,95,124 | 15,93,613 | 21,04,358 |
| | | PMC | 5,03,640 | 5,79,577 | 6,65,683 | 8,62,031 |
| | | PCMC | 3,81,629 | 5,37,434 | 7,22,667 | 9,72,851 |
| 2 | Daily Trips (excluding external trips) | | 1,07,89,895 | 1,34,90,875 | 1,66,00,135 | 2,19,20,395 |
| 3 | Private Vehicle Share (%) | | 70% | 72% | 72% | 73% |
| 4 | Public Transport Share (%) | | 13% | 7% | 5% | 3% |
| 5 | Intermediate Public Transport Share (%) | | 17% | 21% | 23% | 24% |
| 6 | Average Network speed in KMPH | | 25.2 | 22.5 | 21.2 | 19.7 |
| 7 | Average Trip Length in Km | | 8.7 | 10.7 | 9.8 | 8.9 |
| 8 | PCU-Km (Private Vehicles) in Lakhs | | 4,509 | 5,968 | 7,665 | 9,353 |
| 9 | Pass-Km (Public Transport) in Lakhs | | 1,387 | 1,124 | 767 | 469 |
| 10 | Emission in Tonnes per day | | 132 | 187 | 243 | 330 |

In BAU scenario, the share of public transport declines from 13% in base year to 3% in horizon year 2054. Average network speed is declining by 21% from 25.2 kmph in the base year to 19.7 kmph in horizon year 2054. Pollutant emissions increase 2.5 times from 132 tonnes per day in base year to 330 tonnes per day in the horizon year 2054.

**Figure 3-11 | Horizon Year (2054) - PCU Flows for BAU Scenario**

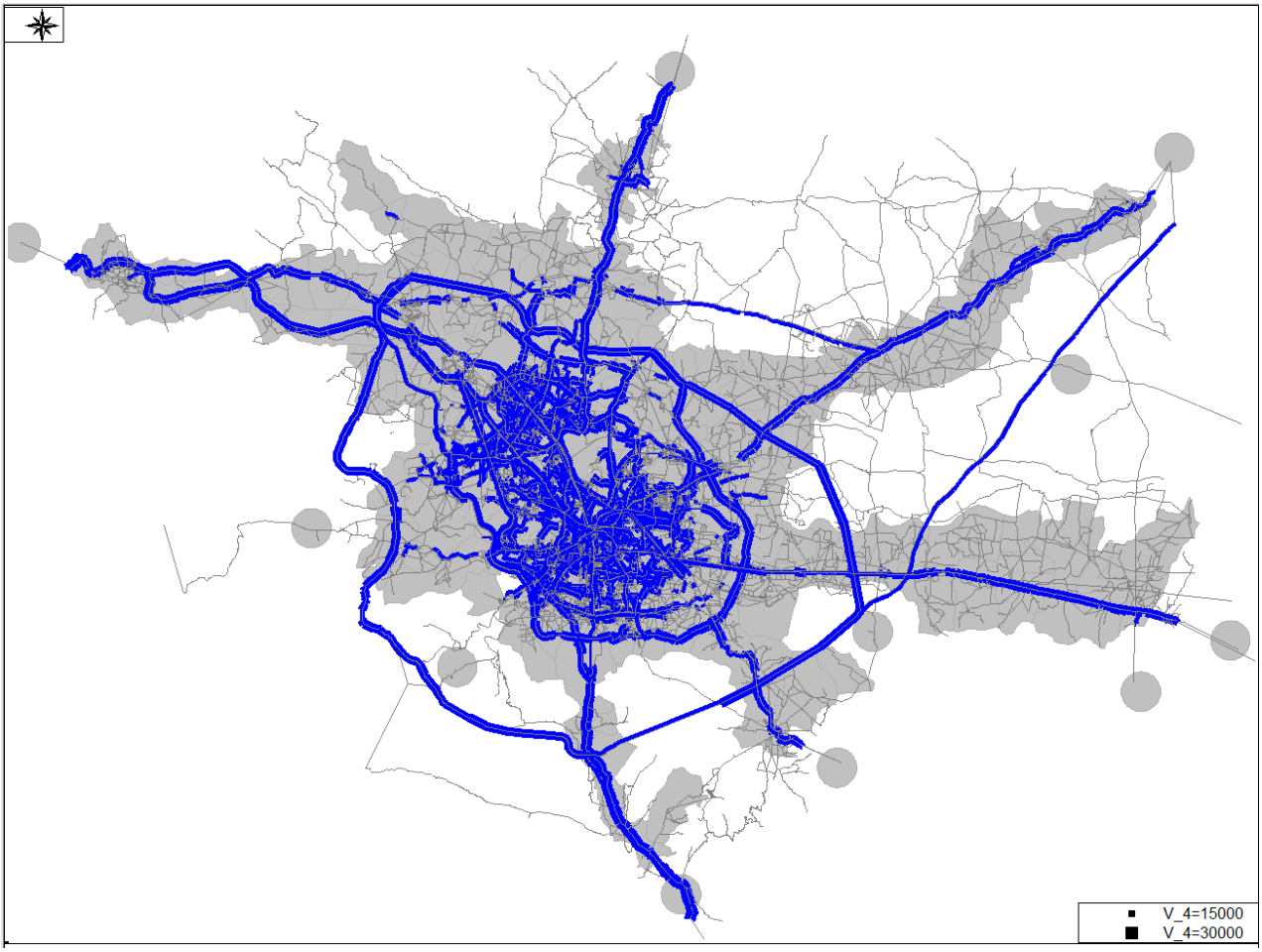
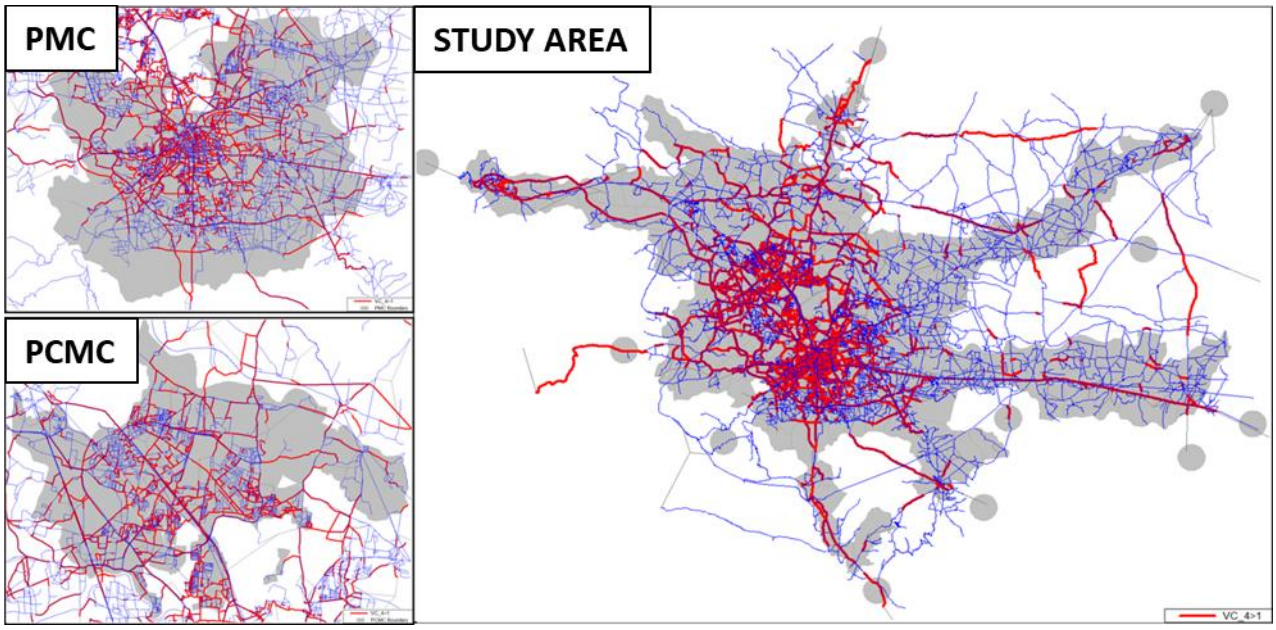



**Figure 3-12 | Horizon Year (2054) - V/C Ratio for BAU Scenario**



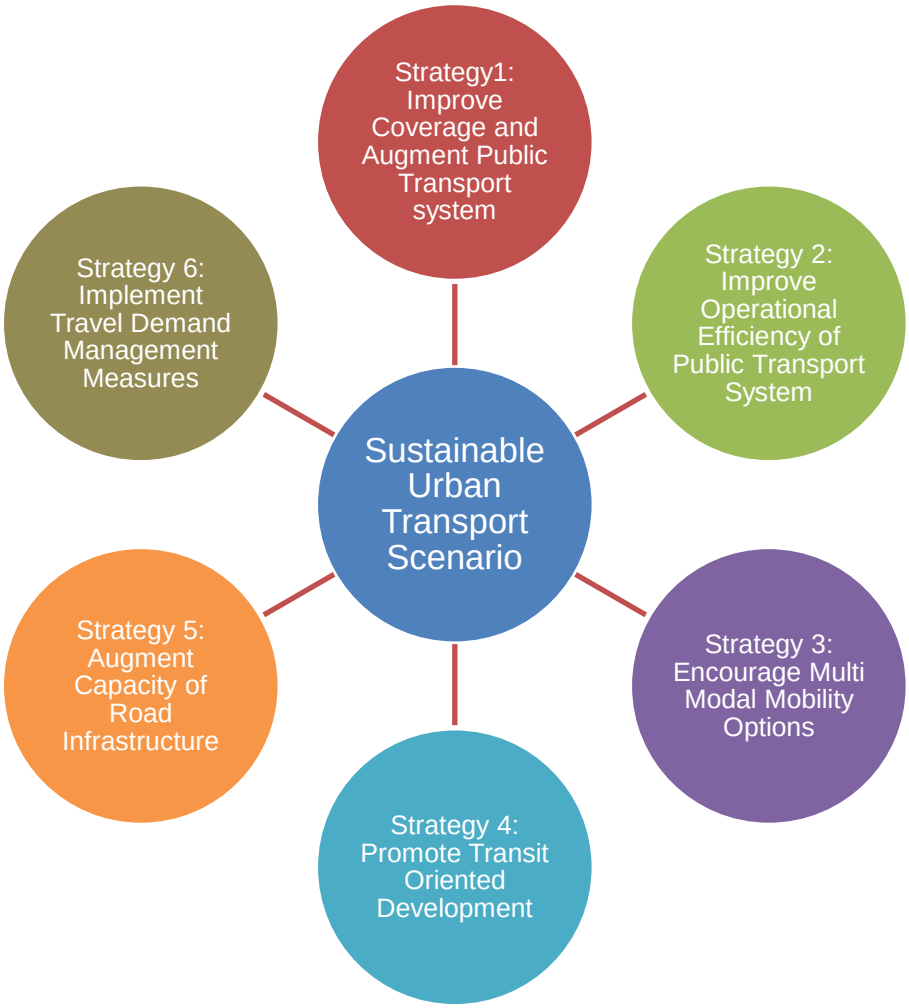
## 3.2 | DEVELOPMENT OF SUSTAINABLE URBAN TRANSPORT SCENARIO

It is observed from the Business-As-Usual Scenario that the private vehicle share is rising sharply whereas Public Transport share has declined, and the average speed reduced to 19.7 kmph from the existing 25.2 kmph. In order to improve the mobility, reduce congestion and pollution Sustainable Urban Transport Scenario (SUT) is formulated.

### 3.2.1 | FRAMEWORK FOR SCENARIOS

The framework considered for the development of Sustainable Urban Transport (SUT) Scenario is presented in **Figure 3-13**. Framework for SUT scenario comprises of strategies for improving public transport coverage, operational efficiency, multi-modal integration, encouraging Transit Oriented development, augmentation of road infrastructure and demand management measures.

**Figure 3-13 | Framework for Sustainable Urban Transport Scenario**



## 3.2.2 | STRATEGIES AND PLANS FOR SUSTAINABLE URBAN TRANSPORT

### STRATEGY 1: IMPROVE COVERAGE AND AUGMENT PUBLIC TRANSPORT SYSTEM

The aim is to achieve at least 50% modal share (motorized) in PT from current 13% within next 30 years through proactive measures. The strategy for promoting PT includes improved PT network infrastructure (i.e., fleet size, new routes, stops, frequency of services etc.), development and expansion of Metro, BRTS, and Bus System. It is further to be supplemented with last mile connectivity, which includes provision of feeder services and wide and high-quality footpaths.

### STRATEGY 2: IMPROVE OPERATIONAL EFFICIENCY OF PUBLIC TRANSPORT SYSTEM

Ridership of existing metro corridors can be improved by providing last mile connectivity, rationalization of overlapping bus routes and shared auto routes, provision of Multi-Modal Integration facilities etc. The ridership of PMPML bus services can be further increased by scientific planning of bus routes, running as feeder to metro, rationalizing the bus routes with respect to travel patterns and demand. Sub-urban rail ridership can be improved by increasing the headway by doubling/quadrupling the tracks and providing last-mile connectivity to the Railway Station.

### STRATEGY 3: ENCOURAGE MULTI MODAL MOBILITY OPTIONS

- **Develop Multi-Modal Hubs** at major transit stations and multi-modal transfer facilities at all MRT stations, park and ride facilities, drop-off & pick-up facilities for seamless transfer from one mode to the other. The roads connecting mass transit stations shall have wider footpaths and way finding signage.
- **Common Ticketing System:** Common ticketing system for multiple transport modes can significantly improve ridership due to convenience, cost-effectiveness, seamless transfer and increased accessibility.

### STRATEGY 4: PROMOTE TRANSIT ORIENTED DEVELOPMENT

- Land-use transport integration shall be encouraged by permitting the higher FSI along the Mass transit corridors. Higher FSI should be rationalized based on road width and plot size taking into account existing land use and development.
- Encourage re-development in core areas by incentives.

### STRATEGY 5: AUGMENT CAPACITY OF ROAD INFRASTRUCTURE

- Develop higher order road network (Expressways, access control arterial roads) especially regional roads.
- Develop urban streets as per Pune Urban Street Design Guidelines. Allocate road space

equitably among all the modes including NMT, Public transport etc., as well as for landscaping, place making etc.

- Develop missing links, grade separators/interchanges at critical junctions, junction improvements, river bridges, ROBs/RUBs across railway lines, bypasses, access roads to Intermediate Ring Road (IRR), Pune Inner Ring Road, Outer Ring Road (ORR), Bypass railway line etc.
- Improve road connectivity between PMC, PCMC, and Rest of PMR for effective dispersal of traffic.
- Reduce road accidents through 3Es i.e. Engineering, Enforcement and Education. Perform periodic maintenance of road infrastructure.
- Optimize the available capacity of roads through improved street designs, access control, vehicle actuated signals and traffic management using ITS and enforcement.

### STRATEGY 6: IMPLEMENT TRAVEL DEMAND MANAGEMENT

- Transportation Demand Management (TDM) strategies aim to reduce peak-period commuting and promote sustainable transportation by implementing flexible work hours, subsidies for public transport users, higher parking and registration fees for private vehicles under the “polluters pay” principle, congestion pricing, penalizing illegal parking on footpaths or cycle tracks, and promoting telecommuting as an alternative to daily commutes. Other measures include restricting heavy vehicles during peak hours, utilizing employer shuttle services, car-pooling, ride sharing, and managing traffic with one-way streets, reversible lanes, and Intelligent Transport Systems, flexible medians to handle tidal flow of traffic etc. may be considered.
- To further reduce private vehicle use, revising Development Control Regulations (DCR) to support Transit-Oriented Development (TOD), and prioritizing complete streets with walkable footpaths and pedestrian zones shall be considered.

## 3.2.3 | TRANSPORT DEMAND ANALYSIS OF ALTERNATIVE STRATEGIES FOR SUSTAINABLE URBAN TRANSPORT

The Public transport share declines and Pollution levels increases in the BAU scenario which is not sustainable for the PMR. Therefore, as part of the Alternative Strategies, multiple strategies are combined and tested in Travel Demand Model for the Horizon years for identifying the best scenario suitable for PMR.

**Option 1 | Public Transport Augmentation + Improving Operational Efficiency + Multi Modal Integration + Augmented Road Network (Strategies 1, 2, 3 and 5)**

Model is run for the above-mentioned alternate scenario and results are presented in **Table 3-20**.

**Table 3-20 | Travel Characteristics for BAU Scenario and SUT- Option 1**

| No. | Travel Characteristics | | BAU (2054) | SUT (2054) – Option 1 |
|---|---|---|---|---|
| 1 | Trips Assigned in Peak Hour (excluding external trips) | Total | 21,04,358 | 21,04,358 |
| | | PMC | 8,62,031 | 8,62,031 |
| | | PCMC | 9,72,851 | 9,72,851 |
| 2 | Daily Trips (excluding external trips) | | 2,19,20,395 | 2,19,20,395 |
| 3 | Private Vehicle Share (%) | | 73% | 59% |
| 4 | Public Transport Share (%) | | 3% | 34% |
| 5 | Intermediate Public Transport Share (%) | | 24% | 7% |
| 6 | Average Network speed in KMPH | | 19.7 | 23.0 |
| 7 | Average Trip Length in Km | | 8.9 | 9.1 |
| 8 | PCU-Km (Private Vehicles) in Lakhs | | 9,353 | 6,093 |
| 9 | Pass-Km (Public Transport) in Lakhs | | 469 | 9,352 |
| 10 | Emission in Tonnes per day | | 330 | 300 |

- In SUT option-1 scenario, Public Transport Augmentation, Improving Operational Efficiency, Multi-Modal Integration, Augmented Road Network and Normal Land Use were considered.
- The share of private vehicles and IPT decreased from 73% in BAU scenario to 59% in SUT option-1 scenario in the horizon year 2054.
- The share of public transport increased from 3% in BAU scenario to 34% in SUT option-1 scenario in the horizon year 2054.
- Average network speed increased from 19.7 kmph in BAU scenario to 23.0 kmph in SUT option-1 scenario in the horizon year 2054.
- Vehicular pollutant emissions decreased from 330 tonnes per day in BAU scenario to 300 tonnes per day in SUT option-1 scenario in the horizon year 2054.

**Option 2 | Comprehensive Mobility Strategy: Public Transport Augmentation + Improving Operational Efficiency + Multi Modal Integration + Augmented Road Network + TOD Scenario + Travel Demand Management (Strategies 1, 2, 3, 4, 5 and 6)**

Model is run for the above-mentioned alternate scenario and results are presented in **Table 3-21.**

**Table 3-21 | Travel Characteristics for BAU Scenario and SUT- Option 2**

| No. | Travel Characteristics | | BAU (2054) | SUT (2054) – Option 2 |
|---|---|---|---|---|
| 1 | Trips Assigned in Peak Hour (excluding external trips) | Total | 21,04,358 | 21,04,358 |
| | | PMC | 8,62,031 | 8,62,031 |
| | | PCMC | 9,72,851 | 9,72,851 |
| 2 | Daily Trips (excluding external trips) | | 2,19,20,395 | 2,19,20,395 |
| 3 | Private Vehicle Share (%) | | 73% | 36% |

| No. | Travel Characteristics | BAU (2054) | SUT (2054) – Option 2 |
|---|---|---|---|
| 4 | Public Transport Share (%) | 3% | 61% |
| 5 | Intermediate Public Transport Share (%) | 24% | 3% |
| 6 | Average Network speed in KMPH | 19.7 | 27.2 |
| 7 | Average Trip Length in Km | 8.9 | 6.8 |
| 8 | PCU-Km (Private Vehicles) in Lakhs | 9,353 | 1,863 |
| 9 | Pass-Km (Public Transport) in Lakhs | 469 | 18,372 |
| 10 | Emission in Tonnes per day | 330 | 238 |

- In SUT option-2 scenario, Public Transport Augmentation, Improving Operational Efficiency, Multi-Modal Integration, Augmented Road Network, Transit-Oriented Development and Travel Demand Management strategies were considered.
- The share of private vehicles and IPT decreased from 73% in BAU scenario to 36% in SUT option-2 scenario in the horizon year 2054.
- The share of public transport increased from 3% in BAU scenario to 61% in SUT option-2 scenario in the horizon year 2054.
- Average network speed increased from 19.7 kmph in BAU scenario to 27.2 kmph in SUT option-2 scenario in the horizon year 2054.
- Vehicular pollutant emissions decreased from 330 tonnes per day in BAU scenario to 238 tonnes per day in SUT option-2 scenario in the horizon year 2054.

The PCU flow diagram and map showing V/C ratio for SUT scenarios are shown from **Figure 3-14** to **Figure 3-17**. **Table 3-22** presents the scenario comparison of trips for the Base Year with the horizon year for Business as Usual scenario and Sustainable Urban Transport Scenario.

**Table 3-22 | Scenario Comparison**

| No. | Travel Characteristics | | Base Year (2024) | BAU (2054) | SUT (2054) – Option 1 | SUT (2054) – Option 2 |
|---|---|---|---|---|---|---|
| 1 | Trips Assigned in Peak Hour (excluding external trips) | Total | 10,35,830 | 21,04,358 | 21,04,358 | 21,04,358 |
| | | PMC | 5,03,640 | 8,62,031 | 8,62,031 | 8,62,031 |
| | | PCMC | 3,81,629 | 9,72,851 | 9,72,851 | 9,72,851 |
| 2 | Daily Trips (excluding external trips) | | 1,07,89,895 | 21,05,358 | 2,19,20,395 | 2,19,20,395 |
| 3 | Private Vehicle Share (%) | | 70% | 73% | 59% | 36% |
| 4 | Public Transport Share (%) | | 13% | 3% | 34% | 61% |
| 5 | Intermediate Public Transport Share (%) | | 17% | 24% | 7% | 3% |
| 6 | Average Network speed in KMPH | | 25.2 | 19.7 | 23.0 | 27.2 |
| 7 | Average Trip Length in Km | | 8.7 | 8.9 | 9.1 | 6.8 |
| 8 | PCU-Km (Private Vehicles) in Lakhs | | 4,509 | 9,353 | 6,093 | 1,863 |
| 9 | Pass-Km (Public Transport) in Lakhs | | 1,387 | 469 | 9,352 | 18,372 |
| 10 | Emission in Tonnes per day | | 132 | 330 | 300 | 238 |

## 3.2.4 | TECHNOLOGY TRANSITIONS UNDER A LOW CARBON SCENARIO

The new technological improvement and intelligent transport systems are to be considered and encouraged to improve the efficiency of the transport network and public transport system and reduce the pollution levels in the city. Following are the some of the technological solutions to be considered,

- Electric public transport and IPT vehicles
- Encouragement of shared mobility
- Real time passenger information system
- Smart travel cards
- New fuels such as Hydrogen

Another important area that will help significantly is the development of electronics in traffic management. The total ITS package however is very intricate and may not find applicability immediately in true mixed traffic (Indian) conditions. However it will be essential to pursue the following:

- Set up a traffic management center
- Advance warning systems
- Install Video cameras at key locations
- Install variable message signs
- Installation of GPS in buses to predict arrival of buses etc.,

## 3.2.5 | POLLUTANT EMISSIONS AND AIR QUALITY

In BAU scenario, vehicular pollutant emissions increases 2.5 times from 132 tonnes per day in base year 2024 to 330 tonnes per day in the horizon year 2054, while in SUT option-2 scenario the vehicular emission increases 1.8 times from 132 tonnes per day in the base year 2024 to 238 tonnes per day in the horizon year 2054. Vehicular emission decreases by 28% in SUT-option-2 scenario compared to BAU scenario in the horizon year 2054.

**Table 3-23 | Travel Characteristics for Base Year and BAU Scenario (2054)**

| No. | Scenario | Emission in Tonnes per Day (includes CO, VOC, HCNOx, $PM_{2.5}$ and $NO_x$) | | | |
|---|---|---|---|---|---|
| | | Base Year (2024) | 2034 | 2044 | 2054 |
| 1 | BAU Scenario | 132 | 187 | 243 | 330 |
| 2 | SUT Option-1 Scenario | 132 | 172 | 227 | 300 |
| 3 | SUT Option-2 Scenario | 132 | 168 | 189 | 238 |

**Figure 3-14 | Horizon Year (2054) - PCU Flows for SUT Option-1 Scenario**

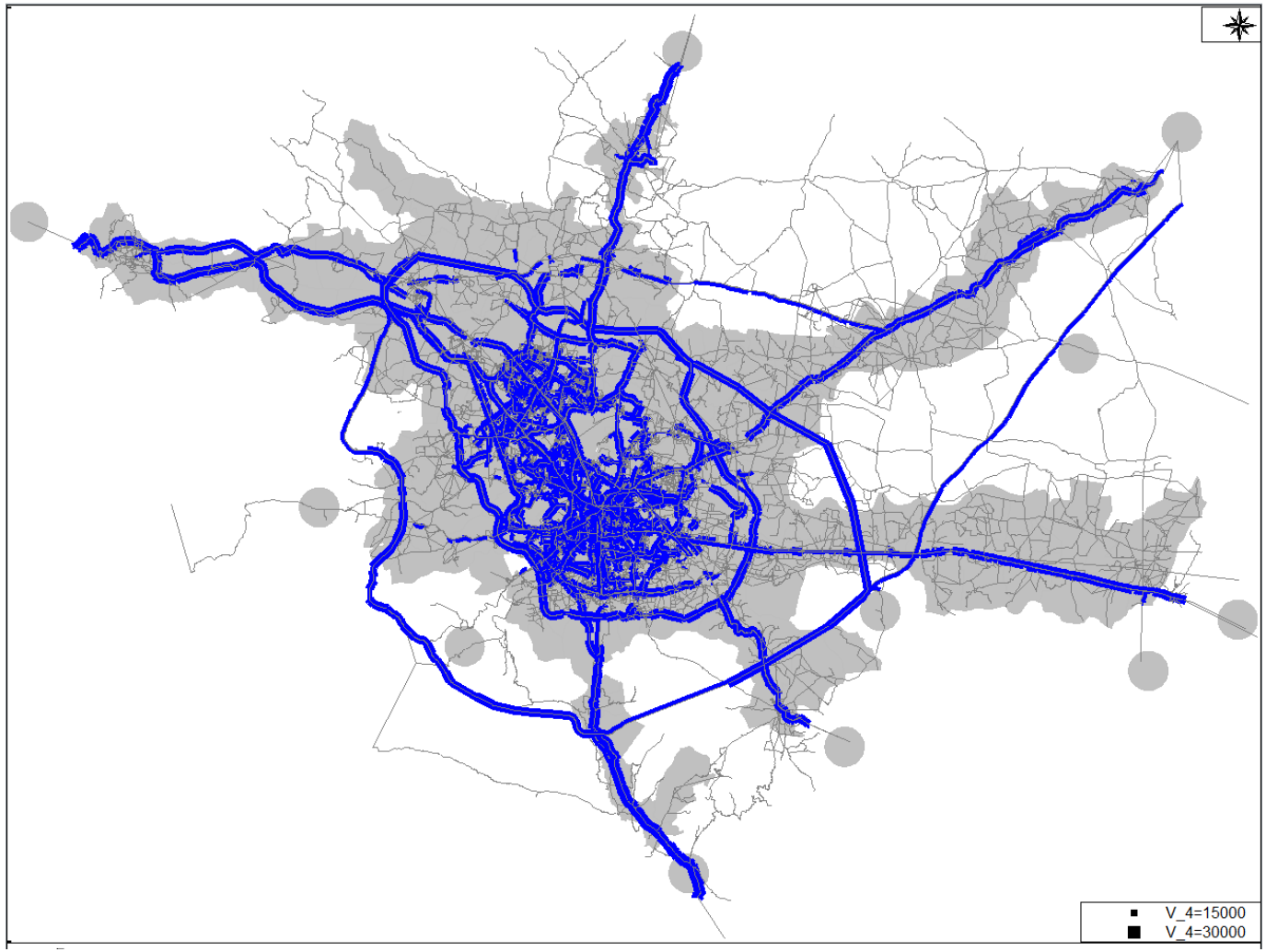


**Figure 3-15 | Horizon Year (2054) - V/C Ratio for SUT Option-1 Scenario**

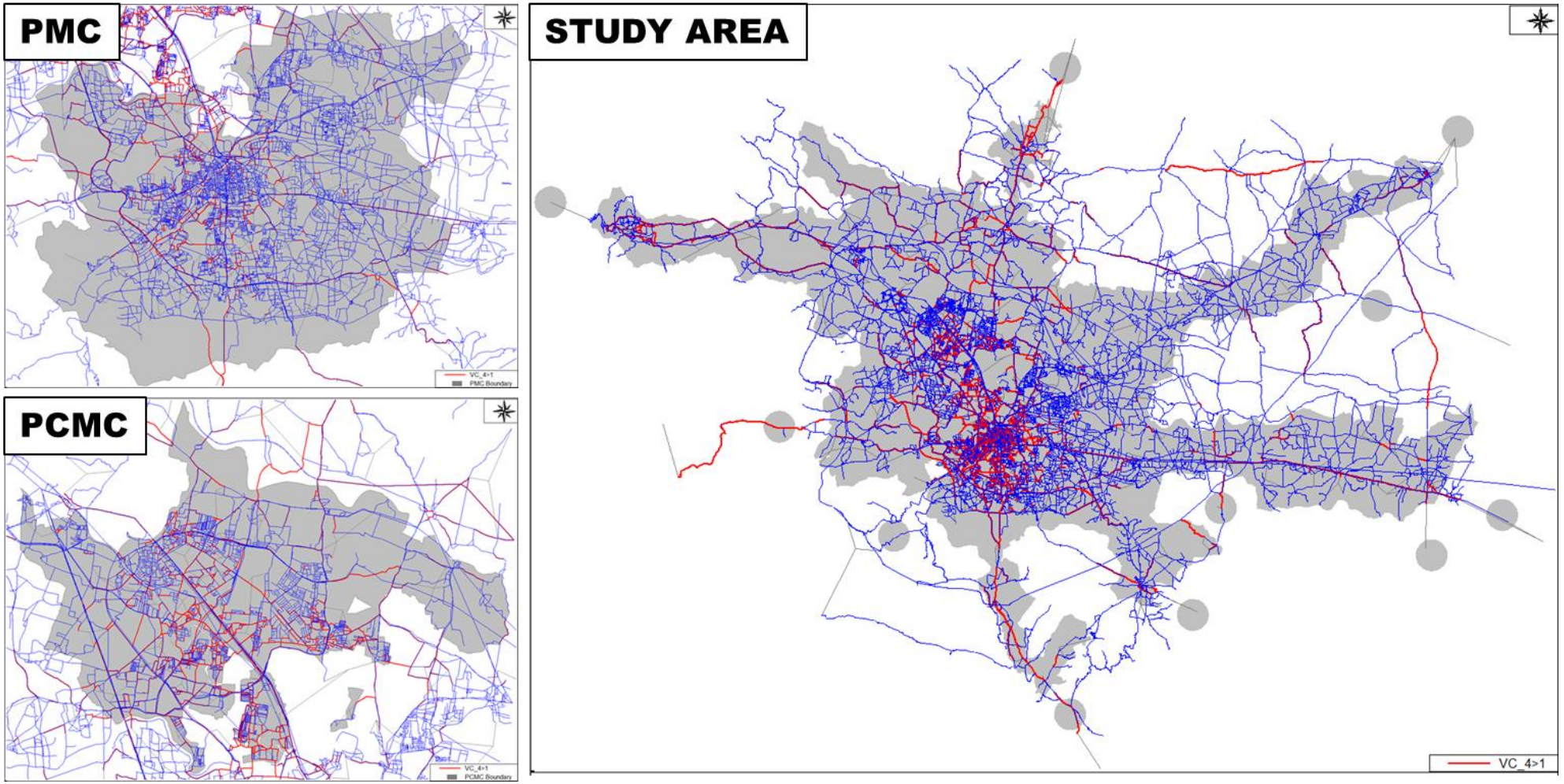


**Figure 3-16 | Horizon Year (2054) - PCU Flows for SUT Option-2 Scenario**

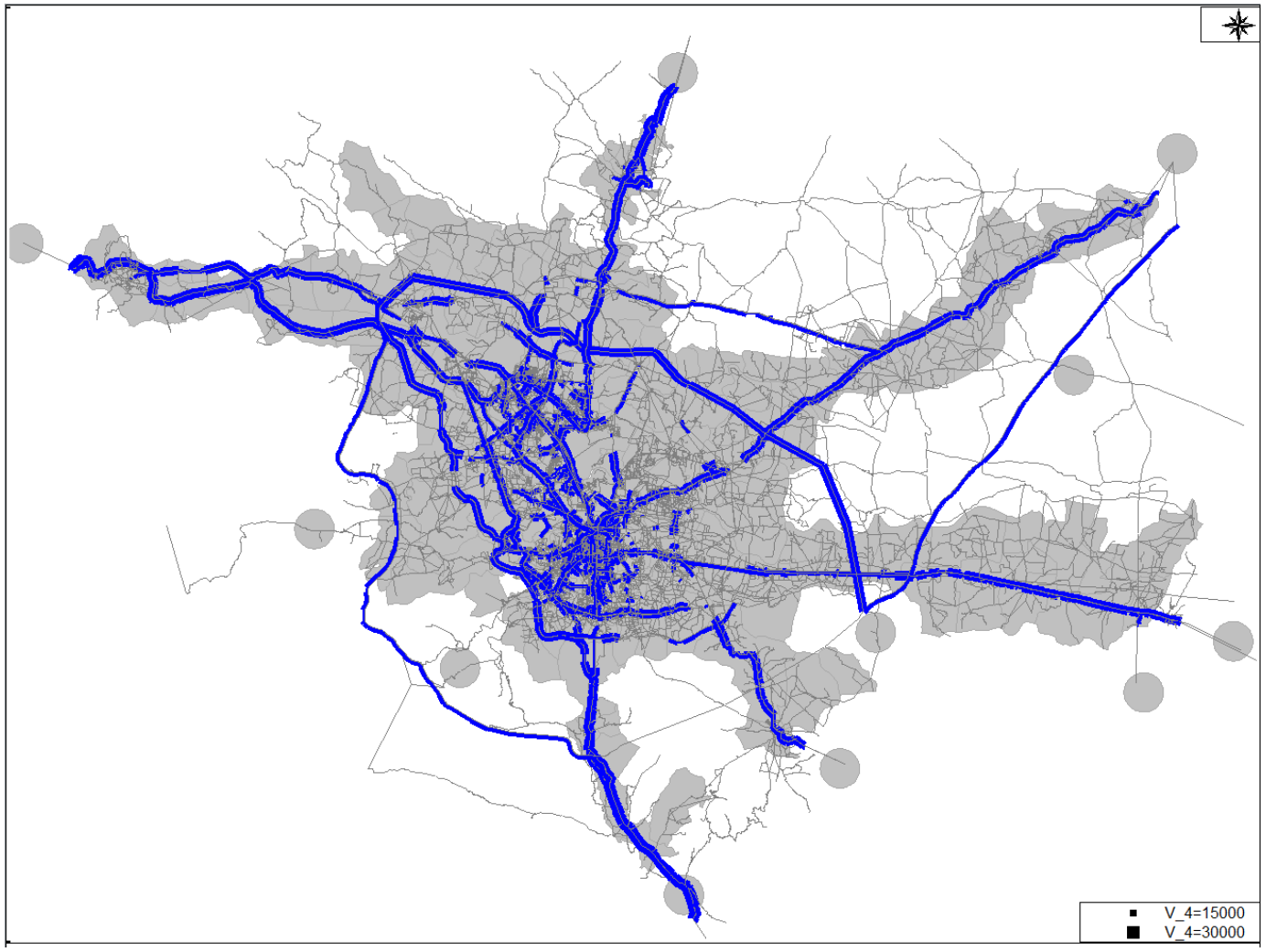
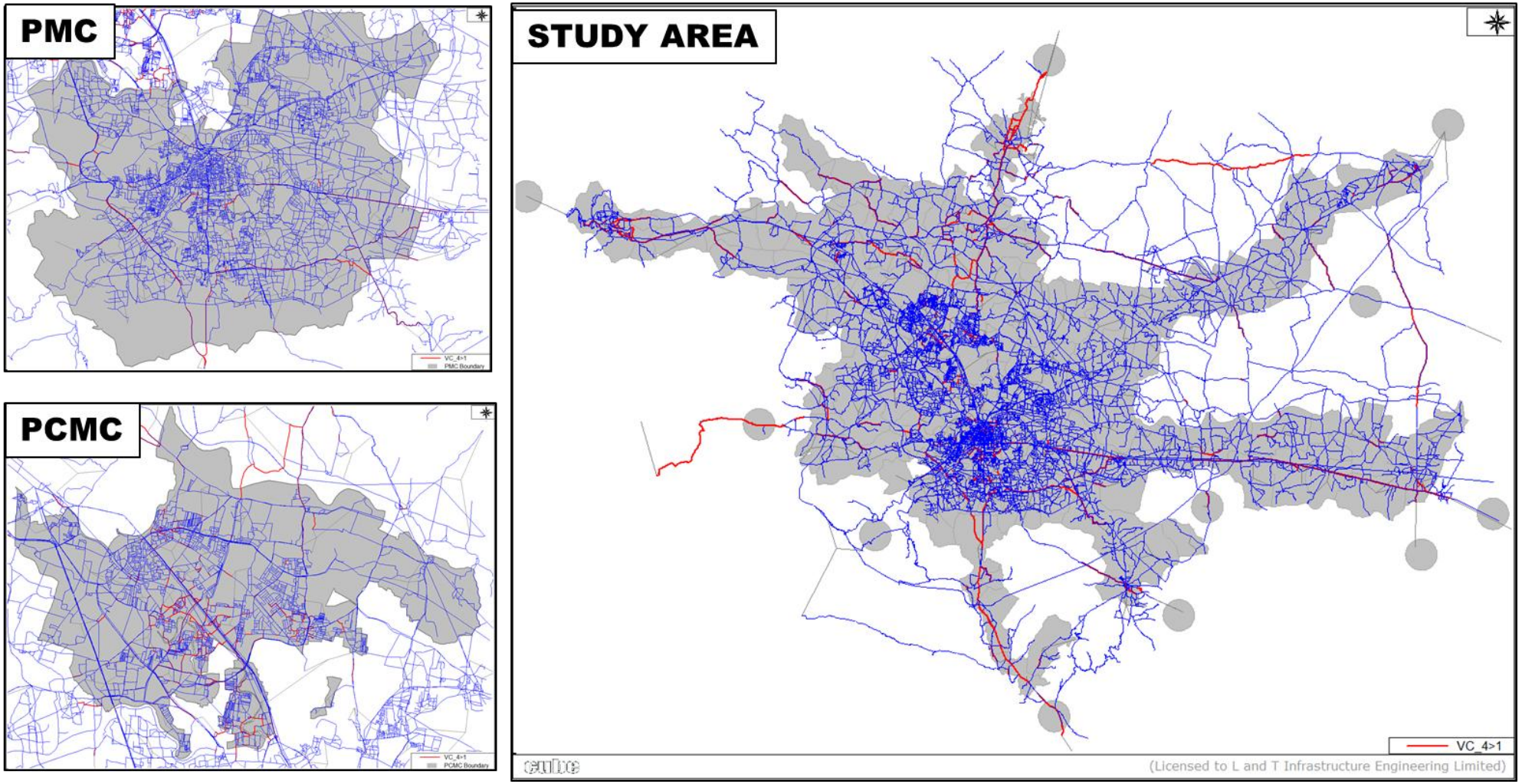


**Figure 3-17 | Horizon Year (2054) - V/C Ratio for SUT Option-2 Scenario**



## 3.2.6 | COMPARISON INDICATORS FOR EXISTING AND SUT SCENARIO

This section presents the comparison of indicators i.e. Service Level Benchmarks for existing and SUT Scenario is compiled and the same is presented in **Table 3-24**.

**Table 3-24 | Comparison of Existing and SUT Scenario Service Level Benchmarks**

| No | Benchmark | LOS for Study Area (BAU Scenario) | LOS for Study Area (SUT Scenario) | Inference as per MoHUA Guidelines |
|---|---|---|---|---|
| 1 | Public Transport Facilities | 2 | 1 | The city has public transport system which may need considerable improvements in terms of supply of buses/coaches and coverage as many parts of the city are not served by it. The frequency of services available may need improvements. The system provided is comfortable |
| 2 | Travel speed (Motorized and Mass transit) | 3 | 1 | Significant approach delays and average travel speed of 1/3 the free flow speed or lower. Such conditions causing combination of one or more reasons such as high signal density, extensive queuing at critical intersections and inappropriate signal timing. |
| 3 | Pollution Levels | 3 | 1 | Need considerable improvements in emission standards, checking pollution etc. |

## COMPARISON OF TRAVEL CHARACTERISTICS OF PUNE WITH OTHER CITIES

The various Travel characteristics of Pune are compared with other cities of India and the details are presented in **Table 3-25**.

**Table 3-25 | Comparison of Travel Characteristics of Pune with other cities**

| Parameter | Pune# | Mumbai* | Delhi* | Kolkata* | Chennai* | Bengaluru* | Hyderabad* | Ahmedabad* |
|---|---|---|---|---|---|---|---|---|
| Public Transport Share (%) | 13% | 78% | 54% | 77% | 47% | 42% | 40% | 33% |
| PCTR (All) | 1.32 | 1.79 | 1.48 | 1.49 | 1.59 | 1.48 | 1.26 | 1.46 |
| Average Trip length in Km by Car | 8.54 | 13.95 | 12.74 | 4.82 | 15.52 | 13.71 | 13.05 | 10.07 |
| $CO_2$ Emissions (Kg/trip/day) | 0.17 | 0.05 | 0.12 | 0.05 | 0.19 | 0.19 | 0.23 | 0.13 |

*#CMP Study 2024; *****Source: "Why it is difficult to come up with viable public transport model for all cities", **Economic Times dated October 6th, 2018***

It can be observed that the share of public transport is very less in Pune compared to other major cities of the country. Also it can be noted cities like Hyderabad and Bengaluru have a share of about 40%. In view of above, major efforts from all Transport agencies in the study area are required to enhance the share of public transport.

## MOBILITY INDICATORS

The mobility indicators of the study area for Base year and Horizon year for BAU scenario as well as for SUT scenario is analyzed and presented in Table 3-26. It can be noted that significant improvement in transport infrastructure post implementation of CMP Proposals as per SUT scenario.

**Table 3-26 | Mobility Indicators for BAU and Sustainable Transport Scenarios**

| No. | Mobility Indicator | Base Year | BAU Scenario | Sustainable Transport Scenario |
|---|---|---|---|---|
| 1 | Presence of Organized Public Transport System in Urban Area (%) | 63% | 63% | 100% |
| 2 | Extent of Supply Availability of Public Transport | 0.28 | 0.14 | 0.50 |
| 3 | % of Fleet as per Urban Bus specification | 77% | 77% | 100% |
| 4 | Percentage of City Covered (%) by Footpaths | 10.6% | 10.6% | 20% |
| 5 | % of Network Covered by NMT facilities | 0.91% | 0.91% | 19% |
| 6 | Average speed of Personal Vehicles (Kmph) | 25.0 | 19.7 | 27.2 |
| 7 | % network with exclusive ROW for transit | 9% | 24% | 48% |
| 8 | Availability of Passenger Information System | 28% | 45% | 75% |

## GOALS AND TARGETS ACHIEVED

Sustainable transport Goals and its achievement post implementation of CMP proposals are presented in **Table 3-27**.

**Table 3-27 | Sustainable Transport Goals and Targets Achieved**

| Goal | Target | Achieved | Target Year |
|---|---|---|---|
| **Mode share** | Increasing the public transport share to 50% in 30 years. | 61% achieved in SUT- Option2 scenario in the year 2054 | 30 years |
| | Walking and cycling should account for 35% of all person trips* | Walking and cycling would account for 35% of all person trips* | 10 years |
| **Population with Access to Public Transport** | 80% of the population in the city should be within a walk-able distance of 500m from a basic public transport service with a frequency of at least 12 buses/ hour. | 83% of the population in the city would be within a walk-able distance of 500m from a basic public transport service with a frequency of at least 12 buses/ hour. | 5 years |
| | 50% of the population in the city should be within a walk-able distance of 500m from its mass rapid transit network. | 51% of the population in the city would be within a walk-able distance of 500m from its mass rapid transit network. | 10 years |
| **Jobs near transit** | At least 60% of jobs in the city should be within a walk-able distance of 500m from a basic public transport service with a frequency of at least 12 buses/ hour. | At least 66% of jobs in the city would be within a walk-able distance of 500m from a basic public transport service with a frequency of at least 12 buses/ hour. | 5 years |
| | At least 40% of jobs in the city should be within a walkable distance of 500m from its mass rapid transit network. | At least 48% of jobs in the city would be within a walkable distance of 500m from its mass rapid transit network. | 10 years |
| **Parking** | On-street parking on arterial/sub-arterial roads shall be based on parking fees.<br>▪ Phase-1: 30% of the roads | Targets could be achieved by enforcing the parking management measures as proposed in mobility management measures of section 4.7 of Chapter-4. | 5 years<br>10 years<br>5 years |

| Goal | Target | Achieved | Target Year |
|---|---|---|---|
| | ▪ Phase-2: 50% of the roads<br>The study area will establish market-based parking fees and implement IT-based systems for fee collection and enforcement | | |
| **Electric Vehicle Adoption** | To achieve an EV penetration rate of,<br>• 10% across all vehicle segments<br>• 10% in case of two wheelers<br>• 20% in case of three wheelers<br>• 5% in case of four wheelers<br>25% electrification of PMPML Bus Fleet by 2025 | Targets could be achieved by enforcing The Government of Maharashtra's Electric Vehicle (EV) Policy 2021. | 5 years |
| **Road Accidents** | To achieve 50% reduction in fatal accidents | 50% accident reduction could be achieved by implementing road improvement plan including junction improvements, public transport improvement plans, NMT improvement plans, traffic management including ITS | 5 years |

** * - As the population of the city increases the number of trips by walk mode increases from the current 47.94 lakh to 120.02 lakh trips (47,94,638 to 1,20,02,210) by horizon year 2054. The 35% share of NMT mentioned is exclusive walk and cycling trips and does not include access trips to public transport. Considering 70% of access trips to public transport is by walk/cycling the total walking/cycling share will go up from 41.4% to 70% in 2054. i.e. from current 56.71 lakh to 240.04 lakh trips. This is due to the significant increase in public transport share. The above clearly indicates the substantial increase in NMT trips.*

## 3.3 | CONCLUSIONS

**Sustainable scenario (option-2) is suggested as it results in highest public transport share of 61% and an average network speed of 27 kmph.** Implementing the mobility strategies including public transport augmentation, improving operational efficiency, multi-modal integration, augmented road network, transit-oriented development (TOD) and travel demand management strategies will help sustainable transport system in the city.

Implementing above strategies will reduce the vehicular pollution levels by 28% and increase the travel speeds by 38% compared to business-as-usual scenario in the horizon year 2054.

The mode share achieved in the travel demand model is achievable by implementing the above-mentioned mobility strategies which will result in improved transport mobility in the city.

# *Chapter-4*

*Development of Comprehensive Mobility Plan*

# 4 | DEVELOPMENT OF COMPREHENSIVE MOBILITY PLAN

The **Comprehensive Mobility Plan** comprises of proposals to enhance mobility for all users and for all modes of travel. Based on the analysis of existing urban transport, land use, future travel demand, Sustainable Urban Mobility Plan is prepared.

Mobility Plan is a city's long-term blueprint for improving accessibility and mobility. The aim of the mobility plan is to develop an adequate, safe, environmentally friendly, affordable, equitable, comfortable, efficient integrated transport system within the framework of a progressive and competitive market economy. It advocates planning for the mobility of people rather than vehicles by providing sustainable mobility and accessibility for all citizens to jobs, education, social services and recreation at an affordable cost and within reasonable time.

Mobility plan essentially includes integration of land use with transport, well-connected network of complete road hierarchy, measures to shift from private vehicles to public transport and NMT, travel demand management and freight management plan. It comprises of the following plans to cater to all the modes of transport:

- Integrated Land use and Urban Mobility Plan
- Public Transport Improvement Plan
- Road Network Development Plan
- NMT Improvement Plan
- Freight Management Plan
- Mobility Management Measures

The above plans are further divided into short term (less than 5 years), medium term (5 to 10 years) and long-term proposals (more than 10 years) based on usefulness of the proposals. Further, Mobility Plan also covers stakeholder consultations, institutional issues, funding and implementation plan.

## 4.1 | INTEGRATED LAND USE AND URBAN MOBILITY PLAN

### 4.1.1 | BENEFITS OF LAND USE AND TRANSPORT INTEGRATION

Spatial growth of the Study Area is guided by Development Plan (DP) prepared by the PMC, PCMC and PMRDA as well as MIDCs. Land use and transport are interconnected; therefore, any investments in transport should take land use into account, and any changes in land use should assess their impact on transport needs. Integrating land use and transport offers several benefits which include :

- Reduces trip lengths

- Lowers vehicle kilometres travelled
- Encourages non-motorized transport (NMT) for short trips and public transport for longer journeys
- Optimizes transport investments
- Enhances the effective use of transport infrastructure, facilities, and services
- Decreases accidents and vehicular pollution
- Lowers overall travel costs within the city
- Improves the city's economic competitiveness

Thus, sustainable transport is only possible if land use and transport are integrated.

### 4.1.2 | PROVISIONS FOR PROMOTING TOD IN VARIOUS DEVELOPMENT PLANS

Draft Development Plan for Pune City (2007-2027), PMC (2013), Pimpri Chinchwad City Development Plan (2006-2012) and PMR Draft Development Plan (2021-2041) have highlighted the provisions on landuse transport integration though redevelopment of congested areas, densification along the metro corridors, etc.

As per the Unified Development Control and Promotion Regulations (UDCPR)-2022 for Maharashtra, 500 m around the metro station boundary is eligible for higher FSI. As compared to DCR-2017, FSI has been enhanced by 0.5 which will enhance the built-up area along the metro corridors. The maximum permissible FSI for different Road widths and Plot sizes have also been modified. The comparison of FSI, as per Pune DCPR-2017 and UDCPR-2022 is presented in **Annexure 1.1**. The details of TOD policy is discussed in **Chapter 1 under Section 1.2.2**.

PMR Draft Development Plan (2021-2041) recommends sector specific development in 233 villages which are identified as Urban Growth Centers. It envisions Pune to be India's Most Livable Habitat. **It recommends development of compact residential development along the major transit corridors.** The transport strategy as outlined in Development Plan is presented in **Table 4 - 1**

**Table 4 - 1 | Objectives and Strategies of PMRDA Draft Development Plan (2021-2041)**

| Objectives | Strategies |
|---|---|
| **Develop Regional Linkages** | Expansion and up-gradation of Highways |
| | Development of Ring Roads |
| | Development of Secondary Road Network |
| **Develop Transport Hubs** | Development of Multimodal Hubs and Transfer Stations |
| | Promote development along transit corridors along with last-mile connectivity |
| | Development of truck terminals |
| **Promote Public Transport & Increase its Modal Share** | Connect employment nodes by mass transit |
| | Development of Metro, Linking Growth Centres to PMC and PCMC |

| Objectives | Strategies |
|---|---|
| | Development of Sub-urban railway, crescent Railway and High-Speed Rail |
| | Promote mass transit system/feeder systems within the secondary road |
| **Promote Work-Live Concept** compact residential development along transit corridors | Development of compact residential development along major transit corridors |

*The DP suggests the significant initiatives in accordance with CTTS 2017.*

### 4.1.3 | PREPARATION OF LOCAL AREA PLANS ALONG THE METRO CORRIDORS

The Pune Municipal Corporation (PMC) has launched initiative for preparation of Local Area Plan (LAP) to promote TOD surrounding the Metro stations. This plan aims to create sustainable living conditions for residents while promoting both residential and commercial activities by utilizing a higher FSI in accordance with the Unified Development Control and Promotion Regulations (UDCPR) -2022.

Initially, the LAP will focus on a pilot stretch of approximately one km on either side of four key metro stations: Swargate, Vanaz, Baner, and Pune railway station. PMC intends to integrate city-wide mobility enhancements with localized accessibility improvements, facilitating natural urban renewal and strategic redevelopment.

To encourage development, PMC will offer additional FSI and allow the conversion of residential properties to commercial use. Parking restrictions will be enforced to reduce reliance on private vehicles, thereby promoting metro feeder services and other public transport alternatives.

Further, PMC aims to revitalize slum areas by creating more commercial spaces to attract businesses and enhance revenue streams. The draft LAP will undergo stakeholder consultations to gather community feedback. Following these discussions, the draft LAP and its accompanying plans will be reviewed by PMC before publication. Eventually, it is expected that LAP will be prepared by PMC and PCMC for all the Metro stations.

## 4.2 | PUBLIC TRANSPORT IMPROVEMENT PLAN

The Public Transport Improvement Plan is formulated by assessing the deficiencies in current public transport system, identifying the areas for improvement i.e. fleet augmentation, and rationalization of routes. Further, mass transport corridors are identified based on future travel demand in terms of Peak Hour Peak Direction Traffic (PHPDT). Selection of system for each identified corridor is recommended based on capacity of the system to meet the future demand and other considerations like cost, constructability, technology and availability road ROW.

The public transport improvement plan also includes proposals for last mile connectivity, passenger terminals (including access, egress, waiting & circulation areas, information boards etc.), Bus stops and multi-modal integration facilities. The plan also discusses accessibility issues for pedestrians and cyclists, and the differently abled and elderly people and suggests various improvement proposals.

**Comprehensive Mobility Plan Goal is to achieve a Public Transport share of 50% by the year 2054**

The current share of public transport trips in the Study Area is approximately 13% of motorized trips, significantly lower than the desired share of 75% outlined in the URDPFI Guidelines, 2014. **Table 4-2** presents the desired public transport share based on the city's population. This low share underscores the urgent need for increased investments in public transport, as well as a favorable policy framework to promote its use within the Study Area.

**Table 4 - 2 | Desired Share of Public Transport as per URDPFI Guidelines**

| No. | City Population | Recommended Share of Public Transport (%) |
|---|---|---|
| 1 | Below 1 million | 30 |
| 2 | Around 1 million | 35 |
| 3 | 1.5 Million | 40 |
| 4 | 3 Million | 50 |
| 5 | 6 Million | 70 |
| 6 | 9 Million | 75 |

*Source | URDPFI Guidelines, 2014*

## 4.2.1 | FORMULATION OF HIGHER ORDER PUBLIC TRANSPORT NETWORK

In order to identify the higher order public transport network, travel demand model is utilized. Several Mass transit corridors including existing, committed, mass transit corridors suggested by various stakeholders have been coded and tested using the travel demand model. The Peak Hourly Peak Direction Traffic (PHPDT) is the parameter used to formulate the public transport network.

### SYSTEM SELECTION

The guidelines for selection of system as per the **"Recommendations of Working Group on Urban Transport for 12th Five Year Plan"** are presented in **Table 4 - 3.**

**Table 4 - 3 | Guidelines for Selection of Mass Rapid Transit System**

| Mode Choices | PHPDT ** | Population as per 2011 Census (in millions) | Average Trip Length for motorized trips (in km) |
|---|---|---|---|
| Metro Rail# | >= 15,000 for at least 5 km continuous length | >= 2 | > 7 – 8 |
| Light Rail Transit (primarily at grade) | <= 10,000 | > 1 | > 7 – 8 |
| Monorail* | <= 10,000 | > 2 | About 5 – 6 |

| Mode Choices | PHPDT ** | Population as per 2011 Census (in millions) | Average Trip Length for motorized trips (in km) |
|---|---|---|---|
| Bus Rapid Transit System (BRTS) | >= 4,000 and up to 20,000 | > 1 | > 5 |
| Organized City Bus Service as per Urban Bus Specifications | | > 1 lakh (50,000 for hilly towns) | > 2 – 3 |

*# For having Metro Rail, the city should have a ridership of at least 1 million on organized public transport (any mode)*

** Monorail is desirable only as a feeder system or where narrow roads are flanked on either side by high rise buildings. In monorail, while cost of construction, operation and maintenance is almost the same as elevated metro rail, the carrying capacity is much lesser.*

*** PHPDT in next 10 years i.e. 2034*

The broad range of capacities considered for various systems for the current study is presented in following **Table 4 - 4**.

**Table 4 - 4 | Capacity of Mass Transit Systems**

| No. | System | Range of Capacity (PHPDT) |
|---|---|---|
| 1 | BRTS | 4,000 to 8,000 |
| 2 | Metro Lite | 8,000 to 15,000 |
| 3 | Metro | 15,000 to 60,000 |

## 4.2.2 | PROPOSED PUBLIC TRANSPORT NETWORK AND SYSTEM

A Mobility Corridor maximizes the throughput of people, focusing on mass transport and non-motorized traffic, rather than motorized traffic. Mobility corridors offer a strong network providing connectivity to major attraction centers in the city along with regional connectivity. In the current study, all existing and proposed Mass Transit Corridors, i.e. BRTS and Metro are proposed as Mobility Corridors. All the arterial roads of ROW 25 m / 30 m or above are considered as Mobility Corridors.

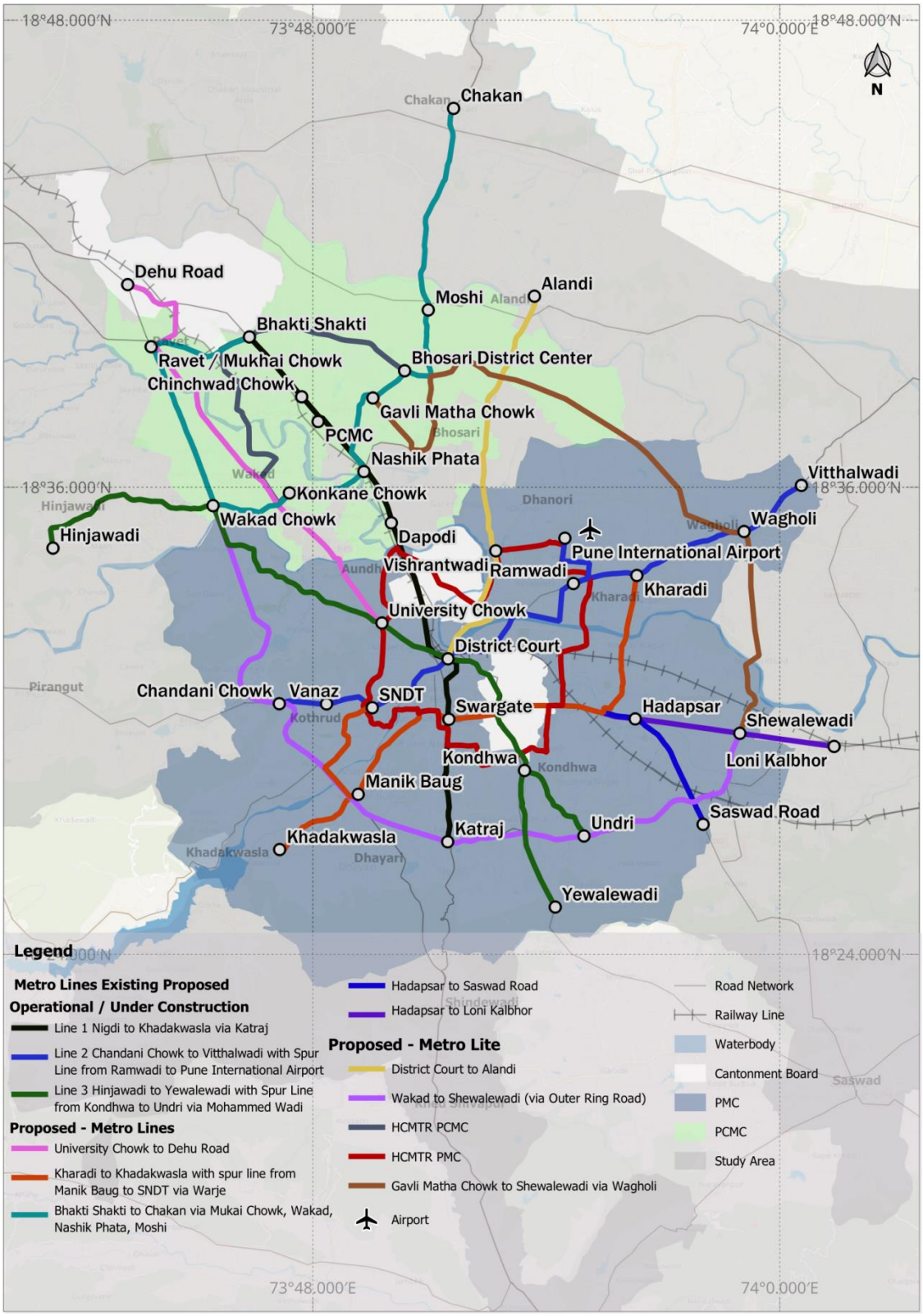
### METRO/METRO-LITE

Based on traffic demand, the appropriate type of public transport system has been selected. Conventional Metro, Metro-Lite, systems are recommended for various corridors. The proposed Metro, Metro-Lite corridors for year 2054 are presented in **Table 4 - 5** and **Figure 4 - 1**. Based on the travel demand modelling, CMP proposes 214 km of Metro (out of which 66 kms are already operational / under construction), 165 km of Metro-Lite along with a robust network of Bus System which acts as the feeder system to the proposed metro corridors.

**Table 4 - 5 | Recommended Metro, Metro-Lite Corridors**

| Name of Corridor | Length (in Km) | PHPDT | | | |
|---|---|---|---|---|---|
| | | 2024 | 2034 | 2044 | 2054 |
| **Conventional Metro** | | | | | |
| Nigdi – Katraj | 27.5 | 20,445 | 23,178 | 34,442 | 41,060 |
| Chandani Chowk – Vitthalwadi with Spur line from Ramwadi to Pune international Airport - Lohegaon | 32.7 | 7,538 | 13,206 | 20,398 | 28,831 |
| Hinjawadi – Yewalewadi via Kondhwa with Spur line from Kondhwa to Undri via Mohammed wadi | 37.0 | 6,553 | 9,058 | 16,442 | 26,122 |
| University Chowk - Dehu Road | 24.3 | 5,752 | 9,353 | 16,368 | 25,436 |
| Kharadi – Khadakwasala (with Spur line Manik Baug – SNDT via Warje) | 32.1 | 7,040 | 9,481 | 16,719 | 21,153 |
| Bhakti Shakti – Chakan (via Mukai Chowk, Wakad, Nashik Phata, Moshi) | 42.6 | 5,717 | 8,457 | 18,508 | 27,521 |
| Hadapsar - Saswad Road | 7.5 | 3,580 | 5,806 | 8,483 | 10,080 |
| Hadapsar - Loni Khalbor | 10.7 | 2,635 | 3,939 | 6,993 | 13,695 |
| **Metro – Lite** | | | | | |
| District Court – Alandi | 20.4 | 2,673 | 5,600 | 8,784 | 12,313 |
| Wakad Chowk to Shewalewadi (via Katraj) | 42.4 | 3,636 | 5,411 | 7,780 | 11,040 |
| HCMTR – PCMC | 20.9 | 2,638 | 4,586 | 9,967 | 13,752 |
| HCMTR – PMC | 44.2 | 3,196 | 6,321 | 8,006 | 12,076 |
| Gavli Matha Chowk – Shewalewadi via Wagholi | 36.5 | 2,194 | 4,672 | 7,947 | 9,883 |

**Figure 4 - 1 | Recommended Metro and Metro-Lite Corridors**




The brief description of proposed Metro, Metro-Lite corridors is given below:

### CORRIDOR 1: NIGDI TO KATRAJ

The North-South Metro corridor traverses the core areas of PMC and PCMC. It begins at Nigdi in the northern part of the Study Area and terminates at Katraj Junction in the south. The corridor passes through several key locations, including Chinchwad, Pimpri, Vallabh Nagar, Kasarwadi, Dapodi, Bopodi, Khadki Police Station, Shivaji Nagar Bus Stand, District Court, Swargate, City Pride Chowk, Vasant Baug, and Balaji Nagar Chowk before reaching Katraj Junction.

Currently, the stretch between PCMC and District Court is operational, while the segments from PCMC to Nigdi and District Court to Swargate are under construction.

### CORRIDOR 2: CHANDANI CHOWK TO VITTHALWADI WITH SPUR LINE FROM RAMWADI TO PUNE INTERNATIONAL AIRPORT

The East-West Metro corridor begins at Chandani Chowk on the Westerly Bypass and terminates at Vitthalwadi on the eastern side of the Study Area. It runs along Paud Road to Karve Chowk, then continues along Karve Road to Khanduji Baba Chowk. From there, the route run parallel to the Mutha River until Sangam Bridge, then, alignment runs along Wellesly Road, Bund Garden Road, and Nagar Road and reaches Vitthalwadi. This corridor connects key areas such as Yerwada, Kalyani Nagar, Ramwadi, Viman Nagar, Kharadi, and Wagholi. Additionally a spur line is proposed from Ramwadi to Pune International Airport via Viman Nagar as part of the corridor to provide direct connectivity to the existing airport.

Currently, the stretch between Vanaz and Ramwadi is operational, while the segments from Vanaz to Chandani Chowk and from Ramwadi to Wagholi are in the planning stages.

### CORRIDOR 3: HINJAWADI TO YEWALEWADI

This corridor connects Hinjawadi, a major IT hub, located in the northwestern part of the Study Area, with Yewalewadi in the southeastern region. The corridor passes through several key areas, including Wakad, the Westerly Bypass, Balewadi Gaon, Balewadi Phata, Baner Gaon, University Chowk, District Court, Mangalwar Peth, Kondhwa, and Khadi Machine Chowk before reaching Yewalewadi. Additionally a spur line is proposed from Kondhwa to Undri via Mohammed wadi as part of the corridor to provide connectivity to dense residential areas.

Currently, the stretch between Megapolis Circle in Hinjawadi and District Court is under construction.

### CORRIDOR 4: KHARADI TO KHADAKWASLA WITH SPUR LINE FROM MANIK BAUG TO SNDT VIA WARJE

This corridor connects the Kharadi Bypass stop in the northeast part of the Study Area with Khadakwasla in the southwest. It traverses key locations including Kharadi, Mundhwa, Hadapsar, Swargate, Dattawadi, and Vadgaon Budruk before reaching Khadakwasla. Additionally, a spur line is proposed from Manik Baug via Warje Dhanukar Chowk to the SNDT College (Nal Stop Metro Station) as part of this corridor.

### CORRIDOR 5: UNIVERISITY CHOWK TO DEHU ROAD

This corridor connects University Chowk in PMC with Dehu Road Junction in the northwest of the Study Area via the Aundh Ravet BRTS Road. It passes through key locations including Old Sangvi, Rakshak Society, Jagtap Dairy Chowk, Kalewadi Phata, Thergaon Phata, Mukhai Chowk Bus Terminus, and Dehu Road Railway Station. This Metro corridor will replace the existing Aundh-Ravet BRTS system.

### CORRIDOR 6: BHAKTI SHAKTI TO CHAKAN

This corridor connects Nigdi in PCMC with Chakan, an industrial area located in the northern part of the Study Area. It traverses key locations including Ravet, Punawale, Tathawade, Wakad Chowk, Kaspate Wasti, Kasarwadi, Nashik Phata, Bhosari District Center, and Moshi.

### CORRIDOR 7: HADAPSAR TO SASWAD ROAD

This corridor connects Hadapsar, located on the eastern side of the city, with Saswad Road in the southeast part of the Study Area. It passes through key locations such as Bhekrai Nagar, Pimpalmala, Wadki, and Jadhavwadi before reaching Saswad Road.

### CORRIDOR 8: HADAPSAR TO LONI KALBHOR

This corridor connects Hadapsar, situated on the eastern side of the PMC, passes through Manjri Bk and ends at Loni Kalbhor on east side of the Study Area on Pune-Solapur Road.

### CORRIDOR 9: DISTRICT COURT TO ALANDI

This corridor connects District Court in the heart of PMC with Alandi in the North of the city. The corridor passes through Sangamwadi, Yerawada, Vishrantwadi, Dighi, Wadmukhwadi, Chovisawadi and Alandi. This corridor replaces the existing BRTS line between Sagamwadi and Vishrantwadi.

### CORRIDOR 10: WAKAD CHOWK TO SHEWALEWADI

This corridor connects Shewalewadi in the southeastern part of the Study Area with Wakad via the Westerly Bypass. It passes through key locations including Phursungi, Uruli Devachi, Handewadi, Undri, Katraj, Ambegaon Budruk, Vadgaon Budruk, Warje, Chandani Chowk, Pashan, and Balewadi.

### CORRIDOR 11: HCMTR PCMC

This corridor connects Konkane Chowk with Bhosari District Center located in PCMC. The corridor passes through Kalewadi Phata, Thergaon, Dagdoba Chowk, Nigdi, Sambhaji Nagar. The remaining part of the ring is covered in the Nigdi – Chakan alignment.

### CORRIDOR 12: HCMTR PMC

This corridor runs along the proposed HCMTR of PMC, forming a circular route within the city. It passes through key areas including 509 Area, Viman Nagar, Vadgaon Sheri, Ghorpadi, Hadapsar Industrial Area, Wanowrie, Market Yard, Swargate, Sarasbaug, Kamlesh Society, Janwadi, Chatturshringi, Bopodi, and Yerawada.

### CORRIDOR 13: GAVLI MATHA CHOWK TO SHEWALEWADI

This corridor connects Gavli Matha Chowk in PCMC with Shewalewadi in PMC. It passes through key locations such as Landewadi, Bhosari, Wadmukhwadi, Janardhan Nagar, Wagholi, Awhalwadi, and Manjari Khurd.

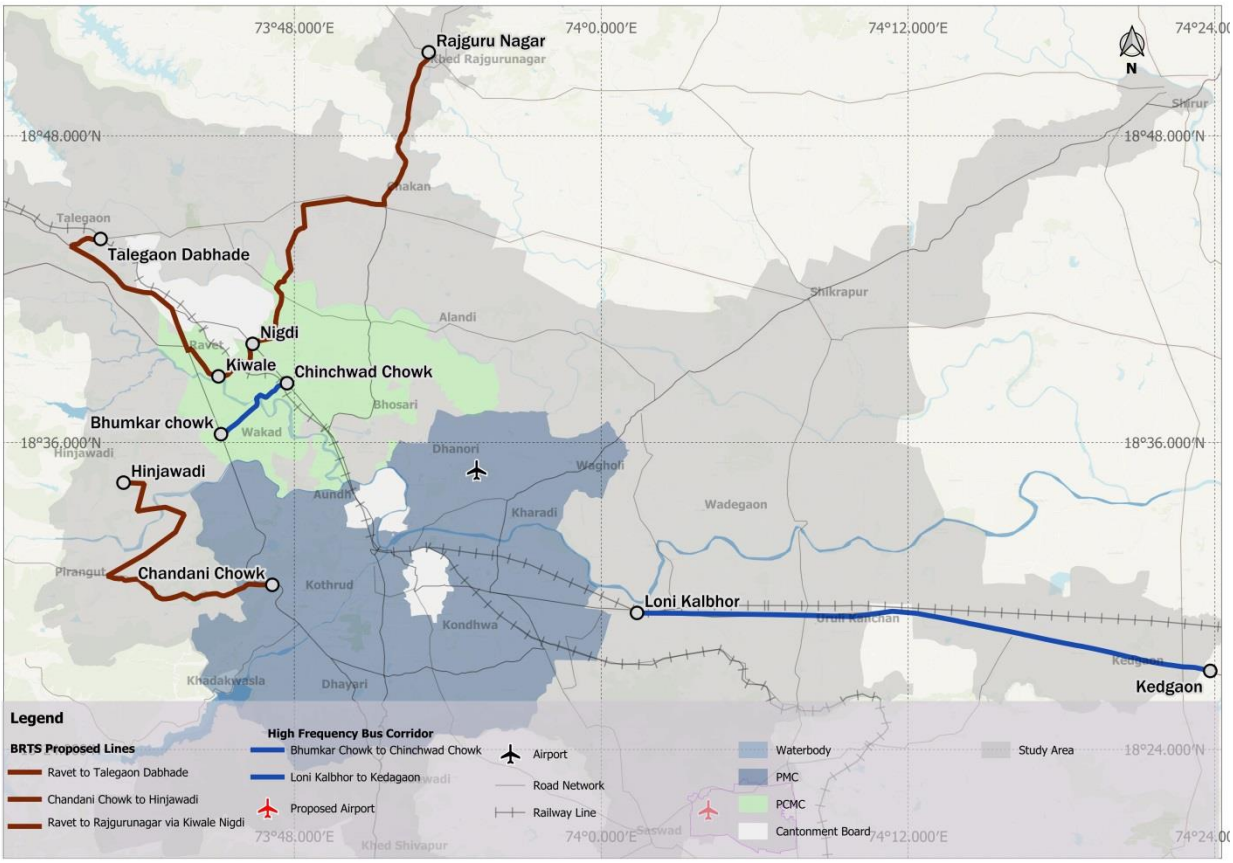
## BRTS

BRTS and High Frequency Bus Corridors have been recommended based on the Peak Hour Peak Direction Traffic (PHPDT). Recommended BRTS and High Frequency Bus Corridors are presented in **Table 4 - 6** and **Figure 4 - 2.** CMP proposes 81 km of BRTS Network and 46 km of high frequency Bus routes in the Study Area.

**Table 4 - 6 | Recommended BRTS/ High frequency Bus route network**

| No. | Name of Corridor | Length (in km) | PHPDT | | | |
|---|---|---|---|---|---|---|
| | | | 2024 | 2034 | 2044 | 2054 |
| | **BRTS** | | | | | |
| 1 | Ravet - Rajguru Nagar via Chakan | 37.8 | 2,462 | 3,063 | 5,777 | 7,500 |
| 2 | Ravet - Talegaon Dabhade | 14.1 | 971 | 1,826 | 4,091 | 6,289 |
| 3 | Chandani Chowk to Hinjawadi | 28.6 | 658 | 886 | 2,060 | 2,979 |
| | **High Frequency Bus Corridor** | | | | | |
| 4 | Loni Kalbhor - Kedgaon | 40.0 | 794 | 893 | 1,964 | 2,547 |
| 5 | Bhumkar Chowk - Chinchwad Chowk | 6.3 | 667 | 906 | 1,148 | 2,917 |

**Figure 4 - 2 | Recommended BRTS Corridors**




The brief description of proposed BRTS Corridors is given below:

## CORRIDOR 1: RAVET TO RAJGURUNAGAR VIA CHAKAN

This corridor connects Ravet in PCMC with Rajgurunagar, located on the northern part of the Study Area via Chakan. It passes through key locations including Nigdi, Talwade, Mahalunge Ingale, Kharabwadi, Ekta Nagar, Waki Khurd, Shiroli, and Kharpudi Khurd.

## CORRIDOR 2: RAVET TO TALEGAON DABHADE

This corridor connects Ravet in PCMC with Talegaon Dabhade in the northwestern part of the Study Area. It serves as an extension of the Ravet to Chakan line and passes through key locations such as Shitala Nagar, Somatne Phata, Tukaram Nagar, and Swaraj Nagari.

## CORRIDOR 3: CHANDANI CHOWK TO HINJAWADI

This corridor connects Chandani Chowk in PMC with Hinjawadi in the western part of the Study Area. It passes through key locations such as Bhugaon, Pirangut, Shelkewadi, and Godambewadi.

**The brief description of proposed High Frequency Bus Corridors is presented below:**

### CORRIDOR 4: LONI KALBHOR TO KEDGAON

This corridor connects Loni Kalbhor with Kedgaon located on east side of the Study Area. The corridor passes through Dhumal Mala, Nigade Vadi, Uruli Kanchan, Mhetre Vasti, Yawat, Wakhari. This corridor improves connectivity in the peripheral areas of the city.

### CORRIDOR 5: BHUMKAR CHOWK TO CHINCHWAD CHOWK

This corridor connects Bhumkar Chowk near Westerly Bypass with Chinchwad Chowk. The corridor passes through Thergaon Phata and Chinchwad Gaon.

In order to appreciate the public transport proposals of CMP-2018 and the CMP-24 i.e. Current Study, a comparison of Public transport corridors is made and the same is presented in **Annexure 4.1**.

## CITY BUS – PMPML

The city bus service in the Study Area is provided by PMPML. The brief description of PMPML services is presented in **Section 2.2.3** of **Chapter 2**. The proposals for PMPML are presented below.

### BUS AUGMENTATION

Currently, PMPML operates a bus fleet of 2,030 buses, with 1,880 buses on the road. To meet both current and future demand, the fleet size has been estimated using two methods:

1. Bus Supply Index: Following MoHUA Guidelines, which suggest 60 buses per lakh population.
2. Travel Demand Forecast.

The current bus supply index for the Study Area is 20, which needs to be increased to 60. According to the Bus Supply Index method, the Study Area requires 6,228 buses for the base year. However, the demand forecast method indicates a need for 6,500 buses. Since the demand forecast method provides a higher fleet size, it is chosen for fleet size estimation. The bus demand is projected to rise from 6,500 in the base year to 15,000 by the horizon year of 2054. Details of the total bus fleet requirement based on both the Bus Supply Index and travel demand forecasts are presented in presented in **Table 4 - 7**.

**Table 4 - 7 | Estimation of Requirement of Bus Fleet**

| No | Horizon Year | Population in Lakhs | Total Number of Buses Required** | Total Number of Buses based on Travel Demand | E-Bus Requirement |
|---|---|---|---|---|---|
| 1 | 2024 | 103.79 | 6,228 | 6,500 | 1,625 (25%) |
| 2 | 2034 | 133.55 | 8,013 | 8,000 | 2,400 (30%) |
| 3 | 2044 | 166.69 | 10,001 | 10,500 | 5,250 (50%) |
| 4 | 2054 | 192.74 | 11,564 | 15,000 | 15,000 (100%) |

*** based on 60 buses per lakh population, MoHUA Guidelines.*

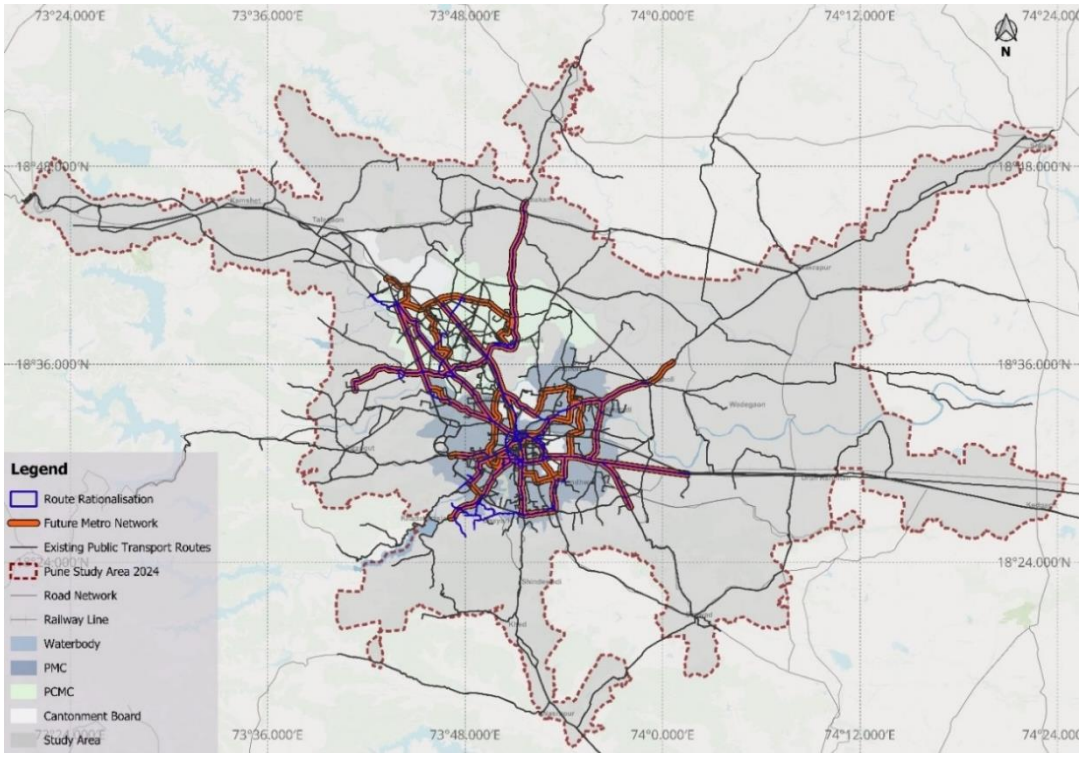
## ROUTE RATIONALIZATION AND RESTRUCTURING

### HUB AND SPOKE MODEL

Currently, most PMPML routes are long-distance, leading to operational losses due to non-adherence of schedule. There is a need for short to medium-distance services with high frequency and effective transfer facilities, following a hub-and-spoke model. This strategy is expected to enhance occupancy rates and improve schedule adherence.

The catchment area (0.5 km on either side of the Bus Route) along with the routes identified for rationalization is presented in **Figure 4 - 3.** It can be observed that coverage of the PMPML is fairly good. However, the frequency of services is critical to achieve the desired shift to public transport.

**Figure 4 - 3 | Bus Route Rationalization along the Metro Corridors**




### AREAS WHERE BUS FREQUENCY NEED TO BE INCREASED

Based on the above analysis, it can be noted that services need to be increased to the rapidly growing areas in the suburbs, including Shikrapur, Charoli, Wadgoansheri, Manjari Khurd, Kesnand, Chande, Nande, Kirkitwadi, Yewlewadi, Handewadi, and Punawale. Frequencies of the services to the following locations are to be improved:

*"Darumbre, Chandkhed, Nigade, Jadhavwadi, Akurdi, Induri, Biradvadi, Shiroli, Kurali, Nighoje, Shelgaon, Pimpalgaon, Markal, Phulgaon, Solu, Wadhu Budruk, Sanaswadi, Lonikand, Bakori, Kodhapuri, Ranjangaon, Karegaon, Saradwadi, Shirur, Dhok Sangavi, Kasari, Bhawarapur, Tilekar Wadi, Boribhadak, Bori Aindi, Tamhanawadi, Darekarwadi, Kasurdi, Navalewasti, Yawat, Bhandgaon, Undawadi, Galandwadi, Wakhari, Nimalkar Vasti, Dapodi, Nanagoan, Kolwadi, Theur, Chandan Tekadi, Pawarwadi, Jadhavwadi, Dive, Kalewadi, Zendewadi, Wadki, Ambodi, Kumbharvalan, Udachiwadi, Vanpuri, Sonori, Singapur, Gurholi, Velu, Shindewadi, Sasewadi, Bhilarewadi, Ramnagar, Kolewadi, Mangadewadi, Sanasagar, Nandoshi".*

## ROUTE RATIONALIZATION

Route rationalization involves adjusting service frequencies based on travel demand, eliminating redundant services, partially withdrawing routes, and curtailing services where higher-order public transport systems like the Metro are operational. This approach aims to optimize bus services, allowing withdrawn buses to be redeployed in underserved areas. The steps involved in identifying bus routes for rationalization is outlined as follows:

- **Identification of Routes:** Bus routes running parallel to the proposed MRT corridors are identified.
- **Overlap Analysis:** The percentage overlap of these bus routes with the proposed MRT corridors is calculated using GIS software (Q-GIS).
- **Rationalization Criteria:** Routes with more than 80% overlap are recommended for rationalization.

A total of 89 routes along the proposed Mass Rapid Transit (MRT) corridors have been identified for this rationalization, and the details of routes are provided in **Annexure 4.2.** Due to route rationalization around 475 buses will be curtailed. These buses can be effectively utilized as a feeder route for last mile connectivity**.** A detailed operational planning study needs to be carried out to rationalize the bus routes and improve the efficiency of the bus operations.

## NEW BUS ROUTES & PHASING

Based on the travel demand, new bus routes have been identified to improve the coverage of public transport in the Study Area. The proposed bus routes shall be operated with standard buses (12m) with headway of 5-10 minutes. The details of proposed new bus routes are presented in **Table 4 - 8** and in **Figure 4 - 4.**

**Table 4 - 8 | Details of Proposed New Bus Routes**

| No | Route | Length (Km) | Year of Introduction of Service |
|---|---|---|---|
| 1 | Karandi to Uruli Kanchan via Pimpri Saandas | 33.4 | 2024 |
| 2 | Bhide Baug to Sasewadi via Jambhulwadi | 10.7 | 2024 |

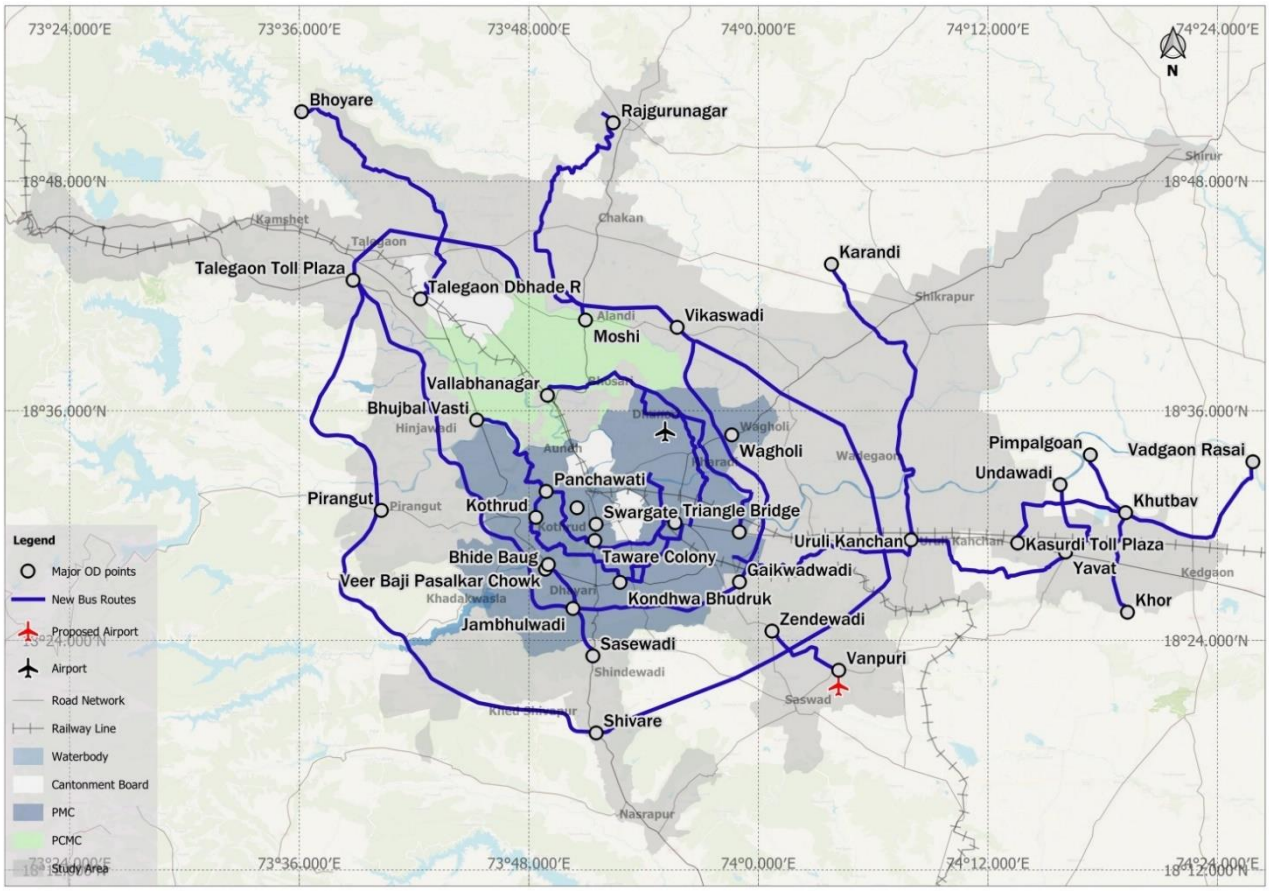
| No | Route | Length (Km) | Year of Introduction of Service |
|---|---|---|---|
| 3 | Zendewadi to Vanpuri via Kalewadi | 9.2 | 2024 |
| 4 | Moshi to Rajgurunagar via Mahalunge Ingale | 33.3 | 2024 |
| 5 | Kasurdi Toll Plaza to Vadgaon Rasai via Khutbav | 32.2 | 2024 |
| 6 | Phursungi to Uruli Kanchan via Sitaram Mala | 21.4 | 2024 |
| 7 | Pune Outer Ring Road via Talegaon, Pirangut, Shivare and Alandi | 173.6 | 2034 |
| 8 | Intermediate Ring Road via Talegon, Hinjawadi, Jambhulwadi and Vikaswadi | 124.9 | 2034 |
| 9 | Kothrud to Kondhwa Bhudruk via Vitthalwadi | 15.2 | 2034 |
| 10 | Vallabhanagar to Manjiri Farm via Dhanori | 33.6 | 2034 |
| 11 | Kalyani Nagar to Kondhwa Khadi Machine Chowk via Ramtekadi | 16.3 | 2034 |
| 12 | Panchawati to Taware Colony via Vakil Nagar | 9.6 | 2034 |
| 13 | Magazine Chowk to Hadapsar Gadital Bus Stand via Kharadi | 23.7 | 2034 |
| 14 | Taware Colony to Triangle Bridge via Lullanagar | 9.6 | 2044 |
| 15 | Kothrud to Bhujbal Vasti via Pimple Nilakh | 17.4 | 2044 |
| 16 | Talegaon Dabhade R to Bhoyare Via Nigade | 30.2 | 2044 |
| 17 | Uruli Kanchan to Yavat via Bori Aindi | 29.7 | 2054 |
| 18 | Pimpalgoan to Khor via Khutbav | 17.9 | 2054 |

Based on the above, length of New Bus Routes (in Km) is assessed and presented in **Table 4-9**

**Table 4 - 9 | Details of Proposed New Bus Routes**

| Year | 2024 | 2034 | 2044 | 2054 |
|---|---|---|---|---|
| Length of Proposed New Bus Routes (in Km) | 140.2 | 396.7 | 57.2 | 47.6 |

**Figure 4 - 4 | Map of Proposed New PMPML Bus Routes**




## PMPML BUS TERMINALS

The existing PMPML bus terminals as well as area of terminals (in acres) are presented in **Table 4 - 10** & **Figure 4 - 5**.

**Table 4 - 10 | Existing PMPML Bus Terminals**

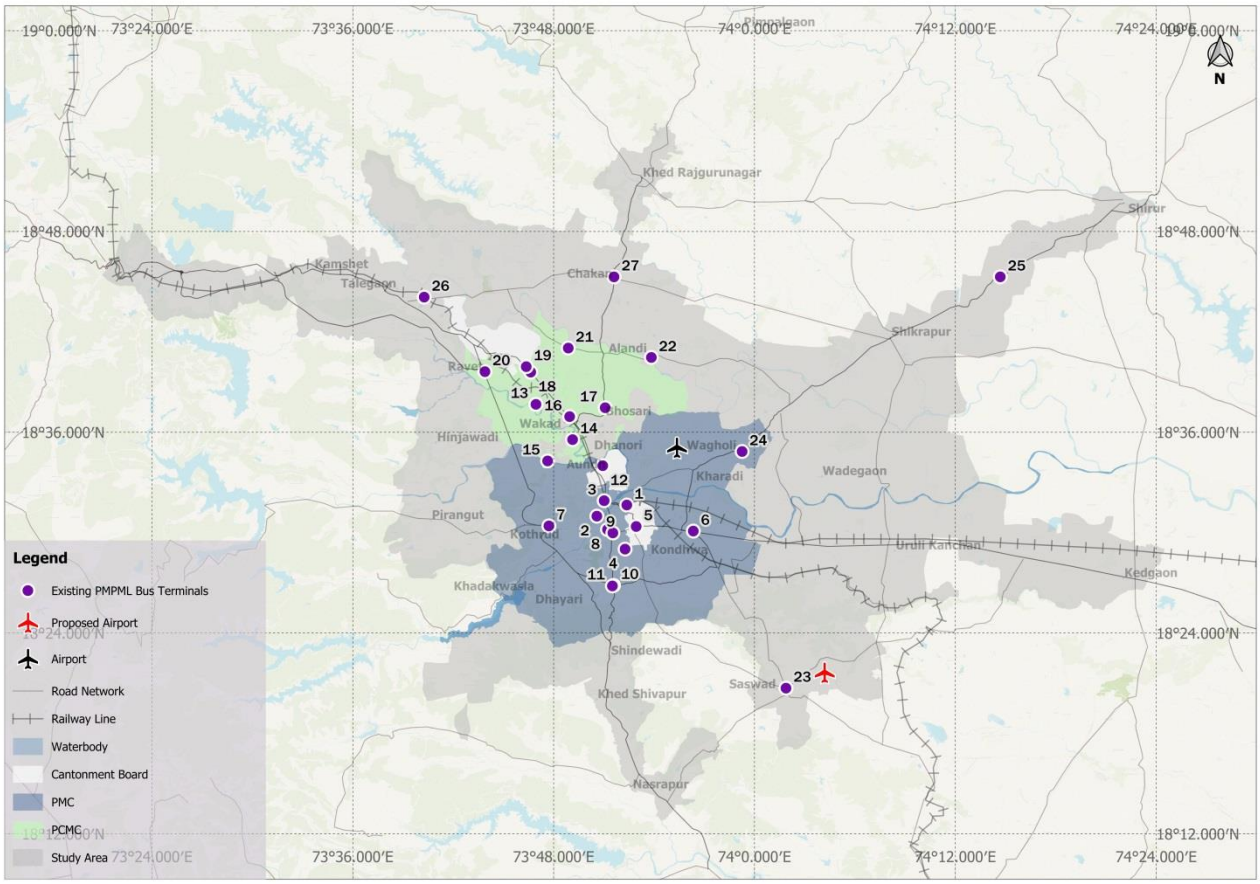
| No. | Location | Area (Acre) | Jurisdiction |
|---|---|---|---|
| 1 | P.M.C. (Tukaram Shinde Bus Terminal) | 2 | PMC |
| 2 | Deccan Gymkhana | 1 | PMC |
| 3 | Shivaji Nagar** | - | PMC |
| 4 | Market Yard** | - | PMC |
| 5 | Pulgate | 1 | PMC |
| 6 | Hadapsar | 0.5 | PMC |
| 7 | Kothrud | 0.5 | PMC |
| 8 | Sarasbaug** | 0.5 | PMC |
| 9 | Swargate | 1 | PMC |
| 10 | Katraj Zoo | 0.5 | PMC |

| No. | Location | Area (Acre) | Jurisdiction |
|---|---|---|---|
| 11 | Katraj BRT | 0.5 | PMC |
| 12 | Khadki | 1 | Khadki Cantonment |
| 13 | Chinchwad | 0.3 | PCMC |
| 14 | Pimple Gurav | 0.5 | PCMC |
| 15 | Pimple Nilakh | 0.7 | PCMC |
| 16 | Pimpri | 0.5 | PCMC |
| 17 | Bhosari | 0.5 | PCMC |
| 18 | Nigidi Chowk | 0.1 | PCMC |
| 19 | Bhakti Shakti | 3 | PCMC |
| 20 | Mukhai Chowk | 0.4 | PCMC |
| 21 | Chikali** | - | PCMC |
| 22 | Alandi | 0.5 | Rest of PMR |
| 23 | Saswad | 0.5 | Rest of PMR |
| 24 | Wagholi** | - | Rest of PMR |
| 25 | Ranjangaon** | - | Rest of PMR |
| 26 | Talegaon Dabhade | 1 | Rest of PMR |
| 27 | Chakan | 0.4 | Rest of PMR |

*Note: ** bus terminals do not have exclusive area*

Among the 27 locations, Chikali Bus Terminal has ceased to operate and is now functioning as a bus stop.

**Figure 4 - 5 | Existing PMPML Bus Terminals**




## PROPOSALS FOR REDEVELOPMENT OF PMPML BUS TERMINALS

There is a need to enhance the capacity of existing terminals through the redevelopment of terminal areas, utilizing higher Floor Space Index (FSI), and identifying new terminal locations. PMPML is actively exploring terminals with integrated commercial areas, which can contribute to revenue generation for its operations. Among the 27 PMPML Bus Terminals, 12 terminals are proposed for redevelopment and the same is presented in **Table 4 - 11** and **Figure 4 - 6**.

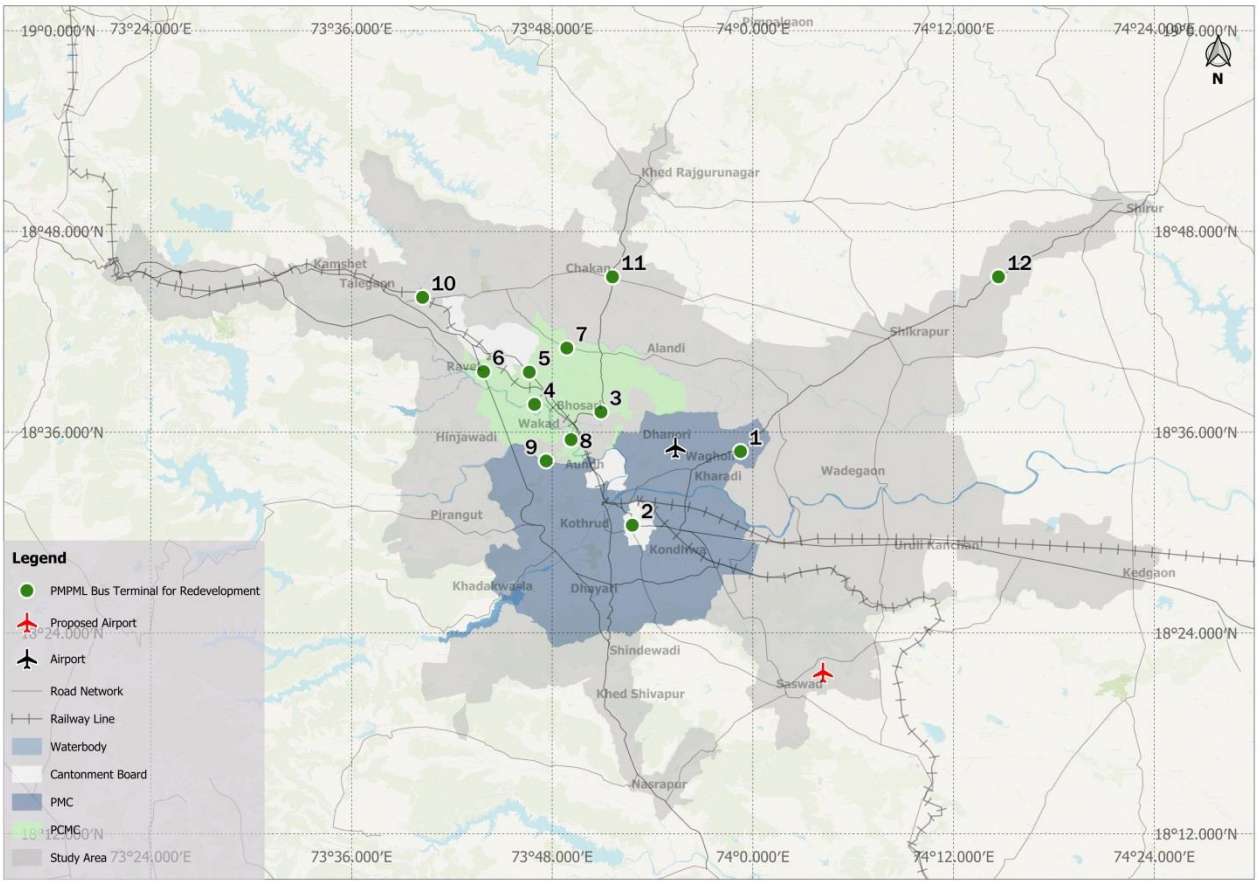
**Table 4 - 11 | Proposed Bus Terminals for Redevelopment**

| No. | Location | Up-gradation | EV-Charging Facilities | Additional Area Required | Remarks |
|---|---|---|---|---|---|
| 1 | Wagholi | ✓ | | ✓ | • PIS<br>• Waiting Areas |
| 2 | Pulgate | ✓ | ✓ | | • PIS<br>• New Bus Shelter |
| 3 | Bhosarigaon | ✓ | | | • PIS<br>• Waiting Areas |

| No. | Location | Up-gradation | EV-Charging Facilities | Additional Area Required | Remarks |
|---|---|---|---|---|---|
| 4 | Chinchwad | ✓ | | | • PIS<br>• Shelters<br>• Drinking Water<br>• Toilets |
| 5 | Nigdi | ✓ | ✓ | | • Waiting Areas<br>• Shelters<br>• Drinking Water<br>• Toilets |
| 6 | Mukhai Chowk | ✓ | | | • Improve access & Safety<br>• Segregate bus operations from through traffic |
| 7 | Chikali | ✓ | | | • PIS<br>• Circulation Areas<br>• Bus Shelters<br>• Drinking Water |
| 8 | Pimple Gurav | ✓ | | | • PIS<br>• Waiting Areas<br>• Bus Shelters<br>• Drinking Water<br>• Toilets |
| 9 | Pimple Nilakh | ✓ | | | • PIS<br>• Waiting Areas<br>• Bus Shelters<br>• Drinking Water<br>• Toilets |
| 10 | Talegaon | ✓ | | | • Shelters<br>• Waiting areas |
| 11 | Chakan | | | ✓ | • Shelters<br>• Waiting areas<br>• Circulation areas<br>• To be relocated to suitable place near Bypass |
| 12 | Ranjangaon | ✓ | | | • Terminal operates from roadside<br>• Proper passenger facilities. |

*Note: All the terminal's access roads, circulation areas, parking facilities shall be improved.*

**Figure 4 - 6 | Proposed PMPML Bus Terminals for Redevelopment**




## PROPOSALS FOR NEW PMPML BUS TERMINALS

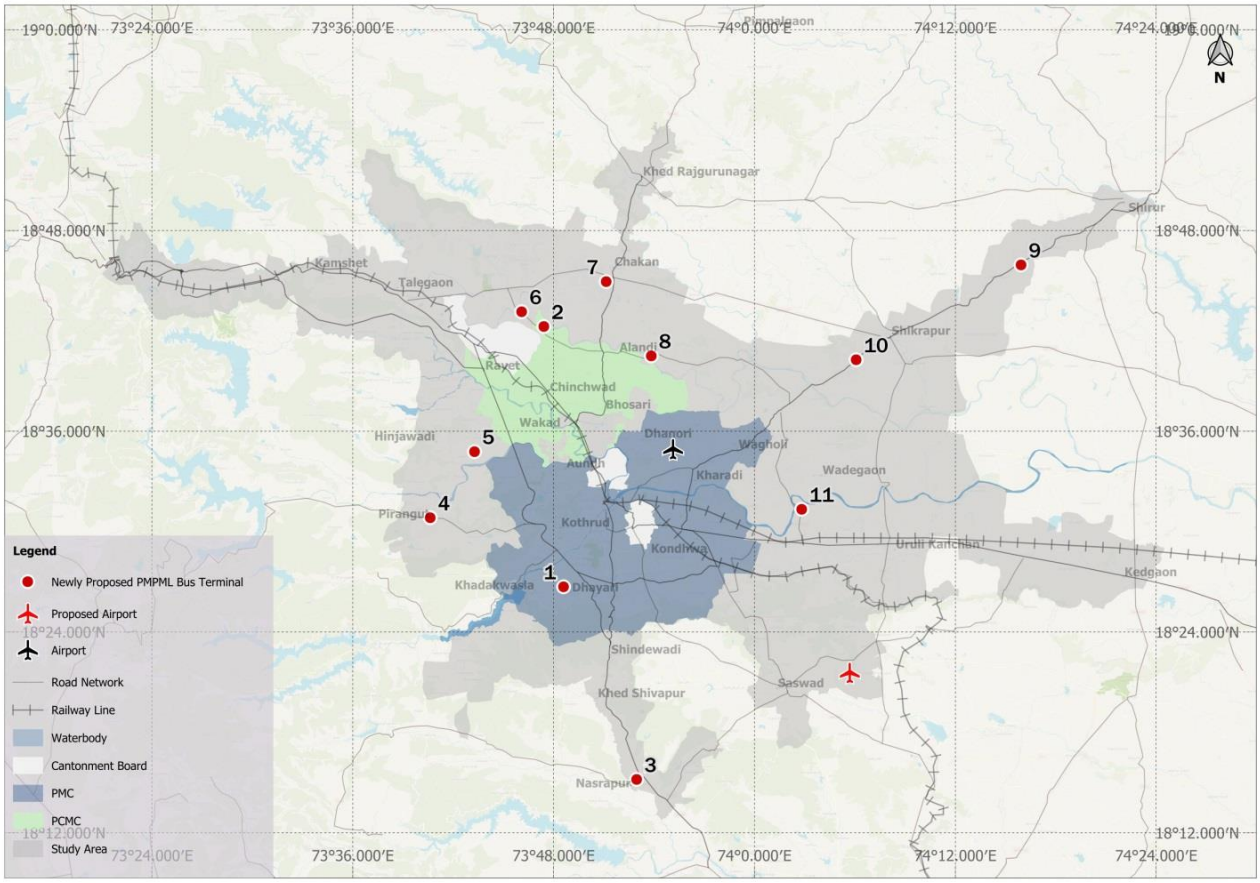
In addition to the redevelopment of the exiting PMPML Bus Terminals, the development of new PMPML Terminals is proposed considering the future demand requirements. The list of new bus terminals to be developed is presented in **Table 4 - 12** and **Figure 4 - 7.**

**Table 4 - 12 | Locations of proposed new PMPML Bus Terminals**

| No | Location | Jurisdiction |
|---|---|---|
| 1 | Dhayari | PMC |
| 2 | Talwade MIDC | PCMC |
| 3 | Nasrapur | Rest of PMR |
| 4 | Pirangut | Rest of PMR |
| 5 | Maan Mulshi | Rest of PMR |
| 6 | Dehugaon | Rest of PMR |
| 7 | Chakan (near Chakan Bypass - Nanekarwadi) | Rest of PMR |
| 8 | Alandi | Rest of PMR |
| 9 | Ranjangaon | Rest of PMR |

| No | Location | Jurisdiction |
|---|---|---|
| 10 | Sanaswadi | Rest of PMR |
| 11 | Theur | Rest of PMR |

**Figure 4 - 7 | Proposed New PMPML Bus Terminals**




Among the proposed new PMPML Bus Terminal locations, the existing Chakan Bus Terminal is proposed to be moved near to the proposed Chakan Bypass (Nanekarwadi) to decongest the junction. The Maan Mulshi Bus Terminal is proposed to be developed next to the proposed Inner Ring along with a Depot.

## PMPML BUS DEPOTS

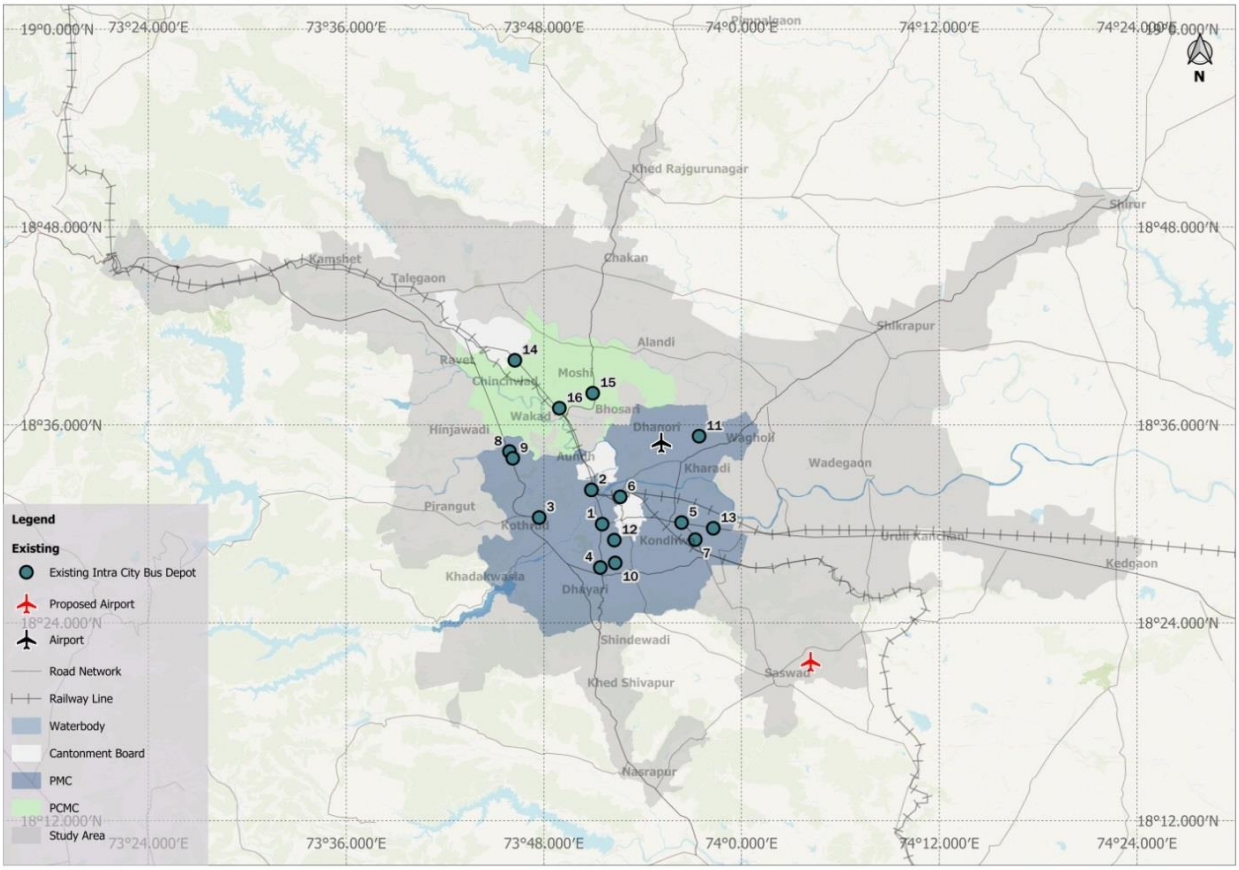
Currently, PMPML operates from 16 bus depots. Swargate bus stand is being redeveloped into a multimodal hub, integrating the existing MSRTC bus station, PMPML bus stop, and the upcoming metro station. Upper and Bhekrainagar Depots are acting as Depot cum terminal. Therefore, small Bus Terminal can be developed with amenities such as information boards on bus routes, schedules, drinking water and toilet facilities etc. The existing PMPML bus depots are presented in **Table 4 - 13** and **Figure 4 - 8**.

