ROAD SAFETY ASSESSMENT OF SCHOOLS ZONES

Nashik, Maharashtra

Bloomberg Philanthropies | Initiative for Global Road Safety

GRSF Global Road Safety Facility | Managed by World Bank Group

Global Designing Cities Initiative

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All photographs and graphics are by the project team, unless mentioned otherwise.

About GRSF
The Global Road Safety Facility (GRSF) is a global multi-donor fund managed by the World Bank. Its mission is to help governments develop road safety management capacity and scale up road safety delivery in low- and middle-income countries (LMICs). GRSF provides funding, knowledge, and technical assistance designed to scale-up the efforts of LMICs to build their scientific, technological, managerial and delivery capacities for road safety.

About Bloomberg Philanthropies/BIGRS
The Bloomberg Philanthropies Initiative for Global Road Safety (BIGRS) helps to implement a comprehensive package of activities proven to save lives. In partnership with international organizations and governments, it focuses on five key areas to improve road safety and save lives: strengthening national legislation; enhancing data collection and surveillance; changing road user behavior; improving road infrastructure; and upgrading vehicle safety.

About GDCI
The Global Designing Cities Initiative transforms streets for the people who use them, shaping cities that allow everyone to prosper. Its team of designers, planners, and urban strategists seeks to inspire leaders, inform practitioners, and invite communities to imagine what is possible when we design streets that put people first. The strategies and best practices in their *Global Street Design Guide* are the foundation of their work, and they have been applied in cities across the globe, helping to update policies, build local capacity, implement and evaluate projects, and scale up impact.

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Nashik, Maharashtra

Case of Adarsh English Medium School near CBS & NMC School 57 near Muktidham Mandir, Nashik

Photo: In front of Adarsh English Medium School, Old Agra Road, Nashik

"**Children are a kind of indicator species**. If we can build a successful city for children, we will have a successful city for everyone."

Enrique Peñalosa, Former Mayor of Bogota

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Contents

Photo: NMC School 57, Muktidham, Nashik

Acronyms

AEMS	Adarsh English Medium School
BIGRS	Bloomberg Philanthropies Initiative for Global Road Safety
BvLF	Bernard van Leer Foundation
CCTV	Closed Circuit Television
COTPA	Cigarettes and Other Tobacco Products Act
CTTP	Comprehensive Traffic and Transportation Plan, Nashik
GDCI	Global Designing Cities Initiative
GRSF	Global Road Safety Facility
IRC	Indian Roads Congress
MoHUA	Ministry of Housing and Urban Affairs, Government of India
MoRTH	Ministry of Road Transport and Highways, Government of India
MUZ	Multi Utility Zone
NMC	Nashik Municipal Corporation
NMPML	Nashik Mahanagar Parivahan Mahamandal Limited
NMT	Non-Motorised Transport
PWD	Public Works Department
ROW	Right of Way
RTIs	Road Traffic Injuries
RTO	Regional Transport Office
SPZ	School Proximal Zone
ST	Sustainable Transit
UD	Urban Design
WHO	World Health Organisation

Definitions

Accessibility	The ability for all people, including people with impaired mobility and of all ages, to physically reach their desired destinations, services and/or activities with ease.
Caregivers	Any person/ persons responsible for the safety and well-being of a child. They could be parents, grandparents, relatives, caretakers, or even elder siblings.
Carriageway	Part of a street intended primarily for vehicular movement
Complete Streets	Streets that are designed to cater to the needs of all users and activities, through equitable allocation of road space. Complete streets provide safe and inclusive environments that support users of all age groups, gender, and physical dispositions. They also guarantee efficient mobility by focusing on moving people rather than vehicles, user safety, user accessibility, vitality and livability, sensitivity to the local context, and environmental sustainability.
Crossings	A designated crosswalk for pedestrians to cross a road or street.
Mobility	The ability of people or goods to move within the transportation system.
Multi Utility Zone (MUZ)	It accommodates functions like street furniture, bus stops, auto/ taxi stops, utility boxes, street vendors, landscape and parking.
Non-Motorised Transport (NMT)	All forms of human-powered transport including walking & cycling.

Tactical Urbanism	Tactical urbanism refers to design solutions that are quick and lowcost, and that aim to bring larger, neighborhood-level impacts. Tactical urbanism projects offer a way to gain public and Government support for investing in permanent projects
Traffic calming	The combination of street designs and traffic rules that deliberately reduces vehicle speeds by designing and building interventions (e.g. speed humps, raised crossings, chicanes) to improve safety for all road users, especially pedestrians & cyclists.
Traffic Volume	Traffic Volume is defined as the procedure to determine the volume of traffic or no of vehicles moving on the roads at a particular section during a particular time period.
School Proximal Zone (SPZ)	According to IRC SP:32 Road Safety Manual for Schools, SPZ can be considered as an area around a school. It is measured as a radial zone around school, for different type of roads.
School Zone	School Zone can be considered as the road leading to every entrance of the school, extending 100 m on either side of the entrance.
Universal Accessibility	Design techniques that accommodate all people, including pedestrians requiring special mobility consideration, such as pedestrians pushing strollers/delivery carts, pedestrians using personal mobility devices such as wheelchairs, and pedestrians who are visually impaired.
Vulnerable road users	A collective term for a group of road users who have a high injury or casualty rate, mainly pedestrians, bicyclists, and motorcyclists. Vulnerability can be understood in various ways, such as how much protection someone has in traffic or how well young children and elderly people can perform tasks.

Executive Summary

The report evaluates the road safety landscape around school zones in Nashik and offers strategic recommendations to enhance the safety of children commuting to school. It focuses on critical areas such as infrastructure, safety measures, and stakeholder engagement to create a safer environment that encourages independent mobility for children.

