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Government of India

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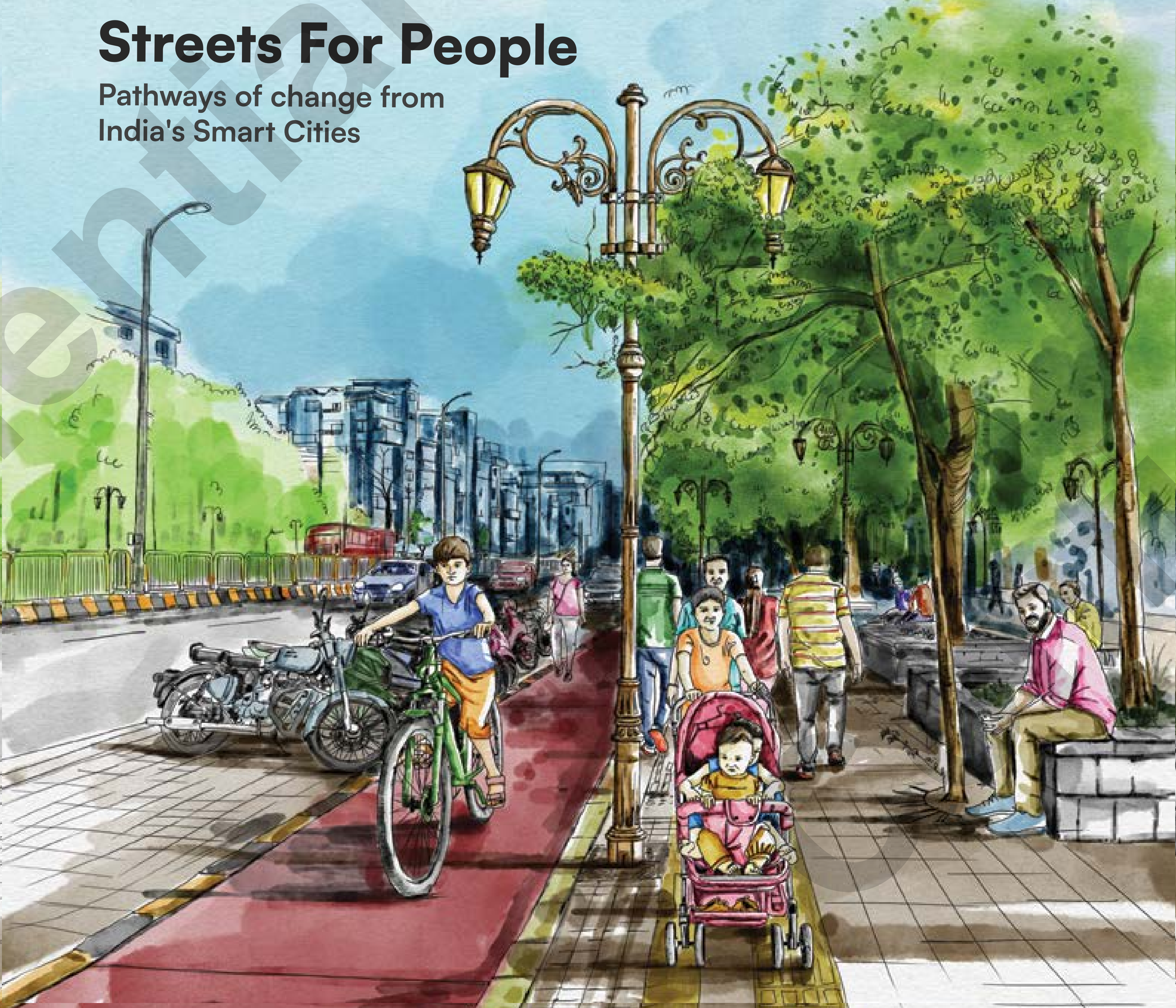
INDIA

Streets For People

Pathways of change from India's Smart Cities



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SMART CITIES MISSION, MINISTRY OF HOUSING
AND URBAN AFFAIRS, GOVERNMENT OF INDIA

Reimagining Streets of Indian Smart Cities:
A compendium of learnings from India's 50 Streetscape Projects

December 2023

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Streets For People

Pathways of change from India's Smart Cities

Message

Hardeep Singh Puri

Minister, Ministry of Housing and Urban Affairs

The Ministry of Housing and Urban Affairs is committed to creating sustainable and vibrant urban spaces that enhance the quality of life for our citizens. Over the years, we have witnessed cities evolve, and today, we stand on the cusp of a new era of urban development. This publication, brimming with inspiring case studies of street transformation projects from various corners of our country, serves as a testament to our collective commitment to this cause. Within its pages, you will find inspiring case studies of street transformation projects from various corners of our country.

As I peruse through the pages of this publication, I am filled with admiration for the sheer dedication and creativity displayed by our city officials, urban designers, and all our partners who have breathed new life into our streets. These projects are not just about enhancing aesthetics; they represent a holistic approach to urban revitalization, encompassing accessibility, sustainability, and community engagement.

In the pages that follow, you will discover stories of resilience, creativity, and unwavering progress. May these case studies serve as blueprints for change and inspire us all to take bold steps towards building cities that are not just livable, but thriving and inclusive.

Foreword

Manoj Joshi
Secretary, Ministry of Housing and Urban Affairs

In the realm of urban development, the Ministry of Housing and Urban Affairs stands steadfast in its commitment to crafting urban spaces that resonate with sustainability and vibrancy, ultimately enriching the lives of our fellow citizens. As we journey through the annals of time, we bear witness to the evolution of our cities, standing at the precipice of a transformative era in urban development.

This publication, replete with captivating case studies of street transformation initiatives spanning the breadth of our diverse nation, stands as a testament to our collective resolve in this noble endeavor. Within these pages, you will embark on a journey through inspiring projects that breathe new life into our urban landscapes.

I extend my heartfelt appreciation to the cities that have showcased their remarkable achievements. Your dedication, innovation, and unwavering determination are truly inspiring. I urge you to continue your efforts and serve as beacons of change for others.

To those cities that are on a similar transformative journey, I encourage you to persevere. The road to transformation is challenging, but the rewards are immeasurable. Learn from the experiences shared here and adapt them to your unique contexts. As you delve into these case studies, let them ignite your passion and inspire you to create better, more sustainable urban spaces.

Foreword

Kunal Kumar
Joint Secretary and Mission Director, Smart Cities Mission, Ministry of Housing and Urban Affairs

I jokingly use the phrase 'burden of smartness' to underwrite the fact that the tag of being 'smart' cannot be earned easily. 'Being smart' is equated to 'being perfect', which is quite simply impossible to achieve, let alone achieve in a window of 5 to 10 years. Nevertheless, it is the combined force of many such local aspirations that acts as the Mission's fuel. Cities are but, their people. And by putting the hopes and aspirations of their citizens at the core of their work, smart cities may run the risk of being criticized due to the potential achievement-aspiration gap but would never run the risk of being irrelevant and unresponsive. For the ability to adapt to the ever-changing needs of its citizenry is the true measure of 'smartness' of a city.

Streets are the canvas upon which our cities paint their character, and the evolution of India's streets has been entwined with the accelerating pace of urbanization. Embracing collaborative action becomes imperative to navigate this transformative journey.

This document, a reservoir of practical wisdom derived from successful initiatives, serves as a compass guiding us toward streets designed for resilience. By adopting these insights and fostering partnerships, we lay the foundation for cities that echo with vibrancy, sustainability, and a spirit of collective progress.

I urge all Indian cities to engage with the project partners and cities featured in this compendium. By exchanging ideas and translating them into action, cities can forge their paths toward a sustainable future. Best wishes!

Preface

India is urbanizing rapidly today. With this rapid increase of urbanization, it is extremely important for Indian cities to provide access to good quality public spaces within walking distance from home.

The Smart Cities Mission, in the last few years, has made a significant impact on the quality of life in more than 100 cities through its streetscape and public space transformation projects.

This Compendium is a culmination of the collective efforts of various Indian cities, and is a testament to the vision and impact of the Smart Cities Mission over the last seven years. By showcasing the successful execution of various street design initiatives, the document highlights the mission's transformative influence in enhancing the overall quality of life for Indian citizens.

The Compendium captures the essence of innovative street design projects across the country and aims to serve as a repository of knowledge for decision-makers, urban practitioners, local champions in India. By providing accessible and comprehensive information, the Compendium plays a pivotal role in supporting the scale-up of street transformations and furthering the Mission's vision of creating people-centric cities across India.

Comprising of 50 streetscape projects, this Compendium includes:

1. 15 detailed case studies that capture the street design and implementation process, its challenges, and learnings through the execution of these projects.
2. 35 overview projects that highlight the project approach and its impact

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The Ministry of Housing and Urban Affairs is the apex authority of Government of India to formulate policies, coordinate the activities of various Central Ministries, State Governments, and other nodal authorities, and monitor programmes related to issues of housing and urban affairs in the country.

The Smart Cities Mission was launched by the Ministry in 2015 to promote sustainable and inclusive cities that provide core infrastructure and give a decent quality of life to its citizens, a clean and sustainable environment and application of 'Smart' Solutions.

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The Institute for Transportation & Development Policy (ITDP) is a global non-for-profit organisation that works with cities worldwide to promote transport solutions that reduce traffic congestion, air pollution, and greenhouse emissions while improving urban liveability and economic opportunity. ITDP is represented in India by ITDP Pvt Ltd and works with governments, multilateral agencies, and civil society to make visible, on-the-ground improvements by providing technical expertise, policy solutions, research publications, and training programmes.

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We thank the participating cities & Elements Creative India for providing the photos featured in this compendium

Contributors

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December 2023

Disclaimer: The information in this report is collected from cities through digital forms. While efforts have been made to ensure accuracy, the team assumes no responsibility for errors or omissions. Readers should verify and use this data at their discretion.

About the Compendium

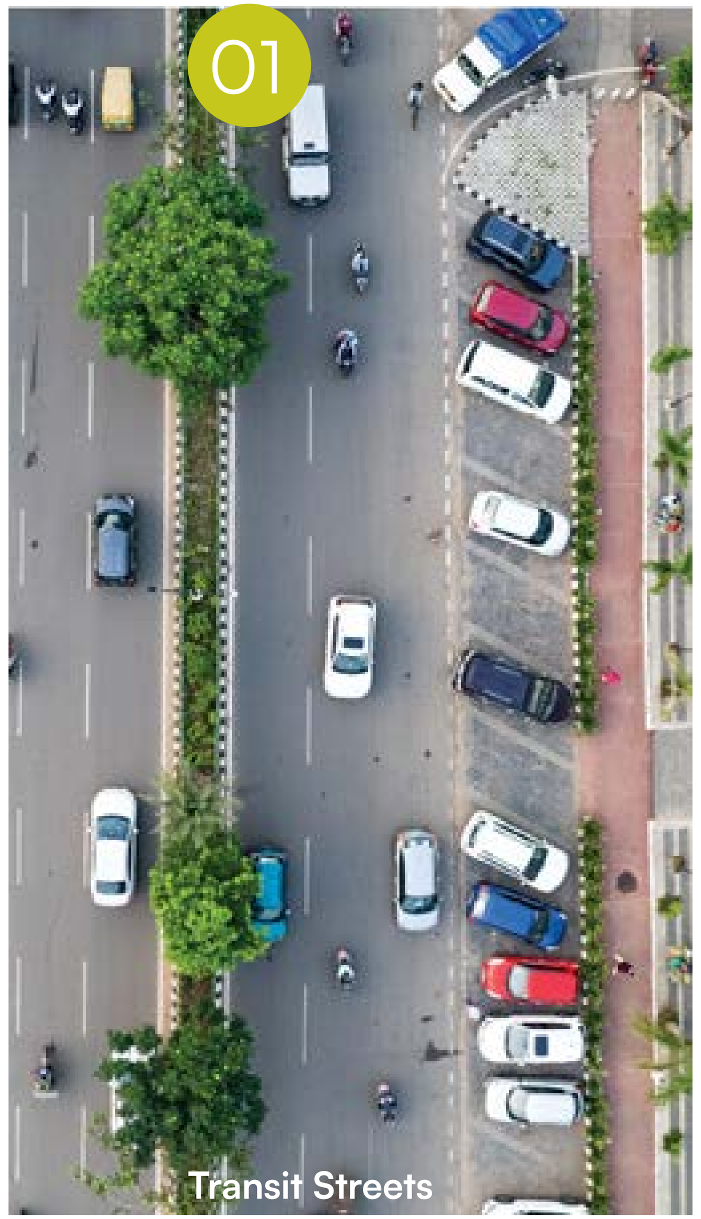
Over the last decade, as Indian cities continuously strive to improve the quality of life for their citizens, the functional and visual characteristics of Indian streets have changed drastically. Several cities from around the nation have initiated their street transformation journeys by executing pilots of people-centric, complete streets. However, due to a lack of adequate documentation, the qualitative and quantitative impact of these transformations is yet to be determined.

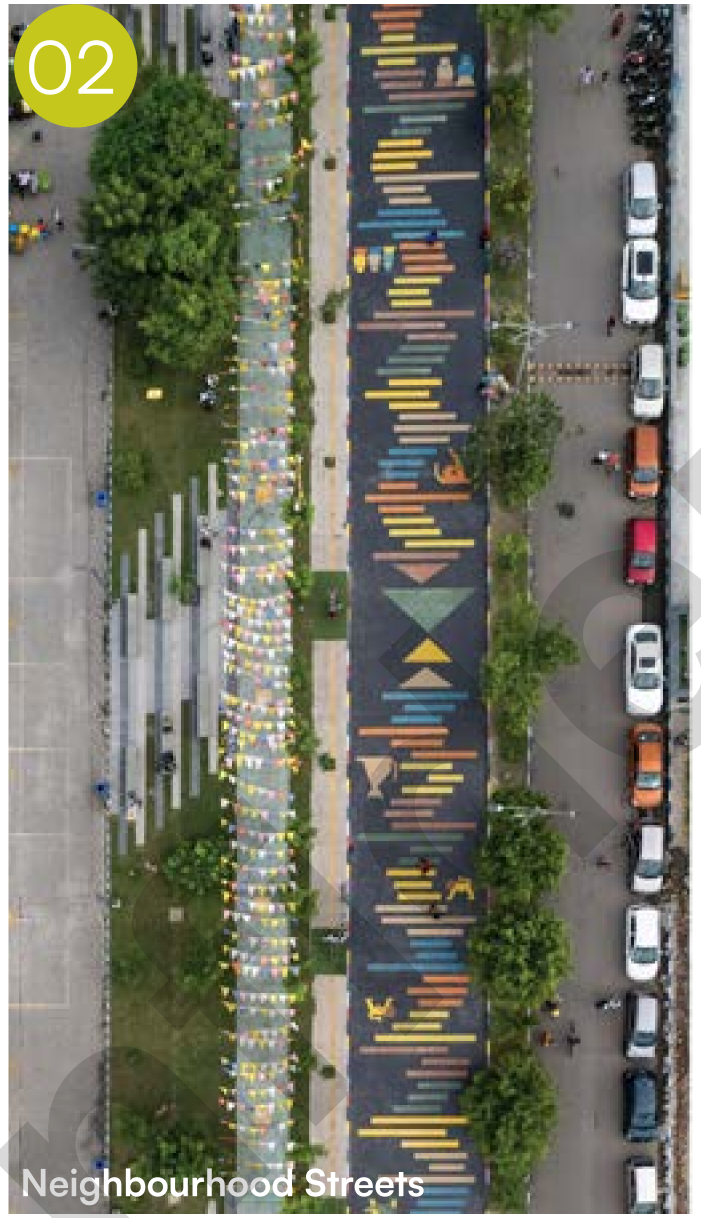
The 'Reimagining Streets of Indian Smart Cities' compendium is an attempt by the Smart Cities Mission- Ministry of Housing and Affairs (MoHUA) and Institute for Transportation and Development Policy (ITDP) to document and compile the street design processes, their challenges and learnings through 50 street transformation case studies. The compendium aims to provide an extensive database of best-practice examples of street transformations that decision-makers, city engineers, urban practitioners, and academicians involved in street transformation projects can use as advocacy material for a nationwide scale-up of streetscapes. The compendium also captures user perspectives about the project and insights from the designers and engineers on how cities overcame different challenges at different project stages.

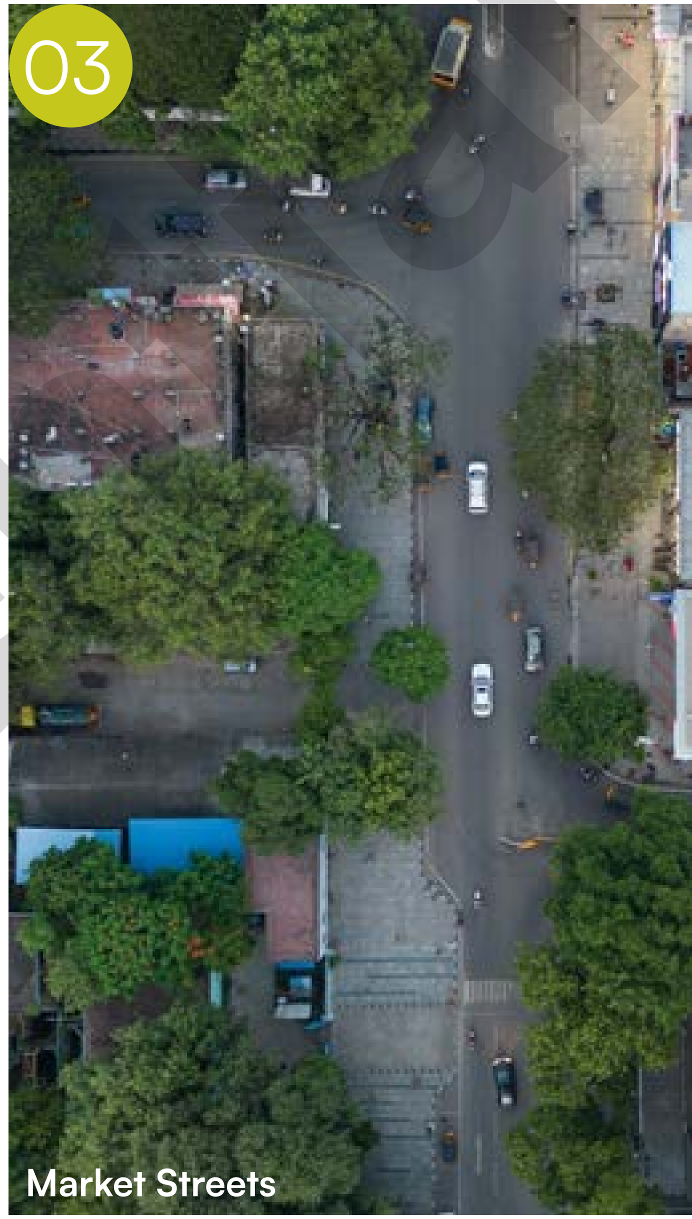
Additionally, the compendium also indexes the projects across various project stages to enable easy navigation to address specific challenges in the project life-cycle:

- 01 **Project initiation**
- 02 **Laying the foundation**
- 03 **Implementing the project**
- 04 **Maintaining the project quality**

The compendium categorizes streets into 3 broad typologies:







Transit Streets, are those streets that are running along commercial corridors, prioritize the street for pedestrians and transit. In some cases, transit such as buses, light rail, or streetcars have dedicated spaces between sidewalks.

Neighbourhood streets lie at the heart of everyday life, offering walkable destinations such as restaurants, shops, services, and transit stops. Pedestrian volumes should be accommodated by well-designed sidewalks.

Market streets are the streets that prioritize people and are typically most appropriate in corridors with commercial activity on both edges of the street.

How will this compendium help you?

Citizens

Over the past 8 years, the Smart Cities Mission of India has set a good example of a national-scale mission that evoked an active mobilization of citizens in the planning and implementation of projects. At the city level, it has been proved citizens play a critical role in promoting sustainable mobility using people-friendly streets. At the neighborhood level, the citizens' role is crucial in enabling inclusive development by participating in the citizen engagement exercise for creating walkable and cyclable streets and public realms with augmented infrastructure. This compendium informs citizens of possible urban street design interventions at neighbourhood level. Further, it provides them with the necessary information to participate in the local-level decision-making processes and empowers them to assume positions of stewardship for the design, development, and maintenance of streets / corridors they use for mobility.

Government Officials

This compendium provides the necessary technical information to government officials, CEOs of SPVs, and Municipal Commissioners to assist in two pivotal roles; first, decision-making along with stakeholders and senior officials; second, coordinating with urban designers and transport planners, formulating and implementing complete and healthy streets through a strategic planning approach. Whether to cater to the needs of developing transit focused corridors, or to create neighborhood streets or to revive the back alleys or integrating urban services in the existing heritage streets, this compendium present cases and the step-by-step journey of implementation that is very crucial for government officials to plan and steer coordination between the transit agency, land development agency, municipal authority, departments and/ or parastatals in charge of infrastructure development and maintenance, across various tiers of the government.

Urban Practitioners (Urban Designers, Urban Planners, Placemakers, Transport Planners etc.)

This compendium presents technical and planning knowledge of streetscape projects which is essential for the budding urban practitioners such as Urban Designers, Urban Planners, Placemakers, Transport planners of developing India. The above-mentioned urban practitioners play a significant role in holistically transforming public realms in our city, and driving the process of changing planning legislation in order to accommodate accessible and walkable streets for people.

Further, they have the ability to mediate between all stakeholders and citizens to facilitate consensus in implementing healthy streets

Urban Local Bodies / Planning Authority

This compendium presents and demonstrates case studies of streets in the Indian context. All these case studies reflect Indian street models, that are built around transit or waterbodies or developed through a highly congested old ward or in commercial areas, which have incorporated ways for non-motorized mobility and facilitated ease of moving in cities. The project journey demonstrated in the compendium includes 4 key steps of the implementing streetscape project-

i) laying the foundation of developing the street project,
ii) building India's muscle,
iii) doing things together, and
iv) monitoring learning and improving in addition to the spatial planning and design of the project.
The urban local bodies play a key role in enabling stakeholder participation in the decision-making process which is the key for developing streetscape projects.

How to read this compendium?

This compendium provides a menu card of proven good practices of Smart Streets and Roads across several Smart Cities. All information related to these projects is gathered through partner deliberations, online discussions, and crowdsourcing from cities. These projects are categorized under 3 broad typologies- Transit Street, Neighbourhood Street and Market Street.

Additionally, the compendium also indexes the projects across various project stages to enable easy navigation to address specific challenges in the project life-cycle:

- 01 **Project initiation**
- 02 **Laying the foundation**
- 03 **Implementing the project**
- 04 **Maintaining the project quality**

Going ahead, the compendium also introduces with a section on institutionalising the approach with three chapter:

- 01 **Common challenges and solutions**
- 02 **Funding & Financing of Street Transformations**
- 03 **Six steps to successful city-wide transformation**

This could help cities to learn and apply in their future streetscape projects.

Designed to cater to city leaders, city managers, urban practitioners, government authorities, policymakers, the compendium intends to stimulate and promote further to formulate projects that stimulate people friendly street design. The idea is to be able to pick up bits and pieces, or even the entire journey of the projects, and replicate them through contextualisation and drawing local strategies.

To make the process easy, we have colour-coded themes on each project page — Colours for thematic areas:

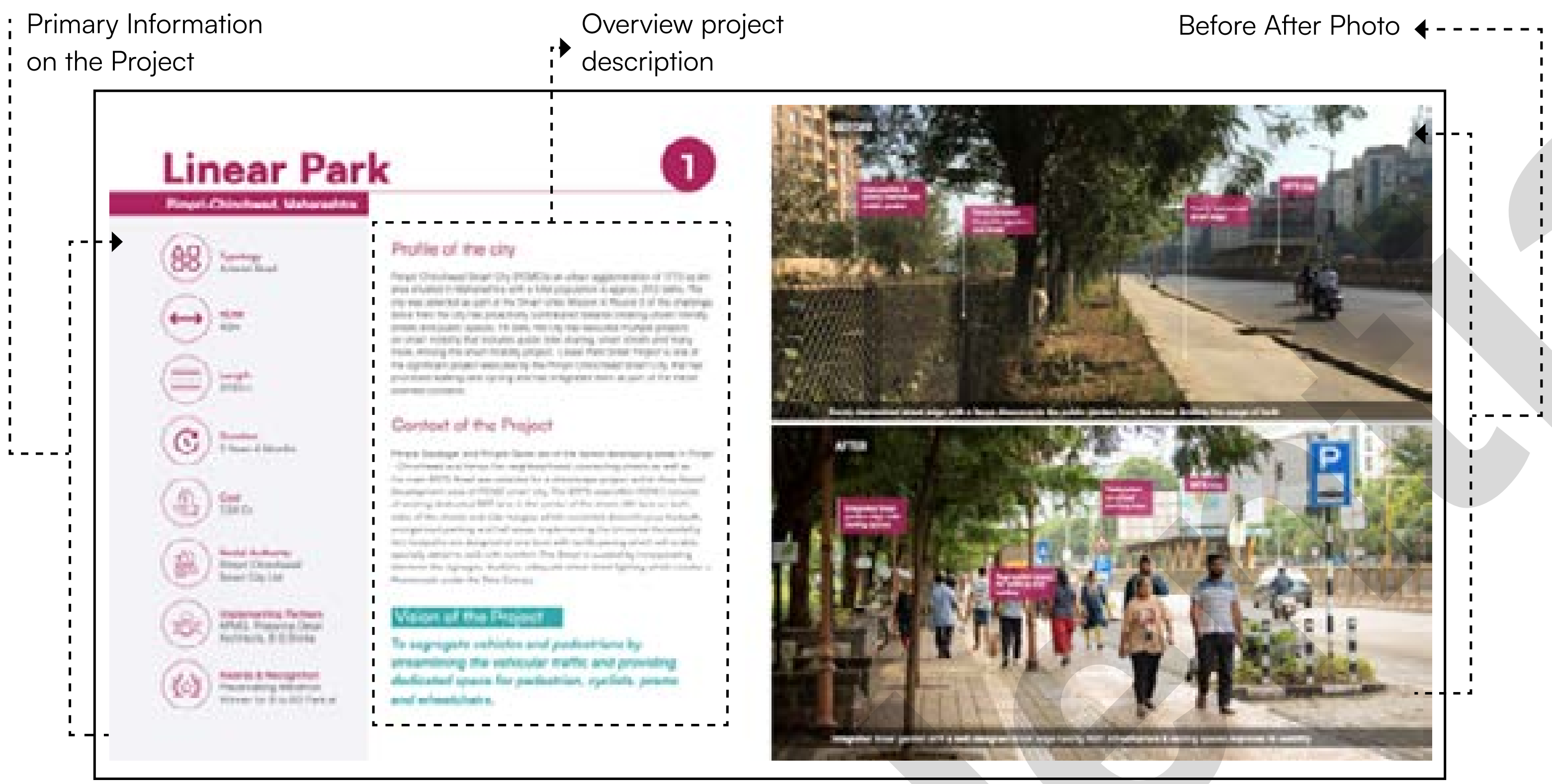
■ **Transit Streets** ■ **Neighbourhood Streets** ■ **Market Streets**

Identifying types of case studies

5 Identifying Detailed Case Studies

14 Identifying Overview Case Studies

How to read detailed case studies?


Primary Information on the Project

Overview project description

Before After Photo

Linear Park

1

Pimpri-Chinchwad, Maharashtra

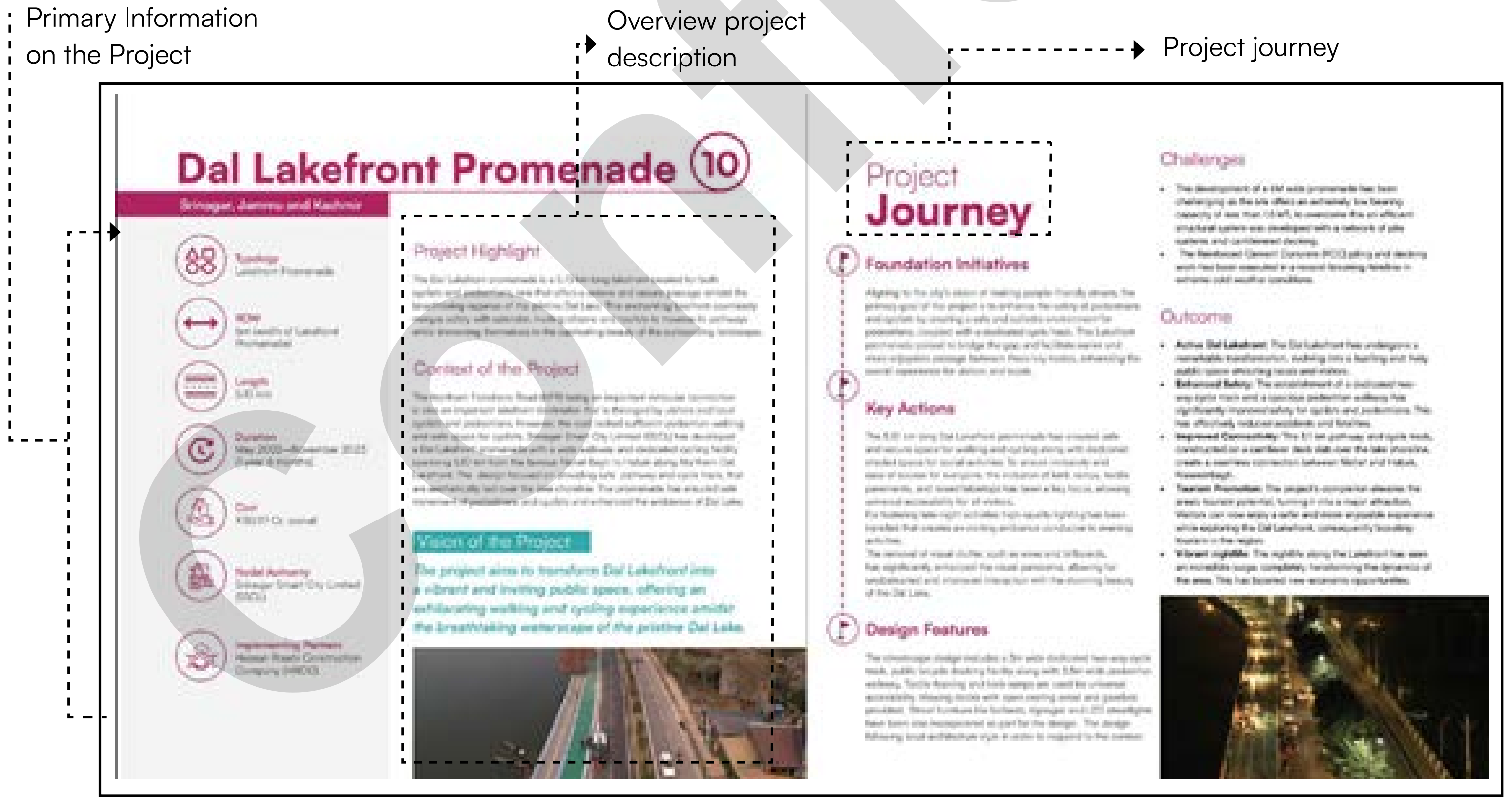
Profile of the city

Context of the Project

Vision of the Project

The following content of the chapter includes these four components, **Design Highlights, Project Journey, Stakeholder consultation, Challenges addressed & outcomes, Scale-up plan of the city**

How to read overview case studies?


Primary Information on the Project

Overview project description

Project journey

Dal Lakefront Promenade

10

Srinagar, Jammu and Kashmir

Project Highlight

Context of the Project

Vision of the Project

Project Journey

Foundation Initiatives

Key Actions

Design Features

Challenges

Outcome

1

Setting the context

India's Urban Streetscape

Streetscapes in India are vibrant, bustling, and full of life. From the narrow alleys of Old Delhi to the wide boulevards of Mumbai, the streets of India reflect the country's diverse culture. Street design in India is a complex and dynamic process that is continuously evolving. Over the last decade, street transformations have revolutionised how people look at and use streetscapes in various corners of the country. Many Indian cities still face challenges such as inadequate infrastructure, haphazard development, and traffic congestion that limit the potential of their street design. Hence, improving street design in India requires a comprehensive approach considering every city's unique needs and challenges.

In India, walking and cycling are an integral part of the transport landscape. As per the 2013 report on Urban Transport by the National Transport Development Policy Committee, the modal share for walking and cycling ranges from 30% in cities with more than eight million population to 52% for cities with less than one million population. Further, public transport trips also start and end on foot (or cycle). However, presently the allocation of road space in Indian cities is extremely biased and favours the private motor vehicles over the majority users comprising of pedestrians and cyclists

The Smart Cities Mission has built the capacity of cities to design and implement liveable, energy-efficient, adaptive and resilient projects across multiple contexts in the country. Over the last seven years, through various national challenges, like the Streets4People, Cycles4Change, and strategy like ' Complete Streets', several cities have implemented pilot projects demonstrating innovative solutions to multiple challenges. As a result of the mission, several cities saw a definitive shift from haphazard vehicle-centric streets to people-centric, lively streets. However, India's journey of street transformations is at a nascent stage. It demands a scale-up of the efforts to achieve long-term solutions. Independent pilots is not enough to make a change, the people centric transformation of streets should be in sync with the overall comprehensive mobility plan of the city.

The Problem of Streets in Urban India

For the last few decades, high economic growth rate and urbanization have been mutually dependent in urban India. Cities have been expanding rapidly as the growing number of migrants, mostly from rural areas come in search of opportunities. The increasing population has increased the demand for both mobility and real estate thus affecting the situation on streets and in public spaces. The sharp rising transportation demands have overwhelmed the existing street infrastructure and transport systems of India.

Traditionally, besides being the means of mobility, streets and public spaces in Indian cities have facilitated a large number of income groups to earn a livelihood and simultaneously satisfy them with basic needs. Due to the accelerated urbanisation in recent decades and the subsequent increase of density in cities, the mobility patterns of the people living in cities have changed particularly. As a result, the dependency on motorized vehicles has highly increased.

The huge flowers, wider roads, ring roads and radial streets etc. have gradually taken over the cities. And neither of these solutions has enhanced the non-motorised and public transport means nor assuages the problem in the long run particularly in the cities. With this emerging dominance of motorized transportation and prioritization on gigantic roads, streets in India have started experiencing increase in number of fatalities. Road fatality rates in India are 20-25 times that of developed countries. According to the 2017 report on road accidents in India by the Ministry of Road Transport and Highways (MoRTH), 56 pedestrians and 10 cyclists were killed daily in road accidents in 2017. To add to this issue, lack of investment into infrastructure for walking, cycling, and public transport is raising private motor vehicle ownership and usage. This shift has led to many Indian cities facing problems of traffic congestion, increased pollution, and poor air quality which compromises the liveability and health of the city.

In order to overcome this both central and state mission of India, have taken initiatives, that has triggered the shift from the use of motorized vehicle to walking, cycling, use of public transport and non-motorised as the major means of transportation in many Indian cities. Th is has been further elaborated in the following section.

Role of Smart Cities Mission in the Streetscape of India

Streets are the core component of any city's transport framework. They occupy around one-fifth of the total land area and are the most visible form of public space in the city. By nature, streets play a critical role in cities connecting spaces, people and goods, and thereby facilitating commerce, social interaction and most important- the mobility. From mobility corridors to neighborhood streets to pedestrianized market lanes, streets have framed the image of the city. However, when designing streetscapes, the streets are often regarded as just links in the road network, enabling travel in the city. This has resulted in inadequate, poorly designed streetscape.

In this light, Smart Cities Mission has emphasized the role of the streets as a connective matrix on which Smart Cities have grown, while embracing the essential requirements of being inclusive, connected, safe, accessible, multi-functional and liveable.

As COVID-19 brought our cities to a halt, citizens across India took to walking and cycling to access essentials and services, and even exercise. Leveraging this opportunity, the Smart Cities Mission launched Streets4People and India Cycle4Change Challenge, to inspire Indian cities to work with their citizens and experts to implement permanent walking and cycling-friendly infrastructure.

Over the past few years, Smart Cities Mission has actively developed safe walking and cycling infrastructure, by implementing policies and guidelines for healthy and complete streets - which culminated into a people centric streetscape.

Till date 1216+ projects in Smart Cities Mission have been contributed towards Smart Mobility. These projects include 2500+km of Smart streets with universal accessibility, designated pedestrian paths, 573+ km of cycle tracks and utility ducts. Furthermore, to enhance cycling activities across smart cities, 10,000+ bicycle deployed under public bike sharing and several awareness campaigns such as Cycle to Work have been promoted.

All these efforts have resulted in the implementation of various streetscape projects across Smart cities that have encouraged citizens to walk and cycle, improving their health while reducing motorized traffic, energy use and pollution.

This publication on 'Reimagining Streets of Indian Smart Cities' provides valuable lessons, approaches, inspiring practices on streetscape undertaken by smart cities to improve the overall visual character of the city while stimulating economic activities and enhancing the functionality of the city.

Confi

2

50 Case Studies of Streets

A

Transit Streets

Transit Streets, often running along commercial corridors, prioritize the street for pedestrians and transit. In some cases, transit such as buses, light rail, or streetcars have dedicated spaces between sidewalks. Other times, an even surface is designed for pedestrians, allowing transit to move slowly through the shared space. Transit case studies covers 26 smart streets/ road projects developed across different smart cities. Out of these 26 case studies 6 are detailed case studies and rest 20 are overview case studies.

1	Atal Path, Bhopal
2	Canal Corridor, Surat
3	Linear Park, Pimpri Chinchwad
4	MR4 Road, Jabalpur
5	Planetarium Road, Bengaluru
6	Smart Janpath, Bhubaneswar
7	Aundh Ravet, Pimpri Chinchwad
8	Alkola Circle Road, Shivamogga
9	Civil Lines, Sagar
10	Dal Lakefront Promenande, Srinagar
11	Dharmnath Marg, Belagavi
12	Dr Radhakrishnan Road, Tumakuru
13	Dedicated Cycle Track, Chandigarh

14	Ernankulam Smart Roads, Kochi
15	Green Mobility Corridor, Hubbali- Dharwad
16	Harbour Park Road, Visakhapatnam
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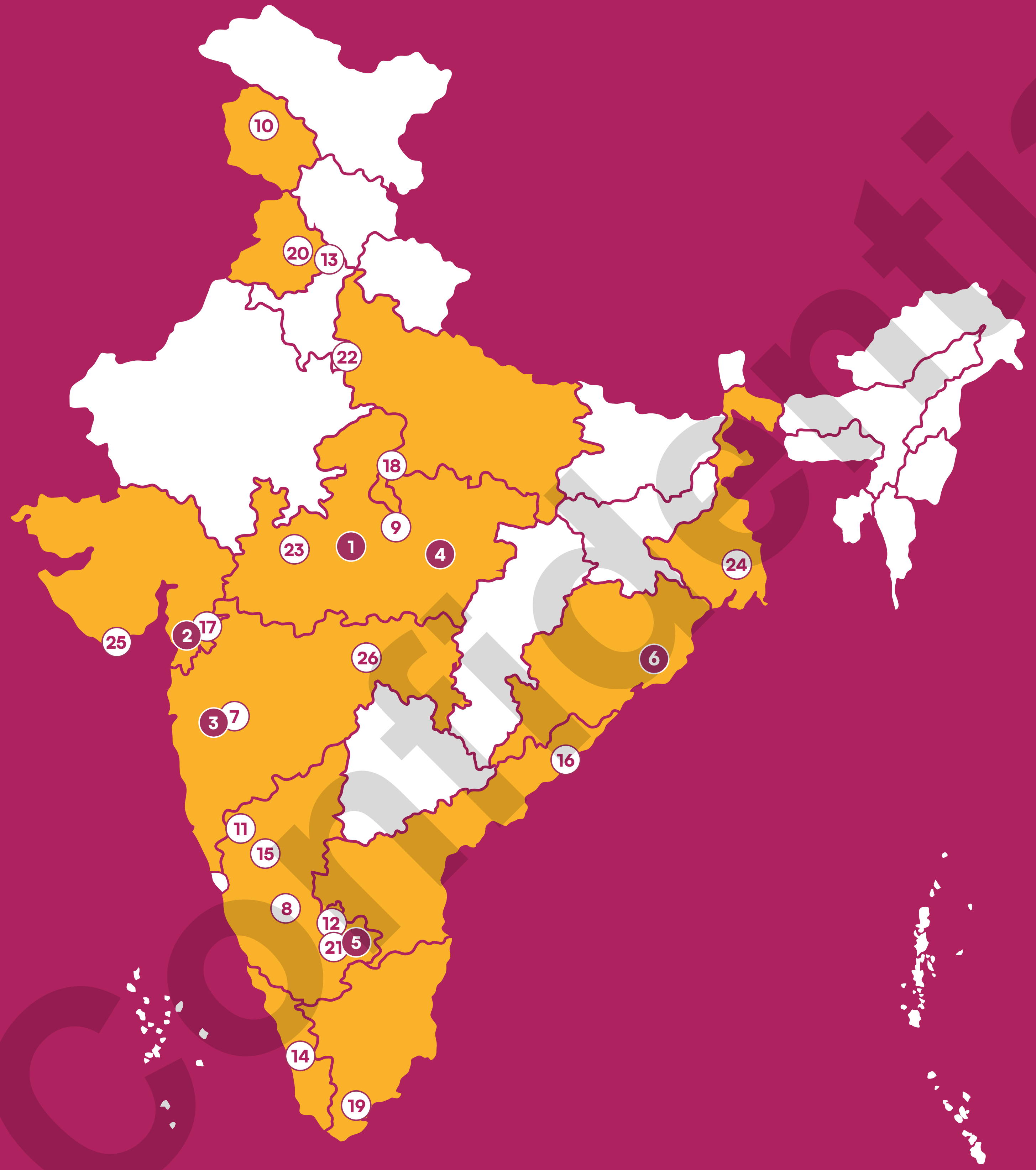
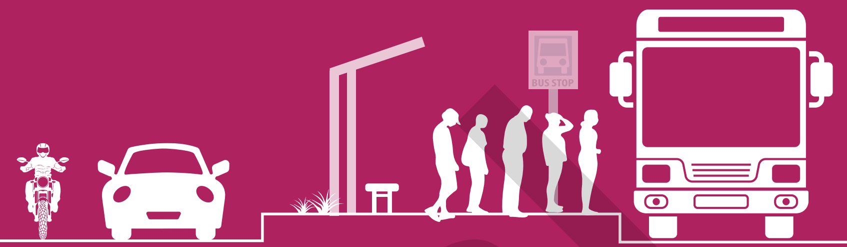
25	Saily Police Training Road, Silvassa
26	Wardha Road, Nagpur



Transit Streets

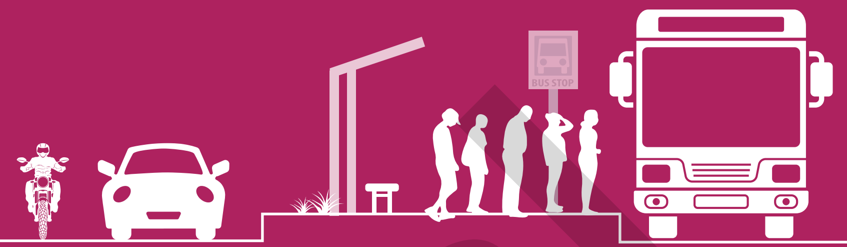


Name of Street	City	Typology	Landuse	ROW (m)	Length (km)	Cost / km	Duration months/yrs	Funding Sources	Project Initiated by	Public Participation?	Tactical Testing?	Traffic Calming Measures	O&M Responsibility
① **Atal Path**	Bhopal	Arterial	🟨🟦⬜⬜⬜🟧⬜	45	1.7	₹ 27.78 Cr.	3.3	🔴⚪⚪	SPV	✗	✗	Cobblestone pathways	🤝
② **Canal Corridor**	Surat	Arterial	🟨🟦🩷⬜⬜⬜⬜	60	3	₹ 18.13 Cr.	2.3	⚪🔵⚪	ULB	✗	✗	Rumble Strips	🤝
③ **Linear Park**	Pimpri Chinchwad	Arterial	🟨🟦⬜⬜🟩🟧⬜	45	3.9	₹ 7.34 Cr.	2.4	🔴🔵🟢	SPV	✗	✓	Raised Pedestrian Crossings & Cobblestones	🤝
④ **MR4 Road**	Jabalpur	Arterial	🟨🟦🩷⬜⬜⬜⬜	36	2.6	₹ 5.52 Cr.	2.5	🔴🔵⚪	ULB	✗	✓	None	🏛
⑤ **Planetarium Road**	Bengaluru	Arterial	⬜⬜⬜🟥⬜⬜⬜	10.5	0.5	₹ 14.50 Cr.	2.8	🔴⚪⚪	ULB	✗	✗	None	🤝
⑥ **Smart Janpath**	Bhubaneswar	Sub-arterial	🟨🟦⬜⬜⬜⬜⬜	60	5.8	₹ 13.72 Cr.	4.4	🔴⚪⚪	ULB	✓	✓	Rumble Strips	🏛
⑦ **Aundh Ravet**	Pimpri Chinchwad	Arterial	⬜⬜🩷⬜⬜⬜⬜	45	8	₹ 7.74 Cr.	2.4	🔴⚪⚪	SPV	✓	✓	Speed Humps	🏛
⑧ **Alkola Circle Road**	Shivamogga	Arterial	🟨🟦⬜⬜⬜⬜⬜	35	2.9	₹ 1.8 Cr.	3.9	🔴⚪⚪	SPV	✓	✗	None	🏛
⑨ **Civil Lines**	Sagar	Arterial	🟨🟦⬜⬜🟩🟧⬜	21	3.5	₹ 15.40 Cr.	1.9	🔴⚪⚪	SPV	✓	✗	None	None
⑩ **Dal Lakefront Promenande**	Srinagar	Arterial	🟨⬜⬜⬜⬜⬜⬜	6	5.1	₹ 6.00 Cr.	1.5	🔴⚪⚪	SPV	✗	✗	Rumble Strips	🤝
⑪ **Dharmnath Marg**	Belagavi	Arterial	🟨🟦⬜⬜⬜🟧🟪	30	2.5	₹ 13.62 Cr.	4.4	🔴🔵⚪	ULB + SPV	✗	✓	None	🤝
⑫ **Dr Radhakrishnan Road**	Tumakuru	Sub-arterial	🟨⬜🩷⬜⬜⬜🟪	20	0.7	₹ 8.83 Cr.	4.0	🔴⚪⚪	SPV	✓	✗	Table top Crossings	None
⑬ **Dedicated Cycle Track**	Chandigarh	Other	🟨🟦🩷⬜⬜🟧🟪	1.8	220	₹ 20.0 Cr.	2.6	⚪⚪🟢	ULB	✓	✓	None	🏛

🟨 Residential 🟦 Commercial 🩷 Institution 🟥 Public 🟩 Open Spaces 🟧 Mixed use 🟪 Industrial

🔴 National-SCM 🔵 State 🟢 ULB ✓ Yes ✗ No 🏛 Government 🤝 Private

Transit Streets



	Name of Street	City	Typology	Landuse	ROW (m)	Length (km)	Cost / km	Duration months/yrs	Funding Sources	Project Initiated by	Public Participation?	Tactical Testing?	Traffic Calming Measures	O&M Responsibility
⑭	**Ernankulam Smart Roads**	Kochi	Local	Residential, Commercial, Institution	9	13.8	₹ 3.15 Cr.	3.1	National-SCM, State	ULB	✗	✗	None	Private
⑮	**Green Mobility Corridor**	Hubbali- Dharwad	Sub-arterial	Residential, Commercial, Mixed use	3.5	5	₹ 22.58 Cr.	2.6	National-SCM, State	SPV	✓	✗	None	SPV
⑯	**Harbour Park Road**	Visakhapatnam	Sub-arterial	Residential	11	1.1	₹ 8.01 Cr.	4.5	National-SCM	ULB	✗	✓	Table top Crossings	Private
⑰	**Iconic Road**	Surat	Arterial	Residential, Commercial, Institution, Industrial	60	2.1	₹ 6.67 Cr.	3.3	PPP	SPV	✗	✗	Rumble Strips	Private
⑱	**Iconic Road Project**	Jhansi	Arterial	Residential, Commercial, Institution	30	1.6	₹ 5.60 Cr.	0.9	ULB	ULB	✓	✓	None	None
⑲	**Jeyaraj Road**	Thoothukudi	Arterial	Commercial	1	0.7	₹ 5.51 Cr.	2.1	National-SCM, State	ULB	✗	✓	None	Government
⑳	**Malhar Road**	Ludhiana	Sub-arterial	Commercial, Institution, Mixed use	27	1.1	₹ 32.01 Cr.	3.1	National-SCM	SPV	✗	✗	Table top Crossings	Government
㉑	**Race Course Road**	Bengaluru	Arterial	Commercial	29	0.6	₹ 4.00 Cr.	4.0	National-SCM	SPV	✓	✗	Rumble Strips & Table top	Government
㉒	**Smart Road Development**	Faridabad	Arterial	Residential, Commercial, Institution, Mixed use	30	24.3	₹ 12.60 Cr.	3.5	National-SCM	SPV	✗	✗	Rumble Strips	Private
㉓	**Smart Road Development**	Ujjain	Local	Residential, Commercial, Mixed use, Industrial	12	5.1	₹ 10.30 Cr.	4.3	National-SCM, State	SPV	✗	✓	Speed Humps	Private
㉔	**Street 165, 166**	New Town Kolkata	Sub-arterial	Residential	18	1.4	₹ 1.96 Cr.	1.8	National-SCM, State	ULB	✓	✓	Speed Humps	Government
㉕	**Saily Police Training Road**	Silvassa	Sub-arterial	Institution, Mixed use	15	0.7	₹ 2.34 Cr.	0.6	National-SCM	ULB	✗	✗	None	Government
㉖	**Wardha Road**	Hubbali- Dharwad	Sub-arterial	Commercial, Institution, Mixed use	30	6	₹ 9.50 Cr.	2.5	National-SCM	ULB	✓	✓	None	Private

Residential Commercial Institution Public Open Spaces Mixed use Industrial

National-SCM State ULB ✓ Yes ✗ No Government Private

1 Atal Path

Bhopal, Madhya Pradesh

Typology
Arterial Road

ROW
45m

Length
1.65 km

Duration
Nov 2017- Feb 2020
(3 years 4 months)

Cost
₹28.8 Cr. per km

Nodal Authority
Bhopal Smart City Development Corporation Ltd (BSCDCL)

Implementing Partners
Bhopal Smart City Development Corporation Ltd (BSCDCL), Bhopal Municipal Corporation, Ernst & Young LLP (PMC), Tata Consulting Engineers Limited (Project Design and Implementation)

Awards & Recognition
Placemaking Marathon Winner for 8 to 80 Park at

Profile of the city

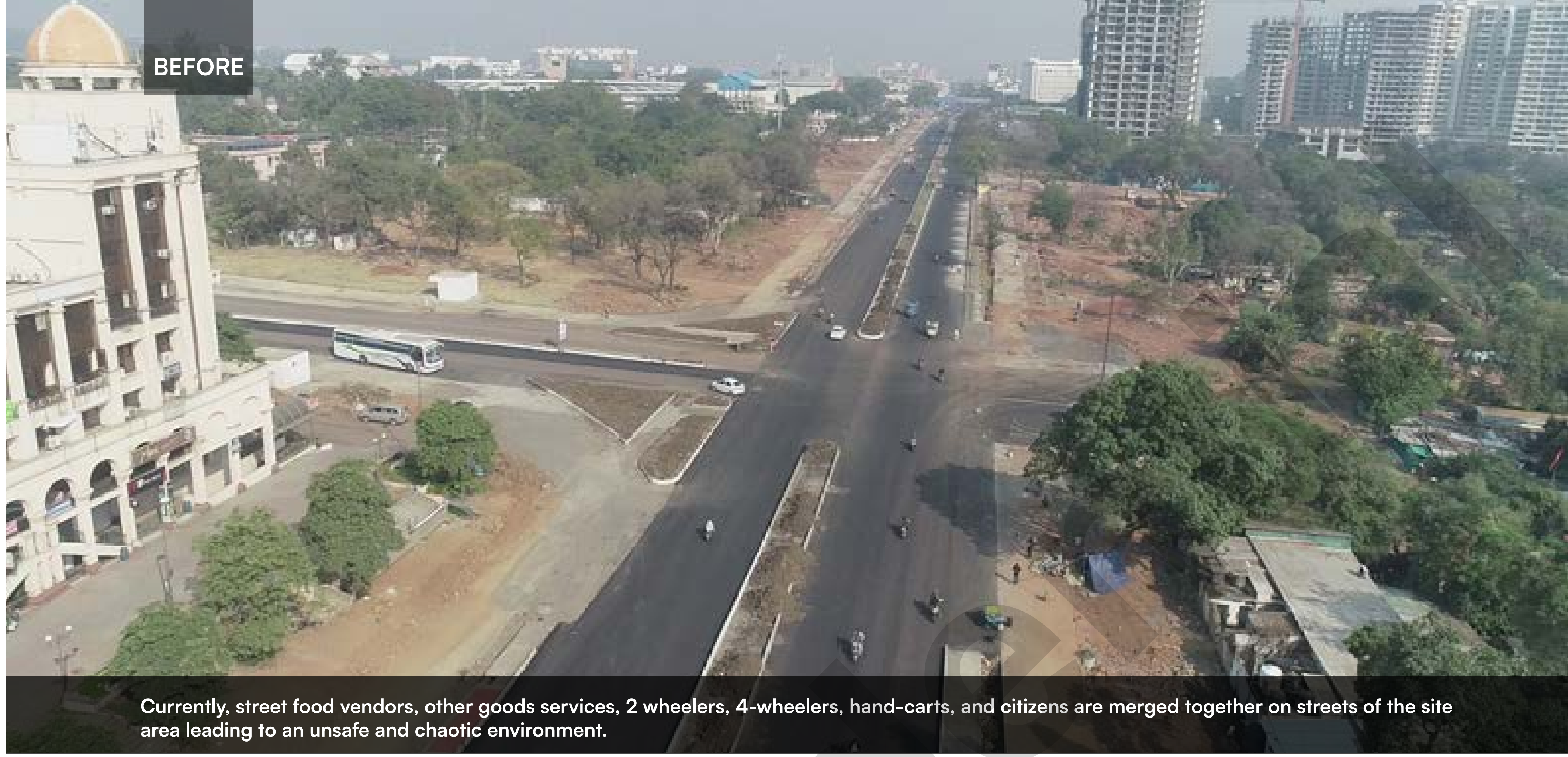
Bhopal was selected as Smart City in the first round of the Smart City selection process. Having a population of 17,98,218 and with an area of 285.9 Sq km, the city has undertaken 83 projects worth ₹3105 Cr under the Smart Cities Mission out of which the city has implemented Smart Mobility projects worth ₹380 Cr.

Context of the Project

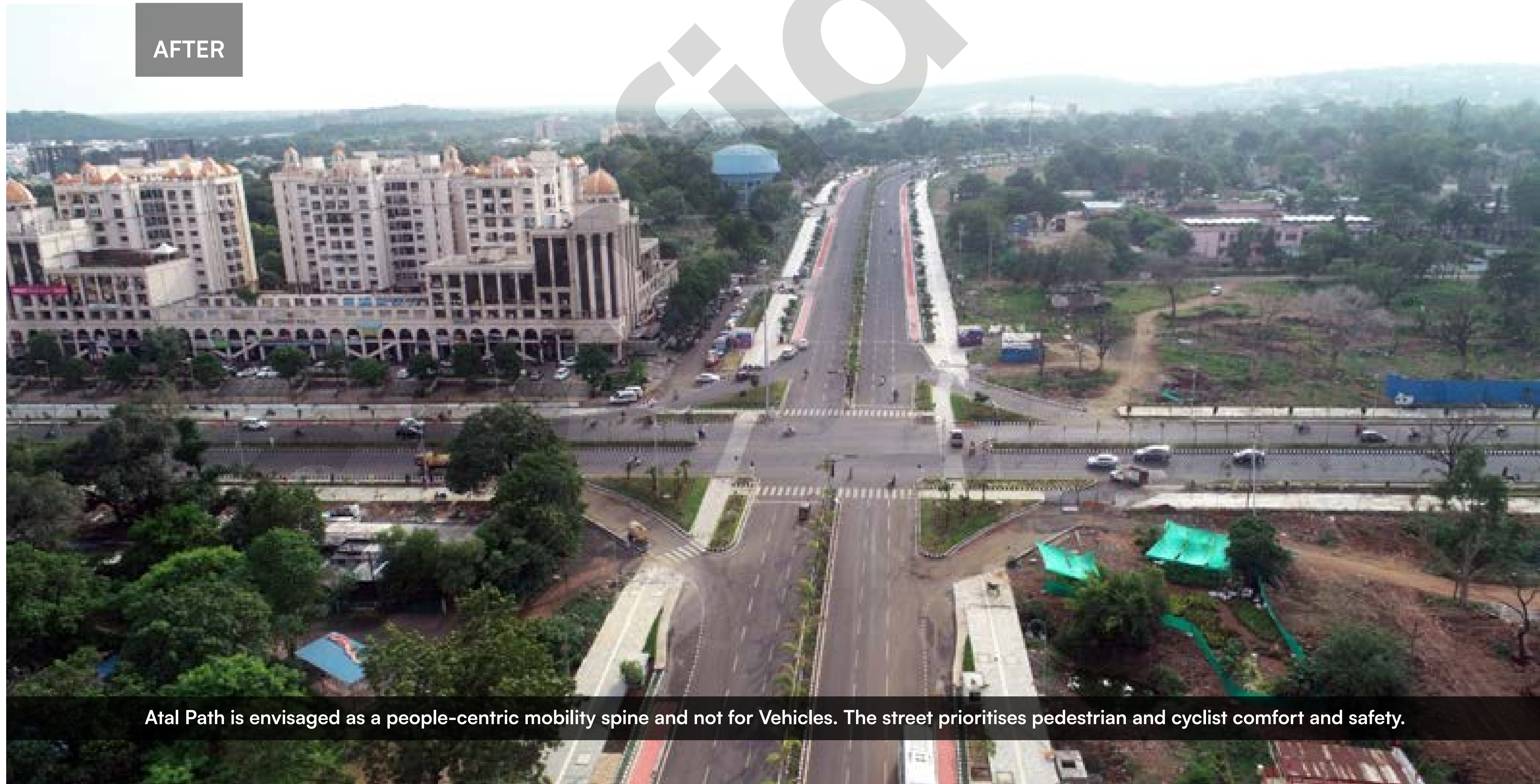
Bhopal undertook an area development of the New Market area, based on the principles of Transit-oriented Development. Atal Path is the central spine for this ABD and is developed as a model next-generation road with modern utilities and inclusive ROW for all modes of transport. The project is developed as a pedestrian and cyclist-friendly central spine running through the New Market area. This project is first of a kind project in Bhopal, that has integrated underground utility ducts as part of the ROW construction.

Vision of the Project

The greenfield project aimed to develop state-of-the-art street infrastructure, in the ABD area, that incorporates all design elements of a complete street and establishes a benchmark for future projects.

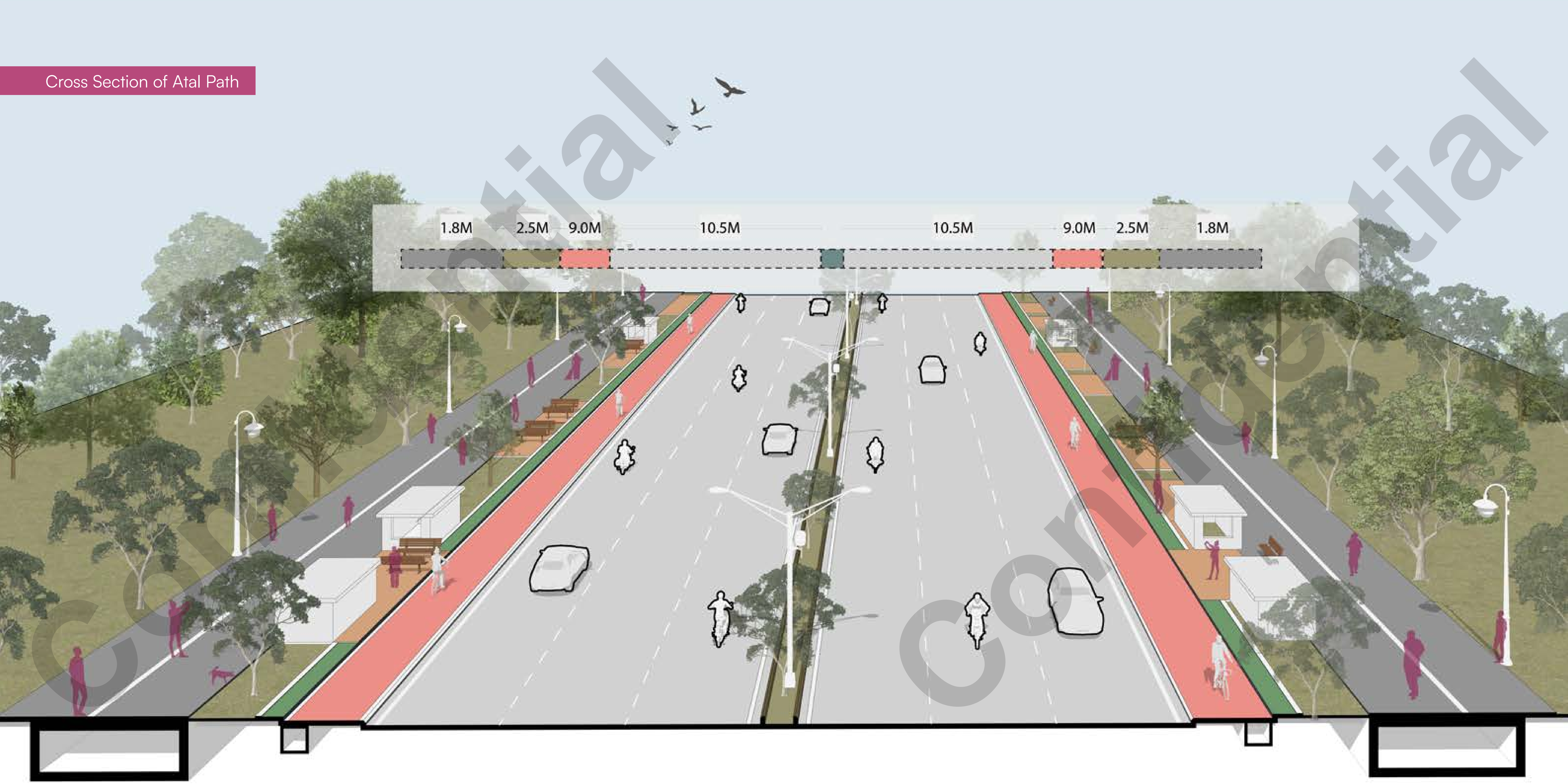


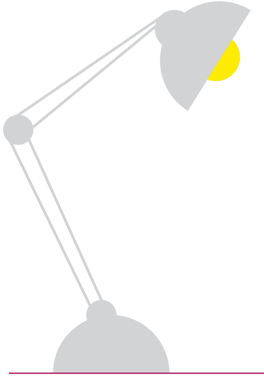
Currently, street food vendors, other goods services, 2 wheelers, 4-wheelers, hand-carts, and citizens are merged together on streets of the site area leading to an unsafe and chaotic environment.



Atal Path is envisaged as a people-centric mobility spine and not for Vehicles. The street prioritises pedestrian and cyclist comfort and safety.

Cross Section of Atal Path


1.8M
2.5M
9.0M
10.5M
10.5M
9.0M
2.5M
1.8M



Design Highlights

01 A 6.7m wide continuous footpath with elements like raised property entries to maintain a uniform, continuous walking surface at a uniform level

02 2.5m wide segregated cycle tracks on both sides at the footpath level along with cycle boxes at junctions have been implemented to improve cycling infrastructure.

03 Green verges to direct pedestrians to cross at the junction crossings.

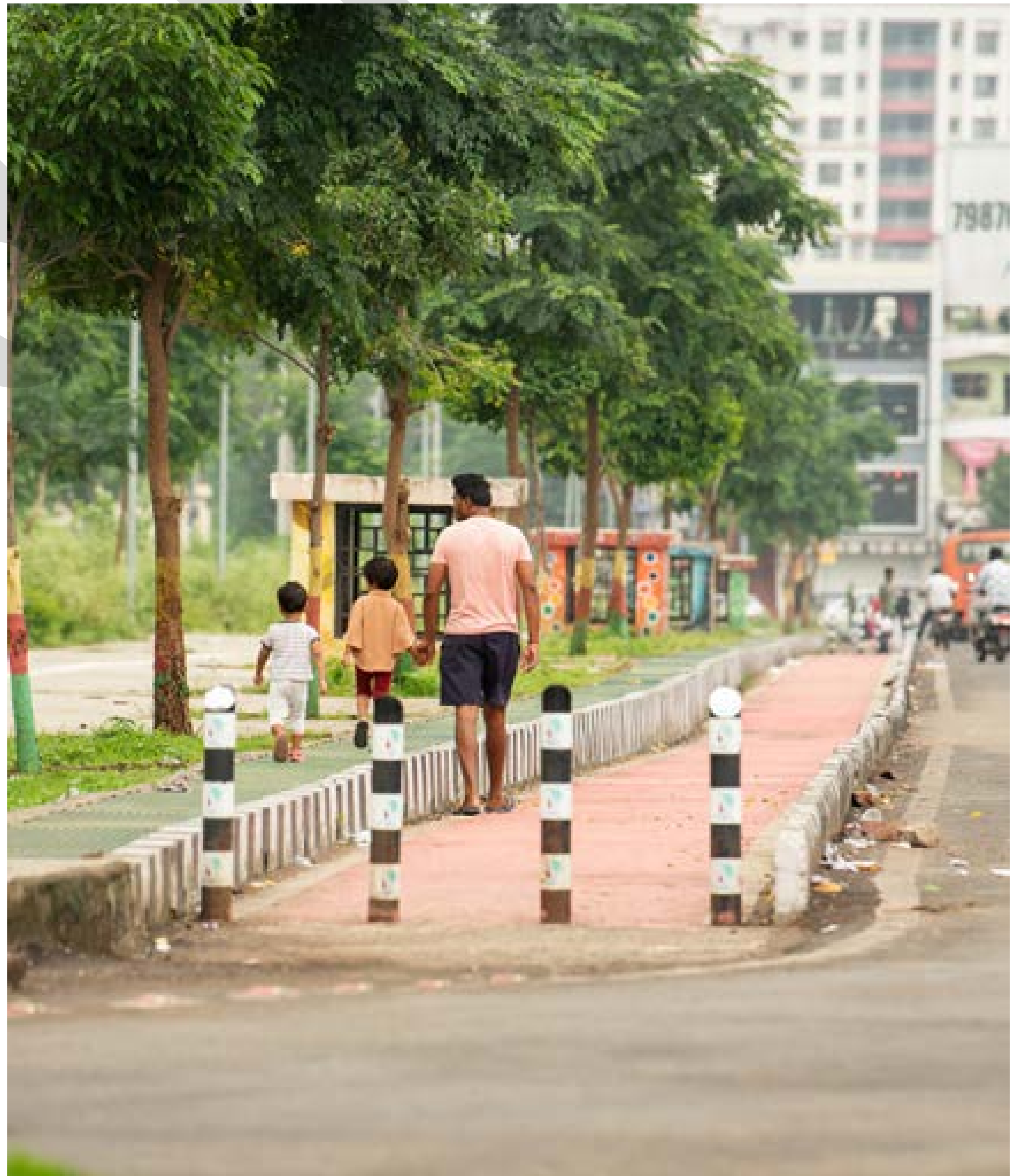
04 Traffic calming with cobblestone strips on the carriageway surface

05 Compact and realigned junction design to ensure slow turning of vehicles. Further to improve walking and cycling continuity at the junction, cycle tracks are lowered at the carriageway level. Bollards are installed along the crossings.

06 Addition of the utility trench below the cycle track was one of the key design features of the street transformation.

07 Materials like Bituminous concrete, Kota stone, tactile tiles for footpath, and Thermodrin FRP Covers have been used as part of the design.

Around 27,500 sq.m. was reclaimed from the vehicular space for NMT infrastructure.



अटल पथ
ATAL PATH

Wide footpaths with design elements like seatings, lighting, etc

Newly designed streetscape integrated with the adjacent linear garden

Project Journey

Stakeholder engagement

01

Laying the foundation

Bhopal Smart City adopted the Health Streets Policy and the Street Design Guidelines for implementing a Complete Street model in the city.

✓ Complete ✗ Not yet started ● Ongoing

✗ **Parking Policy**
✗ **Vending Policy**
✓ **Healthy Streets Policy**
✓ **Street Design Guidelines**

02

Building the team's muscle

Further, Bhopal Municipal Corporation, Madhya Pradesh State Electricity Board, Madhya Pradesh Water Resources Authority, Indus Towers for laying of Optical Fiber Cables were taken on board for the coordinated decision-making and approvals during the construction of the project. A robust team consisting of engineers from the Bhopal Smart City Development Corporation and Bhopal Municipal Corporation along with external consultants for Strategy and Project Monitoring, Project Design and Implementation was formed. In addition, there were regular capacity building workshops were conducted for the engineers of Smart City and Corporation.

Discussion at site

03

Doing things together

Extensive Citizen Engagement

As this was first of its kind project in the city, the Bhopal Smart City team conducted extensive citizen engagements to ensure the successful implementation of the project. To ensure the development of the street is centralized around the needs of the citizens and caters to the future-oriented demand of the area multi-stakeholder consultations were organized by Bhopal Smart City where residents, consultants, engineers, government agencies, planners, contractors were invited to discuss possible solutions and feedbacks for the proposed road. These were conducted through focused group discussions and on-site citizen engagements programmes.

The team also assessed the public opinion through targeted feedback forms. Consultation and Feedback from Residents and Property owners was done on a one-to-one basis, in person.

04

Monitoring, learning & improving

Monthly Review Meeting

Monthly Progress Review Meetings were held with Project Design Consultant and the Construction firm with the Engineer-in-charge of BSCDCL

Operation and Maintenance

The Street is currently under the defect's liability period for five yearstherefore the O&M is under the responsibility of the construction contractor.

CCTV Monitoring

Several acts of vandalism have been reported damaging street furniture and dustbins on the street. Smart city has filed complaints in local police station, the installation work of CCTV cameras at Boulevard Street to deter such future occurrences will commence shortly.

Impact Assessment of the project

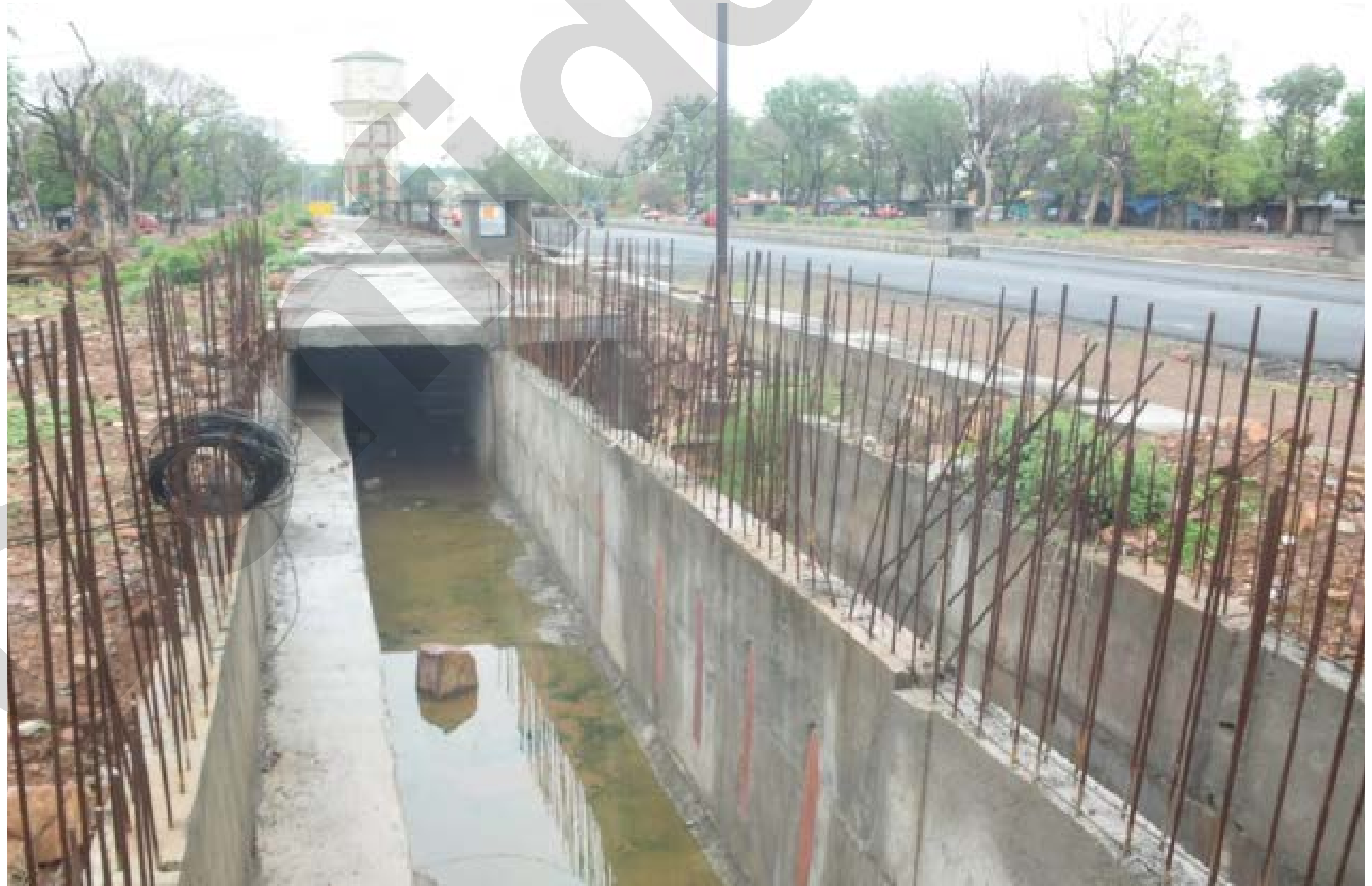
Assessment for the same is under process though Atal Bihari Vajpayee Institute of Good Governance and Policy Analysis.

Construction Phase

Innovative Solution: **Utility Management**

Utility management was one of the primary focuses of the street transformation. Under this initiative, utility trenches were laid below the cycle track to carry key utilities like the water supply, stormwater, sewage line, etc. The design and laying of utilities was done with discussions with the departments in the city.

In order to avoid obstructions in the cycle track, an 800 m deep ventilation shaft is provided adjacent to the trenches, below the multi-utility zone. The city has provided access to the tunnel at around ten locations through this ventilation shaft. This design detail ensures lesser disruption to the NMT infrastructure during the repair and maintenance of the underground utilities.



Challenges Accepted & Addressed

Site clearance and relocation of government officials: In order to integrate the smart road with dedicated bicycles and pedestrian paths the site was cleared, and additional land was incorporated. The government quarters that were adjacent to the road were demolished to obtain additional land. The demolition process was challenging, as it was a time-consuming process. However, all the government officials have been relocated to another advanced government housing complex project made under the Smart Cities Mission.

Laying of utility ducts: The biggest challenge was to construct underground utility ducts on both sides of the road. For the laying of the underground ducts hard rock excavation was done through controlled blasting.

Relocation of shop owners: There was major pushback from the shop. However, through regular stakeholder consultation with the shop owners, the shops were relocated at a subsidized rate to the Haat Bazaar a prime market in the ABD Area.

Outcomes

Enhanced connectivity and local economy: The project have not only enhanced connectivity but has also contributed to accessibility, increased local employment and is considered as one of the most happening places of Bhopal to visit and spend quality outdoor time with friends and families. The improved infrastructure has made it easier for customers to reach out, resulting in increased footfall and a subsequent boost in sales because of the pre-established refreshment shops, Showrooms and Hawkers that are increasing over the years. Increase in sales 15% of the local businesses in the area.

Increase in property rate: The project has led to a significant increase in local real estate. Post implementation of the project and with the improved infrastructure there has been an increase in the desirability of the area which led to a surge in demand for residential as well as commercial property in and around the area. Residential Property prices saw an increase of 15% over the last few years.

Reclaimed space for people: 27480 sqm of space reclaimed for pedestrians and cyclists after the implementation of the project.

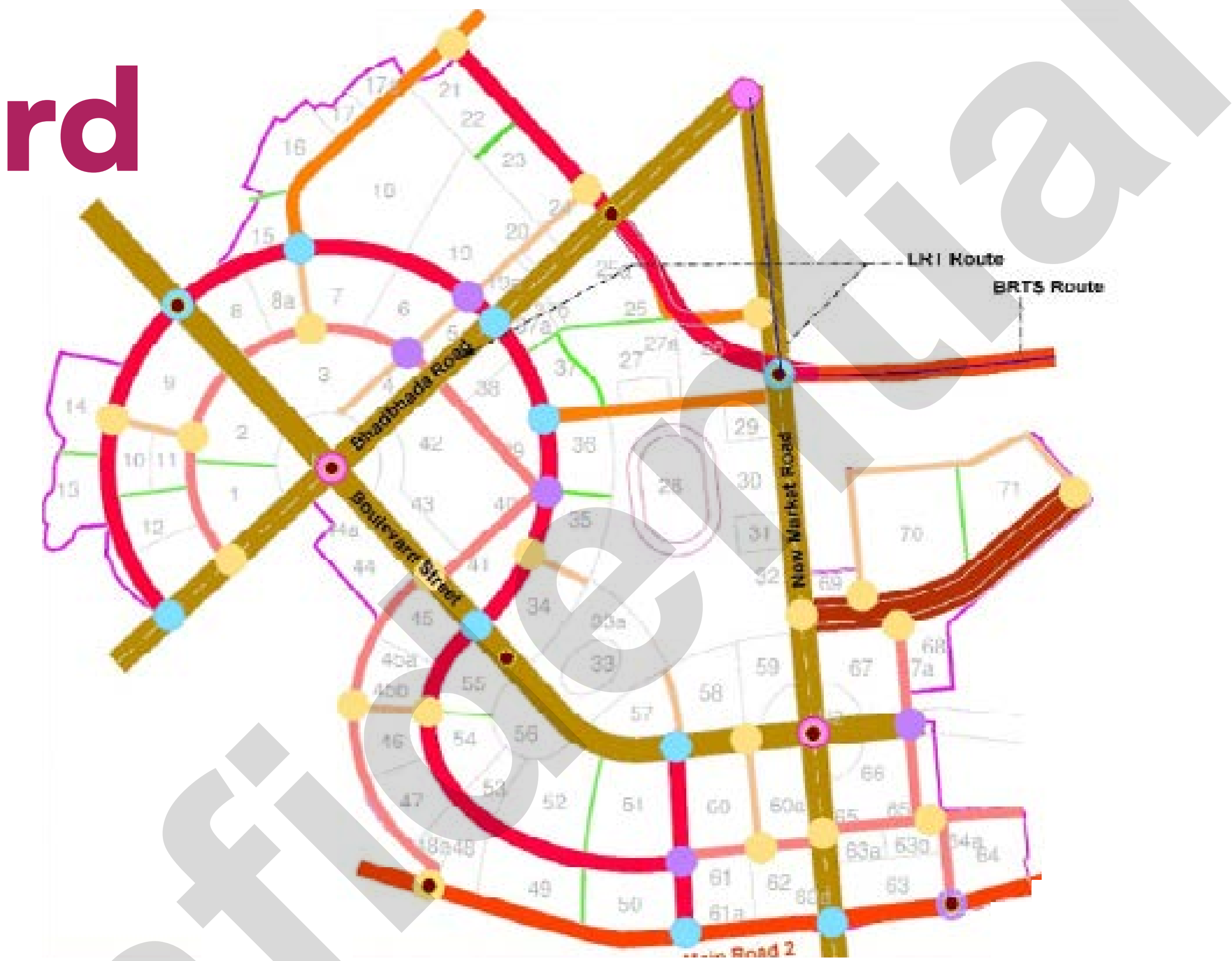
Confid

Citizen Impact Stories

> *Atal Path has increased the footfall in the area, my daily income has almost doubled due to the newly designed road. People come here in the evenings to relax with family and enjoy the street food*

-Mr Milan Gupta, Milan Chinese stall owner at Platinum Plaza Junction

Way Forward

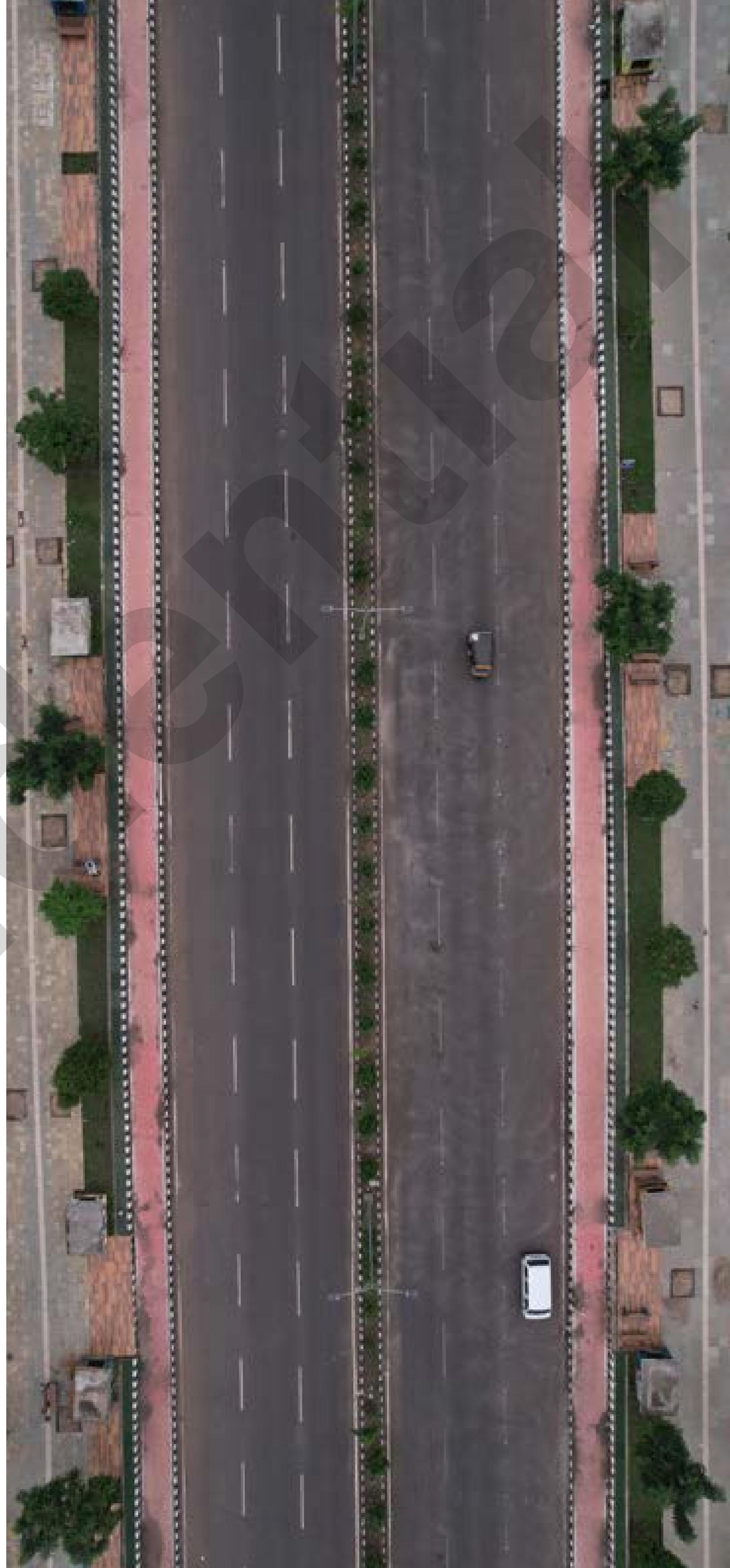

Bhadbhada Road
Boulevard Street
New Market Road
LRT Route
BRTS Route
Main Road 2
120m ROW
45m ROW
30m ROW
24m ROW
18m ROW
12m ROW
8m ROW
Multi-Modal Intersection
At-Grade Intersection
T-Junction on Service Road
Minor Intersection
Bus Stops with IPT Facility
MR Major Roads (60-30m ROW)
MNA Minor Roads (21-18m ROW)
MHR Minor Roads (12m ROW)
P Pedestrian & Cycle Tracks

Scaling-up the transformation

Bhopal Smart City mission focuses on developing NMT infrastructure as a positive step towards creating a more sustainable, healthy, and livable city. By prioritizing NMT, Bhopal is not only promoting active fitness and reducing pollution but also enhancing social and economic inclusion.

The NMT Network Plan for ABD in Bhopal is developed to identify and transform a combine length of 29km of segregated cycling track and footpath in a three phased manner demarcated based on the widths of roads. The master plan design has taken into consideration the concept of complete street designs with pedestrian and cycling friendly streets to be developed across the 18-45m RoWs. The development of this NMT infrastructure would prioritize needs of all users and create a safe, accessible, and pleasant environment for the community members. This model has already been utilized as a framework in construction of a combined length of 15.5 Kms NMT infrastructure in the ABD area.

Atal Path



2

Canal Corridor

Surat, Gujarat

Typology
Arterial Road

ROW
60m

Length
3 km

Duration
Nov 2017- Feb 2020
(2 years 3 months)

Cost
₹18.13 Cr. per km

Nodal Authority
Surat Municipal Corporation, Surat Smart City Development Limited

Implementing Partners
Centre Environmental Planning and Technology (CEPT) & Sardar Vallabhbhai National Institute of Technology (SVNIT) for Planning and Design, Ranjit Buildcon (Contractor), Mahimtura Consultant Pvt. Ltd (PMC)

Awards and Recognition
'Project Award under 'Built Environment' category by ISAC 2020

Profile of the city

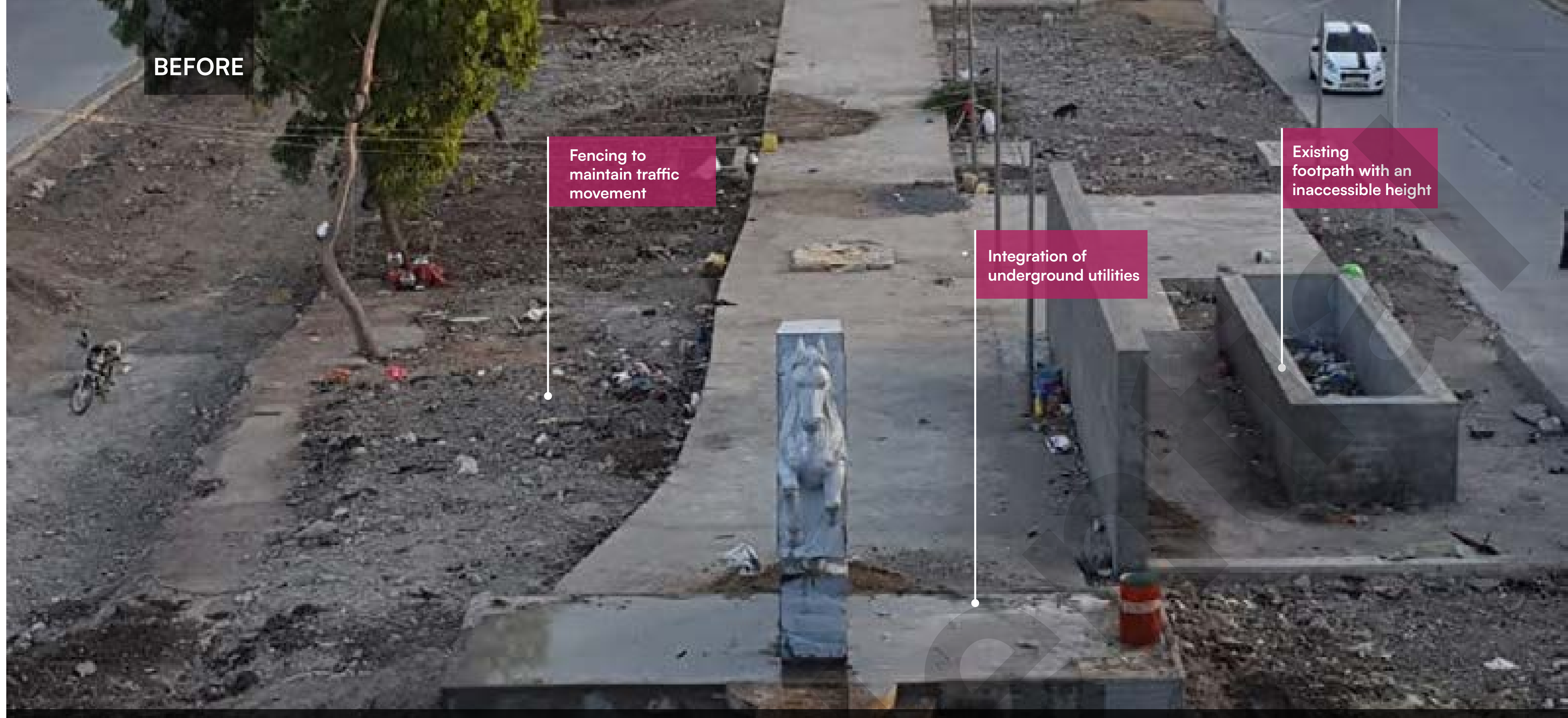
Surat, the 8th largest city in India and 2nd largest in Gujarat, is one of the biggest contributors to the GDP of the country, owing to its robust diamond and textile industry. The city has a population of 4.7 million (Census 2011) and covers an area of jurisdiction of approx. 475 sq.km. Consistently ranked among the best performing smart city among the 100 selected smart cities in the country, Surat Smart City has enhanced the quality of life of the citizens by providing equal access to the best quality physical infrastructure, social infrastructure, and mobility, while protecting the ecology and preserving the culture of the city. Surat ranked 2nd among 51 million+ cities in India in the Municipal Performance Index 2020 and ranked Fifth among 49 million+ cities in the Ease of Living Index 2020. The city has undertaken 82 projects worth ₹2,902 Cr., of which it has already completed 98% of the projects.