### Table 4 - 13 | Existing PMPML Bus Depots

| No | Name of Depot | Approx. Area (Acres) | No. of Buses | Jurisdiction |
|---|---|---|---|---|
| 1 | Swargate | 2.5 | 177 | PMC |
| 2 | Shivaji Nagar (N.T. Wadi) | 3 | 180 | PMC |
| 3 | Kothrud | 6 | 175 | PMC |
| 4 | Katraj | 6 | 219 | PMC |
| 5 | Hadapsar | 6 | 165 | PMC |
| 6 | Pune station (EV station) | 4 | 126 | PMC |
| 7 | Bhekrainagar (EV station) | 5.5 | 117 | PMC |
| 8 | Balewadi | 10 | 59 | PMC |
| 9 | Baner | 2.5 | 74 | PMC |
| 10 | Upper Depot | 2 | 116 | PMC |
| 11 | Wagholi | 3 | 95 | PMC |
| 12 | Market Yard | 1.25* | 44* | PMC |
| 13 | Shewalewadi | 8 | 75 | PMC |
| 14 | Nigdi + Bhakti Shakti (EV station) | 11 | 165 | PCMC |
| 15 | Bhosari | 2 | 137 | PCMC |
| 16 | Pimpri | 3.5 | 148 | PCMC |

*Note: * The numbers are approximate.*

### Figure 4 - 8 | Existing PMPML Bus Depots



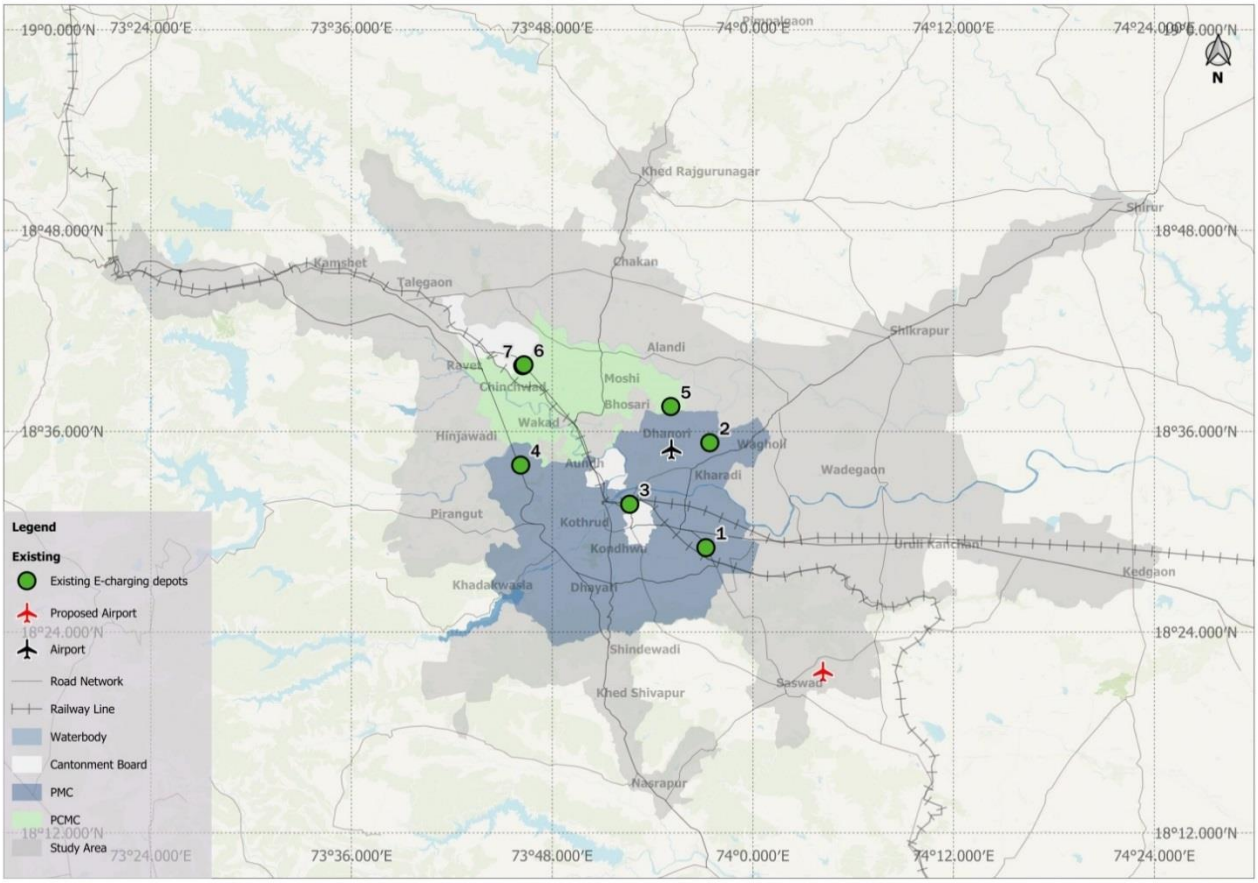
PMPML has **seven E-charging stations** at various locations in the Study Area. Given the increasing prevalence of electric vehicles, there is a growing demand for expanding charging infrastructure spatially across the Study Area. Depots equipped with E-charging facilities are presented in **Table 4 - 14** and **Figure 4 - 9.**

**Table 4 - 14 | Depots Equipped with E-charging facilities**

| No. | Name of Depot | Area of Space (Acre) | Load Capacity (KVA) | 9 M Buses | 12 M Buses | Jurisdiction |
|---|---|---|---|---|---|---|
| 1 | Bhekrainagar | 5.5 | 5,500 | 15 | 132 | PMC |
| 2 | Wagholi | 3 | 6,200 | - | 95 | PMC |
| 3 | Pune Station | 4 | 5,700 | - | 108 | PMC |
| 4 | Baner | 2.5 | 4,500 | - | 74 | PMC |
| 5 | Charholi | 3.5 | 4,500 | - | - | PCMC |
| 6 | Bhakti Shakti | 2 | 3,000 | 10 | 64 | PCMC |
| 7 | Nigidi | 9 | 4,900 | - | - | PCMC |

** 80 kW overnight charging points are provided at stations.*

**Figure 4 - 9 | PMPML Bus Depots Equipped with E-Charging Facilities**



## PROPOSALS FOR REDEVELOPMENT OF PMPML BUS DEPOTS

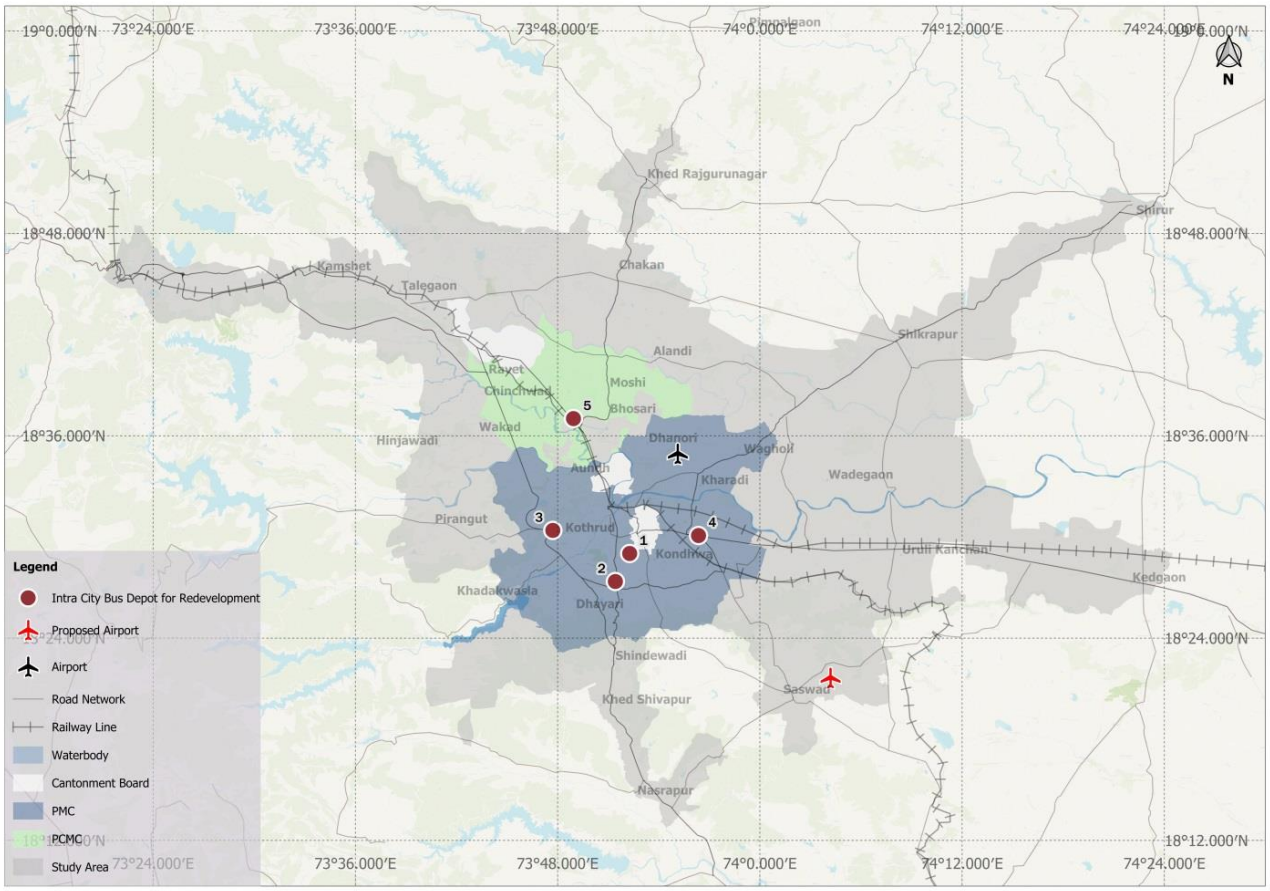
Among the existing bus depots, 5 depots are proposed for redevelopment and the same is presented in **Table 4 - 15** and **Figure 4 - 10.**

### Table 4 - 15 | Proposed PMPML Bus Depots for Redevelopment

| No | Name of Depot | Jurisdiction |
|---|---|---|
| 1 | Market Yard | PMC |
| 2 | Katraj | PMC |
| 3 | Kothrud | PMC |
| 4 | Hadapsar | PMC |
| 5 | Pimpri | PCMC |

The suggested locations serve as origin or destination points for future routes and serve to minimize dead mileage. Currently, all depots except for Bhekrainagar, Shewalewadi, and Balewadi are at full capacity. These depots may not be able to meet future demand, necessitating the expansion of depot facilities through vertical development.

### Figure 4 - 10 | Proposed PMPML Bus Depots for Redevelopment



## PROPOSALS FOR NEW PMPML BUS DEPOTS

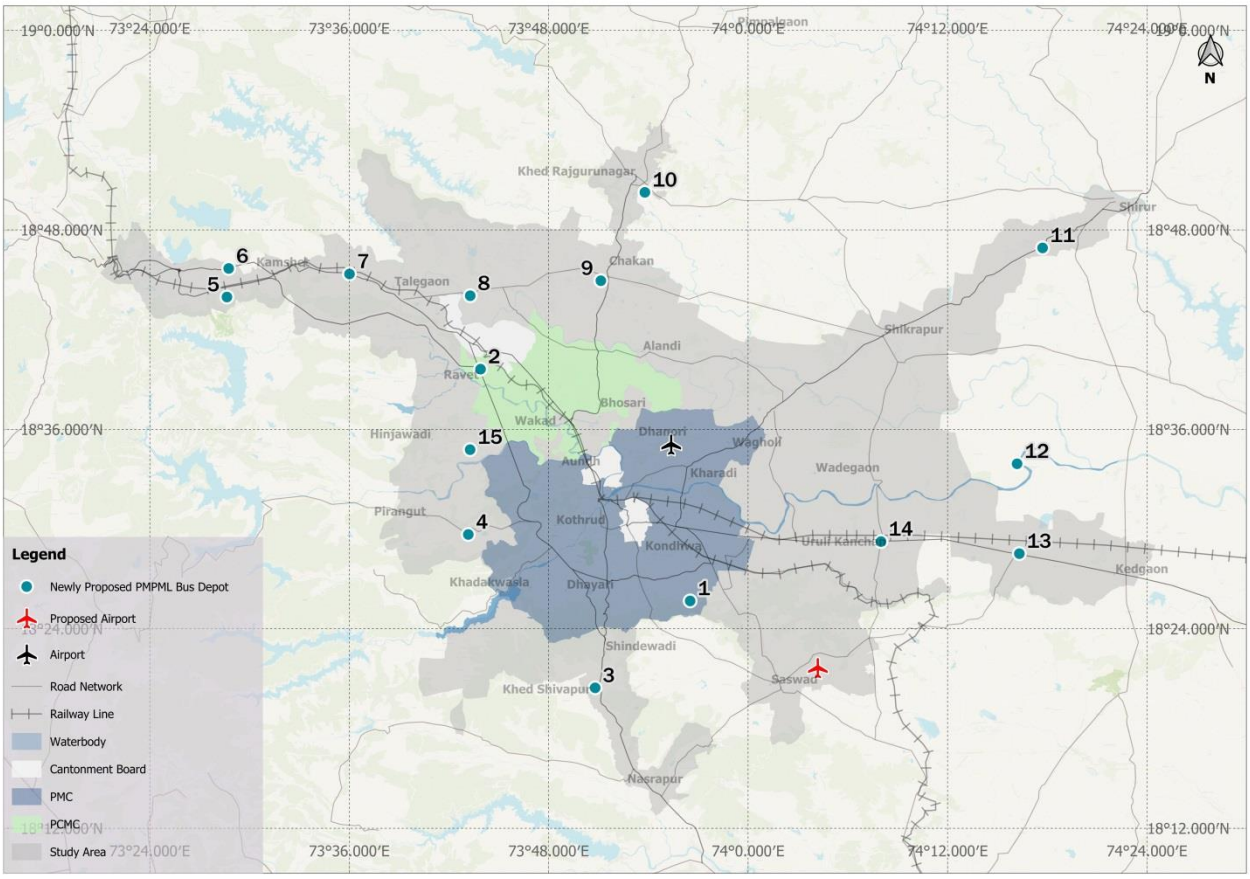
To cater to the future travel demand, several new Bus Depots are proposed at the peripheral areas. Each proposed location requires a minimum of 2 hectares of land to accommodate 100 buses, preferably 5 hectares land is required for terminal expansion to accommodate future growth. In cases where sufficient land is not available, the possibility of multi-storied bus parking shall be considered. The list of Bus Depots proposed in the Study Area is presented in **Table 4 - 16** and **Figure 4 - 11.**

**Table 4 - 16 | Proposed New PMPML Bus Depots**

| No. | Location Name | Jurisdiction |
|---|---|---|
| 1 | Holkarwadi | PMC |
| 2 | Ravet | PCMC |
| 3 | Khed Shivapur | Rest of PMR |
| 4 | Bhukum | Rest of PMR |
| 5 | Bhaje | Rest of PMR |
| 6 | Karla | Rest of PMR |
| 7 | Kanhe | Rest of PMR |
| 8 | Induri | Rest of PMR |
| 9 | Nanekarwadi | Rest of PMR |
| 10 | Santosh Nagar, Khed | Rest of PMR |
| 11 | Karegaon | Rest of PMR |
| 12 | Rahu, Daund | Rest of PMR |
| 13 | Yawat | Rest of PMR |
| 14 | Uruli Kanchan | Rest of PMR |
| 15 | Maan, Mulshi* | Rest of PMR |

** Proposed as PMPML Bus Terminal/Depot*

**Figure 4 - 11 | Proposed New PMPML Bus Depots**



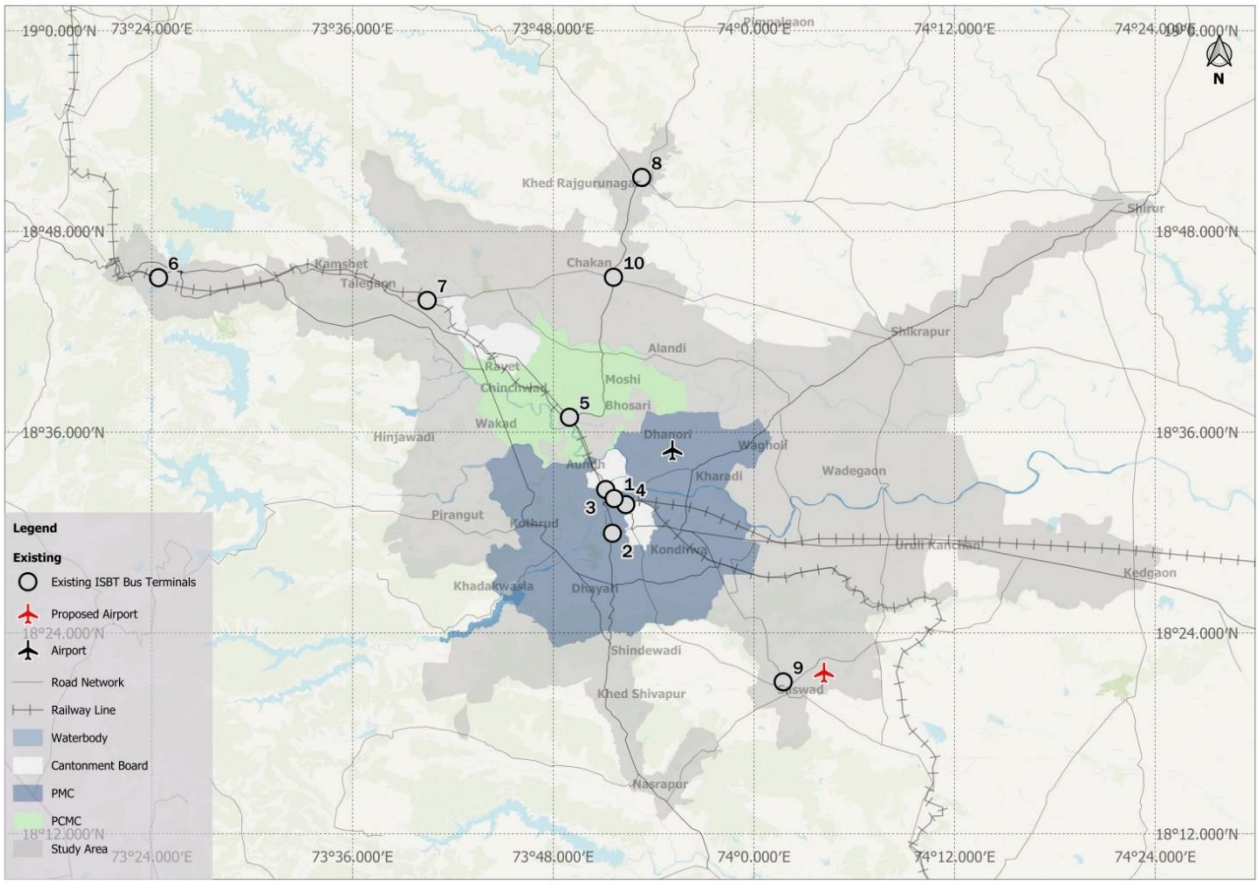

## INTER-CITY BUS TERMINALS

Details of existing Intercity (also known as Inter State Bus Terminals (ISBT)) within the Study Area are presented in **Table 4 - 17** and **Figure 4 - 12**.

**Table 4 - 17 | Details of Existing Intercity Bus Terminals**

| No. | Name | Type of Terminal | Jurisdiction |
|---|---|---|---|
| 1 | Sangamwadi | Private | PMC |
| 2 | Swargate | MSRTC (Major Terminal) | PMC |
| 3 | Wakdewadi | MSRTC (Major Terminal) | PMC |
| 4 | Pune Railway Station Bus Stand | MSRTC (Major Terminal) | PMC |
| 5 | Vallabh Nagar | MSRTC (Major Terminal) | PCMC |
| 6 | Lonavala | MSRTC | Rest of PMR |
| 7 | Talegaon | MSRTC | Rest of PMR |
| 8 | Rajgurunagar | MSRTC | Rest of PMR |
| 9 | Saswad | MSRTC | Rest of PMR |
| 10 | Chakan | MSRTC | Rest of PMR |

**Figure 4 - 12 | Existing Intercity Bus Terminals**



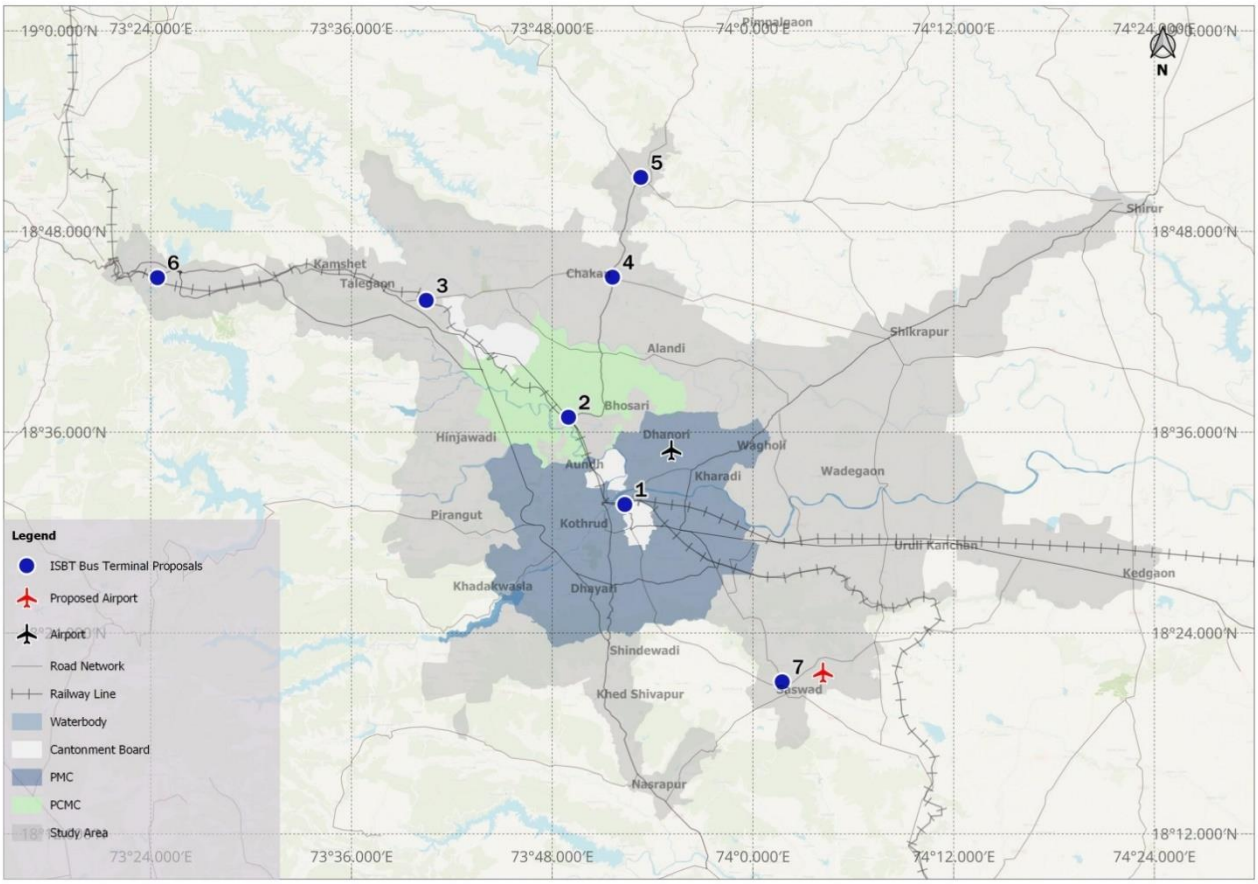

## PROPOSALS FOR REDEVELOPMENT OF INTER-CITY BUS TERMINALS

Redevelopment of Inter-city Bus Terminals is suggested based inventory of facilities and the details are presented in **Table 4 - 18** and **Figure 4 - 13**.

**Table 4 - 18 | List of Inter-city Bus Terminals for Redevelopment**

| No | Name | Jurisdiction |
|---|---|---|
| 1 | Pune Railway Station | PMC |
| 2 | Vallabh Nagar | PCMC |
| 3 | Talegaon | Rest of PMR |
| 4 | Chakan | Rest of PMR |
| 5 | Rajgurunagar | Rest of PMR |
| 6 | Lonavala | Rest of PMR |
| 7 | Saswad | Rest of PMR |

**Figure 4 - 13 | Proposed Inter-City Bus Terminals for Redevelopment**




Some of the common improvements suggested for Intercity Bus terminals is as follows :

- Improvement of Bus circulation e.g. separate entry/exit, adequate turning radius etc.,
- Upgradation of Passenger facilities (waiting area, seating facilities, public facilities and lighting)
- Passenger Information System (PIS)
- Pick-up and Drop-off facilities
- Parking Facilities
- Development of continuous footpaths to access the bus terminal and for internal movement
- Reorganization of facilities inside the terminal to optimize the space
- Proper signage & markings
- Provisions to accommodate differently abled people

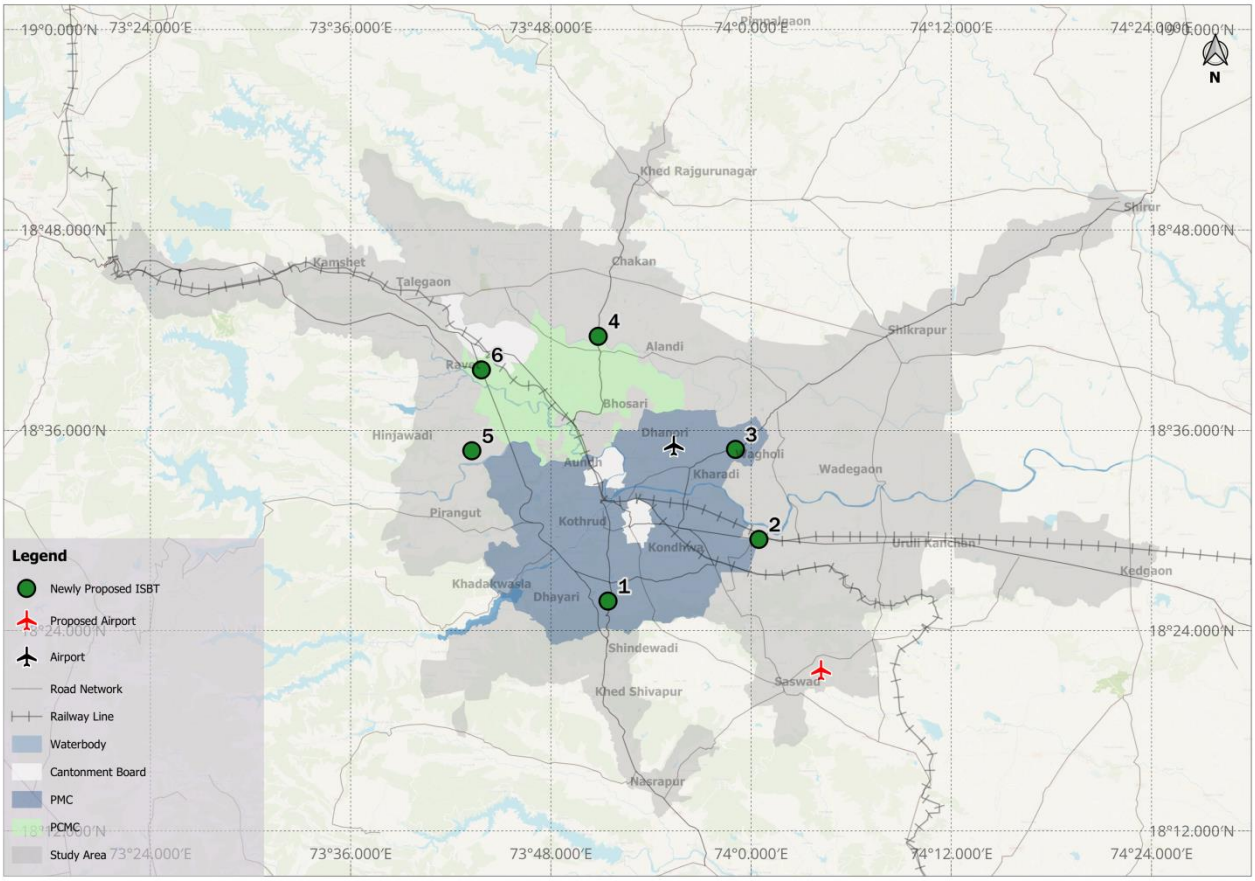
## PROPOSALS FOR NEW INTER-CITY BUS TERMINALS

Considering the existing and future developments in the Study Area, new Intercity/Interstate Bus terminals are proposed to cater to the future demand. Five new Inter-city /Inter-state Bus Terminals proposed are presented in **Table 4 - 19** and **Figure 4 - 14**.

**Table 4 - 19 | List of Proposed Inter-city Bus Terminals**

| No | Location Name | Area (in acres) | Jurisdiction |
|---|---|---|---|
| 1 | Mangdewadi (Near Katraj) | 35 | PMC |
| 2 | Loni Kalbhor | 15 | Rest of PMR |
| 3 | Vitthalwadi | 30 | PMC |
| 4 | Moshi | 15 | Rest of PMR |
| 5 | Maan Mulshi (Hinjawadi) | 35 | Rest of PMR |
| 6 | Mukai Chowk | 30 | PCMC |

**Figure 4 - 14 | Proposed Inter-city Bus Terminals**




## AIRPORT CONNECTIVITY

The current passenger traffic for 2022-23 at the Pune International Airport in Lohegaon is 8 million passengers per annum. The details of the existing airport, road and public transport connectivity are presented in **Section 2.2.1** of **Chapter 2.** Considering average growth of 12% in passenger traffic over the past 10 years and the fact that the existing airport is sharing a runway with the Indian Air Force base and land constrains a new green field airport is proposed near Purandar Taluka of Pune District to cater to the future demand. A spur line is proposed from Ramwadi to Pune International Airport Lohegaon via Viman Nagar as part of Chandani Chowk to Vitthalwadi Corridor to provide direct connectivity to the existing airport. The proposed metro connectivity to Pune International Airport at

Lohegaon is discussed in detail in **Section 4.2.2** of **Chapter 4**.

According to the Traffic Forecast report for the Detailed Techno-Economic Feasibility Study for Development of Chhatrapati Sambhaji Raje International Airport, the projected passenger traffic is 47 million and it is expected to handle about 2 lakh tonnes of cargo by 2035. The passenger traffic is expected to grow at 11% per annum while the freight traffic is expected to grow at 9% per annum. Based on the above projections, airport connectivity proposals have been identified and presented.

## ROAD CONNECTIVITY

There are five major access roads to proposed airport from various locations in PMR. In order to provide better connectivity to proposed airport there is a need for development of all roads connecting airport. In order to provide good access to the airport all the access roads shall be developed with four lane divided configuration. The road alignment shall use flyovers/tunnels, gentle vertical and horizontal gradient at required locations to reduce the travel time. The proposed access roads to the airport are as follows:

**1. Hadapsar- Saswad Road from Dive Ghat**

- This road will serve the airport traffic generated from Hadapsar, Vimannagar, Kharadi, Wagholi, Magarpatta Area and areas around Nagar Road. The length of the road is 21 km. Currently, it is a two-lane road till the end of the Ghat road and four lane road over the hill. The geometrics of this road are comparatively better than the other roads.
- Widening of Saswad Road to 4-lane configuration initially and 6-lane configuration by 2038 is required based on travel demand model. The 4-lane expansion between Hadapsar and Dive Ghat is currently under consideration by NHAI with work having been started in the stretch between Lonand and Saswad. Beyond 2038, another 4-lane road needs to be planned through alternative route in the Ghat section.

**2. Saswad- Bopdev Pune Road from Bopdev Ghat**

- This road will serve the airport traffic generating from Kondhwa, NIBM, Wanowrie, Fatima Nagar etc. The length of the road is 24 km. Currently it is a two lane till the foot of the hill and 1 to 1.5 lanes thereafter. As compared to Hadapsar- Saswad road this road is used less due to steep gradient and narrow carriageway.
- This road shall be developed into a 4-lane road with better road geometrics to handle the traffic demand.

**3. Uruli-Kanchan Jejuri Road**

- This road will serve the airport traffic generating from Uruli Kanchan and areas around the Solapur Road. The length of the road is 15.5 km. Currently, it is an intermediate lane configuration. The vertical geometrics of this road in the ghat section are to be corrected for serving fast moving airport traffic.
- This road shall be developed into a 4 lane divided road with improvements in geometric designs to cater to the airport traffic.

**4. Saswad- Kapurhol- Bhor Road**

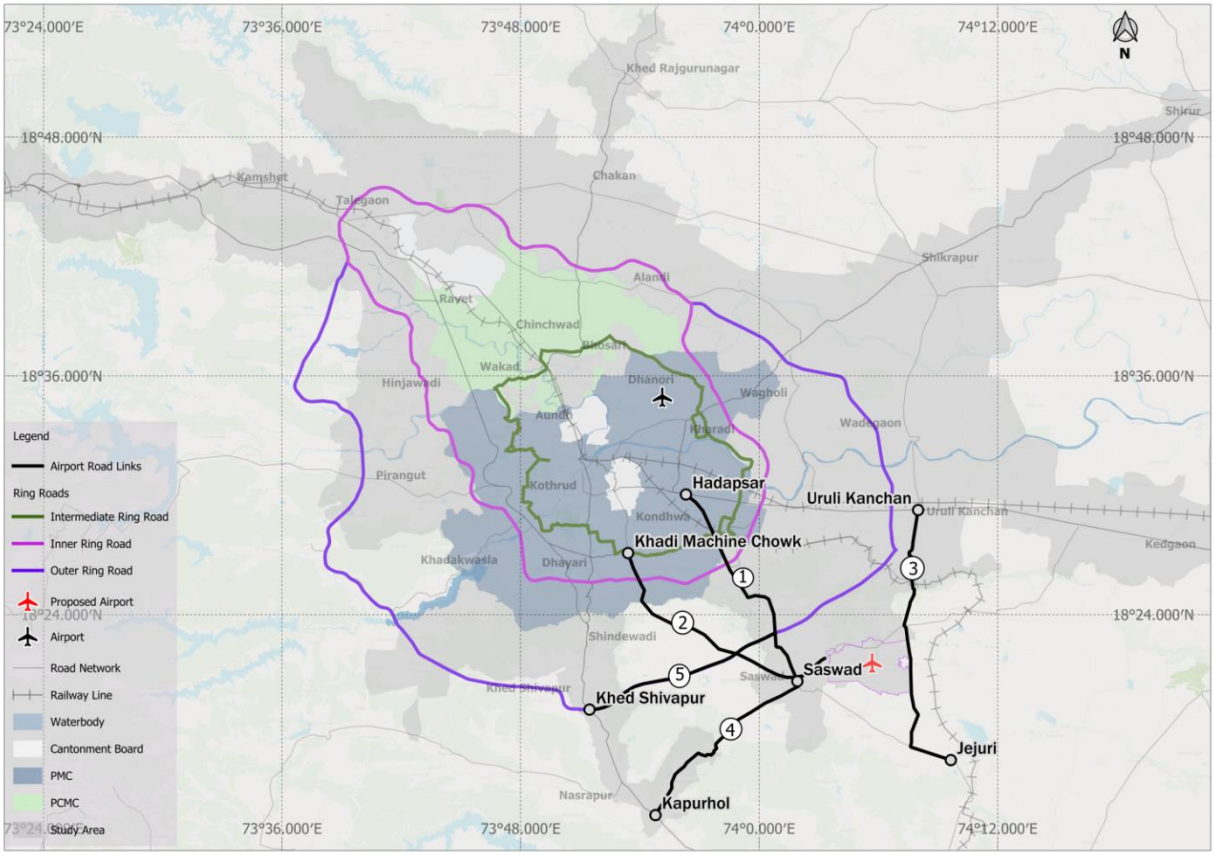
- This road will serve the airport traffic generating from Nasrapur, Kapurhol and other areas on Satara Road. The length of the road is 19.8 km. Currently it is 1.5 to 2 lane road passing through Narayanpur and Purandar. The geometrics and condition of this road is good.
- This road shall be developed into a 4 lane road and would serve as an alternative to the Khed Shivapur Saswad Link Road.

**5. Khed Shivapur- Saswad Link Road**

- This road will serve the airport traffic generating from areas like Khed, Shivapur and other areas on Satara Road. The length of the road is 18 km. Currently it is a single lane road with poor geometrics and pavement condition.
- The road shall be developed into a four-lane configuration with improved geometrics. This road runs alongside the proposed Pune Outer Ring Road alignment.

The location of the five major road links connecting the airport is presented in **Figure 4 - 15**. Among all the roads, Hadapsar – Saswad Road from Dive Ghat and Saswad – Bopdev Pune Road from Bopdev Ghat shall be prioritized.

**Figure 4 - 15 | Road Connectivity to Proposed New Airport at Purandar**



## BUS SERVICES TO AIRPORT

It is recommended that regular bus services exclusively for airport passengers be operated from key city nodes such as Shivaji Nagar, Hinjawadi, and Pimpri-Chinchwad. Additionally, if the proposed railway terminal is not conveniently located near the airport, a shuttle service should be developed to connect the railway terminal to the airport terminal area.

## METRO CONNECTIVITY

In the current Comprehensive Mobility Plan (CMP), a Metro Rail corridor is proposed from Hadapsar to Saswad. It is further recommended to extend this corridor up to the proposed New International Airport at Purandar to provide seamless connectivity between the city and the airport for passengers. However, the challenging hilly terrain between Saswad and the airport would require the construction of special bridges and tunnels, resulting in significant cost implications.

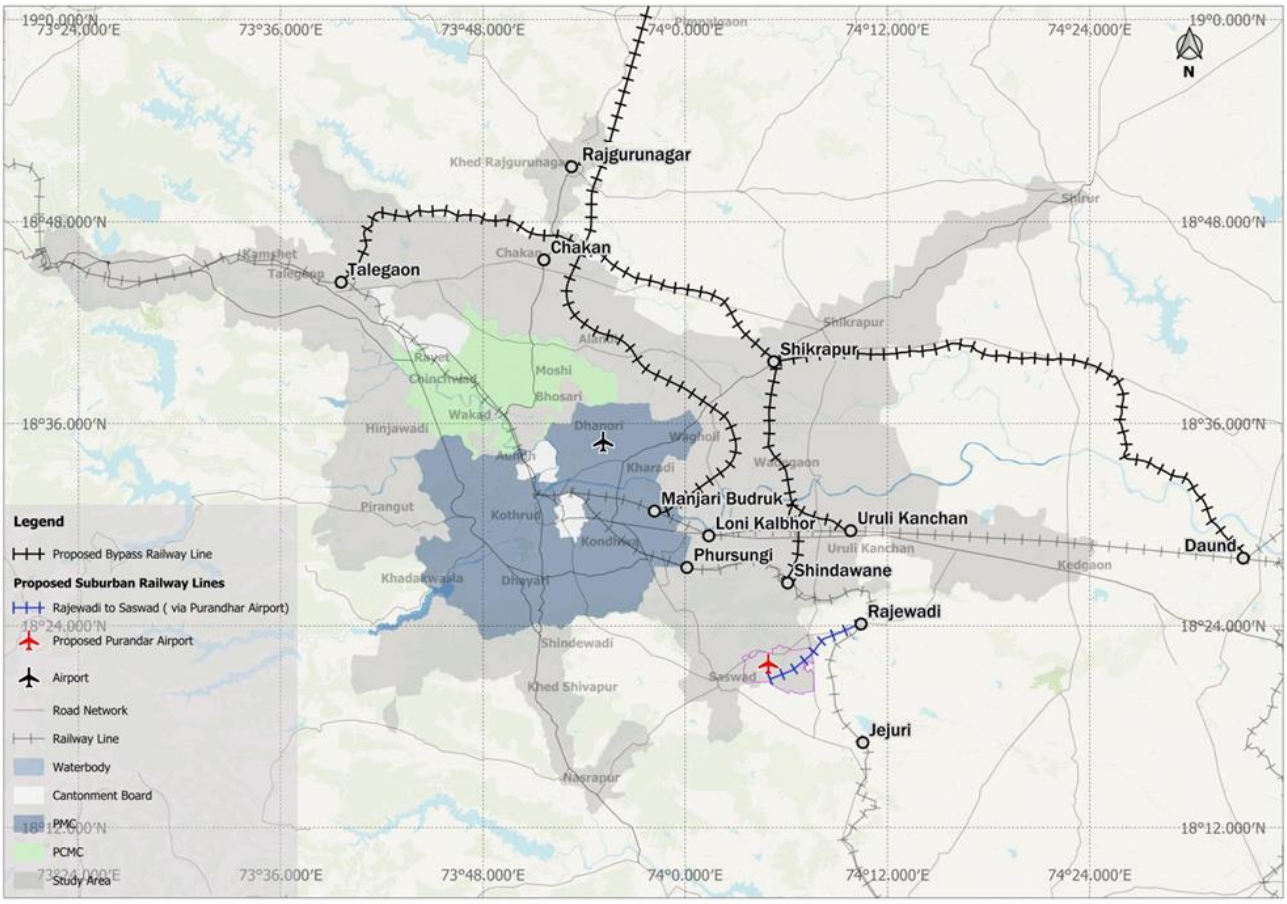
Considering these challenges, it is recommended to conduct a detailed feasibility study to assess the technical, financial, and environmental aspects of the proposed Airport Metro. Additionally, it is essential to ensure that the Airport Metro station is integrated with the Airport Master Plan for efficient multimodal connectivity.

## RAIL CONNECTIVITY

The existing railway line from Pune to Jejuri takes a detour due to the steep hilly terrain. Considering the high value of time for airport users, a direct rail link must be developed. The effectiveness of the proposed airport hinges on efficient road and rail connections from the city, with an ideal travel time from the city center to the airport shall be between 45 to 60 minutes.

Currently, the regional rail link from Pune to Satara passes through Jejuri, with Rajewadi being the nearest station to the proposed airport site. To further enhance connectivity, a new suburban spur rail link is proposed from Rajewadi to the airport, including a terminal station at the airport. This rail connection would help ensure affordable, reliable, and efficient mass transit access to the airport from both the city core and suburban areas. The rail connectivity from major locations in the study area to the proposed airport is illustrated in **Figure 4 - 16.**

**Figure 4 - 16 | Rail Connectivity to Proposed New Airport at Purandar**




## 4.2.3 | RAILWAY PROPOSALS

Railway proposals for both passenger and goods traffic which are either under implementation or in pipeline are summarized below based on the data collected from Central Railways.

- **Third and Fourth line from Pune to Lonavala:** MVRC has revised the DPR in July 2023 with a cost of Rs. 5100 Crore. Maharashtra Government would bear 50% of the project cost.
- **Doubling of Pune-Satara-Miraj rail line:** Around 85% doubling works are complete.
- **Pune-Nashik Semi High-Speed Rail:** The project was announced in March 2021 after the Railways gave its in-principal approval in June 2020. The project is estimated to cost Rs 16,039 crore. The project will have two Railway Stations i.e. Hapadsar, Manjari, Wagholi, Alandi, Chakan and Rajgurunagar within the Study Area.
- **Redevelopment of Pune Railway Station:** Ministry of Railways has entrusted the work to Rail Land Development Authority (RLDA). Railways have sent proposal to PMC to relocate the existing ST Bus Stand
- **Development of Hadapsar Railway Station:** Hadapsar is proposed to be developed as a Satellite Terminus with a cost of Rs. 148 Cr. Railways have sent the proposals to PMC for

widening the access roads to the station, land acquisition to develop various infrastructural facilities such as stabling line, second entry to the station, parking, parcel facilities, retiring room, reservation and booking facilities etc., Railways also asked PMC to study the feasibility of ROB near the station to improve the traffic circulation.

- **Uruli Mega Coaching Terminal:** Mega Coaching Terminal at Uruli is being planned to decongest existing Railway stations and create capacity to cater for future traffic demand.
- **Development of Goods Shed at Loni:** It is one of the busiest freight terminals of the Pune Division handling cement & steel. It is proposed to enhance the capacity of the terminal by increasing the circulation area and length of Goods line with shunting neck. The sanctioned cost of the proposal is Rs.47 crore.
- **Railway siding at Patas** will cater the needs of proposed cement cluster and at Charoli Alandi station near Uruli Kanchan to serve the need of proposed Bharat Petroleum storage facility.
- **Expansion of the existing Saswad railway siding** facility to 15,000 tons from present handling capacity of 3000 tons.
- **Multi-modal logistic park** is proposed to be developed at Mavali near Lonavala.
- **Amrit Bharat Station Scheme:** Following stations are proposed to be developed under this scheme,
  - Dehu Road
  - Chinchwad
  - Hadapsar
  - Uruli
  - Wathar
  - Lonand
  - Kedgaon
  - Baramati
  - Karad

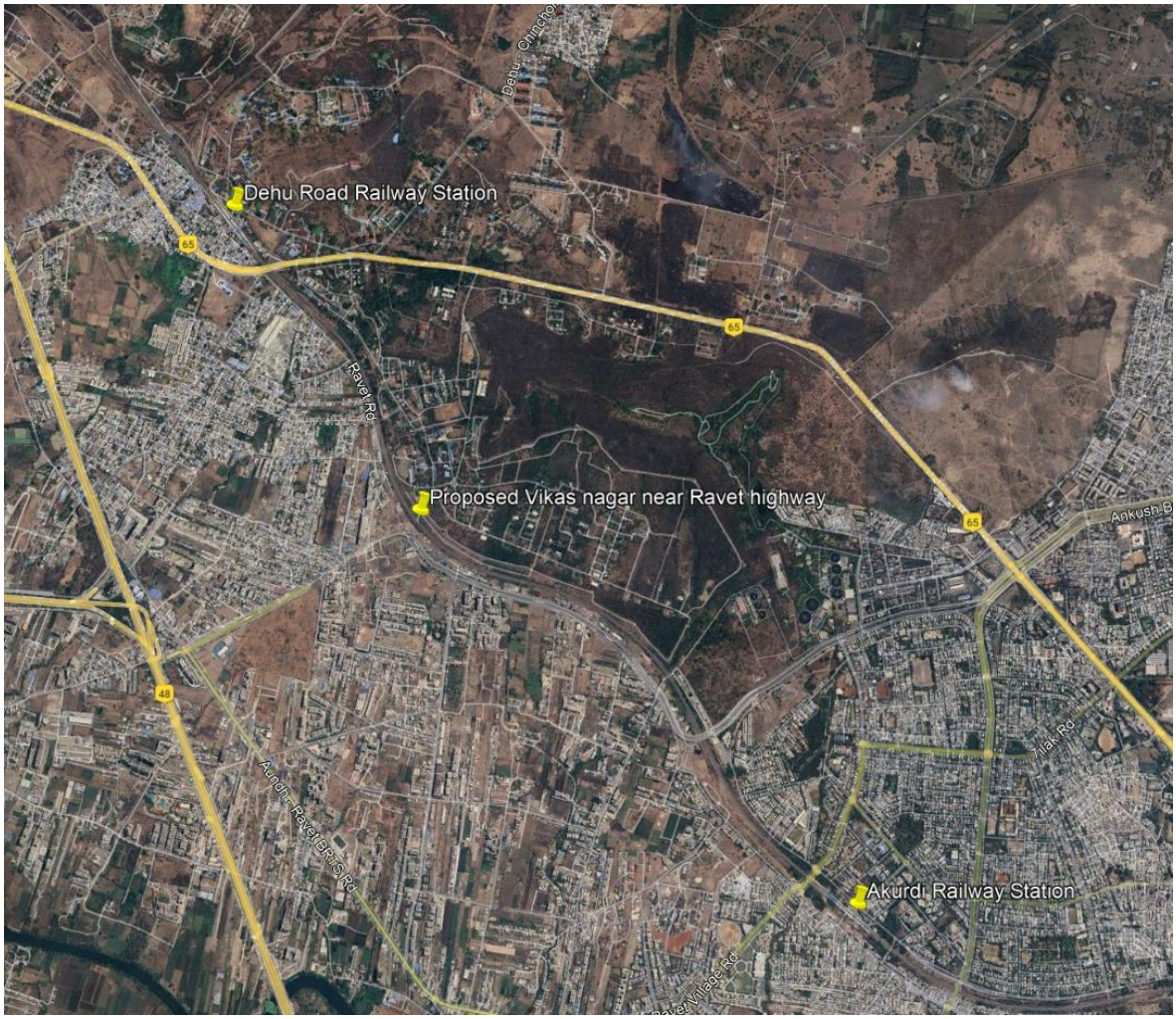
In additional above, following minor works are proposed by Central Railways in Pune Division:

- Improvement to passenger amenities at Shivaji Nagar , Khadki , Dapodi, Kasarwadi, Pimpri , Begdewadi, Gorawadi , Vadgaon , Kamshet, Malavli , Kanhe , Loni , Yewat and Patas
- Provision of Cover Over Platform (COP) at various stations in Pune- Daund section like Loni, Yevat and Patas
- Provision of COP at various stations of SVJR-MVL section like Shivaji Nagar , Khadki , Dapodi, Kasarwadi, Pimpri , Begdewadi, Gorawadi , Vadgaon , Kamshet, Malavli
- Provision of standard signage's at Pune Station
- Improvement to station circulating area in front and back side of Pune Station
- Raising of Platform height to facilitate passenger boarding / deboarding EMU trains at various Suburban stations of SVJR- MVL section

- Up gradation / Modernisation of infrastructure of various goods shed like Chinchwad, Baramati , Karad,Lonand,Loni, Miraj ,Phursungi , Sasvad Road , Satara, Gurmarket, Sangli Goods Shed
- Proposed construction of ROB along with RUB between JSP-HTK on Miraj- Kolhapur section, between SIW-KRD , Kirloskarwadi- Bhilavdi , Nandre- Sangli , Ghorpadi- Saswad, Targaon – Masur and Masur – Shirwade on Pune- Miraj Section
- Provision of Cover Over shed on both side ramp of LHS No 42,47,and 53 of Pune- Lonavala section to avoid water logging.

In additional above, a new suburban railway station is proposed between Akurdi and Dehu Road Railway Station as a lot of residential development has taken place near Vikas Nagar. The distance between the two stations is 4.5 kms. Considering the future potential for development around this region, a suburban station is proposed to be constructed near Vikas Nagar along the Ravet highway for better access to the people of Vikas Nagar. The location is presented in figure below.

**Figure 4 - 17 | New Suburban Station between Dehu Road and Akurdi Station**



## RAIL GOODS TERMINALS

**The current goods shed in Pune and Pimpri-Chinchwad includes:**

- Infrastructure developed at Gadital and additional yards at Hadapsar and Chinchwad
- Oil sidings at Loni Kalbhor
- Container depot at Chinchwad
- Military Sidings at Khadki and Dehu Road
- Rail terminals at Pune Railway Station, Phursungi and Ghorpadi.
- Marshaling yard at Daund
- Inland Container Depots without Container Freight Stations at Chinchwad.

At most of the above locations, lack of capacity, access and dispersal is a major issue due to space constraints. Considering the increasing demand of passenger traffic and the space constrains at all the existing railway terminals the Existing Yard / Goods Sheds / Railway Siding shall be shifted to outside city limits along the proposed bypass line and the space thus released may be utilized to augment the existing passenger facilities. For example, Phursungi is having severe access problems. In addition to above, the proposed Greenfield airport access road passes through Phursungi.

## BYPASS RAIL LINE CONNECTING TALEGAON WITH DAUND

At present, the Suburban trains are sharing tracks with long distance trains and therefore increasing the frequency is not possible. The current railway lines in Pune division are saturated. The capacity utilization with maintenance for the year 2021-22 is presented in **Table 4 - 20**.

**Table 4 - 20 | Capacity Utilization of Rail lines in Pune Division (2021-22)**

| Section | Capacity Utilization | Work in Progress |
|---|---|---|
| Lonavala-Talegaon | 63% | ▪ Automatic signaling of LNL-PA section (PH 33). Commissioned between LNL-CCH & in CCH-PA: work in progress.<br>▪ PA-LNL: 3rd/4th line suburban corridor under MUTP, executed by MRVC, sanction awaited.<br>▪ PA Station: Extension of PFs to 24/26 Coach work in progress. |
| Talegaon-Pune | 107.4% | |
| Pune-Daund | 74.3% | ▪ Hadapsar: Satellite Terminus work in progress. |
| Pune-Satara | 107.6% | ▪ PA-MRJ-Londa Doubling work (PH15) in progress by Const. Sections Commissioned PA-ALN-SHIV, ABLE-RJW, DNJ-WLH, LNN-AKI & SNE-TKR-BVQ.<br>▪ BRMT-Phaltan-Lonand - New line between Lonand-Phaltan commissioned .For Phaltan-Baramati, work is in progress. |
| Daund-Baramati | 30% | ▪ BRMT-Phaltan-Lonand - New line between Lonand-Phaltan commissioned. Work for Phaltan-Baramati is in progress. |

*Source | Central Railways*

To meet future demand, a bypass rail line connecting Talegaon-Daund is proposed. This line will link the proposed Pune-Nashik semi-high speed rail line and various industrial areas, helping to divert road

traffic. The development of the bypass rail line is proposed in two phases:

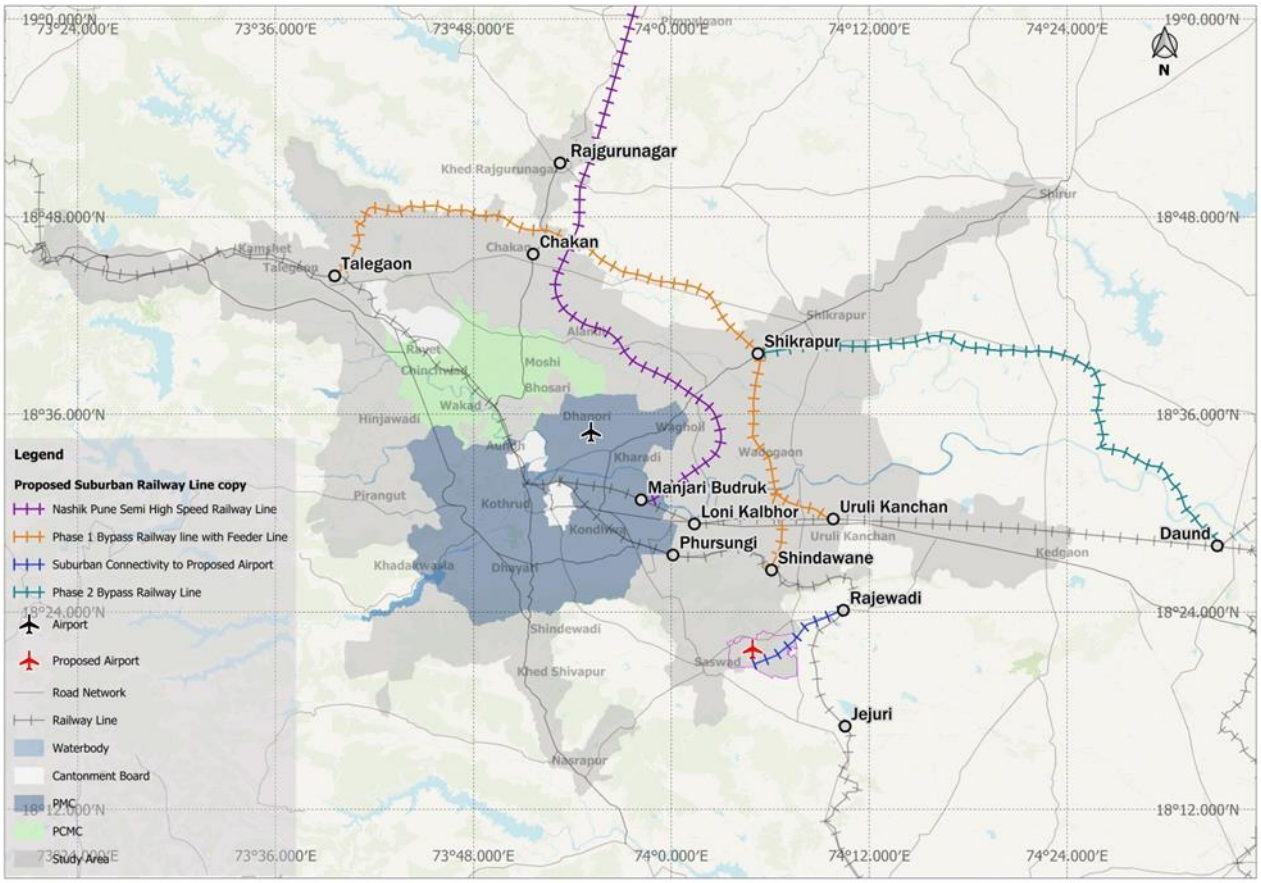
- **Phase I:** Talegaon to Shikrapur, including feeder railway lines to connect Uruli Kanchan on the Pune-Solapur line and Shindawane on the Pune-Miraj Railway line.

- **Phase II:** Shikrapur to Daund.

Upon completion of the quadrupling of the Lonavala-Pune rail line, the bypass rail line can be dedicated utilized for movement of goods trains. This will aid in decongesting the city by relocating the goods shed from core areas to outside the city, thereby maximizing the land potential of the city center. The proposed bypass line and railway terminal locations are illustrated in **Figure 4 - 18**.

It is proposed that Phursungi station, strategically located in the study area along the Pune-Miraj line, be converted into a passenger terminal. At the same time, existing goods operations at Phursungi shall be relocated to Shindawane.

**Figure 4 - 18 | Proposed Bypass Railway Line and Pune Nashik Semi-High Speed Railway Line**



### STATION AREA TRAFFIC IMPROVEMENT SCHEMES (SATIS)

Station Area Traffic Improvement Scheme (SATIS) aims to improve traffic flow and pedestrian movement around the busy suburban rail stations. It comprises of improvements in vehicular and passenger entry exit, smooth dispersal, parking management, drop-off/pick-up facilities etc. Based on the current constraints and passenger demand, 5 stations are proposed for SATIS and the same is presented in **Table 4 - 21**. A detailed station level study needs to be undertaken to identify the exact nature of improvement proposals.

**Table 4 - 21 | List of Railway Stations identified for SATIS**

| No. | Name of the Station | Current Status |
|---|---|---|
| 1 | Pune Railway Station | Redevelopment of Station in progress |
| 2 | Shivaji Nagar Railway Station | - |
| 3 | Pimpri Railway Station | - |
| 4 | Talegaon Railway Station | - |
| 5 | Chinchwad Railway Station | - |

## 4.3 | ROAD NETWORK DEVELOPMENT PLAN

Based on the travel demand, new roads, roads for widening, grade separators are proposed and presented in this section.

### 4.3.1 | RING ROADS

Over the years, Pune has grown in concentric rings. While the Radial roads have been developed, development of Ring roads got delayed due to various constraints. The details of the Ring roads proposed in the Study Area are presented in **Table 4 - 22**. Once all the Ring roads are implemented, it will significantly improve traffic dispersal within the urbanized areas.

**Table 4 - 22 | Details of Proposed / Under Implementation Ring Roads**

| No. | Name | Length (Km) | Lane Configuration |
|---|---|---|---|
| 1 | Intermediate Ring Road | 70.0 | 6 to 8 Lane |
| 2 | Inner Ring Road by PMRDA | 82.9 | 8 Lane |
| 3 | Outer Ring Road by MSRDC | 137.3 | 6 to 8 Lane |
| | **Total** | **290.2** | |

### INTERMEDIATE RING ROAD

There is a need for an Intermediate Ring Road (IRR) in the PMC area. The proposed IRR will span 70 km, with 47 km consisting of existing roads and 23 km designated as a greenfield route. Among the existing roads, approximately 7 km will require widening due to their current narrow width. The project will also involve the construction of three tunnels, two bridges, and one Road Over Bridge (RoB) to

complete the ring. The primary objective of the IRR is to alleviate congestion in the core PMC area and enhance overall traffic dispersal.

The projected peak hour traffic on IRR is 12,489 PCUs in 2054. The peak hour traffic of the various sections of the ring road is presented in **Table 4 - 23**. Details of Intermediate ring roads are presented in **Figure 4 - 19** and **Table 4 - 22.**

## INNER RING ROAD

The Inner ring road of length 82.9 km covering 29 villages along the periphery of PMC and PCMC is being implemented by PMRDA. The proposed Inner Ring Road connects with the Outer Ring Road by MSRDC at Parandvadi in the West end and Solu in the East end. This section is common to both Inner Ring Road and Outer Ring Road. The RoW of the ring road corridor is 65 m. The ring road will connect five National Highways i.e. Pune-Nashik, Pune-Solapur, Pune-Ahmednagar, Pune-Bengaluru and Pune-Satara. It is proposed to be a toll road. A total of 9 interchanges, 17 major bridges, 32 minor bridge, 8 vehicle underpass, 34 flyovers, 16 vehicle overpass, 3 RoB's and 10 tunnels as part of the Inner Ring Road.

The main purpose of the Ring Road is three-fold:

- To divert regional truck and passenger traffic
- To relieve the congestion within the city
- To catalyze the dispersal of urban growth

The projected peak hour traffic on Inner ring road is 13,187 PCUs in 2054 and the peak hour traffic on various sections of the ring road is presented in **Table 4 - 23.** Currently, funding for the project is secured, and land acquisition is underway.

## OUTER RING ROAD

Maharashtra State Road Development Corporation (MSRDC) is spearheading the development of 137 km Outer Ring Road, designed as a 6-8 lane access-controlled highway encircling Study Area. This strategic infrastructure project aims to enhance regional connectivity and facilitate smoother traffic flow. With a designated vehicle speed limit of 120 kilometers per hour, the highway will link the Khed, Haveli, Purandar, Bhor, Mulshi, and Maval. The Outer Ring Road's alignment is segmented into three distinct sections. The first part of the eastern alignment, Urse-Soli, will overlap with the Inner Ring Road project. The second part of the eastern alignment extends from Solu to Varve (Kelawade), while western alignment stretches from Urse to Varve.

The ring road will connect 6 National Highways passing through Pune Metropolitan Region i.e. Pune-Nashik, Mumbai-Pune, Pune-Solapur, Pune-Ahmednagar, Pune-Satara and the proposed Pune Aurangabad National Highway. Upon completion, the Outer Ring Road is expected to significantly enhance vehicular movement, reduce congestion, and support the broader developmental goals of the

Pune Metropolitan Area.

The projected peak hour traffic on the Outer ring road is 9,238 PCUs in 2054. The details of section wise peak hour volumes on the Ring Roads are presented in **Table 4 - 23**.

**Figure 4 - 19 | Proposed & Under Implementation Ring Roads in the Study Area**

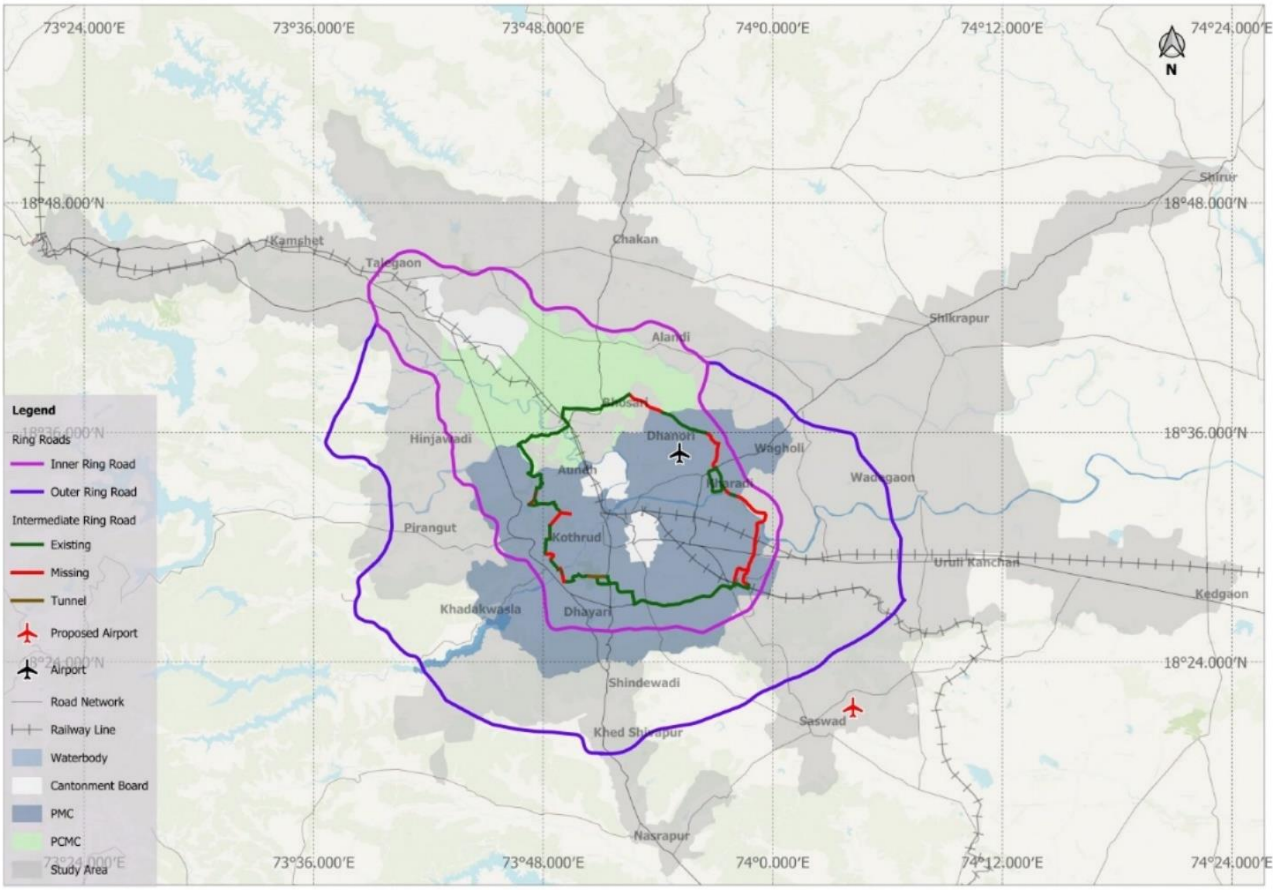



**Table 4 - 23 | Peak Hour Traffic on various sections of Ring Roads**

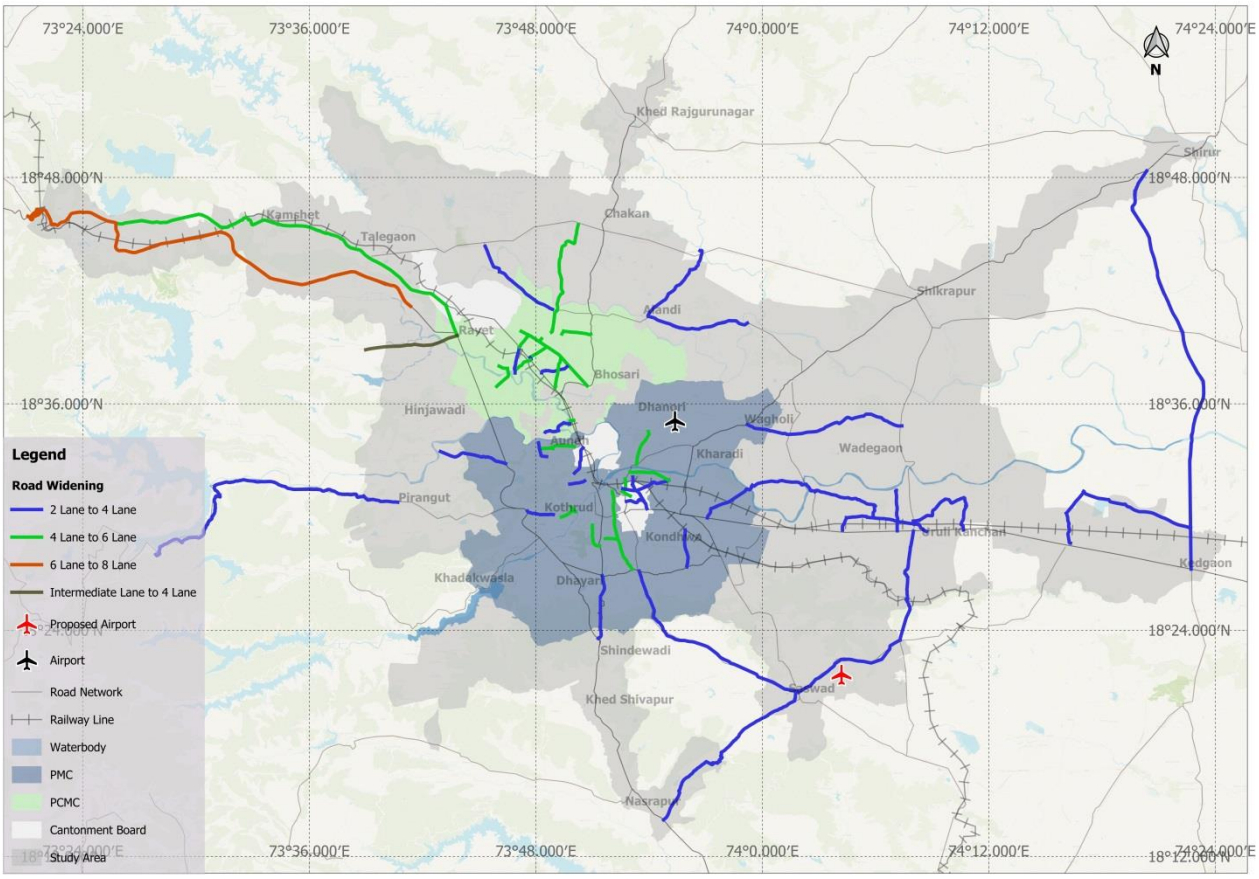
| Ring Road Name | Section | Peak Hour PCU | | | |
|---|---|---|---|---|---|
| | | 2024 | 2034 | 2044 | 2054 |
| Outer Ring Road | NH 60 to NH 965 | 931 | 1,547 | 2,460 | 3,594 |
| | NH 965 to SH 61 | 1,174 | 1,921 | 3,030 | 4,400 |
| | SH 61 to NH 548D | 185 | 838 | 1,765 | 3,115 |
| | NH 548D to SH 50 | 185 | 838 | 1,765 | 3,115 |
| | NH 48 to NH 753F | 1,239 | 2,685 | 4,285 | 5,409 |
| | NH 753F to NH 48 | 3,334 | 4,509 | 5,966 | 6,918 |
| | NH 48 to NH 548D | 3,551 | 4,651 | 5,488 | 6,451 |
| | NH 548D to NH 60 | 3,245 | 4,370 | 4,645 | 5,027 |
| | NH 60 to NH 753F | 6,140 | 7,608 | 8,545 | 9,238 |
| | NH 753F to NH 65 | 2,775 | 3,982 | 4,890 | 6,640 |

| Ring Road Name | Section | Peak Hour PCU | | | |
|---|---|---|---|---|---|
| | | 2024 | 2034 | 2044 | 2054 |
| Inner Ring Road | Outer Ring Road to NH 753F | 6,254 | 7,912 | 8,812 | 9,385 |
| | NH 753F to NH 60 | 6,907 | 9,421 | 10,974 | 13,187 |
| | NH 60 to NH 965 | 5,035 | 6,598 | 7,487 | 9,023 |
| | NH 965 to NH 65 | 4,029 | 5,177 | 5,797 | 7,199 |
| | NH 65 to NH 753F | 2,844 | 3,873 | 4,543 | 4,978 |
| | NH 753F to Outer Ring Road | 3,800 | 5,638 | 6,455 | 6,970 |
| Intermediate Ring Road | NH 60 to NH 753F | 5,505 | 6,803 | 7,649 | 8,720 |
| | NH 753F to NH 965 (North West) | 7,342 | 9,747 | 11,050 | 12,489 |
| | NH 965 to Alandi Road | 6,065 | 8,013 | 8,976 | 9,582 |
| | Alandi Road to NH 753F | 2,856 | 4,077 | 4,576 | 4,818 |
| | NH 753F to NH 965 | 2,815 | 3,687 | 4,325 | 5,638 |
| | NH 965 to NH 60 | 5,989 | 7,360 | 8,295 | 9,397 |

## 4.3.2 | ROAD WIDENING PROPOSALS

Based on the travel demand, several roads in the Study Area have been identified for widening in horizon years. When an existing roadway is widened, the existing footpaths shall be demolished and new ones to be built after widening the road. Hence, in all widening proposals, construction of new footpaths and corresponding costs are included in cost estimates. Length of roads identified for widening are presented in **Table 4 - 24**. Details of Road widening by lane configuration is presented in **Table 4 - 25.**

### Figure 4 - 20 | Proposed Roads for Widening




### Table 4 - 24 | Details of Road Widening by Lane Configuration

| Lane Configuration | Length (in Km) |
|---|---|
| Intermediate Lane to 4 Lane | 10 |
| 2 Lane to 4 Lane | 283 |
| 4 Lane to 6 Lane | 98 |
| 6 Lane to 8 Lane | 47 |
| **Grand Total** | **438** |

### Table 4 - 25 | List of Roads Proposed for Widening

| No. | Road Name | Length (km) | Existing Lane Configuration | Proposed Lane Configuration | Jurisdiction | Phasing |
|---|---|---|---|---|---|---|
| 1 | Mukai Chowk Kiwale – Sangavade Chandkhed | 10 | Intermediate | 4L | PCMC/ Rest of PMR | 2034 |
| | **Sub-Total (A)** | **10** | | | | |
| 2 | New DP Road from Chandrakant Gaikwad Chowk to Ambedkar Chowk | 1 | 2L | 4L | PMC | 2034 |
| 3 | Gurudware Road From Indira Gandhi Chowk to Vikramaditya Marg | 1 | 2L | 4L | PMC | 2034 |

| No. | Road Name | Length (km) | Existing Lane Configuration | Proposed Lane Configuration | Jurisdiction | Phasing |
|---|---|---|---|---|---|---|
| | Junction | | | | | |
| 4 | Nargis Dutt Road from Vithal Chowk to Ganeshkhind Road | 1 | 2L | 4L | PMC | 2034 |
| 5 | NH 753F Mulshi-Paud Road from Ghotewade Phata Chowk to Mulshi | 22 | 2L | 4L | PMC | 2034 |
| 6 | NH 753F Tamhini Ghat Road From Mulshi to Varak | 8 | 2L | 4L | PMC | 2034 |
| 7 | Handewadi Road from Saswad Road junction to Sasane Nagar Road | 4 | 2L | 4L | PMC | 2034 |
| 8 | Koregaon Road from Seafarers Memorial Camp Pune to St. Meera College | 1 | 2L | 4L | PMC | 2044 |
| 9 | NH 60 Pune-Satara Road from Katraj Chowk to NH 48 Mumbai Satara Highway | 6 | 2L | 4L | PMC | 2044 |
| 10 | Pimple Gurav Road from Mata Shitala Devi Chowk to Trimurthi Chowk | 1 | 2L | 4L | PMC | 2054 |
| 11 | DP Road from Karve Statue to Raviraj Residency Bus Stop | 3 | 2L | 4L | PMC | 2054 |
| 12 | Ghorpadi Road From National War Memorial Southern Command to Star Junction | 3 | 2L | 4L | PMC | 2054 |
| 13 | Prayagdham Fatal Rd from Solapur-Pune Highway to Grampanchayat, Koregaon | 4 | 2L | 4L | PMC | 2054 |
| 14 | Peth Kunjirwadi Road from Chaufula Naigaon Road Junction Uruli- Peth Road | 2 | 2L | 4L | PMC | 2054 |
| 15 | Prince of Wales Dr From Ghorpadi Road Junction to Solapur Road | 2 | 2L | 4L | PCMC | 2034 |
| 16 | Richardson Road (Ashoka Marg) from Seafarers Memorial Camp Pune to Ghorpadi Road | 1 | 2L | 4L | PCMC | 2034 |
| 17 | Chinchwad Gaon Road from Khandoba Chowk to Power House Chowk | 3 | 2L | 4L | PCMC | 2034 |
| 18 | Karmaveer Bhaurao Patil Road from Trimurthi Chowk to Ahilya Bai Holkar Chowk | 1 | 2L | 4L | PCMC | 2034 |
| 19 | Range Hill Road from Khadki Bazar Road Junction to Near ABIL Group Junction | 3 | 2L | 4L | PCMC | 2034 |
| 20 | Prayagdham Road from Uruli-Peth Road from Uruli-Peth Road to Belhe-Jejuri Highway | 1 | 2L | 4L | PCMC | 2034 |
| 21 | Shirur-Satara Road from Kedagaon Junction to Tardobachiwadi Junction | 41 | 2L | 4L | PCMC | 2034 |
| 22 | Tilekar Wadi Road From Belhe-Jejuri | 3 | 2L | 4L | PCMC | 2034 |

| No. | Road Name | Length (km) | Existing Lane Configuration | Proposed Lane Configuration | Jurisdiction | Phasing |
|---|---|---|---|---|---|---|
| | Highway to Amul Milk Collection Center Tilekar Wadi | | | | | |
| 23 | Pune-Natepute Road from Kondhwa Khadi Machine Chowk to NH 965 Pandharpur Road Junction | 21 | 2L | 4L | PCMC | 2034 |
| 24 | Sahajpuriwadi Road From Sahajpur Phata to Hodek Vibration Technologies Pvt Ltd | 3 | 2L | 4L | PCMC | 2044 |
| 25 | Uruli-Peth Road from Peth Kunjirwadi Road Junction to Prayagdham Road Junction | 3 | 2L | 4L | PCMC | 2044 |
| 26 | Sus Lane from Rajmata Jijau Flying Pool Bridge to Nandegaon Phata Junction | 7 | 2L | 4L | PCMC | 2044 |
| 27 | Theur Naigoan Road from Theur Road to Prayagdham Mandir, Naigaon Peth Road | 6 | 2L | 4L | PCMC | 2044 |
| 28 | Tupe Wasti Road from Uruli Railway Station to Solapur-Pune Highway | 1 | 2L | 4L | PCMC | 2044 |
| 29 | Nehru Nagar Bhosari road From BHTC to Gandhi Nagar, Kharalwadi | 2 | 2L | 4L | PCMC | 2054 |
| 30 | PWD Road from Taurus to B.R. Gholap Vidyalay Bus Stop Junction | 1 | 2L | 4L | PCMC | 2054 |
| 31 | Sir Maneckji Mehta Road From Sadhu Vaswani Chowk to Richardson Road (Ashoka Marg) | 1 | 2L | 4L | PCMC | 2054 |
| 32 | Saswad Waghapur Yavat Road from Rajewadi Phata Junction to Waghapur Phata Junction | 12 | 2L | 4L | PCMC | 2054 |
| 33 | Saswad-Kapurhol-Bhor Road From Tehsildhar Office Purandar Junction to NH 48, Kapurhol Junction | 19 | 2L | 4L | PCMC | 2054 |
| 34 | Seasons Road from Ambedkar Chowk to Tuljabhavani corner, Chavan chowk | 1 | 2L | 4L | PCMC | 2054 |
| 35 | Theur Kesnand Road From Kolwadi Road to Chintamani Nagar to Theur Bus Stop Road | 2 | 2L | 4L | PCMC | 2054 |
| 36 | Wagholi-Rahu Road From Kesnand Phata Junction Bus Stop to Ashatapur Phata Junction | 16 | 2L | 4L | PCMC | 2054 |
| 37 | Yavat Station Road from Dudhane Chauk to Near Ladakat Wadi Junction | 3 | 2L | 4L | PCMC | 2054 |
| 38 | Yavat Undawadi Road From Dudhane Chauk to Adinath hospital, Yavat | 3 | 2L | 4L | PCMC | 2054 |
| 39 | Manjari Khurd from Bokar Chowk to Kolawadi Road | 5 | 2L | 4L | PMC/PCMC | 2024 |
| 40 | Hadapsar-Manjari Road From Solapur Road to Borkar Chowk | 6 | 2L | 4L | PMC/PCMC | 2024 |

| No. | Road Name | Length (km) | Existing Lane Configuration | Proposed Lane Configuration | Jurisdiction | Phasing |
|---|---|---|---|---|---|---|
| 41 | Dehu- Yewalewadi Road from NH 548D Talegaon Chowk Road to Dehu | 3 | 2L | 4L | PCMC/Rest of PMR | 2024 |
| 42 | Dehu-Alandi Road from Chikhali Akurdi Road Junction to Dehu | 6 | 2L | 4L | PCMC/Rest of PMR | 2054 |
| 43 | From Khutbav Junction (B.V.K College) to Near Ladakat Wadi Junction | 4 | 2L | 4L | Rest of PMR | 2024 |
| 44 | Belhe-Jejuri Highway from Datar Colony Uruli Kanchan to Raiway Station Road Junction | 1 | 2L | 4L | Rest of PMR | 2034 |
| 45 | Belhe-Jejuri Highway from Shindavane Phata Junction to Rajewadi Phata Junction | 12 | 2L | 4L | Rest of PMR | 2034 |
| 46 | From Near Amul Milk Collection Center Tilekar Wadi to Hodek Vibration Technologies Pvt Ltd, Sahajpur | 4 | 2L | 4L | Rest of PMR | 2034 |
| 47 | Alandi Market Road from Markal Phata Alandi to Chatrapati Sambhaji Maharaj Bridge | 10 | 2L | 4L | Rest of PMR | 2044 |
| 48 | Alandi-Vadgaon Road From NH 548D Chakan Shikrapur Road | 9 | 2L | 4L | Rest of PMR | 2044 |
| 49 | Main Road, Kumbharwada from Natepute Pune Road Junction to Tahasil Office Road Junction | 1 | 2L | 4L | Rest of PMR | 2054 |
| 50 | From Kedgaon Division MSEDCL Office to Khutbav Junction (B.V.K College) | 7 | 2L | 4L | Rest of PMR | 2054 |
| 51 | Kunjirwadi-Naigaon Road from Perfect Cabin Pvt Ltd, Solapur-Pune Highway to Chaufula Naigaon Road Junction | 1 | 2L | 4L | Rest of PMR | 2054 |
| 52 | Naigaon Peth Road from Prayagdham Mandhir to Uruli Peth Road | 1 | 2L | 4L | Rest of PMR | 2054 |
| | **Sub-Total (B)** | **283** | | | | |
| 53 | Bund Garden Road from Wadia College Chowk to Colonel Tarapore Road Junction | 1 | 4L | 6L | PMC | 2024 |
| 54 | Gulawani Maharaj Road From Late GA Kulkarni Path Road Junction to Khilare Patil Road Junction | 1 | 4L | 6L | PMC | 2024 |
| 55 | Padmavati Sahakar Nagar Road From Gajanan Maharaj Chowk to Padmavati Chowk | 2 | 4L | 6L | PMC | 2024 |
| 56 | N Main Road From Koregaon Road junction to Star Junction | 4 | 4L | 6L | PMC | 2024 |
| 57 | NH 48 Mumbai-Pandharpur Road From Dehu Phata Chowk to Lonavala Interchange | 35 | 4L | 6L | PMC | 2024 |

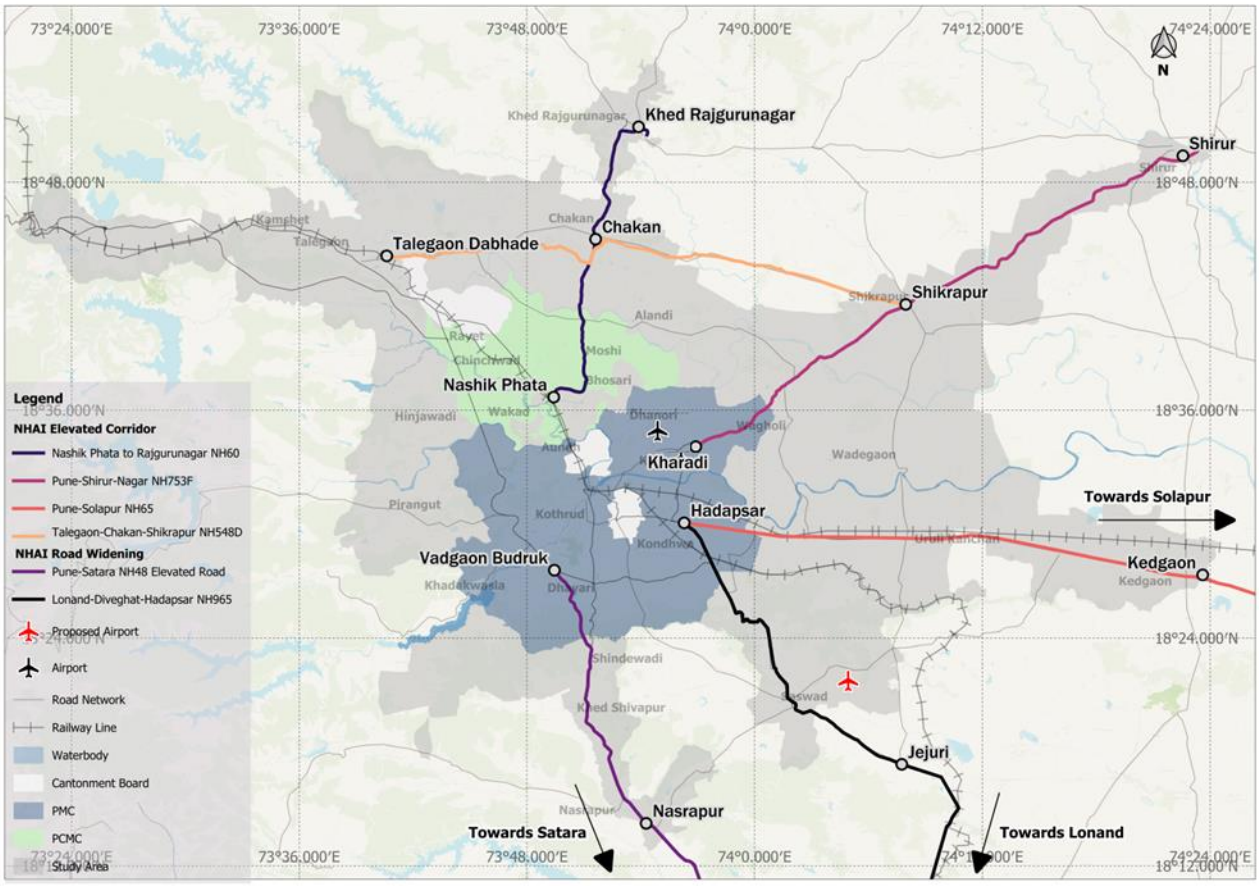
| No. | Road Name | Length (km) | Existing Lane Configuration | Proposed Lane Configuration | Jurisdiction | Phasing |
|---|---|---|---|---|---|---|
| 58 | Gangadham-Shatrunjay Road from Aai Mata Chowk to Kakde Chowk | 2 | 4L | 6L | PMC | 2034 |
| 59 | Airport Road from Gunjan Chowk to 509 Chowk | 4 | 4L | 6L | PMC | 2034 |
| 60 | Aundh Road from Wamanrao G More Road Junction to Bremen Friendship Chowk | 2 | 4L | 6L | PMC | 2034 |
| 61 | Colonel Tarapore Road from Kahun Rd Junction to Sadhu Vaswani Road Junction | 1 | 4L | 6L | PMC | 2034 |
| 62 | Jawaharlal Nehru Road from Raiway Station Road to Aai Mata Chowk | 5 | 4L | 6L | PMC | 2034 |
| 63 | Kakde Nagar Road From Kakde Chowk to Tilekar Chowk | 1 | 4L | 6L | PMC | 2034 |
| 64 | New Telco Road from Nigdi Bhosari Road to Vallabh Nagar Chowk | 3 | 4L | 6L | PMC | 2044 |
| 65 | NH 48 Mumbai Pune Bypass Road From Near Mukai Chowk to Dehu Phata Chowk | 3 | 4L | 6L | PMC | 2044 |
| 66 | DP Road from Rishi Chowk to Ambedkar Chowk | 1 | 4L | 6L | PMC | 2054 |
| 67 | Khilare Patil Road From Nalstop Chowk to DP Road Near Mhatre Bridge | 1 | 4L | 6L | PMC | 2054 |
| 68 | Nigdi-Bhosari Road from Durga Chowk | 8 | 4L | 6L | PMC | 2054 |
| 69 | Dapodi Bridge from Dapodi Bridge Junction to Mata Shitala Devi Chowk | 1 | 4L | 6L | PCMC | 2034 |
| 70 | Aditya Birla Hospital Marg from Walhekar Wadi Road Junction to Aundh-Ravet BRTS Road Junction | 2 | 4L | 6L | PCMC | 2034 |
| 71 | Vibgyor School Road from Nigdi Bhosari Road to Shri Daneshwari Manpower Services Road Junction | 2 | 4L | 6L | PCMC | 2034 |
| 72 | Chikhali Akurdi Road from Khandoba Chowk to Nigdi Bhosari Road | 1 | 4L | 6L | PCMC | 2044 |
| 73 | Chikali Road from Dehu - Moshi Road Junctionn to Spine Road Bridge | 2 | 4L | 6L | PCMC | 2044 |
| 74 | Chikhali-Kaspate Wasti BRTS Road from Chinchwad Chowk to Chapekar Chowk Flyover | 2 | 4L | 6L | PCMC | 2054 |
| 75 | Sitaram Thakare Road from Vasantbaug Chowk to Aai Mata Chowk | 1 | 4L | 6L | PCMC | 2054 |
| 76 | Moshi Highway Street from NH 965 Nashik Pune Road to Chattrapati Shivaji Maharaj Square | 3 | 4L | 6L | PCMC | 2054 |
| 77 | Walhekar Wadi Road from Walhekarwadi South Main Road to | 1 | 4L | 6L | PCMC | 2054 |

| No. | Road Name | Length (km) | Existing Lane Configuration | Proposed Lane Configuration | Jurisdiction | Phasing |
|---|---|---|---|---|---|---|
| | Link Road Junction | | | | | |
| 78 | Chikali Moi Nighoje Kharabwadi | 9 | 4L | 6L | PCMC/Rest of PMR | 2034 |
| | **Sub-Total (C)** | **98** | | | | |
| 79 | Bengaluru-Mumbai Highway From Somatane Shirgaon Bridge to Khandala Ghat Flyover Chowk | 47 | 6L | 8L | Rest of PMR | 2024 |
| | **Sub-Total (D)** | **47** | | | | |
| | **Total (A+B+C+D)** | **438** | | | | |

In case of major National Highways along the Study Area elevated corridors/road widening are proposed by NHAI to alleviate traffic congestion for the regional traffic. Following list provides details of planned elevated corridors and road widening. Among the proposals, first 4 proposals are in tendering stage.

1. **Nashik Phata to Khed Rajgurunagar(NH-60):** A 30km, 8-lane elevated corridor is proposed between Nashik Phata and Khed Rajgurunagar. The proposed ROW is 60m with 12m service roads on both sides. This corridor is in the tendering stage.
2. **Pune-Shirur-Nagar (NH-753F):** The planned ROW is 60m with 12m service roads on both sides. This corridor is in the tendering stage.
3. **Pune-Solapur (NH-65):** The ROW varies from 45m (Hadapsar to Yavat) to 60m (Yavat to Pune District Border), with 12m service roads on either side. This corridor is in the tendering stage.
4. **Talegaon-Chakan-Shikrapur (NH-548D)**: The existing ROW ranges from 18m to 24m and is proposed to be widened to 60 m. A 12 m service road will be constructed on both sides of the corridor. This corridor is in the tendering stage.
5. **Pune – Satara (NH-48):** The Pune Satara Road between Vadgaon Budruk and Satara has an existing RoW varies from 46 m to 150 m. The stretch is predominantly a 6-lane road with few stretches narrowing down to four lanes. The road is currently being widened into a uniform 6 lane highway.
6. **Lonand Diveghat Hadapsar (NH-965):** The road is currently being widened to 4 lane road from the existing 2 lane configuration and same has been proposed as part of the New Airport connectivity in **section 4.2.2** of **Chapter 4**.

**Figure 4 - 21 | Elevated Corridors/Road Widening proposed along major National Highways**




## 4.3.3 | GRADE SEPARATORS (ROB/ RUBS) AT LEVEL CROSSING

### NEW ROB/RUBs

As per standards, level crossing with TVUs more than one lakh units is eligible for the provision of Grade Separator. It is recommended to convert all level crossings to ROB/RUB which will improve safety and reduce vehicular delays. The List of level crossings identified for development of new ROB/RUB is presented in **Table 4 - 26** and **Figure 4 - 22**.

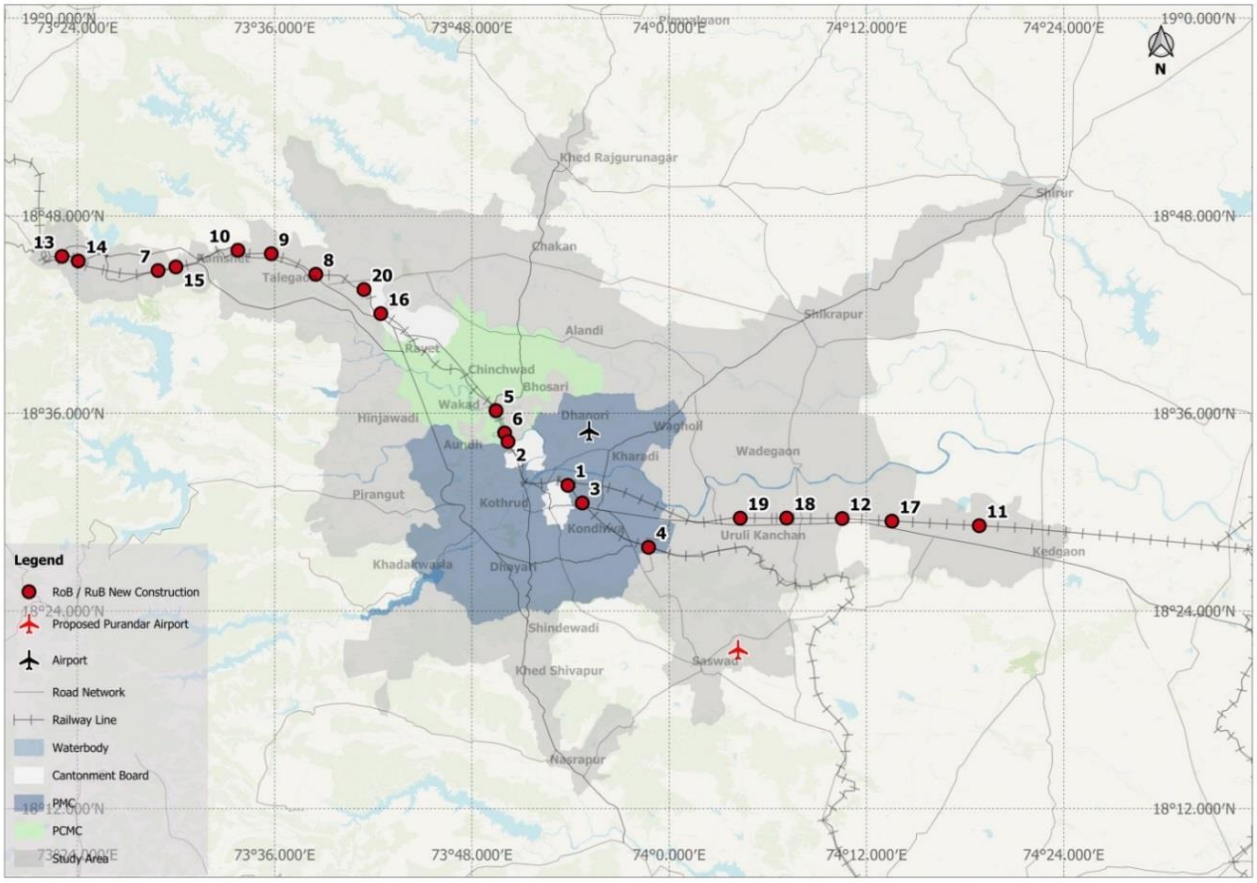
**Table 4 - 26 | List of locations identified for construction of ROB/RUBs**

| No. | Location | TVUs | Jurisdiction | LC No |
|---|---|---|---|---|
| 1 | Near Police Station, Ghorpadi | 1,21,160 | PMC | 586 |
| 2 | Bopodi | 2,09,195 | PMC | 63A |
| 3 | Hadapsar MIDC Road | 4,98,292 | PMC | 4 |
| 4 | Wadki Phursungi Road | 43,994 | PMC | 10 |
| 5 | Kasarwadi | 6,11,694 | PCMC | 61A |
| 6 | Dapodi | 3,96,627 | PCMC | 62A |
| 7 | Ekvira Devi Road, Malavali | 1,83,044 | Rest of PMR | 26A |

| No. | Location | TVUs | Jurisdiction | LC No |
|---|---|---|---|---|
| 8 | Vadgaon | 1,96,645 | Rest of PMR | 49 |
| 9 | Kanhe Main Road | 3,67,411 | Rest of PMR | 45 |
| 10 | Kamshet | 98,289 | Rest of PMR | 43 |
| 11 | Kutbav | 2,53,490 | Rest of PMR | 10A |
| 12 | Sahajpur in Uruli Kanchan | 3,07,760 | Rest of PMR | 7 |
| 13 | Lonavala | 1,84,471 | Rest of PMR | 30 |
| 14 | Old Khandala Road | 3,04,258 | Rest of PMR | 31 |
| 15 | Malavali | 1,31,119 | Rest of PMR | 38 |
| 16 | Begdewadi Railway Station | 1,62,224 | Rest of PMR | 52A |
| 17 | Khamgaon | 3,03,221 | Rest of PMR | 10 |
| 18 | Naigaon | 3,07,905 | Rest of PMR | 8 |
| 19 | Kunjarwadi | 2,56,953 | Rest of PMR | 7 |
| 20 | Baneshor Smashan Bhoomi* | - | Rest of PMR | |

*- *New RoB/RuB for better connectivity*

**Figure 4 - 22 | Proposed ROB/RUBs at Existing Level Crossings**

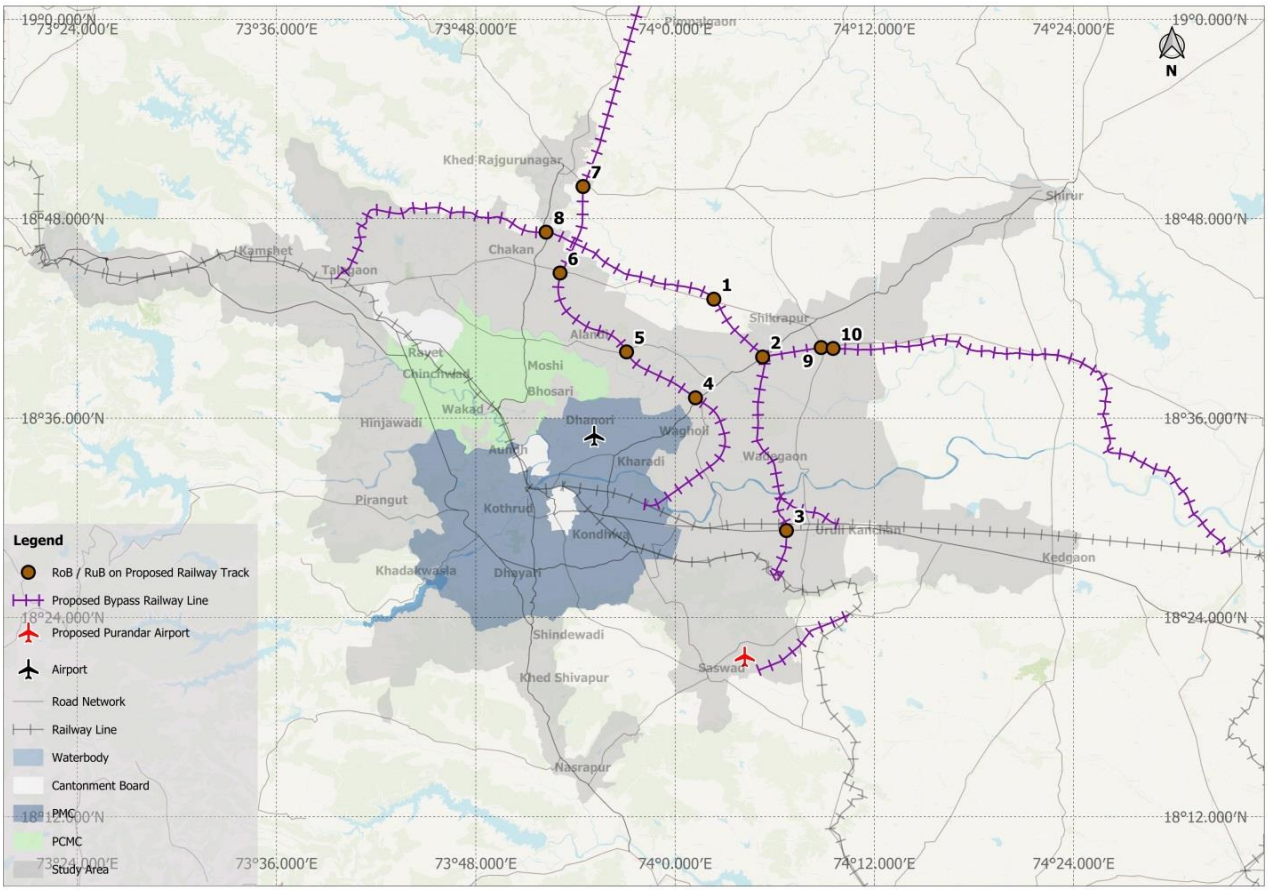



Proposed new RoB/RuBs across the proposed Bypass Railway lines & Pune – Nashik Semi-High Speed Railway line are presented in **Table 4 - 27**.

### Table 4 - 27 | New ROB/RUBs across Proposed Bypass Railway Line & Pune-Nashik Semi-High Speed Railway Line

| No. | Proposed RoB / RuB along Proposed Bypass Railway Line and Pune Nashik Railway Line | Jurisdiction |
|---|---|---|
| 1 | On Talegaon-Chakan- Shikrapur Road near Chouphula over Bypass Railway line | Rest of PMR |
| 2 | On Nagar Road near Sanswadi over Bypass Railway line | Rest of PMR |
| 3 | On Solapur Road near Uruli Kanchan on Bypass Railway line | Rest of PMR |
| 4 | On Nagar Road near Lonikand over Pune Nashik Semi - High Speed Railway Line | Rest of PMR |
| 5 | On Alandi- Tulapur Road (SH-58) near Markal over Pune Nashik Semi - High Speed Railway Line | Rest of PMR |
| 6 | On Talegaon-Chakan-Shikrapur Road near Chakan over Pune Nashik Semi - High Speed Railway Line | Rest of PMR |
| 7 | On Pabal Road (SH-54) near Khed City on Pune Nashik Semi - High Speed Railway Line | Rest of PMR |
| 8 | On Nashik Road near Chakan over Bypass Railway line | Rest of PMR |
| 9 | On Nhavare Shikrapur Road (NH 548D) over Bypass Railway line | Rest of PMR |
| 10 | On Nhavare Shikrapur Road (NH 548D) near Jagatap Vasti over Bypass Railway line | Rest of PMR |

### Figure 4 - 23 | New ROB/RUB along Proposed Bypass Railway Line & Pune-Nashik Semi-High Speed Railway Line



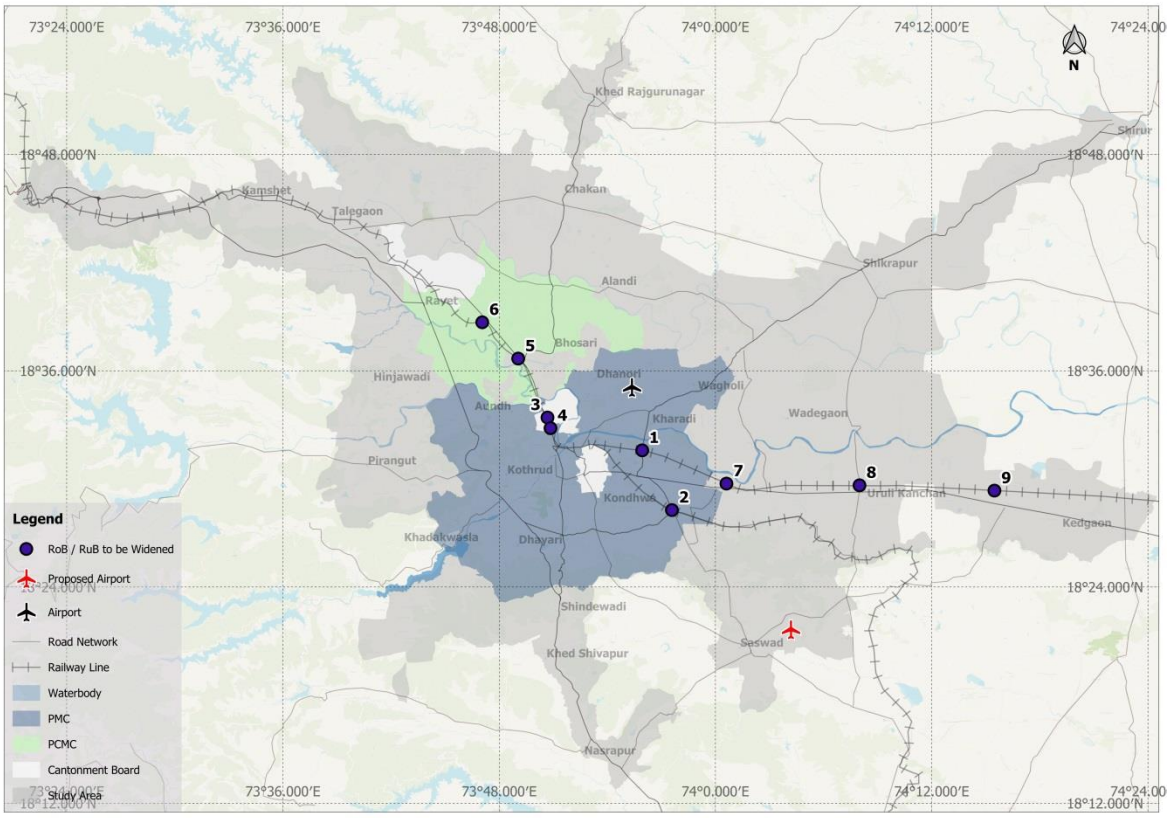
## WIDENING OF ROB/RUBs

In addition to the above, the existing ROB/RUB locations where current traffic levels have exceeded its capacity and require widening are presented in **Table 4 - 28** and **Figure 4 - 24**.

### Table 4 - 28 | List of ROBs/RUBs Proposed for Widening

| No. | Proposed RoB / RuB for Widening | Existing Lane Configuration | Proposed Lane Configuration | PCU's 2024 | Jurisdiction |
|---|---|---|---|---|---|
| 1 | Magarpatta Road (near Hadapsar Railway Station) | 4 Lane | 8 Lane Divided | 18,215 | PMC |
| 2 | Mantarwadi, Saswad Road (near Saswad Road Railway Station) | 2 Lane | 4 Lane Divided | 4,890 | PMC |
| 3 | Khadki Police Chowk | 2 Lane | 6 Lane Divided | 7,529 | Khadki Cantonment |
| 4 | Dhanori Alandi Road (near Shivaji Nagar Railway Station) | 1 Lane | 6 Lane Divided | 7,911 | Khadki Cantonment |
| 5 | RuB to the North of Kasarwadi Railway Station | 2 Lane | 4 Lane Divided | 3,103 | PCMC |
| 6 | RuB near Dalavi Nagar | 2 Lne | 4 Lane Divided | 5,471 | PCMC |
| 7 | Jachak Vasti Road (Nearby Loni Yard) | 1 Lane | 2 Lane | 1,452 | Rest of PMR |
| 8 | Belhe Jejuri Highway (Near Uruli Railway Station) | 1 Lane | 4 Lane Divided | 3,543 | Rest of PMR |
| 9 | Yavat Station Road (Near Yavat Railway Station) | 1 Lane | 2 Lane Un-Divided | 1,088 | Rest of PMR |

### Figure 4 - 24 | Proposals for Widening of Existing ROB/RUBs



## 4.3.4 | GRADE SEPARATORS FOR JUNCTIONS

As some of the junctions in the Study Area have already reached their capacity, there is a need for grade separators at these locations in order to reduce the delays. If the number of PCU's traversing the junction during peak hour exceeds 10,000 PCU's then the junction is eligible for grade separation (IRC 92:1985). 18 locations have been identified based on demand and in consultation with respective authorities where grade separation is required and it is presented in **Table 4 - 29.**

**Figure 4 - 25 | Proposed Grade Separators**

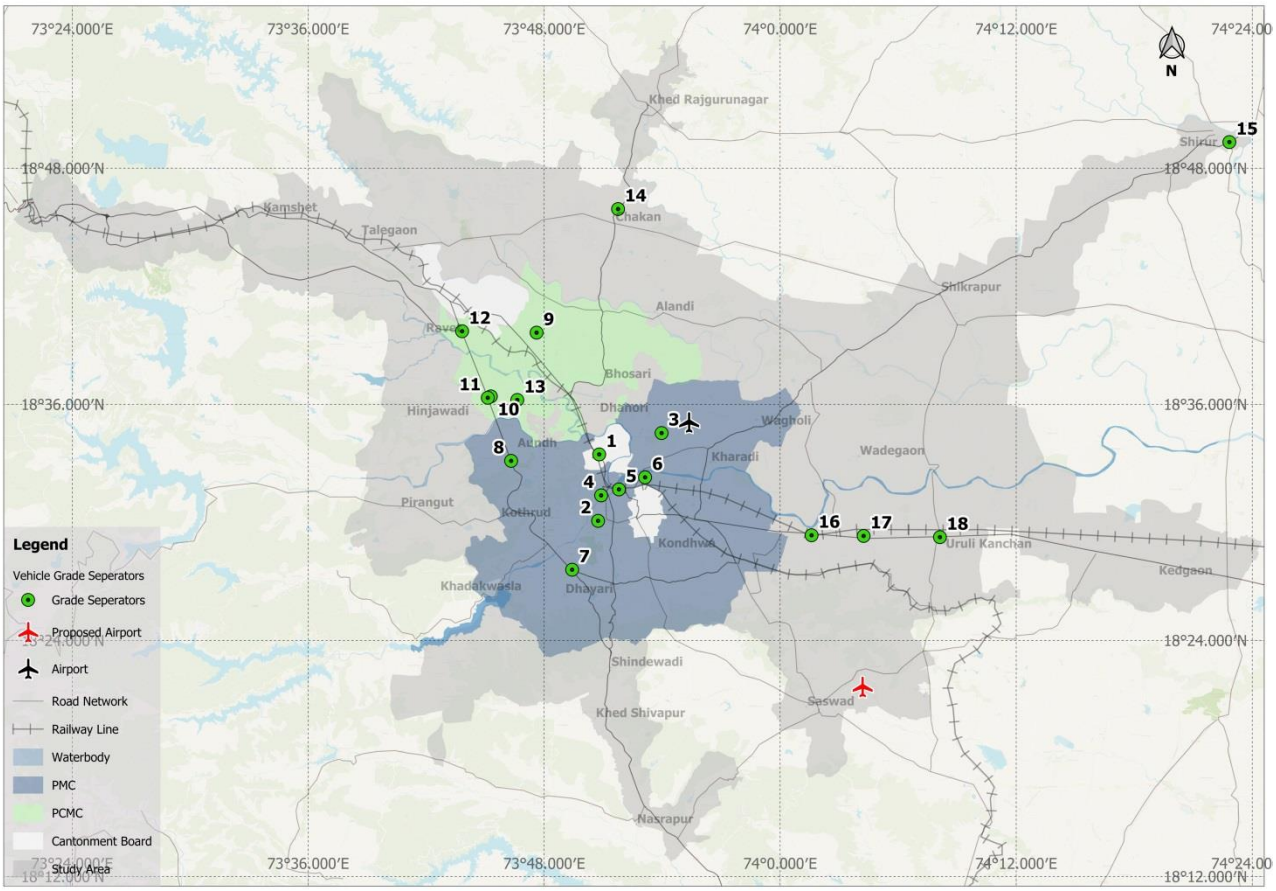



**Table 4 - 29 | Proposed Grade Separators at Junctions**

| No | Intersections | Arm Type | 2024 PCU's | Jurisdiction |
|---|---|---|---|---|
| 1 | Khadki Police Chowk, NH 4 | 4-Arm | 14,391 | PMC |
| 2 | Dandekar Bridge, Sinhgad Road | 3-Arm | 19,118 | PMC |
| 3 | 509 Chowk | 4-Arm | 7,775 | PMC |
| 4 | Jhansi Lakshmi Bai Chowk | 4-Arm | 17,593 | PMC |
| 5 | Juna Bazar Chowk | 4-Arm | 21,509 | PMC |
| 6 | Sadu Vaswani Bridge to Bund Garden | 3-Arm | 6,662 | PMC |
| 7 | Additional ramp towards Pune, Navale Bridge | 4-Arm | 17,310 | PMC |
| 8 | Widening of Underpass, Nanavare Chowk | Underpass | 12,933 | PMC |

| No | Intersections | Arm Type | 2024 PCU's | Jurisdiction |
|---|---|---|---|---|
| 9 | Thermax Chowk | 4-Arm | 12,344 | PCMC |
| 10 | Kala Kadak Chowk | 3-Arm | 11,155 | PCMC |
| 11 | Widening of Underpass, Bhumkar Chowk | Underpass | 19,604 | PCMC |
| 12 | Kiwale | 4-Arm | 28,075 | PCMC |
| 13 | Kalewadi Phata | 4-Arm | 20,175 | PCMC |
| 14 | Chakan | 4-Arm | 9,859 | Rest of PMR |
| 15 | Widening of Underpass on Nagar Road, Shirur | Underpass | For Better Connectivity | Rest of PMR |
| 16 | Loni Kalbhor | 4-Arm | 8,347 | Rest of PMR |
| 17 | Theur Phata | 4-Arm | 12,256 | Rest of PMR |
| 18 | Uruli Kanchan | 4-Arm | 20,649 | Rest of PMR |

## 4.3.5 | DEVELOPMENT OF NEW RIVER BRIDGES

Several new river bridges are identified to improve the connectivity and traffic dispersal and the same is presented in **Table 4 - 30** and **Figure 4 - 26.** About 11 kms of new access roads needs to be developed along with the proposed new river bridges.

