



# PEOPLE NEAR TRANSIT, TRANSIT NEAR PEOPLE

Shaping public transit to serve maximum, pollute minimum



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The Institute for Transportation and Development Policy works around the world to design and implement high quality transport and urban development systems and policy solutions that make cities more livable, equitable, and sustainable.

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# 1 What is People Near Transit?

In an urban environment, access to any form of transit within a comfortable walking distance is critical for the selection of a mode of transportation. The lack of walkability to public transport, along with the deficiency of other vital factors like frequency and safety, often result in people shifting towards unsustainable transport modes like personal motor vehicles.

People near Transit (PNT) is an effective proxy **indicator to measure how well a city provides transit access to its residents.** It aids in assessing urban transport systems and services while exposing the accessibility gaps in the existing systems. Furthermore, the analysis facilitates the integration of land use and transportation, while providing guidance on the planning of future transit corridors with better frequencies.

## 1.1 Who benefits?

The PNT analysis establishes an accessibility index of public transit points from urban built environments. Hence, its target audiences are agencies that run transit systems and the town planning department.

In the case of Pune and Pimpri-Chinchwad, the target groups are the **Pune Mahanagar Parivahan Mahamandal Limited (PMPML)** - the administration that runs the bus transit system, **town planning department**, and the **MahaMetro (Maharashtra Metro Rail Corporation Limited)**, a special project vehicle (SPV) that is responsible for the Pune Metro.



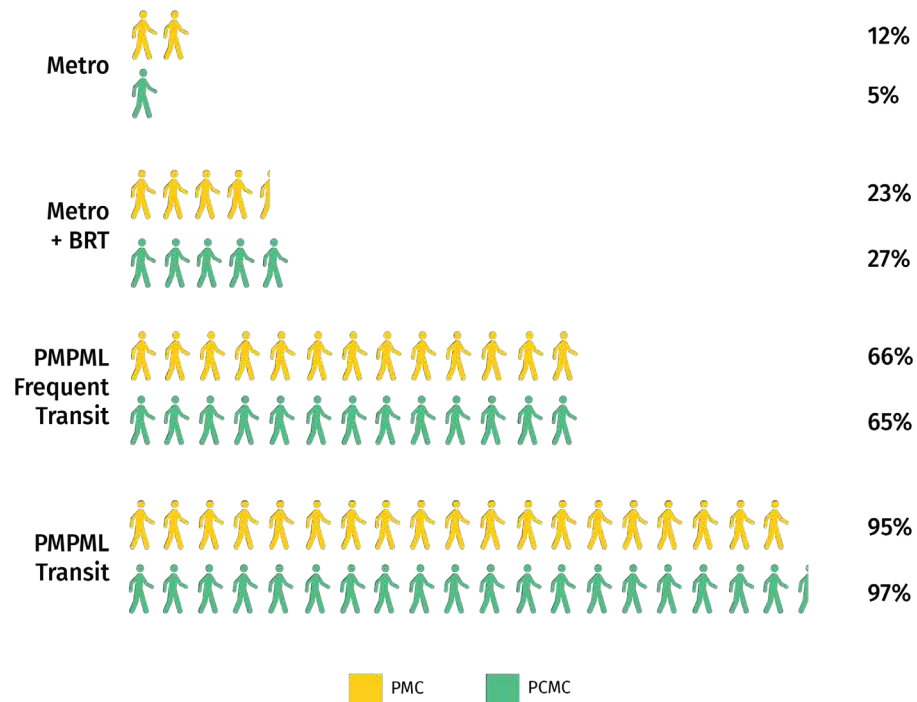


For authorities of the Pune Metropolitan Region, ensuring safe, comfortable, and convenient public transport is a priority. Additionally, there is a renewed focus to ensure commuters have access to sustainable and energy-efficient transit modes. The aim is not only to serve the existing users but also to shift personal motor vehicle users towards public transport.

The PNT analysis is an ideal tool to help make efficient, sustainable mobility decisions. The tool uses data to identify density and transit deserts. This output can be further used by city transit authorities, such as bus operators, to make prompt and informed decisions on expansion of new corridors, improvement of route frequencies, and prioritisation of transit modes. The motive is to enable public transport systems fulfil its intent: cost a penny, service as many.

Correspondingly, the tool can aid in the revision of development plans through integration of transportation with land use. Planning higher density residential areas as well as employment centres near existing transit corridors can effectively increase people near transit with relatively less investment.

## Percentage of people near transit in the Pune Metropolitan Region



\*Analysis is based on PMPML scheduled frequencies

## 1.2 Highlights of the Pune PNT Analysis

1. Pune is a sprawling city, with a density of 40,000 people per sq km in the city and 9,000 people per sq km in the peripheries. This outward urban sprawl leads to 48% of the trips being longer than 5 km<sup>1</sup>. In such conditions the availability of public transport is crucial, but in its absence there is a noticeable dependency on personal motorised transportation. This is evident in the city's growing personal motor vehicle ownership.
2. With 96% of Pune and Pimpri-Chinchwad residents living within 500 m walkable distance of the PMPML network, the twin cities are very well connected by the bus system. However, lack of pedestrian and cyclist accessibility, and the affordability and reliability of buses, result in only 12% of trips<sup>2</sup> made by bus.
3. Currently, only 66% of the population has access to high-frequency bus transit, with a bus available every five minutes at a walking distance of 500 m. The percentage of people with access to rapid transit (including the Pune Metro and Rainbow BRT) is even lower at just 25%.
4. In Pune, around six lakh<sup>3</sup> citizens live in notified slums, of whom around 1.5 lakh don't have access to frequent bus transit. Similarly, only 60% of school children and 62% of employment centres have access to frequent transit.

<sup>1</sup> Transportation Status Report by Citizens of Pune. (2013).

<sup>2</sup> Comprehensive Mobility Plan for Pune City. (2008).