Context of the Project

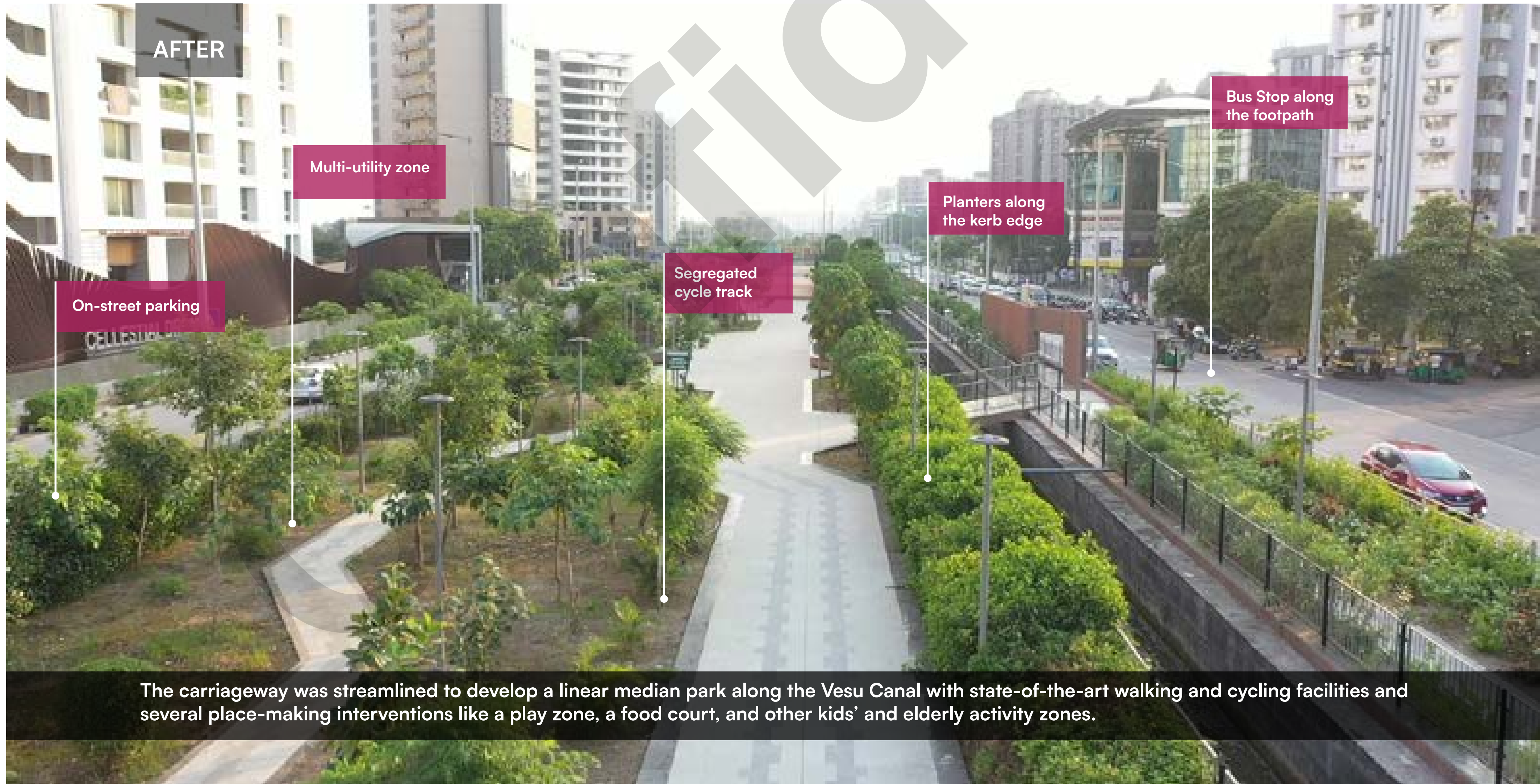
Canal Corridor is located in a prime residential zone and was used for dumping. This led to the degradation of the canal, causing issues for the residents. Surat Municipal Corporation initiated the project to transform the corridor into a vibrant, safe, healthy street for its residents. For this, the city introduced a recreational zone along the canal with the 13.5-meter-wide multi-purpose, recreational, and landscaped area that runs through the center of the road. The project is being maintained through a unique, self-sustaining model.

Vision of the Project

The project aimed to improve mobility and liveability of the neighbourhood by resolving the unhealthy conditions prevailing around the canal, curbing the on-street encroachments and developing a vibrant recreational space along it.

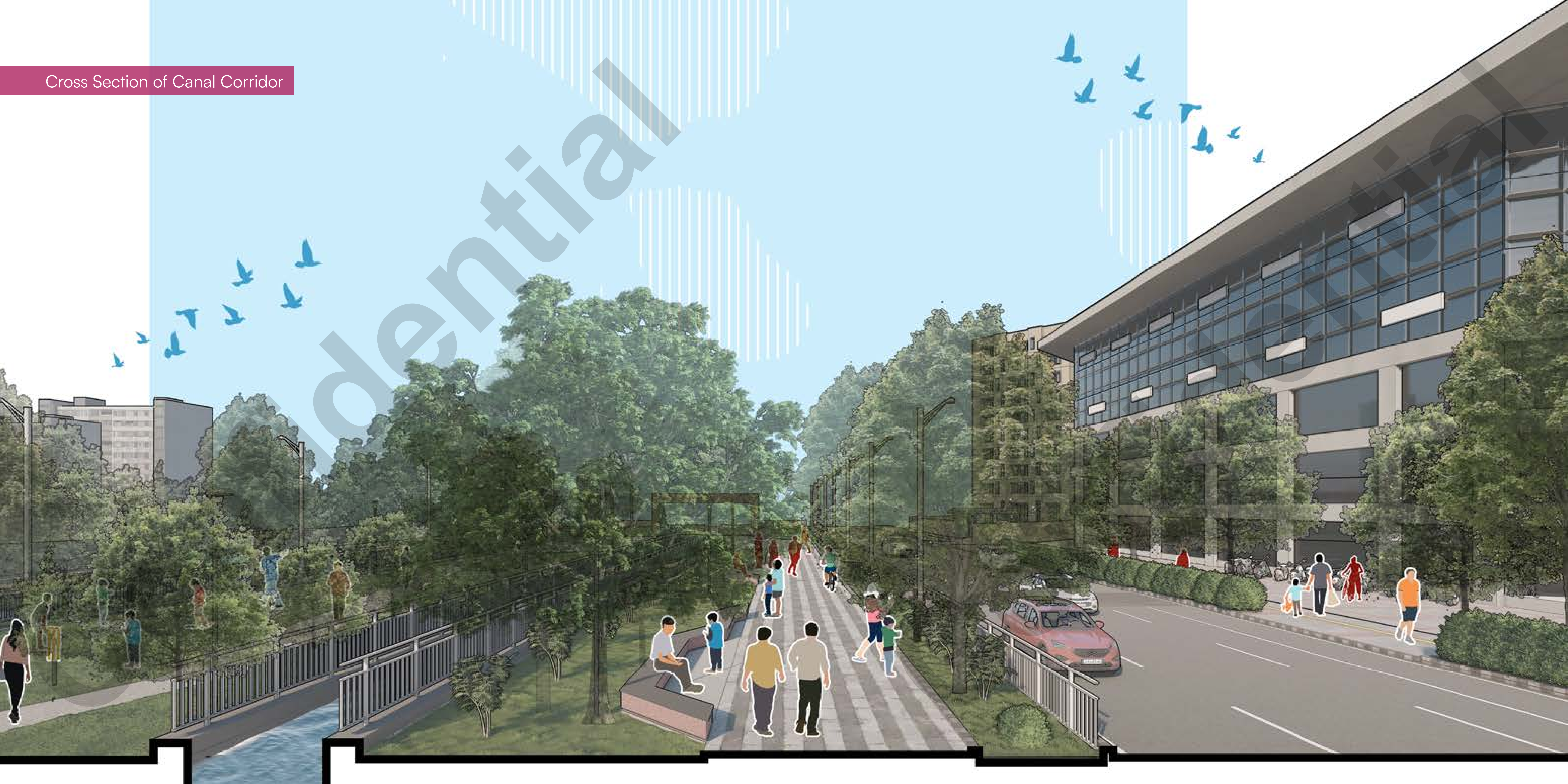

BEFORE
Fencing to maintain traffic movement
Integration of underground utilities
Existing footpath with an inaccessible height

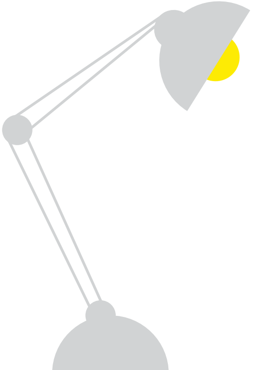
Earlier, the shoulder space along the canal was used as a dump site with encroachments on the wide carriageway.



The carriageway was streamlined to develop a linear median park along the Vesu Canal with state-of-the-art walking and cycling facilities and several place-making interventions like a play zone, a food court, and other kids' and elderly activity zones.

Cross Section of Canal Corridor





Design Highlights

01 Both sides of the five-metre-wide canal are developed as a13.5m wide median linear park. It includes walkways, recreational activities, shopping zone, and kids play area.

02 The road is exclusive, dedicated and attractive 10.5-metre CC road with a 2.5-metre footpath on both sides including street furniture.

03 The design of the footpath includes a 1.0-metre buffer zone with trees and shrubs to achieve an obstruction-free walking zone and avoid the misuse of footpath as parking space. Traffic and road signs are also erected in buffer zone at sides/above roads to guide/caution road users.

04 The tactile paving tile and bollards are installed at entry points to ensure universal access.

05 Traffic calming measures such as rumble strips, speed regulatory and cautionary signages integrated as part of the streetscape.

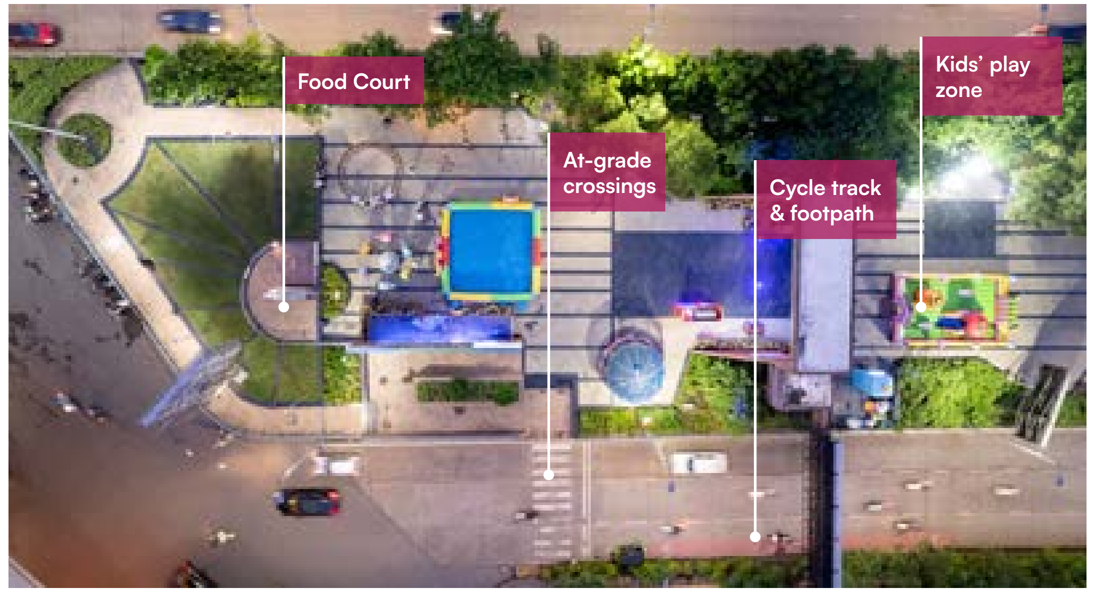
06 Slipform paver are used for the construction of this 60 m wide cement concrete road.

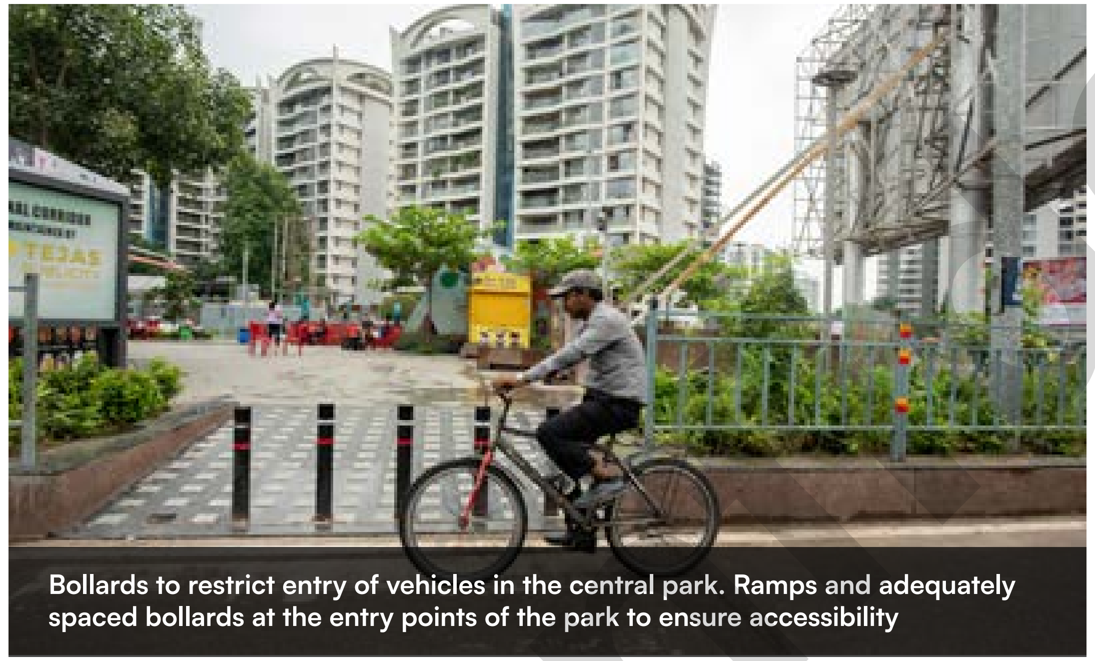
07 Use of seasonal plants in landscape, material selection, etc. was done keeping in mind the sustainability of all the interventions.

08 The overall landscape has been designed in such a way that specific species of columnar trees and flowering shrubs are planted at the edge of road as a green belt towards of footpath, so that they do not hinder the pedestrian on footpath and all other elements like Traffic sign board, Light pole, etc. are installed in green belt.

09 Stormwater drains are provided to prevent waterlogging on the street.

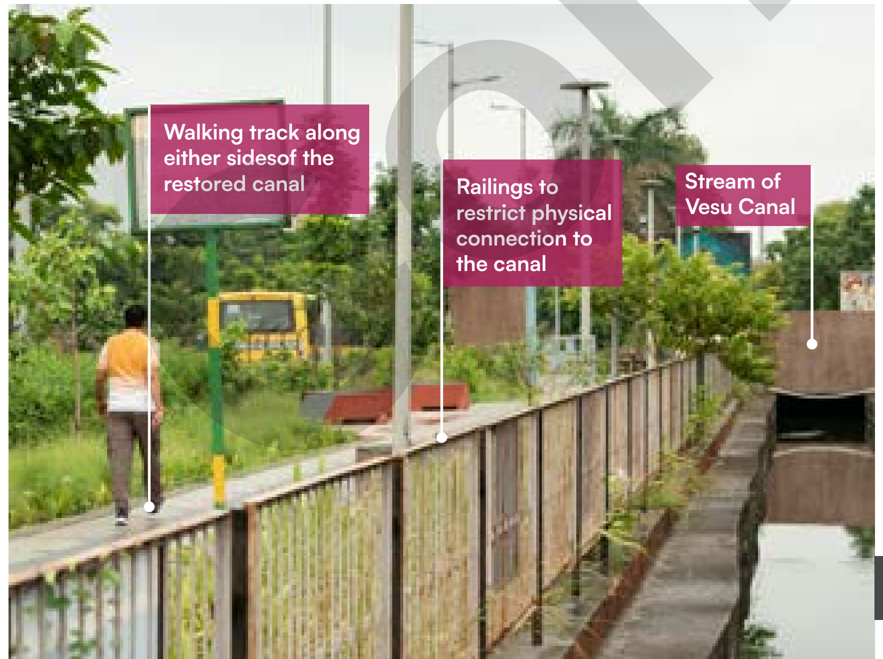
Shaded walkway in the median park along the exisiting canal





Bollards to restrict entry of vehicles in the central park. Ramps and adequately spaced bollards at the entry points of the park to ensure accessibility

Seatings along the landscaped areas



Walking track along either sidesof the restored canal
Railings to restrict physical connection to the canal
Stream of Vesu Canal

Shaded walkway in the median park along the exisiting canal

Project **Journey**

01
Laying the foundation

Surat Street Design Guidelines have provisions for different types of right of way, junction design, intersection design, food park guidelines and street marking design guidelines. Use of the manual is mandated for various engineers working in different zones and departments of the ULB. This ensures appropriate and adequate street infrastructure in the city.

✓ Complete ✕ Not yet started ● Ongoing

- ✓ **Healthy Streets Policy**
- ✕ **Vending Policy**
- ✕ **Parking Policy**
- ✕ **Street Design Guidelines**

02
Building the team's muscle

Team of technical experts
A consortium of technical experts from CEPT University Ahmedabad , for Architecture planning and design and SVNIT Surat, for infrastructure and civil design was formed for the project. These teams worked closely with the contractor and the management consultants. Being a local institute, SVNIT usually reviews most of the infrastructural projects in the city.

03
Doing things together

The primary implementing agency for the project was the Surat Municipal Corporation that worked closely with the Surat Smart City to implement the project.

The key challenge during the project was to shift existing network of utilities that obstructed the road construction but with coordinated efforts of the Corporation, Smart City and the team from the technical experts it was implemented successfully. Utility crossings were provided at every 250m interval on both side of canal to prevent future digging. It was specifically designed to shift the various inlet chambers, manholes and utility chambers to the edge of service road towards the footpath for draining off the storm water effectively.

CANAL CORRIDOR
MAINTAINED BY
TEJAS PUBLICITY
Lite Bite

04
Monitoring, learning & improving

The canal corridor project is designed to be self-sustaining by providing the operation and maintenance to a third-party agency and generating revenue for the smart city.

The total maintenance and housekeeping work and operation of various amenities are carried out by the agency named Tejas Publicity, and the contract has been awarded for a period of 20 years.

The agency carries out the operation and maintenance of the project from the revenue generated from food zone operations, advertisement rights, parking rights, etc.

Innovative Solution: Parking Management

The project has provisions for food kiosks, kids' play zone, multi-utility space, and parking management to ensure self-sustainenance of the project. The revenue generated from these activities is used for operations and maintenance of the entire street.

The parking is managed by the third-party agency through a warden-based ticketing system. The parking pricing is primarily based on Surat's Parking Policy, adopted in 2018.

The agency, Tejas Publicity, was onboarded through a tender bid, in which they bid for approx 13lakhs to 15lakhs per year to Surat Municipal Corporation for a contract period of 20 years.

Challenges Accepted & Addressed

Alignment of underground utilities: As the canal passes through the centre of the street, managing the existing utilities below the pavement was a challenge. With continuous coordination with Hydraulic department, Drainage department, Storm water department, Street light department of Surat Municipal Corporation and other utility provider such as Reliance Jio, Reliance Infra, BSNL, DGVCL, Etcon-site helped to resolve the issue.

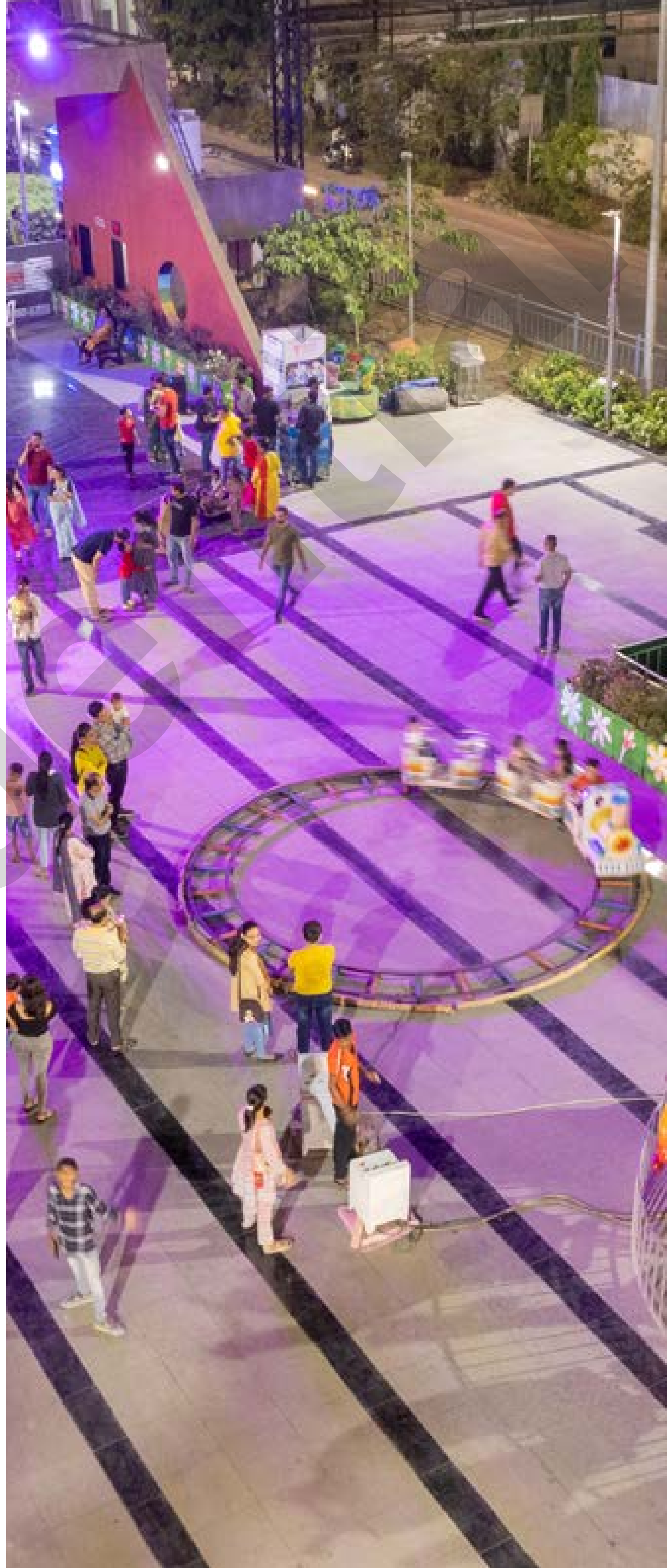
Development of linear park: Initially the entire 60m ROW, was occupied for vehicular movement, which was challenging during the construction stage. However, through effective implementation of town planning scheme, the road was redesigned by integrating Linear park corridor at the median of the road.

The simultaneous development of pavement and the linear park was a challenge and the organized planning helped timely completion of the project.

Outcomes

Increase in footfall: After the development the footfall and recreational activities were increased manyfold. On the weekends, the footfall reaches around 3000 people per hour, while and also the traffic movement has also improved.

Reclaimed space for people: 24528 sqm of space transformed as linear garden while 4500+sqm for pedestrians and cyclist after the implementation of the project



Citizen Impact Stories

> *“‘This walkway is the best place for outdoor games for our children. Before the development of walkway our children used to play mobile games only in their free time but now in evening time we take them to this walkway where they can play outdoor games and enjoy a lot with their friends which has enhanced their play outdoor games and enjoy a lot with their friends which has enhanced their healthy lifestyle. Also, citizens spend their quality time with their families in this linear garden”*

- Dr Hetal Patel, Paediatrician

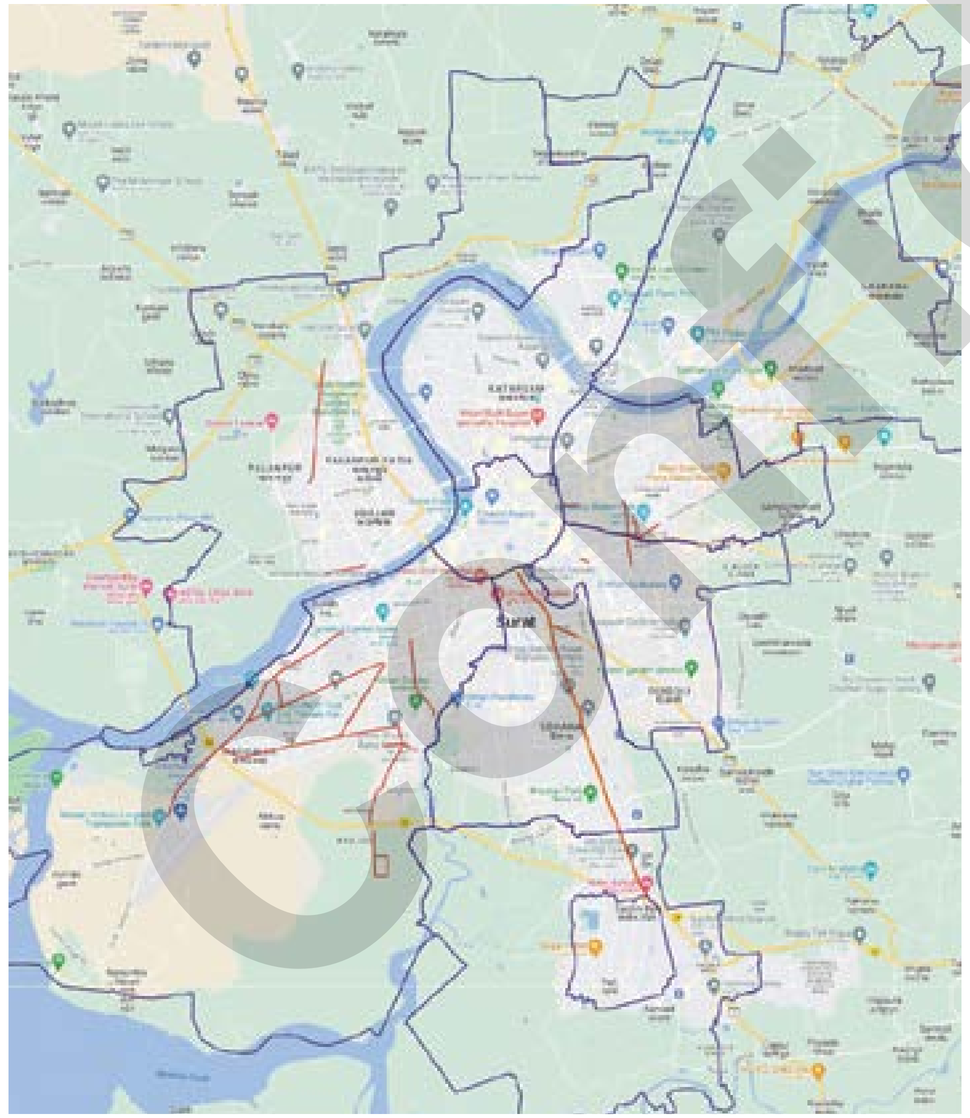
Way **Forward**

NMT Scale-up Plan

To work towards this goal, Surat Smart City has proposed a phase-wise cycle network plan for the entire city. This plan would be executed in seven phases over the next 3 years.

In addition, Surat has also developed a three year action plan consisting of the following programmes-

- A network of cycling infrastructure in industrial areas,
- Makeway 30- Making a neighbourhood cycle and pedestrian friendly.
- Cycle to School- Making safe schools zones



Scaling-up the transformation

Vision- By investing in dedicated cycling and walking paths, involving the community in decision-making, and implementing supportive policies, the city aims to create a sustainable and inclusive transportation system throughout the city. Through strategic planning, Surat City is determined to create an environment where active mobility becomes a natural and convenient choice for all, leading to a greener, healthier, and more vibrant cityscape.

> *The Canal Corridor was a project of convergence- we had to converge funds from several State and Central schemes. It is also one of the most successful PPP project in the city. Surat plans to extend the Canal Corridor to other parts of the city.*

Shalini Agarwal
Municipal Commissionor of Surat

Canal Corridor

3 Linear Garden Street

Pimpri-Chinchwad, Maharashtra

Typology
Arterial Road

ROW
45m

Length
3930m

Duration
2 Years 4 Months

Cost
₹7.34 Cr.

Nodal Authority
Pimpri Chinchwad Smart City Ltd

Implementing Partners
KPMG, Prasanna Desai Architects, B G Shirke

Awards & Recognition
Placemaking Marathon Winner for 8 to 80 Park at

Profile of the city

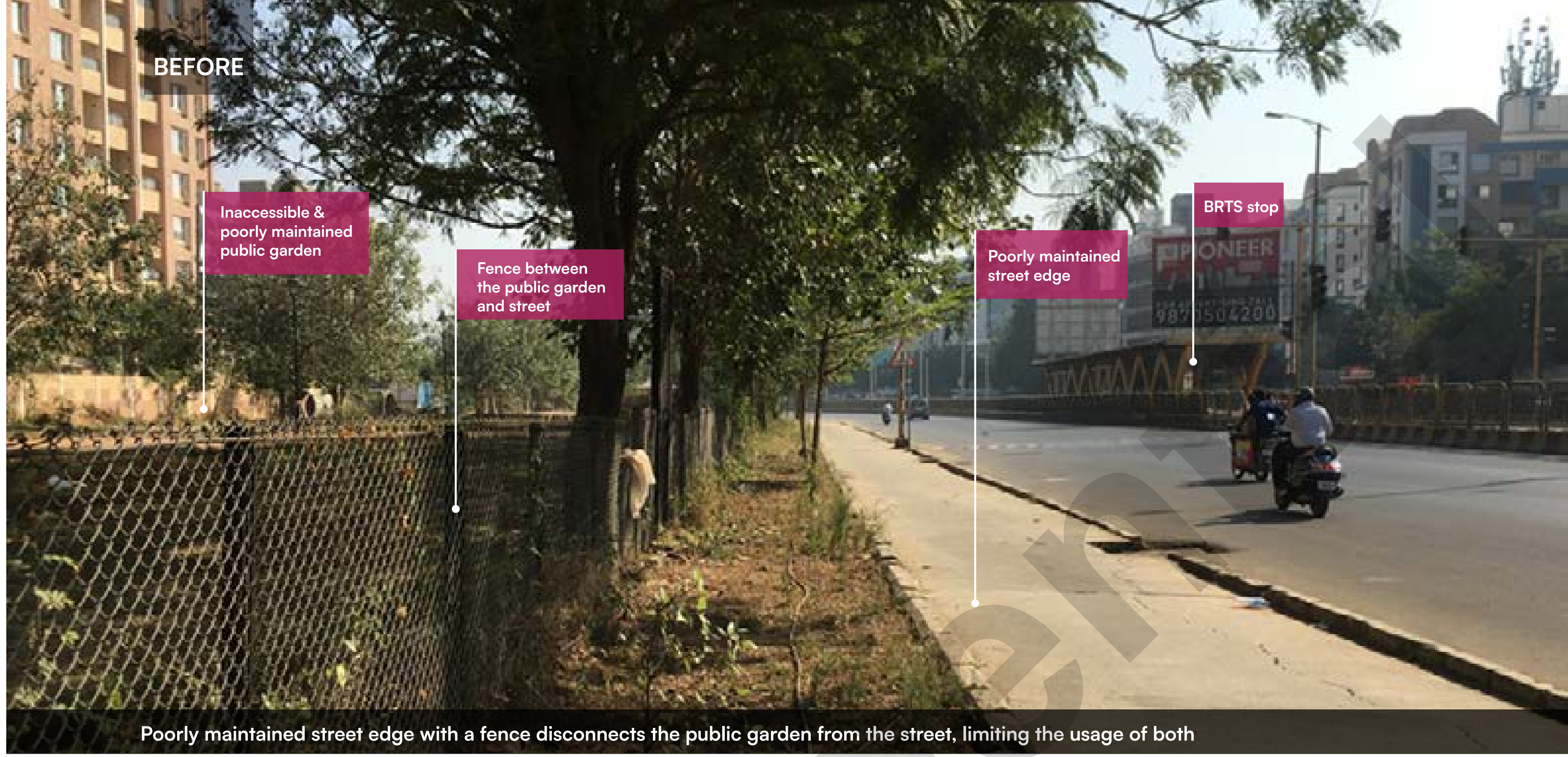
Pimpri Chinchwad Smart City (PCMC)is an urban agglomeration of 177.3 sq km area situated in Maharashtra with a total population is approx. 29.6 lakhs. The city was selected as part of the Smart cities Mission in Round 3 of the challenge. Since then the city has proactively contributed towards creating citizen friendly streets and public spaces. Till date, the city has executed multiple projects on smart mobility that includes public bike sharing, smart streets and many more. Among the smart mobility project, Linear Park Street Project is one of the significant project executed by the Pimpri Chinchwad Smart City, that has prioritized walking and cycling and has integrated them as part of the transit oriented corridors.

Context of the Project

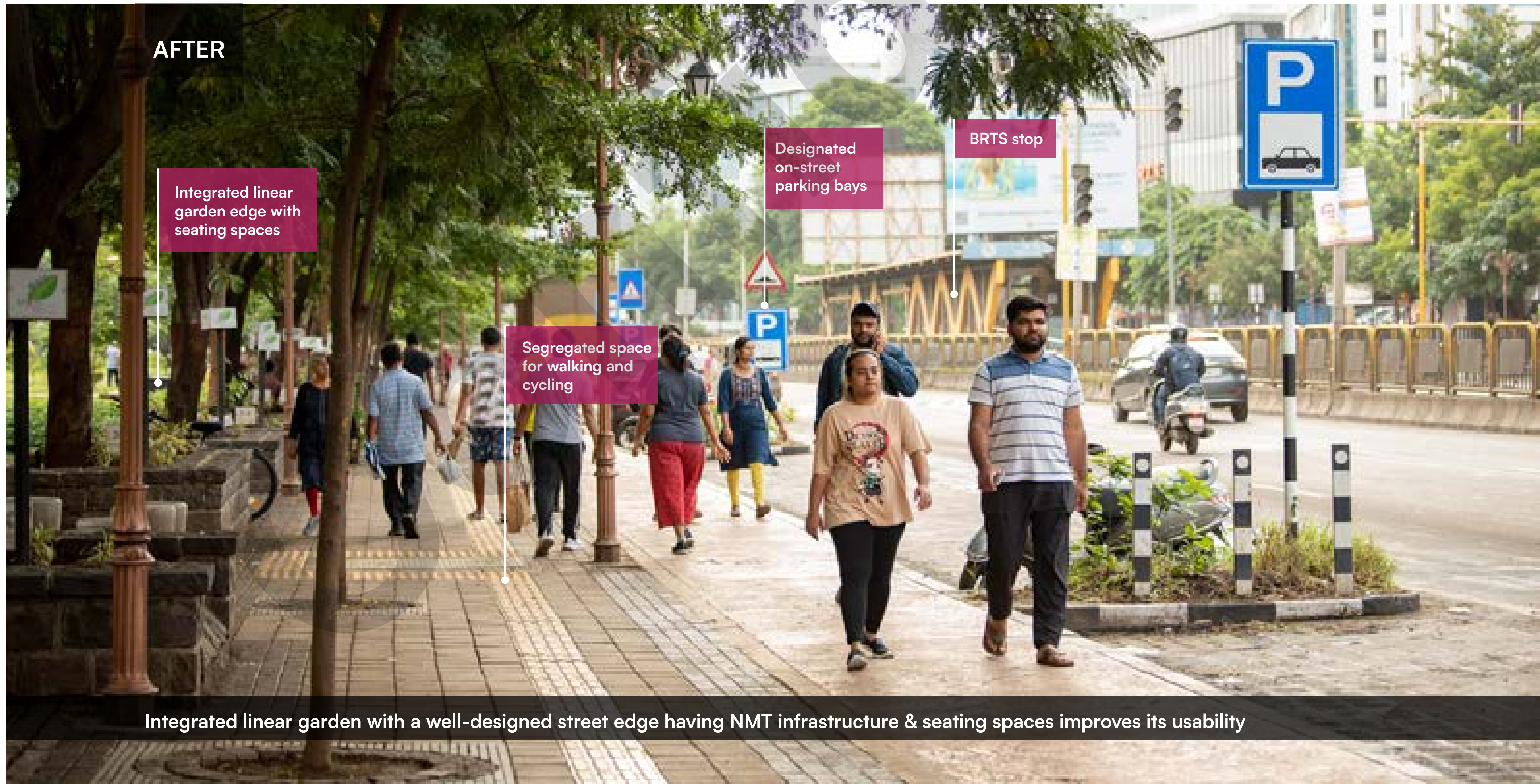
Pimple Saudagar and Pimple Gurav are of the fastest developing areas in Pimpri - Chinchwad and hence the neighbourhood, connecting streets as well as the main BRTS Road was selected for a streetscape project within Area Based Development area of PCMC smart city. The BRTS road (45m ROW) consists of existing dedicated BRT lane in the center of the street, MV lane on both sides of the streets and side margins which consisted discontinuous footpath, unorganised parking and halt areas. Implementing the Universal Accessibility Act, footpaths are designed at one level with tactile paving which will enable specially abled to walk with comfort. The Street is curated by incorporating elements like signages, dustbins, adequate street street lighting which creates a Promenade under the Tree Canopy.

Vision of the Project

To segregate vehicles and pedestrians by streamlining the vehicular traffic and providing dedicated space for pedestrian, cyclists, prams and wheelchairs.

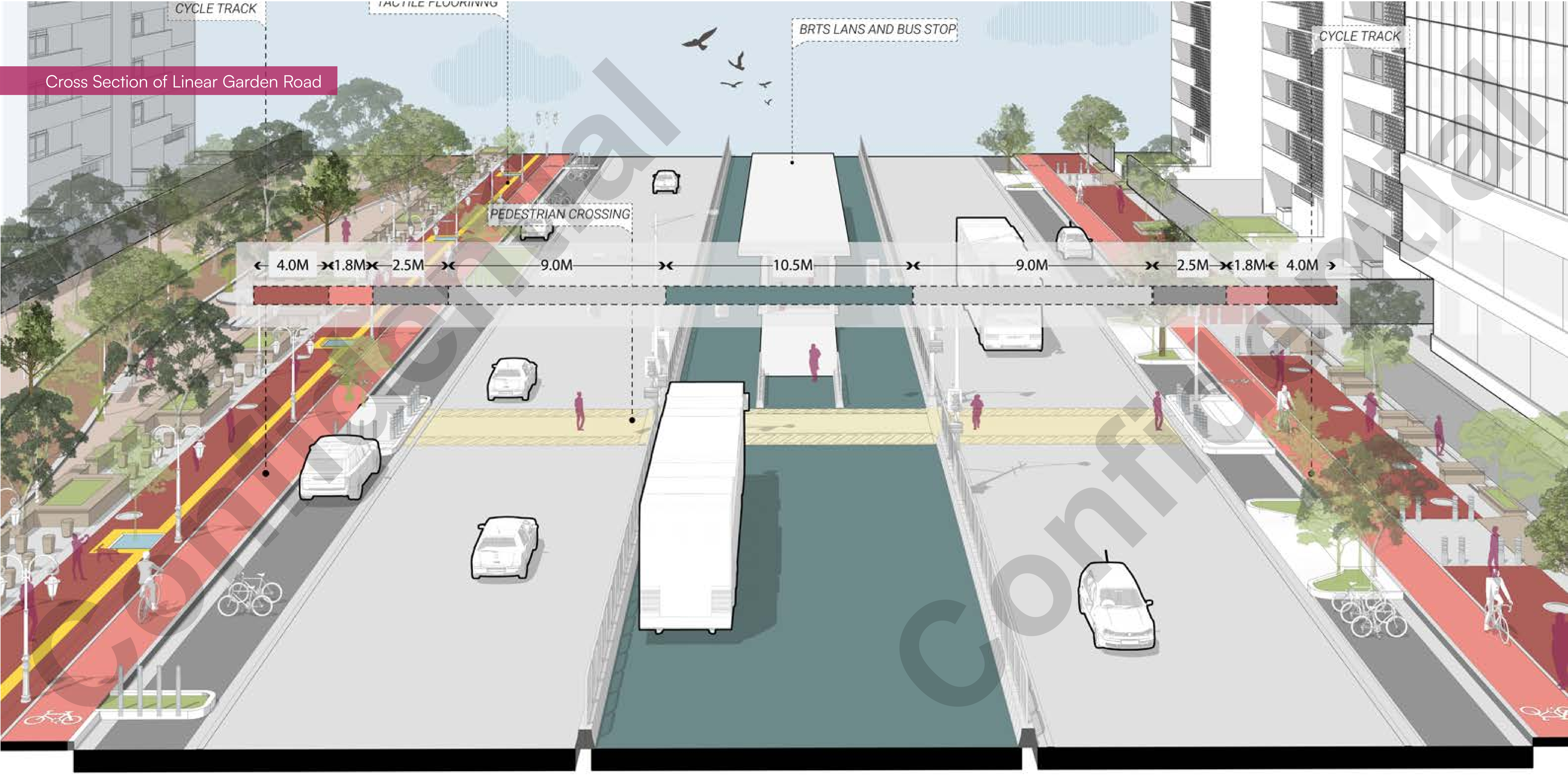

BEFORE
Inaccessible & poorly maintained public garden
Fence between the public garden and street
Poorly maintained street edge
BRTS stop

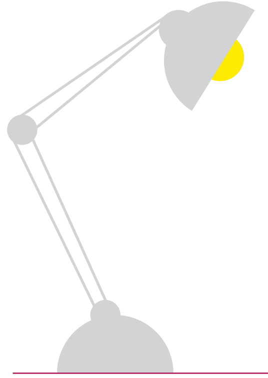
Poorly maintained street edge with a fence disconnects the public garden from the street, limiting the usage of both


AFTER
Integrated linear garden edge with seating spaces
Designated on-street parking bays
BRTS stop
Segregated space for walking and cycling

Integrated linear garden with a well-designed street edge having NMT infrastructure & seating spaces improves its usability

Cross Section of Linear Garden Road


CYCLE TRACK
TACTILE FLOORING
BRTS LANS AND BUS STOP
CYCLE TRACK
PEDESTRIAN CROSSING
4.0M
1.8M
2.5M
9.0M
10.5M
9.0M
2.5M
1.8M
4.0M



Design
Highlights

01 Continuous footpaths are designed at one level, incorporating tactile paving to facilitate mobility for all users in compliance with the Universal Accessibility Act.

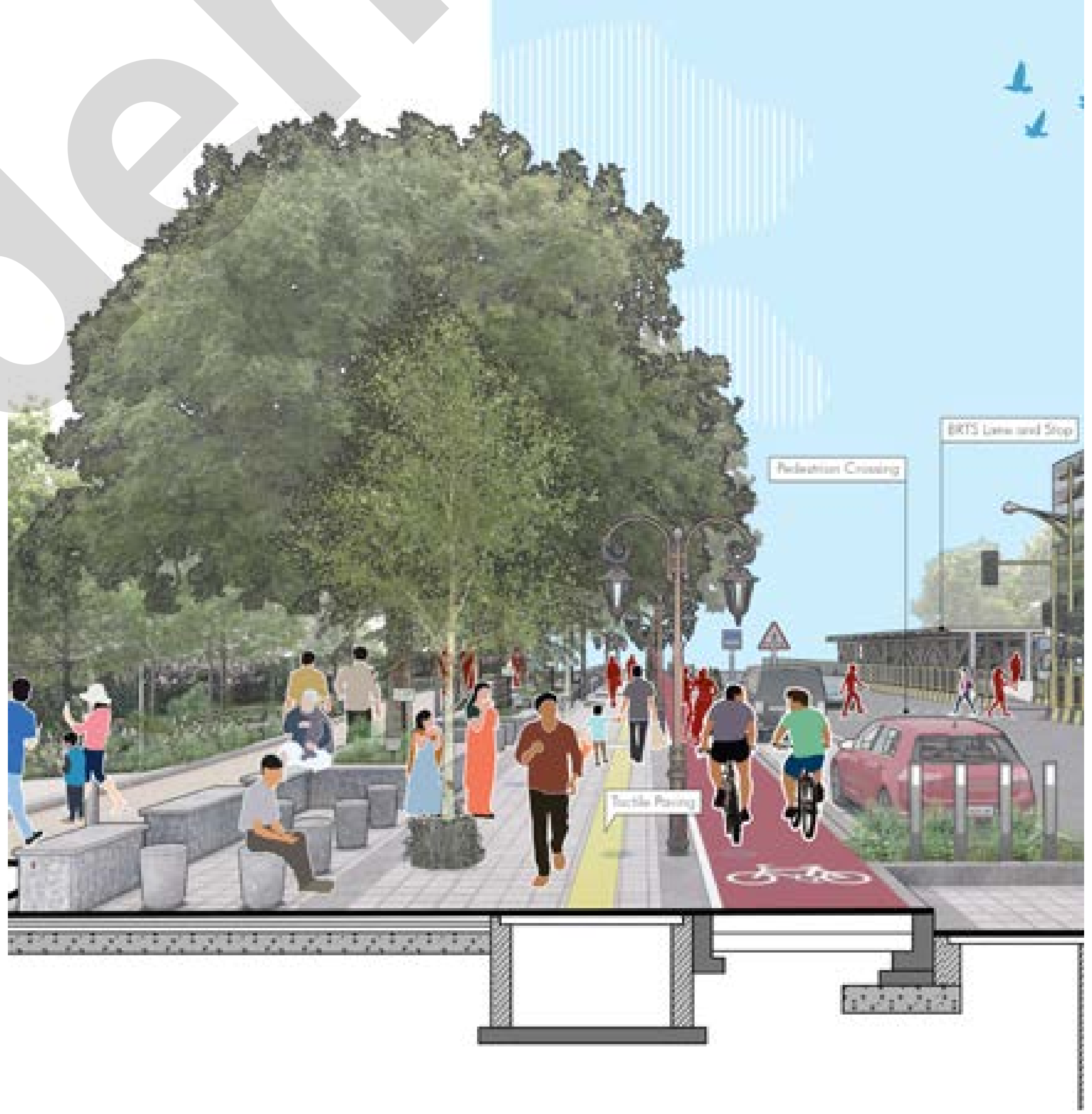
02 Enhancing both safety and functionality, a 0.5m cobblestone paving separates the parking bay and cycle track. This design detail not only safeguards cyclists but also provides the flexibility to accommodate heavy vehicle parking as needed.

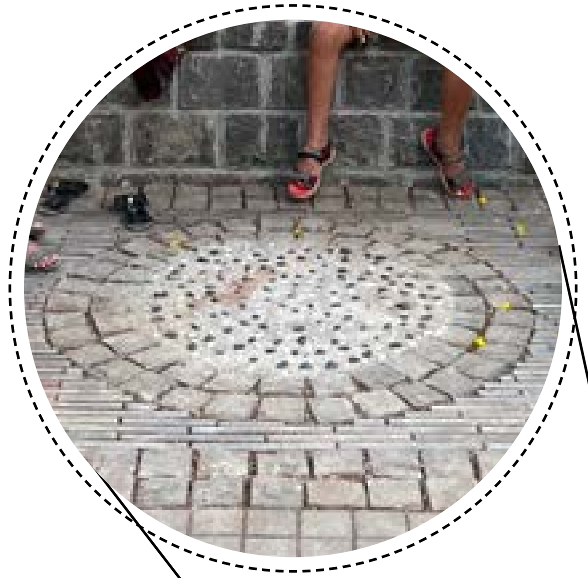
03 Skilled local craftsmen hand-crafted locally available Basalt stone to create seating areas around the existing trees.

04 Public amenities such as signage, dustbins, and street lights are provided along the street edges.

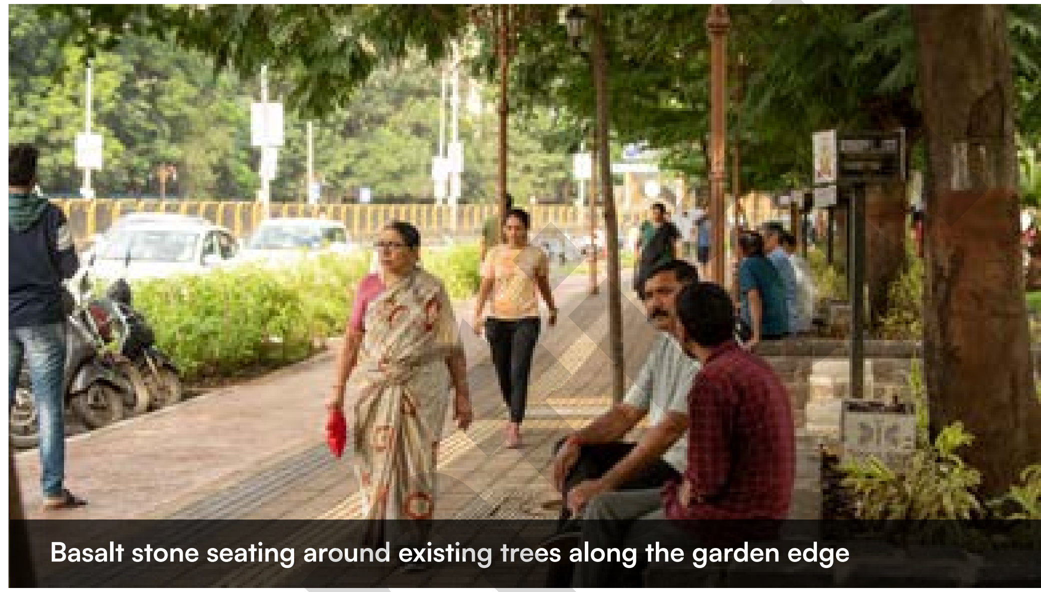
05 High-quality precast elements, like kerbs and circular mudas (seating elements) are manufactured off-site by the contractor as per the design requirements and transported to the site.

This design celebrates the region's local materials and crafts.

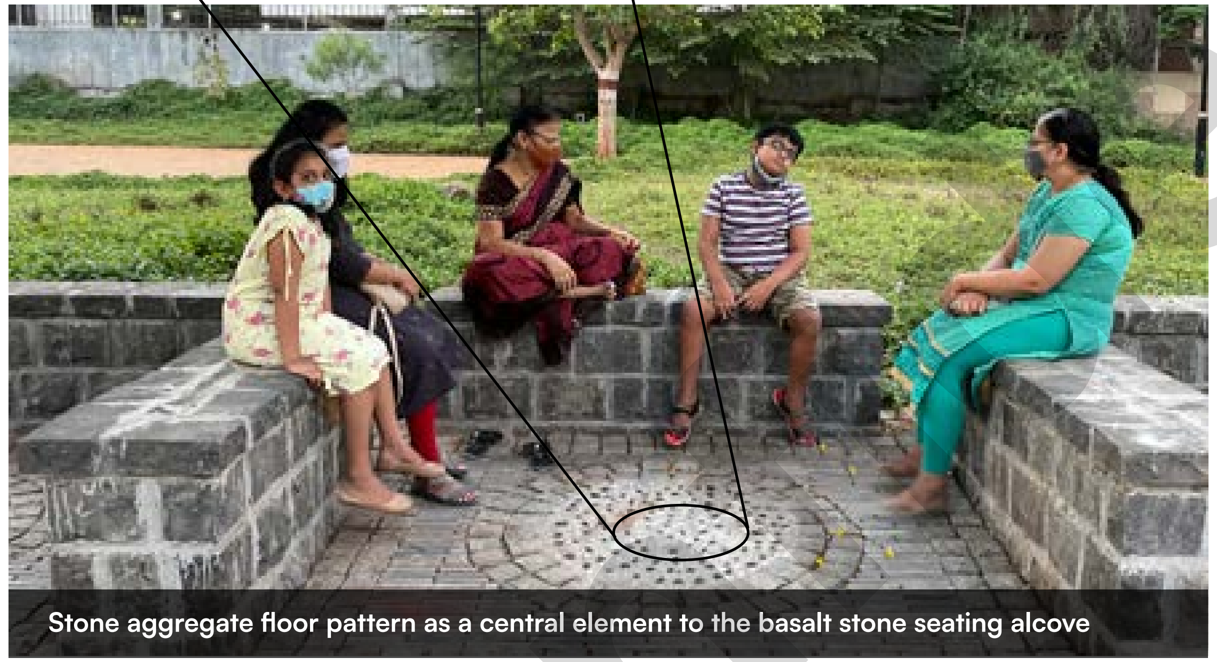




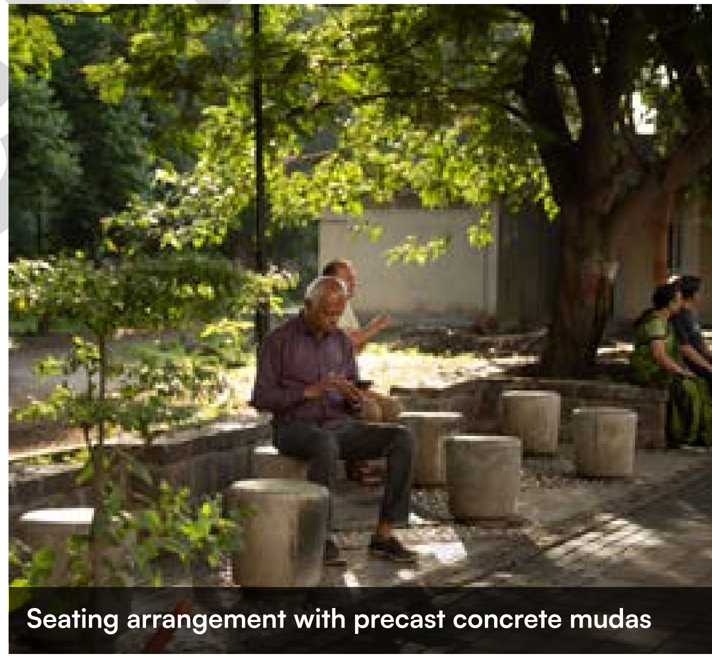
Stone aggregate floor pattern called as 'Kashmiri embroidery'



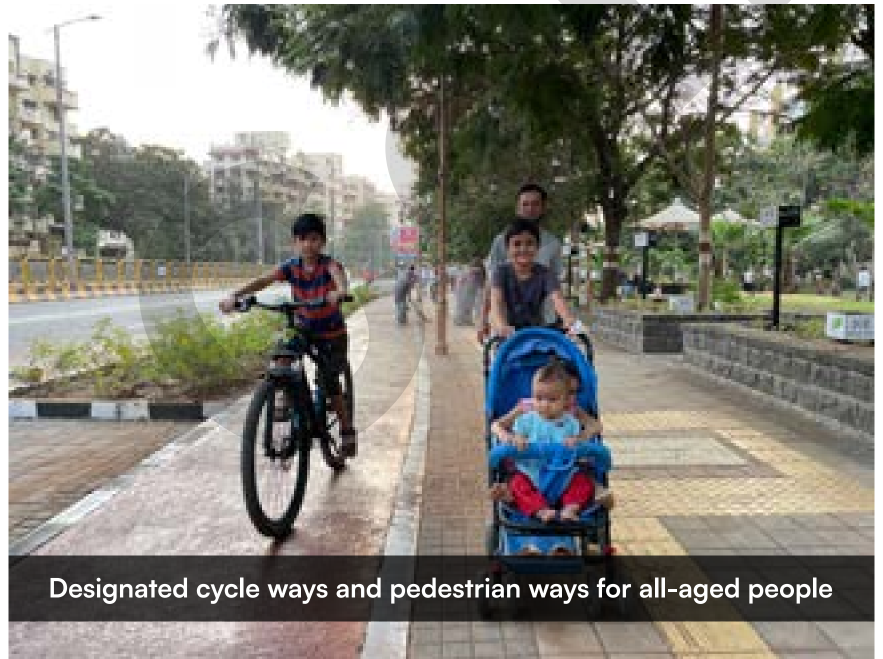
Basalt stone seating around existing trees along the garden edge



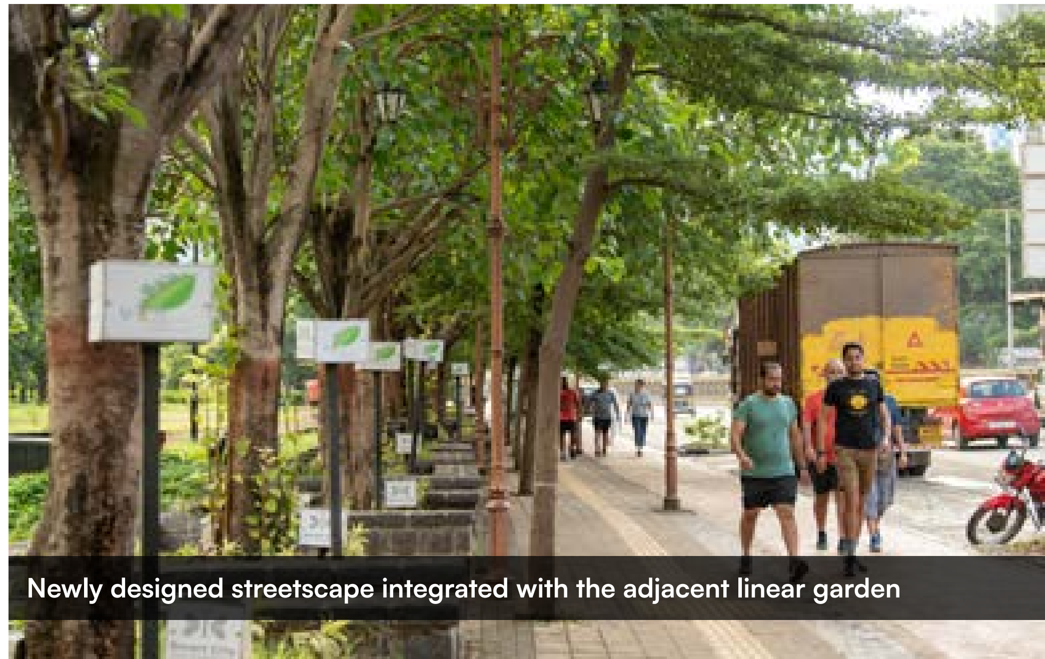
Stone aggregate floor pattern as a central element to the basalt stone seating alcove



Seating arrangement with precast concrete mudas



Designated cycle ways and pedestrian ways for all-aged people



Newly designed streetscape integrated with the adjacent linear garden

Project **Journey**

Stakeholder engagement

01 Laying the foundation

✓ Complete ✗ Not yet started ● Ongoing

- ✓ **Healthy Streets Policy**
- ✓ **Healthy Streets Cell**
- ✓ **Parking Policy**
- ✗ **Street Design Guidelines**
- ✓ **Capacity-building workshops**
- ✓ **Site visits, Pune**

Discussion at site

02 Building the team's muscle

On-site demonstrations

Typical details, like ramp slopes were demonstrated on the site to not only enable a standard method of execution but also to test the usability on site.

03 Doing things together

Traffic management

Traffic was strategically diverted through the BRT lane, in close coordination with the traffic police to minimise traffic disruptions and ensure a seamless movement during the construction phase.

Tactical Trial

A tactical trial was conducted for the typical RoW along the entire street to identify unique conditions on-site

Stakeholder engagement

A typical 'Right of Way' section was worked out in discussion with various stakeholders, including local representatives and shopkeepers

Stormwater Drain Relocation

An overlap between the stormwater drain and cycle track location led to multiple manholes on the surface of the cycle track, creating an obstruction for cyclists. Therefore, in coordination with the Smart City team, most manholes were shifted to another location by creating dummy chambers to ensure a smooth surface for the cyclists.

04 Monitoring, learning & improving

On-street parking management

The on-street parking management system executed as part of this project faced gaps in implementation, like lack of data collection from the service provider, revenue leakage and overall customer dissatisfaction. Therefore, it was paused after a few months.

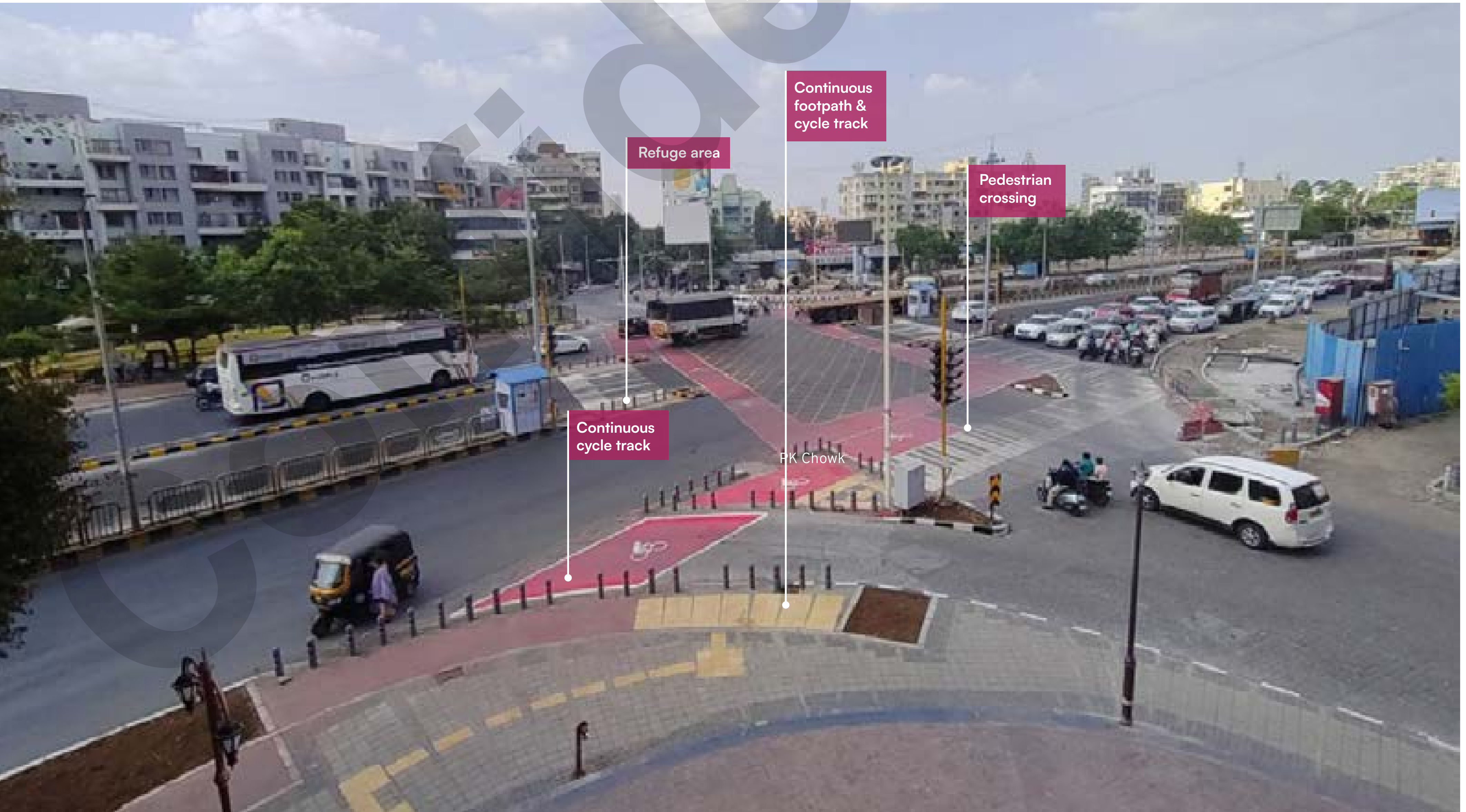
Currently, the City team is taking initiatives to implement the Parking Policy and an efficient Parking Management System through an app-based QR code that will be integrated with the city's official website.

Construction Phase

Innovative Solution: Junction Detail

Weekly stakeholder discussions were organised to resolve and agree on unique conditions along the street, especially junctions. Various design iterations were prepared according to the feedback received.

Additional carriageway space is created at the junctions to incorporate free left-turn as demanded by various stakeholders. However, pedestrian and cyclist safety is not compromised by ensuring continuity for the segregated footpath and cycle track at the junctions.



Stakeholder Consultation

The proposal underwent various stakeholder consultations which involved public and multilateral departments. The traffic police department, electrical department, BRTS department, Water Supply & Drainage Department were a part of the consultation process. Public consultations were also conducted with local public representatives, RWAs, shopkeepers, etc., through focused group discussions. Apart from these consultations being conducted at the proposal/ design stage were also carried out during the construction phases of the project

Challenges Accepted & Addressed

Acquisition and Encroachment: Land acquisition and encroachment were one of the major challenges before the execution of the project, mitigated with the help of the police and the PCMC encroachment squad. They helped in acquiring the required space for the new street design before implementation. During this process, all encroachments like temporary shops, were notified one month in advance to clear the site. The enforcement squad continues to function till date with CCTV surveillance at every junction.

Traffic Congestion Issues: Resistance from citizens was observed because of traffic congestion and mismanaged traffic during construction. To address this issue, traffic was diverted temporarily through the BRT lanes to avoid congestion on site. However, on thorough completion of the project, the traffic was re-directed to its original flow.

Execution of Parking Management: Parking management was another challenge faced after execution - due to gaps in implementation of parking policy, malpractices, revenue leakage and lack of data collection from the service provider. To meet this problem, PCMC Smart City is taking active initiatives to implement the Parking Policy and an efficient Parking Management System throughout the city. It is testing a digital platform (app based and QR code) to aid parking management while minimizing revenue leakage and ensuring real-time data collection. This application will be integrated with the official website of Smart Sarathi.

Challenges posed by Existing Features: An overlap between the stormwater drain and the cycle track location led to multiple manholes on the surface, creating an obstruction for users. Therefore, in coordination with the Smart City team, most manholes were shifted to another location by creating dummy chambers to ensure a smooth surface for cyclists.

Outcomes

Pedestrian Safety: 51,000 sq.m of space has been reclaimed for NMT after the execution of the project. The pedestrians have a safe, secure and dedicated footpath space for movement. No citizens are seen walking along the edge of the MV Lane, reducing the chances of accidents and other mishaps.

Cycling: Citizens of Pimpri-Chinchwad use dedicated cycle tracks to commute, which creates a safe and organised route for cyclists.

Socially Interactive Space: The percentage of citizens coming out on the street for exercise as well as recreation has gone up after the execution of the project. Children can be seen cycling and playing on the street in their designated zones, reducing the risk of their proximity with the traffic on the MV Lane.

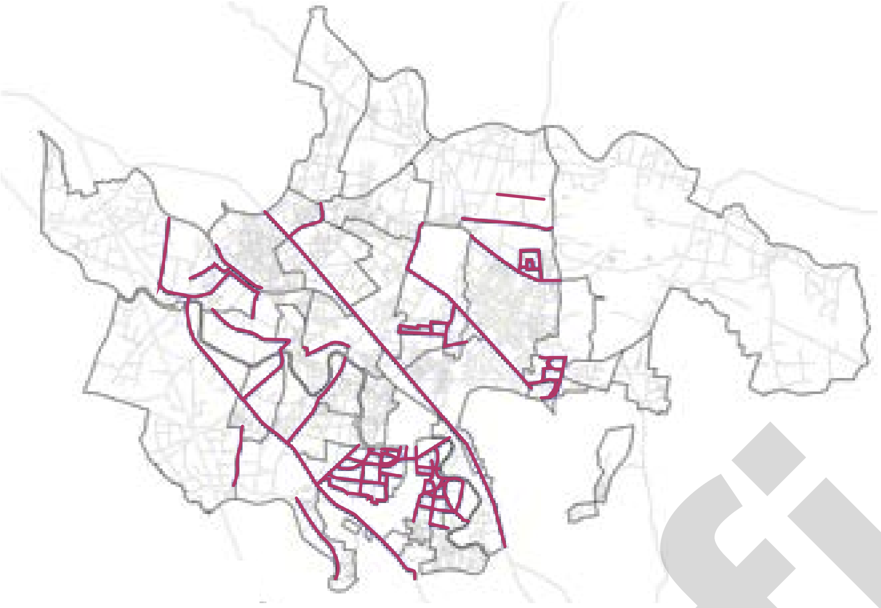
Citizen Impact Stories

> *I am new to Pimpri as I was residing in Mumbai before. What i find specific here is the 4 kms constant stretch of footpath alongside the garden. Every evening i come here for a run. I find the cycle track very useful and I see citizens using it happily. Congratulations to the citizens as they are lucky enough to have such beautiful connectivity of footpath and cycle track in the city and congrats to the smart city and government who has come up with such beautiful initiative.*

Mr. Ram, Citizen

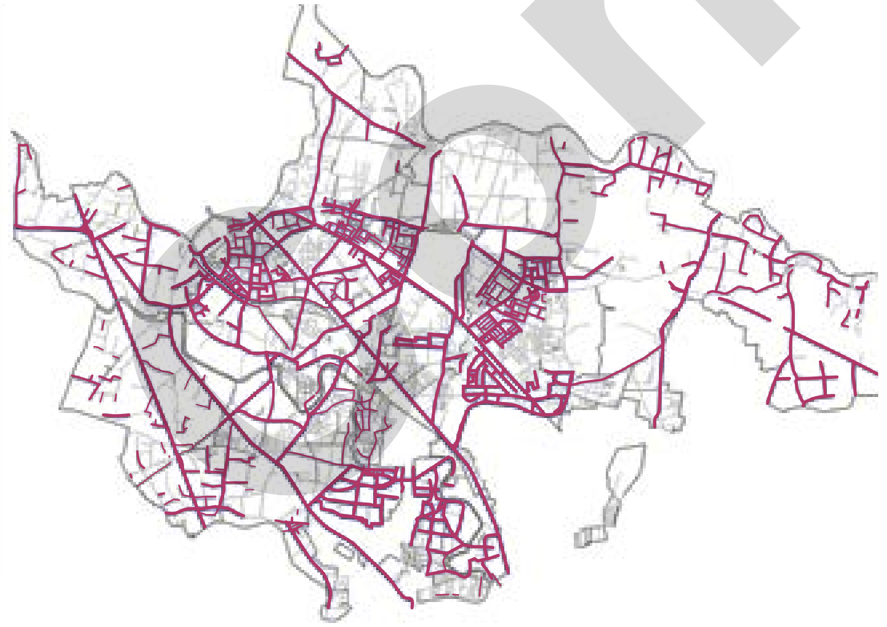
Way Forward

Existing NMT Street Network in 2023



Source: Prasanna Desai Architects

Proposed NMT Street Network in 2032



Source: Prasanna Desai Architects

Scaling-up the transformation

The Linear Garden Road is implemented as a model street for Pimpri-Chinchwad. Moving ahead, 'Harit Setu' Master Plan aims to transform Pimpri-Chinchwad into a liveable city by 2030 by transforming it into smaller 15-minute NMT-friendly neighbourhoods.

'Harit Setu' Master Plan is an outcome of the concept of 'connected greens' included in the smart city proposal. It aims to enhance existing connections and create new green links connecting several residential, commercial, institutional, campuses to improve and encourage NMT modes for short trips in the city.

> *Our strategy is to focus on exploring shortcuts which will be greenways passing through various land uses, river/nallah edges, railway edges, small back alleys, etc. beyond the existing street network.*
> *We aim to create shorter distances for NMT users; making mobility safe, comfortable and convenient across the city.*

Mr Bapu Gaikwad
Senior Executive Engineer

Linear Garden Road

4 MR4 Road

Jabalpur, Madhya Pradesh

Typology
Sub-Arterial

ROW
36m

Length
2.6km

Duration
Sep 2018-Mar 2021
(30 months)

Cost
₹5.52 Cr. per km

Nodal Authority
Jabalpur Smart City Limited

Implementing Partners
Jabalpur Development Authority, Jabalpur Municipal Corporation

Profile of the city

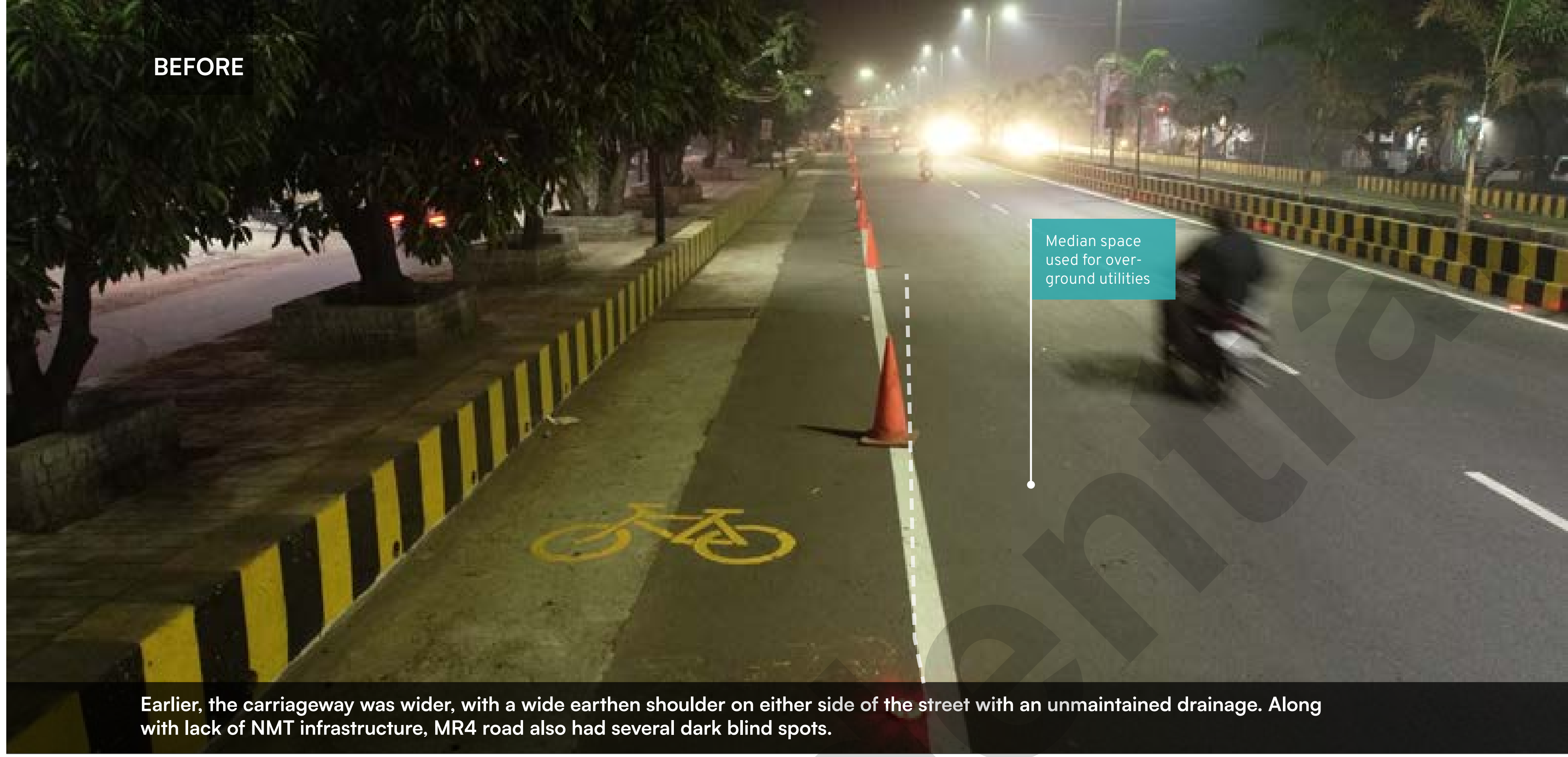
Jabalpur, having a population of 10.5 lakh, was selected in Round 1 of the Smart Cities Mission. It has an ABD area of 3 sq.km out of a total area of 152 sq.km in the city. Jabalpur Smart City has executed various projects across all beach heads in the Smart Cities Mission among which 26 projects worth ▯246 Cr. have been completed in the mobility sector. To enhance mobility, Jabalpur has undertaken projects like — MLCPs, Junction Improvement, ISBTs, Smart Roads, NMT focused infrastructure, E-rickshaws, etc., through the journey of the Mission.

Context of the Project

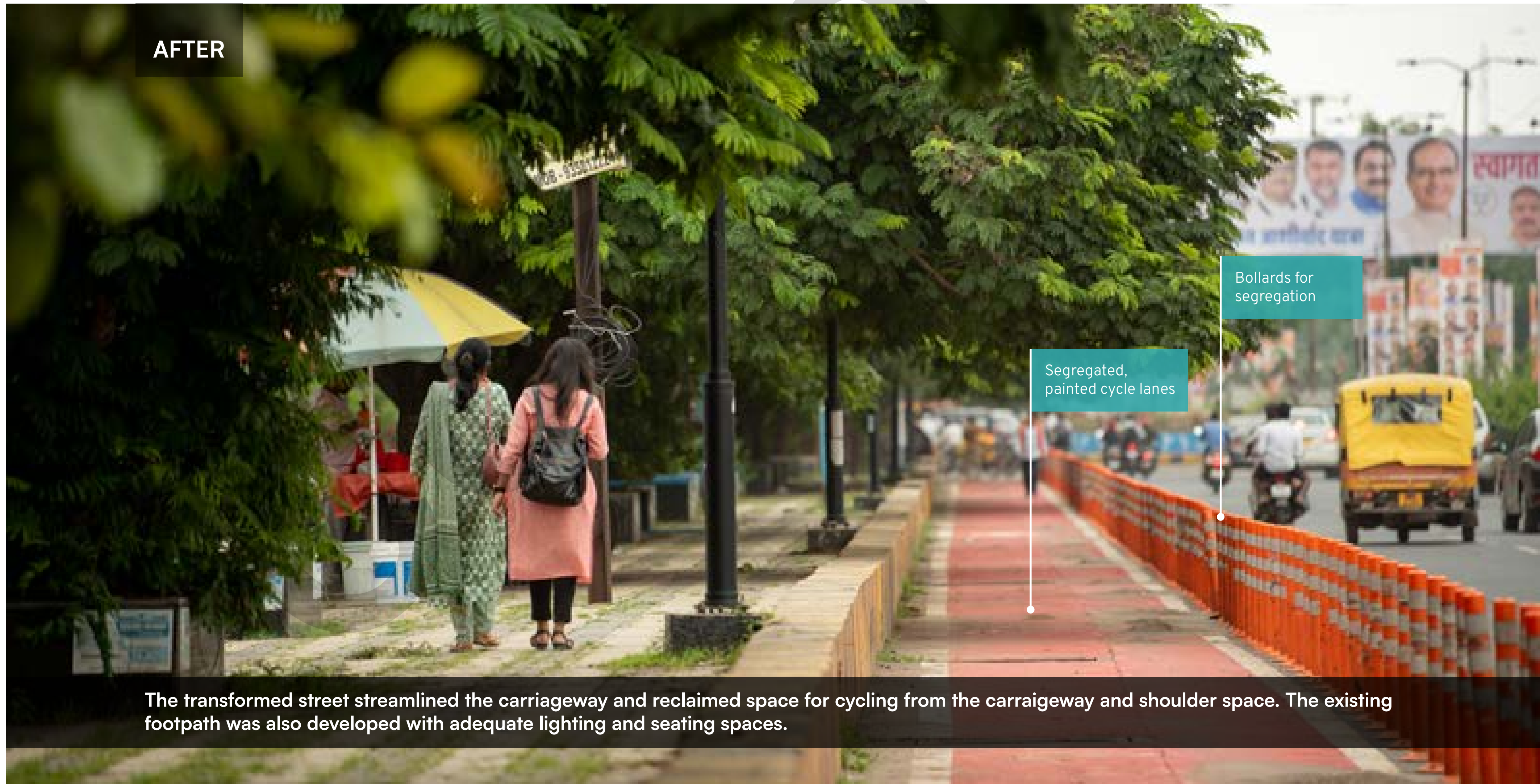
MR4 street is one of the crucial mobility corridors in the city of Jabalpur. The corridor faced several safety and water logging issues. As a result, Jabalpur Smart City had nominated this street under it's Cycles4Change Challenge submission. As a part of this challenge, the street was developed using a test-learn-scale method to resolve the existing issues on the street.

Vision of the Project

The project aimed to create a resilient, safe and inclusive model prioritizing Non-Motorized Transport along with creating a public realm infrastructure for all strata of society.

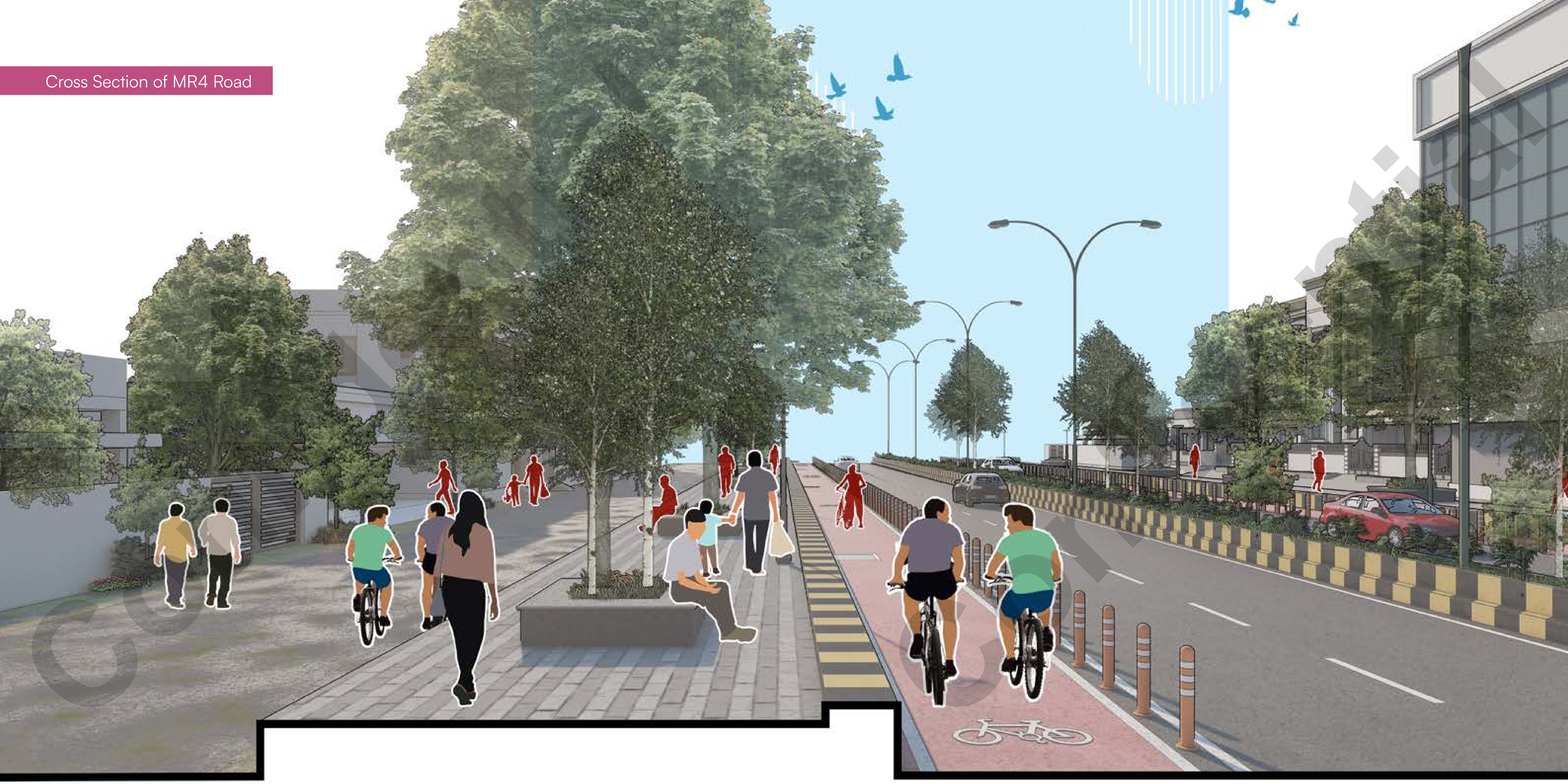


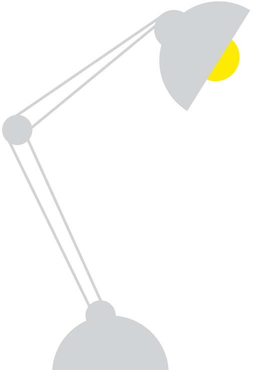
Earlier, the carriageway was wider, with a wide earthen shoulder on either side of the street with an unmaintained drainage. Along with lack of NMT infrastructure, MR4 road also had several dark blind spots.



The transformed street streamlined the carriageway and reclaimed space for cycling from the carraigeway and shoulder space. The existing footpath was also developed with adequate lighting and seating spaces.

Cross Section of MR4 Road





Design Highlights

01 Pedestrian and cyclist mobility was an integral focus point, especially from the last mile connectivity perspective.

02 The carriageway was reduced by 2m. This increased space was then converted to the painted cycle lane. The cycle lane is segregated with the help of plastic bollards.

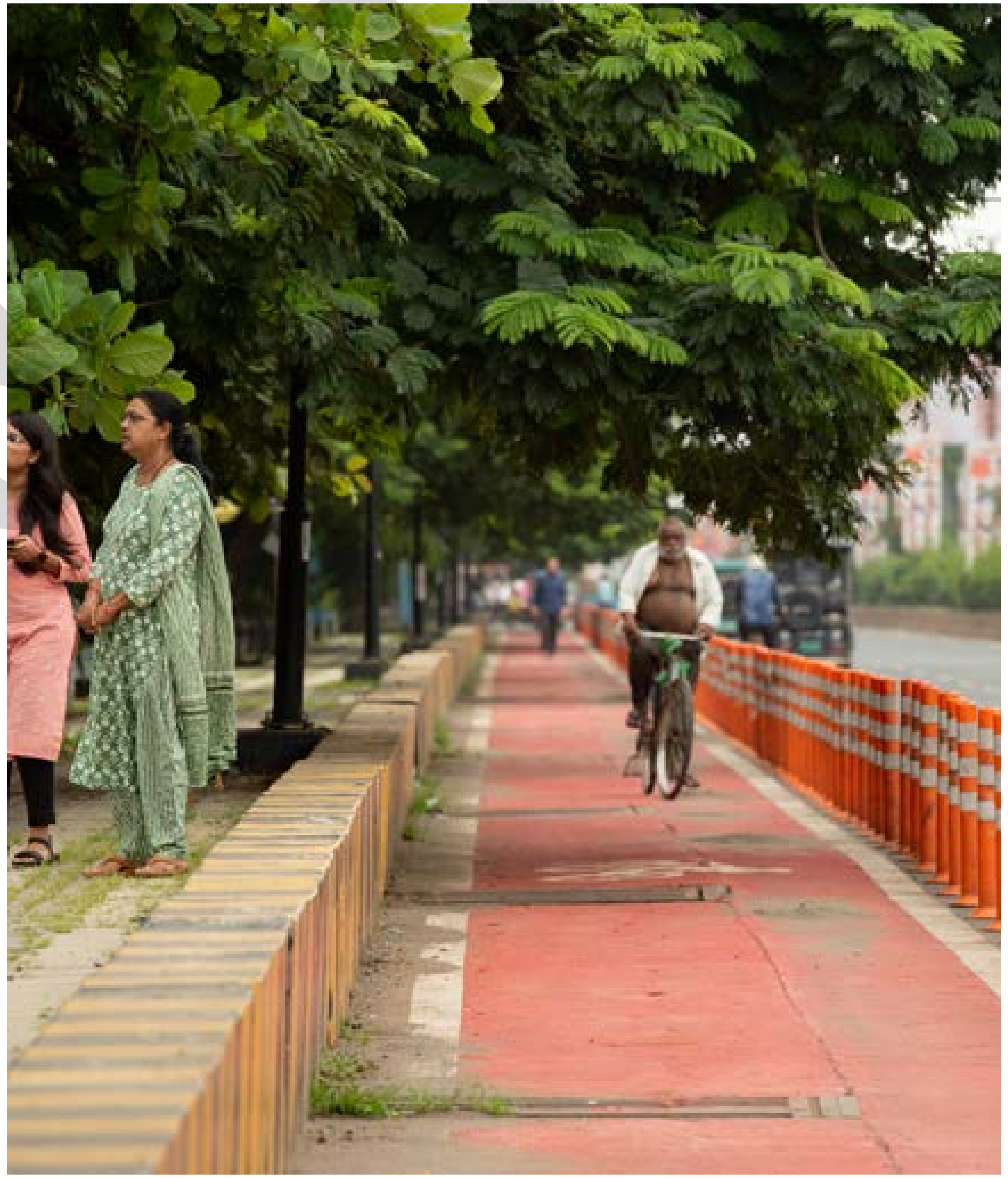
03 To combat water logging and the lack of available space, the city created an RCC drain below the cycle lane, with inspection chambers at regular intervals.