**Figure 4 - 26 | Proposed New River Bridges**

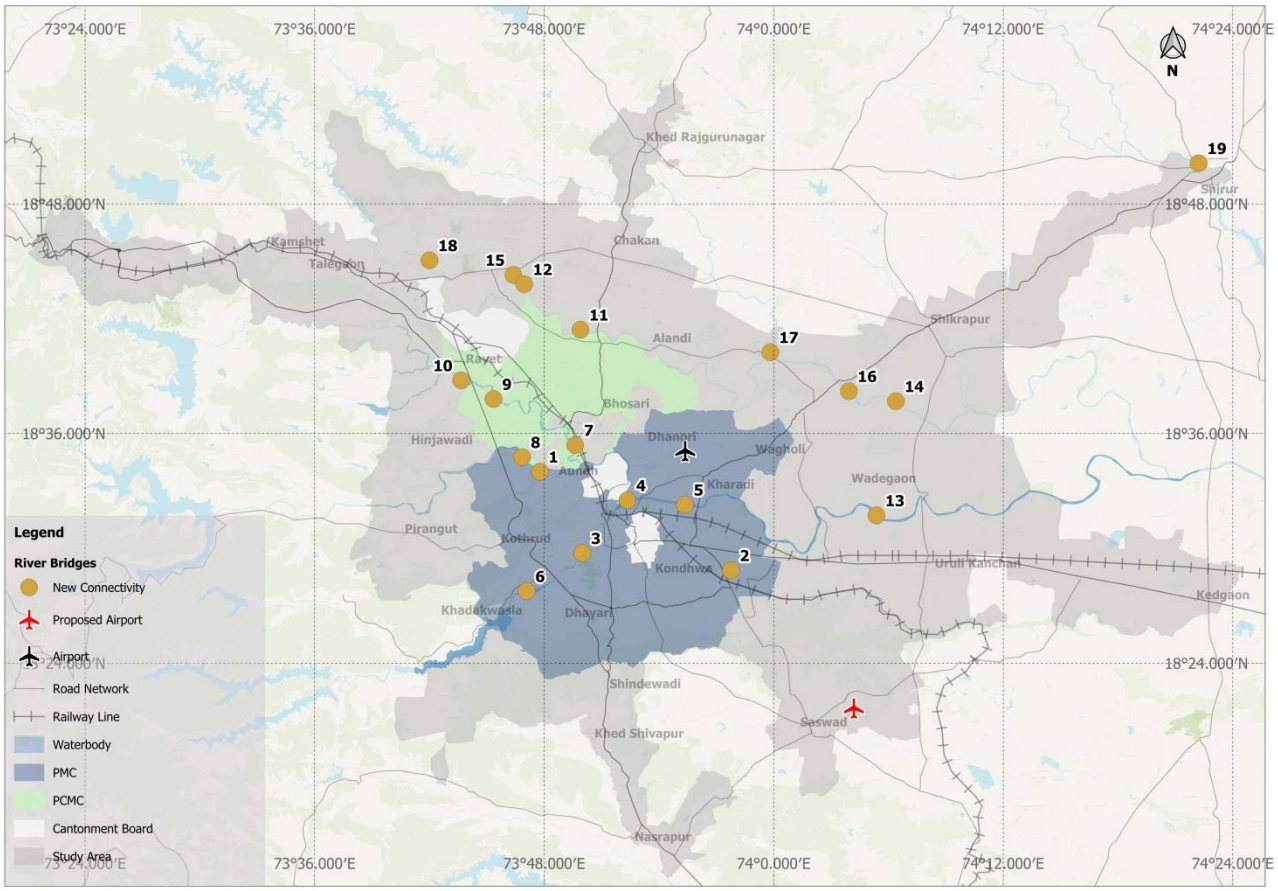


**Table 4 - 30 | Proposed New River Bridges**

| No | New River Bridges | Jurisdiction |
|---|---|---|
| 1 | Near Pimple Nilakh (Intermediate Ring Road) | PMC |
| 2 | Near Phursungi Road (Intermediate Ring Road) | PMC |
| 3 | Between Karve Road and Sinhgad Road near Panmala | PMC |
| 4 | Between Pune Station to Sangamwadi near Lumbini Nagar | PMC |
| 5 | Wadgaonsheri to Mundhwa Tadigutta Chowk | PMC |
| 6 | Connecting Sinhgad Road to Ramnagar (NDA road) via Rajyog Township | PMC |
| 7 | Phugewadi to Pimple Gurav | PCMC |
| 8 | Balewadi to Kolte Patil 24K | PCMC |
| 9 | Between Walhekarwadi to Tathawade | PCMC |
| 10 | Between Ravet and Punawale | PCMC |
| 11 | Between Jadhavwadi to Moi near Boat Club River Residency | PCMC |
| 12 | Near Gathagram, Dehu to Khalumbre | Rest of PMR |
| 13 | Between Theur Naigaon Road and Koregaon Biwri Road near Biwri village | Rest of PMR |
| 14 | Between Perane Road and Dingarwadi Road near to existing minor bridge | Rest of PMR |
| 15 | Near KT Weir Indrayani River (no Connectivity) | Rest of PMR |
| 16 | Bypass to Koregaon Bhima- RP Road | Rest of PMR |
| 17 | Between Tulapur and Apati village near Tulapur village | Rest of PMR |
| 18 | Between Varale village and Akurdi village | Rest of PMR |
| 19 | Ramayanagiri Housing Society near Shirur | Rest of PMR |

In addition to developing new river bridges for better connectivity, few river bridges are identified for widening as they have reached their capacity. The list of river bridges that needs to be widened is presented in **Table 4 - 31** and **Figure 4 - 27.**

**Figure 4 - 27 | Proposed River Bridges for Widening**

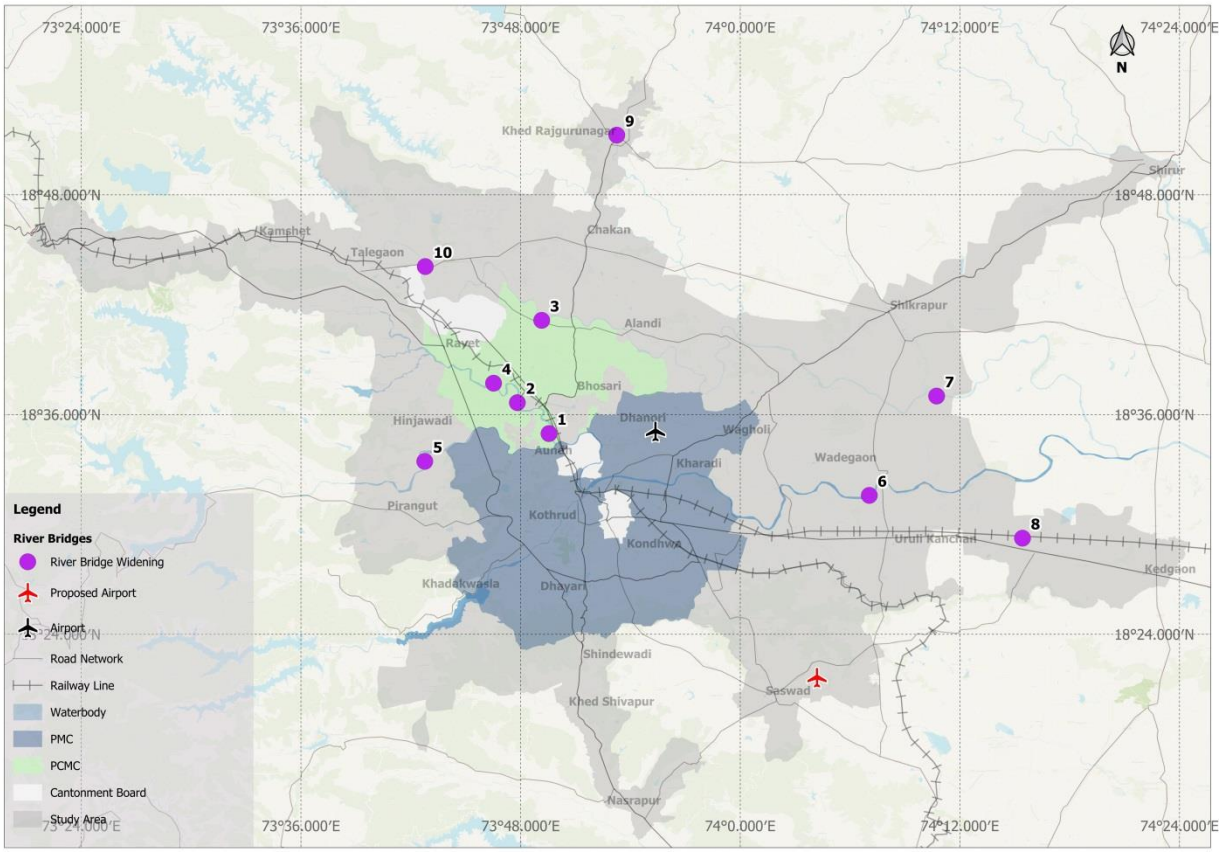



**Table 4 - 31 | Locations of Widening of River Bridges**

| No. | River Bridges for Widening | 2024 PCU's | Existing Lane Configuration | Proposed Lane Configuration | Jurisdiction |
|---|---|---|---|---|---|
| 1 | Pimple Gurav Road on Pavna River | 5,386 | 2 | 4 Lane Divided | PCMC |
| 2 | Pimpri Gaon River Bridge on Pavna River | 2,438 | 2 | 4 Lane Undivided | PCMC |
| 3 | Chikhali Moi River Bridge on Indrayani River | 1,368 | 2 | 4 Lane Divided | PCMC |
| 4 | Aditya Birla River Bridge | 6,805 | 4 | 6 Lane Divided | PCMC |
| 5 | Chande- Nande Bridge | 2,710 | 1 | 4 Lane Undivided | Rest of PMR |
| 6 | Connecting Koregaon Biwri Road with Koregaon Mul village | 1,441 | 1 | 2 Lane Divided | Rest of PMR |
| 7 | Vitthalwadi Bandhara near Sanghavi | 917 | 1 | 2 Lane Undivided | Rest of PMR |
| 8 | Canal Bridge on Yavat Station Road | 1,088 | 1 | 2 Lane Undivided | Rest of PMR |
| 9 | Near Rajgurunagar Bus Stand | 9,329 | 4 | 8 lane Divided | Rest of PMR |

| No. | River Bridges for Widening | 2024 PCU's | Existing Lane Configuration | Proposed Lane Configuration | Jurisdiction |
|---|---|---|---|---|---|
| 10 | Near Indori Village Talegaon- Chakan-Shikrapur Road | 2,540 | 2 | 4 Lane Undivided | Rest of PMR |

## 4.3.6 | MISSING LINKS

The missing links improve the accessibility of unconnected localities in the Study Area, which helps in relieving congestion in major arterial roads and leads to reduced trip length and results in considerable fuel savings.

### MISSING LINKS – PMC

A total of 678 missing links have been proposed to improve the connectivity in PMC with a total length of 459 kms. Out of these 459 kms, 36 prioritized missing links of length 14 kms have been identified and is presented in **Table 4 - 32**. The complete list of missing links in PMC is presented in **Figure 4 - 28** and in **Annexure 4.3**.

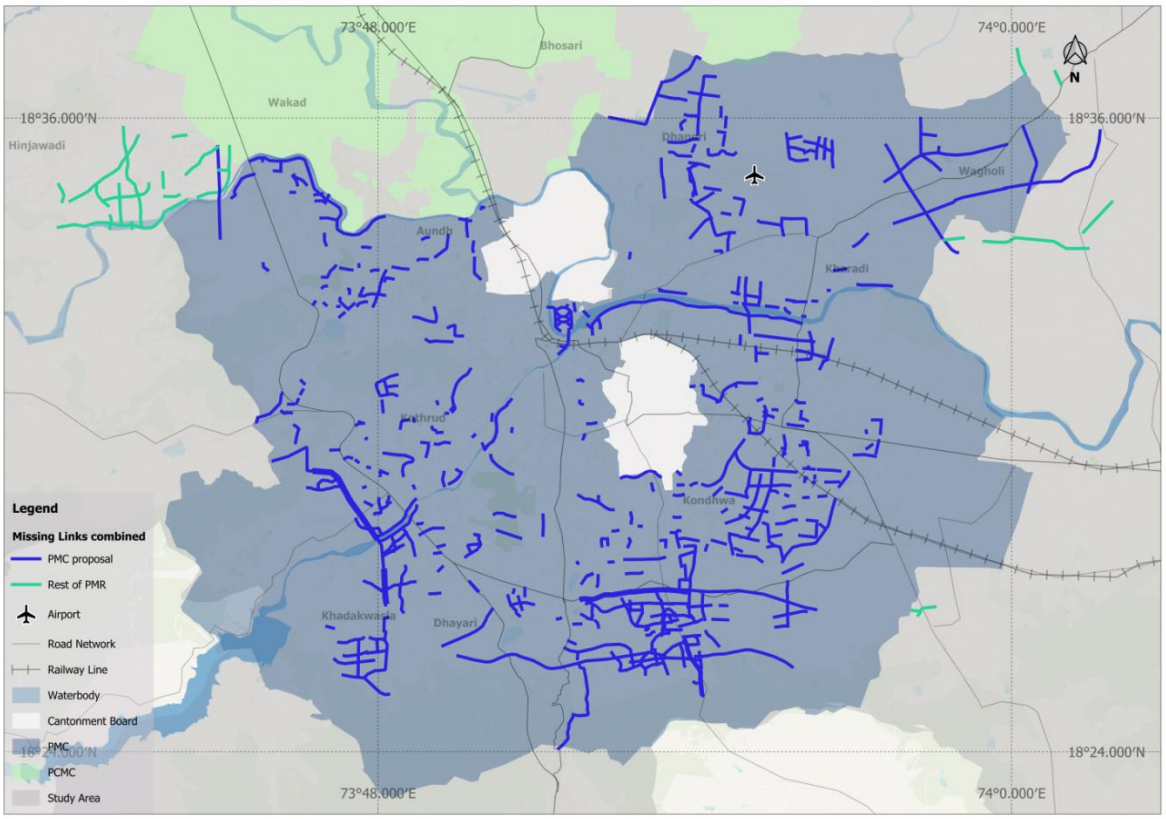
**Table 4 - 32 | Prioritized New/Missing Links in PMC**

| No | Jurisdiction | Name | Length (km) | Peak Hour PCUs | | | | Proposed Lane Configuration |
|---|---|---|---|---|---|---|---|---|
| | | | | 2024 | 2034 | 2044 | 2054 | |
| 1 | PMC | Karve putla petrol pump to Kothrud link | 0.35 | 3,639 | 4,966 | 5,671 | 6,184 | Six Lane Divided |
| 2 | PMC | Ambedkar Chowk to Jawalkar Udyan River road | 0.05 | 2,795 | 3,630 | 4,190 | 4,893 | Six Lane Divided |
| 3 | PMC | Kokan express Chowk to Pinac memories | 0.21 | 2,643 | 3,688 | 4,234 | 4,734 | Four Lane Divided |
| 4 | PMC | Shastri Nagar to VIP road | 0.97 | 1,815 | 2,981 | 3,510 | 4,036 | Four Lane Divided |
| 5 | PMC | Vision Cricket Academy to highway | 0.42 | 1,898 | 2,891 | 3,486 | 4,027 | Four Lane Divided |
| 6 | PMC | Amanora to Keshavnagar RUP | 1.17 | 1,975 | 2,684 | 3,037 | 3,474 | Four Lane Divided |
| 7 | PMC | Shooting Range to Magarpatta city | 0.30 | 1,377 | 2,259 | 2,795 | 3,450 | Four Lane Divided |
| 8 | PMC | Mutha Bridge RHS Riverside road Shivram Mhat | 0.42 | 1,379 | 2,019 | 2,496 | 3,075 | Four Lane Divided |
| 9 | PMC | NH Service road Nawale to Bhumkar chowk | 0.55 | 626 | 1,673 | 2,349 | 3,046 | Four Lane Divided |
| 10 | PMC | Hadapsar to Magarpatta link Chetan Tupe | 0.11 | 1,241 | 1,745 | 2,150 | 3,029 | Four Lane Divided |
| 11 | PMC | Kodre farm Prayeja city | 0.35 | 960 | 1,931 | 2,339 | 2,810 | Four Lane Divided |
| 12 | PMC | Pandhare mala to Dmart Gaothan | 0.50 | 1,411 | 1,914 | 2,022 | 2,620 | Four Lane Divided |

| No | Jurisdiction | Name | Length (km) | Peak Hour PCUs | | | | Proposed Lane Configuration |
|---|---|---|---|---|---|---|---|---|
| | | | | 2024 | 2034 | 2044 | 2054 | |
| 13 | PMC | Pandhre mala to D Mart Gaothan | 0.50 | 1,411 | 1,914 | 2,022 | 2,620 | Four Lane Divided |
| 14 | PMC | Kondhwa Fire station to BG Lonkar path | 0.55 | 1,138 | 1,808 | 2,023 | 2,352 | Four Lane Divided |
| 15 | PMC | Lake Town to Satara Road Sri Ram Mandir | 0.09 | 1,190 | 1,551 | 1,794 | 2,040 | Four Lane Divided |
| 16 | PMC | Aeromall to Airport road 205 | 0.51 | 697 | 1,535 | 1,887 | 2,008 | Four Lane Divided |
| 17 | PMC | NH to Kothrud - Tirupati nagar link | 1.28 | 579 | 1,380 | 1,739 | 1,990 | Four Lane Divided |
| 18 | PMC | Sai Enclave to Sutarwadi | 0.43 | 324 | 1,177 | 1,482 | 1,779 | Four Lane Divided |
| 19 | PMC | Shila Vihar SRA Toilet | 0.08 | 676 | 956 | 1,425 | 1,622 | Two Lane Undivided |
| 20 | PMC | Kondhwa WAKF board land link | 0.20 | 718 | 1,082 | 1,349 | 1,524 | Two Lane Undivided |
| 21 | PMC | Rajas SOC to Sukhsagar Nagar | 0.13 | 822 | 1,085 | 1,215 | 1,416 | Two Lane Undivided |
| 22 | PMC | Gunjan to River side kharadi road | 0.22 | 848 | 1,237 | 1,393 | 1,396 | Two Lane Undivided |
| 23 | PMC | Weikfield to Sakore Nagar Nagar road | 0.64 | 626 | 1,036 | 1,205 | 1,376 | Two Lane Undivided |
| 24 | PMC | Airport Symbiosis School | 0.42 | 531 | 917 | 1,148 | 1,274 | Two Lane Undivided |
| 25 | PMC | Hume factory to Sinhgad road | 0.57 | 772 | 1,008 | 1,111 | 1,244 | Two Lane Undivided |
| 26 | PMC | Mahatma SOC lane 8 - Pramathesh | 0.35 | 610 | 990 | 1,099 | 1,239 | Two Lane Undivided |
| 27 | PMC | River Dale Unity Kharadi | 0.21 | 281 | 545 | 814 | 1,156 | Two Lane Undivided |
| 28 | PMC | Eklavya college to Highway link | 0.08 | 635 | 809 | 882 | 1,022 | Two Lane Undivided |
| 29 | PMC | old palkhi road dada Gujar school to Handewadi link | 0.33 | 463 | 738 | 850 | 1,010 | Two Lane Undivided |
| 30 | PMC | Railway line to Solapur road | 0.75 | 485 | 625 | 817 | 908 | Two Lane Undivided |
| 31 | PMC | Magarpatta to Honeywell Incab | 0.12 | 326 | 554 | 686 | 834 | Two Lane Undivided |
| 32 | PMC | Handewadi link road Yogesh Sasane | 0.09 | 271 | 461 | 515 | 550 | Two Lane Undivided |
| 33 | PMC | Paud road to Karve road Chitale Bandhu | 0.10 | 493 | 509 | 525 | 540 | Two Lane Undivided |
| 34 | PMC | NH to Sus road link | 0.08 | 408 | 420 | 433 | 446 | Two Lane Undivided |
| 35 | PMC | Kharadi Nyati Empire link | 0.48 | 119 | 120 | 173 | 391 | Two Lane Undivided |
| 36 | PMC | Kale Padal Underpass to Handewadi paralle | 0.39 | 35 | 43 | 65 | 281 | Two Lane Undivided |

| No | Jurisdiction | Name | Length (km) | Peak Hour PCUs | | | | Proposed Lane Configuration |
|---|---|---|---|---|---|---|---|---|
| | | | | 2024 | 2034 | 2044 | 2054 | |
| | | **Total** | **14.00** | | | | | |

**Figure 4 - 28 | Proposed Missing Links in PMC**




## MISSING LINKS – PCMC

A total of 231 missing links have been proposed to improve the connectivity in PCMC with a total length of 93 kms. Out of these 93 kms, 12 missing links of length 16 kms have been identified in the present study based on travel demand to be implemented on priority and is presented in **Table 4 - 33**. The entire list of missing links in PCMC is presented in **Annexure 4.3**.

**Table 4 - 33 | Prioritized New/Missing Links in PCMC**

| No | Jurisdiction | Name | Length (km) | Peak Hour PCUs | | | | Proposed Lane Configuration |
|---|---|---|---|---|---|---|---|---|
| | | | | 2024 | 2034 | 2044 | 2054 | |
| 1 | PCMC | Dairy Farm, Nimbalkar Nagar to Rastramata Jijau Chowk | 1.78 | 3,483 | 4,165 | 4,518 | 4,805 | Six Lane Divided |
| 2 | PCMC | Punawale Phata to Walhekarwadi Road | 0.77 | 555 | 1,881 | 2,287 | 2,912 | Four Lane Divided |
| 3 | PCMC | Tathwade Corner to | 1.30 | 1,390 | 2,203 | 2,644 | 2,835 | Four Lane |

| No | Jurisdiction | Name | Length (km) | Peak Hour PCUs | | | | Proposed Lane Configuration |
|---|---|---|---|---|---|---|---|---|
| | | | | 2024 | 2034 | 2044 | 2054 | |
| | | Bhondve Vasti | | | | | | Divided |
| 4 | PCMC | Sant Namdev Maharaj Chowk to Chaitanya Sabhagruh | 0.53 | 695 | 1,640 | 2,027 | 2,432 | Four Lane Divided |
| 5 | PCMC | Bhim Nagar to Dharmaveer Chatrapati Sambahji Majaraj Chowk | 3.89 | 454 | 736 | 1,275 | 1,846 | Four Lane Divided |
| 6 | PCMC | Adarsh Nagar Road to Goodwill Palette Road | 0.66 | 346 | 548 | 798 | 1,237 | Two Lane Undivided |
| 7 | PCMC | Punawale Bazar to Ravet Chowk | 0.96 | 616 | 1,077 | 1,120 | 1,141 | Two Lane Undivided |
| 8 | PCMC | Chovisavadi to Savata Mala | 1.24 | 95 | 200 | 418 | 877 | Two Lane Undivided |
| 9 | PCMC | Life Republic Sector R10 to Punawale | 2.25 | 436 | 695 | 741 | 788 | Two Lane Undivided |
| 10 | PCMC | Tathawade Road to Aundh-Ravet BRTS Road | 0.66 | 30 | 204 | 313 | 690 | Two Lane Undivided |
| 11 | PCMC | Jambhe Post Office to Katale Wasti Bus Stop | 1.29 | 107 | 276 | 348 | 446 | Two Lane Undivided |
| 12 | PCMC | Vishnu Dev Nagar to Guru Dutta Road | 0.80 | 42 | 145 | 163 | 174 | Two Lane Undivided |
| | | **Total** | **16.00** | | | | | |

## 4.3.7 | JUNCTION IMPROVEMENTS

Junction improvements are essential for enhancing corridor throughput and reducing accidents. These enhancements include:

- Geometric improvements, along with safety audits
- Enhanced road markings and signage
- Upgraded traffic signals
- Improved pedestrian facilities, such as footpaths, railings, and zebra crossings

Some of the common issues and suggested strategies for junction improvement are presented in the **Table 4 - 34**.

**Table 4 - 34 | Issues and Strategies for Junction Improvements**

| Identified Issues | Strategies |
|---|---|
| 1. Uncontrolled/unsignalized intersections<br>2. Poor pedestrian safety<br>3. Wide open intersections encouraging traffic spread<br>4. Lack of lane | • **Signalization of Major Intersections**: Implement traffic signals to separate traffic flows and enhance pedestrian safety, using manual controls only in special circumstances.<br>• **Direct and Short Crossings**: Design pedestrian crossings to be as direct and brief as possible to minimize exposure and encourage safe crossing.<br>• **Channelized and Tightly Designed Intersections**: Employ design strategies |

| Identified Issues | Strategies |
|---|---|
| balancing/channelization<br>5. Large turning radii promoting speeding<br>6. Medians that stop before junctions<br>7. Poor road markings<br>8. Absence of marked pedestrian crossings<br>9. No pedestrian refuge islands<br>10. Lack of integrated bicycle lanes at intersections<br>11. Parking at intersections<br>12. Bus/auto stands near intersections<br>13. Poor grading and drainage at junctions | that channel traffic and reduce the area where vehicles can spread out, minimizing crash potential.<br>• **Tight Turning Radii**: Design intersections with tighter turning radii to discourage speeding and improve control of vehicle movement.<br>• **Enhanced Pedestrian Safety Features**: Introduce medians, raised crossings, refuge islands, clearly marked crossings, and bollards at every intersection to protect pedestrians.<br>• **Lane Balancing**: Implement lane balancing techniques to reduce conflicts and improve traffic flow at intersections.<br>• **Integration of Pedestrian and Bicycle Facilities**: Ensure continuous lanes and walkways for pedestrians and cyclists to facilitate smooth dispersal and avoid conflicts.<br>• **Prohibition of Right Turns and U-Turns**: Implement restrictions on right turns and U-turns at intersections to streamline traffic flow and enhance safety.<br>• **Ban on Parking at Intersections**: Completely prohibit parking within all intersection areas to maintain clear sightlines and reduce congestion.<br>• **Relocation of Bus and Auto Stands**: Move bus and auto stands to at least 75 meters away from intersections to minimize obstruction and improve traffic flow.<br>• **Improved Grading and Drainage**: Conduct re-grading and implement effective drainage solutions at junctions to prevent flooding and maintain road integrity.<br>• By addressing these issues with targeted strategies, intersections can become safer and more efficient for all road users. |

Thus, the Junction improvements mainly comprise of improvements in geometrics, channelization, provision of pedestrian facilities, signage and markings. The list of junctions identified for improvement is presented **in Annexure 4.4** and shown in **Figure 4 - 29** & **Figure 4 - 30**. The criteria adopted for identifying the junctions are vehicular and pedestrian traffic intensity, lack of geometrics, accident prone locations etc.

**Figure 4 - 29 | Junctions identified for improvement in PMC and PCMC**

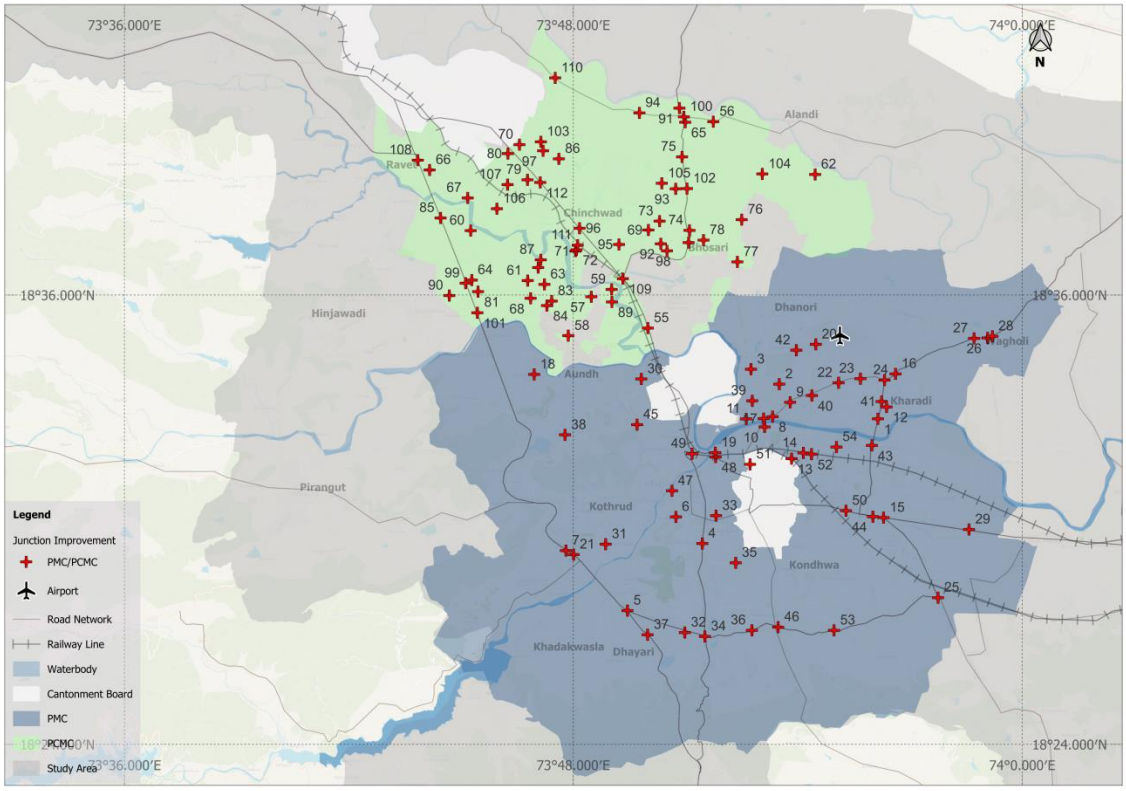
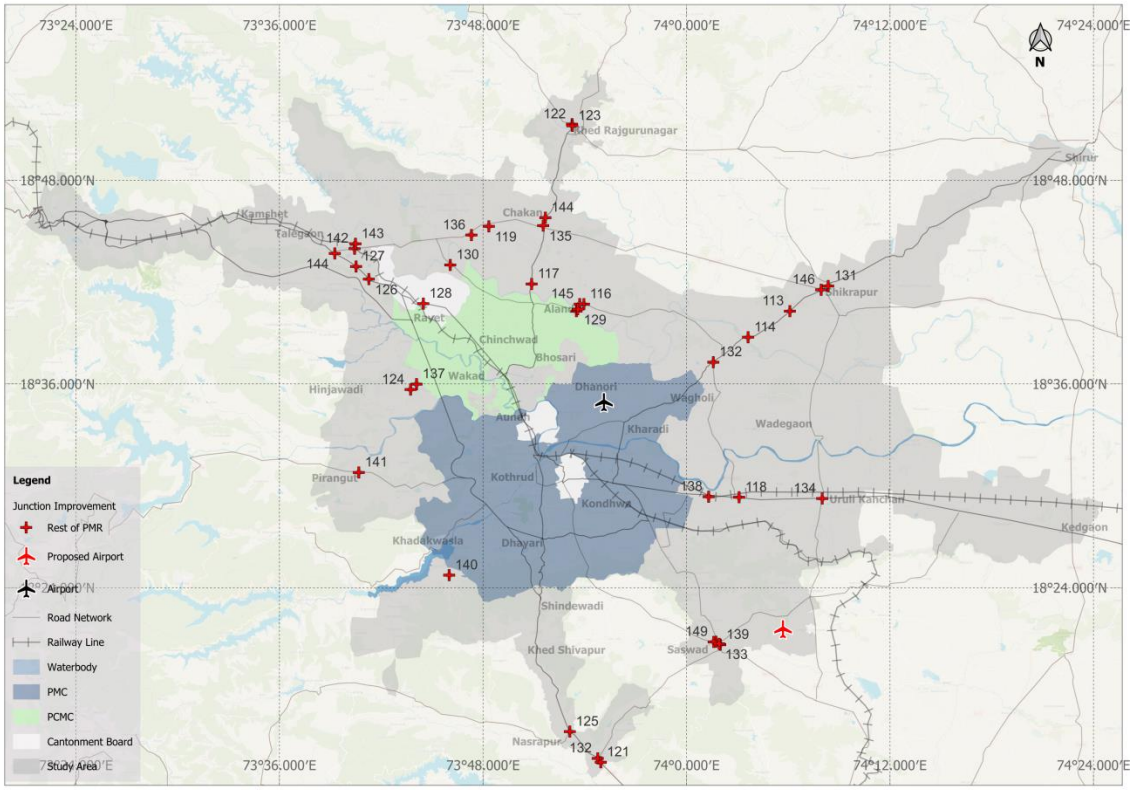



**Figure 4 - 30 | Junctions identified for improvement in PMR**

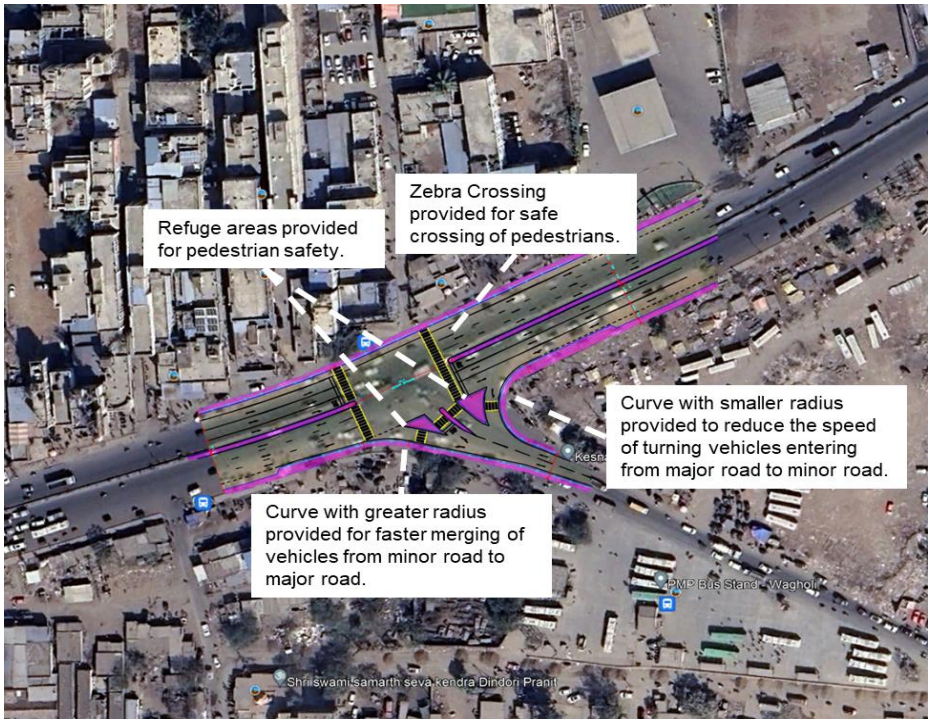


The existing junction layout and proposed conceptual Junction improvement at Kesnand Junction is presented in **Figure 4 - 31.**

**Figure 4 - 31 | Existing Layout and Proposed Junction Improvement Plan at Kesnand Junction**




**Existing Layout of Kesnand Junction**




**Proposed Junction Layout at Kesnand Junction**

### KESNAND JUNCTION

#### EXISTING SITUATION

The Kesnand Junction is a 3 - arm intersection where the Pune Ahmednagar Road (Nagar Road) and Wagholi Kesnand Road intersect. The Wagholi Bus stand is near the junction thus there are a lot of pedestrian and vehicle movement at the junction. The following are the issues noticed at the junction,

- The Pune Ahmednagar Road is a six-lane road. There is no island for pedestrians to take refuge on the road as the pedestrians may not be able to cross the road in the given pedestrian green phase.
- The vehicles approaching from the Kesnand road to take left arrive at high speeds to merge with the Pune Solapur Road which increases the risk of side swipe accident near the junction and also is unsafe for pedestrian.
- There is a lot of unused open space available in the junction which would promote parking and wrong side movement of vehicles.

#### PROPOSED IMPROVEMENTS

The various components of proposed junction improvements at Kesnand Junction is as follows :

- The junction is resigned with compact layout using channelizing islands and refuge islands to make it safe for pedestrians.
- Through the provision of channelizing island and sharper turning radius the speed of the vehicles is controlled while entering and leaving the junction.
- Footpaths are also provided at all the arms of the junction to provide a segregated safe pathway for pedestrians to walk.
- The footpaths shall be provided with guard rails with opening near the pedestrian crossings only in order to prevent the jay walking on the road.
- Signage & markings as per IRC Guidelines

## 4.4 | NMT IMPROVEMENT PLAN

Non-Motorized Transport (also known as active transport and human powered transport) includes walking and cycling. Walking and cycling are the most sustainable modes of transport. Moreover, it will have health benefits for the citizens. NMT improvements are often one of the most effective ways of encouraging public transport use. Quality of the pedestrian environment is important for community livability and social cohesion. Making streets pleasant and safe for walking allows residents to interact and children to play. The economic return on investing in Non-Motorized Transport (NMT) infrastructure is high because the benefits greatly outweigh the costs.

Non-motorized modes are important in their own right as 31.85% of the trips in the study area are made by walk trips in the Study Area. Further, all the public transport trips start and end with walk trips. The bicycle trip share at present is low (1%) due to lack of exclusive bicycle infrastructure, longer trip lengths and unsafe street conditions. The categorization of footpaths based on the width in PMC and PCMC is presented in the **Figure 4 - 32** and **Figure 4 - 33**.

**Figure 4 - 32 | Categorization of Existing Footpaths based on the Width in PMC**

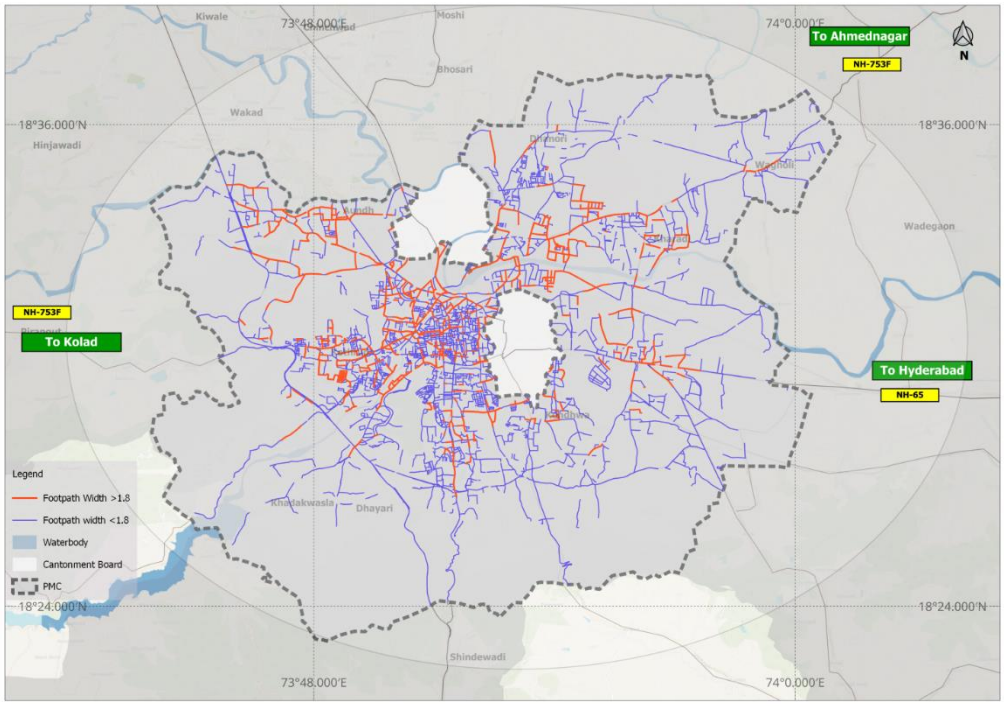
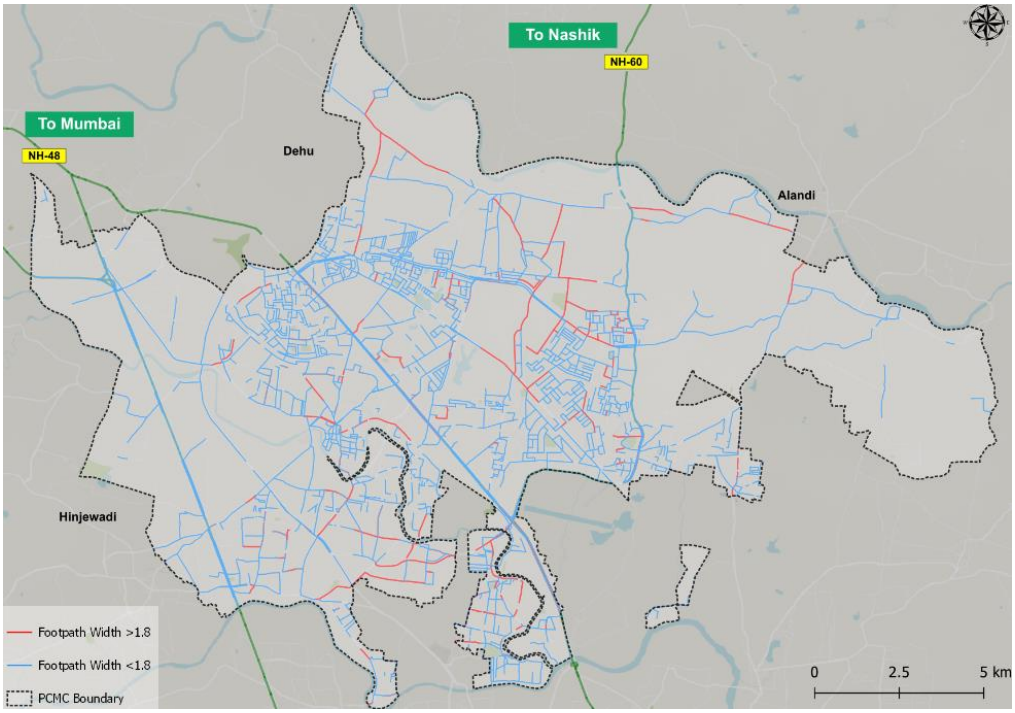



**Figure 4 - 33 | Categorization of Existing Footpath based on Width in PCMC**



## 4.4.1 | PEDESTRIAN FOOTPATH IMPROVEMENT

The width of footpaths directly affects the pedestrian safety and comfort. According to IRC 103-2012, the minimum footpath width is 1.8 meters to accommodate basic pedestrian flows. However, pedestrian traffic volumes, heavily influenced by adjacent land use, often necessitate wider footpaths. For instance, commercial areas, schools, and transit hubs generate higher pedestrian volumes compared to residential or industrial areas, requiring broader footpaths to prevent congestion and ensure safety. The recommended width of footpath along various land uses are given in the **Table 4 - 35** as per **IRC 103-2012.**

**Table 4 - 35 | Width of Footpath based on the adjacent Landuse (as per IRC 103-2012)**

| No. | Land-use | Width (m) |
|---|---|---|
| 1 | Minimum free walkway width and residential/mixed use areas | 1.8 |
| 2 | Commercial/Mixed Use Areas | 2.5 |
| 3 | Shopping Frontages | 3.5 – 4.5 |
| 4 | Bus Stops | 3.0 |
| 5 | High Intensity Commercial areas | 4.0 |

*Source: Table 2, IRC 103-2012 Guidelines for Pedestrian Facilities*

Based on road inventory surveys and pedestrian surveys, footpaths are proposed for a length of about 341 km in PMC and about 266 kms in PCMC. The total length of footpath proposed in PMC and PCMC is presented in **Figure 4-33** and **Figure 4 - 35** respectively.

Of this total footpath proposed, the construction of footpaths are prioritized based on RoW, adjacent landuse and pedestrian volumes and the finalized list of roads for footpath development is presented in **Table 4 - 36 & Table 4 - 37**. All the pedestrian facilities shall be developed as per the Pedestrian Policy developed by the PMC. All the roads shall have footpath width of minimum 1.8 m except Dehu-Alandi Road and Kalewadi-Wakad Road where 2.5 m width is proposed.

**Table 4 - 36 | List of Roads identified for Footpath Construction in PMC**

| No | Location | Length (km) |
|---|---|---|
| 1 | Agarwal Road | 0.6 |
| 2 | Airport Road | 2 |
| 3 | Alankar Society Road | 0.2 |
| 4 | Bengaluru-Mumbai Highway | 15.6 |
| 5 | Bhau Patil Road | 0.9 |
| 6 | Cummins College Road | 0.7 |
| 7 | Dhanori Lohegaon Road | 2.5 |
| 8 | Duncan Road | 0.9 |
| 9 | Ganeshkhind Road | 1.0 |
| 10 | Hadapsar Road | 1.8 |
| 11 | Hidayatulla Road | 0.4 |
| 12 | Jangali Maharaj Road | 0.9 |

| No | Location | Length (km) |
|---|---|---|
| 13 | Jawaharlal Nehru Road | 1.7 |
| 14 | Karve Road | 1.8 |
| 15 | Katraj Ambegaon Road | 1.3 |
| 16 | Katraj-Dehu Road | 0.6 |
| 17 | Katraj-Kondhwa Road | 3.1 |
| 18 | Kondhwa Road | 2.2 |
| 19 | Magarpatta Road | 6.3 |
| 20 | Maharana Pratap Singh Road | 0.5 |
| 21 | Mirza Galib Road | 0.7 |
| 22 | Mudaliar Road | 0.7 |
| 23 | Mumbai - Padharpur Road | 2.7 |
| 24 | Pandharpur - Saswad Road | 1.2 |
| 25 | Parwal Road | 1.3 |
| 26 | Pune Satara Road | 1.8 |
| 27 | Pune University | 0.9 |
| 28 | Saswad Bopdev Road | 0.8 |
| 29 | Soli Poonawalla Road | 1.4 |
| | **Total** | **57.9** |

**Table 4 - 37 | List of Roads identified for Footpath Construction in PCMC**

| No | Location | Length (km) |
|---|---|---|
| 1 | Alandi Road | 2.5 |
| 2 | Aundh Ravet BRTS Road | 3.7 |
| 3 | Balewadi Hinjawadi Road | 0.4 |
| 4 | Bengaluru-Mumbai highway | 7.9 |
| 5 | Bhosari Alandi Road | 0.9 |
| 6 | Chakan – Nanekarwadi – Pune | 11.3 |
| 7 | Chikhali Akurdi Road | 0.5 |
| 8 | Dange Chowk Road | 0.8 |
| 9 | Dehu Alandi Road | 1.1 |
| 10 | Kalewadi Wakad Road | 1.2 |
| 11 | Kaspate Wasti Road | 3.4 |
| 12 | Katraj-Dehu Road Bypass | 1.0 |
| 13 | Moshi Alandi Road | 2.2 |
| 14 | Mumbai Pandharpur Road | 9.0 |
| 15 | Mumbai Pune Road | 2.8 |
| 16 | Nigdi Chinchwad Road | 0.8 |
| 17 | Pimple Gaurav Road | 1.1 |
| 18 | Old Mumbai Road | 2.7 |
| 19 | Talawade Chakan Road | 1.6 |
| 20 | Walhekarwadi Road | 1.3 |
| | **Total** | **57.1** |

**Figure 4 - 34 | Proposals for New Footpaths in PMC**

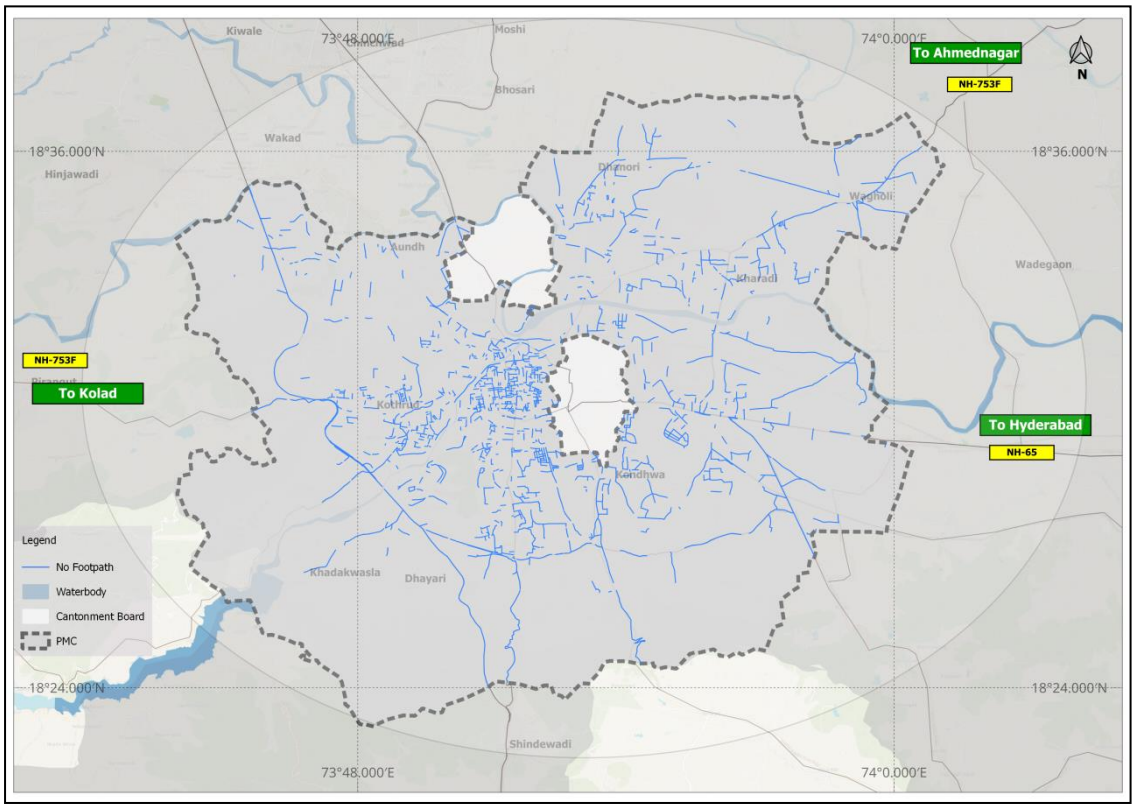
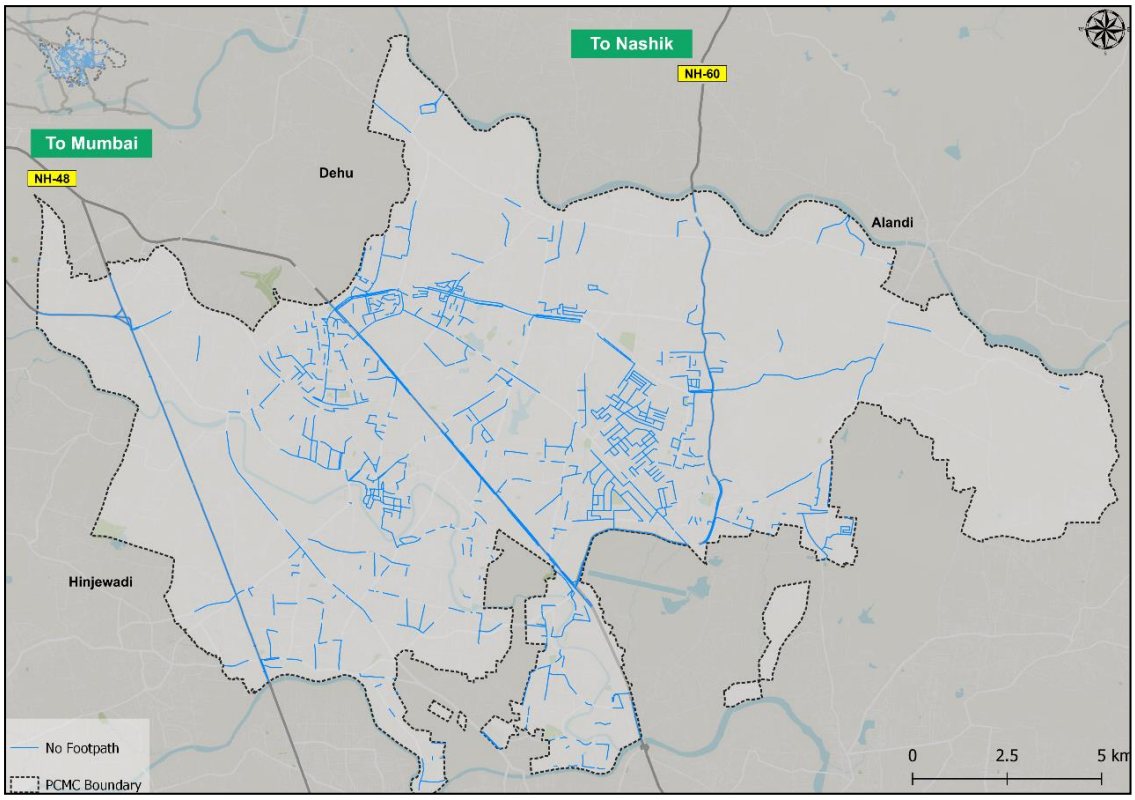



**Figure 4 - 35 | Proposals for New Footpaths in PCMC**



Some of the guiding principles for implementation of footpaths in the Study Area is listed below:

- Footpath facilities shall be augmented by acquiring land, wherever required.
- At important busy roads and junctions, railing shall be provided to prevent spilling of pedestrians on the carriageway.
- Footpaths shall be kept free from utilities and shops like STD booths, electric poles, dustbins, telephone chambers, parking and hawking activities etc.
- Signage and markings will encourage pedestrian to use pedestrian facilities and should be provided near important transport terminals, major traffic generators i.e. commercial areas, educational institutions, hospitals etc.
- Footpaths shall be continuous and at same level throughout.
- Footpath height of 150 mm shall be maintained throughout.

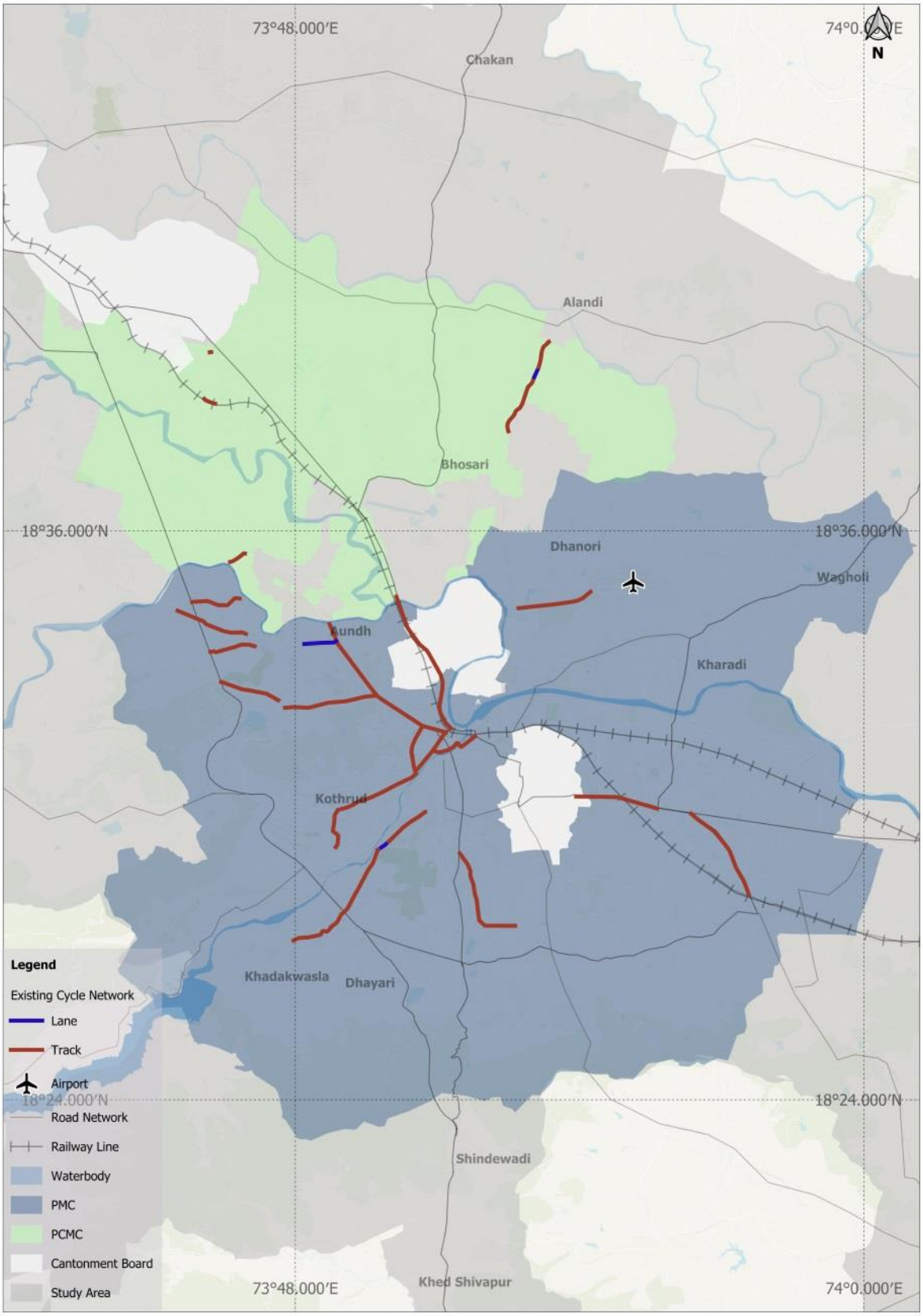
### 4.4.2 | BICYCLE TRACK

To enhance the share of bicycle trips in the Study Area, a strategic focus on major corridors is essential. By developing dedicated bicycle lanes and ensuring seamless connectivity to key destinations such as schools, workplaces, and commercial hubs, cycling can become a more attractive option. Additionally, implementing bicycle-friendly policies and promoting the benefits of cycling can further encourage residents to choose bicycles over motor vehicles. Prioritizing these corridors will lay the groundwork for a sustainable, efficient, and eco-friendly transportation network in the Study Area. The benefits of a bicycle track network include:

- Bicycling is an efficient and environmentally friendly option for short trips.
- Bicycle tracks will provide affordable transportation for the urban poor.
- Separating bicycles from fast-moving traffic will enhance safety.
- Segregating slow-moving vehicles will increase road capacity.
- The urban environment will improve in quality.
- Fuel consumption will be reduced.

Comprehensive Bicycle Plan for PMC was prepared in the year 2017. The salient features of the plan are presented in this section. Pune Municipal Corporation has already constructed bicycle tracks of around 62 km. Existing Bicycle Tracks in the Study Area is presented in **Figure 4 - 36.**

**Figure 4 - 36 | Existing Bicycle Track Network**



## BICYCLE NETWORK PLAN FOR PMC

As per the 2011 census, cycle ownership in Pune city stands at 32.8%. Enhancing cycle infrastructure is vital to increasing the Non-Motorized Transport (NMT) mode share, which offers significant health benefits, reduces environmental impact, and brings economic benefits. The Pune Municipal Corporation's (PMC) Bicycle Master Plan of 2017 envisions 412 km of roads with cycle tracks. However, based on Right of Way widths and travel patterns, a priority network of 229.8 km has been identified. The 229.8 kms of bicycle network is classified under to following types :

- **Segregated Bicycle Track**: A raised segregated bicycle track in order to improve the cyclists' safety and also to prevent the misuse of the bicycle space. The segregated cycle track will be separated from the roadway with a one meter buffer from the main carriageway.
- **Retrofit Cycle Track**: the existing cycles tracks shall be refurbished and retrofitted to the current standards to improve the usage of the cycle track.
- **Painted Cycle Lane**: The Painted cycle lanes are painted areas in the carriageway dedicated for the cyclists. This is provided in locations where segregated cycle track cannot be provided due to limited right of way availability.
- **Footpath + Bicycle track**: In certain locations the painted bicycle track is provided in the footpaths and are known as footpath + bicycle track lanes.
- **Greenway**: The greenways are the independent cycle ways developed along the canals, streams, rivers, gardens institutions etc.

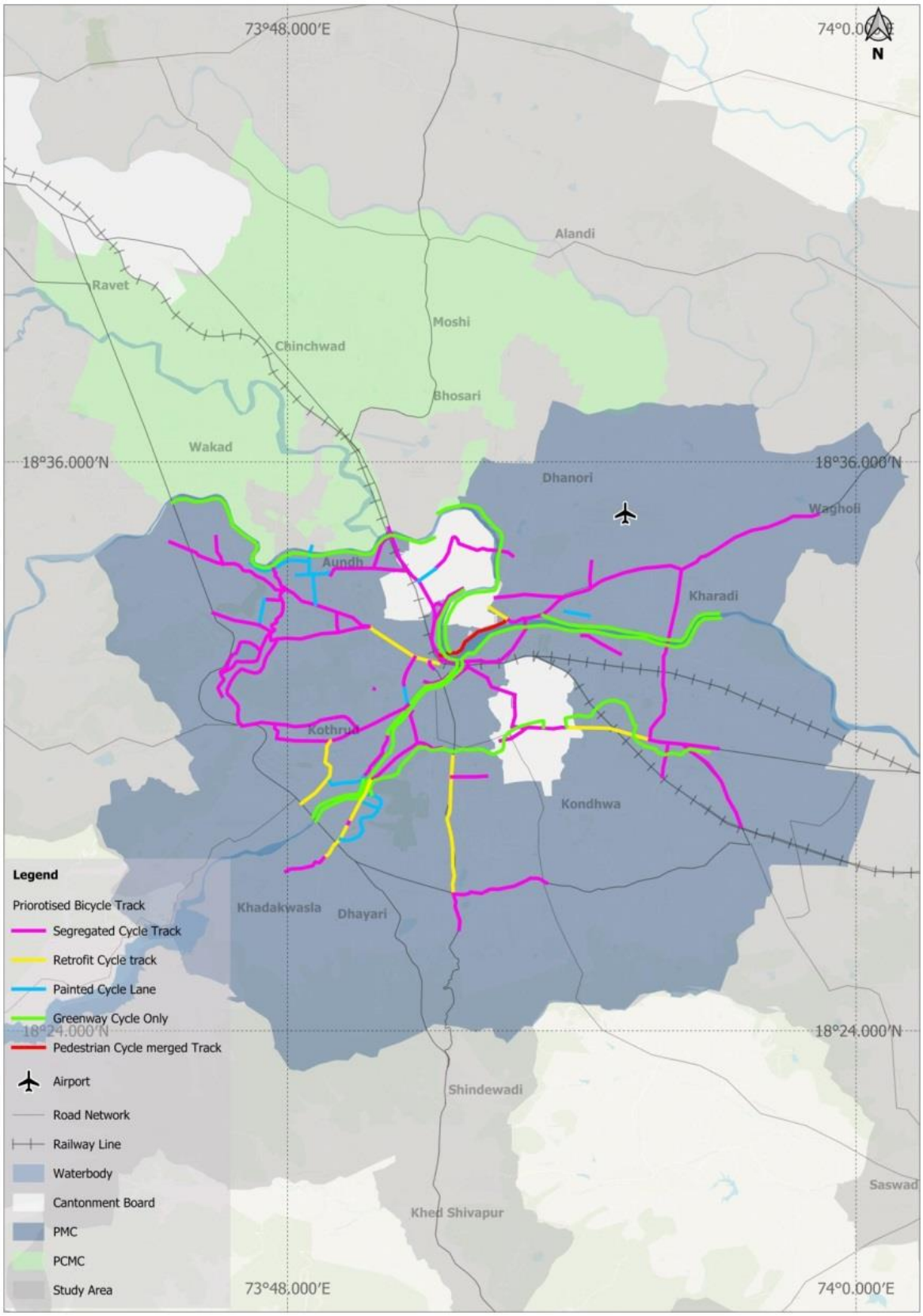
The length of the prioritized bicycle tracks under the different types is presented in **Table 4 - 38**.

**Table 4 - 38 | Details of Proposed Prioritized Bicycle Network Plan in PMC**

| No | Type | Total (Km.) |
|---|---|---|
| 1 | Segregated Bicycle Track | 119.7 |
| 2 | Retrofit Cycle Track | 18.4 |
| 3 | Painted Cycle Lane | 14.7 |
| 4 | Greenway | 74.0 |
| 5 | Footpath + Bicycle track | 3.0 |
| | **Total** | **229.8** |

The bicycle track network has been planned so that it will provide connectivity to the proposed metro stations and other important public transport nodes. The details of the Proposed Prioritized Bicycle Network Plan in PMC are presented in **Figure 4 - 37.** Tentative cross sections of bicycle lane have been shown in **Figure 4 - 39, Figure 4 - 40** and **Figure 4 - 41.**

**Figure 4 - 37 | Proposed Prioritized Bicycle Track Network in PMC**



## PROPOSED BICYCLE NETWORK PLAN FOR PCMC

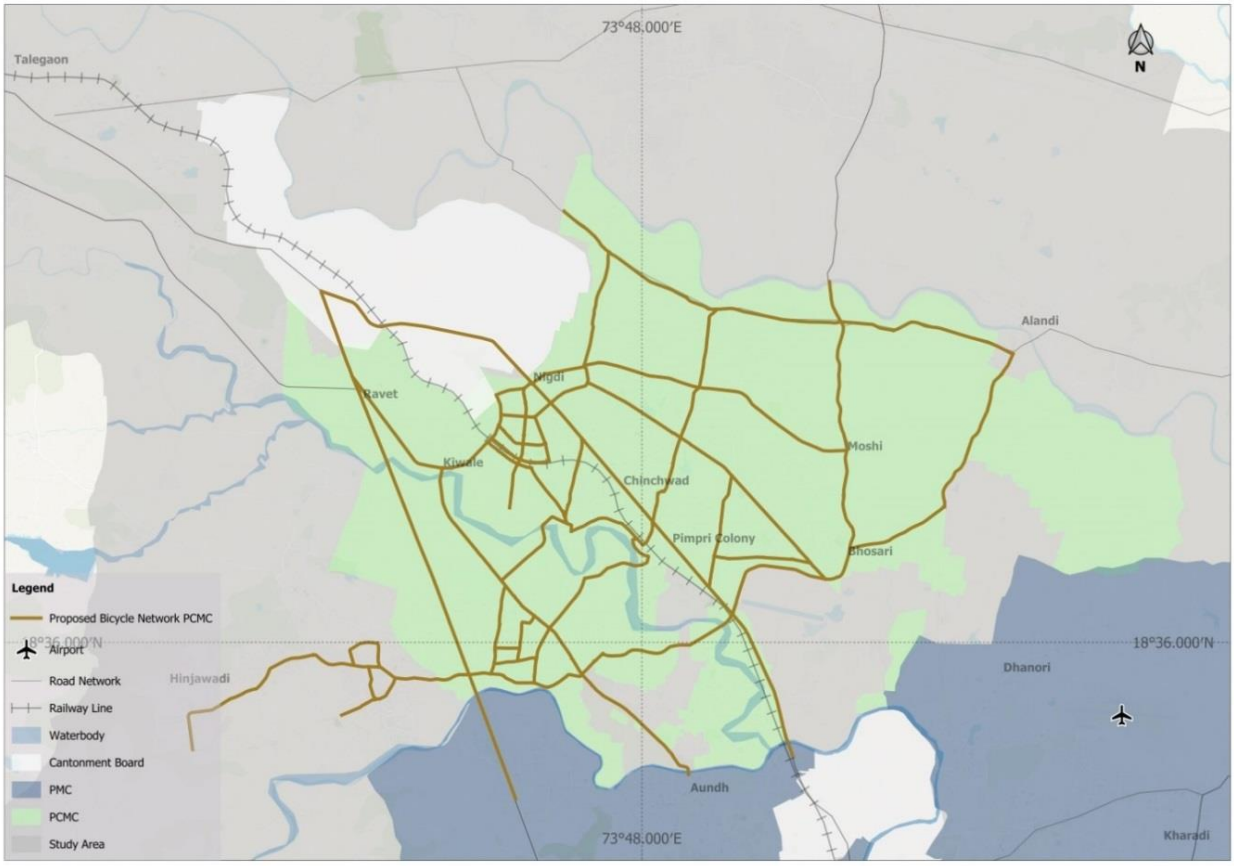
PCMC's Non-Motorized Transport Policy envisions 100% of streets shall be made safe for cycling, by creating dedicated cycle tracks or using traffic calming measures to create safe, low speed space that can be shared by motorized and non-motorized vehicles.

Around 170 km of bicycle track is proposed in PCMC and the areas covered under bicycle tracks are presented in **Table 4 - 39**. Currently the bicycle tracks and footpaths are being developed under the Urban Streetscapes Program and Harit Sethu Master Plan. The details of Harit Setu Master Plan are presented in **Section 4.4.5** of **Chapter 4**.

**Table 4 - 39 | Areas covered under Proposed Bicycle Tracks in PCMC**

| No. | Location |
|---|---|
| 1 | Balewadi |
| 2 | Akurdi |
| 3 | Kalewadi |
| 4 | Nigdi Pradhikaran |
| 5 | Sudarshan Nagar |
| 6 | Chinchwad Gaon |
| 7 | Pimpri |
| 8 | Wakad |
| 9 | Bhosari |
| 10 | Hinjawadi (connecting Phase 1, Phase 2 and Phase 3) |
| 11 | Ajmera |

**Figure 4 - 38 | Proposed Bicycle Track Network in PCMC**




The minimum width for bicycle track is 2 m for one-way movement and 3 m for two-way movement. A 0.5 m buffer is needed between a bicycle track and motor vehicle or parking lanes. The buffer can accommodate ramps and storm water catch pits. The buffer shall be paved if it is adjacent to a parking lane.

Targeting educational trips for usage of bicycle is best way to encourage bicycling trips. Educational institutions should encourage bicycle / walking so as to minimize use of private vehicles. Bicycle parking shall be provided free of cost. As a policy, bicyclists shall be permitted to park their bicycles for free at key locations, including bus terminals, educational institutions, hospitals, and commercial areas. This initiative will promote the use of bicycles. However, to enhance turnover, time limit restrictions should be implemented based on the specific location. Typical cross sections showing provision of the cycle tracks is presented in **Figure 4 - 39**, **Figure 4 - 40** & **Figure 4 - 41**.

**Figure 4 - 39 | Road Cross Section with Four Lane Divided Road with either side Bicycle Lane**

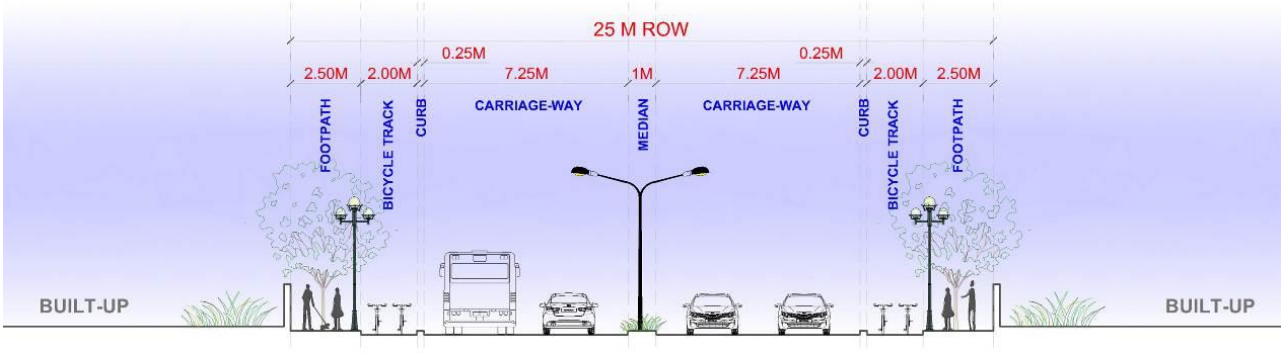



**Figure 4 - 40 | Road Cross Section with Four Lane Divided Road with one side Bicycle Lane**

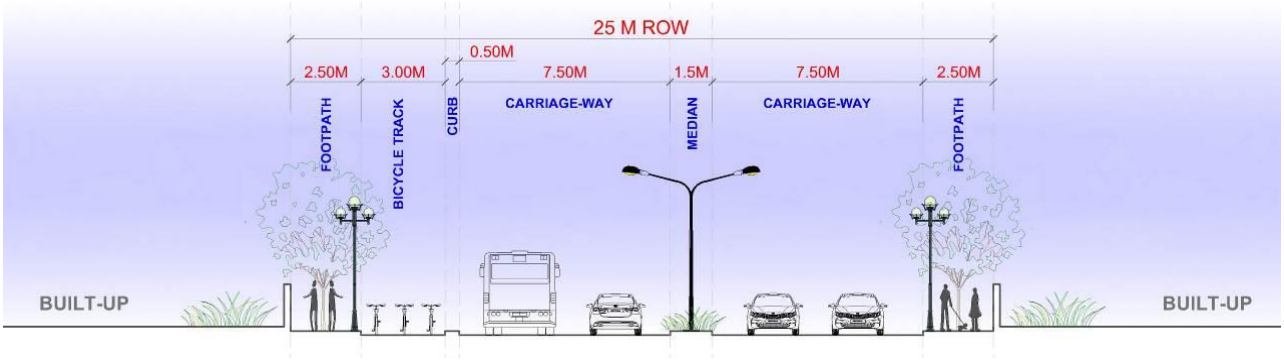
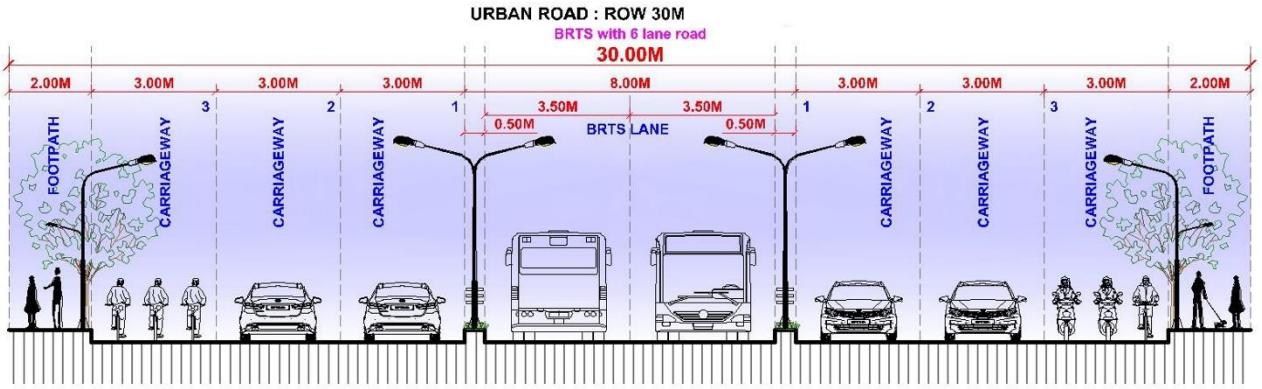



**Figure 4 - 41 | Typical Cross Section for BRTS Corridor for 30 m ROW with Bicycle Lane**




## 4.4.3 | PEDESTRIANS GRADE SEPARATED FACILITIES

Implementing grade-separated pedestrian crossings is an effective strategy to improve safety, particularly at high-traffic areas or wide road corridors. The following criteria are used to propose these facilities:

- Busy, wide multi-arm junctions with large areas.

- Mid-block sections of major roads with high traffic speeds and pedestrian crossing volumes.
- Intersections with high pedestrian volumes and long waiting times.

Identified locations for pedestrian grade separators are presented in **Figure 4 - 42**.

**Figure 4 - 42 | Proposed Pedestrian Grade Separators**

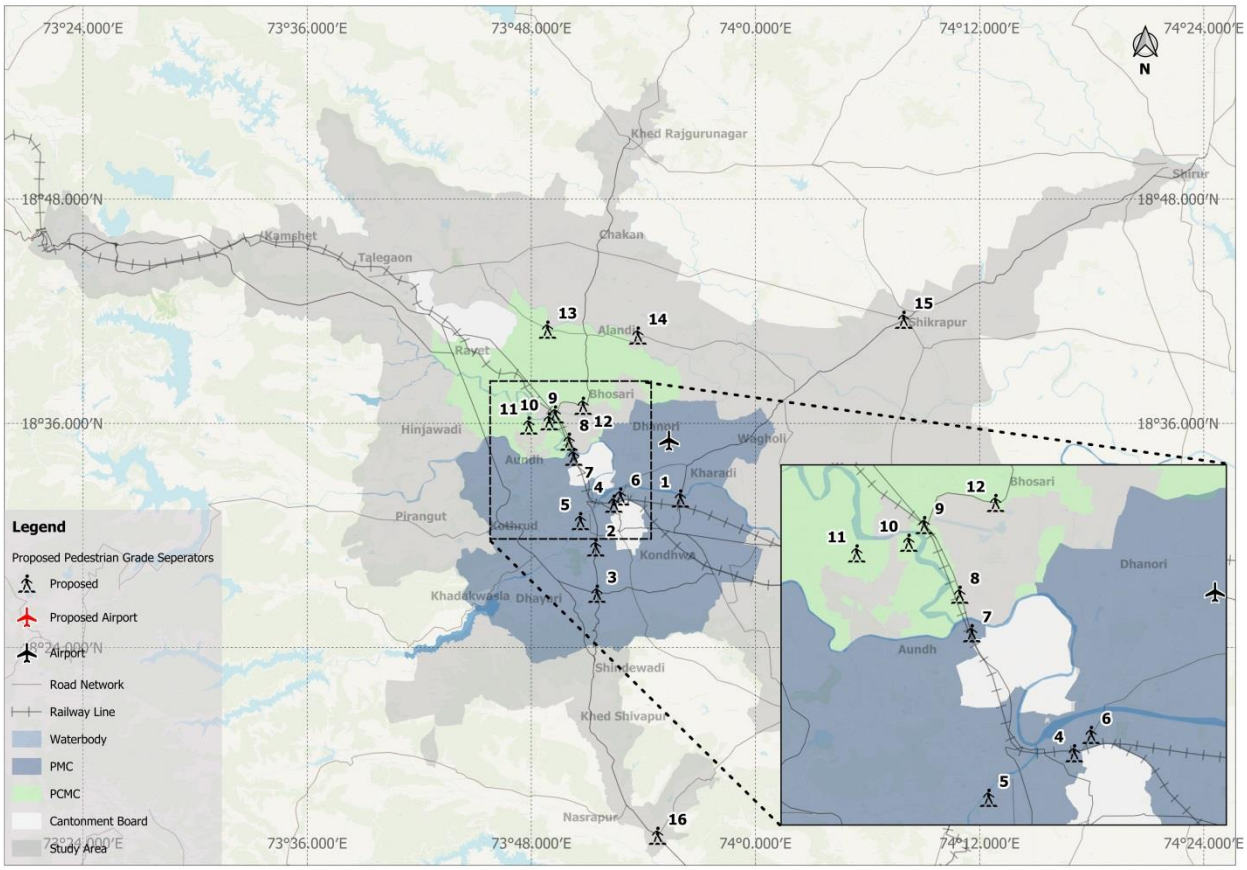



**Table 4 - 40 | List of Proposed Pedestrian Grade Separator Locations**

| No | FOB / Subway | Crossing Pedestrian Volume (P) | Traffic Volume (Vehicles) (V) | PV2 (X10^8) | Controlled Crossing Facility Requirement | Location |
|---|---|---|---|---|---|---|
| 1 | Mundhwa Chowk on Magarpatta Road | 1,633 | 16,545 | 4,470 | Yes | PMC |
| 2 | City Pride Chowk on Satara Road | Based on Landuse | | | | PMC |
| 3 | Katraj Chowk on Satara Road | Accident Black Spot | | | | PMC |
| 4 | Sanjeev Gandhi Road to Wellesley Road connecting Pune Railway Station | Based on Landuse | | | | PMC |
| 5 | Alka Talkies Chowk on Lal Bahadur Shastri Road | 734 | 12,007 | 1,058 | Yes | PMC |
| 6 | Dhole Patil Chowk/ Wadia College | 1,850 | 17,225 | 5,489 | Yes | PMC |
| 7 | Bopodi FOB across Railway Line | Based on Landuse for better connetivity | | | | PMC |

| No | FOB / Subway | Crossing Pedestrian Volume (P) | Traffic Volume (Vehicles) (V) | PV2 (X10^8) | Controlled Crossing Facility Requirement | Location |
|---|---|---|---|---|---|---|
| 8 | Dapodi FOB across the Railway Line | Based on Landuse for better connetivity | | | | PCMC |
| 9 | Nashik Phata FOB conneting Bhosari Metro station and Kasarwadi Railwya Station | Based on Landuse for better connetivity | | | | PCMC |
| 10 | Near Kalpatharu Society, Pimple Gurav | Based on Landuse | | | | PCMC |
| 11 | Pimple Saudagar | Based on Landuse | | | | PCMC |
| 12 | Modification of Existing FOB near Poona Public School (Before Bhosari) | Modification is required to improve access and also to equip the FOB with lift and escalators. | | | | PCMC |
| 13 | Opposite to Chikali Bus Stand | 1,339 | 9,864 | 1,303 | Yes | PCMC |
| 14 | Chakan Chowk, Alandi | 813 | 2,461 | 49 | Yes | Rest of PMR |
| 15 | Chakan Chowk, Shikrapur | Based on Landuse | | | | Rest of PMR |
| 16 | Kapurhol Junction | Based on Landuse and non-availability of Pedestrian crossing in the vicinity. | | | | Rest of PMR |

## 4.4.4 | PEDESTRIAN PRIORITY STREETS

Pune has already initiated several pedestrian-oriented projects, with pedestrian priority streets representing a significant advancement in this effort. These streets focus on promoting walking and cycling while minimizing vehicular movement. Pedestrian priority streets will feature wide, high-quality, well-maintained footpaths that accommodate recreational activities for citizens of all ages.

To prioritize pedestrians, minimal space is allocated for vehicles. If necessary, one-way schemes may be implemented based on the availability of alternative road network. Parking is discouraged on these streets, with restrictions allowing parking on only one side, provided it does not impede pedestrian flow.

Pedestrian priority streets not only enhance safety for children and senior citizens but also promote universal accessibility, contributing to a vibrant business environment. In light of these benefits, several pedestrian priority streets are proposed, as detailed in **Table 4 - 41**.These projects shall be implemented in phases, incorporating lessons learned from earlier efforts.

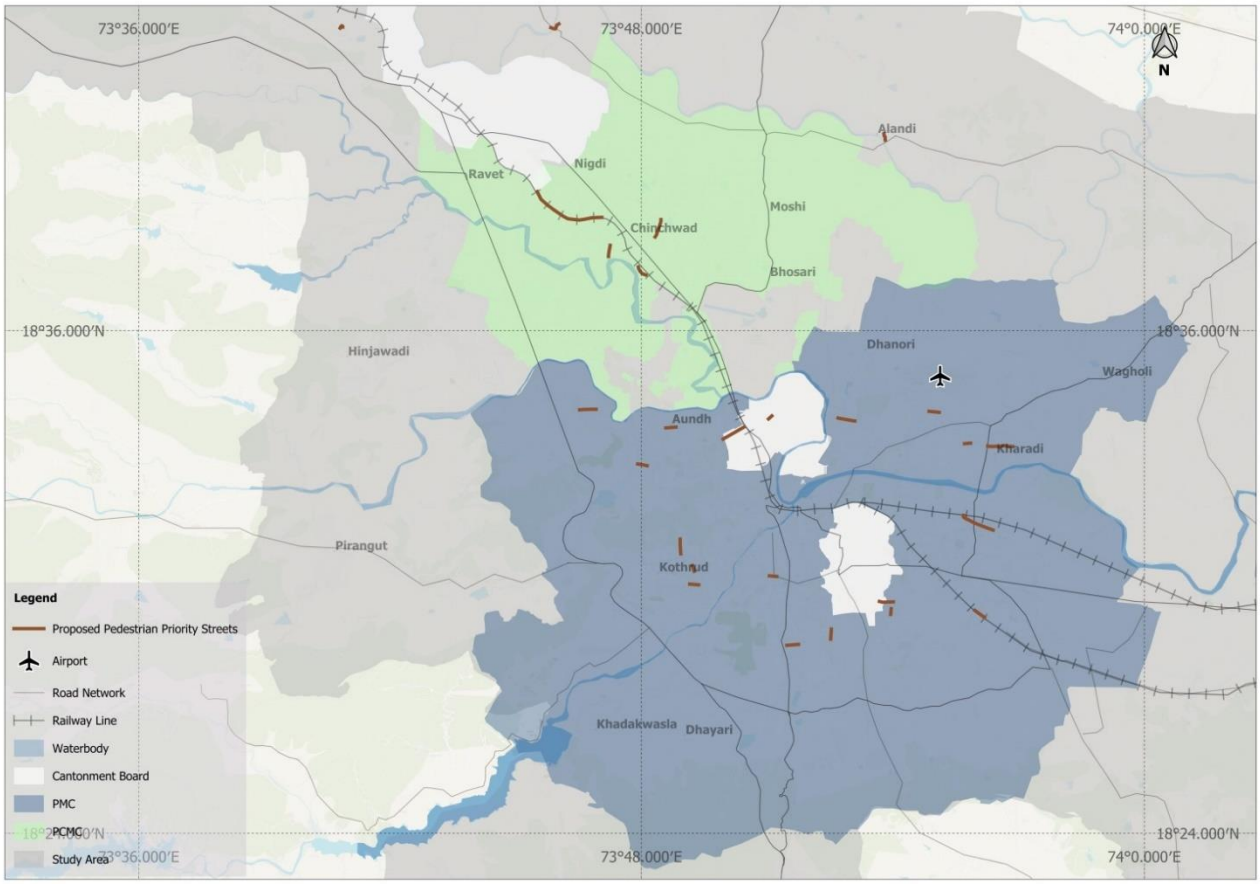
Proposed **pedestrian-only streets** include MG Road, Phule Mandai Market (Shanipar Mandai Road - Gaikwad Road - Amrale Road - Fruit Market Road), and the Pimpri Market Area.

**Table 4 - 41 | List of proposed Pedestrian Priority Streets in the Study Area**

| No. | Road Name | Length in Km |
|---|---|---|
| | **PMC** | |
| 1 | Road connecting Balewadi High Street Road and Old Baner – Balewadi Road | 0.69 |
| 2 | Someshwar Wadi Road, Someshwarwadi | 0.41 |
| 3 | Police Workshop Road, Aundh | 0.43 |

| No. | Road Name | Length in Km |
|---|---|---|
| 4 | Park Road, Range Hill, Khadki Cantonment | 1.0 |
| 5 | Factory Road, Khadki Bazar | 0.19 |
| 6 | Samrat Ashok Path, Bhimashankar Society | 0.72 |
| 7 | Anand Vidya Niketan High School Road, Viman Nagar | 0.43 |
| 8 | Vascon Forest Edge Road, Kharadi | 1.1 |
| 9 | Amanora Park Town Road, Hadapsar | 0.87 |
| 10 | Road connecting Old Mundhwa Road and Kharadi Road, Kharadi | 0.26 |
| 11 | Kale Pedal Bypass Road, Hadapsar | 0.51 |
| 12 | Flower Valley Lane, Wanwadi | 0.26 |
| 13 | Mahadji Shinde Road, Wanowrie | 0.59 |
| 14 | Gangadham Road, Bibewadi | 0.45 |
| 15 | Sitaram Ambaji Bhidve Road | 0.49 |
| 16 | Peshve Park Lake Road, Sadashiv Peth | 0.31 |
| 17 | Tridal Hall Road, Kothrud | 0.27 |
| 18 | 3rd Lane, Paschimanagri, Kothrud | 0.38 |
| | **Sub-Total (A)** | **9.36** |
| | **PCMC** | |
| 1 | Main Bazar Road, Pimpri Market | 0.51 |
| 2 | Ganga Nagar Road, Pimpri Colony | 3.24 |
| 3 | Morwadi Road, Pimpri Colony | 0.81 |
| 4 | Global International School Road, Chinchwad | 0.50 |
| | **Sub-Total (B)** | **5.06** |
| | **Total (A+B)** | **14.42** |

**Figure 4 - 43 | Proposed Pedestrian Priority Streets in PMC and PCMC**




## 4.4.5 | HARIT SETU PROJECT BY PCMC

The Harit Setu Project is an initiative aimed at modernizing the city's road infrastructure while promoting sustainability. This project is designed to create an integrated and eco-friendly road network that not only enhances traffic flow but also improves the overall quality of urban life by providing better NMT facilities and reducing the dependence on private modes. The projects connect gardens and sports, residential areas, education institutes & hospitals, entertainment zones, transport nodes and shopping areas. By adopting urban street guidelines for road design, the Harit Setu Project ensures accessibility for all citizens, including pedestrians, cyclists, and public transport users.

### KEY FOCUS AREAS

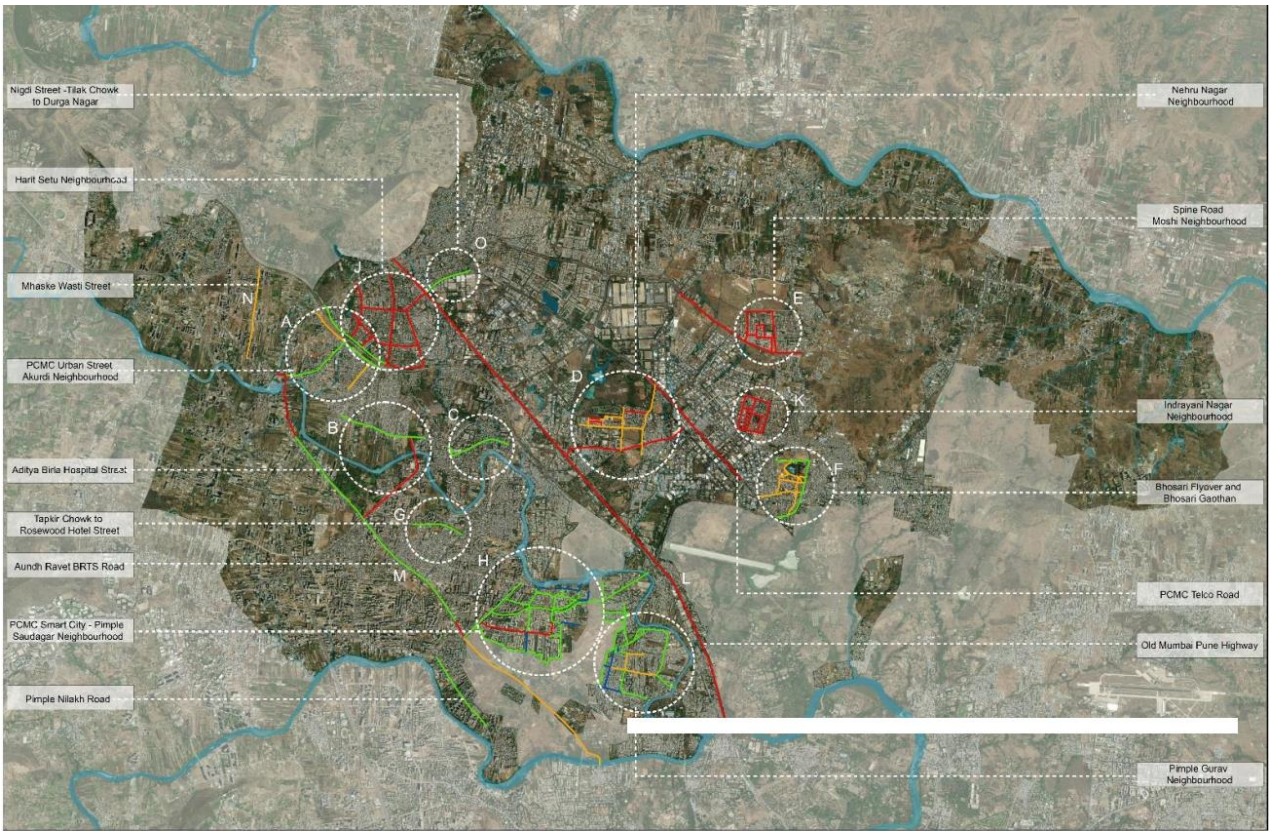
- **Road Modernization and Safety:** The project emphasizes enhancing road safety, especially for vulnerable groups such as children and senior citizens. Redesigned roads will include advanced traffic management systems to reduce accidents and ensure smoother traffic flow.
- **Sustainable Urban Design:** Sustainability is a core element of the project, with green corridors along the roads aimed at reducing pollution and mitigating urban heat. The inclusion of cycling lanes and pedestrian zones promotes non-motorized, eco-friendly

commuting options.

- **Public Transport Integration:** The road network will be designed with public transport in mind, incorporating well-placed bus stops and pedestrian-friendly zones to make public transportation more efficient and accessible.
- **Congestion Reduction:** By streamlining road networks and implementing modern traffic management systems, the project is expected to significantly reduce vehicular - congestion, leading to smoother traffic movement across the city.
- **Pollution Control:** The project's focus on reducing vehicular traffic, combined with better road design, will contribute to lower noise and air pollution levels. This will improve the overall environmental health in the Study Area.
- **Financial Support and Green Bond:** To support the sustainability goals of the Harit Setu Project, PCMC will raise Rs. 200 crore through green bonds. These funds will be crucial in ensuring that the project adheres to its commitment to environmental and urban sustainability.

The details of the projects undertaken as part of Harit Setu Project are presented in **Figure 4 - 44**.

**Figure 4 - 44 | Proposed Projects in Harit Setu**



# 4.5 | INTER-MODALITY- INTEGRATED DEVELOPMENT OF ALL MODES INCLUDING NMT

## 4.5.1 | MULTI-MODAL INTEGRATION

A public transit system is incomplete without Multi – Modal Integration, which encompasses seamless transfers between different modes and the provision of passenger amenities at strategic locations where major transfers occur.

Direct service for all commuters is not feasible in large city and therefore transfer from one mode to another is a vital aspect of any public transportation system. Integrating various transport modes is essential for creating a cost-effective and sustainable transportation network. Multi – Modal Integration can be achieved at various levels:

- **Physical Integration**: This ensures easy transfers between transport modes by minimizing walking distances and reducing horizontal and vertical displacement.
- **Fare Integration**: This involves implementing common ticketing for multiple public transport options, such as PMPML, BRTS, Metro and Suburban Rail. This approach eliminates the need to purchase separate tickets, reduces transfer times, and saves commuters money.
- **Operational Integration**: This includes synchronizing the schedules of mass transit and feeder services to minimize walking and waiting times at stations.
- **Information Integration**: Providing passengers with comprehensive information about service availability, routes, and schedules is crucial for efficient travel.
- **Institutional Integration**: This brings together all agencies responsible for urban transport planning and operations under a single organization, ensuring coordinated project planning and operations.

Multi-modal hubs are planned to achieve the physical integration. Key features of multi-modal hubs and stations include:

- Minimizing delays and ensuring smooth, comfortable transfers
- Providing real-time information on various service schedules
- Integrating feeder services like auto-rickshaws, taxis, and minibuses
- Provision of parking facilities on pay-and-park basis
- Implementing an integrated fare policy and ticketing system
- Providing amenities such as shopping arcades, offices, ATMs, banking services, post offices, and essential passenger facilities like information boards, drinking water, first aid, washrooms, and seating areas.

The details of the proposed 26 Multi-Modal Hubs are presented in **Table 4 - 42**. The Multi Modal Hubs has been categorized as large medium and small based on the land development potential, number of modes connected and the same has been presented in detail in **Chapter 5**.

**Table 4 - 42 | Details of Proposed Multi – Modal Hubs**

| No | Locations | Modes that will be integrated |
|---|---|---|
| 1 | Pune Railway Station | Metro, Railways, PMPML, MSRTC |
| 2 | Shivaji Nagar | Metro, Railways, PMPML, MSRTC |
| 3 | Swargate | Metro, PMPML, MSRTC |
| 4 | Bhakti Shakti | Metro, PMPML, MSRTC |
| 5 | Balewadi | Metro, PMPML, MSRTC |
| 6 | Katraj | Metro, PMPML, MSRTC |
| 7 | Hadapsar | Metro, PMPML, MSRTC |
| 8 | Wagholi | Metro, PMPML, MSRTC |
| 9 | Moshi | Metro, PMPML, MSRTC |
| 10 | Sant Tukaram Nagar | Metro, PMPML, MSRTC |
| 11 | Chinchwad | Metro, Railways, PMPML |
| 12 | Mukhai Chowk | Metro, PMPML, MSRTC |
| 13 | Chandani Chowk | Metro, PMPML, MSRTC |
| 14 | Wakad | Metro, PMPML, MSRTC |
| 15 | Chakan | Metro, PMPML, MSRTC |
| 16 | Manjari Budruk | Metro, PMPML, MSRTC |
| 17 | Nashik Phata | Metro, PMPML, Railways |
| 18 | District Court | Metro, PMPML |
| 19 | Vanaz | Metro, PMPML |
| 20 | Godown Chowk | Metro, PMPML |
| 21 | Kurali | Metro, PMPML |
| 22 | Vitthalwadi | Metro, PMPML, MSRTC |
| 23 | Vadhu Budruk | PMPML, Railway |
| 24 | Loni Kalbhor | PMPML, Metro, MSRTC |
| 25 | Khadkale | Railway, PMPML |
| 26 | Purandar | Airport, Railway, PMPML |

Apart from the above, 11 minor multi-modal stations are proposed in the Study Area which are basically for intra-city mobility and will have basic facilities for transfer of passengers from one mode to another. It includes facilities like skywalks connecting different modes, small waiting areas for passenger transfers, PIS etc. The details of these transfer stations are presented in **Table 4 - 43**.

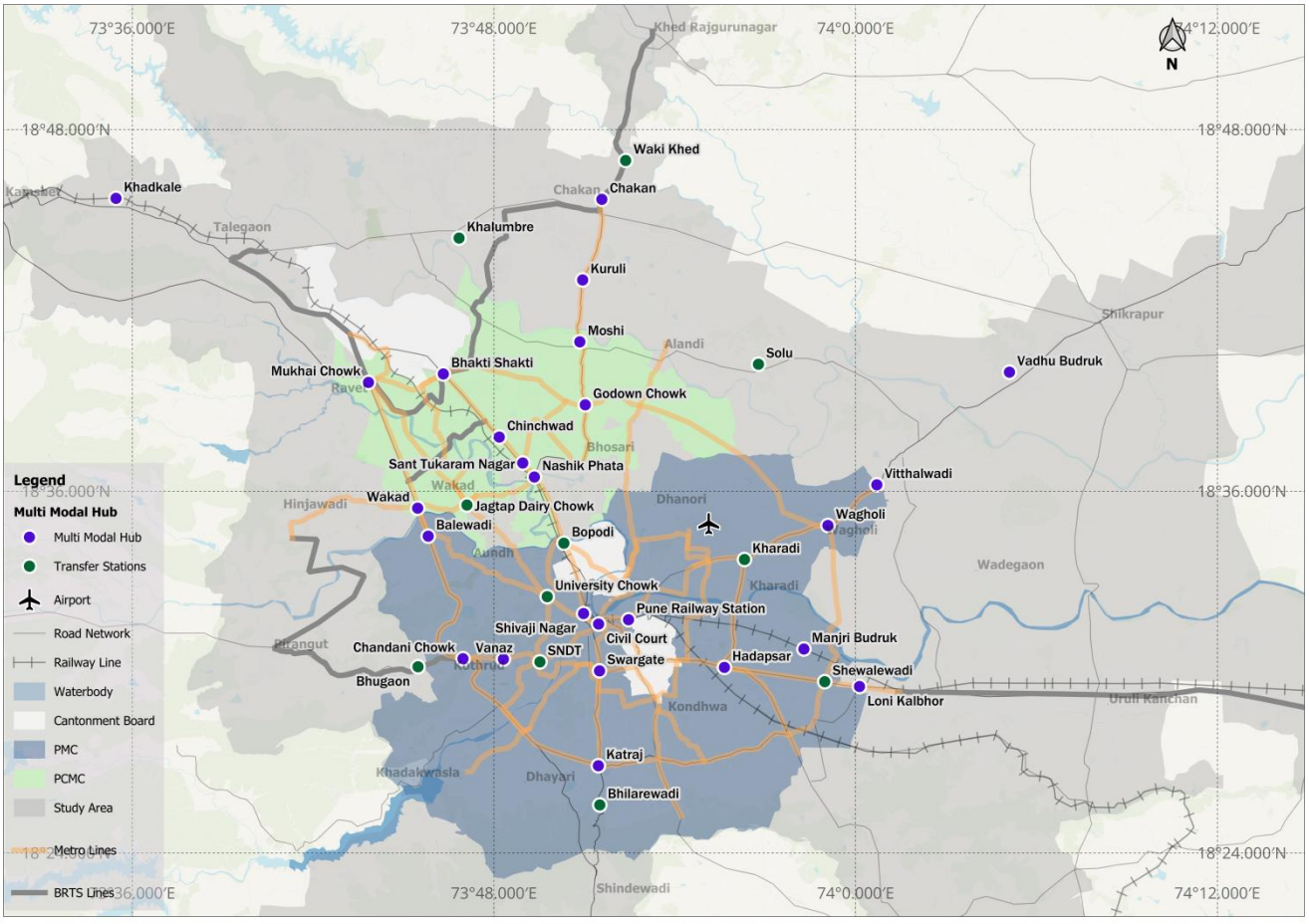
**Table 4 - 43 | Details of Proposed Multi-modal Transfer Stations**

| No | Transfer Station Locations | Modes |
|---|---|---|
| 1 | Kharadi | Metro, PMPML |
| 2 | Jagtap Dairy Chowk | Metro, PMPML |
| 3 | SNDT | Metro, PMPML |

| No | Transfer Station Locations | Modes |
|---|---|---|
| 4 | University Chowk | Metro, PMPML |
| 5 | Bopodi | Metro, PMPML |
| 6 | Shewalewadi | Metro, PMPML |
| 7 | Waki Khurd | Railway, Semi High Speed Rail, PMPML |
| 8 | Bhilarewadi | MSRTC |
| 9 | Khalumbre | PMPML |
| 10 | Solu | PMPML |
| 11 | Bhugaon | PMPML, MSRTC |

In addition to above, all the metro stations shall be properly integrated with nearest PMPML bus stops or railway stations to provide easy access for passengers to transfer from one mode to another. IPT shall be integrated at Metro/Bus Stands/Railway Stations by providing adequate space for pick-up/drop-off as well as waiting/circulation areas.

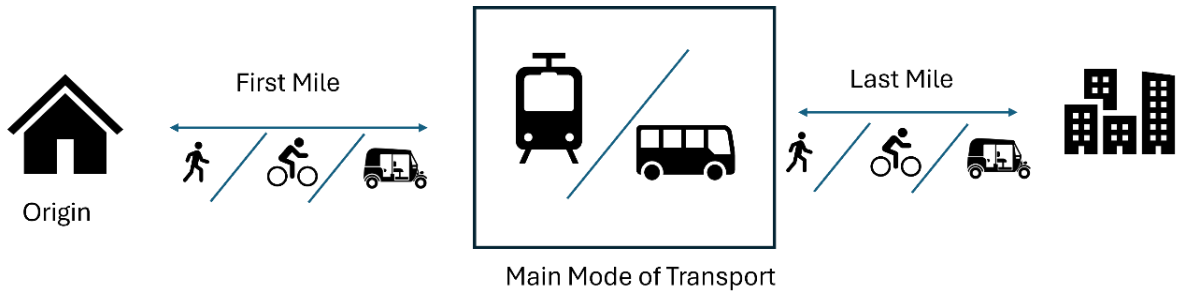
**Figure 4 - 45 | Proposed Multi-Modal Integration Hubs and Transfer stations**



## FIRST/LAST MILE CONNECTIVITY

First/Last mile connectivity is a crucial aspect of urban transportation, particularly in the context of expanding metro system in the Study Area. While metro networks significantly reduce travel times and congestion, ensuring seamless access from residential/workplaces to metro stations is essential for maximizing their usage and efficiency. The concept of first/last mile connectivity is depicted in the following **Figure 4 - 46.**

**Figure 4 - 46 | Info graphics showing First/Last Mile Connectivity**




Some of the recommendations for the First / Last mile connectivity include:

- A combination of pedestrian pathways, bicycle lanes, and feeder services like auto-rickshaws, electric buses, and app-based cab services can create a robust first/last mile network even in narrow lanes and densely populated areas.
- Mini buses and standard buses can be operated to serve the high demand corridors.
- High frequency of services during peak periods and economical fare is the key for patronage and success of last mile connectivity services.
- Infrastructure improvements, such as well-maintained footpaths and safe crossings, signage & markings, proper lighting during night are vital to encourage walking and cycling.
- IPT shall be regulated related in terms of routes and fares so that commuters are not charged more than the fare finalized by RTO.
- Public awareness and engagement are also critical. Involving local communities in the planning process will further align services with the actual needs of residents.
- Finally, collaboration between various transport authorities and local governments is essential to create a cohesive strategy for first/last mile connectivity.

# 4.6 | FREIGHT MANAGEMENT PLAN

Pune's rapid population growth and the rise of e-commerce have intensified challenges in urban goods transport. Effective freight management is essential to support economic activities while minimizing traffic congestion, accidents, and pollution.

### 4.6.1 | CURRENT CHALLENGES

1. **Inadequate Terminal Facilities**: There is a notable lack of truck terminals equipped with essential amenities i.e. parking for longer duration, including resting rooms, toilets, drinking water, restaurants, and vehicle repair services.
2. **Traffic Congestion**: Heavy truck traffic on major radial roads exacerbates local congestion. Regulations prohibiting daytime truck movement have led to increased parking demand on these routes.
3. **Insufficient Bypass Infrastructure**: The existing eastern bypass is only a two-lane road, limiting its effectiveness in managing freight traffic.

### 4.6.2 | PROPOSED STRATEGIES

To address these challenges, the following strategies are recommended:

1. **Infrastructure Development**:

   **Bypass Railway Line**: Develop the proposed bypass railway to divert freight traffic.

   **Multi-Modal Logistics Parks**: Establish logistics centers on the outskirts connected to regional roads and rail networks.

   **Truck Terminals**: Develop terminals along major radial roads and the inner ring road to facilitate freight movement. Ensure all truck terminals are equipped with essential services, including resting rooms and vehicle repair facilities

2. **Relocation of Activity Centers**: Shift congested markets and road/rail terminals outside the city to alleviate inner-city traffic.
3. **Night-time Loading/Unloading**: Permit night-time operations for loading and unloading at markets to reduce daytime congestion.
4. **Holistic Oversight**: Form a sub-committee under PUMTA to oversee freight management and infrastructure development, involving stakeholders such as transport associations and railways and companies which generate significant freight traffic.

### 4.6.3 | REGULATORY MEASURES

1. **Vehicle Specification Regulations**: Implement regulations based on Gross Vehicle Weight (GVW) and height to mitigate road damage and enhance safety:

   **Light Commercial Vehicles (LCVs)**: GVW up to 3.5 tons—permitted throughout the day.

   **Medium Commercial Vehicles (MCVs)**: GVW between 3.5 to 12 tons—allowed during non-peak hours.

   **Heavy Commercial Vehicles (HCVs)**: GVW over 12 tons—restricted to night-time.

2. **Time Restrictions for Freight Vehicles**: Maintain prohibitions on heavy vehicles entering the city from 7:00 AM to 10:00 PM, encouraging night-time deliveries. The existing heavy and commercial vehicle restrictions as implemented by the traffic police within the Study Area are presented in **Annexure 4.5**.

3. **Height Restrictions**: Enforce height limits in compliance with Central Motor Vehicle Rules, 1989 to ensure safe passage through flyovers and underpasses.

   **Goods Vehicles:** The maximum height is restricted to 3.8 meters (approximately 12.5 feet) from the ground level. This applies to standard commercial vehicles.

   **Containerized Vehicles:** In the case of containerized trucks or vehicles with special containers, the maximum allowable height is 4.2 meters (approximately 13.8 feet).

   **Special Locations:** Underpasses and bridges with lesser clearance shall be identified and provision of barriers with adequate advance warning sidings in compliance with IRC 67:2012 shall be provided. The barrier shall be placed 50 - 100 m ahead of the railway crossing/underpass/flyover with lesser clearance while the warning sign shall usually be placed 200 m away from the barrier. The locations of the proposals shall be identified and implemented in consultation with local authorities.

Implementing these strategies will streamline freight operations, reduce negative impacts, and promote a sustainable urban transport environment. While short- and medium-term measures are crucial, long-term solutions should focus on developing ring roads and relocating logistics activities to the outskirts of the city.

## 4.6.4 | TRUCK TERMINALS

Truck traffic within urban areas significantly affects overall city mobility, especially during peak hours. To mitigate congestion and facilitate loading and unloading activities, the establishment of truck terminals is proposed at various strategic locations along arterial roads.