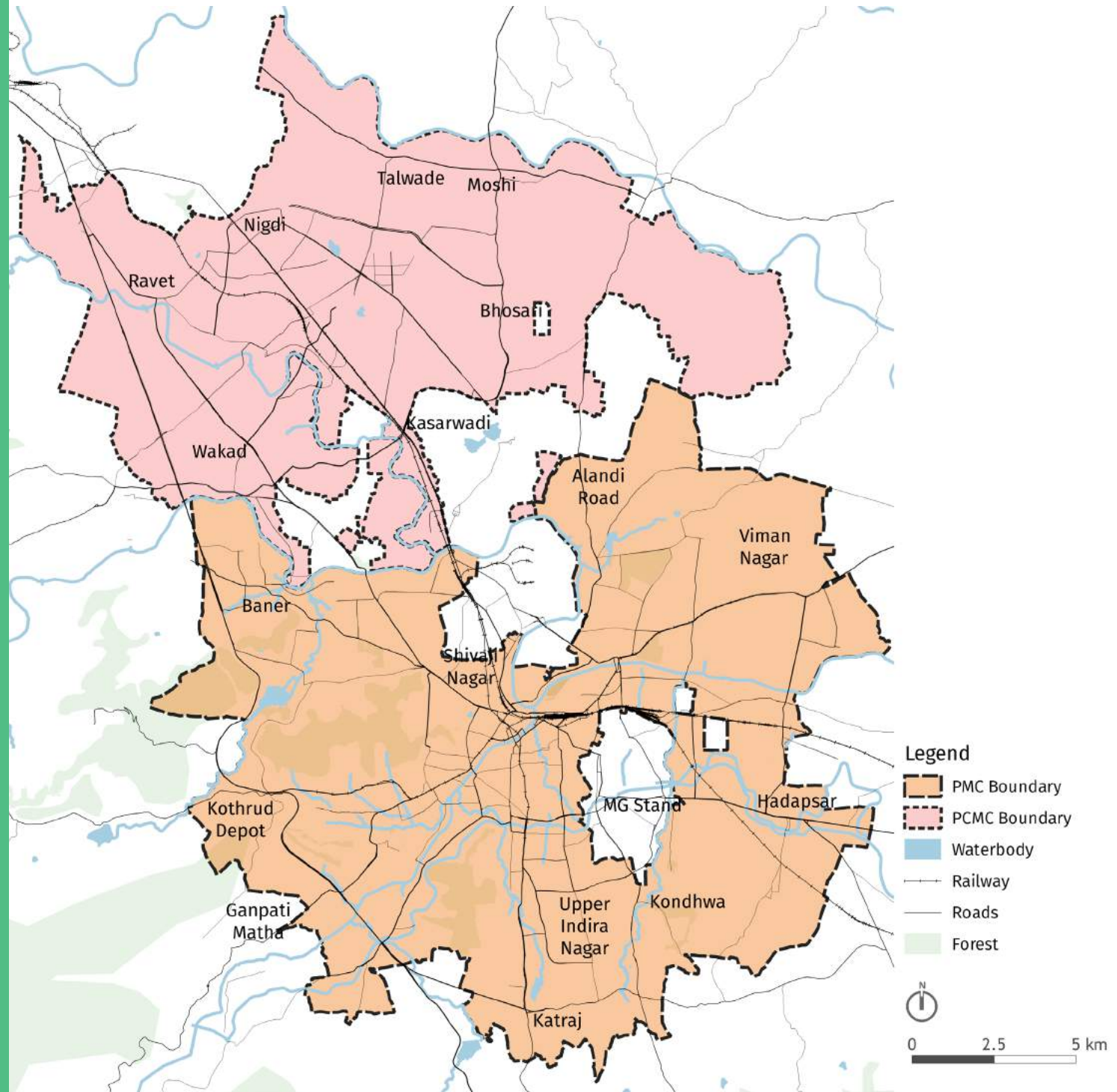
<sup>3</sup> Pune Open Data-Prabhag wise Slum Details, 2016.

\*Analysis is based on PMPML scheduled frequencies

## 2

# About Pune and Pimpri-Chinchwad

With a population of 31 lakhs<sup>4</sup>, Pune is the second largest city in Maharashtra. The metropolis along with its twin-city Pimpri Chinchwad, which is home to 17 lakh<sup>5</sup> people, form the urban core of the Pune Metropolitan Region (PMR).

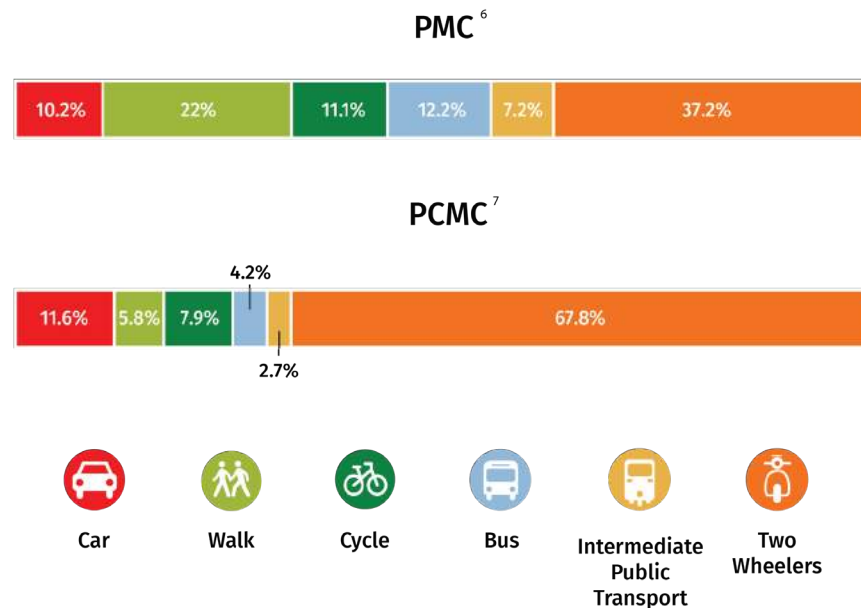


<sup>4</sup> Pune Open Data- Ward wise Population. (2016)

<sup>5</sup> PCMC Final Ward Organization. (2017)

## 2.1 How the twin cities commute?

At present, the main modes of public transit, both intra- and inter-city, are the bus services operated by PMPML, Pune's suburban railway, and auto-rickshaws. The Pune Metro is expected to bolster the public transportation demands after its launch. Transport network companies, such as Uber and Ola Cabs, also provide rideshare and taxi services in the city.



<sup>6</sup> Comprehensive Mobility Plan for Pune City. (2008).

<sup>7</sup> Comprehensive Mobility Plan (CMP) for PCMC. (2008).