Detailed assessments were conducted at Adarsh English Medium School and NMC School 57, involving infrastructure surveys, observation surveys, and perception surveys with 265 participants, including children, caregivers, school staff, and security personnel. Findings indicate significant safety concerns, with 86% of students walking to NMC School 57 despite unsafe conditions, and 65% expressing traffic and road safety as a major worry.

The analysis reveals that the streets surrounding these schools are predominantly car-centric, lacking essential infrastructure for non-motorized transport (NMT). This results in frequent conflicts between pedestrians, cyclists, and motor vehicles, significantly compromising safety. Key issues identified include the absence of footpaths, inadequate pedestrian crossings, lack of road markings and signage, poor lighting, and insufficient traffic calming measures. These deficiencies create hazardous conditions for all road users, particularly children.

Effective road safety in school zones requires a multi-stakeholder approach. The report highlights the roles of various entities including the Nashik Municipal Corporation (NMC), traffic police, Nashik Mahanagar Parivahan Mahamandal Limited (NMPML), Regional Transport Office (RTO), school management, and civil society organizations. The active involvement of parents and caregivers is also crucial for the successful implementation of safety measures.

To address the safety issues, the report recommends several infrastructure enhancements:

Delineation of School Zones: Clearly marked school zones with reduced speed limits and enhanced visibility to ensure concentrated safety efforts.

Pedestrian and Cycling Infrastructure: Construction of footpaths, cycle tracks/lanes, and designated pedestrian crossings to provide safe walking routes for children.

Traffic Calming Measures: Implementation of speed breakers, rumble strips, and raised pedestrian crossings to control vehicular speed near schools.

Improved Lighting: Installation of adequate street lighting to enhance visibility and safety during evening and night hours.

Signage and Road Markings: Erecting precautionary signage and lane markings to guide traffic and improve road discipline.

A coordinated approach among stakeholders is essential for the successful implementation of these recommendations. The report suggests establishing a School

Zone Road Safety Committee comprising representatives from school administration, civil society organizations, parents, school van associations, and secondary school students. This committee would regularly evaluate the safety landscape and communicate necessary action points to the NMC and other responsible entities.

Promoting road safety education through workshops conducted by traffic police and civil society organizations is crucial. Schools should facilitate these workshops to raise awareness among students about responsible road behaviour. Additionally, the deployment of security guards or wardens during peak hours can help manage traffic and ensure safe crossings for students.

The report emphasizes the importance of promoting independent mobility among children. Schools are encouraged to track the mode of transit of their students and offer incentives to those using sustainable transportation modes such as walking, cycling, and public transit. This approach not only encourages sustainable modes but also contributes to the overall well-being and development of children.

Strict enforcement of existing regulations, such as the prohibition of liquor and tobacco sales near schools and the partial ban on commercial heavy vehicles during school hours, is necessary to create a safer environment for children.

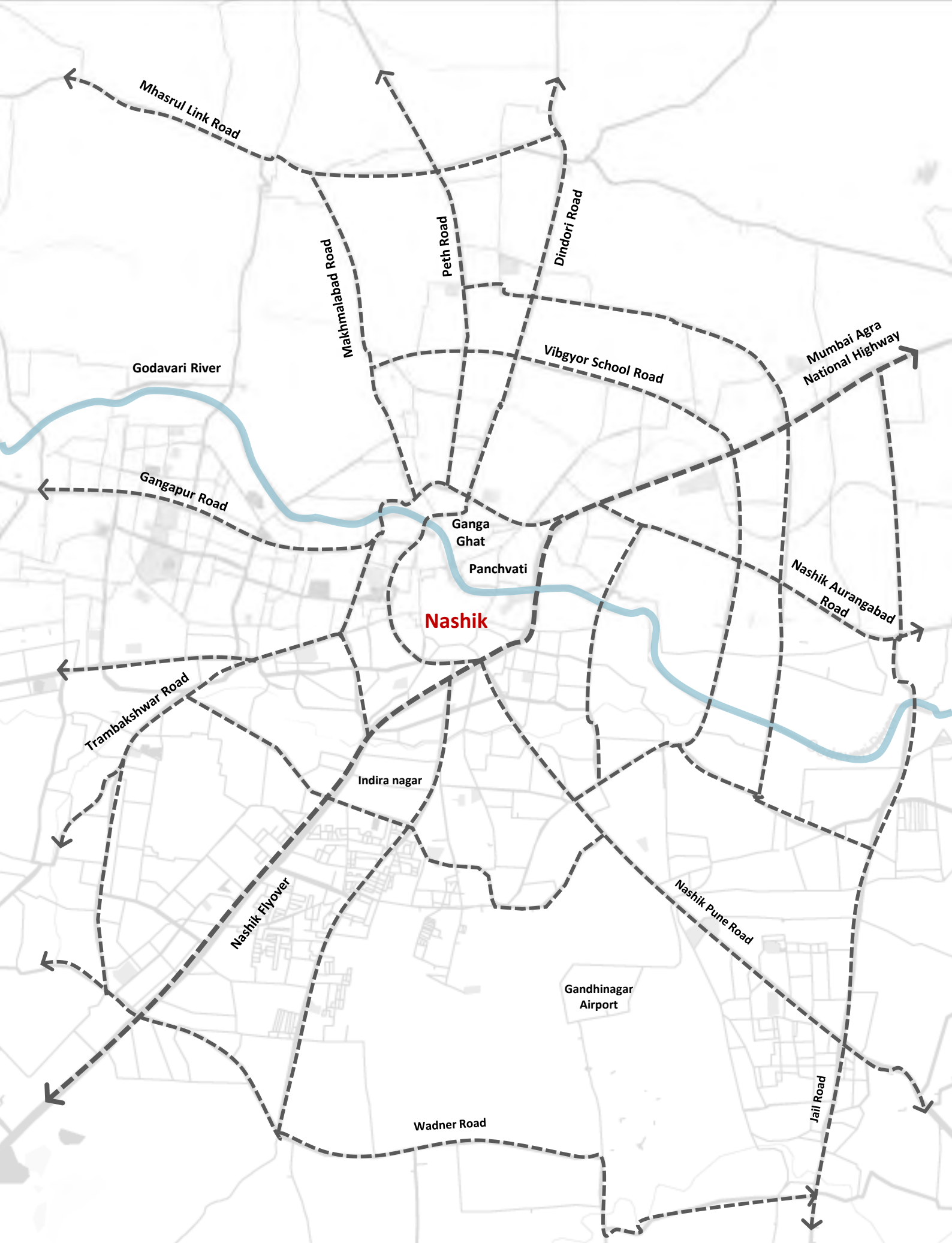
Securing adequate funding and resources is vital for the successful implementation of the proposed measures. The NMC should explore funding opportunities from government sources, international organizations, and private sector partnerships to support infrastructure development and educational campaigns.