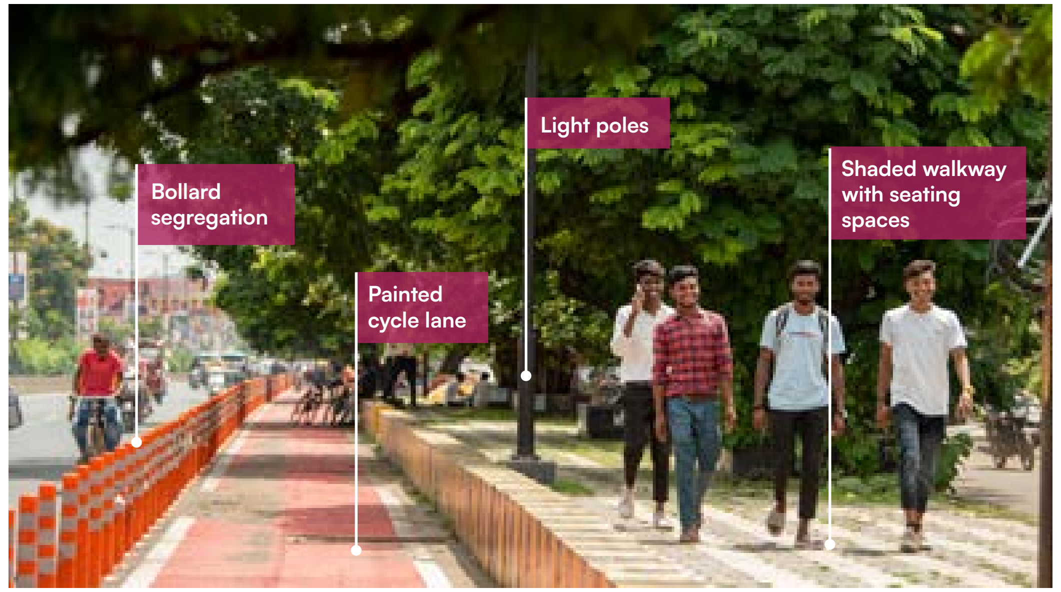
04 JSCL has maintained a minimum 1.2m-wide obstruction-free cycle lane beyond the drain covers of these chambers to avoid any hindrances for the cyclists.

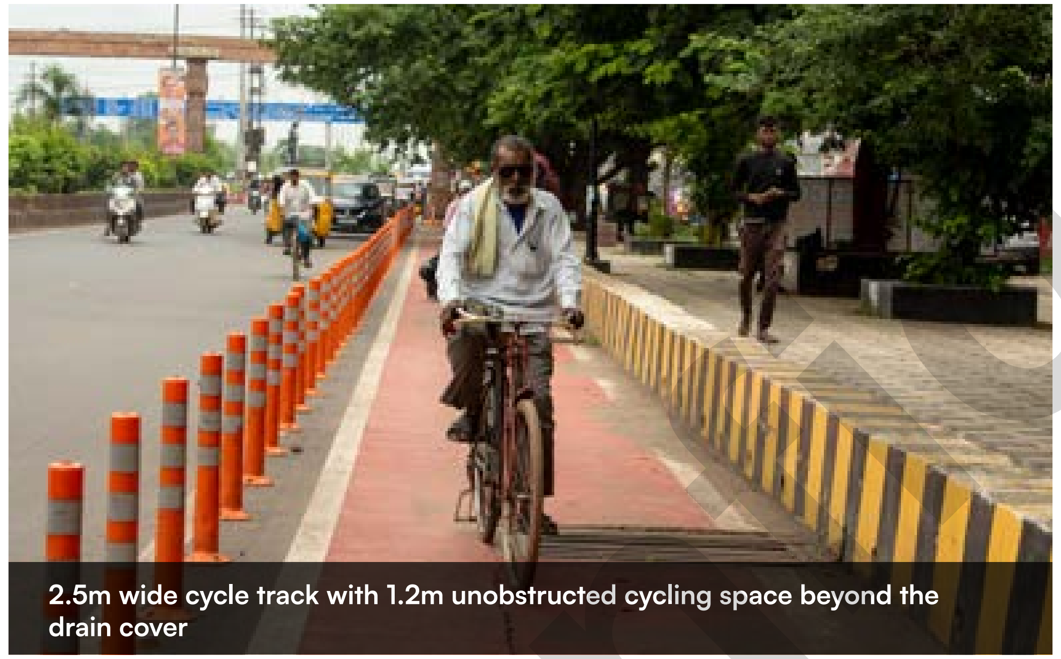
05 Cycle tracks were painted so that they could stand out and become identifiable at a distance. The Paint used was PlastiDry - a specialised cold paint for zebra crossings and cycle tracks.

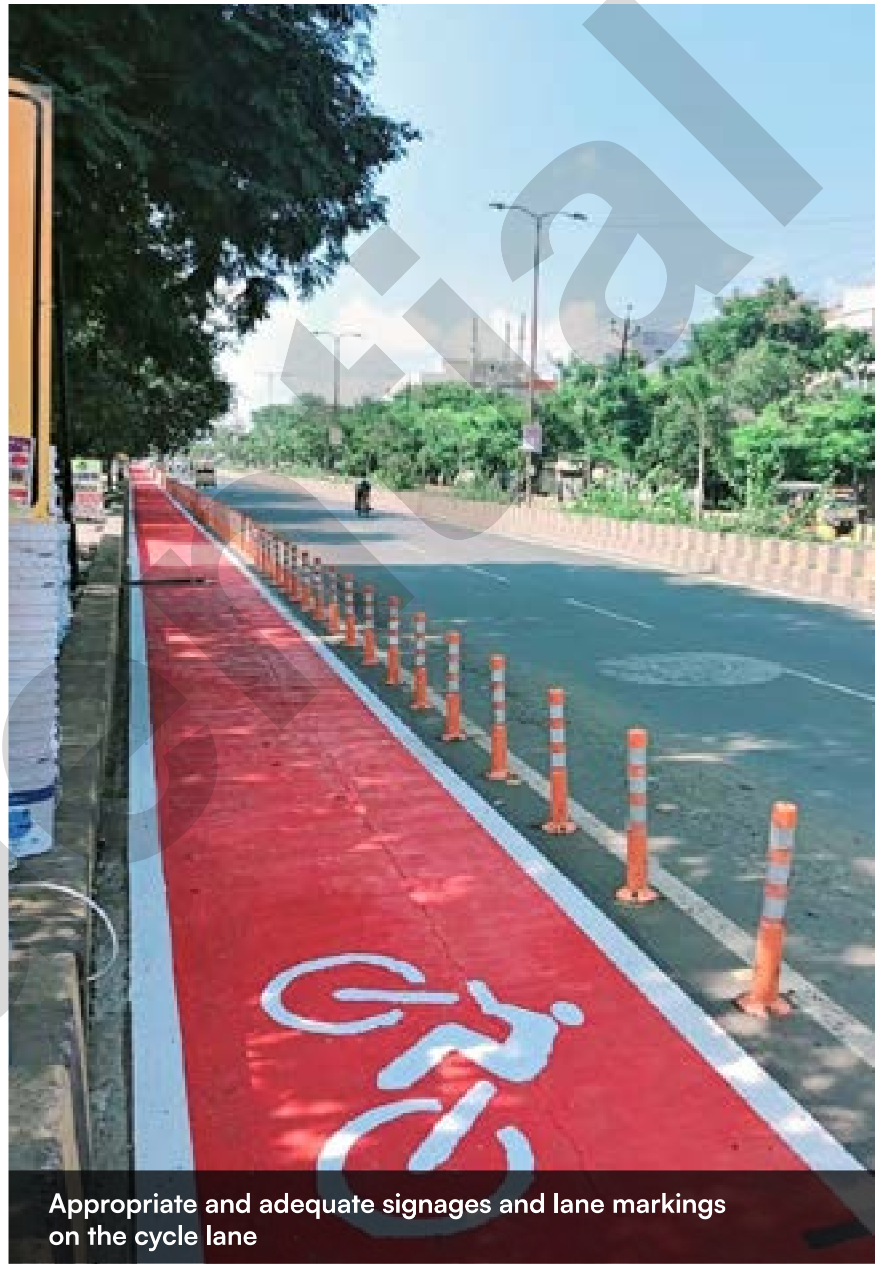
06 Interlocking flagstones are used for the footpath pavement

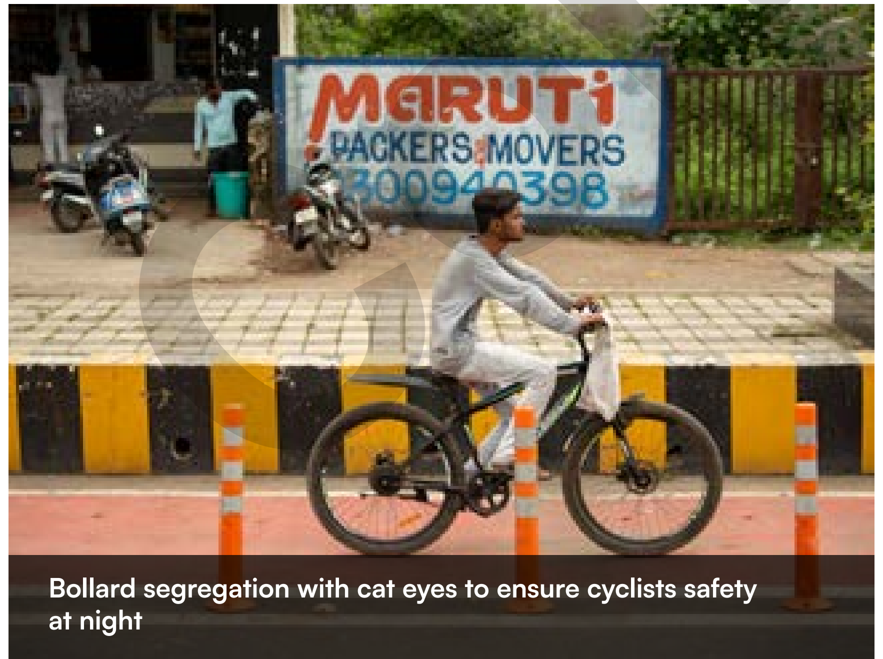
07 Landscaping with 3 seat chairs, tree guards, dustbins and provision of Water ATMs at some locations.



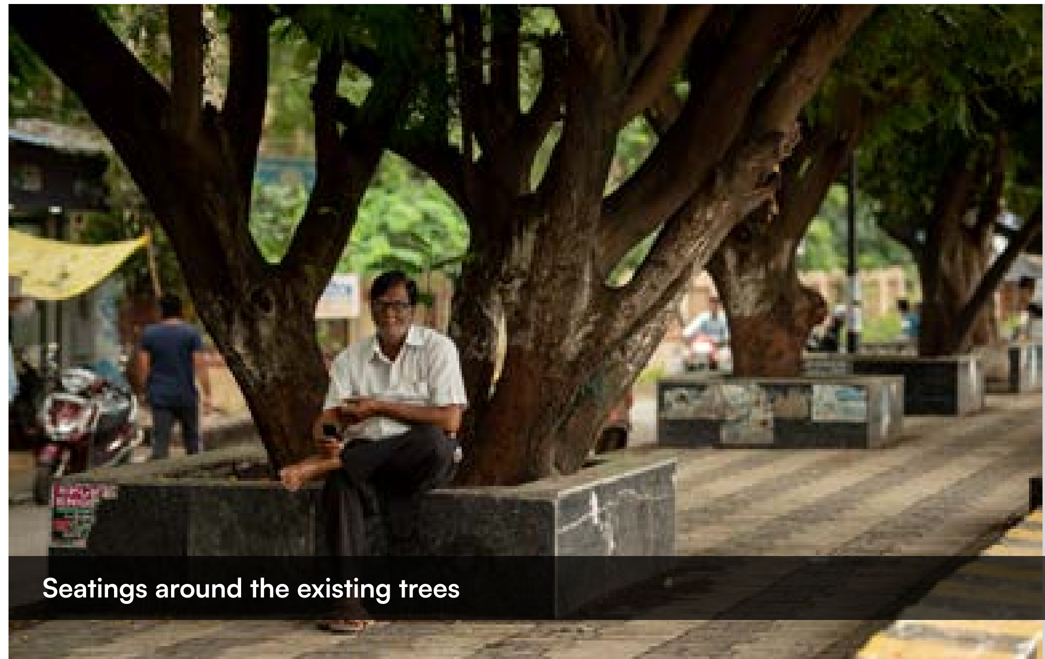



2.5m wide cycle track with 1.2m unobstructed cycling space beyond the drain cover


Appropriate and adequate signages and lane markings on the cycle lane



Bollard segregation with cat eyes to ensure cyclists safety at night


Seatings around the existing trees

Project Journey

Stakeholder engagement

01

Laying the foundation

✓ Complete ✗ Not yet started ● Ongoing

- ✗ **Parking Policy**
- ✗ **Vending Policy**
- ✓ **Healthy Streets Policy**
- ✓ **Street Design Guidelines**

Working and reviewing team

Under the Cycles4Change Challenge, Jabalpur has set up a NMT Cell with several officials involved in the day-to-day street design works. Jabalpur also formed an Apex Committee, to review and discuss reviews transport-related initiatives in the city periodically. Both these institutional set-ups are headed by the Municipal Commisioner.

Regular capacity building of the engineers

Capacity building workshops for street design and implementation, parking management, etc are conducted on a regular basis for the engineers of the Jabalpur Municipal Corporation and Jabalpur Smart City.

02

Building the team's muscle

On-site demonstrations

Typical details, like ramp slopes were demonstrated on the site to not only enable a standard method of execution but also to test the usability on site.

03

Doing things together

The stakeholders were involved in the pre-design phase to identify the existing issues on the street. Further, to address and resolve citizens' on-site concerns- like inadequate lighting, traffic diversion, etc- JSCL has created a group of neighborhood residents through social media. JSCL also created a WhatsApp group for grievance redressal during the implementation phase.

Encroachment removal

The abutting service road footpath was encroachment by vendors and hutments . The city conducted several on-site discussions with the vendors to convince them of the project and provided alternate locations for vending. The corporation is also ensuring an encroachment-free infrastructure by conducting regular checks and encroachment drives.

04

Stakeholder Consultation

Tactical trials-

Initiated under the Cycles4Change Challenge, JSCL first implemented a pilot stretch along with a junction using temporary road markings and bollards. The Smart City team also conducted several public engagement activities through programmes like open street campaigns, etc.

Citizen engagement-

Through these open street campaigns the vision and designs for the street were shared with the citizens. The feedback received from these engagements were incorporated in the permanent design implementation. In addition to this, several focused group discussions were also conducted within the pilot and neighborhood residential areas.

05

Monitoring, learning & improving

Maintenance-

Currently, Jabalpur Municipal Corporation looks after the maintenance of the street. The Garden Department looks after the watering & pruning the trees and landscape on the verge and medians of the street. Dedicated encroachment removal department to regular clearance of encroachments. The traffic police department has installed traffic signals to for traffic management.

Vandalism-

Overcame it through several public engagement meetings. Involving them in the design process helped them develop a sense of belongingness towards the project. This led to citizen-led monitoring to restrict and reduce vandalism the project.

Challenges Accepted & Addressed

The removal of encroachment of shops, vendors, etc., took significant amount of time.

Traffic management during construction was a major challenge faced.

The utilities were re-built. Therefore, removal of the existing pipelines and ducting was a cumbersome task and pushed the timelines of project completion.

The project was undertaken during the pandemic, which resulted in delays and lack of availability of materials.

After project completion speed of traffic had increased, which caused accidents on the road. To resolve the issue, JSCL installed traffic calming elements and developed safe junctions for pedestrian crossings.

Outcomes

Safety features have been enhanced by providing organised spaces for pedestrians, cyclists and motorised vehicles.

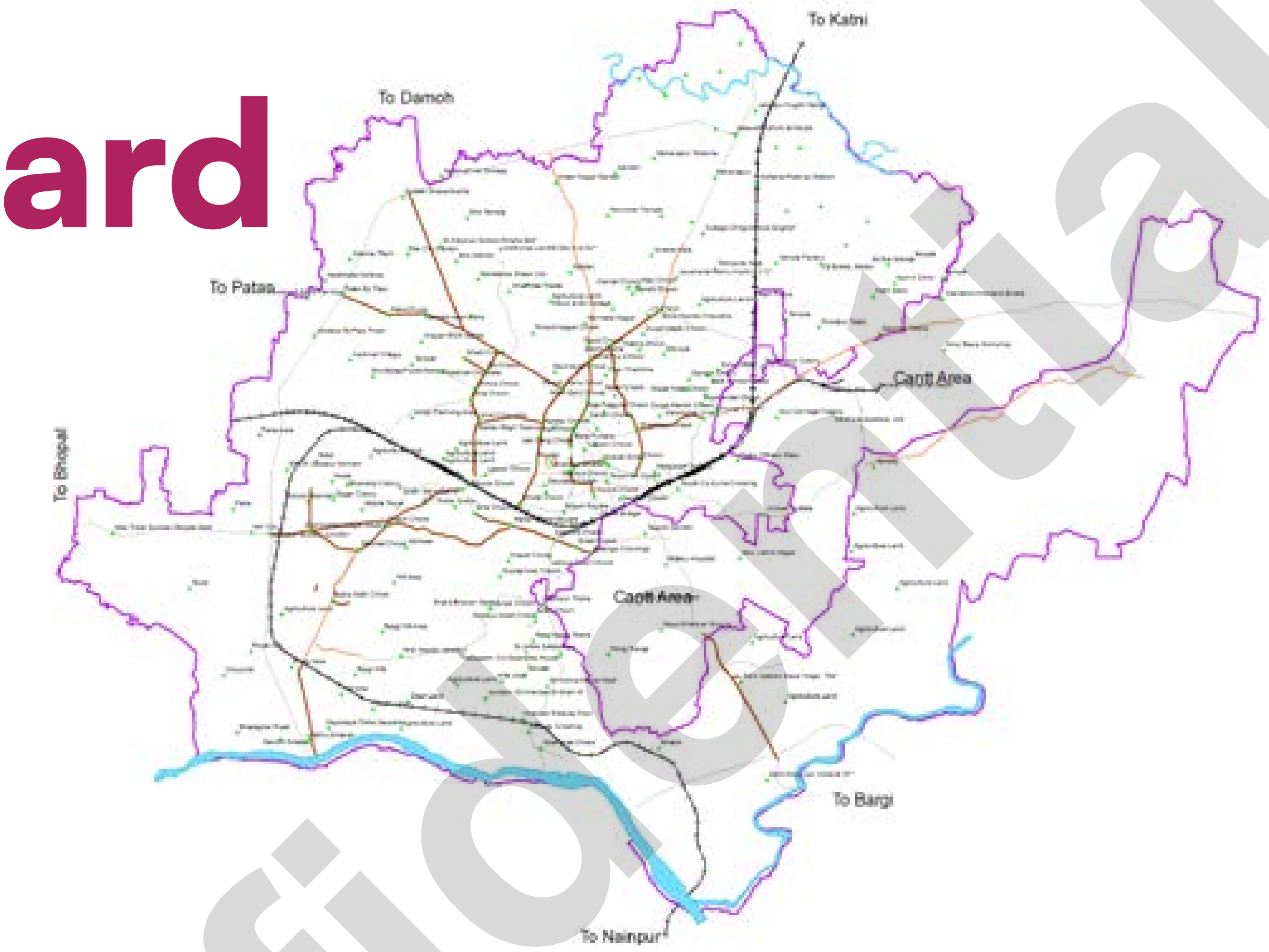
Cyclists can be seen in larger numbers because of the cycle track provided.

Pedestrian safety has been enhanced due to raised pedestrian crossings.

1300 sq.m of space for pedestrians have been reclaimed.

A better parking management system can be observed in place.

Way
Forward



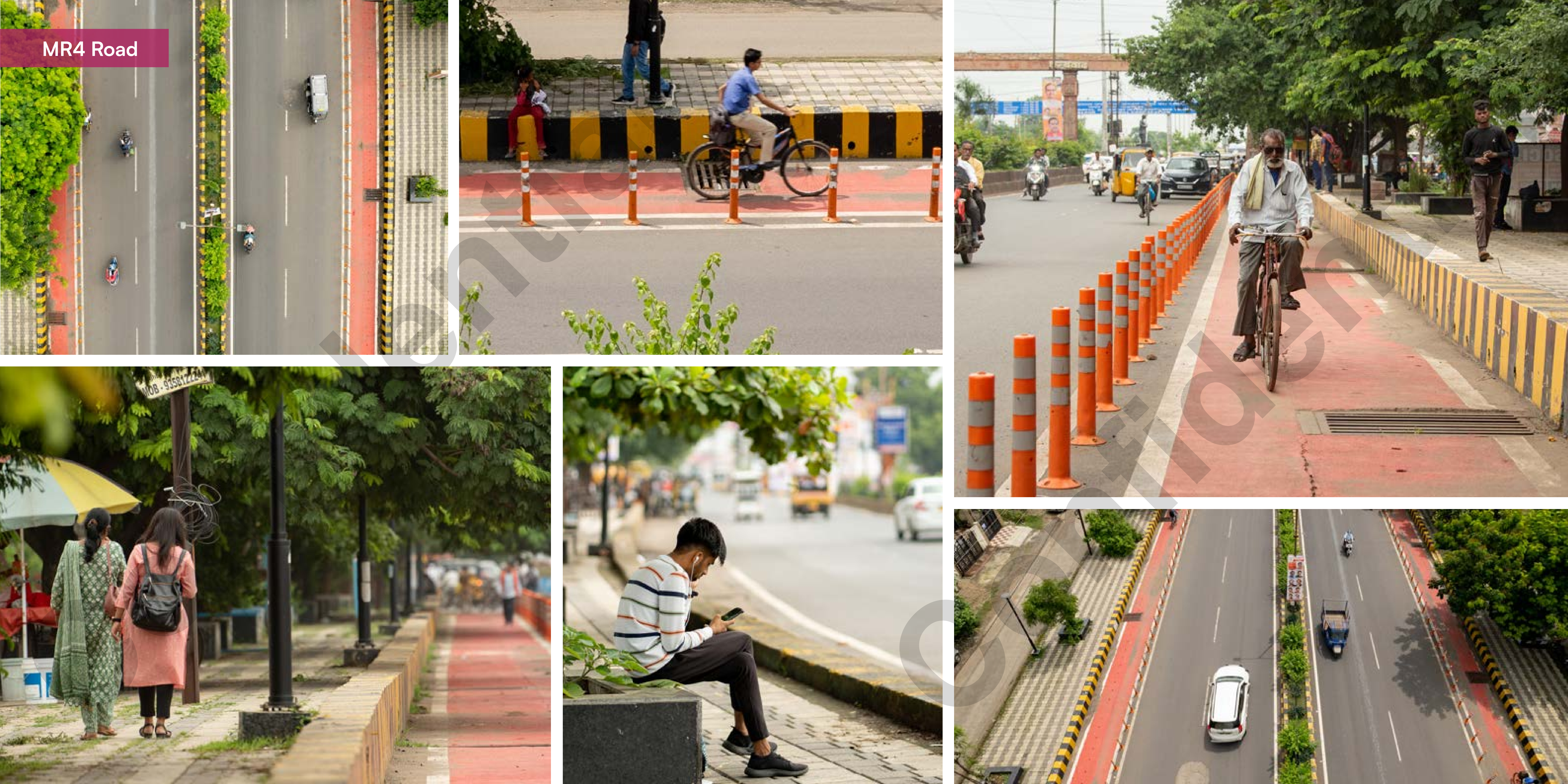
Scaling-up the transformation

Vision: Transforming Jabalpur into a vibrant regional economic and cultural hub through inclusive urban regeneration, to act as a magnet for investment and new opportunities for the youth.

Jabalpur's Cycling Network Plan was devised based on the city's NMT Policy and Street Design Guidelines. The plan recommends appropriate infrastructure type and location, in order to plan, design, and implement dense, continuous walkable and cyclable streets around the city. The network plan visually depicts the street hierarchy at the neighborhood- and city-level. Further, the phasing plan also sets the direction for the implementation strategy.

> *Every city should ensure extensive citizen engagement for any public project execution. The key learning through MR4 was that when we started incorporating citizens' design suggestion in the project, the usability and in turn the footfall of the project improved drastically. Through our public engagements, we have created a network of champions in our city.*
>
> **Shri. Sambhav Ayachi**
> **Assistant Commissioner, Jabalpur**

MR4 Road



5 Planetarium Road

Bengaluru, Karnataka

Typology
Sub-arterial Road

ROW
10.5 m

Length
0.5km

Duration
Jul 2019 - Apr 2022
(33 Months)

Cost
₹14.5 Crores for 0.5km

Nodal Authority
Bengaluru Smart City Limited

Implementing Partners
Design Consultant- JANA urban Space foundation, PMC- M/S Infrastructure Development Corporation (Karnataka) Limited (IDECK), Contractor- M/S ACR Projects Pvt Ltd. Design Consultant- JANA urban Space foundation, PMC-M/S Infrastructure Development Corporation (Karnataka) Limited (IDECK), Contractor- M/S ACR Projects Pvt Ltd.

Awards & Recognition
Cycle4Change

Profile of the city

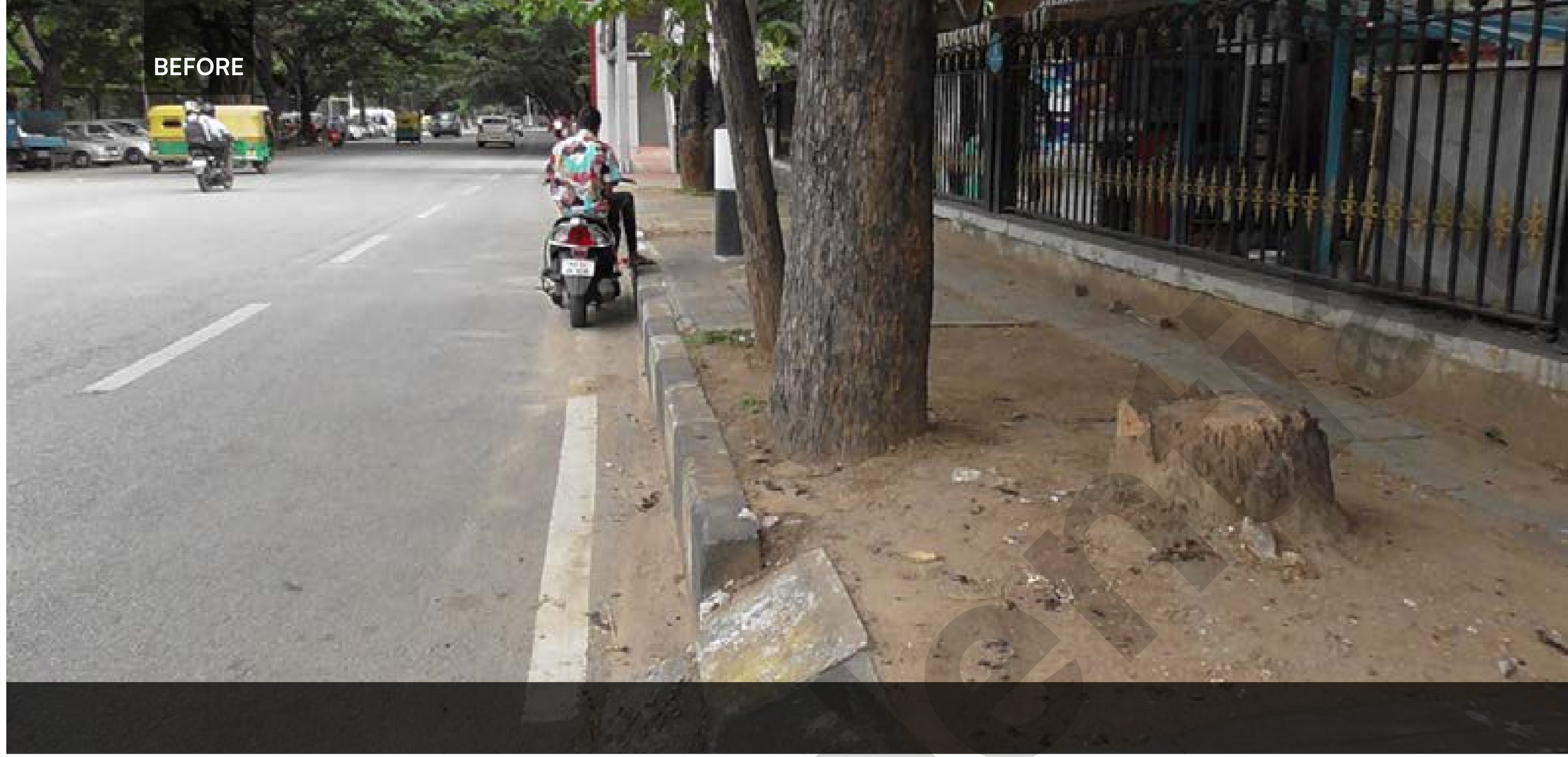
Bengaluru, the IT hub of India has a recorded population of 84.4 lakhs spanning an area of 741.9 sq.km in which 21.8 sq.km has been demarcated as the ABD area. The city was selected in Round 3 of the Smart Cities Mission — since then, it has undertaken 48 projects worth ₹1,033 Cr. in multiple sectors, out of which 16 projects worth ₹534 Cr. belong to the mobility sector. These projects majorly comprise of road redevelopment based on the Tender S.U.R.E guidelines. This fosters walkability, universal accessibility, and improvement in the basic services of the streets in the city.

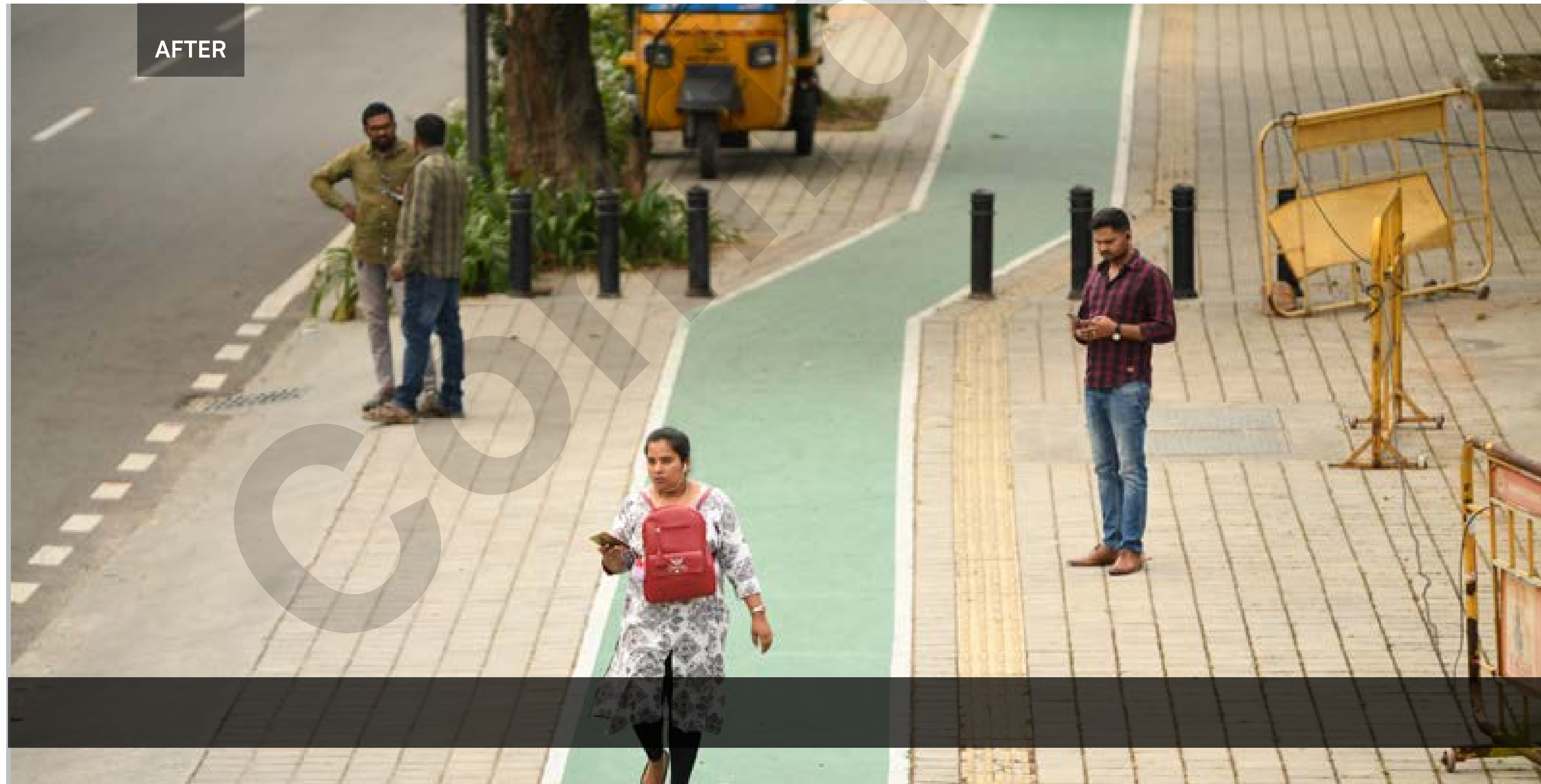
Context of the Project

Planetarium road attracts high traffic flow daily as it is one of the major roads linking Bengaluru's corporate hubs. The aim of the project is to prioritize pedestrians and cyclists, based on the Tender SURE guidelines to prevent road disruptions due to recurrent excavations.

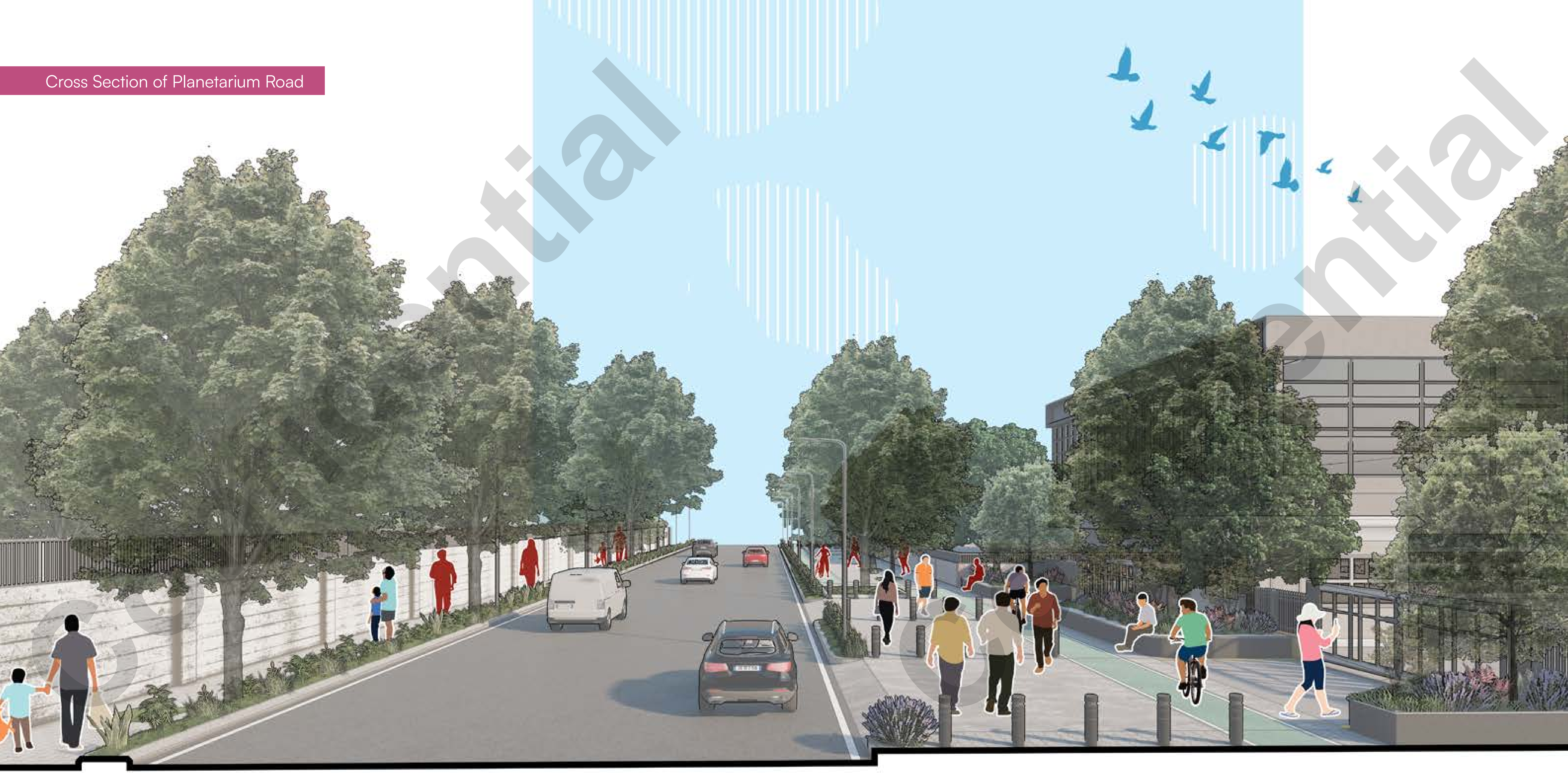
Vision of the Project

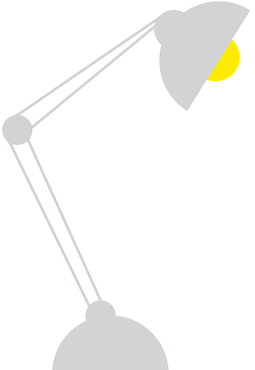
"Liveable Bengaluru- Healthy, Connected & Vibrant".





Cross Section of Planetarium Road





Design Highlights

01 Uniform Road Surface: Ensures a consistent and smooth road surface, enhancing safety and comfort for all users.

02 Allocation of Right-of-Way: Clearly defines spaces for pedestrians, cyclists, and motor vehicles, promoting a well-organized and efficient use of road space.

03 Pedestrian-Friendly Design: Emphasizes wide and well-designed sidewalks with amenities such as seating, street furniture, and greenery to enhance the pedestrian experience.

04 Accessibility Features: Ensures accessibility for differently abled individuals through the incorporation of ramps, tactile pavements, and other universal design elements.

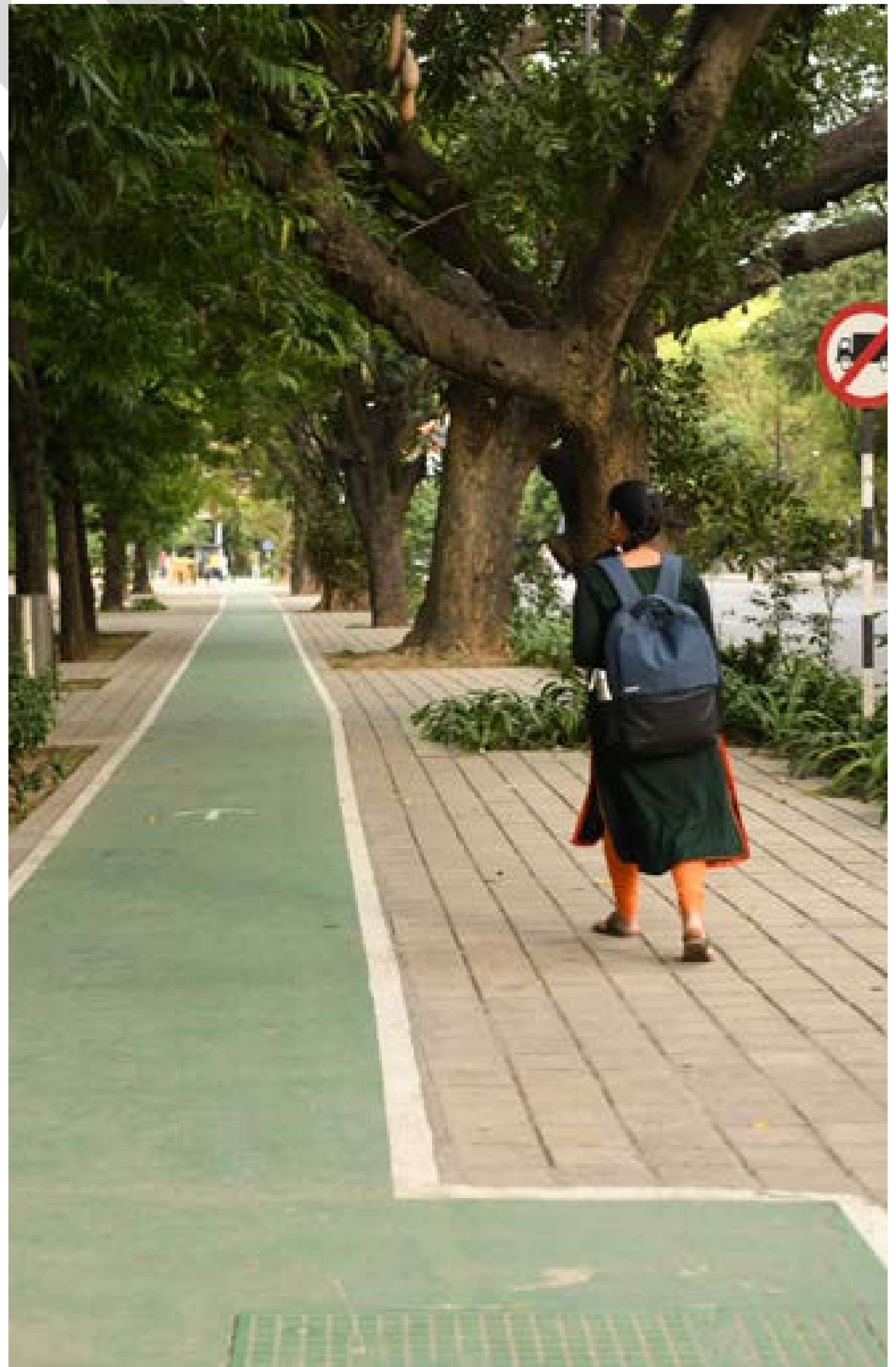
05 Utility Ducts: The main feature of the Tender S.U.R.E guidelines are the underground utilities. It Incorporates underground utility ducts to streamline the placement and maintenance of utility services, reducing disruption caused by frequent road digging.

06 Street Furniture and Lighting: Effective lighting contributes to the overall safety, usability, and attractiveness of the urban environment.

07 Shared Cycle Lane: Due to space constraints and promote the use of cycles, a shared cycle lane along with the footpath has been incorporated.

08 Landscaping and Greenery: Green spaces along the road have been contributing to environmental sustainability creating aesthetically pleasing urban landscapes.

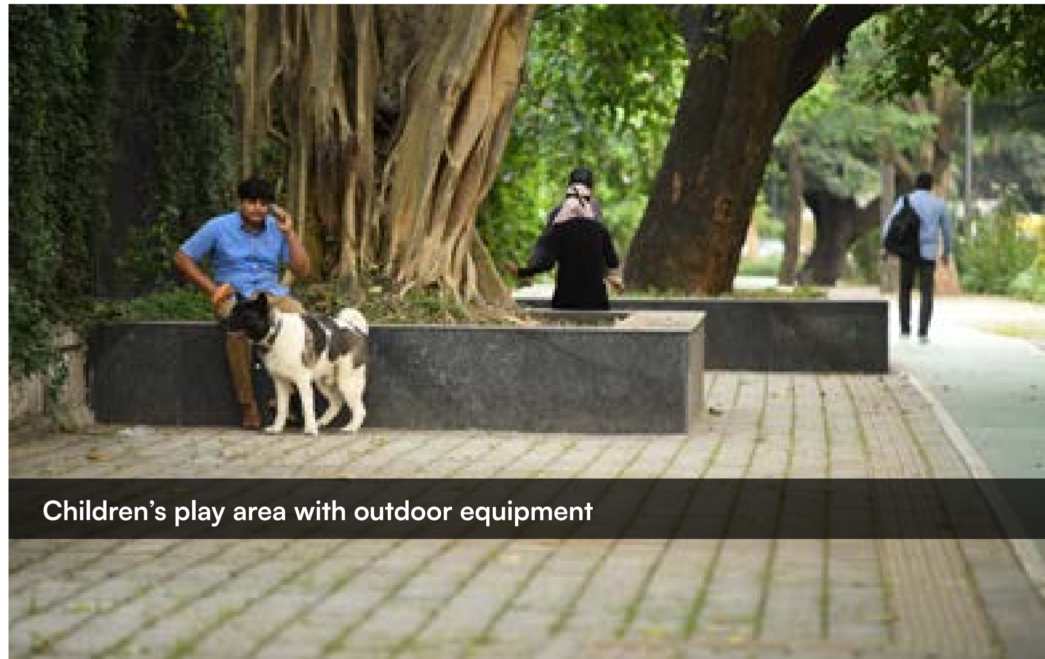
This street design is based on Tender SURE guidelines



Well-maintained green space with shading

Outdoor gym equipment

Continuous walking space along the carriageway



Children's play area with outdoor equipment

Project
Journey

Implementation stage

01
Laying the foundation

The city has also institutionalised the DULT Policy for cycle tracks to design and manage the City's cycle network.

✓ Complete ✗ Not yet started ● Ongoing

- ✗ **Healthy Streets Policy**
- ✗ **Healthy Streets Cell**
- ✓ **Parking Policy**
- ✗ **Street Design Guidelines**

Construction at Raj Bhavan Road

- ✓ **Site visits**
- ✓ **Capacity-building workshops**

02
Building the team's muscle

The city conducted regular capacity building workshops and site visits to other cities for peer learning.

03
Doing things together

Stakeholder engagement
Stakeholders were involved during pre-Execution of the project and during the preparation of DPR through focus group discussions at the ward level.

City Level Advisory Forum (CLAF)
CLAF constituted of 4 MLAs, Assistant City Comissioner and City Commisioner. The CLAF was headed by the MP and reviewed the work progress every three months.

Traffic management
Work was planned such that implementation happened only on one sde and traffic flow was managed on the other side.

Optimising the Right of Way
The proposed street design having 3 lanes in the carriageway initially faced as a pushback as city officials thought that reduced carriageway width will cause congestion.

The carriageway width was optimised to ensure that there is no extra space for parking and other encroachments.

04
Monitoring, learning & improving

Operations & maintenance
Operations and maintenance of built assets for a duration of three years is part of the contract.

Impact Assessment
The city is conducting Impact Assessment to asses the perception of all the stakeholders.

Stakeholder Consultat

Challenges Accepted & Addressed

The major challenges posed during execution were:

The proposed street design having 3 lanes in the carriageway initially faced as a pushback as city officials thought that reduced carriageway width will cause congestion. The carriageway width was optimized to ensure that there is no extra space for parking and other encroachments.

After execution of the Tender S.U.R.E Road, other parastatal agencies could damage the completed road stretch. To avoid the

re-work, all stakeholder coordination meetings were conducted.

Outcomes

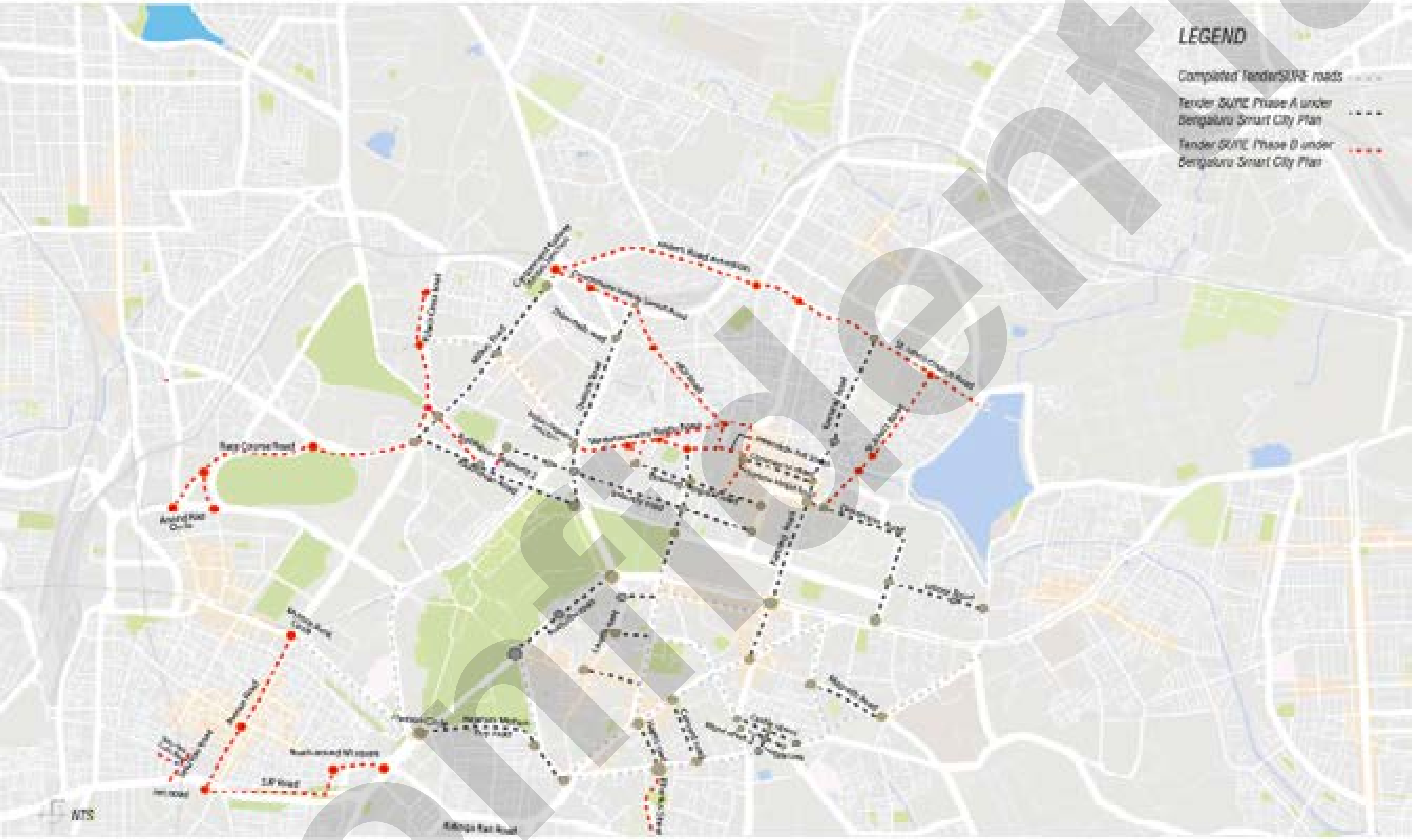
810 sq.m of space has been reclaimed for pedestrians.

The roads of Bengaluru experienced a complete turnaround with pedestrian friendly and universally accessible streets.

There are noticeable differences seen in the cycling activity across the streets.

Way Forward

The street development being carried out in Bengaluru based on the Tender S.U.R.E guidelines showed positive feedback from the citizens and government officials due to their uniqueness. It was among the first few streets in the country to have a designated footpath, underground utilities, parking spaces, public plazas, etc. Recognizing this change, the Bengaluru Smart City Plan included a phased development of a series of streets marked in the centre of the city.


LEGEND
Completed TenderSURE roads
Tender SURE Phase A under Bengaluru Smart City Plan
Tender SURE Phase B under Bengaluru Smart City Plan
NTS

Scaling-up the transformation

At present, a 30km long network of these streets is being executed as part of this plan. Once complete, the Tender S.U.R.E roads will result in one of the most pedestrian and cycle friendly streets in India, connecting Public transport like buses and metros to around 100 institutions and landmarks. The map below shows a phased development plan of the network being developed in Central Bengaluru.

Planetarium Road

6 Smart Janpath

Bhubaneswar, Orissa

Typology
Arterial Road

ROW
60m

Length
5.8 km

Duration
Oct 2017- Feb 2022
(4 years 8 months)

Cost
₹13.72 Cr. per km

Nodal Authority
Bhubaneswar Smart City Limited (BSCL)

Implementing Partners
M/S EGIS India Consulting, M/S IBI India Limited, M/S Ernst & Young.

Profile of the city

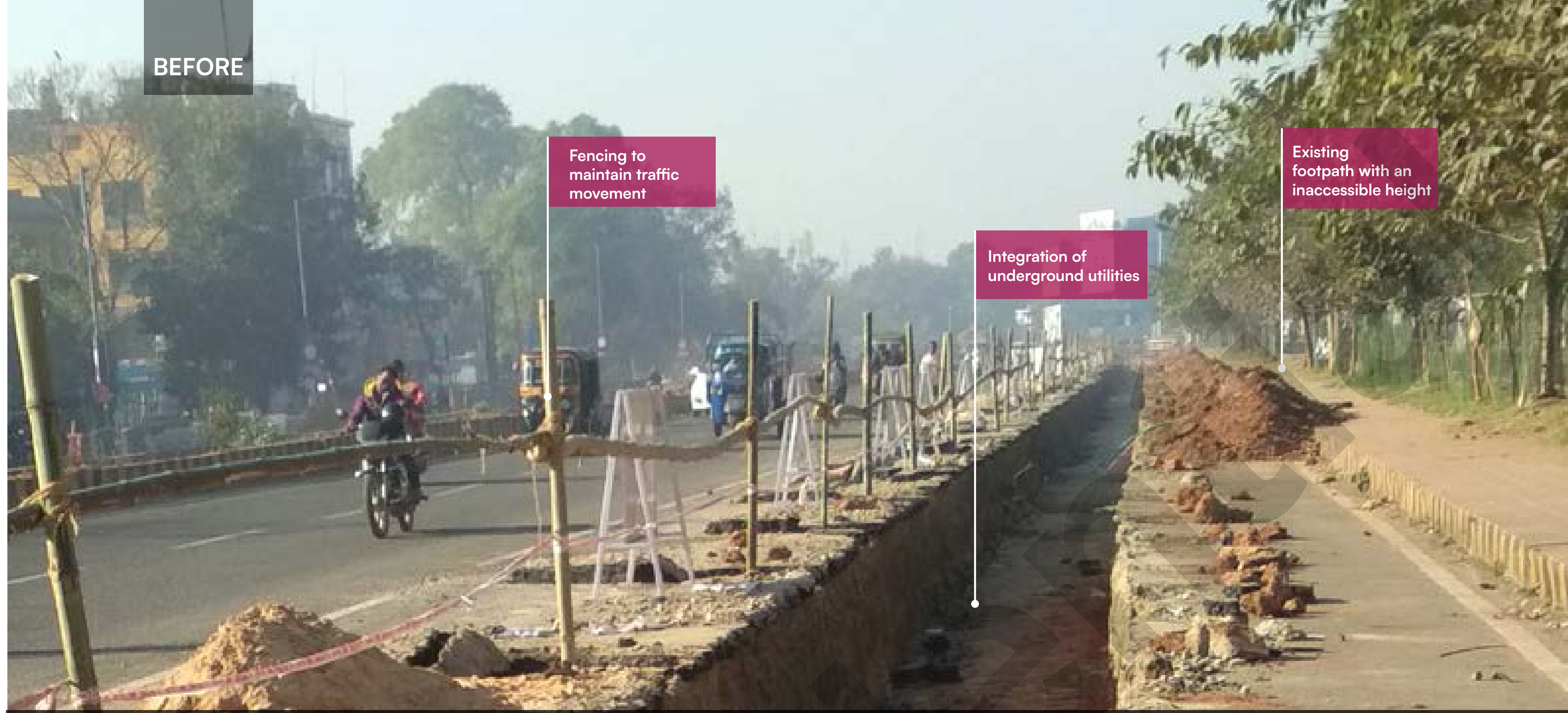
Bhubaneswar ranked 1st position among the 100 cities selected under the Smart Cities Mission of the first planned cities in the country and is renowned as a Temple City. Bhubaneswar has implemented many unique projects under the Smart Cities Mission, including the iconic Smart Road at Janpath and the Bhubaneswar Operations Center (ICCC). Further, the Bhubaneswar Smart City has introduced initiatives such as Child-friendly Smart City and Socially Smart Project that demonstrated inclusive thinking and decision-making processes ensuring citizen participation and responsive planning. Having a total area of 135 sq km with a population more than 8 lakhs, Bhubaneswar Smart City has undertaken projects, worth ₹910 Cr., of which 90% of the projects by value (₹809 Cr.) are already completed under Smart Cities Mission.

Context of the Project

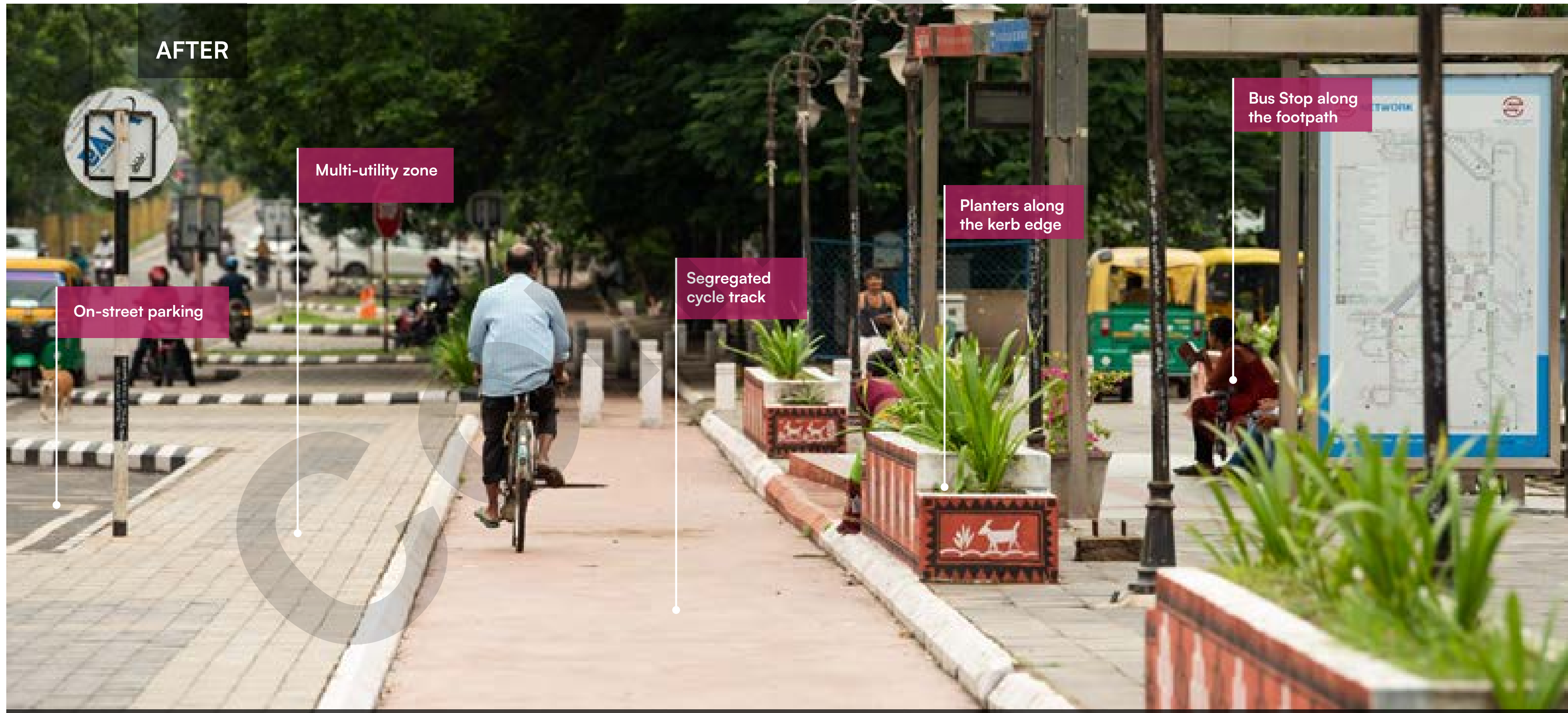
Smart Janpath Road is one of the busiest roads, connecting different parts of the city, having a metro station as well as providing access to ISBT and airport. Being one of the longest streets in the city, it was selected as a model street and envisioned to demonstrate a people-friendly transit-oriented development. This 5.8 km long Smart Janpath is a visionary project that caters to pedestrians and cyclists with dedicated pathways, active public plazas, and improved crossings. The project's success lies in its community-friendly approach, transforming the road into a pedestrian and cyclist-friendly haven.

Vision of the Project

Revitalising urban life, the project envisioned transforming an arterial street into a vibrant community hub integrated with amenities while also ensuring its seamless connection to regions outside the city.

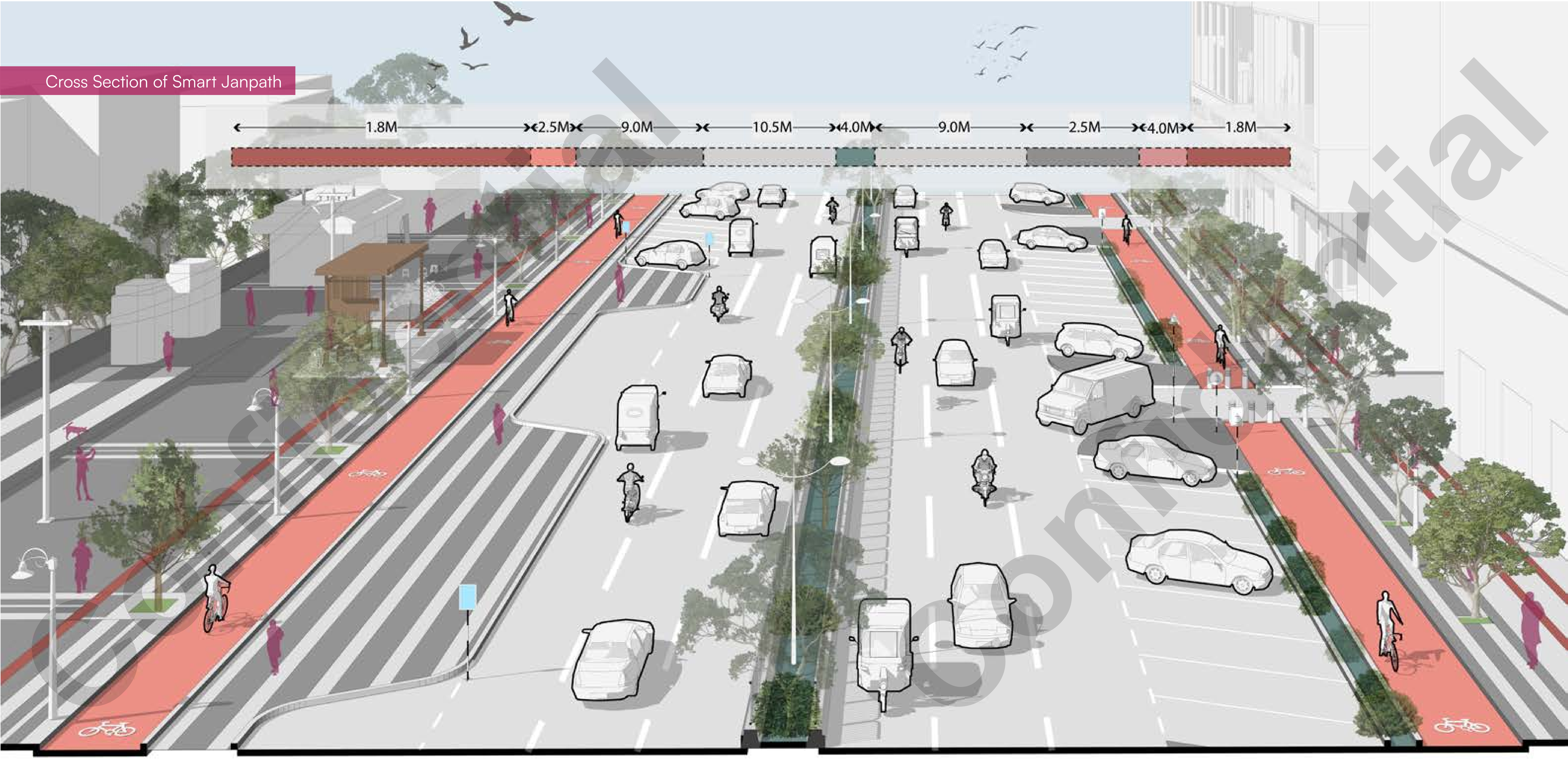

BEFORE
Fencing to maintain traffic movement
Integration of underground utilities
Existing footpath with an inaccessible height

All underground utilities being integrated as per the IRC and Bhubaneswar Street Design Guidelines


AFTER
Multi-utility zone
On-street parking
Segregated cycle track
Planters along the kerb edge
Bus Stop along the footpath

A revitalised urban space integrated with all public amenities, traffic-calming elements and underground utilities

Cross Section of Smart Janpath


1.8M
2.5M
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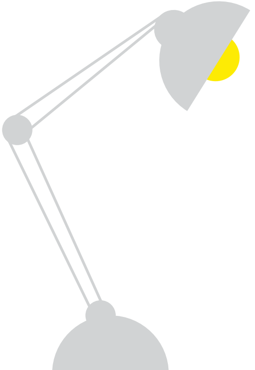


Design Highlights

01 Segregated footpath, cycle track, on-street parking management, dedicated vending zones, and bus stops integrated with amenities are the key features of this street design.

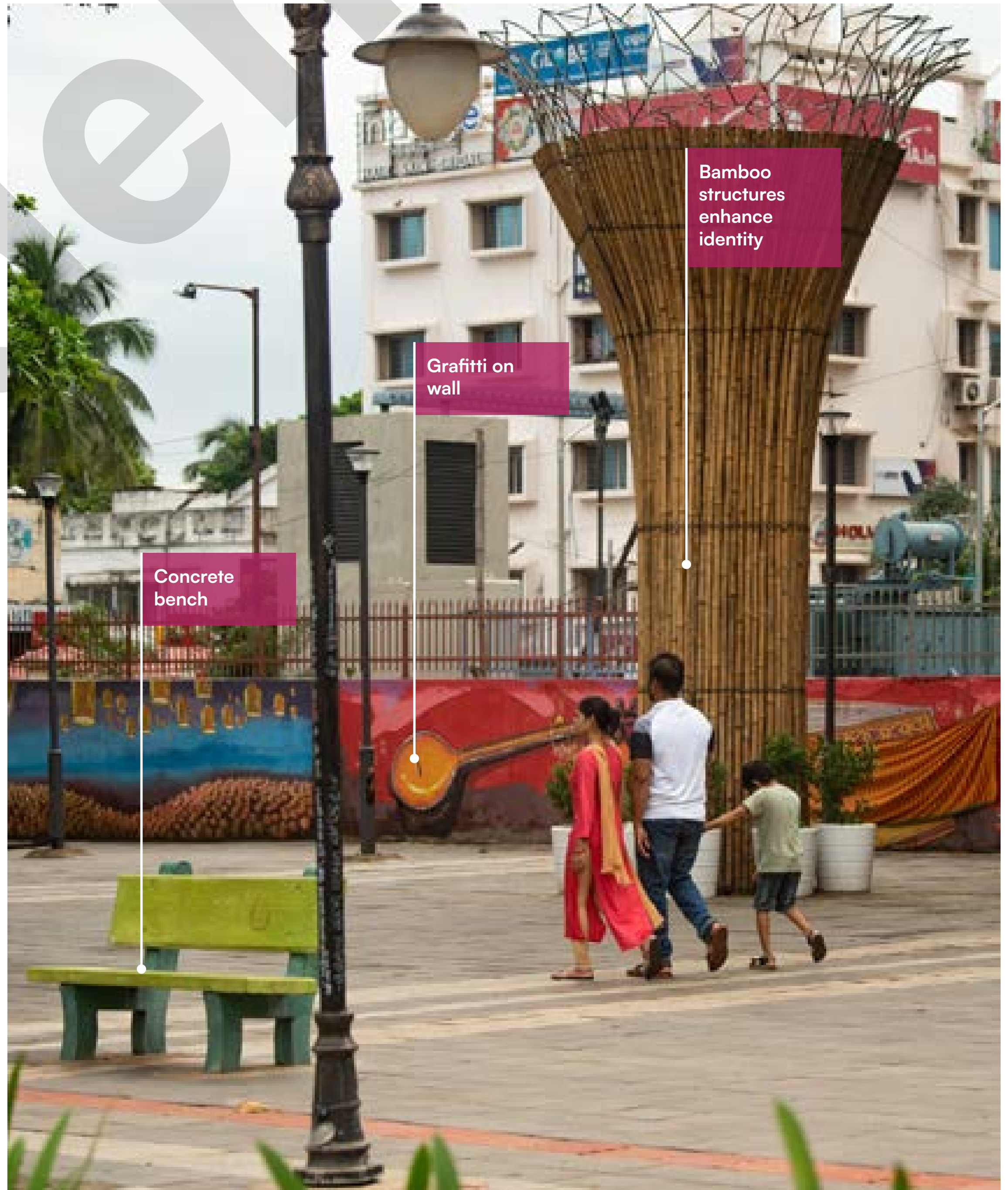
02 All the utilities are consolidated underground and traffic-calming measures, like rumble strips, zebra crossings, embossed indications, and bollards are integrated into the street design to regulate the pedestrian and bicycle movement.

03 Placemaking initiatives have transformed the street edge into inclusive public places integrated with public amenities like seating, street lighting, dustbins etc.

04 Pre-stressed concrete, stamped concrete and sand aggregate are used for the footpath, cycle track, and landscape elements.

05 Bamboo filters are used in the median for green barricading and to ensure visibility from both the sides. Bamboo structures are also created along the edge to enhance the street identity.

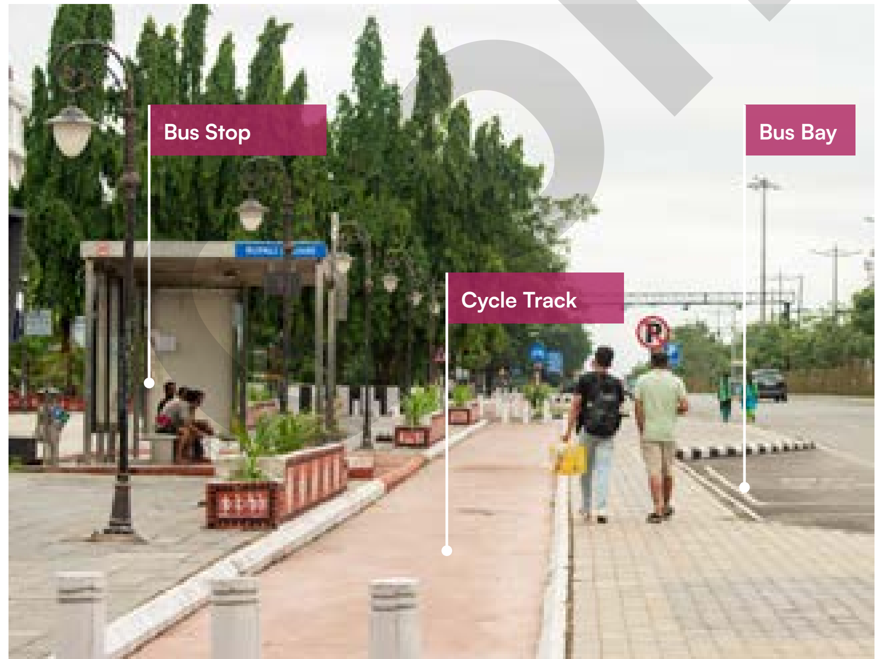
This design celebrates the region's local materials and crafts.



Active street edge creates an inclusive streetscape

At-grade pedestrian crossings improve safety & accessibility

Public Bicycle Sharing stops integrated with bus stops



Segregated cycle track protected with a green buffer & seating provided under tree shade

Project
Journey

Stakeholder engagement

01
Laying the foundation

The city has also institutionalised a Street Vending Policy to organise and manage street vendors.

✓ Complete ✗ Not yet started ● Ongoing

- ✓ **Healthy Streets Policy**
- ✗ **Healthy Streets Cell**
- ✓ **Parking Policy**
- ✓ **Street Design Guidelines**

- ✓ **Capacity-building workshops**
- ✓ **Site visits, Pune**

02
Building the team's muscle

Peer-to-peer learning

Selected team members visited the sites and shared their observations with other team members enabling a peer-to-peer learning for the entire team.

03
Doing things together

Stakeholder engagement

All the stakeholders (including RWA, business owners, residents, NGO representing transgender community) were engaged throughout the project duration through mutual consultations and field visits on a regular basis for redressal and resolution of legal issues. Further, officials from Bhubaneswar Municipal Corporation, Bhubaneswar Development Authority, Public Works, Water Resources, Energy, Housing and Urban Development Department, Government of Odisha and communication agencies like BSNL, AIRTEL, TATA etc were taken on board during the planning and decision-making process.

Media reporting

Media reported the people's demands and it helped the team in understanding their requirements. Designs were modified accordingly.

24x7 Redressal Team

24x7 tracking and redressal of issues was ensured through WhatsApp groups and on-ground staff from the Bhubaneswar Municipal Corporation. The MD & CEO of Bhubaneswar Smart City received updates on a daily basis.

04
Monitoring, learning & improving

Monitoring

Two dedicated teams are engaged to monitoring proper enforcement in the area like dissuading the Mobile Vendors, symmetrical arrangements of the vending kiosks, proper parking of the vehicles in the assigned parking place, towing of the vehicles creating indiscipline in the Smart Janpath. Moreover, the officials of Bhubaneswar Smart City were also entrusted with supervision duties in the Smart Janpath to monitor the same.

On-street parking management

The system is monitored through ICCC and is managed by an NGO run by the transgender community.

CCTV Surveillance

CCTV surveillance near bus stops focuses on people waiting as well as passengers boarding and de-boarding the buses to ensure safety.

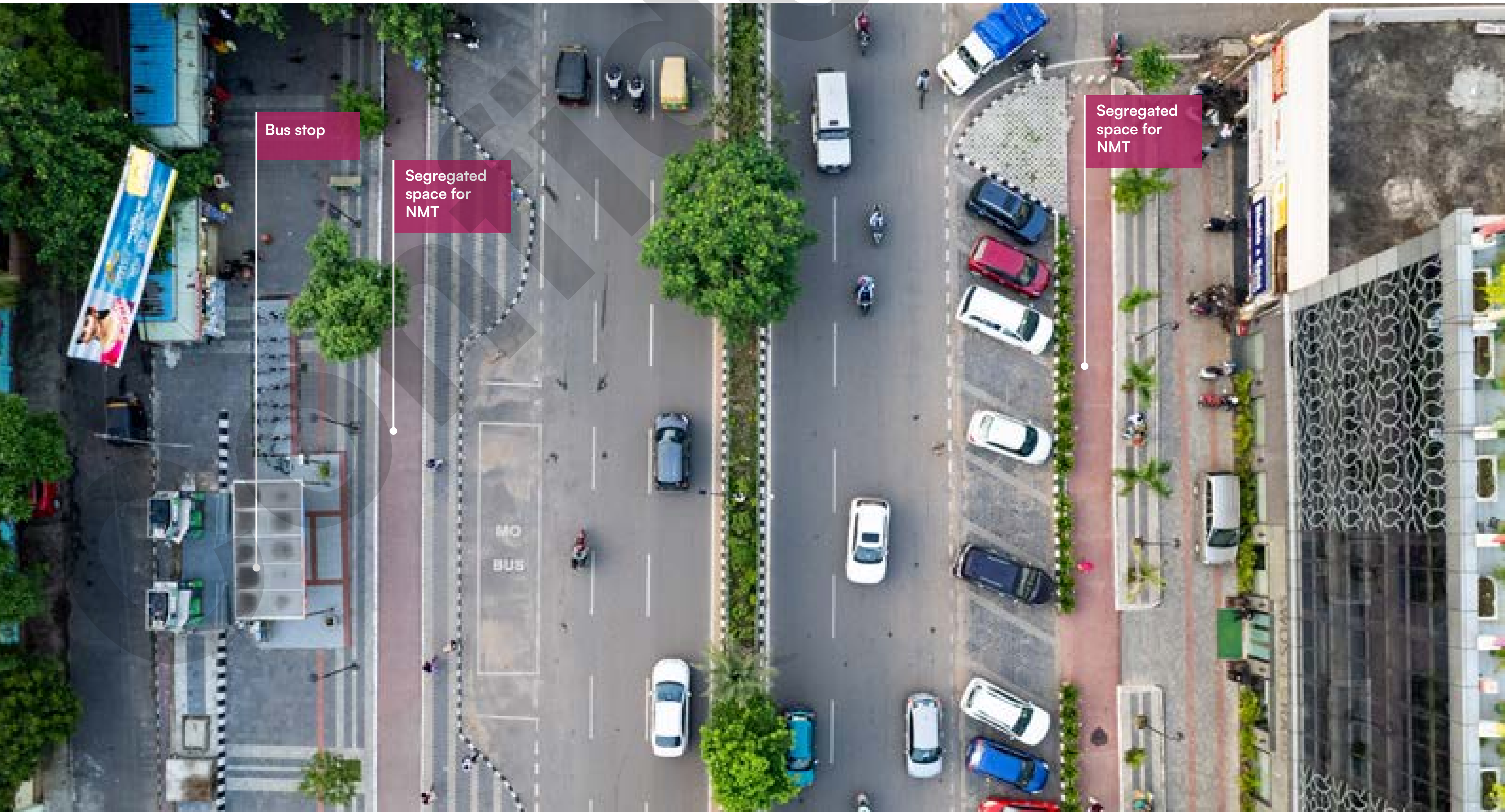
Operations & Maintenance

The project contractor has been assigned a contract of four years for O&M of the street. Sanitation and street lighting is being managedd by the Bhubaneswar Municipal Corporation.

Innovative Solution:
On-street Parking Management

Lack of designated parking spaces near the existing commercial shop-fronts were a major concern for the business owners as well as the visitors. These parking bays can be booked online and the system is being managed by an NGO run by a transgender community.

On-street parking management system has provided 1080 designated parking bays that allow people to park close to their destination and has improved accessibility, boosting the businesses as well.



Challenges Accepted & Addressed

Encroachment by vendors: Initially the roads were encroached on by Street Vendors. There was major pushback from these vendors and from local people, however, this issue was resolved through several stakeholder engagements.

Laying of underground utilities: Relocating underground utilities along the smart road. Through efficient engineered mechanism and stakeholder consultation with the officials from Bhubaneswar Development Authority, Public Works, Water Resources, Energy, Housing and Urban Development Department, Government of Odisha, this issue was resolved.

Pushbacks from Citizens: Citizens filed cases in the court as they felt the design was not contextual. This was mitigated through participatory approach, where citizens were invited for workshop to provide feedback to the design consultants that satisfy the citizen's needs.

Outcomes

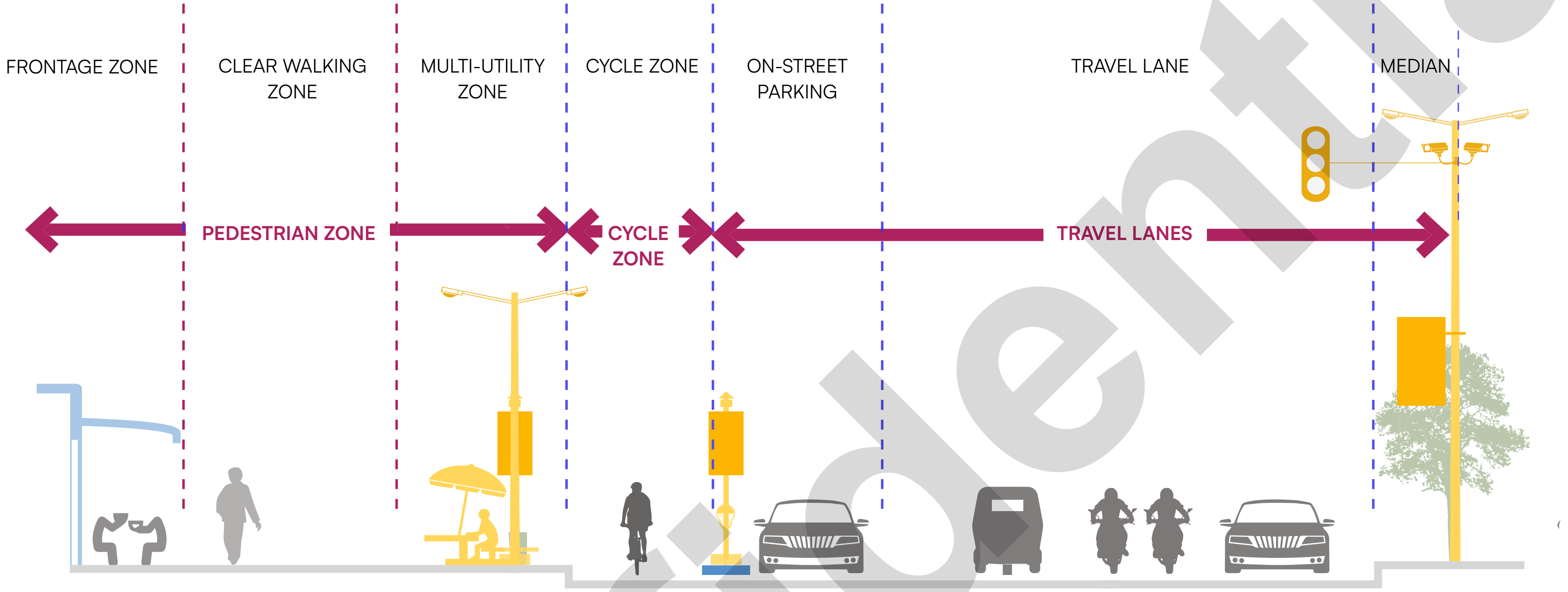
All Inclusive space: The project has crafted an all-inclusive and vibrant public space with dynamic public plazas, fostering a sense of community and providing spaces for lively gatherings.

Reclaimed space for people: 60000 sqm of space was reclaimed for pedestrians and cyclist after the implementation of the project
Boosting local businesses: The Smart Janpath has benefitted 1,000+ business establishments on one side of the road and 100+ residential plots on the other side

Citizen Impact Stories

> *Smart Janpath has truly transformed the heart of our city, Bhubaneswar. It's not just a road; it's a vision brought to life. The pedestrian and cyclist friendly pathways, vibrant public spaces, and dedicated vending zones have not only made it more accessible but also more enjoyable. Smart Janpath has quickly become a beloved part of our daily lives, reflecting the forward-thinking spirit of our community and setting a shining example for urban development.*
>
> **- Mr. Sri Nirmal Kumar Mohapatra, Resident**

Way Forward



Scaling-up the transformation

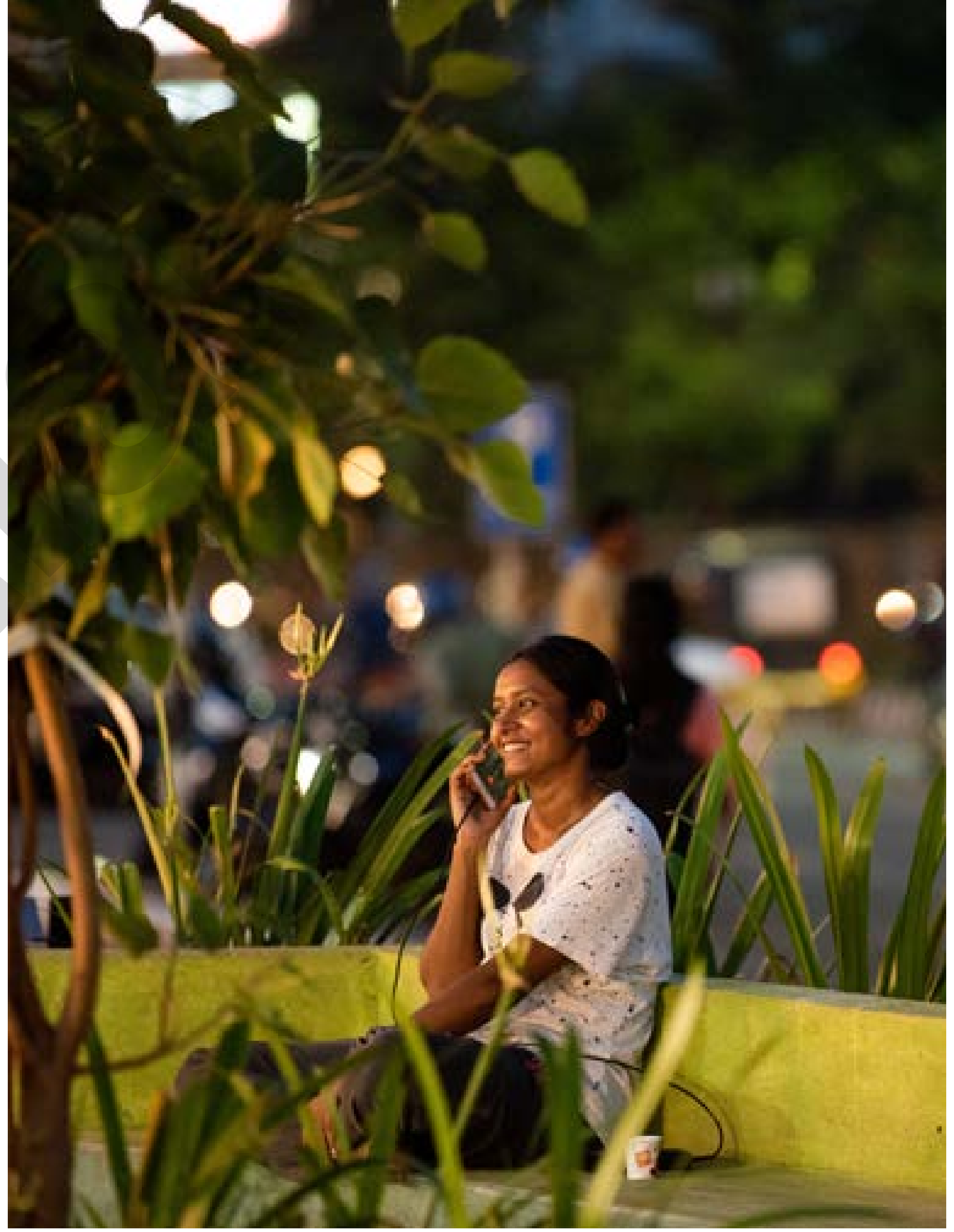
In order to tap the potential of urban streets, Bhubaneswar Development Authority has initiated Project 'URBS'- Urban Regeneration through Bhubaneswar Streets in an effort to improve liveability in the city. Project URBS has been conceptualized to enhance the liveability of Bhubaneswar through a multi-pronged approach, of which Street Design Guidelines is one part &amp; it will help establish the framework for urban regeneration of streets and public spaces in Bhubaneswar.

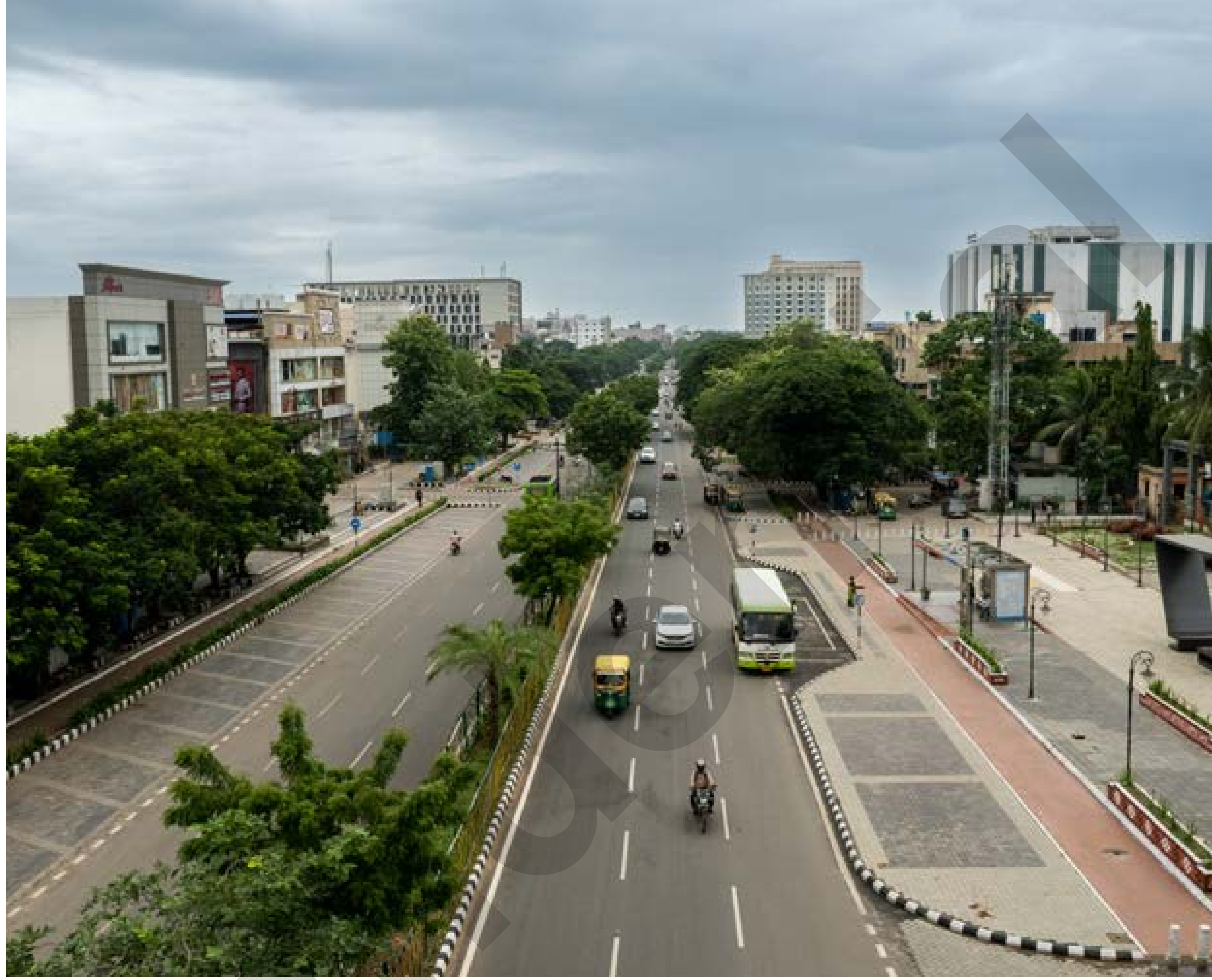
In 2021, after the implementation of Smart Janpath the Street Design Guidelines and standards for Bhubaneswar was prepared to design the roads where space is allocated to safely balance the needs of all road users including pedestrians, cyclists, transit, and motorists. In a nutshell, the guideline provided a step-by step approach formulating a COMPLETE STREET.