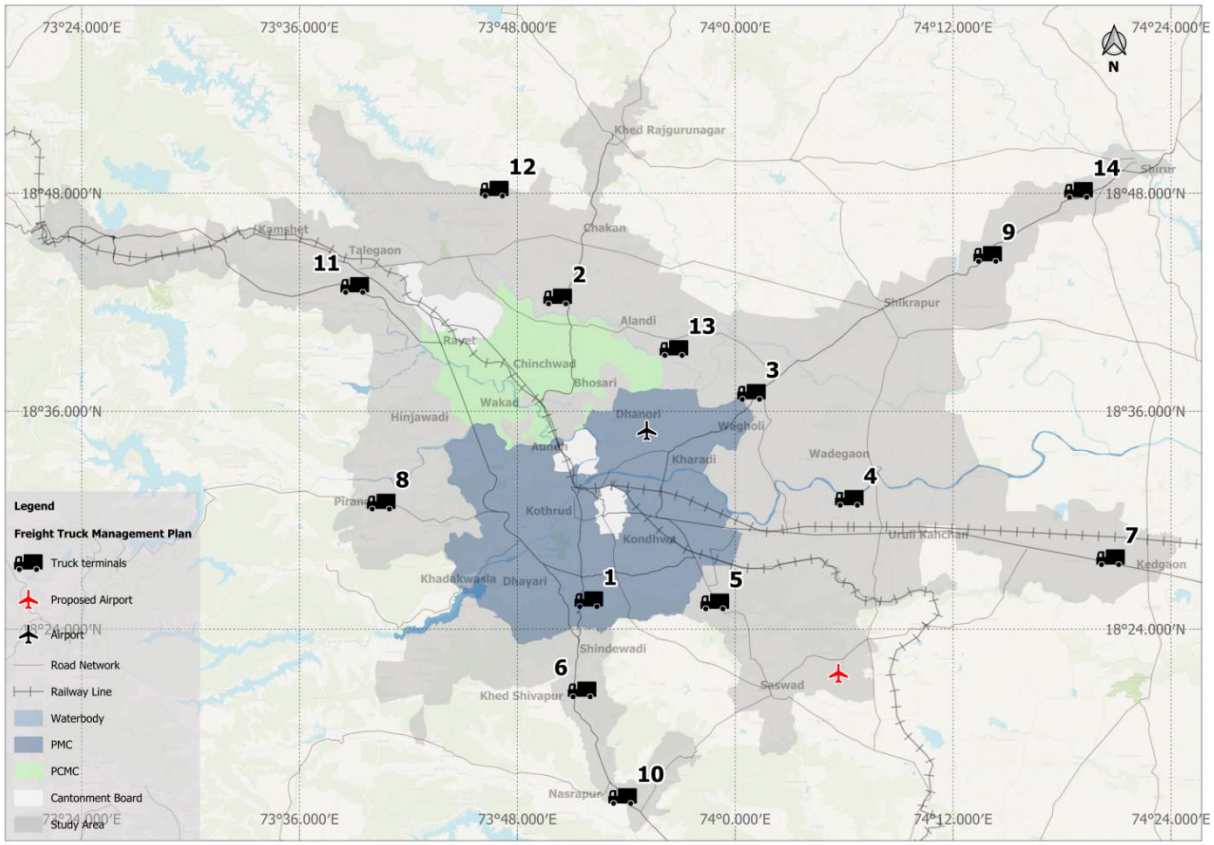
These terminals have been identified based on projected future demand and input from various authorities. They aim to address truck parking needs and streamline loading/unloading processes. Details of the proposed terminals can be found in in **Table 4 - 44** and **Figure 4 - 47.**

**Table 4 - 44 | Proposed Truck Terminals in the Study Area**

| No. | Proposal | Land Required (Acres) | Jurisdiction |
|---|---|---|---|
| 1 | Mangdewadi | 3.10 | PMC |
| 2 | Nashik Road, Near Chimbali | 3.5 | Rest of PMR |
| 3 | Loni Kand | 5.67 | Rest of PMR |
| 4 | Prayagdham | 3.67 | Rest of PMR |
| 5 | Wadki | 2.77 | Rest of PMR |
| 6 | Kasurdi | 1.2 | Rest of PMR |
| 7 | Daund, Kedgaon | 4.12 | Rest of PMR |
| 8 | Kasar Amboli | 1.09 | Rest of PMR |
| 9 | Ranjangaon on NH753P | 4.81 | Rest of PMR |
| 10 | Satara Road near Nasrapur | 3.5 | Rest of PMR |
| 11 | Parandvadi | 5.75 | Rest of PMR |
| 12 | Bhamboli | 2.54 | Rest of PMR |

| No. | Proposal | Land Required (Acres) | Jurisdiction |
|---|---|---|---|
| 13 | Solu | 3.17 | Rest of PMR |
| 14 | Saradwadi | 4.81 | Rest of PMR |

**Figure 4 - 47 | Proposed Truck Terminals**




## 4.6.5 | LOGISTIC PARKS

Logistic Parks serve as integrated hubs for various logistics operations, encompassing warehousing, transportation, and value-added services. As urbanization and e-commerce continue to rise, the importance of logistics parks in enhancing supply chain efficiency and supporting economic growth has become increasingly evident.

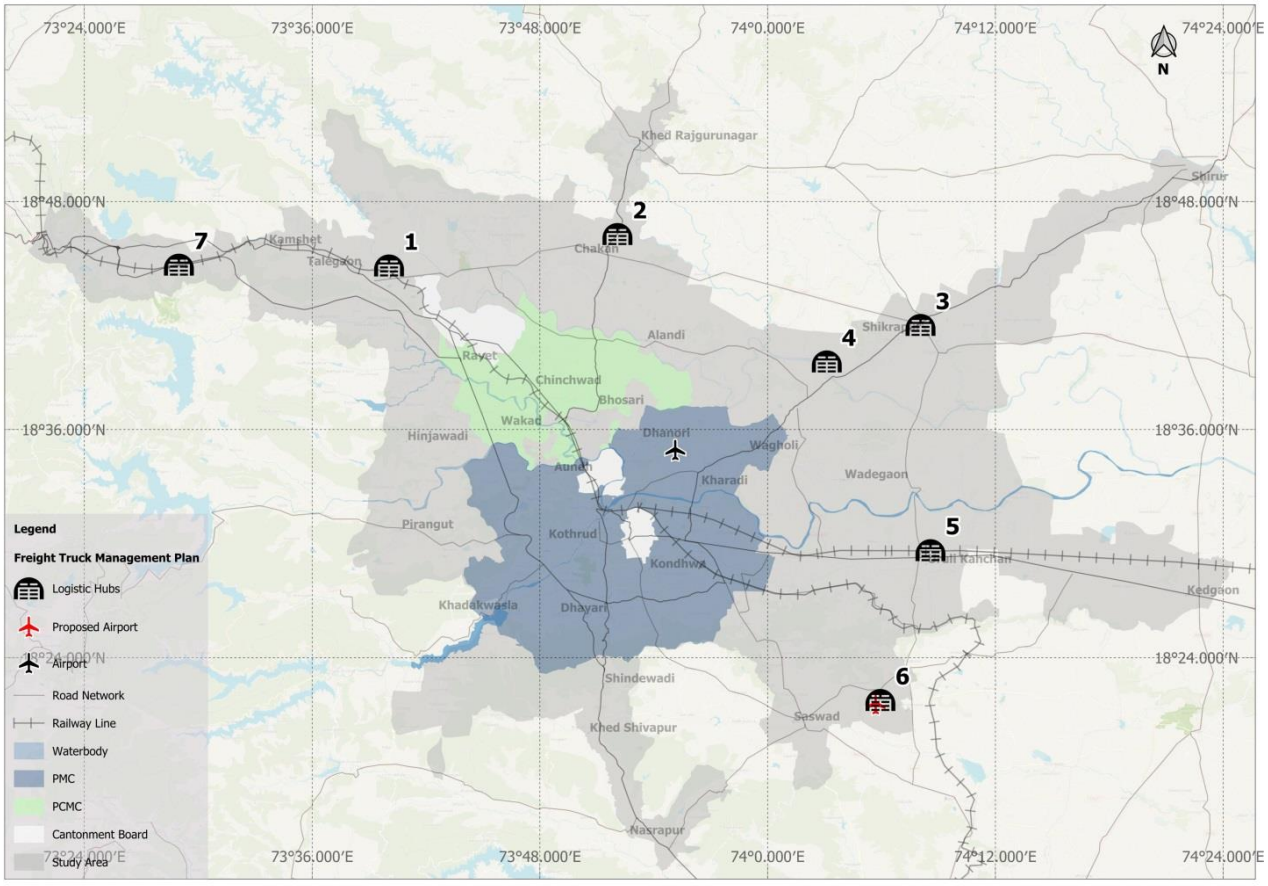
A logistics park enhances domestic and international trade by offering a range of services, including handling, warehousing, cold storage, multi-modal transport facilities, and container freight stations. These services support efficient, cost-effective, and value-added logistics operations such as cargo aggregation and disaggregation, distribution, and intermodal transfers. Within a logistics park, all supply chain activities are conducted commercially by various operators. Proposals for logistics parks have been made at multiple locations near bypass railway lines to facilitate multi-modal connectivity for logistics operations, as detailed in **Table 4 - 45** and **Figure 4 - 48.**

Each proposed site requires a minimum area of 25 acres to establish a logistics park. A detailed feasibility study needs to be carried out to evaluate market demand, land requirements, location suitability, and the potential for development under a Public Private Partnership (PPP) model.

**Table 4 - 45 | Proposed Logistic Parks**

| No. | Location | Jurisdiction |
|---|---|---|
| 1 | Talegaon Dabhade | Rest of PMR |
| 2 | Chakan | Rest of PMR |
| 3 | Shikrapur | Rest of PMR |
| 4 | Vadhu Budruk | Rest of PMR |
| 5 | Uruli Kanchan | Rest of PMR |
| 6 | Saswad | Rest of PMR |
| 7 | Malavli | Rest of PMR |

**Figure 4 - 48 | Proposed Logistics Parks**




## 4.7 | INTELLIGENT TRANSPORT SYSTEM (ITS)

Intelligent Transport System (ITS) is real-time management of vehicles and transport networks

involving the movements of people and goods through information and communication Technology (ICT). ITS can make the transport system safer and more secure, more efficient and reduce environmental impacts. In this section, the summary of ITS proposals that needs to be implemented in phased manner in the Study Area is presented. These applications are broadly divided into two categories:

- Integrated Traffic Management System
- Public Transport Management System

## 4.7.1 | INTEGRATED TRAFFIC MANAGEMENT SYSTEM (ITMS)

Integrated Traffic Management System (ITMS) is designed to optimize and coordinate traffic flow across various transportation modes in urban environments. It focuses on collecting, analyzing, and disseminating real-time traffic data to enhance road safety and optimize traffic flow. By integrating information from various sources, such as traffic sensors, cameras, and vehicle GPS, ITIMS provides insights into current traffic conditions and detects incidents. It communicates timely information to drivers through digital signage, mobile apps, and websites, enabling informed travel decisions and reducing congestion. Additionally, TIMS supports traffic management centers in coordinating rapid responses to incidents and optimizing traffic signal operations, ultimately contributing to a more efficient and safer transportation network. The various sub-systems in ITMS are presented in **Table 4 - 46**.

**Table 4 - 46 | Sub-Systems of Integrated Traffic Management System (ITMS)**

| No. | Type of Sub-System | Description | Proposals |
|---|---|---|---|
| 1 | **Variable Message Sign (VMS)** | VMS boards are installed at locations for road users to display the alternative route. The VMS System provides traffic information to the road users such as congestion level, expected travel time to reach the major destinations, and traffic message of accident, road work, road closure, etc. It aims to enable them to select the alternative route or encourage them to change their travel plan, by notifying such information in advance. The VMS boards will be installed at locations before reaching major junctions of the arterial roads where drivers are able to decide between the routes. | VMS boards shall be implemented at strategic locations on all major arterial roads of the city as well as radial roads, ring roads, Major Railway stations, Bus Stands, Multi-modal hubs and Airport. |
| 2 | **Adaptive Traffic Control System (ATCS)** | An Adaptive Traffic Control System (ATCS) is an integrated network designed to monitor, manage, and optimize traffic flow on roadways using real-time data collection and analysis. It incorporates various technologies, such as traffic sensors, adaptive signal control, and communication networks, to enhance traffic efficiency and safety. By dynamically adjusting traffic signals based on current conditions, detecting incidents, and providing real-time information to drivers, ATCS aims to reduce congestion, minimize delays, and improve overall roadway safety, ultimately contributing to a smoother transportation experience. | The PSCDCL implemented ATCS at 125 junctions. The ATMS consists of various sub-systems (vehicle detection camera, ATC controller, communication network, variable message signboards etc.) in a coherent single interface that provides real-time data on the status of traffic at the ATCS application software at the command-and-control centre. PSCDCL shall take up remaining major junctions. |

| No. | Type of Sub-System | Description | Proposals |
|---|---|---|---|
| 3 | **Traffic Incident Detection System (TIDS)** | A Traffic Incident Detection System (TIDS) is a technology-driven solution designed to monitor traffic conditions and identify incidents such as accidents or breakdowns in real time. By utilizing various data sources, including sensors and cameras, TIDS analyzes traffic patterns to detect anomalies that may indicate an incident. When an issue is identified, the system automatically alerts traffic management centers and relevant authorities, enabling rapid response and coordination to mitigate traffic disruptions. By improving incident response times and enhancing roadway safety, TIDS plays a vital role in optimizing traffic flow and reducing congestion on roadways. | The system can be deployed on high-speed corridors such as Inner Ring Road, Outer Ring Road, Mumbai Pune Highway and other high-speed accident-prone Highways in the Study Area |
| 4 | **Speed Limit Violation System (SLVD)** | A Speed Limit Violation System (SLVD) is a technology-based solution designed to monitor vehicle speeds and identify instances where drivers exceed established speed limits. Utilizing technologies such as radar, cameras, and inductive loops, the system continuously tracks vehicle speeds in real time and automatically detects and records violations, often capturing photographic evidence for enforcement purposes. SLVD integrates with traffic management systems to provide immediate access to violation records for law enforcement, generating alerts when violations occur. By compiling data on speed violations, the system not only enhances road safety by discouraging speeding but also supports efficient enforcement and data-driven traffic planning, ultimately contributing to safer roadways. | The System can be deployed on all Arterial roads which high accident incidents as well as NH, SH, Inner and Outer Ring roads |
| 5 | **Red-Light Violation Detection (RLVD) system** | One of the most important methods for enhancing traffic and public safety is enforcement. The Red-Light Violation Detection (RLVD) system would assist Traffic Police effectively in enforcement with minimal increase in human effort. The RLVD system is a system for capturing details of vehicles that have crossed the stop line at the junction while the traffic light is red. The system should be capable to detect red light status and redlight violation by video analytics method. The camera should also be used for evidence snap generation. The information so captured shall be used to issue challans to the violators. | All Major Intersections in the phased manner. Accident prone intersections shall be prioritised in the first phase. |
| 6 | **Automatic Traffic Counter-cum-Classifier (ATCC)** | The primary purpose of ATCC is to collect vehicle data by type as well as speed data. Data collected by the system will be used to calculate the congestion level on the roads. The collected data is accumulated and analysed for road and traffic management purposes. | This system can be deployed at strategic locations i.e. entry point to the city, industrial areas to monitor the trends of vehicle movements. |

| No. | Type of Sub-System | Description | Proposals |
|---|---|---|---|
| 7 | **SMART Parking Management** | Smart parking management using Intelligent Transportation Systems (ITS) leverages technology to optimize the use of parking spaces in urban areas. By integrating sensors, mobile applications, and real-time data analytics, this system allows drivers to locate available parking spots quickly, reducing time spent searching for parking and minimizing traffic congestion. Additionally, smart parking solutions can provide dynamic pricing based on demand, encouraging more efficient space utilization and generating revenue for municipalities. Enhanced features, such as reservation systems and automated payment options, further improve user convenience and promote the use of public transport by making it easier to transition between modes of travel. | This is more useful for large off-street parking facilities at Railway stations, Airports and Malls etc.,<br>On-street parking shall be managed through manual methods |

## 4.7.2 | PUBLIC TRANSPORT MANAGEMENT SYSTEM

Public Transport Management System or City Bus System (CBS) is an integrated framework designed for efficient fleet operations and real-time information dissemination to riders. Key components include:

- **On-Board Units (OBU)**: Each bus is equipped with an OBU for location tracking, utilizing cellular communications to send periodic location updates to the Command Control Centre (CCC). This data helps monitor traffic speeds on key routes.
- **Command Control Centre (CCC)**: This centre employs fleet management software to track route adherence and manage incidents through a Computer Aided Dispatch/Automatic Vehicle Location (CAD/AVL) system.
- **Passenger Information System (PIS)**: PIS uses tracking data to provide real-time arrival predictions at terminals and shelters, accessible via a website and mobile app.
- **Depot Management System (DMS)**: Each depot has a DMS for scheduling, crew management, vehicle dispatch, and operational reporting, enhancing overall service efficiency.
- **Real-Time Monitoring**: The fleet is monitored on a GIS map using geo-position data from OBUs, allowing for accurate arrival time predictions and operational alerts to improve service delivery.
- **Safety and Security Monitoring**: The system ensures passive monitoring of safety for city infrastructure, enabling quick decision-making during emergencies.
- **Communication with Agencies**: Real-time data is transmitted to ITS units at stations and on buses, as well as to agencies like traffic police and local authorities for coordinated management.

### PMPML INITIATIVES

In 2017, PMPML established a Command and Control Centre to enhance bus operations. Key components of this project include:

- **Real-Time Bus Tracking**: GPS trackers on buses capture real-time movement data.
- **Enhanced Security**: CCTV surveillance and panic buttons are installed on 510 buses.
- **Public Information System (PIS)**: Displays 'Expected Time of Arrival (ETA)' and critical information on LED screens at 190 bus stops and within 510 buses, supplemented by mobile apps and a website for real-time updates.
- **In-Bus Amenities**: Information systems and Wi-Fi services provided in approximately 1,080 buses.

**Key Outputs and Outcomes**

- **Incident Response**: The vehicle tracking system enables PMPML to monitor incidents of over-speeding, harsh braking, and traffic violations.
- **Fleet Utilization**: Vehicle health monitoring enhances overall fleet efficiency.
- **Passenger Security**: The surveillance system improves passenger safety and ensures rapid emergency response.
- **Traffic Management**: The central command room facilitates quicker decision-making, traffic condition forecasting, and future transportation planning.
- **Asset Management**: Intelligent asset management optimizes investments and reduces annual maintenance costs.

### PROPOSALS

Following proposals are suggested to improve the bus operations

- **Review Existing ITS System**: Assess effectiveness of existing ITS system and expand its scope and coverage.
- **Implement ITS Depot Management**: Enhance crew and fleet management capabilities through deployment of Depot Management.
- **Performance Reporting**: Regularly update salient performance indicators on the PMPML website.

## 4.8 | TRAFFIC MANAGEMENT MEASURES

Traffic Management, also known as Transportation Demand Management (TDM), encompasses strategies designed to use transportation resources more efficiently rather than expanding the supply of transportation infrastructure like roads, parking facilities, and amenities for private vehicles.

Mobility Management prioritizes the movement of people and goods, rather than vehicles, and thus

emphasizes modes of transport such as public transportation, non-motorized transport (NMT), and ride sharing. These modes optimize available road space and minimize pollution, particularly under congested road conditions. This approach is especially relevant for Indian cities due to its low costs and diverse benefits. The benefits of such mobility management measures include,

- **Congestion Reduction:** Alleviating traffic congestion
- **Cost Savings:** Reducing the need for and expenditure on developing roads and parking facilities
- **Improved Consumer Choice:** Offering more transit options
- **Enhanced Road Safety:** Promoting safer travel methods
- **Better Environmental Quality:** Reducing pollution
- **Community Livability:** Enhancing the quality of life in urban areas
- **Efficient Land-Use:** Supporting better landuse practices
- **Equity:** Ensuring fair access to transportation.

Mobility Management can yield significant savings for both commuters and society by reducing and deferring the costs associated with road network capacity expansion. These measures can be implemented quickly and can be tailored to specific locations, time periods, or user groups, providing flexible and targeted solutions for urban transportation challenges.

Traffic Management measures such as Junction Improvements, Signalization of Junction, Pedestrian priority streets, enforcement of traffic rules & regulations, Auto lanes at Metro stations, SATIS, area traffic management plans, signage & markings, freight management strategies etc., have been suggested in the Mobility Plan.

### 4.8.1 | PARKING MANAGEMENT

Urban land holds significant commercial value, necessitating effective pricing strategies for its use. Parking demand is elastic with respect to fees; therefore, implementing appropriate parking charges can help manage and reduce demand. Pricing should be based on location, vehicle type, and duration of use, and must be supported by a comprehensive pricing policy.

Many residential and commercial establishments in the city lack adequate parking space within their compounds, resulting in vehicles being parked on adjoining roads. This situation contributes significantly to traffic congestion.

It is advisable to involve the private sector in parking development. Parking projects can be enhanced by allocating some areas for commercial use and granting advertising rights.

In 2017, the Pune Municipal Corporation (PMC) formulated a parking policy aimed at prioritizing parking control initiatives. These initiatives encourage a shift from personal modes of transport, particularly two-wheelers and cars, to public transit, walking, or cycling. Balancing the provision of parking spaces with the need for facilities supporting sustainable transportation is essential. The

parking policy outlines a pricing strategy that categorizes the city into three zones:

- Central Business District
- Mobility Corridors
- Other Areas

Parking charges are determined based on these zones, the type of vehicle, and the time of day, ensuring an efficient use of urban space.

## PARKING FEES AND EXEMPTIONS

Parking rates in the study area are currently low. To ensure effective demand management, it is crucial to increase parking charges in line with the parking policy. Benchmarking these rates against those of other cities and adjusting them according to market dynamics is essential. The parking policy also includes a formula for revising rates, which must be implemented. The base parking rates for both on-street and off-street parking are outlined in the PMC Parking Policy 2016, as detailed in **Table 4 - 47.**

**Table 4 - 47 | Base rates for On-Street and Off-Street Parking**

| Vehicle | ECS | On-Street Parking Base Rate (Rs. per hour) | | | Off-Street Parking Base Rate (Rs. per hour) | | |
|---|---|---|---|---|---|---|---|
| | | Central Business District | Mobility Corridors | Rest of city in PMC limit | Central Business District | Mobility Corridors | Rest of city in PMC limit |
| Two-wheeler | 0.25 | 15 | 10 | 5 | 10 | 5 | 3 |
| Para Transit (non-designated areas) | 0.60 | 36 | 24 | 12 | 20 | 10 | 5 |
| Four Wheeler | 1.00 | 60 | 40 | 20 | 30 | 20 | 10 |
| Tempos | 1.00 | 60 | 40 | 20 | 30 | 20 | 10 |
| Minibus/LCV | 1.50 | 90 | 60 | 30 | 45 | 30 | 15 |
| HCV/Truck | 2.20 | 132 | 88 | 44 | 65 | 45 | 20 |
| Private Tourist Bus (≈ 15 m long) | 3.90 | 234 | 156 | 78 | 115 | 80 | 40 |
| * Includes vehicles such as food vending tempos, vegetable vending tempos and other such vehicles<br>Cycles and all types of PMPML Buses shall be exempted from Parking charges | | | | | | | |

*Source: Public Parking Policy, 2016, PMC.*

The parking rates in the PCMC are as follows:

- **Two-wheelers and auto rickshaws**: Rs. 5 per hour
- **Four-wheelers and tempos**: Rs. 10 per hour
- **Minibuses**: Rs. 25 per hour
- **Trucks and private buses**: Rs. 100 per hour

These rates, proposed in 2016, should be revised regularly to account for inflation to ensure they remain relevant.

## PARKING FEE REVISION FORMULA

Annual parking rates should be tied to the rise in vehicle registration numbers and ready reckoner rates. The applicable parking rates for any financial year can be calculated using the following formula:

**Revised Parking Charge** = Base Parking Charge + (0.6R1 + 0.4R2) × Base Parking Charge

Where:

- **R1** = Percentage rise in vehicle registrations for the financial year
- **R2** = Maximum percentage rise in ready reckoner rates for that year

## STRATEGIES FOR ON-STREET PARKING MANAGEMENT

To effectively regulate on-street parking for private vehicles, the following recommendations are proposed:

- **Prohibited Locations:** On-street parking shall not be permitted on sub-arterial and collector roads where the carriageway width is less than 7 meters.
- **High Traffic Volume Areas:** Parking shall be disallowed on roads where the volume/capacity (V/C) ratio exceeds 0.8 or where speeds are less than 15 km/hr.
- **Mass Transit Corridor Routes:** On-street parking in all the Mass Transit corridors shall be converted to paid parking.
- **Intersections and Critical Locations:** These areas shall remain free of parked vehicles. Vehicles should not be allowed to park within 50 meters of a major intersection to improve road capacity and safety, ensuring adequate sight distances for vehicles and pedestrians and providing sufficient space for large commercial vehicles to make left-hand turns.
- **Bus Bays:** Suitable kerb side lengths near bus bays should be kept clear of parked vehicles.
- **Pedestrian Areas:** No parking shall be allowed on raised footpaths or other corridors designated exclusively for pedestrians. For safety reasons, parking should be prohibited on or adjacent to pedestrian crossings within 8 meters.
- **Central Areas:** Street parking may be permitted on one side of the road on one day and on the other side on another day, depending on the site location.
- **Narrow Streets:** Kerb parking management measures are necessary for narrow streets. Parking should not be permitted on two-way carriageways less than 5.75 meters wide and on one-way streets less than 4 meters wide, particularly in central areas.
- **Priority Locations:** Parking should not be permitted at kerb locations where priority is given to public services, such as bus stops and other critical areas.

## ON-STREET PARKING MANAGEMENT

Existing on-street free parking shall be made paid parking on several roads and the details of roads

where pay-and-park to be implemented is presented in **Table 4 - 48.**

**Table 4 - 48 | Proposed Roads for On-Street Parking with Pay & Park basis**

| No. | On Street Parking | Area | Type of Vehicle |
|---|---|---|---|
| 1 | Shivaji Road | PMC | Two wheeler |
| 2 | Bajirao Road | PMC | Two wheeler |
| 3 | Laxmi Road | PMC | Two wheeler |
| 4 | Shivaji Nagar Bus Stand Area | PMC | Two wheeler/Car |
| 5 | JM Road | PMC | Two wheeler |
| 6 | FC Road | PMC | Two wheeler |
| 7 | Balewadi Phata | PMC | Two wheeler/Car |
| 8 | Near Market Yard | PMC | Two wheeler |
| 9 | DP Road and Mahadji Shinde Road, Aundh | PMC | Two wheeler/Car |
| 10 | Lal Bahadur Shastri Road | PMC | Two wheeler/Car |
| 11 | District Court | PMC | Two wheeler/Car |
| 12 | Timber Market Road near Market Yard | PMC | Two wheeler |
| 13 | Nagar Road near Viman Nagar Corner and Kharadi Bypass Junction | PMC | Two wheeler/Car |
| 14 | Balewadi High Street to Varsha Park Society | PMC | Two wheeler/Car |
| 15 | Bhosari ( 50 m away from intersection) | PCMC | Two wheeler |
| 16 | Nigdi (50 m away from intersection) | PCMC | Two wheeler |
| 17 | Dange Chowk (50 m away from intersection) | PCMC | Two wheeler/Car |
| 18 | Chapekar Chowk (50 m away from intersection) | PCMC | Two wheeler/Car |
| 19 | Landewadi Chowk (50 m away from intersection) | PCMC | Two wheeler/Car |
| 20 | Kaspate Chowk to Wakad Chowk | PCMC | Two wheeler/Car |
| 21 | Mahesh Nagar Road near Yashwanth Rao Chavan Hospital | PCMC | Two wheeler/Car |
| 22 | Chikhali Akurdi Road from Thermax Chowk to Om Sai Chowk | PCMC | Two wheeler/Car |

## OFF-STREET PARKING MANAGEMENT

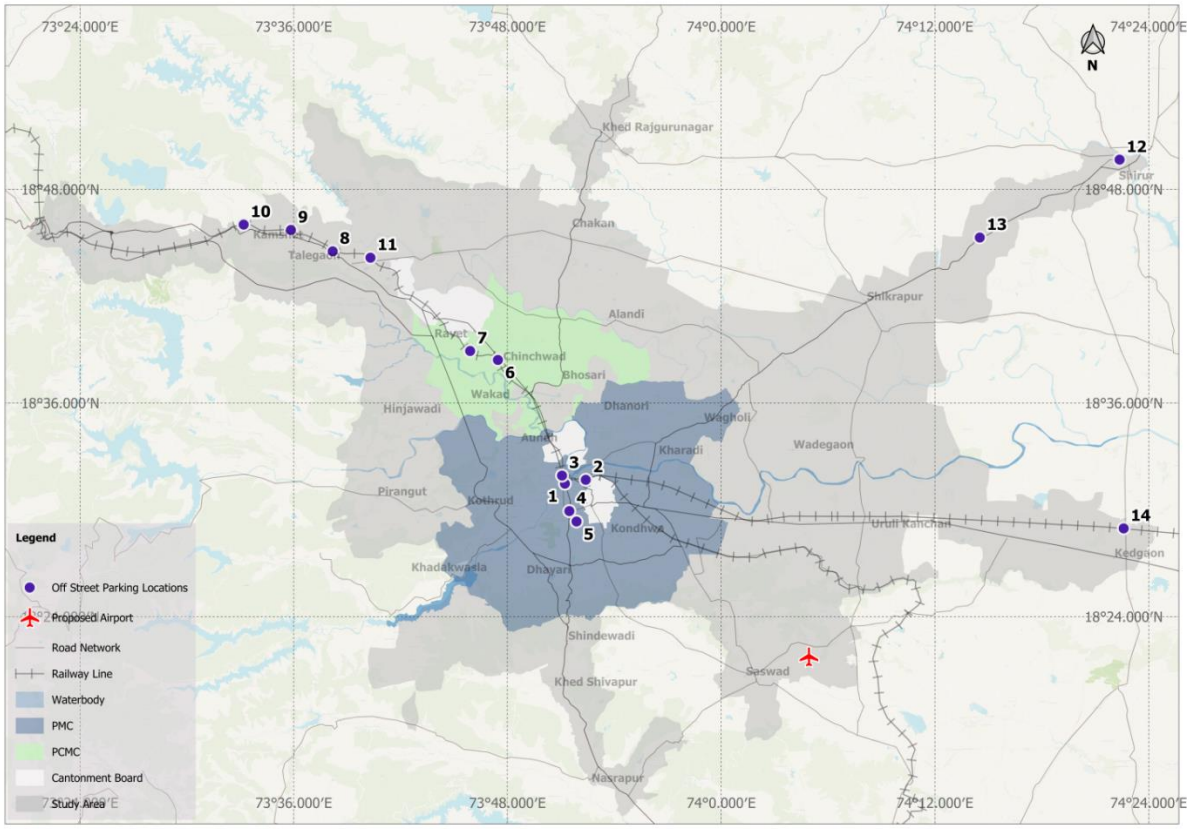
**The off-street parking facilities are proposed based on the parking demand and in locations where heavy parking is causing serious congestion challenges. The proposed off-street parking locations presented in Table 4 - 49 and Figure 4-49**

Figure 4 - 49. A detailed feasibility study shall be carried out before the development of off-street parking facilities.

**Table 4 - 49 | Proposed for Off-Street Parking Facilities**

| No. | Off Street Parking locations | Area | Land Req. (sq. m) | Capacity | Remark |
|---|---|---|---|---|---|
| 1 | Pune Municipal Corporation | PMC | 2,500 | 209 | At present Parking lot is developed for Two wheelers only. In order to enhance the capacity and accommodate both Two wheelers and Cars, the existing parking lot shall be redeveloped with higher capacity. |
| 2 | Pune Railway Station | PMC | 3,500 | 584 | Convert Existing Car Parking to Multilevel Car Parking |
| 3 | Shivaji Nagar | PMC | 2,500 | 313 | Multilevel Parking |
| 4 | Swargate | PMC | 5,000 | 625 | Multilevel Parking |
| 5 | Market Yard | PMC | 3,500 | 438 | Multilevel Parking at Existing Surface Parking |
| 6 | Chinchwad Railway Station | PCMC | 1,000 | 125 | Multilevel Parking |
| 7 | Akurdi (Near Railway Station) | PCMC | 2,700 | 250 | Surface Parking |
| 8 | Vadgaon Railway Station | Rest of PMR | 500 | 21 | Surface Parking |
| 9 | Kanhe Railway Station | Rest of PMR | 500 | 21 | Surface Parking |
| 10 | Kamshet Railway Station | Rest of PMR | 500 | 21 | Surface Parking |
| 11 | Front Side of Talegaon Railway Station | Rest of PMR | 500 | 21 | Surface Parking |
| 12 | Beside Shirur Bus Stand | Rest of PMR | 2,650 | 21 | Surface Parking |
| 13 | Opposite Ranjangaon Ganapati Temple | Rest of PMR | 1,700 | 111 | Surface Parking |
| 14 | Kedgaon Railway Station | Rest of PMR | 750 | 32 | Surface Parking |

**Figure 4 - 49 | Proposed Off-street Parking locations**




Apart from these locations, paid parking facilities are proposed at Multimodal hubs and ISBT locations. The list of proposed Multimodal hubs and ISBT where off-street parking is required is presented in **Table 4 - 50**.

**Table 4 - 50 | Proposed Off-Street Parking Facilities at Multimodal Hubs and ISBTs**

| No. | Location for Off-Street Parking |
|---|---|
| 1 | Katraj Multimodal Hub |
| 2 | Hadapsar Multimodal Hub |
| 3 | Wagholi Multimodal Hub |
| 4 | Moshi Multimodal Hub |
| 5 | Sant Tukaram Multimodal Hub |
| 6 | Chinchwad Multimodal Hub |
| 7 | Talegaon ISBT, Mumbai Road |
| 8 | Vitthalwadi ISBT, Nagar Road |
| 9 | Loni Kalbhor ISBT, Solapur Road |
| 10 | Mangdewadi ISBT, Satara Road |
| 11 | Moshi ISBT, Nashik Road |

## 4.8.2 | STREET LIGHTING

Street lighting is crucial for safety. A light meter survey conducted during the study revealed that several roads require improved lighting. The details of these roads, along with the specific lighting enhancements needed, are presented in **Table 4 - 51**

**Table 4 - 51 | Proposed Street Lighting Improvement along the Major Corridors**

| No | Name of the Road | Length (Km) | Standard Lux Value | Existing Lux Value |
|---|---|---|---|---|
| | **Streetlight for Carriageway** | | | |
| 1 | Shivaji Nagar to Market Yard | 4.69 | 30 | 28 |
| 2 | Shivaji Nagar to Mitra Mandal Chowk | 2.7 | 30 | 22 |
| 3 | RTO to Solapur Chowk | 4 | 30 | 16 |
| 4 | Shivaji Nagar to Bund Garden | 5.32 | 30 | 24 |
| 5 | Shivaji Nagar to Chandani Chowk | 8.29 | 30 | 15 |
| 6 | Shivaji Nagar to Baner Road | 9.55 | 30 | 21 |
| 7 | Kharadi Bypass | 6.36 | 30 | 24 |
| 8 | Solapur Highway | 6.34 | 30 | 13 |
| 9 | Kondhwa Road | 2.19 | 15 | 14 |
| 10 | Wakad - Chichwad | 6.28 | 30 | 18 |
| 11 | Bopodi-Yerwada | 5.92 | 30 | 20 |
| 12 | Market Yard | 2.94 | 15 | 12 |
| 13 | Sinhgad Road | 5.1 | 15 | 13 |
| 14 | Magarpatta Road | 12 | 30 | 25 |
| 15 | Bhosari Road | 10.4 | 30 | 23 |
| 16 | Bhosari Nigdi Road | 8.2 | 30 | 22 |
| | **Streetlight for Footpath** | | | |
| 1 | Shivaji Nagar to Market Yard | 4.69 | 25 | 20 |
| 2 | Shivaji Nagar to Mitra Mandal Chowk | 2.7 | 25 | 17 |
| 3 | RTO to Solapur Chowk | 4 | 25 | 3 |
| 4 | Shivaji Nagar to Bund Garden | 5.32 | 25 | 4 |
| 5 | Shivaji Nagar to Chandani Chowk | 8.29 | 25 | 10 |
| 6 | Shivaji Nagar to Baner Road | 9.55 | 25 | 12 |
| 7 | University Chowk to Sant Tukaram Bridge | 14.2 | 25 | 20 |
| 8 | COEP Bridge to Bhakti Shakti | 17.7 | 25 | 21 |
| 9 | Deccan College to Vishrantwadi | 5.5 | 25 | 18 |
| 10 | Kharadi Bypass | 6.36 | 25 | 16 |
| 11 | Solapur Highway | 6.34 | 25 | 3 |
| 12 | Kondhwa Road | 2.19 | 25 | 3 |
| 13 | Shivaji Nagar to Camp Via Swargate | 8 | 25 | 6 |
| 14 | Gokhale Nagar Road | 5.45 | 25 | 13 |
| 15 | Wakad -Chichwad | 6.28 | 25 | 5 |
| 16 | Hinjawadi-Chinchwad Road | 7.66 | 25 | 7 |

| No | Name of the Road | Length (Km) | Standard Lux Value | Existing Lux Value |
|---|---|---|---|---|
| 17 | Deccan College Road | 5.92 | 25 | 16 |
| 18 | Laxmi Road | 2.69 | 25 | 15 |
| 19 | Market Yard | 2.94 | 25 | 4 |
| 20 | Sinhgad Road | 5.1 | 25 | 3 |
| 21 | Magarpatta Road | 12 | 25 | 7 |
| 22 | Bhosari Road | 10.4 | 25 | 24 |
| 23 | Bhosari Nigadi Road | 8.2 | 25 | 3 |
| 24 | Kalewadi Phata | 4.18 | 25 | 7 |

### 4.8.3 | SIGNALIZATION OF JUNCTIONS

Traffic signals play a crucial role in managing both vehicular and pedestrian traffic. By assigning the Right-of-Way to various traffic movements, they significantly facilitate orderly and safe traffic flow. Properly designed, located, operated, and maintained traffic signals offer several advantages, including:

- Facilitating the orderly movement of traffic.
- Increasing the traffic-handling capacity of intersections.
- Reducing frequency and severity of certain types of accidents, particularly right-angle collisions.
- Interrupting heavy traffic at intervals to allow pedestrians to cross the road safely.
- To maximize efficiency, traffic signals on major corridors and junctions should be coordinated to minimize delays and increase the throughput of the corridor.

Several junctions in the study area have non-operational traffic signals, resulting in manual control by traffic police. The junctions identified for signalization are listed in **Table 4 - 52**.

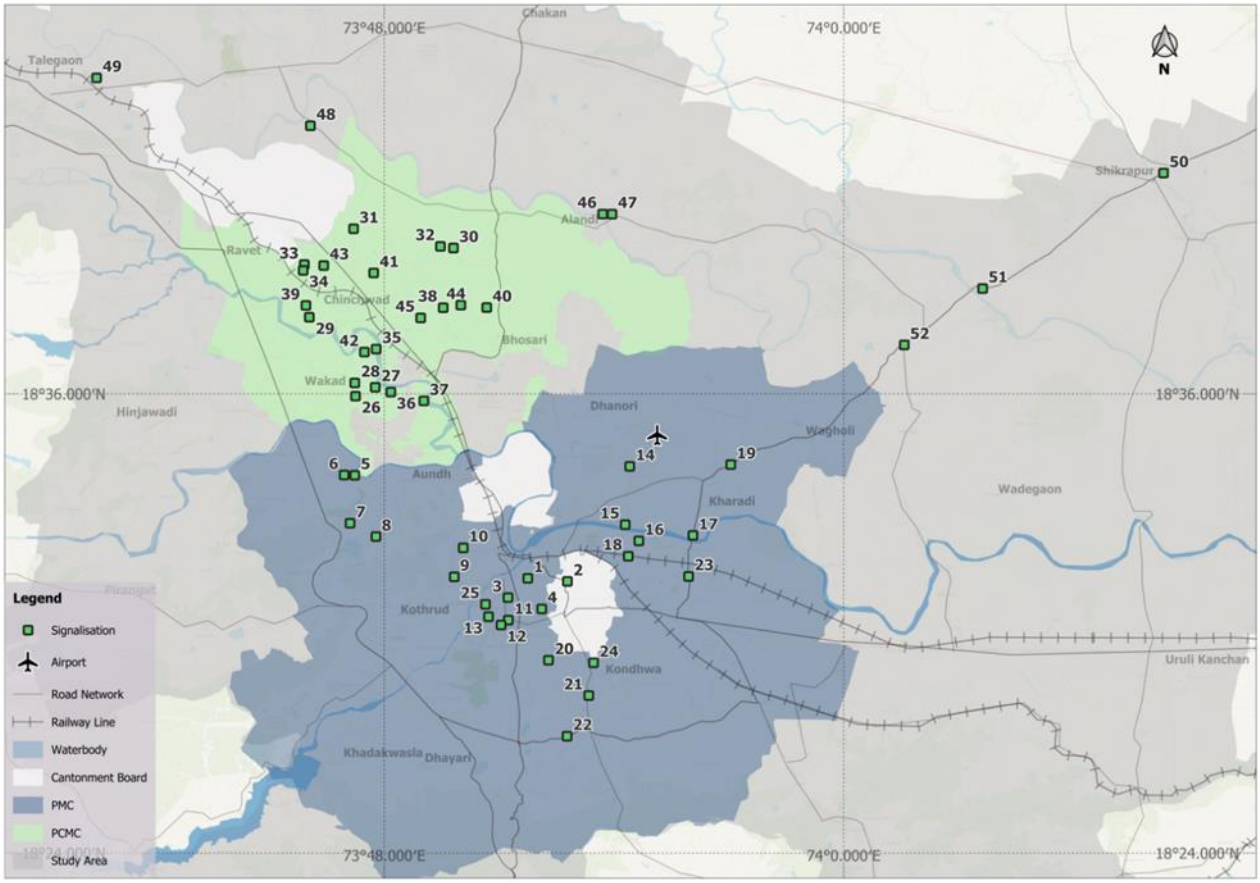
**Table 4 - 52 | List of Junctions identified for Signalization**

| No | Name | Jurisdiction |
|---|---|---|
| 1 | Samarth Chowk | PMC |
| 2 | Diamond Queen Junction Camp | PMC |
| 3 | Sarvajanik Kaka Chowk | PMC |
| 4 | Timber Market Junction | PMC |
| 5 | Rutuparna Apartment Junction | PMC |
| 6 | Balewadi Phata | PMC |
| 7 | Sai Chowk, Pashan Sus Road | PMC |
| 8 | Garware Circle | PMC |
| 9 | NCC Head Quarters Chowk | PMC |
| 10 | Dhotre Chowk | PMC |

| No | Name | Jurisdiction |
|---|---|---|
| 11 | Sarasbaug Junction | PMC |
| 12 | Junction between Sane Guruji Rasta and Narveer Tanaji Malusare Road | PMC |
| 13 | Junction between Lal Bahadur Shastri Road and Satguru M Baba Marg | PMC |
| 14 | Dorabjee Junction (Symbiosis Road) | PMC |
| 15 | Kalyani Nagar Junction | PMC |
| 16 | Marriot Suites Junction | PMC |
| 17 | Junction between Magarpatta Road and Raghoba Patil Nagar Road. | PMC |
| 18 | BT Kawade Chowk | PMC |
| 19 | Junction between Grant Road and Samrat Ashok Road | PMC |
| 20 | Marketyard Post Office Junction | PMC |
| 21 | Kondhwa Junction | PMC |
| 22 | Shatrunjaye Chowk | PMC |
| 23 | Seasons Mall Junction | PMC |
| 24 | Fakhri Hills Junction NIBM | PMC |
| 25 | Junction between Lal Bahadur Shastri road and Sharad Pandit Path | PMC |
| 26 | Sambhaji Maharaj PCMC Garden Junction | PCMC |
| 27 | Junction between Rahatani Road and Ram Mandir Road | PCMC |
| 28 | Nakhate Wasti Chowk | PCMC |
| 29 | Rashtramata Jijau Chowk | PCMC |
| 30 | Chatrapati Sambhaji Maharaj Chowk | PCMC |
| 31 | Triveni Nagar Road Junction | PCMC |
| 32 | Chatrapati Shivaji Maharaj Square | PCMC |
| 33 | Swami Vivekanand Chowk | PCMC |
| 34 | PCCOE Circle Chowk | PCMC |
| 35 | Junction between Kalewadi Main Road and Vijay Nagar Road | PCMC |
| 36 | Pimple Saudagar Pump Junction | PCMC |
| 37 | Shrushti Chowk | PCMC |
| 38 | Gavi Mata Chowk | PCMC |
| 39 | Chintamani Chowk | PCMC |
| 40 | Vaishno Mata Marg Chowk | PCMC |
| 41 | Parshuram Chowk | PCMC |
| 42 | Athvan Chowk | PCMC |
| 43 | Swatarayaveer Savakar Chowk | PCMC |
| 44 | Junction between Telco Road Junction and Devchaya Road | PCMC |

| No | Name | Jurisdiction |
|---|---|---|
| 45 | Junction between Vastu Udyog Road and Antariksh Road | PCMC |
| 46 | Alandi Chowk | Rest Of PMR |
| 47 | Wadgaon Chowk | Rest Of PMR |
| 48 | Tukoba Maharaj Entrance Chowk | Rest Of PMR |
| 49 | Shivaji Chowk | Rest Of PMR |
| 50 | Pabal Phata Chowk | Rest Of PMR |
| 51 | Junction between Pune Ahmednagar Highway and Vadu Road | Rest Of PMR |
| 52 | Lonikand Phata Junction | Rest Of PMR |

**Figure 4 - 50 | Proposed Junctions for Signalization**




## 4.8.4 | TRAFFIC CALMING MEASURES

Traffic calming measures are recommended to reduce vehicular speeds in areas with heavy pedestrian movement, such as residential neighbourhoods, institutional zones, public spaces, community centers, and recreational areas. Implementing these measures will enhance road safety. As per various studies, speeds below 35 km/h significantly lower the risk of fatal crashes.

Various road design strategies can be employed to effectively reduce traffic speeds and improve safety for cyclists and pedestrians. The tools for these traffic calming measures are outlined in **able 4 - 53**.

**Table 4 - 53 | Tools for Implementation of Traffic Calming Measures**

| Measures | Strategy |
|---|---|
| Speed Humps | Speed humps can reduce speeds to a certain limit based on the height and length of the hump. |
| Speed Cushions | Speed cushions are small speed humps installed across the width of the road with spaces between each of them. |
| Raised Pedestrian Crossings | Raised crossings are elevated road crossings for pedestrians on the road with ramps to slow down cars. |
| Raised Intersections | The intersection area is raised with ramps constructed for vehicles to access the raised area. |
| Chicanes | Chicanes are artificially created turns to slow traffic by reducing the width of the road. |
| Chokers | Chokers are a kerb extension that narrows a road by widening the footpaths. |
| Kerb Extensions | Kerb extensions are extensions of footpath, usually at intersections to improve pedestrian safety and reduce crossing distance. |
| Traffic Circles | Traffic circles are rotaries in the middle of an intersection. Entering traffic must follow a circular flow in on direction. They help in reducing speeds and vehicular conflicts. |
| Roundabouts | Roundabouts reduce conflict points at four-armed intersections and slow traffic. A roundabout is a road intersection with circulatory traffic. The traffic passing through the intersection is regulated in one direction. |
| Medians | Medians are barriers/dividers in the centre portion of a road separating traffic moving in opposite directions |
| Refuge Islands | Refuge islands are segments of medians used by pedestrians to wait while crossing a road. |
| Bollards | Bollards are vertical posts used to protect sidewalks from vehicular access |

The list of roads identified for traffic calming measures is presented in **Table 4 - 54.**

**Table 4 - 54 | List of Roads/Corridors identified for Traffic Calming Measures**

| No. | Roads | Length (km) |
|---|---|---|
| | **PMC** | |
| 1 | Thorle Madhav Rao Peshwa Road | 0.9 |
| 2 | Congress House Road | 1.5 |
| 3 | Old Mumbai Pune Road | 1.85 |
| 4 | Sanjay Gandhi-HH Prince Agakhan Road | 1 |
| | **Total length in PMC** | **5.25** |
| | **PCMC** | |
| 1 | Finolex Chowk-Karachi Chowk | 0.8 |
| 2 | River Road (near Pimpri Market) | 0.7 |
| 3 | Main Bazar Road (near Pimpri Market) | 0.5 |

| No. | Roads | Length (km) |
|---|---|---|
| 4 | Bhondwe Chowk-Hutatma Chowk | 1.8 |
| 5 | Akurdi Police Chowki-Akurdi Railway Station | 0.35 |
| 6 | Chinchwad Station Road | 0.25 |
| | **Total length in PCMC** | **4.4** |

## 4.8.5 | IPT MANAGEMENT

In the Study Area, a variety of intermediate public transport (IPT) options are available, including auto-rickshaws, share autos, and taxi services, such as app-based aggregators like Ola and Uber. Auto-rickshaws operate without specific route restrictions, providing vital connectivity to the city's core areas, which often feature narrow road networks. IPT accounts for 17% of all motorised trips.

At present, around 922 designated auto rickshaw stands exist in PMC, PCMC and Cantonment areas. These stands shall be reviewed at regular intervals based on the demand and availability of space; more stands shall be allocated. The local body shall erect proper information boards at designated Auto stands. This will help unauthorized parking of Autorickshaws. Traffic Police shall enforce metering of Auto rickshaws. RTP shall review shared Auto routes at regular intervals and modify the routes based on demand and public feedback.

IPT stands including drop-off/pick up and circulation areas are suggested at Lonavala, Talegaon and Shirur. The details are presented in **Table 4 - 55**.

**Table 4 - 55 | Locations identified for IPT Management**

| Urban Areas | Location | No. |
|---|---|---|
| Malavali | Lonavala Bus Stand and Railway Station | 2 |
| Talegaon | Talegaon Bus Stand and Railway Station | 2 |
| Ranjangaon | Shirur Bus Stand | 2 |

### E-RICKSHAWS IN INDIA



E-rickshaws, or electric rickshaws, have rapidly gained traction as a popular mode of transport in various Indian cities, particularly in North India, including Delhi, Lucknow, Jaipur, and Ranchi. According to the Ministry of Road Transport and Highways (MoRTH) notification dated October 18, 2018, E-rickshaws are exempt from permit requirements but can be regulated based on local traffic conditions. Each state is empowered to set its own registration and licensing norms, resulting in significant variations across the country. While some states have established clear registration processes, others face challenges in enforcement.

MoRTH has introduced specific guidelines that categorize E-rickshaws as a distinct vehicle type

intended to provide last-mile connectivity for passenger transport. Key provisions include:

- A maximum speed limit of 25 km/h
- A motor power limit of 2,000 Watts
- Capacity to carry four passengers, excluding the driver, along with 40 kg of luggage
- E-carts designated for transporting goods up to 310 kg

The benefits of E-rickshaws are substantial. They are environmentally friendly, producing zero emissions during operation, and cost-effective, with prices ranging from Rs.80,000 to Rs.150,000. The running cost per km is significantly lower at approximately Rs.0.40, compared to Rs.2.10-Rs.2.30 for internal combustion engine (ICE) rickshaws. Furthermore, a study by the International Council on Clean Transportation (ICCT) indicated that E-rickshaws can reduce greenhouse gas emissions by up to 90% compared to traditional vehicles, highlighting their role in promoting sustainable urban transport.

However, there are notable drawbacks. Regulatory challenges and enforcement issues can lead to illegal operations, oversaturation of E-rickshaws leading to congestion and parking issues and safety concerns. A lack of adequate charging infrastructure and battery management solutions, including disposal methods, usage of lead acid battery poses significant challenges.

### INTRODUCTION OF E-RICKSHAWS IN THE STUDY AREA

Drawing on experiences from other cities, it is crucial to introduce E-rickshaws gradually, initially focusing on areas where regular rickshaws are scarce. E-rickshaws can play a vital role in providing last-mile connectivity to metro stations; however, their numbers at each station should be regulated to prevent congestion and parking challenges. Furthermore, establishing adequate charging infrastructure and battery-swapping arrangements is essential before the rollout of E-rickshaws to ensure a sustainable and efficient operation.

## 4.8.6 | HAWKER MANAGEMENT

Hawkers occupying the carriageway reduce the effective road width and lower its capacity. Additionally, hawkers on footpaths discourage pedestrians from using them, forcing them onto the carriageway and exposing them to potential hazards. In this context, the Municipal Corporation should formulate a **Hawker policy**, which should be jointly implemented by the Municipal Corporation and the Traffic Police.

## 4.8.7 | TRAVEL DEMAND MANAGEMENT PLAN

Travel Demand Management (TDM) measures are proposed to influence travel decisions, enabling the achievement of transport, social, economic, and environmental objectives while minimizing negative externalities. The implementation of TDM strategies aims to reduce or redistribute travel demand across different times and locations. Proposed strategies include:

- **Road Space Rationing**: Limiting travel during specific times and in certain areas.
- **Car Parking Controls and Pricing**: Implementing various parking strategies to manage demand.
- **Flexible Work Schedules**: Encouraging staggered work hours to alleviate peak-time congestion.
- **Public Education and Awareness**: Promoting understanding of sustainable travel options.

Given that the road network is a limited resource that cannot be expanded indefinitely, TDM measures are essential for optimizing available road space. To encourage public transport use and reduce reliance on private vehicles, the following regulatory measures are proposed:

- **Enforcement of Speed Limits**: Utilize speed cameras and increase police patrols to ensure compliance with speed regulations.
- **Parking Restrictions**: Implement time-based parking limits in high-demand areas.
- **Pedestrian-Only Zones**: Establish areas designated for pedestrians, low-emission zones, and restricted access for certain vehicles.
- **Congestion Pricing**: Charge vehicles for entering high-traffic areas during peak hours to discourage unnecessary trips.
- **Automated Enforcement**: Deploy cameras to enforce red-light violations, speeding, and other traffic infractions.

Implementing the above regulatory measures can effectively manage traffic, enhance safety, and promote more sustainable transportation options.

## 4.9 | ACTION PLAN AND BUDGET PLAN

An Action Plan for the implementation of various Comprehensive Mobility Plan (CMP) projects shall be developed by the respective agencies. The implementation agencies shall prioritize the projects identified in the CMP while preparing their annual budgets. PUMTA shall take a lead in preparation of Action Plan & Budget Plan for the CMP projects.

**Budget Allocation**:

- PUMTA shall gather comprehensive details from various transport agencies regarding planned future projects.
- PUMTA shall coordinate with implementation agencies to ensure that sufficient budgets are allocated for these projects.
- PUMTA, in collaboration with local bodies and planning authorities, will work to secure funding from State, Central, and Multilateral sources for large and strategic projects

**Annual Plans and 5 -Year Plans**:

- PUMTA shall formulate Annual Plans, and 5-Year Plans based on the data collected from various agencies.
- PUMTA shall carry out analysis of projects and funds allocated critically through holistic view, and economic rate of return, will modify the project priorities in consultation with the respective agencies to ensure optimal fund utilization.

**Business Plan Development**:

- In order to ensure, comprehensive control over project implementation and resource mobilisation, PUMTA will prepare a Business Plan for implementing the CMP for the Pune Metropolitan Area. This plan shall include:
  - Current status of implementation of various projects
  - Current revenue levels and expenditure
  - Grants from State and Central governments
  - Funding from multi-lateral agencies
  - Plan for generating non-fare box revenues
  - Identification of funding gaps, resource plan
  - Institutional strengthening strategies and resource mobilization approaches
  - Identification of Key performance indicators (KPIs) to monitor the progress and effectiveness of the CMP projects

This coordinated approach will facilitate the effective implementation of CMP projects, ensuring that resources are allocated efficiently and strategically for the development of sustainable urban transport in the Pune Metropolitan Area.

## 4.10 | MONITORING AND EVALUATION PLAN

The Comprehensive Mobility Plan (CMP) serves as a strategic blueprint for transportation infrastructure. It ensures that development efforts are integrated and mutually reinforcing to achieve the desired outcomes. Therefore, it is essential to monitor and evaluate the impact of interventions derived from the CMP. Monitoring can occur at two levels:

- **Monitoring of Implementation**: This phase focusses on tracking the progress of proposals outlined in the Comprehensive Mobility Plan (CMP) during implementation. It involves evaluating whether these proposals are being executed within the established timeframes. Effective monitoring is crucial for assessing the pace and efficiency of execution of projects, ensuring that projects remain on track and any necessary adjustments can be made promptly.
- **Evaluation of Projects**: This level aims to evaluate the outcomes of CMP implementation. It

involves analyzing the impact using indicators established in the CMP, with assessments conducted on a biannual basis. By maintaining oversight, stakeholders can better understand the impact of the CMP and make informed decisions to enhance its effectiveness.

First level of monitoring and evaluation will be done by respective agencies for their projects such as PMC, PCMC and PMRDA etc. Higher level of monitoring as well as co-ordination issues among the agencies will be carried out by Pune Unified Metropolitan Transport Authority (PUMTA). PUMTA would coordinate the efforts of various agencies involved in urban development, ensuring that overall objectives and development goals are met. By streamlining collaboration among stakeholders, PUMTA will facilitate effective execution and alignment of urban transport initiatives, ultimately enhancing the mobility and sustainability in the Study Area.

## 4.11 | ENGAGEMENT OF STAKEHOLDERS INCLUDING CITIZENS

Stakeholder Consultation have been conducted throughout the project period including Government agencies who are involved in planning, implementation and maintaining the transport infrastructure. In addition, consultation was also held with citizen groups, non-governmental organizations, IPT operators, Taxi aggregators and Academia.

The details of the stakeholder and public consultation meetings held at various stages of CMP preparation are detailed in **Section 5.5 of Chapter 5**.

## 4.12 | FISCAL MEASURES

Securing funding for urban transport projects is a formidable challenge. Traditional sources, such as fare box revenue and government budgets, fall short of meeting public transport needs. To bridge this gap, non-fare revenues—like real estate development, advertising, and licensing fees—are crucial. Innovative approaches, including property taxes, betterment levies, premium floor space charges, transferable development rights, and public-private partnerships (PPPs), aim to capture the value that transport projects add to surrounding areas. Additional mechanisms, such as Viability Gap Funding (VGF) and Central Government support for metro projects, can enhance private sector participation in operations, maintenance, and non-core services, thus facilitating the financing of urban transport infrastructure. Detailed discussions of these methods can be found in **Sections 5.3.2.**

Transport policies aim to develop a sustainable and efficient urban transport system, supported by fiscal strategies that focus on funding infrastructure, managing demand, and promoting sustainable transport options. Key recommended fiscal policies include:

- **Vehicle Ownership and Usage Costs**: Implementing a tax based on vehicle type and engine capacity encourages the adoption of smaller, more fuel-efficient vehicles, imposing higher taxes on larger engines.

- **Congestion Charges**: Electronic Road Pricing (ERP) employs congestion-based pricing in high-traffic areas to deter private vehicle use during peak hours, with charges varying according to the time of day and traffic conditions. Similarly, rationalizing parking fees in high-demand areas can generate revenue and further discourage reliance on private vehicles.

- **Parking Charges :** Appropriate parking charges shall be imposed for on-street and off-street parking facilities which will control the use of private vehicles and also yield revenue

- **Incentives for Sustainable Transport**: Green Credit incentives promote the development of environmentally friendly transport facilities. Additionally, offering incentives for scrapping older vehicles encourages the adoption of more energy-efficient models, thereby reducing pollution.

- **Rational Fare Box Charges**: While fare box revenue is crucial for maintaining public transport systems, it often proves inadequate. Insufficient investment in public transport will increase in private vehicle usage. To address inflation-related revenue losses, automatic fare adjustments should be implemented, tied to at least 50% of the inflation rate as measured by the Consumer Price Index. Instead of providing blanket subsidies, targeted subsidies in the form of coupons should be available for low-income individuals. Fare revisions should include two components:

  ***Automatic Fare Revision*:** Implemented annually to automatically reflect at least 50% inflation.

  ***Strategic Fare Revision*:** Based on the operational needs of the Bus Utility Company.

- **Value Capture through Transit-Oriented Development**: Local governments can adopt various value capture mechanisms, such as:

  **Tax Increment Financing (TIF)**: Redirecting future increases in property tax revenue resulting from Transit-Oriented Development back into the transit system's development and maintenance.

  **Betterment Levies**: Assessing fees on properties that benefit from enhanced transit access to fund infrastructure improvements.

  **Development Impact Fees**: Charging developers a fee to mitigate the additional demand on public services and infrastructure arising from new developments.

- **Public-Private Partnerships**: Public-Private Partnerships (PPPs) present an effective solution for financing urban transport projects by leveraging private sector expertise, innovation, and resources. When structured properly, these partnerships can enhance the quality, sustainability, and efficiency of urban transport systems while safeguarding public interests. They allow for resource pooling, risk sharing, and the utilization of specialized expertise to create well-planned developments.

## 4.13 | MOBILITY IMPROVEMENT MEASURES & NUTP OBJECTIVES

The measures proposed in the CMP and the relation with National Urban Transport Policy (NUTP) objectives are summarized and presented in **Table 4 - 56**.

**Table 4 - 56 | Mobility Measures and NUTP Objectives**

| NUTP Objective | Proposal |
|---|---|
| **PT should be citywide, safe, seamless, user friendly, reliable and should provide good ambience with well-behaved drivers and conductors** | 214 kms of Metro |
| | 165 km of Metro Lite |
| | 81 kms of BRTS |
| | 46 kms of High Frequency Bus routes |
| | 12 PMPML Terminals for redevelopment |
| | 11 new PMPML Terminals |
| | 05 PMPML Depots for redevelopment |
| | 15 new PMPML Depots |
| | 07 ISBT Terminals for redevelopment |
| | 06 new ISBT Terminals |
| | 26 Multi Modal Transport Hubs and 11 Multimodal Transfer Stations |
| | PMPML Bus Augmentation |
| | Bypass Railway Line |
| | Rail Connectivity to Airport |
| **Walk and cycle should become safe modes of Urban Transport** | 607 kms of Footpath |
| | 16 Grade Separators for Pedestrians |
| | 400 km Bicycle Tracks |
| | Pedestrianization of streets |
| **Addressing concerns of road safety** | 149 Junction Improvement |
| | Street Lighting |
| | Traffic Calming Measures |
| **Introducing ITS for Traffic Management** | Traffic Signals |
| **Freight Management** | 14 Truck Terminals |
| | 07 Logistic Parks |
| **Road Network and associated facilities** | 19 River Bridges (New) |
| | 10 River Bridges (Widening) |
| | 20 ROB / RUB (New) |
| | 10 ROB / RUB (Widening) |
| | 438 km Road Widening |
| | 18 Grade Separators at junctions |
| | 52 Junctions for Signalization |
| | Missing links |
| | Ring Roads |
| **Mobility Management Measures** | 22 On Street Parking |
| | 14 Off Street Parking Facilities |

## 4.14 | IMPACT OF PROPOSED MEASURES ON SERVICE LEVEL BENCHMARK

The impact of proposed measures in CMP is assessed through service level bench marks. In order to assess the impact, Service level benchmarks for BAU scenario and SUT Scenario is compared and presented in **Table 4 - 57.**

It can be noted that by implementation of CMP proposals significant improvements are possible in public transport facilities, travel speed and pollution levels. The detailed calculation of SLBs for SUT scenario is presented in **Annexure 4-6.**

**Table 4 - 57 | Impact on Service Level Benchmarks due to Implementation of CMP Proposals**

| No | Benchmark | LOS for Study Area (BAU Scenario) | LOS for Study Area (SUT Scenario) | Inference as per MoHUA Guidelines |
|---|---|---|---|---|
| 1 | Public Transport Facilities | 2 | 1 | The city has public transport system which may need considerable improvements in terms of supply of buses/coaches and coverage as many parts of the city are not served by it. The frequency of services available may need improvements. The system provided is comfortable |
| 2 | Travel speed (Motorized and Mass transit) | 3 | 1 | Significant approach delays and average travel speed of 1/3 the free flow speed or lower. Such conditions causing combination of one or more reasons such as high signal density, extensive queuing at critical intersections and inappropriate signal timing. |
| 3 | Pollution Levels | 3 | 1 | Need considerable improvements in emission standards, checking pollution etc. |

# *Chapter-5*

*Implementation Plan*

# 5 | IMPLEMENTATION PLAN

## 5.1 | PREPARATION OF IMPLEMENTATION PROGRAMS

The current chapter presents the implementation programs along with an Action Plan for implementation of identified proposals in the Comprehensive Mobility Plan (CMP). Further, proposals are categorized into short, medium and long-term based on the period of usefulness.

- **Short-term Proposals** are aimed at improving the safety and accessibility of pedestrians, cyclists and public transport users, area level traffic circulation plans, on-street parking management, traffic signals, and Junction Improvement Plans.
- **Medium-term Proposals** broadly include proposals such as public transport fleet augmentation, redevelopment of intra city bus terminals, depots and intercity bus depots, off-street parking proposals, road development proposals such as road widening, missing links, ROBs, RUBs, Grade Separators, River Bridges, Truck Terminals, Logistic Parks and off-street parking facilities.
- **Long-term Proposals** include proposals such as developing Mass-transit system, Multi Modal Hubs, augmentation of Suburban rail, Rail connectivity to proposed Airport and New Intercity Bus terminals.

Accordingly, short, medium and long term proposals are categorized and presented in **Table 5-1.**

**Table 5-1 | Categorization of Proposals into Short, Medium and Long-Term**

| Short Term Proposals | Medium Term Proposals | Long Term Proposals |
|---|---|---|
| ▪ Junction Improvements<br>▪ Traffic Management Measures<br>▪ Pedestrian facilities such as footpath, FOB and subway<br>▪ Cycle tracks<br>▪ On-street parking management<br>▪ Off-street parking facilities<br>▪ Traffic signals<br>▪ Street lighting<br>▪ Intelligent Transport System (ITS) | ▪ Off Street Parking (MLCP)<br>▪ Multi-Modal Hubs<br>▪ Augmentation of Bus Fleet<br>▪ Redevelopment of City & Inter-city Bus Terminus<br>▪ Development of New City Terminals<br>▪ Redevelopment of Railway Stations<br>▪ River Bridges<br>▪ ROBs/RUBs<br>▪ Road Development Proposals including widening, new roads<br>▪ Flyovers<br>▪ Truck Terminals and Logistic Parks<br>▪ Intelligent Transport System (ITS) | ▪ Multi-Modal Hubs<br>▪ Mass Transit Corridors<br>▪ Ring Roads<br>▪ Bypass Rail line<br>▪ Augmentation of Suburban Rail<br>▪ Rail connectivity to proposed Airport<br>▪ New Intercity Bus Terminals<br>▪ Intelligent Transport System (ITS) |

## 5.2 | PRIORITIZATION OF SUB-PROJECTS

The prioritization and phasing of projects are needed since they do not need to be implemented all at once but rather in a phased manner based on traffic demand and availability of funds. The criteria for prioritizing the projects include:

- **Travel Demand**: Evaluating current and future transportation needs.
- **Optimization of Existing Infrastructure**: Enhancing and maximizing the use of current facilities.
- **Mobility and Accessibility Improvements**: Focusing on projects that enhance safety, environmental sustainability, and reduce energy consumption. The projects in this category include NMT and public transport proposals.
- **Cost and Budget Availability**: Assessing the overall cost of proposals in relation to available funding.

Based on the above criteria, projects are organized into three implementation phases:

- **Phase I: 2024-34**
- **Phase II: 2035-44**
- **Phase III: 2045-54**

The project-wise phasing of the CMP projects is presented in **Table 5-2**.

**Table 5-2 I Phasing of CMP Projects**

| No. | Project | Phase I (2024-34) | Phase II (2035-44) | Phase III (2045-54) |
|---|---|---|---|---|
| 1 | Junction Improvement | ✓ | | |
| 2 | Bus Fleet Augmentation | ✓ | ✓ | |
| 3 | E-Bus Augmentation | ✓ | ✓ | ✓ |
| 4 | Pedestrian Grade Separators | ✓ | | |
| 5 | Footpath | ✓ | | |
| 6 | Bicycle Tracks | ✓ | | |
| 7 | Pedestrian Priority Streets | ✓ | | |
| 8 | Street light Facility (New) | ✓ | | |
| 9 | Road Widening | ✓ | ✓ | ✓ |
| 10 | Road Widening (Airport Connectivity) | ✓ | | |
| 11 | Missing Links | ✓ | ✓ | ✓ |
| 12 | ROB/RUBs (New) | ✓ | | |
| 13 | ROB/RUB(Widening) | ✓ | | |
| 14 | Grade Separators | ✓ | | |
| 15 | River Bridges(New) | ✓ | ✓ | |
| 16 | River Bridges (Widening) | ✓ | | |
| 17 | Railway Passenger Terminals | ✓ | | |
| 18 | Truck Terminals and Logistic Parks | ✓ | ✓ | |
| 19 | Off-street Parking Facilities | ✓ | | |
| 20 | Intracity Bus Terminal Redevelopment | ✓ | | |
| 21 | Intercity Bus Terminal Redevelopment | ✓ | | |

| No. | Project | Phase I (2024-34) | Phase II (2035-44) | Phase III (2045-54) |
|---|---|---|---|---|
| 22 | Intracity Bus depot for Redevelopment | ✓ | | |
| 23 | Intercity Bus Depots | ✓ | | |
| 24 | Ring Roads | ✓ | | |
| 25 | Railway Lines | ✓ | | |
| 26 | High Speed Rail | ✓ | | |
| 27 | ISBT Bus Terminal -Newly Construction | ✓ | | |
| 28 | Multi-Modal Hubs | ✓ | ✓ | |
| 29 | Multi-Modal Transfer Stations | ✓ | | |
| 30 | Metro lite | | ✓ | |
| 31 | Metro | ✓ | ✓ | |
| 32 | BRTS | ✓ | ✓ | ✓ |

The detailed Phasing of Metro, Metro-Lite, BRTS, Bus Argumentation, Multi Modal Hubs and Multi Modal Transfer Stations is provided in **Annexure 5.1.**

## 5.3 | FUNDING OF PROJECTS

As per the recommendations of the working group on urban transport for 12$^{th}$ five-year plan, the financing of urban transport projects in the country has largely been confined to gross budgetary support from the government and the user charges. Due to heavy investment needs of urban transport and conflicting demands on the general exchequer, investment under urban transport in the past has not kept pace with the rapidly increasing requirement of the sector. The current level of user charges of urban transport facilities does not make the system self-sustainable. At the same time, providing safe, comfortable, faster, reliable and affordable public urban transport to all has to be a necessary goal of the local government. In this section, phase-wise cost estimates of CMP proposals have been presented followed by discussion on options for financing urban transport projects.

### 5.3.1 | COST ESTIMATES

Unit rates for various components are estimated based on Standard Schedule of Rates published by PWD, Government of Maharashtra as well as database of recent studies. The details of unit cost considered for Block cost estimates are presented in **Annexure 5.2**.

The overall cost of the proposals is estimated at approximately Rs. 1,33,535 crores over the next 30 years, based on unit rates. The CMP proposals will not be implemented all at once; rather, it will be phased according to traffic demand and funding availability. Taking into account current and projected traffic needs, the critical nature of the projects in addressing key traffic issues, and available funding, the CMP proposals are divided into three phases, each spanning 10 years for implementation. The estimated costs for each phase are as follows: Phase I (2024-2034) at Rs. 62,282 crores, Phase II (2035-2044) at Rs. 47,032 crores, and Phase III (2045-2054) at Rs. 24,221 crores. The summary of phase-wise cost estimates is presented in **Table 5-3.**

**Table 5-3 I Phase-wise Cost Estimates for CMP Projects (in Crore Rs)**

| No | Improvement Proposals | Units | Quantity (sq. m /Kms/No) | Overall Cost in Cr. |
|---|---|---|---|---|
| | **Phase I (2024-34)** | | | |
| 1 | Junction Improvement | | | |
| | i. 3 – Arm | *Nos* | 78 | 17 |
| | ii. 4 – Arm | *Nos* | 68 | 18 |
| | iii. 5 – Arm | *Nos* | 3 | 1 |
| 2 | Bus Fleet Augmentation | *Nos* | 9,068 | 7,254 |
| 3 | E-Bus Augmentation | *Nos* | 3,552 | 5,328 |
| 4 | Pedestrian Grade Separators | *Nos* | 16 | 50 |
| 5 | Footpath | *m* | 10,92,600 | 461 |
| 6 | Bicycle Tracks | | | |
| | i. Painting | *Kms* | 15 | 2 |
| | ii. Construction of new Bicycle track (Paver Block 60mm thick) | *Kms* | 74 | 32 |
| | iii. Segregated Cycle Track | *Kms* | 311 | 133 |
| 7 | Pedestrian Priority Streets | *Kms* | 14 | 43 |
| 8 | New light Facility - Double arm | *Kms* | 5,506 | 42 |
| 9 | Road Widening | | | |
| | i. Intermediate Lane to 4 Lane | *Kms* | 10 | 104 |
| | ii. 2 Lane to 4 Lane | *Kms* | 148 | 1,022 |
| | iii. 4 Lane to 6 Lane | *Kms* | 72 | 508 |
| | iv. 6 Lane to 8 Lane | *Kms* | 47 | 339 |
| 10 | Road Widening (Airport Connectivity) | | | |
| | i. Intermediate Lane to 4Lane | *Kms* | 18 | 188 |
| | ii. 2 Lane to 4 Lane | *Kms* | 59 | 409 |
| | iii. 4 Lane to 6 Lane | *Kms* | 21 | 150 |
| 11 | Missing Links | *Kms* | 402 | 1,921 |
| 12 | ROB/RUBs (new) | *Nos* | 30 | 210 |
| 13 | ROB/RUB(Widening) | *Nos* | 9 | 63 |
| 14 | Grade Separators | *Nos* | 18 | 540 |
| 15 | River Bridges(New) | *Nos* | 9 | 135 |
| 16 | River Bridges (Widening) | *Nos* | 10 | 150 |
| 17 | SATIS | *Nos* | 5 | 150 |
| 18 | Truck Terminals and Logistical hubs | *per Acre* | 129 | 258 |
| 19 | Off-street Parking Facilities | *Nos* | 14 | 12 |
| 20 | PMPML Bus Terminal Redevelopment | *Nos* | 12 | 94 |

| No | Improvement Proposals | Units | Quantity (sq. m /Kms/No) | Overall Cost in Cr. |
|---|---|---|---|---|
| 21 | PMPML Bus Terminal (New) | *Nos* | 11 | 127 |
| 22 | ISBT Bus Terminal Redevelopment | *Nos* | 7 | 55 |
| 23 | PMPML Bus depot for Redevelopment | *Nos* | 5 | 28 |
| 24 | PMPML Bus Depots (New) | *Nos* | 15 | 83 |
| 25 | Ring Roads | *Kms* | 290 | 3,582 |
| 26 | Railway Lines | *Kms* | 90 | 2,700 |
| 27 | Metro (Elevated) | *Kms* | 124 | 33,372 |
| 28 | Sub-Urban rail connectivity to Proposed Airport | *Kms* | 12 | 360 |
| 29 | ISBT Bus Terminal -Newly Construction | *Nos* | 6 | 375 |
| 30 | Multi-Modal Hubs | | | |
| | i. Large | *Nos* | 10 | 1,500 |
| | ii. Medium | *Nos* | 4 | 360 |
| | iii. Small | *Nos* | 2 | 100 |
| 31 | Multi-Modal Transfer Stations | *Nos* | 3 | 9 |
| **A.** | **Sub-Total** | | | **62,282** |
| | **Phase II (2035- 44)** | | | |
| 32 | Bus Fleet Augmentation | *Nos* | 5,250 | 4,200 |
| 33 | E-Bus Augmentation | *Nos* | 5,250 | 7,875 |
| 34 | Road Widening | | | |
| | i. 2 Lane to 4 Lane | *Kms* | 46 | 318 |
| | ii. 4 Lane to 6 Lane | *Kms* | 9 | 63 |
| | iii. 6 Lane to 8 Lane | *Kms* | - | - |
| 35 | Missing Links | *Kms* | 107 | 511 |
| 36 | River Bridges(New) | *Nos* | 10 | 150 |
| 37 | Truck Terminals and Logistical hubs | *Per Acre* | 96 | 192 |
| 38 | Metro (Elevated) | *Kms* | 24 | 6,561 |
| 39 | Metro Lite | *Kms* | 165 | 24,660 |
| 40 | Multi-Modal Hubs | | | |
| | i. Large | *Nos* | 3 | 450 |
| | ii. Medium | *Nos* | 3 | 270 |
| | iii. Small | *Nos* | 4 | 200 |
| 41 | Multi-Modal Transfer Stations | *Nos* | 8 | 24 |
| 42 | BRTS | *Kms* | 52 | 1,557 |
| **B.** | **Sub-Total** | | | **47,032** |

| No | Improvement Proposals | Units | Quantity (sq. m /Kms/No) | Overall Cost in Cr. |
|---|---|---|---|---|
| | ***Phase III (2045- 54)*** | | | |
| 43 | E-Bus Augmentation | *Nos* | 15,000 | 22,500 |
| 44 | Road Widening | | | |
| | i. 2 Lane to 4 Lane | *Kms* | 89 | 614 |
| | ii. 4 Lane to 6 Lane | *Kms* | 17 | 120 |
| | iii. 6 Lane to 8 Lane | *Kms* | - | - |
| 45 | Missing Links | *Kms* | 27 | 129 |
| 46 | BRTS | *Kms* | 29 | 858 |
| **C.** | **Sub-Total** | | | **24,221** |
| **A+B+C** | **Total** | | **In Cr.** | **1,33,535** |

## LIMITATIONS:

To arrive at the cost estimates, Schedule of Rates from Public Works Department for Pune Region and state of Maharashtra are considered; and market information have ensured to the best of its ability the correctness of the same. However, material markets in cities/ towns continue to be non-transparent, subject to non-disclosure and fragmentation. Therefore, the cost estimates provided in this section are preliminary in nature and shall be treated as “reference” information. All facts, figures, unit rates etc. discussed in this section are based on macro-level assessment. Hence, they shall be considered as “indicative rates/ estimates”. Land acquisition cost is not included in arriving at the cost estimate.

## 5.3.2 | FINANCING OF URBAN TRANSPORT

The funds of the general budgets of local bodies and grants from the state and central government are inadequate and therefore, there is a need to identify other sources of funds.

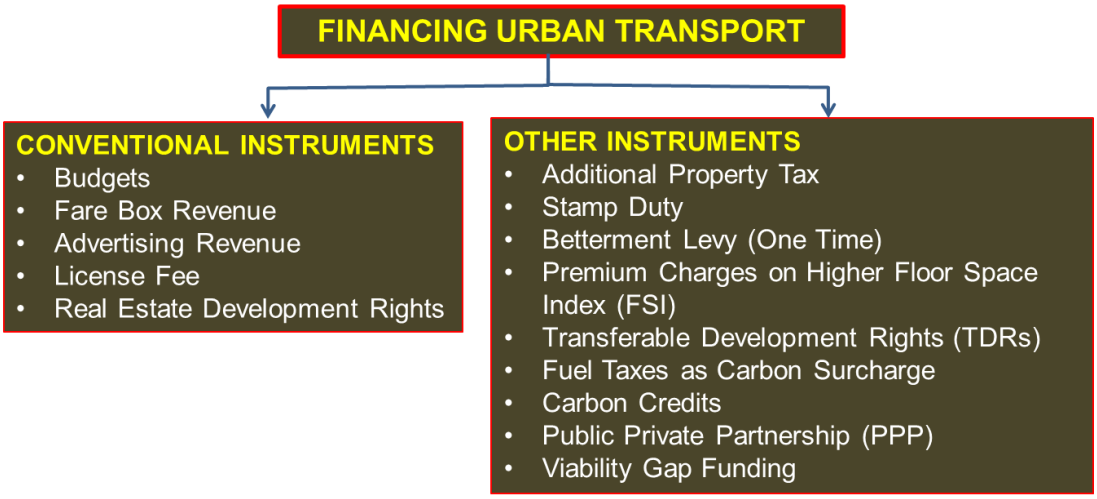
Beneficiaries of investments in urban transport can be classified into direct beneficiaries (commuters) and indirect beneficiaries (landowners, business owners, and residents). It is essential for all beneficiaries to contribute to the cost of urban transport services. Therefore, maximizing non-fare revenue sources, such as income from real estate development and advertising, is crucial.

The financing paradigm must shift from the "non-users pay" principle to the "users pay" and "polluters pay" principles. This change will ensure that those who directly benefit from urban transport systems bear the costs, promoting a fairer and more sustainable funding model. By aligning costs with usage and environmental impact, we can incentivize responsible behavior and create a more efficient transport system that serves all stakeholders effectively.

There is a need for long-term sustainable dedicating financing mechanism to address requirements of urban transport. There is need to identify the benefits and accordingly collect from various beneficiaries so that urban transport can support itself to the large extent. The various identified instruments have

been presented in the **Figure 5-1** followed by brief discussion on various items.

**Figure 5-1 | Sources for Financing Urban Transport**




## CONVENTIONAL INSTRUMENTS

- **Budgets**: Annual Budgets allocated to transport sector by ULBs, and other agencies involved in the construction and operation of the transport infrastructure.

- **Fare Box Revenue**: Fare box revenue refers to the fees paid by commuters for using public transport services. As a principle, user fees should cover the operating costs of bus services. However, achieving this objective is challenging, as higher fares often face social and political resistance. Additionally, some middle and higher-income commuters take advantage of concessions even when they can afford to pay full fares. The ability to recover operational costs through fares depends on several factors, including the availability of competing transportation modes, the quality and coverage of the network, population density, and the effectiveness of the feeder and last-mile services. While fare box revenue is expected to be the primary source of income for public transport projects, it is essential to set fares at appropriate levels to ensure cost recovery. To enhance viability of public transport, exploring non-fare box revenue sources is crucial. Worldwide, non-fare box revenue typically accounts for 11% to 30% of total revenue.

- **Advertising Revenue:** The rolling stock, including buses, metros, and trains, serves as an excellent platform for advertising. Additionally, passenger terminals with high daily footfalls and bus stops offer ample space for advertisements, providing significant revenue-generating opportunities. Advertising rights can be sold based on a fixed fee or through a revenue-sharing arrangement, maximizing the potential income from these high-visibility locations.

- **License Fee:** License fees can be collected from both on-street and off-street parking facilities. Additionally, amenities such as food stalls, bookstores, and banking services like ATMs, which are developed as part of passenger terminals, can also generate significant license fee revenue. This approach not only enhances the passenger experience but also provides a valuable income stream for transport services.

- **Real Estate Development Rights:** Real estate development rights can be bundled with urban transportation projects to enhance their viability, allowing for property development at key points along the corridor and at stations. However, this opportunity largely depends on the availability of land along the route. Additionally, the potential for development is influenced by the demand for commercial real estate in those specific locations. By strategically leveraging these rights, transportation projects can create added value and support sustainable urban growth.

- **Revenue from real estate development** are often viewed as a significant source of funding for capital expenditures, while other revenue streams, such as fare box income, advertising revenue, and license fees, are primarily utilized for the operation and maintenance of transport infrastructure and services. By effectively harnessing real estate development revenues, transportation projects can secure the necessary investment for expansion and improvement, ensuring long-term sustainability and enhanced service delivery.

## OTHER INSTRUMENTS

The instruments discussed above are the conventional instruments. Other innovative instruments of urban transport financing are discussed briefly in the following section.

- **Additional Property Tax:** Urban transport projects enhance the value of land and property along mass transit corridors, particularly near stations. One effective strategy for Urban Local Bodies (ULBs) to capture some of this increased value is to implement a higher property tax rate on these properties. ULBs can designate specific corridors and areas adjacent to stations as “project influence zones,” where elevated property tax rates apply. Properties within these zones should be easily accessible from stations and capable of generating higher rental income. This additional property tax can capture a portion of the increased rental value resulting from improved transit access. Similarly, commercial properties near stations benefit from greater consumer footfall and should also be subject to higher property taxes, reflecting their enhanced value. This approach not only generates revenue for the ULB but also incentivizes thoughtful urban development around transit hubs.

- **Stamp Duty**: In Pune, stamp duty is already implemented. Currently, the stamp duty and registration fees for new and resale property is 5%, local body tax (LBT) 1%, metro cess 1% and registration fees 1% (capped at maximum of Rs.30,000). The metro cess was introduced to fund metro rail projects in Pune and other cities in Maharashtra.

- **Betterment Levy:** An alternative to higher property tax is to levy a one-time betterment levy on properties in the proximity zone. This option could help generate upfront resources from beneficiaries for part-funding the capital cost. This levy would also be applicable on any property that comes up at a later stage.

- **Premium Charges on Higher Floor Space Index (FSI):** In order to encourage Transit-Oriented Development and incentivize real-estate development along the mass transit corridors, a higher FSI may be allowed. Developments may be allowed to increase the built-up area in this zone after paying premium FSI charges to the ULB. This is already implemented in

Pune. It is necessary to ensure that this tool should not be indiscriminately used for revenue generation. Detailed analysis is necessary to assess whether other infrastructure services such as water supply, parking facilities etc., would be able to cope with the higher demand.

- **Transferable Development Rights (TDRs):** This is a tradable instrument that gives the owner the right to a certain quantity of built-up area in another part of the city in lieu of giving away land for social amenities. Owners of TDRs may be allowed to transfer or sell the development right for additional property development in the project influence zone. This is already implemented in Pune. This instrument would be suitable for planned densification of areas close to the corridor. However, it is necessary that the project influence zone has sufficient capacity to bear the additional load on infrastructure services. The effectiveness of the above instruments would vary depending upon the local circumstances, scope for real-estate development and densification as well as availability of complementary instruments.

- **Fuel Taxes as Carbon Surcharge:** In case congestion pricing is not feasible, a fuel surcharge may be levied to capture the externality cost of use of private transport. As in the case of congestion pricing, a fuel tax changes the relative price between private vehicle use and public transport and has the potential to incentivize inter-modal shift. However, it does not sufficiently target cost of additional congestion on the roads as it is levied uniformly on all users irrespective of whether the vehicle is driven into congested areas or during peak hours.

- **Carbon Credits**: Public transport projects reduce carbon emission by providing a viable alternative to use of private transport. At present developing countries are not mandatorily required to reduce their carbon emission. However, adoption of carbon emission abatement projects in developing countries earns carbon credits that can be used for off-setting emissions by developed economies through the Clean Development Mechanism (CDM) framework. An urban transport projects are eligible for such credits. The National Action Plan on Climate Change unveiled by Government of India also refers to the use of pricing, taxes and charges to influence travel demand and choice of transportation. For example, TransMilenio, Bogota, Colombia is the first BRT project to be successfully registered under CDM for carbon credits. Transmilenio will generate credits from improved fuel-use efficiency, use of new and larger buses and scrapping of old buses and modal shift to public transport from private vehicles. Delhi Metro also earned carbon credits for its Regenerative Braking Project.

- **Public-Private Partnerships (PPP)**: It involve collaboration between a public authority and private companies to implement specific projects. In the context of new transport infrastructure development, the public authority establishes a secure environment for the private sector to operate, while the private partner contributes industry expertise, funding, and shares the associated risks. The decision to engage in a PPP and the selection of the most suitable partnership model depend on the specific context and the nature of the projects. Potential projects suitable for Public-Private Partnership in the study area include:

    - Metro construction and operations
    - City Bus operations on selected routes
    - City Bus terminal and inter-city bus terminal
    - Feeder Bus operations to Metro and BRTS
    - On-Street and Off-Street parking management

- Truck terminals
- Multi-modal hubs
- Bus stops and shelters

- **Viability Gap Funding**: Government of India has established a special financing facility called "Viability Gap Funding" under the Department of Economic Affairs, Ministry of Finance, to provide support to PPP infrastructure projects that have at least 40% private equity committed to each such project. Viability gap funding can take various forms such as capital grants, sub-ordinated loans, O&M support grants and interest subsidies. It will be provided in installments, preferably in the form of annuities. However, the Ministry of Finance guidelines require that the total government support to such a project, including viability gap funding and the financial support of other Ministries and agencies of the Government of India, must not exceed 20% of the total project cost as estimated in the preliminary project appraisal, or the actual project cost, whichever is lower. Projects in the following sectors implemented by the Private Sector are eligible for funding:

  - Roads and bridges, railways, seaports, airports, inland waterways, power
  - Urban transport, water supply, sewerage, solid waste management and other physical infrastructure in urban areas
  - Infrastructure projects in Special Economic Zones
  - International convention centers and other tourism infrastructure projects

## PPP FOR METRO RAIL PROJECT

### PPP FOR DEVELOPMENT OF METRO

According to the Metro Policy 2017 of the Government of India, private sector participation is essential for all metro rail project proposals seeking central financial assistance.

State governments wishing to obtain central financial support for a metro rail system must explore the possibility of establishing a Public-Private Partnership (PPP) arrangement. The government encourages all forms of PPPs. As an indicative menu, the following broad models of PPP are recommended as options for advancing PPP in metro rail projects:

- **Design-Build-Finance-Operate-Transfer (DBFOT)**: Construction of new metro rail systems under this comprehensive model.
- **Operational Services Concessions**: Awarding concessions for operational services, which may include the supply of rolling stock.
- **Maintenance and Upgrading Concessions**: Awarding concessions for the maintenance and enhancement of existing infrastructure.

## PRIVATE PARTICIPATION IN O&M OF METRO

With the expansion of metro rail systems across the country and the growing expertise in the private sector, metro rail agencies should consider involving private entities in the provisioning of rolling stock, signalling systems, and the operation and maintenance (O&M) of services. This approach can enhance managerial efficiency and foster the entrepreneurial spirit of the private sector in service delivery. It is also crucial to clearly define the nature of private participation during the early stages of planning.

**Indicative Models of O&M Include:**

- **Cost + Fee Contract**: The authority/owner compensates the operator with a monthly or annual payment for the operations and maintenance of the system. This remuneration may consist of a fixed fee and a variable component based on the quality of service provided, with operating and revenue risks borne by the authority.
- **Gross Cost Contract**: The operator receives a predetermined fixed sum for the duration of the contract. In this model, all operational and maintenance risks are the responsibility of the operator, while revenue risk is assumed by the authority.
- **Net Cost Contract**: The operator retains all revenue generated from services. If the revenue falls short of covering O&M costs, the authority may agree to compensate the operator for the difference during the contract negotiation. However, both operating and revenue risks are borne by the operator for the contract's duration.
- **Private Participation in Non-Core Activities**: Some metro companies have successfully engaged private participation in areas such as the Automatic Fare Collection System, resulting in higher efficiencies and shared costs. Other non-core activities should also be explored for unbundling through PPP models.

## OPTIONS FOR CENTRAL ASSISTANCE FOR METRO RAIL PROJECTS

The various options for central financial assistance for metro projects are as below:

- **Equity Sharing Model**: In this model, projects will be pursued under equal ownership by the Central and State Governments through shared equity. The government of India will provide financial support to metro rail projects in the form of equity and subordinate debt (covering part of the taxes), subject to an overall ceiling of 20% of the project's cost (excluding private investment, land costs, rehabilitation, and resettlement). A jointly owned Special Purpose Vehicle (SPV) will be established, managed by a Board of Directors. The Managing Director of the SPV will be appointed by the State Government with prior approval from the Central Government. The ex-officio chairman of the SPV will be a nominee of the Government of India.
- **Grant from the Central Government**: The Central Government may provide a grant of 10% of the project cost (excluding private investment, land costs, rehabilitation, resettlement, and taxes) to the state government for constructing a metro rail project. The release of this grant may be tied to the project's progress. However, some form of PPP for the implementation,

operation and maintenance, fare collection, or other unbundled activities of the proposed metro rail project will be required wherever feasible.

- **Public-Private Partnership (PPP)**: Central financing for PPP models will be governed by the Viability Gap Funding (VGF) Scheme of the Government of India or any other guidelines issued or revised by the government over time.

- **Direct Government Initiative**: The Government of India may undertake projects deemed necessary for the development of a city or metropolitan region after consulting with the relevant state government(s), either within the existing equity sharing model or through alternative funding and institutional arrangements.

## POTENTIAL FUNDING OPTIONS

Urban transport projects are primarily funded by state, central, and local governments. Additionally, Public-Private Partnerships (PPP) and other innovative financing methods are utilized. The potential funding options for each type of project are outlined in **Table 5-4.**

**Table 5-4 | Potential Funding Agencies for various Urban Transport Projects**

| No | Plan/Project | State Govt | Central Govt | Multilateral Funding Agencies | PPP | Innovative Financing |
|---|---|---|---|---|---|---|
| **A** | **Integrated Land Use and Mobility Plan** | | | | | |
| 1 | Transit Oriented Development | ■ | | | | |
| **B** | **Public Transport Improvement Plan** | | | | | |
| 1 | Mass Rapid Transit System | ■ | ■ | ■ | ■ | ■ |
| 2 | Route Rationalization | ■ | | | | |
| 3 | Bus Augmentation | ■ | ■ | | ■ | ■ |
| 4 | Bus Terminals /Depots | ■ | | ■ | ■ | |
| 5 | Airport Connectivity | ■ | | | ■ | |
| 6 | Multimodal Integration | ■ | ■ | | | |
| 7 | Railway Projects** | | ■ | | | |
| **C** | **Road Network Improvement Plan** | | | | | |
| 1 | Ring Road | ■ | ■ | | | |
| 2 | Road Widening | ■ | ■ | | | |
| 3 | New Roads/Missing Links | ■ | | | | |
| 4 | ROB/RUB | ■ | ■ | | | |
| 5 | Grade Separator for Junctions | ■ | | | | |
| 6 | Development of New Bridges | ■ | | | | |
| **D** | **NMT Improvement Plan** | | | | | |
| 1 | Footpath Improvement | ■ | | | | |
| 2 | Bicycle Improvement | ■ | | | | |
| 3 | Pedestrian Grade Separator | ■ | | | | |
| 4 | Pedestrian Priority Streets | ■ | | | | |

| No | Plan/Project | State Govt | Central Govt | Multilateral Funding Agencies | PPP | Innovative Financing |
|---|---|---|---|---|---|---|
| **E.** | **Freight Improvement Plan** | | | | | |
| 1 | Truck Terminal | | | | | |
| 2 | Logistic Park | | | | | |
| **F** | **Mobility Management Measures** | | | | | |
| 1 | Parking Management | | | | | |
| 2 | Traffic Calming Measures | | | | | |
| 3 | IPT Management | | | | | |
| 4 | Signalisation of Junctions | | | | | |
| **G** | **Technological Measures** | | | | | |
| 1 | Intelligent Transport System (ITS) | | | | | |
| **H** | **TDM Measures** | | | | | |
| 1 | Parking Management | | | | | |
| 2 | Traffic Management | | | | | |
| **I** | **Governance Measure** | | | | | |
| 1 | Data Management System | | | | | |

***Some of the proposals like Bypass railway line, multi-modal hubs etc., may require joint funding of Indian Railways, State Government and Local bodies.*

## 5.4 | MONITORING OF CMP

The Comprehensive Mobility Plan (CMP) serves as a strategic blueprint for transportation infrastructure, crucial for approving projects, plans, and regulatory measures within the urban area. It ensures that development efforts are integrated and mutually reinforcing to achieve the desired outcomes. Therefore, it is essential to monitor and evaluate the impact of interventions derived from the CMP. Monitoring can occur at two levels:

- **Monitoring of Implementation**: This phase focusses on tracking the progress of proposals outlined in the Comprehensive Mobility Plan (CMP) during implementation. It involves evaluating whether these proposals are being executed within the established timeframes. Effective monitoring is crucial for assessing the pace and efficiency of execution of projects, ensuring that projects remain on track and any necessary adjustments can be made promptly.
- **Impact Assessment**: This level aims to evaluate the outcomes of CMP implementation. It involves analyzing impact using indicators established in CMP, with assessments conducted on a biannual basis. By maintaining oversight, stakeholders can better understand the impact of the CMP and make informed decisions to enhance its effectiveness.

To ensure successful implementation and oversight, a Unified Transport Authority is essential. This authority would coordinate the efforts of various agencies involved in urban development, ensuring that overall objectives and development goals are met. In the Pune Metropolitan Area, the Pune Unified Metropolitan Transport Authority (PUMTA) will act as the coordinating agency responsible for monitoring the Comprehensive Mobility Plan (CMP). By streamlining collaboration among stakeholders,

PUMTA will facilitate effective execution and alignment of urban transport initiatives, ultimately enhancing the region's mobility and sustainability. The agencies responsible for the implementation of CMP Projects are presented in **Table 5-5**.

**Table 5-5 | Agencies responsible for Implementation of CMP Proposals**

| No. | Projects | Probable Implementing Agency |
|---|---|---|
| 1 | Junction Improvement | PMC / PCMC / PSCDCL / PMRDA / NHAI / PWD / MSRDC |
| 2 | Bus Fleet Augmentation | PMPML |
| 3 | Pedestrian Grade Separators | PMC / PCMC / PMRDA |
| 4 | Footpath | PMC / PCMC / PSCDCL |
| 5 | Bicycle Tracks | PMC / PCMC / PSCDCL |
| 6 | Pedestrian Priority Streets | PMC / PCMC / PMRDA / PSCDCL |
| 7 | Road Widening | PMC / PCMC / PMRDA / MSRDC / NHAI |
| 8 | Road Widening(Airport Connectivity) | PMRDA / NHAI / MSRDC / PWD |
| 9 | Missing Links | PMC / PCMC / PMRDA |
| 10 | ROB/RUBs | PMC / PCMC / PMRDA / PWD / Central Railway / NHAI / MSRDC |
| 11 | ROB/RUB (Widening) | PMC / PMRDA / PWD / Central Railway |
| 12 | Grade Separators | PMC / PCMC |
| 13 | River Bridges (New) | PMC / PCMC / PMRDA / PWD |
| 14 | River Bridges (Widening) | PMRDA / PWD |
| 15 | Railway Improvement Proposals | Central Railways |
| 16 | PMPML Bus Terminal Redevelopment | PMPML |
| 17 | PMPML Bus Terminal (New) | PMPML |
| 18 | ISBT Bus Terminal Redevelopment | MSRTC |
| 19 | ISBT New Bus Terminal | MSRTC |
| 20 | PMPML Bus Depot Redevelopment | PMPML |
| 21 | ISBT Bus Depots | MSRTC |
| 22 | Truck Terminal and Logistic Hubs | PMRDA / MSRDC / NHAI / PWD / Railways |
| 23 | Off street Parking Facilities | PMC / PCMC / PMRDA / PSCDCL |
| 24 | Ring Roads | PMC / PMRDA / MSRDC |
| 25 | Bypass Railway lines | Central Railways |
| 26 | Conventional Metro | Maha Metro |
| 27 | Metro Lite | Maha Metro |
| 28 | Semi-High speed rail | Central Railways |
| 29 | Multi Modal Hubs | PMC / PCMC / Maha Metro / MSRTC / PMPML / Central Railways |
| 30 | BRTS | PMC / PCMC / PMRDA |

## 5.5 | STAKEHOLDERS CONSULTATION

Stakeholder consultations were conducted in two stages of the project. The first meeting took place at the Maha Metro office on April 12, 2024. During this meeting, broad approach to the study was presented to various stakeholders. The minutes of this first stakeholder meeting is presented in

**Annexure 5.3**. Below are photographs capturing the First Stakeholder Consultations.

**Figure 5-2 | Photographs of First Stakeholder Meeting**



The second stakeholder meeting was conducted as part of PUMTA meeting during the Draft Comprehensive Mobility Plan (CMP) stage at the Council Hall, chaired by the Chairman/PUMTA and Divisional Commissioner Pune, on August 26, 2024. During this meeting, the draft CMP proposals were presented to various stakeholders. The minutes of this second stakeholder consultation can be found in **Annexure 5.3**. Below are photographs capturing the Second Stakeholder Consultations.

**Figure 5-3 | Photographs of Second Stakeholder Meeting**



Two meetings with PCMC officials were held, chaired by the PCMC Commissioner, to discuss

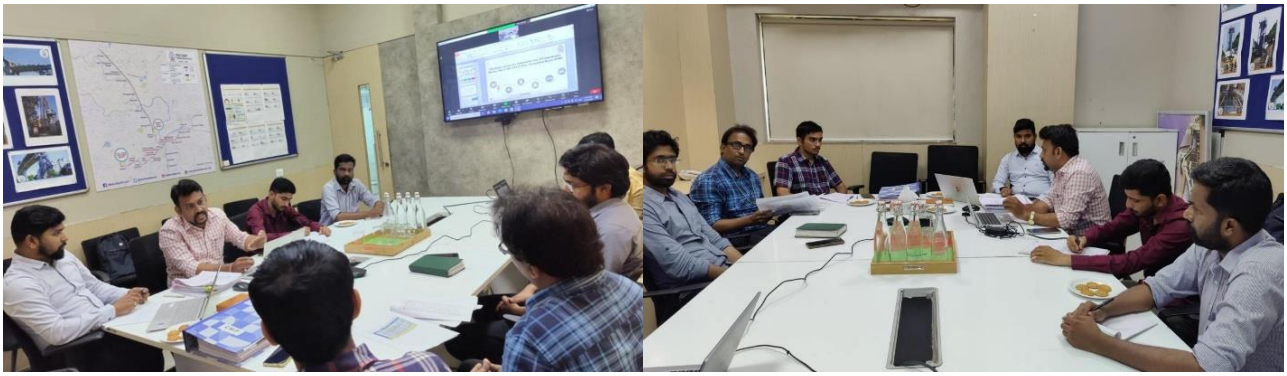
population forecasts and committed projects on July 27, 2024, and August 7, 2024. Below are the photographs from the meetings with PCMC officials.

**Figure 5-4 | Photographs of Meeting with PCMC on Population Forecast and Project Proposals**



Additionally, discussion with citizen groups was held on June 12, 2024, at Maha Metro office. During this session, the citizen groups shared their suggestions regarding the Mass Transit Corridors. Below are the photographs from the meetings with Citizen Groups.

**Figure 5-5 | Photographs of Meeting with Citizen Groups on Mass Transit Corridors**



Additionally, a Public Stakeholder Consultation meeting was held during the Draft Comprehensive Mobility Plan (CMP) stage at the Maha Metro Office in Phugewadi, on September 9, 2024. During this meeting, the Draft CMP proposals were presented to various public stakeholders, for their feedback and suggestions.The list of attendees and the minutes of the meeting is presented in **Annexure 5.3**. Below are the photographs capturing the Public Consultation meeting.

**Figure 5-6 | Photographs of Public Consultation Meeting**



An online meeting with Prof. Sangram Nirmale and Mr. Sumit Sen from IIT Bombay was conducted on 23rd September, 2024 in order to receive their comments and suggestions on the CUBE modeling for the current study.

In addition to the aforementioned meetings, several individual meetings with various stakeholders were also held and the details are presented in **Table 5-6** below.

**Table 5-6 I Schedule of Discussion Meetings with Officials of Various Stakeholders**

| No | Name of Stake holder | Name of person and Designation | Date |
|---|---|---|---|
| 1 | PMC | Shri.Srinivas Bonala<br>CE, Projects, PMC | 09th Feb 2024, 22nd Feb 2024 |
| 2 | PCMC | Shri.Bapusaheb Gaikwad, Executive Engineer,PCMC | 12th Feb 24, 29th Feb 2024 |
| 3 | PMRDA | Smt. Rinaj Pathan (CE)<br>Smt. Shweta Patil (AMP)<br>Shri. Ashok Bhalkar (CE) | 09th Feb 2024, 21st Feb 2024, 29th Feb 2024, 10th May 2024 |
| 4 | MIDC | Shri. Nitin Wankhede (CE) | 09th Feb 2024 |
| 5 | Office of Joint Director of Industries (Pune) | Shri. Angad Nagargoje (Inspector) | 09th Feb 2024 |
| 6 | RTO for PMC | Shri .Sanjeev Bhor | 12th Feb 2024 |
| 7 | RTO for PCMC | Shri. Manoj Tiwari (ARTO) | 13th Feb 2024, 27th Feb 2024 |
| 8 | Traffic Police PMC/PCMC Region | Shri. Shere (PI) | 10th Feb 2024 |

| No | Name of Stake holder | Name of person and Designation | Date |
|---|---|---|---|
| 9 | Central Railways | Smt. Indu Dube (DRM) | 12th Feb 24 |
| 10 | AAI | Shri. Satish Dhoke (Airport Director)<br>Shri. Jagdish Urkude | 13th Feb 24 |
| 11 | PWD | Shri. S. P. Khalate (ACE) | 12th Feb 2024, 22nd Feb 2024 |
| 12 | MSRDC | Shri. B. Gaikwad | 12th Feb 2024 |
| 13 | NHAI | Shri. Omkar Jagdale (Site Engineer) | 13th Feb 2024 |
| 14 | PMPML | Shri. Satish Gavhane (CTMO)<br>Shri. Abhijeet Jadhav (IT Dept) | 09th Feb 2024 |
| 15 | MSRTC | Shri. Kailas Patil (Divisional Cont.) | 14th Feb 2024 |
| 16 | Pune Smart City | Shri. Dinesh Virkar (CKO) | 12th Feb 2024 |
| 17 | SP (Rural) | Shri. Pankaj Deshmukh (SP) | 09th Feb 2024, 27th Feb 2024 |

## 5.6 | INSTITUTIONAL MEASURES

This section examines the existing institutional challenges and offers recommendations for addressing both current and future issues related to urban transport in the Pune Metropolitan Region (PMR).

Urban transport in India is characterized by a high degree of fragmentation, with multiple institutions across various levels of government overseeing different aspects of the sector. This fragmentation is also evident in the PMR, where responsibilities for policy-making, planning, investment, operation, and management are dispersed among central, state, and local governments. This division often leads to a lack of unified command and a coherent approach to addressing the myriad challenges faced by the urban transport sector.

To address these issues, there is a need for a single lead institution with the financial capacity and accountability to oversee all aspects of urban transport. In response to this need, the Pune Unified Metropolitan Transport Authority (PUMTA) was established on June 4, 2019. The following sections present an analysis of institutional issues specific to various agencies and provide suggestions for strengthening their roles to improve urban transport in the PMR.

### 5.6.1 | PUMTA

PUMTA, established through a Government Resolution (GR), serves as an umbrella organization responsible for coordinating various transport projects and programs. However, PUMTA faces several limitations due to its current framework:

- **Lack of Authority**: The GR under which PUMTA was formed does not grant it adequate powers which restrict its ability to implement programs effectively. The GR also stipulates that "PUMTA has no right to take any decisions which might intervene in the rights and freedoms granted to Urban Local Bodies". In view of above, PUMTA needs to be strengthened with adequate powers.
- **Recommendations of Metro Rail Policy, 2017:** The Metro Rail Policy, 2017 recommends the

establishment of a Unified Metropolitan Transport Authority (UMTA) as a statutory body. To align with this recommendation, it is necessary for an Act to be passed that will provide PUMTA with permanency and adequate powers.

- **Operational Constraints:** Currently, PUMTA does not have any dedicated establishment and staff and thus impairs its effectiveness. To enhance its effectiveness, PUMTA should be empowered with the following functions:
    - **Adequate Legal Authority:** Ensure that PUMTA is granted the necessary legal authority and powers through the enactment of a statutory Act.
    - **Financial Control:** Provide PUMTA with the authority to sanction and manage funds for transport projects.
    - **Implementation Powers:** To enforce its decisions and coordinate effectively with Urban Local Bodies and other stakeholders.
    - **Dedicated Infrastructure:** Assign a dedicated establishment and infrastructure to PUMTA to support its operations and functions.

### 5.6.2 | PMRDA

PMRDA is responsible for planning and development of transport infrastructure across the entire PMR area. Currently, the organization has an engineering division that handles the planning and implementation of transport infrastructure projects. However, there is no dedicated transport planning division. Given the specialized nature of transport planning, it is essential for PMRDA to establish a separate division staffed with experienced transport planners. Additionally, PMRDA should recruit technical advisors on a needs basis for specialized areas such as Intelligent Transport Systems (ITS) and Public-Private Partnerships (PPP) to fill existing capability gaps.

PMRDA should develop and disseminate publicity materials to raise public awareness about transport policies, programs, and projects. Currently, no budget is allocated for information dissemination or public education on transport issues, making it essential to designate funds for this purpose. This new division should serve as the technical backbone for PUMTA and actively participate in exchange programs with other cities, both in India and abroad, to share best practices and strengthen its initiatives

### 5.6.3 | PMC & PCMC

PMC and PCMC should establish a dedicated transport planning division, staffed with experienced transport planners and traffic engineers

### 5.6.4 | PMPML

Pune Mahanagar Parivahan Mahamandal Limited (PMPML) is the public transport bus service provider for the study area. It aims to provide efficient, reliable, and affordable bus services to meet the growing transportation needs of the city's residents.

PMPML is currently unable to cover its operating costs. To address this issue and ensure the services become operationally profitable, several measures are needed to enhance efficiency, increase ridership, and implement a rational fare policy. Additionally, PMPML faces a challenge due to insufficient land for developing bus terminals and depots. To overcome these obstacles, the following steps are recommended,

- **Contracting Selected Routes to Private Operators**: To introduce competition and improve efficiency in urban bus operations, PMPML may consider transitioning to a model where it acts as a bus planning agency while gradually assigning routes to private operators. This model, similar to those used in London and Seoul, can be based on quality-based Gross Cost Contracts. This approach would alleviate the financial burden on PMPML by shifting some of the investment and operational responsibilities to private parties.
- **Development of Bus Terminals and Depots via PPP**: To expand the fleet and extend services to new urban areas, PMPML may explore the option of developing bus terminals and depots through Public-Private Partnerships (PPP). This approach, successfully implemented by BMTC in Bengaluru, can provide the necessary funding and infrastructure support.
- **Implementation of Intelligent Transport Systems (ITS)**: Investing in a Command-and-Control system for bus service planning and operations is crucial. Public transport investments should extend beyond physical infrastructure—such as bus stops, terminals, and depots—to include enhancements in skills, management, and organizational capacities. This holistic approach will improve overall service delivery and commuter satisfaction.
- **Capacity Building**: To enhance service quality, technical and managerial staff shall be provided training in various key areas, including route planning and management, service rationalization, fare collection, safety and maintenance, fleet management, and customer engagement. As diesel and CNG buses are phased out in favor of electric buses, capacity building in electric mobility will also be essential. Additionally, Intelligent Transportation Systems (ITS) play a crucial role in planning, operations, and monitoring, necessitating focused training in this area as well.

### 5.6.5 | TRAFFIC POLICE

The Traffic Police require technical support to enhance their focus on traffic management and the enforcement of traffic rules. This support should include expertise in traffic management and ITS. To address this need, PUMTA in collaboration with PMC, PCMC and other urban local bodies in the Study Area should establish a Technical Support Team for the Traffic Police. The team should conduct regular studies to identify traffic management issues, compile historical traffic data (e.g., through surveillance cameras), and perform before-and-after studies to evaluate the effectiveness of various traffic management strategies. ITS can significantly enhance traffic management cost-effectively. Additionally, the Traffic Police should initiate road safety education campaigns to address the critical issue of road accidents.

The Traffic Police should also engage in educating the general public on the importance of adhering to traffic rules and regulations for road safety. A portion of the budget should be allocated specifically for this purpose.

## 5.6.6 | SPV FOR IMPLEMENTATION OF RAIL PROJECTS IN STUDY AREA

The mandate of Indian Railways (IR) is to provide rail services for both passenger and freight traffic, with a primary focus on regional railway networks and operations. Therefore, IR expects state governments and local bodies to share the costs of urban rail projects to make the projects viable.

Currently, the PMR has a 159 km rail network with 32 stations, including the Pune Railway Station and several goods terminals. Additionally, there are 11 railway sidings and goods sheds under the Pune railway division of Central Railways, handling a total of 600 outward rakes and 2,000 inward rakes per year. The current daily ridership for suburban rail services is approximately 50,000. Based on travel demand projections, CMP has identified several new lines and augmentation of existing lines.

To effectively manage the construction, operation, and maintenance of suburban rail services within the PMR, the establishment of a dedicated zone, tentatively named the Pune Suburban Rail Region (PSRR), should be considered. This zone would cover an area of approximately 2,490 sq. km.

Maharashtra Rail Infrastructure Development Corporation Ltd (MRIDC) was established in 2018 through a Special Purpose Vehicle (SPV) with equal shares from the Central and State governments. MRIDC aims to enhance rail infrastructure projects in Maharashtra and has significant potential for growth and performance. MRIDC can undertake urban rail projects within the Pune Metropolitan Region (PMR), including the development of bypass railway lines, road overbridges (ROBs)/road under bridges (RUBs), and logistics terminals.