The city may test the solutions before the capital construction of the project and measure their impact. This can be achieved through pop-up and interim street transformations, also known as “tactical urbanism” projects. These projects offer the opportunity to quickly and economically demonstrate possibilities with existing infrastructure and refine new designs before making capital investments.

Implementing these recommendations will significantly enhance the road safety landscape near school zones in Nashik. By prioritizing the well-being of young pedestrians and cyclists, these collaborative efforts will not only ensure safer school commutes but also contribute to the overall safety and efficiency of the city's transportation system. The proactive approach outlined in this report emphasizes the importance of sustainable transport options and the need for comprehensive infrastructure improvements to foster a culture of road safety in Nashik.

Photo: Nashik on India Map

01 Introduction


Mhasrul Link Road
Makhmalabad Road
Peth Road
Dindori Road
Vibgyor School Road
Mumbai Agra National Highway
Godavari River
Gangapur Road
Ganga Ghat
Panchvati
Nashik
Nashik Aurangabad Road
Trambakshwar Road
Indira nagar
Nashik Flyover
Nashik Pune Road
Gandhinagar Airport
Jail Road
Wadner Road

1. Introduction

Road traffic deaths and injuries remain a major global health and development challenge. Vulnerable road users such as pedestrians, cyclists and motorcyclists remain dangerously exposed and account for more than half of fatalities**. As per WHO, nine in 10 road crash related deaths occur in low- and middle income countries,** while people in low-income countries continue to face the highest risk of death per population.

Situated on the banks of the river Godavari, Nashik is the fourth largest urban expanse in the state of Maharashtra, covering an area of about 267.48 square kilometers[1]. The population of Nashik city is over 22 lakhs and is emerging as one of the fastest-growing cities in India. Nashik Municipal Corporation (NMC) is the civic body overseeing the infrastructure projects and civic administration in Nashik city, striving to keep pace with the evolving needs of its residents.

Transport plays a key role in defining a city and touches the lives of people daily. With increasing migration to urban areas, the city is witnessing rapid motorization accompanied by the challenges of road safety, congestion and pollution.

1.1 The road safety picture

India grapples with a daunting road safety challenge, as evidenced by statistics from the Ministry of Road Transport & Highways (MoRT&H), Government of India. **More than 1,68,491 people were killed in road crashes in India in the year 2022, an 11.9% rise than the previous year,** giving a stark reminder of the urgent need for comprehensive measures to mitigate risks[2]. The World Health Organistaion (WHO) Global Status Report on Road Safety further underscores the gravity of the situation, placing India among the countries with the highest road traffic mortality rates globally.

Maharashtra ranks sixth in India, accounting for 7.2% of all traffic crashes[2]. And ranks third in terms of total road crash fatalities in India, accounting for 9%[2]. Recognising the challenges, the state government is taking necessary actions to improve road safety in order to reduce fatalities due to road crashes to half by 2030, aligned with the United Nations target. The World Bank, through its Global Road Safety Facility (GRSF) is supporting the Maharashtra Government in undertaking road safety assessment as a part of the Bloomberg initiative for Global Road Safety (BIGRS).

Nashik is one of the districts, with second highest road fatalities in Maharashtra, behind Pune[3]. There is an imperative need for judicious and targeted interventions to ensure the safety and well-being of its citizens.