Apart from the Street Design Guidelines, there are other multiple components of URBS such as Placemaking Initiatives, walkable neighbourhoods, Multimodal transport network, institutional support and mobilizing behavioral change initiatives (NMT day, cycle day, Car free day etc.) intended to achieve the overarching goal of developing Bhubaneswar into a child friendly city.

Smart Janpath

SRIYARAM
RESTAURANT & DRY FRUITS





7 Aundh Ravet BRTS

Pimpri Chinchwad, Maharashtra

Typology
Arterial Street

ROW
45m

Length
8km

Duration
Jun 2021- Nov 2023
(2 year 4 months)

Cost
₹7.74 Cr. per km

Nodal Authority
Pimpri Chinchwad Smart City Ltd

Implementing Partners
Local Administration: Pimpri Chinchwad Municipal Corporation, Design Consultant: Prasanna Desai Architects, Project Contractor: Nikhil Construction Group Pvt. Ltd., PMC: EnviroSafe Consultants

Project Highlight

Focus on pedestrianization and cycle friendly infrastructure along the public transit corridor which connects Pune and Pimpri Chinchwad, drawing heavy vehicular traffic across the street.

Context of the Project

The Aundh-Ravet Road, a vital connection between Pune and Pimpri Chinchwad, was characterized by large institutional blocks on both sides. Despite high footfall and cyclist numbers, it lacked essential walking and cycling infrastructure. Recognizing this need, the project sought to address these deficiencies, transforming the corridor into a more pedestrian and cyclist-friendly space while enhancing access to the BRTS corridor.

Vision of the Project

The project aims to create continuous walking and cycling infrastructure while enhancing access to the BRTS corridor.

Project Journey

Foundation Initiatives

In 2018, PCMC initiated the Urban Streetscapes Programme, adopting the NMT Policy in 2021. Later The Harit Setu Plan was developed which serves as the city's NMT Master Plan. To foster implementation of NMT infrastructure, a team dedicated to streets development was set up which ensured regular capacity.

Key Actions

As part of the C4C Challenge, tactical trials were carried out, introducing a 1km pop-up cycle lane. Positive public feedback led to the establishment of permanent walking and cycling infrastructure along the entire 7 km corridor. Furthermore, to develop a desirable NMT network, citizens and cyclist groups were involved through handlebar surveys to evaluate usability, while perception surveys were employed to gauge public opinions, gather input, and identify potential locations for similar infrastructure improvements.

Design Features

For a seamless pedestrianization and cycling infrastructure, the design included segregated cycle tracks, safe walkways, green safety buffers, and multi-utility zone separation. To maintain the green cover existing trees were preserved, and tree pits were made for water percolation for ground water recharge.

Challenges

- The shifting of utilities such as water, drainage pipeline and storm line, was challenging during the construction stage of the road.
- Alignment of the utility lines aper the ROW, was the critical part of the projects, as some of them were overlapping with the pedestrian pathways, which was affecting the design of the road. However, through effective design solution, this issue was resolved.

Outcome

- The segregated tracks for joggers and walkers have ensured safety. Before the implementation of the project, cyclists and joggers were using the main vehicular lane which resulted in the risk of accidents.
- More than 16,800 sqm of space have been reclaimed for pedestrian and cycleways, as part of the projects

8

Alkola Circle Road

Shivamogga, Karnataka

Typology
Arterial Street

ROW
30m

Length
2.8 km

Duration
Mar 2018- Dec 2021
(3 years)

Cost
₹7.6 Cr. per km

Nodal Authority
Shivamogga Smart City Ltd.

Implementing Partners
PMC: Tata Consulting Engineers, Contractor: HD Infrastructure, Local Administration: Shivamogga City Corporations, MESCOM, KUWS&DB, Water Supply Department

Project Highlight

he project includes all features which enhance the quality of life in the city. It provides spaces for social interaction, cyclable streets and pedestrian safety across the street.

Context of the Project

The Smart Road project in Shivamogga City aims to enhance road safety and improve the level of service (LOS) for road users. This initiative includes integrated pedestrian facilities, footpaths, and Non-Motorized Transport (NMT) infrastructure like cycle tracks, etc. It also involves the conversion of overhead electrical lines to underground cabling within the ABD area. This project spans from Ashoka Circle to Prof. Krishnappa Circle and is a part of the city's infrastructure development efforts, contributing to aesthetic enhancements and visual improvements.

Vision of the Project

The project envisions promoting growth through zoning regulations, transportation infrastructure, and business district development. It strives to improve air quality, aesthetics, and safety for all road users.

Project Journey

Foundation Initiatives

Recognizing the importance of developing one of the important streets stretches in the city, the project was initiated by Shivamogga Smart City Ltd (SPV) and was designed on the basis of NMT and Health Streets Policy.

Key Actions

Stakeholder consultations were conducted in the initial stages of the design development through focused group discussion, ward level citizen/ stakeholder engagement or through NGOs and third-party organizations. Apart from the regular in-person consultations, site visits were also conducted to give an idea of the proposal. The collection of feedback responses was done through online public grievance portals.

Design Features

The street has been organized with typical features of street design in which a segregated footpath, segregated cycle track, on-street parking management, at-grade crossings and interactive multi-purpose spaces have been designed and incorporated. Street furniture like granite seatings, play equipment, streetlights, etc. have also been placed. In addition to this, a dedicated bus stop, PBS stations and public toilets enhance the completeness of the street.

Challenges

Variations in width of the ROW led to multiple design changes related to footpath and corridor separation which consumed time. Another challenge was faced during the clearance of land acquisition and encroachment. However, after execution there were persistent unorganized spaces for the auto-rickshaws and street vendors.

Outcome

- The public has started utilizing cycle tracks as well as footpaths which were absent earlier.
- 22000 sq.m. of space has been reclaimed for pedestrians and cyclists.

9

Civil Lines

Sagar, Madhya Pradesh

Typology
Arterial Road

ROW
21m

Length
3.5km

Duration
Mar 2021- Nov 2022
(1 years 8 months)

Cost
₹54.25 Cr.

Nodal Authority
Sagar Smart City Limited

Implementing Partners
Sagar Municipal Corporation, Madhya Pradesh Road Development Corporation Limited, Town and Country Planning Department Sagar, NH-PWD, Grant Thornton Bharat LLP(PMC), Sreeji Infrastructure India Pvt. Ltd. (Contractor)

Awards & Recognition
HUDCO Award for Best Practice

Project Highlight

Connecting 2 ends of the city, the street is widened from a 7m congested road to a 21m wide street as per the Master Plan 2031, focusing on improving pedestrian safety, and enhancing the connectivity to different parts of the city.

Context of the Project

Sagar Smart City was selected in the round 3 of the smart cities challenges as one of the smart cities from Madhya Pradesh. As part of the Master Plan 2031, the city envisions on improving pedestrian movement and enhance connectivity. This particular road running from Civil lines to Tili Junction is part of the Smart Road Project undertaken by the Sagar Smart City. Uniting corporate offices, banks, coaching institutes, food courts in the Civil-lines area with the Central university, Officers colony, colleges, playgrounds, this road connects major parts of the city.

Vision of the Project

The project strived to enhance traffic flow, connectivity, and urban living by creating a modern road equipped with streetlights, footpaths, and essential infrastructure, aligning with the city's development vision.

Project Journey

Foundation Initiatives

The project strictly adhered to IRC guidelines and government codes for different types of work, ensuring compliance with the required standards.

Key Actions

Through focused group discussions, capacity building workshops, Ward level citizen and stakeholder engagement, social media campaigns, the inputs for the street design were incorporated. During the implementation, the roads; profile was corrected to ensure proper gradients. Furthermore, Efficient streetlights, walkways, green spaces, underground multi service -ducts, and parking spaces were implemented as part of the project.

Design Features

Design features include segregated footpath, on-street parking management, organising on-street vending, underground utilities, cycle parking areas, multi-purpose open spaces, seating areas, landscaped corridors, public toilets, and food plaza.

Challenges

- The project faced encroachment issue, however, with the help of Municipal Corporation and Sagar Collectorate this issue was resolved during the pre- execution stage.
- During the implementation stage, the biggest challenge to accommodate 800mm diameter of Underground Water Supply Pipeline System as part of the street design. Due to which the design was changed for 100m.
- Post implementation, the people started encroaching the road with vehicular parking, which resulted in major traffic congestion. However, through on-site parking management, Integrated Traffic Management System, help from Traffic police and continuous public campaign this issue was resolved

Outcome

- The project has provided safety for pedestrian and vehicular movement and enhanced the quality of life.
- 14000 sqm of space was reclaimed for pedestrian and cycling movement as part of the is Smart Road Project.

10 Dal Lakefront Promenade

Srinagar, Jammu and Kashmir

Typology
Arterial Road

ROW
6m (width of Lakefront Promenade)

Length
5.10 km

Duration
May 2022—November 2023
(1 year 6 months)

Cost
₹30.97 Cr. overall

Nodal Authority
Srinagar Smart City Limited (SSCL)

Implementing Partners
Hassan Roads Construction Company (HRCC)

Project Highlight

The Dal Lakefront promenade is a 5.10 km long lakefront created for both cyclists and pedestrians, one that offers a serene and secure passage amidst the breathtaking expanse of the pristine Dal Lake. This enchanting lakefront seamlessly merges safety with splendor, inviting citizens and tourists to traverse its pathways while immersing themselves in the captivating beauty of the surrounding landscape.

Context of the Project

The Northern Foreshore Road (NFR) being an important vehicular connection is also an important lakefront destination that is thronged by visitors and local cyclists and pedestrians. However, the road lacked sufficient pedestrian walking and safe space for cyclists. Srinagar Smart City Limited (SSCL) has developed a Dal Lakefront promenade with a wide walkway and dedicated cycling facility spanning 5.10 km from the famous Nishat Bagh to Habak along Northern Dal Lakefront. The design focused on providing safe pathway and cycle track, that are aesthetically laid over the lake shoreline. The promenade has ensured safe movement of pedestrians and cyclists and enhanced the ambience of Dal Lake.

Vision of the Project

The project aims to transform Dal Lakefront into a vibrant and inviting public space, offering an exhilarating walking and cycling experience amidst the breathtaking waterscape of the pristine Dal Lake.

Project Journey

Foundation Initiatives

Aligning to the city's vision of making people-friendly streets, the primary goal of the project is to enhance the safety of pedestrians and cyclists by creating a safe and suitable environment for pedestrians, coupled with a dedicated cycle track. This Lakefront promenade poised to bridge the gap and facilitate easier and more enjoyable passage between these key nodes, enhancing the overall experience for visitors and locals.

Key Actions

The 5.10 km long Dal Lakefront promenade has ensured safe and secure space for walking and cycling along with dedicated shaded space for social activities. To ensure inclusivity and ease of access for everyone, the inclusion of kerb ramps, tactile pavements, and rumble strips has been a key focus, allowing universal accessibility for all visitors.

For fostering late-night activities high-quality lighting has been installed that creates an inviting ambiance conducive to evening activities.

The removal of visual clutter, such as wires and billboards, has significantly enhanced the visual panorama, allowing for unobstructed and improved interaction with the stunning beauty of the Dal Lake.

Design Features

The streetscape design includes a 3m wide dedicated two-way cycle track, public bicycle docking facility along with 2.5m wide pedestrian walkway. Tactile flooring and kerb ramps are used for universal accessibility. Viewing decks with open seating areas and gazebos provided. Street furniture like bollards, signages and LED streetlights have been also incorporated as part for the design. The design following local architecture style in order to respond to the context.

Challenges

- The development of a 6M wide promenade has been challenging as the site offers an extremely low bearing capacity of less than 1.5 MT, to overcome this an efficient structural system was developed with a network of pile systems and cantilevered decking.
- The Reinforced Cement Concrete (RCC) piling and decking work has been executed in a record-breaking timeline in extreme cold weather conditions.

Outcome

- **Active Dal Lakefront:** The Dal Lakefront has undergone a remarkable transformation, evolving into a bustling and lively public space attracting locals and visitors.
- **Enhanced Safety:** The establishment of a dedicated two-way cycle track and a spacious pedestrian walkway has significantly improved safety for cyclists and pedestrians. This has effectively reduced accidents and fatalities.
- **Improved Connectivity:** The 5.1 km pathway and cycle track, constructed on a cantilever deck slab over the lake shoreline, create a seamless connection between Nishat and Habak, Naseembagh.
- **Tourism Promotion:** The project's completion elevates the area's tourism potential, turning it into a major attraction. Visitors can now enjoy a safer and more enjoyable experience while exploring the Dal Lakefront, consequently boosting tourism in the region.
- **Vibrant nightlife:** The nightlife along the Lakefront has seen an incredible surge, completely transforming the dynamics of the area. This has boosted new economic opportunities.

11 Dharmnath Marg

Belagavi, Karnataka

Typology
Arterial Street

ROW
30m

Length
2.4km

Duration
Sep 2019- Mar 2020
(6 months)

Cost
₹13.62 Cr.

Nodal Authority
Belagavi Smart City
Limited (BSCL)

Implementing Partners
Design Consultants: Tractebel Engineering Pvt. Ltd.,
Local Administration: City Corporation of Belagavi Corporation, BSCL, KUIDFC

Awards & Recognition
Smart Project Awards in the category "Smart & Successful Citizen Engagement" was presented to Belagavi Smart City for the Multi-Dimensional Inclusive Project on 26 August 2022 in the event — Smart Urbanization, Mumbai.

Project Highlight

In response to the rapid increase in vehicle ownership, the city had taken initiatives to revamp the deteriorating street infrastructure by creating a pedestrian and cyclist-friendly environment with well-organized utilities to promote sustainable mobility.

Context of the Project

The project was initiated jointly by the City Corporation of Belagavi and Belagavi Smart City Limited, in coordination with the Karnataka Urban Infrastructure Development and Finance Corporation. It was divided into five packages, covering 27.25 km of roads, which focus on specific construction and enhancement initiatives in the city's most congested areas as part of a comprehensive road improvement plan under the Smart Cities Mission.

Vision of the Project

The aim is to provide core infrastructure, enhancing the quality of life for citizens, and offering smart solutions for operations and maintenance services.

Project Journey

Foundation Initiatives

The project has been implemented on the principles of Healthy Street policy and undertook capacity-building initiatives, such as peer-to-peer learning from other cities through site visits.

Key Actions

The project standardized lane widths, created pedestrian friendly footpaths, cycle lanes and planned utilities. Contractors were engaged in operations and maintenance (O&M) of the street. Local civic authorities and common public were involved through meetings, mobile applications, and social media (LinkedIn, Twitter, Instagram). Efforts were also made digitally in which - online surveys, crowdsourcing, webinars, and virtual workshops collected ideas and feedback.

Design Features

The street was designed in an organized manner with IPT bays, on-street parking and underground utilities. Street furniture like smart street poles with LED lights and CCTV surveillance have also been installed. To create public spaces on the street, elements of placemaking have been incorporated.

Challenges

- Encroachment was one of the key challenges faced in Belagavi Smart City leading to design changes. As a result, there were various amendments to the original scope of work. Elements like cycle track, HDPE Pipe laying for utility, reduction of the ROW, etc. had to be descoped to avoid encroachments which had implications on the project timelines, costs and deliverables.
- After completion, a few challenges related to parking management emerged. Promotion of NMT across the street led to a reduction in on-street parking which resulted in the requirement of dedicated parking spaces like MLCPs, etc.

Outcome

- A Significant cycling activity is observed on the street after the implementation of a dedicated cycle track in which the cycling count per hour has increased from 372 to 425.
- 4252 sq.m of space was reclaimed for pedestrians and cyclists.
- A modal shift has been observed after the implementation of the street — in which the pedestrian count has increased from 970 to 1050 pedestrians/ hour after implementation of a dedicated and seamless footpath.

12 Dr. Radhakrishnan Road

Tumakuru, Karnataka

Typology
Sub- Arterial Street

ROW
20m

Length
0.65km

Duration
Mar 2019- Mar 2023
(4 years)

Cost
₹5.74 Cr.

Nodal Authority
Tumakuru Smart City Limited

Implementing Partners
Tumakuru Smart City Limited (TSCL), Karnataka Urban Infrastructure Development & Finance Corporation (KUIDFC), IPE Global Ltd (PMC), M/s Sri Srinivasa Constructions (I) Pvt Ltd.

Project Highlight

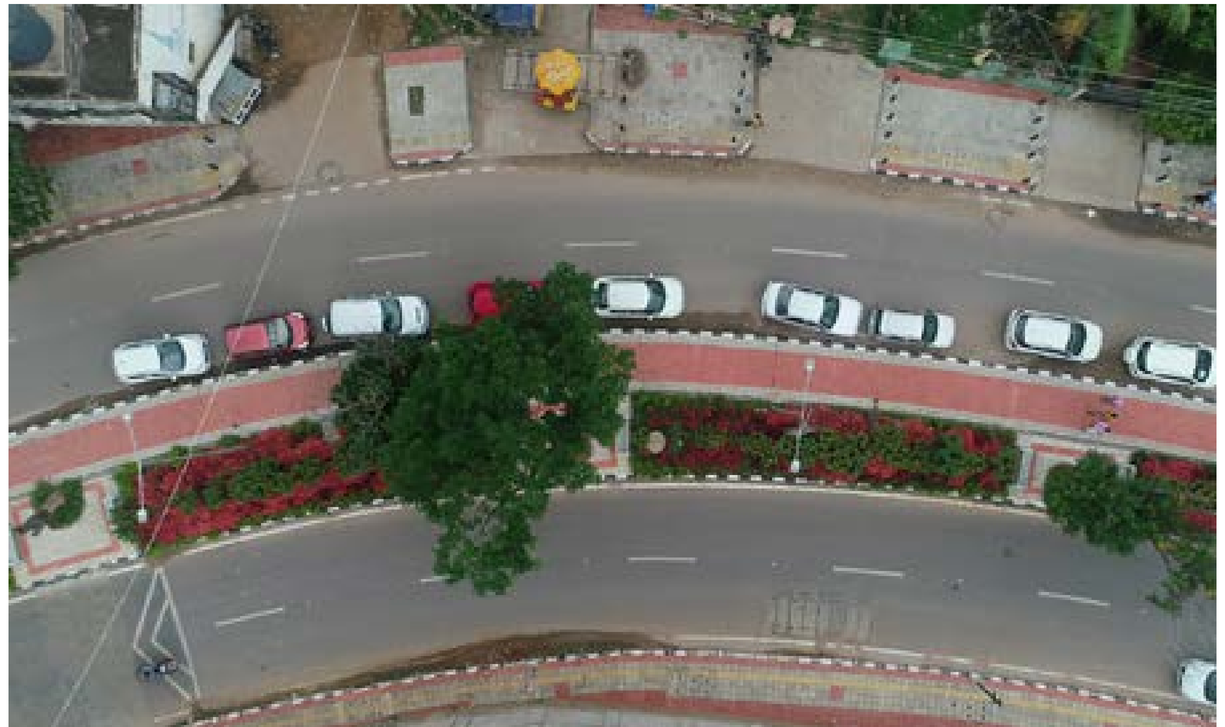
Driven by people-centric planning, the street is transformed to enhance connectivity between local streets and arterial roads prioritising pedestrian needs.

Context of the Project

Dr. Radhakrishnan is part of the Bengaluru-Honnavar highway that runs through the Tumakuru Smart City. The road transitioned from 2 lane to 4 lane. Additional R.O.W. integrated the wide footpaths on both sides, cycle track and a linear lush green cover in the centre of the road. These interventions have yielded spaces conducive to placemaking, thereby transforming the landscape of public domains while increasing the road capacity.

Vision of the Project

The project aims to improve connectivity, prioritize pedestrians, and enhance urban aesthetics, aligning with the city's broader development vision.



Project Journey

Foundation Initiatives

The city's unique initiative involved extensive public consultations to address pedestrian needs and transform the congested highway into a people-friendly thoroughfare.

Key Actions

In the initial stage, the city organised a mass stakeholder/Public participation in the community halls to get the general feedbacks from the publics on the planning and the design of the project. Further, monthly ward-level consultations facilitated public input, with Deputy Commissioner of Tumakuru and MD & CEO of TSCL co-chairing to tackle urban issues.

During the implementation stage of the project, the city police team and Corporation worked together to remove the encroachments on the road. To enhance the greenery of the street, 15 new trees were planted, and 18 mature trees were relocated during the expansion of the road.

Design Features

Notable design elements include a segregated cycle track, spacious footpaths, parking spaces for shopkeepers and street amenities like lighting, furniture, and public bicycle sharing stations. The design included Speed Tabletops to regulate the vehicle speed & also for pedestrian crossings. Materials used are locally sourced and the waste plastics collected from the garbage's are shredded to pieces are used in the Asphalt works of the road. CCTVs and Emergency call box/panic buttons are installed on the street to ensure safety.

Challenges

- The biggest challenge was the clearances of the encroachment on the street. With immense support and coordination of the city police and corporation the issue was resolved.
- During the excavation works, the underground utilities such as existing BSNL cables, water supply lines were very carefully safeguarded by the implementing agency.
- Post the completion of the project, the pedestrian paths were encroached by vendors that was managed under the city corporation.

Outcome

- The street observed an increase of pedestrian footfall from 423 to 655 during the peak hours
- 2600 sqm of spaces was reclaimed for pedestrian after the implementation of the project.

13 Dedicated Cycle Tracks

Chandigarh

Typology
Sub Arterial Street

ROW
9m and above

Length
21.4km

Duration
Jan 2017- Aug 2019
(2 year 8 months)

Cost
₹10.7 Cr.

Nodal Authority
Chandigarh Smart City Limited (CSCL)

Implementing Partners
Chandigarh UT Administration, Engineering Department Chandigarh Administration.

Project Highlight

Driven by a high per capita vehicle ownership, Chandigarh initiated the project to promote cycling as a sustainable transport mode encouraging a modal shift away from motorized transport.

Context of the Project

The project constitutes an extension of the existing 200 km cycle network and footpath along 7V's. It encompasses vital road segments, including Uttar Marg, Sukhna Path, Sarovar Path, and Purv Marg. The city is committed to achieving carbon neutrality and has introduced India's largest Public Bike Sharing system, comprising 5,000 bicycles and 617 docking stations which has led to a reduction of over 950 MT of carbon emissions.

Vision of the Project

Envisioning to adopt bicycles as a clean and affordable mode of transport, Chandigarh aims to become "The Bicycling Capital" of India.

Project Journey

Foundation Initiatives

As the foundation of the project, an Apex Committee was formed. The city adopted policies such as the Healthy Street Policy, Bicycling Vision Policy and Healthy Street guidelines.

Key Actions

The city adopted a holistic communication plan that includes regular cycling events, user testimonials, feedback mechanisms, and citizen outreach programs. By implementing initiatives like cycle rally, cyclothon, training workshops, cycle2work, the city generated awareness among citizens. Citizen participation surveys and focused stakeholder discussions were carried out to finalize the proposals to meet the city's requirements to benefit the citizens with a safer and more secure cycling environment. The city also conducted pilot interventions along several corridors in the city. In-house officials from the various departments such as Engineering Department, Horticulture Department, Urban Planning Department and Traffic Safety & Security department are appointed to ensure proper operations and maintenance of the cycle track constructed and also for taking care of the safety and security of the cycle users in the city.

Design Features

Design features include pelican crossings, illuminated cycle tracks, table-tops for traffic calming and junction redesigning. Street light poles were added at a later stage to provide well illuminated cycle tracks for the cyclists.

Challenges

- Cyclists faced problems of crossing at junctions, as a solution of which, cycle time in traffic signals have been provided and the junctions have been redesigned to benefit the cyclists positively.
- Keeping in view the safety aspects of bicycle users, street light poles and surveillance cameras were installed alongside the cycle tracks and were started getting monitored in ICCC of Chandigarh.

Outcome

- There has been seen a modal shift among the citizens as after the construction of segregated cycle tracks/lanes, more people can be seen using cycle to make commute, resulting in project's success.
- Citizens can be seen adopting cycling in their daily use and stepping towards a healthy lifestyle.

14 Ernakulam Smart Roads

Kochi, Kerela

Typology
Arterial Road

ROW
7.5m

Length
5.5 km

Duration
May 2022- November 2023
(2 years 10 months)

Cost
₹52 Cr. overall

Nodal Authority
Cochin Smart Mission Limited
(CSML)

Implementing Partners
Kochi Municipal Corporation,
IPE Global Limited (PMC),
Deens Group (Contractor)
KIIFCON Private Limited

Project Highlight

The Dal Lakefront promenade is a 5.10 km long lakefront created for both cyclists and pedestrians, one that offers a serene and secure passage amidst the breathtaking expanse of the pristine Dal Lake. This enchanting lakefront seamlessly merges safety with splendor, inviting citizens and tourists to traverse its pathways while immersing themselves in the captivating beauty of the surrounding landscape.

Context of the Project

With the introduction of metro services in the Kochi Smart City and the process of integration of the various modes of transport, the upgradation of the existing system is need of the hour. This demanded the development of the major roads within the ABD area of Kochi Smart City to world-class standards, by providing underground provisions for the utilities and designing the urban architecture. Aligning to this, Kochi transformed the existing road networks such as Abraham Madammakkal Road, Shanmugham road, Park Avenue Road, Banerji Road, and Durbar Hall Road into Smart Road by providing dedicated cycle tracks, pedestrian path and world class underground utilities.

Vision of the Project

The project envisions developing an inclusive and complete arterial system with high class infrastructure and basic amenities to meet world class standards.

Project Journey

Foundation Initiatives

The project was initiated through the selection of road networks, that are mainly considered as the main thoroughfare and runs along the main waterfront projects in the city. The strategic locations of these roads created opportunity for implementing the pilot stretch. All the selected roads were well connected and runs along the major landmarks and transit nodes such as Ernakulam boat jetty, Maharajas College, Durbar Hall, KSRTC bus station of the city.

Key Actions

Intending to upgrade the aesthetics of the urban environment, the city followed people-friendly urban design approach while integrating world-class infrastructure as part of the streetscape. The scope of the project mainly includes relaying of roads, aligning of underground utility duct, reconstruction of stormwater drainage system, upgradation of the defined carriageway as per the standards, junction improvement, provision of bus bays, multi-utility zones hawker zones, and parking.

Design Features

The streetscape design includes well-illuminated dedicated pedestrian pathways and cycle lanes, with wayfinding signages placed along the road stretches. The dedicated pedestrian pathways were designed as per the standard guidelines and with innovative street furniture.

Challenges

- Breakage of existing underground utility during excavation. This was resolved by replacing of the old utility with new ones from the alignment of the excavation.
- During the construction of footpaths, there was pushback from the shopkeepers that was resolved through continuous meetings with stakeholders
- There were protests from people due to reduction in road width after the construction of footpath. However, through continuous meetings with people representatives, residents' association, ward councilors this issue was solved.

Outcome

- The development of the road has enhanced the quality of life for citizens, and ensured the safety for cyclists and pedestrians.
- The stretch promotes NMT and reduces traffic congestion.
- There is an increase in footfall of people on the pedestrian ways after the renovation work.
- Shanmugam Road houses many commercial buildings, business establishments, retail shops, food cafes, and restaurants. The development of the Smart Roads along this stretch has boosted the local economy and have fostered the socio-cultural growth of the region.
- This project has improved connectivity to other parts of the city of Ernakulam and facilitated easy access to the West Kochi area.

15 Green Mobility Corridor

Hubballi-Dharwad, Karnataka

Typology
Sub-Arterial Street

ROW
3.5m

Length
9.25 km

Duration
May 2023- Aug 2023
(3 months)

Cost
₹165.68 Cr.

Nodal Authority
Hubballi-Dharwad Smart City Ltd.

Implementing Partners
KVR Contractors, Aminbhavi & Hegde, Local Administration — Hubballi Dharwad Municipal Corporation

Project Highlight

This initiative focused on rejuvenating Hubballi's Unkal Nala, a 9.25Km drainage channel, transforming it from a simple stormwater drain into a holistic community space.

Context of the Project

The project had been taken up under the CITIIS program of the Smart Cities Mission. With a total cost of 130 crores, the project underwent a phased approach, emphasizing environmental sustainability, NMT corridors, and public spaces along the Unkal Nala. The project is divided into 3 phases. Phase I included a pilot quick win project of 0.6km, Phase II consisted of 5km and the remaining 3.6km was taken up in Phase III.

Vision of the Project

The project envisions converting Unkal Nala into a green mobility corridor, fostering sustainable urban mobility, flood management, sewage treatment, waste control, and green space expansion.

Project Journey

Foundation Initiatives

For the acceptance of this project, various awareness initiatives were implemented, including radio shows, bicycle rallies, pamphlet distribution, door-to-door engagement, and Plog runs.

Key Actions

The project employed Natural Hybrid technology and treated 3 MLD of sewage water. The inflow of sewage water was reduced by 28 MLD into the nala. Solid waste management was an important aspect in the project which curbed 16 tonnes/day of littering. The addition of 22 acres of green cover includes 6 parks developed in the city. For public consultations, citizen and stakeholder engagement at the ward level included NGO's and third-party organisations. Over 4,000 household surveys were conducted during the maturation phase and feedback was gathered via focused group discussions.

Design Features

The project incorporated tangible elements like Gabion walls to prevent flooding. This wall consists of a gabion apron at the base to prevent erosion of the soil and give stability to the apron wall; which increased the carrying capacity of the nala, effectively preventing flooding. In areas where there was not enough land available to construct the cycle track, a cantilever was erected inside the nala, instead of acquiring private lands. Given the tendency to dump garbage in the open or into the nala, a 10 ft high chain-link fence is erected all along the nala, and at all the 12 bridges. This has been painted green, adding to the corridor's aesthetic value. The other features include cycle and walking track, children's play area, public activity zone, landscape areas, open gyms, public bike sharing stations etc.

Challenges

The entrance to Unkal nala and the area surrounding it was an overgrown swamp, filled with weeds and snakes without any clear boundaries. An ADLR survey was conducted, and boundaries were marked in consultation with Hubballi Dharwad Municipal Corporation.

Unlike traditional infrastructure projects, the GMC required labour and machinery to work in the slush and smell of a live nala. The water had to be diverted at every stretch. The labour sometimes had to deal with fresh sewage entering the site where they were working. Despite all these challenges, work continued at a brisk pace as safety, environmental and social safeguards were followed. The nala carried an unhygienic mix of lake overflow water, storm water and sewage. Hence, a new UGD trunk line had to be laid 1.5m below the nala floor with chambers extending up to a height of 4m, above the Highest Flow Level (HFL) of the nala. his was challenging as the large pipes had to lowered into trenches where it was nearly impossible for labour to even stand.

Outcome

- The Green Mobility Corridor project has transformed the landscape of an important part of the city. The stakeholders, i.e. the residents living along the nala opine that the nala does not stink anymore. This is primarily due to construction of a dedicated UGD line underneath the nala to prevent mixing of storm water and sewage, and secondarily due to the reduction in solid waste dumping inside the nala.
- People have also been using the bicycle track as a walking path and as a shortcut to get from one area to another within the city. In addition to this, 15,000 sqm of space has been reclaimed for the pedestrians and cyclists.

16 Harbour Park Road

Visakhapatnam, Andhra Pradesh

Typology
Sub Arterial Street

ROW
15m

Length
1.1 km

Duration
Jun 2018- Dec 2022
(4 year 6 months)

Cost
₹8.01 Cr. per km

Nodal Authority
Greater Visakhapatnam Smart City Corporation Limited.

Implementing Partners
Greater Visakhapatnam Municipal Corporation, AECOM India, Shapoorji Pallonji Group

Project Highlight

Promoting pedestrian-friendly streets that integrate barrier free pathways and segregated bicycle ways as part of the streetscape design.

Context of the Project

Visakhapatnam was selected as one of the Smart Cities in Round 1 of the Smart Cities Challenge. Having a total area of 514 sq km, the city has implemented various streetscape projects. As part of the Smart City Plan, the city had proposed several streetscape projects in the ABD area. To prioritize a pedestrian-friendly environment over a vehicle-dominated road, the Visakhapatnam Smart City developed Harbour Road that connects the main RK beach of the city.

Vision of the Project

Visakhapatnam envisions transforming into a "pedestrian-friendly city" by prioritizing pedestrian safety and enhancing the overall urban environment.

Project Journey

Foundation Initiatives

The city formed an Apex Committee and adopted the Healthy Streets Policy and Guidelines to promote pedestrian-friendly streets.

Key Action

A participatory planning approach was embraced, coupled with effective communication tools, regular citizen outreach programs, and feedback mechanisms to engage citizens and drive behavior change. Further, the city conducted initiatives like street cleaning, parking drives, and collaborated with the traffic police to kickstart the on-ground transformation.

Design Features

Project incorporated design elements, such as pelican crossings, table-tops for traffic calming, junction redesigning, and the inclusion of car and bike parking facilities.

Challenges

- During the initial phase of implementation, there was resistance from several stakeholders of the project. However, with continuous rigorous stakeholder and citizen-inclusive workshops, the design was formulated, and the issue was resolved.
- Harbor Road being located at downhill, the terrain was one of the biggest challenges during the implementation stage. The efficient alignment of the carriageway with parking and pedestrian ways was very critical at the design stage, which led to a successful implementation of the road.

Outcome

- Harbour Road .is one of the major spines that connects to the most important attraction of the city that is the RK Beach. After the development of the streetscape, the footfall has increased during the peak hours.
- The wider pedestrian ways with seating areas have encouraged social interaction during the evening hours,
- Road is well illuminated and safer now for pedestrians, as the road safety measures have been incorporated as part of the street design.

17

Iconic Road

Surat, Gujarat

Typology
Arterial Street

ROW
60m and above

Length
2.1km

Duration
Jan 2017- Aug 2019
(3 years 2 months)

Cost
₹14.1 Cr.

Nodal Authority
Surat Smart City Limited
(SSCL)

Implementing Partners Surat Municipal Corporation, - Road Department, Southwest (Athwa) Zone BHOSEKAR VIKAS & NILIMA (Design consultants),

Project Highlight

With a 60-meter Right of Way, the road is the entry/exit point of the city. Its transformation enhances accessibility and public health while leaving a lasting positive impression on visitors.

Context of the Project

This street is a major connector between the city and the airport, facilitating access to the National Highway, which, in turn, leads to the major industrial hub of Surat, Hazira. Additionally, this thoroughfare intersects with Surat's renowned Dumas Beach, a popular tourist destination. Initially plagued by traffic congestion and lacking pedestrian and cycling lanes, the project's objective is to promote walking, cycling, and public transportation.

Vision of the Project

The project envisions a balanced road for pedestrians, cyclists, and vehicles, promoting public health, improved mobility, and a positive city image.

Project Journey

Foundation Initiatives

Acting as the major connector of the city, this Street plays a very important role, as it acts as the entry and exit point of the city. Ensuring the sustainability of the project, the city has already laid a strong operation and maintenance strategy for 15 years, which is to be executed by a private agency through PPP.

Key Actions

In the initial stage of the project, extensive public consultation was conducted to co-create a uniform vision of the street. During the implementation stage, the project adopted a creative approach of using pile and raft foundations for the installation of hoardings, bus stops, underground water tanks, drip irrigation, and plant sprinklers to minimize the need for relocating existing utilities. With high salt content, the top 3 feet of existing soil were removed and replaced with garden clay soil for shrub plantation.

Design Features

1.5m wide of the segregated footpath, 2.5 m of dedicated cycle track, on-street parking, and integrating underground utility ducts as part of the streetscape. Multi-purpose spaces with seating, play areas, jogging tracks and landscaped elements are incorporated as part of the design.

Challenges

- The shifting of utilities such as water, drainage pipeline and storm line, was challenging during the construction stage of the road.
- Alignment of the utility lines aper the ROW, was the critical part of the projects, as some of them were overlapping with the pedestrian pathways, which was affecting the design of the road. However, through effective design solution, this issue was resolved.

Outcome

- The segregated tracks for joggers and walkers have ensured safety. Before the implementation of the project, cyclists and joggers were using the main vehicular lane which resulted in the risk of accidents.
- More than 16,800 sqm of space have been reclaimed for pedestrian and cycleways, as part of the projects

18

Iconic Road Project

Jhansi, Uttar Pradesh

Typology
Arterial Street

ROW
30m

Length
1.6 km

Duration
Jan 2023- Nov 2023
(11 months)

Cost
₹5.6 Cr. per km

Nodal Authority
Jhansi Municipal Corporation

Implementing Partners
Engineering Department,
Jhansi Municipal
Corporation

Project Highlight

In the vicinity of Jhansi's two major universities, underutilised street shoulders were transformed to provide vibrant urban spaces for students and pedestrians.

Context of the Project

5km long Kanpur Road was a busy arterial street connecting two major universities, hospitals and commercial establishments. The 30m wide RoW faced issues of traffic congestion, unregulated parking and vending along with cordoning-off of street shoulders leaving no space for the high pedestrian flow in the area. The project vision was to develop a walking highway connecting a series of vibrant urban spaces where people, especially students, can meet, eat, walk, cycle and interact. The interventions included development of walk-cycle track, public bike-sharing stations, landscaped sit-outs, on-street parking, variety of vending zones and urban art installations.

Vision of the Project

To introduce Jhansi's citizens to the benefits of healthy streets and inspire stronger walk-cycle communities.

Project
Journey

Foundation Initiatives

- Jhansi has adopted Healthy Streets Policy through sweeping consensus of concerned departments. The city has formed Healthy Streets Design Cell and Healthy Streets Department within Jhansi Municipal Corporation. Street development projects are being undertaken by both, Jhansi Municipal Corporation and Jhansi Development Authority under the visionary leadership of Divisional Commissioner, Jhansi. Jhansi has also completed its Comprehensive Mobility Plan Study and created its Network plan so that planned development of healthy streets continues.

Key Actions

- Workshops/meetings, events and social media have been the major tools of engagement with citizens along with one-on-one discussions. Jhansi has conducted multiple workshops with citizens and government departments to discuss plans, identify demands and priorities as well as assess feasibility of planned interventions. Jhansi Smart City regularly hosts events of various nature, including two successful editions of Raahgiri Jhansi to build positive relations with citizens and encourage engagement with public spaces. Social media is used for outreach and taking opinion feedbacks.
- The city has undertaken multi-faceted interventions to support the project. Such interventions include smart parking management system, public bike sharing project, elimination of garbage-vulnerable points, activation of city parks, development of vending zones across the city, regular anti-encroachment drives etc.
- Jhansi has followed the **Test-Learn-Scale approach** for its street development projects because it is not only valuable as a learning tool but also as a trust-building tool with the citizens. Projects are first run in trial phase wherever necessary and then permanent interventions are undertaken- the best example of this is redesign of Elite Circle which is the busiest city junction of Jhansi.

Design Features

- The design of the streetscape incorporates a 7m wide pedestrian corridor, featuring a dedicated walking track that seamlessly connects various elements like water features, bridges, play equipment, vending areas, and vibrant paving patterns.
- The inclusion of well-placed sit-outs and diverse lighting enhances the overall aesthetic and functionality of the space.

Challenges

- Lack of awareness and exposure for on-site implementation which was overcome through detailed instructions and monitoring.

Outcome

- 11,200 sqm of public space reclaimed for pedestrians.
- The project's success is evident as the Mayor advocates for the expansion of a 32 km walk-cycle infrastructure in the city. This achievement is reflected in the vibrant scenes of citizens strolling along footpaths, taking pleasure in the provided seating areas. The environment mirrors that of a street-side park, offering a blend of urban activity and a sense of security.
- Residents relish the lively atmosphere while comfortably seated on shaded benches nestled among hedges.

19 Jeyaraj Road

Thoothukudi, Tamil Nadu

Typology
Arterial Street

ROW
12m wide

Length
0.66 km

Duration
Jan 2020- Dec 2021
(2 years)

Cost
₹7.69 Cr. overall

Nodal Authority
Thoothukudi City Municipal Corporation

Implementing Partners
M/s Mother Land Builders, M/s. CS and Associates Pvt Ltd

Project Highlight

By integrating smart infrastructure as part of the road development, the project reclaimed 1320 sqm of space for pedestrians.

Context of the Project

The Jeyaraj Road is vital road in the Thoothukudi Smart City, that connects the Thoothukudi-Palayamkottai Highway and Buckle Odai, thus facilitating the heavy traffic flow towards the New Bus Stand and Madurai. The government launched this project of transforming the Jeyaraj Road to a smart road, with a strong emphasis on developing a sustainable transportation network.

Vision of the Project

The project aims to enhance walkability, promote cycling, alleviate traffic congestion, and create safe and peaceful walking experiences through street design interventions and urban landscaping.

Project Journey

Foundation Initiatives

The city adopted NMT/Healthy Streets Policy, Parking Policy, and Vending Policy. The project initiated with the stakeholder consultation, where the officials form the city corporation, Tami Nadu Electricity Board (TNEB), Tamil Nadu Water Supply and Drainage Board (TWAD) were taken on board.

Key Actions

Stakeholder meetings were conducted every 3 months. NGOs, RWAs, Shop Keeper Associations to show their expressions about the works during these meetings. Through focused group discussions, ward level citizen/stakeholder engagement, feedbacks were taken. Post the stakeholder engagement, a design consultant was contracted for the project to ensure successful implementation of a sustainable transport network. The progress and plans of the project were reviewed by chief minister, collector, corporation commissioner. The CCTV Cameras installed in the area also monitors and ensures safety of the area.

Design Features

The road is constructed in RCC provided with pedestrian pathway on both sides and drainage facilities. Paver blocks were laid as part of the pedestrian pathway. The center median is provided with LED street lighting poles. As part of the design bus stops, cycle parking, drinking water facilities, public toilets, open seating spaces with fountain and selfie point have been provided. Further, ACP materials and glowing thermos plastic paints are used for construction.

Challenges

- Traffic Management was very difficult because of this road is presented in core of the city. Being located very close to the Market, it's always been difficult to manage public movement at the site.
- During the construction the alignment of the water supply and EB Supply lines, were critical. However, the corporation executed the project without stopping the water supply and EB supply for the public.

Outcome

- The project has reduced accidents and congestion by introducing traffic calming measures.
- The project has reduced the cost of road maintenance and repairs by providing real-time information about pavement conditions and traffic flow, allowing for targeted maintenance and repairs.
- The efficient drainage system incorporated as part of the road construction has also reduced water stagnation during the monsoon season.
- 1320 sqm of space was reclaimed for the pedestrians as part of the project.

20 Malhar Road

Ludhiana, Punjab

Typology
Sub Arterial Street

ROW
27m

Length
1.1km

Duration
Nov 2018- Jan 2022
(38 months)

Cost
₹32 Cr.

Nodal Authority
Ludhiana Smart City Limited (LSCL)

Implementing Partners
Design Consultants and PMC: AECOM Asia Company Limited, Contractor: Deepak Builders & Engineers Pvt Limited, Local Administration: Municipal Corporation Ludhiana, Punjab State Power Corporation Limited, Punjab Police, Traffic Police.

Project Highlight

Over 1750 sq.m. of space was reclaimed for pedestrians, transforming streets into dynamic evolving urban spaces.

Context of the Project

The objective of the project arose from the city administration's desire to allocate dedicated space for all street users, including clear right of way for road carriageway, landscape, cycle tracks, amenity zones, underground services, and more. Malhar Road, being a prominent thoroughfare with commercial and institutional establishments, frequented by the business community and the public, required a comprehensive plan to accommodate various aspects of the project.

Vision of the Project

By reducing car dependence, traffic congestion, and improving air quality, Ludhiana aspires to be a sustainable business hub with inclusive job growth and technological empowerment of citizens.

Project Journey

Foundation Initiatives

The project adhered to NMT/ Healthy Streets Policy and Parking Policy.

Key Actions

The street was revamped for walking, cycling, and social interactions, featuring organized vending zones and rainwater-recharging landscape. This led to organized parking and clear walkable spaces, boosting pedestrian footfall. Stakeholder engagement comprised focused group discussions throughout conceptualization, execution, and mid-term reviews, accompanied by regular public interactions and citizen feedback.

Design Features

The project incorporated segregated footpaths, cycle tracks, and speed calming measures such as raised tabletop junctions and crossings. Additionally, interactive multi-purpose spaces were integrated to promote social interactions.

Challenges

Challenges were faced in convincing stakeholders and business establishments in favor of Smart roads, which was addressed by conducting knowledge sessions, explaining the advantages of street development. Another issue faced during implementation was the high volume of traffic, which had to be diverted in a phase wise manner from junction to junction during all the stages of construction.

Outcome

- Organized parking of vehicles on street.
- Effective utilization of spaces by pedestrians.
- Increase in number of people visiting the stretch.
- 1750 sq.m of space was reclaimed for pedestrians and cyclists after the execution of the project.

21 Race Course Road

Bengaluru, Karnataka

Typology
Arterial Street

ROW
29m

Length
0.6 km

Duration
June 2019- June 2023
(4 years)

Cost
₹4 Cr. per km

Nodal Authority
Bengaluru Smart City Limited, Bruhat Bengaluru Mahanagara Palike(BBMP)

Implementing Partners
Bangalore Electricity Supply Company Limited (BESCOM), Bangalore Water Supply and Sewerage Board (BWSSB), Karnataka Power Transmission Corporation (KPTC), Bengaluru Traffic Police (BTP), IDECK (Project Management Consultant)

Project Highlight

The project aims at the improvement of a network of roads within the key areas of Bengaluru Smart City while prioritizing non-motorized transport.

Context of the Project

Race Course Road is an important artery for the city supporting a heavy volume of vehicles through the roads. It runs along the Bangalore race course, and hence its name. A lot of out - station buses use this road for pick - ups and drop off's in the mornings and late nights.

This project focuses on enhancing a crucial network of sixteen roads, Race course road being in the package. These roads play a pivotal role in supporting business hubs, historical landmarks, public buildings, and schools. The redesign aims to bolster these functions, preserve historical landmarks, and prioritize pedestrians and non-motorized transport. A comprehensive road inventory assesses various elements like right of way, street furniture, utilities, drainage systems, intersections, parking lighting, safety, and public transport facilities, ensuring a holistic approach to urban improvement.

Vision of the Project

The project envisions creating a safer, efficient urban landscape by optimizing road networks, promoting non-motorized transport and enhancing overall accessibility and aesthetics.

Project Journey

Foundation Initiatives

The project adheres to Tender SURE guidelines, ensuring compliance with relevant policies for design, parking, and overall urban development.

Key Actions

The project engages stakeholders through meetings and public participation sessions before execution, showcasing a consultative approach. Based on the feedback form the consultation, in the CBD, one-way loops were introduced to manage traffic. Excess land from the carriage way was repurposed for public spaces, featuring cycle tracks and parking. Safety is prioritized with colored paver-block marked cycle lanes integrated with pedestrian paths.

Design Features

The streetscape includes uniform travel lanes, 3m wide footpaths with shaded cycle tracks and continuous landscape, safe pedestrian crossing at every 250mtrs across the road with junction improvement and well-designed utility services. The width of the cycle lanes varies between 1 to 2m. At all signalized intersections, an exclusive signal phase is dedicated for cycle movements and a Cycle waiting box is created in between Zebra crossing and Stop line, where cyclists can wait for their turn to make turnings.

Challenges

- Reclaiming land from existing function road was a big challenge & to convince Traffic police and another relevant department for designing appropriate travel lane width. This was mitigated through several rounds of stakeholder consultation workshop.
- Initially, one of the biggest challenges was to convince the local residents as there were restinace from their end. The stakeholder consultation and the co-creating vision exercise with citizens, helped to resolve this issue.
- Traffic management was also challenging during the construction period.
- During the project implementation stage, the aying of new underground utility ducts with 900mm diameter storm water drain, and other 6 service utilities were challenging. However, the city ensured of the laying the new duct without affecting existing utilities and the adjacent o=private property.

Outcome

- Well illuminated footpaths with along with cycle tracks have encourage people to adopt cycling and walking as part of their daily mode of transport.
- Well-designed junctions with efficient traffic calming measures and safe pedestrian crossing at 250 metres, have ensured safety of pedestrian movement.

22 Smart Road Development

Faridabad, Haryana

Typology
Arterial Street

ROW
30m

Length
24.25 km

Duration
Sep 2019- Feb 2023
(3 years 6 months)

Cost
₹306.54 Cr. overall

Nodal Authority
Faridabad Smart City Limited (FSCL)

Implementing Partners
Faridabad Smart City Limited (FSCL)

Project Highlight

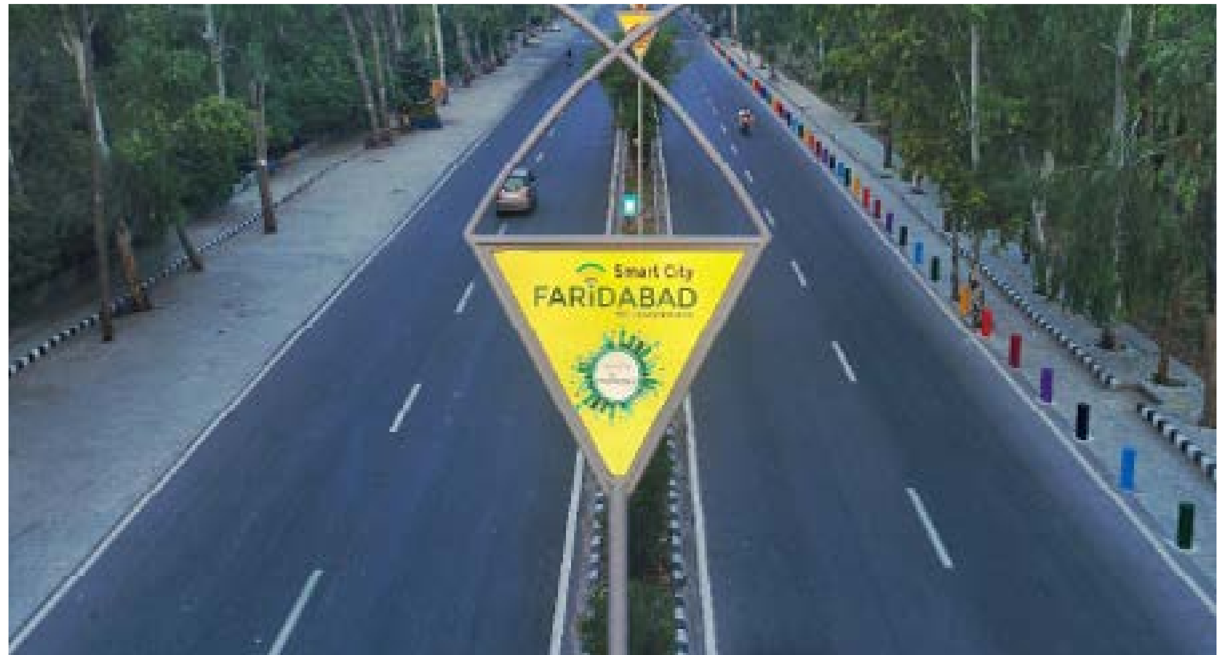
Integrating smart and sustainable infrastructure as part of the road development, that helped in reducing road congestion while providing safe public realms for walking.

Context of the Project

Under the Smart Cities Mission,a road network of 24.25 km has been developed as part of the Faridabad Smart City ABD Area. The design of the road involves the enhancement of road infrastructure, installation of advanced traffic control and safety and security instruments along with giving each road a unique name and feature through the landscape and urban design elements. This project includes stretches at the Amedkar Road, Talab Road, Main Bandh Road, Metro Road and roads of sector 21D and 21 B which are very crucial connector roads of the ABD area of Faridabad Smart City.

Vision of the Project

The project aims at providing well connected, accessible and eco-friendly mobility corridors in the city.



Project Journey

Foundation Initiatives

The project had to take multiple approvals and clearance for the line departments for the execution of the work. Non-motorized transport model was adopted for the implementation of the project.

Key Actions

After the clearance from the forest and other department, the project started the execution work. During the construction stage, the project involved improvement in cement concrete and bituminous road infrastructure. All the activities related to procurement and execution were carried out in coordination with Dakshin Haryana Bijli Vitran Nigam (DHBVN). Further, regular review meetings with contractor agencies were undertaken to resolve the bottlenecks and speeding up the work on site.

Design Features

The project includes 2 lanes of 9m of carriage ways, with 2m wide pedestrian paths on the both the side, 2m wide cycle tracks, landscaped areas, ITMS, and on-street car parking facilities. All the utility services such as water supply lines, storm water drainage, sewage systems and electrical lines, OFC duct were laid underground. Smart Street lights were incorporated as part of the streetscape. Wayfinding signages were also incorporated at the median of the street. The project has a Defect Liability Period of two years and Operation & Maintenance for a period of five years.

Challenges

- The site was initially encroached, which was resolved through regular stakeholder meetings and concerned departments
- The construction work stopped due to the ban by Honourable NGT, however, it was lifted within a month.
- The Covid 19 lockdown and heavy rains were the biggest challenges, due to which the works were delayed for months.

Outcome

- The project enhanced non-motorized transportation like walking and cycling in the city.
- The network of well-designed roads has also helped in reducing the traffic congestions.
- The integration of smart infrastructure like ITMs have also helped the city to manage the traffic congestion.

23 Smart Road Development

Ujjain, Madhya Pardesh

Typology
StreetLocal

ROW
12 m wide

Length
5.14km

Duration
June 2018- Sep 2022
(4 years 3 months)

Cost
₹10.3 Cr. per Km

Nodal Authority
Ujjain Smart City Limited

Implementing Partners Ujjain Smart City Limited, Ujjain Municipal Corporation, Tata Projects, IPE Global (PDMC)

Project Highlight

As a part of the City Mobility plan, Ujjain Smart City developed this road to ensure smooth crowd movement around Shri Mahakaleshwar Temple premise.

Context of the Project

The Smart Road with underground ducting and Integrated Infrastructure Development project embodies a visionary approach to creating a modern, sustainable, and connected city, with the primary goal of facilitating efficient crowd and traffic management around the Shri Mahakaleshwar Temple premise.

Vision of the Project

The project envisions to create a modern, sustainable, and connected street that ensures smooth traffic movement around Shri Mahakaleshwar Temple premise.

Project Journey

Foundation Initiatives

To initiate the preparation and planning of a large-scale project the city adopted multifaceted process that required careful consideration and strategic thinking. The project was initiated through stakeholder consultation that was undertaken via several series of physical and online meeting. The city also adopted NMT policy, vending policy and parking policy for the implementation of project.

Key Actions

Ujjain Smart City Limited (USCL), in consultation with Shri Mahakal Temple Management Committee (SMTMC), District Administration, Traffic Department, TNCP, Ujjain Development Authority, PWD, Police Department, Water Department, MPEB etc., planned and designed the layout of the road under this project. Further, a team comprising of USCL, PDMC, and Tata Projects collaborated for the execution of the project. The collaborative approach of various authorities and stakeholders in the planning and execution of the project was instrumental in ensuring the implementation of the highest standards of smart road. In conclusion, the involvement of multiple authorities and stakeholders played a critical role in implementing a seamless and effective execution. The operation and maintenance of the project has been undertaken by Tata Project which will be transferred to the Ujjain Municipal Corporation.

Design Features

The project includes segregated cycle tracks and pedestrian ways along the main vehicular carriageway. Several traffic calming measures have been taken to manage the vehicular movement. The design components also include on-street vending zones, interactive open spaces with seating areas and play equipment, that have been strategically placed along the pedestrian path. The project also emphasised on using environmentally sustainable and locally available materials for the construction of the project. The key materials used for civil work and streetscaping include concrete, asphalt, bricks, pavers, stone, and metal, among others. The road integrated underground ducting and integrated infrastructure such as water supply, electricity internet connection and drainage lines.

Challenges

- In the implementation phase, the Ujjain Administration faced three key challenges such as land encroachment, land acquisition, and managing regular construction while ensuring smooth crowd movement.
- Land encroachment caused delays in the project implementation and increases project costs.
- Land acquisition process was also challenging as the complex process of acquiring land from private owners or government agencies for public use was time-consuming.
- During the construction, the regular management of the project was a significant challenge as it required efficient management of pedestrian and vehicular movement. However, the Ujjain Administration resolved these issues by conducting regular inspections, engaging with stakeholders, and implementing crowd management measures.
- Due to the COVID 19 lockdown there was a delay in implementation of the project on ground.

Outcome

- Through this project, the citizens have benefitted as the project has boosted the economic growth and enhanced the quality of life.
- The successful implementation of the project has led to improved road safety and traffic flow by reducing congestion and minimizing the risk of accidents.
- The sourcing of materials from local vendors also provided employment opportunities for the local workforce of Ujjain.

24

Street No. 165, 166

New Town Kolkata, West Bengal

Typology
Sub Arterial Street

ROW
18m

Length
1.3 km

Duration
Aug 2021- May 2023
(1 year 8 months)

Cost
₹1.96 Cr. per km

Nodal Authority
New Town Kolkata Green Smart City Corporation Ltd.

Implementing Partners New Town Kolkata Development Authority, Abin Design Studio

Project Highlight

Reclaiming over 14333qm area for pedestrians, the city authority of New Town develop street 165 &166 as a model streetscape which could be replicated in other parts of the city.

Context of the Project

In a recent effort by the New Town Kolkata Smart City, two sub-arterial streets, namely Street 165&166, were developed as model streets with wide segregated footpaths (with tactile pavers) and cycle tracks.

Vision of the Project

The aim of this street transformation project was to promote a more human friendly environment, syncing all possible network and technologies together for a safer and more walkable/cycling realm.

SMART STREET

Project Journey

Foundation Initiatives

An apex committee has been constituted in the city to oversee the development of NMT infrastructure. The city also adopted a Healthy Street Policy to promote non-motorized transport and pedestrianization in the city.

Key Actions

The city authority invited feedback/suggestions on the project through various stakeholder consultations. The city also adopted a test-learn-scale approach for promoting pedestrianization in the city. To build momentum the city organized several car free days and awareness generation programmes. This project is a model pedestrian friendly zone, that was conceived and approved by the Board of New Town Kolkata Green Smart City Corporation Ltd. and thereafter by the City Level Advisory Forum of NKGSCCL. The City Level Advisory Forum (CLAF) was also involved in periodic monitoring/review of the project during implementation stage. Further, the city organised several campaigns for raising awareness about the benefits of cycling among the residents, encouraging people to use cycles for short trips and discourage encroachments/parking on cycle tracks and footpaths of the city.

Design Features

The key materials used for civil work and streetscaping include precast concrete kerb stone, interlocking concrete paver block, and tactile finish vitrified tiles. The other design components include waste receptacles, tree cover, benches (fabricated with mild steel and painted with weather resistant finish), etc. The project additionally includes CCTVs (ANPR cameras) and speed breakers to reduce overspeeding of vehicles. Additional features included street furniture mainly seating arrangements, dustbins, tree planters, and kiosks at regular intervals. Vending kiosks were also set up at select locations

Challenges

- During the initial phase of implementation, there was resistance from a section of residents residing in the area, primarily because they faced difficulty in moving their cars in and out of their parking area due to the ongoing footpath construction in front of their house. However, the engineers from the city authority regularly interacted with the residents, shared their work plan in advance and provided alternative locations for parking their cars during the time of construction.
- After the implementation, vehicular parking on cycle tracks was one of the key challenges faced by the city authority. To address this concern and raise awareness amongst the citizens, the city authority of New Town undertakes regular awareness drives in the city and police department for removal of encroachments and parking from cycle tracks in New Town.

Outcome

- Barrier free universal accessible design have encouraged elderly citizen for daily walks.
- 14333 sqm space was reclaimed for pedestrians and cyclists

25 Saily Police Training Road

Silvassa, Diu

Typology
Sub-Arterial Street

ROW
15m

Length
0.6 km

Duration
Sep 2022- Apr 2023
(3 months)

Cost
₹3.6 Cr. per km

Nodal Authority
Silvassa Smart City Ltd.

Implementing Partners
Contractors — L&T Construction, Local Administration — U.T. Administration of Dadra & Nagar Haveli and Daman and Diu

Project Highlight

The strategic development of this road between the police training ground and cricket stadium not only enhances the accessibility and connectivity of these institutions but also serves as a catalyst for the overall development of the region.

Context of the Project

This strategic thoroughfare establishes a vital link between the Saily International Cricket Stadium and Namo Medical College, enhancing accessibility and fostering regional development. Inaugurated by Prime Minister Narendra Modi on April 25, 2023, this project signifies a steadfast commitment to Smart City objectives. It harmoniously integrates infrastructure development and sustainable urban planning, aiming to elevate community life. Notably, to enhance sight visibility and traffic flow on the Saily Police Training School Road, the project involved removing the compound walls of the Saily Cricket Stadium and Saily Police Training School, creating a seamless curve for efficient traffic movement.

Vision of the Project

To create sustainable, well-connected, and technologically advanced urban spaces that improve the quality of life for residents and visitors while promoting economic growth and community development.

Project Journey

Foundation Initiatives

The project was strategically chosen by the SPV to induce developmental changes in the region. Therefore the design of the street was undertaken in-house in the basis of the NMT/ Healthy streets policy.

Key Actions

The locational impact of the street had to be taken into consideration while implementing. Therefore, there were various stakeholder consultations involved before execution through focused group discussions and site visits. The officials of the Dadra and Nagar Haveli and Daman Diu UT administration visited the site to direct Silvassa towards the way forward of the street. In addition to this, in order to be at par with the other developmental works in the nation, representatives from Silvassa Smart City visited other cities to learn about the best practices of street design being implemented.

Design Features

The SPT road was constructed with locally sourced materials with provisions of MV lane, footpath, underground utilities etc mentioned below:

- **Road Construction:** 15m-wide, 684m-long vital transportation artery has been created for a smooth traffic flow.
- **Storm Water Drainage:** Integrated system manages rainwater runoff, preventing flooding and ensuring road longevity.
- **Street Lighting:** Well-planned, energy-efficient lighting enhances safety and security during nighttime hours.
- **Underground Utilities:** Water, electricity, and optical fiber cables installed underground for a clean, uncluttered environment, minimizing disruptions, and enhancing visual appeal.

Challenges

- To improve sight visibility and movement of traffic, the compound walls of the Saily Cricket Stadium and Saily Police Training School were removed for placing a smooth curve for traffic movement, which involved co-ordination with the planning and development authority and DNH police department.
- Diversion of traffic during the construction period was also one of the major challenges involved in construction. This was addressed by chalking out an alternative route to the public and timely co-ordination with the traffic police department.

Outcome

- It has been observed that after construction of the road, the serviceability of the road has increased and an increased number of different age groups have started visiting the Cricket Stadium for sports and recreational activities.
- After the implementation of the project, the space reclaimed for the citizens is: 3370 sq.m.

26 Wardha Road

Nagpur, Maharashtra

Typology
Arterial Street

ROW
30m

Length
6 km

Duration
July 2021- Dec 2023
(2 years 6 months)

Cost
₹9.5 Cr. per km

Nodal Authority
NH Division

Implementing Partners
Another Earthling Studio,
Drishti Structural &
Engineering Private Limited
(DSEPL)

Project Highlight

Key actions mainstreamed urban design into Nagpur's Street development, particularly on Wardha Road, serving as a citywide model.

Context of the Project

It is a national highway entering the city, flanked by vibrant commercial areas and recreational zones. This project is Nagpur's second road designed on the principles of complete streets to match international standards. It features a 6km long cycle track and footpath. The initiative has revitalized public spaces and enhanced last-mile connectivity. Road safety and organization is enhanced through the integration of 7 major metro stations and smart traffic solutions.

Vision of the Project

The project's vision is to transform the city by creating a robust Non-Motorized Transportation (NMT) infrastructure while simultaneously enhancing the city's aesthetic appeal.

Project Journey

Foundation Initiatives

Streets4People challenge, India Cycle for Change Challenge, and Nurturing Neighborhood challenge set the stage for urban street transformation of Wardha Road in Nagpur.

Key Actions

The city adopted a Test-Learn-Scale approach including testing new ideas, learning from the results, and scaling up the successful ones. A 28-kilometer street network with NMT facilities was identified, initiating projects on three streets and one exclusive cycle track through various governing agencies. Extensive citizen engagement with RWAs, shop owners, and Maha Metro resulted in improvements along significant stretches.

Design Features

Includes- Dual-sided cycle tracks, continuous footpaths, placemaking, metro station integration, parallel parking, bulb-outs, urban furniture, defined property entrances, and improved junctions across a 6-kilometer stretch.

Challenges

- Since the road is an important transit corridor, there were 7 major stations that occurred along the stretch. These station precincts has to be carefully designed in order to integrate multiple modes of transportation and accessibility.
- Angular parking on the street reduced the efficiency of the third lane. This has to be addressed by introducing parallel parking for better street channelisation.
- Due to the width of the road, there were many residual spaces at junctions, which created accident prone areas. These spaces were converted into channelisers for efficient traffic movement.

Outcome

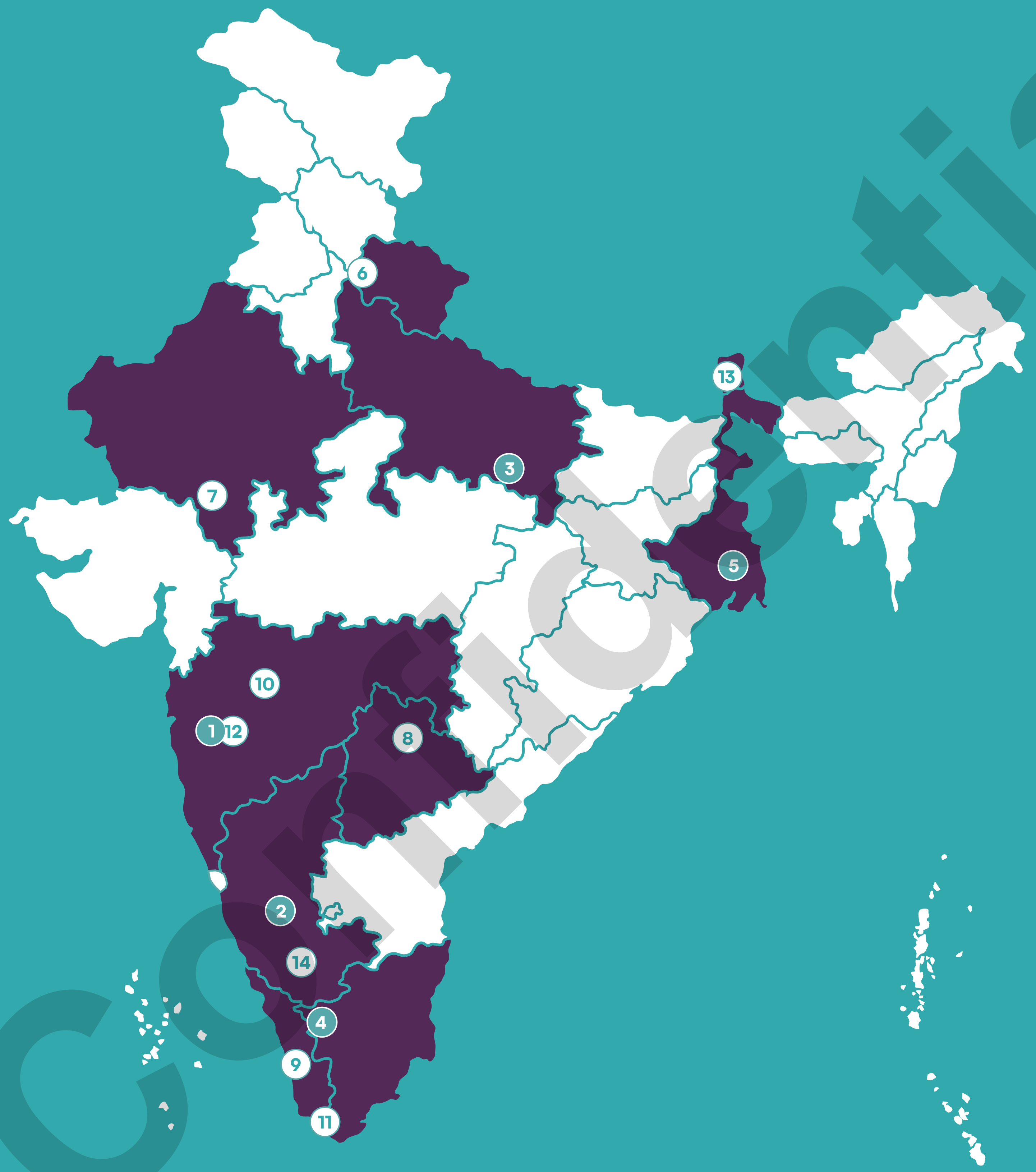
- Multi modal integration has been achieved enhancing last mile connectivity.
- Efficient traffic movement and junction geometry.

B

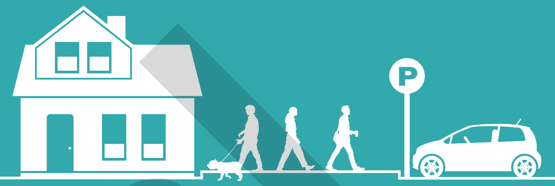
Neighbourhood Streets

Neighbourhood streets lie at the heart of everyday life, offering walkable destinations such as restaurants, shops, services, and transit stops. Pedestrian volumes should be accommodated by well-designed sidewalks. Traffic speeds should be limited, and key transit routes and cycle lanes prioritized. These streets are redesigned to better serve the needs of multiple users. There are 14 case studies on Neighbourhood Streets, out of which 5 are detailed case studies and 9 are overview ones.

1	Aundh Neighbourhood Street, Pune
2	Conservancy Lanes, Shivamogga
3	Lanes of Old Kashi, Varanasi
4	Race Course Road, Coimbatore
5	Street 106, New Town Kolkata
6	Child Friendly Street, Dehradun
7	Hiran Magari, Udaipur
8	Housing Board Colony Streets, Karimnagar
9	Marine Drive Walkway, Kochi
10	Mauli Medical Road, Aurangabad
11	Manveeyam Veedhi, Thiruvanthapuram
12	Pashan Sus, Pune
13	Pedestrian Walkway, Namchi, Sikkim
14	Saptagiri School Road, Davangere, Karnataka



Neighborhood Streets



	Name of Street	City	Typology	Landuse	ROW (m)	Length (km)	Cost / km	Duration months/yrs	Funding Sources	Project Initiated by	Public Participation?	Tactical Testing?	Traffic Calming Measures	O&M Responsibility
①	**Aundh Streets**	Pune	Sub-arterial	🟨 🟦 🟥 🟧	24	1.5	₹ 12.86 Cr.	4.5	National-SCM	ULB	✓	✓	None	Private
②	**Conservancy Lanes**	Shivamogga	Other	🟨 🟦 🟧	3	14.4	₹ 1.20 Cr.	2.7	National-SCM State	Professionals	✓	✗	None	Public
③	**Lanes of Old Kashi**	Varanasi	Local	🟨	1.5	36	₹ 2.36 Cr.	2.1	National-SCM	SPV	✓	✓	None	Government
④	**Race Course Road**	Coimbatore	Sub-arterial	🟨 🟦 🟥	30	2.5	₹ 16.00 Cr.	3.0	National-SCM State	ULB	✓	✓	Speed Humps	Private
⑤	**Street 106**	New Town Kolkata	Sub-arterial	🟦	46	0.2	₹ 5.20 Cr.	0.6	National-SCM State	ULB	✓	✓	No Vehicular Movement	Government
⑥	**Child Friendly Street**	Dehradun	Local	🟥	5.5	10	₹ 3.05 Cr.	4.5	International	ULB	✓	✓	Speed Humps + Rumble Strips	Government
⑦	**Hiran Magari**	Udaipur	Arterial	🟨 🟦 🟥 🟧	40	2.4	₹ 17.84 Cr.	3.1	National-SCM	SPV	✓	✓	Speed Humps	Private
⑧	**Housing Board Colony Streets**	Karimnagar	Local	🟨 🟦 🟥	40	10	₹ 6.50 Cr.	3.9	National-SCM	ULB	✓	✓	Rumble Strips	None
⑨	**Marine Drive Walkway**	Kochi	Local	🟨 🟦 🟥	19	2.5	₹ 0.43 Cr.	1.0	National-SCM	SPV	✗	✗	None	None
⑩	**Mauli Medical Road**	Aurangabad	Sub-arterial	🟨 🟦	40	0.4	₹ 0.50 Cr.	0.6	National-SCM ULB	ULB	✓	✓	Table top Crossings	Private
⑪	**Manveeyam Veedhi**	Thiruvanthapuram	Arterial	🟦 🟩 🟪	15	0.2	₹ 5.00 Cr.	0.3	National-SCM	ULB	✓	✓	Speed Humps	Government
⑫	**Pashan Sus**	Pune	Sub-arterial	🟨	36	1.2	₹ 5.00 Cr.	2.9	National-SCM	ULB	✓	✗	Table top Crossings	Private
⑬	**Pedestrian Walkway**	Namchi	Local	🟨	4.5	6	₹ 8.00 Cr.	1.0	National-SCM	SPV	✗	✗	None	Government
⑭	**Saptagiri School Road**	Davangere	Sub-arterial	🟨	30	0.7	₹ 5.00 Cr.	1.3	National-SCM	Public Representative	✗	✗	None	None

🟨 Residential 🟦 Commercial 🟥 Institution 🟫 Public 🟩 Open Spaces 🟧 Mixed use 🟪 Industrial

National-SCM State ULB ✓ Yes ✗ No Government Private

1 Aundh Streets

Pune, Maharashtra

Typology
Sub Arterial Street

ROW
24m

Length
1.5km

Duration
54 months
(about 4 and a half years)

Cost
₹12.86 Cr. per km

Nodal Authority
Pune Smart City Development Corporation Limited

Implementing Partners
IBI Group, Prasanna Desai Architects, Pavetech

Profile of the city

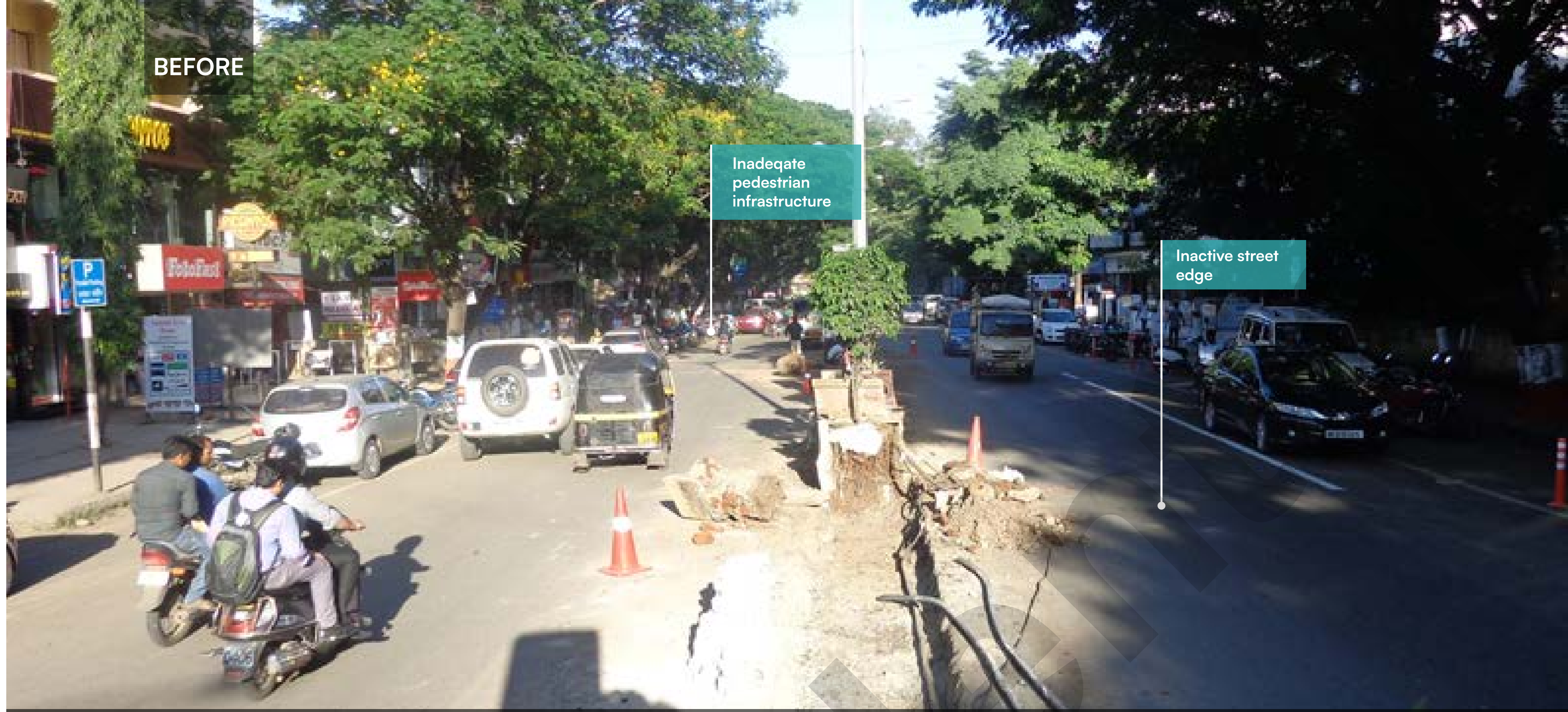
The city of Pune in Maharashtra has been a historically significant town due to the seat of the Maratha kingdom. Since then, it grew into a modern urban settlement with a population of 50.5 lakhs — as one of the important locations for education, industrial development, IT hubs, etc. Pune was selected in the Round 1 of Smart Cities Mission with an ABD area of 3.6 sq.km. The smart city has executed 17 projects worth ₹599 Cr. focusing on mobility out of 49 projects worth ₹1,613 Cr. These projects involve — intelligent transport management system (ITMS), e-vehicles, public bike sharing, street design etc.

Context of the Project

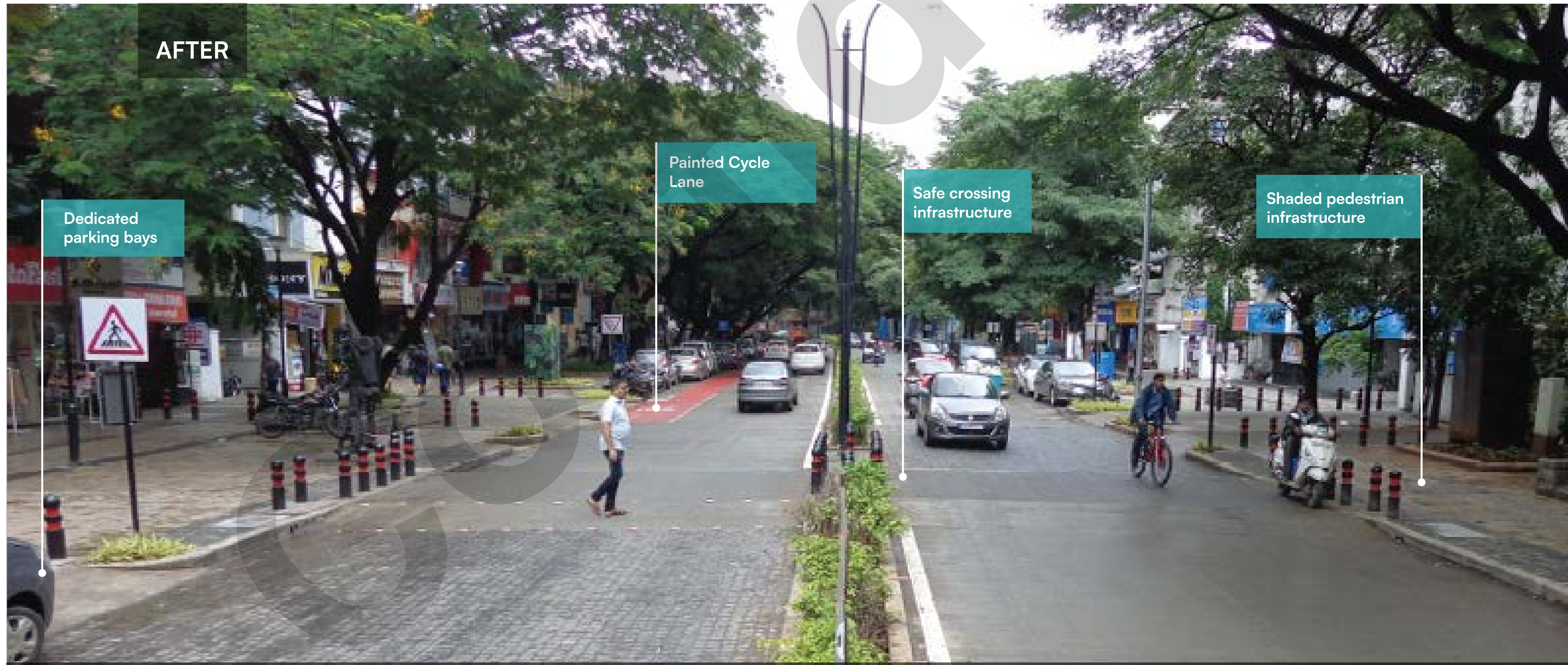
A package of 9 streets with a total of 15km was selected for development in the Aundh neighborhood of Pune — which was a part of the Aundh-Baner-Balewadi ABD area. This plan included local streets, market streets and significant corridors of the neighborhood which formed a complete loop. The idea was to develop a continuous NMT zone to enhance the quality of life of the citizens. Therefore, the ITI and DP road which are adjacent to each other, depict implementation of the part plan giving an idea of the overall concept.

Vision of the Project

The Aundh Streets Project aims to transform the neighborhood accessible by 8s to the 80s, wherein the children can cycle safely, roads are easy to cross, and the footpaths are a pleasure to walk on.

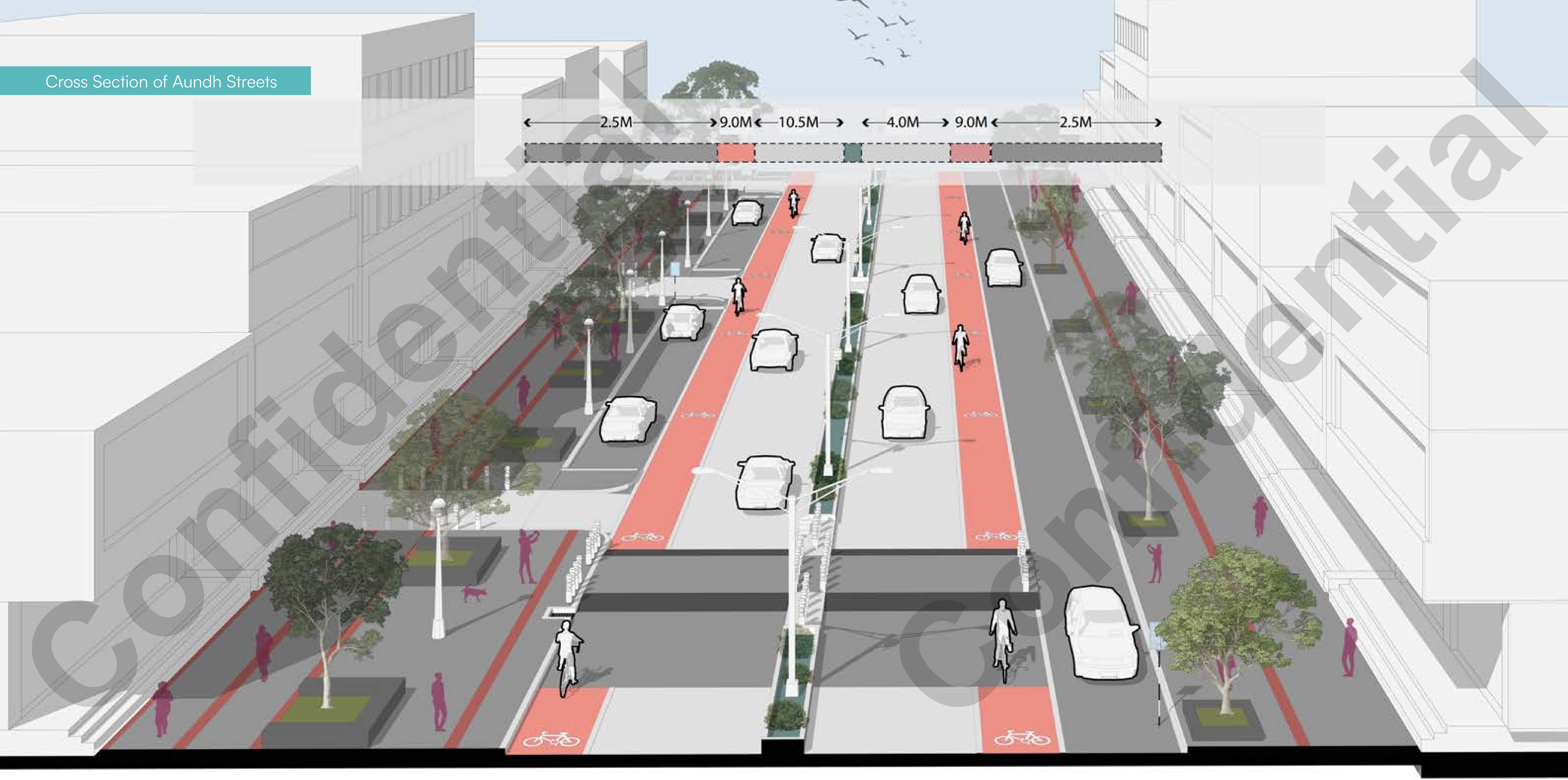


The street had a wider carriageway with almost inadequate NMT infrastructure, unsafe crossings and unmanaged parking


AFTER
Dedicated parking bays
Painted Cycle Lane
Safe crossing infrastructure
Shaded pedestrian infrastructure

The transformed street has wide wide footpaths with an at-grade painted cycle lane. It also has other interventions like designated parking bays, safe crossing infrastructure like raised crossings and speed-calming and placemaking initiatives like open gym, kids' play area, and seatings at regular intervals.

Cross Section of Aundh Streets


2.5M
9.0M
10.5M
4.0M
9.0M
2.5M

Design Highlights

01 **Footpath:** A continuous footpath elevated at 0.15m from the ground the was provided across the streets. For universal accessibility, this level was maintained throughout including the pedestrian crossings across the street. The width of the footpath varied due to the extra space obtained from the shop frontages; thereby providing a wide walkway for the residents.

02 **Cycling Infrastructure:** A cycle lane was given on the MV lane as a shared space, to promote cycling. Cycle stands which has bike sharing options, were also constructed on the footpath at strategic locations. These locations were in tandem with the Pune Cycle Plan network planned across the city.

03 **Seatings:** Seatings on these streets have been provided in conjunction with the trees present on the street, without disturbing the foliage. This adds on to the aesthetic value of the street while maintaining the trees. The idea was to protect the natural base of the trees and provide a safe buffer for the trees to grow.

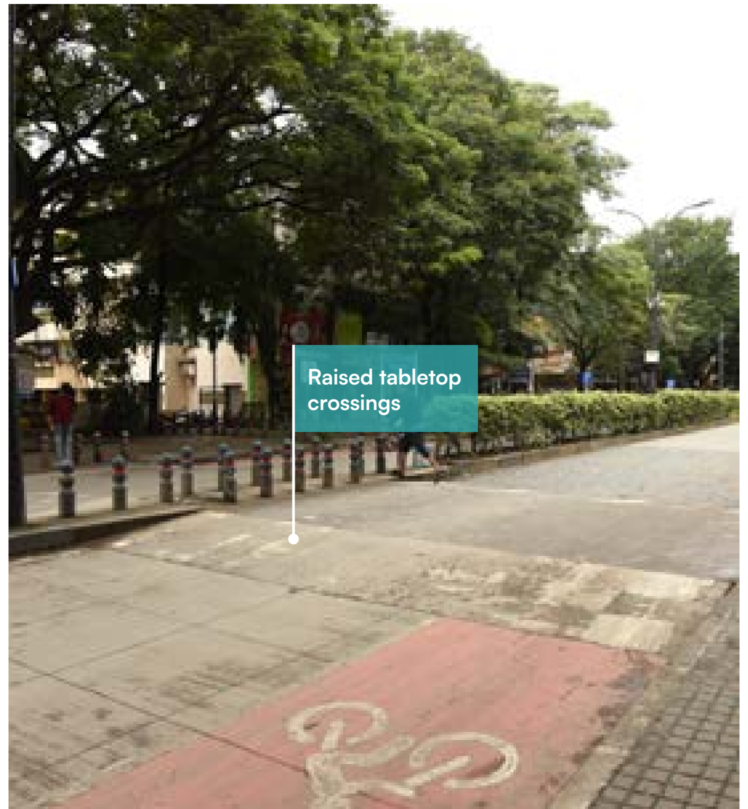
04 **Raised pedestrian crossings:** Table-top crossings were provided across the streets to make walkability easier for kids, specially abled, elderly, etc. To enhance the efficiency of these crossings, speed calming measures were adopted in which the approach to the crossings was covered with a 15m long stretch of cobble stones.

05 **Wheelchair friendly ramps:** Curved ramps were provided in places where the crossings are at-grade especially at junctions. These wheel-chair friendly ramps are guarded by bollards to regulate traffic as well as for the safety of the users.

06 **Tactile paving:** Tactiles are present across the streets in continuation. It consists of a combination of directional and cautionary tiles to guide the way better.