# 3

## Pune PNT Analysis

### Density Distribution

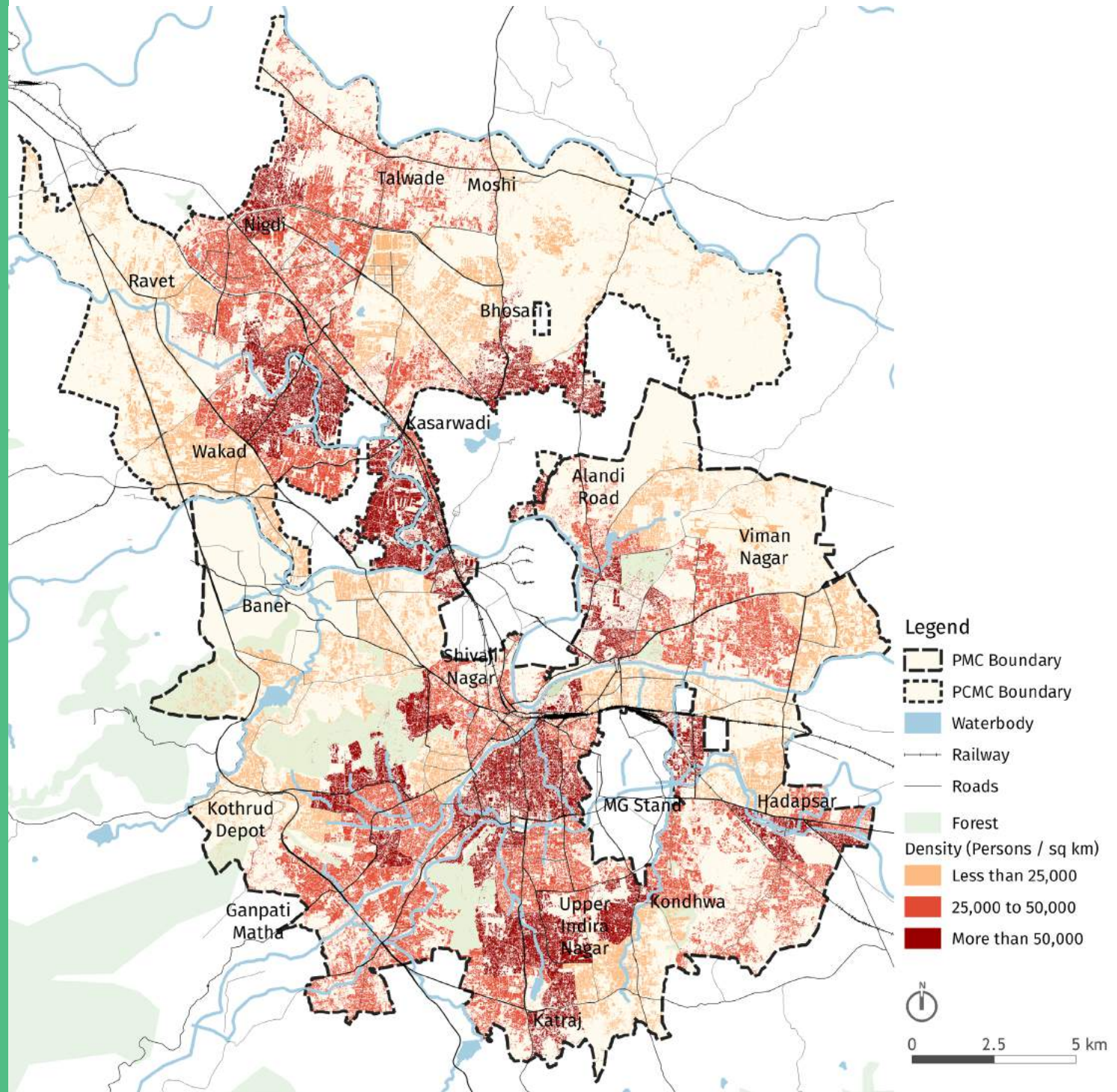
Pune is witnessing a high-density development, with the city recording 40,000 people per sqkm<sup>8</sup>. Such a rapid rise in population density is astonishing, especially when compared to similarly sized cities like Jaipur, Kanpur, and Lucknow.

However, in the last decade, the city has begun sprawling to its peripheries at a density of 9,000 people per sqkm. This urban sprawl is causing immense fissures in the city's urban planning agenda, with public transport becoming a cause for concern.

As a result of the sprawl, 48% of trips in Pune are found to be longer than 5 km<sup>9</sup>. Due to longer trip lengths and lack of efficient public transit options, residents are turning to personal motor vehicles to meet their travel needs.

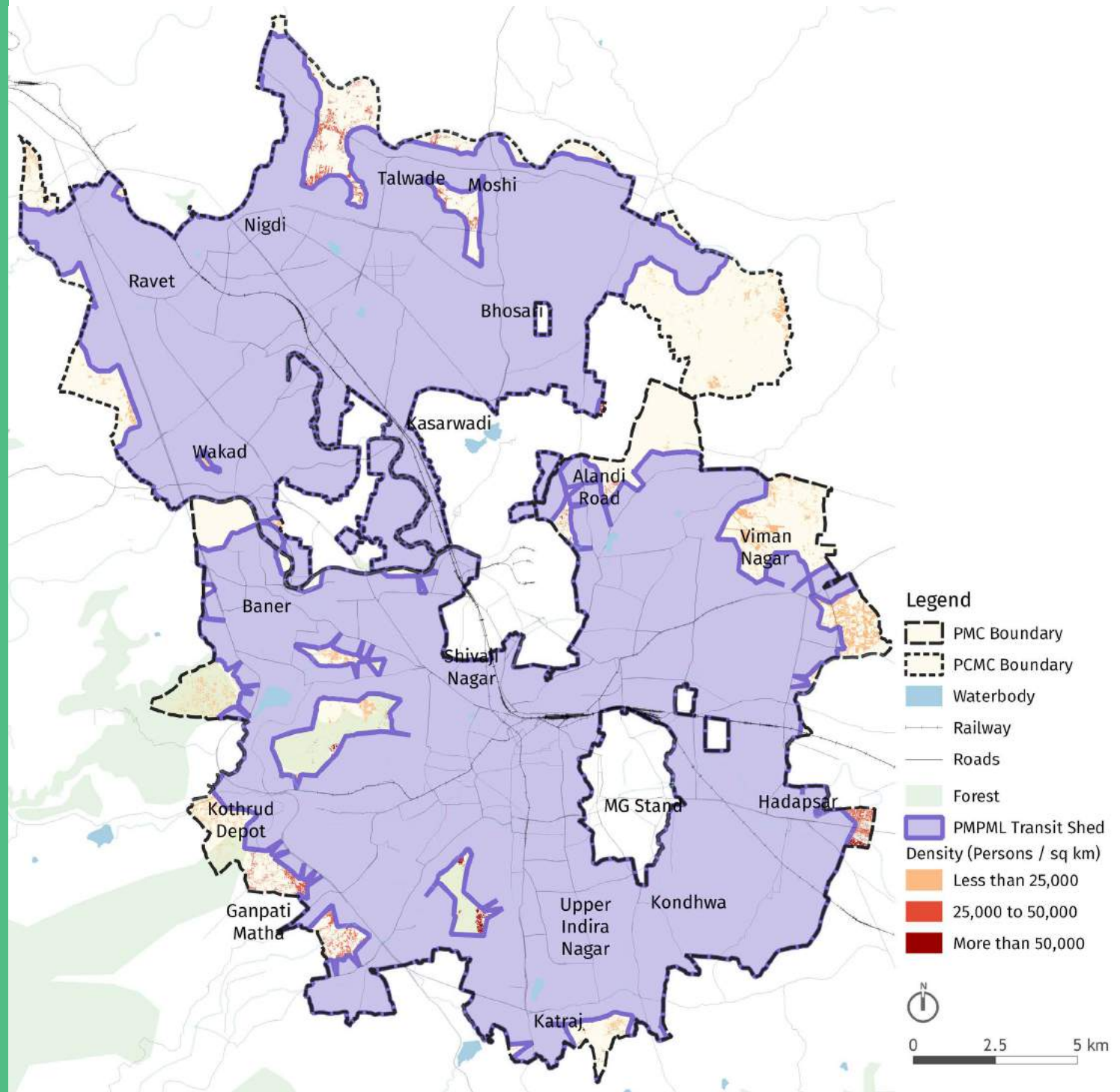
<sup>8</sup> Calculated by ITDP from built-up map prepared through object-based satellite image classification in GIS.