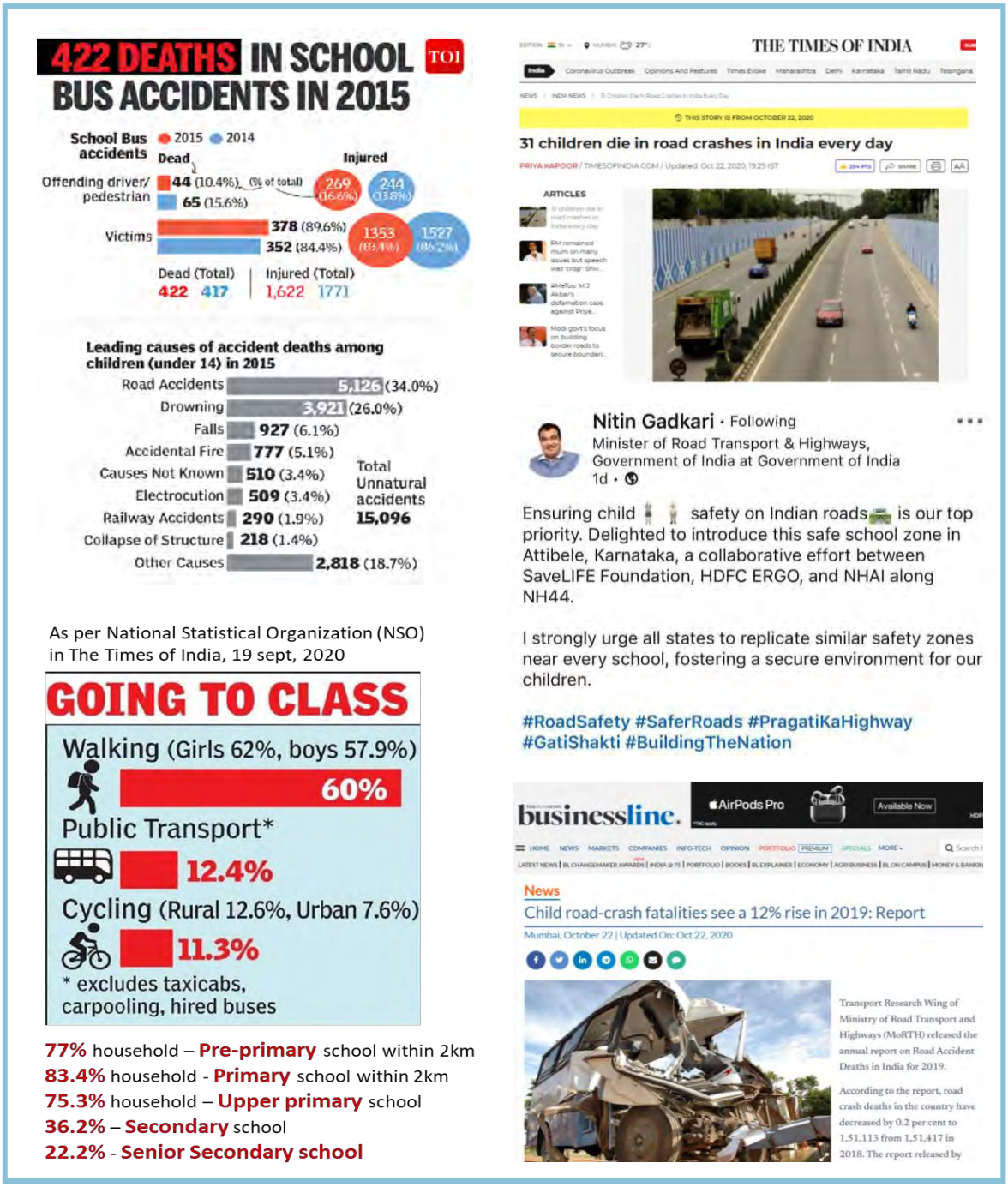
1.2 Children and road safety

Through GRSF, road safety assessment was carried out for two National Highways & two State Highways near Nashik city which were high risk & high-volume highways. This report indicated that high speed & inadequate pedestrian/bicycle/motorcycle facilities are the major risk concerns. The report also identified several schools in Nashik where the students and their caregivers are vulnerable, due to high speed and inadequate pedestrian facilities.

1. *Comprehensive transportation and traffic plan, Nashik*
2. *Road accidents in India Report 2022, MoRTH*
3. *Maharashtra Road Crash Report 2022*

The study thus recognized the necessity of conducting School Zones Road Safety Assessment to formulate necessary mitigation measures for enhancing road safety near the school zones.

As per the World Health Organization, road crash-related deaths, are known to be the leading cause of death among children aged 5-14 and adults in the age 15-29 [4]. Ensuring the safety of school zones is paramount in fostering a secure environment for our children and promoting responsible urban planning. The World Bank, in collaboration with the Nashik Municipal Corporation, recognizes the significance of prioritizing school zone safety.



Media reports highlighting the road safety landscape in the country with respect to children

4. Global Status on Road Safety Report 2023 by WHO

The need for dedicated attention to school zone safety arises from the vulnerability of young pedestrians and the increased risk they face while navigating the surrounding streets. Given their size, the inherent unpredictability of children's behavior and their limited awareness of traffic rules, it becomes imperative to create environments that prioritize their safety and mobility.

By evaluating and enhancing safety measures in school zones, we not only safeguard the lives of our future generations but also contribute significantly to the broader goal of overall road safety. This assessment recognizes the urgency of addressing the unique challenges posed by school zones, aiming to formulate targeted strategies that create secure, accessible, and conducive environments for both students and the surrounding community.

1.3 Significance of Independent mobility for children

The significance of independent mobility for children cannot be overstated, as it plays a pivotal role in their physical, cognitive, and socio-emotional development.

1. **Social Interaction and Communication Skills**: Independent mobility allows children to engage with their peers, fostering social interaction and the development of essential communication skills. Walking or cycling to school, for example, provides opportunities for children to interact with others in their community, building friendships and a sense of belonging.
2. **Health Benefits:** Active transportation methods, such as walking or cycling, contribute to a healthier lifestyle for children. Regular physical activity not only promotes cardiovascular health but also helps combat childhood obesity—an issue of growing concern globally.
3. **Environmental Awareness:** Encouraging independent mobility introduces children to their surroundings and instills a sense of environmental consciousness. By walking or cycling, children become more attuned to the natural world, fostering an appreciation for sustainable modes of transportation.
4. **Reduced Dependence on Motorized Transport:** Embracing independent mobility reduces the reliance on motorized transport for short distances. This not only eases traffic congestion but also contributes to environmental sustainability by lowering carbon emissions associated with vehicular traffic.
5. **Building Decision-Making and Cognitive Skills:** Navigating the journey to school independently provides children with opportunities to make decisions, assess risks, and develop problem-solving skills. These experiences are crucial for their cognitive development and preparation for future responsibilities.
6. **Sense of Autonomy, Responsibility and Self-confidence**: Independent mobility imparts a sense of responsibility as children learn to manage their time, follow traffic rules, and prioritize safety. These early lessons contribute to the development of responsible and conscientious individuals.

Unfortunately, recent trends underscore a decline in independent mobility among children, with safety concerns being a major contributing factor. Statistics reveal that in some urban areas, the percentage of children walking or cycling to school has decreased significantly over the years.