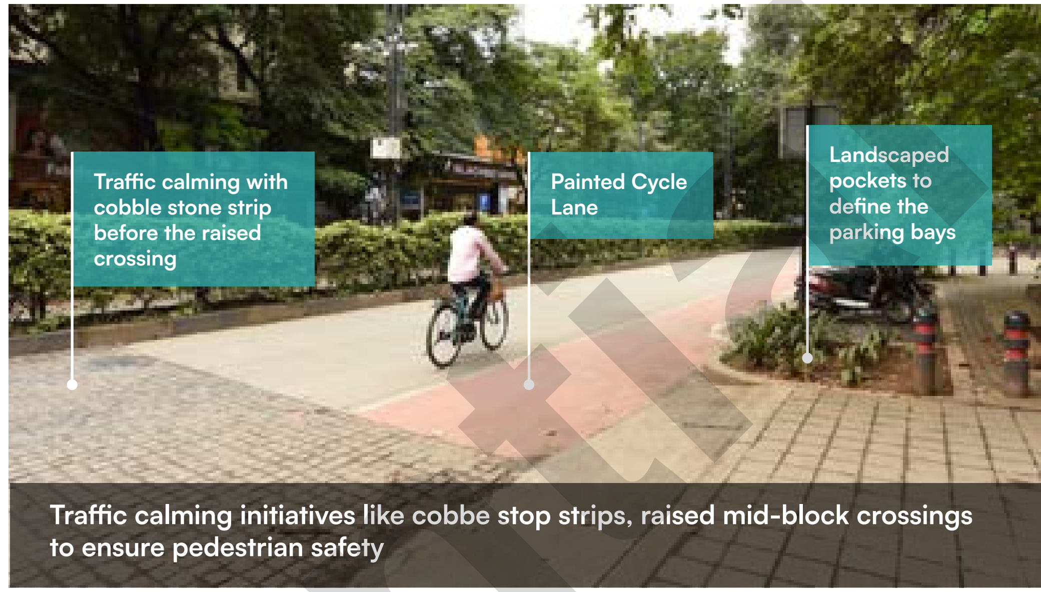
07 **Utilities:** MSEB boxes, SWDs, manholes, underground ducting etc., have also been incorporated such that the aesthetic value of the street does not get disturbed.

The ITI and DP road have been designed on the principles of walkability, universal accessibility, and cycle friendly streets. Therefore, to achieve these, there are various elements that strengthen the concept and design on these streets.



Raised tabletop crossings

Seatings designed to restrict people from sitting along edges where the adjacent footpath is not wide enough

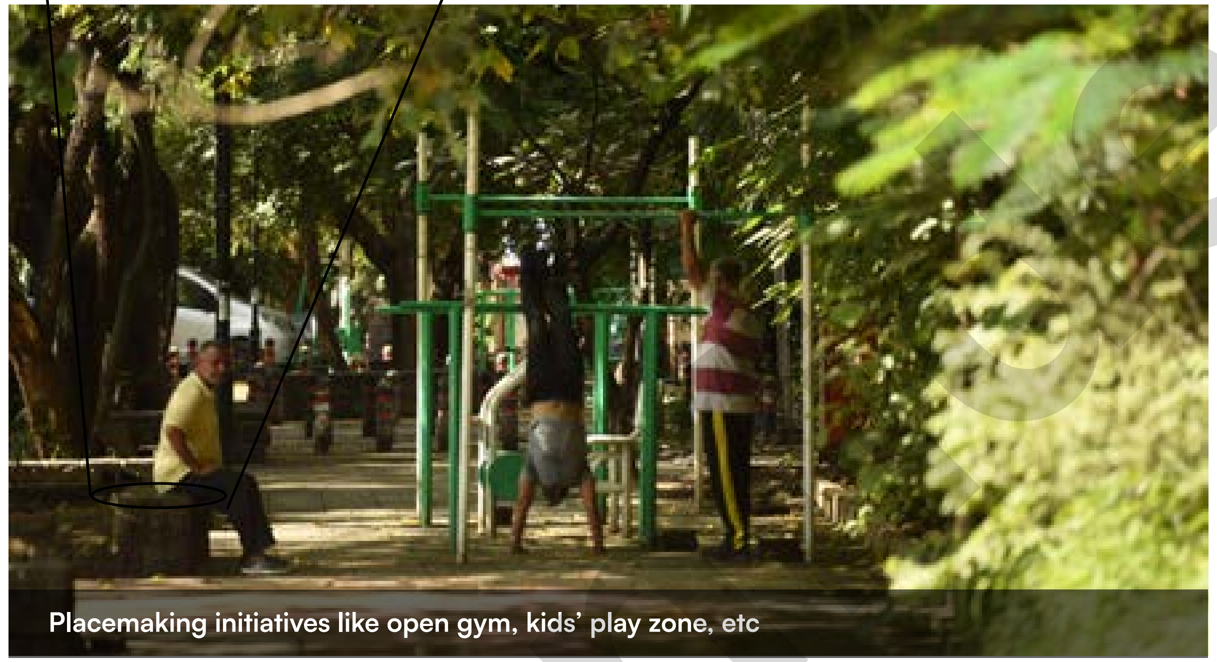


Traffic calming with cobble stone strip before the raised crossing

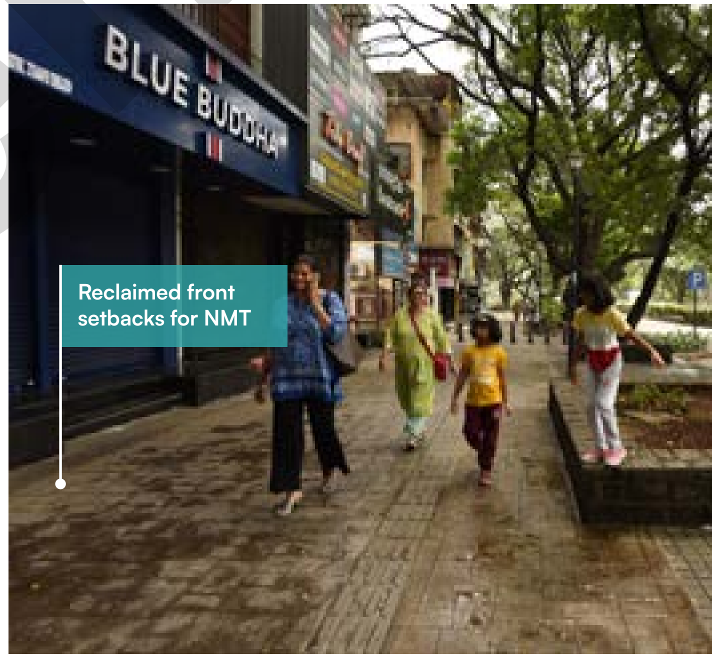
Painted Cycle Lane

Landscaped pockets to define the parking bays

Traffic calming initiatives like cobbe stop strips, raised mid-block crossings to ensure pedestrian safety

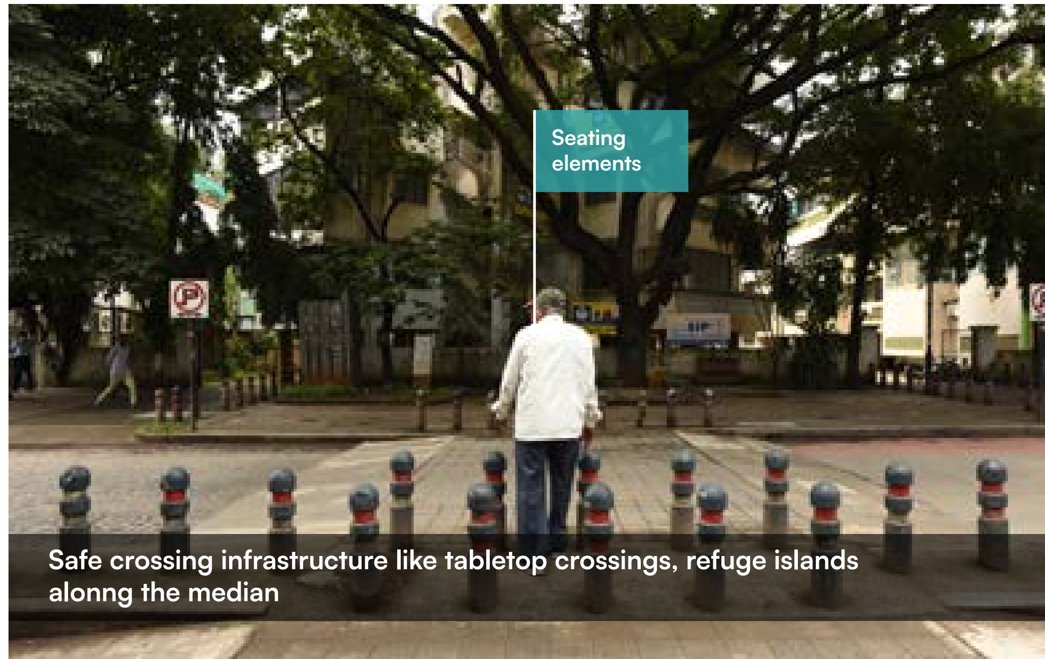


Placemaking initiatives like open gym, kids' play zone, etc



Reclaimed front setbacks for NMT

Universally accessible infrastructure



Seating elements

Safe crossing infrastructure like tabletop crossings, refuge islands alonng the median

Project
Journey

Stakeholder engagement during tactical trial on the site

01
Laying the foundation

Pune Street Design Guidelines is an easy-to-use manual that simplifies street design into a three step process: Determine the available right-of-way, identify the character of the street from the surrounding land uses, and finally choose the correspondingly right template.

✓ Complete ✗ Not yet started ● Ongoing

✓ Healthy Streets Policy
✗ Vending Policy
✗ Parking Policy
✓ Street Design Guidelines

02
Building the team's muscle

Capacity building workshops
Regular capacity-building workshops for the engineers of the Road Department were conducted by external experts and experts from the NMT Cell.

Peer to peer learnings from other cities
The administrative decision-makers- Commissioners, and the Road Department engineers were taken for several site visits to learn from national and international best practice examples like Singapore, etc.

03
Doing things together

Being one of the initial few pedestrian-friendly, complete streets in the city, a very strong stakeholder engagement process was conducted. In order to engage more citizens, innovative outreach and engagement measures were used

The local representative was actively involved in getting stakeholder engagement for the implementation of the street design, including convincing the private and commercial owners to give up their shop frontages.

The Pune Biennale Foundation was also involved in the design and creation of street art - wall paintings, murals, and sculptures.

04
Stakeholder engagement

Stakeholder consultations
Several public discussions were hosted at society levels, auditoriums, and PMC ward offices. Further, to create awareness about the project, a street exhibition about the design was curated with the help of the local representatives. During this street exhibition, the citizens also reviewed the designs, and their suggestions were noted down.

Tactical trial
A week-long tactical trial was conducted on the street to engage more citizens. In parallel to this, extensive communication and citizen engagement campaigns were conducted by the design consultant with the help of an external public engagement consultant.

05
Monitoring, learning & improving

NMT Cell
In 2010, Pune Municipal Corporation has also established an advisory cells with experts to oversee planning, review implementation, and maintenance of various NMT initiatives in the city.

Monitoring and maintenance
Earlier there was an O&M for five years with the contractor. However, post-expiry of the contract, the maintenance is now handed over to the ward office. In addition, the local political representative is also voluntarily involved in the maintenance of certain elements like the open gym equipment, wall painting, and landscaping.

Challenges Accepted & Addressed

Overhead cabling created issues in the city, therefore an underground ducting framework structure was implemented.

On-street parking was a challenge, as there was no space for parking prior execution. It was provided at strategic locations, after the street plan was implemented.

During the initial phases of implementation, the shopkeepers association had to be briefed about the benefits of developing the streets, who feared the reduction of their business due to curbed on-street parking in front of their shops. Demonstrations were made to explain the advantages to utilizing their shop frontages for the development of wider footpaths.

Outcomes

Citizen engagement and recreational activities like fitness activities and the citizen engagement dialogue sessions happen very frequently.

Children enjoy landscaping and the painted games on the footpath.

Students and working people utilize space for Wi-Fi hotspots.

Food joints have helped increase the vibrance of the streets.

12,000 sq.m of space has been reclaimed for the pedestrians.

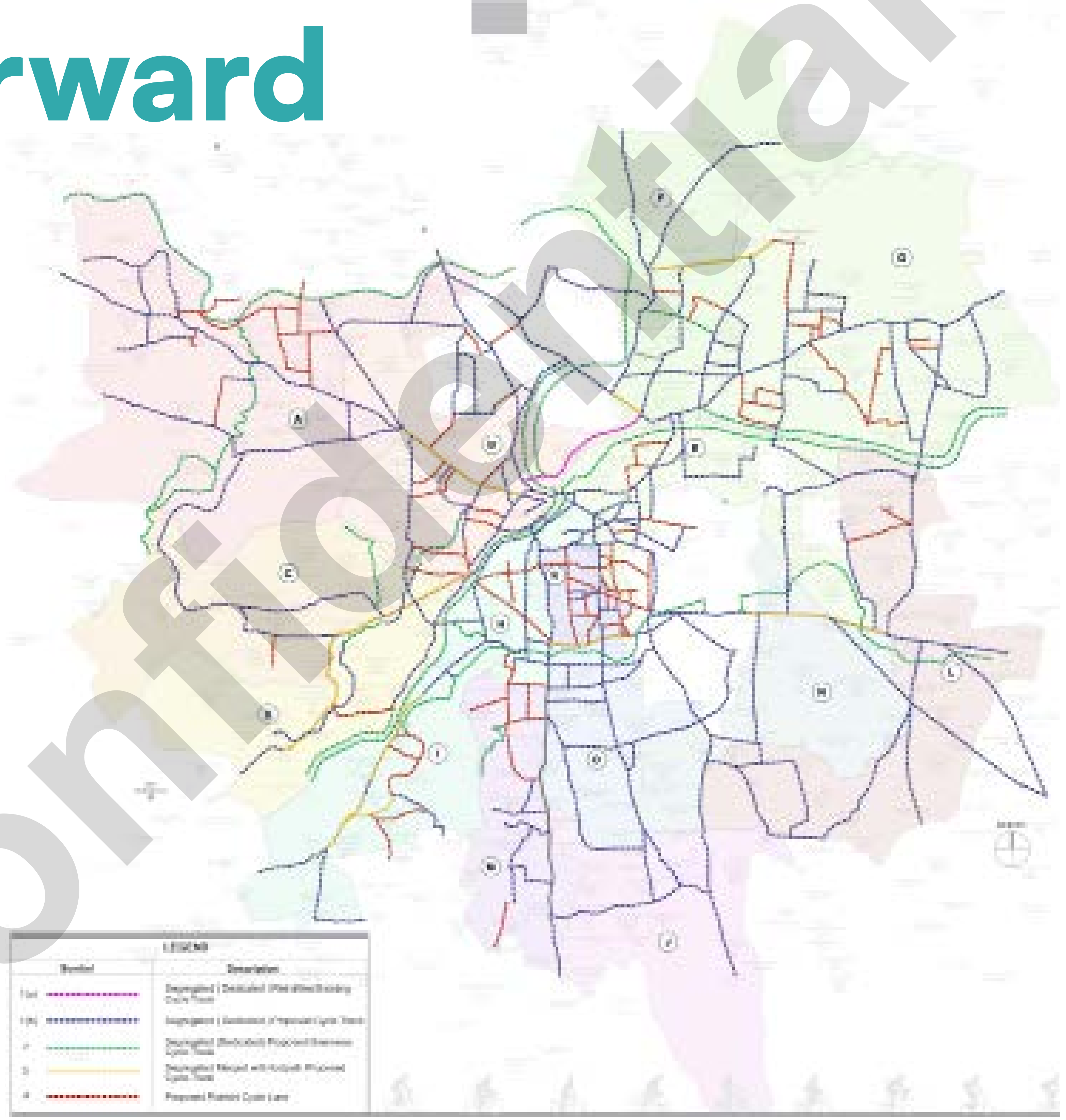
There has been a significant improvement in the usage of walkways and cycles to commute on the street. The pedestrian count has increased from 1,468 to 3,670 per hour. Similarly, cycling has also increased from 546 to 1,290 per hour.

Citizen Impact Stories

> “*The landscaping and green cover in the area help regulate the temperature. The developed area has provided us with safe, fresh, and clean air for morning fitness, as well as opportunities for recreational activities without the concern of vehicles intruding on citizens. The small recreational activities on the weekends allow citizens to enjoy and relax in the vicinity throughout the entire time. Streetlights ensure that the roads in this stretch are safe for children, senior citizens, and women. The cycle track and disability-friendly infrastructure have been well-planned.*”

Prashant Chaudhary, Citizen

Way
Forward



Scaling-up the transformation

The Aundh streets have seen a stark improvement in the neighborhood after execution. As mentioned earlier, the plan aims at developing all the nine streets demarcated for development. The concept of these streets is versatile and precise which can be used to develop other neighborhoods in the city.

Pune Cycle Plan

The Pune Cycle Plan was initiated in 2016. The Comprehensive Bicycle Master Plan was approved by the PMC's General Body in December 2017.

The plan was recognised by UN Habitat World Urban Forum, 2020

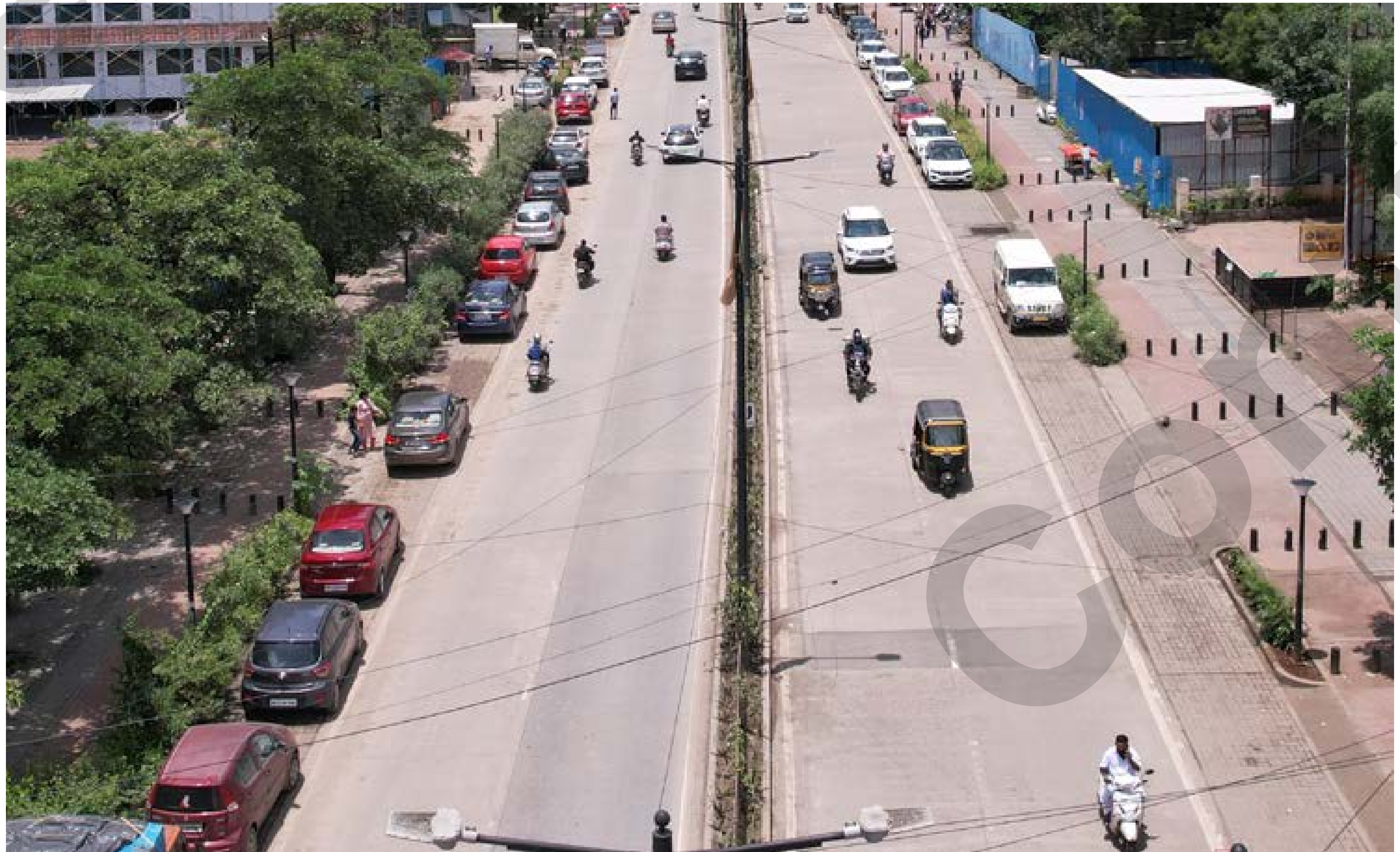
Vision: To make Pune a cycling-friendly city where cycling is safe, comfortable, convenient, attractive and enjoyable. The plan also aims to increase the modal share of cycling from the current 3% to 25%, by the year 2031.

Features of the Plan:

The Cycle Plan includes proposals for a city wide cycle network (cycle tracks and lanes), support for Public Bicycle Share systems, cycle promotion activities, participatory reviews of plan implementation, etc. Along with the cycle network plan, PMC's Urban Cycling Design Guidelines and a policy for Public Bicycle Sharing were adopted to enhance the quality of insfrastructural provisions. A Bicycle Cell was also to be set up at PMC to ensure smooth coordination with all stakeholders within PMC and other agencies like Traffic Police, PMPML, PSCDCL and Pune Metro. In 2020 Pune Cycle Plan was presented at the UN Habitat World Urban Forum by the Pune Municipal Corporation, sharing the experiences thus far, challenges, and seeking cooperation and long-term support for implementation.

> *"The landscaping and green cover in the area help regulate the temperature. The developed area has provided us with safe, fresh, and clean air for morning fitness, as well as opportunities for recreational activities without the concern of vehicles intruding on citizens. The small recreational activities on the weekends allow citizens to enjoy and relax in the vicinity throughout the entire time. Streetlights ensure that the roads in this stretch are safe for children, senior citizens, and women. The cycle track and disability-friendly infrastructure have been well-planned."*
>
> **Mr. Kunal Kumar**
> **Erstwhile Commissioner, PMC**

Aundh Streets



2 Conservancy lanes

Shivamogga, Karnataka

Typology
Arterial Street

ROW
3-4m

Length
14.4 km

Duration
Dec 2019- Jul 2022
(2 years 4 months)

Cost
₹1.20 Cr. per km

Nodal Authority
Shivamogga Smart City Limited

Implementing Partners
Shivamogga Municipal Corporation, TATA Consulting Engineers, JANA Urban Space, HD Infrastructure

Awards & Recognition
ISAC Award 2022- First Runner up under Urban Environment Category

Profile of the city

Having an urban population of 3,22,650, Shivamogga was selected as a Smart City in Round 2 of the India Smart City Challenge. Over the past few decades, the urbanization rate of Shivamogga city has picked up place and the city has grown at a considerably good pace. The city managers have tried to ensure that the provision of city infrastructure is at par with its growth. The total area of the city is 76.7 sq km, with 6.1 sq km as ABD area.

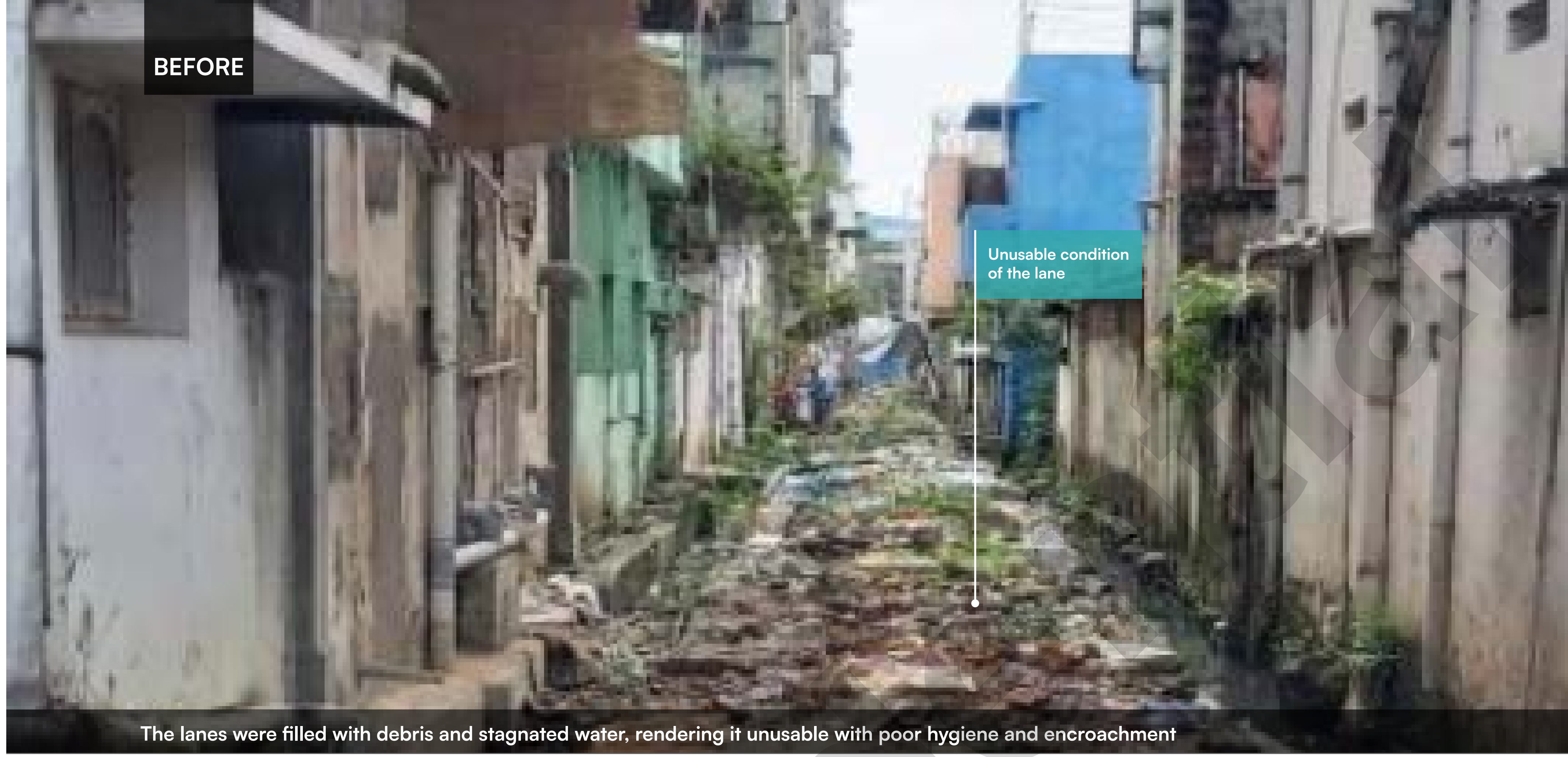
Context of the Project

Shivamogga has 176 conservancy lanes, with a total length of 17 km, located mostly within the older part of the city. The width of conservancy lanes varies from as low as 2 meters up to 5.5 Meters. These conservancy lanes were used as service corridors in the past where each individual house was connected to its respective septic tanks or common septic tanks. These lanes were in dilapidated conditions and were also used as solid waste dumping zones and waste disposal areas. Thus, the Shivamogga Smart City realized that it is imperative to revitalize these lanes into productive spaces.

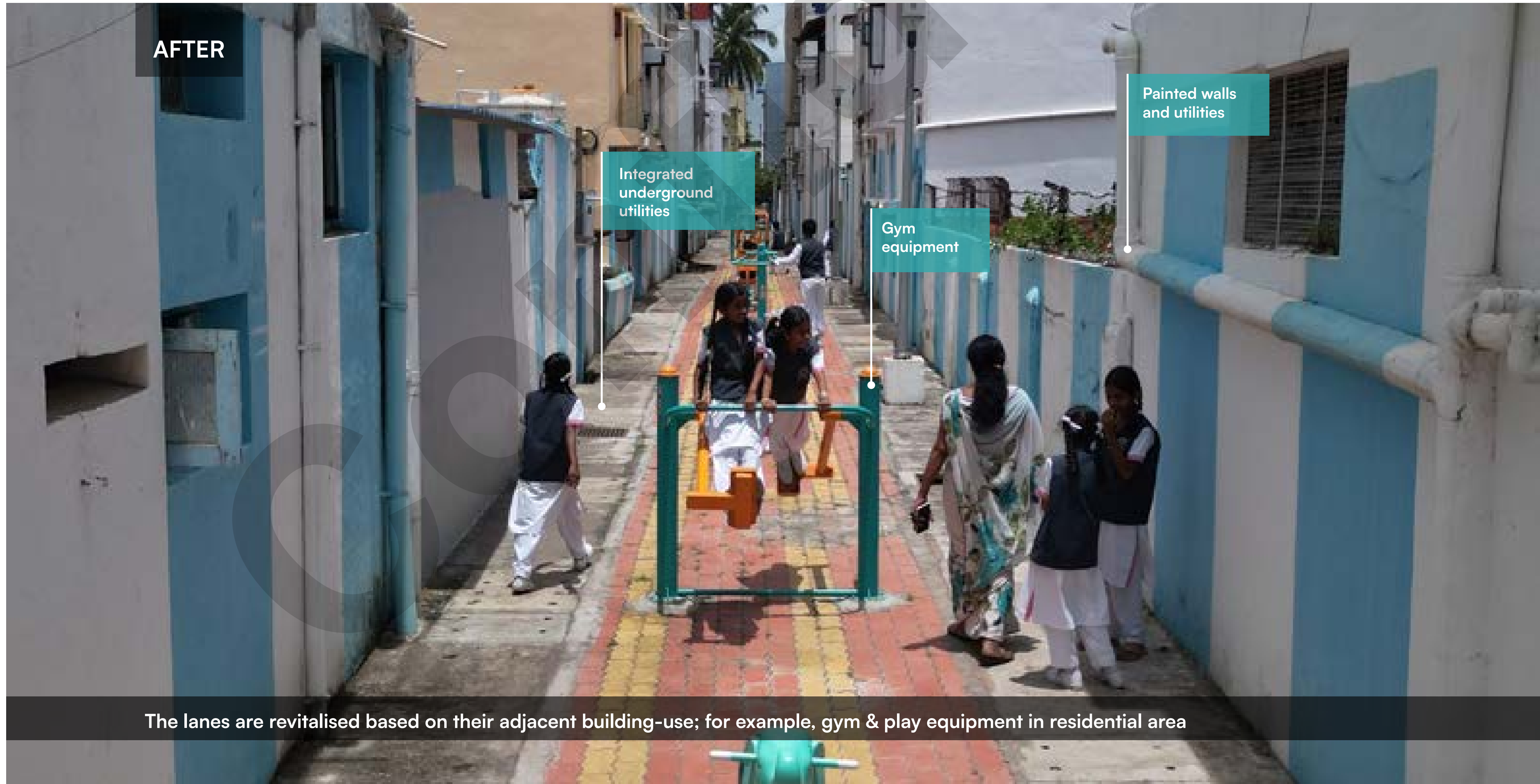
Under this project 108 conservancy lanes located in prime residential and commercial areas with a total length of 7 km were rejuvenated and transformed into accessible vibrant public spaces. Out of these 108 Conservancies, only 23 are earmarked for revenue-yielding activities. This project has set an example of how old parts of cities that have space constraints can be revitalised and brought back to functional uses with minimal interventions.

Vision of the Project

This project envisioned to revitalise infrastructure in the city's inner core, alleviating congestion and fostering multifunctional spaces that can serve as inclusive gathering points for everyone.

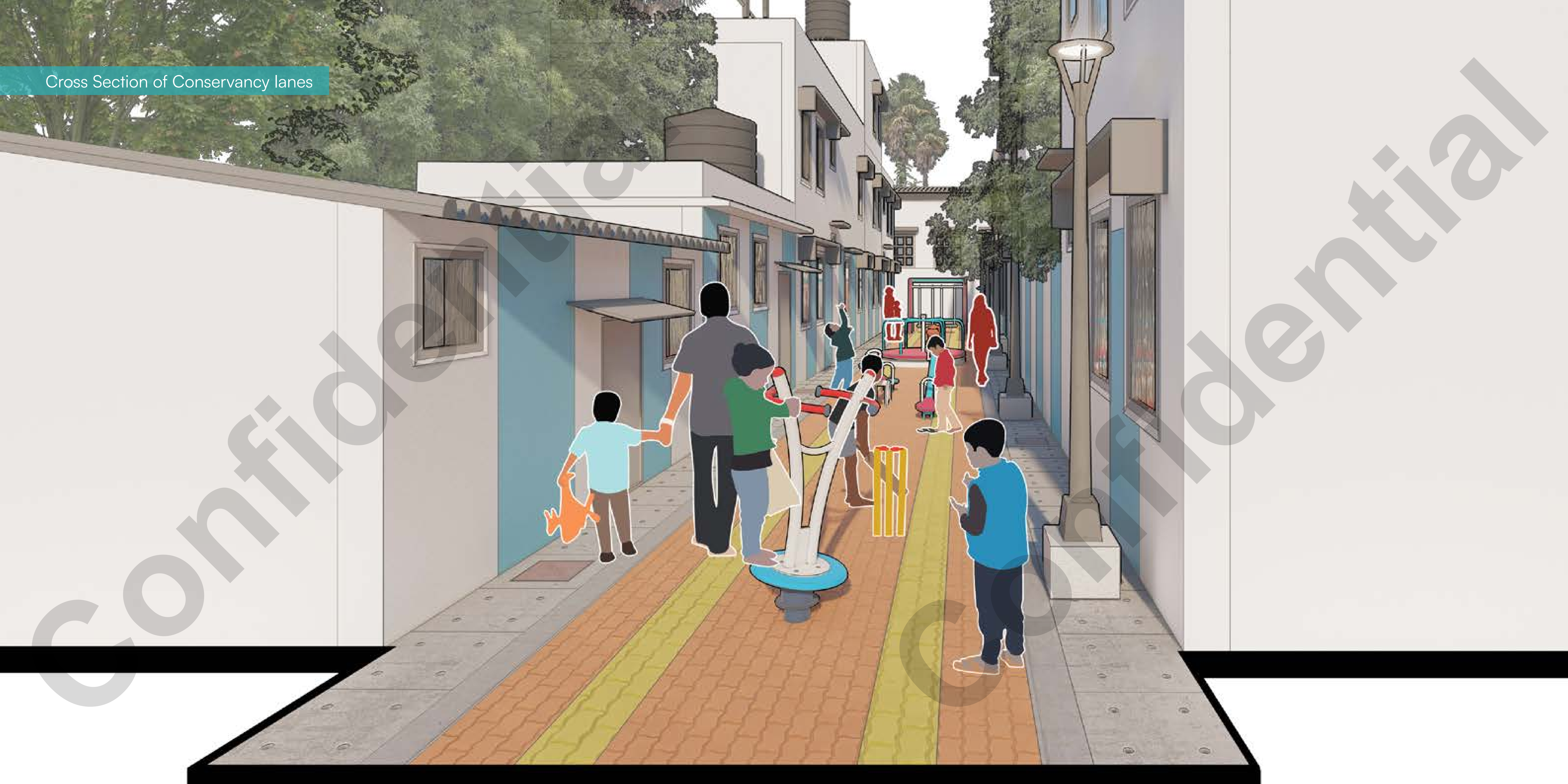


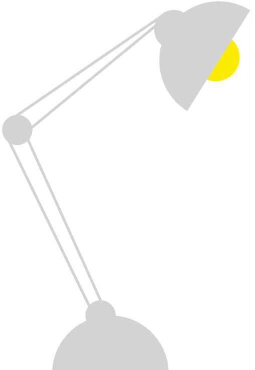
The lanes were filled with debris and stagnated water, rendering it unusable with poor hygiene and encroachment



The lanes are revitalised based on their adjacent building-use; for example, gym & play equipment in residential area

Cross Section of Conservancy lanes





Design Highlights

01 The conservancy lanes are divided into five packages. Each conservancy package typically has provision for off-street parking wherever the adjoining land-use is commercial.

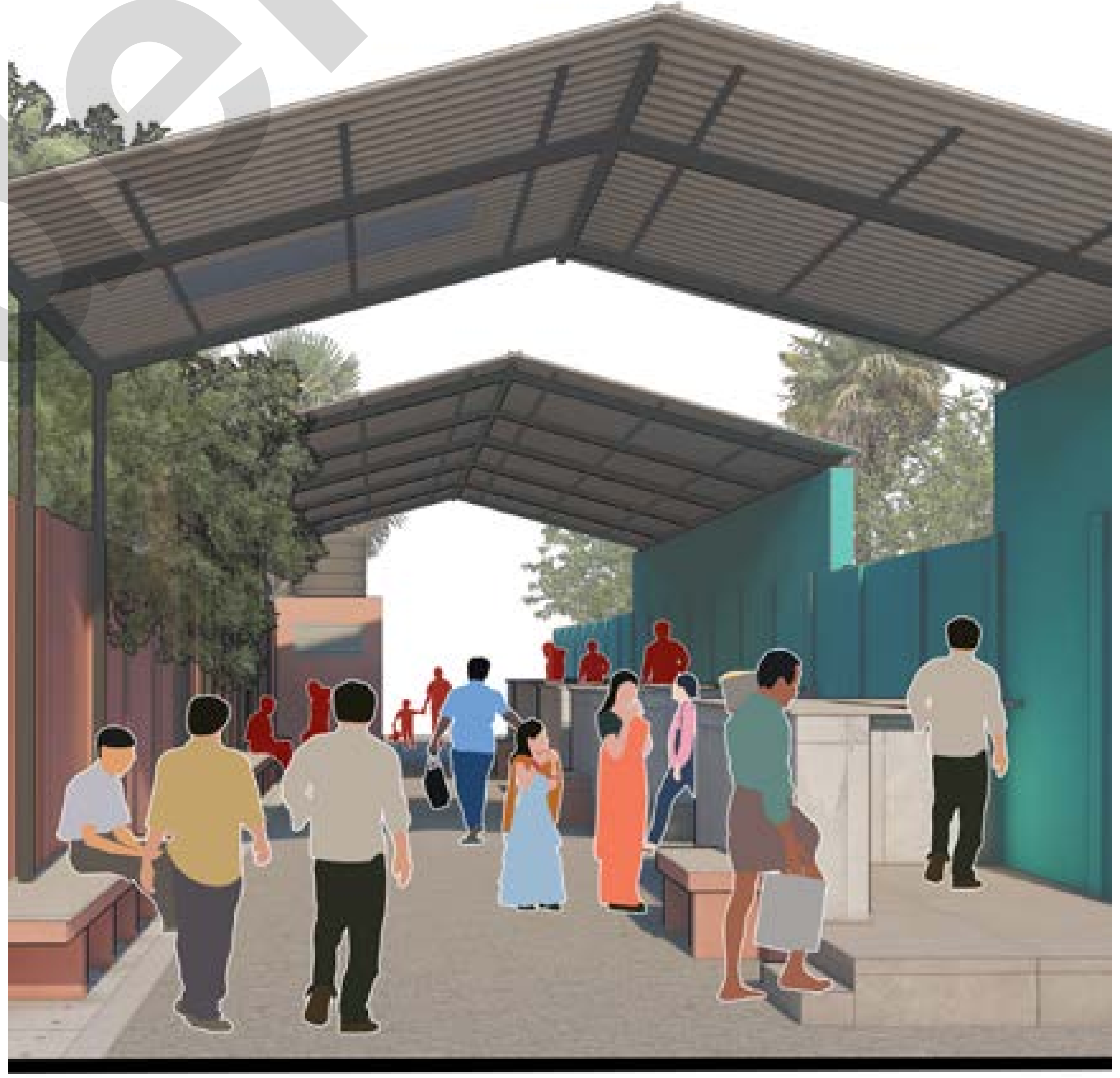
02 Residential lanes are designed for recreational purposes for the community, integrating street elements like play & gym equipment.

03 The conservancy lanes in mixed-use zones are transformed to integrate street vendors, public toilets and seating for the users wherever possible.

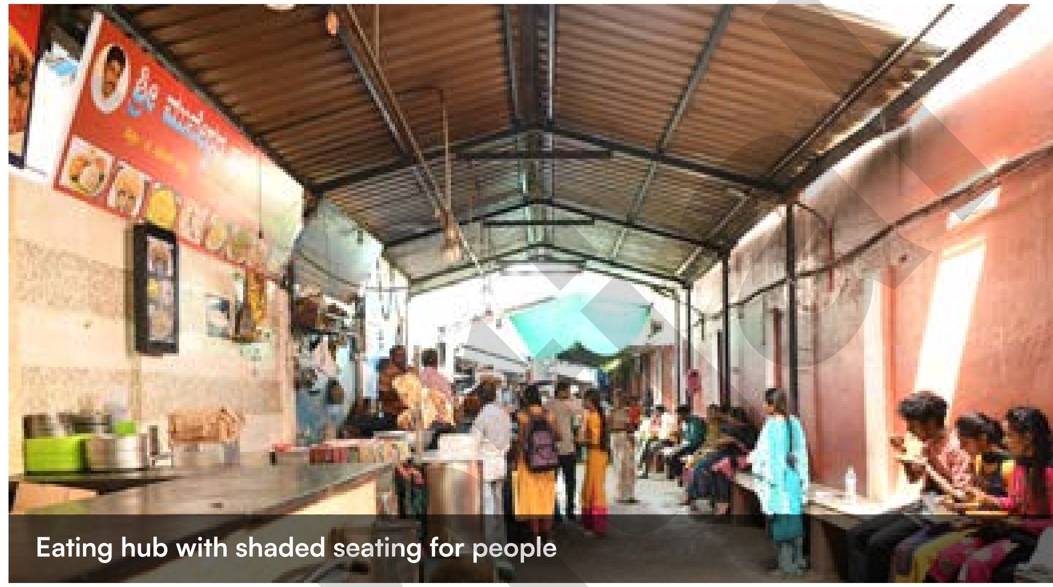
04 Grey water from the residences has been diverted to underground service line by providing house service connections. This has improved the hygiene of the lanes, and reduced the pollution of Tunga River considerably.

05 As part of the project, 1240m long drains, 2005 sqm of pavers, 160m of sewage lines, 650 numbers of UGD connections, and 6 children's play areas have been implemented.

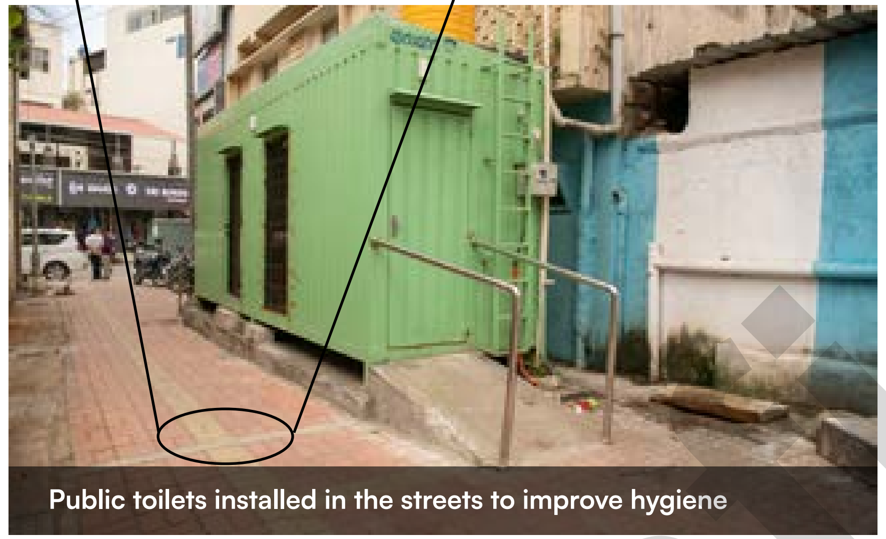
This design integrates activities that are suitable to the context.



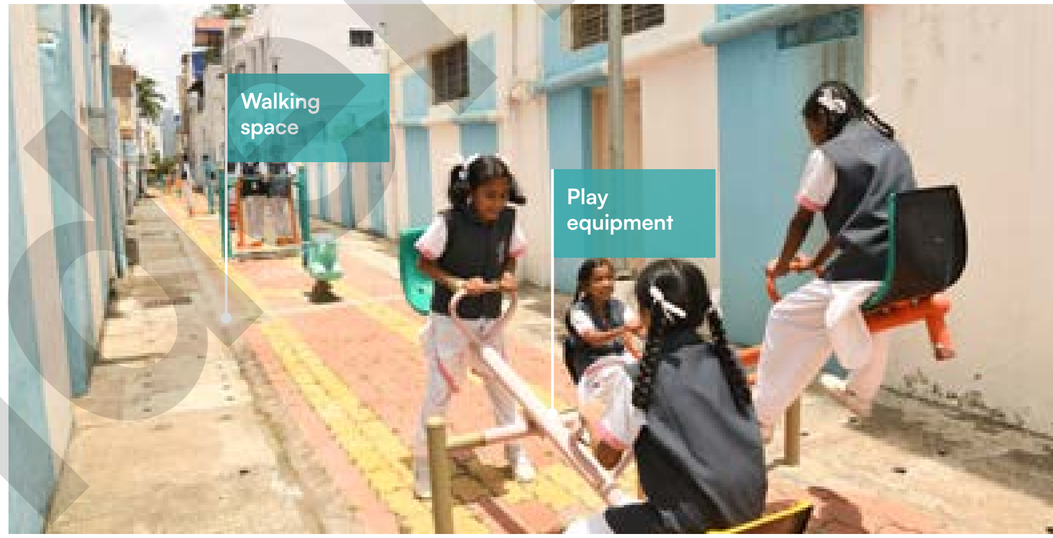
Concrete interlocking pavers, red and yellow are used to demarcate space

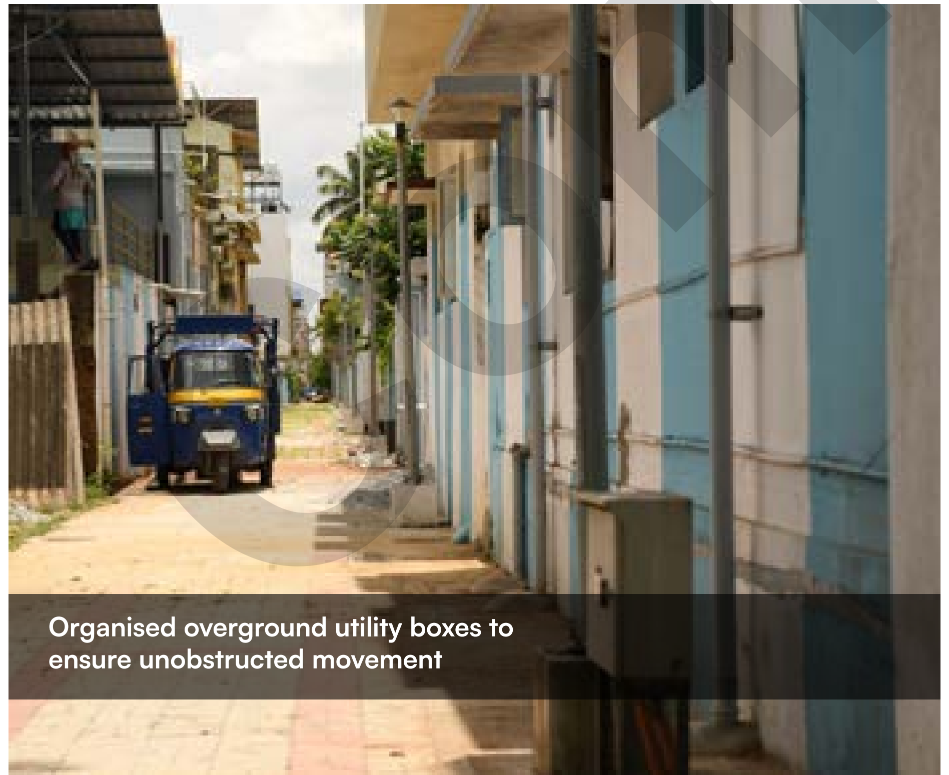


Eating hub with shaded seating for people

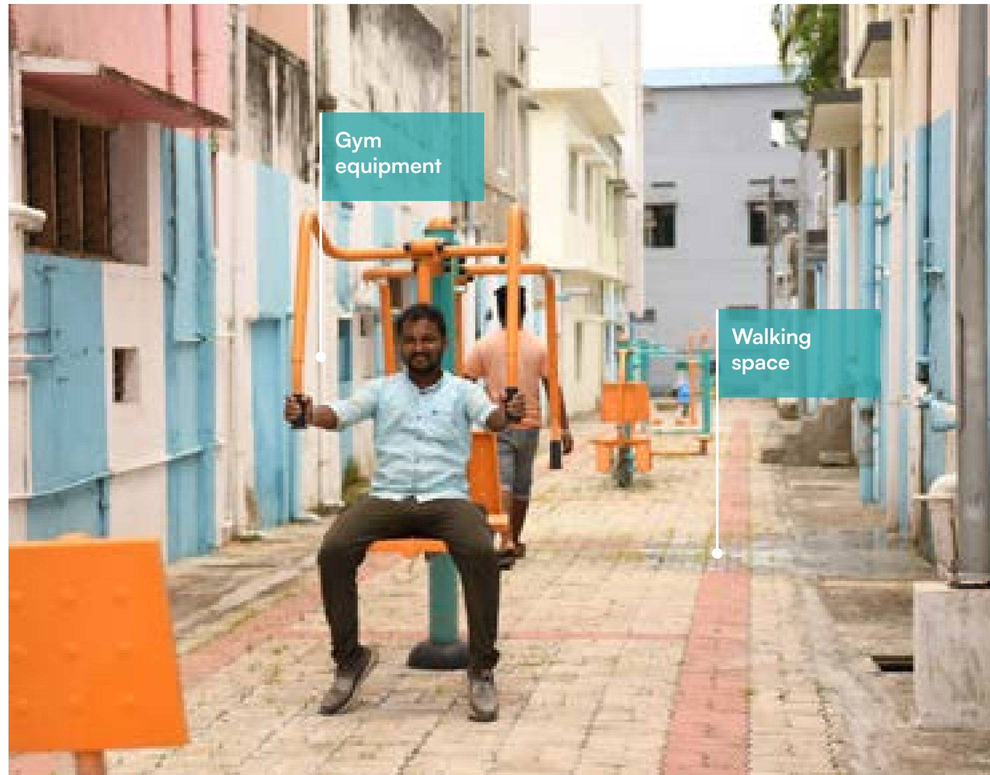


Public toilets installed in the streets to improve hygiene





Organised overground utility boxes to ensure unobstructed movement



Project
Journey

Manual labour and small machines being used due to space constraints

01
Laying the foundation

✓ Complete ✗ Not yet started ● Ongoing

- ✗ **Healthy Streets Policy**
- ✗ **Healthy Streets Cell**
- ✓ **Parking Policy**
- ✓ **Street Design Guidelines**

02
Building the team's muscle

- ✓ **Site visits, Pune**
- ✓ **Capacity-building workshops**

03
Doing things together

Stakeholder engagement

Stakeholder engagement

Project Management consultant along with SSCL staff conducted focus group discussions with residents on a daily basis to get feedback on the ongoing work. This ensured that citizen grievances were collected on a daily basis. PMC-TCE has conducted the stakeholders meeting and designed the conservancies as per the requirements of stakeholders along with existing utilities conditions.

City perception survey

A city-level perception survey was conducted to collect user feedback. The survey was conducted both online and offline. to ensure maximum participation.

Awareness programmes

RWAs and NGOs, alongwith the local administration, educated the residents about the need for cleanliness and proper utilisation of conservancy lanes. This helped in clearing the existing encroachments.

Design process

Around 10 different design options were developed for each of these lanes. Initially parking of vehicles was done on the street which is shifted to conservancy lanes in the design options, that helped in reducing traffic congestion. The design options also include, 2-wheeler cum cycle parking, Auto Stand, Food Courts, Vending zone, installation of Children's Play area, and landscaped areas with Open Gym.

04
Monitoring, learning & improving

Maintenance

A trust called Shivamogga Smart City Development Society has been formed and registered under the society act. The prime focus of the trust is to ensure maintenance of the conservancy lanes.

Operation

Out of the 108 Conservancy lanes, only 23 are earmarked for revenue-yielding activities. All remaining conservancy lanes would not have any rent or charge levied.

Communication method

One City One App is being developed through ICCC for innovative communication methods to engage stakeholders.

Education programmes

RWAs are educating residents to maintain cleanliness in the conservancy lanes Through various education programmes, the City aims to imbibe ownership for these conservancies to ensure proper usage by the citizens.

Taskforce on the ground for inspecting the maintenance

Challenges Accepted & Addressed

Encroachment: Encroachment of the site was one of the major challenges before the execution of the project, which was mitigated with the support of the Urban Local Bodies (ULBs).

Unhygienic Condition: Located in the backyard of the residential areas, these conservancy lanes became the dump yard over time. Further, the wastewater from the residents was directly flown in open drains of conservancy lanes, which led to the stagnation of water and propelled unhygienic conditions of the lane. However, this issue was resolved, when the city officials, connected the residence's UGD wastewater lines to the city sewer lines.

Due to their limited width, some of the conservancy lanes were not accessible to construction machines. In such cases, the entire work was done through manual skilled labour.

Congestion: Initially parking was done on the streets which is now shifted to off-street locations near the conservancy lanes. This has helped in reducing congestion on the streets.

Outcomes

Improved quality of life: The facilities incorporated in the conservancy lanes have encouraged the use of public sanitation facilities and hence discouraged the people from the practice of open urination and defecation, which has improved quality of life.

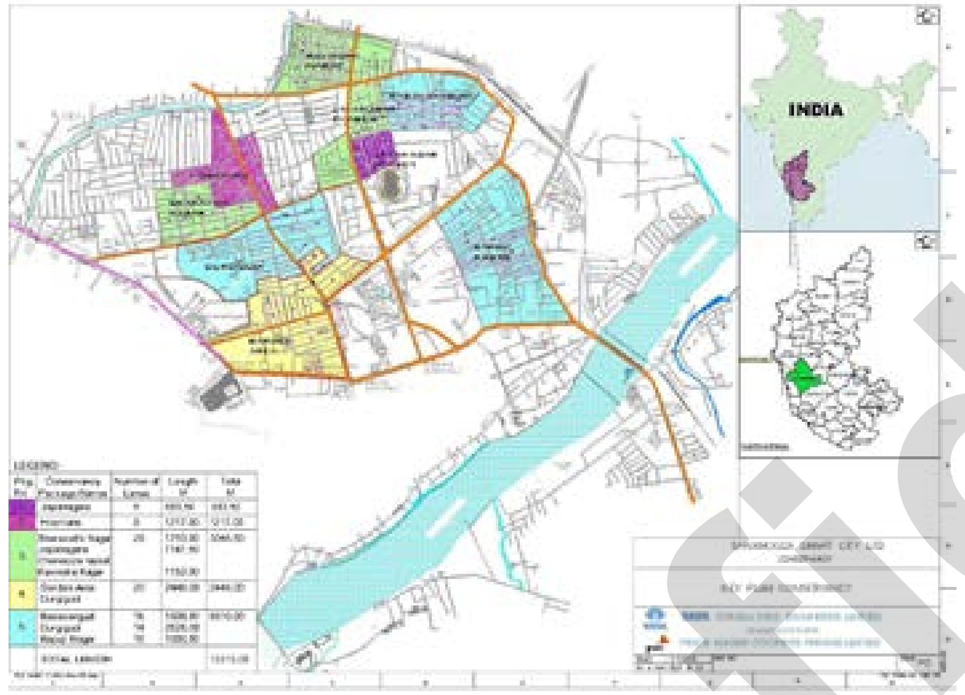
Enhanced cleaner and hygienic condition: Littering and dumping of garbage have been reduced, which has fostered a cleaner, and more hygienic environment for the citizens and commuters.

Reduced on-street parking: Many of these conservancy lanes were also converted into parking areas at a nominal fee to reduce the tendencies of on-street parking.

Reduced Trip impact: The decentralization of vending to small neighbourhoods of the city has reduced trip impact of the citizens, saving their time and energy.

Way
Forward

Existing NMT Street Network in 2023



Citizen Impact Stories

> *In the congested city life, it is difficult to find children's recreation facilities in the neighborhood areas. But projects like conservancy lanes have provided children's play equipment and recreation facilities at the rear side of our houses. We are thankful to Shivamogga Smart City for developing such spaces for children in the city.*

- Aruna P, Employee

Scaling-up the transformation

Through this project, the Shivamogga Smart City has succeeded in its participatory approach to address problems in the core city area.

To scale-up the effort, Shivamogga Smart City has identified about 140 conservancy lanes in the non-ABD area, adding to a total length of approximately 16km.

The city municipal corporation is in the process of revitalising such lanes around the commercial areas based on the learnings of the previous package.

> *The focus of the City is to improve sustainability of this development by generating a continuous revenue for maintenance of the assets created under conservancies. For this, stringent policy amendments are being proposed in consultation with citizens and enforcing authorities.*

Shri. Chidanad S Vatare
Managing Director

Conservancy lanes

Retail shop owners reported an increase in sales by ***10 to 15%*** *From Dec 2021 compared to sales of the same period in 2019 and 2020*

3 Lanes of Old Kashi

Varanasi, Uttar Pradesh

Typology
Local

ROW
0.6m

Length
36km

Duration
June 2020- July 2022
(2 years 2 months)

Cost
2.36Cr. per km

Nodal Authority
Varanasi Smart City Limited

Implementing Partners
Municipal Corporation, Water Distribution Department, Integrated Power Distribution System IPDS

Profile of the city

Varanasi, having a population of 11.9 lakh, was selected in Round 2 of the Smart Cities Mission. It has an ABD area of 5.6 sq.km out of a total area of 82 sq.km in the city. Varanasi Smart City has executed various projects across all beach heads in the Smart Cities Mission among which 16 projects worth ₹329 Cr. have been completed in the mobility sector. To enhance mobility, Varanasi has undertaken projects like — Smart Roads, Smart Parking, redevelopment of wards, E-buses etc., through the journey of the Mission.

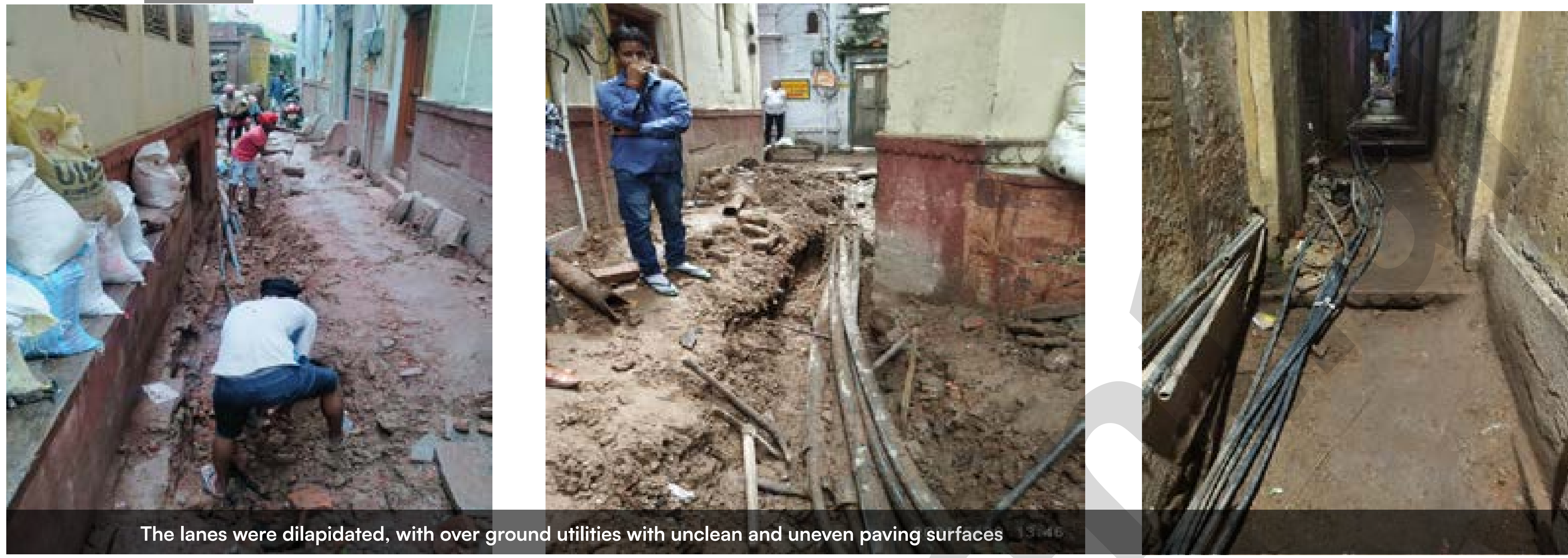
Context of the Project

Varanasi is famous for its complex network of narrow lanes throughout the old city, called "galis", often described as the city's nervous system. Through the Smart Cities Mission, the Varanasi Smart City planned to transform six wards through the "Redevelopment of Wards of Old Kashi" project. Through these efforts, the city hopes to provide its residents with a better quality of life and attract more tourists. The project involves various components, such as the revitalization of sewage and water lines, Pavement of Traditional Chauka Stones and Thematic Wall Art.

Vision of the Project

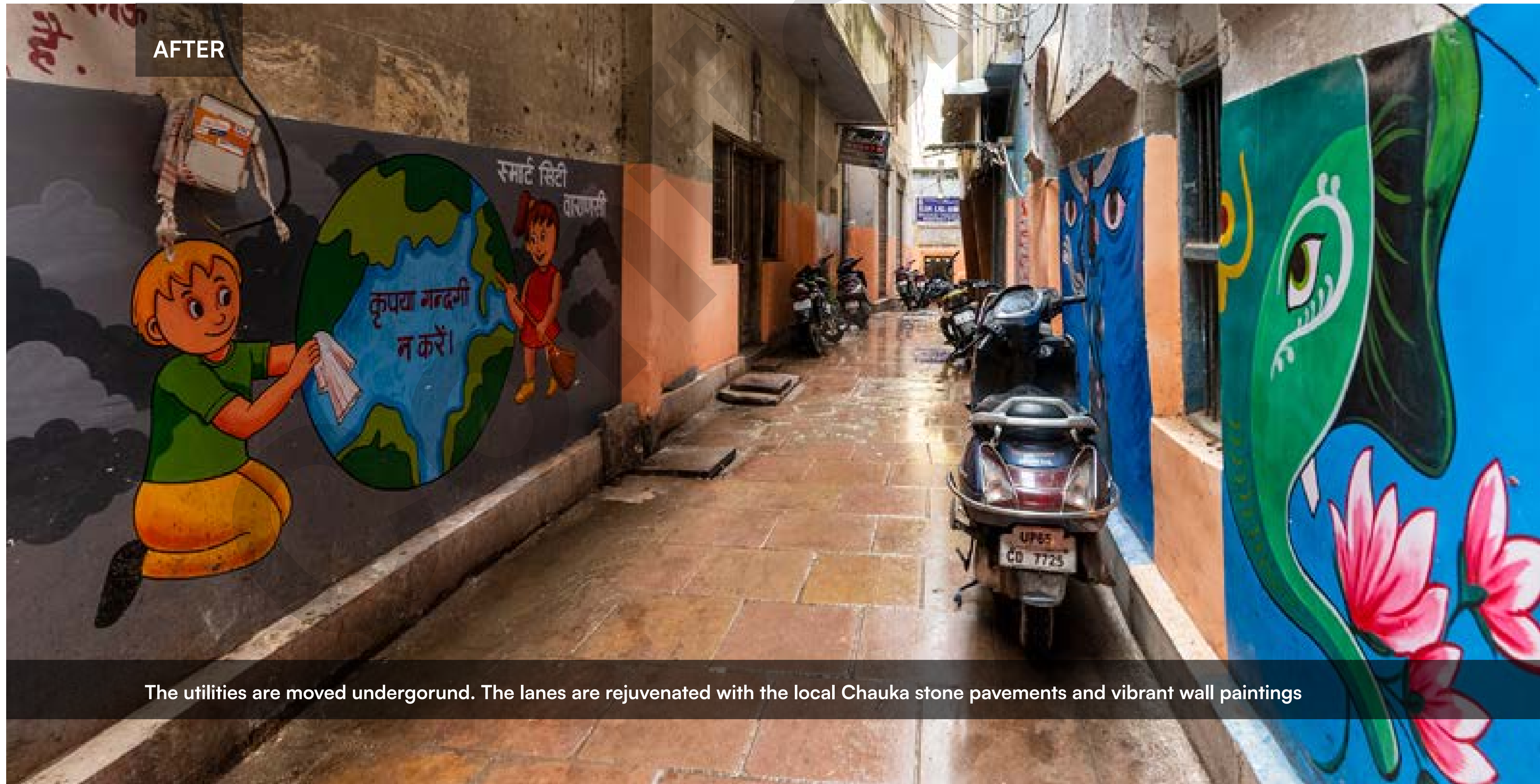
The project aimed to revitalize and modernize the old city core of Varanasi while preserving its unique heritage character and increasing public amenities.

BEFORE



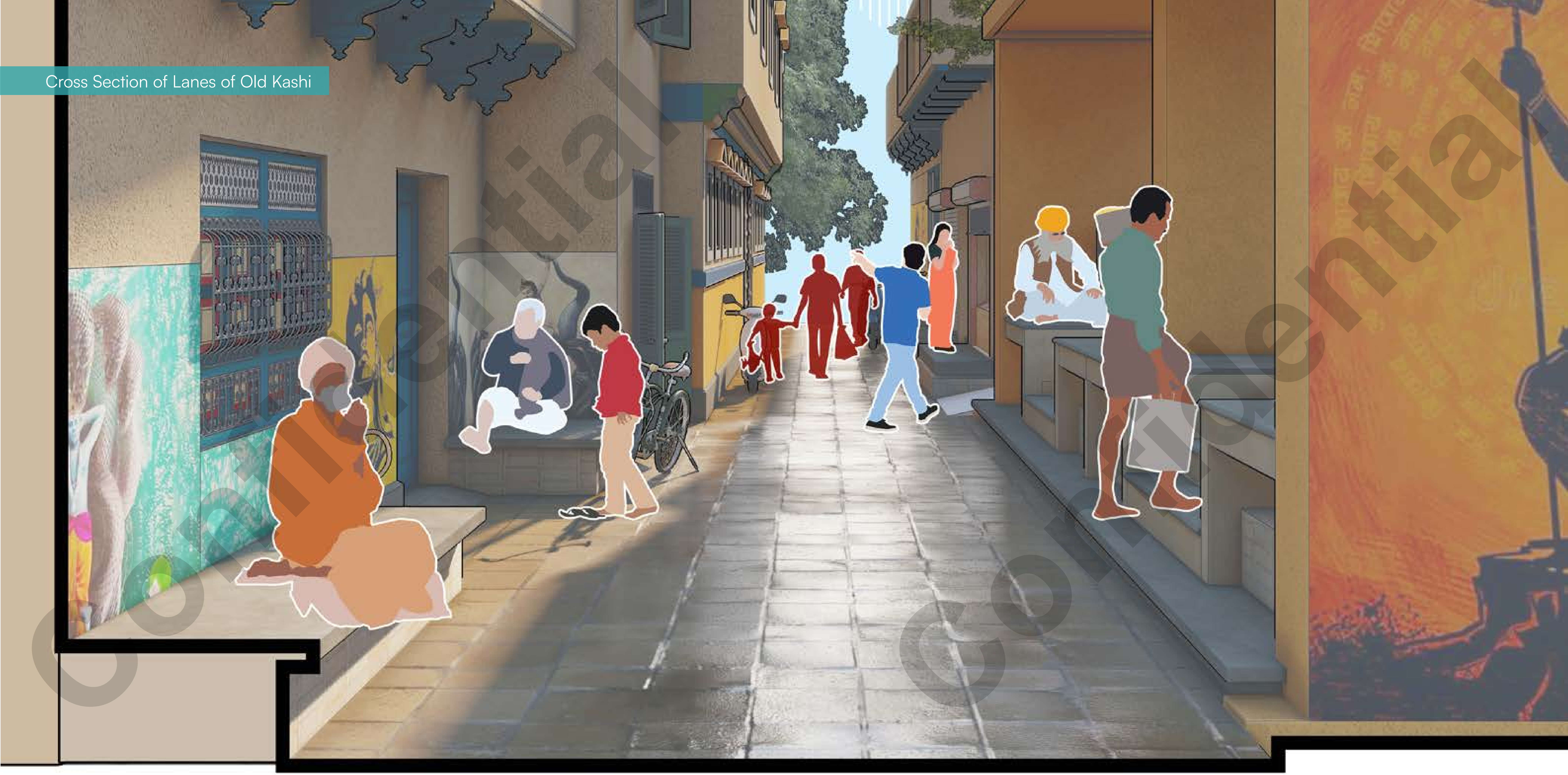
The lanes were dilapidated, with over ground utilities with unclean and uneven paving surfaces

AFTER



The utilities are moved undergorund. The lanes are rejuvenated with the local Chauka stone pavements and vibrant wall paintings

Cross Section of Lanes of Old Kashi



Design Highlights

01 The project was executed in six wards under which 100 lanes were undertaken.

02 The project primarily focused on managing the utilities management so that sewage and water pipelines can be provided the residents.

03 To maintain the heritage character of the neighbourhoods traditional Chauka stones were used for pavements.

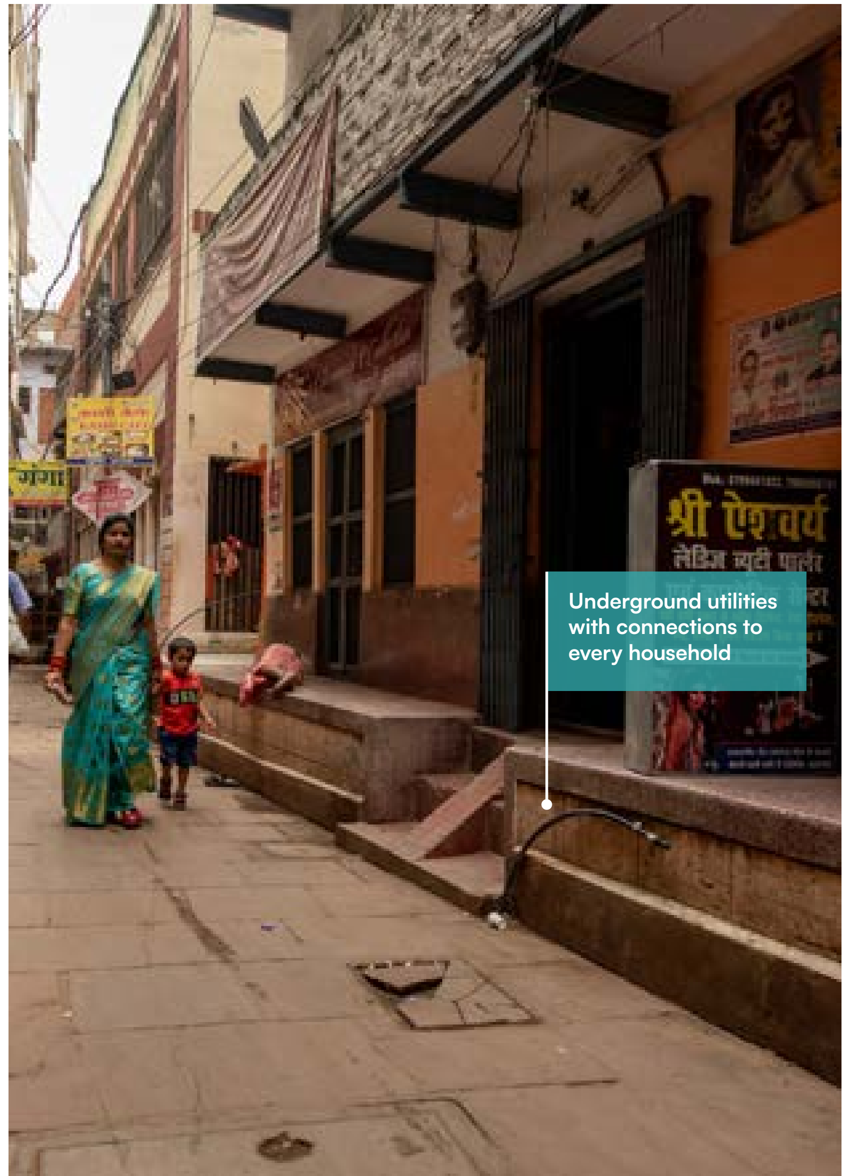
04 Owing to the narrow widths (average 1.5m), most of the lanes were designed as shared streets

05 Placemaking elements like seatings, garbage bins, etc were provided.

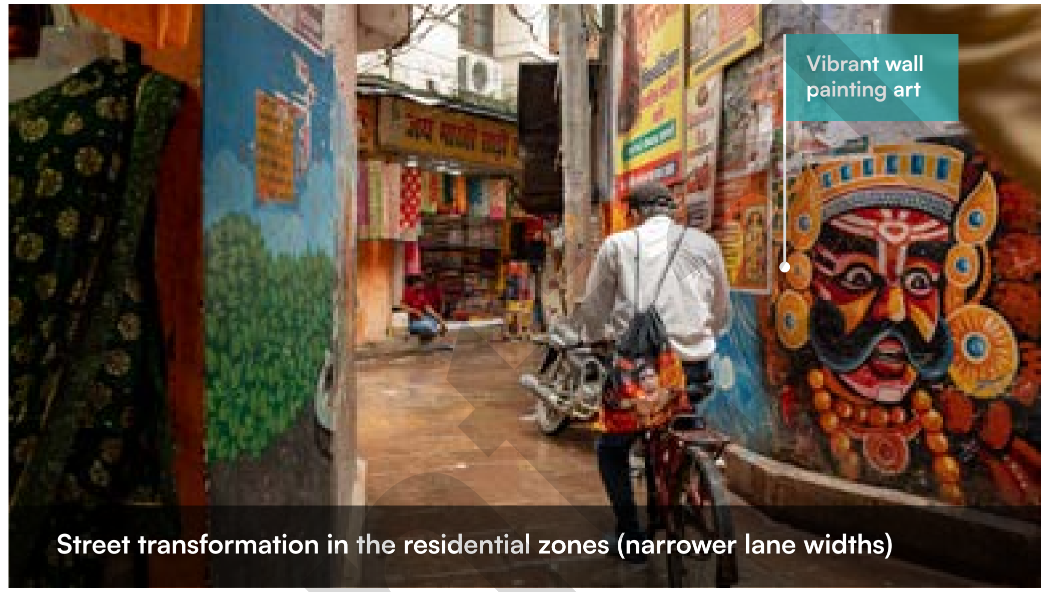
06 Based on the available widths in the lanes, designated zones were carved out to organise the parking and vending activities while ensuring unobstructed walking space.

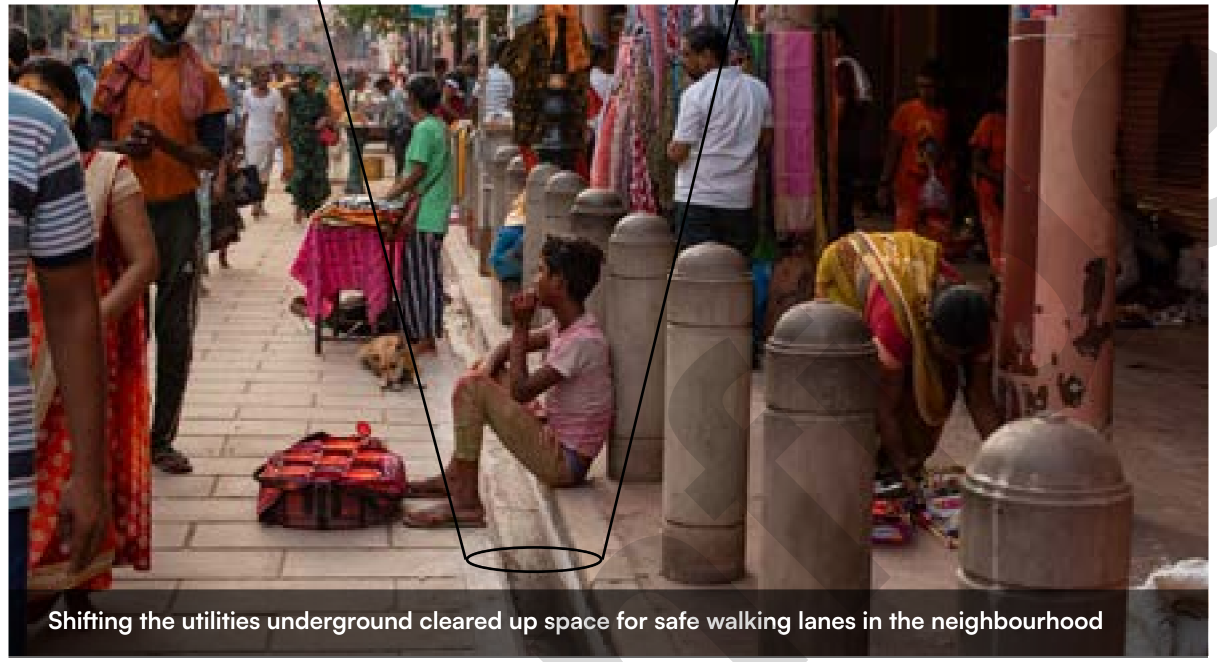
07 Beautification of these lanes were done through thematic wall paintings that depicted the traditional and mythological folklore of the city.

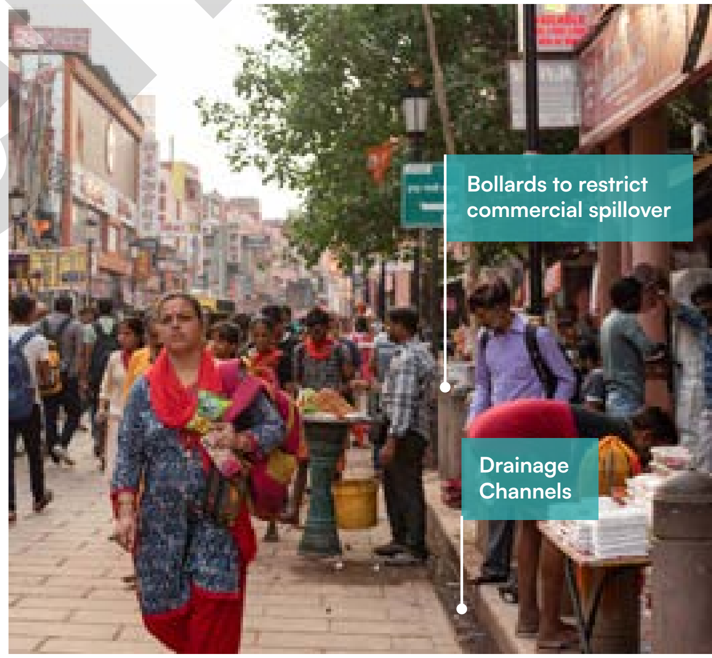
The project is equipping Varanasi with modern amenities while attempting to preserve its unique heritage.


Underground utilities with connections to every household

Precast Concrete Drainage Channels installed along the street edge


Vibrant wall painting art
Street transformation in the residential zones (narrower lane widths)


Shifting the utilities underground cleared up space for safe walking lanes in the neighbourhood


Bollards to restrict commercial spillover
Drainage Channels

Existing kattas (plinths) along the houses being used for recreational placemaking

Project
Journey

Stakeholder engagement

01
Laying the foundation

✓ Complete ✗ Not yet started ● Ongoing

- ✗ Parking Policy
- ✓ Vending Policy
- ✗ Healthy Streets Policy
- ✗ Street Design Guidelines

02
Building the team's muscle

Public Relations Office

Getting support from all the residents of all six wards during the construction was difficult. Many grievances and court cases were filed . Smart City's dedicated Public Relations Officer was very effective in ensuring that issues of all the affected users were heard and resolved.

Project Management Committe

Further, a committee of stakeholders, including the in house engineers, project mangers, technical experts from IIT, local representatives, engineers from jal kal department and other stakeholders affected by or involved in the project was created.

03
Doing things together

Expert Reviews

As the designs were developed inhouse and in most cases were changed on-site, based on the context and the issues faced, the designs were reviewed by the committee of experts. The Corporation engineers along with the Jal Kal Department would visit the sites weekly. The issues faced by them was then discussed in the larger committee meetings that were conducted on a bi-monthly basis. Most of the issues faced were due to the complexities of dilapidated houses and services.

Stakeholder Engagements

Several programmes like public consultations, workshops, and meetings to discuss the project's objectives, plans, and outcomes- were conducted to ensure public engagement. Feedbacks were incorporated for designing public spaces or the preservation of heritage buildings. Six wards were identified for implementation.

04
Public Engagement

Outreach-

Varanasi Municipal Corporation (VMC), along with Varanasi Smart City team conducted a massive awareness and discussion campaign through Print-media, Radio, Advertising, Tableau vehicles and Social Media for the outreach among to residentd.

Public consultation and grievance redressals-

Varanasi smart city set up a grievance management cell to resolve the on-site issues of the residents. This was followed by proper public consultation meetings with political representatives, word councillors, local members, etc. Various communication methods were used in development projects, including focused group discussions, door-to-door grievance redressal, and public feedback mechanisms, to engage stakeholders and address their concerns and feedback.

05
Monitoring, learning & improving

Operations and Maintenance

Post-completion, the project has been handed over to the jal kal department. During the handover all the stakeholders conducted a joint visit to the sites and a detailed inventory of all the concerned streets was created.

The underground utilities are maintained by the Jal Kal department, while the cleanliness is taken care by the Nagar Nigam. A dedicated committee including the Jal Kal department and other local stakeholders was formulated to look after the operations and maintenance of these streets and the underground utilities.

Vandalism

Most of the artwork and amenities are protected and maintained by the local residents.

Challenges Accepted & Addressed

The project faced significant challenges due to the narrow lanes in Old Kashi. Mechanized machines were hindered by the limited width, necessitating much manual labor. Complicating the situation further, key lanes served as primary routes to the popular Shri Kashi Vishwanath Temple, leading to congestion from devotees. To overcome this, the project team opted to conduct renovations during midnight hours when the temple was closed, minimizing disruptions. Collaborating closely with the local community and temple authorities, the team ensured the work preserved the temple's sanctity and caused minimal inconvenience to devotees. Despite obstacles, the project succeeded in safeguarding Old Kashi's cultural heritage.

Outcomes

The project has left a lasting positive impression on the local residents. Being the first renovation effort of its kind since independence, the project holds particular significance for the community. The tangible improvements have positively influenced the daily lives of the locals, fostering a sense of gratitude towards the dedicated efforts of the project team.

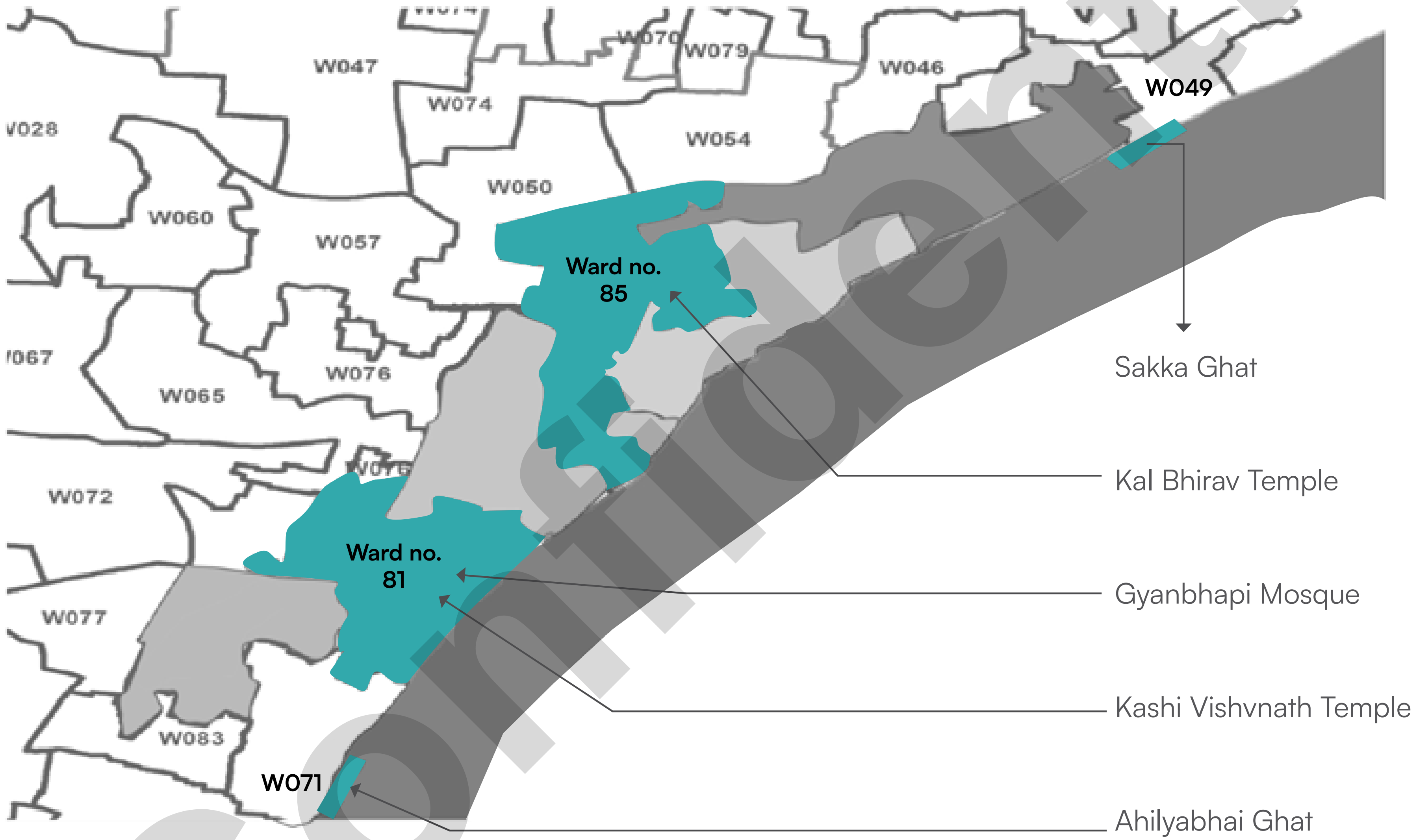
Citizen Impact Stories

> *It is heartening to see that the Redevelopment of Wards of Old Kashi project has positively impacted our lives. It is also noteworthy, that this was the first monsoon in 72 years with no waterlogging in these redeveloped lanes, which is remarkable*

-Sarala Devi, 97 yrs old resident

Way
Forward

Redevelopement of Wards of old Kashi



Sakka Ghat

Kal Bhirav Temple

Gyanbhapi Mosque

Kashi Vishvnath Temple

Ahilyabhai Ghat

Scaling-up the transformation

Vision: To rejuvenate the oldest Indian living city of Varanasi as a great place to live and visit by conserving and showcasing its enriched heritage, culture, spirituality and traditions through innovative social and financial inclusion solutions.

Lanes of Old Kashi

काशी कैफे
KASHI CAFE
गंगा
OPEN

SAIGAL
CLASSES

कृपया काशी की
सुंदरता बनायें रखें।

4 Race Course Road

Coimbatore, Tamil Nadu

Typology
Sub Arterial Street

ROW
30m

Length
2.5 km

Duration
May 2020- May 2023
(4 years)

Cost
₹16 Cr. overall

Nodal Authority
Coimbatore Smart City Limited

Implementing Partners
Coimbatore City Municipal Corporation, M/s. SGS India Private Limited, Residents Awareness Association of Coimbatore (RAAC), Race course & Neighborhood Association (RANA), M/s. P & C Projects Limited, M/s Oasis Design Inc., Delhi (Design consultant)

Awards & Recognition
ISAC Award 2022-
Winning project under Built Environment Category

Profile of the city

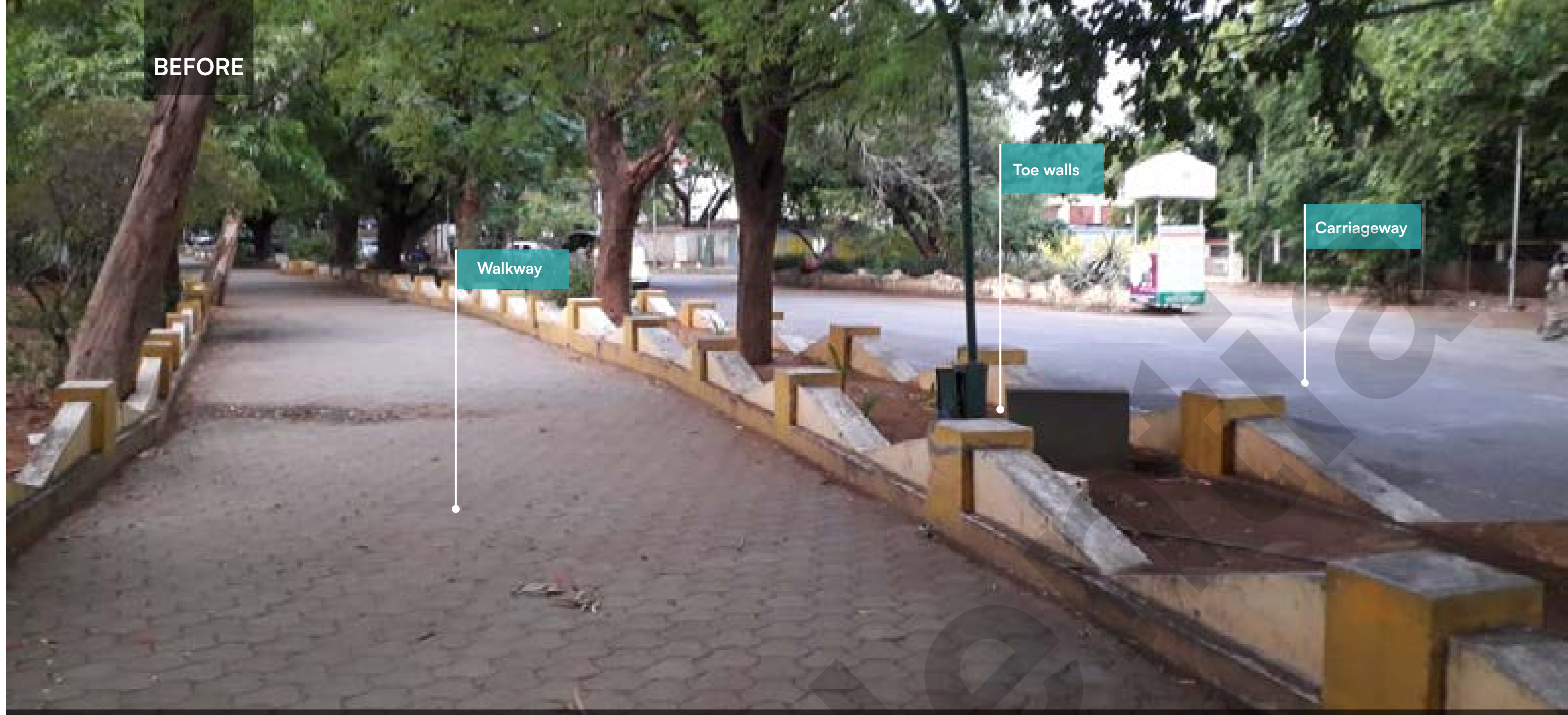
“Manchester of South India” or the “Textile City”, Coimbatore- a vibrant and bustling city located in the Indian state of Tamil Nadu. It is the second largest city in Tamil Nadu after Chennai in terms of population and features among top 20 largest urban agglomerations in India as per the census 2011. With a total population of 10,50,721, the city was selected in the Round 2 of the India Smart City Challenge. Under the aegis of the Smart Cities Mission, the city has completed projects worth ₹825 Cr. These projects focus on themes like water body restoration, model roads, waste management, and energy conservation.