<sup>9</sup> Transportation Status Report by Citizens of Pune. (2013).



## People near Bus Transit

The city is extensively connected with its bus system, with **96% of the people<sup>10</sup> living within a comfortable 500 m walking distance of the PMPML network**. However, only 12% of trips<sup>11</sup> are by bus transit. Though there are multiple factors for this low figure, the primary one is the unavailability of frequent transit services.



<sup>10</sup> 95% in PMC and 97% in PCMC

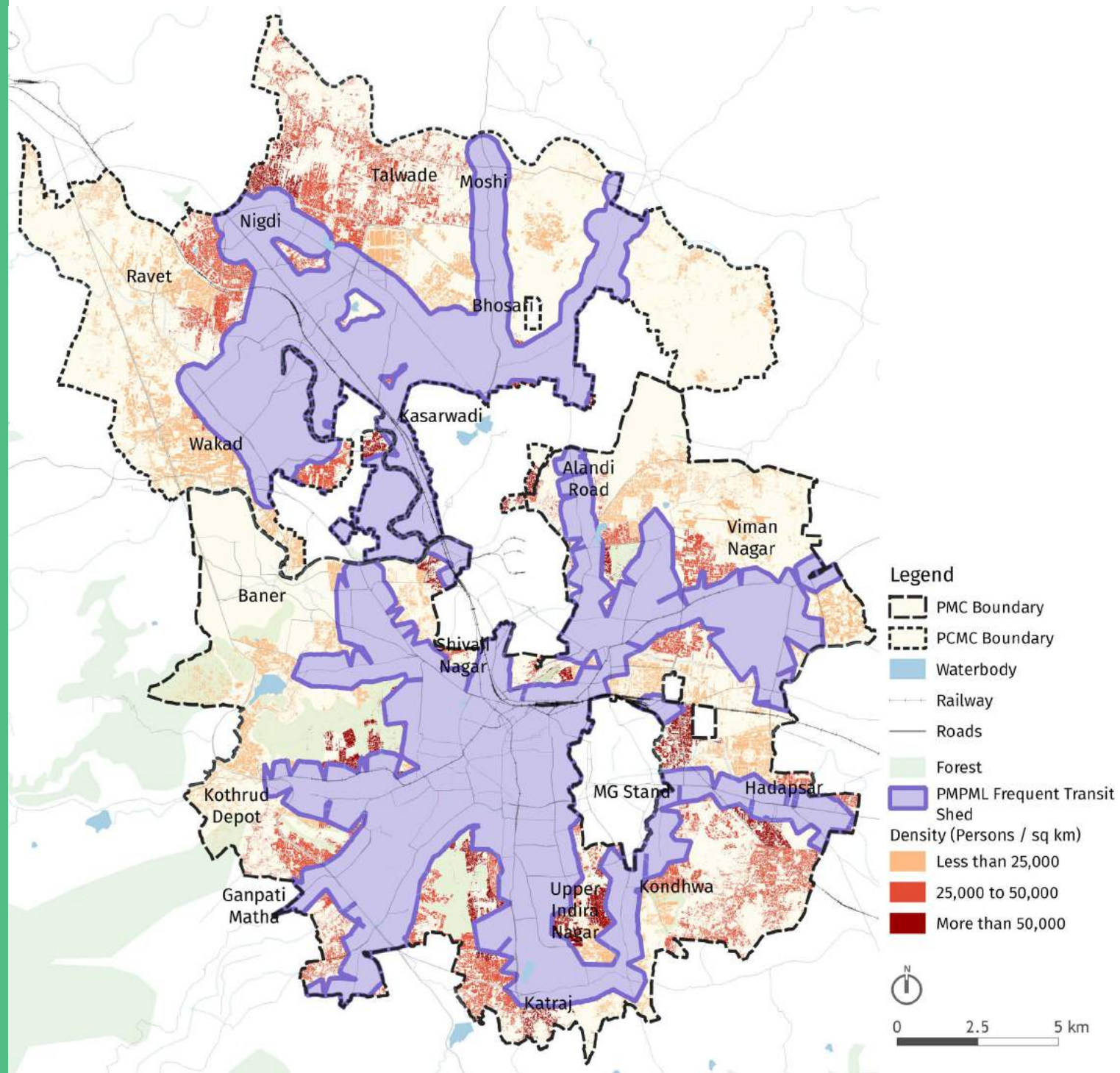
<sup>11</sup> Comprehensive Mobility Plan for Pune City. (2008).

\*Analysis is based on PMPML scheduled frequencies

## People near Frequent Transit

A well-functioning public transport system is reliable, convenient, safe, and affordable. The absence of even one of the factor often results in people shifting towards unsustainable transport modes like personal motor vehicles.

**When it comes to frequent transit, only 66% of residents<sup>12</sup> have access** to public transport within a 500m walking distance in PMC and PCMC. This forces many high-density areas like Dhanori, Kalyani Nagar, Warje-bypass, Pradhikaran, Talwade, etc., to become transit deserts.