It is important to reverse this trend, considering the critical role of independent mobility in fostering holistic childhood development. Consequently, measures need to be undertaken to create safer environments that encourage and facilitate independent travel for our younger population.

1.4 Objective of the study

Road safety is a critical concern that demands immediate attention, particularly in the context of school zones where the vulnerability of young lives is at its peak. The objective of the study is to **assess the road safety landscape in the catchment areas of the two selected pilot schools.**

This report, driven by statistics and a commitment to safeguarding young lives, **sets the stage for actionable recommendations** under the Nashik School Zones program and help transform the city's school zones into safe places, for its future generations.

Students waiting for a safe moment to cross the junction

Children who are granted the freedom to travel independently show greater resilience and problem-solving abilities, contributing positively to their mental health.

1.5 Who is the study meant for?

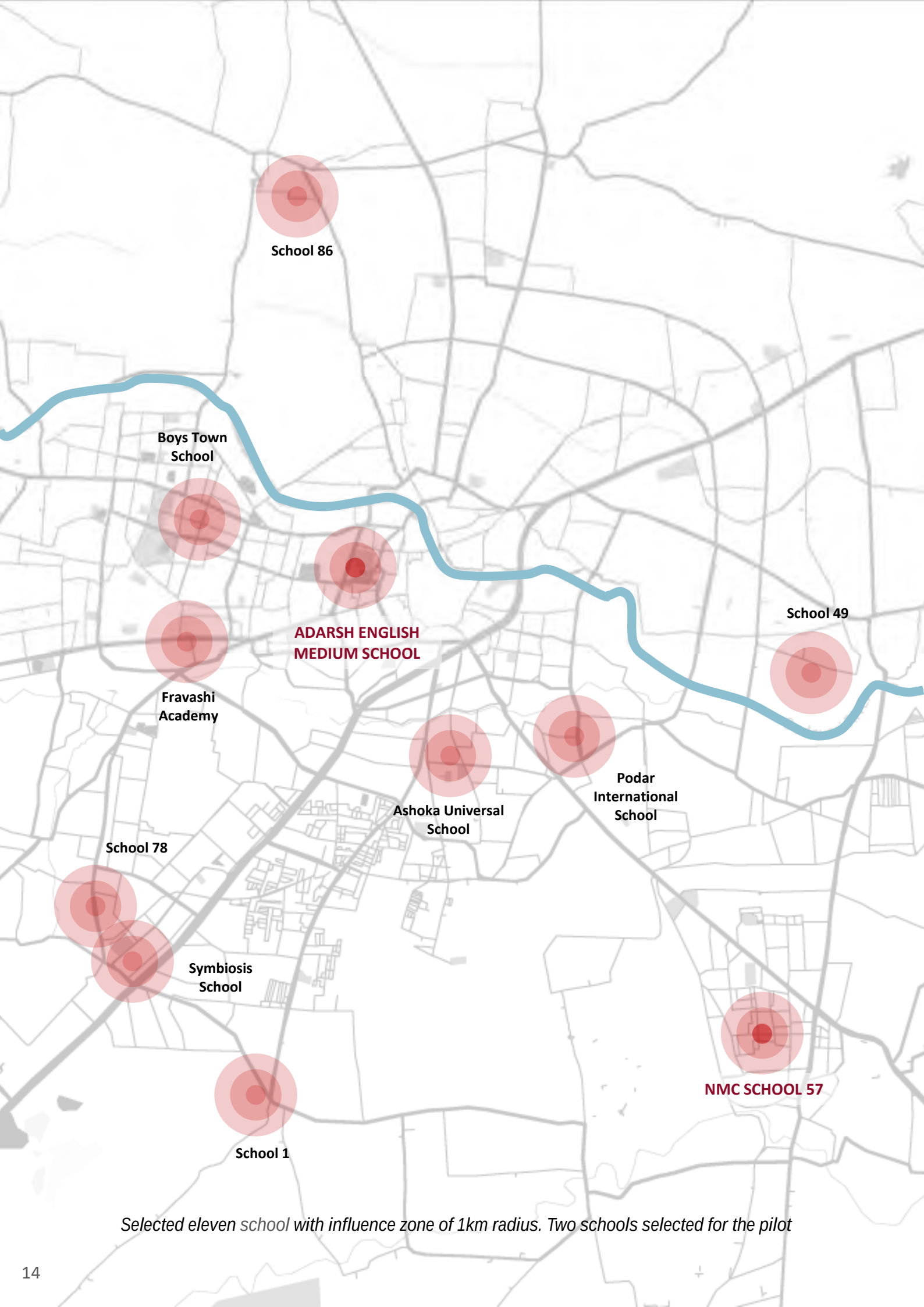
This report, based on the analysis and inspection is prepared for the City of Nashik, aiming to advocate for focused investment in enhancing the safety of children within school zones. To effectively realize the proposed design recommendations, a synergistic collaboration is essential among key stakeholders, including the Nashik Municipal Corporation (NMC), the city's traffic police, the city bus corporation - Nashik Mahanagar Parivahan Mahamandal Limited (NMPML), Regional Transport Office (RTO), school management, and school van drivers. The engagement of parents and caregivers also holds significant importance.

The report further elaborates upon the distinct roles and responsibilities of these stakeholders to ensure a comprehensive approach to school zone road safety. External support from non-profits like Bloomberg Philanthropies, Global Designing Cities Initiative (GDCI) is anticipated to play a vital role in sustaining efforts to improve the city's road safety landscape in the years ahead. Designing streets with the safety of children in mind not only prioritizes their well-being but also establishes a secure environment for all road users.