Furthermore, the Rail Land Development Authority (RLDA) plays a crucial role in the commercial development of railway-owned land to generate non-fare revenue. Urban local bodies (ULBs) and PMRDA need to support RLDA by providing liberal Floor Area Ratio (FAR) allowances to maximize revenue from real estate developments.

*Annexures*

# *Annexure 1-1*

*Transit Oriented Development Policy - DCPR*

## ANNEXURE 1.1: TRANSIT ORIENTED DEVELOPMENT POLICY - DCPR

**विकास योजना-पुणे (मुळ.हद्द.)**
महाराष्ट्र प्रादेशिक नियोजन व नगर रचना अधिनियम, १९६६ चे कलम ३७ (१ क क) अन्वये मंजूर विकास नियंत्रण व प्रोत्साहन नियमावलीतील ट्रान्झिट ओरिएंटेड (टि.ओ.डी) च्या तरतूदीमध्ये सुधारणा प्रस्तावित करणे.

**महाराष्ट्र शासन**
**नगर विकास विभाग**
**मंत्रालय, मुंबई-३२**
**शासन निर्णय क्रमांक: टिपीएस-१८१८/प्र.क्र.८५/१८/नवि-१३,**
**दिनांक : ०८/०३/२०१९**

**शासन निर्णय :-** सोबतची शासकिय सूचना महाराष्ट्र शासन राजपत्रामध्ये प्रसिध्द करावी.

महाराष्ट्राचे राज्यपाल यांचे आदेशानुसार व नांवाने,

URBAN DEVELOPMENT DEPTT. सत्यमेव जयते MANTRALAYA, MUMBAI 32

(श्री. दि. लांडगे)
**सह सचिव, महाराष्ट्र शासन**

**प्रत :-**

१) मा.मुख्यमंत्री महोदय यांचे सचिव.
२) मा. राज्यमंत्री, नगर विकास यांचे खाजगी सचिव.
३) प्रधान सचिव (नवि-१), नगर विकास विभाग, महाराष्ट्र राज्य, मंत्रालय, मुंबई.

**प्रति,**

४) सह सचिव तथा संचालक (नगर रचना), नगर विकास विभाग
५) संचालक, नगर रचना, महाराष्ट्र राज्य , पुणे.
६) **सह संचालक, नगर रचना, पुणे विभाग, पुणे** - प्रस्तुत सूचना शासनाच्या दि.१३/०९/२०१० रोजीच्या परिपत्रकातील निदेशानुसार व खालील सूचनांप्रमाणे जाहिरात म्हणुन प्रसिध्द करुन घेणेबाबत सत्वर कार्यवाही करावी.

| | | |
|---|---|---|
| i) | जाहीरात देणाऱ्या कार्यालयाचे नांव | :- नगर विकास विभाग, मंत्रालय, मुंबई-३२. |
| ii) | जाहीरात कोणत्या दिनांकापर्यंत द्यावयाची आहे. | :- तात्काळ |
| iii) | प्रसिध्दीचे स्वरुप | :- सर्वाधिक खपाच्या स्थानिक वृत्तपत्रात |
| iv) | कोणत्या जिल्ह्यात | :- पुणे |
| v) | किती वृत्तपत्रात | :- एका इंग्रजी व एका मराठी वृत्तपत्रात |
| vi) | कितीवेळा | :- एकदा |
| vii) | जाहीरात खर्चाचे देयक कोणत्या अधिकाऱ्याकडे पाठवावयाचे | :- आयुक्त, पुणे महानगरपालिका, पुणे |

७) विभागीय आयुक्त, पुणे विभाग, पुणे.

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८) आयुक्त, पुणे महानगरपालिका, पुणे.
/- त्यांनी सुचनेच्या अनुषंगाने अधिप्रमाणित करावयाचे नकाशे ५ प्रतीत शासनाकडे पाठवावेत.
९) सहायक संचालक, नगर रचना, पुणे शाखा, पुणे.
१०) **व्यवस्थापक, येरवडा कारागृह मुद्रणालय, पुणे** - सोबतची शासकीय सूचना महाराष्ट्र शासन राजपत्रामध्ये प्रसिध्द करुन त्याच्या प्रत्येकी १० प्रती या विभागास, संचालक, नगर रचना,राज्य, पुणे व सहसंचालक, नगर रचना, पुणे विभाग, पुणे, व आयुक्त, पुणे महानगरपालिका, पुणे यांना पाठवाव्यात.
११) **कक्ष अधिकारी (नवि-२९), नगर विकास विभाग, मंत्रालय, मुंबई –**
/- सदर **सूचना** विभागाच्या वेबसाईटवर प्रसिध्द करण्याबाबत कार्यवाही करावी.
१२) कक्ष अधिकारी, माहिती व तंत्रज्ञान विभाग .मंत्रालय, मुंबई -३२.
/-सदरची **सूचना** शासनाच्या वेबसाईटवर (कायदे / नियम) सदरात प्रसिध्द करावी.
१३) निवडनस्ती (नवि-१३).

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URBAN DEVELOPMENT DEPTT. MANTRALAYA, MUMBAI 32

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# सूचना

**महाराष्ट्र शासन**
**नगर विकास विभाग**
**मंत्रालय, मुंबई-३२.**
**दिनांक :०८/०३/२०१९.**

महाराष्ट्र प्रादेशिक नियोजन व नगर रचना, अधिनियम, १९६६

**क्रमांक:-टिपीएस-१८१८/प्र.क्र.८५/१८/नवि-१३:-** ज्याअर्थी, पुणे महानगरपालिकेची (मुळ हद्द) सुधारित विकास योजना (यापुढे जिचा उल्लेख "उक्त विकास योजना" असा करण्यात आला आहे) व विकास नियंत्रण व प्रोत्साहन नियमावली -२०१७ (यापुढे जिचा उल्लेख "उक्त विकास नियंत्रण नियमावली " असा करण्यात आला आहे.) महाराष्ट्र प्रादेशिक नियोजन व नगर रचना अधिनियम, १९६६ (यापुढे "उक्त अधिनियम" असा उल्लेखलेला) चे कलम ३१(१) अन्वये शासनाच्या नगर विकास विभागाने अधिसूचना क्र. टिपीएस-१८१५/२०९/प्र.क्र.६९/१५/वि.यो.पुणे-मंजूरी/नवि-१३, दि.०५/०१/२०१७, तसेच वगळलेल्या भागाची विकास योजना अधिसूचना क्र. **टिपीएस - १८१५/२०९/प्र.क्र.६९/१५/ ईपी-मंजूरी/ नवि-१३ ,दि.१७/०२/२०१८** अन्वये मंजूर केली आहे;

आणि ज्याअर्थी, उक्त विकास नियंत्रण नियमावलीमध्ये विनियम क्र. २४.८ मध्ये ट्रान्झिट ओरिएंटेड डेव्हलपमेंन्ट (टि.ओ.डी) च्या तरतूदी समाविष्ट आहेत. (यापुढे ज्यांचा उल्लेख "उक्त नियम" असा करण्यात आला आहे) ;

आणि ज्याअर्थी, पुणे महानगरपालिकेने (यापुढे "उक्त महानगरपालिका" उल्लेखिलेले) दि. ०९/११/२०१७ रोजीच्या पत्रान्वये उक्त तरतूदीची अंमलबजावणी करणेसाठी उक्त तरतूदीमध्ये काही सुधारणा करणेबाबत शासनास प्रस्ताव सादर केला आहे; (यापुढे "उक्त प्रस्ताव" उल्लेखलेला);

आणि ज्याअर्थी, उक्त महानगरपालिकेने उक्त तरतूदी संदर्भात सादर केलेला उक्त प्रस्ताव विचारात घेवून आणि आवश्यक त्या चौकशीनंतर उक्त विकास नियंत्रण नियमावलीमध्ये उक्त नियमांची अंमलबजावणी योग्य रितीने होवून ट्रान्झिट ओरिएंटेड डेव्हलपमेंन्ट मागील उद्देश साध्य होणेसाठी तसेच लोक हिताचे दृष्टीने विचार करुन उक्त नियमामध्ये परिशिष्ठ 'अ' मध्ये नमूद केल्याप्रमाणे सुधारणा करणे आवश्यक आहे असे शासनाचे मत झाले आहे ( यापुढे ज्याचा उल्लेख "प्रस्तावित फेरबदल" असा करण्यात आला आहे);

आणि ज्याअर्थी, उक्त अधिनियमाच्या कलम ३७ (१ क क) अन्वये प्रदत्त असलेल्या अधिकारानुसार शासन "प्रस्तावित फेरबदल" प्रस्तावासंदर्भात आम जनतेकडून सूचना / हरकती मागविण्यासाठी नोटीस प्रसिध्द करीत आहे. प्रस्तावित फेरबदलासंदर्भात नागरिकांना काही सूचना/हरकती असल्यास त्या त्यांनी नोटीस शासन राजपत्रात प्रसिध्द झाल्याच्या दिनाकापासून ३० दिवसाच्या आत सहसंचालक , नगर रचना, पुणे विभाग पुणे यांचेकडे लेखी स्वरुपात पाठवाव्यात. सहसंचालक, नगर रचना, पुणे विभाग पुणे यांची प्राप्त होणा-या हरकती/ सूचनांना सुनावणी देण्याकरिता तसेच उक्त अधिनियमाच्या कलम ३७ (१ क क) अन्वये विहित केलेली कार्यवाही पूर्ण करुन अहवाल शासनास सादर करण्याकरिता "अधिकारी" म्हणून नियुक्ती करण्यात येत आहे ;

URBAN DEVELOPMENT DEPTT. MANTRALAYA, MUMBAI-32

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**टिप:-अ)** प्रस्तुतची सूचना त्यासोबतच्या प्रस्तावित फेरबदल दर्शविणा-या भाग नकाशा सह नागरिकांच्या अवलोकनार्थ कामकाजाच्या दिवशी कार्यालयीन वेळेत खालील ठिकाणी उपलब्ध करण्यात यावी:-

१) सहसंचालक, नगर रचना, पुणे विभाग पुणे.
२) आयुक्त पुणे महानगरपालिका पुणे.

**ब)** सदरहू सूचना शासनाच्या www.maharashtra.gov.in **(कायदे/नियम)** या संकेतस्थळावर प्रसिद्ध करण्यात यावी.

महाराष्ट्राचे राज्यपाल यांच्या आदेशानुसार व नांवाने,

URBAN DEVELOPMENT DEPTT. सत्यमेव जयते MANTRALAYA, MUMBAI-32

(रा.म.पवार)
अवर सचिव, महाराष्ट्र शासन

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# NOTICE

**GOVERNMENT OF MAHARASHTRA**
**Urban Developmnt Department**
**Mantralay, Mumbai-400032**
**Dated : 08/03/2019**

Maharashtra Regional Town Planniing, Act, 1966

**No.TPS-1818/CR-85/18/UD-13:-** Whereas, the Development Plan of Pune Municipal Corporation (Original Limit) (hereinafter referred to as "the said Development Plan") & Development Control and Promotion Regulation-2017 (hereinafter referred to as the "said Development Control Regulation") prepared under the provisions of Maharashtra Regional and Town Planning Act 1966 (hereinafter referred to as the "said Act") has been sanctioned by Government in Urban Development Department. vide Notification No.TPS-1815/209/CR-69/15/D.P Pune/Sanction/UD-13, dated 05/01/2017 and excluded part (EP) sanctioned wide notification No.TPS-1815/209/CR-69/15/E.P Sanction/UD-13. dated.17/02/2018 ;

And whereas, as per the said Development Control Regulations the provisions for Transit Oriented Development are mentioned in Regulation No. 24.8 (hereinafter referred to as the "said Regulations");

And whereas, for implementation of Transit Oriented Development (TOD), Pune Municipal Corporation (hereinafter referred to as the "said Corporation") has suggested certian changes in said regulations and submitted a proposal to Government vide letter dated 09/11/2017; (hereinafter referred to as the "said proposal ");

And whereas, after considering the said proposal Goverment of maharashtra is of opinion that it is expedient to modify the said Regulations as per Appendix 'A' so as to achieve the objective of TOD Policy by smooth implementation of the said regulations as well as considering larger public interest. (hereinafter referred to as the "said modification ");

Now therefore, in exercise of the power conferred under Section 37 (1AA) of the said Act. the Government finds, it expedient to publish Notice for the said Proposed Modification thereby inviting suggestion/ objections from the general public within a period of thirty days from the date of publication of this Notice in Maharashtra Government Gazette. Suggestions / Objections shall be forwarded to the Joint Director of Town Planning, Pune, who is being appointed as an Officer to hear suggestions / objections and to complete the modification procedure as mentioned in Section 37 (1AA) of the said Act.

**Note :-** A) The notice and the Plan showing proposed modifications is made available for inspection to the general public during office hours on all working days at the following offices:-

1. Joint Director of Town Planning, Pune Division, Pune.
2. The Commissioner , Pune Municipal Corporation , Pune .

B) This notification is also available on Govt. web site www.maharashtra.Gov.in (कायदे व नियम).

By order and in the name of the Governor of Maharashtra,

URBAN DEVELOPMENT DEPTT. * सत्यमेव जयते * MANTRALAYA, MUMBAI-32

(R.M.Pawar)
**Under Secretary to Government**

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**APPENDIX- 'A'**
**(See Regulation No.24.8)**

**(TOD regulations was sanctioned and inserted in the DCPR of Pune Municipal Corporation vide Govt. Notification dated 05/01/2017. The changes / modification made in this appendix are shown in bold italic and strike through. These modifications are only published limited to changes shown in bold italic / strike through as mentioned below under section 37(1AA)(a) of the MRTP Act,)**

**24.8 TRANSIT ORIENTED DEVELOPMENT (TOD)**

***The planning authority shall ensure execution of complete street design for the success of TOD and enable construction of street oriented buildings while achieving optimum densities in residential, commercial and office buildings.***

***The Planning authority shall also ensure complete pedestrianisation in the TOD zones for easy movement of the pedestrians to & from station within a period of 1 year from publication of this regulation.***

**24.8.1 Definitions**

(i) **TOD zone**: - It is the area ~~along~~/ ***500 M.*** around the proposed ~~MRTS~~/Metro ~~corridor~~ ***station boundary*** as will be delineated by Pune Municipal Corporation with the approval of the State Government. ***This distance of 500 mtr. may be relaxed up to 30 % by the Municipal Commissioner where any reservation / amenity space within such distance is utilised for the purpose of transportation as prescribed in regulation no.21(5)***

(ii) **Base permissible FSI**: - It is the FSI that is otherwise permissible on any land with respect to zone shown as per the sanctioned development plan and the relevant provision of the Principal DCPR excluding the TDR and the premium FSI, redevelopment incentive FSI that can be received.

(iii) **Gross plot area**: - Gross Plot Area means total area of land after deducting area under reservation or deemed reservation like amenity space if any, area under D.P. Road and Road widening.

(iv) **Principal DCPR**: - Principal DCPR means these DC Regulations ***sanctioned vide Government Notification dt.05/01/2017*** excluding the provisions regarding TOD zone.

**24.8.2 Date of coming into force**: - ~~The date of coming into force of these regulations shall be the date as notified by the Government~~. ***These Regulations will be made applicable by issuing directives u/s-154 of Maharashtra Regional and Town Planning Act 1966 separately.***

**24.8.3 Maximum Permissible FSI** :- The maximum permissible total FSI in TOD zone shall be 4.00 including the base permissible FSI, subject to condition that, the additional FSI over and above the base permissible FSI shall be allowed within the overall limit of maximum permissible FSI, as given in the Table below-

| Sr. No. | Road width in m. | Min .Plot Area in sq.m. | Maximum Permissible FSI |
|---|---|---|---|
| 1 | 2 | 3 | 4 |
| 1 | 9 m. and up to 12 m. | Below 1000 | 2.00 |
| 2 | 12 m. and up to 18 m. | 1000 or above | 2.50 |
| 3 | 18 m. and up to 24 m. | 2000 or above | 3.00 |
| 4 | 24 m. and up to 30 m. | 3000 or above | 3.50 |
| 5 | 30 m. and above | 4000 or above | 4.00 |

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**Explanation:-**

1) The maximum permissible FSI as per the above Table shall be determined by satisfaction of both the criteria's viz. Minimum Road width as well as plot area, simultaneously. However in case, both these criteria's are not satisfied simultaneously, the maximum permissible FSI shall be the minimum of that permissible against each of these two criteria's, as illustrated below ;

**Illustrations: -**

Utilization of FSI

| Plot Area in sqm | Road width | | | | | |
|---|---|---|---|---|---|---|
| | Less than 9mt. | 9 m. and up to 12 m | 12 m. and up to 18 m | 18 m. and up to 24 m. | 24 m. and up to 30m. | 30 m. and above |
| Below 1000 | Principal DCPR | 2 | ~~2~~ *2.25* | ~~2~~ *2.50* | ~~2~~ *2.75* | ~~2~~ *3* |
| 1000 to below 2000 | Principal DCPR | 2 | 2.5 | 2.5 | ~~2.5~~*2.75* | ~~2.5~~ *3* |
| 2000 to below 3000 | Principal DCPR | 2 | 2.5 | 3.0 | 3.0 | 3.0 |
| 3000 to below 4000 | Principal DCPR | 2 | 2.5 | 3.0 | 3.5 | 3.5 |
| 4000 or above | Principal DCPR | 2 | 2.5 | 3.0 | 3.5 | 4.0 |

**24.8.3.1** **Premium to be Paid** - Additional FSI over and above base permissible FSI of respective land use zones as per principal DCPR, may be permitted on the payment of premium equivalent as would be decided by Government from time to time.

***24.8.3.2*** ***Impact Assessment and Integrated Mobility Plan:-***

***Such additional FSI over and above the base permissible FSI, shall be granted by the Commissioner, Pune Municipal Corporation / Planning Authorities from where the Metro Rail is passing through after taking into account the Impact Assessment of the implementation of these regulations regarding the impact on the city and sector level infrastructure and amenities as well as traffic and environment. Such Impact Assessment shall also contain measures to be undertaken to mitigate its likely impact and the Action Plan for implementation of such measures in a time bound manner.***

There shall be an Integrated Mobility Plan envisaging inter-linkages between different modes of mass transport, parking management, traffic management and pedestrianisation, ***non-motorized transport network, last mile connectivity, traffic calming interconnected street networking etc.***

**24.8.3.3** The maximum permissible FSI as given in Table under regulation 24.8.3 shall be calculated on the gross plot area.

**24.8.3.4** In case of plot / plots falling partly within the TOD zone, the FSI permissible shall be as follows, provided that the total area of the plot (plot falling within TOD zone plus plot falling outside TOD zone) shall be as prescribed in the table in regulation no. 24.8.3 :-

(i) Where 50% or more area of such plot / plots falls within TOD zone, these regulations including FSI shall apply to the total area of such plot / plots.

(ii) Where less than 50% area of such plot / plots falls within TOD zone, these regulations including FSI shall be applicable to the part of plot / plots falling within TOD zone, whereas for the part of plot / plots falling outside TOD zone, these regulations except provisions regarding FSI shall be applicable. The FSI permissible for the part falling outside TOD zone shall be as per Principal DCPR.

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Notwithstanding anything contained in any other provision of this DCPR the Parking, Double height terraces up to 20% (subject to payment of premium) and 15% balconies not enclosed, Stair cases, Lift wells with machine rooms, Refuge areas, Voids, Service Floor & Entrance lobbies of the building in TOD zone shall be free of FSI.

Notwithstanding anything contained in any other provisions of these regulations, TDR-shall ~~not~~ be allowed to be received on the plots within TOD zone, irrespective of its location in congested area / non-congested area as per the Development Plan of Pune ***subject to condition that it shall be utilised in 1/4 share with premium FSI at every stage of utilisation. The Municipal Corporation shall compensate for the same to Maha Metro as per the sharing formula decided by the Government from time to time.***

**24.8.4 Tenement Size**

For any development or redevelopment within TOD zone, size of tenement shall be minimum 25 sqm and maximum 120 sqm of ~~built-up~~ **carpet** area and out of total proposed tenements, the tenements equivalent to at least 50% of total FSI shall be of a size equal to or less than 60 sqm. ***except the projects in which rehabilitation of existing tenements is under taken. In case of redevelopment scheme, size of tenement can be relaxed for Rehab Component subject to other provisions of principal DCR. However for free sale component50% of total FSI shall be utilise for tenements of size equal to or less than 60 sqm*** These tenements shall not be allowed to be clubbed/amalgamated in any case.

***If the holder/owner of the property needs to build this 50% component at some other location(s) within the same TOD zone / circle, the difference between rate of sale of tenements as mentioned in annual statement of rates shall be paid by the developer to the Municipal Corporation as premium.***

**24.8.5 Permissible mixed use in TOD zone:**

Mixed use in the form of residential and commercial may be permissible on the residential plot in TOD zone fronting on the road width of 12 mt. and above. And mix use on plot / plots in commercial zone in Pune Municipal Corporation shall be permissible as per the principal DCPR and the maximum permissible FSI under these regulations shall be allowed on the payment of premium. ***Purely Mercantile building & Information Technology building will be permissible on independent plot subject to payment of premium. For I.T. Buildings the rate of premium for additional FSI up to 200 % shall be as per regulation no.24.10 of principal DCPR and for additional FSI over it shall be as required under these regulations.***

**24.8.6** Other provisions regarding marginal open spaces shall be governed by the proposed height of structure, as given in the provisions 24.8.7 below and should conform to the Maharashtra Fire Prevention and Life Safety Measures Act, 2006 (Maharashtra Act no. III of 2007) as amended from time to time. No building permission shall be issued without NOC of the Fire Officer ***wherever applicable***. Other regulations regarding room sizes, apertures for light and ventilation shall be as per the principal DCPR in force.

**24.8.7 Marginal Spaces**

| Sr. No. | Building Height | Side and Rear Margins | Remark |
|---|---|---|---|
| a | 15.0 mt and below | (H/2) - 4 | Minimum 3.0 mt. for Residential minimum 4.5 mt. for Commercial and Minimum 6.0 m. for Special Buildings. |
| b | Above 15.0 mt. and upto 24.0 mt. | H/4 | |
| c | 24.0 mt and above | *H/5 subject to Maximum 12.0 mt* | |

Note- 1) However if Developer / Owner provides more than 12.00 mt. side and rear margins, it shall be permissible.

***2) The marginal spaces as mentioned in regulation 17.1.1(f) are applicable for building height***

***up to 24 mtr. in congested area. The marginal distances for building height above 24 mtr. in congested area will be as per regulation 24.8.7 with step margin as mentioned in regulation 17.2.3(c)***

**24.8.7.1** No projections shall be allowed in marginal spaces so that minimum 6 mt. marginal spaces remain free from all encumbrances for the movement of fire tenders. In case if ramp is necessary from accessibility, such ramp may be allowed after leaving 6 mt. clear margin,

**24.8.7.2** For calculation of marginal distances the height of the parking floors (Maximum two floors above the Ground Level) shall not be taken in account, However height of such parking floors will be counted towards the total height of the building for deciding the building as high rise building and for civil Aviation purpose.

**24.8.7.3** Car lift / mechanical parking shall be permissible, as per Principal DCPR as amended from time to time.

**24.8.8 Parking**

Parking in the TOD zone shall be provided as per the table given below.

| Sr. No. | Occupancy | One parking space for every | Transit Oriented Development Influence Zone | | |
|---|---|---|---|---|---|
| | | | Car | Scooter / Motorcycle | Cycle |
| 1 | Residential | For 4 units having carpet area From 25 and upto 40 sq.mt. | 0 | 1 | 2 |
| | | For 2 units above 40 and upto 60 sq.mt. | ~~1~~ *0* | 1 | 2 |
| | | For every unit above 60 and upto 80 sq.mt. | ~~1~~ *0* | ~~2~~ *1* | 2 |
| | | For every unit above 80 sq.mt | 1 | 1 | 1 |
| 2 | Govt. & Semi Govt. Private business buildings | 100 sq.mt carpet area or fraction thereof | 1 | 2 | 2 |

Note: i) Parking spaces for differently – abled persons shall be provided as per Indian Road Congress Code No. IRC 103:2012 in each new construction / development / re-development in the TOD zone.

ii) No on street parking shall be permissible, unless specifically allowed in the integrated mobility plan report.

**24.8.8.1** Incentive for providing Public Parking in the area falling within the radius of 200 mt. from the Metro/MRTS Station.

If the owner / developer of the plot falling within the radius of 200 mt. from the Metro Station/MRTS, is willing to provide Public Parking space over and above the parking spaces required as per the table given in regulation No.24.8.8 of these regulations, the same shall be allowed ***without charging premium for such additional area and in that case the over all premium shall be discounted on 40 % of such parking area while calculating premium for additional FSI allowed over and above the base FSI.*** ~~premium to be paid by such developer / owner~~ as per regulation No.24.8.3.1 ~~shall be reduced by the amount equal to the premium worked out for 25% of the area earmarked for such additional Public Parking space,~~ subject to following conditions:-

a) Such parking area shall be in the built-up form and shall be handed over to Planning Authority free of cost before granting the Occupation Certificate to the project. The Planning Authority

should enter into an agreement with owner / developer for such parking space at the time of granting Commencement Certificate to the project. Such Public Parking area shall be clearly shown on the proposed building plan / layout and a condition to above effect shall be incorporated in the Commencement Certificate.

b) The parking area shall have independent access from major road adjacent to the plot and with proper entry and exits.

c) The parking area to be made available at individual site shall be at minimum 100 sq.mt. at one place either at Ground floor / Stilt floor or first floor.

d) The maximum parking area that can be provided shall be decided by the Commissioner, Pune Municipal Corporation, as the case may be, on considering the location of such site and the parking requirement.

e) A board showing the location of such public parking space should be displayed at suitable places by the Planning Authority.

f) Area covered under such parking shall not be counted towards FSI consumption.

g) Concerned land owner / developer / society / public company shall not be allowed to operate the public parking.

h) The proposed development shall be further subject to such conditions as may be decided by the Municipal Commissioner.

**24.8.9** In case of development or redevelopment, proposed by the Authority / individual applicant / any other Planning Authority, from the edge of the Metro Rail, within 20 mt. distance on its either side, the concerned Planning Authority i.e. Pune Municipal Corporation before granting such permission for development / redevelopment shall seek prior NOC from the concerned Metro Railway Authority as required under the Metro Railways (Construction of Works) Act, 1978 from the point of view of safety of the Metro Railway and such other related matters.

**24.8.10** In case of any conflict between these Regulations and any other Regulation/s of the ***Principal DCPR,*** these Regulations shall prevail for the TOD zone.

**24.8.11** No Compound wall / fencing shall be permissible on the boundary of plot ~~fronting on~~ ***facing the*** road and 50% front marginal distance (subject to minimum of 3.0 mt.) shall be kept accessible to the pedestrians to be used as foot paths. However, it shall be permissible for the applicant to construct / erect fencing, on the receded boundary, after leaving the space for pedestrians as specified above.

~~However for the plots situated on 9mt. and 12mt. wide Roads having 100% residential use therefore this rule shall not be made applicable.~~

**24.8.12** Large wholesale stores, car dealer showrooms, warehouses/storages, auto service centres, Garages etc. shall not be permissible in TOD zone.

**24.8.13** Provision of Inclusive housing shall not be applicable in TOD zone.

**24.8.14** For Gunthewari development regularized under the provisions of Maharashtra Gunthewari Development Act, 2001 and falling in TOD zone, seeking provisions for ***development*** / redevelopment, these regulations shall apply.

**24.8.15** The width of passage shall be minimum ~~1.5~~ ***1.2***mt. for residential use & 2.0 mt. for commercial use.

***24.8.16 In case of independent unit / Bungalow for self use, such Development / Redevelopment may be allowed within base FSI subject to principal DCPR.***

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*24.8.17 The layout of building / group housing layout or standalone building on a plot / plots situated in TOD Circle over which construction is started and for which occupancy certificate is not granted may be revised and balance potential if any may be allowed subject to structural stability criteria's and as per the above provisions subject to following.*

*a) Marginal Distance – The existing marginal distances including front margin may be allowed for higher floor / floors and necessary relaxation to that extent may be granted by the Municipal Commissioner subject to compliance of all fire requirements and fire NOCs by charging hardship premium. Hardship premium is to be decided by Municipal Commissioner. In any case sanctioned existing marginal /front margin distance shall not be reduced.*

*b) Free of FSI items - For the ongoing buildings for which passages, stairs, lifts, lift room etc. are allowed as free of FSI by charging premium, in such cases these free of FSI items are allowed to that extent only and for the remaining balance potential free of FSI items under these regulations shall be applicable.*

*c) Balcony - For the ongoing buildings for which balconies are allowed as free of FSI by charging premium may be allowed to that extent only and for the remaining balance potential balcony shall only be allowed as mentioned in Regulation No. 18.13.*

*24.8.18 The Amount received as scrutiny fee, hardship premium, premium for additional FSI ect. in TOD zone / circle shall be kept in separate head at Municipal level and shall be utilised for development of metro project as per directives issued by Government from time to time.*

*24.8.19 These TOD provisions will also be made applicable to other MRTS projects such as BRTS. The scale of FSI availability will be notified later by the Government for such other projects.*

By order and in the name of the Governor of Maharashtra

URBAN DEVELOPMENT DEPTT. सत्यमेव जयते MANTRALAYA, MUMBAI-32

(R.M.Pawar)
Under Secretary to Government

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# *Annexure 1-2*

*FSI Comparison of Pune DCPR-2017 and UDCPR - 2022*

## ANNEXURE 1.2: FSI COMPARISON OF PUNE DCPR-2017 AND UDCPR - 2022

The following is a comparison between the DCPR-2017 and UDCPR-2022.

### DCPR-2017

| No | Road Width (meter) | Min. Plot Area in sqm | Maximum Permissible FSI |
|---|---|---|---|
| 1 | 9 m. and up to 12m | Below 1000 | 2.00 |
| 2 | 12 m. and up to 18 m. | 1000 or above | 2.50 |
| 3 | 18 m. and up to 24 m. | 2000 or above | 3.00 |
| 4 | 24 m. and up to 30 m. | 3000 or above | 3.50 |
| 5 | 30 m. and above | 4000 or above | 4.00 |

### UDCPR-2022

| No | Road Width (meter) | Maximum Permissible FSI |
|---|---|---|
| 1 | 9 m. and up to 12m. | 2.50 |
| 2 | 12 m. and up to 15 m. | 3.00 |
| 3 | 15m. and up to 24 m. | 3.50 |
| 4 | 24 m. and above | 4.00 |

Baseline FSI for smaller road widths (9 to 12m) was 2.00 in DCPR-2017 while it has been increased to 2.50 in UDCPR-2022. Under the DCPR-2017, lower road widths were capped at a lower FSI, which could limit the scale of projects in those areas. The UDCPR-2022 revision allows for higher-density development in areas where roads are relatively narrow, promoting vertical growth and maximizing land use. Across all road width categories, the FSI allowances have increased under UDCPR-2022. The maximum FSI is capped at 4.00. This overall increase reflects the city's vision for compact, vertical development to support urban expansion and greater population density.

# *Annexure 1-3*

*Detailed Breakup of Administrative Units in Study Area*

## ANNEXURE 1.3: DETAILED BREAKUP OF ADMINISTRATIVE UNITS IN STUDY AREA

| No | Name of Study Area in Pune Metropolitan Region | Area in Sq.km |
|---|---|---|
| **A** | **Urban Centre's in PMR** | |
| 1 | Pune Municipal Corporation | 519 |
| 2 | Pimpri Municipal Corporation | 181 |
| 3 | Alandi Municipal Council | 3 |
| 4 | Chakan Municipal Council | 17 |
| 5 | Lonavala Municipal Council | 30 |
| 6 | Rajgurunagar Municipal Council | 4 |
| 7 | Saswad Municipal Council | 23 |
| 8 | Shirur Municipal Council | 7 |
| 9 | Telegaon Dabhade Municipal Council | 11 |
| 10 | Vadgaon Nagar Panchayat | 13 |
| 11 | Dehu Nagar Panchayat | 9 |
| 12 | Dehu Road Cantonment Board | 37 |
| 13 | Kirkee Cantonment Board | 14 |
| 14 | Pune Cantonment Board | 12 |
| 15 | Hinjawadi | 7 |
| 16 | Khadkale | 5 |
| 17 | Kharabwadi | 6 |
| 18 | Koregaon Bhima | 12 |
| 19 | Kusgaon BK | 7 |
| 20 | Medankarwadi | 5 |
| 21 | Nanekarwadi | 4 |
| 22 | Pirangut | 10 |
| 23 | Sanaswadi | 17 |
| | **Sub-Total (A)** | **954** |
| **B** | **Special Planning Area** | |
| 1 | MADC | 10 |
| 2 | MIDC | 98 |
| | **Sub-Total (B)** | **108** |
| **C** | | |
| 1 | Chakan (Sector M) | 169 |
| 2 | Alandi (Sector I) | 102 |
| 3 | Wagholi (Sector H) | 108 |
| 4 | Loni Kalbhor (Sector G) | 92 |
| 5 | Pirangut (Sector P) | 101 |
| 6 | Hinjawadi (Sector B,C,D) | 125 |
| 7 | Talegaon (Sector J,R) | 205 |
| 8 | Malavali (Sector N,0) | 73 |
| 9 | Khed-Rajgurunagar | 49 |
| 10 | Shikrapur (Sector L) | 91 |

| No | Name of Study Area in Pune Metropolitan Region | Area in Sq.km |
|---|---|---|
| 11 | Uruli Kanchan (Sector K) | 72 |
| 12 | Saswad | 74 |
| 13 | Khed-Shivapur (Sector Q) | 19 |
| 14 | Nasrapur (Sector Q) | 58 |
| 15 | Ranjangaon | 75 |
| 16 | Kedgaon | 28 |
| 17 | Yawat | 42 |
| | **Sub-Total (C)** | **1483** |
| | **Grand Total (A+B+C)** | **2545** |
| | **Say** | **2550** |

# *Annexure 1-4*

*Status of Proposals in CMP 2018*

## ANNEXURE 1.4: STATUS OF PROPOSALS OF CMP 2018

| No | Project Name | Type of Project | Status |
|---|---|---|---|
| **1** | **Development of Ring Roads** | | |
| A | HCMTR for PMC | Road Development | Not Implemented |
| B | HCMTR for PCMC | | Not Implemented |
| C | PMRDA Ring Road (128 km) | | Not Implemented |
| D | Intermediate Ring Road | | Not Implemented |
| **2** | **Airport at Purandhar** | Airport Development | Not Implemented |
| **3** | **BRTS Corridor** | | |
| F | Dapodi - Nigdi | Public Transport -BRTS | |
| G | Kalewadi Phata – Dehu Alandi | | Implemented |
| H | Shivaji Nagar - Dapodi | | Not Implemented |
| I | Shivaji Nagar – Pune University | | Not Implemented |
| J | Pune University - Aundh | | Implemented |
| K | Bhopkel - Alandi | | Not Implemented |
| L | Nigdi to Kiwale | | Implemented |
| 4 | Route Rationalization and Restructuring | | |
| A | Recommendation to Increase services<br>• Shikrapur<br>• Charoli<br>• Wadgoanshinde<br>• Manjari khurd<br>• Kesnand<br>• Chande<br>• Nande<br>• Kirkitwadi<br>• Yewlewadi<br>• Handewadi<br>• Punawale | Public Transport Service Increase – Buses | Not Implemented |
| B | Fleet Augmentation up to 3400 buses in 2023 | Fleet Augmentation | Not Implemented |
| C -1 | Hadapsar Bus Stand | Bus Terminals | Not Implemented |
| C -2 | Pune Railway Station | | Not Implemented |
| C -3 | Katraj PMPML | | Not Implemented |
| C -4 | Mahatma Gandhi | | Not Implemented |
| C -5 | Bhakti Shakti | | Not Implemented |
| C -6 | Nigdi Bus Stand | | Not Implemented |
| C -7 | Bhosari | | Not Implemented |
| C -8 | Bhosarigaon Bus stand | | Not Implemented |
| C -9 | Chinchwad | | Not Implemented |
| C -10 | Kiwale | | Not Implemented |
| C -11 | Chikhali | | Not Implemented |
| C -12 | Alandi | | Not Implemented |
| C-13 | Talegaon | | Not Implemented |
| C-14 | Chakan | | Not Implemented |
| C-15 | Ambegaon Narhe | | Not Implemented |
| C-16 | Dhayari | | Not Implemented |
| C-17 | Talwade MIDC | | Not Implemented |
| C-18 | Hinjawadi | | Not Implemented |
| D-1 | Talegaon | Bus Depot | Implemented |
| D-2 | Chakan | | Implemented |
| D-3 | Ambegaon Narhe | | Implemented |
| D-4 | Dhayari | | Implemented |
| D-5 | Chikhali | | Implemented |
| D-6 | Talwade MIDC | | Not Implemented |
| D-7 | Hinjawadi | | Not Implemented |
| D-8 | Vallabh Nagar | | Implemented |
| D-9 | Alandi | | Not Implemented |
| E- 1 | Talegaon, Mumbai Road | Intercity Bus Terminals | Not Implemented |
| E- 2 | Vitthalwadi, Nagar Road | | Not Implemented |

| No | Project Name | Type of Project | Status |
|---|---|---|---|
| E- 3 | Loni Kalboor, Solapur Road | Intercity Bus Terminals | Not Implemented |
| E- 4 | Mangdewadi, Satara Road | | Not Implemented |
| E- 5 | Moshi, Nasik Road | | Not Implemented |
| E-6 | Pune Railway Station MSRTC Terminal | Bus Terminal – Intercity Bus Terminals | Not Implemented |
| E-7 | Vallabh Nagar Bus Station | | Not Implemented |
| F-1 | Hadapsar Railway Station | Railway Station Redevelopment | Not Implemented |
| F-2 | Pune Railway Station | | Not Implemented |
| F-3 | Shivajinagar Railway Station | | Not Implemented |
| F-4 | Khadki Railway Station | | Not Implemented |
| F-5 | Akurdi Railway Station | | Not Implemented |
| F-6 | Chinchwad Railway Station | | Not Implemented |
| F-7 | Pimpri Railway Station | | Not Implemented |
| F-8 | Kasarwadi Railway Station | | Not Implemented |
| G-1 | Nigdi - Katraj | Metro | Partially Implemented |
| G-2 | Chandani Chowk - Wagholi | | Partially Implemented |
| G-3 | Hinjawadi-Shivaji Nagar | | Under Construction |
| G-4 | Shivaji Nagar - Hadapsar | | Not Implemented |
| G-5 | Hinjawadi - Chakan | | Not Implemented |
| G-6 | Sinhagad Road (Veer Baji Pasalkar Chowk to Pune Cant.) | Light Metro | Not Implemented |
| H-1 | Yerwada- Airport | BRTS | Not Implemented |
| H-2 | Kaspate Wasti – Kalewadi Phata | | Implemented |
| H-3 | HCMTR PMC | | Not Implemented |
| H-4 | HCMTR PCMC | | Not Implemented |
| H-5 | Chinchwad- Talwade | | Not Implemented |
| I-1 | Hadapsar- Saswad Road from Dive Ghat | Airport Road Connectivity | Not Implemented |
| I-2 | Saswad- Bopdev Pune Road from Bopdev Ghat | | Not Implemented |
| I-3 | Urali-Kanchan Jejuri Road | | Not Implemented |
| I-4 | Saswad- Kapurhol- Bhor Road | | Not Implemented |
| I-5 | Khed Shivapur- Saswad Link Road | | Not Implemented |
| J-1 | Katraj | Proposed Multimodal Hubs | Not Implemented |
| J-2 | Hadapsar | | Not Implemented |
| J-3 | Wagholi | | Not Implemented |
| J-4 | Moshi | | Not Implemented |
| J-5 | Vallabh Nagar | | Not Implemented |
| J-6 | Chinchwad | | Not Implemented |
| K-1 | Nasik Phata | Multi-modal Transfer Stations | Not Implemented |
| K-2 | Hinjawadi | | Not Implemented |
| K-3 | Chandini Chowk | | Not Implemented |
| K-4 | Warje | | Not Implemented |
| K-5 | Wadgaon Budruk | | Not Implemented |
| K-6 | Kharadi | | Not Implemented |
| K-7 | Pul Gate, Pune Cantonment | | Not Implemented |
| K-8 | Wakad | | Not Implemented |
| **4** | **Road Development Projects** | | |
| 1 | Katraj to Mantarwadi via Undri | Road Widening | Not Implemented |
| 2 | Dhayari to Ambegaon Narhe | | Not Implemented |
| 3 | Wagholi to Hadapsar via Manjari | | Not Implemented |
| 4 | Hadapsar to Handewadi vai Sasane Nagar | | Not Implemented |
| 5 | Western Bypass Junction to Khed Shivapur Toll Plaza, Satara Road | | Not Implemented |
| 6 | Wadki to Saswad (Proposed Airport) | | Not Implemented |
| 7 | Old - Mumbai Pune Highway (Dehu Road Y Junction to Wadgoan) | | Not Implemented |
| 8 | Nashik Road ( Moshi Toll Plaza to Chakan)) | | Not Implemented |
| 9 | Nagar Road (Kharadi Bypass to Shikrapur) | | Not Implemented |
| 10 | Solapur Road (PMC Boundary to Uruli Kanchan) | | Not Implemented |
| 11 | Saswad Road (Hadapsar Junction to Wadki) | | Not Implemented |
| 12 | Sinhagad Road (Veer Baji Pasalkar Chowk to Khadakwasla Village) | | Not Implemented |
| 13 | NDA Road (Warje Flyover to Uttam Nagar) | | Not Implemented |
| 14 | Hinjawadi Road (Shivaji Chowk to Metropolis) | | Not Implemented |

| No | Project Name | Type of Project | Status |
|---|---|---|---|
| 15 | Ghorpadi Level Crossing near Police Station | ROB/RUB | Not Implemented |
| 16 | Ghorpadi Level Crossing near BFCC Road | | Implemented |
| 17 | Sasane Nagar Level Crossing | | Not Implemented |
| 18 | Uruli Kanchan Level Crossing | | Not Implemented |
| 1 | RUB near Khadki Police Chowk | ROB/RUB - Upgradation | Not Implemented |
| 2 | ROB near Mantarwadi on Saswad Road | | Not Implemented |
| 3 | ROB in Talegaon near Railway Station Junction | | Not Implemented |
| 4 | RUB on KB Joshi Path near Shivaji Nagar Railway Station | | Not Implemented |
| 5 | ROB on Magarpatta Road | | Not Implemented |
| 1 | Kalubai Chowk, Solapur Road | Grade Separators | Not Implemented |
| 2 | Karadi Bypass, Nagar Road | | Not Implemented |
| 3 | Wagholi Junction, Nagar Road | | Not Implemented |
| 4 | Kadki Police Chowk, Old NH-4 | | Not Implemented |
| 5 | Chandni Chowk, Paud Road (Proposed by NHAI) | | Implemented |
| 6 | Nalstop Junction, Karve Road | | Not Implemented |
| 7 | Rajaram Bridge, Sinhgad Road | | Under Construction |
| 8 | Dandekar Bridge, Sinhgad Road | | Not Implemented |
| 9 | Talegaon Chowk, Chakan | | Not Implemented |
| 10 | Dehu Alandi Road Junction, Nasik Road | | Not Implemented |
| 11 | 509 Chowk, Airport Road | | Not Implemented |
| 1 | Charoli to Lohegaon | Undeveloped Development Plan Roads | Under Construction |
| 2 | Dange Chowk to Walekarwadi | | Not Implemented |
| 3 | Balabarathi, SB Road to Paud Phata | | Not Implemented |
| 4 | Nigdi to Hinjawadi | | Not Implemented |
| 5 | Mahalunge to Hinjawadi | | Not Implemented |
| 1 | Between Karve Road and Singhad Road near Sun City | New Bridges-PMC | Not Implemented |
| 2 | Between Karve Road and Singhad Road near Panmala | | Not Implemented |
| 3 | Between Pune Station to Sangamwadi near Lumbini Nagar | | Not Implemented |
| 4 | Wadgaonsheri to Mundhwa Tadigutta Chowk | | Not Implemented |
| 5 | Keshav Nagar to Kharadi | | Implemented |
| 1 | Phugewadi to Pimple Gurav | New Bridges-PCMC | Not Implemented |
| 2 | Walhekarwadi to Tathavadi | | Not Implemented |
| 1 | *Sutarwadi Road* | Footpath proposed in PMC | Not Implemented |
| 2 | *Baner Pashan Link Road* | | Implemented |
| 3 | *Balewadi Road (via SKP Chowk)* | | Implemented |
| 4 | *Karve Road (Near Ambedkar Chowk)* | | Implemented |
| 5 | *Dhayari Phata Road* | | Not Implemented |
| 6 | *Swami Vivekanand Road, Bibvewadi* | | Implemented |
| 7 | *Laxmi Nagar Road / Golvalkar Guruji Path (Parvati)* | | Not Implemented |
| 8 | *Bhau Patil Road* | | Not Implemented |
| 9 | *Mundhwa Road* | | Implemented |
| 10 | *Madhukar Chimanrao Patnis Road* | | Implemented |
| 11 | *Samrat Ashok Road* | | Not Implemented |
| 1 | *Aundh Ravet BRT Corridor* | Footpath proposed in PCMC | Implemented |
| 2 | *Aundh Wakad Road* | | Not Implemented |
| 3 | *Kaspate Vasti Road* | | Implemented |
| 4 | *From Aditya Birla Hospital Road to Shri Chatrapati Shivaji Maharaj Road (Via Wal* | | Not Implemented |
| 5 | *Nigdi Chikhali Road* | | Not Implemented |
| 6 | *Kalewadi Rahatani Road* | | Implemented |
| 7 | *Pimple Saudagar Road* | | Implemented |
| 8 | *Ganga Nagar Road (Akurdi)* | | Not Implemented |
| 9 | *Bhaktivedant Marg and Sant Namdev Marg (Akurdi)* | | Not Implemented |
| 10 | *Mata Ramabai Bhimrao Ambedkar Marg, (Nigdi)* | | Implemented |
| 11 | *Chinchwad Gaon Road* | | Not Implemented |
| 12 | *PCMC Link Road* | | Not Implemented |
| 13 | *River Road / M.G. Road (Pimpri)* | | Implemented |
| 14 | *Pimpri Chinchwad Road (via MIDC Chowk)* | | Not Implemented |
| 15 | *Nasik Highway (Near Bharat Mata Chowk, Moshi)* | | Not Implemented |

| No | Project Name | Type of Project | Status |
|---|---|---|---|
| 16 | *Spine Road* | Footpath proposed in PCMC | Not Implemented |
| 17 | *Bhosari Alandi Road* | | Not Implemented |
| 18 | *Ravet Village Road, (Akurdi)* | | Not Implemented |
| 19 | *Rahatni Link Road* | | Implemented |
| 20 | *Tathavade Road (Ravet)* | | Not Implemented |
| 1 | *Viman Nagar Chowk on Nagar Road* | Pedestrian Gradeseparators in PMC | Not Implemented |
| 2 | *Kharadi Bypass Junction on Nagar Road* | | Not Implemented |
| 3 | *Near Amanora Mall on Magarpatta Road* | | Not Implemented |
| 4 | *Mundhwa Chowk on Magarpatta Road* | | Not Implemented |
| 5 | *Kalubai Chowk on Solapur Road* | | Not Implemented |
| 6 | *Fatima Nagar Junction on Solapur Road* | | Not Implemented |
| 7 | *Khadki Railway Station on Old Mumbai Highway Road* | | Not Implemented |
| 8 | *Near Harris Bridge on Old Mumbai Highway Road* | | Not Implemented |
| 9 | *Near Swargate bus terminal connecting PMPML Bus stand on Satara Road* | | Not Implemented |
| 10 | *City Pride Chowk on Satara Road* | | Not Implemented |
| 11 | *Rajiv Gandhi Chowk near Rajiv Gandhi Zoo Park on Satara Road* | | Not Implemented |
| 12 | *Katraj Chowk on Satara Road* | | Not Implemented |
| 13 | *Sanjeev Gandhi Road to Wellesley Road connecting the Pune Railway Station* | | Not Implemented |
| 14 | *Dr. Kapote Chowk on Ganeshkindh Road* | | Not Implemented |
| 15 | *Alka Talkies Chowk on Lal Bahadur Sastri Road* | | Not Implemented |
| 16 | *Dhole Patil Chowk/ Wadia College* | | Not Implemented |
| 17 | *Jehangir Hospital Junction* | | Not Implemented |
| 18 | *Near PMC Building* | | Not Implemented |
| 1 | *Bhakti Shakti (PMPML and MSRTC)* | Pedestrian Grade Separators in PCMC | Not Implemented |
| 2 | *Kasarwadi (Near Railway Station)* | | Not Implemented |
| 3 | *Modification of Existing FOB near Poona Public School (Before Bhosari on Nasik* | | Not Implemented |
| 4 | *Bhujbal Chowk (Near Hinjawadi Flyover)* | | Not Implemented |
| 5 | *Bharat Mata Chowk, (Moshi)* | | Not Implemented |
| 1 | *Talegaon Chowk, Chakan* | Proposed Grade Separators in Others areas outside PMC & PCMC | Not Implemented |
| 2 | *Awalwadi Junction, Wagholi* | | Not Implemented |
| 3 | *Chakan Chowk, Shikrapur* | | Not Implemented |
| 1 | Chinchwad | Proposed Grade Separators connecting Railway stations to Metro Stations | Not Implemented |
| 2 | Akurdi | | Not Implemented |
| 3 | Khadki | | Not Implemented |
| 4 | Shivaji Nagar | | Not Implemented |
| 5 | Hadapsar | | Not Implemented |
| 1 | Near Pavilion Mall on Senapati Bapat Road | Raised Pedestrian Crosswalk in PMC | Not Implemented |
| 2 | Near Westin Hotel, N Main Road | | Not Implemented |
| 3 | Magarapatta Main Gate, Magarpatta Road | | Not Implemented |
| 4 | Hadapsar Junction | | Not Implemented |
| 5 | Near Orchid Speciality Clinic on Baner Road | | Not Implemented |
| 6 | Mahadji Shinde – Kumar Classic Rd Junction near Westend Mall, Aundh | | Not Implemented |
| 7 | NCL Main Gate on Pashan Road | | Not Implemented |
| 8 | In front of Kothrud Bus Stand on Karve Road | | Not Implemented |
| 9 | Near Bank of Maharastra on Paud Road | | Not Implemented |
| 10 | SP Chowk on Tilak Road | | Not Implemented |
| 11 | Near Lunawat Hospital on Tilak Road | | Not Implemented |
| 12 | Near Indian Overseas Bank on Sinhagad Road | | Not Implemented |
| 13 | Near Mod Tech Engineering College on Sinhagad Road | | Not Implemented |
| 14 | Market Yard Junction on Market Yard Road | | Not Implemented |
| 15 | Near Shri Dattpur Mandir on Bibvewadi Road | | Not Implemented |
| 16 | Near Market Yard Last Bus Stop on Jawaharlal Nehru Road | | Not Implemented |
| 17 | Near E Square Konark on Kondhwa Road | | Not Implemented |
| 18 | In front of SP Infocity on Saswad Pandharpur Road | | Not Implemented |
| 19 | In front of Eon IT Park, Fountain Road | | Not Implemented |
| 20 | Near Bank of Maharastra, Bhavdhan, Pashan Road | | Not Implemented |
| 21 | In front of Shivaji Nagar MSRTC Bus Stand | | Not Implemented |

| No | Project Name | Type of Project | Status |
|---|---|---|---|
| 1 | Akurdi Railway Station to Ravet | Roads to be redesigned under Pune Street Programme (PCMC) | Not Implemented |
| 2 | Akurdi Railway Station to Bijli Nagar | | Not Implemented |
| 3 | Akurdi Railway Station to Nisarg Darshan Society | | Not Implemented |
| 4 | Akurdi Railway Station to Ganga Nagar | | Not Implemented |
| 5 | Jagtap dairy to Brigde on pimple Nilakh | | Not Implemented |
| 1 | Aundh | Pune Smart City Program- Redesign of Streets | Implemented |
| 2 | Baner | | Implemented |
| 3 | Balewadi | | Implemented |
| 4 | Sangvi | | Implemented |
| 5 | Pimple Saudagar | | Implemented |
| 6 | Pimple Gurav | | Implemented |
| 1 | Pashan Road – 3.5 km | Redesign based on urban street design | Implemented |
| 2 | Ganeshkind Road – 3 km | | Not Implemented |
| 3 | Paud Road – 4.2 km | | Not Implemented |
| 4 | Bhosari – Alandi Road – 2.8 km | | Not Implemented |
| 5 | Khandoba Chowk – Hutatma Chowk (Akurdi Railway Station Road) – 2.4 km | | Not Implemented |
| 6 | Bhondwe Chowk – Chapekar Chowk Flyover – 3.1 km | | Not Implemented |
| 1 | Akurdi | Proposed Bicycle Track | Not Implemented |
| 2 | Nidgi Pradikaran | | Not Implemented |
| 3 | Chinchwad Gaon | | Not Implemented |
| 4 | Kalewadi | | Not Implemented |
| 5 | Pimpri | | Not Implemented |
| 6 | Wakad | | Not Implemented |
| 7 | Bhosari | | Not Implemented |
| 8 | Hinjawadi (connecting Phase 1, Phase 2 and Phase 3) | | Not Implemented |
| 1 | Mumbai Highway and Expressway near Talegaon | Proposed Truck Terminals | Not Implemented |
| 2 | Nasik Road near Kuruli | | Not Implemented |
| 3 | Nagar Road near Wagholi | | Not Implemented |
| 4 | Solapur Road near Loni Kalboor | | Not Implemented |
| 5 | Saswad Jejuri Road near Fursungi | | Not Implemented |
| 6 | Western Bypass near Jambhulwadi | | Not Implemented |
| 1 | Shivaji Road | Proposed Pay and park -on-street - PMC | Not Implemented |
| 2 | Bajirao Road | | Not Implemented |
| 3 | Laxmi Road | | Not Implemented |
| 4 | Hadapsar Gadithal Area | | Not Implemented |
| 5 | Shivajinagar Bus Stand Area | | Not Implemented |
| 6 | Pune Railway Station Area | | Not Implemented |
| 7 | JM Road | | Not Implemented |
| 8 | FC Road | | Not Implemented |
| 9 | Balewadi Phata | | Not Implemented |
| 10 | Near Market Yard | | Not Implemented |
| 11 | Swargate Bus Stand Area | | Not Implemented |
| 12 | DP Road and Mahadji Shinde Road, Aundh | | Not Implemented |
| 13 | Lal Bahadur Sastri Road | | Not Implemented |
| 14 | District Court | | Not Implemented |
| 15 | Timber Market Road near Market Yard | | Not Implemented |
| 16 | Nagar Road near Viman Nagar Corner and Kharadi Bypass Junction | | Not Implemented |
| 17 | Balewadi High Street to Varsha Park Society | | Not Implemented |
| 1 | Bhosari (50m away from the intersection) | Proposed Pay and park -on-street - PCMC | Not Implemented |
| 2 | Nigdi (50m away from the intersection) | | Not Implemented |
| 3 | Dange Chowk (50m away from the intersection) | | Not Implemented |
| 4 | Chopekar Chowk (50m away from the intersection) | | Not Implemented |
| 5 | Landewadi Chowk (50m away from the intersection) | | Not Implemented |
| 6 | Pimpri market | | Not Implemented |
| 7 | Kapate Chowk to Wakad Chowk | | Not Implemented |
| 8 | Mahesh Nagar Road near Yeshwanth Rao Chavan Hospital | | Not Implemented |
| 9 | Chikhali Akurdi Road from Thermax Chowk to Om Sai Chowk | | Not Implemented |
| 1 | Katraj Chowk | Surface Parking | Not Implemented |

| No | Project Name | Type of Project | Status |
|---|---|---|---|
| 2 | Pune Municipal Corporation | Increase the Capacity of Existing Multilevel Parking | Not Implemented |
| 3 | Pune Railway Station | Open the Existing Multilevel Parking for Cars | Not Implemented |
| 4 | Shivajinagar | Multilevel Parking | Not Implemented |
| 5 | Swargate | Multilevel Parking | Not Implemented |
| 6 | Hadapsar | Surface Parking | Not Implemented |
| 7 | Market Yard | Multilevel Parking at existing surface parking | Not Implemented |
| 1 | Akurdi | Surface Parking | Not Implemented |
| 2 | Chinchwad Railway Station | Multilevel Parking | Not Implemented |
| 3 | PCMC Building | Multilevel Parking | Not Implemented |
| 4 | Bhosari | Surface Parking | Not Implemented |
| 5 | Pimpri market | Multilevel Parking | Not Implemented |
| 1 | Katraj Multimodal Hub | Off-street Parking Facilities at Multimodal Hubs and ISBTs | Not Implemented |
| 2 | Hadapsar Multimodal Hub | | Not Implemented |
| 3 | Wagholi Multimodal Hub | | Not Implemented |
| 4 | Moshi Multimodal Hub | | Not Implemented |
| 5 | Vallabhnagar Multimodal Hub | | Not Implemented |
| 6 | Chinchwad Multimodal Hub | | Not Implemented |
| 7 | Talegaon ISBT, Mumbai Road | | Not Implemented |
| 8 | Vitthalwadi ISBT, Nagar Road | | Not Implemented |
| 9 | Loni Kalboor ISBT, Solapur Road | | Not Implemented |
| 10 | Mangdewadi ISBT, Satara Road | | Not Implemented |
| 11 | Moshi ISBT, Nasik Road | | Not Implemented |
| 1 | Mantarwadi Junction | Junction Improvements | Not Implemented |
| 2 | Katraj Junction | | Not Implemented |
| 3 | Kharadi Bypass Junction | | Not Implemented |
| 4 | Khadi Machine | | Not Implemented |
| 5 | Netaji Chowk | | Not Implemented |
| 6 | Gunjan Chowk | | Not Implemented |
| 7 | Shadal Baba Dargha Chowk | | Not Implemented |
| 8 | Janak Baba Dargha Chowk | | Not Implemented |
| 9 | Saikar Chowk | | Not Implemented |
| 10 | Balewadi Phata | | Not Implemented |
| 11 | Alka Talkies Chowk | | Not Implemented |
| 12 | Dandekar Chowk | | Not Implemented |
| 13 | Juna Bazar Junction | | Not Implemented |
| 14 | RTO Chowk | | Not Implemented |
| 15 | Mundhwa Chowk | | Not Implemented |
| 16 | Nigdi Junction | | Not Implemented |
| 17 | Shivaji Chowk | | Not Implemented |
| 18 | Landevadi Junction | | Not Implemented |
| 19 | Bhondwe Chowk | | Not Implemented |
| 20 | Dr. Babasaheb Ambedkar Chowk | | Not Implemented |
| 21 | Bhumkar Chowk | | Not Implemented |
| 22 | Dange Chowk | | Not Implemented |
| 23 | Bharat Mata Chowk | | Not Implemented |
| 24 | Alandi Chowk | | Not Implemented |
| 25 | Dehu Road Y Junction | | Not Implemented |
| 26 | Awalwadi Junction | | Not Implemented |
| 27 | Somatane Phata | | Not Implemented |
| 28 | Kesnand Junction | | Not Implemented |
| 29 | Wageshwar Junction | | Not Implemented |
| 30 | Wakad Junction | | Not Implemented |
| 31 | Taelgaon Junction, Talegaon | | Not Implemented |
| 32 | Chakan Chowk, Shikrapur | | Not Implemented |
| 33 | Koregaon Bhima Junction | | Not Implemented |
| 34 | Talegaon Chowk, Chakan | | Not Implemented |

| No | Project Name | Type of Project | Status |
|---|---|---|---|
| 35 | Undri Chowk | Junction Improvements | Not Implemented |
| 36 | Limbh Phata | | Not Implemented |
| 1 | Parihar Chowk | Junctions identified for signalization | Implemented |
| 2 | Rajwada Chowk | | Not Implemented |
| 3 | Abhimanshri Chowk | | Not Implemented |
| 4 | Alandi Junction Road | | Not Implemented |
| 5 | Sapras Chowk | | Not Implemented |
| 6 | Kalas Phata Chowk | | Not Implemented |
| 7 | Mental Corner Chowk | | Not Implemented |
| 8 | Shanti Nagar Chowk | | Not Implemented |
| 9 | Shagun Chowk | | Not Implemented |
| 10 | Sudarshan Nagar Junction | | Not Implemented |
| 11 | Ganapati Chowk Shitole Nagar | | Not Implemented |
| 12 | Krushna Chowk | | Not Implemented |
| 13 | Ahinsa Chowk | | Not Implemented |
| 14 | Power House Junction | | Not Implemented |
| 15 | Bajaj Auto Chowk | | Not Implemented |
| 16 | Ankush Chowk | | Not Implemented |
| 17 | Triventi Nagar | | Not Implemented |
| 18 | Akurdi Railway Bridge (Dharmavat Chowk) | | Not Implemented |
| 19 | Akurdi Railway Bridge (Inner Wheel Club) | | Not Implemented |
| 20 | Santosh Nagar Chowk | | Not Implemented |
| 21 | Vishal Nagar Chowk | | Not Implemented |
| 22 | Waked Jakat Naka | | Not Implemented |
| 23 | Poonawale Chwok | | Not Implemented |
| 24 | Pawar Vasti Chowk | | Not Implemented |
| 25 | Raghunandan Chowk | | Not Implemented |
| 26 | Birla Hospital Chowk | | Not Implemented |
| 27 | Kelewadi Chowk | | Not Implemented |
| 28 | Deep Bangla Chowk | | Not Implemented |
| 29 | Kunte Chowk | | Not Implemented |
| 30 | Gadital Bridge Narayan Peth Side | | Not Implemented |
| 31 | Shyamrao Ganjave Chowk | | Not Implemented |
| 32 | Phadke Haud Chowk | | Not Implemented |
| 33 | Sonya Maruti Chowk | | Not Implemented |
| 34 | Narpatgiri Chowk | | Not Implemented |
| 35 | Tadigupta Chowk | | Not Implemented |
| 36 | Kailash Samshan Bhumi Chowk | | Not Implemented |
| 37 | Sharbatwala Chowk | | Not Implemented |
| 38 | Vholga Chowk | | Not Implemented |
| 39 | Garison Engineering Chowk | | Not Implemented |
| 40 | Ganesh Halwai Road | | Not Implemented |
| 41 | Tarkeshwar Chowk | | Not Implemented |
| 42 | Yerwada Jail Junction | | Not Implemented |
| 43 | Parn Kuti Chowk | | Not Implemented |
| 44 | Jadhe Chowk | | Not Implemented |
| 45 | Gangadham Chowk | | Not Implemented |
| 46 | Wega Center | | Not Implemented |
| 47 | Dhobi Ghat | | Not Implemented |
| 48 | Dutta Nagar Chowk | | Not Implemented |
| 49 | Dhanakwadi Phata Chowk | | Not Implemented |
| 50 | Chandralok Hospital Chowk, Swargate | | Not Implemented |
| 51 | Bibwewadi Gawthan Chowk | | Not Implemented |
| 52 | Jambhulkar Chowk | | Not Implemented |
| 53 | Dobadwadi Road T Junction | | Not Implemented |
| 54 | Shide High School | | Not Implemented |
| 55 | Santosh Hall | | Not Implemented |
| 56 | Ummbrya Ganpati | | Not Implemented |

| No | Project Name | Type of Project | Status |
|---|---|---|---|
| 57 | Oogle Chowk | Junctions identified for signalization | Not Implemented |
| 58 | Gujrat Colony Chowk | | Not Implemented |
| 59 | Ashish Garden Chowk | | Not Implemented |
| 60 | Chinchwad Gaon Bus Stop | | Not Implemented |
| 61 | Hotel River View Chinchwad Chowk | | Not Implemented |
| 62 | M I D C Chowk | | Not Implemented |
| 63 | Bhosari Bridge (Bhosari Alandi Chowk) | | Not Implemented |
| 64 | Bhosari B R T S Stop | | Not Implemented |
| 65 | Shitaladevi Dapoli | | Not Implemented |
| 66 | Bhagwan Mahavir Chowk Dapoli | | Not Implemented |
| 67 | Pcmt Junction Sadguru Nagar | | Not Implemented |
| 68 | Sector No.4 Sant Nagar | | Not Implemented |
| 69 | Spine Road Sector No. 9 | | Not Implemented |
| 70 | Spine Road Sector No. 10 | | Not Implemented |
| 71 | Chikhali Pmt Depot | | Not Implemented |
| 72 | Gharkul Shivtej Nagar | | Not Implemented |
| 73 | Chicken Chowk | | Not Implemented |
| 74 | Mhalsakanth Chowk | | Not Implemented |
| 75 | Juna D World Office Junction | | Not Implemented |
| 76 | Maharshi Walmiki Bhat Nagar Chowk | | Not Implemented |

# *Annexure 2-1*

*Zone Wise Population of Study Area for Base Year (2024)*

## ANNEXURE 2.1: ZONE WISE POPULATION OF STUDY AREA FOR BASE YEAR (2024)

| Zone No. | Zone Name | Population |
|---|---|---|
| 1 | Dhanori | 21,317 |
| 2 | Vidhanagar Lohegaon | 20,984 |
| 3 | Tingarenagar Pumping Station | 17,176 |
| 4 | Kalas Vishrantwadi | 25,486 |
| 5 | Nanasaheb Parulekar School | 19,118 |
| 6 | Yerwada Prison Press | 21,368 |
| 7 | Lohegaon Airport | 18,164 |
| 8 | Kharadi Gaon | 36,631 |
| 9 | Kharadi Infotech Park | 22,600 |
| 10 | Sundarabai Marathe School | 18,847 |
| 11 | Vadgaon Sheri | 19,597 |
| 12 | Ramwadi | 25,757 |
| 13 | Aga Khan Palace | 23,171 |
| 14 | Don Bosco High School | 23,804 |
| 15 | Nagpur Chaal | 20,528 |
| 16 | Phulenagar Yerawada | 20,988 |
| 17 | Netaji Subhash Chandra Bose School | 21,332 |
| 18 | Yerawada Gaon | 22,824 |
| 19 | Parnkuti | 17,901 |
| 20 | Yerawada Hotmix Plant | 16,827 |
| 21 | Deccan College | 20,346 |
| 22 | Kamal Nayan Bajaj Garden | 14,358 |
| 23 | Agricultural College | 23,705 |
| 24 | Sanjay Gandhi Hospital | 26,283 |
| 25 | Bopodi | 57,603 |
| 26 | Pune University | 33,118 |
| 27 | Aundh Gaon | 37,048 |
| 28 | Baner Balewadi | 31,352 |
| 29 | Sutarwadi | 52,732 |
| 30 | Pashan | 53,917 |
| 31 | Aundh ITI | 31,315 |
| 32 | Rajbhavan | 16,588 |
| 33 | Chaturshrungi Temple | 17,855 |
| 34 | Model Colony | 20,939 |
| 35 | Modern College | 36,407 |
| 36 | PMC Office | 62,048 |
| 37 | Dr. Naidu Hospital | 71,313 |
| 38 | Bund Garden | 43,644 |
| 39 | Wadia College | 38,951 |
| 40 | Koregaon Park | 12,411 |
| 41 | Mundhwa Gaon | 21,696 |
| 42 | Magarpatta-Hadapsar | 22,676 |
| 43 | Hadapsar Industrial Colony | 18,664 |
| 44 | St. Patrick's Town | 17,452 |
| 45 | Vikasnagar-Ghorpadi | 18,669 |
| 46 | Dr. Babasaheb Ambedkar Udyan | 26,336 |
| 47 | Sasoon Hospital | 24,802 |
| 48 | Kamla Nehru Hospital | 18,963 |
| 49 | Juna Bazaar | 17,658 |
| 50 | Kasba Ganpati | 21,142 |

| Zone No. | Zone Name | Population |
|---|---|---|
| 51 | Shaniwarwada | 22,923 |
| 52 | New English School (Ramanbaug) | 57,358 |
| 53 | Fergusson College | 41,072 |
| 54 | Dr. Homi Baba Hospital | 25,107 |
| 55 | Gokhalenagar | 18,969 |
| 56 | Vidhi College | 34,023 |
| 57 | Shankar Rao More School | 29,641 |
| 58 | Rambaug Colony | 18,467 |
| 59 | Kishkindhanagar | 21,685 |
| 60 | Ramkrishna Paramhans Nagar | 41,219 |
| 61 | Vedbhavan | 19,072 |
| 62 | Mahatma Society - Kothrud | 22,195 |
| 63 | Vanaz Company | 18,415 |
| 64 | Yashwantrao Chavan Natyagruha | 25,578 |
| 65 | Ideal Colony | 36,878 |
| 66 | Dinanath Mangeshkar Hospital | 23,110 |
| 67 | Deccan Gymkhana | 27,058 |
| 68 | Rajendranagar | 18,151 |
| 69 | Vishrambaug wada | 21,661 |
| 70 | Mahatma Phule Mandai | 18,728 |
| 71 | City Post | 18,108 |
| 72 | Ganesh Peth Gurudwara | 27,446 |
| 73 | Tilak Ayurved College | 17,165 |
| 74 | Rajewadi | 19,043 |
| 75 | Harkanagar | 19,945 |
| 76 | General Arunkumar Vaidya Stadium | 15,821 |
| 77 | Doke Talim | 17,311 |
| 78 | Swami Samarth Mandir - Ganesh Peth | 21,012 |
| 79 | Dr. Kotnis Clinic | 19,204 |
| 80 | Renuka Swarup School | 25,634 |
| 81 | S.P. College | 16,893 |
| 82 | Subhashnagar | 23,728 |
| 83 | Ghorpade Udyan | 17,810 |
| 84 | Panch Haud Mission | 20,818 |
| 85 | Mahatma Phule Memorial (Samta Bhumi) | 17,719 |
| 86 | Lohiyanagar | 14,707 |
| 87 | Ekbote Colony | 20,023 |
| 88 | Gurunanak Nagar | 20,625 |
| 89 | Wanwadi Gaon | 17,931 |
| 90 | Ramtekdi | 17,634 |
| 91 | Hadapsar Gaon | 70,165 |
| 92 | Gliding Centre | 22,914 |
| 93 | Sadhna College | 47,602 |
| 94 | Satavwadi | 17,204 |
| 95 | Kale Borate Nagar | 56,756 |
| 96 | Mohammedwadi | 23,629 |
| 97 | Mahadji Shinde Chhatri | 29,347 |
| 98 | Salisbury Park | 27,736 |
| 99 | Tilak Maharashtra University | 36,995 |
| 100 | Parvati Darshan | 15,753 |

| Zone No. | Zone Name | Population |
|---|---|---|
| 101 | Parvati Gaon | 39,469 |
| 102 | Parvati Water Works | 35,437 |
| 103 | Dandekar Pul - Dattawadi | 42,716 |
| 104 | Pu La Deshpande Udyan | 39,491 |
| 105 | Major Tathwade Udyan | 25,412 |
| 106 | Kothrud Gaon | 22,864 |
| 107 | Hope Colony | 17,119 |
| 108 | Dahanukar Colony | 22,480 |
| 109 | Warje Water Treatment Plant | 16,835 |
| 110 | Popular Nagar - Warje | 14,467 |
| 111 | Warje Malwadi | 16,295 |
| 112 | Maharshi Karve Nagar | 14,483 |
| 113 | Hingne Women's Education Institute | 22,321 |
| 114 | Public Settlement | 25,935 |
| 115 | Shahu College | 32,403 |
| 116 | Parvati Industrial Estate | 19,477 |
| 117 | Maharshi nagar | 75,312 |
| 118 | Chhattrapati Shivaji Marketyard | 35,469 |
| 119 | DID Colony | 39,399 |
| 120 | Kondhwa - Khurd | 40,941 |
| 121 | NIBM | 28,619 |
| 122 | Mithanagar | 35,075 |
| 123 | Bibwewadi Gaon | 34,334 |
| 124 | Shankar Maharaj Temple | 20,866 |
| 125 | Panchavati - Aruneshwar | 21,234 |
| 126 | Taljai Mandir | 19,994 |
| 127 | Anandnagar - Hingne Khurd | 31,869 |
| 128 | Vitthalwadi | 39,034 |
| 129 | Vadgaon - Dhayari | 45,384 |
| 130 | Vadgaon Budruk | 77,577 |
| 131 | Manik Baug | 55,653 |
| 132 | Chavannagar | 38,100 |
| 133 | Dhanakvadi Ambegaon Plateau | 39,847 |
| 134 | Dhankavadi Gaon | 30,562 |
| 135 | Chaitanyanagar Dhankavadi | 60,570 |
| 136 | Balajinagar | 62,363 |
| 137 | Sukhsagar nagar | 49,377 |
| 138 | Vishwakarma Institute (Bibwewadi) | 28,644 |
| 139 | Upper Indiranagar - Bibwewadi | 38,838 |
| 140 | Kondhwa (Budruk) | 37,341 |
| 141 | Katraj Gaon | 61,093 |
| 142 | Rajiv Gandhi Zoo | 39,783 |
| 143 | Bharti Vidyapeeth | 26,101 |
| 144 | Agam Mandir Katraj | 70,661 |
| 145 | Pune Cantonment | 72,101 |
| 146 | Kirkee Cantonemnt | 75,204 |
| 147 | Rupinagar Talwade | 41,788 |
| 148 | Triveni Nagar | 48,516 |
| 149 | Chikhali | 57,026 |
| 150 | Krishna Nagar | 26,670 |

| Zone No. | Zone Name | Population |
|---|---|---|
| 151 | Kudalwadi Jadhavwadi | 26,862 |
| 152 | Moshi | 25,480 |
| 153 | Charholi | 36,408 |
| 154 | Vidya Nagar | 32,891 |
| 155 | Sambhaji Nagar | 37,262 |
| 156 | Tuljaiwasti - Ajanthanagar | 89,516 |
| 157 | Yamuna Nagar | 107,777 |
| 158 | Late Madhukar Pavle High School | 39,667 |
| 159 | Nigdi Gaothan | 16,705 |
| 160 | Bhakti Shakti Udyan | 80,932 |
| 161 | Dattawadi | 53,470 |
| 162 | Akurdi Gaothan | 26,985 |
| 163 | Sant Tukaram Udyan | 44,059 |
| 164 | Kilwale | 61,901 |
| 165 | Walhekarwadi | 31,467 |
| 166 | Chinchwade Nagar | 49,788 |
| 167 | Dalvi Nagar | 38,471 |
| 168 | Chinchwad Gaothan | 131,514 |
| 169 | Keshav Nagar | 79,496 |
| 170 | Ram Krishan | 102,714 |
| 171 | Chinchwad Station Anand Nagar | 41,307 |
| 172 | Kalbhor Nagar | 29,763 |
| 173 | Morwadi | 43,917 |
| 174 | Masulkar Colony | 36,247 |
| 175 | Indrayani Nagar | 29,028 |
| 176 | Chakrapani Vasahat | 32,086 |
| 177 | Dighi | 73,447 |
| 178 | Sandvik Colony | 27,435 |
| 179 | Gavleen Nagar | 66,151 |
| 180 | Gavhane Vasti | 44,080 |
| 181 | Bhosari Gaothan | 113,285 |
| 182 | Landewadi | 49,946 |
| 183 | Mahatma Phule Nagar | 42,105 |
| 184 | Nehru Nagar | 28,715 |
| 185 | Sant Tukaram Nagar | 38,022 |
| 186 | Kharalwadi | 37,011 |
| 187 | Gandhi Nagar | 98,182 |
| 188 | Bhat Nagar | 93,326 |
| 189 | Jijamata Hospital | 28,189 |
| 190 | Ashok Theatre | 24,543 |
| 191 | Pimpri Vadhre | 24,322 |
| 192 | Vijay Nagar | 33,122 |
| 193 | Kalewadi | 29,972 |
| 194 | Tapkir Nagar Shrinagar | 29,980 |
| 195 | Shri Sai Mandir Shri Bapujibuwa Nagar | 25,774 |
| 196 | Thergaon Gaothana | 27,946 |
| 197 | Ganesh Nagar Belthika Nagar | 44,713 |
| 198 | Tathawade Punawale | 49,059 |
| 199 | Wakad | 79,695 |
| 200 | Pimple Nilakh | 107,182 |

| Zone No. | Zone Name | Population |
|---|---|---|
| 201 | Rahatani Pimpale Saudagar | 64,088 |
| 202 | Vaidu Vasti | 65,085 |
| 203 | Pimpale Gurav | 62,561 |
| 204 | Vani Sangwai | 126,443 |
| 205 | Madhuban | 49,797 |
| 206 | Sangwai Gaothan | 53,762 |
| 207 | Hutatma Bhagat Singh School | 128,947 |
| 208 | Phugewadi | 33,022 |
| 209 | Kasarwadi | 28,019 |
| 210 | Dapodi Bopkhel | 42,153 |
| 211 | Dehu Road Cantonemnt | 52,122 |
| 212 | Kapurhop, Harishchandri, Kamthadi, Karandi, (Khedebar), Degaon, Somurdi, Kambare | 26,384 |
| 213 | Ketkawale, Chivhewadi, Devadi | 9,723 |
| 214 | Malegaon, Nasrapur | 16,464 |
| 215 | Kelawade, Varve Kh., Varve Bk., Shivare | 19,451 |
| 216 | Kasurdi (Khedebare) | 12,175 |
| 217 | Khed, Shiwapur | 19,660 |
| 218 | Ambodi, Kumbharvalan, Udachiwadi, Vanpuri, Sonori | 10,690 |
| 219 | Singapur, Gurholi | 19,521 |
| 220 | Tamhanwadi, Boribhadak, Boriaindi | 12,111 |
| 221 | Yawat | 23,088 |
| 222 | Bharatgoan, Kasurdi, Jawje Buwachiwadi, Kamatwadi, Yawat Station | 19,616 |
| 223 | Bhandgaon, Wakhari, Dhumalicha Mala Kedgaon | 19,507 |
| 224 | Boripardhi | 21,754 |
| 225 | Nangaon, Dapodi, Amoni Mal, Khopodi, Deshmukh Mala | 15,978 |
| 226 | Galandwadi, Handalwadi, Nimbalkar, Vasti, Kedgaon, Station | 18,610 |
| 227 | Khutbav, Ekeriwadi, Ladkatwadi, Undawadi, Nathachiwadi | 18,738 |
| 228 | Khamgaon, Tambewadi, Sahajpurwadi, Nandur, Boratewadi | 20,062 |
| 229 | Koregaon Mul, Naigaon, Sortapwadi | 42,485 |
| 230 | Chandan Tekadi, Pawarwadi, Jadhavwadi, Dive, Kalewadi, Zendewadi, Wadki | 27,137 |
| 231 | Holkarwadi, Uruli-dewachi, Autadwadi, Handewadi | 19,358 |
| 232 | Velu, Shindewadi, Sasewadi, Bhilarewadi, Ramnagar, Kolewadi, Mangadewadi | 22,387 |
| 233 | Tardobachiwadi, Kardilwadi, Saradwadi, Karegaon | 20,934 |
| 234 | Sone Sangavi, Dhok Sangavi, Pimpari Dumala, Khandale, Kondhapuri | 19,580 |
| 235 | Sandbhorwadi, Pacharnewadi, Khalchi Bhamburwadi | 13,347 |
| 236 | Rakshewadi, Holewadi | 17,760 |
| 237 | Satkarsthal, Kohinkarwadi | 10,325 |
| 238 | Chandoli, Shiroli,Vadgaon Tarf Khed | 19,557 |
| 239 | Kasari, Nimgaon Mhalungi | 19,173 |
| 240 | Kolwadi, Manjari Kh. | 16,383 |
| 241 | Prayagdhum (N.V.), Ramoshiwadi, Alandi Mhatobachi, Tarade, Peth | 25,799 |
| 242 | Bakori | 25,834 |
| 243 | Loni-kand, Wadhu Kh. | 25,638 |
| 244 | Apati, Wadhu Bk. | 25,016 |
| 245 | Fulgaon, Tulapur, Bhawadi | 14,041 |
| 246 | Taleranwadi, Kesnand, Awhalwadi | 20,098 |
| 247 | Markal | 17,452 |
| 248 | Solu, Pimpalgaon Tarf Chakan, Golegaon, Wadgaon-shinde, Nirgudi | 20,332 |
| 249 | Alandi Rural, Dhanore, Charholi. | 28,730 |
| 250 | Chimbali, Kelgaon | 17,489 |

| Zone No. | Zone Name | Population |
|---|---|---|
| 251 | Bhose, Kadachiwadi, Rase | 17,899 |
| 252 | Santosh Nagar (N.V.), Ambethan, Biradvadi, Waki Kh. | 13,073 |
| 253 | Santosh Nagar (N.V.), Ambethan, Biradvadi, Waki Kh. | 7,874 |
| 254 | Kuruli, Nighoje, Moi | 27,372 |
| 255 | Yelwadi, Sangurdi, Kanhewadi Tarf Chakan | 9,333 |
| 256 | Bhamboli, Varale, Shive | 22,322 |
| 257 | Wasuli, Savardari, Khalumbre, Sudhavadi, Sudumbare | 16,646 |
| 258 | Umbare Navalakh, Badhalawadi, Shinde, Jadhavwadi, Mendhewadi, Jambavade | 13,510 |
| 259 | Ambale, Nanoli Tarf Chakan, Akurdi, Ambi, Sangavi, Katavi, Varale, Mangarul | 18,899 |
| 260 | Ambale, Nanoli Tarf Chakan, Akurdi, Ambi, Sangavi, Katavi, Varale, Mangarul | 18,899 |
| 261 | Kalhat, Pimpari, Bhoyare, Pawalewadi, Nigade | 13,592 |
| 262 | Somatane, Shirgaon | 13,876 |
| 263 | Jambhul, Sate, Mohitewadi, Brahman Wadi, Kanhe | 19,557 |
| 264 | Brahmanwadi, Baur, Sadavali, Ozarde | 10,442 |
| 265 | Bebad Ohol, Chandkhed, Dhamane | 17,926 |
| 266 | Pathargaon, Pimpaloli, Kamshet, Kusgaon Kh., Nayagaon, Chikhalse, Ahirvade | 11,608 |
| 267 | Devghar, Karla | 17,241 |
| 268 | Boraj, Patan, Taje, Malawali N.m., Bhaje, Devale | 13,883 |
| 269 | Sangavade, Godumbare, Salumbare, Darumbare, Gahunje, Jambe, Nere, Dattwadi | 25,774 |
| 270 | Bhoirvadi, Man, Marunji | 23,246 |
| 271 | Sus (N.V.), Mahalunge, , (N.V.) | 22,740 |
| 272 | Amarale Wadi, Chande, Nande, Mulkhed, Lavale | 20,139 |
| 273 | Uravade, Botarwadi, Mukaiwadi, Bhugaon, Bhukum | 21,225 |
| 274 | Undari (Part) (N.V.), Pisoli (N.V.), Wadachiwadi | 16,771 |
| 275 | Ambegaon, Maranewadi, Kasar Amboli, Bhare, Ambarwet | 22,025 |
| 276 | Godambewadi, Ghotavade, Bhegadewadi, Materewadi | 15,934 |
| 277 | Shikrapur | 28,716 |
| 278 | Sanaswadi (CT) | 23,919 |
| 279 | Varsoli, Waksai, Jevare, Budhele | 13,618 |
| 280 | Ranjangaon Ganpati | 22,707 |
| 281 | Koregaon Bhima (CT) | 21,256 |
| 282 | Talegaon Dhamdhere | 23,166 |
| 283 | Shirur Municipal Council | 56,342 |
| 284 | Uruli Kanchan, Khamgaon Tek, Tilekarwadi, Bhawarapur | 36,551 |
| 285 | Uruli Kanchan, Khamgaon Tek, Tilekarwadi, Bhawarapur | 36,551 |
| 286 | Fursungi | 55,097 |
| 287 | Shewalwadi | 9,868 |
| 288 | Loni-kalbhor | 30,567 |
| 289 | Kunjirwadi | 15,024 |
| 290 | Kadamwak Wasti | 28,701 |
| 291 | Theur | 15,993 |
| 292 | Manjari Bk (N.V.) | 35,697 |
| 293 | Wagholi (CT) | 33,341 |
| 294 | Kharabwadi (CT) | 17,389 |
| 295 | Medankarwadi (CT) | 22,386 |
| 296 | Nanekarwadi (CT) | 22,438 |
| 297 | Mahalunge | 13,688 |
| 298 | Alandi (M Cl) | 50,766 |
| 299 | Lahagaon, (N.V.) | 37,531 |
| 300 | Rajgurunagar (Khed) (CT) | 30,680 |

| Zone No. | Zone Name | Population |
|---|---|---|
| 301 | Chakan (CT) | 59,366 |
| 302 | Vitthal Nagar | 15,323 |
| 303 | Yewalewadi (CT), Gujar Nimbalkarwadi, Jambhulwadi | 13,668 |
| 304 | Ambegaon Kh (Part) (N.V.) | 19,184 |
| 305 | Ambegaon Bk (Part) (N.V.) | 20,743 |
| 306 | Nahre (N.V.) | 18,337 |
| 307 | Dhayari (Part) (N.V.) | 25,629 |
| 308 | Sanas Nagar, Nandoshi, Kirkitwadi (N.V.) | 11,985 |
| 309 | Nanded (N.V.) | 14,735 |
| 310 | Shivne (Part) (N.V.) | 20,315 |
| 311 | Khadakwasala (N.V.) | 12,197 |
| 312 | Pirangut (CT) | 24,584 |
| 313 | Bavadhan BK (N.V.) | 17,250 |
| 314 | Hinjawadi (CT) | 20,368 |
| 315 | Induri | 18,502 |
| 316 | Wadagaon (CT) | 24,535 |
| 317 | Talegaon Dabhade (M, Cl) | 85,762 |
| 318 | Talegaon Dabhade (R) | 13,611 |
| 319 | Saswad Municipal Council | 41,573 |
| 320 | Khadkale (CT) | 22,798 |
| 321 | Adhe Kh., Urse, Parandvadi | 33,211 |
| 322 | Kune N.m., Lonavala, (M, Cl), Kusgaon Bk. (CT), Pangaloli | 66,282 |
| 323 | Sadapur, Aundhe Kh., Aundholi | 8,550 |
| 324 | Keshavnagar-Mundwa (N.V.) | 33,051 |
| 325 | Malinagar | 16,007 |
| 326 | CME | Cantonment |
| 327 | Rakshak Society, Bharat Electronics Colony, Shastri Nagar | |
| 328 | Kondave-Dhavde (N.V.) | 19,630 |
| 329 | Shivane (Uttamnagar) (N.V.) | 11,761 |
| **Total** | | **10,378,004** |

# *Annexure 2-2*

*Zone Wise Employment of Study Area for Base Year (2024)*

## ANNEXURE 2.2: ZONE-WISE EMPLOYMENT OF STUDY AREA FOR BASE YEAR (2024)

| Zone No. | Zone Name | Employment |
|---|---|---|
| 1 | Dhanori | 2,716 |
| 2 | Vidhanagar Lohegaon | 2,789 |
| 3 | Tingarenagar Pumping Station | 3,905 |
| 4 | Kalas Vishrantwadi | 3,072 |
| 5 | Nanasaheb Parulekar School | 4,179 |
| 6 | Yerwada Prison Press | 5,582 |
| 7 | Lohegaon Airport | 7,959 |
| 8 | Kharadi Gaon | 15,968 |
| 9 | Kharadi Infotech Park | 8,563 |
| 10 | Sundarabai Marathe School | 5,074 |
| 11 | Vadgaon Sheri | 7,215 |
| 12 | Ramwadi | 6,590 |
| 13 | Aga Khan Palace | 10,686 |
| 14 | Don Bosco High School | 8,350 |
| 15 | Nagpur Chaal | 3,573 |
| 16 | Phulenagar Yerawada | 5,823 |
| 17 | Netaji Subhash Chandra Bose School | 4,819 |
| 18 | Yerawada Gaon | 6,164 |
| 19 | Parnkuti | 13,867 |
| 20 | Yerawada Hotmix Plant | 3,074 |
| 21 | Deccan College | 13,993 |
| 22 | Kamal Nayan Bajaj Garden | 10,127 |
| 23 | Agricultural College | 17,144 |
| 24 | Sanjay Gandhi Hospital | 13,552 |
| 25 | Bopodi | 22,010 |
| 26 | Pune University | 8,873 |
| 27 | Aundh Gaon | 7,383 |
| 28 | Baner Balewadi | 11,953 |
| 29 | Sutarwadi | 14,426 |
| 30 | Pashan | 28,153 |
| 31 | Aundh ITI | 6,411 |
| 32 | Rajbhavan | 16,582 |
| 33 | Chaturshrungi Temple | 5,191 |
| 34 | Model Colony | 11,550 |
| 35 | Modern College | 7,436 |
| 36 | PMC Office | 15,873 |
| 37 | Dr. Naidu Hospital | 7,940 |
| 38 | Bund Garden | 19,524 |
| 39 | Wadia College | 6,770 |
| 40 | Koregaon Park | 16,390 |
| 41 | Mundhwa Gaon | 5,884 |
| 42 | Magarpatta-Hadapsar | 5,957 |
| 43 | Hadapsar Industrial Colony | 6,154 |
| 44 | St. Patrick's Town | 3,576 |
| 45 | Vikasnagar-Ghorpadi | 22,811 |
| 46 | Dr. Babasaheb Ambedkar Udyan | 8,244 |
| 47 | Sasoon Hospital | 8,441 |
| 48 | Kamla Nehru Hospital | 7,206 |
| 49 | Juna Bazaar | 4,385 |
| 50 | Kasba Ganpati | 8,514 |

| Zone No. | Zone Name | Employment |
|---|---|---|
| 51 | Shaniwarwada | 15,392 |
| 52 | New English School (Ramanbaug) | 12,041 |
| 53 | Fergusson College | 5,624 |
| 54 | Dr. Homi Baba Hospital | 12,088 |
| 55 | Gokhalenagar | 20,739 |
| 56 | Vidhi College | 10,242 |
| 57 | Shankar Rao More School | 6,338 |
| 58 | Rambaug Colony | 7,076 |
| 59 | Kishkindhanagar | 9,321 |
| 60 | Ramkrishna Paramhans Nagar | 21,376 |
| 61 | Vedbhavan | 2,651 |
| 62 | Mahatma Society - Kothrud | 30,977 |
| 63 | Vanaz Company | 9,576 |
| 64 | Yashwantrao Chavan Natyagruha | 18,991 |
| 65 | Ideal Colony | 3,916 |
| 66 | Dinanath Mangeshkar Hospital | 5,760 |
| 67 | Deccan Gymkhana | 9,416 |
| 68 | Rajendranagar | 17,424 |
| 69 | Vishrambaug wada | 4,030 |
| 70 | Mahatma Phule Mandai | 2,567 |
| 71 | City Post | 5,622 |
| 72 | Ganesh Peth Gurudwara | 15,445 |
| 73 | Tilak Ayurved College | 6,696 |
| 74 | Rajewadi | 4,710 |
| 75 | Harkanagar | 6,262 |
| 76 | General Arunkumar Vaidya Stadium | 2,143 |
| 77 | Doke Talim | 3,709 |
| 78 | Swami Samarth Mandir - Ganesh Peth | 3,717 |
| 79 | Dr. Kotnis Clinic | 14,635 |
| 80 | Renuka Swarup School | 8,071 |
| 81 | S.P. College | 4,559 |
| 82 | Subhashnagar | 7,639 |
| 83 | Ghorpade Udyan | 5,873 |
| 84 | Panch Haud Mission | 5,744 |
| 85 | Mahatma Phule Memorial (Samta Bhumi) | 13,673 |
| 86 | Lohiyanagar | 7,794 |
| 87 | Ekbote Colony | 22,364 |
| 88 | Gurunanak Nagar | 31,620 |
| 89 | Wanwadi Gaon | 11,087 |
| 90 | Ramtekdi | 6,003 |
| 91 | Hadapsar Gaon | 29,036 |
| 92 | Gliding Centre | 5,574 |
| 93 | Sadhna College | 13,468 |
| 94 | Satavwadi | 6,605 |
| 95 | Kale Borate Nagar | 34,635 |
| 96 | Mohammedwadi | 9,124 |
| 97 | Mahadji Shinde Chhatri | 10,602 |
| 98 | Salisbury Park | 14,175 |
| 99 | Tilak Maharashtra University | 6,027 |
| 100 | Parvati Darshan | 8,181 |

| Zone No. | Zone Name | Employment |
|---|---|---|
| 101 | Parvati Gaon | 10,289 |
| 102 | Parvati Water Works | 23,874 |
| 103 | Dandekar Pul - Dattawadi | 15,996 |
| 104 | Pu La Deshpande Udyan | 21,425 |
| 105 | Major Tathwade Udyan | 11,395 |
| 106 | Kothrud Gaon | 6,156 |
| 107 | Hope Colony | 11,983 |
| 108 | Dahanukar Colony | 9,458 |
| 109 | Warje Water Treatment Plant | 24,696 |
| 110 | Popular Nagar - Warje | 10,257 |
| 111 | Warje Malwadi | 11,135 |
| 112 | Maharshi Karve Nagar | 13,702 |
| 113 | Hingne Women's Education Institute | 9,427 |
| 114 | Public Settlement | 11,110 |
| 115 | Shahu College | 9,333 |
| 116 | Parvati Industrial Estate | 6,710 |
| 117 | Maharshi nagar | 15,863 |
| 118 | Chhattrapati Shivaji Marketyard | 7,662 |
| 119 | DID Colony | 8,656 |
| 120 | Kondhwa - Khurd | 6,309 |
| 121 | NIBM | 7,188 |
| 122 | Mithanagar | 9,924 |
| 123 | Bibwewadi Gaon | 5,796 |
| 124 | Shankar Maharaj Temple | 2,575 |
| 125 | Panchavati - Aruneshwar | 3,782 |
| 126 | Taljai Mandir | 11,729 |
| 127 | Anandnagar - Hingne Khurd | 12,683 |
| 128 | Vitthalwadi | 14,279 |
| 129 | Vadgaon - Dhayari | 15,747 |
| 130 | Vadgaon Budruk | 42,824 |
| 131 | Manik Baug | 30,579 |
| 132 | Chavannagar | 15,917 |
| 133 | Dhanakvadi Ambegaon Plateau | 16,252 |
| 134 | Dhankavadi Gaon | 7,570 |
| 135 | Chaitanyanagar Dhankavadi | 21,972 |
| 136 | Balajinagar | 15,653 |
| 137 | Sukhsagar nagar | 38,075 |
| 138 | Vishwakarma Institute (Bibwewadi) | 9,774 |
| 139 | Upper Indiranagar - Bibwewadi | 14,176 |
| 140 | Kondhwa (Budruk) | 11,842 |
| 141 | Katraj Gaon | 43,884 |
| 142 | Rajiv Gandhi Zoo | 15,078 |
| 143 | Bharti Vidyapeeth | 9,279 |
| 144 | Agam Mandir Katraj | 14,509 |
| 145 | Pune Cantonment | 28,066 |
| 146 | Kirkee Cantonemnt | 32,832 |
| 147 | Rupinagar Talwade | 23,440 |
| 148 | Triveni Nagar | 10,370 |
| 149 | Chikhali | 25,222 |
| 150 | Krishna Nagar | 15,987 |

| Zone No. | Zone Name | Employment |
|---|---|---|
| 151 | Kudalwadi Jadhavwadi | 9,728 |
| 152 | Moshi | 27,961 |
| 153 | Charholi | 10,093 |
| 154 | Vidya Nagar | 34,532 |
| 155 | Sambhaji Nagar | 8,954 |
| 156 | Tuljaiwasti - Ajanthanagar | 19,245 |
| 157 | Yamuna Nagar | 27,660 |
| 158 | Late Madhukar Pavle High School | 19,612 |
| 159 | Nigdi Gaothan | 4,381 |
| 160 | Bhakti Shakti Udyan | 24,553 |
| 161 | Dattawadi | 11,185 |
| 162 | Akurdi Gaothan | 7,708 |
| 163 | Sant Tukaram Udyan | 16,389 |
| 164 | Kilwale | 13,310 |
| 165 | Walhekarwadi | 35,671 |
| 166 | Chinchwade Nagar | 27,024 |
| 167 | Dalvi Nagar | 12,216 |
| 168 | Chinchwad Gaothan | 23,734 |
| 169 | Keshav Nagar | 19,291 |
| 170 | Ram Krishan | 33,430 |
| 171 | Chinchwad Station Anand Nagar | 8,011 |
| 172 | Kalbhor Nagar | 10,741 |
| 173 | Morwadi | 12,964 |
| 174 | Masulkar Colony | 14,653 |
| 175 | Indrayani Nagar | 11,663 |
| 176 | Chakrapani Vasahat | 16,347 |
| 177 | Dighi | 22,885 |
| 178 | Sandvik Colony | 14,735 |
| 179 | Gavleen Nagar | 16,987 |
| 180 | Gavhane Vasti | 31,578 |
| 181 | Bhosari Gaothan | 38,901 |
| 182 | Landewadi | 33,566 |
| 183 | Mahatma Phule Nagar | 27,169 |
| 184 | Nehru Nagar | 10,586 |
| 185 | Sant Tukaram Nagar | 30,776 |
| 186 | Kharalwadi | 15,576 |
| 187 | Gandhi Nagar | 109,593 |
| 188 | Bhat Nagar | 30,436 |
| 189 | Jijamata Hospital | 10,538 |
| 190 | Ashok Theatre | 38,547 |
| 191 | Pimpri Vadhre | 12,796 |
| 192 | Vijay Nagar | 33,353 |
| 193 | Kalewadi | 26,363 |
| 194 | Tapkir Nagar Shrinagar | 72,608 |
| 195 | Shri Sai Mandir Shri Bapujibuwa Nagar | 25,847 |
| 196 | Thergaon Gaothana | 8,160 |
| 197 | Ganesh Nagar Belthika Nagar | 17,944 |
| 198 | Tathawade Punawale | 23,991 |
| 199 | Wakad | 28,961 |
| 200 | Pimple Nilakh | 23,863 |

| Zone No. | Zone Name | Employment |
|---|---|---|
| 201 | Rahatani Pimpale Saudagar | 20,215 |
| 202 | Vaidu Vasti | 17,760 |
| 203 | Pimpale Gurav | 19,819 |
| 204 | Vani Sangwai | 35,379 |
| 205 | Madhuban | 24,341 |
| 206 | Sangwai Gaothan | 25,549 |
| 207 | Hutatma Bhagat Singh School | 54,386 |
| 208 | Phugewadi | 16,343 |
| 209 | Kasarwadi | 17,010 |
| 210 | Dapodi Bopkhel | 10,078 |
| 211 | Dehu Road Cantonemnt | 18,872 |
| 212 | Kapurhop, Harishchandri, Kamthadi, Karandi, (Khedebar), Degaon, Somurdi, Kambare | 2,710 |
| 213 | Ketkawale, Chivhewadi, Devadi | 180 |
| 214 | Malegaon, Nasrapur | 615 |
| 215 | Kelawade, Varve Kh., Varve Bk., Shivare | 24,788 |
| 216 | Kasurdi (Khedebare) | 1,079 |
| 217 | Khed, Shiwapur | 913 |
| 218 | Ambodi, Kumbharvalan, Udachiwadi, Vanpuri, Sonori | 968 |
| 219 | Singapur, Gurholi | 14,832 |
| 220 | Tamhanwadi, Boribhadak, Boriaindi | 282 |
| 221 | Yawat | 5,154 |
| 222 | Bharatgoan, Kasurdi, Jawje Buwachiwadi, Kamatwadi, Yawat Station | 719 |
| 223 | Bhandgaon, Wakhari, Dhumalicha Mala Kedgaon | 246 |
| 224 | Boripardhi | 5,187 |
| 225 | Nangaon, Dapodi, Amoni Mal, Khopodi, Deshmukh Mala | 541 |
| 226 | Galandwadi, Handalwadi, Nimbalkar, Vasti, Kedgaon, Station | 541 |
| 227 | Khutbav, Ekeriwadi, Ladkatwadi, Undawadi, Nathachiwadi | 493 |
| 228 | Khamgaon, Tambewadi, Sahajpurwadi, Nandur, Boratewadi | 750 |
| 229 | Koregaon Mul, Naigaon, Sortapwadi | 74,306 |
| 230 | Chandan Tekadi, Pawarwadi, Jadhavwadi, Dive, Kalewadi, Zendewadi, Wadki | 1,147 |
| 231 | Holkarwadi, Uruli-dewachi, Autadwadi, Handewadi | 4,054 |
| 232 | Velu, Shindewadi, Sasewadi, Bhilarewadi, Ramnagar, Kolewadi, Mangadewadi | 4,283 |
| 233 | Tardobachiwadi, Kardilwadi, Saradwadi, Karegaon | 14,968 |
| 234 | Sone Sangavi, Dhok Sangavi, Pimpari Dumala, Khandale, Kondhapuri | 329 |
| 235 | Sandbhorwadi, Pacharnewadi, Khalchi Bhamburwadi | 149 |
| 236 | Rakshewadi, Holewadi | 735 |
| 237 | Satkarsthal, Kohinkarwadi | 253 |
| 238 | Chandoli, Shiroli,Vadgaon Tarf Khed | 1,916 |
| 239 | Kasari, Nimgaon Mhalungi | 424 |
| 240 | Kolwadi, Manjari Kh. | 2,316 |
| 241 | Prayagdhum (N.V.), Ramoshiwadi, Alandi Mhatobachi, Tarade, Peth | 4,050 |
| 242 | Bakori | 18,157 |
| 243 | Loni-kand, Wadhu Kh. | 49,463 |
| 244 | Apati, Wadhu Bk. | 3,275 |
| 245 | Fulgaon, Tulapur, Bhawadi | 17,077 |
| 246 | Taleranwadi, Kesnand, Awhalwadi | 2,678 |
| 247 | Markal | 10,190 |
| 248 | Solu, Pimpalgaon Tarf Chakan, Golegaon, Wadgaon-shinde, Nirgudi | 5,389 |
| 249 | Alandi Rural, Dhanore, Charholi. | 41,156 |
| 250 | Chimbali, Kelgaon | 1,808 |

| Zone No. | Zone Name | Employment |
|---|---|---|
| 251 | Bhose, Kadachiwadi, Rase | 1,915 |
| 252 | Santosh Nagar (N.V.), Ambethan, Biradvadi, Waki Kh. | 1,662 |
| 253 | Santosh Nagar (N.V.), Ambethan, Biradvadi, Waki Kh. | 1,001 |
| 254 | Kuruli, Nighoje, Moi | 16,506 |
| 255 | Yelwadi, Sangurdi, Kanhewadi Tarf Chakan | 2,688 |
| 256 | Bhamboli, Varale, Shive | 634 |
| 257 | Wasuli, Savardari, Khalumbre, Sudhavadi, Sudumbare | 14,923 |
| 258 | Umbare Navalakh, Badhalawadi, Shinde, Jadhavwadi, Mendhewadi, Jambavade | 2,111 |
| 259 | Ambale, Nanoli Tarf Chakan, Akurdi, Ambi, Sangavi, Katavi, Varale, Mangarul | 421 |
| 260 | Ambale, Nanoli Tarf Chakan, Akurdi, Ambi, Sangavi, Katavi, Varale, Mangarul | 3,586 |
| 261 | Kalhat, Pimpari, Bhoyare, Pawalewadi, Nigade | 829 |
| 262 | Somatane, Shirgaon | 10,694 |
| 263 | Jambhul, Sate, Mohitewadi, Brahman Wadi, Kanhe | 3,277 |
| 264 | Brahmanwadi, Baur, Sadavali, Ozarde | 1,130 |
| 265 | Bebad Ohol, Chandkhed, Dhamane | 9,611 |
| 266 | Pathargaon, Pimpaloli, Kamshet, Kusgaon Kh., Nayagaon, Chikhalse, Ahirvade | 740 |
| 267 | Devghar, Karla | 1,572 |
| 268 | Boraj, Patan, Taje, Malawali N.m., Bhaje, Devale | 348 |
| 269 | Sangavade, Godumbare, Salumbare, Darumbare, Gahunje, Jambe, Nere, Dattwadi | 10,984 |
| 270 | Bhoirvadi, Man, Marunji | 92,152 |
| 271 | Sus (N.V.), Mahalunge, , (N.V.) | 83,167 |
| 272 | Amarale Wadi, Chande, Nande, Mulkhed, Lavale | 932 |
| 273 | Uravade, Botarwadi, Mukaiwadi, Bhugaon, Bhukum | 869 |
| 274 | Undari (Part) (N.V.), Pisoli (N.V.), Wadachiwadi | 6,829 |
| 275 | Ambegaon, Maranewadi, Kasar Amboli, Bhare, Ambarwet | 1,285 |
| 276 | Godambewadi, Ghotavade, Bhegadewadi, Materewadi | 7,728 |
| 277 | Shikrapur | 6,296 |
| 278 | Sanaswadi (CT) | 6,617 |
| 279 | Varsoli, Waksai, Jevare, Budhele | 229 |
| 280 | Ranjangaon Ganpati | 17,801 |
| 281 | Koregaon Bhima (CT) | 5,019 |
| 282 | Talegaon Dhamdhere | 6,595 |
| 283 | Shirur Municipal Council | 10,356 |
| 284 | Uruli Kanchan, Khamgaon Tek, Tilekarwadi, Bhawarapur | 1,795 |
| 285 | Uruli Kanchan, Khamgaon Tek, Tilekarwadi, Bhawarapur | 16,566 |
| 286 | Fursungi | 40,891 |
| 287 | Shewalwadi | 9,269 |
| 288 | Loni-kalbhor | 7,045 |
| 289 | Kunjirwadi | 1,065 |
| 290 | Kadamwak Wasti | 1,752 |
| 291 | Theur | 1,808 |
| 292 | Manjari Bk (N.V.) | 12,301 |
| 293 | Wagholi (CT) | 92,584 |
| 294 | Kharabwadi (CT) | 9,811 |
| 295 | Medankarwadi (CT) | 2,105 |
| 296 | Nanekarwadi (CT) | 1,996 |
| 297 | Mahalunge | 6,790 |
| 298 | Alandi (M Cl) | 17,128 |
| 299 | Lahagaon, (N.V.) | 2,927 |
| 300 | Rajgurunagar (Khed) (CT) | 19,144 |

| Zone No. | Zone Name | Employment |
|---|---|---|
| 301 | Chakan (CT) | 50,362 |
| 302 | Vitthal Nagar | 365 |
| 303 | Yewalewadi (CT), Gujar Nimbalkarwadi, Jambhulwadi | 633 |
| 304 | Ambegaon Kh (Part) (N.V.) | 578 |
| 305 | Ambegaon Bk (Part) (N.V.) | 1,497 |
| 306 | Nahre (N.V.) | 9,680 |
| 307 | Dhayari (Part) (N.V.) | 9,866 |
| 308 | Sanas Nagar, Nandoshi, Kirkitwadi (N.V.) | 1,376 |
| 309 | Nanded (N.V.) | 30,887 |
| 310 | Shivne (Part) (N.V.) | 2,143 |
| 311 | Khadakwasala (N.V.) | 1,081 |
| 312 | Pirangut (CT) | 6,799 |
| 313 | Bavadhan BK (N.V.) | 1,822 |
| 314 | Hinjawadi (CT) | 226,737 |
| 315 | Induri | 2,112 |
| 316 | Wadagaon (CT) | 816 |
| 317 | Talegaon Dabhade (M, Cl) | 29,086 |
| 318 | Talegaon Dabhade (R) | 896 |
| 319 | Saswad Municipal Council | 14,169 |
| 320 | Khadkale (CT) | 2,947 |
| 321 | Adhe Kh., Urse, Parandvadi | 20,120 |
| 322 | Kune N.m., Lonavala, (M, Cl), Kusgaon Bk. (CT), Pangaloli | 8,249 |
| 323 | Sadapur, Aundhe Kh., Aundholi | 1,587 |
| 324 | Keshavnagar-Mundwa (N.V.) | 7,375 |
| 325 | Malinagar | 567 |
| 326 | CME | Cantonment |
| 327 | Rakshak Society, Bharat Electronics Colony, Shastri Nagar | |
| 328 | Kondave-Dhavde (N.V.) | 7,660 |
| 329 | Shivane (Uttamnagar) (N.V.) | 14,151 |
| **Total** | | **4,568,932** |