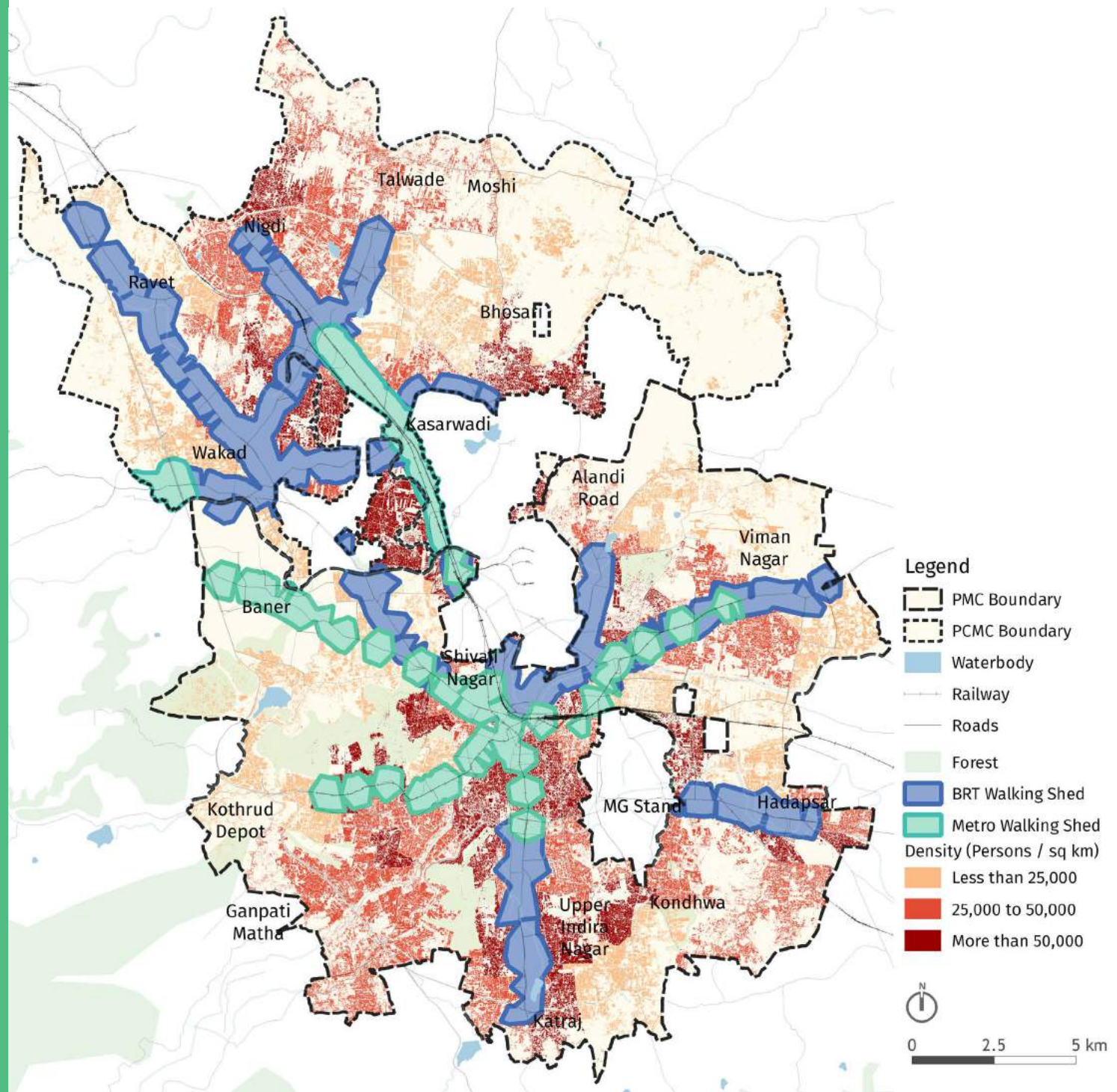
<sup>12</sup> 66% in PMC and 65% in PCMC

\*Analysis is based on PMPML scheduled frequencies

## People near Rapid Transit

Despite being capital-intensive, the much-anticipated **Metro Rail project, running through the twin cities, will be accessible to only 10% of people<sup>13</sup>** within a 500 m walking distance. Even with the Rainbow BRT (existing and upcoming), **rapid transit will be accessible to only 25% of people<sup>14</sup>**.

To provide widespread transit access, the existing PMPML bus corridors can be leveraged to provide frequent transit throughout the city. Not only does this ensure a low-cost transit option, but also multi-modal integration as these buses could feed into the Metro ridership.