Stakeholders responsible for the success of road safety initiative in the school zones

Photo: Dutta Mandir Road, Nashik

02 Methodology



Selected eleven school with influence zone of 1km radius. Two schools selected for the pilot

02 Methodology

A total of eleven schools of Nashik have been identified under the program considering the vulnerability of students travelling on arterial and sub-arterial roads. The schools have been identified in discussion with the Nashik Municipal Corporation. The list of the selected schools is as follows,

1. Municipal School No.1, Makhmalabad Gaon
2. Municipal School No.86, Pathdi Gaon
3. Municipal School No.49, Panchak, Jail Road
4. Municipal School No.57, Muktidham
5. Municipal School No.78, Ambadgaon
6. Fravashi Academy
7. Boys Town Public School
8. Ashoka Universal School
9. Podar International School
10. Symbiosis School
11. Adarsh English Medium School

Out of the above schools, two schools have been identified by Nashik Municipal Corporation for the road safety assessment as a pilot project.

- **Adarsh English Medium School,** located on the CBS road, a major road of the city with Central bus stand located on the street.
- **Municipal School 57 – Mukthidham Road,** located in the southern zone of Nashik and with one major arterial highway, a high-speed road that connects to Pune.

The catchment area of the above two schools is comprehensively studied and analysed for road safety.

Crash-related deaths, are known to be the leading cause of death among children aged 5-14 and adults aged 15-29.
- World Health Organization

Field Surveys

For the assessment, three types of surveys were conducted on the field for a comprehensive understanding of the road safety landscape in the school zones

Data Collection Method

Primary Data Collection

Secondary Data Collection

- Government Publications
- Statistical data
- Best Practices

Infrastructure Survey

- Documenting all the elements of street and junction design
- Quality Assessment through photographic documentation

Observation Survey

- Participant Observation
- Activity Mapping
- Pedestrian Movement
- Vehicular Movement

Perception Survey

- Personal Interviews
- Questionnaires

a. Infrastructure surveys

The design of streets were assessed on the basic design requirements of urban streets. Following parameters were assessed under four heads, and rated as excellent, above average, average, below average and poor.

Ease Of Movement

Safety

Universal Accessibility

Comfort & Liveability

Ease Of Movement	Safety	Universal Accessibility	Comfort
Adequate Footpath	Traffic Calming	Accessible Footpath	Seatings
Designed Parking	Road Markings	Accessible Crossingss	Dustbins
Continuous Cycle Track	Pedestrian Refuges At Intersections	Wayfinding Signages	Pause & Play Opportunities
	Pedestrian Crossings		
	Signages		
	Lighting		

Assessment Parameter based on score

0-3	4-6	7-9	10-12	13-15
Excellent	**Good**	**Average**	**Below Average**	**Poor**

b. Observation surveys

Based on observation, the immediate school premise is assessed on activity mapping, parking patterns, traffic volumes at intersection. The base plans for the surveys were prepared on computer aided drawing software based on the satellite imagery from Google Earth.

c. Perception surveys – understanding the children and caregivers

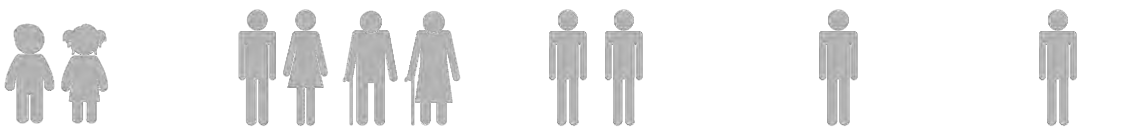
To understand the safety perception of the users, a total of 265 interviews were conducted including children, caregivers, school staff, security guards, school van drivers. The results and reflections shall help in formulating evidence-based measures. Two separate questionnaires were prepared for children (Annexure A) and for caregivers (Annexure B)

Date of Survey : 02.11.2023 & 03.11.2023 (Thursday & Friday)

Timing of Survey : Full Day

Selected Schools : Adarsh English Medium School & NMC School 57

Total Sample Size : 256 Person



School Children of different age	Parents & Care Givers	School bus or Van Driver	School Staff (Principal, Teachers)	Security Guard
72%	**23%**	**3%**	**1%**	**1%**

Photo: Old Agra Road, Nashik

03 Assessment

Adarsh English Medium School


Makhmalabad Road
Peth Road
Dindori Road
Tarwala Signal
Vibgyor School Road
Mumbai Agra National Highway
Apollo Hospital
Nashik Aurangabad Road
Godavari River
Ganga Ghat
Old Agra Road
Panchvati Mandir
Adarsh English Medium School
Amardham Panchvati
Trambakshwar Road
Sardar Vinchurkar Chowk
Maylan Circle
Nashik Flyover
Ramdas Swami Road
Tagor Nagar Signal
Nashik Pune Road