# *Annexure 2-3*

*Vehicle Registration Data*

## ANNEXURE 2.3: VEHICLE REGISTRATION DATA

| Vehicle Category | PMC | | | | | PCMC | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 2020 | 2021 | 2022 | 2023 | Overall Vehicles Registered | 2020 | 2021 | 2022 | 2023 | Overall Vehicles Registered |
| Two-Wheeler | 96,906 | 1,02,363 | 1,61,605 | 182,735 | 26,32,405 | 66,114 | 63,598 | 89,463 | 1,06,632 | 15,01,052 |
| M-Cycle/Scooter-With Side Car | 63 | 6 | - | 2 | 424 | 39 | 25 | 1 | - | 317 |
| Moped | 1,220 | 121 | 84 | 109 | 5,187 | 5 | 5 | 12 | 14 | 1,248 |
| Motorised Cycle (CC > 25cc) | 15 | 14 | 9 | 10 | 3,173 | 33 | 31 | 3 | 2 | 1,188 |
| M-Cycle/Scooter | 95,572 | 1,02,156 | 1,61,393 | 182,511 | 26,25,546 | 66,035 | 63,517 | 89,401 | 1,06,544 | 14,98,726 |
| Motorcycle/Scooter-SideCar(T) | - | - | - | - | 2 | - | - | - | - | - |
| Motorcycle/Scooter-With Trailer | - | - | - | - | 1 | - | - | - | - | - |
| Motorcycle/Scooter-Used for Hire | - | - | 14 | - | 24 | - | - | - | - | - |
| Three-Wheeler (Personal) | - | 2 | 4 | 3 | 468 | 5 | - | - | - | 60 |
| Adapted Vehicle | 51 | 78 | 110 | 110 | 753 | 30 | 51 | 49 | 74 | 701 |
| Four-Wheeler | 35,965 | 49,728 | 67,559 | 71,735 | 8,14,532 | 24,106 | 31,269 | 42,179 | 46,122 | 4,63,111 |
| Motor Car | 35,965 | 49,728 | 67,559 | 71,735 | 8,14,532 | 24,106 | 31,269 | 42,179 | 46,122 | 4,63,111 |
| IPT | 5,517 | 4,345 | 9,518 | 21,585 | 1,72,722 | 3,562 | 2,754 | 4,933 | 11,120 | 70,236 |
| e-Rickshaw with Cart (G) | 26 | 88 | 154 | 60 | 458 | 9 | 35 | 59 | 56 | 199 |
| e-Rickshaw(P) | 1 | 5 | 33 | 16 | 173 | - | - | 18 | 11 | 36 |
| Three-Wheeler (Passenger) | 4,213 | 3,775 | 6,865 | 12,998 | 1,22,878 | 2,708 | 2,401 | 3,567 | 6,089 | 38,696 |
| Luxury Cab | - | 1 | - | - | 4 | - | - | - | - | 1 |
| Maxi Cab | - | - | 1 | 1 | 27 | - | - | - | - | 1,327 |
| Motor Cab | 1,277 | 476 | 2,465 | 8,510 | 49,182 | 845 | 318 | 1,289 | 4,964 | 29,977 |
| Bus | 532 | 196 | 816 | 1,432 | 19,729 | 642 | 69 | 486 | 1,346 | 15,161 |
| Light Vehicles | 6,768 | 9,073 | 12,593 | 13,109 | 1,48,371 | 4,876 | 7,423 | 10,191 | 10,200 | 1,15,414 |
| Three-Wheeler (Goods) | 691 | 1,088 | 1,388 | 1,769 | 9,046 | 395 | 744 | 942 | 1,233 | 5,415 |
| Goods Carrier | 5,889 | 7,816 | 11,078 | 11,231 | 1,37,153 | 4,449 | 6,543 | 9,131 | 8,846 | 1,07,814 |
| Mobile Clinic | 55 | 22 | 6 | 20 | 150 | 1 | - | 1 | 4 | 14 |

| Vehicle Category | PMC | | | | | PCMC | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 2020 | 2021 | 2022 | 2023 | Overall Vehicles Registered | 2020 | 2021 | 2022 | 2023 | Overall Vehicles Registered |
| Ambulance | 96 | 132 | 91 | 70 | 1,552 | 31 | 136 | 70 | 81 | 2,015 |
| Camper Van / Trailer | 4 | 3 | 2 | 1 | 40 | - | - | - | - | 11 |
| Cash Van | 31 | 12 | 27 | 17 | 268 | - | - | 47 | 35 | 88 |
| Private Service Vehicle (Individual Use) | - | - | 1 | 1 | 20 | - | - | - | 1 | 29 |
| Quadricycle (Private) | 2 | - | - | - | 9 | - | - | - | - | 1 |
| Vintage Motor Vehicle | - | - | - | - | 133 | - | - | - | - | 27 |
| Heavy Vehicles | 2,407 | 2,953 | 2,969 | 2,924 | 38,096 | 2,408 | 2,855 | 2,659 | 2,814 | 31,467 |
| Auxiliary Trailer | - | - | - | - | - | - | - | - | 47 | 47 |
| Semi-Trailer (Commercial) | - | - | - | - | - | - | - | - | 29 | 76 |
| Educational Institution Bus | - | - | - | - | - | - | - | - | - | 2 |
| Vehicle Fitted with Rig | 3 | - | - | - | 133 | - | - | - | 1 | 80 |
| Recovery Vehicle | 1 | - | - | - | 5 | - | - | - | - | - |
| Tractor (Commercial) | - | - | - | - | 204 | 1 | - | - | - | 85 |
| X-Ray Van | - | - | - | - | 3 | - | - | - | - | - |
| Mobile Workshop | - | - | - | - | 10 | 3 | 1 | - | - | 12 |
| Mobile Canteen | - | - | - | - | 5 | - | - | 5 | - | 5 |
| Private Service Vehicle | - | - | - | - | 2 | - | - | - | 1 | 4 |
| Omni Bus | - | - | - | - | 130 | - | - | - | - | 82 |
| Excavator (Commercial) | - | - | - | - | 1 | - | - | - | - | 7 |
| Trailer (Commercial) | - | - | - | - | 1,217 | - | - | - | 6 | 53 |
| Tractor-Trolley (Commercial) | - | - | - | - | 1 | - | - | - | - | 2 |
| Tower Wagon | - | - | - | - | 1 | - | - | - | - | 1 |
| Trailer For Personal Use | - | - | - | - | 33 | - | - | - | - | 704 |
| Camper Van / Trailer (Private Use) | - | - | - | 3 | 8 | 2 | - | - | 1 | 5 |
| Tow Truck | 5 | 4 | 18 | 16 | 190 | 3 | 5 | 5 | 7 | 123 |

| Vehicle Category | PMC | | | | | PCMC | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 2020 | 2021 | 2022 | 2023 | Overall Vehicles Registered | 2020 | 2021 | 2022 | 2023 | Overall Vehicles Registered |
| Construction Equipment Vehicle | 211 | 280 | 276 | 439 | 1,659 | 170 | 102 | 109 | 174 | 836 |
| Omni Bus (Private Use) | 1 | 2 | - | 82 | 314 | - | - | - | 18 | 26 |
| Library Van | - | - | 2 | - | 8 | - | - | - | - | 1 |
| Fire Fighting Vehicle | - | 1 | 2 | - | 60 | - | - | - | - | 48 |
| Vehicle Fitted with Compressor | - | - | 1 | - | 16 | - | - | - | - | 18 |
| Breakdown Van | 1 | 1 | 1 | - | 59 | - | - | - | - | 31 |
| Construction Equip. Vehicle Commercial) | - | 2 | - | - | 2 | - | - | - | 4 | 8 |
| Road Roller | - | 1 | - | - | 10 | - | - | 1 | - | 8 |
| Hearses | 1 | - | - | - | 3 | - | - | - | - | 2 |
| Forklift | 5 | 9 | 33 | 24 | 207 | 11 | 32 | 44 | 55 | 484 |
| Vehicle Fitted with Generator | 3 | 1 | - | 5 | 468 | 2 | 1 | 1 | - | 186 |
| Crane Mounted Vehicle | 67 | 91 | 97 | 233 | 1,466 | 124 | 133 | 145 | 296 | 2,132 |
| Agricultural Tractor | 1,919 | 2,251 | 2,250 | 1,955 | 23,753 | 1,903 | 2,236 | 1,914 | 1,603 | 21,668 |
| Fire Tenders | - | 1 | - | 1 | 3 | - | - | 6 | 3 | 24 |
| Articulated Vehicle | 2 | 12 | 9 | 7 | 2,016 | 15 | 75 | 134 | 278 | 1,305 |
| Dumper | 26 | 128 | 141 | 4 | 424 | 10 | 47 | 81 | 9 | 265 |
| Quadricycle (Commercial) | 2 | - | 1 | 1 | 15 | - | - | - | - | 1 |
| Excavator (NT) | 120 | 75 | 44 | 50 | 3,173 | 150 | 192 | 194 | 246 | 2,577 |
| Harvester | 10 | 15 | 8 | 21 | 87 | 3 | 13 | 5 | 17 | 64 |
| Earth Moving Equipment | 3 | 9 | 4 | 10 | 230 | 11 | 6 | 6 | 4 | 373 |
| Armoured/Specialised Vehicle | - | - | - | 5 | 8 | - | - | - | - | - |
| Trailer (Agricultural) | 27 | 70 | 82 | 68 | 2,172 | - | 12 | 9 | 15 | 122 |

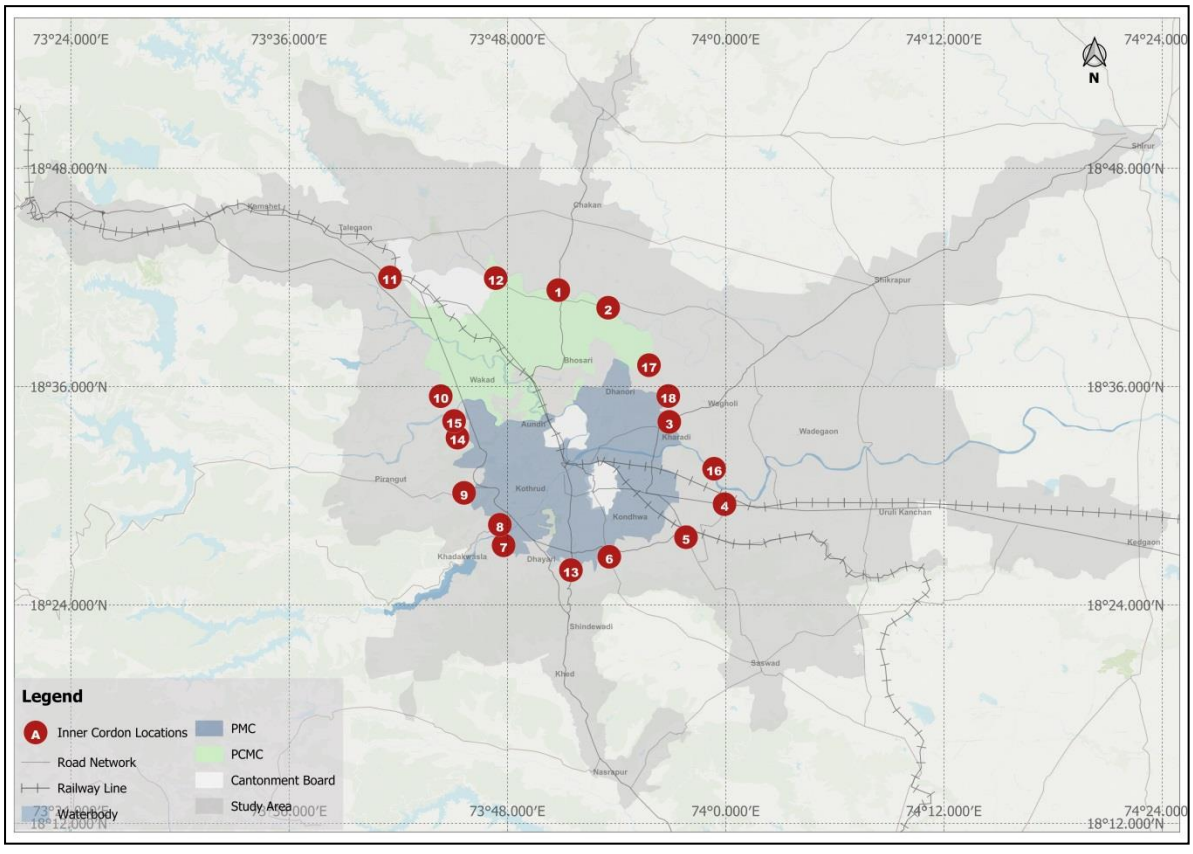
# *Annexure 2-4*

*List of Survey Locations*

## ANNEXURE 2.4: LIST OF SURVEY LOCATIONS

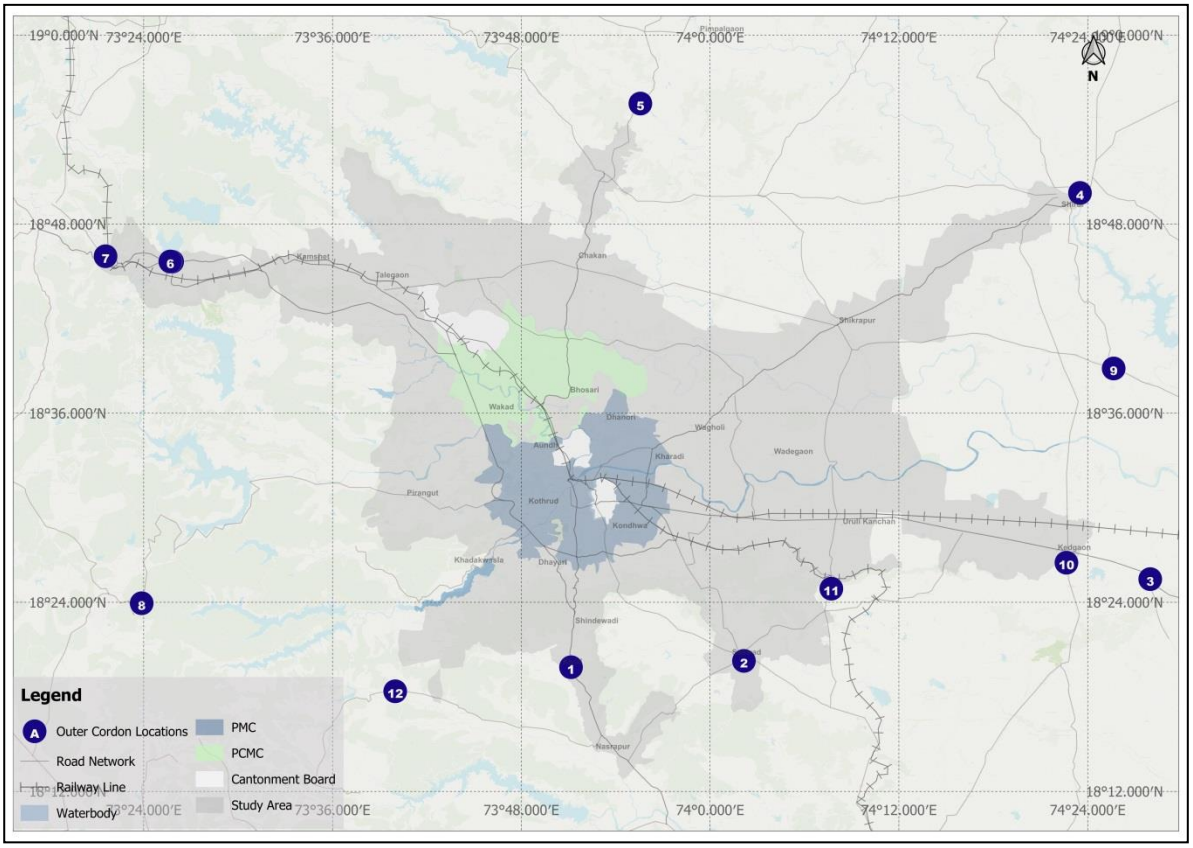
### List of Classified Traffic Volume Counts at Inner Cordon Locations

| No. | Name of Road/ Location |
|---|---|
| 1 | Nashik Highway - Moshi Toll Plaza |
| 2 | Near Sambhaji Chowk, Alandi Road |
| 3 | Nagar Road – Janak Baba Dharga Chowk |
| 4 | Solapur Road – Kawadipath Toll Plaza |
| 5 | Saswad Road – Near Wadki |
| 6 | Saswad - Bopdev Road- Near Singhad Nursery School |
| 7 | Sinhagad Road- Near Nanded City |
| 8 | NDA Academy Road – Dudane Wasti |
| 9 | Mulshi Road – Near Bhugaon |
| 10 | Hinjawadi Road - Shivaji Chowk |
| 11 | Old Mumbai Highway – Dehu Road Toll Plaza |
| 12 | Talwade Road- Near Talwade MIDC Junction |
| 13 | Katraj - Satara Road- Near Mangdewadi |
| 14 | Sus road – Near Sus Village |
| 15 | Nande-Balewadi Road – Near Hinjawadi Police Chowk |
| 16 | Manjari Road – Near Mula Mutha River Bridge |
| 17 | Nirgudi- Lohegaon Road – Near Chhatrapati Shivaji Maharaj Statue |
| 18 | Lohegaon- Wagholi Road – Near Yojana Nagar |



### List of Classified Traffic Volume Counts at Outer Cordon Locations

| No. | Name of Road/ Location |
|---|---|
| 1 | Khed Shivapur Toll Plaza, Satara Road |
| 2 | Saswad - Jejuri Road and Indrapratha Road Junction |
| 3 | Solapur Highway- Patas Toll Plaza |
| 4 | Nagar Road – Shirur |
| 5 | Nashik Highway- Peth |
| 6 | Mumbai - Pune Expressway- Lonavala Entry/ Exit Toll Plaza |
| 7 | Mumbai - Pune Highway (Lonavala) |
| 8 | Vile - Bhagud MIDC, Mulshi Road |
| 9 | Nirvi - Nhavare Road |
| 10 | Khedgaon - Supa Road |
| 11 | Uruli Kanchan-Jejuri Road |
| 12 | Velhe Bhudruk Village Road |



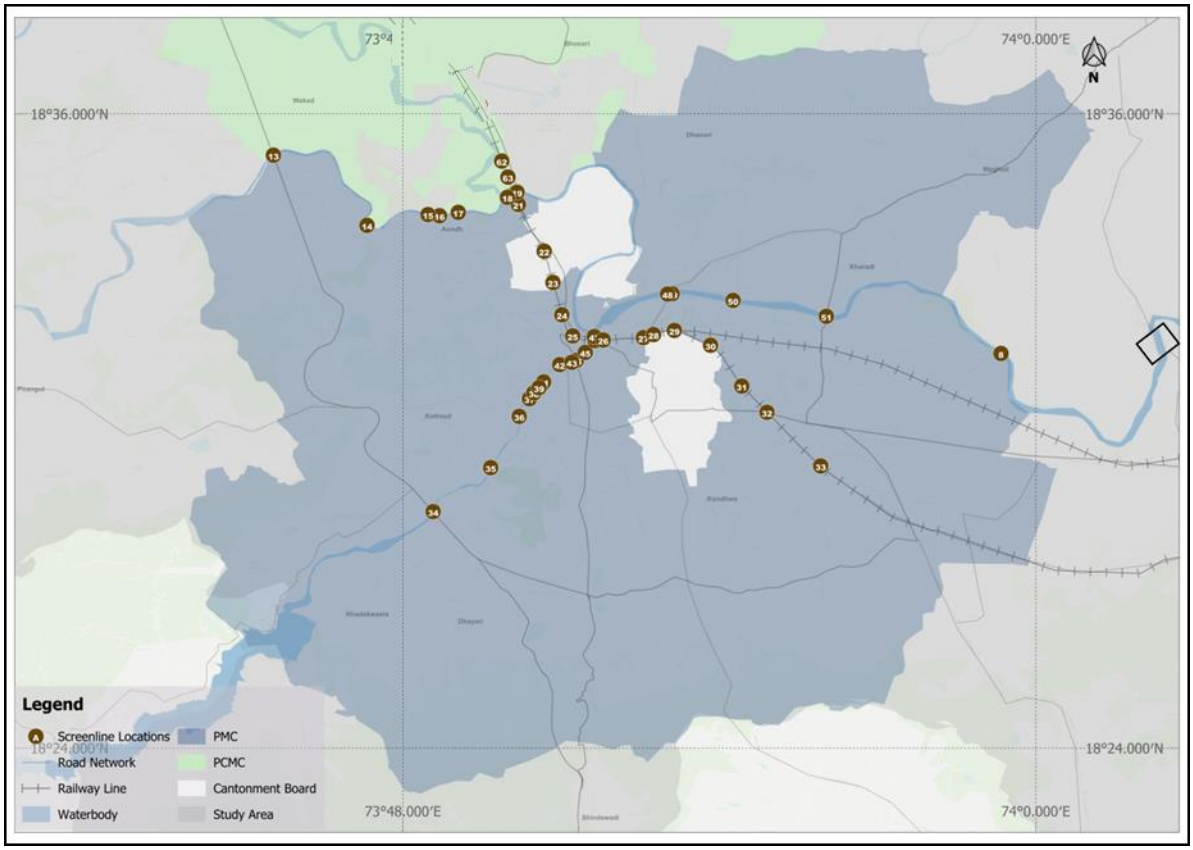

### List of Classified Traffic Volume Count and Occupancy Count at Screen-line Locations

| No. | NS/ EW | Name of the Location / Road | Type of Location | Duration of Survey |
|---|---|---|---|---|
| PMRDA Region | | | | |
| 1 | NS | Main Bazar Road (Lonavala) | Road Over Bridge | 16 hours |
| 2 | NS | Kamshet | Level Crossing | 16 hours |
| 3 | NS | Kanhe | Level Crossing | 16 hours |

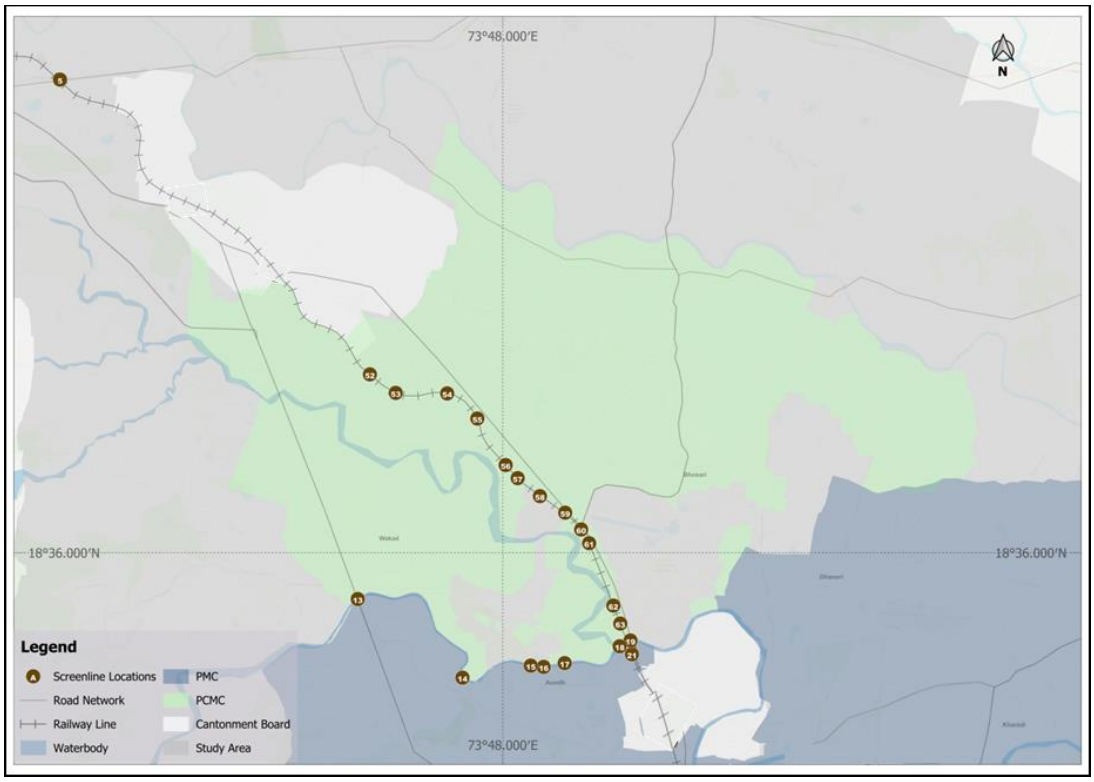
| No. | NS/ EW | Name of the Location / Road | Type of Location | Duration of Survey |
|---|---|---|---|---|
| 4 | NS | Talegaon Industrial Area | Road Over Bridge | 24 hours |
| 5 | NS | Talegaon Chakan Road | Road Over Bridge | 16 hours |
| 6 | NS | Begdaewadi | Level Crossing | 16 hours |
| 7 | NS | Dehu | Road Over Bridge | 16 hours |
| 8 | EW | Manjari Village | River Bridge | 24 hours |
| 9 | EW | Theur Kesanand Road | River Bridge | 16 hours |
| 10 | EW | Uruli Ashtapur Road | River Bridge | 16 hours |
| 11 | EW | Pimpalgaon Rahu Road | River Bridge | 16 hours |
| 12 | EW | SH 62, Pargaon | River Bridge | 16 hours |
| | | PMC Region | | |
| 13 | EW | Western Bypass Road | Hinjawadi River Bridge | 24 hours |
| 14 | EW | Mahatma Jyotiba Phule Bridge | River Bridge | 24 hours |
| 15 | EW | Mahadji Shinde Road (Aundh) | River Bridge | 24 hours |
| 16 | EW | Rajiv Gandhi Bridge (Aundh Ravet Road) | River Bridge | 8 hours |
| 17 | EW | Jai Ganesh Chowk | River Bridge | 24 hours |
| 18 | EW | Old Sangavi Nera Petrol Pump | River Bridge | 24 hours |
| 19 | EW | Harris Bridge (Old Mumbai Highway) | River Bridge | 24 hours |
| 20 | NS | Bhanu Patil Road | Road Under Bridge | 16 hours |
| 21 | NS | Yashwanthrao Chavan Path | Level Crossing | 16 hours |
| 22 | NS | Khadki Police Chowk | Road Under Bridge | 16 hours |
| 23 | NS | Dhanori Alandi Road | Road Under Bridge | 16 hours |
| 24 | NS | KB Joshi Path | Road Under Bridge | 16 hours |
| 25 | NS | HK Foridia Bridge | Road Over Bridge | 24 hours |
| 26 | NS | Juna Bazar | Road Under Bridge | 16 hours |
| 27 | NS | Connaught Road (RoB) | Road Over Bridge | 16 hours |
| 28 | NS | Bund Garden Road | Road Over Bridge | 16 hours |
| 29 | NS | Koregaon Park Road | Road Over Bridge | 16 hours |
| 30 | NS | Ghorpadi Road | Level Crossing | 16 hours |
| 31 | NS | BT Kawade Road (RoB) | Road Over Bridge | 16 hours |
| 32 | NS | Solapur Road (RoB) Kirloskar Bridge | Road Over Bridge | 24 hours |
| 33 | NS | Hadapsar Road | Level Crossing | 16 hours |
| 34 | NS | Western Bypass (After Warje) | Road Over Bridge | 8 hours |
| 35 | EW | Rajaram Bridge | River Bridge | 16 hours |
| 36 | NS | Mhatre Bridge | River Bridge | 16 hours |
| 37 | NS | SM Joshi Bridge | River Bridge | 16 hours |
| 38 | NS | Shivaram Mhatre Road (Chavan Bridge) | River Bridge | 16 hours |
| 39 | NS | Sambhaji Bridge | River Bridge | 8 hours |
| 40 | NS | Kakasaheb Gadgil Bridge (Z Bridge) | River Bridge | 16 hours |
| 41 | NS | Baba Bhide Bridge | River Bridge | 16 hours |
| 42 | NS | Maha Rishi Shinde Bridge | River Bridge | 16 hours |
| 43 | NS | PMC Bhavan Bridge | River Bridge | 16 hours |
| 44 | NS | Shivaji Bridge-Nava Pool | River Bridge | 8 hours |
| 45 | NS | Dengale Bridge Road | River Bridge | 16 hours |

| No. | NS/ EW | Name of the Location / Road | Type of Location | Duration of Survey |
|---|---|---|---|---|
| 46 | NS | Sangam Bridge 1 | River Bridge | 16 hours |
| 47 | NS | Sangam Bridge 2 | River Bridge | 8 hours |
| 48 | EW | Yerwada Bridge 1 | River Bridge | 8 hours |
| 49 | EW | Yerwada Bridge 2 | River Bridge | 8 hours |
| 50 | EW | HH Aga Khan Bridge | River Bridge | 16 hours |
| 51 | EW | Mundhwa Bridge | River Bridge | 16 hours |
| | | PCMC Region | | |
| 52 | NS | Revat Nigdi Raod | Road Under Bridge | 16 hours |
| 53 | NS | Akurdi Chikali Road | Road Over Bridge | 16 hours |
| 54 | NS | Chinchwad Akurdi Link Raod | Road Over Bridge | 16 hours |
| 55 | NS | Kaspate Wasti Road | Road Over Bridge | 8 hours |
| 56 | NS | Karachi Chowk | Road Over Bridge | 16 hours |
| 57 | NS | Jawaharlal Nehru Road | Road Under Bridge | 16 hours |
| 58 | NS | Power House Road | Level Crossing | 16 hours |
| 59 | NS | Pimple Gurav Road | Road Under Bridge | 16 hours |
| 60 | NS | Nashik Phata | Road Over Bridge | 8 hours |
| 61 | NS | From Jai Maharashtra Chowk | Level Crossing | 16 hours |
| 62 | NS | Dapodi Bridge | Road Over Bridge | 16 hours |
| 63 | NS | Sangam Cross Road | Level Crossing | 16 hours |

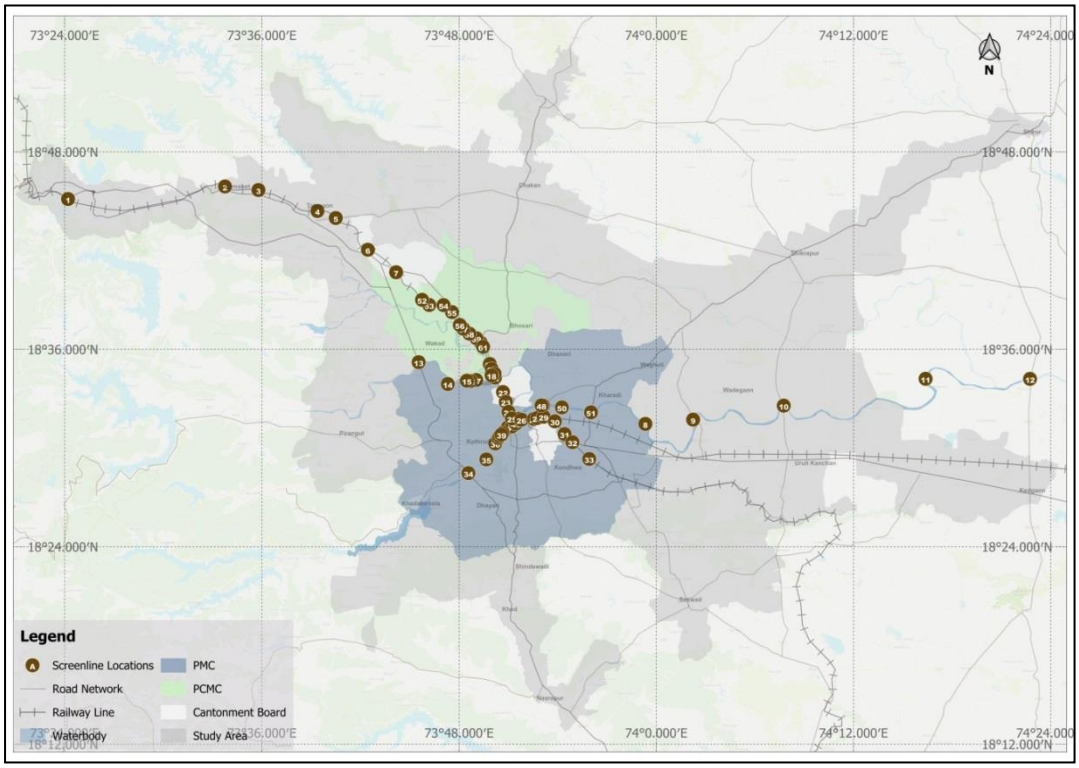
**Screen Line Locations in PMC**



### Screen Line Locations in PCMC

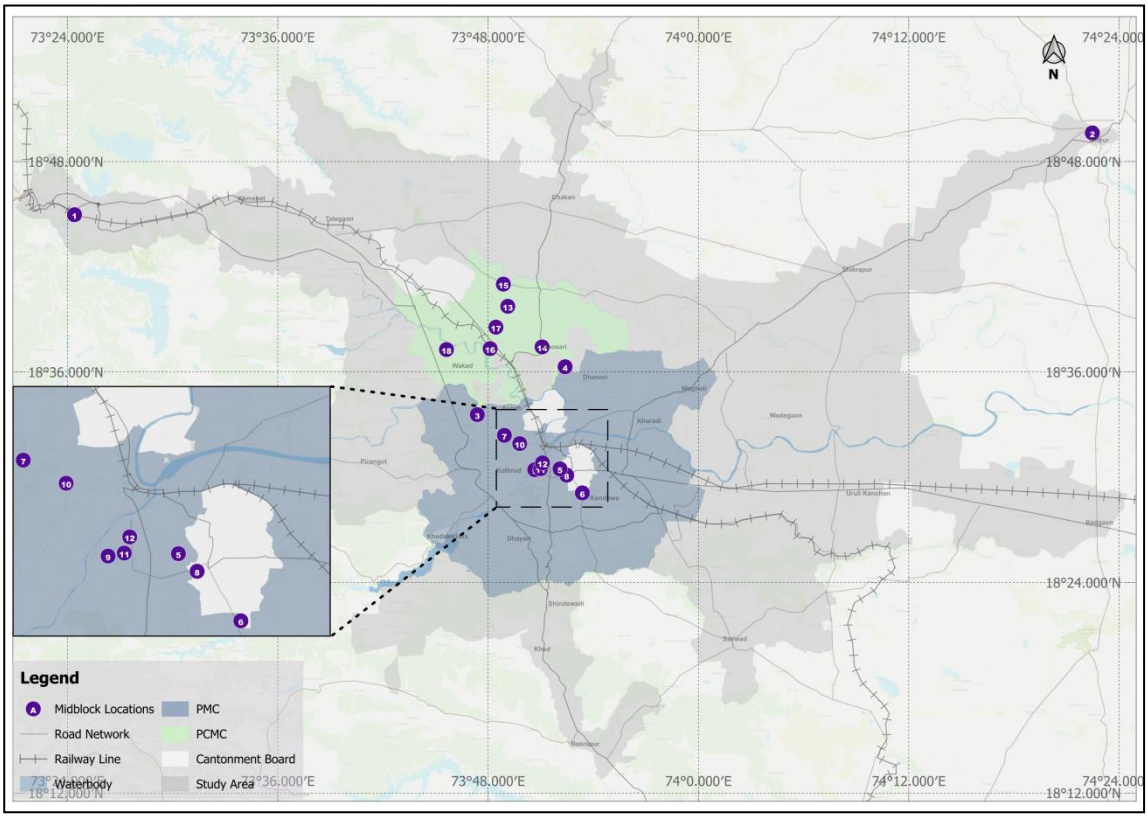



### Overall Screen Line Locations in Study Area



## List of Classified Traffic Volume Count at Mid-block Locations

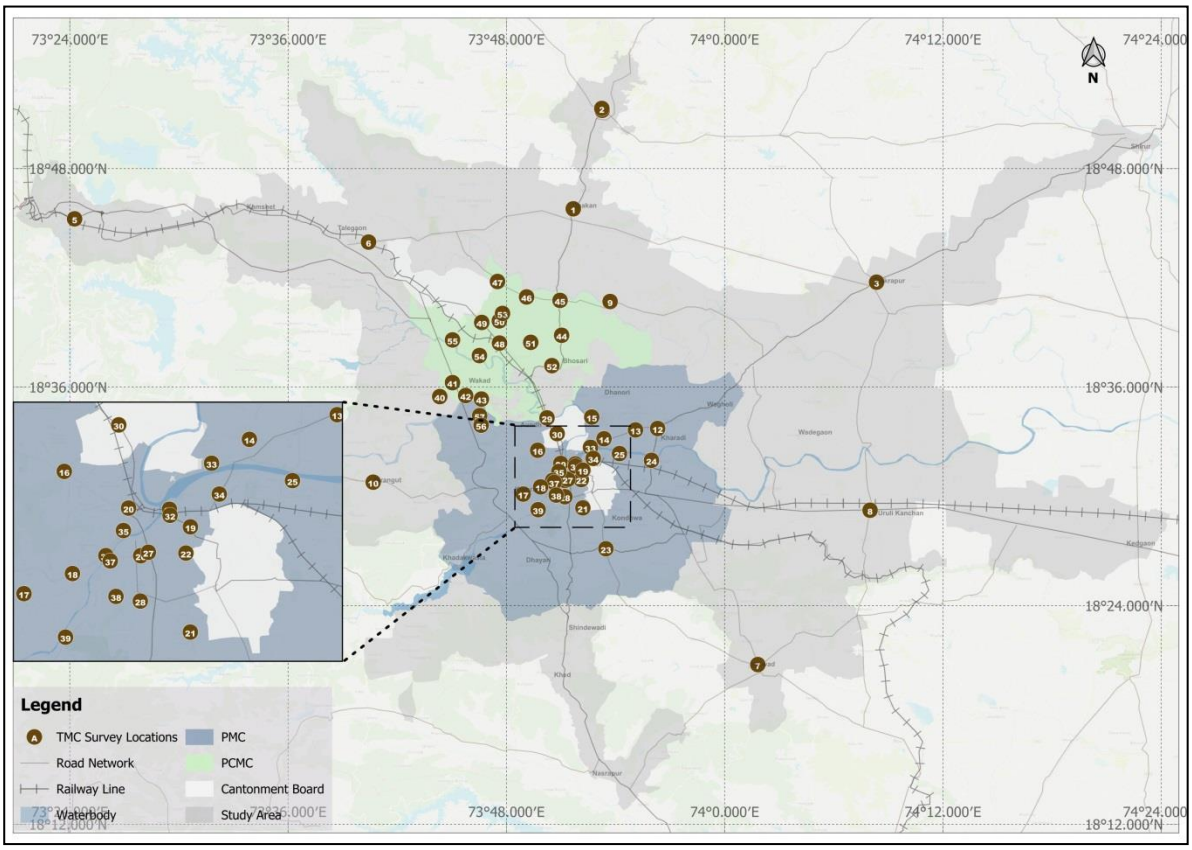
| No. | Name of the Location / Road | Type of Location | Duration of Survey |
|---|---|---|---|
| | **PMRDA Region** | | |
| 1 | Main Road - Lonavala | Mid-block | 16 hours |
| 2 | Shirur Main Road (Near Bus Stand) | Mid-block | 16 hours |
| | **PMC Region** | | |
| 3 | Baner Road (Dhanwantari Hospital) | Mid-block | 16 hours |
| 4 | Pune – Alandi Road | Mid-block | 24 hours |
| 5 | Timber Market Road | Mid-block | 16 hours |
| 6 | Kondwa Road (Near Kondwa Chowk) | Mid-block | 16 hours |
| 7 | Pashan Road (NCL) | Mid-block | 16 hours |
| 8 | Jagannath Shankarsheth Road (Meera Hospital) | Mid-block | 16 hours |
| 9 | Lal Bahadur Shastri Road (Near Ahilya Library) | Mid-block | 16 hours |
| 10 | Senapati Bapat Road (Near JW Marriot) | Mid-block | 16 hours |
| 11 | Balagangadhar Tilak Road (Near SP College) | Mid-block | 16 hours |
| 12 | RB Kumthekar Road (Near Phadhatre Chowk) | Mid-block | 16 hours |
| | **PCMC Region** | | |
| 13 | Spine Road | Mid-block | 16 hours |
| 14 | Nashik Road (Near Alandi Chowk)- Below flyover | Mid-block | 16 hours |
| 15 | Dehu Alandi - Akrudi Chikali Road (Opp Chikali Bus Stand) | Mid-block | 16 hours |
| 16 | PCMC Link Road (Near Shagun Chowk) | Mid-block | 16 hours |
| 17 | Morawadi Road | Mid-block | 16 hours |
| 18 | Aundh - Ravet Road | Mid-block | 16 hours |



## List of Turning Movement Count Survey Locations

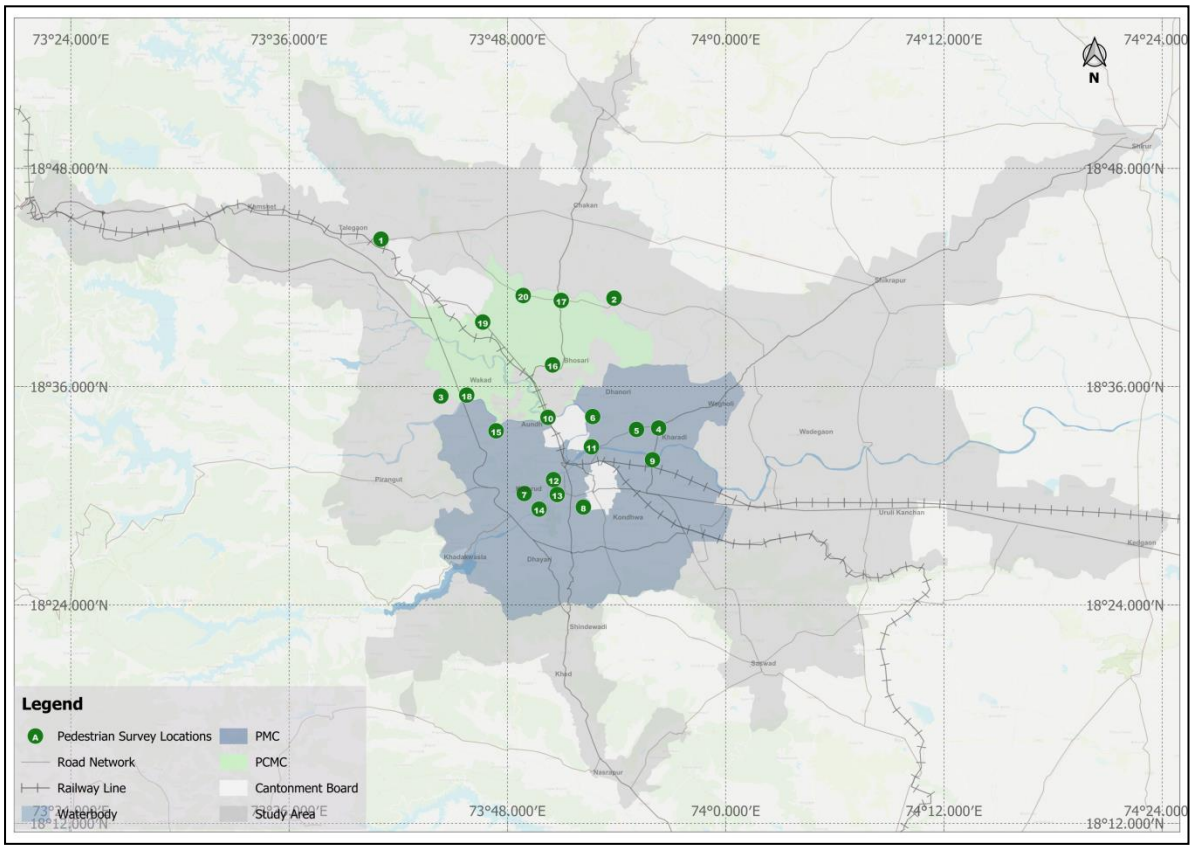
| No. | Name of the Intersection | Name of Road |
|---|---|---|
| | **PMRDA Region** | |
| 1 | Ambethan Chowk | Nashik Road (Chakan) |
| 2 | Wada Road-Nashik Road Junction | Nashik Road (Rajguru Nagar) |
| 3 | Shikrapur Junction (24 hours) | Nagar Road |
| 4 | Pabal Road – Nashik Road Junction | Nashik Road (Rajguru Nagar) |
| 5 | Main Bazzar Road Junction | Old Bombay Road (Lonavala) |
| 6 | Station Chowk | Urse Talegaon Road (Talegaon) |
| 7 | Saswad Police Chowk | Saswad Pandharpur Road (Saswad) |
| 8 | Uruli Kanchan | Solapur Road |
| 9 | Chakan Chowk | Alandi Road (Alandi) |
| 10 | Hinjawadi – Pirangut Road | Hinjawadi Road |
| 11 | Kolwan – Paud Road Junction | Mulshi Road |
| | **PMC Region** | |
| 12 | Kharadi Bypass Junction | Samrat Ashok Road |
| 13 | Viman Corner Junction | Samrat Ashok Road |
| 14 | Netaji Chowk Junction | Airport Road |
| 15 | Vishrantwadi | Alandi Road |
| 16 | Pune University | Aundh Road |
| 17 | Karve Chowk | Maharshi Karve Road |
| 18 | Nalstop Chowk | Maharishi Karve Road |
| 19 | Collectorate Junction | Molidena Road |
| 20 | Dr.Kapote Chowk | Shimla Office Chowk |
| 21 | Market Yard Junction | Jawaharlal Nehru Road |
| 22 | Sant Kabir Chowk | Jawaharlal Nehru Road |
| 23 | Kadimasjid Chowk (24 hours) | Parvati Road |
| 24 | Mundhwa Chowk | Maragpetta Rd |
| 25 | Koregoan Park East Avenue Junction | N Main Rd |
| 26 | Nagakar Talim Chowk | Bajirao Road |
| 27 | Belbaug Chowk | Shivaji Road |
| 28 | Saras bagh Junction | Vanari Road |
| 29 | Bopodi Junction | Old Mumbai Highway |
| 30 | Khadki Police Chowk | Old Mumbai Highway |
| 31 | RTO Junction | Old Mumbai Highway |
| 32 | Juna Bazar Chowk | Old Mumbai Highway |
| 33 | Shahbagh Baba Dargaha Chowk | Deccan College Road |
| 34 | Dole Patil Chowk | Bund Garden Road |
| 35 | Jhansi Lakshmi Bai Chowk | JM Road |
| 36 | Khanduji Baba Chowk | JM Road |
| 37 | Alka Chowk | JM Road |
| 38 | Dhandekar Chowk | Sinhagad Road |
| 39 | Rajaram Chowk | Sinhagad Road |

| No. | Name of the Intersection | Name of Road |
|---|---|---|
| | **PCMC Region** | |
| 40 | Shivaji Chowk (24 hours) | Dange Chowk Road |
| 41 | Bhumkar Chowk | Bhumkar Das Road |
| 42 | Wakad Chowk | Wakad Bosari BRTS Road |
| 43 | Kaspate Chowk | Wakad Bosari BRTS Road |
| 44 | Nashik Road Spine Road Junction | Nashik Road |
| 45 | Nashik Road Dehu Alandi Road Junction | Nashik Road |
| 46 | Chikali | Dehu Alandi Road |
| 47 | Talewadi Chowk | Dehu Alandi Road |
| 48 | Chinchwad Station Chowk | Old Mumbai Road |
| 49 | Nigdi Flyover | Old Mumbai Road |
| 50 | Thermax Chowk | Nigdi Bhosari Road |
| 51 | Mahatma Jyotiba Phule Chowk | Nigdi Bhosari Road |
| 52 | Philips Road Nigdi Bhosari Road Junction | Nigdi Bhosari Road |
| 53 | Spine Rd Akurdi Chikali Road Junction | Akurdi Chikali Road |
| 54 | Adithya Birla Hospital Road | Aditya Birla Hospital Marg |
| 55 | Sant Tukaram Bridge | Aundh Ravet BRTS Road |
| 56 | Lt. Baburao Habaji Saykar Chowk | Baner Road |
| 57 | SKP Chowk | Balewadi Road |



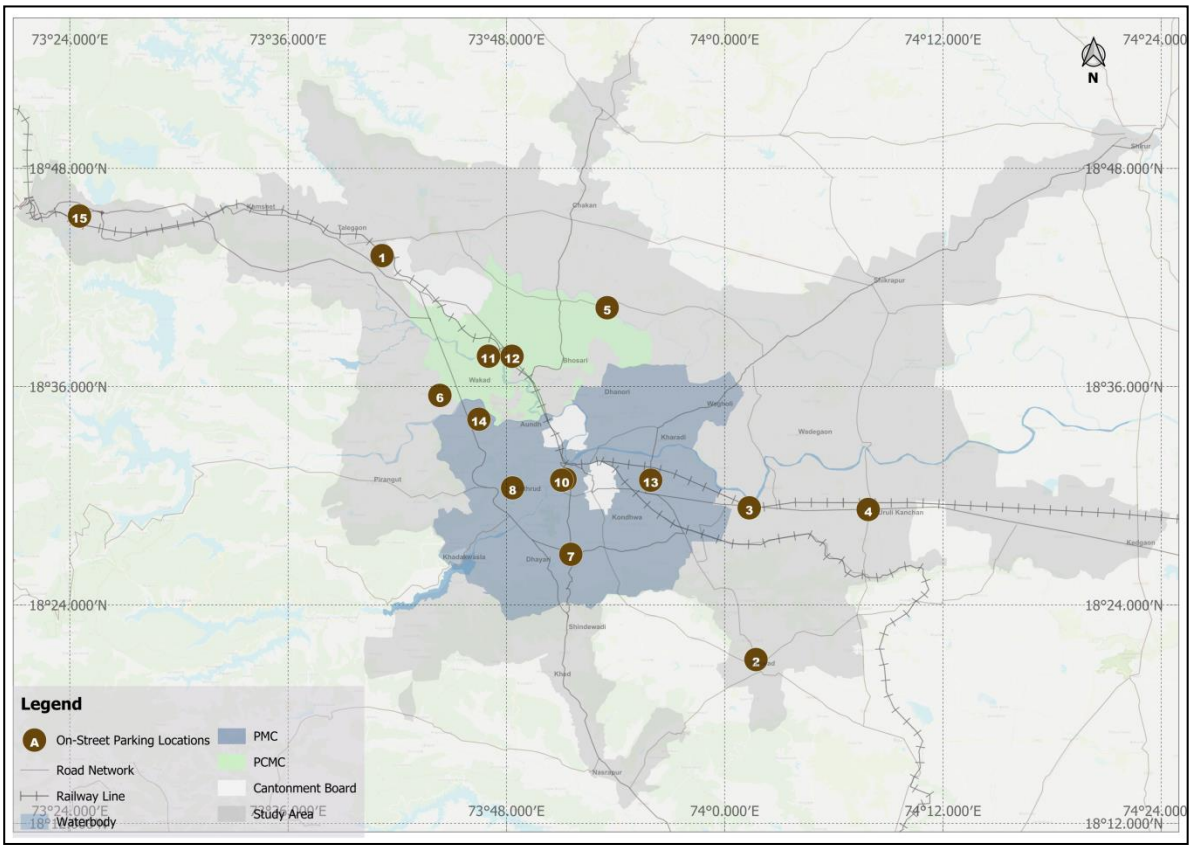
## List of Pedestrian Volume Count Survey Locations

| No. | Name of Road | Name of Location | Date |
|---|---|---|---|
| 1 | Talegaon | Station Chowk Talegaon | 11.03.2024 |
| 2 | Alandi Road | Chakan Chowk Alandi | 11.03.2024 |
| 3 | Dange Chowk Road | Shivaji Chowk | 07.03.2024 |
| 4 | Samrat Ashok Road | Kharadi Bypass Junction | 06.03.2024 |
| 5 | Samrat Ashok Road | Viman Corner Junction | 06.03.2024 |
| 6 | Alandi Road | Vishrant Wadi | 14.03.2024 |
| 7 | Maharishi Karve Road | Karve Chowk | 05.03.2024 |
| 8 | Jawaharlal Nehru Road | Market Yard Chowk | 05.03.2024 |
| 9 | Magarpatta Road | Mundhawa Chowk | 06.03.2024 |
| 10 | Old Mumbai Highway | Bopodi Junction | 07.03.2024 |
| 11 | Deccan College Road | Shahabagh Baba Dargha Chowk | 06.03.2024 |
| 12 | JM Road | Khanduji Baba Chowk | 05.03.2024 |
| 13 | Sinhgad Road | Dhandekar Chowk | 05.03.2024 |
| 14 | Sinhgad Road | Rajaram Chowk | 05.03.2024 |
| 15 | Baner Road | Dhanwantari Hospital | 07.03.2024 |
| 16 | Nigdi Bhosari Road | Philips Road Nigdi Bhosari Road Junction | 14.03.2024 |
| 17 | Nashik Road | Nashik Road Dehu Alandi Road Junction | 11.03.2024 |
| 18 | Wakad Bhosari Road | Wakad Chowk | 07.03.2024 |
| 19 | Old Mumbai Road | Nigdi Flyover | 11.03.2024 |
| 20 | Dehu Alandi - Akrudi Chikhali Road | Opposite to Chikhali Bus Stand | 11.03.2024 |



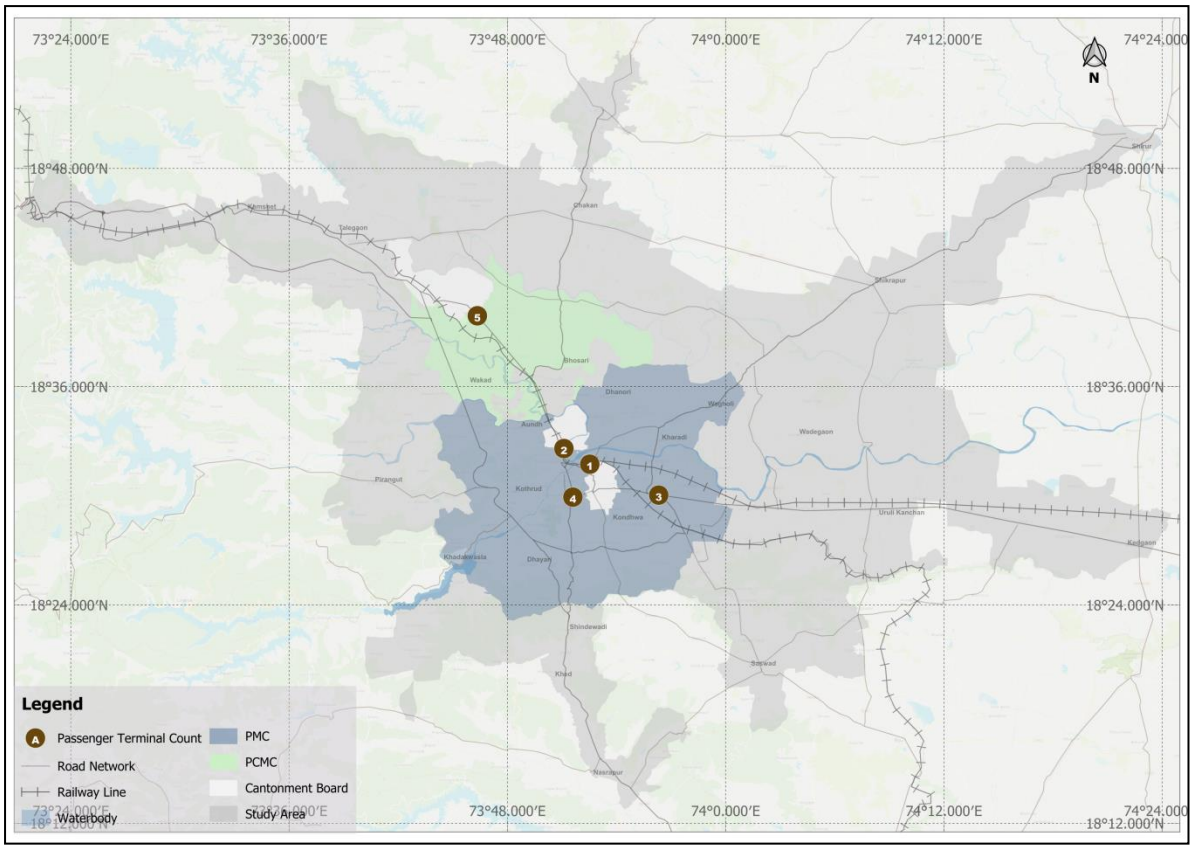
## List of On-Street Parking Survey Locations

| No. | Name of Location | Survey Date |
|---|---|---|
| 1 | Bazar Peth Road – Talegaon (L1) | 19.03.2024 |
| 2 | Main Road (Opp Bus Terminal)- Saswad (L2) | 12.03.2024 |
| 3 | Solapur Highway - Loni Kalbor | 14.03.2024 |
| 4 | Solapur Highway - Uruli Kanchan | 14.03.2024 |
| 5 | Alandi Road (Dehu Phata to Sambhaji Chowk) (L5) | 15.03.2024 |
| 6 | Along Dange Chowk Road from Shivaji Chowk – Hinjawadi (L6) | 15.03.2024 |
| 7 | Satara Road from Katraj Chowk to Hotel Kinara (L7) | 12.03.2024 |
| 8 | Vanaz Metro Station (L8) | 14.03.2024 |
| 9 | Bajirao Road (L9) | 12.03.2024 |
| 10 | Laxmi Road (L10) | 13.03.2024 |
| 11 | Pimpri Chinchwad Link Road, Near Chinchwad Bus Stand (L11) | 15.03.2024 |
| 12 | Near PCMC Office (L12) | 18.03.2024 |
| 13 | Magarpatta Road (L13) | 11.03.2024 |
| 14 | Balewadi High Street (L14) | 13.03.2024 |
| 15 | Lonavala (L15) | 19.03.2024 |



## List of Terminal Survey Locations

| No. | Terminal | Type | Date |
|---|---|---|---|
| 1 | Pune | MSRTC Bus Stand | 22.03.2024 |
| 2 | Shivaji Nagar | MSRTC Bus Stand | 20.03.2024 |
| 3 | Hadapsar | PMPML Bus Stand | 18.03.2024 |
| 4 | Swargate | MSRTC Bus Stand | 21.03.2024 |
| 5 | Nigdi | PMPML Bus Terminal | 19.03.2024 |

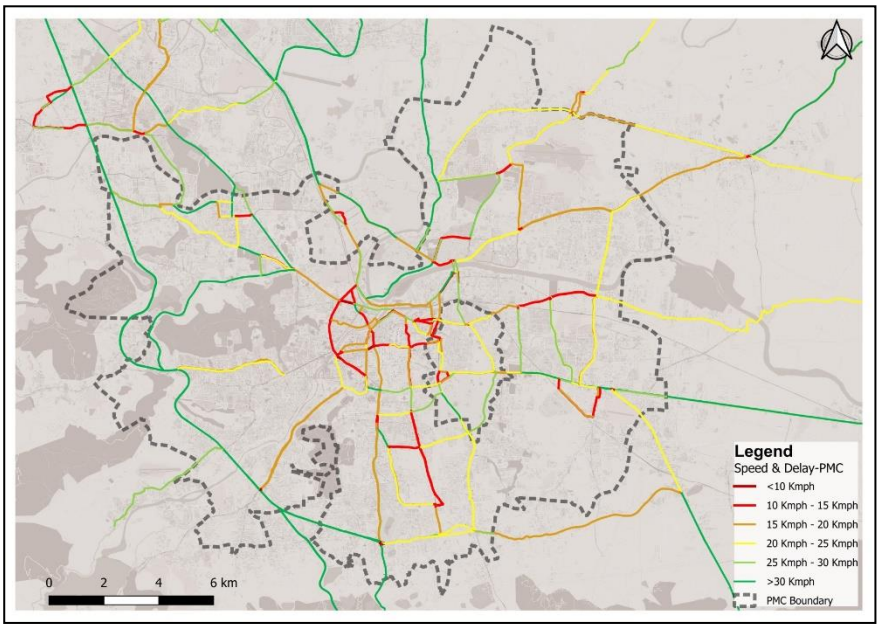



## List of Goods Focal Point Surveys

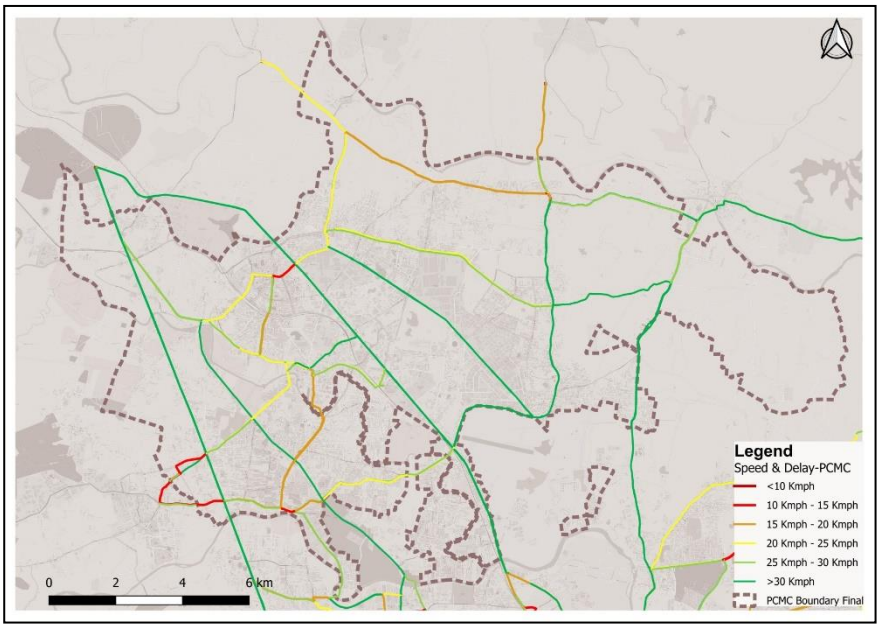
| No. | Name of Industrial Area | No. of Samples |
|---|---|---|
| 1 | Pune Station | 8 |
| 2 | Undri | 22 |
| 3 | Pimpri Market | 10 |
| 4 | Bhosari MIDC | 17 |
| 5 | Nigdi | 10 |
| 6 | Ranjangaon | 1 |
| 7 | Hinjawadi | 14 |
| 8 | Pirangut | 5 |
| 9 | Hadapsar | 13 |
| 10 | Market Yard | 10 |

| No. | Name of Industrial Area | No. of Samples |
|---|---|---|
| 11 | Phule Mandai | 10 |
| 12 | Chakan | 14 |
| 13 | Laxmi Road | 11 |
| 14 | Pimpri-Chinchwad MIDC | 7 |
| 15 | Saswad Raiway Siding | 11 |
| | Total | 163 |

### Speed and Delay (PMC)

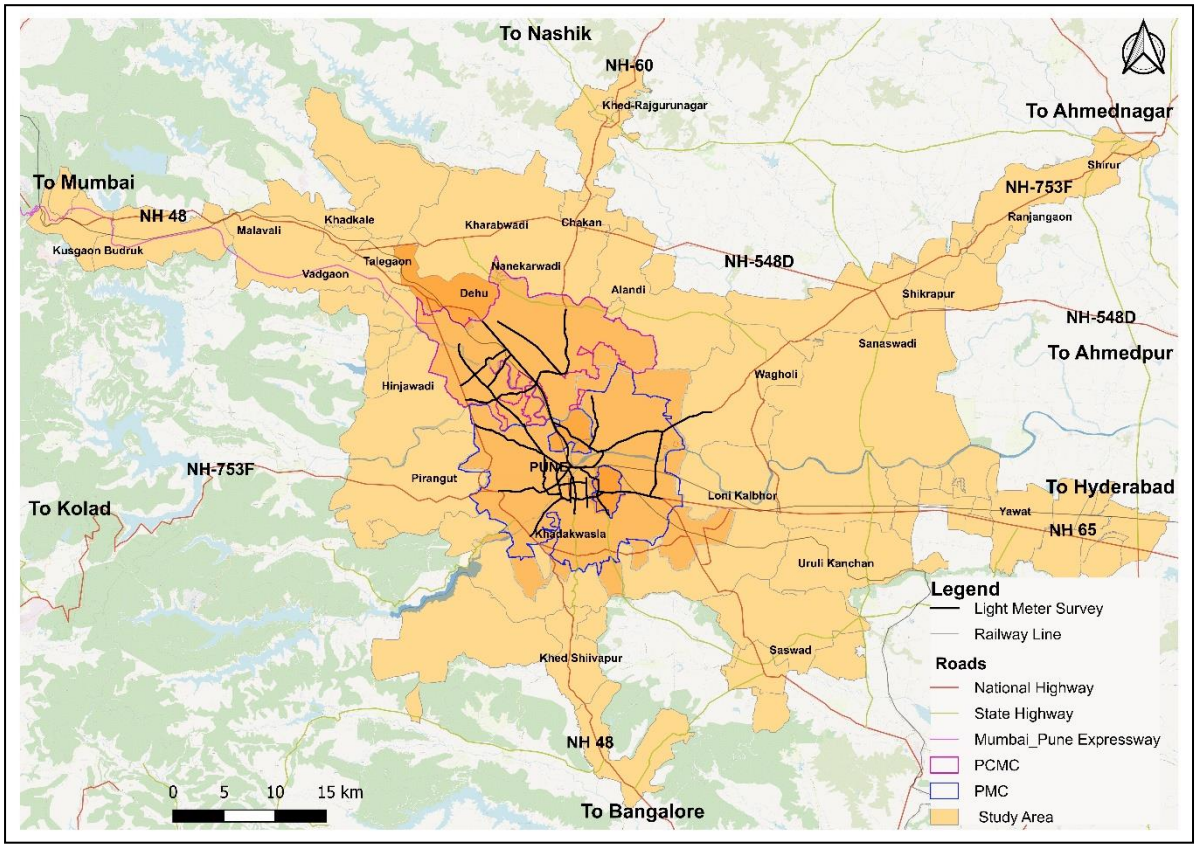



### Speed and Delay (PCMC)



## Light Meter Survey

The location where light meter survey is conducted is presented in figure below.



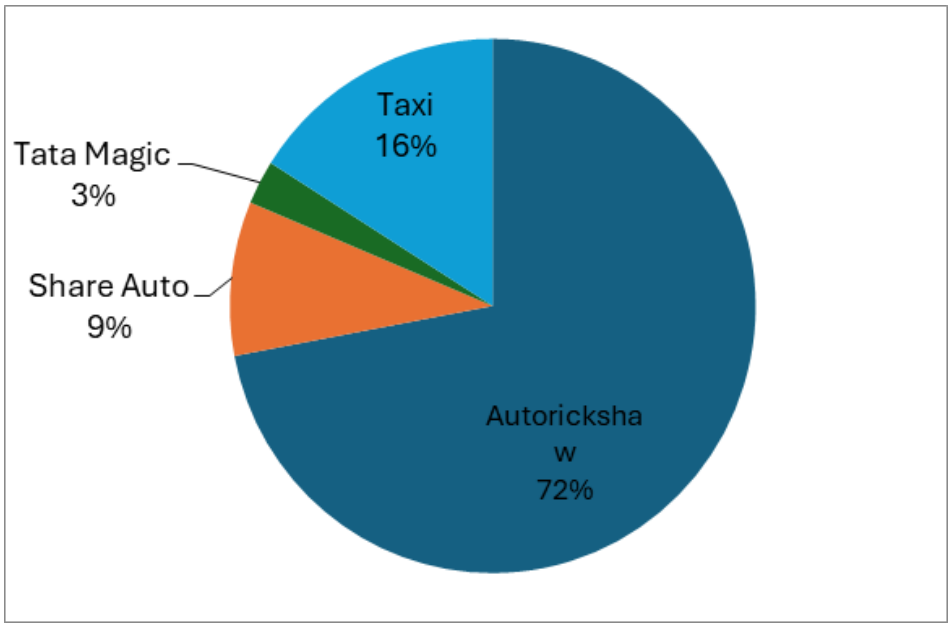
# *Annexure 2-5*

*Opinion Survey Characteristics*

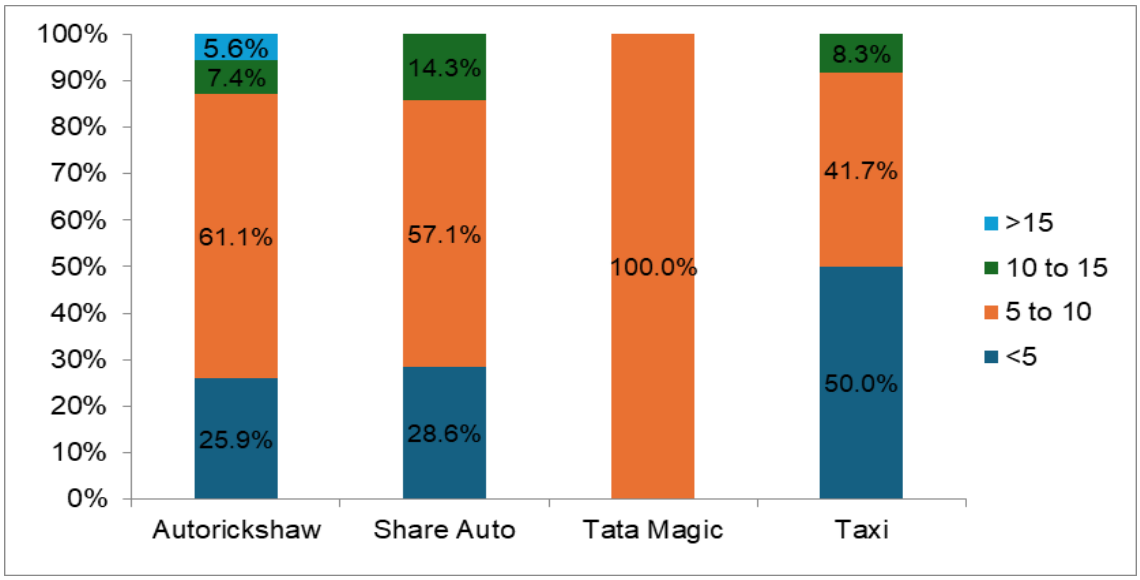
## ANNEXURE 2.5: OPINION SURVEY CHARACTERISTICS

**Intermediate Public Transport Operator Survey**

The composition of vehicle types enquired in IPT Operator Survey is presented below.



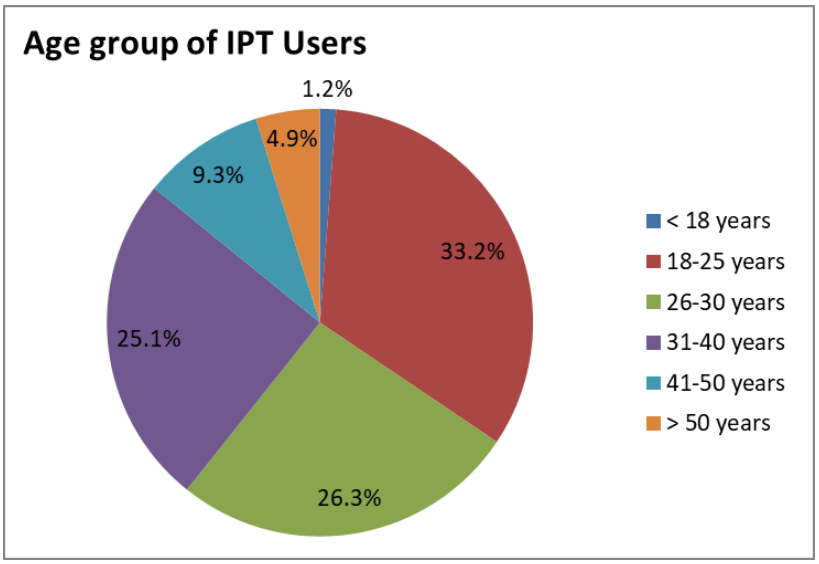

The details of the average age of vehicles in the study area are presented below.




- It is observed that major share of Intermediate public transport (IPT) vehicles within the city is less than 10 years old.

**Intermediate Public Transport User Survey**

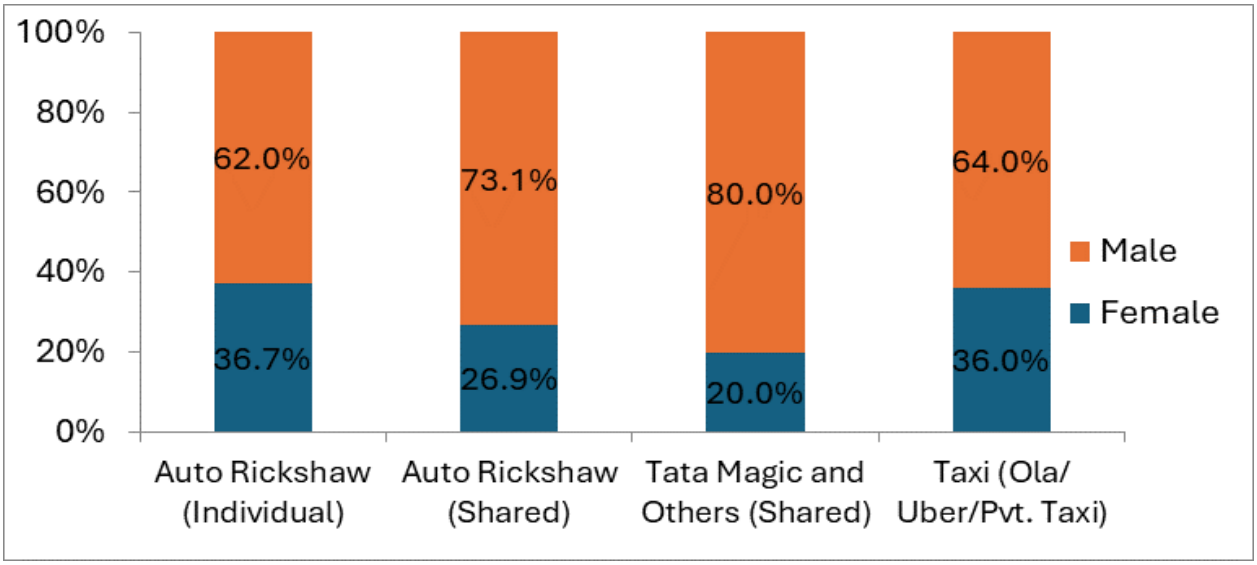
The details of age group of various IPT users are presented below.




**Age group of IPT Users**

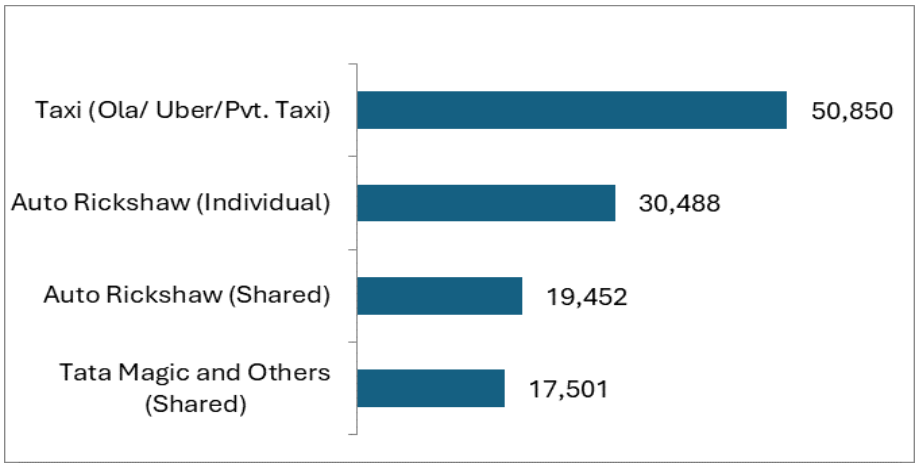
- It is observed that 33% of IPT users are 18 to 25 years age group followed by 26 to 30 years age group (26.3%).
-

**Gender of users with respect to different modes are presented below.**



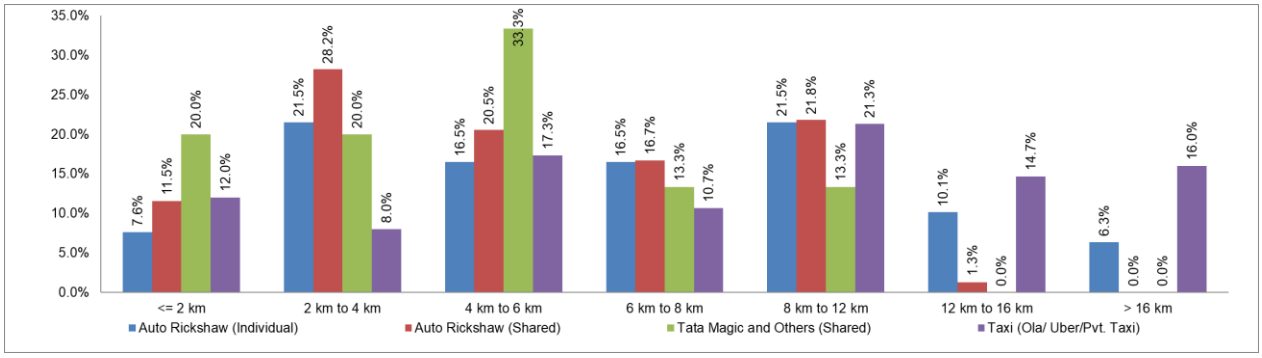

**Gender composition of IPT Users**

- The average monthly income of Taxi (Ola/Uber/Private Taxi) users are high (Rs. 50,850) followed by Auto Rickshaw (Rs. 30,488). Average Monthly income of IPT Users is presented below.



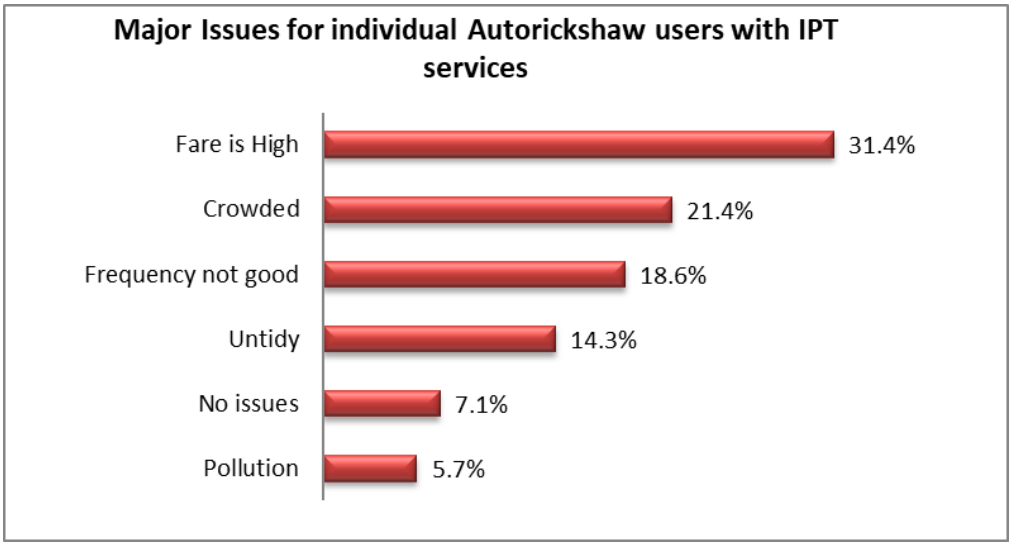

### Average Monthly income of various IPT Users

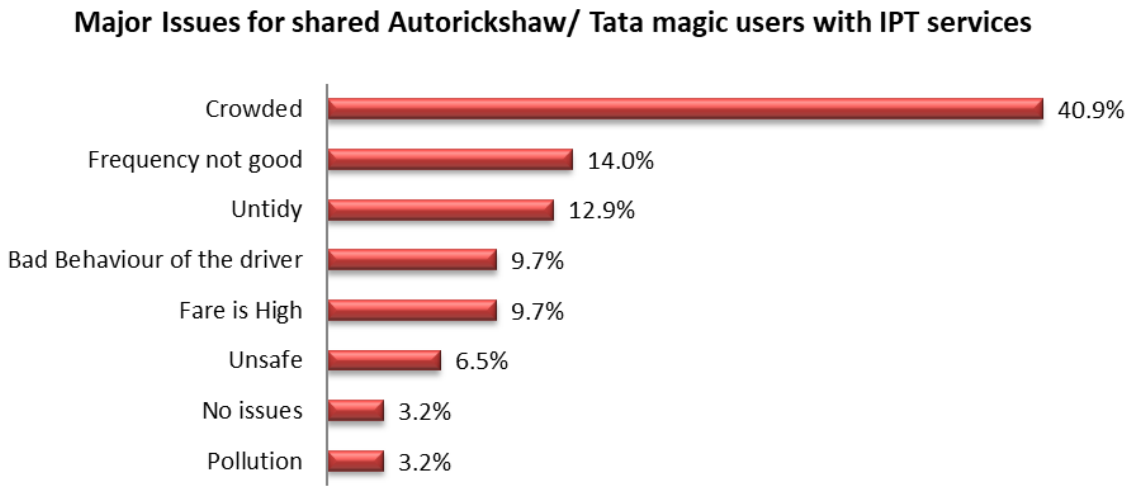
The details of trip distance of IPT users are presented below.

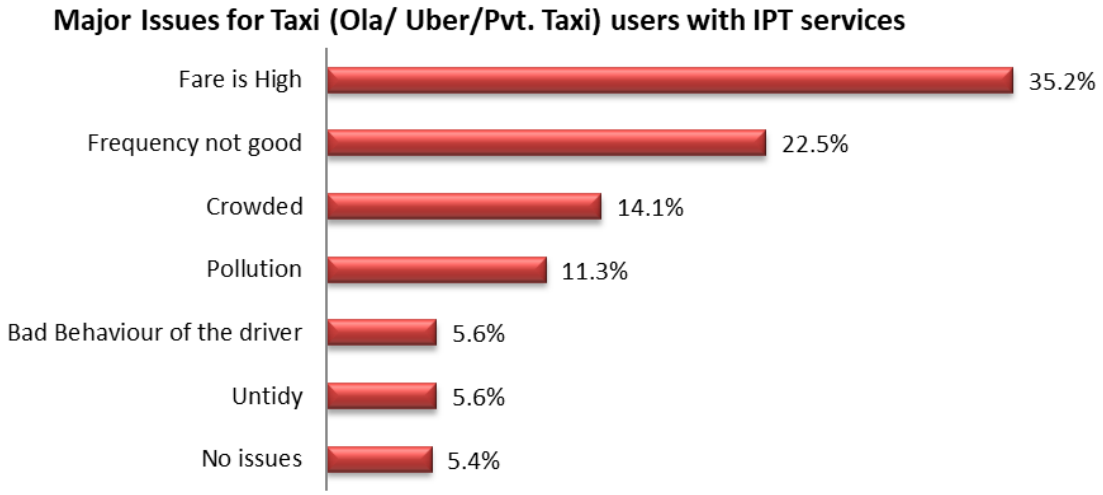



### Trip distance of IPT users

The major issues highlighted by the various IPT users are presented below.





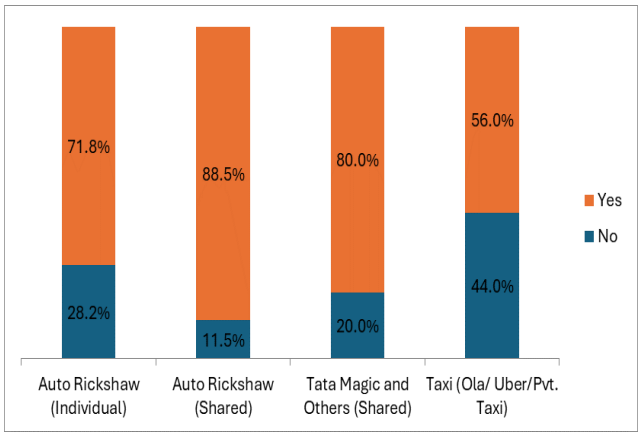




**Issues faced by various IPT users**

From the above chart it is observed that,

- High fare is the major issue for individual Auto rickshaw users followed by crowded and poor frequency.
- Overcrowding is the major issue for share auto/Tata magic users followed by poor frequency, untidy.
- High fare is the major issue for taxi users followed by poor frequency and crowded.

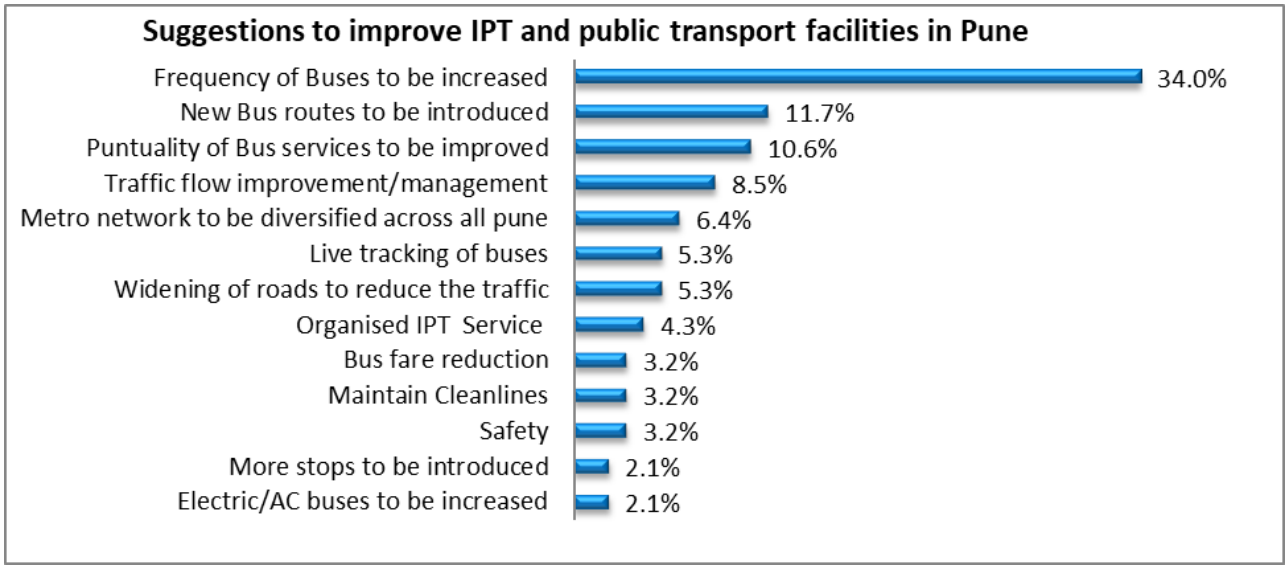
The Willingness to shift to bus if good frequency of bus services/ coverage is provided is presented below. It is observed that majority of IPT users are willing to shift (an average 80%) to public transport than taxi user (56%).




**Willingness to shift to Bus (if good frequency of bus services/ coverage is provided)**

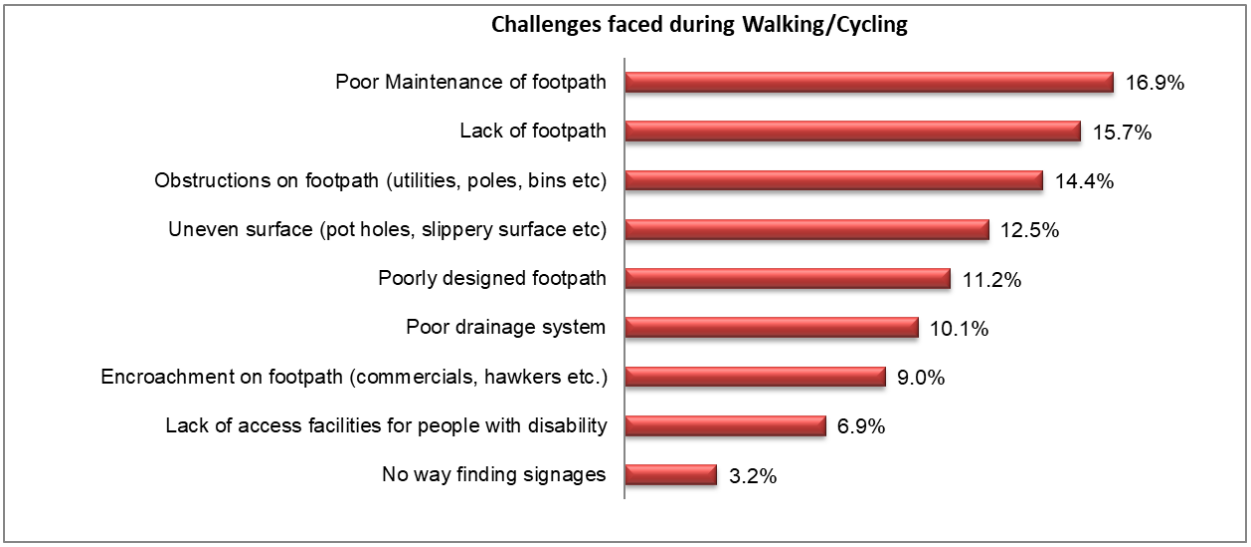
The majority of user suggested for improvement of IPT and Public transport facilities in order to tackle the overcrowding issue are presented below.

- Bus frequency should be improved (34%)
- Introduction of new bus routes (11.7%)
- Punctuality of bus services (10.6%)
- Traffic flow improvement/ management (8.5%) etc.,



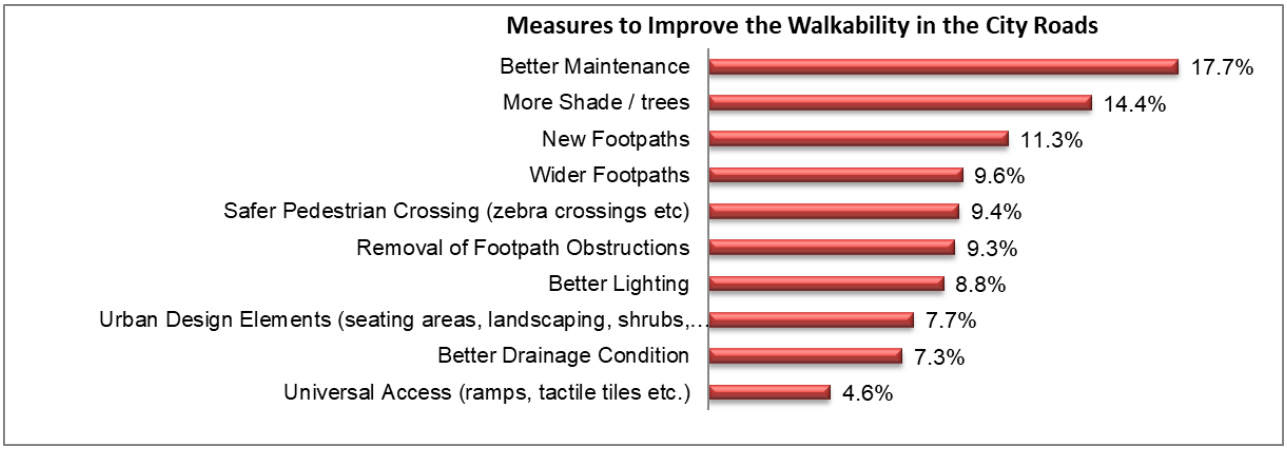
### Suggestions to Improve IPT and Public Transport Facilities in Pune

Non-Motorised Transport (NMT) Opinion Survey



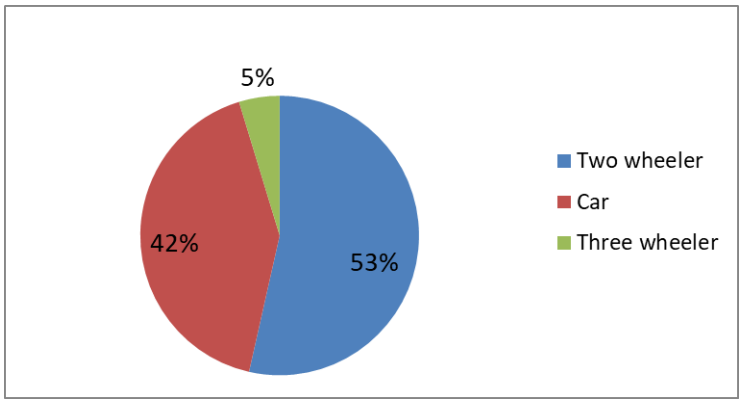

The challenges faced during walking/cycling in the city are presented below. Major issues are poor maintenance of footpath (16.9%), lack of footpath (15.7%) and obstructions on the footpath (14.4%).

Measures to improve the walkability in the city roads are presented below.

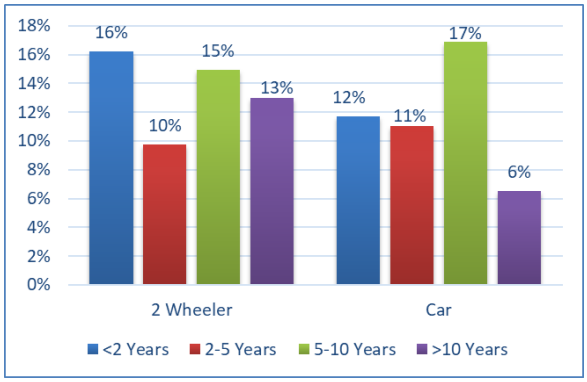



### Vehicle Operators' Survey (Petrol Pump Survey)

Vehicle operator survey is carried out for private vehicle modes (2-wheeler, 3-wheeler and Car) to understand the fuel efficiency of various vehicle categories and it is carried out at fuel stations. The drivers of vehicles are interviewed based on finalized format. The outcome of the survey is presented below. The compositions of vehicle types surveyed in the study area are presented below.

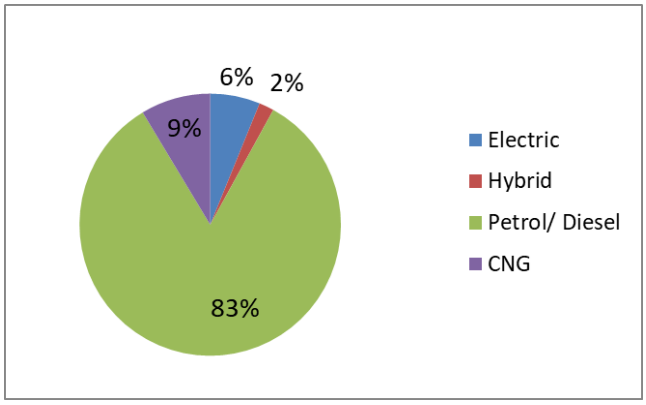



### Composition of Vehicle Types




### Age of Vehicles

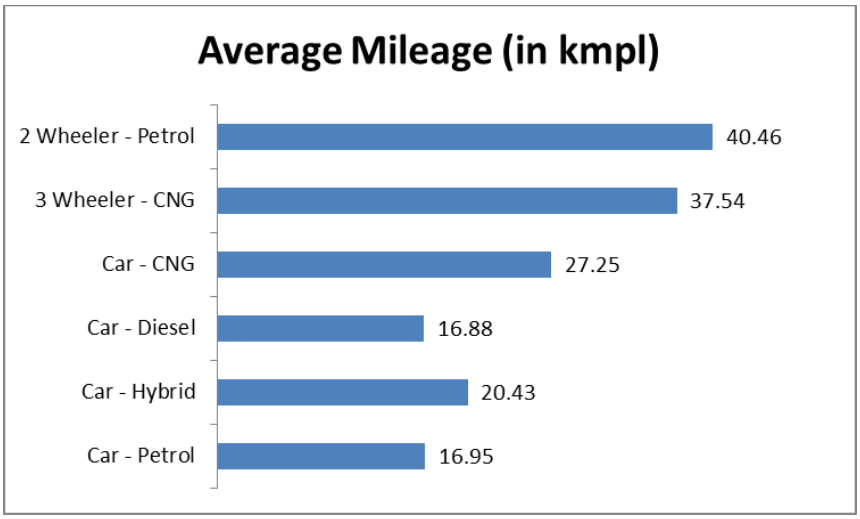
- It is observed that 13% of the 2-Wheeler and 6% of car has average age more than 10 years old.




The compositions of the Engine type used in vehicles surveyed in the study area are presented below. It is observed that majority of the uses used Petrol/ Diesel Engine (83%) followed by CNG (9%).

### Composition of Engine Type

The average of mileage (in Km per Litre) of Tww Wheeler was around 40.46 kmpl followed by that of three-wheeler which was around 37.54 kmpl. The average of mileage (in Km per Litre/ per charge) is presented below.


Average Mileage (in kmpl)
2 Wheeler - Petrol
40.46
3 Wheeler - CNG
37.54
Car - CNG
27.25
Car - Diesel
16.88
Car - Hybrid
20.43
Car - Petrol
16.95

# *Annexure 2-6*

*Service Level Benchmarks*

## ANNEXURE 2.6: SERVICE LEVEL BENCHMARKS

## PERFORMANCE BENCHMARKS FOR URBAN TRANSPORT

The service level performance of each of the facility for the study area is discussed in subsequent sections.

### 1. Public Transport Facilities

Public transport facilities for the study area are assessed based on the following six different indicators:

i. Presence of organized public transport system
ii. Extent of supply availability of public transport
iii. Service coverage of public transport in the city
iv. Average waiting time for public transport users
v. Level of comport in public transport.
vi. % of fleet as per urban bus specification

**i. Presence of Organized Public Transport System in Urban Area (%)**

A = Total number of buses operating in the city
= 2,637
B = Total number of buses operating under the ownership of STU/SPV
= 1,672

| LoS 1 | Presence of Organized Public Transport System |
|---|---|
| 1 | >= 60 |
| 2 | 40 - 60 |
| 3 | 20 - 40 |
| 4 | < 20 |

Presence of public transport system in urban area (%)

= (B/A) *100
= 63 %, Therefore, **LoS 1 = 1**

| LoS 2 | Presence of Organized Public Transport System |
|---|---|
| 1 | >= 0.6 |
| 2 | 0.4 – 0.6 |
| 3 | 0.2 – 0.4 |
| 4 | < 0.2 |

**ii. Extent of Supply Availability of Public Transport**

The estimated population of Study Area for the year 2024 is 1,03,78,004

A = Total number of buses/train coaches in Study Area
= 2776
B = Total population of Study Area
= 1,03,78,004.

Availability of public transport / 1000 Population = A/ (B/1000) = 0.27

Therefore, **LoS 2 = 3**

### iii. Service Coverage of Public Transport in the City

The Study Area is about 2,550 sq.km. There is city based public transport system available in Study Area.

A = Total length of road km of the corridors on which the PT systems ply in study area

= 1718 km

B = Area of the urban limits (study area)

= 2,550 (in $km^2$)

| LoS 3 | Service Coverage of Public Transport in the City |
|---|---|
| 1 | >= 1 |
| 2 | 0.7 - 1.0 |
| 3 | 0.3 – 0.7 |
| 4 | < 0.3 |

Service coverage of public transport in the city = (A/B) = 0.7

Therefore, **LoS 3 = 2**

### iv. Average Waiting Time for Public Transport Users (minutes)

The average waiting time for public transport users in Study Area is 16 minutes.

Therefore, **LoS 4 = 4**

| LoS 4 | Average Waiting Time for Public Transport Users (min) |
|---|---|
| 1 | <=4 |
| 2 | 4 - 6 |
| 3 | 6- 10 |
| 4 | > 10 |

### v. Level of Comfort in Public Transport

The level of comfort in public transport in Study Area is evaluated as 0.97.

Therefore, **LoS 5 = 1**

| LoS 5 | Level of Comfort of Public Transport in the City |
|---|---|
| 1 | <=1.5 |
| 2 | 1.5 – 2.0 |
| 3 | 2.0 – 2.5 |
| 4 | >2.5 |

### vi. % of Fleet as per Urban Bus Specification

A = Total number of buses in the Study Area

= 2,637

B = Calculate total number of buses as per urban bus specifications

= 2,028

%Fleet as per urban Bus Specification=77%

Therefore, **LoS 6 = 1**

| LoS 6 | % of Fleet as per Urban Bus Specification |
|---|---|
| 1 | 75 - 100 |
| 2 | 50 - 74 |
| 3 | 25 - 49 |
| 4 | <=25 |

**Overall Level of Service of Public Transport Facilities**

The reference table to compute the overall level of Public Transport facilities is given in **Table 2-1**.

**Table 2-1 | Reference Table for Computing Overall Level of PT Facilities**

| Overall Level of Service of Public Transport facilities City wide | | |
|---|---|---|
| Calculated LoS = ($LoS_1$ + $LoS_2$ + $LoS_3$ + $LoS_4$ + $LoS_5$ + $LoS_6$) and identify overall LoS as mentioned below | | |
| **Overall LoS** | **Calculated LoS** | **Comments** |
| 1 | **< 12** | The city has a good public transport system which is widespread and easily available to the citizens. The system provided is comfortable. |
| 2 | **12 - 16** | The City has public transport system which may need considerable improvements in terms of supply of buses/ coaches and coverage as many parts of the city are not served by it. The frequency of the services available may need improvements. The system provided is comfortable. |
| 3 | **17 - 20** | The City has a public transport system which may need considerable improvements in terms of supply of buses / coaches and coverage as most parts of the city are not served by it. The frequency of the services available needs improvement. The system provided is not comfortable as there is considerable over loading. |
| 4 | **21-24** | The city has very poor/no organized public transport system |

The overall LoS of Public Transport Facilities is obtained by summing up the LoS of individual parameters.

Calculated Level of Service of Public Transport facilities in Study Area **= LoS 1+ LoS 2 + LoS 3 + LoS 4 + LoS 5 + LoS 6 = 1 + 3 +2 + 4 +1 + 1 = 12.**

Therefore, **overall LoS = 2**

**The city has public transport system which may need considerable improvements in terms of supply of buses/coaches and coverage as many parts of the city are not served by it. The frequency of services available may need improvements. The system provided is comfortable.**

**2. Pedestrian Infrastructure Facilities**

Pedestrian infrastructure facilities for Study Area are assessed based on the following three different indicators:

i. Signalized intersection delay (%)
ii. Street lighting (LUX)
iii. % of city covered by footpaths

### i. Signalized Intersection Delay (%)

A = Total number of signalized intersections in the city
= 422

B = No. of intersections having average waiting time of pedestrian more than 45 seconds
= 125

Signalized intersections delay (%) = (B/A) *100

= (125/422)*100 = 30%

Therefore, **LoS 1 =2**

| LoS 1 | Signalized Intersection Delay (%) |
|---|---|
| 1 | < 25 |
| 2 | 25 – 50 |
| 3 | 50 - 75 |
| 4 | >= 75 |

### ii. Street Lighting (%)

The cumulative frequency crosses at 22, range >=8.

Therefore, **LoS 2 = 1**

| LoS 2 | Street Lighting (LUX) |
|---|---|
| 1 | >= 8 |
| 2 | 6 - 8 |
| 3 | 4 - 6 |
| 4 | < 4 |

### iii. Percentage of City Covered (%) by Footpaths

Total length of road network in Study Area is 6586 km.

A = Total length of road network in the city and multiplied by 2
= 13172 km

B = Total length of the footpath having minimum width of 1.2 m or more and available on both sides
= 1396 km

Percentage of the city covered by footpaths = (B/A) *100

= (1396/13172) *100

= 10.60

Therefore, **LoS 3 =4**

| LoS 3 | % of City Covered by Footpaths |
|---|---|
| 1 | >= 75 |
| 2 | 50 - 75 |
| 3 | 25 - 50 |
| 4 | < 25 |

### Overall Level of Service of Pedestrian Infrastructure Facilities

The reference table to compute the overall level of pedestrian facilities is given in Table 2-2.

**Table 2-2 | Reference Table for Computing Overall Level of Pedestrian Infrastructure Facilities**

| Overall Level of Service of Pedestrian Infrastructure Facilities City wide | | |
|---|---|---|
| Calculated LoS = ($LoS_1$ + $LoS_2$ + $LoS_3$ ) and identify overall LoS as mentioned below | | |
| **Overall LoS** | **Calculated LoS** | **Comments** |
| 1 | **3 - 5** | The city has adequate barrier free pedestrian facilities along overall road network. |
| 2 | **6 - 8** | The City has pedestrian facilities which may need some improvements in terms of improvements in intersections, footpaths, and street lighting as some parts of the city are not served by it. The footpath available needs improvements. The system provided is otherwise comfortable and sustainable |
| 3 | **9-10** | The city has pedestrian facilities which may need considerable improvements. The pedestrian facilities at intersections, availability of footpath etc needs improvements as also many partsof the city are not served by it. |
| 4 | **11 - 12** | The city lacks adequate pedestrian facilities |

The overall LoS of pedestrian infrastructure facilities is obtained by summing up the LoS of individual parameters.

Calculated Level of Service of pedestrian Infrastructure facilities in the Study Area = **LoS 1+ LoS 2 + LoS 3 = 2+1+4= 7.** Therefore, **overall LoS = 2**

**The city has pedestrian facilities which may need some improvements in terms of improvements in intersection, footpath, and street lighting as some parts of the city are not served by it the footpath available needs improvements. The system provided is otherwise comfortable and sustainable.**

### 3. Non-motorized Transport (NMT) Facilities

Non-motorized Transport (NMT) facilities for Study Area are assessed based on the three parameters given below:

i. % of network covered
ii. Encroachment on NMT roads by vehicle parking (%)
iii. NMT parking facilities at interchanges (%)

| LoS 1 | % of Network Covered |
|---|---|
| 1 | >= 50 |
| 2 | 50 - 25 |
| 3 | 25 - 15 |
| 4 | < 15 |

#### i. % of Network Covered

A = Total length of road network
= 6586 km.
B = Total length of NMV network
= 60 km

Percentage of city covered by NMV network = (B/A) x100= (60/6586) x100 = 0.91

Therefore, **LoS 1 = 4**.

| LoS 2 | Encroachment on NMV roads by Vehicle Parking (%) |
|---|---|
| 1 | <= 10 |
| 2 | 10 - 20 |
| 3 | 20 - 30 |
| 4 | >30 |

### ii. Encroachment on NMT roads by Vehicle Parking

A = Total length of parking on the cycle track
= 2.88 km
B = Total length of NMV network
= 60 km

Percentage of on street parking on cycle track = (A/B) x100
= 4.8

Therefore, LoS **2 = 1**

### iii. NMT Parking Facilities at Interchanges

A = Total number of interchanges i.e. major bus stops, terminals, and railway stations
= 319
B = Total number of interchanges having NMT parking facilities (with in 250m)
= 18

| LoS 3 | NMT Parking Facilities at Interchanges (%) |
|---|---|
| 1 | >= 75 |
| 2 | 50 - 75 |
| 3 | 25 - 50 |
| 4 | < 25 |

NMT parking facilities at interchanges = (B/A) x100
= (18/319) x100 = 5.6

Hence, **LoS 3 = 4**.

**Overall Level of Service for NMT Facilities**

The reference table to compute the overall level of NMT Facilities is given in **Table 2-3**.

**Table 2-3 | Reference Table for Computing Overall Level of NMT Facilities**

| Overall Level of Service (LoS) of Non-Motorized Transport facilities (NMT) City-wide | | |
|---|---|---|
| Calculated LoS = ($LoS_1$ + $LoS_2$ + $LoS_3$) and identify overall LoS as mentioned below | | |
| **Overall LoS** | **Calculated LoS** | **Comments** |
| 1 | **3-5** | The city has adequate NMT facilities along overall road network. |
| 2 | **6 -8** | The city has NMT facilities which may need some improvements in terms of encroachments, parking facilities at interchanges etc as some parts of the city are not served by it. The system provided is otherwise comfortable and sustainable |
| 3 | **9-10** | The city has NMT facilities which may need considerable improvements as many parts of the city are not served by it. |
| 4 | **11 - 12** | The city lacks adequate NMT facilities |

Calculated Level of Service of NMT facilities in the Study Area = **LoS 1+ LoS 2 + LoS 3 = 4+1+4= 9,** Therefore**, overall LoS = 3**

**The city has NMT Facilities which may need considerable improvements as many parts of the city are not served by it.**

### 4. Level of Usage of Intelligent Transport System (ITS) Facilities

Level of usage of ITS facilities for Study Area is assessed based on the five different indicators given below:

i. Availability of traffic surveillance (%)
ii. Passenger Information System (%)
iii. Global Positioning System (GPS)/ General Pocket Radio Service (GPRS) (%)
iv. Signal synchronization (%)
v. Integrated ticketing system (%)

#### i. Availability of Traffic Surveillance (%)

A = Total no of bus stations on BRTS, major bus stops, terminals, metro stations and signalized intersection having CCTVs

= 431

B = Total no. of bus stations on BRTS, major bus stops, terminals, metro stations and signalized intersections

= 775

| LoS 1 | Availability of Traffic Surveillance (%) |
|---|---|
| 1 | >= 75 |
| 2 | 50 - 75 |
| 3 | 25 - 50 |
| 4 | < 25 |

Availability of traffic surveillance(%)=(A/B)*100=(431/775)X100= 56%.

Therefore, **LoS 1 = 2**

#### ii. Passenger Information System (%)

A = Total no. of bus stops, terminals, metro stations having Passenger Information System facility

= 100

B = Total no. of major bus stops, terminals, metro stations

= 353

| LoS 2 | Passenger Information System (PIS) |
|---|---|
| 1 | >= 75 |
| 2 | 50 - 75 |
| 3 | 25 - 50 |
| 4 | < 25 |

Passenger Information System= (100/353) *100 = 28%

Therefore, **LoS 2 = 3**

### iii. Global Positioning System (GPS)/ General Pocket Radio Service (GPRS) (%)

A = Number of Public transport vehicles and IPT with functional on-board GPS/GPRS and connected to common control center

= 0

B = Total number of public transport vehicles and IPT

= 2,42,958

Global positioning system /GPRS = (A/B) *100 = 0,

Therefore, **LoS 3 = 4**

| LoS 3 | Global Positioning System / GPRS |
|---|---|
| 1 | >= 75 |
| 2 | 50 – 75 |
| 3 | 25 – 50 |
| 4 | < 25 |

### iv. Signal Synchronization (%)

A = No of signals synchronized

= 125 (in No.)

B = Total number of signalized intersections

= 422 (in No.)

Signal Synchronization (%) = (A/B)*100

= (125/422)*100=30%,

Therefore, **LoS 4 = 3**

| LoS 4 | Signal Synchronization (%) |
|---|---|
| 1 | >= 75 |
| 2 | 50 - 75 |
| 3 | 25 - 50 |
| 4 | < 25 |

### v. Integrated Ticketing System (%)

A = Total number of modes and operators in the city which have integrated ticketing system

= 0

B = Total number of modes and operators in the city

= 5

Integrated Ticketing system = (A/B) x100 = (0/5) X100 = 0,

Therefore, **LoS 5 = 4.**

| LoS 5 | Integrated Ticketing System (%) |
|---|---|
| 1 | >= 75 |
| 2 | 50 - 75 |
| 3 | 25 - 50 |
| 4 | < 25 |

**Overall Level of Service for ITS Facilities**

The reference table to compute the overall level of ITS Facilities is given in **Table 2-4**.

**Table 2-4 | Reference Table for Computing Overall Level of ITS Facilities**

| Overall Level of Service (LoS) of usage of Intelligent Transport System (ITS) City-wide | | |
|---|---|---|
| **The calculated LoS = ($LoS_1$ + $LoS_2$ + $LoS_3$ + $LoS_4$ + $LoS_5$ ) and identify overall LoS as mentioned below** | | |
| **Overall LoS** | **Calculated LoS** | **Comments** |
| 1 | 5 - 7 | The city has adequate ITS facilities |
| 2 | 8 - 10 | The city has ITS facilities which may need some improvements in terms of IntegratedTicketing System, Signal Synchronization, GPS/GPRS, PIS etc as some parts of the city are not served by it. |

| Overall Level of Service (LoS) of usage of Intelligent Transport System (ITS) City-wide | | |
|---|---|---|
| The calculated LoS = ($LoS_1$ + $LoS_2$ + $LoS_3$ + $LoS_4$ + $LoS_5$ ) and identify overall LoS as mentioned below | | |
| **Overall LoS** | **Calculated LoS** | **Comments** |
| 3 | 11 - 15 | The city has bare minimum ITS facilities and may need considerable improvements terms of Integrated Ticketing System, Signal Synchronization, GPS/GPRS, PIS etc as many parts of the city are not served by it. |
| 4 | 16 - 20 | The city lacks adequate ITS facilities |

Calculated Level of Service of ITS facilities in the Study Area = **LoS 1+ LoS 2 + LoS 3 + LoS 4 + LoS 5 = 2+3+4+3+4= 16**, Therefore, **overall LoS = 4**

**The city lacks adequate ITS**

### 5. Travel Speed (Motorized and Mass Transit) along Major Corridors

Travel speed along major corridors is assessed based on the following two different indicators:

i. Average travel speed of personal vehicles (kmph)
ii. Average travel speed of public transport (kmph)

### i. Average Travel Speed of Personal Vehicles (kmph)

A = Delineate the key corridors of the road traffic (personal vehicle) in the city
B = Compute average speed on the key corridors
C = Level of service for personal vehicle along each corridor.
D = Weight of each corridor based on volume of personal traffic Weightage of the nth corridor
$W_n$ = Length for nth corridor / Total length.

| LoS 1 | Average Travel Speed of Personal Vehicles (kmph) |
|---|---|
| 1 | >=30 |
| 2 | 25 - 30 |
| 3 | 15 - 25 |
| 4 | <15 |

Based on the above formula, the weightages of all the corridors as share of total length have been calculated for both the directions.

City-wide Level of Service for travel speed of motorized vehicles = ($W_1$*LoS corridor1) + ($W_2$ * LoS corridor 2) + ($W_3$ * LoS Corridor 3) +…. ($W_n$* LoS corridor n) = 1.285 = 2 (Rounded off to the next whole number).

Average Travel Speed of Personal Vehicle along key corridors (Kmph) = 27

Therefore, **LoS 1 = 2**.

| LoS | Percentage (personal vehicles) of LoS on Corridors |
|---|---|
| 1 (>=30 kmph) | 59% |
| 2(25 – 30 kmph) | 12% |
| 3 (15 -25 kmph) | 20% |
| 4 (<15 kmph) | 9% |

**ii. Average Travel Speed of Public Transport Vehicles (kmph)**

The average travel speed of public transport vehicles is 19 kmph.

Therefore, **LoS 2 = 2**

| LoS 2 | Average Travel Speed of Public Transport Vehicles (kmph) |
|---|---|
| 1 | >=20 |
| 2 | 15 – 20 |
| 3 | 10 – 15 |
| 4 | <10 |

**Overall Level of Service of Travel Speed along Major Corridors**

The reference table to compute the overall level of travel speed is given in **Table 2-5**.