Context of the Project

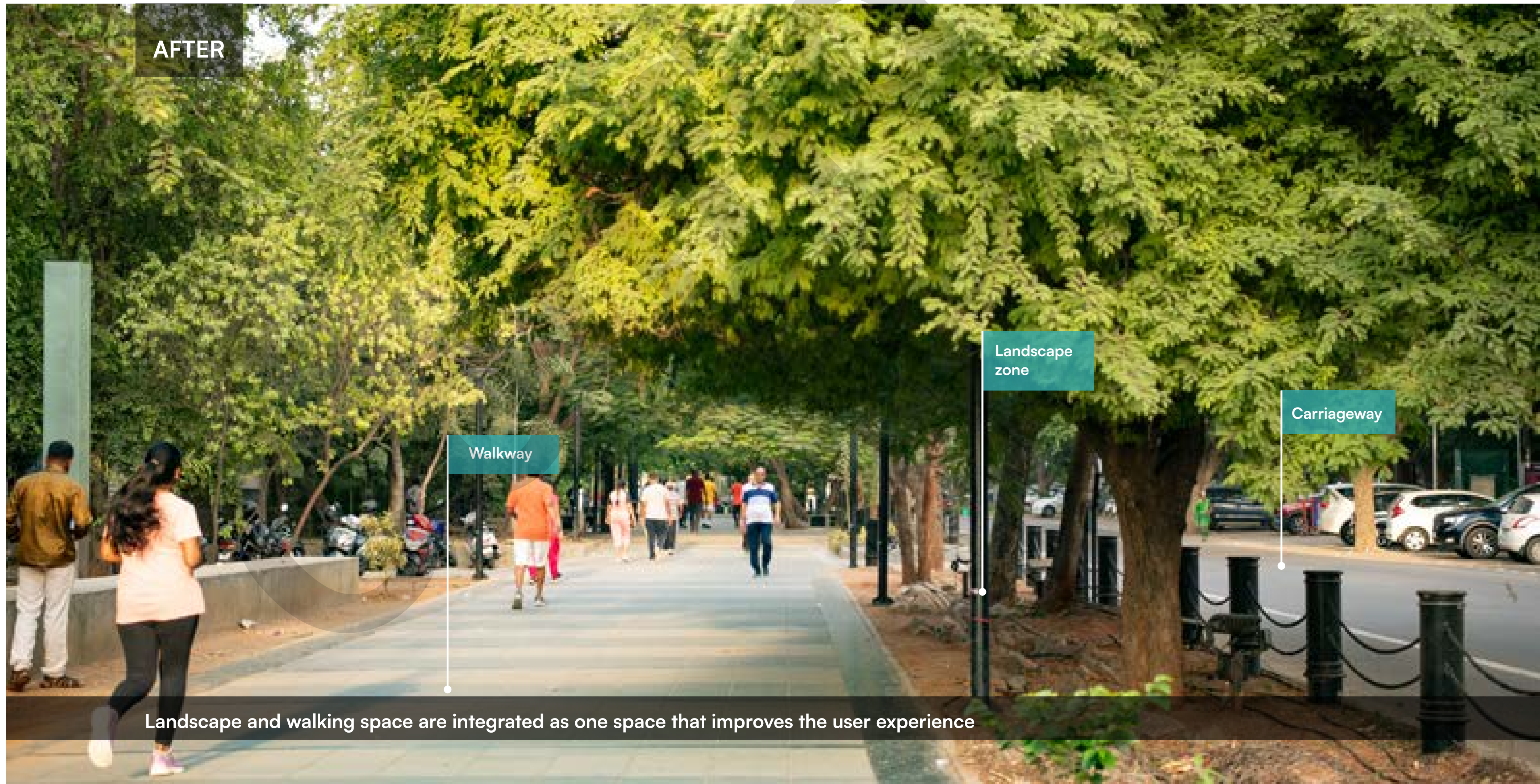
Racecourse Road is an oval loop in a residential neighbourhood, frequently visited by citizens due to its connectivity to key landmarks, institutions and markets. It is one of the streets in the City’s NMT corridor that is part of the Seven Lakes Project. Identified in the Smart City proposal, the redevelopment of Race Course Road has significantly benefited local residents and enhanced the city’s infrastructure and sustainability. This project rejuvenated the core city area, establishing an inclusive leisure and recreational streetscape while integrating a storm-water management system to mitigate flood risk.

Vision of the Project

The vision of the project was to demonstrate a complete street that has a universally accessible walking plaza with ramps, bollards, and all dipped crossovers to ensure a complete barrier-free design.

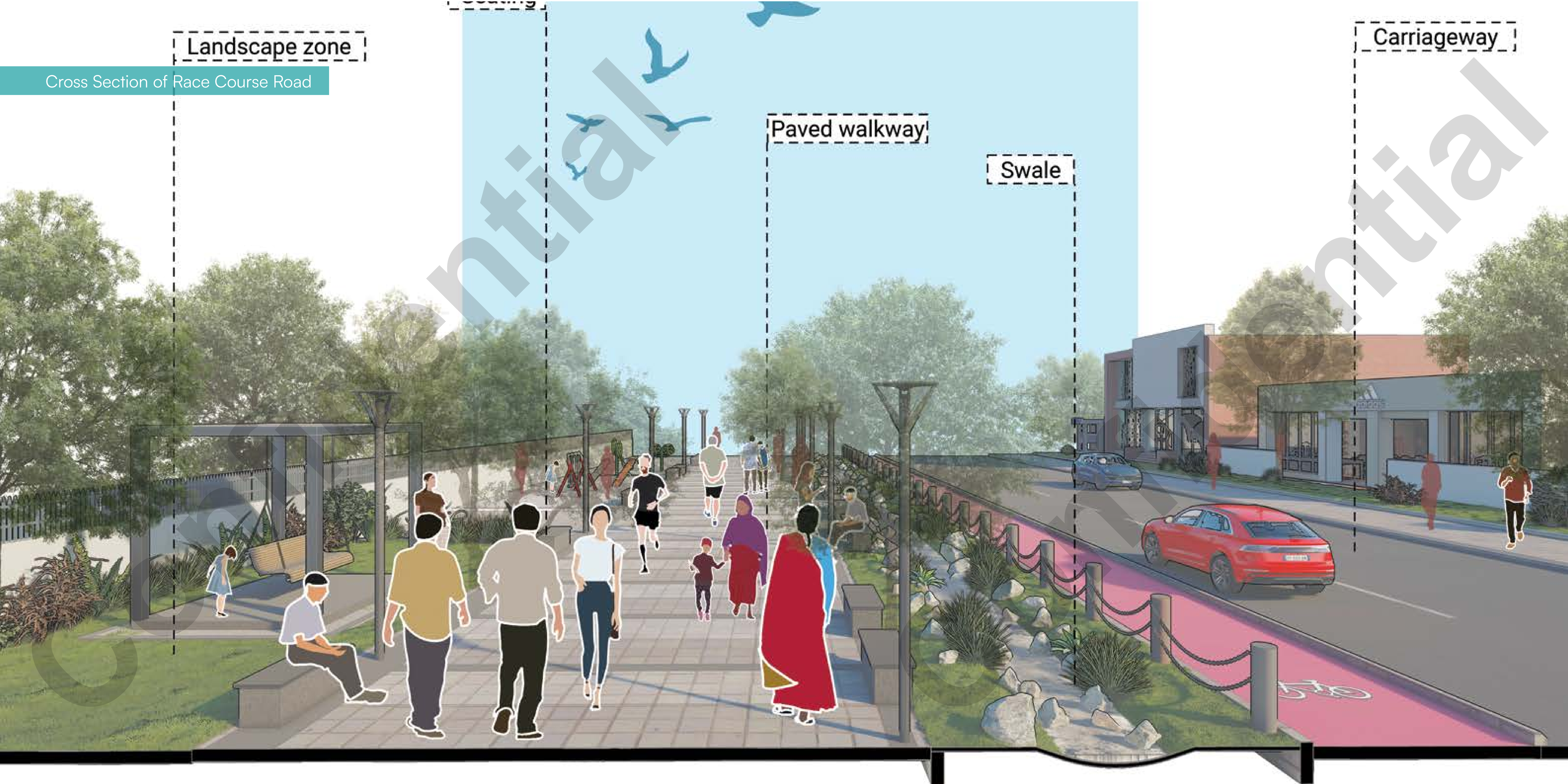


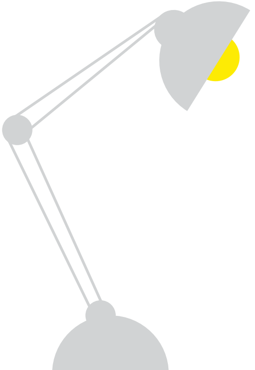
The walkway was restricted by toe walls on both sides, creating a segregation between the landscape and walking space



Landscape and walking space are integrated as one space that improves the user experience

Cross Section of Race Course Road


Landscape zone
Paved walkway
Swale
Carriageway



Design Highlights

01 The existing street had a dedicated walkway and sufficient trees for shade. Therefore, the focus of this project was to enhance the activities and improve the user experience by providing necessary amenities to sit, play, rest and walk.

02 The seating spaces are designed as long benches to allow large groups of people to be seated together.

03 Kiosks, play and gym equipment are integrated in the streetscape to create an interactive environment and promote usage of the street for longer durations.

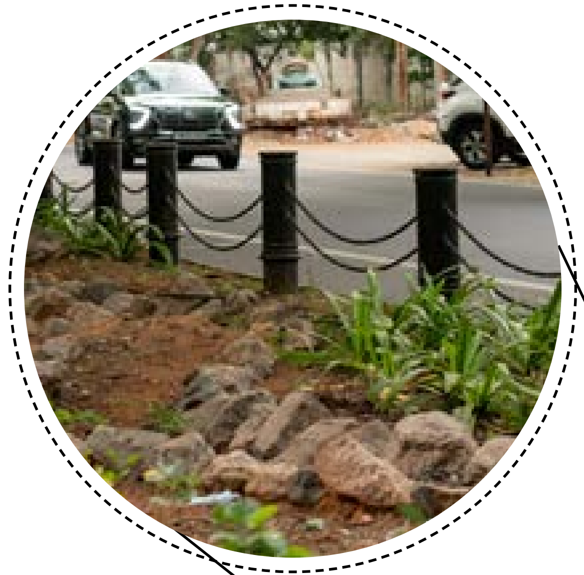
04 The design limits hardscape area to the minimum required for usability. Materials are chosen such that they enable groundwater recharge, for example, the tree gratings are made of porous concrete.

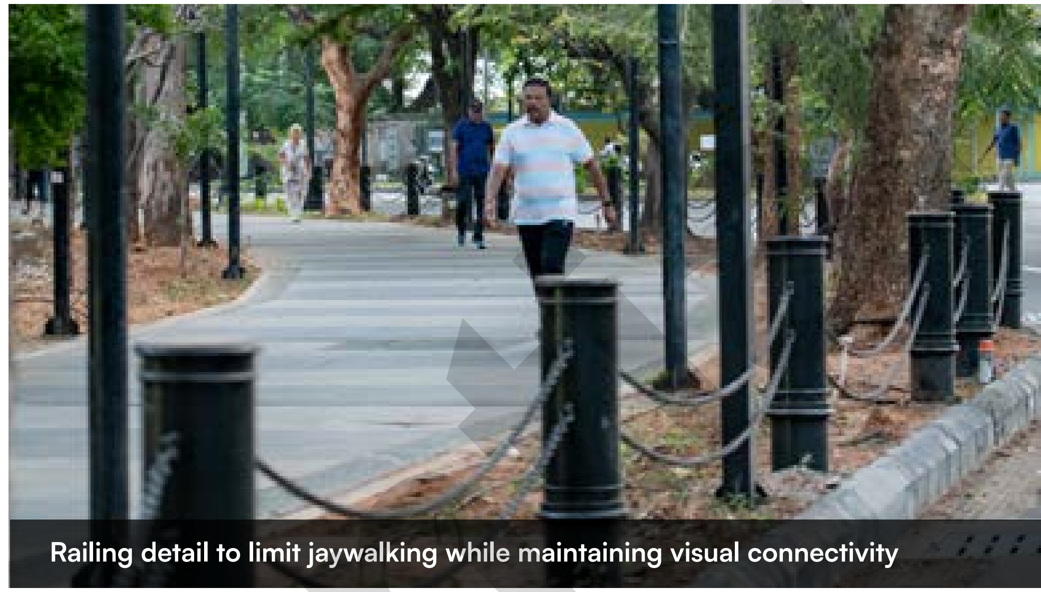
05 A unique stormwater management system is created within the landscape zone that further connects to the city's drainage system.

Earlier, this area was prone to flooding, due to which a unique stormwater management system is created within the landscape zone that further connects to the city's drainage system.

This design mitigates flood with a stormwater management system.

Bollards
ZONE


Stormwater swale within the landscape zone


Railing detail to limit jaywalking while maintaining visual connectivity

Walking space integrated with the landscape zones

Public toilets provided

Seating spaces that allow flexible use and children's play area

Daily morning walks on newly designed pathways

Project Journey

01

Laying the foundation

In 2017, responding to the proposals for model roads and eco-mobility corridors under the Smart Cities Mission, the Coimbatore City Municipal Corporation (CCMC) adopted the "Coimbatore Street Design and Management Policy". This laid the foundation for NMT-related projects in Coimbatore city. Happy Streets, an initiative started with the Race Course Road project, thrives to be a weekly event in the City.

✓ Complete ✗ Not yet started ● Ongoing

- ✗ **Healthy Streets Policy**
- ✓ **Healthy Streets Cell**
- ✓ **Parking Policy**
- ✓ **Street Design Guidelines**

02

Building the team's muscle

- ✓ **Site visits, Pune**
- ✓ **Capacity-building workshops**

03

Doing things together

Stakeholder engagement
Weekly site meetings were organised with the local residents' associations - RANA & RAAC. District-level meetings were conducted at regular intervals with the collector, elected representatives, officials of district administration, and Non-Governmental Organizations.

Awareness programmes
Citizen engagement was done through public display boards, media engagement & ward level Focus Group Discussions. Happy streets events were organised on a regular basis to garner support.

Design process
Meetings at the site were also conducted with the local resident associations and valuable inputs were also incorporated in the designs and implemented. The design of the walkways included sturdy materials, paper blocks and a little bit of granite.

Review schedule
Monthly reviews were organised with the Joint Secretary, MoHUA and fortnightly reviews were organised with the Additional Chief Secretary, Municipal Administration and other departments to coordinate the work. Further, a weekly review was organised with the City Commissioner and Managing Director of Coimbatore Smart City.

04

Monitoring, learning & improving

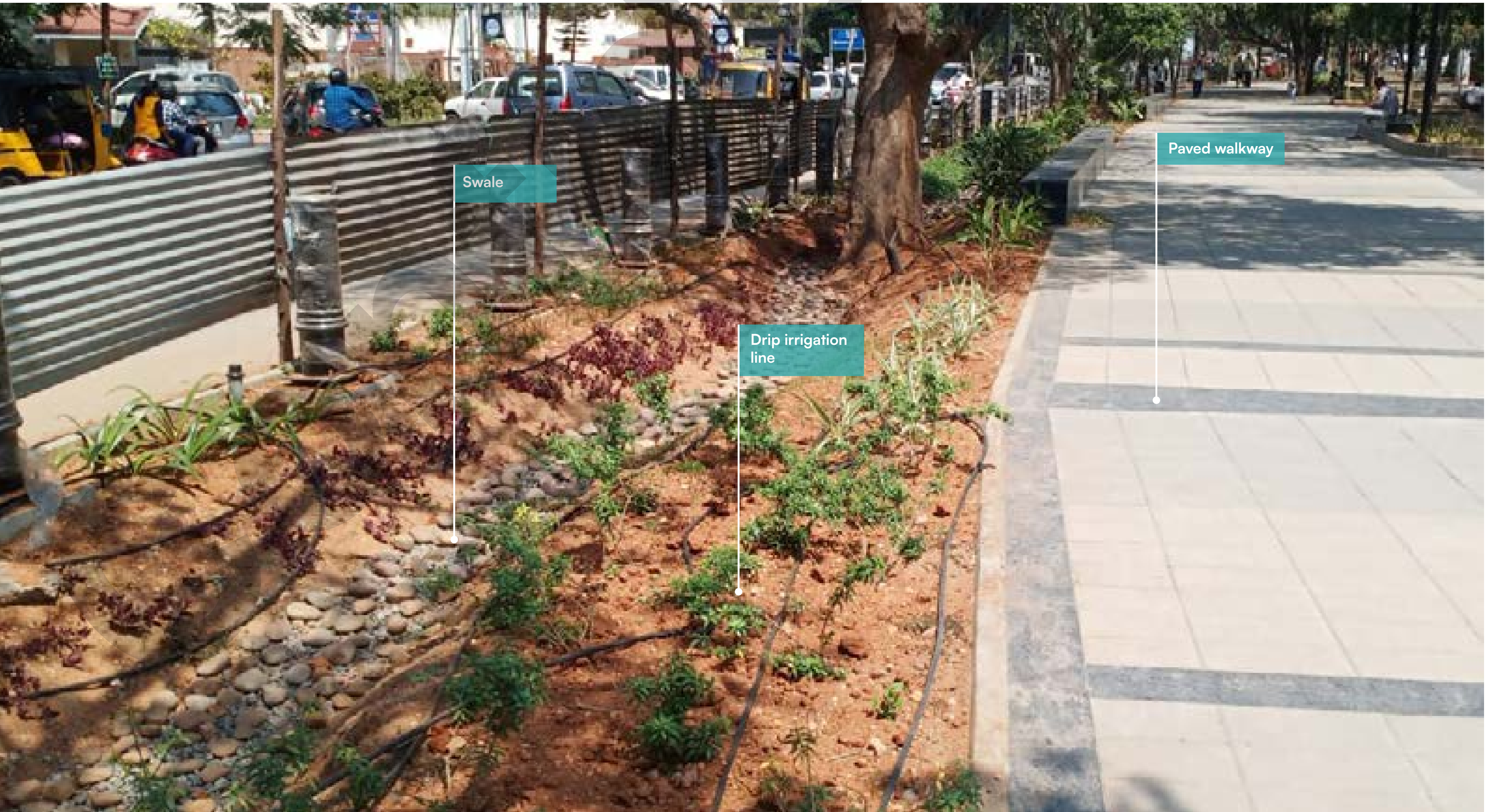
Managing Encroachment
The design elements like bollards, paving pattern to demarcate walking space have been instrumental in managing encroachment. CCTV cameras are installed & Traffic Police is deployed for regular surveillance.

Activating the lakefront
Resident associations have been against any commercial activity on the Race Course Road. Currently the City is in the process of identifying other activities along the lakefront and identifying CSR initiatives with the help of RANA for revenue generation.

Innovative Solution:
Integrating Stormwater Management System

There are two systems integrated in the streetscape - one is a Swale to collect the surface runoff from footpaths and other is a water recharge put in the carriageway area that collects all the surface runoff from the carriageway. All the water first gets into the Swale and then into the city system.

The swale is designed as along a meandering path to increase its surface area, slowing down the speed of water to soak a larger quantity.



Challenges Accepted & Addressed

Interdepartmental coordination for utility shifting: During the project implementation the interdepartmental coordination for the aligning of the utilities was one of the key challenges, which was resolved through regular monthly review meetings with all the implementing agencies and stakeholders.

Traffic management: During the construction stage of the project, traffic management was also a critical issue. To ensure the smooth implementation of the project, traffic rerouting and efficient traffic management was required. With the support of the traffic police, the city resolved the issue and ensured traffic movement without any hindrance in the construction.

Parking Encroachment: After construction, some of the non-parking areas were encroached for car parking. The Coimbatore City Municipal Corporation and Coimbatore Smart City Limited prepared an area-level parking management plan to resolve this issue. Further, with the support of th Traffic Police this issue was also resolved on site.

Outcomes

Increased pedestrian and vehicular counts: After Implementation the road observed a Pedestrian Count of 7464 / day (weekend) and Vehicular Count - 2857 / day (weekend)

Vibrant public space for all: After the development of the project, people from all groups come for their morning &amp; evening walks. 2000 daily visitors from different age group visit this place for daily activities like walking, jogging, cycling, yoga and sports.

Enhanced healthy lifestyles: Dedicated cycle track and w pathways, have encouraged people to adopt cycling and walking as the part of the daily activities of their life.

Solving decades of problems: By mitigating flood with a unique stormwater management system, the bioswale incorporated in the streetscape has resolved the decades of problem.

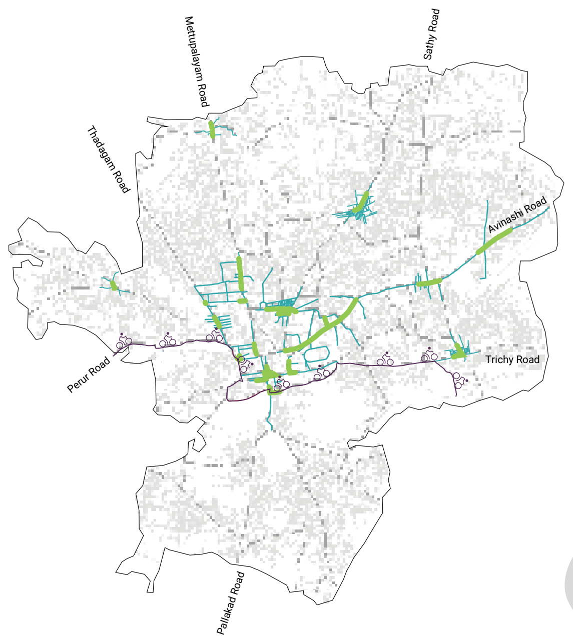
Citizen Impact Stories

> *We organized a cycling event starting from Race Course Road, passing through the neighbourhood lake promenades, and ending near RS Puram. The scenic beauty along the Race Course Road while cycling really enriched our cycling experience. Many of us cycle along the dedicated cycling lane and take our daily morning walks on the segregated pedestrian ways of the newly designed race Course Road".*

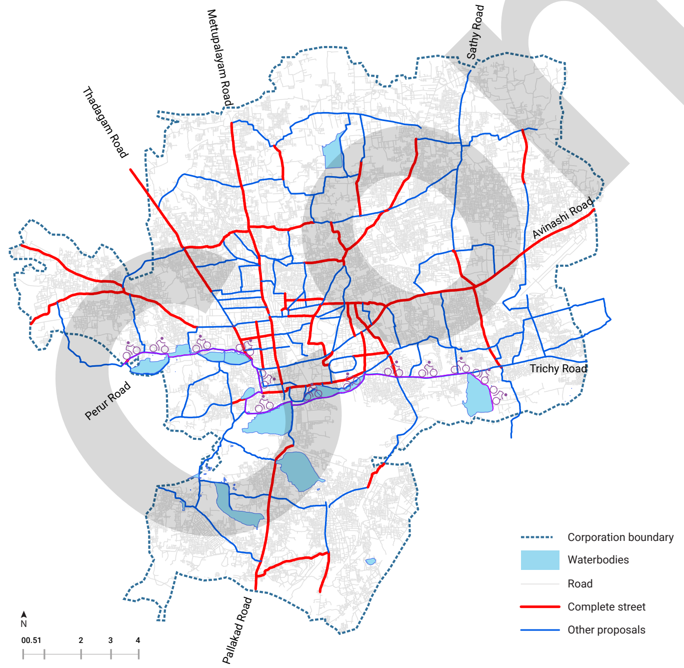
- P Robert Anthony Raj, Member of western Valley Cycling, Coimbatore Smart City

Way Forward

Identified pedestrian priority roads around hotspots


Mettupalayam Road
Sathy Road
Thadagam Road
Avinashi Road
Perur Road
Trichy Road
Pallakad Road

Proposed NMT Street Network in 2032


Mettupalayam Road
Sathy Road
Thadagam Road
Avinashi Road
Perur Road
Trichy Road
Pallakad Road
N
00.51 2 3 4
Corporation boundary
Waterbodies
Road
Complete street
Other proposals

Scaling-up the transformation

The prime purpose of the NMT Network Plan is to set forth a comprehensive set of measures which would put the city on the path to a sustainable, low-carbon mobility system by the year 2035.

The NMT Network Plan identifies the safest possible routes connecting the public transport hubs, shopping centres, religious centres, recreation spots, institutions and other local amenities.

> *It should be noted that the proposed NMT network and pedestrian hotspots are being developed to complement and connect the proposed ecomobility corridor in the "8 Lakes Rejuvenation and Restoration Plan" under the Smart Cities Project*

....

Race Course Road

5

Street 106

New Town Kolkata, West Bengal

Typology
Sub Arterial Street

ROW
46m

Length
0.2km

Duration
Oct 2021- Jun 2022
(8 months)

Cost
₹5.2 Cr. overall

Nodal Authority
Coimbatore Smart City Limited

Implementing Partners
City Level Advisory Forum (CLAF), Malabi Makur & Associates, M.M Enterprise (Contractor)

Profile of the city

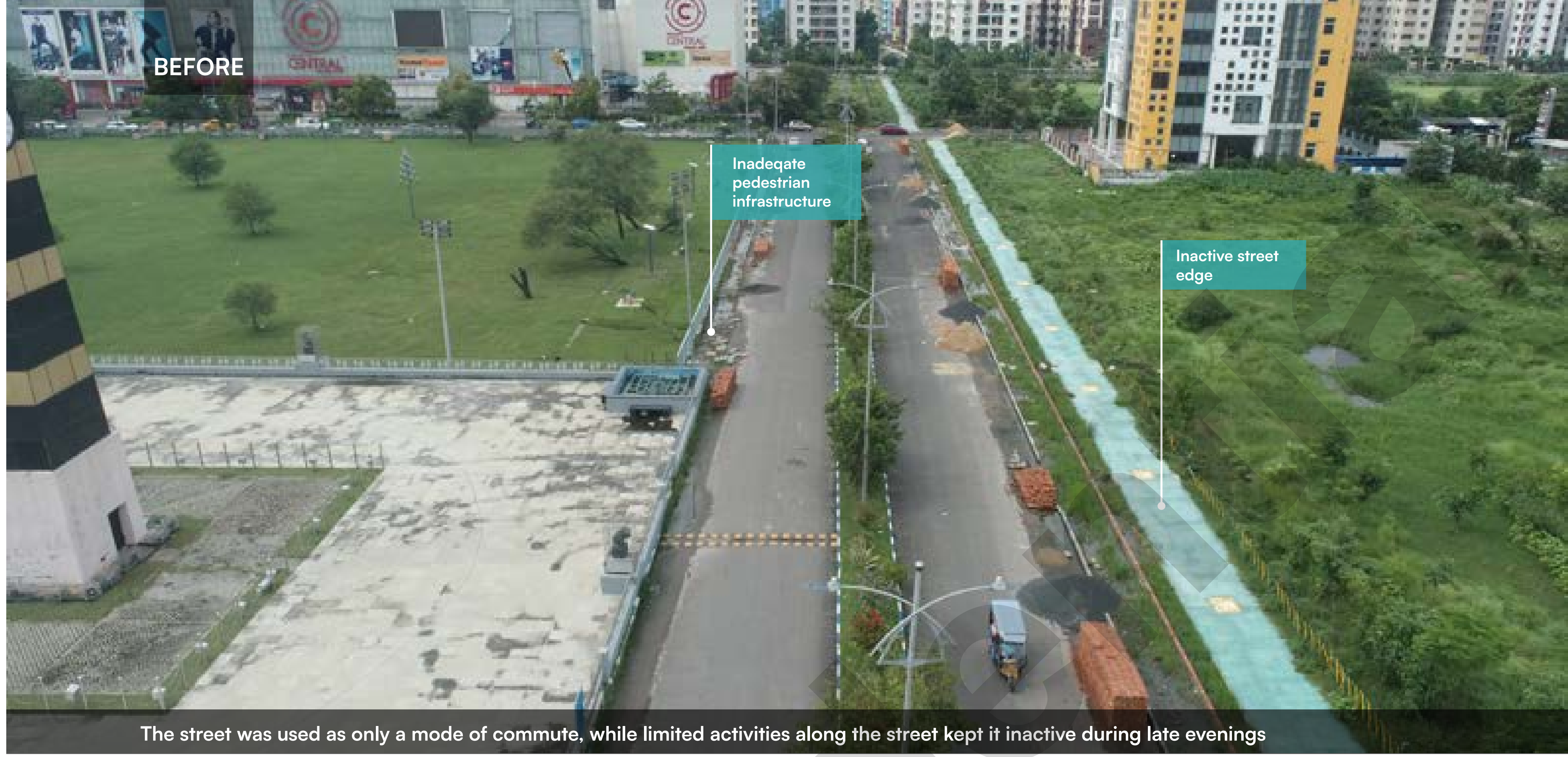
New Town, Kolkata was declared as a potential Smart City under the Smart Cities Mission, in the Round-1 (Fast Track) of the challenge of the smart city. Having a total area of 28 sq Km, the city has implemented more than 50 projects on Smart streets and smart mobility, total worth ₹430 Cr. Under the Smart Cities Mission, the city has taken multiple initiatives that promote non-motorized transport while facilitating seamless network of dedicated cycle tracks and pedestrian pathways.

Context of the Project

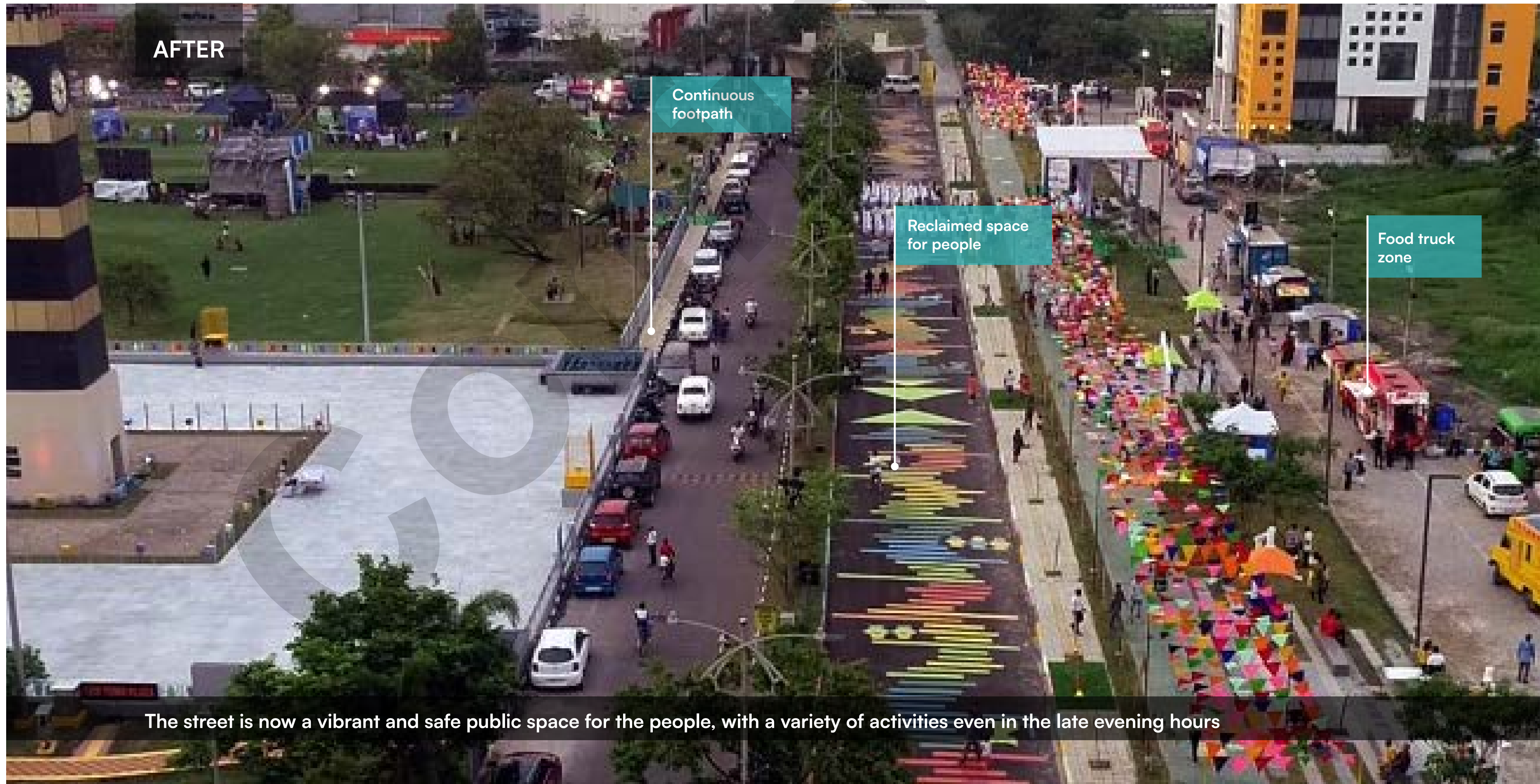
Street 106, situated at the core of New Town Kolkata, despite regular footfall was rendered lifeless during evenings. As part of the Smart Cities Mission's initiative — Street4People Challenge, the project was conceived and aimed to introduce new engaging activities, such as a food truck park, to activate the street during late hours.

Vision of the Project

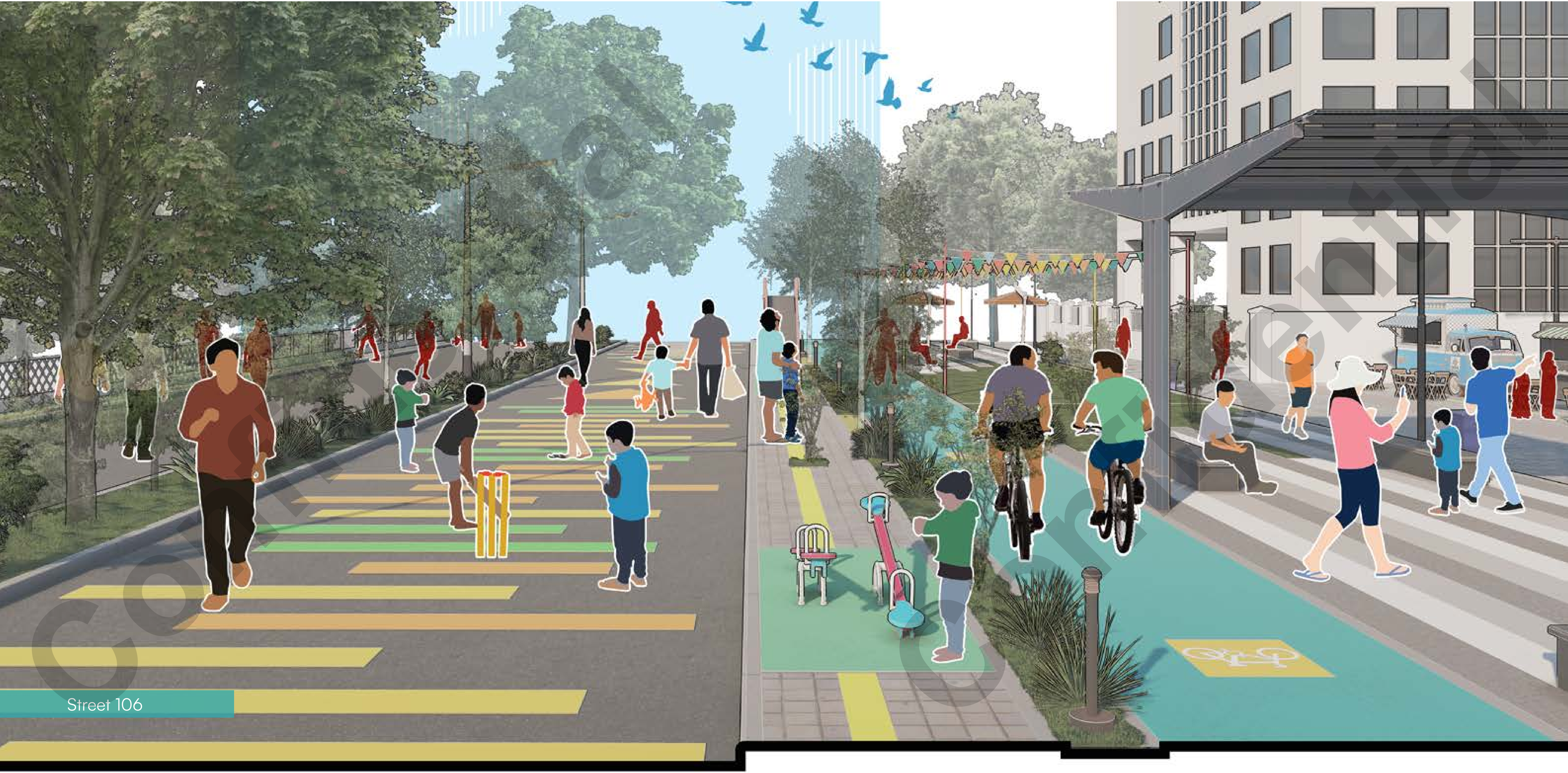
This project revitalised the street with engaging activities, converting it into a pedestrian-friendly street ensuring safety and vibrancy, fostering a lively space for the community throughout the day.

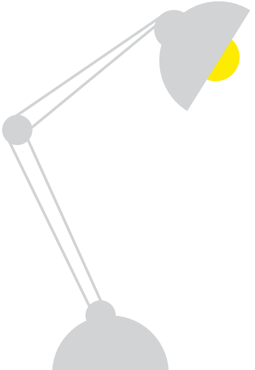


The street was used as only a mode of commute, while limited activities along the street kept it inactive during late evenings



The street is now a vibrant and safe public space for the people, with a variety of activities even in the late evening hours


Street 106



Design Highlights

01 The project conceptualisation initiated with a design competition to crowdsource ideas. An integral part of the selected design was the efficient traffic circulation for converting Street 106 into a pedestrian-friendly zone.

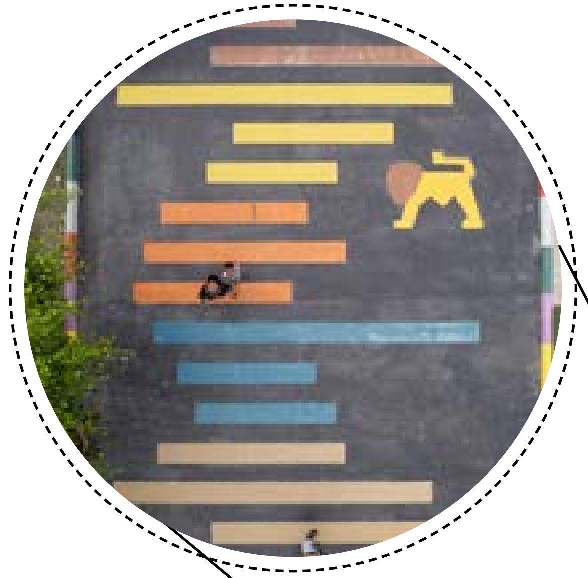
02 The carriageway is refurbished and vibrant paints are used to demarcate the pedestrianised stretch. Footpath abutting the carriageway is converted into children's play zone with outdoor play equipment. A segregated cycle track is also created along the street length.

03 The service lane is converted into a food truck zone, integrated with necessary amenities like seating spaces, to popularise the street and keep it active in the late evening hours.

04 A permanent dais/stage is integrated in the street design to offer a platform for performances during public events. NTK radio is an active contributor to the space.

05 Silver sands, cement concrete, brick, reinforcement steel, galvanized iron sheet, polycarbonate sheet, synthetic enamel paint, exterior grade acrylic primer, decorative acrylic exterior emulsion paint, interlocking Concrete paver block, kota stones (polished, honed, leather finish), high quality children playground equipment, etc.

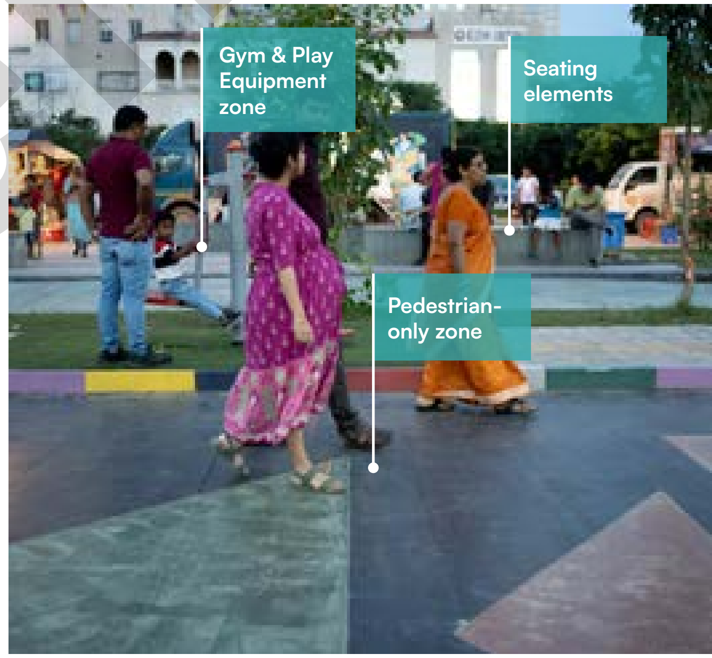
This design mitigates flood with a stormwater management system.



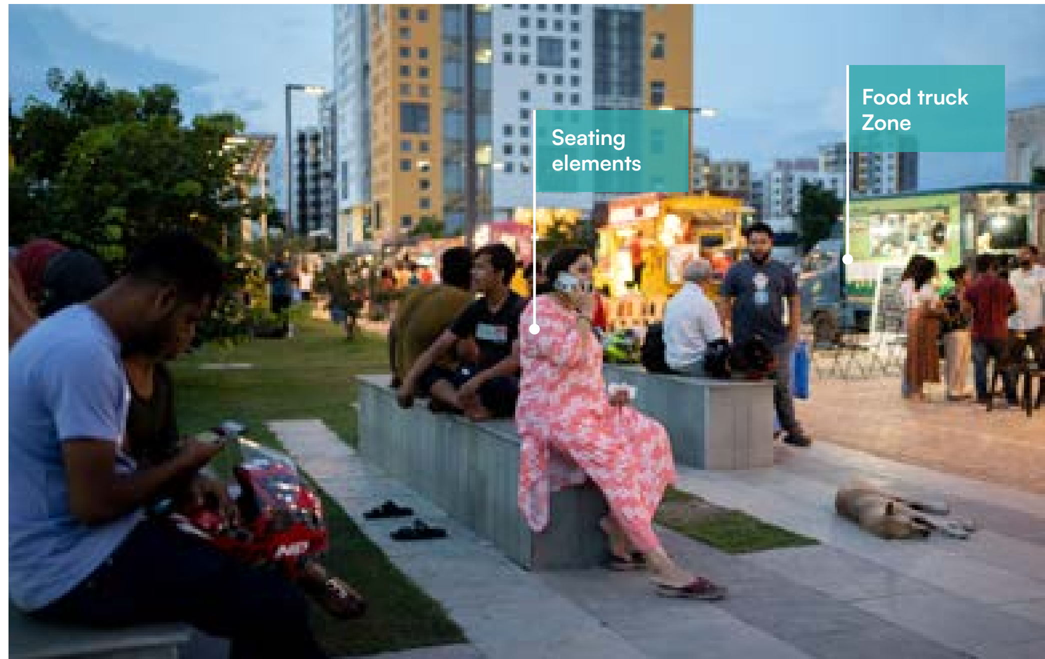
Stormwater swale within the landscape zone

Landscape area shaded with pergolas

Outdoor play equipment along pedestrian-only zone



Continuous walking space along the carriageway



Project Journey

01

Laying the foundation

The city formed the Non Motorised Transport (NMT) cell which is now part of the New Town Kolkata Green Smart City Corporation Ltd. The city also developed Street design guidelines which was followed during the implementation of other streets in New Town Kolkata

✓ Complete ✕ Not yet started ● Ongoing

- ✓ **Healthy Streets Policy**
- ✓ **NMT Cell**
- ✕ **Parking Policy**
- ✓ **Street Design Guidelines**

02

Building the team's muscle

Online & offline Juries
Local experts were involved in the competition juries to share contextual suggestions on the designs submitted by the participants.

Walking audits
Walking audits were organised with the participants of the design competition to ensure that they are aware of the on-ground situations.

03

Doing things together

Design Competition
Crowdscourcing ideas through a design competition helped in ensuring community engagement.

Stakeholder engagement
Street 106 lies in one of the three action areas identified by NTK. Weekly citizen grievance meetings were organised for each action area where city officials, including engineers, CEO, and the chairman of ULB, interacted with citizens, NGO, shopkeepers association, transgender community, women association, to resolve their issues. This led to a smooth implementation as people started trusting the grievance redressal system. All the stakeholders were engaged through out the project period through mutual consultation, filed visit for redressal and resolve of legal issues on continuous basis.

04

Monitoring, learning & improving

Traffic management
The city authority of New Town Kolkata along with the Bidhanagar Police Commissionerate played an important role in working out an alternative traffic circulation plan, for pedestrianising Street 106.

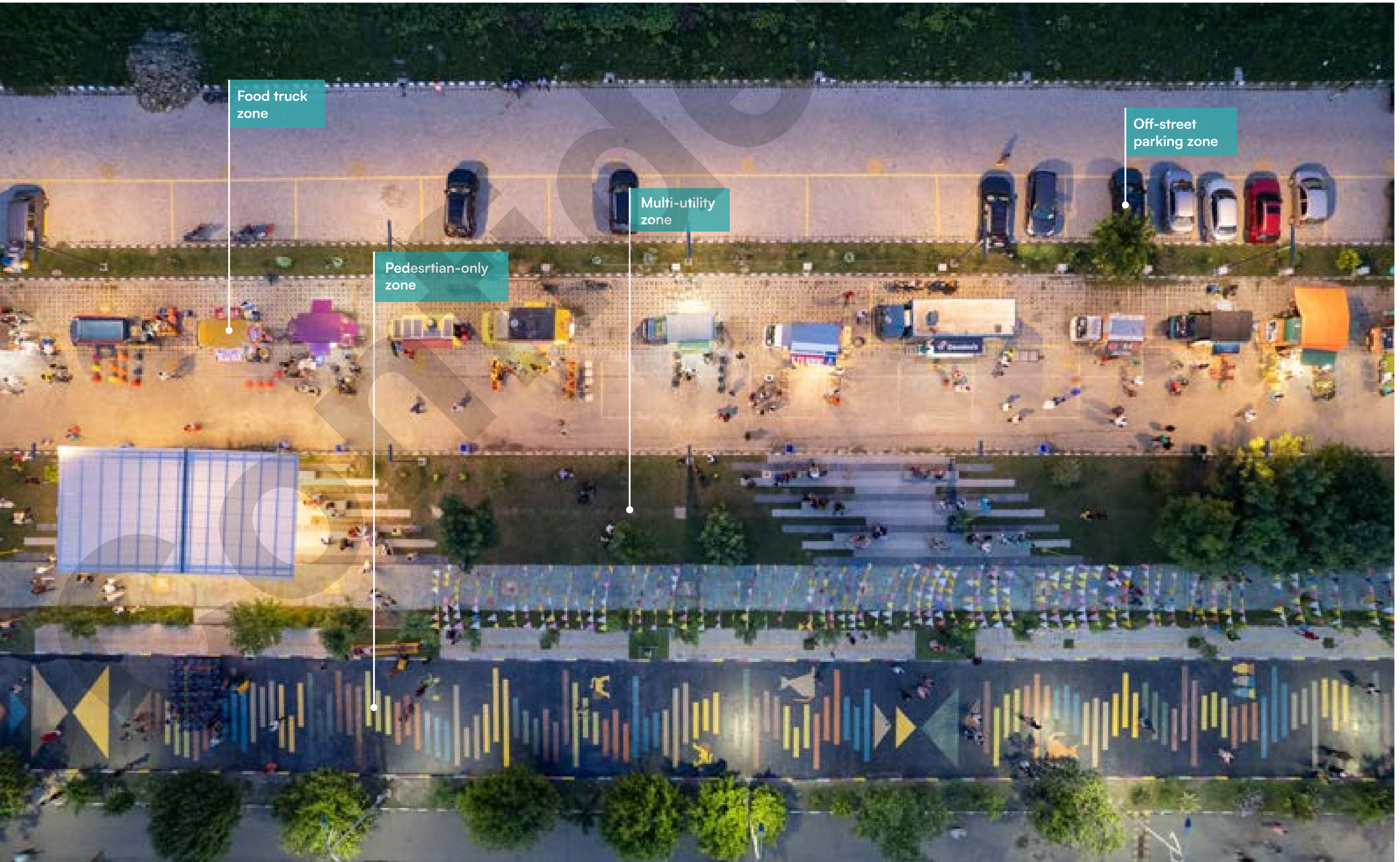
Monitoring
The project was regularly monitored by the engineering section of the West Bengal Housing Infrastructure Corporation (WBHIDCO) and the NMT Cell of New Town Kolkata, that was created during the Streets4People Challenge. Moreover, the project was also periodically monitored by the Board of Directors of NKGSCCL and the City Level Advisory Forum through weekly review meetings.

Food Truck Policy
The New Town Kolkata Development Authority (NKDA) developed a food truck policy where registered commercial vehicles can be licensed to run food trucks in this zone. The design included a dedicated space for only 5 food trucks but later based on the citizen demand, an additional parking bay accommodating up to 20 food trucks is created.
The revenue generated from the rentals provided by food trucks is directed to the general fund of NKDA, which takes care of the operations & maintenance of the space.

Innovative Solution: **Integrating the Food Truck Zone**

The food trucks with their plethora of food options act as a 'pull factor' for attracting citizens to the place, especially during late evening hours.

The food truck zone was initially not part of the design. The service lane was later converted into food truck zone to popularise the destination. For efficient management of visitor car parking, a dedicated off-street parking location is also created by the authority after project implementation. It is managed by a vendor selected by the city authority through a competitive bidding.



Challenges Accepted & Addressed

Resistance from the citizens: At the initial stage of the project, there was major pushbacks of the citizens on the pedestrianisation approach of the street. However, this was mitigated through regular stakeholder consultation with the citizens. Further, during the implementation the service lane was redesigned as a dedicated parking bay for food trucks to ensure smooth traffic and pedestrian circulation.

Traffic management: During the implementation of the project, there was an issue with the vehicular traffic movement. However, the city Authority of New Town Kolkata collaborated with the traffic police, for the efficient management of traffic by providing alternate routes to ensure smooth pedestrianisation of Street 106.

Outcomes

Revenue generation: The revenue generated from the rentals provided by food trucks is directed to the general fund of NKDA, which takes care of the operations & maintenance of the space. Presently, the operating food trucks generate around 1 lakh revenue (on weekdays). The revenue figures substantially increase to over 2 lakhs on weekends when the place is bustling with people and activities.

Increase in footfall: On weekdays, the site records a footfall of around 250 — 300 persons per day which increases manifold during the weekends 1000 — 1500 persons per day.

Reclaimed space: 1275 sqm of space was reclaimed for pedestrians and cyclists.

Enhanced Air quality: Post implementation of this project here has been a 1.86% improvement in AQI index, and 28.83% reduction in PM 10 AVG (µg/m^3) in New Town Kolkata.

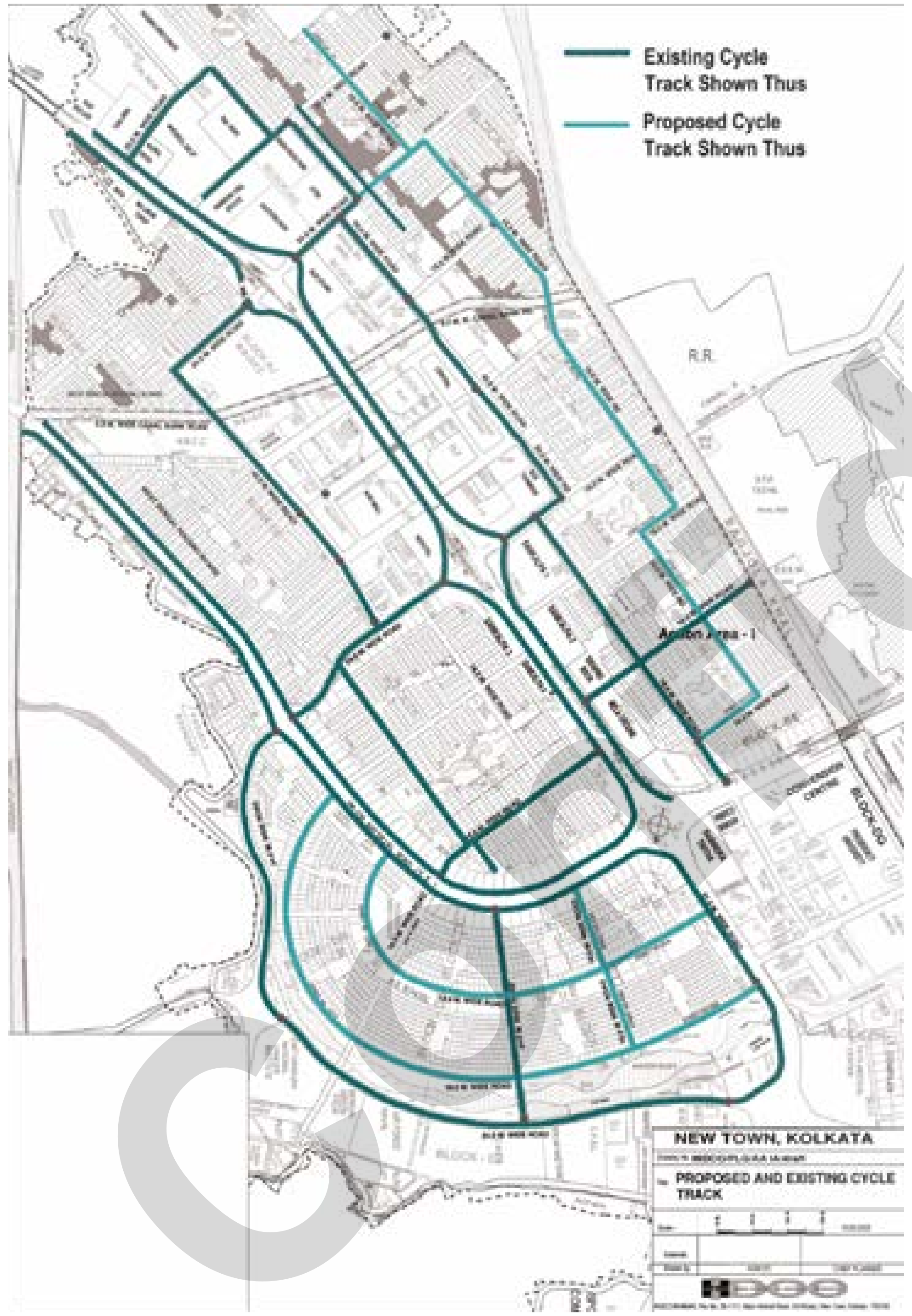
Change in Design Thinking: The success of the Streets4Peopple Challenge as seen at the Street 106, led the city to take up another Happy Street which is currently being executed. Tactical trials, initiated during this projects are now part of the system for all street projects in NTK.

Citizen Impact Stories

‘Network of well-lit pedestrian street with dedicated food truck lane, has created this space more vibrant and safer in New Town. Directly connecting to the Community zone below the flyover, this place has become new cultural and social hub of the city. People from different part of Kolkata come here over the weekends to spend quality times with their friends and family”

- Ms. Deepa Aditya, Government Service & Resident of New Town

Way Forward


Existing Cycle Track Shown Thus
Proposed Cycle Track Shown Thus
R.R.
Action Area - I
NEW TOWN, KOLKATA
PROPOSED AND EXISTING CYCLE TRACK

Scaling-up the transformation

New Town Kolkata’s 3-year Action Plan aims to implement traffic-calmed streets in 5 neighbourhoods/wards after testing solutions through tactical methods.

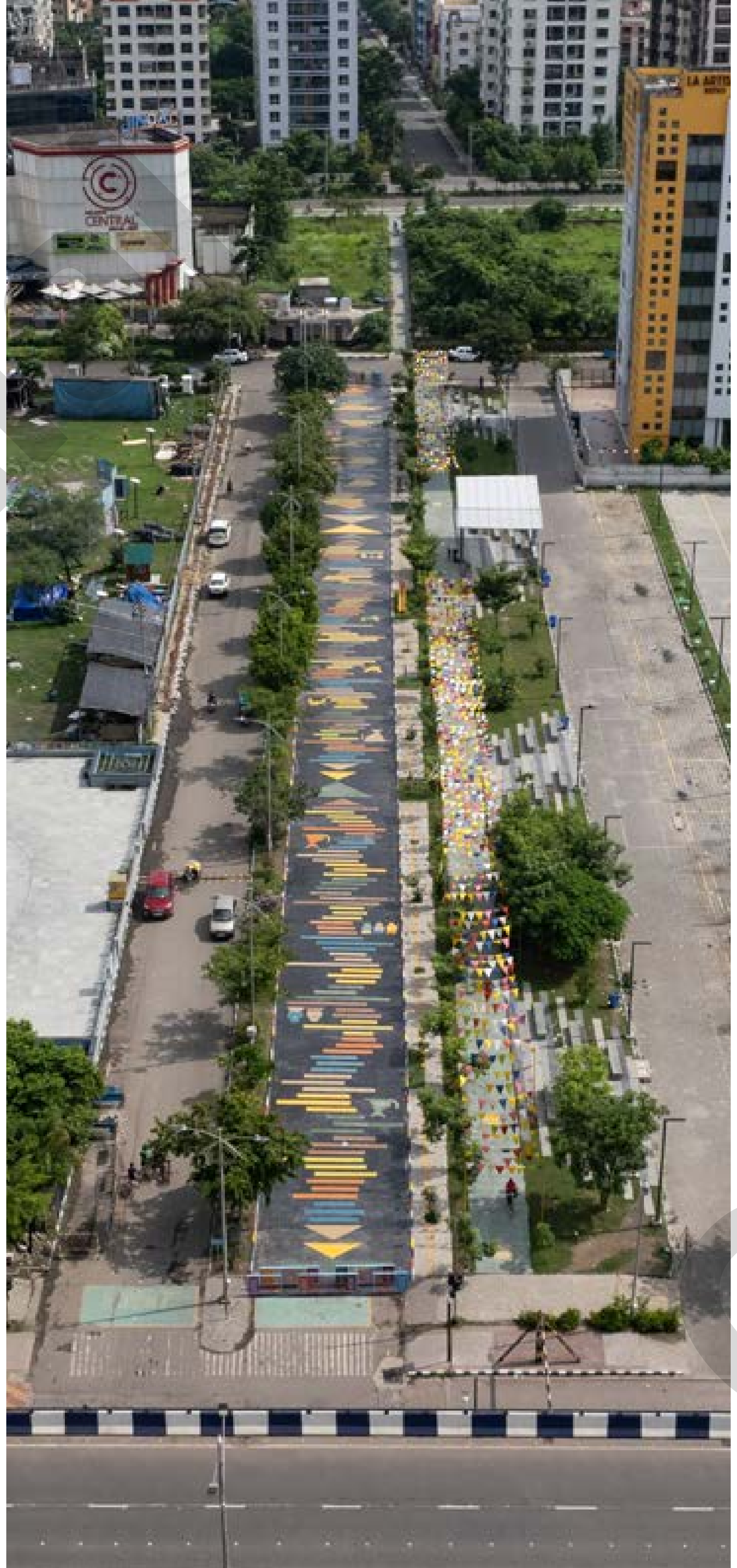
New Town Kolkata Smart City aims to double the Healthy Streets Network and has planned the implementation in 3 phases. The City also aims to implement parking management in 2 model neighbourhoods and initiate impact assessment of all the completed streets in the City.

The City also aims to host regular Healthy Streets campaigns to build awareness.

> *The 3-year Healthy Streets Action Plan is a step towards committing to and ensuring a long-term transformation, by laying down a roadmap. We aim to provide adequate physical infrastructure to increase the mode share of pedestrians and cyclists by 70% and eliminate road fatalities.*

Mr. Debashis Sen
Chairman

Street 106



6 Child Friendly Street

Dehradun, Uttarakhand

Typology
Local Street

ROW
Average 5.5m

Length
10 km

Duration
Aug 2019- Dec 2023
(4 year 5 months)

Cost
₹3.05 Cr. overall

Nodal Authority
Dehradun Smart City Limited

Implementing Partners
Dehradun Smart City Limited

Project Highlight

The project aims to create child friendly streets around schools in Dehradun through appropriate infrastructure development, regulatory reforms to improve road safety and discipline and behavioural changes to create child friendly environment.

Context of the Project

Many streets in Dehradun lack walkways (footpaths, sidewalks). The existing walkways are narrow and hence people prefer to walk on the roadways instead of the narrow pathways. This has resulted in blocked passageways. Additionally, as India motorises, the sheer number of on-street vehicle parking has increasingly become problematic. Thus, this project provides an opportunity to provide safe walkways and calm traffic to improve the safety of school children crossing the streets.

Vision of the Project

Safer Streets, Secure Lives through enhanced perception of walking and increase in share of NMT modes of transportation in the city and co-creation of recreational facilities for children along the school zones.

Project Journey

Foundation Initiatives

The city is aiming to evolve as a child friendly city by encouraging the use of public transport and creating safer pedestrian paths. This project proposes to refocus towards specific interventions around schools such as amenities, vending zones, medians, curb extensions, and traffic calming measures. Regulatory and self-enforcement measures were adopted to improve safety.

Key Actions

Initially, all the schools around the project interventions were involved in the consultations. To ensure that all inputs are captured, during the COVID phase, the consultations with the students were held online. Citizens were also reached out through media engagement to raise awareness about the project and gain their support. Tactical urbanism exercise (pilot project) was undertaken to demonstrate the impact of the project to the school children. Students were invited to visit the pilot site and were involved in the designing and painting of identified areas marked as pedestrian areas. The Public Works Department, the traffic police played significant roles during and after the project implementation. Special capacity building sessions were also conducted for the PWD officials and traffic police working on the project. For ensuring cleanliness and respecting the designed spaces, the communication programs helped the residents and schools to 'own' the project for ensuring sustainability.

Challenges

During the execution of the project there was a limitation of the availability and variety of materials for tactical interventions (pilot project). However, the team worked on it strategically and implement the intervention with available materials and red carpets to level the uneven unpaved surface and overcome this challenge.

Design Features

The project envisages the following infrastructure interventions:

- Retrofitting existing walkways within school access zones
- Creating safe pedestrian crossings at major junctions and mid-blocks
- Installing traffic-calming elements
- Other complementary elements such as beautification through wall paintings and murals

Behavioural change is envisaged to be achieved through communications and outreach activities. Aiming regulatory reforms to improve road safety and discipline, DSCL to work with the traffic police to improve enforcement around schools. Under the pilot project, the proposed width of the footpath was marked on the street with paints, and the area reclaimed for the pedestrians was painted with bold colours.

Outcome

- The city brough change in motorist' through traffic calming measures.
- The project provided safe routes to schools by implementing dedicated walking and cycling routes and thus increased the habit of walking and cycling among the children.
- The colourful paints on roads helped to visualize the width of the footpath and remaining carriageway post-implementation.

7 Hiran Magri

Udaipur, Rajasthan

Typology
Arterial Road

ROW
40m

Length
2.7km

Duration
Feb 2019- March 2023
(3 years 11 months)

Cost
₹48.17 Cr.

Nodal Authority
Udaipur Smart City Limited

Implementing Partners
Municipal Corporation of Udaipur and UT, Eptisa (PMC), ICLEI(Design Consultants)

Project Highlight

4800 sqm space is reclaimed for pedestrians and cyclists post the project implementation that led to active transportation, adoption of public transport, enhanced road safety awareness and increased civic responsibility.

Context of the Project

The 2.7km long road stretch from Hiran Magari to Jadav Nursery is one of the busiest and most significant roads in Udaipur Smart City. Despite its importance, the street was underutilized, plagued by illegal encroachments, and lacked pedestrian crossings, footpaths, parking, and basic amenities. The project aimed to alleviate traffic congestion, provide proper parking facilities, enhance pedestrian safety with dedicated walkways and traffic signals, promote environmental sustainability through eco-friendly transportation practices, and utilize smart technology for efficient traffic management.

Vision of the Project

The project aimed to alleviate traffic congestion, enhance parking facilities, improve pedestrian safety, promote environmental sustainability, and incorporate smart technology for more efficient and safe transportation.

Project Journey

Foundation Initiatives

The Udaipur Smart City Limited has taken a participatory approach in engaging with stakeholders throughout the implementation of the Hiran Magri Smart Road Project. The city engaged with city residents, NGOs, local business owners, and other government departments such as Public Works Department, the Municipal Corporation, and the Transport Departments such during the planning and implementation phase of the project. Further, the Street Design Guidelines and Parking Policy are also being adopted by the city to enhance non-motorized transportation.

Key Actions

To ensure successful implementation of the project, the SPV conducted regular consultations with stakeholders, including local residents, business owners, and government officials, to gather feedback and suggestions for improving the project. The implementing agency conducted stringent quality control measures to ensure that the project's construction and installation adhered to industry standards and specifications. (Test- Field density, Cube test, CTL). Further, third party auditors were involved to review the project's implementation and provide feedback and recommendations for improvement. Overall, Udaipur Smart City Limited implemented a robust review mechanism to ensure the successful implementation of the Hiran Magri Smart Road Project and its alignment with the objectives of the smart city mission.

Design Features

The design components included several traffic calming measures to improve safety and reduce traffic congestion. Some of these features included dedicated bicycle lanes, well designed walking promenade, landscaped corridor, seating areas, seating spaces, kid's play area, public bicycle sharing facilities.

Challenges

- Initially, the public participation was challenging as the community had diverse needs and expectations, and it was difficult to balance these with the overall project goals. However, through continuous participation and handholding this issue was resolved.
- The project involved coordination with multiple agencies, including the local government, utility providers, and contractors. This coordination was often complex and time-consuming, leading to delays in project timelines.
- One of the biggest challenges was the traffic management. The project team had to implement effective traffic management strategies to minimize the impact on the daily lives of residents and businesses.

Outcome

- The Hiran Magri Smart Road Project has significantly improved the quality of life for the community by promoting safety and enhancing the local economy.
- The installation of street lighting and decorative light facilities has greatly improved the driving experience during evenings and nights
- The newly developed walking promenades have encouraged the elderly and young people to take daily morning walk.
- The project has enhanced business opportunities for local vendors.

8 Housing Board Colony Streets

Karimnagar, Telangana

Typology
Local Street

ROW
9m, 12m, 15m

Length
11 km

Duration
Jan 2019- Jan 2022
(3 years)

Cost
₹6.5 Cr. per km

Nodal Authority
Karimnagar Smart City Ltd.

Implementing Partners
PMC: Aarvee Associates, Contractors: Nanitha Constructions, Local Authority: Municipal Corporation, Town planning Department, Public Health Department

Project Highlight

The project sets an example of economic and neighborhood upgradation through simple design interventions and organization of spaces through multi-stakeholder consultations.

Context of the Project

The Housing Board Colony comprises of three different income groups — LIG, MIG and HIG. Initially, the neighborhood lacked proper roads, transport, drainage and basic services. On initiation of the project by the SPV and the public, the streets of the neighborhood were designed with an MV Lane, MUZ and a separate channel for storm water drainage. The MUZ contained all the piping and ducting like electricity cables, water pipelines, sewage pipelines, etc. The design consisted of a simple yet efficient street organization, providing services and pedestrian friendly walkways.

Vision of the Project

To develop the neighborhood such that it provides necessities to its residents including transportation and socially interactive spaces.

Project Journey

Foundation Initiatives

The project was initiated as the third package of smart road development projects initiated by Karimnagar Smart City. In this package, the Housing Board Colony was specifically chosen on the demand of the public and the RWAs of the colony.

Key Actions

There were various stakeholders like the municipal corporations, corporators, residents, etc. with whom in-person consultations were conducted within the colony. Additionally, permissions had to be sought for relaying the existing partial drainage system.

Design Features

The streets in the colony have been designed with an MV lane to carry the flow of traffic; an MUZ with pavers so that any repair work can be taken up without disturbing the vehicular traffic; a storm water drain besides the MUZ to capture the run-off efficiently and a 1-1.5m wide pedestrian walkway to enhance pedestrian safety. On-street parking has also been provided in strategic locations where the MUZ has been brought at-grade, carving extra space for vehicular parking. Additionally, for the holistic development of the neighborhood, various streetlights and furniture have also been installed.

Challenges

One of the major challenges that was faced during the execution of these streets was encroachment or spill overs on the ROW. There were boundary walls, shop facades and frontages which created maximum spill-overs in the neighborhood. The removal and acquisition of these took around 12-15 months amidst the execution of the project. To satisfy the property owners, monetary compensation or TDR was provided to ensure fair practice.

Another challenge occurred on the discovery of the differential levels between the existing partial drains and the designed road level. Therefore, there were major design changes which delayed the process of execution and completion.

Outcome

- Streetlights have infiltrated a sense of safety among the residents.
- Pedestrianization has increased, which was completely non-existent prior to the development.
- Organised on-street parking has been implemented.

9 Marine Drive Walkway

Kochi, Kerala

Typology
Local Street

ROW
18.8m wide

Length
2.45 km

Duration
Feb 2020- Feb 2021
(1 year)

Cost
₹1.07 Cr. overall

Nodal Authority
Cochin Smart Mission Limited

Implementing Partners
Cochin Smart Mission Limited, Greater Cochin Development Authority

Project Highlight

Marine Drive Walkway provides a distinct identity of the city with an intention of creating a seamless walkable corridor for citizens.

Context of the Project

Kochi is among the first 20 cities selected under Government of India's Smart Cities Mission. Under the revitalization of public spaces in Kochi, Kochi Smart City has renovated 2.45 km stretch of marine drive walkway linking Rajendra Maidan on the south of the corridor up till Tata Canal to the North Corridor. The Marine drive in Kochi features a scenic walkway that encourages and strengthens the social fabric of the society. Places like these across the city are very important to improve walkability in the city.

Vision of the Project

The project aims at revitalising all the public spaces, along the western water edge of Ernakulam mainland, by improving the accessibility, introducing various activities and linking the same with each other to create an active corridor for recreational facilities.

Project Journey

Foundation Initiatives

The project was initially conceived as part of the larger non-motorized transport (NMT) network of the ABD area. Through several discussions with stakeholders, the project was implemented as an open space corridor linking two open spaces in the ABD area.

Key Actions

This 2.45km walkway has ensured safe, inclusive, and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities in the project. For giving a distinct identity to the place - landscaped areas and vending kiosks have been provided. By installing ample lighting and implementing people-friendly streetscaping, the project has improved accessibility to the area. Along the walkway, efficient shoreline protection have been provided at the backwater edge.

Design Features

The design includes components such as streetscaping, open seating, LED street lighting and landscaping, vending kiosk, advertisement provision & play equipment. To attract all the age groups to this area, a family play area and Gym have been incorporated. For a cleaner and safer space, dustbins were provided, and a proper waste collection system have been ensured. A proper drainage system has been provided to avoid waterlogging issues. Green cover along with native trees and flowering plants were provided along the 2.45km stretch has helped in increasing the green coverage of the city. This walkway is remotely monitored by the police using a CCTV network to assure the safety of the citizens.

Challenges

- Being developed on the reclaimed land, the Marine Drive walkway faced disturbance during the construction stage. However, the issue was resolved by providing efficient shoreline protection along the walkway.
- Due to the COVID lockdown, there was delay in the execution of the project on ground.

Outcome

- The corridor promotes NMT and reduces dependency on motorized transport by providing pedestrianized access.
- The project has significantly reduced carbon emissions and contributed SDG Goal 7.
- The renovated walkway provides individuals with a space to rest up and exercise.
- There is an increase in footfall of people after the renovation work of the place. Both young and old people, college students, couples, people who just got off work, etc. all visit the place regularly for morning and evening activities.
- The redevelopment has also triggered people to follow a healthy lifestyle by walking, jogging, cycling, and using the open gym and the yoga area.

10 Mauli Medical Road

Aurangabad, Maharashtra

Typology
Sub Arterial Street

ROW
40m

Length
0.4km

Duration
Sep 2022- May 2023
(1 year 6 months)

Cost
₹0.5 Cr.

Nodal Authority
Aurangabad Smart City Limited (CSML)

Implementing Partners
Water department, Municipal Corporation, IIT Bombay, Town Planning Department, Yash Innovations

Project Highlight

Each day about 1 lakh people traverse this street, majorly women who walk to work. The street is transformed to ensure a safe and pleasant walking and cycling experience, while also allowing the passage of emergency vehicles.

Context of the Project

The stretch between Mauli Medical to Bhavsingpura Kaman, connects the city to a low-income residential area, mainly used by pedestrians and cyclists. Earlier it was in deplorable condition, posing severe challenges for pedestrians and cyclists, particularly during rainy seasons. The initial design primarily focused on vehicular traffic but was later revised to include footpaths and cycle lanes due to the significant pedestrian foot fall. The project received strong support from MLAs and former corporators.

Vision of the Project

The project aimed to enhance pedestrian and cyclist safety and comfort, with a focus on accommodating emergency vehicle access in areas without water pipelines. It aligns with the city's development vision and improves the overall quality of life for residents.

Project Journey

Foundation Initiatives

Citizen participation and stakeholder engagement was the foundation of this project. Samadhan Helpline portal was established to facilitate communication and gather feedback from the stakeholders and public. Operations and Maintenance (O&M) plan was also prepared for the next 10 years.

Key Actions

Citizen and stakeholders' feedback was collected through the ULB's website/ application, with the assistance of media analysts who monitor and report on citizen concerns and street quality. In coordination with the Water Department, utilities were relocated to expand the Right of Way (ROW) and removed encroachments to create footpaths. Further, a design cell was established with a team from IIT Bombay, they were engaged for the review and monitoring of the project.

Design Features

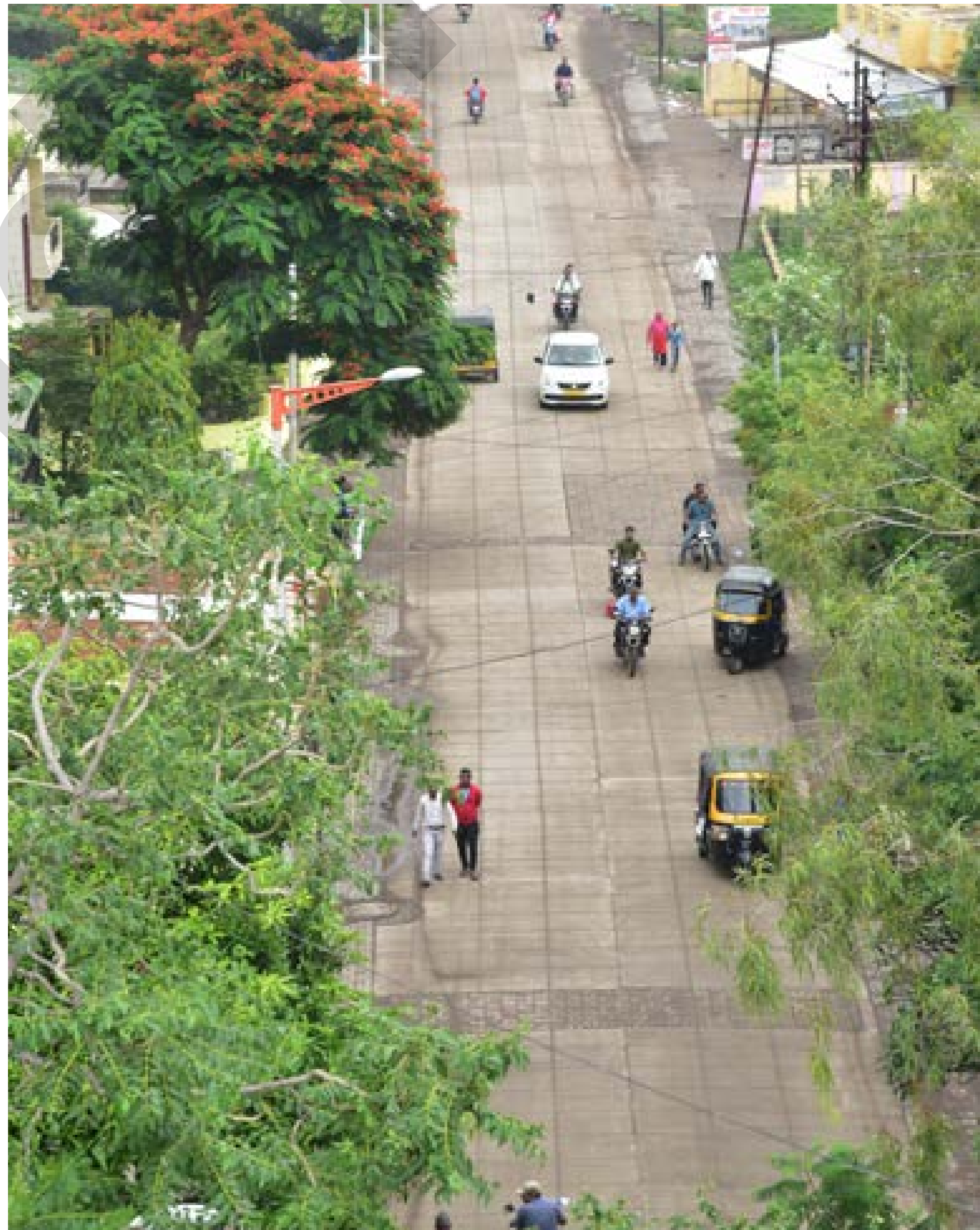
Considering the high number of pedestrians and cyclists in the city, the street design incorporated speed calmers, and increased ROW with dedicated footpaths and street furniture. The design features also include on-street parking management, at-grade crossings, underground utility ducts, and multipurpose open spaces, which encompass seating areas, play equipment, and placemaking. The street included a section over an old bridge, where bitumen was used instead of concrete. Paved tabletops are placed at every 100 meters to control the speed of the vehicular movement.

Challenges

- The change in ROW and the overall street design caused a lot of approval from different departments, which resulted in delays during the implementation stage.
- Traffic congestion was resolved by taking several traffic measures.

Outcome

- There is an increase in morning walkers and pedestrians have been
- Almost 1600 sqm of space was reclaimed for pedestrians after the implementation of the project.



11 Manaveeyam Veedhi

Thiruvanthapuram, Kerala

Typology	Arterial Road
ROW	15m
Length	0.25km
Duration	May 2023- Aug 2023
Cost	₹5 Cr. per km
Nodal Authority	Smart City Thiruvanthapuram Limited
Implementing Partners	Karnataka Road Development Corporation Ltd., Kerala Road Fund Board (KRFB), PWD, Kerala Water Authority, Kerala State Electricity Board (KSEB), IPE Global

Project Highlight

Reclaiming 2340 sqm for pedestrians, witnessing a surge in footfall from 100 counts/hr to 15,000 counts/hr.

Context of the Project

Manaveeyam Veedhi is a 225 m road stretch from Museum-Vellayambalam Road to the Althara junction in Thuryvanthapuram Smart City. The street is renowned for its vibrant cultural performances and Keltron side wall art. As the part of the project, 15mv stretch was renovated which aimed to revitalize this cultural street, making it universally accessible with features like food kiosks, amenity blocks, street lights, open libraries, sculptures, and more. The street boasts tree lighting and gobo projector art, enhancing its charm during cultural events.

Vision of the Project

The project envisions transforming Manaveeyam Veedhi into a dynamic Cultural Street, embracing diversity and fostering artistic expression while offering a pedestrian-friendly, inclusive urban environment.

Project Journey

Foundation Initiatives

Thiruvanthapuram Smart City adopted NMT/Healthy Streets Policy, Parking Policy, Vending Policy to promote people-friendly streets. The city conducted regular capacity-building workshops before implementing the project on the grounds. Furthermore, a permanent committee was set up to resolve stakeholder issues.

Citizen Participation and Stakeholder Engagement

Citizens were engaged through participatory planning. Several participatory tools were involved such as voting, competitions and hackathons to derive the key design components of the streets. Further, Stakeholder input was gathered through focused group discussions and engagement with citizen at the ward level. Public involvement methods included voting, competitions, and hackathons. The inputs and the recommendations gathered form the stakeholders are then reflected into the design and implementation of the project.

Design Features

As a result of the stakeholder engagements and the needs of the citizens, the street was designed with a green buffer segregating carriageway and footpath, with underground utilities. The design also included spacious pedestrian ways with seating areas, designated public bicycle sharing stations, Food Kiosks, , Open Street library, Sculptures display, Street art area, Exhibition Area, Pergola for cultural activities, Fitness zone for yoga, congregation spaces, street lighting, gobo projector lighting, Wifi zones and street surveillance bia CCTV.

Challenges

During the initial phase of the project, there were several pushbacks from stakeholders and street vendors. However, through regular stakeholder engagement workshop and group discussions with the citizens and permanent committee, the challenges were resolved. Further, during the project implementation phase, the vehicular traffic movement was regularized, and the existing vendors were rehabilitated while assuring their livelihoods. Through meticulous planning and asset management, these challenges were overcome.

Outcome

- The street has witnessed a surge in footfall from 100 counts/hr to 15,000 counts/hr
- The development of this neighborhood street has led to a substantial reduction of anti-social activities and substance abuse.
- This street now serves as a creative canvas for differently-abled students to express their art through wall graffitis.
- It has enhanced nightlife activities in the city while boosting the local economy.

12 Pashan Sus Road

Pune, Maharashtra

Typology
Sub - Arterial Street

ROW
36m

Length
1.2 km

Duration
Aug 2021- Apr 2023
(2 years 9 months)

Cost
₹5 Cr. per km

Nodal Authority
Pune Municipal
Corporation (PMC)

Implementing Partners
Institute for Transportation
and Development Policy
(ITDP) India

Project Highlight

The first 500 M stretch (completed stretch) of Pashan-Sus Road is developed by taking feedback from residents and urban designers. The street has dedicated zones for skateboarding, kid's play area and for senior citizens to rest and talk. The Street also has a dedicated at-grade cycle track which has proven to be much more useful than the above-grade (footpath level) one.

Context of the Project

Pashan Sus road is an important suburban street located near the north-western boundary of Pune city. It connect the Pashan-Sus residential neighbourhood to Pune city. With the growing residential population, and increasing social activities in the Pashan-Sus neighbourhood, the street was overdue for a design overhaul as per the Pune Urban Street Design Guidelines.

With the Streets for People National Challenge being announced in late 2020, PMC decided to include Pashan Sus Road as its entry. Pune Municipal Corporation (PMC) conducted a design competition by inviting several urban designers to propose designs for the same. Taking cues from winning designs, PMC also developed a 500M stretch through tactical urbanism intervention for the residents to experience the same. Formidable feedback was solicited through focused group discussion, interviews and perception surveys. With solid data and documentation, PMC designed the stretch yet again and implemented the solutions suggested by residents and competition winners. First 500M stretch was completed by December 2021 and was open to public. The whole street measures around 2.2 KM, and they will be completed by mid-2024.

Vision of the Project

The vision was to create a street that would suit the needs of all including the children, elderly and the specially-abled. A street that would give identity to the neighbourhood and provide means for active mobility, recreation and leisure.

Project Journey

Foundation Initiatives

Pune Municipal Corporation adopted Walksmart Policy 2016, Pune Cycle Plan 2017 and developed Pune Urban Street Design Guidelines 2016

Key Actions

Formidable feedback was solicited through focused group discussion, interviews and perception surveys. Outreach was done through print and social media. WhatsApp groups are used for design and execution communications. PMC conducted a design competition by inviting several urban designers to propose designs for the same. Taking cues from winning designs, PMC also developed a 500M stretch through tactical urbanism intervention for the residents to experience the same.

Design Features

The design of the streetscape includes segregated cycle track, kids' play area, skateboarding area, senior citizens' leisure area, and organized parking. Further, water water percolation pits are placed at every 200M, to restrict water seepage.

Challenges

- The entire street has a two-way slope towards the street edges. Due to this, negotiating property entrance slopes and level differences was a major issue. In some cases, with the support of the concerned properties, the entrance slopes were moved within their respective premises.
- In addition, designing the stormwater treatment for the large quantity of surface water run-off was critical. These issues were solved on-site at specific issue locations. PMC's design team and road department engineers visited the site every week to ensure efficient designs to resolve these issues.

Outcome

- Play and recreational spaces for kids and the elderly have increased.
- The number of kids on the street, especially those using the kids' play area and skating zone, has increased.
- As compared to the earlier situation, the space under the NMT infrastructure has increased by 50%.
- The street transformation organised on-street parking through designated parking bays.
- Property rates along the street have substantially increased.

13 Pedestrian walkway

Namchi, Sikkim

Typology	Neighbourhood Street
ROW	4.5m
Length	6km
Duration	Sep 2021- Dec 2022 (1 year 3 months)
Cost	₹8 Cr.
Nodal Authority	Namchi Smart City Limited
Implementing Partners	M/s K B Tamang, Class 1AA Contractor (SPWD, Govt. of Sikkim)

Project Highlight

A street improvement project under Smart City, that has encouraged women to take leisure walks during late evenings and late-night strolls.

Context of the Project

Namchi Smart City, as part of the Indian Smart Cities Mission, sought to foster innovative, sustainable, and resilient development. It is one of the smart cities of Sikkim and got selected in the second round of Smart Cities Mission Challenge. The city has always prioritized non-motorized transport as part of the mobility plan. Further, during the Smart City Proposal stage, the stakeholders and the citizens had expressed the need for a safe and seamless network of pedestrian walkways to restrict motorized vehicular movement. To address the need of the people, the Namchi Smart City Limited has constructed a well-designed 6 km of pedestrian walkways connecting neighbourhoods, urban centres, tourist spots, parking infrastructures, and roads at various level.

Vision of the Project

Enhancing pedestrian friendly mobility network that fosters inclusivity as the core of development.

Project Journey

Foundation Initiatives

Under the gamut of multiple projects, Namchi Smart City has cautiously made decisions toward developing pedestrian friendly streets and citizen centric spaces within the city. Based on the Smart City's proposal and the need of having safe and seamless network of pedestrian walkways as recommended by citizens, the city has developed well designed interconnected pedestrian walkways throughout the council while carving out spaces to accommodate seating areas as part of the streetscape.

Action

The Namchi Smart City (NSCL) has constructed pedestrian infrastructures at various location to the tune of 6 (six) km cumulative within Namchi Municipal Council. These interventions have created a series of well networked non-motorized infrastructures facilitating and encouraging the local adoption of such infrastructure. This intervention has reduced the trip length and has encouraged the people to adopt a healthy lifestyle of walking. Well networked pedestrian infrastructures connecting various parking infrastructures has also assisted the visitors and tourist to park their vehicle safely and access the town center with ease and safely.

Design Features

As part of the walkways, the NSCL has also implemented more than 4200 LED streetlights to illuminate the existing streets and connected pedestrian walkways.

- 4200 LED streetlights have been installed along 42Kms of roads and 3Kms of the pedestrian pathways
- 6 Km of well-designed pedestrian walkways, is well illuminated by LED lighting, and has safety handrails and rest areas.
- The constructed pedestrian walkway is 1.5 m wide, and has accessible design features where the terrain have been gentle.
- The chequered tiles in combination of yellow and terracotta color have been used to provide distinct visible identity of the infrastructure.

Challenges

- The project faced a major challenge during the implementation phase. During the implementation, accessing the right of way (RoW) was opposed by landowner. The NSCL managed to sort out the intricacies with the local communities through continuous engagement and were assisted by the ward councilors to remove such barriers.
- Technical and implementation challenges were exacerbated by hilly terrain and dependency on the manual carriages of the construction materials.
- The biggest challenges include integrating public aspirations and securing buy-in for sustainability of the infrastructure.

Outcome

- The project has enhanced safety for pedestrians, children, women, entrepreneurs, and motorists. and has expanded the economic activities of the entrepreneurs.
- The illuminated streets have become much safer, more pedestrian-friendly, and have expanded gender equity avenues, thus, encouraging housewives and women to use them for evening/nighttime leisure walks during late evenings and for late night strolls.

14 Saptagiri School Road

Davangere, Karnataka

Typology
Sub Arterial Street

ROW
30m

Length
0.6 km

Duration
Aug 2020- Nov 2021
(1 year 3 months)

Cost
₹1.32 Cr. per km

Nodal Authority
Davanagere Smart City Limited

Implementing Partners
iDeck, K Srinivas Reddy

Project Highlight

A strategic imperative to elevate pedestrianization, reclaiming 3168 sqm for pedestrians aligning with city's vision for modern and efficient infrastructure.