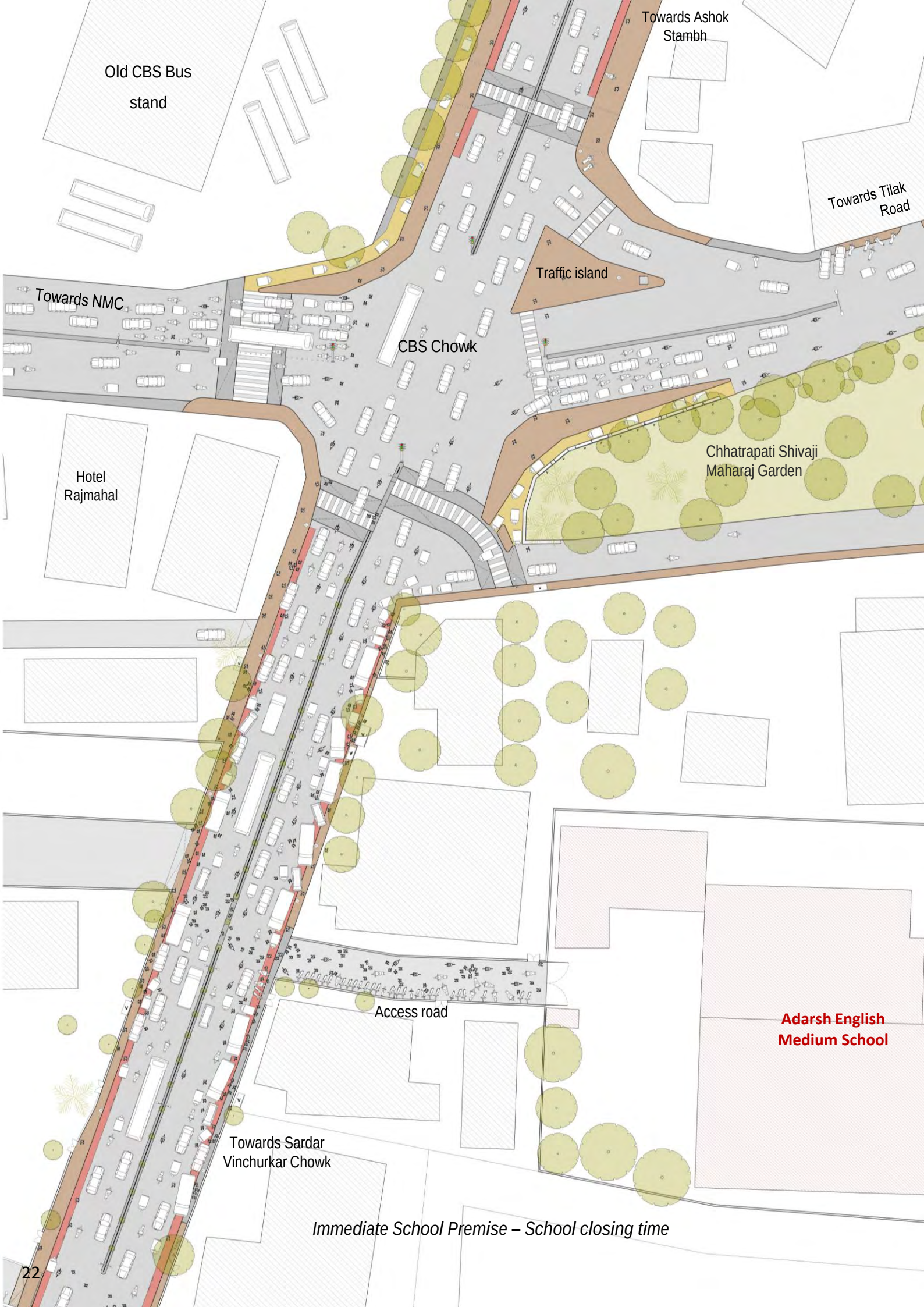
03 Assessment: Adarsh English Medium School

- **Location:** Old Agra Road, near CBS, Nashik
- **Number of Students:** English Medium - approx. 1540

  Marathi Medium School (same campus) – approx. 1405
- **School timing:** 8 am to 2 pm (English Medium), 12 pm to 5pm (Marathi Medium)

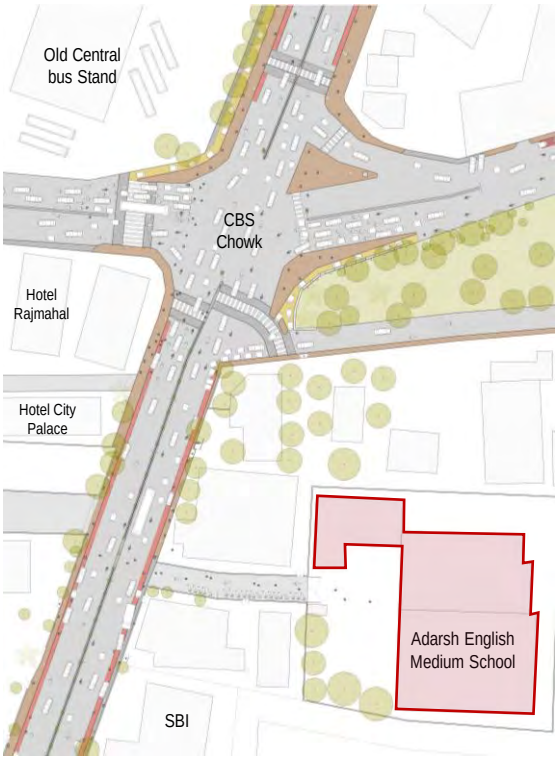
Access road connecting Old Agra road and the school

Lack of pedestrian crossings makes it hard for students to cross outside the school