**Table 2-5 | Reference Table for Computing Overall Level of Travel Speed**

| Overall Level of Service of Travel Speed along major corridors City wide | | |
|---|---|---|
| Calculated LoS = ($LoS_1$ + $LoS_2$) and identify overall LoS as mentioned below | | |
| **Overall LoS** | **Calculated LoS** | **Comments** |
| 1 | **2** | Primarily free flow- movement at average travel speeds usually about 70% of the free flow speed for the key corridors. |
| 2 | **3 -4** | Small increase in traffic causing substantial increase in approach delay and hence, decrease in arterial speed. |
| 3 | **5 -6** | Significant approach delays and average travel speed of 1/3 the free flow speed or lower. Such conditions causing combination of one or more reasons such as high signal density, extensive queuing at critical intersections and inappropriate signal timing. |
| 4 | **7 -8** | Key corridors at extremely low speeds below 1/3 to 1/4 of the free flow speed. Intersection congestion is likely at critical signalized locations, with high approach delays. |

Calculated Level of Service of travel speed facilities in the Study Area = **LoS 1+ LoS 2 =2+2 =4**

As the calculated LoS is 4, the overall LoS can be rated as **2**.

**Small increases in traffic causing substantial increase in approach delays and hence, decrease in arterial speed.**

**6. Availability of Parking Spaces**

Availability of parking spaces is assessed based on the two different indicators given below:

i. Availability of on-street paid public parking spaces (%)

ii. Ratio of maximum and minimum parking fee in the city

### i. Availability of On-Street Paid Public Parking Spaces (%)

In Pune urban area, most of the paid parking facilities fall under the category of off-street parking facility. Paid on-street parking is available at few locations only for around 3 kms. Most of the on-street parking is either free parking or unauthorised parking. Total available on-street parking spaces in ECS allotted for all vehicles are 17250 ECS. Therefore, availability of on-street public parking space can be considered as <25 %.

| LoS 1 | Availability of On-Street Public Parking Spaces (%) |
|---|---|
| 1 | >= 75 |
| 2 | 50 – 75 |
| 3 | 25 – 50 |
| 4 | < 25 |

Therefore, LoS 1= 4.

### ii. Ratio of Maximum and Minimum Parking Fee in the City

The minimum parking fee for two-wheeler and car is Rs.5 and maximum is Rs.20,

The ratio of maximum and minimum parking fee is 4 for Study Area. Therefore, **LoS 2 = 2**

| LoS 2 | Ratio of Maximum and Minimum Parking Fee in the City |
|---|---|
| 1 | >4 |
| 2 | 2 – 4 |
| 3 | 1 – 2 |
| 4 | 1 |

Overall Level of Service for Availability of Parking Spaces

The reference table to compute the overall level of parking spaces is given in **Table 2-6**.

**Table 2-6 | Reference Table for Computing Overall Level of Parking Space**

| Overall Level of Service (LoS) for Availability of Parking Space City-wide | | |
|---|---|---|
| **Calculated LoS = ($LoS_1$ + $LoS_2$) and identify overall LoS as mentioned below.** | | |
| **Overall LoS** | **Calculated LoS** | **Comments** |
| 1 | **2** | Paid parking spaces are available in the city and the demand is well managed by incorporating differential parking rates for the CBD. |
| 2 | **3 - 4** | Paid parking spaces are available in the city and the demand is well managed by incorporating differential parking rates for the CBD. However, some improvements may be required |
| 3 | **5 - 6** | Paid parking spaces provided in the city need to be improved upon and to cater to the demand some differential parking rates for the CBD have been adopted. The city authorities need to imitative considerable improvements measures. |
| 4 | **7 - 8** | The city authorities need to initiate immediate actions with respect to providing paid parking spaces and demand management for parking. |

Calculated Level of Service of parking facilities in the Study Area= LoS 1+ LoS 2 = 4+ 2 = 6

Therefore, **overall LoS = 3**

**Paid Parking Space provided in the city need to be improved upon and to cater to the demand some differential parking rates for the CBD have been adopted. The city authorities need to imitative considerable improvement measures.**

### 7. Road Safety

Road safety for Study Area is assessed based on the two indicators given below:

i. Fatality rate per lakh population
ii. Fatality rate for pedestrian and NMT (%)

#### i. Fatality Rate per Lakh of Population (%)

Accident data for the Study Area was collected from traffic police, calculation was done based on 2023 data (PMC+PCMC) and the corresponding year population.

| LoS 1 | Fatality rate Per Lakh of Population |
|---|---|
| 1 | <=2 persons |
| 2 | 2 – 4 persons |
| 3 | 4 – 6 persons |
| 4 | >6 persons |

A = Total number of fatalities recorded in road accidents within city limits in the given calendar year
= 721
B = Population of the Study Area in 2023 year
= 1,03,78,004 (estimated)

Fatality rate per 1,00,000 Population (ratio) = (A*1,00,000)/B = 6.94

More than 6 persons, Therefore, **LoS 1 = 4**

#### ii. Fatality Rate for Pedestrian and NMT

| LoS 2 | Fatality Rate for Pedestrian and NMT (%) |
|---|---|
| 1 | <=20 |
| 2 | 20 - 40 |
| 3 | 40 - 60 |
| 4 | >60 |

A = Total number of fatalities recorded of persons who were pedestrians /cyclists in road accidents for the year 2023
= 236
B = Total number of fatalities recorded in road accidents within city limits in the given year
= 721

Fatality rate for Pedestrian and NMT = [(A/B) *100] = 33

More than 20%, Therefore **LoS 2=2**

Reference Table for Computing Overall Level of Road Safety City-wide is given in **Table 2-7**.

**Table 2-7 | Reference Table for Computing Overall Level of Road Safety city-wide**

| Overall Level of Service (LoS) for Road Safety City-wide | | |
|---|---|---|
| **Calculated LoS = ($LoS_1$ + $LoS_2$) and identify overall LoS as mentioned below** | | |
| **Overall LoS** | **Calculated LoS** | **Comments** |
| 1 | 2 | Level of Fatality rate in a city is very low. |
| 2 | 3 - 4 | Need some improvements in road design and available road infrastructure, traffic management and in other such reasons which significantly contribute to road safety. |
| 3 | 5 - 6 | Need considerable improvements in road design and available road infrastructure, traffic management and in other such reasons which significantly contribute to road safety. |
| 4 | 7 - 8 | Level of Fatality rate in a city is very high. |

The Calculated Level of Service of road safety in the Study Area = **LoS 1+ LoS 2 = 4+ 2= 6**

The overall Level of Service of road safety in the Study Area is considered as 3.

**Need considerable improvements in Road design and available road infrastructure, traffic management and in other such reasons which significantly contribute to road safety.**

### 8. Pollution Levels

Pollution levels indicates the level of air pollutants in the city i.e., average level of pollution in urban areas. The indicator to calculate the pollution level is Annual Mean Concentration Range. The pollution data that needs to be collected includes:

i. Sulphur Dioxide ($SO_2$)
ii. Oxides of Nitrogen
iii. Suspended Particulate matter (SPM)
iv. Respirable Suspended Particulate Matter (RSPM) (Size less than 10 microns)

**Table 2-8 | Reference Table for Computing Pollution Levels**

| LoS | SO2 | Oxides of Nitrogen | SPM | RSPM (<10 microns) |
|---|---|---|---|---|
| 1 (Low) | 0-40 | 0-40 | 0-180 | 0-40 |
| 2 (Moderate) | 40-80 | 40-80 | 180-360 | 40-80 |
| 3 (High) | 80-120 | 80-120 | 360-540 | 80-120 |
| 4 (Critical) | >120 | >120 | >540 | >120 |

For Study Area, the pollution data collected is presented below.

**Table 2-9 | Details of Pollutant Levels in the Study Area**

| No. | Air Pollutant | Average Present | Level of Service |
|---|---|---|---|
| 1 | Sulphur Dioxide ($SO_2$) | 12 | 1 |
| 2 | Oxides of Nitrogen | 56 | 2 |
| 3 | Suspended Particulate matter (SPM) | 165 | 1 |
| 4 | RSPM (<10 microns) | 99 | 4 |

Reference Table for Computing Overall Level of Road Safety City-wide is given **Table 2-10**.

**Table 2-10 | Reference Table for Computing Overall Level of Service for Pollution**

| Overall Level of Service (LoS) for Pollution level City-wide | | |
|---|---|---|
| **Calculated LoS = ($LoS_1$ + $LoS_2$ + $LoS_3$ + $LoS_4$) and identify overall LoS as mentioned below** | | |
| **Overall LoS** | **Calculated LoS** | **Comments** |
| 1 | < = 5 | Level of pollution in a city is very low. |
| 2 | 6 - 9 | Need some improvements in emission standards, checking pollution etc. |
| 3 | 10 - 13 | Need considerable improvements in emission standards, checking pollution etc. |
| 4 | 14 - 16 | Level of pollution in a city is very high. |

The calculated Level of Service for pollution levels in the Study Area= LoS 1+ LoS 2 + LoS 3 + LoS 4 = 1+2+1+4 = 8, Therefore, **overall LoS = 2.**

**Need some improvements in emission standards, checking pollution etc.**

### 9. Integrated Land Use Transport System

The level of service for the integrated land use transport system for Study Area is assessed based on the following parameters:

i. Financial population density – Gross (Persons/developed area in hectare)
ii. Mixed land use on major transit corridors / network (% area under non-residential use)
iii. Intensity of development citywide (FSI)
iv. Intensity of development along transit corridor (FSI transit corridor/FSI)
v. Clear pattern and completeness of the network

vi. % of area under roads

vii. % network having exclusive ROW for transit network

**i. Population Density – Gross (Persons/Developed area in Ha)**

A = Developed area (in Hectare) computed from the satellite imagery

= 1,69,655 hectares

B = Population of the year 2024

=1,03,78,004

Population density = B/A= 61

| LoS 1 | Population density - Gross |
|---|---|
| 1 | >= 175 |
| 2 | 150 – 175 |
| 3 | 125 – 150 |
| 4 | < 125 |

Therefore, **LoS 1 = 4**

**ii. Mixed Land Use Zoning (Proportion of Non-residential area)**

A = Non-residential area along the transit corridor

= 6,441 hectares

B = Total area along the transit corridor

= 15,305 hectares

| LoS 2 | Mixed Land Use Zoning |
|---|---|
| 1 | >= 30 |
| 2 | 15 - 30 |
| 3 | 5 – 15 |
| 4 | <5 |

% of non-residential area to Total area along the transit corridor = (A/B) *100

= (6,441/15,305) *100 = 42%

Therefore, **LoS 2 = 1**

**iii. Intensity of Development Citywide – FSI**

Normally, FSI varies due to plot size, ground coverage and road width. FSI ranges from 1.5 to 2.0.

| LoS 3 | Intensity of Development Citywide FSI |
|---|---|
| 1 | >= 2 |
| 2 | 1.5 – 2.0 |
| 3 | 1.0 – 1.5 |
| 4 | <1 |

Therefore, **LoS 3 = 2**

**iv. Intensity of Development Citywide along Transit Corridor - FSI**

A = Floor Space Index (applicable to most part of the city) as per master plan/ DP.

The city wide FSI considered as 1.5 – 2.0.

B = FSI along transit corridor considered as =2.5 – 40

Intensity of development along transit corridor = B/A= 1.5-2.0,

| LoS 4 | Intensity of Development along Transit Corridor |
|---|---|
| 1 | >= 2 |
| 2 | 1.5 – 2.0 |
| 3 | 1.0 – 1.5 |
| 4 | <1 |

Therefore, **LoS 4 = 2**

### v. Clear pattern and completeness of Network

The entire network in study area is somewhat clear pattern (ring radial or grid iron) but somewhat incomplete network.

Hence, **LoS 5 = 2**

| LoS 5 | Clear pattern and completeness of Network |
|---|---|
| 1 | Clear pattern (ring radial or grid iron)and complete network |
| 2 | Somewhat clear pattern (ring radial or grid iron) but somewhat in complete network |
| 3 | Somewhat unclear pattern and in complete network |
| 4 | No clear pattern incomplete / sparse network |

### vi. % of Area under Roads (%)

A = Overall developed area
= 1697 sq.km
B = Overall area under road network
= 131Sq.km

Percentage of Area under road network = 7.71,

Therefore, **LoS 6 = 4**

| LoS 6 | % of Area under Roads |
|---|---|
| 1 | >=15 |
| 2 | 12 – 15 |
| 3 | 10 – 12 |
| 4 | < 10 |

### vii. % Network with exclusive ROW for Transit (For >1 million as per 2011 census)

A = Total Length of roads (Arterial and sub arterial) having ROW 9m
= 1170.06km
B = Total length of road having exclusive BRT/Metro/LRT/Monorail
= 106 km

% Network with exclusive ROW for transit = B/A*100

= 106/1170.6 = 9.05.

Therefore, **LoS 7 = 4**

| LoS 7 | % network having exclusive ROW for Transit Network |
|---|---|
| 1 | >=30 |
| 2 | 20-30 |
| 3 | 10-20 |
| 4 | < 10 |

**Overall Level of Service of Integrated Land use System**

The reference table to compute the overall level of integration of land use and transport system is given in **Table 2-11**.

**Table 2-11 | Reference Table for Computing Overall LOS for Integrated Land use Transport System**

| Overall Level of Service (LoS) for Integrated Land Use Transport system City-wide | | | |
|---|---|---|---|
| For > =1 million population: Calculated LoS = ($LoS_1$ + $LoS_2$ + $LoS_3$ + $LoS_4$ + $LoS_5$ + $LoS_6$ + $LoS_7$) and identify overall LoS as mentioned below | | | |
| For < 1 million population: Calculated LoS = ($LoS_1$ + $LoS_2$ + $LoS_3$ + $LoS_4$ + $LoS_5$ + $LoS_6$ ) and identify overall LoS as mentioned below | | | |
| Overall LoS | Calculated LoS | | Comments |
| | >= 1 million population | < 1 million population | |
| 1 | <=8 | <= 9 | City structure is appropriately planned in a manner which patronizes public transport. |
| 2 | 8 -15 | 9 - 14 | City structure is somewhat in coherence with the public transport system |
| 3 | 15 - 22 | 14 - 20 | Faint coherence between city structure and public transport system |
| 4 | 22- 28 | 20 - 24 | Inconsistency in the city structure and public transport system leading to lesser ridership and high dependence on personalized motor vehicles |

For a population >=1 million, overall Level of Service of Integrated Land use system= LoS 1+ LoS 2 +LoS 3 + LoS 4 + LoS 5 + LoS 6 + LoS 7= 4+1 +2 +2 +2 +4 + 4 =19

Therefore, **overall LoS = 3.**

**Faint Coherence between city structure and public transport system.**

### 10. Financial Sustainability of Public Transport

The level of service of financial sustainability of public transport by bus is assessed based on the following parameters.

i. Extent of non-fare revenue
ii. Staff/Bus ratio
iii. Operating ratio

### i. Extent of non-fare revenue

A = Revenue collections per annum from non-fare revenue sources
= Rs. 81,93,00,000 /-
B = Total revenue per annum
= Rs. 6,68,22,00,000/-

Extent of non-fare revenue = (A/B) X100= 12.26

| LoS 1 | Extent of Non fare revenue |
|---|---|
| 1 | >40 |
| 2 | 40-20 |
| 3 | 20-10 |
| 4 | <= 10 |

Therefore, **LoS 1 = 3**

| LoS 2 | Staff / bus ratio |
|---|---|
| 1 | <=5.5 |
| 2 | 5.5-8.0 |
| 3 | 8.0-10 |
| 4 | > 10 |

**ii. Staff bus ratio**

Staff per bus ratio = 4.63

Therefore, **LoS 2 =1**

**iii. Operating Ratio**

A – Cost of operations per bus = Rs. 10149 /-

B – Earnings per bus = Rs. 7201/-

Operating ratio = (A/B) = (10149/7201) = 1.4

| LoS 3 | Operating ratio |
|---|---|
| 1 | <0.7 |
| 2 | 0.7 -1.0 |
| 3 | 1.0-1.5 |
| 4 | >=1.5 |

Therefore, **LoS 3 =3**

Reference Table for Computing Overall Level of Service for Financial sustainability of public transport system is given in **Table 2-12**.

**Table 2-12 | Reference Table for Computing Overall LOS for Financial Sustainability of Public Transport system**

| The Overall LoS for Financial Sustainability of Public Transport by bus city wide | | |
|---|---|---|
| Calculated LoS = ($LoS_1$ + $LoS_2$ + $LoS_3$) and identify overall LoS as mentioned below | | |
| **Overall LoS** | **Calculated LoS** | **Comments** |
| 1 | **< = 4** | The public transport of a city is financially sustainable. |
| 2 | **5 - 7** | The public transport of a city is financially sustainable but needs some improvements |
| 3 | **8- 9** | The public transport of a city is financially sustainable but needs considerable improvements |
| 4 | **10 - 12** | The public transport of a city is not financially sustainable. |

The calculated Level of Service for Financial sustainability of public transport system in the Study Area= LoS 1+ LoS 2 + LoS 3 = 3+1+3 = 7

Therefore, overall LoS = 2

**The Public Transport of a city is financially sustainable but needs some**

# *Annexure 4-1*

*Comparison of MRT Routes of CMP 2018 and Present Study*

## ANNEXURE 4.1: COMPARISON OF MRT ROUTES OF CMP 2018 AND PRESENT STUDY

### Metro/BRTS Route with Remarks/Justification

| No | CMP-2018 | Updation of CMP 2018 | Remarks |
|---|---|---|---|
| 1 | Nigdi-Katraj (Metro) | Covered in the study (Metro) | Same alignment is proposed |
| 2 | Chandani Chowk – Wagholi (Metro) | Covered in the study (Metro) | Extension from Wagholi to Vittalwadi (4 km additional) proposed due to presence of travel demand |
| 3 | Hinjawadi- Shivaji Nagar (Metro) | Covered in the study (Metro) | Covered in Hinjawadi- Yewalewdi via Kondhwa |
| 4 | Shivaji Nagar-Hadapsar (Metro) | Covered in the study with multiple routes (Metro) | Covered in Hinjawadi – Yewalewadi and Kharadi – Khadakwasala route |
| 5 | Hinjawadi – Chakan (Metro) | Covered in the study (Metro) | Covered in Hinjawadi – Yewalewadi and Nigdi to Chakan route |
| 6 | Sinhagad Road (Veer baji Pasalkar Chowk to Pune Cant.) (Light Metro) | Kharadi – Khadakwasala (Metro) | Proposed as Conventional Metro in the Updation study due to presence of travel demand |
| 7 | Warje – Swargate (Light Metro) | Covered in the Study (Metro) | Included as Spur line from SNDT to Warje |
| 8 | Wagholi – Pawar Wasti – Hinjawadi (Light Metro) | Covered with BRTS Corridors | Chinchwad Chowk to Hinjawadi and Gavli Matha Chowk to Shewalewadi via Wagholi proposed as BRTS due to low travel demand |
| 9 | Chandini Chowk – Hinjawadi (Light Metro) | Covered with BRTS system | Proposed as BRTS corridor due to low travel demand |
| **Newly Added Corridors** | | | |
| 1 | - | University Chowk to Dehu Road (Metro) | Aundh Ravet BRTS system in operation to be upgraded to Metro due to availability of travel demand. |
| 2 | - | Nigdi – Chakan (via Ravet, Wakad, Nashik Phata) (Metro) | Proposed in CMP as Hinjawadi to Chakan Corridor<br>Currently proposed along HCMTR from Nigdi in PCMC with Chakan in the North of the city |
| 3 | - | Hadapsar to Saswad Road (Metro) | Proposed due to PHPDT |
| 4 | - | Hadapsar to Loni Kalbhor (Metro) | Extension of proposed District Court -Hadapsar Line with Multimodal Interchange at Loni Kalbhor Railway station would provide better connectivity to far off places due to proposed feeder line to Bypass Railway Line |
| 5 | - | District Court to Alandi (Metro-Lite) | Bhokhel to Alandi was proposed in CMP 2018 as BRTS. Proposed as Metro-Lite due to low travel demand |

**Table 1 BRTS Route Reasoning**

| No. | CMP-2018 | Updation of CMP 2018 | Remarks |
|---|---|---|---|
| 1 | Yerwada - Airport | Suggested as bus system | Proposed as bus system considering the travel demand |
| 2 | Kaspate Wasti – Kalewadi Phata | Not included | Smaller length (1.8 km) |
| 3 | HCMTR PMC | Covered with Metro Lite | |
| 4 | HCMTR PCMC | Covered with Metro Lite | |
| 5 | Chinchwad- Talwade | Covered with multiple corridor | |
| 6 | BRTS along the Westerly Bypass | Covered with Metro Lite | |
| 7 | Ring road BRTS | | Not proposed due to low travel demand |

# *Annexure 4-2*

*Route Rationalization - PMPML*

## ANNEXURE 4.2: ROUTE RATIONALIZATION - PMPML

| No | PMPML Route | Origin | Destination |
|---|---|---|---|
| 1 | 100-D | Hinjawadi Maan Phase 3 | PMC Nadikhathi |
| 2 | 100-U | PMC Nadikhathi | Hinjawadi Maan Phase 3 |
| 3 | 100B-D | Hinjawadi Maan Phase 3 | Baner |
| 4 | 100B-D | Hinjawadi Maan Phase 3 | Baner |
| 5 | 100B-U | Baner | Hinjawadi Maan Phase 3 |
| 6 | 100B-U | Baner | Hinjawadi Maan Phase 3 |
| 7 | 100C-D | Hinjawadi Maan Phase 3 | Pune Station |
| 8 | 111M-D | PMC Congress Bhavan | Bhekrai Nagar |
| 9 | 117-D | Dhayareshwar Mandir | Natraj Stand |
| 10 | 117-U | Natraj Stand | Dhayareshwar Mandir |
| 11 | 117B-D | Raikarmala | Natraj Stand |
| 12 | 117B-U | Natraj Stand | Raikarmala |
| 13 | 117D-D | Jadhav Nagar Sinhgad Road | Natraj Stand |
| 14 | 117D-U | Natraj Stand | Jadhav Nagar Sinhgad Road |
| 15 | 118C-D | Nanded Gaon | Natraj Stand |
| 16 | 118C-U | Natraj Stand | Nanded Gaon |
| 17 | 15-D | Dsk Vishwa | Bhekrai Nagar |
| 18 | 15-U | Bhekrai Nagar | Dsk Vishwa |
| 19 | 167-D | Kesnand Phata Wagholi | Bhekrai Nagar |
| 20 | 17-D | Narhegaon | Natraj Stand |
| 21 | 17-U | Natraj Stand | Narhegaon |
| 22 | 183-D | Kolawadi | Hadapsar Gadital Solapur Road |
| 23 | 183-U | Hadapsar Gadital Solapur Road | Kolawadi |
| 24 | 183B-D | Kesnand Phata Wagholi | Hadapsar Gadital Solapur Road |
| 25 | 183B-U | Hadapsar Gadital Solapur Road | Kesnand Phata Wagholi |
| 26 | 184-D | Ramdara | Hadapsar Gadital |
| 27 | 184-U | Hadapsar Gadital | Ramdara |
| 28 | 193A-D | Khamgaon | Hadapsar Gadital Solapur Road |
| 29 | 193A-U | Hadapsar Gadital Solapur Road | Khamgaon |
| 30 | 199-D | Shewalewadi Depot | Kothrud Depot |
| 31 | 199-U | Kothrud Depot | Shewalewadi Depot |
| 32 | 203B-D | Pune Station St. Helena's Stand | Bhekrai Nagar |
| 33 | 203B-U | Bhekrai Nagar | Pune Station St. Helena's Stand |
| 34 | 204-U | Bhekrai Nagar | Chinchwadgaon Aundh Road |
| 35 | 207-D | Saswad | Swargate |
| 36 | 207-U | Swargate | Saswad |
| 37 | 207A-D | Saswad | Hadapsar Gadital |
| 38 | 207A-U | Hadapsar Gadital | Saswad |
| 39 | 207AC-D | Saswad | PMC |
| 40 | 207AC-U | PMC | Saswad |

| No | PMPML Route | Origin | Destination |
|---|---|---|---|
| 41 | 207K-D | Narayanpur | Hadapsar Gadital |
| 42 | 207K-U | Hadapsar Gadital | Narayanpur |
| 43 | 208-D | Hinjawadi Maan Phase 3 | Bhekrai Nagar |
| 44 | 208-D | Hinjawadi Maan Phase 3 | Bhekrai Nagar |
| 45 | 208-D | Hinjawadi Maan Phase 3 | Bhekrai Nagar |
| 46 | 208-U | Bhekrai Nagar | Hinjawadi Maan Phase 3 |
| 47 | 208-U | Bhekrai Nagar | Hinjawadi Maan Phase 3 |
| 48 | 208-U | Bhekrai Nagar | Hinjawadi Maan Phase 3 |
| 49 | 210-D | Midc Jejuri | Hadapsar Gadital |
| 50 | 210-U | Hadapsar Gadital | Midc Jejuri |
| 51 | 212-D | Morgaon St stand | Hadapsar Gadital |
| 52 | 212-U | Hadapsar Gadital | Morgaon St stand |
| 53 | 228-D | Vadgaon Mawal | Katraj |
| 54 | 228-U | Katraj | Vadgaon Mawal |
| 55 | 228A-D | Vadgaon Mawal | Balewadi Depot |
| 56 | 228A-U | Balewadi Depot | Vadgaon Mawal |
| 57 | 228J-D | Gahunje Stadium | Katraj |
| 58 | 228J-D | Gahunje Stadium | Katraj |
| 59 | 228J-U | Katraj | Gahunje Stadium |
| 60 | 228J-U | Katraj | Gahunje Stadium |
| 61 | 228S-D | Katraj | Katraj |
| 62 | 228S-D | Katraj | Katraj |
| 63 | 228S-U | Katraj | Katraj |
| 64 | 228S-U | Katraj | Katraj |
| 65 | 291-D | Hadapsar Gadital | Katraj Kondhwa Road |
| 66 | 291-U | Katraj Kondhwa Road | Hadapsar Gadital |
| 67 | 294-R | Katraj | Katraj |
| 68 | 295-R | Katraj | Katraj |
| 69 | 301-D | Shewalewadi Depot | Katraj |
| 70 | 301-U | Katraj | Shewalewadi Depot |
| 71 | 301A-D | Bhekrai Nagar | Katraj |
| 72 | 301A-U | Katraj | Bhekrai Nagar |
| 73 | 301C-D | Hadapsar Gadital | Swargate |
| 74 | 301C-U | Swargate | Hadapsar Gadital |
| 75 | 313C-D | Chinchwadgaon | Balewadi Depot |
| 76 | 313C-U | Balewadi Depot | Chinchwadgaon |
| 77 | 317B-D | Sambhaji Nagar | Dapodi |
| 78 | 324-D | Hinjawadi Maan Phase 3 | Bhosari Terminal |
| 79 | 324-U | Bhosari Terminal | Hinjawadi Maan Phase 3 |
| 80 | 336-D | Bhakti Shakti Stand | Kesnand Phata Wagholi |
| 81 | 345-D | Hinjawadi Maan Phase 3 | Bhosari Terminal |
| 82 | 345-U | Bhosari Terminal | Hinjawadi Maan Phase 3 |

| No | PMPML Route | Origin | Destination |
|---|---|---|---|
| 83 | 35-D | Mukhai Chowk | PMC Nadikhathi |
| 84 | 35-U | PMC Nadikhathi | Mukhai Chowk |
| 85 | 355A-D | Nageshwar Vidyalaya Chikhali | Radha Hotel Balewadi |
| 86 | 355A-D | Nageshwar Vidyalaya Chikhali | Radha Hotel Balewadi |
| 87 | 355A-D | Nageshwar Vidyalaya Chikhali | Radha Hotel Balewadi |
| 88 | 355A-U | Radha Hotel Balewadi | Nageshwar Vidyalaya Chikhali |
| 89 | 355A-U | Radha Hotel Balewadi | Nageshwar Vidyalaya Chikhali |
| 90 | 358-D | Rajguru Nagar Law Collage | Bhosari Chakan Road |
| 91 | 358-U | Bhosari Chakan Road | Rajguru Nagar Law Collage |
| 92 | 358A-U | Bhosari Chakan Road | Bhamchandra Vidhyalay Vasuli |
| 93 | 358A-U | Bhosari Chakan Road | Bhamchandra Vidhyalay Vasuli |
| 94 | 358B-D | Chakan Ambethan Chowk | Bhosari PMT Chowk |
| 95 | 358B-D | Chakan Ambethan Chowk | Bhosari PMT Chowk |
| 96 | 358B-U | Bhosari Chakan Road | Chakan Ambethan Chowk |
| 97 | 358B-U | Bhosari Chakan Road | Chakan Ambethan Chowk |
| 98 | 359A-D | Rajguru Nagar Law Collage | Pimplegurav |
| 99 | 359A-U | Pimplegurav | Rajguru Nagar Law Collage |
| 100 | 35J-U | PMC Dengle Pul Nadikhathi | PMC Dengle Pul Nadikhathi |
| 101 | 35S-U | PMC Dengle Pul Nadikhathi | PMC Dengle Pul Nadikhathi |
| 102 | 364-D | Chakan Ambethan Chowk | Alandi |
| 103 | 364-U | Alandi | Chakan Ambethan Chowk |
| 104 | 366-D | Bhakti Shakti Stand | Pune Station Depot |
| 105 | 36A-D | Chinchwadgaon | Baner Depot |
| 106 | 36A-U | Baner Depot | Chinchwadgaon |
| 107 | 370-D | Davdigaon | Bhosari Chakan Road  Vai Kharpudi |
| 108 | 370-U | Bhosari Chakan Road | Davdigaon  Vai Rajguru Nagar |
| 109 | 372A-D | Megapolis Phase 3 | Balewadi Depot |
| 110 | 372A-D | Megapolis Phase 3 | Balewadi Depot |
| 111 | 372A-U | Balewadi Depot | Megapolis Phase 3 |
| 112 | 372A-U | Balewadi Depot | Megapolis Phase 3 |
| 113 | 373A-D | Hinjawadi Maan Phase 3 | Radha Hotel Balewadi |
| 114 | 373A-D | Hinjawadi Maan Phase 3 | Radha Hotel Balewadi |
| 115 | 373A-U | Radha Hotel Balewadi | Hinjawadi Maan Phase 3 |
| 116 | 373A-U | Radha Hotel Balewadi | Hinjawadi Maan Phase 3 |
| 117 | 43-D | Bhakti Shakti | Katraj |
| 118 | 43-D | Bhakti Shakti | Katraj |
| 119 | 43-D | Bhakti Shakti | Katraj |
| 120 | 43-U | Katraj | Bhakti Shakti |
| 121 | 43-U | Katraj | Bhakti Shakti |
| 122 | 43A-D | Hinjawadi Maan Phase 3 | Katraj |
| 123 | 43A-D | Hinjawadi Maan Phase 3 | Katraj |
| 124 | 43A-D | Hinjawadi Maan Phase 3 | Katraj |

| No | PMPML Route | Origin | Destination |
|---|---|---|---|
| 125 | 43A-U | Katraj | Hinjawadi Maan Phase 3 |
| 126 | 43A-U | Katraj | Hinjawadi Maan Phase 3 |
| 127 | 43AC-D | Hinjawadi Maan Phase 3 | Baner Depot |
| 128 | 43AC-D | Hinjawadi Maan Phase 3 | Baner Depot |
| 129 | 43AC-U | Baner Depot | Hinjawadi Maan Phase 3 |
| 130 | 43AC-U | Baner Depot | Hinjawadi Maan Phase 3 |
| 131 | 44-D | Akurdi Railway Station | Katraj |
| 132 | 44-U | Katraj | Akurdi Railway Station |
| 133 | 44A-D | Akurdi Railway Station | Radha Hotel |
| 134 | 44A-U | Radha Hotel | Akurdi Railway Station |
| 135 | 47-D | Sanaswadi Nandoshi | Swargate |
| 136 | 47-U | Swargate | Sanaswadi Nandoshi |
| 137 | 51-U | Shivaji Nagar | Dsk Vishwa |
| 138 | 51A-D | Dhayareshwar Mandir | Shivaji Nagar |
| 139 | 51A-U | Shivaji Nagar | Dhayareshwar Mandir |
| 140 | 64M-D | Ganpati Matha | Hadapsar Gadital |
| 141 | 64M-U | Hadapsar Gadital | Ganpati Matha |
| 142 | 65-D | Yavat | Hadapsar Gadital Solapur Road |
| 143 | 65-U | Hadapsar Gadital Solapur Road | Yavat |
| 144 | 65A-D | Gram Panchayat Karyalay Varvand | Hadapsar Gadital Solapur Road |
| 145 | 65A-U | Hadapsar Gadital Solapur Road | Gram Panchayat Karyalay Varvand |
| 146 | 67-D | Uruli Kanchan | Hadapsar Gadital Solapur Road |
| 147 | 67-U | Hadapsar Gadital Solapur Road | Uruli Kanchan |
| 148 | 67C-D | Uruli Railway Station | Hadapsar Gadital Solapur Road |
| 149 | 67C-U | Hadapsar Gadital Solapur Road | Uruli Railway Station |
| 150 | 67D-D | Mhatobachi Alandi | Hadapsar Gadital Solapur Road |
| 151 | 73A-D | Gada Modi Chowk Khamgaon | Hadapsar Gadital Solapur Road |
| 152 | 73A-U | Hadapsar Gadital Solapur Road | Gada Modi Chowk Khamgaon |
| 153 | 74A-D | Dange Chowk | Radha Hotel |
| 154 | 74A-U | Radha Hotel | Dange Chowk |
| 155 | 76-U | PMC Congress Bhavan | Galinde Path |
| 156 | 77-D | Hinjawadi Maan Phase 3 | Galinde Path |
| 157 | 77-D | Hinjawadi Maan Phase 3 | Galinde Path |
| 158 | 77-U | Galinde Path | Hinjawadi Maan Phase 3 |
| 159 | 77-U | Galinde Path | Hinjawadi Maan Phase 3 |
| 160 | 85B-U | PMC Congress Bhavan | Ganpati Matha |
| 161 | 91-U | PMC Congress Bhavan | Isha Nagari |
| 162 | Ratrani3-D | Hadapsar Gadital | Swargate |
| 163 | Ratrani3-U | Swargate | Hadapsar Gadital |
| 164 | SBMS01 | Saswad | Indira Gandhi Chowk |
| 165 | SBMS01-RVR | Indira Gandhi Chowk | Saswad |
| 166 | SBMS08 | Katraj | Bhujabal Chowk |

| No | PMPML Route | Origin | Destination |
|---|---|---|---|
| 167 | SBMS08 | Katraj | Bhujabal Chowk |
| 168 | SBMS08-RVR | Bhujabal Chowk | Katraj |
| 169 | SBMS10 | Nashik Phata | Rajgurunagar |
| 170 | SBMS11 | Varanand | Hadapsar |
| 171 | SBMS11-RVR | Hadapsar | Varanand |
| 172 | SBPB01 | Private Bus Routes | |
| 173 | SBPB01-RVR | | |
| 174 | SBPB08 | | |
| 175 | SBPB08-RVR | | |
| 176 | SBPB10-RVR | | |
| 177 | SBPB11 | | |
| 178 | SBPB11-RVR | | |

# *Annexure 4-3*

*Missing Links of PMC & PCMC*

## ANNEXURE 4.3: MISSING LINK OF PMC

| Category | No | Name | Length (km) |
|---|---|---|---|
| Prioritised Missing Links | 1 | Karve Putla Petrol Pump to Kothrud Link | 0.4 |
| | 2 | Ambedkar Chowk - Jawalkar Udyan River Road | 0.1 |
| | 3 | Kokan Express Chowk - Pinac Memories | 0.2 |
| | 4 | Shastri Nagar - VIP Road | 1.0 |
| | 5 | Vision Cricket Academy – Highway | 0.4 |
| | 6 | Amanora to Keshavnagar RUP | 1.2 |
| | 7 | Shooting Range to Magarpatta City | 0.3 |
| | 8 | Mutha Bridge RHS Riverside Road Shivram Mhat | 0.4 |
| | 9 | NH Service Road Nawale to Bhumkar Chowk | 0.6 |
| | 10 | Hadapsar to Magarpatta Link Chetan Tupe | 0.1 |
| | 11 | Kodre Farm Prayeja City | 0.4 |
| | 12 | Pandhare Mala to Dmart Gavthan B | 0.5 |
| | 13 | Pandhre Mala to D Mart Gaothan | 0.5 |
| | 14 | Kondhwa Fire Stn to BG Lonkar Path | 0.6 |
| | 15 | Lake Town to Satara Road Sri Ram Mandir | 0.1 |
| | 16 | Aeromall to Airport Road 205 | 0.5 |
| | 17 | NH To Kothrud - Tirupati Nagar Link | 1.3 |
| | 18 | Sai Elcave to Sutarwadi | 0.4 |
| | 19 | Shila Vihar SRA Toilet | 0.1 |
| | 20 | Kondhwa WAKF board land link | 0.2 |
| | 21 | Rajas soc to sukhsagar nagar | 0.1 |
| | 22 | Gunjan to River side kharadi road | 0.2 |
| | 23 | Weikfield to Sakore nagar Nagar road | 0.6 |
| | 24 | Airport Symbiosis school | 0.4 |
| | 25 | Hume factory to Sinhgad road | 0.6 |
| | 26 | Mahatma soc lane 8 - Pramathesh | 0.4 |
| | 27 | River Dale Unity Kharadi | 0.2 |
| | 28 | Eklavya college to Highway link | 0.1 |
| | 29 | old palkhi road dada gujar school to handewadi link | 0.3 |
| | 30 | Railway line to Solapur road | 0.8 |
| | 31 | Magarpatta to Honeywell Incab | 0.1 |
| | 32 | Handewadi link road Yogesh Sasane | 0.1 |
| | 33 | Paud road to Karve road Chitale Bandhu | 0.1 |
| | 34 | NH to Sus road link | 0.1 |
| | 35 | Kharadi Nyati Empire link | 0.5 |
| | 36 | Kale Padal Underpass to Handewadi | 0.4 |
| | 37 | From NH65 to Ghotemala Bus stop,Hadapsar - Saswad - Jejuri Rd | 27.0 |
| | 38 | Service Lane along Westerly Bypass | 21.6 |
| | 39 | Shivne Kharadi Riverside road | 12.3 |
| | 40 | From Grnat Rd to Manjari Rd | 8.7 |
| | 41 | From Upper Kharadi Main Rd to Bakori Rd, Kolte - Magar Vasti | 8.2 |
| | 42 | From Raja Bahadur Mill Rd to Mundhwa Bridge | 7.9 |
| | 43 | From Mahadji Shinde Rd to NH 48 | 7.7 |
| | 44 | From Hinjawadi Road to Chnade Road | 7.0 |
| | 45 | From NH48 to Valevadi Rd | 5.4 |
| | 46 | From DN Parande Park Marg to Pune - Alandi Rd | 5.4 |
| | 47 | From Nande - Balewadi Rd to Hinjawadi - Kasarsai Rd | 4.9 |
| | 48 | NH60 to Pune - Natepute Rd | 4.8 |
| | 49 | From Kawade Wasti Rd, Wagholi to Nagar Road | 4.7 |
| | 50 | From NH48 to Paud Rd | 4.5 |
| | 51 | From Kamthe Patil Complex Near Yewalewadi Kaman, Kondhwa - Saswad Rd to Mail No 19 Ghat Matha Rd | 4.4 |
| | 52 | Alandi Road to DN Parande Park Marg | 4.4 |
| | 53 | From Katraj Bypass Rd to Shewalwadi Rd | 4.3 |
| | 54 | From NH60 to Pune - Natepute Rd to MH SH 114, Mangadewadi | 4.2 |
| | 55 | From Pune - Natepute Rd, Kondhwa Budruk to Autadwadi Handewadi | 4.1 |
| | 56 | Saswad Road to Sudarshannagar Rd | 4.1 |
| | 57 | From Awhalwadi Rd to Theur Kesnand Rd | 4.0 |
| | 58 | From Alandi Rd to Bhim Nagar, Moshi | 3.8 |
| | 59 | From Katraj - Kondhwa Rd to Danny Mehata Nagar Industrial Area Rd | 3.8 |
| | 60 | From Katraj Bypass Rd toPune - Natepute Rd (New Link) to Katraj - Kondhwa Rd to Danny Mehata Nagar Industrial Area Rd (New Link) | 3.6 |
| | 61 | From Pune - Natepute Rd to Wanowrie Rd | 3.6 |
| | 62 | From Kalyani Nagar Rd to Riverfront Rd | 3.5 |
| | 63 | Fursungi Saswad Link Road to Pandavdand Rd | 3.4 |
| | 64 | From Prince of Wales Dr Rd to Vibgyor School Rd | 3.3 |
| | 65 | From Nyati Estate Rd to Saswad Road Railway Station | 3.3 |

| Category | No | Name | Length (km) |
|---|---|---|---|
| | 66 | Wadki rd to Vighnaharta Height, solapur Rd | 3.1 |
| | 67 | From Lane Number 11, Ramtekdi Industrial Area to Kale Borate Nagar Rd | 3.1 |
| | 68 | From DP Road to Shivram Matre Rd, | 3.1 |
| | 69 | From Bhushan Society Bus stop to Khadi Machine Chowk | 2.9 |
| | 70 | Sus Ln to Jay Bhavani Rd to Guest House rd | 2.9 |
| | 71 | Link road bw Sanaswadi rd to Kolewadi Rd | 2.9 |
| | 72 | From Lane 13, Sahakarvrund Society, Paud Rd to Janawadi Rd to Panchawati Rd | 2.8 |
| | 73 | Internal Road across NH48 TO DSK Ramwara Rd | 2.8 |
| | 74 | Sus Ln to Jay Bhavani Rd | 2.7 |
| | 75 | From Patil Vasti Rd to Lohgaon - Wagholi Rd | 2.6 |
| | 76 | Indira Nagar, Khadki Bazar to Tank Rd, Shanti Nagar | 2.6 |
| | 77 | From Lane Number 11, Ramtekdi Industrial Area to Laxmi Nagar Rd, Mohammed Wadi | 2.6 |
| | 78 | From Sus Ln, Sutarwadi to Someshwar Wadi Rd | 2.6 |
| | 79 | From Chandwadi Rd to Solapur Mumbai Bypass Rd | 2.6 |
| | 80 | From NH60 to Chakan Shikrapur Rd | 2.6 |
| | 81 | From Nagar Road to Lohgaon-Wagholi Road | 2.6 |
| | 82 | From New Wakad - Hinjawadi Link Rd to Nande - Balewadi Rd | 2.5 |
| | 83 | From Viman Nagar 2nd Avenue to Airport Rd, MLS Colony | 2.5 |
| | 84 | From Tingre Pk Rd Number 5 to DY Patil University Rd | 2.5 |
| | 85 | From Gokul Nagar Lane No.5 to Pune - Natepute Rd | 2.4 |
| | 86 | From Wagholi - Keshnand Rd to Pune-ahemdabad Highway | 2.4 |
| | 87 | From Pune - Natepute Rd to Wanowrie Rd (New Link) to Mohammedwadi Rd | 2.4 |
| | 88 | Sus Road to North Road (New Link) to Sus Road | 2.4 |
| | 89 | From Raheja Circle to Undri - Hadapsar Rd | 2.4 |
| | 90 | From Pune - Natepute Rd, Kondhwa Budruk to Autadwadi Handewadi to Undri-Pisoli Rd | 2.4 |
| | 91 | From Patil Wasti Rd, Patil Nagar to Balewadi High St | 2.4 |
| | 92 | From [Katraj Bypass Rd toPune - Natepute Rd (New Link) to Katraj - Kondhwa Rd to Danny Mehata Nagar Industrial Area Rd (New Link)] to Pansare Nagar Rd | 2.3 |
| | 93 | From Dhankawadi Rd to Sinhgad Rd | 2.3 |
| | 94 | Mundhwa - Manjari Rd to Ansari Phata Rd | 2.3 |
| | 95 | From NH48 to Dhiree Village Rd, Dhayari | 2.3 |
| | 96 | Manjri-Hadapsar Rd to NH65 | 2.2 |
| | 97 | Atul Nagar, Warje | 2.2 |
| | 98 | From Awhalwadi Rd opposite to Jyotiba Nagar Rd to Awhalwadi Bus Stop | 2.2 |
| | 99 | Karve Nagar to Ram Nagar, Warje | 2.1 |
| | 100 | From Jambhe Road to Kate Wasti rd, Punawale | 2.1 |
| | 101 | Datta Digambar Colony Rd to Nanded Fata, Pandurang Industrial Area | 2.1 |
| | 102 | From Mundhwa Road to Hadapsar-Manjari Road | 2.1 |
| | 103 | From [Katraj-Hadapsar Bypass Rd to Handewadi Rd (New Link) to Nyati Estate Rd to Saswad Road Railway Station (New Link)] to Adarsh Nagar Rd | 2.1 |
| | 104 | Kolwadi Rd, Sashte to Wadegaon rd | 2.1 |
| | 105 | From Dhanori Rd to Khandoba Mal Rd | 2.1 |
| | 106 | From NH-65 to Katraj-Hadapsar Bypass Rd | 2.0 |
| | 107 | From Nandoshi Rd, Bhairavnath Nagar to Nandoshi Rd-Wanjalewadi rd | 2.0 |
| | 108 | From NH-48 to Narveer Tanaji Malusare Rd | 2.0 |
| | 109 | From Chandan Nagar Bus stop, Nagar Rd to Brahmakumaris Rd,nagar road | 1.9 |
| | 110 | From Mundhwa Rd to Kalyani Nagar - Wadgaon Sheri Rd | 1.9 |
| | 111 | From Sinhgad Rd to Raikar Mala Rd | 1.9 |
| | 112 | From Chandwadi Rd to Wadaki-Phursungi Rd | 1.9 |
| | 113 | From NH65 to Yavat Station Rd | 1.9 |
| | 114 | From Wagholi Road to Khadi Machine Road | 1.8 |
| | 115 | From Nande - Balewadi Rd to Hinjawadi - Kasarsai Rd (New Link) to Phase 1 Rd, Hinjawadi Rajiv Gandhi Infotech Park | 1.8 |
| | 116 | From Hinjawadi Road to Chnade Road (New Link) to Maan Rd | 1.8 |
| | 117 | NH48 rosary school Bus Stop to NH48 Cipla Centreus Stop | 1.8 |
| | 118 | From Gangadham - Shatrunjay Rd near Ramyanagari Housing Society to near Aaimata Mandir Bus Stand Gangadham - Shatrunjay Rd | 1.7 |
| | 119 | From Katraj Bypass Rd toPune - Natepute Rd | 1.7 |
| | 120 | Ambedkar Wasti, Vijay Nagar to DN Parande Park Marg | 1.7 |
| | 121 | From Prayeja City Rd to Nanded City Rd | 1.7 |
| | 122 | From A R A I Rd, Hanuman Nagar to Senapati Bapat Rd | 1.7 |
| | 123 | From Aundh - Ravet BRTS Rd to S Main Rd, Walhekarwadi | 1.7 |
| | 124 | From Someshwar Wadi Rd to NDA Pashan Rd | 1.7 |
| | 125 | From Vidyasagar Colony to Chhatrapati Shivaji Maharaj Flyover | 1.7 |
| | 126 | From Wadgaon Budruk - Narhe Rd to Sinhgad College Rd | 1.7 |
| | 127 | From Baner - Pashan Link Rd to Baner Hls Rd | 1.6 |
| | 128 | Link road to Nandoshi road to Kalewadi | 1.6 |
| | 129 | From Khadakwasla Village Bypass Rd to Kirkatwadi Village Rd | 1.6 |
| | 130 | From Patil Vasti Rd to Lohgaon - Wagholi Rd (New Link) to Lohgaon - Wagholi Rd | 1.6 |
| | 131 | From Anudh-Ravet BRTS Road to Walhekar Wadi Rd | 1.6 |

| Category | No | Name | Length (km) |
|---|---|---|---|
| | 132 | From NH65 to Autadewadi Rd | 1.6 |
| | 133 | From NIBM Ext Rd to NIBM Kondhwa Link Rd (New Link) to Katraj Bypass Rd to Shewalwadi Rd (New Link) | 1.6 |
| | 134 | From Katraj-Hadapsar Bypass Rd to Handewadi Rd (New Link) to Nyati Estate Rd to Saswad Road Railway Station (New Link) | 1.5 |
| | 135 | From Mundhwa Rd to BG Shirke Rd | 1.5 |
| | 136 | From Range Hills Rd to Ganeshkhind rd | 1.5 |
| | 137 | From Theur Kesnand Rd to Wagholi - Rahu Rd | 1.5 |
| | 138 | Nande - Balewadi Rd to Near Mumbai Pune Bypass Road, Pashan Hwy Side Rd | 1.5 |
| | 139 | From Airport Road to Lane Number 11, Gokul Nagar | 1.5 |
| | 140 | From Shankarrao Madhukar Ghule Patil Rd to Mohammed Wadi | 1.5 |
| | 141 | From Hinjawadi Road to Chnade Road (New Link) to Maan Road | 1.5 |
| | 142 | From Shiv Malhar Colony Rd to Ganga Nagar Main Rd | 1.4 |
| | 143 | From Hinjawadi - Wakad Rd to Sakhare Vasti Rd, near WTP plant Gangaji, Phase 1 | 1.4 |
| | 144 | From Hadapsar Railway Station Rd to Magarpatta Rd | 1.4 |
| | 145 | From Teen Hatti Chowk Rd to Taljai Tekdi Rd | 1.4 |
| | 146 | From NH48 to Nande - Balewadi Rd | 1.4 |
| | 147 | From Raykar Mala Dhayari Bus stop to near GDSK Road, Chavan Bagh | 1.4 |
| | 148 | NH60 to Pune - Natepute Rd to Gujar Wadi Rd | 1.4 |
| | 149 | From Khadoba Mandir, Lane 3, Kondhwa Budruk to Saswad Rd, Yewalewadi | 1.4 |
| | 150 | Nandoshi Road to Kohelwadi hill point, Kohelwadi | 1.4 |
| | 151 | Gangadham - Shatrunjay Rd to Upper Indira Nagar, Bibwewadi | 1.4 |
| | 152 | Jagdamba Bhawan Marg to Tata Inora Park Ln | 1.4 |
| | 153 | From Mundhwa - Kharadi Rd to Manjari Rd | 1.4 |
| | 154 | From Near Gandhi Bhavan Road to Warje Naka Rd, Warje Jakat Naka | 1.4 |
| | 155 | From Lohgaon - Wagholi Rd to Pathare Wasti Rd | 1.4 |
| | 156 | From JJC Colony rd, Ramtekadi to Magarpatta Rear Approach Rd | 1.4 |
| | 157 | From [Pune - Natepute Rd to Wanowrie Rd (New Link) to Mohammedwadi Rd] to Kedari Nagar Rd to Palkhi Rd (New Link)] to Mohammedwadi Rd | 1.4 |
| | 158 | Nande - Balewadi Rd to Vibgyor School Rd | 1.4 |
| | 159 | From Tiranga Chowk to Jagdamba Bhavan Marg | 1.4 |
| | 160 | From Rd Number 3,Sainath Nagar to Riverfront Rd, Thite Nagar | 1.4 |
| | 161 | From Gangadham - Shatrunjay Rd to Kondhwa Main Rd | 1.4 |
| | 162 | Nagar Rd to Upper Kharadi Main Rd | 1.3 |
| | 163 | More Wasti Road to Hanuman Temple at Haveli | 1.3 |
| | 164 | From Tingre Dhanori Rd to Dhanori Rd, Madhav Nagar | 1.3 |
| | 165 | Link Road to Punyadhan Ashramam Road to Katraj-Hadapsar Bypass Road | 1.3 |
| | 166 | From Baner - Aundh Rd to Baner - Pashan Link Rd (New Link) to Pashan Gaon Road | 1.3 |
| | 167 | From Sangamwadi Bridge to Old Mumbai - Pune Hwy | 1.3 |
| | 168 | From Bibwewadi Kondhwa Rd to Gangadham - Shatrunjay Rd | 1.3 |
| | 169 | From NH65 to Yewalewadi Rd | 1.3 |
| | 170 | From NDA Pashan Rd toPanchawati Rd | 1.3 |
| | 171 | FromLohgaon Rd to Choudhari Nagar (New Link) to ational Games Marg | 1.2 |
| | 172 | From Lonikand Road to Haveli Rd | 1.2 |
| | 173 | From Genba Moze Rd to Symbiosis Rd | 1.2 |
| | 174 | From Sangavade-Nere Rd toDadasaheb Sahasrabudhe Rd | 1.2 |
| | 175 | From Thakar Chowk Maan Rd to Phase 1, Hinjawadi Rajiv Gandhi Infotech Park Rd, Hinjawadi | 1.2 |
| | 176 | From Narhe Ambegaon Rd toRajas Society Rd | 1.2 |
| | 177 | Sinhagad,PMAY Apartments to Canal Road, Nanded | 1.2 |
| | 178 | From Dehu - Alandi Rd to Chovisawadi rd, Charholi Budruk | 1.2 |
| | 179 | From Gokul Nagar Lane No.5 to Pune - Natepute Rd (New Link) to Katraj - Kondhwa Rd to Danny Mehata Nagar Industrial Area Rd (New Link) | 1.2 |
| | 180 | From Kondhwa Budruk RD to Haveli Rd | 1.2 |
| | 181 | From Amanora Park Town Main Rd to Manjari Rd | 1.2 |
| | 182 | From Sangamwadi Bridge to Old Mumbai - Pune Hwy (New Link) to Sangamwadi Rd | 1.2 |
| | 183 | From Dhayari Phata Rd to DSK Vishwa, Dhayari Phata | 1.2 |
| | 184 | From Dhanori Rd to Porwal Rd | 1.1 |
| | 185 | Gangadham - Shatrunjay Rd, Mitha Nagar to Gangadham Road,opp Shreeji Lawns | 1.1 |
| | 186 | Canal Rd to Vadjaee Mata Mandir Marg | 1.1 |
| | 187 | Road Parallel to Holkarwadi Road | 1.1 |
| | 188 | Keshanand Road to IVY Apartment Road | 1.1 |
| | 189 | Paud Road to Lane 2, Vaidehi Enclave | 1.1 |
| | 190 | From Dashabhuja Ganpati Marg to Narveer Tanaji Malusare Rd | 1.1 |
| | 191 | From Telegaon-Chakan Rd to Telegaon Varale rd | 1.1 |
| | 192 | Janawadi Rd to Panchawati Rd | 1.1 |
| | 193 | From Autadwadi Handewadi to Holkarwadi Rd | 1.1 |
| | 194 | From Mundhwa - Kharadi Rd to Anand Nagar Road | 1.1 |
| | 195 | Bavdhan Rd to Universal print hub road crossing NH-48 | 1.1 |
| | 196 | From Ashok Nagar Bus stand to Kumar Pebble Park Rd | 1.1 |
| | 197 | From Shankarrao Madhukar Ghule Patil Rd to Nyati Estate Rd | 1.0 |

| Category | No | Name | Length (km) |
|---|---|---|---|
| | 198 | From NIBM Ext Rd to NIBM Kondhwa Link Rd | 1.0 |
| | 199 | Sus Road to North Road | 1.0 |
| | 200 | From Dhanori Road to From Tingre Dhanori Rd to Dhanori Rd, Madhav Nagar | 1.0 |
| | 201 | From Soli Poonawalla Rd to Sasane Nagar Bypass Rd | 1.0 |
| | 202 | From Patil Vasti Rd to Lohgaon - Wagholi Rd (New Link) to Shop No 4, Patil Vasti Rd | 1.0 |
| | 203 | From Patil Vasti Rd Patil Vasti Rd to Lohgaon - Wagholi Rd (New Link) to Lohgaon - Wagholi Rd | 1.0 |
| | 204 | From Congress House Rd to Sangamwadi Rd | 1.0 |
| | 205 | From [Pune - Natepute Rd to Wanowrie Rd (New Link) to Mohammedwadi Rd] to Kedari Nagar Rd to Palkhi Rd (New Link) | 1.0 |
| | 206 | Skyi Star City, Dhayari to Star Sport Cricket Academy | 1.0 |
| | 207 | From Handewadi Road near satar nagar bus stand to Pakhi Road | 1.0 |
| | 208 | From Maan Main Rd to Maan Rd near Protect India RMC plant | 1.0 |
| | 209 | NIBM Kondhwa Link Rd to dalal street | 1.0 |
| | 210 | From Utkarsha Society Road, Katraj Vasahat, Katraj to Katrajnagar Road, Katraj | 1.0 |
| | 211 | Clovers Hills Plaza to Kumari Sublime Apartments | 1.0 |
| | 212 | From DN Parande Park Marg to DN Parande Park Marg, Kutwal Colony | 1.0 |
| | 213 | From Katraj-Hadapsar Bypass Rd to Handewadi Rd | 1.0 |
| | 214 | From New DP Road to Old Baner-Balewadi Rd | 0.9 |
| | 215 | From Central Avenue Rd tonear Lane Number 1, Navratna Housing Society, Vitthal Nagar | 0.9 |
| | 216 | From Narhe Ambegaon Rd toAadya Krantiveer Umaji Naik Path | 0.9 |
| | 217 | Service Lane along Westerly Bypass. | 0.9 |
| | 218 | From Vidyapeeth Rd, Pune University, Ganeshkhind to Spicer College Road | 0.9 |
| | 219 | From NH48 to Anudh-Ravet Rd | 0.9 |
| | 220 | From Symbiosis Law School Rd to Balghare Rd | 0.9 |
| | 221 | From Deshmukh Plaza Sai Nagar rd to Taljai Tekdi Rd | 0.9 |
| | 222 | From Lohgaon Rd to Choudhari Nagar | 0.9 |
| | 223 | From Nagar Rd to West Avenue | 0.9 |
| | 224 | Kale Borate Nagar Rd to Tukai Darshan Tekdi Rd | 0.9 |
| | 225 | From Sinhagad Road to Prayeja City Road | 0.9 |
| | 226 | Road Crossing PAtil VAsti Road at Lohegaon | 0.8 |
| | 227 | From Baner St, Mohan Nagar to Westernhills Rd | 0.8 |
| | 228 | From Kalwad Wasti Rd to Khese Park Rd | 0.8 |
| | 229 | From Dhanori-Lohegaon Rd to 7th Heaven Rd, Kutwal Colony | 0.8 |
| | 230 | From ITI Rd o Indira Vasahat Road | 0.8 |
| | 231 | From Purushottam Laxman Rd to Ganga Nagar Main Rd | 0.8 |
| | 232 | From Sus Ln, Pashan to Jai Bhavani Nagar Rd, Pashan (New Link) to Nakshatra Lane | 0.8 |
| | 233 | From Gangadham - Shatrunjay Rd to Asharaf Nagar, Betal Nagar | 0.8 |
| | 234 | Domkhel Road to Indo Scots Global School | 0.8 |
| | 235 | From Spicer College Road, Anudh Rd to Shashikala Waghmare Road | 0.8 |
| | 236 | New link to the south of Mutha Right Bank Canal | 0.8 |
| | 237 | From Viman Nagar Rd to Chandan Nagar Bus stop, Nagar Rd to Brahmakumaris Rd,nagar road (New Link) | 0.8 |
| | 238 | Sus Road to North Road (New Link) to Sus Road to Balewadi-Nande Road | 0.8 |
| | 239 | From Nagar Rd to Viman Nagar Rd | 0.8 |
| | 240 | Kohlewadi Internal Road to Nandoshi Road, Dhayari | 0.8 |
| | 241 | From Narhe Ambegaon Rd toRajas Society Rd (New Link) to Dattanagar Road | 0.8 |
| | 242 | From Barangani Rd to Narveer Tanaji Malusare Rd | 0.8 |
| | 243 | From Undri - Hadapsar Rd to Undri Marg, Nyati County | 0.8 |
| | 244 | From Maan Road to Dehu Rd | 0.8 |
| | 245 | From Pune-Ahmednagar Highway to Lonikand rd | 0.8 |
| | 246 | From Aundh - Ravet BRTS Rd,Vishnu Dev Nagar to Anudh-Ravet BRTS Road to Walhekar Wadi Rd (New Link) | 0.8 |
| | 247 | From Kalyani Nagar Rd to Riverfront Rd (New Link) to Kalyani Nagar - Wadgaon Sheri Rd | 0.8 |
| | 248 | From Mahadji Shinde Rd to NH 48 (New Link) to Baner - Balewadi Rd | 0.7 |
| | 249 | Fursungi Saswad Link Road to Sanket Vihar Road | 0.7 |
| | 250 | From Dhanori - Tingre Nagar Rd to Tingre Dhanori Rd | 0.7 |
| | 251 | From NDA Rd to Ganeshpuri Society Rd | 0.7 |
| | 252 | From Anudh - Ravet Rd to Ravet-Walhekarwadi Road | 0.7 |
| | 253 | From Sangamwadi Rd to Raja Bahadur Mill Rd to Mundhwa Bridge (New Link) | 0.7 |
| | 254 | From Nyati Estate Rd to Handewadi Rd | 0.7 |
| | 255 | Punyadham Ashram Road | 0.7 |
| | 256 | Yewalwadi Link Road, Bhaktivedanta Model School | 0.7 |
| | 257 | Grant Road to Millionaire Road | 0.7 |
| | 258 | Grant Rd to Haveli Rd | 0.7 |
| | 259 | From Kedari Nagar Rd to Palkhi Rd | 0.7 |
| | 260 | From Baner - Aundh Rd to Baner - Pashan Link Rd | 0.7 |
| | 261 | From Lohgaon - Wagholi Rd [Patil Vasti Rd Patil Vasti Rd to Lohgaon - Wagholi Rd (New Link) to Lohgaon - Wagholi Rd] | 0.7 |
| | 262 | From Shankarrao Madhukar Ghule Patil Rd to NIBM Rd | 0.7 |
| | 263 | NH48 to Rao Colony Road, Tukaram Nagar | 0.7 |

| Category | No | Name | Length (km) |
|---|---|---|---|
| | 264 | From DP road to Grant Road | 0.7 |
| | 265 | New link connecting Pune Solapur Road and Kumbharkar Wasti Road | 0.7 |
| | 266 | From Pashan-Sus Road to Sutarwadi Rd | 0.7 |
| | 267 | From NH-65 to Shankarrao Lahane Marg | 0.7 |
| | 268 | From Bibwewadi Kondhwa Rd to Lane Number 9,Shreehans Nagar | 0.7 |
| | 269 | From Karve Road to Late GA Kulkarni Path | 0.7 |
| | 270 | From Sinhgad Rd to near Rajyog Sub Station Mseb Vadgaon Khurd, Nanded Fata, Pandurang Industrial Area | 0.7 |
| | 271 | Awhalwadi road to Konark Orchid Road | 0.7 |
| | 272 | From Grnat Rd to Manjari Rd (New Link) to Dr Babasaheb Ambedkar Rd | 0.7 |
| | 273 | From National Games Marg to Sunset Blvd | 0.7 |
| | 274 | Mumbai Pune Bypass Rd to Grandure Chs Apartments, Ambegaon Budruk | 0.6 |
| | 275 | From Swami Samarth Colony Lane 1 to Anand Rao Thorat Path | 0.6 |
| | 276 | From Pashan - Sus Rd to Z Plus Hardware Store TAPKIR MALA NAGAR, Nimhan Mala Rd | 0.6 |
| | 277 | Link Road bw Anthon Nagar Lane No.1 to Natepute Pune Road | 0.6 |
| | 278 | From Tathawade Rd to Aundh - Ravet BRTS Rd | 0.6 |
| | 279 | From Adarsh Nagar Rd to Sai Disthi Rd, | 0.6 |
| | 280 | NH 48 to Dhayari Phata bus stop | 0.6 |
| | 281 | New Service Road from Warje Flyover to Mutha River | 0.6 |
| | 282 | From Wagholi Road to Khadi Machine Road (New Link) to shirampur Road | 0.6 |
| | 283 | From ITI Rd to Mahalaxmi Rd | 0.6 |
| | 284 | From NH48 to Narhe Rd | 0.6 |
| | 285 | From Sus Ln, Sutarwadi to Someshwar Wadi Rd (New Link) to Someshwar wadi Rd | 0.6 |
| | 286 | From Sasane Nagar Rd to Dmart Rd, Swarvihar | 0.6 |
| | 287 | NDA Rd to Ram Nagar Rd | 0.6 |
| | 288 | Link Road From Vishwakarm Vidyala to Shivtej Nagar, Bibwewadi | 0.6 |
| | 289 | Saswad-Bopdev-Pune Road to Kondhaw Budruk | 0.6 |
| | 290 | From Pune - Natepute Rd (New Link) to Katraj Bypass Rd toPune - Natepute Rd (New Link) | 0.6 |
| | 291 | Link between Road Number 3 to Dhanori Tingre Nagar Road | 0.6 |
| | 292 | Tingre Dhanori Road toJai Prakash Nagar Road | 0.6 |
| | 293 | Extension of road from Kalyani Center for Technological Innovation to Mulamutha River | 0.6 |
| | 294 | Old Mundhwa Rd to aqua line | 0.6 |
| | 295 | From Chande Rd to Mulshi-Paud Road | 0.6 |
| | 296 | Indrayani Randive Road to Gali No.4,Sai Baba Nagar | 0.6 |
| | 297 | from Kondhwa road pune to Sainath Nagar road | 0.6 |
| | 298 | From Matoba Nagar Road, Kothrud to Ramchandra Mane Rd | 0.6 |
| | 299 | From NDA Rd to Ganeshpuri Society Rd to NDA Rd | 0.6 |
| | 300 | From Shivneri Nagar to Gali Number 4, Saibaba Nagar | 0.6 |
| | 301 | Internal Road connecting West Avenue to Side road of New Airport Road | 0.6 |
| | 302 | From Aware Chowk to Lane 1 Hind Mata Bhuyari Marg | 0.6 |
| | 303 | From Central Avenue Rd tonear Lane Number 1, Vitthal Nagar to Kalyani Nagar - Wadgaon Sheri Rd | 0.6 |
| | 304 | From Kondhwa Main Rd to B G Lonkar Rd | 0.5 |
| | 305 | From Gangadham - Shatrunjay Rd to VIIT College Rd | 0.5 |
| | 306 | From Riverfront Rd to Purva Silver Sands Internal Rd | 0.5 |
| | 307 | Ramkrishna Paramhans Nagar lane no.14 to Matoba Nagar | 0.5 |
| | 308 | From NH48 to Wadgaon Budruk - Narhe Rd | 0.5 |
| | 309 | From Dr Babasaheb Ambedkar Rd to NH65 | 0.5 |
| | 310 | From Wadgaon Budruk Rd to NH48 | 0.5 |
| | 311 | From Rd Number 3, Sainath Nagar to Near Keshav Nagar Rd | 0.5 |
| | 312 | From Sukhasagar Rd to Rajas Society Rd | 0.5 |
| | 313 | Indira Nagar Road to 509 Chowk | 0.5 |
| | 314 | New link between Dobar Wadi Road and Kings Way | 0.5 |
| | 315 | Cybage Tower Road to Kalyani Nagar Road near Cybage Software Company | 0.5 |
| | 316 | From Yash Ravi Park Rd to DP Road to Kale Padal Bypass Rd (New Link) | 0.5 |
| | 317 | From sai colony road to Mohmmadwadi Ghule Nagar road | 0.5 |
| | 318 | From Sus Ln, Pashan to Jai Bhavani Nagar Rd, Pashan | 0.5 |
| | 319 | From JJC Colony Rd, Ramtekadi to Hadapsar M.I.D.C.Bus stop, Solapur-Pune Highway | 0.5 |
| | 320 | From Airport Rd to Symbiosis Rd | 0.5 |
| | 321 | From Khandoba Mandir Rd to Gangadham - Shatrunjay Rd | 0.5 |
| | 322 | From Walhekar Wadi Rd to Bijli Nagar Rd | 0.5 |
| | 323 | From Thakar Chowk Maan Rd to Blue Ridge Approach Road | 0.5 |
| | 324 | Lakshmi Ganga Heights, Near, Sun City Rd to Kudale Patil Amenity Space, Sinhgad Rd | 0.5 |
| | 325 | From Lohiya Nagar Rd, Laxmi Vihar to Mahalaxmi Temple, Tupe Patil Rd | 0.5 |
| | 326 | From DP Road to Kale Padal Bypass Rd | 0.5 |
| | 327 | From Yewalewadi Rd to Jagdamba Bhawan Marg | 0.5 |
| | 328 | Link Road Pansare Nagar Road from Sai Angan lake | 0.5 |
| | 329 | From Baner - Balewadi Rd to GK Lane Number 27 | 0.5 |
| | 330 | Link Road from Kodre Cricket Ground to Pandurang Industrial Area | 0.5 |
| | 331 | Rk Road to Dhanori Road | 0.5 |
| | 332 | Sanyog Colony Rd to Kale Padal-Fursungi DP Rd | 0.5 |

| Category | No | Name | Length (km) |
|---|---|---|---|
| | 333 | From DP Road to Kai Pu Bha Bhave Marge | 0.5 |
| | 334 | From Mahadev Wadi Rd to Kedari Nagar Road | 0.5 |
| | 335 | From Mundhwa - Kharadi Rd (New Link) to Mundhwa - Kharadi Rd to Manjari Rd (New Link) | 0.5 |
| | 336 | New link to the south of Pune Solapur Road along Laxmi Colony Road | 0.5 |
| | 337 | Bavdhan Rd to Universal print hub road | 0.5 |
| | 338 | From Fountain Road to Rakshak Nagar | 0.5 |
| | 339 | Dhayari post office to Sky Star city Apartments | 0.5 |
| | 340 | Ghule Nagar Road to Overhead Water tank, Vadgaon Budruk | 0.4 |
| | 341 | Road to Wagholi Kendra to Baif Road | 0.4 |
| | 342 | Canal Road to Ram Nagar Road | 0.4 |
| | 343 | From NIBM Kondhwa Link Rd to Punyadham Ashram Rd | 0.4 |
| | 344 | From Khese Wasti Road, Lohegaon to Patil Vasti Rd to Lohgaon - Wagholi Rd (New Link) | 0.4 |
| | 345 | From NH48 to Sinhgad Police Station Rd | 0.4 |
| | 346 | From Symbiosis Rd to Viman Nagar Rd | 0.4 |
| | 347 | New link near New Canal Road RHS side | 0.4 |
| | 348 | From DP Road to NH48 | 0.4 |
| | 349 | From From Tingre Pk Rd Number 5 to DY Patil University Rd (New Link) to Tingre Park Rd | 0.4 |
| | 350 | Fountain rd to south lane ,ashok Nagar | 0.4 |
| | 351 | From Karve Rd to Mayur Colony Rd | 0.4 |
| | 352 | From Karve Rd to Happy Colony Rd | 0.4 |
| | 353 | New link to the south of Pune Daund Railway line parallel to Margapatta Rear Approach Road | 0.4 |
| | 354 | From Kakde Nagar Rd to Kondhwa Main Rd | 0.4 |
| | 355 | From Handewadi Rd to Autadewadi Rd | 0.4 |
| | 356 | From Paud Rd to Shikshaknagar, Indira Nagar | 0.4 |
| | 357 | From NH60 to Gujarwadi Rd | 0.4 |
| | 358 | from Codename7 Rd<br>to Nr High Bliss Society | 0.4 |
| | 359 | From Dhanori Rd to DN Parande Park Marg | 0.4 |
| | 360 | Vighnaharta Nagar, Katraj to Lane Number 6, Gujar Mala | 0.4 |
| | 361 | New link connecting the Kumbharkar Wasti Road and Mhasoba Mandir Gopalpatti manjari BK | 0.4 |
| | 362 | Link Road bw Anthon Nagar Lane No.1 to Pansare Nagar Road | 0.4 |
| | 363 | From Sus Ln, Sutarwadi to Someshwar Wadi Rd (New Link) to Someshwar Temple Rd | 0.4 |
| | 364 | Crystal Paradise Apartments Link Road | 0.4 |
| | 365 | From Hadapsar Industrial Estate, Hadapsar to Magarpatta Rear Approach RD | 0.4 |
| | 366 | Tilekar Nagar Baug Internal Road | 0.4 |
| | 367 | From Sagunabai Bhoj Path to Prathamesh Tulip Rd | 0.4 |
| | 368 | From near canal road to near fun time bus stop, Sinhgad road | 0.4 |
| | 369 | link road along Bhairoba Nala | 0.4 |
| | 370 | Marvel Citrine Rd to Fountain rd to south lane ,ashok Nagar (New Link) | 0.4 |
| | 371 | From Mohammedwadi Rd to Tarawade Vasti Rd | 0.4 |
| | 372 | From NH65 to Narhe Ambegaon Rd | 0.4 |
| | 373 | From Veer Santaji Ghorpade Rd to Agarwal Marg | 0.4 |
| | 374 | Link between Dashrath Sayajirao Jadhav Path to Shivaji Chowk | 0.4 |
| | 375 | New link between Porwal Road Junction to Paduka Temple | 0.4 |
| | 376 | From Narhe Rd, Mokarwadi to Sterling Nisarga II, Dhayari | 0.4 |
| | 377 | Link road bw Imperim sky Garden road to Sopan Baug Rd | 0.4 |
| | 378 | From Sukhasagar Rd to Amba Mata Mandir- Raj Basera Society Rd | 0.4 |
| | 379 | From Subhas Nagar main rd to Hadapsar Industrial Estate rd | 0.4 |
| | 380 | From Pune - Natepute Rd to Kondhwa Budruk RD to Haveli Rd (New Link) | 0.4 |
| | 381 | New link from Warje Atul nagar Road to Oval Nest Road | 0.4 |
| | 382 | From Shankarrao Madhukar Ghule Patil Rd to NIBM Rd (New Link) to Katraj-Hadapsar Bypass Rd | 0.4 |
| | 383 | Extension of RK Christian Cemetry Road to the bank of Mula Mutha River | 0.4 |
| | 384 | From Airport New Road to Nagar Road | 0.4 |
| | 385 | Link Road Matoba Nagara to Ramchandra Mane Road | 0.4 |
| | 386 | Taljai Mandir Rd, Dhankawadi to Talajai Pathar, Dhankawadi | 0.4 |
| | 387 | New Link connecting Spicer Road to behind Pristine Royal | 0.4 |
| | 388 | NearBholenath Mandir Holarwadi Road | 0.4 |
| | 389 | From Mahadji Shinde Rd to NH 48 (New Link) to Patil Wasti Rd, Patil Nagar to Balewadi High St (New Link) | 0.4 |
| | 390 | From Aundh-Wakad Rd to Aundh Rd | 0.4 |
| | 391 | From Baner - Mahalunge Rd to Sutarwadi Baner Gaon Rd | 0.4 |
| | 392 | From Salunke Vihar Rd to Kedari Nagar Rd | 0.4 |
| | 393 | Nandoshi Road to Dhayari Post Office | 0.4 |
| | 394 | New link between Dobar Wadi Road to Mahindra L'artista parallel to Pune Miraj Railway line | 0.4 |
| | 395 | Janawadi Rd to Balshastri Jambhekar Marg | 0.4 |
| | 396 | From Kumar Pebble Park Rd to Adarsh Nagar Rd | 0.4 |
| | 397 | Sai Park Road to Awhalwadi Road | 0.3 |
| | 398 | New like at Khulewadi near airport | 0.3 |
| | 399 | Link Road bw Shakare vasti rd to Hirai Sita Mandir | 0.3 |
| | 400 | Link between Dhanori Tingre Nagar Road and Tingre Dhanori Road | 0.3 |

| Category | No | Name | Length (km) |
|---|---|---|---|
| | 401 | Dhayari Road to Narhe Gaon Road | 0.3 |
| | 402 | From Raheja Circle to Undri - Hadapsar Rd (New Link) to Kedari Nagar Road | 0.3 |
| | 403 | From Lane 3, Brahma Sky city Rd to Kalwad wasti Rd | 0.3 |
| | 404 | From Cummins College Rd to Shivam Colony, Karve Nagar | 0.3 |
| | 405 | New Service Road from Ram Nagar Road to Mutha River | 0.3 |
| | 406 | From Cummins College Rd to Kulashree Ln, Dnydeep Colony | 0.3 |
| | 407 | From Mundhwa - Kharadi Rd to Tupe Patil Rd | 0.3 |
| | 408 | From Lane Number 11, Ramtekdi Industrial Area to Laxmi Nagar Rd to Mohammed Wadi Rd | 0.3 |
| | 409 | From NH65 to Shri Swami Samantha Nagar road | 0.3 |
| | 410 | Padmawati temple, Wadkar Mala | 0.3 |
| | 411 | New link from fire station in Bhagwan Tatyasaheb Kawade Road to the canal parallel to Pune Miraj Railway line | 0.3 |
| | 412 | New link from Pratha Naturals to Malsai Super Market | 0.3 |
| | 413 | from Kalyani Nagar Rd to Ramwadi road | 0.3 |
| | 414 | Near Dhayari Post Office | 0.3 |
| | 415 | New Era Society, Kondhava Rd to Ved Prakash Malhotra Marg | 0.3 |
| | 416 | From Subhas Nagar main rd to Hadapsar Industrial Estate rd (New Link) to North Hadapsar rd, Hadapsar | 0.3 |
| | 417 | Maharana chowk Jadhav wasti to Malwadi Road, Kalas | 0.3 |
| | 418 | From Paud Rd to Gokhale Nagar Rd | 0.3 |
| | 419 | New link from Shir Krupa Soceity Road to Ramashetti Road | 0.3 |
| | 420 | from near to St EDMUND CAMPION PRE SCHOOL to near panchavati hill walkinh trail | 0.3 |
| | 421 | Link Road bw Pokmal rd to khese Park road | 0.3 |
| | 422 | New link connecting Vaishali Pawar to Unit Number 1 Road | 0.3 |
| | 423 | Road from Sphurthi Society Road to other side of Mula Mutha river | 0.3 |
| | 424 | Link from Hindurao Kamble Path to Mula Mutha River | 0.3 |
| | 425 | From NDA Rd to Sahyognagar Rd | 0.3 |
| | 426 | From Mahatma Phule Rd to Balaji Gaikwad Road | 0.3 |
| | 427 | Link Road from Elina Living Road to From Raheja Circle to Undri - Hadapsar Rd (New Link) | 0.3 |
| | 428 | Gangadham - Shatrunjay Rd to Dr. APJ Abdul Kalam Rd | 0.3 |
| | 429 | From Karve Rd to Sargam Society Rd | 0.3 |
| | 430 | From Lohiya Nagar Road to Jawaharlal Nehru Rd | 0.3 |
| | 431 | From Ganesh Colony, Kale Borate Nagar to Shiv Nagar, Hadapsar | 0.3 |
| | 432 | Link connecting Aundh Ravet road along Mula Mutha river | 0.3 |
| | 433 | Link Road from Ram Nagar Road to Mutha River, Warje | 0.3 |
| | 434 | New link to the south of Kinjewadi KT Weir Bridge | 0.3 |
| | 435 | From Katraj-Ambegaon BK Rd to NH65 | 0.3 |
| | 436 | From Prostine Fontana Rd to Lane 1, Bavdhan | 0.3 |
| | 437 | From DP Rd to Serum Company Rd | 0.3 |
| | 438 | Link between West Avenue to Nagar Road near Masjid e Aqsa | 0.3 |
| | 439 | from Niljyoti Society rd, Gokhalenagar to Ashanagar rd, Vaiduwadi | 0.3 |
| | 440 | From Hadapsar 1, Kirkee, Shivaji Rd to Nathu Govind Kapare Rd | 0.3 |
| | 441 | Patwardhan Baug Rd to Navshya Maruti Mandir Rd,Karve Nagar | 0.3 |
| | 442 | From Regional Plan Rd 08 to Lane No. 11, Navavinayak Society | 0.2 |
| | 443 | From Sasane Nagar Rd to Dmart Rd, Swarvihar (New Link) Sasane Nagar Rd | 0.2 |
| | 444 | From Laxmi Park Colony Rd to Satguru M Baba Marg | 0.2 |
| | 445 | From Adarsh Nagar Rd to Nyati Estate Rd to Saswad Road Railway Station (New Link) | 0.2 |
| | 446 | New link between Rakshak Nagar Road Junction and EON Gyanankur School in Kharadi South Main Road | 0.2 |
| | 447 | From near Kondhwa Carrom accedmy, Kausar Baugh road , Kondhwa to mala line, next to B G Lonkar Road, Kausar Baugh | 0.2 |
| | 448 | Hingne Khurd to Arvind Society, Anand Nagar | 0.2 |
| | 449 | New link between Ghorpadi Road and BFC road | 0.2 |
| | 450 | From Meeta Nagar, Kondhwa to Nawazish Park Rd | 0.2 |
| | 451 | From Bharat Colony Road , Hadapsar to Jain Township Road, Chintamani Nagar | 0.2 |
| | 452 | From prasad bibwe nagar, behind Bibwewadi to shelar Road | 0.2 |
| | 453 | Extension of Regency Medows Road | 0.2 |
| | 454 | Ellite lienes North gate to Koregaon Park Annexue | 0.2 |
| | 455 | Near Sangvi Bopodi New Bridge | 0.2 |
| | 456 | From Karve Road to Happy Colony Rd | 0.2 |
| | 457 | From Mhatre Bridge to Riverside Road | 0.2 |
| | 458 | Delhi Public School Pune to Nyati Ambience Apartments | 0.2 |
| | 459 | From near Jog Engineering bus stand to Tukaram Nagar, Kharadi near Bhivaji Rajiv Galande udayan | 0.2 |
| | 460 | From Kalwad Area Rd to Pokmal Rd | 0.2 |
| | 461 | Extension of Kalwad Vasti Road to Tingre Dhanori Road | 0.2 |
| | 462 | From Kausar Baugh Rd to Kausar Baugh Garden | 0.2 |
| | 463 | From Bibwewadi Kondhwa Rd to Gangadham - Shatrunjay Rd to Prabodhankar Thakare Path | 0.2 |
| | 464 | From Chintamani Nagar Road to PMT Colony Rd | 0.2 |
| | 465 | New link south of Lake View Road | 0.2 |
| | 466 | Collector road parallel to Mahadji Shinde Road | 0.2 |
| | 467 | From Katraj-Hadapsar Bypass Rd to Sayyed Nagar | 0.2 |

| Category | No | Name | Length (km) |
|---|---|---|---|
| | 468 | Tithe Nagar to Kharadi-shivane Road | 0.2 |
| | 469 | Road from Karve Road to RC Fabrication and metal works | 0.2 |
| | 470 | Link connecting Service road and Pashan Sus Road adjacent to Sutarwadi Bus Stand | 0.2 |
| | 471 | Sai Angan Road, yewalwadi | 0.2 |
| | 472 | From Mundhwa - Kharadi Rd to Sainath Nagar | 0.2 |
| | 473 | NIBM internal Road to NIBM Main Rd | 0.2 |
| | 474 | From GP Pradhan Garden Rd to Tupe Patil Rd | 0.2 |
| | 475 | Road from Tingre Pk Road No 5 to Palladium Homes Dhanori | 0.2 |
| | 476 | Link Road From Charwad Road to Ghule Nagar Road | 0.2 |
| | 477 | New link between Kumar Parisar Road to Lane 1 Chaitanya Nagar | 0.2 |
| | 478 | From NH48 rosary school Bus Stop to NH48 Cipla Centreus Stop (New Link) to Ishan Nagari Road, near Indra Nagar | 0.2 |
| | 479 | From Jagtap Rd to Vednath S Marg | 0.2 |
| | 480 | New link conecting Eastern Elegance and Lane 7 in Amar Srushti | 0.2 |
| | 481 | Road from Alandi Road Pump House bus stop to Mula Mutha River | 0.2 |
| | 482 | from Poonawalla Rd to Defence Colony road , Vidyasagar Colony | 0.2 |
| | 483 | From Phulenagar Rd to Loop Nagar Rd | 0.2 |
| | 484 | Road betwen Dhanori Lohgaon Road and  Local street to the south | 0.2 |
| | 485 | Link from Madhuban Society Road to Hindurao Kamble Path | 0.2 |
| | 486 | from Sainath Nagar road , Wadgaon Sheri to near navnath Chowk, Wadgaon Sheri | 0.2 |
| | 487 | VK Patil Road to Handewadi Road | 0.2 |
| | 488 | From Satar Nagar Road, Hadapsar to Shiv Nagar road, Santoshi Mata Nagar | 0.2 |
| | 489 | From Shinde Vasti rd to Hadapsar Industrial Estate rd | 0.2 |
| | 490 | Link connecting Aundh Ravet road and AIMS Road | 0.2 |
| | 491 | From Shree Pandharinath Hole Rd to Bypass Rd, North Hadapsar | 0.2 |
| | 492 | From DP road to Hasan Bangh Road,Satav Nagar | 0.2 |
| | 493 | Road from Nyaymurthi Ranade Path to District Court Metro | 0.2 |
| | 494 | From NH60 to Rajyog Society Rd | 0.2 |
| | 495 | Link Rd bw G D Madgulkar Udyan Park rd and vaidehi enclave Road | 0.2 |
| | 496 | From Lt Narayanrao Sahadurao Kamble Path to Chaturshringi road | 0.2 |
| | 497 | New Link connecting Kailask Shankar Nagar with BHIM Nagar Colony | 0.1 |
| | 498 | From Magarpatta Road, Hadapsar to Katraj-Hadapsar Bypass Rd | 0.1 |
| | 499 | From Mutha Canal Rd to NH65 | 0.1 |
| | 500 | Link road Much More Apartments to Tingre Dhanori Rd | 0.1 |
| | 501 | Vaidehi Enclave Lane 4 rd to Bavdhan Gaon Road | 0.1 |
| | 502 | Bopodi Gaothon to Bhau Patil Road | 0.1 |
| | 503 | New link to the south of Kings Way Apartment from Bhagwan Tatyasaheb Kawade Road | 0.1 |
| | 504 | Extension of Nyati Evolve Road to Hadapsar Railway Station | 0.1 |
| | 505 | New link connecting Khetri Group to Toolsung Corporation | 0.1 |
| | 506 | Link Road, Maya<br>Ganga Satellite Apartments to Bhairoba Nala Road | 0.1 |
| | 507 | from Kalyani Nagar Rd to Sainath Nagar road | 0.1 |
| | 508 | From Spicer College Road, Anudh Rd to Shashikala Waghmare Road (New Link) to Shanta Apte Path | 0.1 |
| | 509 | New link near Baner Hls Road | 0.1 |
| | 510 | From Patil Mala Rd, Nanded Fata, Pandurang Industrial Area to near madhukosh society, Vadgaon Khurd, Nanded Fata, Pandurang Industrial Area | 0.1 |
| | 511 | Shahu College Road to Dhomkar Path | 0.1 |
| | 512 | New link near Alloy Castings and Engineering | 0.1 |
| | 513 | From Anand Niketan society Rd to Kothrud Road | 0.1 |
| | 514 | from Gokul Nagar road , Katraj to NCL Coop Housing Society road | 0.1 |
| | 515 | Link Road to JP Naiik Road to Paud Road | 0.1 |
| | 516 | New link connecting New Canal Road and Sinhgad Road | 0.1 |
| | 517 | From Khulewadi road near near Kendriya vidyalaya to chandan nagar, Khulewadi road | 0.1 |
| | 518 | Mendhi Farm Rd to Patrakar Nagar rd | 0.1 |
| | 519 | From  Gandhi Bhavan Road, Kothrud to near Shivsenapramukh Balasaheb Thakrey Garden | 0.1 |
| | 520 | Pune University Bus stand to DR. Homi Bhabha Marg | 0.1 |
| | 521 | from Borade Nagarroad to nancy garden, Wanowrie, | 0.1 |
| | 522 | From Kothrud to Gulmohar Rd | 0.1 |
| | 523 | Link road from Sriram Mandir Road to Lake Town Road, Vivek Nagar | 0.1 |
| | 524 | Mula River Bridge to Patil Nagar | 0.1 |
| | 525 | Pashan Hihway Side Road to Cornerstone School Road | 0.1 |
| | 526 | New link connecting Margapatta West Gate Road with BG Shirke Road | 0.1 |
| | 527 | Purandar Plot D Road to Sasane Nagar Internal Road | 0.1 |
| | 528 | New link between Katraj Vasahat near Katraj Lake | 0.1 |
| | 529 | New link from Dr Nan Saheb Parulekar Vidhyalaya to Raju Gandhi Nagar | 0.1 |
| | 530 | From Pawar Enclave Society Rd to Subhas Nagar road | 0.1 |
| | 531 | Mohammedwadi Rd to handewadi road | 0.1 |
| | 532 | Extension of Lane 5 upto Payal Marketing | 0.1 |
| | 533 | from Baig Nagar road, Thite Nagar to Nyati Elysia road , Thite Nagar | 0.1 |
| | 534 | Extension of road near Vajra Fitness | 0.1 |

| Category | No | Name | Length (km) |
|---|---|---|---|
| | 535 | from kalyani nagar rd to shakar nagar road | 0.1 |
| | 536 | Dr. Shyamaprasad Mukherjee Garden Back Side link Road | 0.1 |
| | 537 | New link between Krishna Wood tech and Pathan Dance Studio | 0.1 |
| | 538 | Hill Street to Mumbai-satara hwy service Road, Sutarwadi | 0.1 |
| | 539 | Near Kadolkar Biodiversity Park | 0.1 |
| | 540 | Extension of Chandrashekar Azad Marg Road to the West | 0.1 |
| | 541 | Tielkar Nagar Roadto Saroj Market, Kondhwa | 0.1 |
| | 542 | from N Main Rd, Fatima Nagar to Gaikawad Vasti bus stop | 0.1 |
| | 543 | Burnig Ghat Road to Mula Mutha River side, Ragvilas Society | 0.1 |
| | 544 | from Gokul Nagar road , Katraj to Yewale Wadi road | 0.1 |
| | 545 | Link road bw Bhelkenagar road to MayurColony Road | 0.1 |
| | 546 | New link between Bapusaheb Tupe Road to Nitin Tupe Bungalow | 0.1 |
| | 547 | fathima nagar road to fathima nagar road- same strech | 0.1 |
| | 548 | from Kumar Sansar G Wing, NIBM Rd to NIBM Rd, opposite Omkar Garden | 0.1 |
| | 549 | Subhas Nagar Lane 4 to lane 5, Chaitanya Colony Hadapsar | 0.1 |
| | 550 | Road from Dada Saheb Bithalii Chauhan Marg to SBM Toilet | 0.1 |
| | 551 | Upper Market Road to B-27 Lane, Upper Indra Nagar | 0.1 |
| | 552 | New link between BG Shirke Road and Vacuum Plant and Instruments Road | 0.1 |
| | 553 | New link near Gurukul Montessori | 0.1 |
| | 554 | Universal Public School to B9 Vardhaman Township, Hadaspar | 0.1 |
| | 555 | JAIDEEP CHOWK VITHHAL NAGAR Warje Malwadi Rd to shivahakti chowk | 0.1 |
| | 556 | From NIBM Road to Link Rd Undrigaon | 0.1 |
| | 557 | Sasane Nagar to Dhawal Windscape Apartments, Hadapsar | 0.1 |
| | 558 | Link betwen Dashrath Sayajirao Jadhav Path to behind Laxmi Township | 0.1 |
| | 559 | Road from baburaoji Sonawane Path to sat toti police chowki road | 0.1 |
| | 560 | Navaratna Society to Sai krupa Society, Wadagaon Sheri | 0.1 |
| | 561 | Extension of Road connecting Kalwad Area Rd | 0.1 |
| | 562 | Road from Chandrasekhar Agashe Path to Vartak Garden | 0.1 |
| | 563 | From Dadasaheb Kudale Rd to Shivajinagar road | 0.1 |
| | 564 | Link extension of Malwadi Road behind trinity school | 0.1 |
| | 565 | Extension of Saraswati Krupa Soceity Road to RK Christian Cemetry | 0.1 |
| | 566 | From Veer Savarkar Marg toAshok Society Rd | 0.1 |
| | 567 | New link near Cipla Palliative Care and Training Center | 0.1 |
| | 568 | from Someshwar Park Rd to near Ward No. 8 road , IMD Colony | 0.1 |
| | 569 | from Jarande Nagar road to Heaven Park Lane No 2 | 0.1 |
| | 570 | Near Gangaji Chakare Chowk | 0.1 |
| | 571 | Ram Manohar Lohia Udyan, Magarpatta Flyover | 0.1 |
| | 572 | Barangani Road to Dalve Wadi Road | 0.1 |
| | 573 | Near Shree Gopal Vihar Apartments | 0.1 |
| | 574 | Sinhgad Rd, Nanded | 0.1 |
| | 575 | Poorna Hospital Main gate link road, Sadashiv Peth | 0.1 |
| | 576 | from Yogiraj Building, Dhayari Phata Rd, Garmal to Surya Plaza, Dhayari Phata Rd | 0.1 |
| | 577 | Near Pune-Ahmednagar Hwy | 0.1 |
| | 578 | Warje Water Treatment Plant Road to Karve Main Road | 0.1 |
| | 579 | from vrindhavan society road to jhopadpatti canal | 0.1 |
| | 580 | Patil Nagar Road to Mumbai hwy Service road | 0.1 |
| | 581 | Dhava Mile Area, Wadki | 0.1 |
| | 582 | Suicide Lake | 0.1 |
| | 583 | Phursungi chowk, Saswad Road | 0.1 |
| | 584 | Balewadi gaon Road, Lakshmi Nagar | 0.1 |
| | 585 | Bhim Nagar Colorny Road | 0.1 |
| | | **Total** | **587.3** |

## ANNEXURE 4.3: MISSING LINKS OF PCMC

| No | Village/Place | DP road width in (m) | Actual developed road width in (m) | Proposed length (in m) | Proposed Width (in m) | Total area sq.m |
|---|---|---|---|---|---|---|
| 1 | Chinchwad | 18 | - | 280 | 18 | 5,040 |
| 2 | Pimpri | 25 | - | 320 | 25 | 8,000 |
| 1 | Ravet (S.No.136) | 18 | 0 | 30 | 18 | 540 |
| 2 | Ravet (S.No.132/1/1) | 18 | 4 | 20 | 14 | 280 |
| 3 | Ravet (S.No. 180) | 24 | 4 | 20 | 20 | 400 |
| 4 | Ravet (S.No. 180) | 24 | 6 | 55 | 18 | 990 |
| 5 | Ravet (S.No. 102) | 24 | 0 | 40 | 24 | 960 |
| 6 | Ravet (S.No. 103) | 24 | 0 | 44 | 24 | 1,056 |
| 7 | Ravet (S.No. 77) | 24 | 0 | 60 | 24 | 1,440 |
| 8 | Ravet (S.No. 44) | 24 | 0 | 25 | 24 | 600 |
| 9 | Ravet (S.No. 43) | 24 | 0 | 30 | 24 | 720 |
| 10 | Ravet (S.No. 147) | 12 | 6 | 100 | 6 | 600 |
| 11 | Ravet (S.No. 153/3) | 12 | 6 | 20 | 6 | 120 |
| 12 | Ravet (S.No. 152) | 12 | 6 | 20 | 6 | 120 |
| 13 | Ravet (S.No. 151/52) | 12 | 0 | 50 | 12 | 600 |
| 14 | Ravet (S.No. 144,143,142,140,139,122,999,102) | 18 | 0 | 1,140 | 18 | 20,520 |
| 15 | Ravet (S.No. 75,76) | 12 | 0 | 270 | 12 | 3,240 |
| 16 | Kiwale (S.No. 78,82) | 24 | 12 | 480 | 12 | 5,760 |
| 17 | Kiwale (S.No. 92,93) | 18 | 9 | 150 | 9 | 1,350 |
| 18 | Ravet (S. No. 226) | 18 | 5 | 40 | 13 | 520 |
| 19 | Ravet (S. No. 119,116,115) | 18 | 0 | 30 | 18 | 540 |
| 20 | Ravet (S. No. 9,227,228,11,16,14,12,8) | 18 | 6 | 750 | 12 | 9,000 |
| 21 | Ravet (S. No. 87) | 18 | 0 | 270 | 18 | 4,860 |
| 22 | Ravet (S. No. 34 & 25) | 18 | 9 | 30 | 9 | 270 |
| 23 | Kiwale(S.No. 9) | 12 | 0 | 180 | 12 | 2,160 |
| 24 | Kiwale(S.No. 18) | 12 | 0 | 400 | 12 | 4,800 |
| 25 | Mamurdi(S.No. 8& 9) | 12 | 0 | 380 | 12 | 4,560 |
| 26 | Kiwale (S.No. 40,72,71,46) | 18 | 0 | 900 | 18 | 16,200 |
| 27 | Kiwale(S.No. 73,75,74,73) | 12 | 0 | 140 | 12 | 1,680 |
| 28 | Ravet (S.No. 92) | 24 | 22 | 230 | 2 | 460 |
| 29 | Ravet (S.No. 92) | 24 | 20.3 | 30 | 3.7 | 111 |
| 30 | Ravet (S.No. 92) | 24 | 20.3 | 30 | 3.7 | 111 |
| 31 | Ravet (S.No. 92) | 24 | 20.3 | 60 | 3.7 | 222 |
| 32 | Ravet (S.No. 92) | 24 | 12 | 200 | 12 | 2,400 |
| 33 | Ravet (S.No. 97) | 24 | 21 | 20 | 3 | 60 |
| 34 | Ravet (S.No. 97) | 24 | 21 | 55 | 3 | 165 |
| 35 | Ravet (S.No. 105) | 24 | 22 | 50 | 2 | 100 |
| 36 | Ravet (S.No. 121) | 18 | 9 | 15 | 9 | 135 |
| 37 | Ravet (S.No. 103,105) | 24 | 22 | 300 | 2 | 600 |
| 38 | Mamurdi (S.No. 11) | 18 | 0 | 60 | 18 | 1,080 |
| 39 | Mamurdi (S.No. 14) | 12 | 0 | 40 | 12 | 480 |
| 40 | To develop river side 18m road adjoining to 12m road | 12 | 25 | 60 | 12 | 720 |
| 41 | To develop river side 18m road adjoining to 9m road | 9 | 0 | 150 | 9 | 1,350 |
| 42 | Till Gurumayya School-Chintamani Chowk-Chinchwad Colony No.2 | 24 | Chinchwad Colony No.2 to Dagdoba Chowk 18 to 20m width and Dagboda Chowk to Gurumayya School 7 to 8m width | 1,180 | 24 | 28,320 |
| 43 | MSEDCL- corner to Gurumayya School to Valhekarwadi Main Road | 24 | MSEDCL- Corner to Gurumayya School gate 12 to 15m width and gurumayya school gate to Valherkawadi Main road 7 to 8m width | 810 | 24 | 19,440 |
| 44 | Thergaon connecting Butterfly Bridge Near Keshav Nagar, near Chinchwad main road connecting 18m DP road | 18 | 180 | 160 | 17 | 2,720 |
| 45 | In Chinchwad nera Pawna River Sant Garden Society to Yalewadi Bridge 18m road | 18 | 1250 | 180 | 8 | 1,440 |
| 46 | Chinchwad nera Pawna River, Snat Garden society to Yelawadi Bridge -18m road | 18 | 350 | 110 | 18 | 1,980 |
| 47 | Chichwad to Theagain joining Gurukulam School Road | 18 | 50 | 300 | 18 | 5,400 |

| No | Village/Place | DP road width in (m) | Actual developed road width in (m) | Proposed length (in m) | Proposed Width (in m) | Total area sq.m |
|---|---|---|---|---|---|---|
| 48 | Pimpiri Village Bridge to Lucky Bakery Chowk | 18 | 6 | 220 | 12 | 2,640 |
| 49 | | | | 280 | 18 | 5,040 |
| 50 | Taplir mada Chowk to Yelwadi Main Road | 12 | 0 | 230 | 12 | 2,760 |
| 51 | Behind Adarshnagar School Road | 9 | 0 | 200 | 9 | 1,800 |
| 52 | Lucky Bakey Chowk to BRT Road | 18 | 0 | 30 | 45 | 1,350 |
| 53 | Bo-Handawadi Survey No. 1346 to 1393 24 | 24 | | 566 | 24 | 13,584 |
| 54 | Survey No. 950 to Nashik Hwy 18m | 18 | | 572 | 18 | 10,296 |
| 55 | Survey No. 99 to Mantra Society 18m | 18 | | 480 | 18 | 8,640 |
| 56 | Survey No. 76 to Survey No. 79 Colosis society18m DP Road | 18 | 5 | 330 | 13 | 4,290 |
| 57 | Ravi Ranjan Weighing Scale to River residency Chowk 24m DP Road | 24 | | 680 | 24 | 16,320 |
| 58 | Near Vadacha Mala Survey No. 681 to 702 12m DP Road | 12 | 4 | 200 | 12 | 2,400 |
| 59 | Swaraj Residency Chowk Survey No. 1327 to River adjoining 18m Shiv Road | 18 | | 470 | 18 | 8,460 |
| 60 | Chikli Cremation Ground till Nashik Hwy 18m DP Road | 18 | | 3,300 | 18 | 59,400 |
| 61 | Moshi-Akurdi-Chikli Road to Nashik Hwy 30m DP Road | 30 | | 4,100 | 30 | 123,000 |
| 62 | Survey No.524 to Shiv Road to BRT Road 18m DP road | 18 | | 1,600 | 18 | 28,800 |
| 63 | Morepatil Chowk to Survey No. 48 River road -18/30 DP road | 18 | | 300 | 18 | 5,400 |
| | | 30 | | 1,300 | 30 | 39,000 |
| 64 | Sector 16 to Kudhedwadi Police Chowk 18m DP Road | 18 | | 1,050 | 14 | 14,700 |
| 65 | Survey No. 1226 to CNG 30m Road. DP road proposed 18m | 18 | 9 | 914 | 9 | 8,226 |
| 66 | Adjoining Dosti Bakery road Neheru Nagar | 12 | 100 | 40 | 12 | 480 |
| 67 | Pimple Saudaghar, Parghade corner to Swaraj Garden jain Mandir Road | 12 | | 60 | 12 | 720 |
| | | | | 20 | 12 | 240 |
| | | | | 50 | 12 | 600 |
| | | | | 180 | 12 | 2,160 |
| 68 | Pimple Saudaghar, Nashik Phata to Wakad BRTS Road to Hotel Crystal hut 18m DP Road(Jhunjarada Mada) | 18 | | 510 | 18 | 9,180 |
| 69 | Pimple Saudaghjar, Natural iCecream to trayos Society road | 18 | 150x7 | 75 | 9 | 675 |
| | | | | 350 | 18 | 6,300 |
| 70 | Pimple Saudaghar, Kunjer Chowk to Military boundary 18m wide road | 18 | | 380 | 18 | 6,840 |
| 71 | Pipmle Gaurav, Navecha road | 18 | 15 | 500 | 3 | 1,500 |
| 72 | Bhujbad Basti, Wakad | 30 | 7 | 680 | 23 | 15,640 |
| 73 | Bhujbad Basti, Wakad | 24 | 7 | 380 | 17 | 6,460 |
| 74 | Vinod Vasti, Wakad | 24 | 3.5 | 550 | 20.5 | 11,275 |
| 75 | Wakad Village | 12 | | 170 | 12 | 2,040 |
| 76 | Wakad / between Survey No. 127 | 18 | 15.5 | 18 | 2.5 | 45 |
| 77 | Wakad / between Survey No. 127 | 18 | 15.5 | 23 | 2.5 | 57 |
| 78 | Wakad Survey No. 176/2/B either or | 18 | 14.5 | 18 | 3.5 | 63 |
| 79 | Wakad Survey No. 176/1/9 either or | 18 | 9 | 40 | 9 | 360 |
| 80 | Wakad Survey No. 167 either or | 18 | 9 | 137 | 9 | 1,233 |
| 81 | Wakad Survey No. 167 either or | 18 | 18 | 215 | 18 | 3,870 |
| 82 | Tathawade (left and Right side) Survey No. 0+000 to Survey No. 0+150 | 24 | 6 | 18 | 150 | 2,700 |
| 83 | Tathawade (Right side) Survey No. 0+150 to Survey No. 0+370 | 24 | 5 | 7 | 220 | 1,540 |
| 84 | Tathawade (Right side) Survey No. 0+425 to Survey No. 0+550 | 24 | 4 | 8 | 125 | 1,000 |
| 85 | Tathawade (Right side) Survey No. 0+590 to Survey No. 0+780 | 24 | 4 | 8 | 190 | 1,520 |
| 86 | Tathawade (Right side) Survey No. 1+560 to Survey No. 1+810 | 24 | 5 | 7 | 250 | 1,750 |
| 87 | Road No.1 -wakad (Shri Shivaji Khumbhar) Survey No. 0+320 to 0+390 | 24 | | 70 | 24 | 1,680 |
| 88 | Road No.1 -wakad (Shri Santosh Kalate) Survey No. 0+460 to 0+500 | 24 | 12 | 40 | 12 | 480 |
| 89 | Road No.2 -wakad (Pooja Kalate) Survey No. 0+380 to 0+400 | 18 | | 20 | 18 | 360 |
| 90 | Road No.2 -wakad (Ashiyana Housing Society) Survey No. 0+000 to 0+200 | 18 | 16.5 | 200 | 1.5 | 300 |
| 91 | Road No.3 -wakad (Shri Mohan Nimhan) Survey No. 0+480 to 0+580 | 24 | | 100 | 24 | 2,400 |
| 92 | Road No.4 -wakad (Shri Mohan Nimhan) Survey No. 0+000 to 0+170 | 24 | | 170 | 24 | 4,080 |
| 93 | Road No.4 -wakad (Pimpri Chinchwad Ma na pa School ) Survey No. 0+270 to 0+320 left side | 24 | 19 | 50 | 5 | 250 |
| 94 | Road No.4 -wakad (Shri Susheel Agrawal ) Survey No. 0+220 to 0+260 Right Side | 24 | 19 | 40 | 5 | 200 |
| 95 | Road No.4 -wakad (Shri Jayant Waghmare) Survey No. 0+560 to 0+600 Right Side | 24 | 19 | 40 | 5 | 200 |

| No | Village/Place | DP road width in (m) | Actual developed road width in (m) | Proposed length (in m) | Proposed Width (in m) | Total area sq.m |
|---|---|---|---|---|---|---|
| 96 | Road No.4 -wakad (Shri Srinavas Kalate) Survey No. 0+940 to 0+960 Right Side | 24 | 19 | 20 | 5 | 100 |
| 97 | Tathwade Survey No.0-420 both sides | 24 | 8 | 20 | 16 | 320 |
| 98 | Tathwad(Jadhav vasti), Survey No. 430 to 530 both sides | 24 | 6 | 100 | 18 | 1,800 |
| 99 | Tathwad, Survey No. 530 to 900 both sides | 24 | 9 | 370 | 15 | 5,550 |
| 100 | Tathwad, Survey No. 900 to 1200 left side | 24 | 3 | 300 | 9 | 2,700 |
| 101 | Tathwad, (Ashok Nagar) Survey No. 900 to 1200 Right side | 24 | 5 | 300 | 7 | 2,100 |
| 102 | Tathwad,Survey No. 1250 to 1800 Right side | 24 | 6 | 550 | 18 | 9,900 |
| 103 | Tathwad,Survey No. 200 to 400 both sides | 18 | 5 | 200 | 13 | 2,600 |
| 104 | Mauje C-Holi Survey No.1009,1010 | 45 | | 80 | 45 | 3,600 |
| 105 | Mauje C-Holi Survey No.306 | 30/18 | | 200 | 30 | 6,000 |
| 106 | Mauje C-Holi Survey No.134 | 30 | | 150 | 30 | 4,500 |
| 107 | Mauje Dudulgaon Survey No.175 | 18 | | 100 | 18 | 1,800 |
| 108 | Mauje Dudulgaon Survey No.78 | 18 | 9m Developed | 100 | 18 | 1,800 |
| 109 | Mauje Dudulgaon Survey No.70,71,71 | 18 | | 200 | 18 | 3,600 |
| 110 | Mauje Dudulgaon Survey No.190 | 24 | | 500 | 24 | 12,000 |
| 111 | Mauje Didhi Survey No.178 | Reserved for Fire Station | out of 40R 20R is been acquired | - | 0 | - |
| 112 | Mauje Tadwade, Triveni Nagar | 24 | 12 | 24 | 12 | 288 |
| 113 | Mauje Chiklu-Survey No.1040 Rajans Colony Navade Vasti | 12 | 270m long is 12m | 270 | 12 | 3,240 |
| | | | 25 m long for 4.5m | 25 | 4.5 | 113 |
| 114 | Mauje Chikli Survey No.928 Navade Vasti | 12 | | 110 | 12 | 1,320 |
| 115 | Mauje Chikli Survey No.901 | 18 | 6 | 25 | 12 | 300 |
| 116 | Mauje Chikli/Sane Chowk to Chikli Junction Road | 13,12,24 | 9 to 10m | 30 | 10 | 300 |
| | | | | 390 | 4 | 1,560 |
| | | | | 600 | 14 | 8,400 |
| 117 | Survey No.Amongst 26, 27,28,29 | 12 | 0 | 350 | 12 | 4,200 |
| 118 | Kunal residency to Theargaon Crematory | 12 | 0 | 700 | 12 | 8,400 |
| 119 | Survey No. 2/11 Vaibhav Nagar Society | 15 | 9 to 12 | 80 | 15 | 1,200 |
| 120 | Pavaneshwar Chowk to Jaldharan Lake | 18 | 0 | 380 | 18 | 6,840 |
| 121 | Vaibhav Nagar to Kalewadi Bridge Pimpri | 15 | 0 | 150 | 15 | 2,250 |
| 122 | Dange Chal, Fronting Nav Maharashtra School | 12 | 0 | 80 | 12 | 960 |
| 123 | Abhimanyu Chowk Usha tai | 18 | 0 | 12 | 18 | 216 |
| 124 | Chatrapati Chowk to Tapkir mada Chowk road, Rahatane | 12 | 6 | 80 | 12 | 960 |
| 125 | Tapkir Mada Chowk Road to River Road 18m wide, Rahatani | 12 | 9 | 75 | 12 | 900 |
| 126 | Nakhate Nagar entry road, Rahatani | 12 | 12 | 90 | 12 | 1,080 |
| 127 | Mathura Colony, Rahatani | 6 | 5 | 60 | 6 | 360 |
| 128 | Gnaga Sky Society to Kala Sagar Hotel (Sant Tukaram Nagar) | 12 | 0 | 200 | 12 | 2,400 |
| 129 | Reservation No. 13 Play ground to Matri Complex Society | 9 | 0 | 150 | 9 | 1,350 |
| 130 | Behind Kasarwadi Ma Na Pa to Seven Apple Hotel CME | 9 | 0 | 200 | 9 | 1,800 |
| 131 | Parthana Society Road, Kasarwadi | 12 | 6 | 300 | 6 | 1,800 |
| 132 | Above Kasarwadi Hotel to Railway gate | 12 | 2 | 10 | 3 | 30 |
| 133 | Above Kasarwadi Hotel to Railway gate | 12 | 6 | 6 | 7 | 42 |
| 134 | Above Kasarwadi Hotel to Railway gate | 12 | 9 | 9 | 3 | 27 |
| 135 | Dapodi Chatrapati Shivaji Statue to Bapodi Bridge Road | 18 | 11 | 160 | 7 | 1,120 |
| 136 | Dapodi Budha vihar to Cremetary Road | 18 | 9 | 70 | 9 | 630 |
| 137 | Dapodi Dr. Baba Saheb Ambedkar Statue to Budha vIhar Corner | 30 | 0 | 400 | 30 | 12,000 |
| 138 | Kasi Vishveshawar School to Kankarya gas Agency | 18 | 18 | 240 | 18 | 4,320 |
| 139 | Krishna Chowk to MK Hotel Chowk | 18 | 12 | 550 | 6 | 3,300 |
| 140 | Shani Mnadir to Shangvi Bus Stop | 12 | 6 | 180 | 6 | 1,080 |
| 141 | Kate Puram Chowk to kAsi Vishveshwar Shala | 18 | 12 | 300 | 6 | 1,800 |
| 142 | Kankarya gas Agency to Mayuriu Nagiri | 18 | 0 | 80 | 18 | 1,440 |
| 143 | Sangvi Phata to Shangvi Police Station | 18 | 12 | 830 | 6 | 4,980 |
| 144 | Sai Chowk tyo Krishna Chowk | 18 | 12 | 80 | 12 | 960 |
| 145 | Sangvi Mumta Ngar to Datt Ashram Road | 18 | 16 | 530 | 2 | 1,060 |
| 146 | MDR 31 Wakad Survey No. 125 | 45 | 20 | 240 | 18 | 4,320 |
| 147 | MDR 31 Wakad Survey No. 124 | 45 | 20 | 550 | 6 | 3,300 |
| 148 | MDR 31 Tathwade Survye No. 51 | 45 | 20 | 180 | 6 | 1,080 |
| 149 | MDR 31 Tathwade Survye No. 51 | 45 | 20 | 300 | 6 | 1,800 |
| 150 | MDR 31 Tathwade Survye No. 51 | 45 | 20 | 80 | 18 | 1,440 |
| 151 | MDR 31 Tathwade Survye No. 51 | 45 | 20 | 830 | 6 | 4,980 |
| 152 | MDR 31 Tathwade Survye No. 51 | 45 | 20 | 80 | 12 | 960 |
| 153 | MDR 31 Chinchwad | 30 | 0 | 530 | 2 | 1,060 |
| 154 | Walekharwadi to Dange Chowk 45m wide Road | 45 | 0 | 1,500 | 45 | 67,500 |

| No | Village/Place | DP road width in (m) | Actual developed road width in (m) | Proposed length (in m) | Proposed Width (in m) | Total area sq.m |
|---|---|---|---|---|---|---|
| 155 | Shivaji Chowk to Walhekarwadi Shiv | 34.5 | 700 | 410 | 17 | 6,970 |
| 156 | Chovesawadi | 90 | 30 | 440 | 90 | 39,600 |
| 157 | Wadmukhwadi | 90 | 30 | 740 | 90 | 66,600 |
| 158 | Chaholi | 90 | 30 | 560 | 90 | 50,400 |
| 159 | Dindhe | 60 | 45 | 750 | 15 | 11,250 |
| 160 | Dindhe | 60 | 30 | 1,220 | 30 | 36,600 |
| 161 | Dindhe | 60 | 9 | 1,520 | 51 | 77,520 |
| 162 | Dindhe | 60 | 50 | 190 | 10 | 1,900 |
| 163 | Wadmukhwadi | 60 | 50 | 350 | 10 | 3,500 |
| 164 | Ravet Shinde Vasti, Mukhai Chowk | 45 | 25 | 660 | 20 | 13,200 |
| 165 | Ravet iscon Mandir, D-mart Road | 34.5 | 0 | 450 | 34.5 | 15,525 |
| 166 | Wakad | 45 | 45 | 40 | 15 | 600 |
| 167 | Wakad | 45 or 12 | 45 | 12 | 10 | 120 |
| 168 | BRTS Corriodr No.3 on pune-Bnglr Nationla hwy Bridge Hingewadi Ma Na Pa road bounded width | 45 | 33 | 20 | 12 | 240 |
| 169 | Bhujbad Chowk to Hinjawadi PMC Boundary left side | 45 | 21 | 12 | 4 | 48 |
| 170 | Bhujbad Chowk to Hinjawadi PMC Boundary left side | 45 | 35 | 35 | 10 | 350 |
| 171 | Bhujbad Chowk to Hinjawadi PMC Boundary left side | 45 | 41 | 10 | 4 | 40 |
| 172 | Bhujbad Chowk to Hinjawadi PMC Boundary Right side | 45 | 30 | 20 | 15 | 300 |
| 173 | Bo-Handawadi Survey No. 1346 to 1393 24 | 24 | | 566 | 24 | 13,584 |
| 174 | Survey No. 950 to Nashik Hwy 18m | 18 | | 572 | 18 | 10,296 |
| 175 | Survey No. 99 to Mantra Society 18m | 18 | | 480 | 18 | 8,640 |
| 176 | Survey No. 76 to Survey No. 79 Colosis society18m DP Road | 18 | 5 | 330 | 13 | 4,290 |
| 177 | Ravi Ranjan Weighing Scale to River residency Chowk 24m DP Road | 24 | | 680 | 24 | 16,320 |
| 178 | Near Vadacha Mala Survey No. 681 to 702 12m DP Road | 12 | 4 | 200 | 12 | 2,400 |
| 179 | Swaraj Residency Chowk Survey No. 1327 to River adjoining 18m Shiv Road | 18 | | 470 | 18 | 8,460 |
| 180 | Chikli Cremation Ground till Nashik Hwy 18m DP Road | 18 | | 3,300 | 18 | 59,400 |
| 181 | Moshi-Akurdi-Chikli Road to Nashik Hwy 30m DP Road | 30 | | 4,100 | 30 | 123,000 |
| 182 | Survey No.524 to Shiv Road to BRT Road 18m DP road | 18 | | 1,600 | 18 | 28,800 |
| 183 | Morepatil Chowk to Survey No. 48 River road -18/30 DP road | 18 | | 300 | 18 | 5,400 |
| | | 30 | | 1,300 | 30 | 39,000 |
| 184 | Sector 16 to Kudhedwadi Police Chowk 18m DP Road | 18 | | 1,050 | 14 | 14,700 |
| 185 | Survey No. 1226 to CNG 30m Road. DP road proposed 18m | 18 | 9 | 914 | 9 | 8,226 |
| 186 | Adjoining Dosti Bakery road Neheru Nagar | 12 | 100 | 40 | 12 | 480 |
| 187 | Ravet (S.No.136) | 18 | 0 | 30 | 18 | 540 |
| 188 | Ravet (S.No.132/1/1) | 18 | 4 | 20 | 14 | 280 |
| 189 | Ravet (S.No. 180) | 24 | 4 | 20 | 20 | 400 |
| 190 | Ravet (S.No. 180) | 24 | 6 | 55 | 18 | 990 |
| 191 | Ravet (S.No. 102) | 24 | 0 | 40 | 24 | 960 |
| 192 | Ravet (S.No. 103) | 24 | 0 | 44 | 24 | 1,056 |
| 193 | Ravet (S.No. 77) | 24 | 0 | 60 | 24 | 1,440 |
| 194 | Ravet (S.No. 44) | 24 | 0 | 25 | 24 | 600 |
| 195 | Ravet (S.No. 43) | 24 | 0 | 30 | 24 | 720 |
| 196 | Ravet (S.No. 147) | 12 | 6 | 100 | 6 | 600 |
| 197 | Ravet (S.No. 153/3) | 12 | 6 | 20 | 6 | 120 |
| 198 | Ravet (S.No. 152) | 12 | 6 | 20 | 6 | 120 |
| 199 | Ravet (S.No. 151/52) | 12 | 0 | 50 | 12 | 600 |
| 200 | Ravet (S.No. 144,143,142,140,139,122,999,102) | 18 | 0 | 1,140 | 18 | 20,520 |
| 201 | Ravet (S.No. 75,76) | 12 | 0 | 270 | 12 | 3,240 |
| 202 | Kiwale (S.No. 78,82) | 24 | 12 | 480 | 12 | 5,760 |
| 203 | Kiwale (S.No. 92,93) | 18 | 9 | 150 | 9 | 1,350 |
| 204 | Ravet (S. No. 226) | 18 | 5 | 40 | 13 | 520 |
| 205 | Ravet (S. No. 119,116,115) | 18 | 0 | 30 | 18 | 540 |
| 206 | Ravet (S. No. 9,227,228,11,16,14,12,8) | 18 | 6 | 750 | 12 | 9,000 |
| 207 | Ravet (S. No. 87) | 18 | 0 | 270 | 18 | 4,860 |
| 208 | Ravet (S. No. 34 & 25) | 18 | 9 | 30 | 9 | 270 |
| 209 | Kiwale(S.No. 9) | 12 | 0 | 180 | 12 | 2,160 |
| 210 | Kiwale(S.No. 18) | 12 | 0 | 400 | 12 | 4,800 |
| 211 | Mamurdi(S.No. 8& 9) | 12 | 0 | 380 | 12 | 4,560 |
| 212 | Kiwale (S.No. 40,72,71,46) | 18 | 0 | 900 | 18 | 16,200 |
| 213 | Kiwale(S.No. 73,75,74,73) | 12 | 0 | 140 | 12 | 1,680 |
| 214 | Ravet (S.No. 92) | 24 | 22 | 230 | 2 | 460 |
| 215 | Ravet (S.No. 92) | 24 | 20.3 | 30 | 3.7 | 111 |
| 216 | Ravet (S.No. 92) | 24 | 20.3 | 30 | 3.7 | 111 |
| 217 | Ravet (S.No. 92) | 24 | 20.3 | 60 | 3.7 | 222 |

| No | Village/Place | DP road width in (m) | Actual developed road width in (m) | Proposed length (in m) | Proposed Width (in m) | Total area sq.m |
|---|---|---|---|---|---|---|
| 218 | Ravet (S.No. 92) | 24 | 12 | 200 | 12 | 2,400 |
| 219 | Ravet (S.No. 97) | 24 | 21 | 20 | 3 | 60 |
| 220 | Ravet (S.No. 97) | 24 | 21 | 55 | 3 | 165 |
| | **Total** | | | **77,256** | | |
| | | | | **77.25 km** | | |