Context of the Project

The Saptagiri School Road project addressed urbanization induced traffic congestion in Davanagere' s CBD area. Spanning 660 meters, it connected peripheral regions to the developed CBD, improve accessibility, and boosted the economy. Noteworthy for its interconnectivity, the road integrated with key sections like PB Road and the clock circle, preserving Davanagere's legacy.

Vision of the Project

The project aims to foster seamless connections among people, markets, and services, with a primary focus on enhancing connectivity and promoting walkability.

Project Journey

Foundation Initiatives

The design adhered to Indian Roads Congress guidelines, for road geometric standards and Urban Street design guidelines for designing street elements.

Key Actions

Stakeholder interactions occur in city-level advisory forums and Davanagere Smart City board meetings, incorporating feedback through focused group discussions. Further, a digital terrain model visualized the topography at project' initiation, and soil samples were collected. Traffic assessments along the stretch provided valuable insight for tactical planning, optimizing route utilization. This initiative involved rigid pavement, walkways, stormwater drainage, and afforestation, emphasizing a Test-Learn-Scale approach for sustainable urban mobility.

Design Features

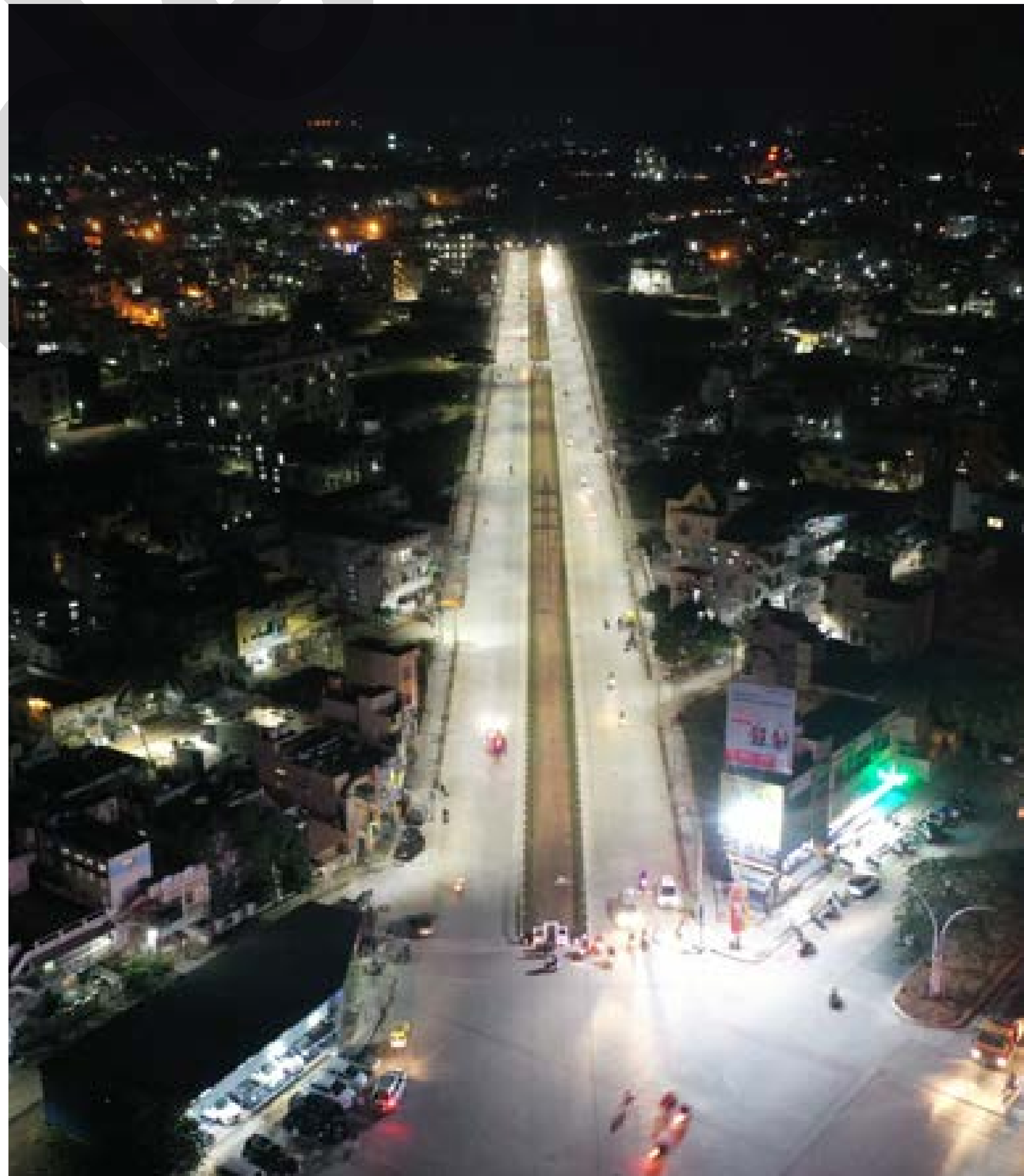
Tangible elements included as part of the design such as cycle tracks, pedestrian pathways, stormwater drains, solar-powered LED street lights and increased green cover. For the design of horizontal and vertical geometry and other road elements, design standards referring to the guidelines of Indian Roads Congress are used — Geometric for Capacity & Design Standards for Urban Roads in Plains, also camber for rigid pavement, proper signage and markings vital for safety and guidance of the drivers and followed urban street design guidelines for pedestrian pathways. Further, slipform paver is used for concrete road construction.

Challenges

- During the project implementation City corporation faced challenges in shifting and aligning underground utility lines such as , water supply pipe lines, electrical pole, 24*7 water supply project pipe line, BSNL pipeline etc.

Outcome

- The project intervention enhanced economic and social life of citizens by providing better mobility and improved quality of travel, and enhanced walkability; thereby reduce pollution levels and GHG emissions.
- 3168 sqm space was reclaimed for the pedestrians and cyclist
- After the development of the street the adjacent land value have increased

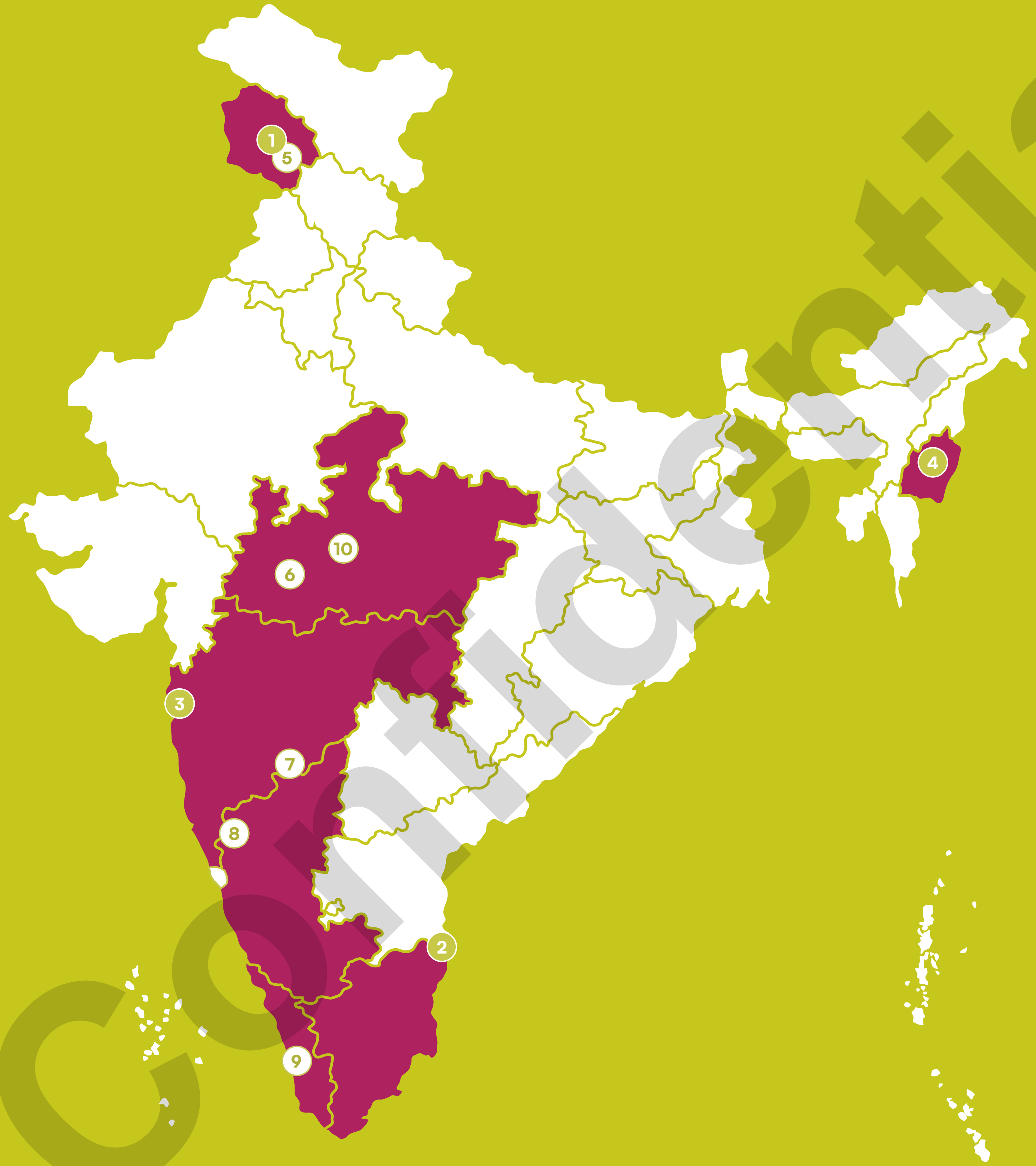


C

Market Streets

Market streets are the streets that prioritize people and are typically most appropriate in corridors with commercial activity on both edges of the street. They are strategically selected streets in which pedestrian volume is high and vehicular traffic is restricted. These streets offer opportunities for diverse activities such as shopping or sitting, dining or dawdling, promenading or performing. When placed, designed, and maintained well, pedestrian-only streets become a destination and result in economic benefits for adjacent businesses. The word Market Street is a term that has been colloquially used, as the markets play a very important role in India's culture and its context. Under this category 10 case studies on Markets streets have been illustrated that include 4 detailed and 6 overview case studies.

1	Polo View Street, Srinagar
2	Pondy Bazaar, Chennai
3	Thane Station Road, Thane
4	Walkable Streets, Kohima
5	Apsara Road, Jammu and Kashmir
6	Chappan Dukan, Indore
7	Street Bazaar, Solapur
8	Mahila Market, Belagavi
9	Jew Street, Kochi
10	Smart Street, Bhopal



Market Streets

Name of Street	City	Typology	Landuse	ROW (m)	Length (km)	Cost / km	Duration months/yrs	Funding Sources	Project Initiated by	Public Participation?	TacticalTesting?	Traffic Calming Measures	O&M Responsibility
① **Polo View Street**	Srinagar	Local	🟦	35	0.2	₹ 15.00 Cr.	1.0	₹	Public	✓	✓	Table Top Crossings	Public
② **Pondy Bazaar**	Chennai	Sub-arterial	🟦	25	1.4	₹ 28.50 Cr.	2.0	₹	SPV	✓	✓	None	🤝
③ **Thane Station Road**	Thane	Local	🟦	3	1.5	₹ 19.63 Cr.	0.7	₹	ULB	✓	✗	None	🏛
④ **Walkable Streets**	Kohima	Sub-arterial	🟦	9.6	0.4	₹ 9.96 Cr.	1.1	₹	State Government	✓	✗	At Grade Crossings	State 🏛
⑤ **Apsara Road**	Jammu	Local	🟦	20	13.6	₹ 3.40 Cr.	1.8	₹	SPV	✓	✓	None	🏛
⑥ **Chappan Dukan**	Indore	Local	🟦	30	0.2	₹ 5.00 Cr.	0.4	₹	SPV	✓	✗	None	🏛
⑦ **Street Bazaar**	Solapur	Sub-arterial	🟥	9	0.4	₹ 7.60 Cr.	1.6	₹	ULB	✗	✗	None	🏛
⑧ **Mahila Market**	Belagavi	Arterial	🟨 🟦 ▨ 🟧 🟪	20	0.2	₹ 18.18 Cr.	1.6	₹ ₹	ULB	✗	✗	None	🤝
⑨ **Jew Street**	Kochi	Local	🟦	4	13.8	₹ 1.50 Cr.	1.0	₹	SPV	✓	✗	None	🤝
⑩ **Smart Street**	Bhopal	Arterial	🟦 ▨	4	0.09	₹ 7.32 Cr. (Overall)	3.9	₹	SPV	✓	✗	None	🤝

🟨 Residential 🟦 Commercial ▨ Institution 🟥 Public 🟩 Open Spaces 🟧 Mixed use 🟪 Industrial

₹ National-SCM ₹ State ₹ ULB ✓ Yes ✗ No 🏛 Government 🤝 Private

1

Polo View Street

Srinagar, Jammu and Kashmir

Typology
Local Street

ROW
35m

Length
0.2km

Duration
Apr 2022- Apr 2023
(1 year)

Cost
₹15 Cr. per km

Nodal Authority
Srinagar Smart City Limited (SSCL)

Implementing Partners
Fortress Infracon Ltd.

Profile of the city

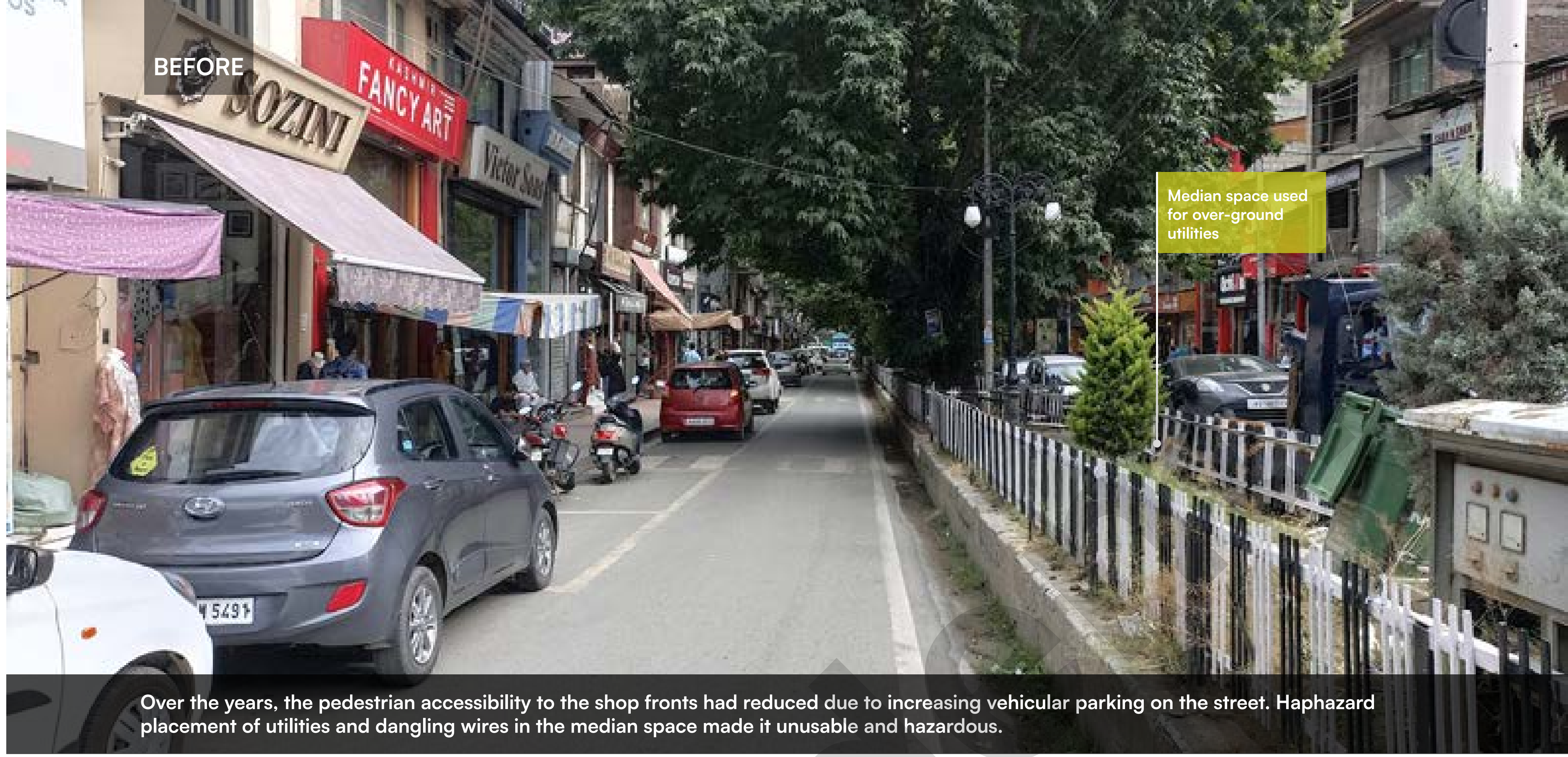
Srinagar is a great example of a 'living lab' for a Smart City where innovation meets excellence to find solutions to the city's problems whilst being tested and tweaked in real time and with real citizens and user engagements. Having a total area of 246 sqm, the city was selected in the Round 3 as part of the Smart Cities Mission. Under Smart Cities Mission, the city has almost 40 Smart Mobility projects worth ₹1,098 Cr., that are being completed.

Context of the Project

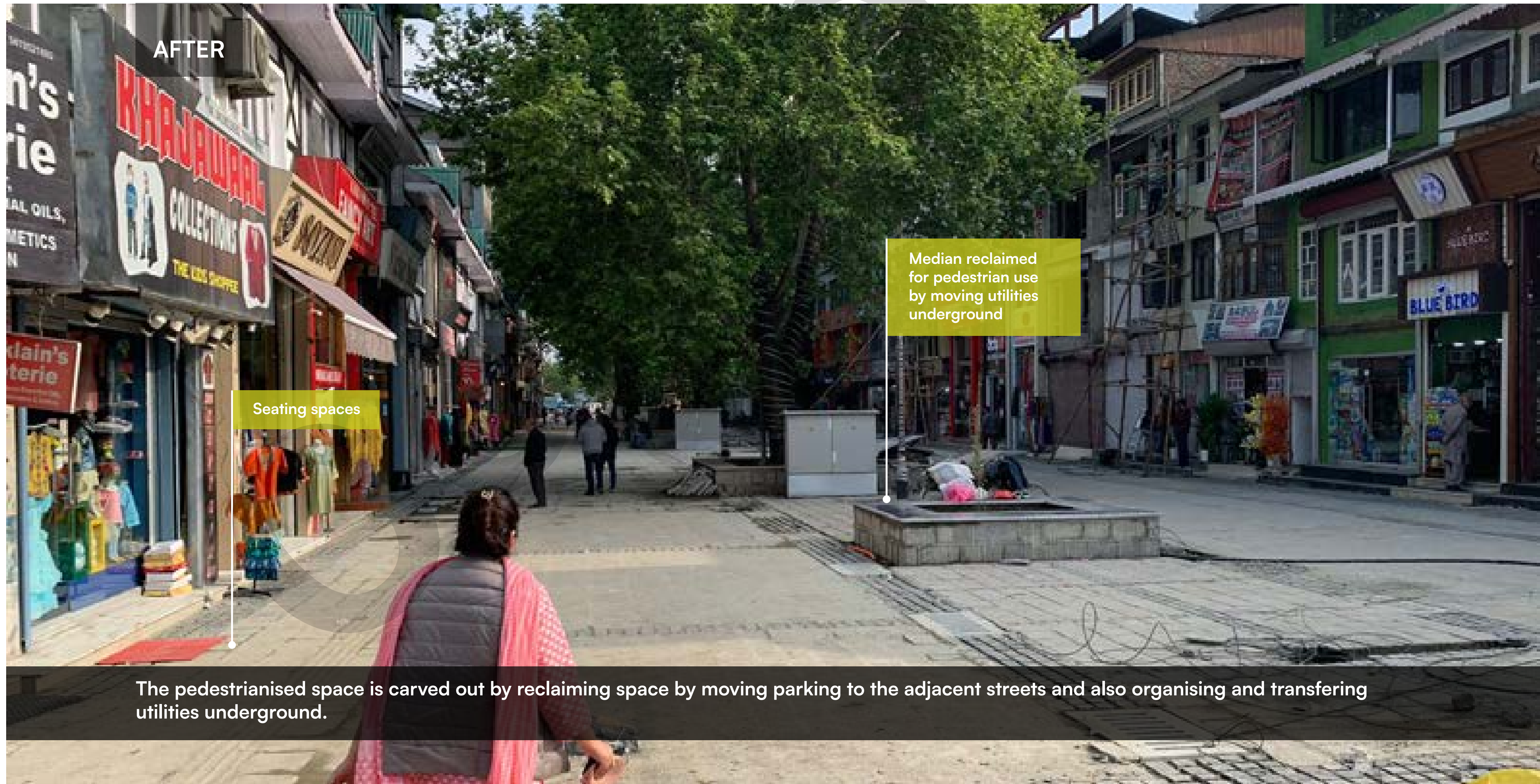
Located at the heart of the Lal Chowk CBD area, Poloview street is the first pedestrianised shopping street in Srinagar. The project was initiated after the local traders' union requested SSCL to improve the existing issues of insufficient pedestrian space, unmanaged parking, inadequate street lighting and defunct drainage system. Srinagar Smart City Limited initiated the planning of the completed redevelopment of Polo View Street with an aim to create a socio-cultural hotspot in the heart of the city.

Vision of the Project

Polo View Street Revitalisation aimed to boost local business while enhancing the shopping experience on the street by redeveloping it as a pedestrian-priority socio-cultural hub at the heart of the city.

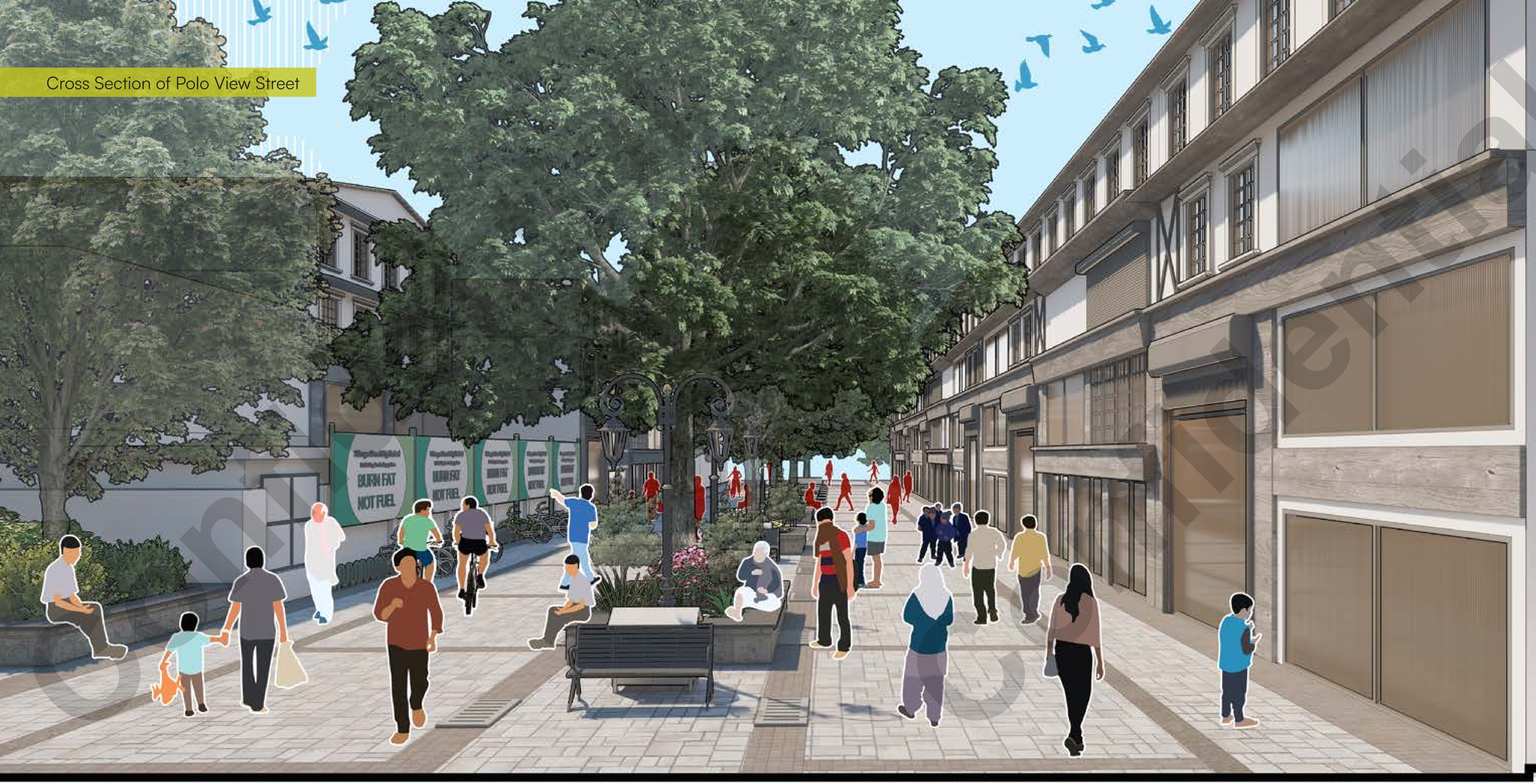


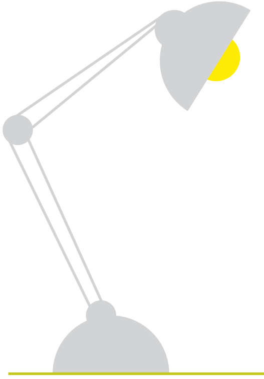
Over the years, the pedestrian accessibility to the shop fronts had reduced due to increasing vehicular parking on the street. Haphazard placement of utilities and dangling wires in the median space made it unusable and hazardous.


AFTER
Median reclaimed for pedestrian use by moving utilities underground
Seating spaces

The pedestrianised space is carved out by reclaiming space by moving parking to the adjacent streets and also organising and transfering utilities underground.

Cross Section of Polo View Street


BURN FAT NOT FUEL



Design Highlights

01 The design primarily aimed to convert the existing street into a pedestrian-priority walkway with facilities like state-of-the-art lighting, Public Bicycle Sharing (PBS) infrastructure.

02 Design interventions like hydraulic retractable bollards ensure entry of emergency vehicles on the pedestrianised stretch.

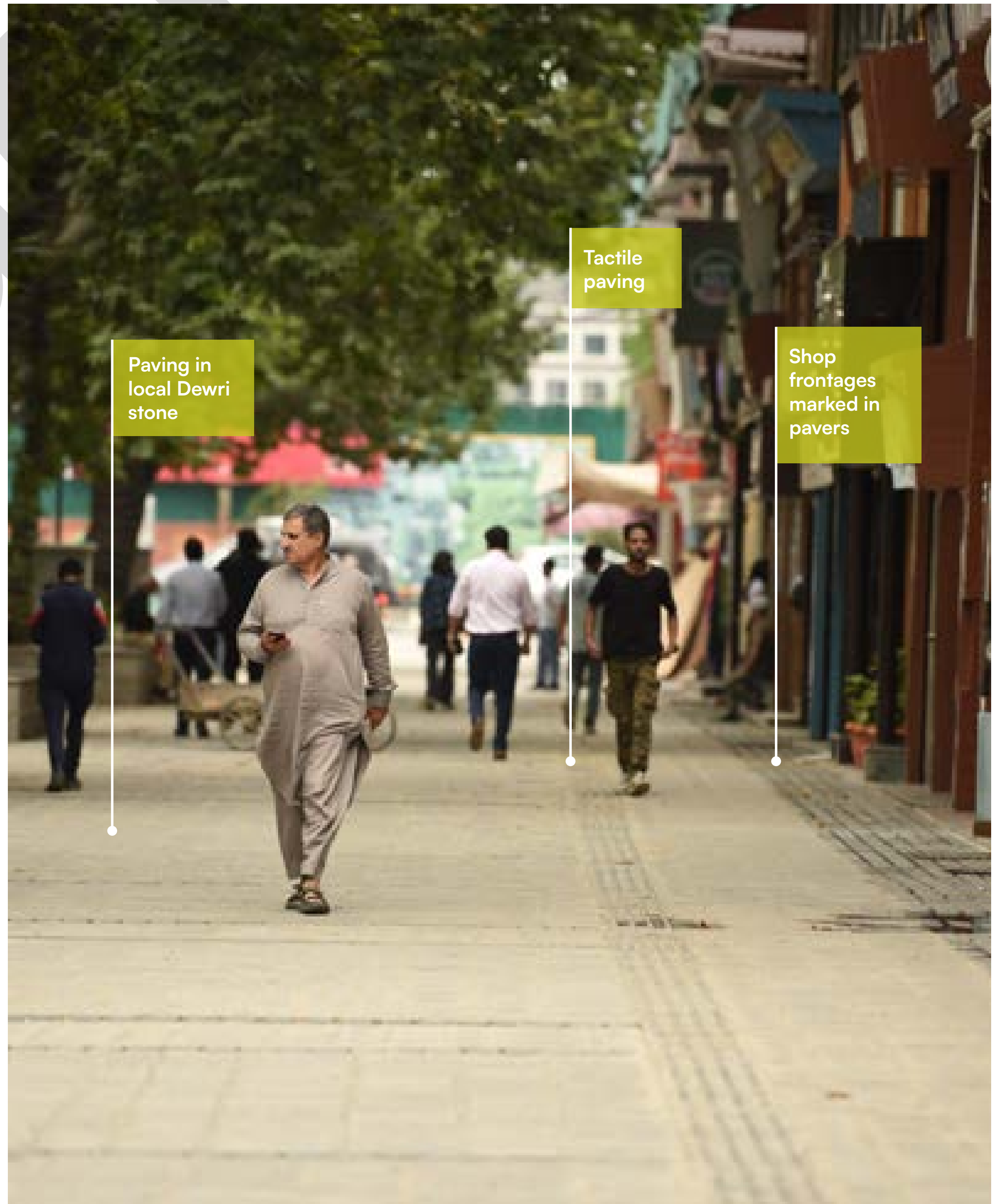
03 Multiple plazas and seating spaces were carved out by converting the existing taxi-stand in the parallel lane into the pedestrianisation plan.

04 The design also included On-street Parking Management, At-grade crossing, Organising on-street vending (Dedicated vending zones through design), Multi-purpose spaces with seating spaces under heritage Chinars.

05 The project also focused on improving utility management by transferring overhead wires underground, and laying of adequate stormwater and sewage network.

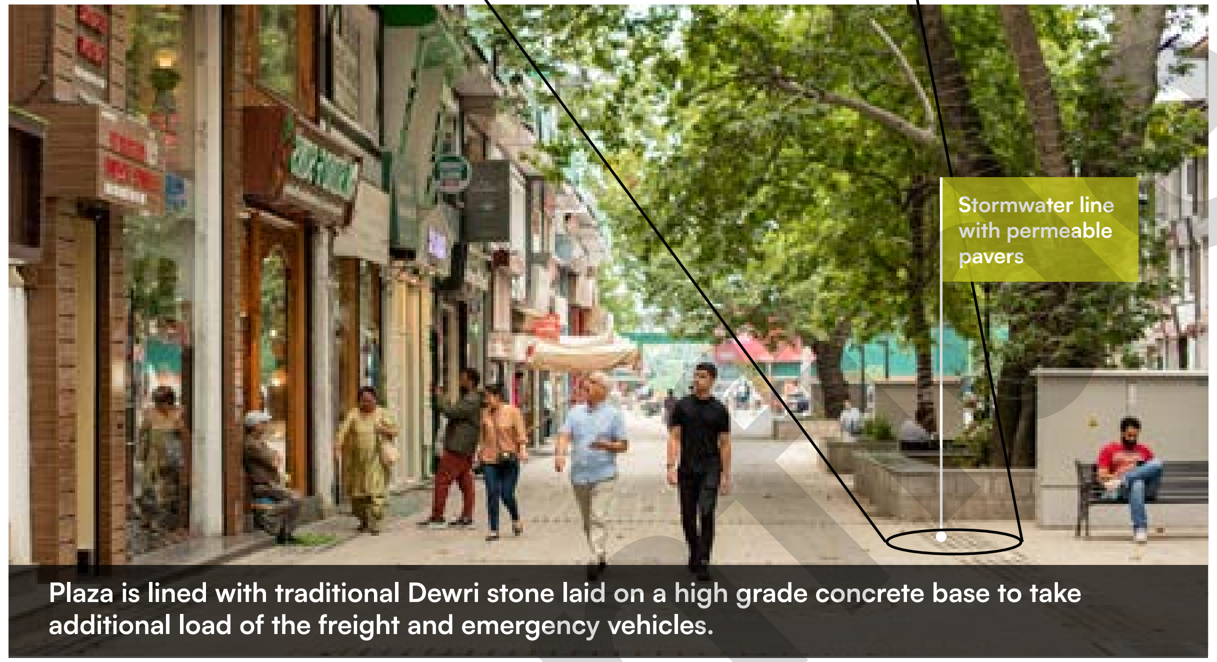
06 To enhance the heritage value of the street, the building facades were rejuvenated with improved illumination. Most of the materials used for the implementation of the project was locally sourced. The major stone used in paving is a locally sourced traditional dewri stone. The other materials used for construction are tactile tiles, cobblestones, and granite. The cobble stones were used for traffic calming on table tops, regular pedestrian crossing and signals, and on rumble strips.

Pedestrianising the street, SSCL reclaimed about 6000m² area for pedestrians and cyclists.


Paving in local Dewri stone
Tactile paving
Shop frontages marked in pavers

Laying of a stormwater network along the plaza and adjacent streets resolved existing issues of water logging

Stone seating around existing heritage Chinar trees


Stormwater line with permeable pavers
Plaza is lined with traditional Dewri stone laid on a high grade concrete base to take additional load of the freight and emergency vehicles.

Facade and lighting improvements to enhance the heritage chracter of the street

Smart City Limited
CYCLE YOUR WAY TO HEALTH
Public bicycle sharing station at the pedestrian plaza

In-situ seatings in sandstone
Retractable bollards at the entrance

Project Journey

Stakeholder engagement during tactical trial on the site

01

Laying the foundation

The city formed the Non Motorised Transport (NMT) cell which is now part of the New Town Kolkata Green Smart City Corporation Ltd. The city also developed Street design guidelines which was followed during the implementation of other streets in New Town Kolkata

✓ Complete ✗ Not yet started ● Ongoing

- ✓ **Healthy Streets Policy**
- ✗ **Vending Policy**
- ✓ **Parking Policy**
- ✗ **Street Design Guidelines**

02

Building the team's muscle

- ✓ **Capacity -buiding worshops**
- ✗ **Site Visits**

Visits by experts from frontrunner cities
Experts from Pune, Pimpri-Chinchwad, Ahmedabad and Bangalore, along with a team from MoHUA, visited the project during its construction phase. This team of experts reviewed the design and the ongoing implementation work. They shared insights on improving the design, construction details, and also suggested alternate materials.

Planning Cell of Srinagar Smart City
SSCL's in-house Planning Cell played a pivotal role in ensuring the success of the project. The cell was involved in project inception, conducting participatory workshops with stakeholders and decision-makers, incorporating their feedbacks in the design and regular monitoring of design implementation.

03

Doing things together

Involving local stakeholders to ensure effective design
Key stakeholders like the Shoppers' Association and Taxi Stand were involved from the initiation of the project. Major concerns raised by them were regarding parking, transportation of goods and water logging on the street. These stakeholders were also actively involved in the design implementation phase. To resolve their issue of water logging, several drainage slopes were tried. The final slope was executed in consulation with the shopkeepers' association. Further, other stakeholders like officials from Power Distribution Corp.(PDCL), Jal Shakti Dept., Traffic Police, UEED, Sports Council and Srinagar Municipal Corporation was also involved in the decision making exercise of the project.

04

Monitoring, learning & improving

Agreement with shopkeepers for maintainence of Poloview Street
MOU has been signed between shopkeepers association and SSCL for effective operations and maintenance of Poloview Street, including regular cleaning, keeping check of vandalism, and controlling the operations of retractable bollards for entry during emergency movement and loading-unloading of goods. CCTV cameras used for monitoring the safety and security of the place.

Innovative Solution:
Area-level Parking Management

Project Phasing

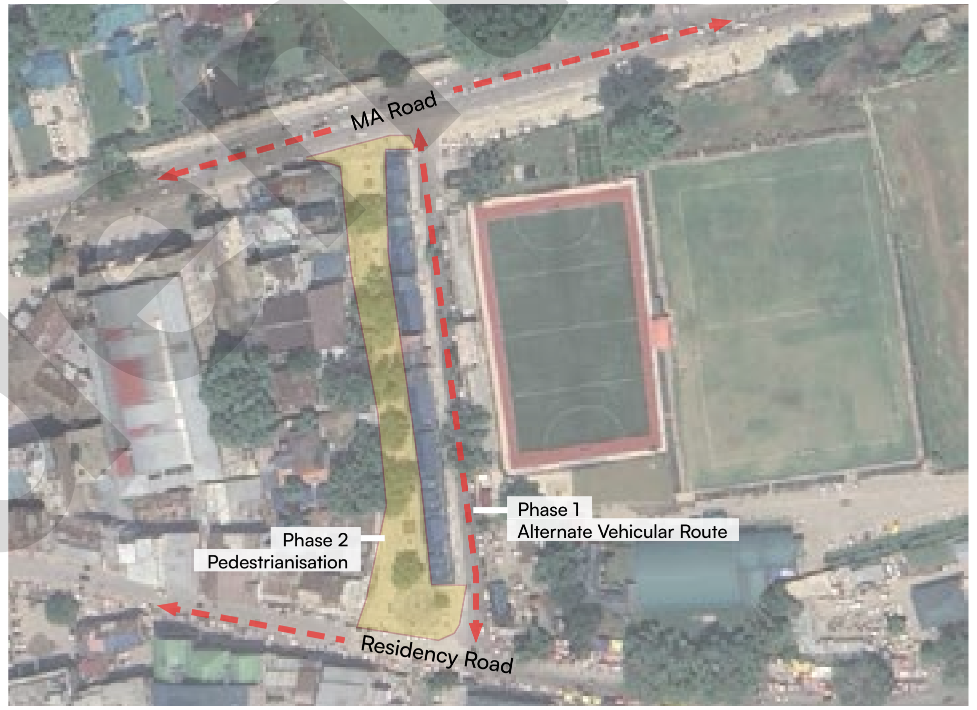
The project was implemented in two phases. In the first phase, the parallel vehicular linkage connecting MA road and Residency road was strengthened. Followed by phase two- conversion of the existing market street to a pedestrian plaza.

Parking Management

To pedestrianise the street, SSCL proposed shifting the existing parking from Poloview street to the parallel street. This street had designed on-street parking bays and an off-street parking lot.

However, the perception that parking spots were being reduced resulted in a huge backlash from the locals.

To tackle this, the Smart City team- with support from the Market Association, demonstrated the parking plan through tactical interventions- using paint. This intervention helped in convincing the locals.



Challenges Accepted & Addressed

Traffic and parking management during construction: Located in the busy Lal Chowk ABD area, the on-site redevelopment work at Polo Street View was challenging. However, with the help of the corporation and city traffic police, this issue was addressed by providing an alternate parallel road to the market street with designated on-street parking.

Extreme weather conditions: Due to extreme weather conditions, the project was completed in fewer working months. In order to ensure a quality implementation of the project, a proper scheduling of construction activities was undertaken.

Shortage of material for construction: Cities could not experiment much with the use of different materials due to a shortage of materials, however, the project used local and easily available materials for the project.

Outcomes

Vibrant Space for All:

The redevelopment of the area, has become the hotspots for the tourist and local people, which has substantially increased the footfall. The street has become livelier for citizens for shopping and social interactions.

Reclaimed space:

After the implementation of the project Srinagar Smart City Limited reclaimed about 6000 sqm area for pedestrians and cyclist.

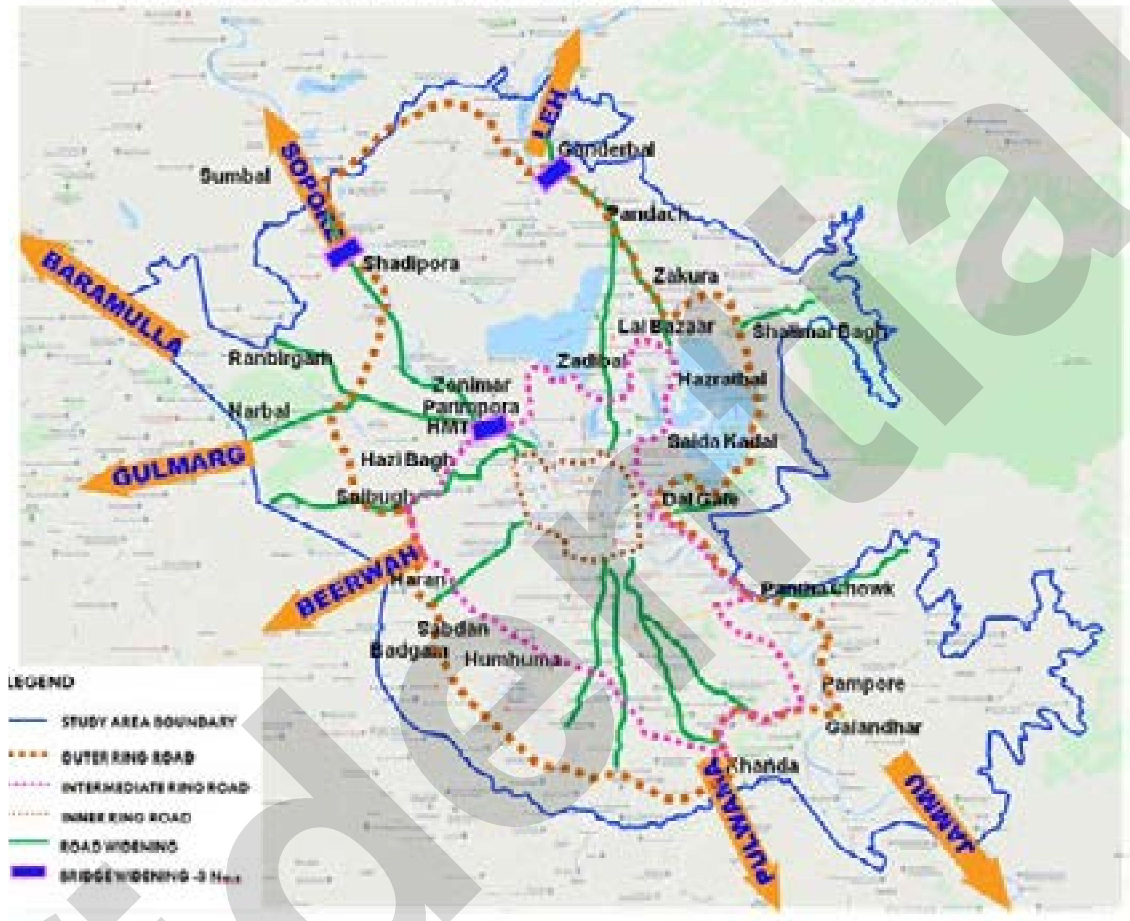
Revenue generation: The redevelopment of Polo view market street has greatly increased the shopping activity, that has boosted the local economy and helped in the substantial increase in revenue generation.

Citizen Impact Stories

‘The Polo View Street project has made a big difference in our lives. I have a shop near Polo View Street and I’ve seen remarkable changes happen. The project has transformed a vehicular road into a pedestrian street that has provided more accessibility to the shop fronts. This has also completely removed the traffic congestion that were previously caused due to vehicular movement.”

- Ms. Annapurna Sharma, Shopkeeper

Way Forward


SOPORE
LEH
BARAMULLA
GULMARG
BEERWAH
PULWAMA
JAMMU
Sumbal
Ganderbal
Pandach
Shadipora
Zakura
Lal Bazaar
Shalimar Bagh
Ranbirgarh
Zadibal
Zainimar
Parimpora
HMT
Hazratbal
Harbal
Saida Kadal
Hazi Bagh
Sebugh
Dal Gate
Haran
Pantha Chowk
Sabdan
Badgam
Humhuma
Pampore
Galandhar
Khanda
LEGEND
STUDY AREA BOUNDARY
OUTER RING ROAD
INTERMEDIATE RING ROAD
INNER RING ROAD
ROAD WIDENING
BRIDGE WIDENING -3 Nos

Scaling-up the transformation

Vision: Creating a people-centric, resilient and socio-economically vibrant city that celebrates its natural and cultural heritage creating opportunities for all.

NMT Master Plan

The provision of NMT facilities in Srinagar are proposed to be developed as a part of the overall road development program as shown in the NMT plan below. About 120 km of road network has been identified for widening or development across the city. These streets will be developed as complete streets with NMT-friendly facilities. In addition, the radial roads connecting to the ring roads are also proposed to be widened/developed with adequate NMT infrastructure to improve the overall accessibility and efficiency of the transport network. The NMT plan also proposes dedicated “Hawker Zones” along NMT infrastructure to decongest the major corridors and commercial areas, ensure encroachment free footpaths and improve the on-street safety by providing eyes on the streets.

> *We are looking to revitalising the city. And based on our experience from Poloview street, we have understood the importance of public engagement in ensuring the success of any project. This is where the team should hold on to the vision and principles and share it to the people.*
>
> **Anuj Malhotra**
> **General Manager**

Polo View Street

FRESH
FLOWERS
INSIDE

2 Pondy Bazaar

Chennai, Tamil Nadu

Typology
Sub Arterial Street

ROW
25m

Length
1.4 km

Duration
May 2020- May 2023
(4 years)

Cost
₹28.5 Cr. per km

Nodal Authority
Chennai Smart City Limited, Greater Chennai Corporation (GCC)

Implementing Partners
Institute for Transportation and Development Policy (ITDP) India, Pondy Bazaar Shop Keeper Association, Darashaw and Studio R+R

Awards & Recognition
Winner of the acclaimed international Ashden Awards 2020 in the Sustainable Mobility (International) category.

Profile of the city

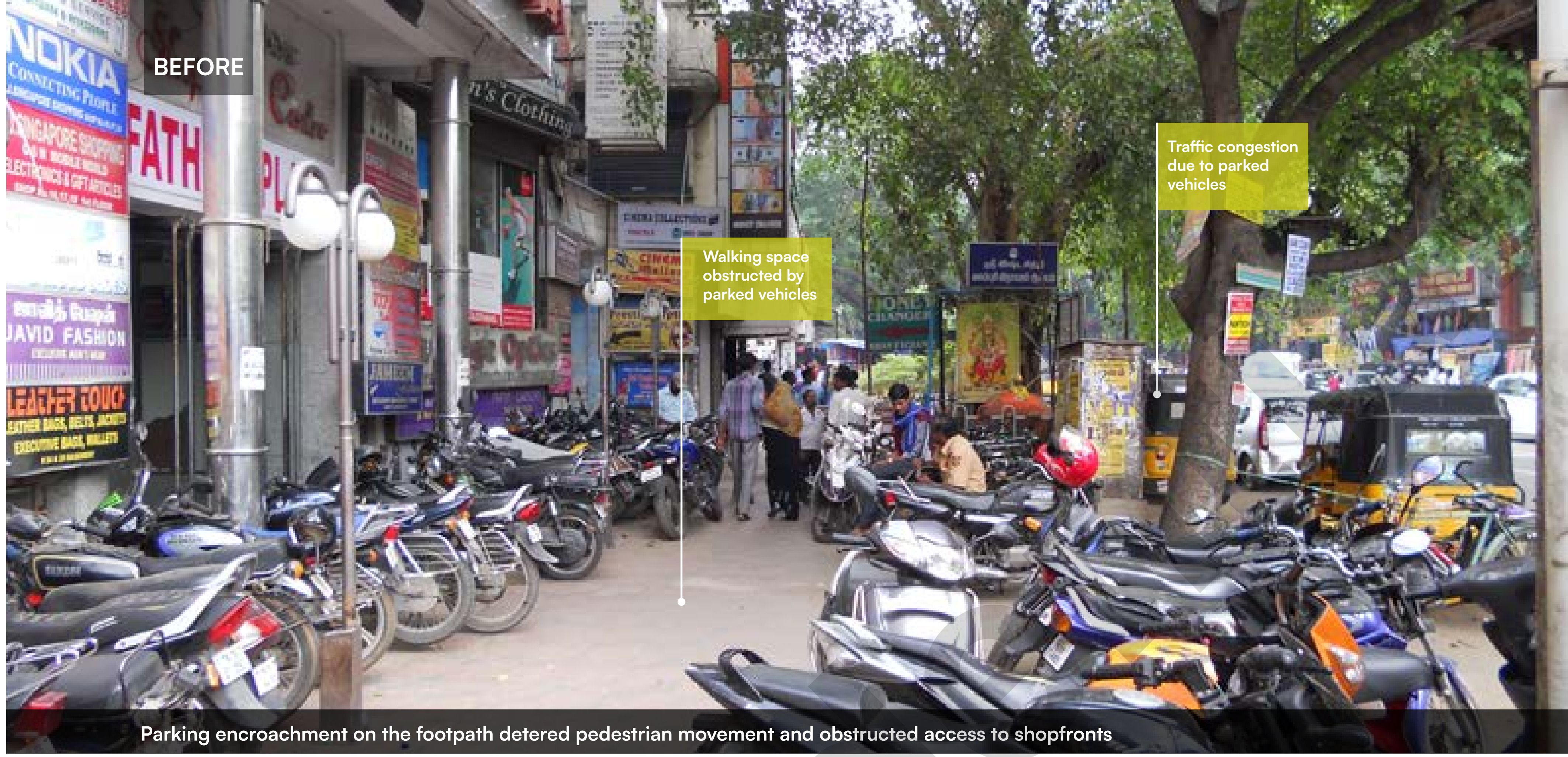
Chennai was selected as Smart City in the Round 1 of the Smart City Challenge. Under the Smart Cities Mission, the city has implemented multiple Smart mobility projects that worth ₹194 Cr. Chennai is one of the first cities in India to adopt and implement non-Motorized transport (NMT) policy to encourage and promote pedestrianization. The city has an area of 175 sq km with a population of 46,46,732. Prioritizing pedestrianization non-motorized transportation, the city developed Pedestrian Plaza in the ABD region of the city.

Context of the Project

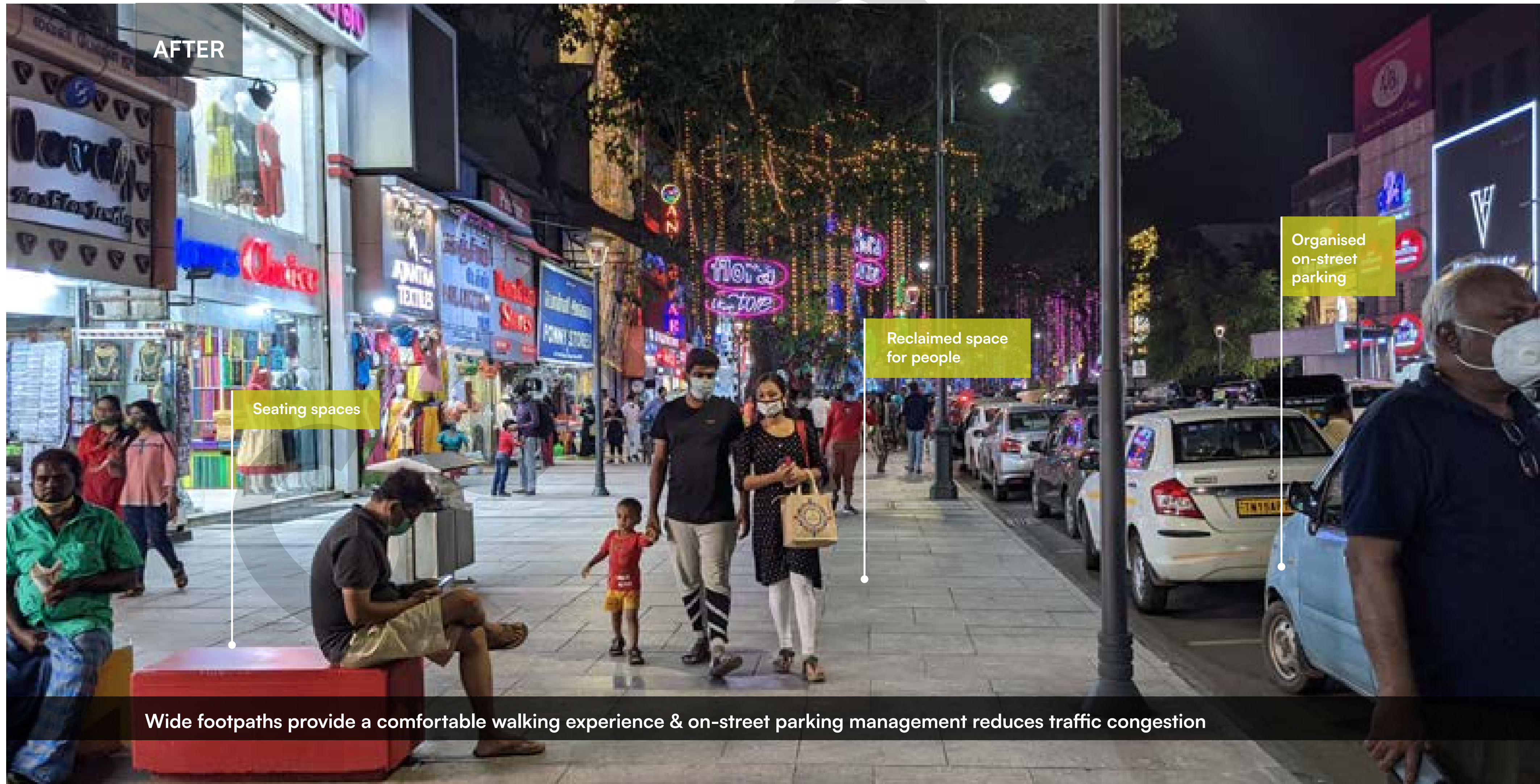
GCC and Chennai Smart City Limited has established a 1.4 km long Pedestrian Plaza at ABD region of Theyagaraya Nagar (T Nagar) with the aim of utilising additional road space to incorporate all essential pedestrian amenities and to create a traffic-free social space for the citizens of Chennai. Situated in the bustling commercial hub of T Nagar, Sir Theyagaraya Road was converted into the Pedestrian Plaza attracted a significant footfall of 4000 pedestrians daily. After the adoption of the NMT Policy the city developed this project by transforming commercial thoroughfare into an inviting, safe, and lively open street mall, fostering both shopping and recreational experiences for all age groups. This project implemented under the Streets4People challenge of Smart Cities Mission.

Vision of the Project

The project was envisioned to transform 1.4 km of prime commercial space in the heart of the Area-Based Development (ABD) region of T Nagar by converting additional road space into broadened walkways and providing all necessary amenities for pedestrians.

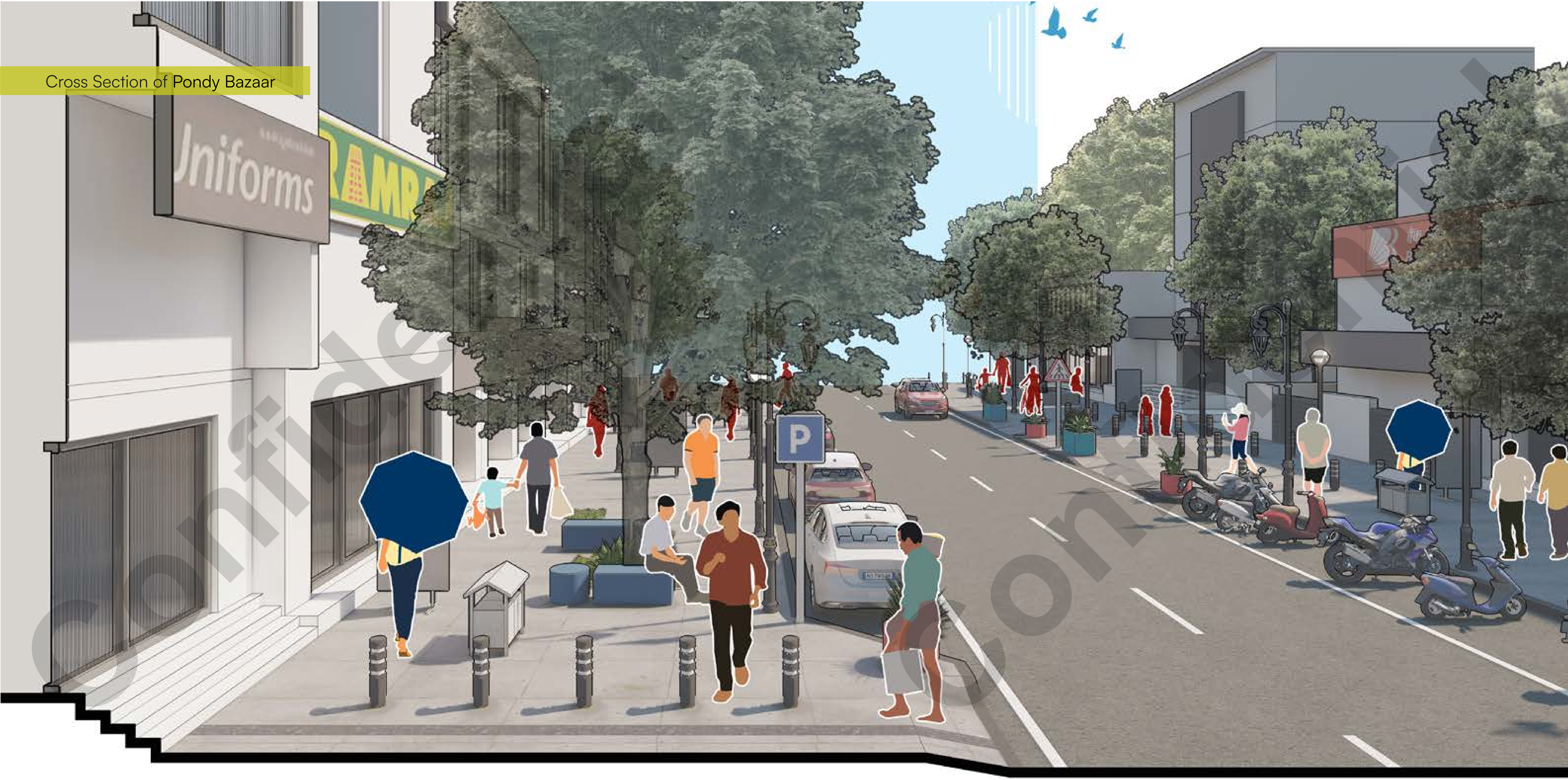

BEFORE
Walking space obstructed by parked vehicles
Traffic congestion due to parked vehicles

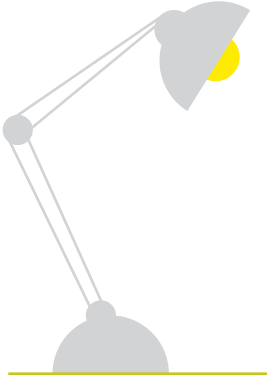
Parking encroachment on the footpath detered pedestrian movement and obstructed access to shopfronts



Wide footpaths provide a comfortable walking experience & on-street parking management reduces traffic congestion

Cross Section of Pondy Bazaar


Uniforms
RAMR
P



Design Highlights

01 The design intent was to create not just a safe & vibrant walking experience but to also integrate elements that can transform the street into a place for recreation as well.

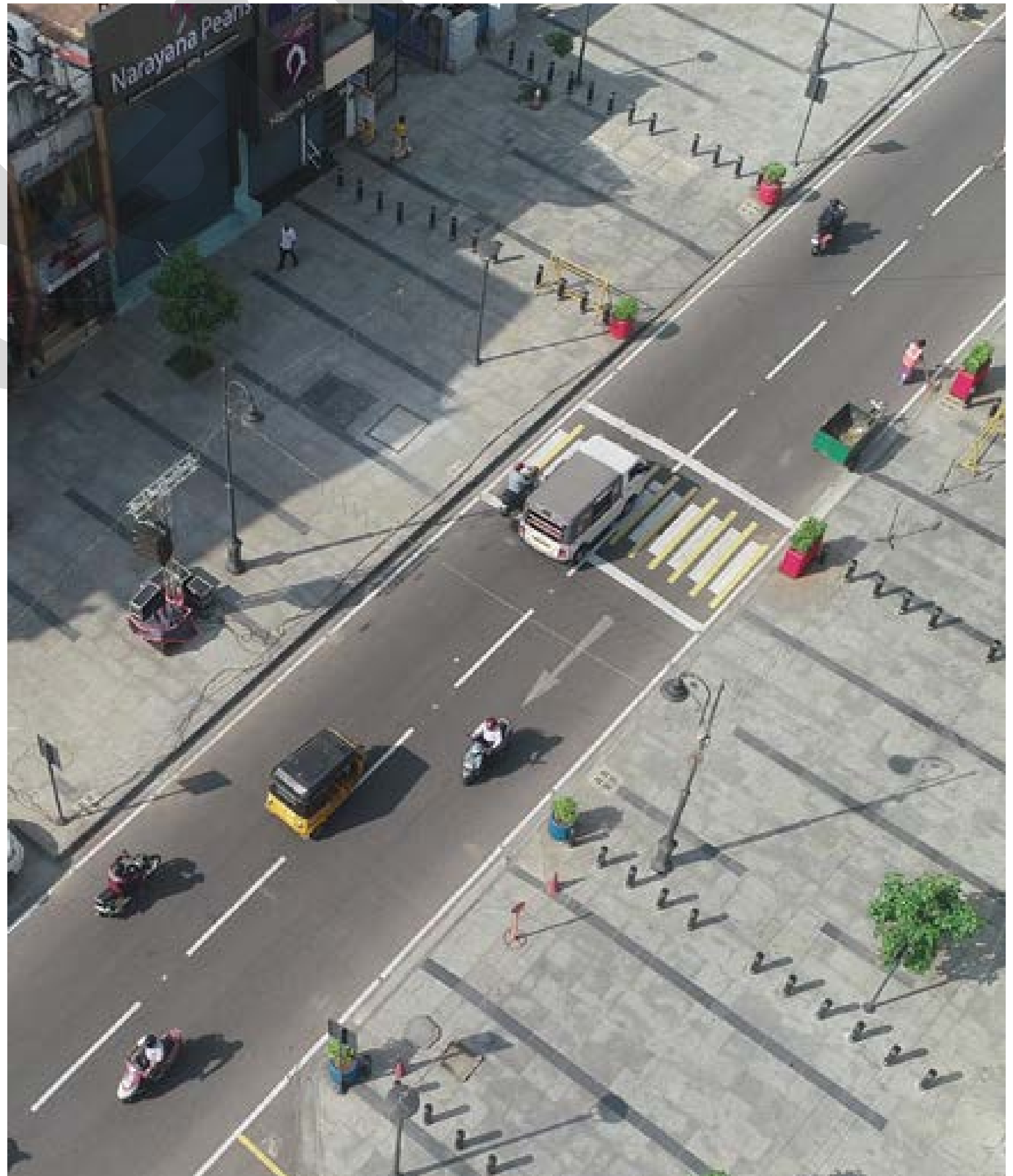
02 The street was divided into 3 parts to cater to the existing context. The first part is commercial and required a wider walking space, the second part has a school and incorporates traffic-calming elements and the third part is less commercial and has on-street parking.

03 The existing tree canopy was retained and additional trees were planted to ensure the street is well-shaded throughout. CARE Earth Trust, an NGO based in Chennai, were roped in to ensure appropriate measures are taken for this.

04 All underground utilities were integrated with the street design and overground utilities were realigned to ensure an unobstructed walking space.

The design provided all necessary amenities for pedestrians, including seating clusters, sheltered bus-stops, motor-free walkways, toilets, covered dustbins, and inclusive play space for people. It also included traffic calming measures such as Speed breakers, and Intersections with round-abouts and curb stone surfacing.

This design provides >50% of the RoW for walking, sitting, playing & more.



GEETHA CAFE

Flexible seating elements that can be arranged as per user preferences

Continuous walking space

Play area created during a Happy Streets event

Designated parking bays along the carriageway edge

Project Journey

Stakeholder engagement during tactical trial on the site

01

Laying the foundation

After the adoption of the NMT Policy the project was proposed to demonstrate a unique shopping and recreation experience. Further, a NMT sub-committee was also formed.

✓ Complete ✗ Not yet started ● Ongoing

- ✓ **Healthy Streets Policy**
- ✗ **Healthy Streets Cell**
- ✗ **Parking Policy**
- ✓ **Street Design Guidelines**
- ✓ **Capacity-building workshops**
- ✓ **Site visits, Pune**

02

Building the team's muscle

The city SPV and the Special project department of GCC conducted regular capacity building workshops and encouraged peer-to-peer learning from other cities through site visits.

03

Doing things together

Designing with Community

The first design iteration proposed only public transport & NMT infrastructure along with organised space for street vendors. However, the shopkeepers demanded on-street parking. Upon discussion with the Pondy Bazar shopkeepers association, a one-way traffic movement with provisions for short-term organised parking was integrated. On the demand of the shopkeepers' association, the street vendors were relocated in a vending complex and the design was modified accordingly.

Tactical Trial

Two trial runs were conducted for collecting citizen feedback & building support for the project.

PMC to ensure consistency of work quality

The street was divided into three parts and each part was assigned to one contractor to enable quick delivery. A PMC was appointed to coordinate with the contractors, ensure consistency of work quality and enable peer learning.

Review Schedule

Monthly review and inspection was done by NMT sub committee headed by the Commissioner. The committee ensured coordination among all the departments involved Weekly meetings were organised with the executive engineers for project monitoring. Designs were reviewed by ITDP and the Special Projects Department.

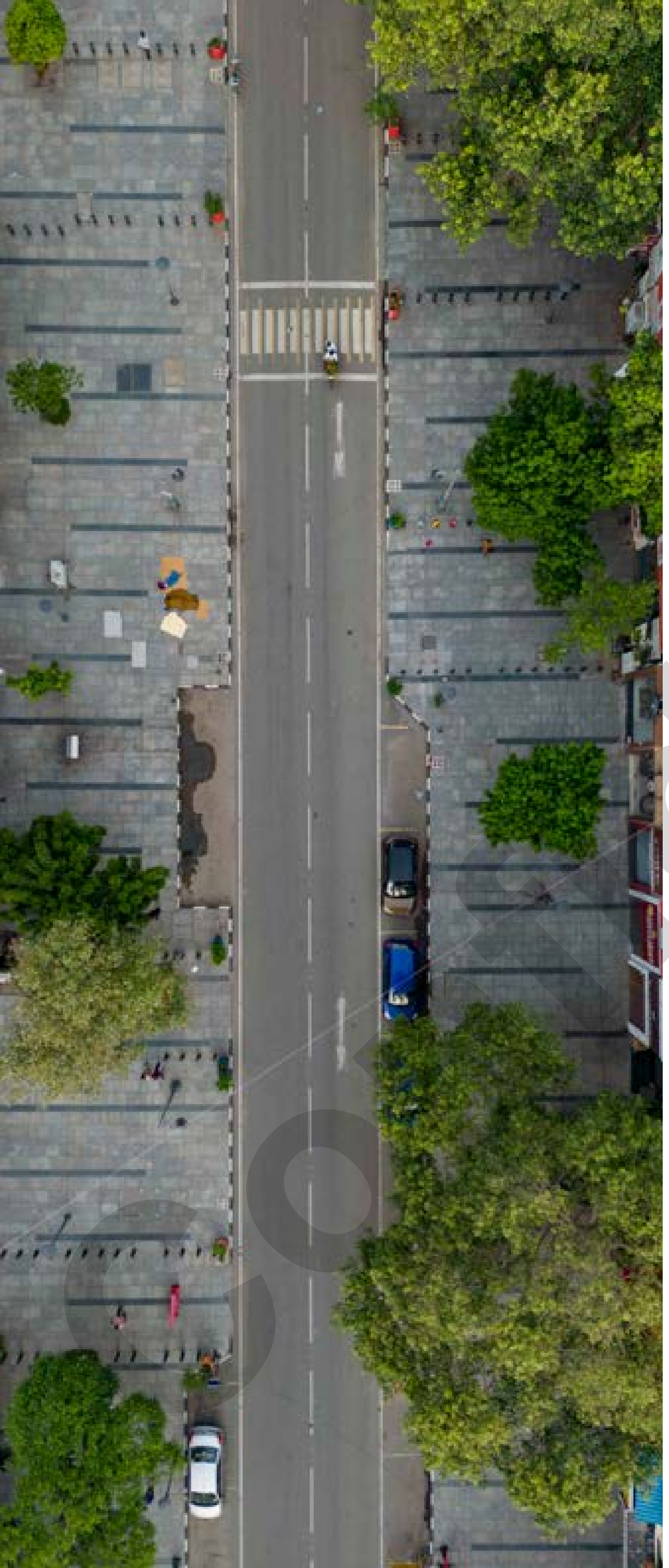
04

Monitoring, learning & improving

Off-street parking

In response to the shopkeepers demand for parking, an MLCP is constructed on one end of the street. However, it is underutilised and people prefer to park on the street.

Parking management system is in place with a third party contract & traffic police conducts regular parking drives to enforce it.



Challenges Accepted & Addressed

Coordination with multiple service departments was a major challenge during the implementation of the project. However, this issue was resolved by conducting regular meetings with NMT subcommittee and other stakeholders.

The site being in the busy shopping street, the execution of the project during the daytime was difficult. To mitigate this, most of the construction was done during nighttime to minimize disturbance to pedestrians and vehicular traffic.

Outcomes

Reclaimed space for pedestrians and cyclists: 14000 sqm space was reclaimed for pedestrian and cyclist, after the implementation of the project. This has drastically increased the number of pedestrians using the space. Further, the time people used to spend in this street has also gone up significantly.

Increase in land value: Residential property prices have seen an increase of 20% over a period of 2 years after the inauguration of the Pedestrian Plaza.

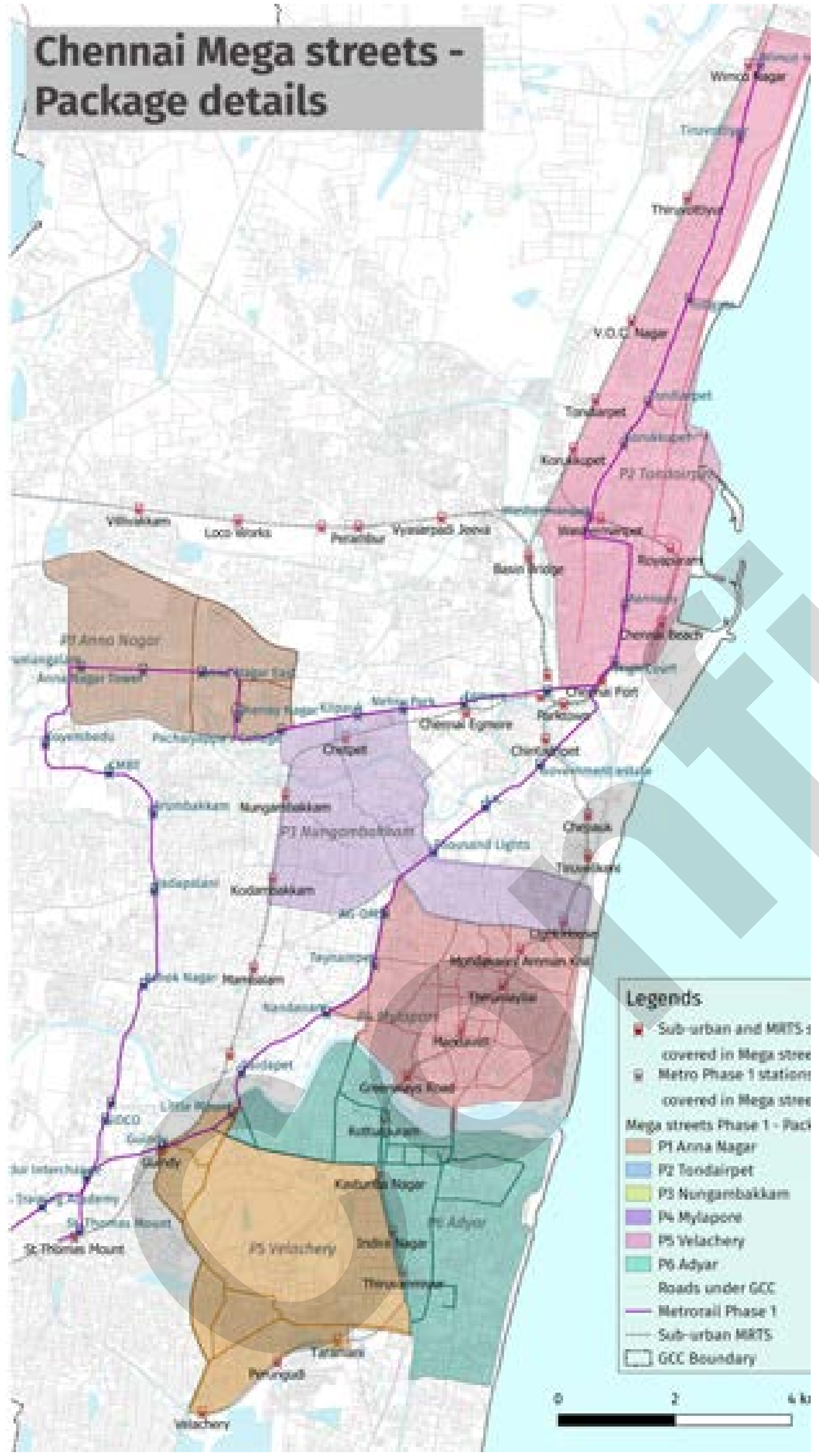
Increase in revenues: Retail shop owners reported an increase in sales by 15-20% during Nov-Feb 20 compared to the sales in earlier year.

Greater safety and mobility of pedestrians: The well-designed Pedestrian Plaza with on street play areas has allowed children to play outside for longer hours and provided more convenient shopping experience for women and the elderly people.

Citizen Impact Stories

> *I would have never imagined a busy commercial street like Sir Theyagaraya Road to be transformed completely into a Pedestrian Plaza. It is awesome how the design of the street has provided 10 feet wider footpaths for universal accessability.*
>
> **- Varsha AV, Data Analyst**

Way **Forward**


Chennai Mega streets -
Package details
Legends
Sub-urban and MRTS s
covered in Mega stree
Metro Phase 1 station
covered in Mega stree
Mega streets Phase 1 - Pack
P1 Anna Nagar
P2 Tondairpet
P3 Nungambakkam
P4 Mylapore
P5 Velachery
P6 Adyar
Roads under GCC
Metrorail Phase 1
Sub-urban MRTS
GCC Boundary
0
2
4 k
Wimco Nagar
Tiruvottiyur
V.O.C Nagar
Tondiarpet
Korukkupet
P2 Tondiarpet
Washermanpet
Royapuram
Basin Bridge
Villivakkam
Loco Works
Perambur
Vyasarpadi Jeeva
P1 Anna Nagar
Chennai Beach
Chennai Fort
Park Town
Chennai Egmore
Chetpet
Chintadripet
Nungambakkam
P3 Nungambakkam
Kodambakkam
Mylapore
Greenways Road
Kotturpuram
Kasturba Nagar
Indira Nagar
P6 Adyar
P5 Velachery
St.Thomas Mount
Perungudi
Taramani
Velachery

Chennai Mega Streets-Pacage details

Scaling-up the transformation

Chennai's Mega Streets Project focuses on creating a network of high-quality and equitable streets and vibrant public spaces, uplifting the face of 6selected neighbourhoods.

It focuses on three key points:

- Integrated planning and design of resilient under and above ground utilities
- Equitable distribution of street space and ensuring accessibility for all to promote walking and cycling
- Neighbourhood planning, managing parking, vendors and adding iconic public spaces

> *It should be noted that the proposed NMT network and pedestrian hotspots are being developed to complement and connect the proposed ecomobility corridor in the "8 Lakes Rejuvenation and Restoration Plan" under the Smart Cities Project*

……………

Pondy Bazaar

SPOT ON
Shreenivas

3 Thane Station Road

Thane, Maharashtra

Typology
Local Road

ROW
45m

Length
13km

Duration
Aug 2020-Dec 2022
(2 years 6 months)

Cost
₹7.3 Cr. per km

Nodal Authority
Thane Smart City Limited

Implementing Partners
Design Consultants —
M/s StudioPOD
Contractor —
M/s Pragati Enterprises
Project Management
Consultant — CRISIL

Profile of the city

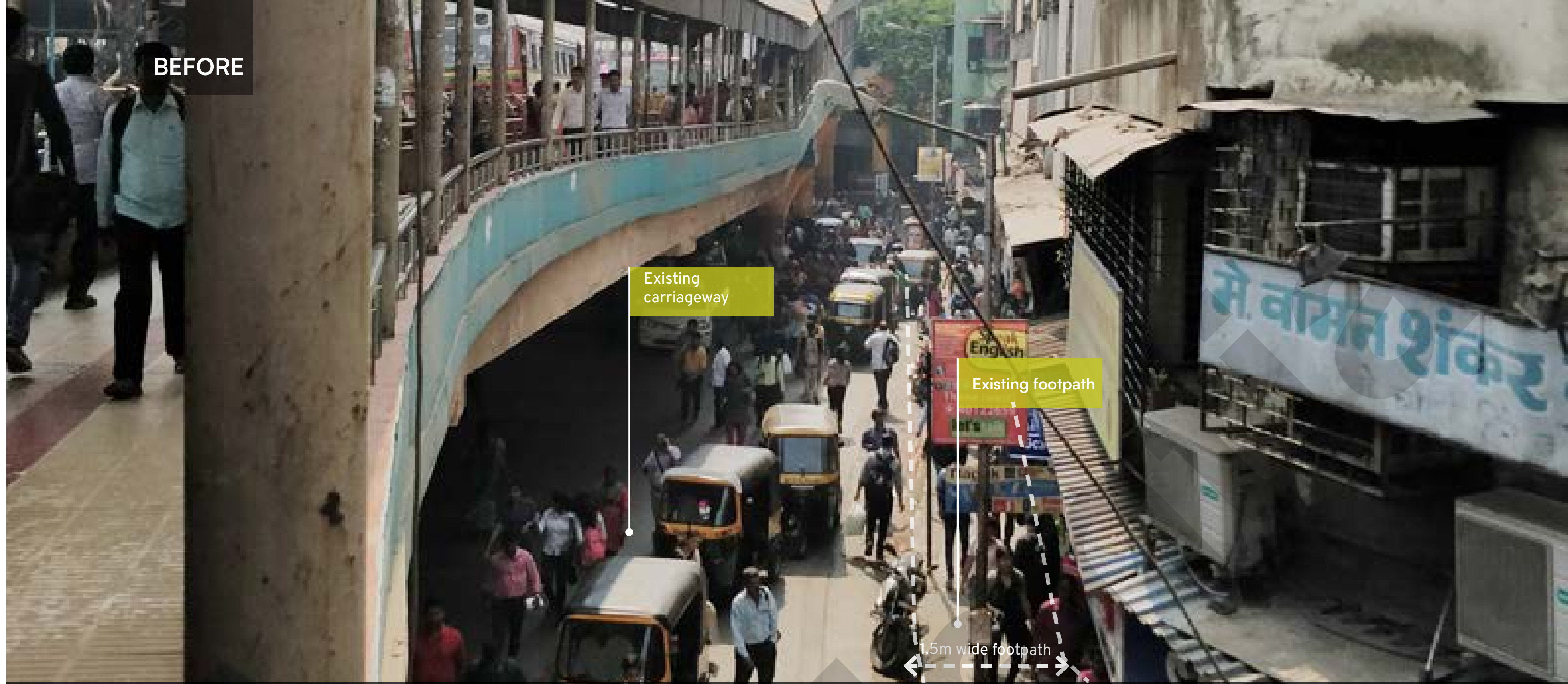
Thane, a residential suburb of Mumbai, is home to around 30 lakes. It has a recorded population of 18.4 lakhs spanning an area of 128 sq.km in which 4.3 sq.km has been demarcated as the ABD area. The city was selected in Round 2 of the Smart Cities Mission — since then, it has undertaken 52 projects worth ₹ 1,845 Cr. in multiple sectors, out of which 6 projects worth ₹422 Cr. belong to the mobility sector. These projects comprise of multimodal transit hubs, MLCPs, ITMS, street design initiatives, upgradation of existing infrastructure etc. Identifying the importance for NMT, Thane has undertaken various works worth ₹390+ Cr. in the development of streets, pedestrian pathways, road infrastructure, etc.

Context of the Project

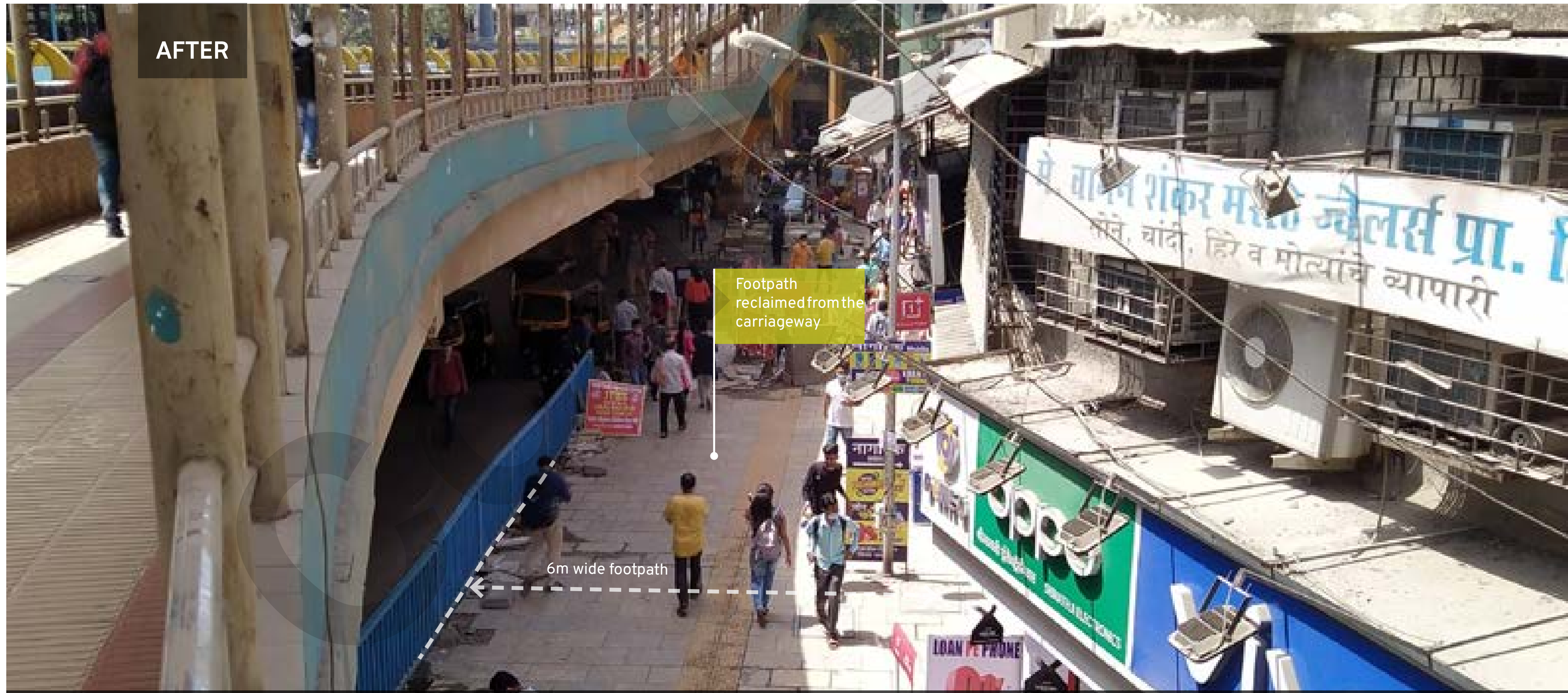
Over the past few decades, with the increase in influx of IPT, vendors, etc.; across the west station access road, many unorganized spaces were created. To create dedicated organized spaces along this significant mutation corridor, the Thane West Station Access Improvement project was identified by Thane Smart City. This project in the ABD area, aimed to reclaim pedestrian space around the station improving accessibility and mobility in the core city.

Vision of the Project

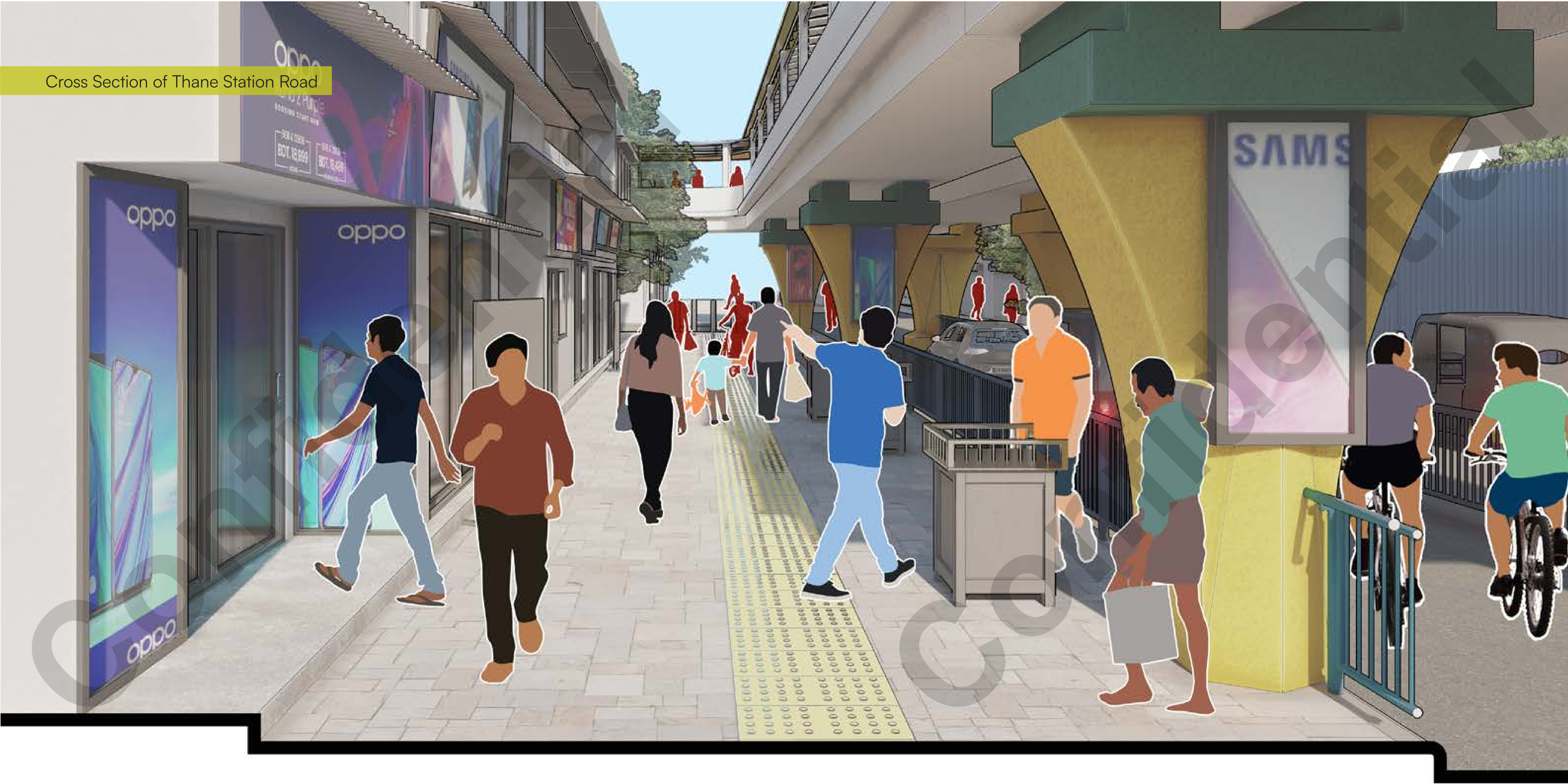
The project aimed to improve the pedestrian access to the railway station by organizing the existing activities like vending, auto-stands and bus stops on the station access road.



The existing 1.5m wide footpath was not sufficient for the heavy pedestrian footfall. In addition, the commercial spillover, on-street vending and utilities like DP boxes were obstructing the pedestrian walkway.



The footpath was increased to 6m by reclaiming space from the carriageway. The utilities were moved underground and the on-street vending and commercial spillovers were restricted to ensure an obstruction-free pedestrian space.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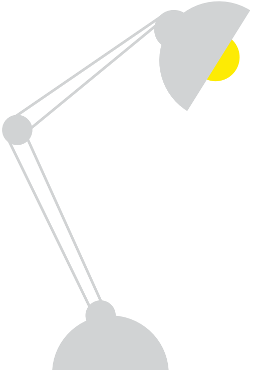
Cross Section of Thane Station Road



Design Highlights

01 The project tried to reduce the vehicular space by transforming the access road to a one-way street.

02 The reclaimed space from the carriageway has been integrated with the walkway to provide a continuous 6m-wide pedestrian space.