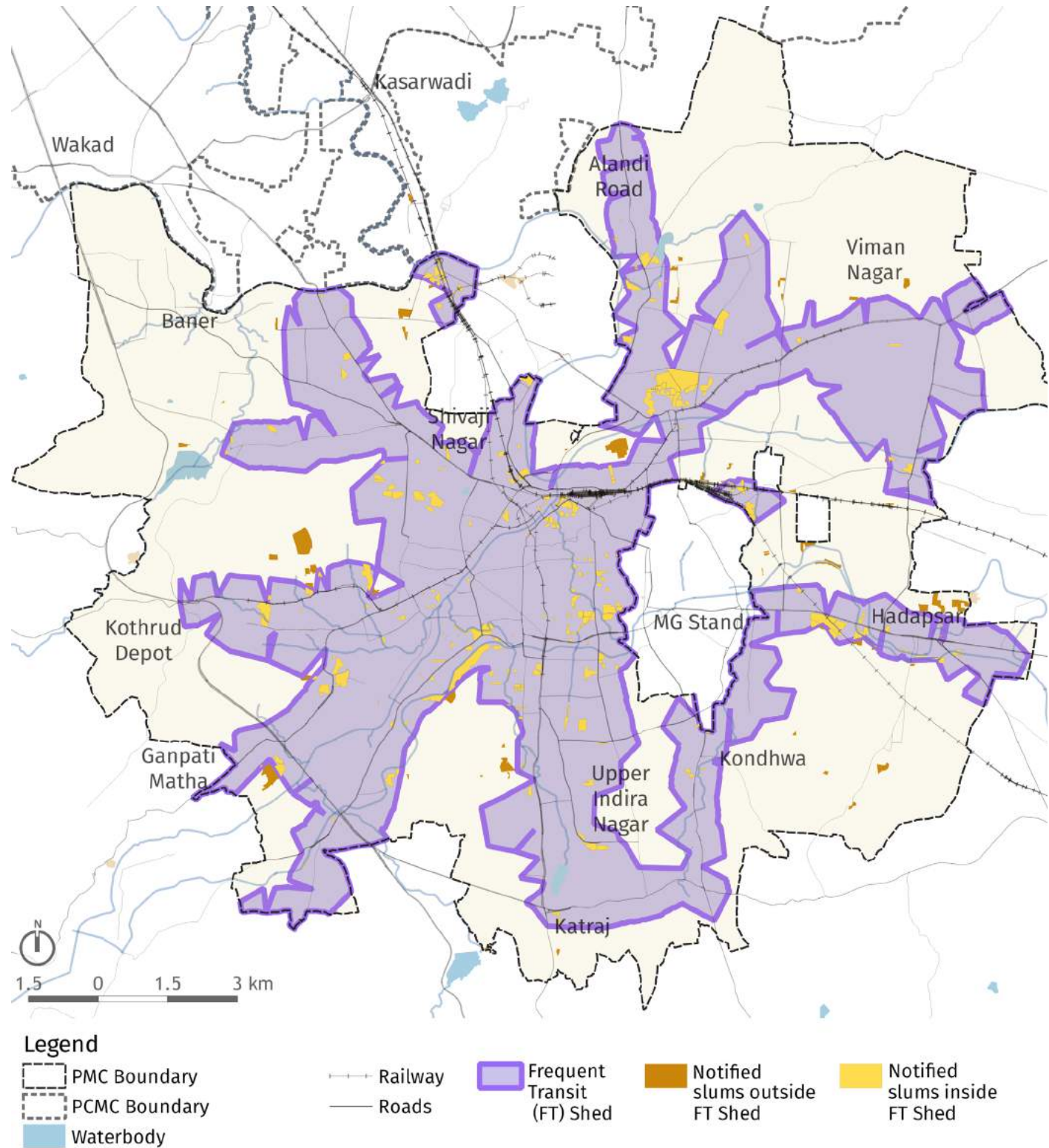
<sup>13</sup> 12% in PMC, 5% in PCMC

<sup>14</sup> 23% in PMC, 27% in PCMC

## Notified Slums near Frequent Transit

Individuals with limited economic capacities have no alternative transit choice but to be dependent on public transport. They are often at the mercy of the transport authorities to make their travel safer and more reliable.

In Pune, **77% of low-income groups<sup>15</sup> have access to frequent transit.** Accessibility of frequent transit services to other notified settlements still need to be improved. This could be achieved by running smaller feeder vehicles in transit deprived sections.

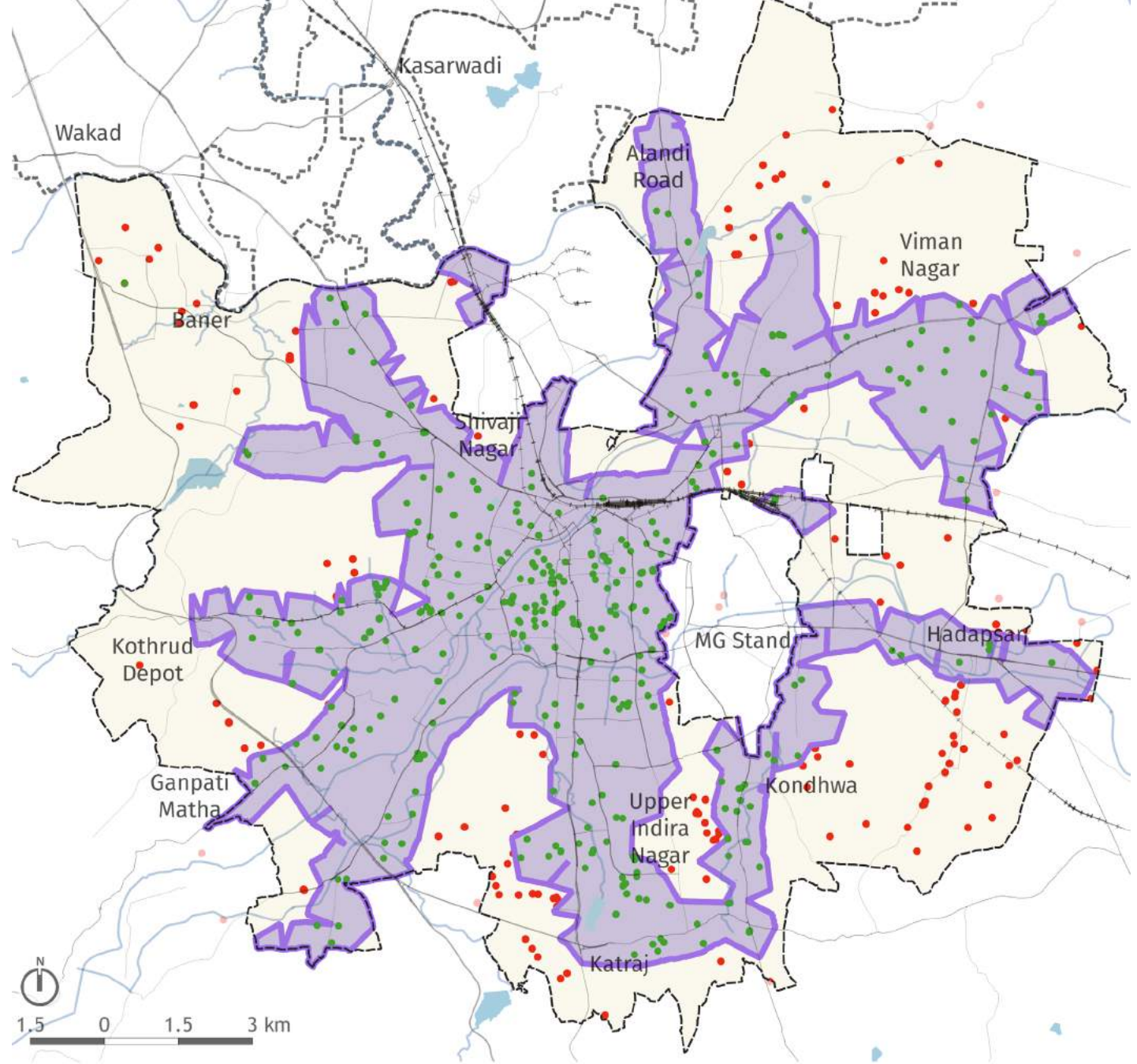


<sup>15</sup> Location of notified slums marked from Pune Open Data-Prabhag wise Slum Details, 2016.

\*Analysis is based on PMPML scheduled frequencies

## School Children near Frequent Transit

School-going children often walk or cycle or use public transportation to reach school and return home. Safety and reliability are key factors to enable children to travel independently. In the PMC region, 79% of schools<sup>16</sup> and **60% of school children<sup>17</sup> have access to frequent transit services.** In this case, unreliable public transport can cost children their future.