# *Annexure 4-4*

*Junction Improvement*

## ANNEXURE 4.4: JUNCTION IMPROVEMENT

| No. | Name | Area | Arm Type |
|---|---|---|---|
| 1 | Thite Vasti HP Petrol Pump | PMC | 3 Arm |
| 2 | Near Post office Chowk | PMC | 3 Arm |
| 3 | Yashwantnagar Chwok | PMC | 3 Arm |
| 4 | City Pride Chowk | PMC | 3 Arm |
| 5 | Nawale bridge | PMC | 3 Arm |
| 6 | Dandekar Bridge | PMC | 3 Arm |
| 7 | Warje Chowk | PMC | 3 Arm |
| 8 | Gunjan Chowk | PMC | 3 Arm |
| 9 | Shastri Nagar chowk | PMC | 3 Arm |
| 10 | Bund Garden chowk | PMC | 3 Arm |
| 11 | Shadalbaba Durgah - Thakrey chowk | PMC | 3 Arm |
| 12 | Reliance Mall Chowk, Kharadi | PMC | 3 Arm |
| 13 | Ghorpadi Railway crossing (West) | PMC | 3 Arm |
| 14 | Ghorpadi Railway crossing (East) Ghorpadi | PMC | 3 Arm |
| 15 | Hadapsar Gadital | PMC | 3 Arm |
| 16 | Janak Baba Dargha Chowk | PMC | 3 Arm |
| 17 | Balasaheb Thacjery Statue chowk | PMC | 3 Arm |
| 18 | Balewadi Phata | PMC | 3 Arm |
| 19 | RTO Chowk | PMC | 3 Arm |
| 20 | Airport Entrance Chowk | PMC | 3 Arm |
| 21 | Mai Mangeshkar Hospital Chowk | PMC | 3 Arm |
| 22 | Viman Nagar Chowk | PMC | 3 Arm |
| 23 | Tata Guard Room | PMC | 3 Arm |
| 24 | Kharadi Byepass Chowk | PMC | 3 Arm |
| 25 | Mantarwadi Junction | PMC | 3 Arm |
| 26 | Awalwadi Junction | PMC | 3 Arm |
| 27 | Wageshwar Junction | PMC | 3 Arm |
| 28 | Awhalwadi - Kesnand road chowk | PMC | 3 Arm |
| 29 | Manjari Phata, Loni Kabhor | PMC | 3 Arm |
| 30 | Ambedkar Chowk | PMC | 4 Arm |
| 31 | Karve Nagar Chowk | PMC | 4 Arm |
| 32 | Dattanagar Chowk | PMC | 4 Arm |
| 33 | Ghorpade Peth | PMC | 4 Arm |

| No. | Name | Area | Arm Type |
|---|---|---|---|
| 34 | Katraj Chowk | PMC | 4 Arm |
| 35 | Aai mata chowk | PMC | 4 Arm |
| 36 | Shatrunjay Chowk | PMC | 4 Arm |
| 37 | Bhumkar Chowk | PMC | 4 Arm |
| 38 | Shivaji Putala Chowk | PMC | 4 Arm |
| 39 | Dr. Babasaheb Ambedkar Chowk | PMC | 4 Arm |
| 40 | Ramwadi chowk | PMC | 4 Arm |
| 41 | Kharadi Chowk | PMC | 4 Arm |
| 42 | 509 chowk | PMC | 4 Arm |
| 43 | Mundhwa Chowk | PMC | 4 Arm |
| 44 | Kalubai Chowk | PMC | 4 Arm |
| 45 | Pune University Chowk | PMC | 4 Arm |
| 46 | Khadi Machine | PMC | 4 Arm |
| 47 | Alka Talkies Chowk | PMC | 4 Arm |
| 48 | Juna Bazar Junction | PMC | 4 Arm |
| 49 | Sancheti Chowk | PMC | 4 Arm |
| 50 | Vaiduwadi Chowk | PMC | 4 Arm |
| 51 | Council Hall Chowk | PMC | 4 Arm |
| 52 | B T Kawde Chowk | PMC | 4 Arm |
| 53 | Undri Chowk | PMC | 4 Arm |
| 54 | Tadigutta Chowk | PMC | 5 Arm |
| 55 | Dapodi T Junction | PCMC | 3 Arm |
| 56 | Moshi Chowk 2 | PCMC | 3 Arm |
| 57 | Kate Patil Chowk | PCMC | 3 Arm |
| 58 | Rakshak Chowk | PCMC | 3 Arm |
| 59 | Mhasoba CHwok (Kalptaru Soc.) | PCMC | 3 Arm |
| 60 | Tathwade Chowk | PCMC | 3 Arm |
| 61 | Rahatani Fata | PCMC | 3 Arm |
| 62 | Wagheshwar Chowk | PCMC | 3 Arm |
| 63 | Dairy Farm Chowk | PCMC | 3 Arm |
| 64 | Kalakhadak Chowk (Phoenix Mall) | PCMC | 3 Arm |
| 65 | Moshi Chowk 1 | PCMC | 3 Arm |
| 66 | Celestial City Chowk | PCMC | 3 Arm |
| 67 | Ganapati Visarjan Ghat Chowk | PCMC | 3 Arm |

| No. | Name | Area | Arm Type |
|---|---|---|---|
| 68 | Raghunandan Mangal Karyalay Chowk | PCMC | 3 Arm |
| 69 | Idrayani Nagar Corner Chowk | PCMC | 3 Arm |
| 70 | Ankush Nagar Chowk | PCMC | 3 Arm |
| 71 | Jai Hind School Chowk | PCMC | 3 Arm |
| 72 | Delux Chowk | PCMC | 3 Arm |
| 73 | Indrayani Nagar Chowk | PCMC | 3 Arm |
| 74 | Dhawde Vasti Chowk | PCMC | 3 Arm |
| 75 | Boradewadi Chowk | PCMC | 3 Arm |
| 76 | Magzine Chowk | PCMC | 3 Arm |
| 77 | Dighi Gaonthan Chowk | PCMC | 3 Arm |
| 78 | Shastri Chowk | PCMC | 3 Arm |
| 79 | Vitthal Mandir Chowk | PCMC | 3 Arm |
| 80 | Mahatma Basaweshwar Garden | PCMC | 3 Arm |
| 81 | Phoenix Mall of the Millenium | PCMC | 3 arm |
| 82 | Bhosari Bus Stand | PCMC | 3 arm |
| 83 | Konkane Chowk | PCMC | 4 Arm |
| 84 | Shivar Chowk | PCMC | 4 Arm |
| 85 | Punawale Gaon Chowk | PCMC | 4 Arm |
| 86 | Thermax Chowk | PCMC | 4 Arm |
| 87 | MM School Chowk | PCMC | 4 Arm |
| 88 | Tapkir Chowk | PCMC | 4 Arm |
| 89 | Kadamji Plaza | PCMC | 4 Arm |
| 90 | Kasturi Chowk | PCMC | 4 Arm |
| 91 | Shivajiwadi Chowk | PCMC | 4 Arm |
| 92 | Electronic Sadan Chowk | PCMC | 4 Arm |
| 93 | Krishna nagar chwok | PCMC | 4 Arm |
| 94 | River residency corner Chowk | PCMC | 4 Arm |
| 95 | YCM Chowk | PCMC | 4 Arm |
| 96 | Ahilyabai Holkar Chowk | PCMC | 4 Arm |
| 97 | Pirbaba Durga Chowk | PCMC | 4 Arm |
| 98 | Landevadi Junction | PCMC | 4 Arm |
| 99 | Dange Chowk | PCMC | 4 Arm |
| 100 | Bharatmata Chowk | PCMC | 4 Arm |
| 101 | Wakad Junction | PCMC | 4 Arm |

| No. | Name | Area | Arm Type |
|---|---|---|---|
| 102 | Godown Chowk | PCMC | 4 Arm |
| 103 | Triveni Nagar Chowk | PCMC | 4 Arm |
| 104 | Vadmukh wadi Chowk | PCMC | 4 Arm |
| 105 | Spine Road Chowk | PCMC | 4 Arm |
| 106 | Chintamani Chowk | PCMC | 4 Arm |
| 107 | Sambhaji Chowk | PCMC | 4 Arm |
| 108 | Mukhai Chowk | PCMC | 4 arm |
| 109 | Nashik Phata, Kasarwadi | PCMC | 4 arm |
| 110 | Talwade Chowk | PCMC | 4 arm |
| 111 | Shagun Chowk | PCMC | 5 Arm |
| 112 | Khandoba Maal Chowk | PCMC | 5 arm |
| 113 | Ispat Road Junction | Rest of PMR | 3 Arm |
| 114 | Vadu Road Junction | Rest of PMR | 3 Arm |
| 115 | Dehu Phata Chowk | Rest of PMR | 3 Arm |
| 116 | Vithal Baba Dharga Junction | Rest of PMR | 3 Arm |
| 117 | Chimbali Phata Chowk | Rest of PMR | 3 Arm |
| 118 | Theur Phata Chowk | Rest of PMR | 3 Arm |
| 119 | Mahalunge Phata Chowk | Rest of PMR | 3 Arm |
| 120 | Kapurhol Junction | Rest of PMR | 3 Arm |
| 121 | Bhor-Kapurhol Road Junction | Rest of PMR | 3 Arm |
| 122 | Wada Road Junction | Rest of PMR | 3 Arm |
| 123 | Pabal Road Junction | Rest of PMR | 3 Arm |
| 124 | KB Chowk | Rest of PMR | 3 Arm |
| 125 | Kapurhol Junction, Nasrapur | Rest of PMR | 3 Arm |
| 126 | Somatane Phata | Rest of PMR | 3 Arm |
| 127 | Limbh Phata | Rest of PMR | 3 Arm |
| 128 | Dehu Road Y Junction | Rest of PMR | 3 Arm |
| 129 | Sambaji Chowk | Rest of PMR | 3 Arm |
| 130 | Junction near Tukoba Maharaj Prvadeshwar, Dehu | Rest of PMR | 3 Arm |
| 131 | Pabal Phata Chowk | Rest of PMR | 3 Arm |
| 132 | Lonikhand Phata | Rest of PMR | 3 Arm |
| 133 | Jejuri Naka Junction | Rest of PMR | 3 Arm |
| 134 | Uruli Kanchan Junction | Rest of PMR | 4 Arm |
| 135 | Talegaon Chowk | Rest of PMR | 4 Arm |

| No. | Name | Area | Arm Type |
|---|---|---|---|
| 136 | Marriot Hotel Junction | Rest of PMR | 4 Arm |
| 137 | Laxmi Chowk | Rest of PMR | 4 Arm |
| 138 | Junction near Loni Station Bus Stop in Loni Kalbhor | Rest of PMR | 4 Arm |
| 139 | Pandharpur- Supe- Bhor Road Junction | Rest of PMR | 4 Arm |
| 140 | Donje Phata | Rest of PMR | 4 Arm |
| 141 | Ghotwade Junction | Rest of PMR | 4 Arm |
| 142 | Talegaon Station Chowk | Rest of PMR | 4 Arm |
| 143 | Shivaji Chowk | Rest of PMR | 4 Arm |
| 144 | Ambethan Chowk | Rest of PMR | 4 Arm |
| 145 | Alandi chowk | Rest of PMR | 4 Arm |
| 146 | Chakan Chowk, Shikrapur | Rest of PMR | 4 Arm |
| 147 | Talegaon Chowk, Chakan | Rest of PMR | 4 Arm |
| 148 | Municipal Council Junction, Saswad | Rest of PMR | 4 Arm |
| 149 | Kodit Naka Junction | Rest of PMR | 4 Arm |

# *Annexure 4-5*

*Commercial Vehicle Restrictions in the Study Area*

## ANNEXURE 4.5: COMMERCIAL VEHICLES RESTRICTION IN STUDY AREA

### PMC VEHICLE RESTRICTIONS

1. In the route and timing of the luxury buses plying on the Ganeshkhind road till further orders are temporarily modified as follows,
   Until the completion of the construction of the flyover and metro on Ganeshkhind road, all types of luxury buses from Pune city from Sancheti Hospital Chowk to Ganeshkhind Road via Vidyapeeth Chowk, Aundh to Pimpri Chinchwad, Hinjawadi area and from Pimpri Chinchwad, Hinjawadi area to Aundh Road from Pune Vidyapeeth Chowk to Sancheti Hospital Chowk are allowed. From 08.00 am to 22.30 pm from 10/02/2023. Access will be remain closed.
   **Alternate Route:** Old Pune Mumbai Highway to Pune City via Harris Bridge and pass through the city or via Bypass Road to or from Katraj Khadi Machine Chowk.
2. Temporary excluding essential service vehicles in transport. The form is variable on experimentalism. All previous traffic orders at the said place will be considered cancelled.

   - From Pune Vidyapith Chowk to Ganeshkhind Road to Senapati Bapat Road Right entry from Senapati Bapat Road junction will be closed for passing vehicles, Motorists should take a U-turn in front of Cosmos Bank and take a left turn from Senapati Bapat Road junction.
   - For vehicles coming from Shivajinagar on Ganeshkhind Road and going towards Range Hills, the right turn will be closed at Range Hills Corner, Motorists should take a U-turn in front of Cosmos Bank and take a left turn at Rangehills corner towards Rangehills.

3. The Baner road leading from Pune University to Baner is being converted into a buffer road up to Police Petrol Pump. 07:00 am to 12:00 pm Until then, the traffic on Mudara Road will continue towards Vidyapeeth Chowk. and 12:00 PM to 07:00 AM. Traffic will continue towards Baner, Between 07:00 AM to 12:00 PM, motorists going to Baner from Pune Vidyapeeth Chowk should take Pashan Road via Abhimanasree Junction to Baner.
4. All types of heavy vehicles, trucks, trailers, containers will be closed for 24 hours on the following route.

   A. Chafekar Chowk to Pune Vidyapithchowk on Ganeshkhind Road
   B. Bremen Chowk to Pune Vidyapith Chowk on Aundh Road
   C. Abhimanashree Chowk to Pune Vidyapeeth Chowk on Baner Road, Abhimanashree Chowk to Pune Vidyapeeth Chowk on Pashan Road
   D. Three-wheeler pickups transporting vegetables, as well as three-wheelers, four-wheelers and all types of cargo vehicles, slow moving vehicles e.g. Dumper, mixer, JCB, road roller and other vehicles from 08:00 AM to 12:00 PM and 16:00 PM to 22:00 PM. Access will be closed during this time.

5. Access to Pune city from Wagholi will be closed for 24 hours from Pune-nagar route.
   **Alternate Route:** From Shikrapur on Pune Nagar Road take a right turn towards Mumbai via Pimpri Chinchwad and Talegaon Dabhade via Chakan. They will also go to Ahmednagar via the

above route.

6. Vehicles coming from Pune Solapur and Pune Saswad roads will be closed for 24 hours to Hadapsar Noble Hospital Chowk Kharadi Bypass Chowk.

   **Alternative route -1:** Vehicles coming from Pune Solapur should turn right at their Phata go via Theur – Lonikand – Shikrapur to and from.

   **Alternative route 2:** Vehicles coming from Pune Saswad Road should take U turn at Hadapsar and take left turn at Theur Phata and proceed till Theur, Lonikand, Shikrapur.

   On the following sample route above type of vehicles will be allowed from 07:00 am to 21:00 pm.
7. Vehicles going from Pune Solapur Road to Satara, Mumbai will take a left turn at Hadapsar and take a right turn at Mantarwadi Phata from Saswad Road and take a right from Khadi Machine Chowk to Katraj Chowk to Satara or Navle Bridge to Mumbai. Also, vehicles coming from Saswad should take a left turn from Mantarwadi Chowk and use the above route.
8. Vehicles coming from Mumbai should take a left turn at Navle Bridge and vehicles coming from Satara should take a left turn from Katraj Chowk to Khadi Machine Chowk Mantarwadi Chowk and take a right turn to Solapur via Hadapsar and go to Saswad through Mantarwadi Chowk.
   Also, as above, all types of vehicles will be closed for 24 hours to enter the inner city from the following points.

   A. Solapur Road Noble Hospital Chowk,
   B. Ahmednagar Road Kesnand Phata Wagholi
   C. Mumbai Pune Road Harris Bridge,
   D. Aundh Road Rajiv Gandhi Bridge,
   E. Baner Road Hotel Radha Chowk,
   F. Pashan Road Ramnagar Junction,
   G. Paud Road Chandani Chowk,
   H. Singhgad Road Wadgaon Bridge Chowk,
   I. Satara Road Katraj Chowk,
   J. Saswad Road (Bopdev Ghat Marg) Khadi Machine Chowk,
   K. Katraj Mantarwadi Bypass Road Undri Chowk, Alandi Road Bopkhel Phata Chowk

## PCMC COMMERCIAL TRAFFIC RESTRICTIONS

1. Entry to and from Triveninagar to Talwade Gaonthan to IT Park Chowk to Mahindra Company Chakan is being blocked for heavy/heavy vehicles.
2. Parandwal Chowk - Khandelwal Chowk IT Park Chowk (Talwade Gaonthan),Chikhali Gaonthan-Diamond Chowk Ramkrishnahari Chowk to and from all types of heavy vehicles are closed.
3. Access to all types of heavy vehicles is closed on the oncoming road from Diamond Chowk to Kudalwadi Bridge.
4. All types of heavy vehicles are closed on the road between Krishna Chowk-Sane Chowk -

Newalevasti from left to Pingle Chowk - Sonwane Chowk - Jyotibanagar Chowk.

5. Entry to and from Bhakti Shakti Chowk to Triveninagar Chowk is closed for heavy vehicles.
6. Entry to and from Talwade Road to Bhakti Shakti Chowk is closed for heavy vehicles.
7. Entry to and from Durga Chowk to Tilak Chowk is closed for heavy vehicles.
8. Entry to and from Thermax Chowk to Khandobamal Chowk is closed for heavy vehicles.
9. Entry to and from Chikhli Police Station- Shahunagar Chowk to KSB Chowk is closed for heavy/heavy vehicles.
10. D.Y Patil to Hanging Bridge Entry to and from is restricted for heavy vehicles.
11. Entry to and from Sambhaji Chowk to Khandobamal Chowk is closed to heavy vehicles.
12. Entry to and from River View Chowk to Mahaveer Chowk Chhatrapati Shivaji Maharaj Chowk is closed for heavy vehicles.
13. Entry to and from Khandobamal to Dalvinagar, SKF Company Chapekar Chowk is closed for heavy vehicles.
14. Entry to and from Ashoka Hotel near Bhosari Over Bridge from Jaika Cha to PMT Chowk Bhosari and from PMT Chowk Bhosari to Bhosari Over Bridge is closed for heavy vehicles.
15. Entry to and from Maiwade Wale Chowk to Banacha Droha is closed for heavy vehicles.
16. Jay Bharat Chowk to Anandnagar Cosmos Society to and from heavy vehicles entry is restricted.
17. All types of heavy vehicles are closed on the route to and from Nashikphata Chowk to Harris Bridge.
18. Entry to Indian Oil Chowk from Wakad Bridge and Wakad Naka is closed to all types of heavy/heavy vehicles.
19. From the Mumbai-Bangalore Highway, take a left from Mycar Showroom to and from Hinjawadi IT Park.
20. All types of heavy vehicles are closed on the way to and from Sakhre Patil T Junction Chowk to Wipro Circle Phase-1.
21. Entry to and from T Junction Phase-3 (Bapuji Bua Khind) to Tata T Junction Chowk is closed for all types of heavy vehicles.
22. All types of heavy vehicles are closed on the way to and from Rajiv Gandhi Bridge Rakshak Chowk Kalewadi Phata flyover.
23. Kalewadi Phata to Tapkir Chowk via M. M. Chowk Empire Estate. All types of heavy vehicles are closed on the way to and from.
24. All types of heavy vehicles are closed on the route from Kaspte Chowk to Sangvi Traffic Division via Savitribai Phule Chowk-Shiwar Chowk-Kokne Chowk via Mhsoba Chowk to Nashik Phata.
25. The road between Pimple Gurav via Mhasoba Chowk and the road from Sangvi Phata to Sangvi Village is closed to all types of heavy vehicles.
26. Entry to and from Wakad naka to Kaspte Chowk is closed for heavy vehicles.
27. Entry to and from Birla Hospital to Bhumkar Chowk is closed for heavy vehicles.
28. Entry of heavy vehicles from Ginger Hotel to Bhumkar Chowk via the service road is closed.
29. Entry of heavy vehicles is closed on the service road from Mycar Showroom to Bhumkar Chowk.
30. From Shani Mandir to Bhumkar Chowk by service road, entry of heavy vehicles is closed.
31. Entry to and from Jaguar showroom to Bhumkar Chowk is closed for heavy vehicles.
32. Entry of heavy vehicles is closed on the way between Wakadgaon Chowk and Dattamandir Road Wakad.
33. Entry of heavy vehicles is closed on the way from Tapkir Chowk to Thergaon Road in Thergaon Phata.
34. Entry of all types of heavy vehicles is closed through Tathwade and Punawale underpass.
35. Access to all types of heavy vehicles is being closed on the route from Suskhind (Susbridge) to

Nande village.

36. After coming to Pimpri Bridge from Pimpri Chowk, while turning left and going to and from Shagun Chowk, access is closed for heavy vehicles.
37. Access of heavy vehicles to and from the Main Bazaar at Bhatnagar Corner is restricted.
38. Shagun Chowk to Sai Chowk Arya Samaj Chowk to Karachi Chowk, Shagun Chowk to Deluxe Chowk Kalewadi Bridge Karachi Chowk to Ambedkar Road (River Road) Bhatnagar to and from Bhatnagar No entry for heavy vehicles.
39. Entry to and from Sai Chowk to Gaillard Chowk is closed to heavy vehicles is restricted.
40. 40. Entry to and from Swami Chowk to Dehur Road Bazar and Savannah Chowk to Dehur Road Bazar is closed for heavy/heavy vehicles.
41. On the way to and from Mukai Chowk to Rawet Entry is closed to heavy vehicles.
42. All types of heavy vehicles are closed to and from Hyundai Circle to Khalumbre.
43. All types of heavy vehicles are closed on the route from the Indori toll gate to Vadgaon Phata.
44. Between Dehu phata Chowk and Chakan Chowk,heavy vehicles will not be allowed to enter.
45. Between Chakan Chowk and Vadgaon Chowk, access to heavy vehicles is closed.
46. Access to heavy vehicles is closed Between Vadgaon Chowk and Markal Chowk.
47. Entry to and from Markal Chowk to Dehuphata is closed for heavy vehicles.
48. Between Dhanori Phata and Markal Chowk, access to heavy/heavy vehicles is closed.
49. There is a full-time ban on the entry and exit of all types of heavy vehicles on the Indrayani River bridge on the Markal village to Tulapur route.
50. Heavy and four-wheeler vehicles (excluding rickshaws, motorcycles, pedestrians etc.) are prohibited from Silver Spoon Hotel to Kasturi Chowk via Santkripa Bungalow.

# *Annexure 4-6*

*Detailed Calculation of Service Level Benchmarks for BAU and SUT Scenario*

# ANNEXURE 4.6: DETAILED CALCULATION OF SERVICE LEVEL BENCHMARK FOR BAU AND SUT SCENARIO

## BAU SCENARIO

## PUBLIC TRANSPORT FACILITIES

### PRESENCE OF ORGANIZED PUBLIC TRANSPORT SYSTEM IN URBAN AREA (%)

Pune's public transportation system is operated and maintained by PMPML. In future by the year 2034, the city will have 2500 buses.

A = Total Number of Buses in the City operating – 2500 buses

B = Total Number of operating Buses under the ownership of STU/SPV – 2500 buses

Presence of Organized Public Transport System in Urban Area (%) = (B/A) *100

= 100 %. Therefore, corresponds to LoS 1=1

### EXTENT OF SUPPLY AVAILABILITY OF PUBLIC TRANSPORT (AVAILABILITY OF PUBLIC TRANSPORT / 1000 POPULATION)

The Estimated Population of study area for the year 2034 will be 133.55 lakhs

A = Total Number of Buses in the City will be – 2500 buses

B = Total Population of the Study area – 133.5 lakhs.

Availability of Public Transport / 1000 Population = A/ (B/1000) = 0.18.

Therefore corresponds to LoS 2 = 4

### AVERAGE WAITING TIME FOR PUBLIC TRANSPORT USERS (MINS)

The average waiting time for public transport users in the Study Area is 16 minutes.

Therefore, **LoS 4 = 4**

**The overall LoS of Public Transport Facilities is obtained by summing up the LoS of individual**

**parameters, Overall Level of Service of Public Transport facilities in Pune. Thus, overall LoS corresponds to '2'.**

## TRAVEL SPEED (MOTORIZED & MASS TRANSIT) ALONG MAJOR CORRIDORS

### AVERAGE TRAVEL SPEED OF PERSONAL VEHICLES (KMPH)

The average journey speed for major corridors for private vehicles likely to increase to = 19 Kmph.

Therefore, it corresponds to LoS 1 = 3.

### AVERAGE TRAVEL SPEED OF PUBLIC TRANSPORT (KMPH)

The average journey speed for major corridors for the public transport likely to increase =13 Kmph.

Therefore, corresponds to LoS 2=3.

Overall score of Level of Service for Travel Speed facilities in the city =3+3= 6

**Overall score = 6 this corresponds to Overall LoS 3**

## AVAILABILITY OF PARKING SPACES

This indicator represents the availability of paid on-street parking spaces for all vehicles in the Pune. Paid on-street parking facility is not yet introduced in Pune city except in some off-street locations like Bus stands, railway stations and other commercial complexes. In some places like Malls parking is maintained by private people.

As the percentage is negligible it is considered as <25 %. Therefore LoS1= 4.

The ratio of maximum and minimum parking fee is >4 for Pune city. Therefore, LoS 2 = 1.

**Overall score 4+1 = 5. This corresponds to Overall LoS 3.**

## POLLUTION LEVELS

The indicator indicates the level of air pollutants in the city i.e., average level of pollution in urban areas. The indicator to calculate the pollution level is Mean Concentration Range.

The pollution data that needs to be collected includes Sulphur Dioxide (SO2), Oxides of Nitrogen, Suspended Particle matter (SPM), RSPM (Size less than 10 microns),

The level of service for the pollutants is divided into four categories i.e., low, moderate, high and critical. The level of service for each of the above parameters is determined using the table below as recommended by MoUD /MoHUA.

For Pune city, the pollution levels will get reduced in future as most of the buses and private vehicles will be either electrified and CNG, the pollution level will be as shown below,

| No. | Air Pollutant | Average Present | Level of Service |
|---|---|---|---|
| 1 | Sulphur Dioxide ($SO_2$) | 17.76 | 1 |
| 2 | Oxides of Nitrogen | 82.88 | 3 |
| 3 | Suspended Particle matter (SPM) | 244.2 | 2 |
| 4 | RSPM (<10 microns) | 146.52 | 4 |

Overall level of service of pollution city wide = LoS 1+ LoS 2+ LoS 3 + LoS 4 =

1+3+2+4= 10, Therefore, **overall LoS = 3**

## SUT SCENARIO

## PUBLIC TRANSPORT FACILITIES

### PRESENCE OF ORGANIZED PUBLIC TRANSPORT SYSTEM IN URBAN AREA (%)

Pune's public transportation system is operated and maintained by PMPML. In future by the year 2034, the city will have 8000 buses.

A = Total Number of Buses in the City operating – 8000 buses

B = Total Number of operating Buses under the ownership of STU/SPV – 8000 buses

Presence of Organized Public Transport System in Urban Area (%) = (B/A) *100 = 100 %, therefore corresponds to **LoS 1=1**

### EXTENT OF SUPPLY AVAILABILITY OF PUBLIC TRANSPORT (AVAILABILITY OF PUBLIC TRANSPORT / 1000 POPULATION)

The Estimated Population of study area for the year 2034 will be 133.55 lakhs

A = Total Number of Buses in the City will be – 8000 buses

B = Total Population of the Study area – 133.55 lakhs.

Availability of Public Transport / 1000 Population = A/ (B/1000) = 0.59, Therefore corresponds to **LoS2=2**.

**AVERAGE WAITING TIME FOR PUBLIC TRANSPORT USERS (MINS)**

The average headway for each bus route will be about 10 minutes.

Therefore, the average waiting time will be half the headway i.e. 5 minutes, therefore corresponds to **LoS 4=2**.

**The overall LoS of Public Transport Facilities is obtained by summing up the LoS of individual parameters, Overall Level of Service of Public Transport facilities in Pune. Thus, overall LoS corresponds to '1'.**

## TRAVEL SPEED (MOTORIZED & MASS TRANSIT) ALONG MAJOR CORRIDORS

**AVERAGE TRAVEL SPEED OF PERSONAL VEHICLES (KMPH)**

The average journey speed for major corridors for the private vehicles likely to increase

to = 35 Kmph. Therefore, corresponds to LoS 1=1.

**AVERAGE TRAVEL SPEED OF PUBLIC TRANSPORT (KMPH)**

The average journey speed for major corridors for the public transport likely to increase

=30 Kmph. Therefore, corresponds to LoS 1=1.

Overall Level of Service of Travel Speed facilities city wide =1+1= 2(score) = LOS 1

**The overall LOS= 2 (score) this corresponds to LoS 1.**

## AVAILABILITY OF PARKING SPACES

This indicator represents the availability of paid on-street parking spaces for all vehicles in the Pune. Paid on-street parking facility is not yet introduced in Pune city except in some off-street locations like Bus stands, railway stations and other commercial complexes. In some places like Malls parking is maintained by private people.

As the percentage is negligible it is considered as <25 %. Therefore LoS1= 4.

The ratio of maximum and minimum parking fee is >4 for Pune city. Therefore, LoS 2 =1.

Overall score: 4+1 = 5 This corresponds to **LoS 3**.

## POLLUTION LEVELS

The indicator indicates the level of air pollutants in the city i.e., average level of pollution in urban areas. The indicator to calculate the pollution level is Mean Concentration Range.

The pollution data that needs to be collected includes Sulphur Dioxide (SO2), Oxides of Nitrogen, Suspended Particle matter (SPM), RSPM (Size less than 10 microns),

The level of service for the pollutants is divided into four categories i.e., low, moderate, high and critical. The level of service for each of the above parameters is determined using the table below as recommended by MoUD /MoHUA

For Pune city, the pollution levels will get reduced in future as most of the buses and private vehicles will be either electrified and CNG, the pollution level will be as shown below

Oxides of Sulphur: 1, this corresponds to **LoS 1**

Oxides of Nitrogen: 3, this corresponds to **LoS 1**

SPM: 80, this corresponds to **LoS 1**

RSPM (Size less than 10 microns): 70, This corresponds to **LoS 2**

Overall level of service of pollution city wide = LoS 1+ LoS 2+ LoS 3 + LoS 4 = 1+1+1+2= 5, this corresponds to **LoS 1**.

# *Annexure 5-1*

*Phasing of Projects*

## ANNEXURE 5.1: PHASING OF PROJECTS

### METRO PHASING

The phasing of metro corridors is provided based on the traffic demand over the horizon year, and the status of projects proposals as on date in the table below.

| Name of Corridor | Total Length (in Km) | To be constructed | |
|---|---|---|---|
| | | Phase 1 (2024-34) | Phase 2 (2034-44) |
| **Conventional Metro** | | | |
| Nigdi – Katraj | 27.5 | - | - |
| Chandani Chowk – Vitthalwadi with Spur Line from Ramwadi to Pune International Airport - Lohegaon | 32.7 | 17.0 | - |
| Hinjawadi – Yewalewadi via Kondhwa with Spur line from Kondhwa to Undri via Mohammed wadi | 37 | 13.7 | - |
| University Chowk - Dehu Road | 24.3 | - | 24.3 |
| Kharadi – Khadakwasala (with Spur line Manik Baug – SNDT via Warje) | 32.1 | 32.1 | - |
| Bhakti Sakthi – Chakan (via Wakad, Nashik Phata, Moshi) | 42.6 | 42.6 | - |
| Hadapsar - Saswad Road | 7.5 | 7.5 | - |
| Hadapsar - Loni Khalbor | 10.7 | 10.7 | - |
| **Sub-Total (A)** | **214.4** | **123.6** | **24.3** |
| **Metro – Lite** | | | |
| District Court – Alandi | 20.4 | - | 20.4 |
| Wakad Chowk to Shewalewadi (via Katraj) | 42.4 | - | 42.4 |
| HCMTR – PCMC | 20.9 | - | 20.9 |
| HCMTR – PMC | 44.2 | - | 44.2 |
| Gavli Matha Chowk to Shewalewadi via Wagholi | 36.5 | - | 36.5 |
| **Sub-total (B)** | **164.4** | **-** | **164.4** |
| **Total (A+B)** | **378.8** | **123.6** | **188.7** |

### BRTS PHASING

| No. | Name of Corridor | Total Length (in Km) | Length (in Km) | | |
|---|---|---|---|---|---|
| | | | Phase 1 (2024-34) | Phase 2 (2034-44) | Phase 3 (2044-54) |
| **BRTS** | | | | | |
| 1 | Ravet - Rajguru Nagar via Chakan | 37.8 | - | 37.8 | - |

| No. | Name of Corridor | Total Length (in Km) | Length (in Km) | | |
|---|---|---|---|---|---|
| | | | Phase 1 (2024-34) | Phase 2 (2034-44) | Phase 3 (2044-54) |
| 2 | Ravet - Talegaon Dabhade | 14.1 | - | 14.1 | - |
| 3 | Chandani Chowk to Hinjawadi | 28.6 | - | - | 28.6 |
| | **Sub-Total** | **80.5** | **-** | **51.9** | **28.6** |
| | **High Frequency Bus Corridor** | | | | |
| 4 | Loni Kalbhor - Kedgaon | 40.0 | 40.0 | - | - |
| 5 | Bhumkar Chowk - Chinchwad Chowk | 6.3 | 6.3 | - | - |
| | **Sub-Total** | **46.3** | **46.3** | **-** | **-** |

## TRUCK TERMINAL & LOGISTIC HUBS

The phasing of implementation for Truck terminals is provided in the table below.

| No. | Proposal | Jurisdiction | Land Required (Acres) | |
|---|---|---|---|---|
| | | | Phase 1 (2024-34) | Phase 2 (2034-44) |
| 1 | Mangdewadi | PMC | 3.1 | - |
| 2 | Nashik Road, Near Chimbali | Rest of PMR | 3.50 | - |
| 3 | Loni Kand | Rest of PMR | 5.67 | - |
| 4 | Prayagdham | Rest of PMR | 3.67 | - |
| 5 | Wadki | Rest of PMR | 2.77 | - |
| 6 | Kasurdi | Rest of PMR | 1.20 | - |
| 7 | Parandvadi | Rest of PMR | 5.75 | - |
| 8 | Solu | Rest of PMR | 3.17 | - |
| 9 | Daund, Kedgaon | Rest of PMR | - | 4.12 |
| 10 | Kasar Amboli | Rest of PMR | - | 1.09 |
| 11 | Ranjangaon on NH753P | Rest of PMR | - | 4.81 |
| 12 | Satara Road near Nasrapur | Rest of PMR | - | 3.50 |
| 13 | Bhamboli | Rest of PMR | - | 2.54 |
| 14 | Saradwadi | Rest of PMR | - | 4.81 |
| | **Total** | | **28.83** | **20.87** |

The phasing of implementation for Logistic Hubs is provided in the table below.

| No. | Location | Jurisdiction | Land Required (Acres) | |
|---|---|---|---|---|
| | | | Phase 1 (2024-34) | Phase 2 (2034-44) |
| 1 | Talegaon Dabhade | Rest of PMR | 25 | - |

| No. | Location | Jurisdiction | Land Required (Acres) | |
|---|---|---|---|---|
| | | | Phase 1 (2024-34) | Phase 2 (2034-44) |
| 2 | Chakan | Rest of PMR | 25 | - |
| 3 | Vadhu Budruk | Rest of PMR | 25 | - |
| 4 | Uruli Kanchan | Rest of PMR | 25 | - |
| 5 | Shikrapur | Rest of PMR | - | 25 |
| 6 | Saswad | Rest of PMR | - | 25 |
| 7 | Malavli | Rest of PMR | - | 25 |
| | **Total** | | **100** | **75** |

## BUS AUGMENTATION

| Bus Type | Phase 1 (2024-34) | Phase 2 (2035 -44) | Phase 3 (2045-54) |
|---|---|---|---|
| Normal bus needed | 9,068 | 5,250 | - |
| E-Bus Needed | 3,552 | 5,250 | 15,000 |
| **Total** | **12,620** | **10,500** | **15,000** |

In case of Bus Augmentation, the following assumptions are made,

- The average life of a bus is considered as 10 years and the fleet needs to be replaced after 10 years.
- In Phase 1 the number buses is arrived by subtracting the existing fleet of 1,407 normal buses and 473 e-buses.

## MULTI MODAL HUB PHASING

| No. | Locations | Modes that will be integrated | Phasing | Type |
|---|---|---|---|---|
| 1 | Swargate | Metro, PMPML, MSRTC | 1 | 1 |
| 2 | Pune Railway Station | Metro, Railways, PMPML, MSRTC | 1 | 1 |
| 3 | Balewadi | Metro, PMPML, MSRTC | 1 | 1 |
| 4 | Shivaji Nagar | Metro, Railways, PMPML, MSRTC | 1 | 1 |
| 5 | Hadapsar | Metro, PMPML, MSRTC | 1 | 1 |
| 6 | Bhakti Shakti | Metro, PMPML, MSRTC | 1 | 1 |
| 7 | Katraj | Metro, PMPML, MSRTC | 1 | 1 |
| 8 | Wagholi | Metro, PMPML, MSRTC | 1 | 1 |
| 9 | Chandani Chowk | Metro, PMPML, MSRTC | 1 | 1 |
| 10 | Wakad | Metro, PMPML, MSRTC | 1 | 1 |
| 11 | Moshi | Metro, PMPML, MSRTC | 1 | 2 |
| 12 | Nashik Phata | Metro, PMPML, Railways | 1 | 2 |
| 13 | Chakan | Metro, PMPML, MSRTC | 1 | 2 |

| No. | Locations | Modes that will be integrated | Phasing | Type |
|---|---|---|---|---|
| 14 | Sant Tukaram Nagar | Metro, PMPML, MSRTC | 1 | 2 |
| 15 | Vanaz | Metro, PMPML | 1 | 3 |
| 16 | Chinchwad | Metro, Railways, PMPML | 1 | 3 |
| 17 | Mukhai Chowk | Metro, PMPML, MSRTC | 2 | 1 |
| 18 | Vitthalwadi | Metro, PMPML, MSRTC | 2 | 1 |
| 19 | Purandar | Airport, Railway, PMPML | 2 | 1 |
| 20 | District Court | Metro, PMPML | 2 | 2 |
| 21 | Manjari Budruk | PMPML, MSRTC | 2 | 2 |
| 22 | Khadkale | Railway, PMPML | 2 | 2 |
| 23 | Godown Chowk | Metro, PMPML | 2 | 3 |
| 24 | Vadhu Budruk | PMPML, Railway | 2 | 3 |
| 25 | Kurali | Metro, PMPML | 2 | 3 |
| 26 | Loni Kalbhor | PMPML, Metro, MSRTC | 2 | 3 |

The phasing of the above locations has been done based on the phasing of the metro lines. In addition to that the potential of development into multi modal hub is split into 3 categories based on the following criteria,

- The development in the locality
- Number of modes integrated.

The cost of the 3 categories is assumed based on the following criteria,

| No. | Type | Area in sq.ft (in lakhs) | Cost in Cr (@Rs.3,000 per sq.ft) | MLCP (in Cr Rs.) | Circulation Area (including Bus Bay/Auto Stand etc., @ 10% of the commercial area cost) | FOB/Sky Walk cost (in Crore Rs) | Signage & ITS cost (in Cr Rs.) | Total Cost (in Cr Rs) |
|---|---|---|---|---|---|---|---|---|
| 1 | Large | 3.0 | 90 | 40 | 9 | 9.0 | 2.0 | **150.0** |
| 2 | Medium | 1.5 | 45 | 30 | 4.5 | 8.5 | 2.0 | **90.0** |
| 3 | Small | 0.75 | 22.5 | 20 | 2.25 | 3.7 | 1.5 | **50.0** |

In the above 3 categories the following capacities are considered in case of MLCP,

- Large - 200 cars + 550 Two wheelers
- Medium - 100 cars + 275 Two wheelers
- Small - 50 cars + 140 Two wheelers

The phasing of the transfer stations is provided in the table below.

| No | Transfer Station Locations | Modes | Phase |
|---|---|---|---|
| 1 | Kharadi | Metro, PMPML | 1 |
| 2 | SNDT | Metro, PMPML | 1 |
| 3 | Bhugaon | PMPML, MSRTC | 1 |

| No | Transfer Station Locations | Modes | Phase |
|---|---|---|---|
| 4 | Jagtap Dairy Chowk | Metro, PMPML | 2 |
| 5 | University Chowk | Metro, PMPML | 2 |
| 6 | Bopodi | Metro, PMPML | 2 |
| 7 | Shewalewadi | Metro, PMPML | 2 |
| 8 | Waki Khurd | Railway, Semi High Speed Rail, PMPML | 2 |
| 9 | Bhilarewadi | MSRTC | 2 |
| 10 | Khalumbre | PMPML | 2 |
| 11 | Solu | PMPML | 2 |

# *Annexure 5-2*

*Details of Unit Cost*

## ANNEXURE 5.2: DETAILS OF UNIT COST

| No. | Item Description | Unit | Unit Cost (in Rs.) |
|---|---|---|---|
| 1 | New road construction | Km. | 12,34,35,259 |
| 2 | Road Widening | | |
| | i. Two Lane to Four Lane (Overlay on Existing Road, 500 mm thick Embankment filling/cutting is considered) | Km. | 6,90,27,557 |
| | ii. Four Lane to Six Lane (Overlay on Existing Road, 500 mm thick Embankment filling/cutting is considered) | Km. | 7,05,44,054 |
| | iii. Six Lane to Eight Lane (Overlay on Existing Road, 500 mm thick Embankment filling/cutting is considered) | Km. | 7,20,60,552 |
| 3 | Road Widening (Airport Connectivity) | | |
| | i. Intermediate Lane to 4Lane | Km. | 10,35,41,335 |
| | ii. 2 Lane to 4 Lane | Km. | 6,90,27,557 |
| | iii. 4 Lane to 6 Lane | Km. | 7,05,44,054 |
| 4 | Missing Links | Km. | 4,77,87,423 |
| 5 | ROB/RUBs | No. | 7,00,00,000 |
| 6 | Grade Separator (4-lane) | No. | 30,00,00,000 |
| 7 | River Bridges (4 lane) | No. | 15,00,00,000 |
| 8 | Junction Improvement (Dismantling of Ex. Road upto GSB, const. of New Junction is considered) | | |
| | i. 3 – Arm – Bitumen | No | 21,74,047 |
| | ii. 4 – Arm – Bitumen | No | 27,17,559 |
| | iii. 5 – Arm – Bitumen | No | 32,61,071 |
| 9 | Railway Line | km. | 30,00,00,000 |
| 10 | Railway Station Area Traffic Improvement Scheme | No. | 30,00,00,000 |
| 11 | Metro Lite | Km. | 1,50,00,00,000 |
| 12 | Conventional Metro (Elevated) | Km. | 2,70,00,00,000 |
| 13 | BRTS | Km. | 30,00,00,000 |
| 14 | Bus Augmentation | No. | 80,00,000 |
| 15 | Bus Argumentation (E Bus) | No. | 1,50,00,000 |
| 16 | PMPML Bus Terminal Redevelopment | No. | 7,80,00,000 |
| 17 | PMPML Bus Terminal (New) | No. | 11,50,00,000 |
| 18 | Intercity Bus Terminal Redevelopment | No. | 7,80,00,000 |
| 19 | PMPML Bus depot (Redevelopment/New) | No. | 5,50,00,000 |
| 20 | ISBT Bus Terminal -Newly Construction | No. | 62,50,00,000 |
| 21 | Multi-Modal Hubs | No. | |
| | i. Large | No. | 1,50,00,00,000 |
| | ii. Medium | No. | 90,00,00,000 |
| | iii. Small | No. | 50,00,00,000 |
| 22 | Multi-Modal Transfer Stations | No. | 3,03,87,656 |
| 23 | Pedestrian Grade Separators | No. | 3,09,77,973 |
| 24 | Footpath | Sq.m | 4,221 |
| 25 | Bicycle Track(Painting) | km | 10,85,267 |

| No. | Item Description | Unit | Unit Cost (in Rs.) |
|---|---|---|---|
| 26 | Construction of new Bicycle track (Paver Block 60mm thick) | km | 43,47,659 |
| 27 | Segregated Cycle Track | km | 42,80,279 |
| 28 | Pedestrian Priority Streets | Km. | 2,96,05,361 |
| 29 | Truck Terminals and Logistical hubs | per acre | 2,00,55,853 |
| 30 | Off-street Parking Facilities | No. | 83,85,300 |
| 31 | New light Facilty-Double arm | No. | 76,048 |

**Note:** The unit cost for each of the improvement proposals is with reference to the Standard Schedule of Rates 2023-24, Public Works Department, Government of Maharashtra; Schedule of Rates, Public Work Department, Pune Region, Government of Maharashtra and past and on-going studies in various urban regions of Maharashtra.

All facts, figures, unit rates etc., discussed in this chapter are based on macro-level assessment. Hence, they shall be considered as “indicative rates/ estimates”. Detailed/ micro-level cost estimates shall be carried out separately.

# *Annexure 5-3*

*MoM of Stakeholders and Public Consultations*

## ANNEXURE 5.3: MOM OF STAKEHOLDER AND PUBLIC CONSULTATIONS

## 1ST STAKEHOLDERS' MEETING & PUBLIC CONSULTATION MEETING

CIN: U60100MH2015SGC262054

महाराष्ट्र मेट्रो रेल कॉर्पोरेशन लिमिटेड
MAHARASHTRA METRO RAIL CORPORATION LIMITED
(भारत सरकार आणि महाराष्ट्र शासनाचा संयुक्त उपक्रम)
Joint Venture of Govt. of India & Govt. of Maharashtra
PUNE METRO RAIL PROJECT

Azadi Ka Amrit Mahotsav

**No. Maha-Metro/Plng/CMP/2024/1042** **Date: 16.04.2024**

To,
**All the Stakeholders – As per List Enclosed**

**Sub: Minutes of Stakeholders' Consultation** - Consultancy Services for Preparation of "Updation/Revision of Comprehensive Mobility Plan (CMP) for 2018" for Pune Metropolitan Region (PMR) as per "Appraisal Guidelines for Metro Rail Project Proposals – September 2017 and Toolkit for Comprehensive Mobility Plan (CMP)-Revised (2014)"

**Ref:** 1st Stakeholders' Consultation held on 12.04.2024.

Sir,

This has reference to the 1st Stakeholders' Consultation for "Updation of Comprehensive Mobility Plan (CMP) for 2018" for Pune Metropolitan Region (PMR)" held on 12.04.2024 at Maha Metro's office, Pune. We are thankful for your active participation and comments that you have offered.

The minutes of 1st Stakeholders' Consultation is enclosed for your reference. As discussed in the meeting, it is requested to share your department's future/committed proposals of transportation infrastructure with us in next 30 days (i.e. latest by 15.05.2024).

Thanking You,

Yours faithfully,

16/4/24

(Atul Gadgil)
**Director (Works)**

**Copy to:**

1. Divisional Commissioner/Pune & Chairman/PUMTA - for kind information
2. Team Leader, L&T IEL – Request your co-ordination with the authorities in this regard

**CORPORATE OFFICE : PUNE**
Civil Court Metro Station, Nyaymurti Ranade Path, Pune - 411005. Maharashtra, India, Tel : 7410004067 / 68
Email : mail.pune@mahametro.org | Website : www.punemetrorail.org

## LIST OF STAKEHOLDERS

(1)
To,
**Metropolitan Commissioner,**
Pune Metropolitan Regional Development Authority (PMRDA), Survey No. 152-153, 4th floor, Maharaja Sayajirao Gaikwad Udyog Bhavan, Aundh, Pune - 411067

(2)
To,
**Divisional Rail Manager,**
DRM office, Central Railway,
Shivam Heights, Railway Station Road,
Agarkar Nagar,
Pune - 411011.

(3)
To,
**Commissioner**
Pune Municipal Corporation,
Main Building, (Near Mangala Theatre),
Shivaji Nagar,
Pune – 411005.

(4)
To,
**Regional Transport Officer**
Regional Transport Office,
A Wing, Opposite Telco Gate,
Chikhli Road,Chinchwad,
Pimpri-Chinchwad 411019.

(5)
To,
**Commissioner**
Pimpri Chinchwad Municipal Corporation,
Mumbai – Pune Road, Pimpri,
Pune – 411018.

(6)
To,
**Regional Transport Officer**
Regional Transport Office,
38, Dr. Ambedkar Road,
Near Sangam Bridge,Pune - 411001.

(7)
To,
**Chairman & Managing Director**
Pune Mahanagar Parivahan Mahamandal Limited,Shanskar Sheth Road,
Swargate, Pune – 411037

(8)
To,
**Dy. Commissioner of Police, Traffic Division,**
Yerawada, Airport Road,
Pune 411006.

(9)
To,
**Chief Executive Officer**
Pune Smart City Development Corporation Limited,
Pashan Road, Pune-411008

(10)
To,
**Dy. Commissioner of Police, Traffic Division**
Premlok Park, Chinchwad,
Pimpri-Chinchwad- 411033

(11)
To,
**Chief Engineer**
Public Works Department,
Central Building,
Camp, Pune - 411001.

(12)
To,
**Chief Engineer**
Maharashtra Industrial Development Corporation (MIDC),2nd floor, Jog Centre,
Mumbai Pune Road,Wakdewadi,
Pune - 411003.

K.LMC
Sr. DAM (P&S)
Maha Metro

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(13)
To,
**Divisional Controller,**
Maharashtra State Road Transport Corporation (MSRTC)
Shankar Sheth Road
Pune - 411037

(14)
To,
**Airport Director,**
Pune International Airport, Airport Authority of India Office, Civil Enclave, Pune Airport,
Lohegaon, Pune – 411032.

(15)
To,
**Superintending Engineer**
Maharashtra State Road Development Corporation (MSRDC)
MSRDC Camp Office,
1st floor, Administrative Building,
Opposite to Council Hall,
Pune - 411001.

(16)
To,
**Chief Executive Officer,**
Office of the Cantonment Board,
Dehu Road,
Pune-412101

(17)
To,
**Project Director PIU(MC)**
National Highways Authority of India (NHAI)
S.No 134/1, BAIF Bhawan Campus,
Dr. Manibhai Desai Nagar, Above Bank of India (Wajire Branch)
Warje,
Pune - 411058.

(18)
To,
**Chief Executive Officer,**
Office of the Cantonment Board,
17 Field Marshal Kariyappa Road, Kirkee, Pune-411003

(19)
To,
Superintending of Police (Rural)
Police Adhishak Karyalay, Pune Gramin,
Opposite St. Joseph High School,
Pashan Road, Pashan,
Pune - 411043.

(20)
To,
**Chief Executive Officer,**
Pune Cantonment Board,
GV2H+VCR, Pune - Solapur Rd,
Golibar Maidan,
Pune-411001

K Cell
Sr. DGM (P&B)
Maha Metro

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**Minutes of the Stakeholder Consultation held on 12.04.2024 for "Updation/Revision of Comprehensive Mobility Plan -2018 for PMR"**

**Meeting Agenda:**
- Stakeholder consultation-1 for updation/revision to Comprehensive Mobility Plan (CMP) – 2018 for PMR – Discussion about the current status, study area and review of CMP 2018.
- Informative assistance or project recommendations from the stakeholders.

**Date & Time** : 12th April 2024 at 11:30am
**Venue** : Main Conference Hall, Maha Metro office, Civil Court Interchange Metro Station, Pune.
**Participants** : List Enclosed

**Director (Works)/Maha-Metro** welcomed all the stakeholders for discussion and gave a brief introduction about the Updation of CMP for PMR.

**Managing Director/Maha-Metro** in his introductory remarks stressed the importance of CMP and active involvement of various stakeholders' and their inputs on preparation of CMP especially the role of planning departments such as PMC, PCMC and PMRDA.

The Consultant made a brief presentation covering scope of CMP, Study area profile, Demography, Economy, Spatial growth pattern, Challenges in Existing Transport Scenario, Review of CMP-2018, Projects in Pipeline, Status of CMP Updation, Assistance required from various stakeholders and Project Timelines.

The following points were discussed.

1. MD/Maha-Metro pointed out that importance of finalisation of location for proposed New Airport at Purandar as this will help Maha Metro in planning the Metro connectivity.
2. The CMP Consultant (L&T IEL) mentioned that as per the latest Budget of Indian Railways, Lonavala-Pune-Daund section will be quadrupled. Recently, Daund Railway station is brought under Pune Division. Further, Bypass Rail line (i.e. Cresent Railway) via Chakan- Shikrapur-Kuruli-Daund was proposed in the last CMP. Railway informed that Quadrupling from Lonavala to Daund and Talegoan to Shikrapur Rail lines are sanctioned.
3. MD/Pune Smart City Limited informed that 125 junctions are completed as part of smart city improvement project.
4. Commissioner/PCMC enquired about the data regarding black spots & congested junctions from PMC, gave directions to PCMC officials regarding the same study, and share this data to the CMP consultant.
5. Deputy Engineer/NHAI informed that NHAI has handed over the Pune-Shirur project to MSIDC
6. Chief Engineer/PMRDA mentioned that their DP had 18 growth centres which were considered with 10 km radial area to be finalized with PMRDA planning dept. along with population forecast & its data to be adopted from DP of PMRDA. MD/Maha-Metro mentioned

that there should be a single methodology that is to be followed for planning parameters such as population forecasting and requested all other planning agencies to follow this for data standardization. CE/PMC informed that PMC got the study done by Gokhale Institute which can be adopted by the CMP consultant.

7. Commissioner/PCMC informed that updated CMP shall recommend suitable institutional framework & mechanism for implementation of infrastructure projects identified in the CMP.
8. MD/Maha-Metro requested all the stakeholders to take this as opportunity to suggest any transport infrastructure projects and the same will be validated and considered for implementation.
9. MD/Maha Metro also enquired to both RTOs (PMC & PCMC) about plans to allow intermediate public transport modes, permits that are given for Auto rickshaws/Shared Autos, Restriction on routes of travel and Frequency of travel on the routes.
10. Divisional Commissioner/Pune & Chairman /PUMTA enquired about the studies about the Regional Ring Road, if any. The Consultant have replied that MSRDC ring road is a regional ring road for Pune city.
11. MD/Maha-Metro informed that there is a potential for future development from Lohegaon Airport to Kondhwa, Khadakwasla to Hadapsar, Chakan to Hinjewadi (from Tathawade-Punavale road). He also advised to study the land development pattern of Wakad from the year 2010 onwards which can be replicated for Tathawade, Punawale, Ravet, Kiwale, Mohammadwadi, Charholi, Moshi, Alandi road for forecasting future development.
12. MD/Maha-Metro advised to prepare a modelling with heat maps for the above areas by using DP as a parameter with average FSI consumption of 2 and tenement density of 200-300.
13. Commissioner/PCMC informed that CMP updation should provide strategies for parking, flyover & infrastructure problems for next 5 to 10 years. Further MD/Maha- Metro stated that the plan must be made taking in to account the saturation of metro corridors in the next 10 years.
14. MD/Maha-Metro mentioned that PHPDT shall not be the only aspect for deciding the mass transit system. The CMP shall study the OD pattern for identifying PT corridor and assessing the Public Transport Demand, allied infrastructure facilities required for improving the readership. Further he advised mapping of the most visited landmarks/points of attraction like malls, schools/colleges, markets, religious centre, public centre, hospitals, etc in the city with their source.
15. MD/Maha-Metro informed that there is a plan to study and improve last mile connectivity and Multi model integration facilities at all the metro station. In this regard, the study will be carried out by Maha metro and requested the other stakeholders such as PMC, PCMC and PMRDA shall join the hands with Maha metro in implementing improvement measures.

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16. DRM (Commercial)/Indian Railways mentioned that Hadapsar station & their surrounding areas have potential for development. MD/Maha Metro mentioned that there is huge population in Hadapsar and there are projects in pipeline.
17. Commissioner/PCMC said metro line of Hinjewadi-Nashik Phata-Chakan to be explored in CMP along with PCMC-Nigdi-Wakad via Mukai Chowk.
18. MD/Maha-Metro, directed the consultant to have subgroup meetings with transport planners of PMC, PCMC & PMRDA to take necessary inputs.
19. MD/Maha Metro requested all the stakeholders to provide details about their proposed projects which were included in Master Plan/Development Plan within 4 weeks to include them in CMP.

## MEETING ATTENDANCE SHEET

Meeting: CMP – Stakeholders' consultation

Date : 12.04.2024 Venue: Maha Metro's office - Civil Court

| S. No | Name | Designation/Organisation | Mobile No | E-Mail Id | Signature |
|---|---|---|---|---|---|
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| 02 | Chandrakant Pulkundwar | Divisional Comm/Pune | 9702100056 | chandrdcantlp@yahoo.com | |
| 03 | Shekhar Singh | Commissioner/PCMC | 8806946449 | commissioner@pcmc-gov.in | |
| 04 | Dr Hemant Sonawane | Executive Dir/PuneMetro | 9309526096 | hemant.sonawane@mahamet.org | |
| 05 | Atul Gadgil. | Director (W) | 9571743111 | atul.gadgil@mahametro.org | |
| 06 | Dr. Milind Hirwe IRTS | DRM (Commercial) | 7219613950 | milindirts2000@gmail.com | |
| 07 | Rinaj M. Pathan | CE PMRDA | 9923078776 | Punemetroline3@pmrda.gov.in | |
| 08 | Pramod S. Nehul. | D.C. MSRTC | 9921689161 | divisionalcontrollerpune@gmail.com | |
| 09 | D. Siddi Ramulu | Team Leader, Assystem (L&T) | 9445392375 | sdudakar@assystem.com | |
| 10 | G. H. Gaikwad | D.E. MSRDC | 9822542496 | ghgaikwad2013@gmail.com | |
| 11 | SRINIVAS Bonala | CECP; PMC | 9689931380 | sbonala@punecorporation.org | |
| 12 | Ankit Yadav | Dy Manager(T), NHAI | 7049706727 | ankityadav@nhai.gov.in | |
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| 15 | Manoj Otari | Asst RTO, PCMC | 9921808282 | mgotari982@gmail.com | |
| 16 | Satish K. Kasbe | A.C.P. Traffic PCPC | 9821119321 | satishkasbe1967@gmail.com | |
| 17 | MILIND S. BARBHAI | EE. P.W.C(Project) Pune | 9822671995 | barbhaims@gmail.com | |
| 18 | Santosh D. Girigosavi | Sup of Police officer(T) | 9823858100 | santoshgirigosavi1972@gmail | |

| S. No | Name | Designation/Organisation | Mobile No | E-Mail Id | Signature |
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| 19 | Dr. Sanjay Kolte | CMD, PMPML & CEO, PCCDCL. | 9422286555 | cmdoffice03@gmail.com | |
| 20 | Bapusaheb Gaikwad | Executive Engineer PCMC, Pimpri. 18 | 9922501763 | b.gaikwad@pcmcindia.gov.in | |
| 21 | Manish Kumar Singh | Sr. DEN/N/ Pune. Pune Div. Central Railway | 7219613202 | manishkr.nitkkr@gmail.com | |
| 22 | Nitin Nanvekar | Jr. MO. PMPML | 9766662214 | nitin.j.nanvekar@gmail.com | |
| 23 | Umesh Mallawat | Ex. Engr. PMRDA | 9422306806 | umeshpmrda@gmail.com | |
| 24 | Rajkumar P. Shere | P.I. Traffic Planning Pune city | 9923025100 | rajkumarshere500@gmail.com | |
| 25 | Sulchdev B. Patil | AEE (CIVIL) | 9822000834 | ceopuneCorp@gmail.com | |
| 26 | Pratik P. Bhilare | Civil Engg. | 8888805353 | Pratikbhilare@live.com | |
| 27 | Pradeep N. Lavhute | Civil Engg P.W.D. Pune | 9823329655 | pradeepnlavhute52@gmail.com | |
| 28 | Srinivasan Sutar | Proj. Manager, L&T Ltd | 9423025724 | ssutar-ext@astys | |
| 29 | Kamalakar B. Shinde | Proj. Manager Monarch | 9766624674 | kamalakarbshinde@gmail | |
| 30 | Shivprasad P. Bagadi | SE. PMRDA | 9422196272 | bagadisp@gmail.com | |
| 31 | K. Sankar | Assystem India Limited | 9445342388 | SKrishnamurthy@assystem.com | |
| 32 | Prakash V. Bhadange | Ex. Engr, MIDC | 9850813750 | eepunednit@midcindia.org | |
| 33 | Makarand Nikam | C.E., PCMC | 9922501784 | m.nikam@pcmcindia.gov.in | |
| 34 | Pramod S. Ambhase | Jt. City Engg Pune | 9922501756 | p.ambhase@pcmcindia.gov.in | |
| 35 | Shrikant Savane | Chief Engineer Pune | 9922501723 | s.savane@pcmcindia.gov.in | |
| 36 | Namdev Admane | E. PSPDC. | 8600100564 | namdev@gmail.com | |
| 37 | Avinash Shinde | Dy. collector PCMC | 9423006575 | | |
| 38 | Vijay R. Ranjane. | T P O II | 9689934259 | pmpmlpune2021@gmail.com | |
| 39 | Sathiyamoorthi | Sr. DGM / Maha Metro | 9505061628 | | |

MEETING ATTENDANCE SHEET

Meeting:

Date

Venue:

| S. No | Name | Designation/Organisation | Mobile No | E-Mail Id | Signature |
|---|---|---|---|---|---|
| 40 | Rajendra Bhosale | Commissioner /PMC | 9823021555 | | |
| 41 | Amol Mudale | ASE/Maha Metro | 9021232526 | | |
| 42 | Majise Kammuelwar | JE /Maha metro | 9637155938 | | |
| 43 | Prakash Gaikwad | AM/ Maha Metro | 9960176116 | | |
| 44 | Anil Kumar Jain | Lect/ MIET | 7972440351 | | |
| 45 | Arun Jagawat Kadam | Cm Fellow/ maha metro | 9373309870 | | |

## MOM OF 2ND STAKEHOLDER MEETING

मा.अध्यक्ष, पुणे एकीकृत महानगर परिवहन प्राधिकरण तथा विभागीय आयुक्त, पुणे यांच्या अध्यक्षतेखाली विभागीय आयुक्त कार्यालय, पुणे येथे दिनांक २६/०८/२०२४ रोजी दुपारी ०३.०० वा. संपन्न झालेल्या पुणे एकीकृत महानगर परिवहन प्राधिकरच्या बाराव्या बैठकीचे इतिवृत्त. (बैठकीस उपस्थितांची यादी संलग्न केली आहे.)

| अ.क्र. | विषय | चर्चा/ठराव | प्रशासकीय विभाग |
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| 1. | Second stakeholder's consultation to finalize the draft of CMP report. | Director (Works)/ Maha Metro introduced the subject of discussion and briefed about the updation of Comprehensive Mobility Plan (CMP). He requested the CMP consultants to commence the presentation.<br>1. It was informed by CE/Roads/PMC that the area of PMC has been revised to 517 Sq. Km after inclusion of new villages in PMC. Accordingly, population of PMC also needs to updated.<br>2. MD/Maha Metro suggested that the Per Capita Trip Rate in PMC and PCMC should be indicated separately so that the respective corporation can use it for their other planning purpose.<br>3. MD/Maha Metro directed that the Vision and Goals for CMP needs to be modified. The percentage modal share of NMT and PT should be revised in a more realistic manner. Some examples from other similar cities may be considered for the same.<br>4. It was enquired by official of Airport Authorities of India about any metro proposal for connectivity to Lohegaon Airport for ease of commuters. Director (Works)/Maha Metro informed that regular feeder bus services from Ramwadi and Yerwada Metro Station will cater to the Airport passengers at present.<br>5. It was observed by PCMC officials that few of junction improvement and ROB/RUB proposals like (Punawale, Tathwade, Mukhai Chowk, etc..) are missing in the presentation. Chaiman/PUMTA directed PCMC officials to provide the missing proposals to Maha Metro so that the same could be included in CMP report.<br>6. It was discussed that electric Rickshaw could be instrumental in improving last mile connectivity. Officials of RTO/Pune informed that currently electric rickshaws are not permitted in the city. MD/Maha Metro and Chaiman/PUMTA suggested RTO/Pune to consider permitting E-Rickshaw with rules and regulations in place as it would be beneficial for the first and last mile connectivity. Also, Consultants were directed to study the introduction of e-rickshaw and the benefits of the same for the Pune city. Additional CP also recommended e-rickshaw to be introduced on specific routes as a feeder to | महामेट्रो |

मा.अध्यक्ष, पुणे एकीकृत महानगर परिवहन प्राधिकरण तथा विभागीय आयुक्त, पुणे यांच्या अध्यक्षतेखाली विभागीय आयुक्त कार्यालय, पुणे येथे दिनांक २६/०८/२०२४ रोजी दुपारी ०३.०० वा. संपन्न झालेल्या पुणे एकीकृत महानगर परिवहन प्राधिकरच्या बाराव्या बैठकीचे इतिवृत्त. (बैठकीस उपस्थितांची यादी संलग्न केली आहे.)

| अ.क्र. | विषय | चर्चा/ठराव | प्रशासकीय विभाग |
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| | | Metro.<br>7. MD/PMPML suggested to explore fare integration mechanism of metro with feeder services and by other means such discounted fare for metro commuters so that usage of feeder services are encouraged.<br>8. It was discussed that providing parking on every metro station is not viable given limited space at Metro Station. Instead, Maha Metro is making efforts to create a robust first and last mile connectivity which will eliminate/minimize the need of parking at the metro stations.<br>9. It was discussed and agreed that as CMP is a mere visionary document for the mobility of the city & the detailing of any proposal suggested in CMP to be undertaken by concerned implementation agency.<br>10. Chairman/PUMTA suggested the consultants that truck terminals at Thanenhave on Mumbai-Pune highways may be studied as a model truck terminal.<br>11. It was suggested by PMRDA & all stakeholders that, sharing of the draft CMP Report along with the presentation would be helpful for them to study and comment. Chairman/PUMTA directed Maha Metro to share the draft report with all the concerned. Further all the stakeholders were directed to go through the shared document and suggest the changes if any in writing to Maha Metro within 14 days upon sharing of report by Maha Metro.<br>12. CE, PMRDA suggested to produce a comparison of proposals in CMP 2018 and CMP 2024. Any major changes from that in 2018 CMP should be backed up with a strong rationale by the consultant. As CMP 2018 prepared by PMRDA was submitted to Central Government through State Government with commitment of all transport proposal of this CMP will be included in PMRDA's development plan. So, any changes done should have valid reasons and justification.<br>13. It was also discussed that the name of probable implementing agency to be included in the presentation and also in proposals section of the report for the convenience of | |

मा.अध्यक्ष, पुणे एकीकृत महानगर परिवहन प्राधिकरण तथा विभागीय आयुक्त, पुणे यांच्या अध्यक्षतेखाली विभागीय आयुक्त कार्यालय, पुणे येथे दिनांक २६/०८/२०२४ रोजी दुपारी ०३.०० वा. संपन्न झालेल्या पुणे एकीकृत महानगर परिवहन प्राधिकरणाच्या बाराव्या बैठकीचे इतिवृत्त. (बैठकीस उपस्थितांची यादी संलग्न केली आहे.)

| अ.क्र. | विषय | चर्चा/ठराव | प्रशासकीय विभाग |
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| | | concerned agency to go through their part of the report due to paucity of time.<br>14. Chairman/PUMTA directed Maha Metro to circulate the revised report with "DRAFT" watermark after incorporating all the discussion points to all the stakeholders.<br>15. It was informed by Chairman/PUMTA that another meeting will be convened to finalize the report. | |

(डॉ. चंद्रकांत पुलकुंडवार)
अध्यक्ष
पुणे एकीकृत महानगर परिवहन प्राधिकरण

(जेहेल बर्गे)
प्र. सदस्य सचिव
पुणे एकीकृत महानगर परिवहन प्राधिकरण

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**पुणे एकीकृत महानगर परिवहन प्राधिकरण, पुणे**

१४ वी बैठक, सोमवार,दि.२६.०८.२०२४ रोजी दुपारी ३.०० वाजता.
स्थळ : विभागीय आयुक्त कार्यालय, पुणे

| अ.क्र. | अधिकाऱ्यांचे/ कर्मचाऱ्याचे नाव | पद | मोबाईल क्र. | स्वाक्षरी |
|---|---|---|---|---|
| ०१ | मा. विभागीय आयुक्त, पुणे | अध्यक्ष | | |
| ०२ | मा. जिल्हाधिकारी, पुणे | सदस्य | | |
| ०३ | व्यवस्थापकीय संचालक, महाराष्ट्र मेट्रो रेलकॉ. लि. पुणे | सदस्य | | |
| ०४ | महानगर आयुक्त, पुमविप्रा,पुणे | सदस्य | 8806946198 | |
| ०५ | आयुक्त, पुणे महानगरपालिका | सदस्य | | |
| ०६ | अति.आयुक्त, पिंपरीचिंचवड महानगरपालिका | सदस्य | 9112272555 | |
| ०७ | परिवहन आयुक्त, पुणे | सदस्य | | |
| ०८ | पोलीस आयुक्त, पुणे | सदस्य | 9823947804 | |
| ०९ | पोलीस अधिक्षक, पुणे ग्रामीण | सदस्य | | |

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| अ.क्र. | अधिकाऱ्यांचे/ कर्मचाऱ्यांचे नाव | पद | मोबाईल क्र. | स्वाक्षरी |
|---|---|---|---|---|
| १० | पोलीस आयुक्त, पिंपरी चिंचवड | सदस्य | | |
| ११ | उपाध्यक्ष व व्यवस्थापकीय संचालक, महाराष्ट्र राज्य मार्ग परिवहन महामंडळ | सदस्य | | |
| १२ | व्यवस्थापकीय संचालक, पुणे महानगर परिवहन महामंडळ, पुणे | सदस्य | 9823914483 | |
| १३ | संचालक, नगर रचना व मूल्यनिर्धारण, पुणे | सदस्य | | |
| १४ | मुख्य अभियंता, महाराष्ट्र राज्य रस्ते विकास महामंडळ, पुणे | सदस्य | 7588576294 का.अ. म.रा.र.वि.म. पुणे | |
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| १७ | महाव्यवस्थापक, मध्य रेल्वे यांचे प्रतिनिधी | सदस्य | | |
| १८ | परिवहन क्षेत्रातील तज्ञ | सदस्य | | |
| १९ | परिवहन अभियांत्रिकीक्षेत्रातील तज्ञ | सदस्य | | |
| २० | सह आयुक्त, पुम्प्राविप्रा, पुणे | सदस्य सचिव | | |

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| अ.क्र. | अधिकाऱ्यांचे/ कर्मचाऱ्याचे नाव | पद | मोबाईल क्र. | स्वाक्षरी |
|---|---|---|---|---|
| २१ | मुख्य अभियंता, अभियांत्रिकी विभाग –१, PMRDA | निमंत्रित सदस्य | 9422782999 | |
| २२ | सह आयुक्त, नगरपरिषद प्रशासन, पुणे विभाग, पुणे | निमंत्रित सदस्य | 9823338248 | |
| २३ | प्रकल्प संचालक, NHAI, निमंत्रित सदस्य | निमंत्रित सदस्य | 9860010546 | |
| २४ | मुख्य कार्यकारी अधिकारी, कॅन्टोमेंट बोर्ड, पुणे | निमंत्रित सदस्य | | |
| २५ | मुख्य कार्यकारी अधिकारी, कॅन्टोमेंट बोर्ड, खडकी | निमंत्रित सदस्य | | |
| २६ | मुख्य कार्यकारी अधिकारी, कॅन्टोमेंट बोर्ड, देहूरोड | निमंत्रित सदस्य | | |
| २७ | संचालक, एअर पोर्ट, पुणे | निमंत्रित सदस्य | 8888829625 | |
| २८ | मुख्य कार्यकारी अधिकारी, पुणे स्मार्ट सिटी डेव्हलपमेंट को. लि., पुणे | निमंत्रित सदस्य | | |
| २९ | व्यवस्थापकीय संचालक, MSIDC | निमंत्रित सदस्य | | |
| ३० | व्यवस्थापकीय संचालक, MRIDC DGM/Track/PA | निमंत्रित सदस्य | 8657400118 | |
| ३१ | मुख्य अभियंता, महाराष्ट्र औद्योगिक विकास महामंडळ | निमंत्रित सदस्य | | |
| ३२ | पोलीस उपायुक्त, वाहतूक विभाग, पुणे | निमंत्रित सदस्य | 9822710868 | |

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| अ.क्र. | अधिकाऱ्यांचे/ कर्मचाऱ्याचे नाव | पद | मोबाईल क्र. | स्वाक्षरी |
|---|---|---|---|---|
| ३३ | पोलीस उपायुक्त, वाहतूक विभाग, पिंपरी चिंचवड | निमंत्रित सदस्य | | |
| ३४ | प्रादेशिक परिवहन अधिकारी, RTO, पुणे | निमंत्रित सदस्य | 8605527103 | 803000 |
| ३५ | प्रादेशिक परिवहन अधिकारी, RTO, पिंपरी चिंचवड | निमंत्रित सदस्य | 8080171010 | |
| ३६ | मुख्य कार्यकारी, राजगुरुनगर नगर परिषद | निमंत्रित सदस्य | | |
| ३७ | मुख्य कार्यकारी, लोणावळा नगर परिषद | निमंत्रित सदस्य | 9881270022 | |
| ३८ | मुख्य कार्यकारी, सासवड नगर परिषद | निमंत्रित सदस्य | | |
| ३९ | मुख्य कार्यकारी, चाकण नगर परिषद | निमंत्रित सदस्य | 9579318878 | |
| ४० | मुख्य कार्यकारी, तळेगाव- दाभाडे नगर परिषद | निमंत्रित सदस्य | अनघाते (मा.जी. कार्यकारिणी) 9423926559 | |
| ४१ | मुख्य कार्यकारी, आळंदी नगर परिषद | निमंत्रित सदस्य | 9579318878 | |
| ४२ | मुख्य कार्यकारी, शिरूर नगर परिषद | निमंत्रित सदस्य | 9860874077 | |
| ४३ | Atul Gadgil, Director (W) Maha Metro | | 9579743111 | |
| ४४ | Sathiyamoorthi Sr. Dgm (Plg) Maha Metro | | 9595061628 | |

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| अक्र. | अधिकाऱ्यांचे/ कर्मचाऱ्याचे नाव | पद | मोबाईल क्र. | स्वाक्षरी |
|---|---|---|---|---|
| 45 | D. Gidai Ramulu Assystem India | General Manager Traffic & Transportation | 9445392375 | D.Ramulu |
| 46 | K. Sankar Assystem India Limited | Senior Manager Traffic & Transport | 9445392388 | |
| 47 | Parag S. Pohnerkar PETRMRL | Deputy General Manager ETM | 8128201941 | |
| 48 | Raghavendra Bhat. | TL/IE/PMRDA | 8004727088 | |
| 49. | Abhishek Sood | Dy. TL/ IE PMRDA | 8588833910 | |
| 50 | Amit Bhoothkar | D.T.P.O. | 9748327343 | |
| 51 | S.B.Patil | Dy. Engg MSRDC | 9422402005 | |
| 52 | Amol Mudale | ASE/Pune Metro | 9021232526 | |
| 53 | Akshay I. Sonkusare | AM / Maha Metro | | |
| 54 | Mayur Hariyardhan | JE / maha-metro | 9637155938 | |
| 55 | Shrivastav L Sutar | Project Manager, CMP, Aranyeshwar | 9423025724 | |
| 56 | Satish D. Gawane | CTM (Operations) | 9763728244 | |
| 57 | Jaydeep Thakare | Manager (OPS) | 8600386956 | |

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| अ.क्र. | अधिकाऱ्यांचे/ कर्मचाऱ्याचे नाव | पद | मोबाईल क्र. | स्वाक्षरी |
|---|---|---|---|---|
| 58 | सुधाराम देशमुख | भूमी अभिलेख | ९८४९९३१४९१ | |
| 59 | Aniruddha Pawashye | Chief Engineer PMC | ९६८९९३१३२४ | |
| 60 | Sahabaz Dadge | Sup Engineer | ९६८९९३१७४५ | |
| 61 | Javed Mulla | Exy Engineer MP | ९१९८८० ९८५९ | |
| 62 | Nitin G. Wankhede | Chief Engineer, MIDC, Pune. | ८१०८११९१६१ | |
| 63 | Sanjay Indwe | Engineer | ९८२२६७१८१७ | |
| 64 | Sameer Shitole | Town planner Chakan MC | ९४६०१०२४२७ | |
| 65 | Sopan Dhamae | ATP from Assist. Direct. of town planning | ९७६२९०५९४५ | |
| 66 | Mrs. Vasharani Patil | PI Traffic PCPC | ९४२३८७१४३७ | |
| 67 | Vikaykumar | Sr. DEN (S) PA | ७२१९६१३२०१ | |
| 68 | A.K. Mishra | Sr Electrical PA | ७२१९६१३२९० | |
| 69 | Nikhil Myak | TP (PMC Roads) | ९८८१०६४४८९ | |
| 70 | S.S. Nagarale | Sr. Engg PMRDA | ९४२०११६७६० | |

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| अ.क्र. | अधिकाऱ्यांचे/ कर्मचाऱ्यांचे नाव | पद | मोबाईल क्र. | स्वाक्षरी |
|---|---|---|---|---|
| 71 | अशोक कुदळकर | कार्यकारी अभियंता रोप्र.-2. PMRDA | | |
| 72 | उषा शेंडगे | EE. PMRDA | | |
| 73 | श्रीकांत कुलकर्णी | सल्लागार, म.रा.वि.वि.कं. | 9403862656 MSEDC, Mumbai | |
| 74 | कापुसहोळ गायकवाड | कार्यकारी अभियंता | 9922501763 | |
| 75 | विनोद पठारे | मुख्य अभियंता | 9423078776 | |
| 76 | [illegible] | [illegible] | 7588637886 | |
| 77 | चेतन चौकर | T.P.A. Shirur Nagar Parishad | 8668605994 | |
| 78 | संतोष शिवतारे | Rajyamarg N.P. | 9970677568 | |
| 79 | मोईन शेख | Transport Planner | 9018033667 | |
| 80 | प. वी. कांबळी | उप अभियंता, MIDC | 9860500346 | |
| 81 | सुधीर कुमार | अवर सचिव NIUA | 8800158427 | |
| 82 | विनय कोंडके | वरिष्ठ कोऑर्डिनेटर | 8378990705 | |
| 83 | संतोष हंडे | कनिष्ठ लिपिक PMRDA | 9970131304 | |
| 84 | मा.श्री.काटपुळे वनरक्षक | | नवारक्षकियंत्रा नवलाख उंबरे कार्या. क्र. | 9423926559 |

## MOM OF PUBLIC STAKEHOLDER MEETING

CIN: U60100MH2015SGC262054

महाराष्ट्र मेट्रो रेल कॉर्पोरेशन लिमिटेड
MAHARASHTRA METRO RAIL CORPORATION LIMITED
(भारत सरकार आणि महाराष्ट्र शासनाचा संयुक्त उपक्रम)
Joint Venture of Govt. of India & Govt. of Maharashtra
PUNE METRO RAIL PROJECT

Azadi Ka Amrit Mahotsav

**No. Maha-Metro/Plng/CMP/2024/** 1054 **Date:** 10.09.2024

To,
**All the Stakeholders – As per List Enclosed**

**Sub:** Minutes of Meeting for Stakeholders' consultation for "Comprehensive Mobility Plan (CMP)" for Pune Metropolitan Region (PMR)

**Ref:** Maha Metro Letter No. Maha-Metro/Plng/CMP/2024/1053 dated 02.09.2024

Dear Sir,

The Minutes of Meeting for Stakeholders' Consultation held on 09.09.2024 on the above cited subject is enclosed with request to forward comments/suggestions by 18.09.2024.

Thanking You,

Yours faithfully,

10/9/24

(Atul Gadgil)
**Director (Works)**

**Encl: A/a**

**CORPORATE OFFICE : PUNE**
Civil Court Metro Station, Nyaymurti Ranade Path, Pune - 411005. Maharashtra, India, Tel : 7410004067 / 68
Email : mail.pune@mahametro.org | Website : www.punemetrorail.org

## LIST OF PUBLIC STAKEHOLDERS

(1)
To,
**Professor Dr. Parag Sadgir,**
Department of Civil Engineering, COEP, Pune.
Mob no – 9822356907.

(2)
To,
**Shri. Dr. Sangram Krishna Nirmale,**
Department of Civil Engineering, Indian Institute of Technology, Bombay (IIT Bombay), Powai, Mumbai – 400076
Mob No – 9422853429.

(3)
To,
**Shri Pranjal Kulkarni,**
Deputy Manager, Healthy streets and Compact Cities, ITDP, Pune.
Mob no – 9967133617.

(4)
To,
Shri. **Pratapsingh Bhonsle,**
M/s Global Traffic Solution,
Unit no. 102, Horizon west one, Mumbai – Pune Highway, Opp Teerth Techno space, Baner, Pune – 411045, MH
Mob no – 7875977620

(5)
To,
**Shri. Sunil Koloti,**
Mohmmadwadi – Undri Residents welfare Development Foundation, Nyati County, Mohmmadwadi, Undri, Pune – 411028.
Mob no – 7350015076.

(6)
To,
**Shri Govind Jagdale,**
President, Rotary club of Walhekarwadi, C/O S P House, Survey no 116/6, Opp Bharat Petrol Pump, Ravet – Walhekarwadi Road, Walhekarwadi.
Mob no - 9850433192

(7)
To,
**Shri. Ashutosh Seth**
Regional Head West, Ani Technologies PVT LTD(OLA), Innovs by OYO, 8th Floor, Building no 11, Solitaire Corporate Park, Chakala, Andheri (East), Mumbai.
Mob no – 9892049518

(8)
To,
**Shri. Mahadevan Nambiar,**
Public Policy Lead, Uber, Uber India Systems Limited, 1st Floor, Paragon Plaza, Phoenix Market City, LBS Marg, Kurla West, Mumbai – 400070.
Email id – mahadevan@uber.com.
Mob No - 9833177539

(9)
To,
**Shri. Anand Ankush,**
Aam Aadmi Rikshawchalak Sangathna, Shop no – 12, Malvankar estate, 1st Floor, Sangam wadi, next to RTO, Pune 411011.
Mob no - 9860699768

(10)
To,
**Shri. Baba Kamble,**
President, Maharashtra Rikshaw Panchayat, Office No. 1 & 13, 1st floor, Bhakti Complex, Old Pune-Mumbai Road, Kharalwadi, PCMC.
Mob. 9850732424

## MINUTES OF PUBLIC STAKEHOLDERS' MEETING

## CONSULTANCY SERVICES FOR "UPDATION/REVISION OF COMPREHENSIVE MOBILITY PLAN (CMP)-2018" FOR PUNE METROPOLITAN REGION

| | |
|---|---|
| Meeting Agenda | Public Stakeholders' Consultation |
| Meeting Date and Time | 09.09.2024,2:30 PM |
| Venue | Physical Attendance, at Maha Metro Office located at Phugewadi, Pune |

| SN | Name | Designation | E-Mail | Contact |
|---|---|---|---|---|
| Maha Metro | | | | |
| 1 | Atul Gadgil | Director/Works | atul.gadgil@mahametro.org | 9571743111 |
| 2 | Akshay Sonkusare | AM/CMS | akshay.sonkusare@mahametro.org | 9960176116 |
| 3 | Amol Mudale | Assistant Section Engineer/Civil | amol.mudale@mahametro.org | 7498900288 |
| 4 | Harshwardhan Maske | JE/Civil | maskeharshvardhan@gmail.com | 9637155938 |
| ASSYSTEM INDIA in person | | | | |
| 1 | Siddi Ramulu | Assystem India | sdudaka@assystem.com | 9445392375 |
| 2 | K Sankar | Assystem India | skrishnamurthy@assystem.com | 9445392388 |
| 3 | Anil Kumar B | Assystem India | abandi@assystem.com | 7799240351 |
| 4 | Moeez Shaikh | Assystem India | NA | 9028033667 |
| Public Stakeholders | | | | |
| 1 | Sangram K Nirmale | IIT Bombay | Sangramnirmale@civil.iitb.ac.in | 9422853429 |
| 2 | Dr. Balakrishna Dawari | COEP University | bmd.civil@coeptech.ac.in | 9422057250 |
| 3 | Jagdish Temkar | ITDP | jagdish.temkar@itdp.org | 7066814589 |
| 4 | Siddhartha Godbole | ITDP | siddhartha.godole@itdp.org | 7798771791 |
| 5 | Pratapsingh Bhonsle | Global Traffic solutions | pbhonsle@gtsolns.com | 7875977620 |
| 6 | Sunil Koloti | Mohammawadi Undri Forum | Sunil.koloti@gmail.com | 7350015076 |
| 7 | Renuka Suryavanshi | Pune Pulse | Renu8615@gmail.com | 9881465579 |
| 8 | Sumit Niture | OLA | Sumit_cont@loacabs.com | 9579908687 |
| 9 | Ashutosh Seth | OLA | Seth.ashutosh@olacabs.com | 9892049518 |
| 10 | Mahadevan Nambiar | Uber | mahadevan@uber.com | 9833177539 |
| 11 | Tandale Shubham | Maharashtra Rickshaw Panchayat | Tandaleshubham69@gmail.com | 9067221131 |
| 12 | Sameer Rathwadkar | Buggy/Maharashtra Rickshaw Panchayat | samir@buggyhub.com | 9921210431 |
| 13 | Baba Kamble | Maharashtra Rickshaw Panchayat | Tandaleshubham69@gmail.com | 9850732424 |
| 14 | Krushna Mohalkar | Buggy/ Maharashtra Rickshaw Panchayat | krushna@buggyhub.com | 9970067070 |
| 15 | Anand Ankush | O Rcikshaw-Aam Aadmi Rcikshaw Sangha tana | NA | 9860699768 |

Director (Works), Maha Metro introduced the topic of CMP to all the present stakeholders. It was brought to the notice of all the stakeholders that CMP study work is being carried by Maha Metro since last 8 months

and inputs from all the stakeholders would be helpful to finalise the report. It was suggested that the comments and suggestions may be provided to Maha Metro in writing by 18th September 2024.

A brief presentation was made by the consultant covering city profile and various surveys carried out for CMP study.

During the meeting the following points were discussed.

| SN | Points discussed |
|---|---|
| 1 | Prof. Sangram Nirmale from IITB requested Maha Metro to organize an online session with the consultants to address queries about the Travel Demand Model and discussion about variables considered during modelling, It was informed by Maha Metro that an online meeting would be arranged as per the availability of the Professor from IIT B and Consultants. |
| 2 | Representatives from Mohammadwadi enquired about parking locations in areas such as Camp. The consultants responded that parking provisions depend on the demand in each area and the availability of land. The consultants will look for possibilities of parking in the area if any. It was requested to the representatives from Mohammadwadi that they could suggest any such possible location for parking to consultants for checking feasibility. However the list of Off street and on street parking locations are identified based on parking surveys. |
| 3 | Representative from Global Traffic Solution, appreciated the fact that the Travel Demand Model is being cross verified from IIT Bombay Professors. It was further mentioned that verification of Travel Demand Model will be helpful for getting better results in terms of future demand predictions. |
| 4 | Prof. Balakrishna Dawari COEP enquired whether River Development has been taken into consideration during CMP study. It was informed by the consultants that due to the seasonal nature of river flow in Pune, integrating river-based mobility into the planning was not feasible. |
| 5 | ITDP representative enquired about the new PMPML bus depots proposals. The consultants responded that, due to limited land availability, locating new bus depots within city limits was not possible. However, instead some existing bus terminals are suggested for redeveloping and capacity augmentation. |
| 6 | It was informed that providing multilevel parking could be helpful for solving the issue of parking due to increase in number of Buses as the on road buses will increase as per the set goal for the CMP. |
| 7 | It was informed that implementation of Common ticketing between Maha Metro and PMRDA is under progress with aim to integrate ticketing system of PMPML as well. |
| 8 | Auto Rickshaw representatives enquired about the provision for parking of Auto Rickshaw in CMP study as currently the parking space for Auto Rickshaw is not sufficient in the city. Consultants will look for availability of the parking space in the city. Also it was discussed that Auto Rickshaw Union may suggest the possible parking places in the city for feasibility study by the consultants. |
| 9 | Representatives of Auto Rickshaw Union suggested to explore for EV charging facilities installation at various location. It was discussed that the same would be explored by the consultants. |

End of the Document

## *Annexure 5-4*

*Government Resolution (GR) for formation of PUMTA*

## ANNEXURE 5.4: GOVERNMENT RESOLUTION (GR) FOR FORMATION OF PUMTA

पुणे व परिसरातील सार्वजनिक वाहतूक व्यवस्थेस चालना देणे, वाहतूक विषयक विविध समस्या सोडविण्याकरिता पुणे एकीकृत महानगर परिवहन प्राधिकरणाची स्थापना (PUMTA)

**महाराष्ट्र शासन**

**नगर विकास विभाग**

**शासन निर्णय क्रमांक:-पीएमआर-३३१९/प्र.क्र.०७/नवि-७**

**मंत्रालय, मुंबई ४०० ०३२**

**दिनांकः ०४ जून, २०१९.**

पुणे महानगर क्षेत्रातील वाहतूक विषयक आव्हानांचा मुकाबला करणे आणि सर्व योजना, उपक्रम व संबंधितसंस्थांमध्ये समन्वय राखून एकत्रित व परिणामकारक उपाययोजना सुचविण्याच्या दृष्टीने एका सक्षम प्राधिकरणाची निर्मिती करण्याचा प्रस्ताव शासनाच्या विचाराधीन होता. यानुषंगाने शासनाने पुढीलप्रमाणे निर्णय घेतला आहे.

**शासन निर्णय:-**

पुणे महानगर प्रदेशातील वाहतूक व्यवस्था अधिकाधिक सक्षम करणे आणि संबंधित सर्व संस्थांमध्ये समन्वय राखून वाहतूक विषयक आव्हानाचा एकत्रित व परस्पर पूरक योजना व उपक्रमाद्वारे मुकाबला करण्याच्या दृष्टीने उपाययोजना सुचविण्याच्या दृष्टीने विभागीय आयुक्त, पुणे यांच्या अध्यक्षतेखाली पुणे एकीकृत महानगर परिवहन प्राधिकरण (Pune Unified Metropolitan Transport Authority) स्थापन करण्यास पुढीलप्रमाणे मान्यत देण्यात येत आहेः-

(१) पुणे एकीकृत महानगर परिवहन प्राधिकरणी रचनाः -

| | | |
|---|---|---|
| १. | विभागीय आयुक्त, पुणे | अध्यक्ष |
| २. | जिल्हाधिकारी, पुणे | सदस्य |
| ३. | व्यवस्थापकीय संचालक, महाराष्ट्र मेट्रो रेल कॉ. लि., पुणे | सदस्य |
| ४. | महानगर आयुक्त, पुणे महानगर प्रदेश विकास प्राधिकरण | सदस्य |
| ५. | आयुक्त, पुणे महानगरपालिका | सदस्य |
| ६. | आयुक्त, पिंपरी- चिंचवड महानगरपालिका | सदस्य |
| ७. | परिवहन आयुक्त,पुणे | सदस्य |
| ८. | पोलीस आयुक्त, पुणे शहर | सदस्य |
| ९. | पोलीस अधिक्षक, पुणे ग्रामीण | सदस्य |
| १०. | पोलीस आयुक्त, पिंपरी-चिचवड | सदस्य |

| | | |
|---|---|---|
| ११. | उपाध्यक्ष व व्यवस्थापकीय संचालक, महाराष्ट्र राज्य मार्ग परिवहन महामंडळ | सदस्य |
| १२. | व्यवस्थापकीय संचालक, पुणे महानगर परिवहन महामंडळ, पुणे | सदस्य |
| १३. | संचालक, नगर रचना व मुल्यनिर्धारण विभाग, पुणे | सदस्य |
| १४. | मुख्य अभियंता, महाराष्ट्र राज्य रस्ते विकास महामंडळ, पुणे | सदस्य |
| १५. | मुख्य अभियंता, सार्वजनिक बांधकाम विभाग, पुणे | सदस्य |
| १६. | प्रादेशिक अधिकारी, पर्यावरण विभाग, पुणे | सदस्य |
| १७. | महाव्यवस्थापक, मध्य रेल्वे यांचे प्रतिनिधी | सदस्य |
| १८. | परिवहन क्षेत्रातील तज्ञ | सदस्य |
| १९. | परिवहन अभियांत्रिकी क्षेत्रातील तज्ञ | सदस्य |
| २०. | अतिरिक्त मुख्य कार्यकारी अधिकारी, पुणे महानगर प्रदेश विकास प्राधिकरण | सदस्य सचिव |

(२) उपरोक्त परिच्छेदामध्ये नमूद केल्याव्यतिरिक्त ज्या व्यक्ती अथवा अधिकरी यांचा सहभाग आवश्यक असेल अशा व्यक्ती अथवा अधिकारी यांना अध्यक्षांव्दारे किंवा अध्यक्षांच्या परवानगीने पुणे एकीकृत महानगर परिवहन प्राधिकरणाच्या बैठकीस निमंत्रित करता येईल.

(३) प्राधिकरणाचे कार्यक्षेत्र :-

१. पुणे महानगर प्रदेश विकास क्षेत्राचे निर्धारित केलेले भौगोलिक क्षेत्र हे पुणे एकीकृत महानगर परिवहन प्राधिकरणाचे कार्यक्षेत्र राहील. सदर प्राधिकरण पुणे महानगर प्रदेश विकास प्राधिकरणाच्या परिक्षेत्रात कार्य करील.
२. सदर प्राधिकरण हे त्यांच्या अधिपत्याखालील प्रामुख्याने परिवहन क्षेत्रात काम करणा-या संस्थामध्ये समन्वय स्थापित करेल.
३. शक्ती प्रदत्त परिवहन प्राधिकरण या नात्याने प्राधिकरणाने एकंदर परिवहन योजना, मोडल प्राधान्य, पायाभूत सुविधा प्राधान्यक्रम, आर्थिक उभारणी आणि वाटप आणि कार्यप्रणाली या संदर्भात निर्णय घेऊन शिफारशी करेल.

मात्र, सदर प्राधिकरण असे कोणतेही निर्णय घेणार नाही ज्यायोगे स्थानिक स्वराज्य संस्थाना घटनेने प्रदान केलेल्या स्वायत्ततेमध्ये अनावश्यक हस्तक्षेप होईल.

(४) सदर प्राधिकरण खालील बाबींवर शिफारशी करू शकेल.

१. महानगराकरिता सर्व समावेशक परिवहन योजना.
२. प्रादेशिक तसेच शहर विकास आराखडा आणि प्रादेशिक परिवहन योजना यामध्ये समन्वय.
३. " मोडल" अग्रक्रम आणि एकात्मिकीकरण.
४. पायाभूत सुविधाचा अग्रक्रम आणि एकात्मिकीकरण.

५. पायाभूत सुविधा कार्यन्वित करण्याकरिता कार्यन्वय संस्थेची निवड.
६. जलद बस सेवा पद्धत.
७. आर्थिक नियोजन आणि वाटप.
८. कार्यान्वयन तंत्र, शासकीय आणि खाजगी संस्थाचा सहभाग (PPP).
९. विविध संस्थामध्ये मतैक्य निर्माण करणे.
१०. परिवहन विषयक संशोधन आणि ज्ञान.
११. परिवहन क्षेत्रात प्रशिक्षण.
१२. पुणे महानगर प्रदेश विकास प्राधिकरणने सोपविलेले इतर कार्ये

(५) पुणे महानगर प्रदेश विकास प्राधिकरणामार्फत पुणे एकिकृत महानगर परिवहन प्राधिकरणास कर्मचारी व तांत्रिक सहाय्य उपलब्ध करून देईल.

(६) समिती स्थापन करणे:-

१. परिवहन क्षेत्रातील विशिष्ट विषयांवर अभ्यास करण्याच्या दृष्टीने परिवहन प्राधिकरण खालील समित्या गठीत करेल.
   १. योजना समिती
   २. अर्थ समिती
   ३. परिवहन वाहतूक अभियांत्रिकी समिती
   ४. वाहतूक कार्यप्रणाली आणि व्यवस्थापन समिती
   ५. विनियमन, सुरक्षा व पर्यावरण समिती
   ६. वाहन तळ समिती
   ७. कायदा समिती
२. पुणे महानगर प्रदेश विकास प्राधिकरणाचे अध्यक्ष हे या समित्यांचे अध्यक्ष आणि सभासद नियुक्त करतील. आवश्यकतेनुसार या समित्या व्यतिरिक्त अन्य समिती परिवहन प्राधिकरणास गठीत करता येईल.
३. या समित्यावर समिती अध्यक्षांच्या मान्यतेने आवश्यक अशा व्यक्ती अथवा संस्था यांना प्रतिनिधी म्हणून निमंत्रित करता येईल.
४. या समित्या परिवहन प्राधिकरणाद्वारे निर्धारित आणि निर्देशित विषयांचा अभ्यास करून त्यांच्या शिफारशी परिवहन प्राधिकरणाला सादर करतील.

(७) पुणे एकीकृत महानगर परिवहन प्राधिकरणास यथावकाश वैधानिक अस्तित्व देण्यात येईल.

(८) अशासकीय सदस्यांना नियमानुसार प्रवास व दैनिक भत्ता देय राहील.

(९) पुणे एकीकृत महानगर परिवहन प्राधिकरणावर होणारा खर्च पुणे महानगर प्रदेश विकास प्राधिकरणामार्फत करण्यात येईल.

शासन निर्णय क्रमांकः **पीएमआर-३३१९/प्र.क्र.०७/नवि-७**

(१०) सदर शासन निर्णय महाराष्ट्र शासनाच्या www.maharashtra.gov.in या संकेतस्थळावर उपलब्ध करण्यात आला असून त्याचा सांकेतांक २०१९०६०४१७३७१५५९२५ असा आहे. हा आदेश डिजीटल स्वाक्षरीने साक्षांकित करुन काढण्यात येत आहे.

महाराष्ट्राचे राज्यपाल यांचे आदेशानुसार व नावाने,

SHRIRAM DATTATRAYA YADAV

Digitally signed by SHRIRAM DATTATRAYA YADAV
DN: c=IN, st=Maharashtra, 2.5.4.20=9da0e03bd84c1e17d7dad320814d003150fbf7d2abd36f924e5705145bf0e270, postalCode=400032, street=MANTRALAYA MUMBAI, serialNumber=50cb0ce4cc4fe54c74f42b860354e8bec00b3b36f5f215c9f7658e611e096200, oid=URBAN DEVELOPMENT DEPT, o=GOVERNMENT OF MAHARASHTRA, cn=SHRIRAM DATTATRAYA YADAV
Date: 2019.06.06 12:54:25 +05'30'

(श्रीराम द. यादव)
उप सचिव, महाराष्ट्र शासन

**प्रत :**

१. मा. राज्यपाल महोदयांचे सचिव, मुंबई.
२. मा. मुख्यमंत्री महोदयांचे प्रधान सचिव,मंत्रालय, मुंबई
३. मा. राज्यमंत्री (नगर विकास), यांचे विशेष कार्य अधिकारी , मंत्रालय, मुंबई
४. मा. मंत्री (परिवहन) यांचे विशेष कार्य अधिकारी , मंत्रालय, मुंबई
५. मा. मुख्य सचिव, मंत्रालय, मुंबई
६. अपर मुख्य सचिव (नियोजन), मंत्रालय, मुंबई
७. अपर मुख्य सचिव (वित्त), मंत्रालय, मुंबई
८. प्रधान सचिव (नवि-१), नगर विकास विभाग, मंत्रालय, मुंबई
९. प्रधान सचिव (नवि-२), नगर विकास विभाग, मंत्रालय, मुंबई
१०. प्रधान सचिव (परिवहन), मंत्रालय, मुंबई
११. प्रधान सचिव (पर्यावरण), मंत्रालय, मुंबई
१२. प्रधान सचिव (विधी व न्याय), मंत्रालय, मुंबई
१३. प्रधान सचिव (विशेष प्रकल्प), सामान्य प्रशासन विभाग, मंत्रालय, मुंबई
१४. सचिव (सार्वजनिक बांधकाम), महाराष्ट्र राज्य, मुंबई
१५. विभागीय आयुक्त, पुणे
१६. जिल्हाधिकारी, पुणे
१७. व्यवस्थापकीय संचालक, महाराष्ट्र मेट्रो रेल कॉ. लि., पुणे
१८. महानगर आयुक्त, पुणे महानगर प्रदेश विकास प्राधिकरण, पुणे
१९. आयुक्त, पुणे महानगरपालिका, पुणे
२०. आयुक्त, पिंपरी- चिंचवड महानगरपालिका, चिंचवड
२१. परिवहन आयुक्त,पुणे
२२. पोलीस आयुक्त, पुणे शहर
२३. पोलीस अधिक्षक, पुणे ग्रामीण
२४. पोलीस आयुक्त, पिंपरी-चिचवड
२५. उपाध्यक्ष व व्यवस्थापकीय संचालक, महाराष्ट्र राज्य मार्ग परिवहन महामंडळ, मुंबई.
२६. व्यवस्थापकीय संचालक, पुणे महानगर परिवहन महामंडळ, पुणे
२७. संचालक, नगर रचना व मुल्यनिर्धारण विभाग, पुणे
२८. मुख्य अभियंता, महाराष्ट्र राज्य रस्ते विकास महामंडळ, पुणे
२९. मुख्य अभियंता, सार्वजनिक बांधकाम विभाग, पुणे
३०. प्रादेशिक अधिकारी, पर्यावरण विभाग, पुणे
३१. महाव्यवस्थापक, मध्य रेल्वे, मुंबई.
३२. महालेखापाल, मुंबई / नागपूर.



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