03 The entry of vehicles into the station area is restricted by the use of metal bollards.

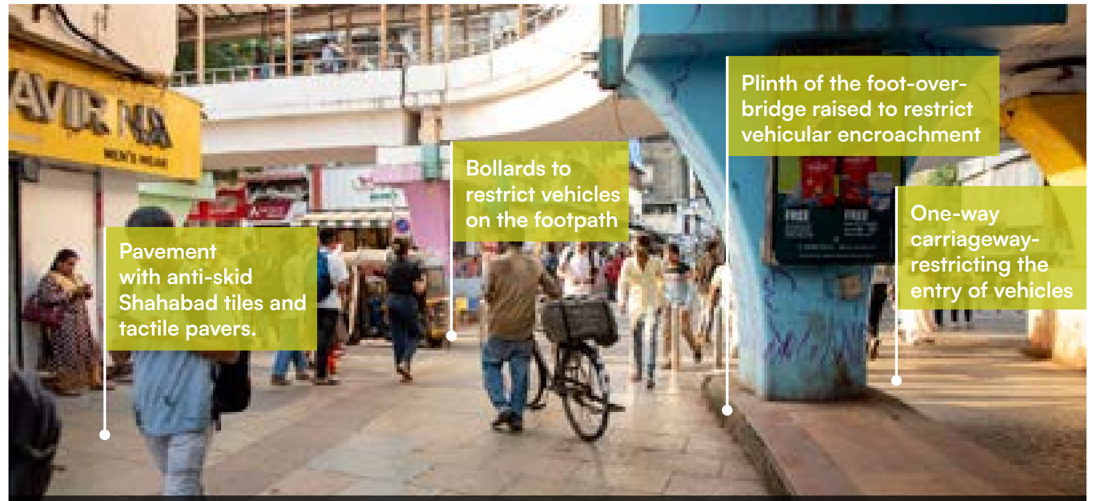
04 The edge of the footpath has been barricaded to regulate the flow of traffic on the MV lane only. This helps in creating dedicated spaces for activities like walking, cycling, vending etc.

05 On-street vending and adjacent commercial activities were organized to improve pedestrian experience.

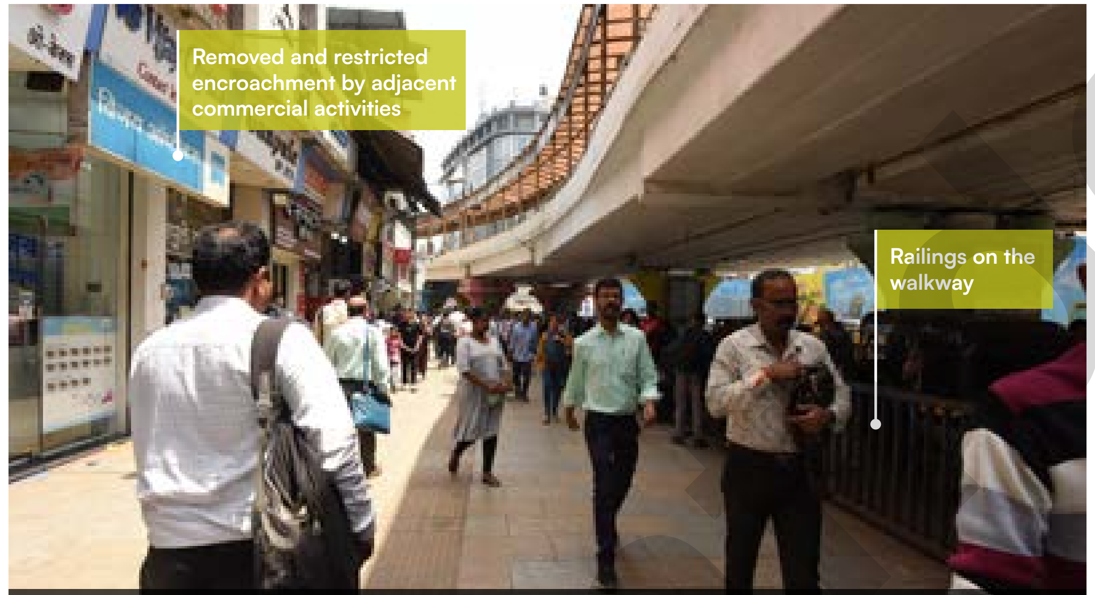
06 The project also organized autorickshaws by providing a dedicated, sheltered auto-stand.

07 To strengthen the corridor with multi-modal transit, bus stops were also provided as part of the project proposal.

The interventions increased the people carrying capacity of the street by 4500 people per hour.

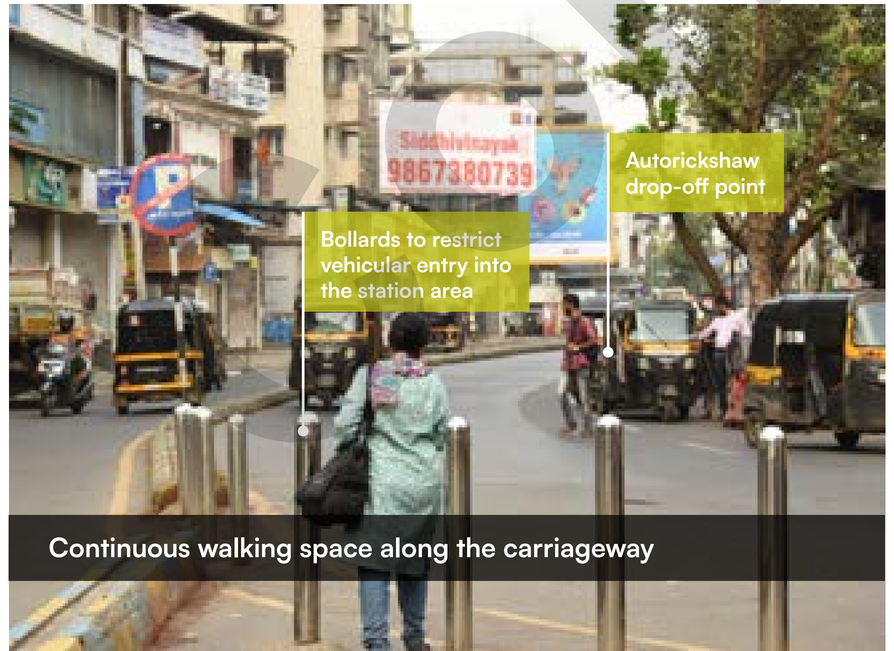

Pavement with anti-skid Shahabad tiles and tactile pavers.
Bollards to restrict vehicles on the footpath
Plinth of the foot-over-bridge raised to restrict vehicular encroachment
One-way carriageway- restricting the entry of vehicles

Unlike the other projects in the ABD project, Shahabad stone was used for the footpath in this stretch keeping in mind the high pedestrian volumes


Removed and restricted encroachment by adjacent commercial activities
Railings on the walkway

Removed and restricted encroachment by adjacent commercial activities

Several vendors setup their stalls along the closed commercial shops in the early morning. They close their stalls during the business hours of the shops. This temporal usage of the space helps keeping the street lively, while maintaining the pedestrian space for walking.


Bollards to restrict vehicular entry into the station area
Autorickshaw drop-off point

Continuous walking space along the carriageway

Project Journey

Stakeholder engagement during tactical trial on the site

01

Laying the foundation

✓ Complete ✗ Not yet started ● Ongoing

- ✓ **Parking Policy**
- ✓ **Vending Policy**
- ✗ **Healthy Streets Policy**
- ✓ **Street Design Guidelines**

02

Building the team's muscle

- ✓ **Capacity-buiding worshops**
- ✓ **Site Visits**

Onboarding design experts

CRISIL- the consultancy experts for the ABD initiatives appointed external design consultants as urban design experts for the project.

The urban designers developed the Station Area Improvement Plan along with design details for Thane Station Road project. Their scope of work for the streetscape also included conducting surveys to understand the existing situation, and also the post-implementation impact of the design.

The urban designers were also actively involved in the implementation phase. The consultants and engineers regularly met on site to ensure smoother implementation.

Dedicated team of consultants

TSCL appointed one consultant each for the ABD and Pan City Initiatives. The consultants work closely with the internal team of engineers at TSCL. The Delivering Change Foundation (DCF) was also onboarded with a specific focus of participatory community development.

03

Doing things together

The team had several meetings on-site with shopkeepers and the Traffic Police Department to convince them for the street intervention.

Even though the idea of the project was simple, the execution was difficult due to high pedestrian volumes using the street throughout the day and night. There was a lot of push back from both the user groups because of the hindrances caused by construction. To aid this, construction was carried out at night.

Involving stakeholders in the process

The team have several meetings on-site with the shopkeepers and Traffic Police Department to convince them for the street intervention.

Even though the idea of the project was simple, the execution was very difficult due to the high pedestrian volumes using the street 24x7. There was a lot of push back from both these user groups due to hindrances caused by the construction works. As a result, the construction work was carried out during the nights.

04

Monitoring, learning & improving

Data-informed design decision-making

The design consultants conducted detailed analysis of the data available with the city to derive the minimum width of the footpath to cater to the daily commuter footfall of approx. 3.73 lakhs people. Further, the modal split data- 55% walking vs 15% IPT and private vehicles was used to support the interventions like restricting the vehicular space by converting the street to one-way.

Challenges Accepted & Addressed

Traffic Congestion — Due to the limited width of the street, traffic related problems occurred especially during the construction phases.

Public interferences — Shopkeepers, local public, auto-rickshaw drivers raised concerns against the execution of the street. This was then solved by conducting sessions which explained the economic benefits of executing the street.

Footpath encroachment — In due course of time, shop frontages, vendors and auto-rickshaws took up space for their day-to-day business, causing unorganised spaces in the precicnt. To deal with this, organised spaces were carved out on the street.

Outcomes

Dedicated and organized spaces for vendors, rickshaws, buses, etc.

Improved circulation and usability of the street.

25sq.m of space has been recovered for the pedestrians.

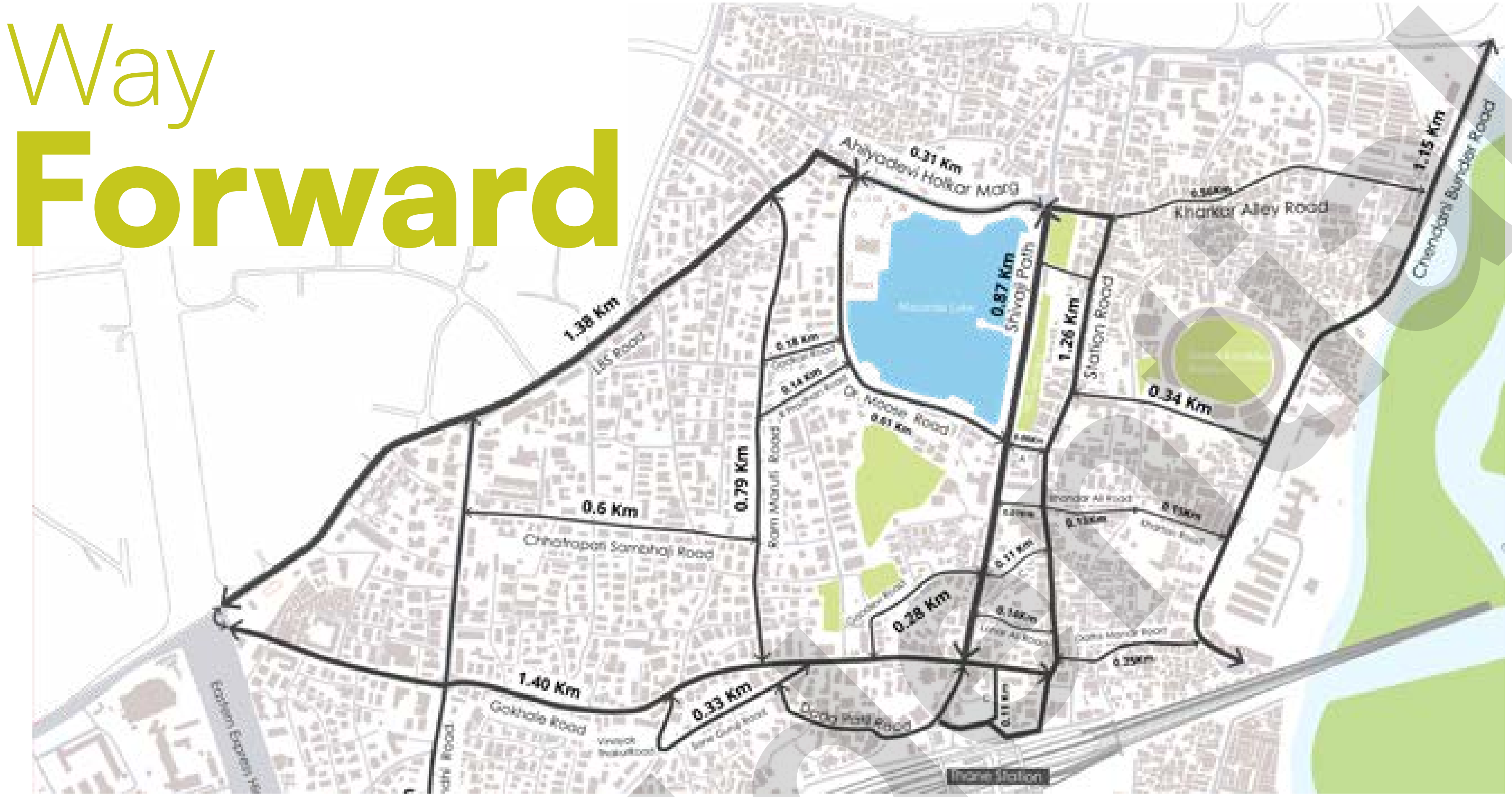
The pedestrian footfall has increased significantly; from 2000 persons to 6500 persons per hour.

Citizen Impact Stories

> *The street which was congested earlier has been completely transformed into a pedestrian zone with the all the amenities present before. It has been well equipped with spaces for all.*

-Mr.Rushikesh Bhatkar, Citizen

Way Forward


0.31 Km
Ahilyadevi Holkar Marg
1.15 Km
Chendani Bunder Road
Kharkar Alley Road
1.38 Km
LBS Road
0.87 Km
Shivaji Path
1.26 Km
Station Road
0.34 Km
0.18 Km
0.14 Km
Dr. Moose Road
0.61 Km
0.79 Km
Ram Maruti Road
0.6 Km
Chhatrapati Sambhaji Road
0.11 Km
0.28 Km
0.14Km
1.40 Km
Gokhale Road
0.33 Km
Dada Patil Road
0.11 Km
0.25Km
Eastern Express Highway
Thane Station

Scaling-up the transformation

Station Area Improvement Plan

Built in 1853, Thane is one of the busiest stations in the Mumbai Metropolitan Region. Over the past few decades, the vehiculles had reduced the pedestrian access to the station, creating issues of pedestrian inaccessibility and safety. The Thane West Station Area Improvement Plan is a network of 12km of streets identified by the Thane Smart City Team to reclaim pedestrian space around the station and to improve access to the station.

The Station Area Improvement Plan included redesigning of several streets forming an accessible network of streets connecting the railway station. The 13km of identified streets were redesigned by rethinking the right of way, resolving intersections, and adding street furniture and landscape elements to improve the pedestrian accessibility and comfort in the neighbourhood.

The Station Area Improvement Plan aims to reclaim around 11.32 acres of NMT space. In addition, 1236 new trees, 4.68 acres of newly landscape areas, 512 seatings, a new 1-acre contiguous park along the Lakefront have been proposed. All of this have been achieved purely by reconfiguring the Right-of-Ways of existing streets.

Thane Station Road

4 Walkable Streets

Kohima, Nagaland

Typology
Sub Arterial Street

ROW
7.5m- 10m

Length
0.4km

Duration
Mar 2022- Apr 2023
(1 year 1 month)

Cost
₹9.96 Cr. overall

Nodal Authority
Kohima Smart City Development Limited

Implementing Partners
Kohima Municipal Council, Kohima Village Council, Kohima Village Youth Organization, Kohima Municipal Council, Kohima District Administration.

Profile of the city

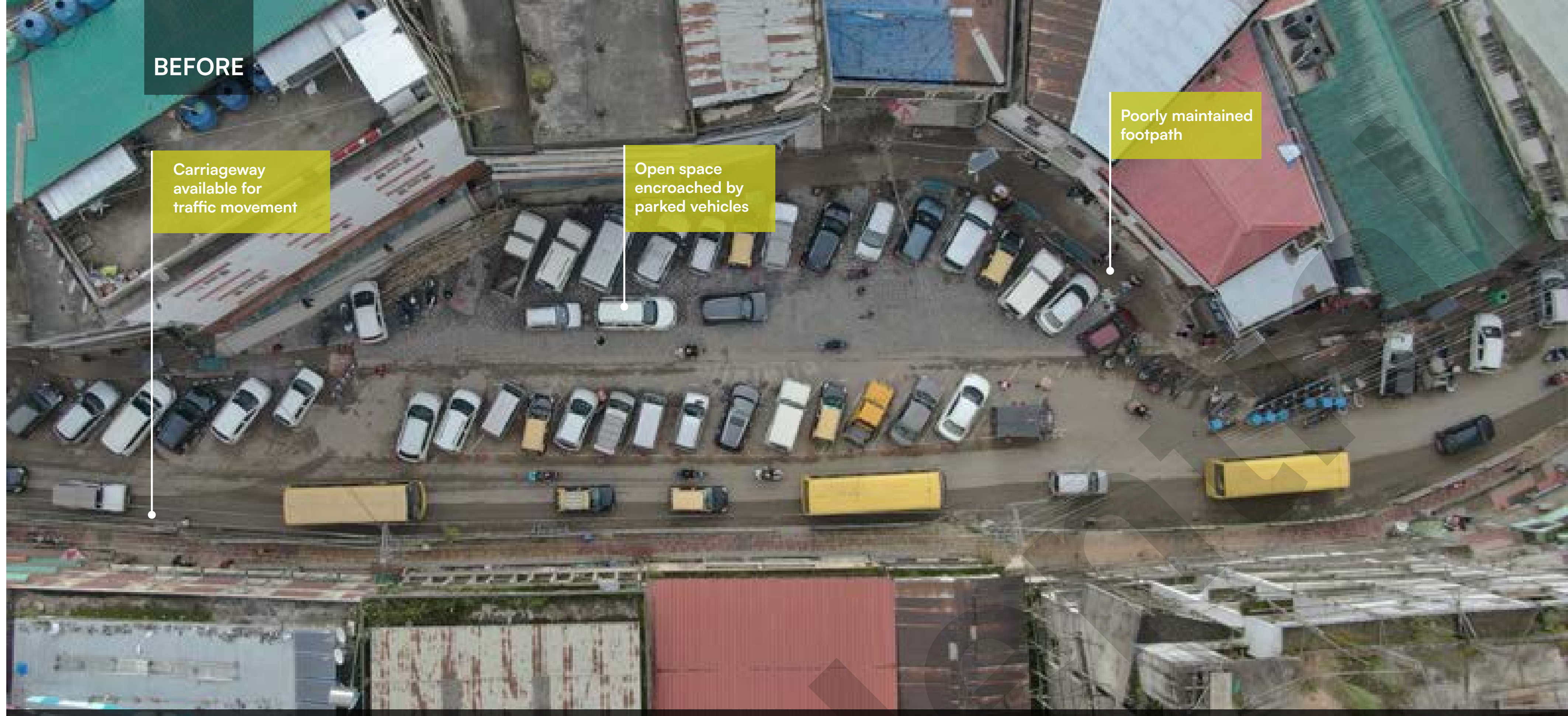
Kohima occupies pride of place as the capital city of Nagaland. With a resident population of around 1,00,000, it is the second largest city in the state. In Round 2 of the India Smart City Selection process, Kohima was selected as the only Smart city from Nagaland. Having a total area of 11 sq km with an ABD area of 1.2 sq km, Kohima Smart City has already completed SCM funded projects, worth ₹512 Cr. These projects inter alia focus on urban transportation, walkable streets, sanitation, water supply management etc. All of these projects have significantly contributed in achieving the objectives of Smart Cities Mission through the fulfillment of needs and aspirations of the citizen.

Context of the Project

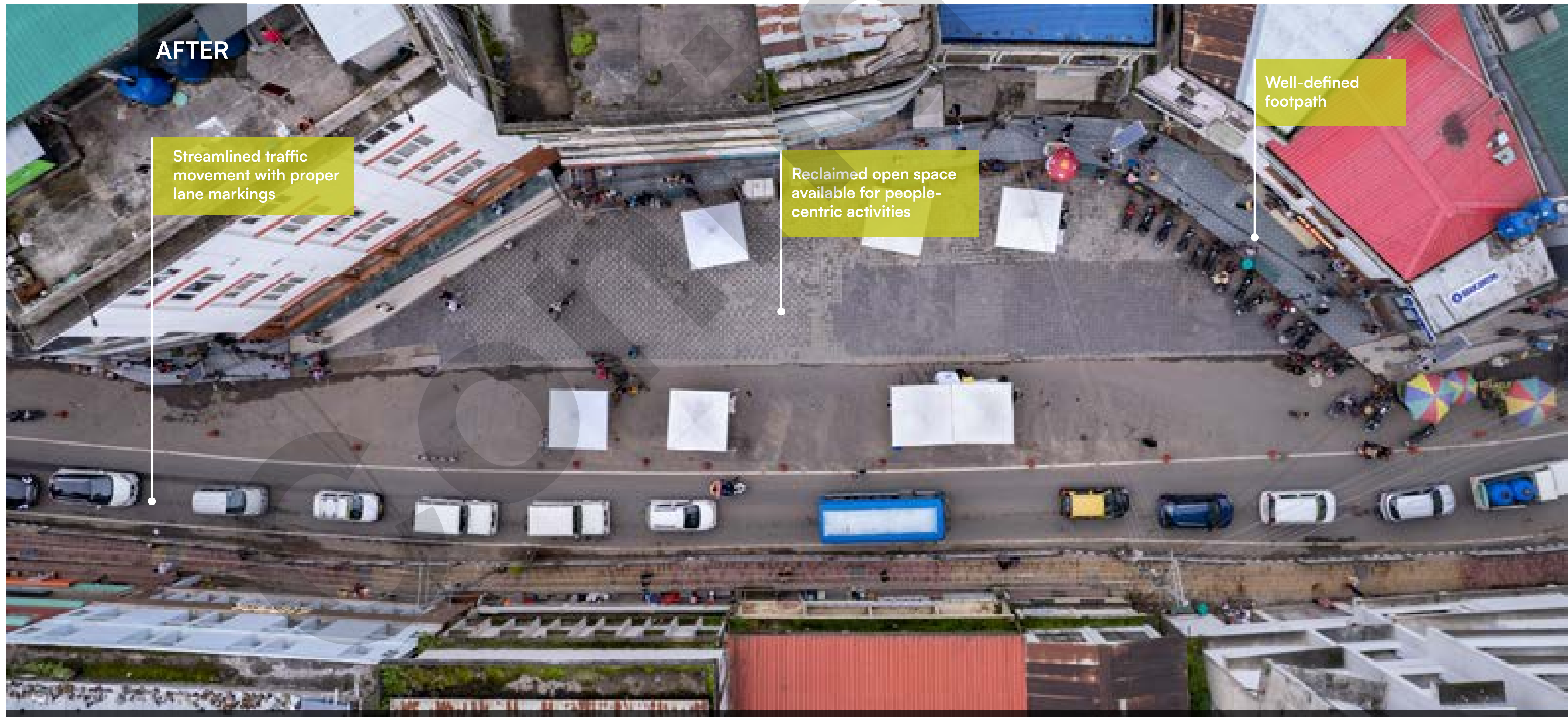
To create awareness on the need for judicious sharing of street space to encourage walking and cycling and the need to carve out space for citizens including the aged, children and the differently abled, Kohima Smart City reimagined their streets by converting multi-level car parking spaces into walkable vibrant streets for citizens.

Vision of the Project

This project created a vibrant public place for people by reclaiming the existing parking spaces, and further enhancing its usability by prioritising pedestrian safety and fostering local businesses.

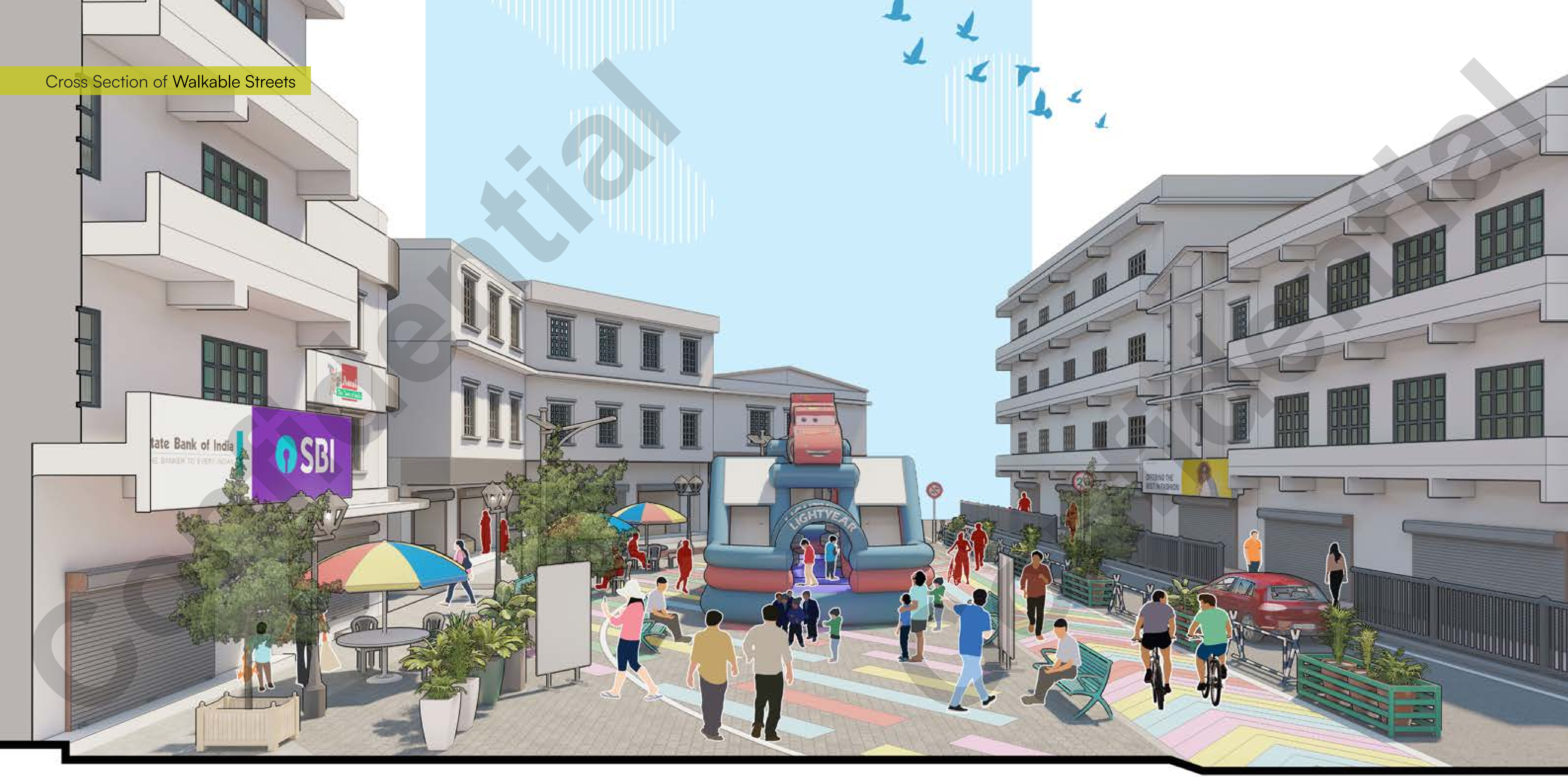

BEFORE
Carriageway available for traffic movement
Open space encroached by parked vehicles
Poorly maintained footpath

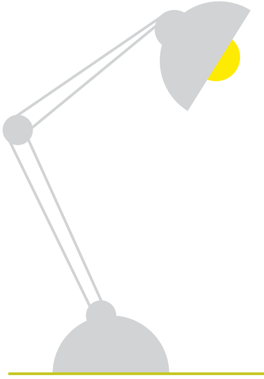
The open space along the street was either filled with parked vehicles or left unused leading to poor pedestrian safety


AFTER
Streamlined traffic movement with proper lane markings
Reclaimed open space available for people-centric activities
Well-defined footpath

The open space is reclaimed for the people, creating a vibrant community space along one of the busiest streets in Kohima

Cross Section of Walkable Streets


tate Bank of India
HE BANKER TO EVERY INDIAN
SBI
LIGHTYEAR
20



Design Highlights

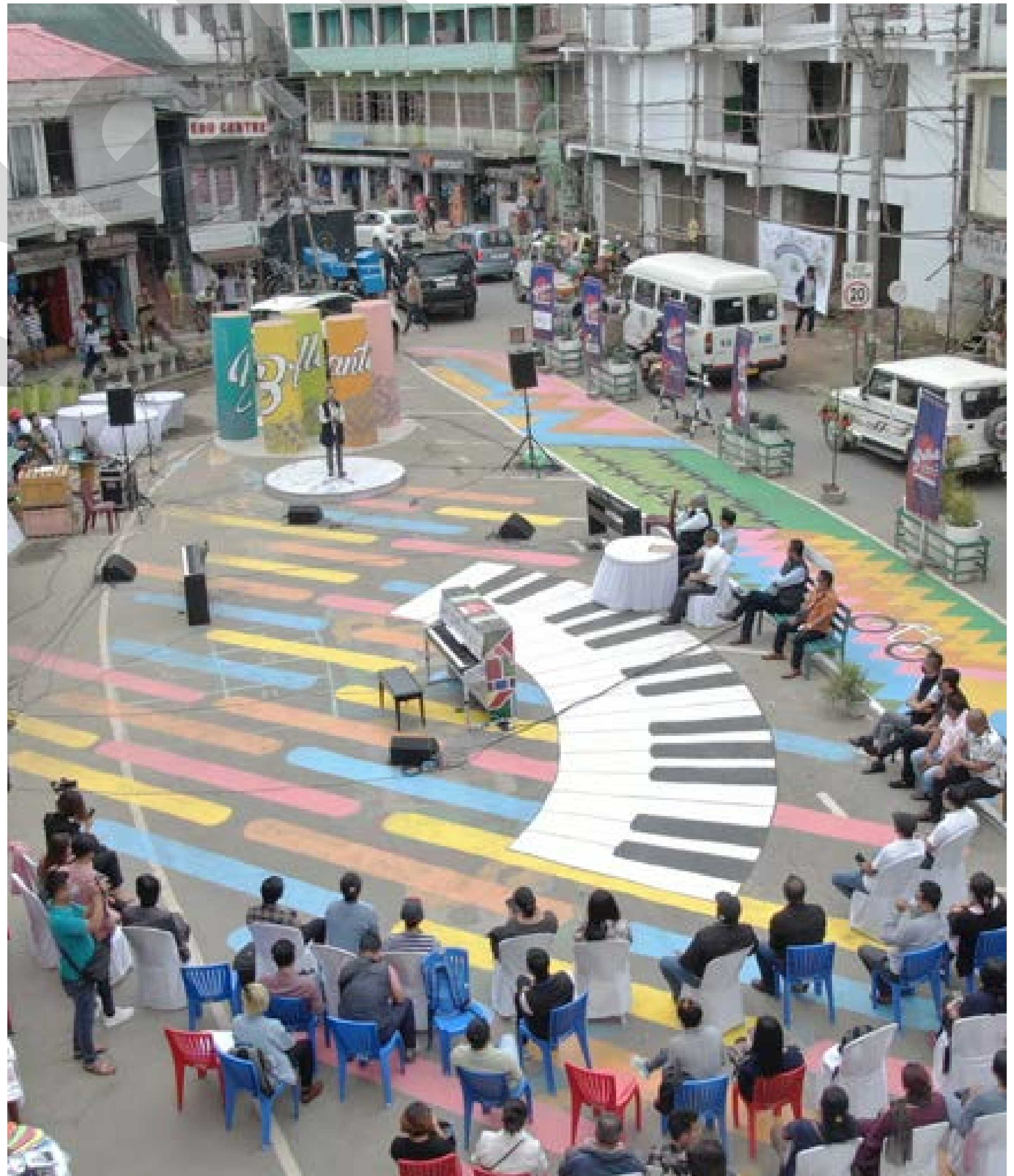
01 The project was initiated with a comprehensive tactical trial, showcasing the advantages of the proposed design to various stakeholders, including local residents, businesses, and authorities.

02 Bright coloured paints were used to demarcate the reclaimed space for people.

03 Movable planters and barricades were used to regulate the traffic movement.

04 To foster community engagement, a series of sensitisation events, encompassing cultural performances, health camps, and more, were organised in collaboration with the district administration, local NGOs, and business communities.

This tactical design approach fosters community engagement.



Temporary shading devices to ensure comfort for the people

PLAY ME I'M YOURS

Street performances attracted a high footfall

Traffic-calming measures to create a safe crossing

Play equipment for children surrounded by street vendor stalls

Project Journey

School children involved during the tactical trial execution process

01 Laying the foundation

State Government of Nagaland initiated the project emphasizing the need of safe pedestrian for the general public and providing space for local vendors to boost the local economy and promote local produce.

✓ Complete ✗ Not yet started ● Ongoing

- ✓ **Healthy Streets Policy**
- ✓ **Healthy Streets Cell**
- ✗ **Parking Policy**
- ✗ **Street Design Guidelines**

Discussion at site

- ✓ **Capacity-building workshops**
- ✓ **Site visits, Pune**

02 Building the team's muscle

The city organised several site visits to Bengaluru and Pune for peer-to-peer learning from other cities.

03 Doing things together

Kohima Village Council as a mediator

The Kohima Village Council acted as a mediator between the business owners and the implementation agency. Multiple meetings were organised with all the stakeholders to brief them about the project, highlighting its benefits for the people.

Stakeholder engagement

Stakeholders were engaged in the Pre & Post implementation process. In Kohima, about 80% of the land is under private ownership, therefore, reclaiming land for the public involved several stakeholders. The Kohima Municipal Corporation, along with the district administration organised intensive discussions with the public, land owners, and business communities, to convince them about the benefits of the project.

04 Monitoring, learning & improving

On-street parking management

In response to the shopkeepers demand for parking, an MLCP is constructed on one end of the street. However, it is underutilised and people prefer to park on the street.

Parking management system is in place with a third party contract & traffic police conducts regular parking drives to enforce it.

Traffic management

The Kohima Village Youth Organisation, which is a part of the Kohima Village Council, in coordination with the district administration and traffic police, helped in regulating traffic to resolve congestion issues during the implementation phase of the project. Alternate routes were identified and business hours were extended to ensure minimum disruption.

05 Permanent Implementation

After a well-executed tactical trial, which spanned several months and garnered unanimous stakeholder support, the City initiated permanent implementation of the project. The permanent implementation is executed as per the tactical trial and includes materials like concrete paver blocks for the reclaimed open space and steel for railings. The multi-level car parking (MLCP) is under construction as of September 2023. Street furniture and traffic-calming elements were added upon commission of the MLCP.

Challenges Accepted & Addressed

Overcoming knowledge gap: Due to the shortage of skilled labours and technical gaps for implementing particular works of the project, Kohima Smart City Project and Planning team visited different cities and attended workshop online & offline to strengthen their capacity and issue this problem.

Traffic management: On-street car parking was one of the key challenges of the project, however, the implementation of a real-time monitoring system via the Integrated City Control Center (ICCC) has streamlined the resolution of traffic-related issues by the traffic police.

Outcomes

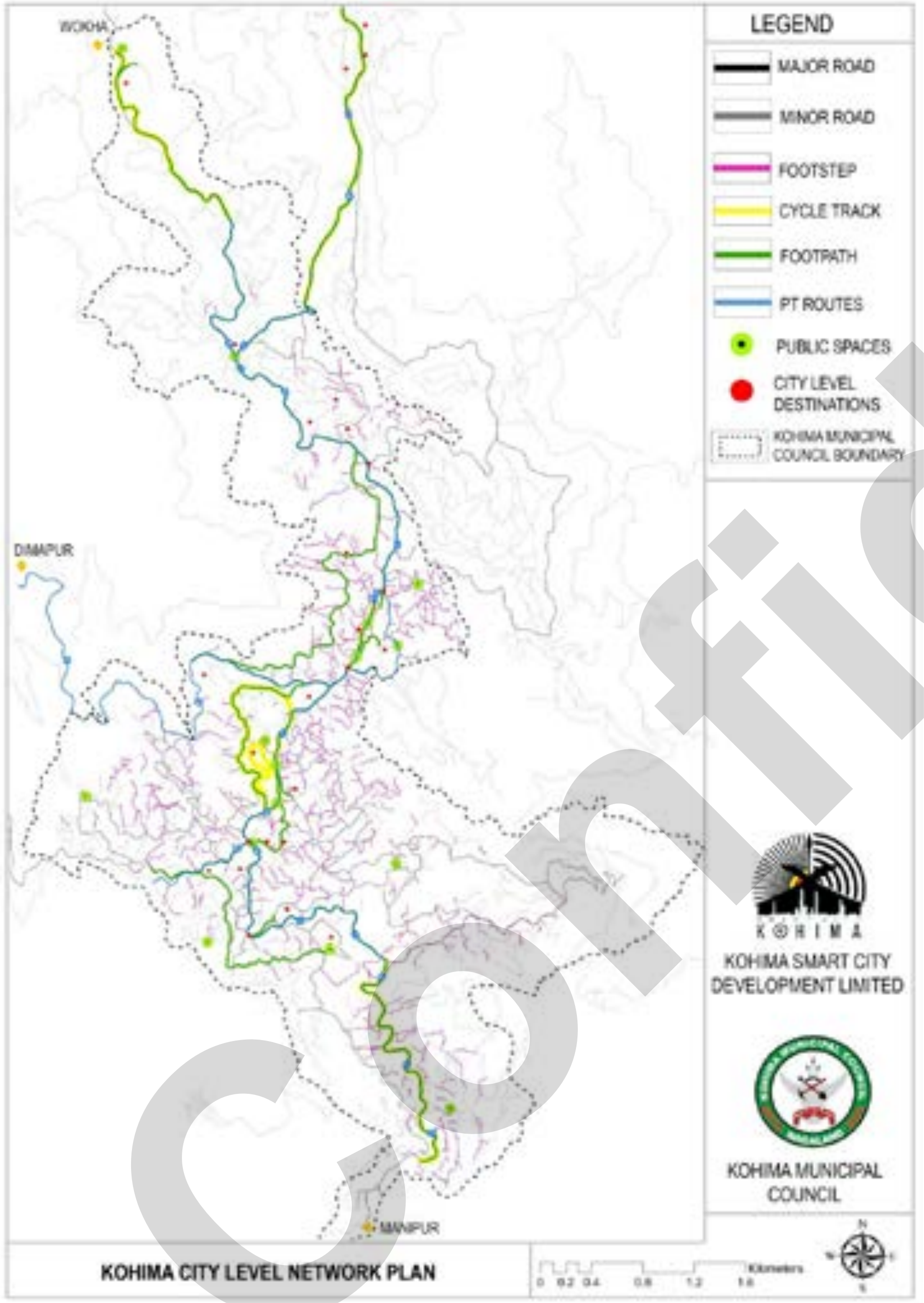
- Kohima Smart City has witnessed an enhancement in the market presence of street vendors and an overall improvement in walkability.
- This project has helped to reclaim 245 sqm of space for pedestrians and cyclists.
- **After the project implementation, the space observed a footfall of 2950-3000 people/ hour.**

Citizen Impact Stories

> *The Walkable Street project undertaken by Kohima Smart City has contributed immensely to the upliftment of the living standards of the citizens in multiple spheres of life. The dedicated pedestrian zones and traffic calming measures have encouraged people to walk while providing them safety.*

Mr. Vibalie Jack Ado Senior citizen, Kohima

Way
Forward


LEGEND
MAJOR ROAD
MINOR ROAD
FOOTSTEP
CYCLE TRACK
FOOTPATH
PT ROUTES
PUBLIC SPACES
CITY LEVEL DESTINATIONS
KOHIMA MUNICIPAL COUNCIL BOUNDARY
WOKHA
DIMAPUR
MANIPUR
KOHIMA
KOHIMA SMART CITY DEVELOPMENT LIMITED
KOHIMA MUNICIPAL COUNCIL
Kilometers
0 0.2 0.4 0.8 1.2 1.6
N
S

KOHIMA CITY LEVEL NETWORK PLAN

Scaling-up the transformation

Kohima's 3-year Action Plan aims to implement traffic-calmed streets in 5 neighbourhoods/wards after testing solutions through tactical methods.

Kohima Smart City aims to double the Healthy Streets Network and has planned the implementation in three phases, including the implementation of parking management in two model neighbourhoods.

The City also aims to initiate impact assessment of all the completed streets and continue hosting regular Healthy Streets campaigns to garner support.

> *Our vision for Kohima is to make it a walking and cycling friendly city for citizens of all ages, genders, abilities, and income groups by 2035. We aim to provide adequate physical infrastructure to increase the mode share of pedestrians and cyclists by 70% and eliminate road fatalities.*

……………

Walkable Streets

NAGALAND
IDBI BANK

EMERALD DENTAL CLINIC

5

Apsara Road

Jammu, Jammu and Kashmir

Typology
Local Street

ROW
20m

Length
13.6 km

Duration
June 2020- Jan 2022
(1 year 8 months)

Cost
₹46.22 Cr. overall

Nodal Authority
Jammu Smart City Limited

Implementing Partners
Hassan Road Construction Company Limited Srinagar

Project Highlight

Serving as a strategic model for planned development, this street is designed for all users, including pedestrians, local shop owners and serves as an incubator for young entrepreneurs of J&K.

Context of the Project

The Apsara Road, Gole Market area along with adjoining roads in Jammu holds regional significance, addressing commercial and institutional needs and congestion in older markets. This development project focuses on surveying to work on actual data, integration of parks with streets, parking management, designing vending zones and improving walkability on streets, strategically contributing to planned colony development.

Vision of the Project

To enhance market area, and its adjoining roads to create a more pedestrian-friendly environment, foster equitable public spaces, improve parking efficiency, and provide a delightful shopping experience.

Project Journey

Foundation Initiatives

The city adopted the "Complete Streets" concept, ensuring that streets are designed for all users, including pedestrians and addressing commercial as well as institutional needs of the people.

Key Actions

The participatory planning approach is adopted to gather feedback and ideas from residents, and shopkeepers making them active stakeholders in the development process. The city adopted the dynamic 'Test — Learn Scale' Approach. As part of the project implementation, the city tested street elements like lighting solutions, walkways through the "High Street" project. Development plan prioritizes the integration of existing amenities like parks, parking, and vending zones into the overall design.

Design Features

The design included well-maintained sidewalks for pedestrians and included textured surfaces, ramps, and clear signage for universal accessibility. Apart from the well-designed sidewalks, the design also incorporates energy-efficient streetlights, cobbled ways, wayfinding strategies, public seating and benches that encourage social interaction. The city also installed bollards and barriers for safety and to separate pedestrian areas from vehicle traffic where necessary.

Challenges

- Organizing public participation and stakeholder engagement as initially there were several pushbacks from the vendors. However, with efficient coordination between stakeholders and regular workshops the issue was resolved.
- Alignment of utility and other service ducts with the alignment of the street was initially challenging.

Outcome

- Ensured well-lit streets at night, enhancing safety and aesthetics.
- Provided green spaces, and shaded areas for pedestrians providing a livable environment.

6 Chappan Dukan

Indore, Madhya Pradesh

Typology
Local Street

ROW
30m

Length
0.2km

Duration
Dec 2019- Mar 2020
(4 months)

Cost
₹5 Cr.

Nodal Authority
Indore Smart City Limited (ISCL)

Implementing Partners
Indore Municipal Corporation, Indore Smart City Development Limited, 56 Dukan Association, Jila Prasharan, 9 Squares Consultants, AVi Enterprises.

Awards & Recognition
Clean Street Food Hub 2021, ISAC Award — Built Environment 2022, Smart Solution Award — 2022.

Project Highlight

Indore's first-ever street to be designated as a vehicle-free zone. ISCDL ensured a democratic design and implementation process through continual citizen engagement.

Context of the Project

Apart from being a smart city, Indore is considered the food hub of central India, and Chappan Dukan (56 Shops) is considered one of the significant projects of Indore Smart City that aligns with the ethos of Indore's culture. Chappan Dukan is a 200-metre-long series of shops serving delectable delicacies that are famous in Indore. Situated in the center of the city, this food street is served as one of the major tourist destinations. Before revamping, the street was in haphazard condition without any on-street parking and public amenities for the visitors. The street used to be a 30m wide motorized road, which was converted into a pedestrian-friendly street. The design and implementation process employed in the redevelopment of Chhappan Dukan can and should be replicated in all urban projects, specifically similar street markets in India.

Vision of the Project

Transforming a 30m wide vehicular road to a pedestrian-friendly street flanked by 56 shops.

Project Journey

Foundation Initiatives

In the year 2019, this project was initiated with the idea of transforming the space in front of the existing 56 Dukan into a pedestrian plaza. Through several stakeholder meetings and awareness sessions, the project was initiated.

Key Actions

The design of the pedestrianized Chappan Dukan was developed by the design consultants in cooperation with the key stakeholders. The completed design exercise took 10 days. Post the design exercise, the construction at the site was initiated. To complete the project, a target of 56 days was set on timer as display. The project incorporated multiple unique construction techniques like underground drainage system, use of dynamic lighting, use of tactile, anti skid tiles, ornamental plantation etc. The project was completed with 54 days without any hurdles. Currently Indore Smart City is handling the Operation and maintenance of 56 Dukan. The maintenance work is being executed by 1 supervisor, 4 sweepers, 1 electrician, 2 gardeners and 3 labors. The 56 dukan premise is currently in the process of being handed over to Indore Municipal Corporation for further O&M after November 2023.

Design Features

The design introduced theme-based sitting area like the social seating space, semi-open team enclosures, enclave seating and open area theatre seating. There is ample shaded green space for pedestrians. Benches and site furnishings at street corners increase pedestrian space, enhance users' experience as well provide a safe refuge for them as they wait to cross the street. In keeping with the main theme of the street, the façade of all shops was designed to reflect the splendour of street food. LED lights, designer pavement space, plantation, and greenery were added for further visual appeal. In addition, CCTV cameras are installed for surveillance and monitoring both for security.

Challenges

- One of the Key Challenges faced by the authority in developing 56 dukan was on boarding shop keepers as the development work was going to affect their business and convincing the shopkeepers to revamp the façade of the shops at their own expense.
- The shops were open throughout, hence it was difficult to manage footfall of around 7000 people every day with the ongoing work.
- Executing the site on ground within 56 days, however, with efficient coordination between ISCL and consultants and the contractors, the project was timely implemented.

Outcome

- The area has seen a huge increase in footfall from 6,000 to 15,000 per day.
- The city stands to gain in revenue a betterment charge calculated at 5% of guideline value in 3 years, on-street and off-street parking charges, and a premium on digital advertisement rights for 10 years.
- The revenue from Chappan Dukan is around 40% of the annual Rs. 5000 crores. turnover from food markets in the city. The project has reduced conflicts between vehicles and pedestrians.
- 4050 sqm of space was reclaimed for pedestrians.

7 Street Bazaar

Solapur, Maharashtra

Typology
Sub Arterial Street

ROW
8.5m- 9m

Length
350 m

Duration
June 2019- Nov 2020
(1 year 6 months)

Cost
₹3.05 Cr. overall

Nodal Authority
Solapur City Development Corporation Limited

Implementing Partners
Solapur City Development Corporation Limited, SGS India Pvt. Ltd. (design consultant), M/ S Anil S Patil (contractor)

Project Highlight

Over 2000 sqm of space was reclaimed as public space while proving an economic opportunity to the local artisans.

Context of the Project

Under the aegis of Smart Cities Mission, the Solapur City Development Corporation Limited developed the Street Bazaar to provide economic opportunities for the local artisans. The project has been envisioned to host a 'night market' for the artisans and vendors to showcase their work, while giving them a platform to sell artworks.

Vision of the Project

The project aims to foster seamless links among people, artisans, markets, and services, with a primary focus on enhancing local economy and promoting walkability.

Project Journey

Foundation Initiatives

Aligning to the city's vision towards pedestrian friendly non-motorized street, this street is developed. This streetscape project was strategically implemented to promote healthy street for people.

Key Actions

Initially the street was underutilized and thus devoid of basic amenities. Looking into this gap, the city revitalized this area through streetscape design exercise, while providing pedestrian walking areas, vending kiosks, streetlighting, segregated waste bins, and smart toilets for the citizens. At present the operation and maintenance is being conducted by Solar City Development Corporation Limited.

Design Features

The project incorporated design elements such as cycle tracks, pedestrian pathways, underground utilities, solar-powered LED streetlights and planter beds with seating facilities. The design also incorporates vending kiosks for vendors and stepped seating that encourages social interaction.

Challenges

During the execution of the project encroachment of street vendors along the stretch posed challenges.

Outcome

- The night market has helped in the revenue generation of the shops that are aligned along the street bazaar.
- The street has become prime hotspot for citizens, as it attracts more visitors which benefits the artisans and the local economy.
- The dedicated pedestrian walkways and cycle ways have encouraged people to walk and cycle and have increased outdoor time substantially.
- 1900 sqm space was reclaimed for the pedestrians and street vendors

8 Mahila Market

Belagavi, Karnataka

Typology
Local Street

ROW
20m

Length
0.2km

Duration
June 2020- Jan 2022
(1 year 4 months)

Cost
₹12 Cr.

Nodal Authority
Belagavi Smart City Limited (BSCL)

Implementing Partners
Belagavi City Corporation, Belagavi Smart City Limited Technical team,, Karnataka Urban Infrastructure Development and Finance, Tractebel Engineering Pvt Ltd.

Awards & Recognition
Smart City Council of India Award (Smart and Successful Citizen category)

Project Highlight

The place was formerly a dumpyard that has been transformed into a well-maintained street plaza with shops owned by women entrepreneurs.

Context of the Project

The Mahila Market—Khau Katta is a must-visit spot in the city of Belagavi to enjoy street food with the best hygiene. The project aimed to create a dedicated space for women entrepreneurs, addressing key challenges and supporting their ventures. It sought to empower women, enhance the local community, and boost the economy by providing networking opportunities, capacity-building programs, and challenging social norms.

Vision of the Project

The project envisions a vibrant street featuring a spacious pedestrian plaza, eateries, and opportunities for women to own and operate shops, advancing women's economic empowerment.

Project Journey

Foundation Initiatives

The city adopted the Street vendor policy act in 2014. Based on the policy, the project was initiated with an aim to address several key challenges and meet the specific needs of women entrepreneurs by providing a dedicated space that would encourage and support their entrepreneurial ventures.

Key Actions

City Level Advisory Forum was formed for the Advisory role and stakeholders' engagement. Based on the recommendation the design proposal was prepared, which was approved by the competent authority for the execution on the site. The participation of the stakeholders including public opinion played an important role in the successful selection, planning, development, and completion of the sub-projects. Effective communication channels were implemented, such as online surveys via the ULB's website and social media, encouraging public participation and crowdsourcing ideas through virtual events. During the implementation, a common traffic calming measure was taken improving road safety and creating a more pedestrian-friendly environment. The design of the retaining wall was carefully planned to ensure stability and durability, as well as aesthetic appeal. In addition to the retaining wall, fencing was also installed to enhance safety and security in the area. The footpaths were designed to be wide and well-maintained, with proper lighting and signage to ensure visibility and improved accessibility for safer movement while benefiting both pedestrians and vendors.

Design Features

The street plaza features e-toilets, decorative poles, lighting fixtures designed to enhance the overall aesthetics, tensile roofing for shade and railing for safety. Further, the space introduced well-designed pedestrian crossings have helped reduce conflicts between pedestrians and vehicles, improved pedestrian accessibility and promoted walking as a mode of transportation.

Challenges

- In the initial stage one of the key challenges was interdepartmental coordination with different departments.
- The challenges that have emerged during peak hour traffic congestion after project completion, cities had to adopt proactive measures like adopting of ITMS to tackle this issue effectively.

Outcome

- The project is oriented towards women empowerment and entrepreneurship, the majority of which are first-generation entrepreneurs.
- The project boosts the local economy with weekend revenue often exceeding ₹ 2.5 lakh.
- Total of 52 shops with daily earnings almost exceeding ₹2,000 each.

9

Jew Street

Kochi, Kerala

Typology
Local Street

ROW
4m and above

Length
13.81km

Duration
Dec 2020- Dec 2021
(1 year)

Cost
₹21 Cr.

Nodal Authority
Cochin Smart City Limited (CSML)

Implementing Partners
Cochin Smart City Limited (CSML), Kochi Municipal Corporation, IPE Global Limited (PMC), Deens Group

Project Highlight

This pedestrian friendly street is the main link connecting prominent tourist locations of Mattancherry Palace to Synagogue in Kochi Smart City.

Context of the Project

Jew Street is a part of CSML's Area Based Development Plan that has transformed 30Km of Fort Kochi and Mattancherry's streets into pedestrian-friendly zone. The street has become a venue for cycling events and heritage tours. Earlier the street was plaqued by haphazard parking and traffic congestion. Considering its unique nature as a heritage and market street with high footfall, the project intends to develop pedestrian-priority streets with blend of traditional and contemporary architectural design element.

Vision of the Project

A town steeped in historical significance, now stands as an essential destination for global travelers. It aims to connect all streets, bolstering the area's basic infrastructure and amenities, thus creating a vibrant cultural landscape where heritage and modernity coalesce.

Project Journey

Foundation Initiatives

The city has set up a up a Neighbourhood Development Programme to scale up the street development in the city. An apex committee collaborated with key stakeholders to implement micro-level strategies.

Key Actions

In the initial stage, regular consultations and open dialogue with local shopkeepers were conducted. A national-level Design competition was organised that served as a catalyst for profound insights. The entire street was re-paved with cobblestones including the drain covers. All the utilities are designed to be underground effectively preventing water stagnation and removing the visual clutter by eliminating over-head cable wires. A 3 year DLP (defect liability period) included in the project scope.

Design Features

Design features include antique-style cast iron armchairs and lamp posts, signages, dustbins. Wide cobbled footpath and dedicated cycle ways.

Challenges

- Through continuous meetings with stakeholders such as residents' association, ward councilors, the protest from the shopkeepers during the construction of footpaths, was resolved.
- During the excavation there were few breakages of existing underground utilities, which was replaced with the newly constructed utility ducts.
- Traffic congestion was resolved by allowing one way traffic flow on the street.

Outcome

- The well connected pedestrian ways have encourages people to walk, while providing safe walkways for children and elder people.
- More than 100 sqm of space was reclaimed for pedestrian after the implementation of the project.

10 Smart Street

Bhopal, Madhya Pradesh

Typology
Sub Arterial Street

ROW
3m- 4m

Length
90 m

Duration
July 2017- March 2021
(3 year 9 months)

Cost
₹7.32 Cr. overall

Nodal Authority
Bhopal Smart City Development Corporation Limited

Implementing Partners
Bhopal Smart City Development Corporation Limited, Bhopal Municipal Corporation, M/s Trishul construction Company

Project Highlight

Integrating 'tactical urbanism' to provide better walkable streets with vibrant and safe public spaces.

Context of the Project

Being located in the financial hub of the city with bustling crowds of the city, the MP Nagar houses several government offices, business offices and educational centres. Under the aegis of Smart Cities Mission, the Bhopal Smart City Development Corporation Limited and Bhopal Municipal Corporation, transformed the stretch from Board Office to Jyoti Talkies squares into a walkable pedestrian friendly space.

Vision of the Project

The project aimed at re-thinking existing public spaces and designing them to suit the needs of the people.

Project Journey

Foundation Initiatives

Aligning to the city's vision towards smart urbanism, the city integrated tactical urbanism to create vibrant, sustainable, and livable urban spaces that provide a good quality of life to citizen. The city adopted the 'complete street' model to execute this project.

Key Actions

The project initiated with a participatory planning approach. Citizen engagement and stakeholder consultation workshops specially with local hawkers/ vendors were organised. Steering Committee was formed to streamline project challenges and facilitate the stakeholder engagement. The several engagement workshops provided a platform where citizens and the local vendors shared their inputs for the design of the space. During the construction phase, prefabricated tensile structures were used and were customized as per the requirement of the space. All the designs were planned according to the Indian Standard Code.

Post the construction and implementation, the project is now being operated and maintained through a PPP model for a period of 10 year, with a minimum expected revenue is ₹ 47,38,044 per year.

Design Features

As the part of the design, prefabricated tensile membrane structures were used for the vending kiosks and food stalls. The project also included widening of 2m pedestrian walkways, smart bicycle parking area, car parking facilities, local hawker's corner, open recreation area, a bus interchange terminal etc. All the utilities such as the electricity supply lines, drainage pipes have been kept underground. Further, the entire has been illuminated by solar lights, for which solar panels have been installed at 4 areas.

Challenges

- There was a major pushback from the local hawkers and the florists' store, which was initially resolved through rigorous stakeholder consultation.
- Further, during the construction stage, the site was encroached by the street vendors which resulted delay. To address this issue, the city corporation and the SPV immediately relocated these street vendors to newly designed video kiosks. The relocation also helped the street vendors to revive their business without any financial loss.

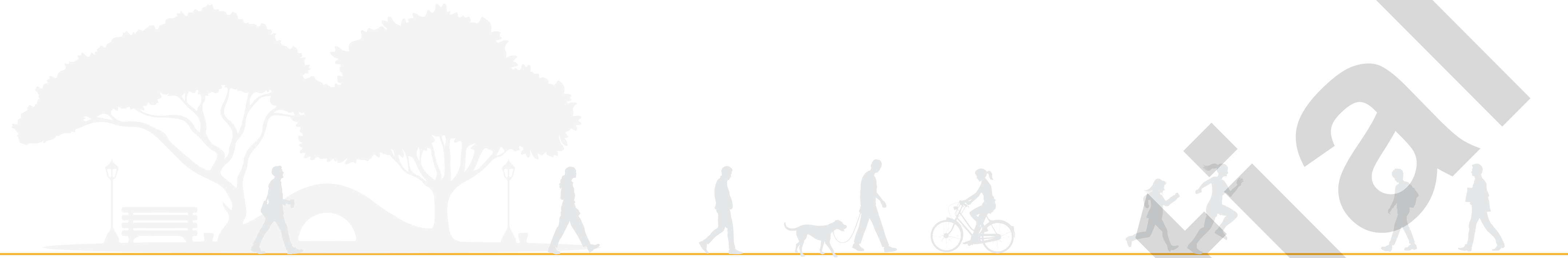
Outcome

- The project provided better access and provided wider pedestrian pathways that increased walkability among the citizens.
- The food courts and the kiosks facilitated in generating revenue for the vendors and boosted the local economy.
- The rentals of the parking facility also generated revenues for the smart city.
- The recreational open green space boosted the social interaction.
- 833 sqm space was reclaimed for the pedestrians and street vendors

3

Pillars of change for future streets

Common Challenges Faced by Cities in Transforming Streets:
A Path to Overcoming Barriers



In the journey towards sustainable urban development and the transformation of city streets, cities across India have encountered several common challenges that hinder progress. These challenges, while daunting, are not insurmountable. By recognizing these hurdles and adopting innovative strategies, cities can pave the way for more successful and impactful street transformation projects.

Lack of Long-Term Vision and Roadmap for Scaling Up Low-Carbon Mobility Initiatives

One of the foremost challenges faced by cities is the absence of a comprehensive, long-term vision and roadmap for scaling up low-carbon mobility initiatives. While individual projects may yield positive results, without a broader strategic plan, cities risk fragmented efforts and missed opportunities for synergy.

To address this challenge, cities must invest in robust urban mobility master plans that outline clear goals and strategies for sustainable transportation. These plans should provide a roadmap for gradually transitioning towards low-carbon mobility solutions, ensuring that projects are aligned with a broader vision for a sustainable urban future.

Low Government Capacity for High-Quality Detailed Project Reports (DPR)

Accessing funding from development agencies is often contingent upon the submission of high-quality Detailed Project Reports (DPRs). Unfortunately, many cities, particularly Tier II cities, lack the in-house capacity to prepare such reports or hire experienced consultants to guide and review their work.
< To rephr

To overcome this capacity constraint, cities must seek technical assistance from experienced organizations and development partners. This assistance can help unlock potential funding opportunities and ensure that projects meet the rigorous standards set by development agencies. Simultaneously, there is a pressing need to invest in capacity development for the city's engineering teams and local contractors to ensure the high-quality implementation of projects.

Lack of Political Will and Personnel Changes

A critical challenge that cities face is the lack of consistent political will and frequent transitions of key officials. These shifts in leadership can disrupt the continuity of projects and hinder long-term progress. Additionally, there is often a shortage of qualified personnel within the government to lead and administer complex urban transformation projects.

To address this challenge, cities should focus on building resilience within their city governments. This can be achieved through partnerships with local organizations and institutions that can provide continuity and expertise even during periods of political transition. Furthermore, investing in training and capacity-building programs for government officials is essential to ensure a pool of qualified individuals who can lead sustainable urban initiatives.

The transfer and transition of government officials can also disrupt the long-term sustainability of projects. When key individuals responsible for driving initiatives change, it can lead to a lack of continuity and institutional memory. To mitigate this challenge, cities should adopt policies, guidelines, and plans that mandate consistent budget allocation to low-carbon projects, irrespective of changes in leadership. By institutionalizing a commitment to sustainability, cities can ensure that projects continue to receive the support and funding they need, regardless of administrative shifts.

Inability to Enable Integrated Planning and Implementation

Efforts to transform streets often involve multiple agencies, each with its own priorities and mandates. The lack of seamless integration and coordination between these agencies can result in poor-quality implementation and the suboptimal use of financial resources.

To tackle this challenge, cities must create unified platforms for key stakeholders, fostering a culture of collaboration and coordination. Establishing inter-agency task forces and shared project management systems can help streamline the planning and execution of street transformation projects. This integrated approach ensures that the various components of a project work together harmoniously, optimizing results and minimizing inefficiencies.

Ignoring Gender Inclusivity in Mobility Solutions

Gender inclusivity is a critical yet often neglected aspect of urban mobility solutions in Indian cities. Failing to consider the unique mobility needs of women and girls hampers their access to work, education, healthcare, and social activities. This exclusionary approach directly affects half of the urban population.

To bridge this gap, cities must prioritize participatory planning processes that actively engage women and girls in the design and development of mobility solutions. This ensures that their perspectives and needs are incorporated into projects, making urban spaces safer and more accessible for all.

Lack of Public Awareness and Consistent Support

Public awareness and consistent support are essential for the success of low-carbon mobility projects. Inadequate public engagement can lead to undesirable travel behavior and pushback against projects and policies that promote sustainability.

To address this challenge, cities must invest in robust public awareness campaigns that educate residents about the benefits of low-carbon mobility and involve them in decision-making processes. Building a sense of ownership and community support is crucial for the acceptance and success of transformative street projects.

In conclusion, while cities across India face common challenges in their journey to transform streets, these challenges offer opportunities for innovation and improvement. By adopting proactive strategies, investing in capacity-building, and fostering collaboration, cities can overcome these hurdles and create more sustainable, vibrant, and inclusive urban environments for their residents.

4

Funding & Financing of Street Transformations

Why invest in **Healthy Streets?**

- To reduce socio-economic costs incurred to cities
- To nurture a thriving local economy
- To attract employers and boost workforce participation
- To reduce recurring operations & maintenance costs

To reduce socio-economic costs incurred to cities

- **Prevent road crashes by designing safe streets and intersections**
  A life lost in a road crash in India incurs ~91 lakhs worth of socio-economic costs. Road crashes cost Indian economy about 3-5% of GDP each year
  Source: MoRTH 2018, World Bank 2022

- **Build resilience against disasters by integrating public utilities and services in street design**
  The overall economic loss due to Chennai 2015 floods is estimated at ~Rs. 15,000 crores
  Source: ASSOCHAM

- **Improve citizens' health by promoting walking & cycling**
  India can incur an economic loss of $4.58 trillion during 2012—30 due to non-communicable diseases.
  Source: Benefits of cycling in India, TERI

To nurture a thriving local economy

- **Boost retail sales by improving the public realm**
  High street walking, cycling, and public realm improvements can increase local sales by upto 30 percent.
  Source: TfL 2014, Lawlor 2013

- **Free up disposable income by reducing travel costs for citizens**
  One car trip (average 7km, 5 days/ week) less for one month means Rs.1,500 saved and 144gms CO emissions reduced
  Source: Central Pollution Control Board

To attract employers and boost workforce participation

- **Reduce economic loss to employers by preventing congestion on streets**
  Bengaluru IT companies suffered a loss of Rs. 225 crore in a day as their employees were stuck in traffic for around five hours.
  Source: Hindustan Times

- **Encourage women workforce participation by ensuring safety**
  Safe infrastructure is a contributor for advancing gender equality in India which could add ~$700 billion of GDP in 2025
  Source: Elsa Marie D'Silva, Mckensy Report

To reduce recurring operations & maintenance costs

- Eliminate the costs of road-cutting and frequent re-laying of roads by integrating underground and aboveground utility management with street design

- Ensure long-lasting street infrastructure with minimal expenses to Urban Local Bodies by including 'Defect Liability Period' under the executing contractor

How much investments would **Healthy Streets initiatives require?**

Abstract costs for street redevelopment

Based on the scope of work, Healthy Street works can be categorised into:

A COMPLETE RECONSTRUCTION

Rs. 12 - 18 cr/km

Involves **complete reconstruction** of the NMT zone, equipped with footpaths, cycle tracks, designated parking, elaborate placemaking, landscaping, and complete new underground utility laying.

These are usually arterial or sub-arterial streets.

B PARTIAL RECONSTRUCTION

Rs. 5 - 8 cr/km

Involves **partial reconstruction** of the NMT zone including footpath (cycle track could be painted or excluded), designated parking and seaters. Placemaking is not as elaborate as type A.

There are usually sub-arterial or collector streets

C MINIMUM RECONSTRUCTION

Rs. 1 - 3 cr/km

Minimum reconstruction - maximum use of existing infrastructure and materials. The prime focus is creating usable, and safe streets. Utilities are not considered - or minimal component is considered.

These are usually collector or local streets

Pondy Bazar Ped Plaza, Chennai

A

₹18 cr/km | **32m** ROW | **2018**

Walking infrastructure- **YES**
Full reconstruction - Granite Finish

Cycling Infrastructure- **NO**

Parking bays- **YES**

Placemaking- **YES**
Seating clusters and play elements (Both sides)

Utilities - **Yes.**
Underground trenches for telecom, electrical, and stormwater drain. Aligning electrical boxes, and lighting

Carriage way- **NO**

Maintenance- **NO**

Jangali Maharaj Road, Pune

A

₹10 cr/km | **30m** ROW | **2016**

Walking infrastructure- **YES**
Full reconstruction - Paver blocks

Cycling Infrastructure- **YES**
Full reconstruction - Concrete finish

Parking bays- **YES**

Placemaking- **YES**
Seating clusters, designated vending and play elements (Both sides)

Utilities - **Yes.**
Shifting all utilities underground.

Carriage way- **NO**

Maintenance- **YES**
5 year maintenance

Pashan Sus road,
Pune

B

₹5 cr/km | **30m** ROW | **2022**

Walking infrastructure- **YES**
Full reconstruction - Paver blocks

Cycling Infrastructure- **YES**
At grade - Tar Finish

Parking bays- **YES. Partially**

Placemaking- **YES**
Seating clusters and play elements (One side)

Utilities - **Yes.**
Shifting utilities underground

Carriage way- **NO**

Maintenance- **NO**

Sardar Patel road,
Chennai

B

₹15 cr/km | **24m** ROW | **2020**

Walking infrastructure- **YES**
Full reconstruction - Granite Finish

Cycling Infrastructure- **NO**

Parking bays- **NO**

Placemaking- **NO**

Utilities - **Yes.**
Underground duct for OFC telecom cables

Carriage way- **NO**

Maintenance- **NO**

Raman Street,
Chennai

C

₹2 cr/km | **15m** ROW | **2018**

Walking infrastructure- **YES**
Full reconstruction - Rubber moulded pavers (One side)

Cycling Infrastructure- **NO**

Parking bays- **NO**

Placemaking- **NO**

Utilities - **Yes.**
Underground HDPE duct for OFC telecom cables

Carriage way- **NO**

Maintenance- **NO**

Mooparappan road,
Chennai

C

₹1.6 cr/km | **15m** ROW | **2018**

Walking infrastructure- **YES**
Full reconstruction - Concrete finish

Cycling Infrastructure- **NO**

Parking bays- **NO**

Placemaking- **NO**

Utilities - **Yes.**
Underground HDPE duct for OFC telecom cables

Carriage way- **NO**

Maintenance- **NO**

How Can We **Optimise Costs?**

1 Prioritize **complete reconstruction** only for high-impact streets

At the cost of implementing complete reconstruction (Type A) for 1 km, you can transform upto 10+ km of streets through minimum reconstruction (Type C) with safe footpaths and traffic calming.

2 Align street redevelopment with **utility repair/ replacement** works

Through proactive collaboration with line agencies and utility mapping prior to project conception, we can reduce upto 20% of project cost.

Phase out the implementation of street redevelopment in alignment with the schedule of shifting/repairing utilities. reconstruction (Type C) with safe footpaths and traffic calming.

3 Do not include **relaying of asphalt** unless necessary

By adopting clean project construction and management practices, you can save upto 30% of costs by avoiding carriageway works.

Interventions to improve safety & accessibility like traffic calming, table top crossing and pedestrian refuges should be prioritised.

Here Are The **10 Ways To Fund And Finance Healthy Streets**

1 National- or State-level funds

These are one-time/recurring large-scale budget allocations for capital investments on urban infrastructure/sustainable mobility interventions from the national- or state governments.

To optimise on these funds, cities could package Healthy Streets projects to improve three key urban infrastructure challenges - mobility, utility, and liveability.

Few examples of **National-level funds:**

- *Smart Cities Mission Fund*
- *National Clean Air Programme Fund (NCAP)*
- *Nirbhaya Fund*
- *Gati Sakthi Scheme*

Few examples of **State-level funds:**

- *Urban Road Infrastructure Fund (Tamil Nadu)*
- *City Infrastructure Development Fund (Assam)*
- *Urban Infrastructure Fund (Maharashtra)*

Chennai allocated ~**110 cr** of Smart Cities Mission Fund for developing walking- and cycling-friendly interventions.

2 Healthy Streets Fund

Set up a Healthy Streets Fund as part of your city's annual budget. Prioritise recurring funding allocation for roads and related amenities, from your city's own-tax revenue or partly redirect funds from the state department for road construction.

In the long-term, set up a Healthy Streets Cell/Department with dedicated internal capacity to implement high-quality infrastructure.

An example of city-level **Healthy Streets funds:**
*Chennai's **Bus Route Roads Department** was allocated ~90 crores was spent on implementing footpaths in 2019-20.*

*Over the last 7 years through a dedicated fund, Chennai has implemented **150+ km** of footpaths across the city.*

3 Development funds from political representatives

Every ward councillor and constituency representative (MLA/MP) shall have access to a **dedicated, recurring annual development funds.**

While these may not be sufficient for projects that require complete reconstruction, it could be optimised for complementary interventions: street lights, traffic calming measures, etc

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Few examples:

- *Member of Legislative Assembly Constituency Development Scheme (MLACDS) in Tamil Nadu - available as Rs. 3 Cr/ yr*
- *Member of Parliament Local Area Development Scheme (MPLADS) - available upto Rs. 5 Cr/ yr*
- *Councillors' Ward Development Fund in Chennai - Rs. 35 lakhs / yr*

4 Development funds from political representatives

Grants from development agencies are generally available and allocated to a limited number of cities or projects with focused goals.

An effective pitch would help scaling up Healthy Streets through **grants for technical assistance** *(DPRs, Feasibility studies, hiring experts, etc.).*

An examples:
City Investments to Innovate, Integrate and Sustain (CITIIS) Challenge - 2018 offered grants for procuring technical assistance

Cities including Amritsar, Dehradun, and Hubballi Dharwad optimised on CITIIS Challenge - 2018 to implement high-quality sustainable mobility projects.

5 Opportunities from global development sector

Other than grants routed through the national/state departments, various global development agencies also offer opportunities for capacity building and technical support through direct 'call for proposals'.

While the funding sum could be limited, they enable access to expertise and could showcase your work at an international forum to attract more investments in the future.

An examples:

- *GDCI's Streets for Kids - Leadership Accelerator Program*
- *Bloomberg Initiative for Cycling Infrastructure*

Thrissur, Kerala is part of the **GDCI's Streets for Kids - Leadership Accelerator Program 2022**, which covers capacity building and implementation grants up to ~0.2 crores

Global Designing Cities Initiative

6 Revenue from Travel Demand Management (TDM)

Progressive TDM policies should be based on incentivizing sustainable mobility, as much as disincentivizing polluting private modes.

Pricing-based regulation could persuade long-term behaviour change, while offering short-term revenue source for strengthening street infrastructure.

(Note: For successful implementation of on-street parking management, curb alignment and presence of footpaths are crucial. Hence, the both should go hand-in-hand.)

An examples:

- *Parking charges*
  (Conservative estimates show that Bengaluru can unlock approx. Rs. 300 cr/year through effective on-street parking management)
- *Congestion pricing*
- *Green Tax*

Bengaluru's Parking Policy 2.0 commits to ring-fence the revenue from parking management for implementing NMT-friendly infrastructure.

7 Land Value Capture (LVC) Mechanisms

Land value capture can promote inclusive and equitable urban development, by accounting the increase in property value due to public infrastructure, levying relative charges, and reinvesting them for high-quality public infrastructure.

The impact of street transformation projects are not only is limited to the right-of-way, but extends to change business activities, service access for residents, and change the lives of people in that neighborhood.

Hence, it is important to look through the real estate perspective and optimise the benefits.

Few examples:

- *Infrastructure and Amenities Charges*
- *Station Connection Fees*
- *Betterment Charges*
- *Impact Charges*

Chennai opitimises ~100 cr of their Infrastructure and Amenities Fund for implementing Healthy Streets initiatives under Mega Streets Project.

8 Contributions from non-governmental partners

This reduces the dependency on city budgets for small-scale neighbourhood-level interventions. This also provides the opportunity for catalysing community-driven transformation.

Contributions from non-governmental partners could be tapped into for intersection redesign, tactical urbanism tests, placemaking projects, and pilot street segments.

An examples:

- *Corporate Social Responsibility Funds*
- *Public donations*

One Green Mile project in **Mumbai** was implemented with contributions of from private sector

9 Market-based financing mechanisms

Market-based tools will help cities increase and diversify own-source revenues. It gives direct access to capital market and avoid unplanned growth or deficient infrastructure supply.

Note: A total of Rs 1,747 Crores ($291 Million) of debt across 27 projects has been raised by municipalities in India since 1997. (Source: Janaagraha)

Few examples:

- *Public Private Partnership based on Out-of-Home advertising potential*
- *Municipal Bonds & Credit rating: Debt securities issued by the cities directly or pooled by state government*
- *Carbon Credits and trading*

VMC'S 'successful listing' of municipal bond now case study for US Treasury

Indore Municipal Corporation's green bonds oversubscribed 5.91 times on final day

ALL ABOUT
MUNICIPAL BONDS

10 Low- or zero-interest loans *(Soft loans)*

Low- or zero-interest loans could help in increasing the capital investments for resilient urban infrastructure. This also opens up opportunities to collaboratively work with Development Banks and tap into international expertise.

Cities could package street redevelopment works with other projects including Social Housing, Metro/other public transport infra, etc

An examples:

- *City Investments to Innovate, Integrate and Sustain (CITIIS) Challenge - 2018 (Agence Française de Développement (AFD) and the European Union (EU)*
- *Chennai City Partnership (World Bank)*
- *Project Readiness Financing (PRF) loan - Nagaland (Asian Development Bank)*

Chennai has collaborated with the World Bank for transforming arterial and sub arterial streets, through the Chennai City Partnership.

Enabling Impactful Healthy Streets: **Lessons from Frontrunner Cities**

Creating impactful Healthy Streets is a collective effort that involves careful planning, effective resource allocation, and community engagement. Frontrunner cities like Chennai, Pune, Coimbatore, Delhi, Ahmedabad, Mumbai, and others have set a precedent for creating such transformative urban spaces. In this chapter, we delve into the six fundamental principles that enabled these cities to create Healthy Streets that resonate with their communities.

Laying the Foundation: Policies, Plans & Guidelines

Creating Healthy Streets begins with a solid foundation. Frontrunner cities like Chennai, Pune, and others understood that co-creating a common vision and initiating necessary institutional reforms were crucial to ensure the resilience of their initiatives.

Healthy Street Policies & Design Guidelines:

These cities have been at the forefront of adopting progressive policies to advance their vision for promoting walking and cycling. It wasn't just about words on paper; it was about translating those policies into actionable change on the streets. To strengthen these policies, they also implemented Street Design Guidelines, City-wide network Plans, and Impact Assessment frameworks. These guidelines provided a framework for city planners, designers, and engineers to create streets that prioritize the health and well-being of the community.

Walking & Cycling Network Plans with 3-Year Action Plans:

Infrastructure works best when it's connected, not in isolated segments. Recognizing this, frontrunner cities took the initiative to create long-term, city-wide network plans that seamlessly integrated walking and cycling paths into their urban fabric. Pune, for example, developed its Comprehensive Bicycle Plan, while Chennai embarked on the Mega Streets Programme, aiming to transform over 110 kilometers of streets across six neighborhoods. These comprehensive plans ensured that every part of the city was connected and accessible for pedestrians and cyclists.

Healthy Streets Design Cell & Apex Committee:

Implementing such transformative changes required dedicated teams and cross-functional collaboration. Frontrunner cities formed Healthy Streets Design Cells and Apex Committees to oversee the implementation of their Healthy Streets initiatives. These teams brought together professionals with diverse backgrounds, including urban designers, data experts, transport planners, and community engagement specialists. The diversity within these teams promoted innovative solutions and a holistic approach to urban transformation.

In summary, laying the foundation for Healthy Streets involved crafting policies, design guidelines, and comprehensive network plans while fostering collaboration through dedicated teams. These frontrunner cities understood that to build a healthier, more sustainable urban environment, the first step was to set a strong foundation grounded in visionary policies and meticulous planning.

Sourcing Your Funds: Budgeting & Financing Healthy Streets

Planning your finances and identifying sustainable funding sources are key elements in ensuring the long-term success of Healthy Streets initiatives.

Chennai: Chennai, a frontrunner in the Healthy Streets movement, took a multifaceted approach to funding its street initiatives. The city tapped into the National Clean Air Program Funds, a government-backed initiative aimed at improving air quality in urban areas. Additionally, Chennai leveraged the TURIF program, a state-level road infrastructure program, to fund specific street projects. Furthermore, the city secured funding from the Nirbhaya Fund, which supports initiatives related to the safety and well-being of women, and attracted investments from international financial institutions like the World Bank.

Pune: Pune, another exemplar in the realm of Healthy Streets, demonstrated a remarkable commitment to financing their initiatives. The city allocated more than 50% of its annual transportation budget toward improving walking, cycling, and public transport infrastructure. This dedicated funding allocation reflected Pune's vision of creating streets that prioritize the health and mobility of its residents.

In essence, these frontrunner cities recognized that the financial aspect of Healthy Streets is a critical component of their success. By diversifying funding sources, Chennai and Pune ensured that their initiatives were financially sustainable and capable of delivering long-lasting benefits to their communities.

Hiring a Competent Team: Designers, Contractors, & Project Managers

Embracing the right design principles and ensuring high-quality implementation were instrumental in securing long-term benefits from urban design projects.

Hiring competent consultants:

These cities stood out for their commitment to delivering high-quality streets and public spaces. One of the key factors behind their success was their ability to hire competent designers and work with skilled local contractors. By doing so, they ensured that the designs were not just aesthetically pleasing but also functionally robust and capable of withstanding the test of time.

Prioritizing good design:

These cities emphasized the importance of design by preparing and publishing competitive Requests for Proposals (RfPs). This approach attracted top-tier design talents, allowing them to bring innovative ideas and creative solutions to the table. By prioritizing design excellence, these cities ensured that their streets were utilitarian as well as visually appealing, enhancing the overall urban experience.

In summary, these frontrunner cities understood that the success of Healthy Streets hinged on the quality of design and implementation. By investing in competent teams and prioritizing design excellence, they were able to create streets that were not only functional but also beautiful, contributing to the well-being and vibrancy of their urban environments.

Building the Team's Muscle: Conducting Capacity Development Training

Having a dedicated and skilled team aligned with the project's vision and equipped with the necessary skills is essential for the success of Healthy Streets initiatives.

Front-runner cities have demonstrated a commitment to building the capabilities of their teams. They appointed dedicated staff members with specialized training in implementing street design. This investment in human capital was a crucial factor in enabling these cities to realize their vision for transformation.

These frontrunner cities recognized the importance of nurturing a dedicated internal team with diverse backgrounds and skills. This included urban designers, data experts, transport planners, and other professionals who brought a holistic perspective to the planning and implementation of Healthy Streets. They conducted regular workshops, launched training courses, and provided ongoing professional development opportunities to ensure that their teams were well-equipped.

In essence, these cities understood that by investing in capacity development and nurturing a diverse set of skills, they empowered their teams to drive meaningful change and bring their vision for healthier streets to life.

Doing Things Together: Community Engagement, Inter-Departmental Coordination

Embracing participatory processes and fostering inter-departmental coordination are central to the success of Healthy Streets initiatives.

Community Engagement:

These cities prioritized community engagement and recognized the importance of involving residents, businesses, and other stakeholders in the planning and decision-making processes. Initiatives like NMT subcommittees in Chennai and Coimbatore ensured seamless inter-departmental coordination, breaking down silos that often hinder progress.

Interdepartmental coordination

Successful cities understood that liaising with all primary stakeholders and line agencies was essential. They actively engaged with political leaders and local champions who played a crucial role in garnering support for Healthy Streets initiatives. Events like Mumbai's Sunday Streets and Delhi's Raahgiri Days prioritized people on streets, creating a sense of ownership and participation among the community.

In summary, these frontrunner cities recognized that creating Healthy Streets is a collaborative effort that requires active engagement with the community and seamless coordination among various departments. By involving stakeholders and breaking down bureaucratic barriers, they fostered a sense of ownership and collective responsibility for the success of their initiatives.

Monitoring, Learning & Improving

Implementation of Healthy Streets is an ongoing process that requires continuous monitoring, learning, and improvement.

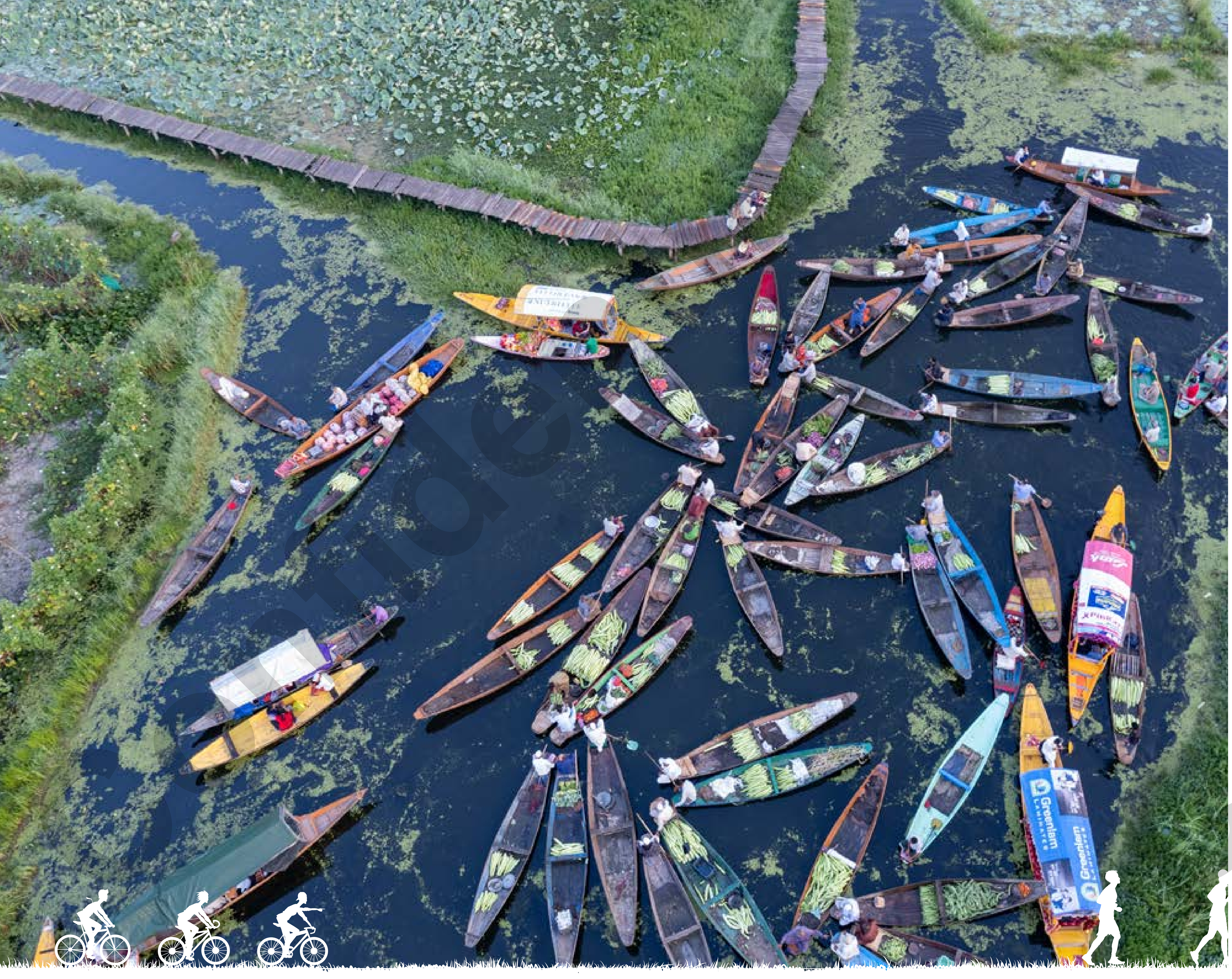
Adopting Impact Assessment Frameworks:

These cities stood out for their commitment to delivering high-quality streets and public spaces. One of the key factors behind their success was their ability to hire competent designers and work with skilled local contractors. By doing so, they ensured that the designs were not just aesthetically pleasing but also functionally robust and capable of withstanding the test of time.

Listening to Citizens:

They actively sought feedback from residents and observed usage patterns to understand how people were interacting with the newly designed streets. This citizen-centric approach helped

In conclusion, these frontrunner cities have showcased that creating impactful Healthy Streets is not just an aspiration but a tangible reality achievable through meticulous planning, resource allocation, and community involvement. Their experiences provide invaluable lessons for cities around the world looking to transform their urban spaces into healthier, more vibrant environments.



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Appendix

Glossary
Bibliography

Glossary

CITIIS: CITIIS, or the City Investments to Innovate, Integrate and Sustain, is a sub-component of the Government of India's Smart Cities Mission. It is a joint program of the Ministry of Housing and Urban Affairs, Agence Francaise de Development (AFD), the European Union (EU), and the National Institute of Urban Affairs (NIUA).

C4C Challenge: The India Cycles4Change Challenge is an initiative of the Smart Cities Mission, Ministry of Housing and Urban Affairs, Government of India to inspire and support Indian cities to implement quick cycling-friendly initiatives in response to COVID-19. The Ministry of Housing and Urban Affairs launched the Challenge on June 25th, 2020.

Complete Streets: Smart Cities Mission-Ministry of Housing and Urban Affairs launched 'Complete Streets' Strategy to help cities transform their dangerous roads into Completes streets that cater to all user groups—regardless of their age, gender, ability, or mode of transportation. The Complete Streets Framework Toolkit consists of six volumes: (i) Complete Streets Policy Workbook; (ii) Complete Street Policy Framework; (iii) Complete Streets Evaluation Matrix; (iv) Developing Complete Streets Masterplan; (v) Complete Street Implementation Guidelines; and (vi) Complete Streets Design Streets Design Guidelines. Complete Street Sector Framework documents are intended to be used by city managers, municipal commissioners, CEOs of smart cities SPVs for development & integrated planning. These framework documents will help develop capacities of these officers to better understand this sector in terms of policy perspective, designing, financing, technology and overall development.

NMT: Non-motorised Transport (NMT) is a foundational sustainable mobility concept that prioritizes planning for walking and cycling over automobiles.

Smart Road: In the context of Indian Smart Cities, Smart Road is defined as those roads that integrate Internet of Things (IoT) devices to ensure safer mobility and efficient traffic management. These roads further integrate physical infrastructure such as utility ducts (with several service lines) as part of the streetscape.

S4P Challenge: The Streets4People(S4P) Challenge is an initiative of the Smart Cities Mission, Ministry of Housing and Urban Affairs (MoHUA), Government of India, to support cities to create walking-friendly streets. As COVID-19 brought our cities to a halt, citizens across India took to walking and cycling to access essentials and services, and even exercise. Leveraging this opportunity, the Streets4People Challenge was launched to inspire Indian cities to work with their citizens and experts to implement permanent walking-friendly infrastructure, embed institutional reforms, and build momentum for walking and placemaking.

SPV: The implementation of the Smart Cities Mission at the City level is done by a Special Purpose Vehicle (SPV) created for the purpose. Each Smart City has an SPV which is headed by a full-time CEO and has nominees of Central Government, State Government and ULB on its Board. The States/ULBs ensure that, (a) a dedicated and substantial revenue stream is made available to the SPV to make it self-sustainable and could evolve its own creditworthiness for raising additional resources from the market and (b) Government contribution for Smart City is used only to create infrastructure that has public benefit outcomes. The execution of projects is done through joint ventures, subsidiaries, public-private partnerships (PPP), turnkey contracts, etc. suitably dovetailed with revenue streams.

UT: A union territory (UT) is a type of administrative division in the Republic of India. Unlike the states of India, which have their own governments, union territories are federal territories governed, in part or in whole, by the Union Government of India. India has total of 8 Union Territories.

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Notes

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