### Legend

- PMC Boundary
- PCMC Boundary
- Waterbody
- Railway
- Roads
- Frequent Transit (FT) Shed
- Govt. Recognized Schools outside FT Shed
- Govt. recognized Schools inside FT Shed

<sup>16</sup> Govt. recognized schools marked on google maps as per School Details given on PMC Open data website

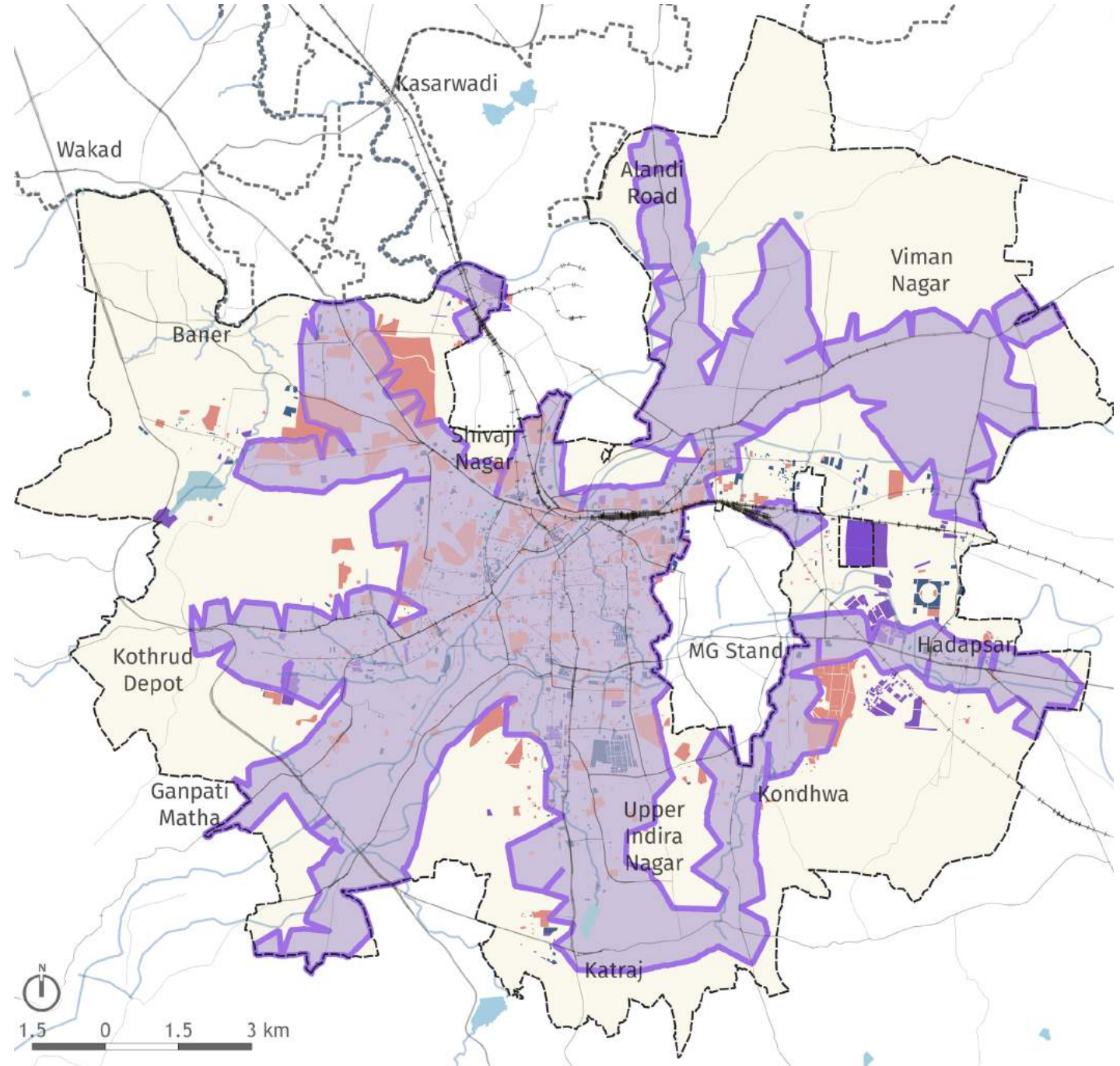
<sup>17</sup> Enrollment as given in School Enrollment Details, 2016 on PMC Open data website

\*Analysis is based on PMPML scheduled frequencies

## Employment Centres near Frequent Transit

Work trips account for 50% of the total trips in Pune and are most frequent as compared to other purpose trips. Provision of public transportation to employment centers is the most effective way to reduce traffic congestion, lower the cost of living, and increase transit sustainability.

In Pune, only **62% of employment centers<sup>18</sup> have access to frequent transit**, leaving key employment areas near Mundhwa and Bhekrai Nagar as transit deserts.



### Legend

- PMC Boundary
- PCMC Boundary
- Waterbody

- Railway
- Roads

- Frequent Transit (FT) Shed

- Land use**
- Commercial
- Industrial

- Public semi-public (PSP)

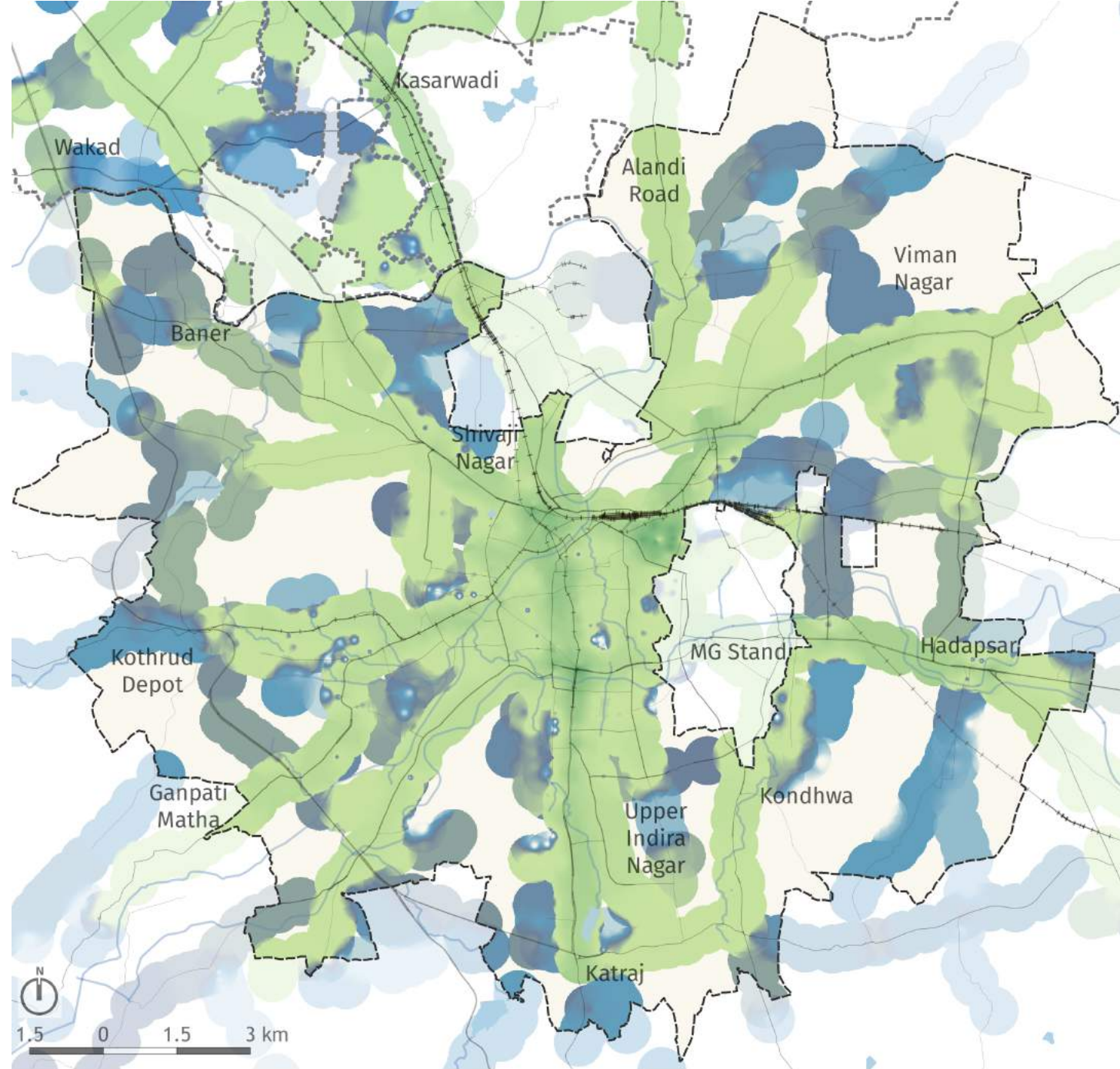
<sup>18</sup> Land use plan- Pune Development Plan, 2012

\*Analysis is based on PMPML scheduled frequencies

## Frequency Heat map of PMPML Service

The frequency heat map of PMPML bus service represents areas covered by frequent transit. It identifies areas with lower frequency of buses which need improvement.

In sections with lean transit access, specific corridors can be introduced which intersect high-density areas and high-frequency corridors. This can be done at a relatively low investment and provide transit access to many in need.



### Legend

- PMC Boundary
- PCMC Boundary
- Waterbody

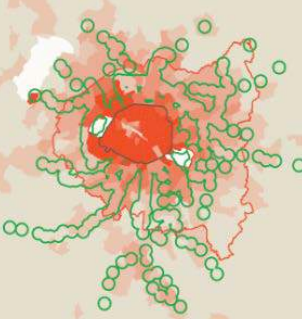
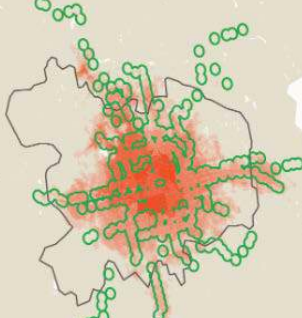
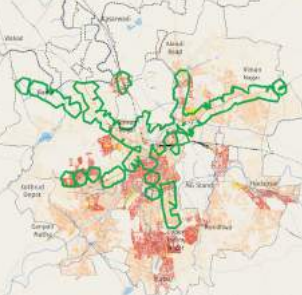
- Railway
- Roads

- PMPML Frequency (in min.) 5 to 10
- More than 20
- 10 to 20
- 1 to 5
- Less than 1

\*Analysis is based on PMPML scheduled frequencies



## 4 Comparison with Best Practices

Paris		<p><b>Transit Network:</b></p> <p>Metro Tram Suburban Rail</p>	<p><b>People near rapid transit:</b></p> <p>100%</p>
Beijing		<p><b>Transit Network:</b></p> <p>Metro BRT</p>	<p><b>People near rapid transit:</b></p> <p>46%</p>
Pune		<p><b>Transit Network:</b></p> <p>Metro BRT</p>	<p><b>People near rapid transit:</b></p> <p>25%</p>

## 5 Recommendations

1. PNT, an effective data-driven assessment, can be adopted as an evaluation indicator by PMPML to periodically measure its progress towards achieving its sustainable transport goals and **revise its bus operations plan**.
2. The PMPML covers both PMC and PCMC regions very extensively. With rapid transit modes, such as the BRT and the upcoming Metro rail, only reaching 25% of people combined, the existing PMPML bus corridors should be used effectively to provide low-cost, frequent transit throughout the city. These buses could potentially facilitate **multi-modal integration** by connecting with the Metro — also improving the latter's ridership.
3. Existing mass transit corridors are serving low-density areas. **Densification under transit-oriented development (TOD)** will help more residents get access to existing corridors in the future. However, further impact assessment needs to be done by the city.
4. Low density areas in **TOD zone need local area plans (LAPs)** to 'infill' them with densities. Similarly, high density areas in TOD zones need LAPs to improve street network and public spaces.
5. Better integration of land use and transport can be ensured in the future by adopting PNT as a tool in **preparing and revising the development plan and identify mass transit corridors**.

## 6 Glossary

**People Near Transit (PNT):** Tool to measure the percentage of residents in a city living within a short walking distance (500 m) of transit.

**Rapid transit:** High quality public transport systems characterised by high capacity, comfort, overall attractiveness, use of technology in passenger information system, and ensuring reliability using dedicated right of way for transit vehicles (i.e. BRT, LRT, Metro).

**Frequent transit:** ITDP defines frequent transit as city bus transit with a frequency of at least one bus at every five minutes.

**Transit shed:** The actual 500 m walking distance around a transit station serves as “transit sheds”. People who live within the transit shed are considered to be near transit.

**Notified slum:** A settlement is ‘notified as slum’ by either the State or UT Administration or Local Government under any Act including the ‘Slum Act’.

**Transit deserts:** Built-up areas of the city which are not accessible by transit within a 500 m walking distance.

**Urban sprawl:** A low-density, scattered and often, unplanned urban growth outside of the city municipal boundary.

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