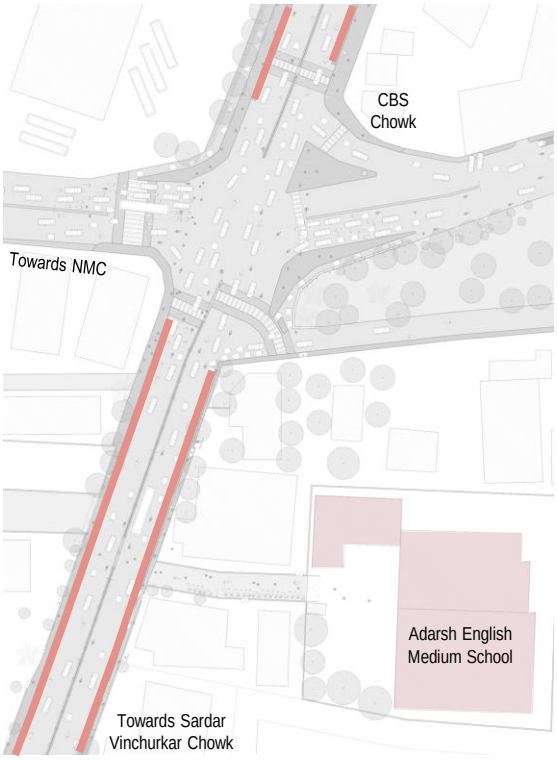


Immediate School Premise – School closing time

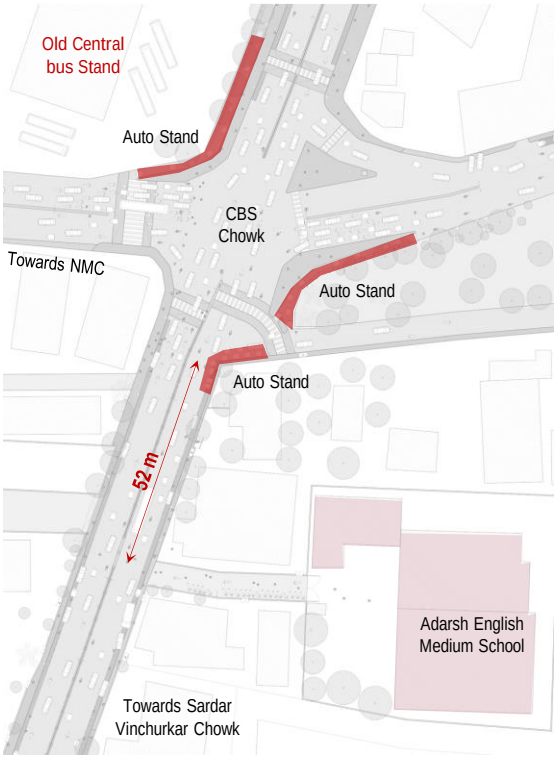
3.1 School Access Road



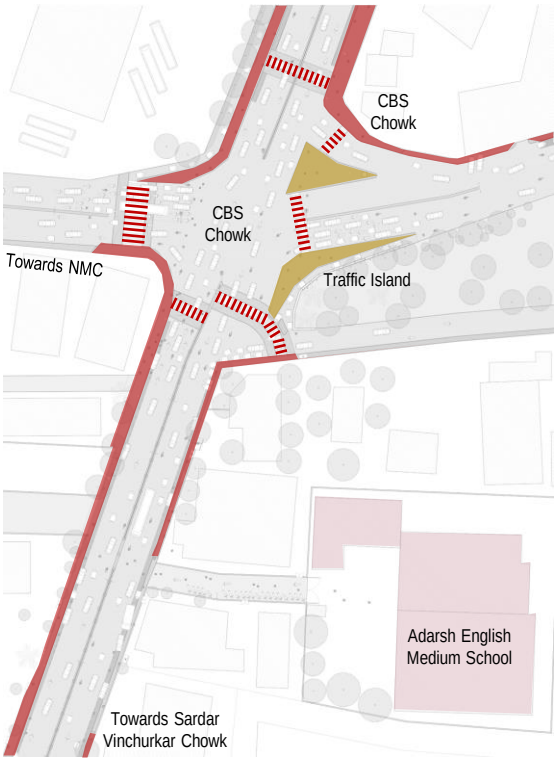
Scenario during non-peak hour: *The school lies predominantly in a commercial area with CBS chowk in close proximity of 60m*



Cycle Lane: *The street has provision of 1m wide cycle lanes but is encroached by parking making it unusable for cycling. Cycle lane connectivity is missing at the junction*



Public Transit & Intermediate Public Transit *There are no bus stops close to the school. Auto stands are located at the junction*

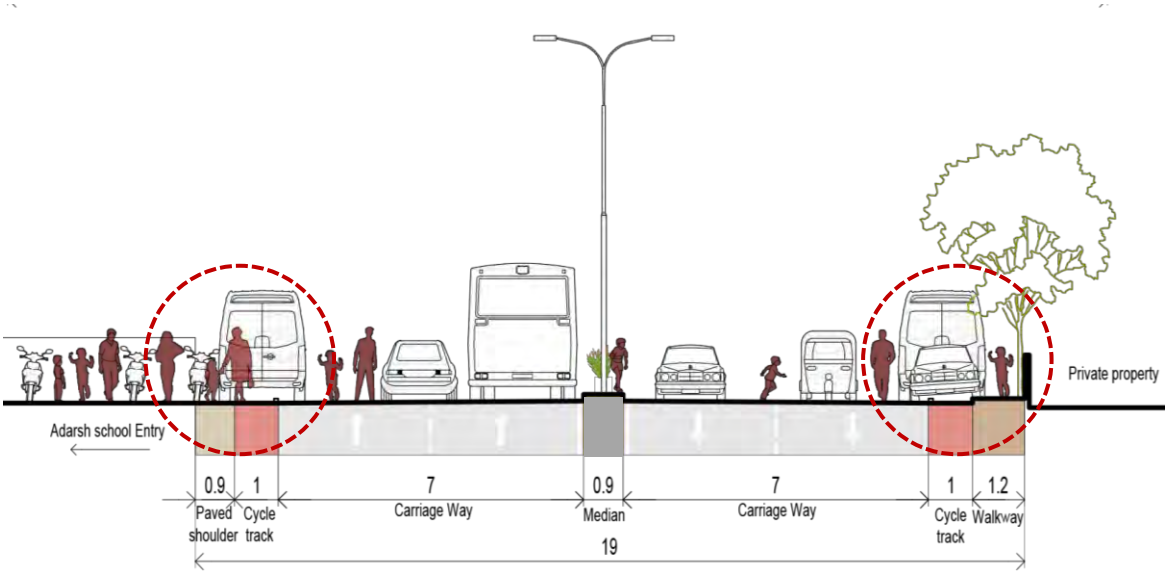


Footpath, Pedestrian Crossings at CBS Chowk: *The footpaths are narrow, encroached and lack continuity. Lack of pedestrian crossings in front of school.*

Premise outside the school during school closing time

School Van/Bus & other parking outside the school *– There is a lack of parking management resulting in parking encroachment of footpaths and cycle lane.*

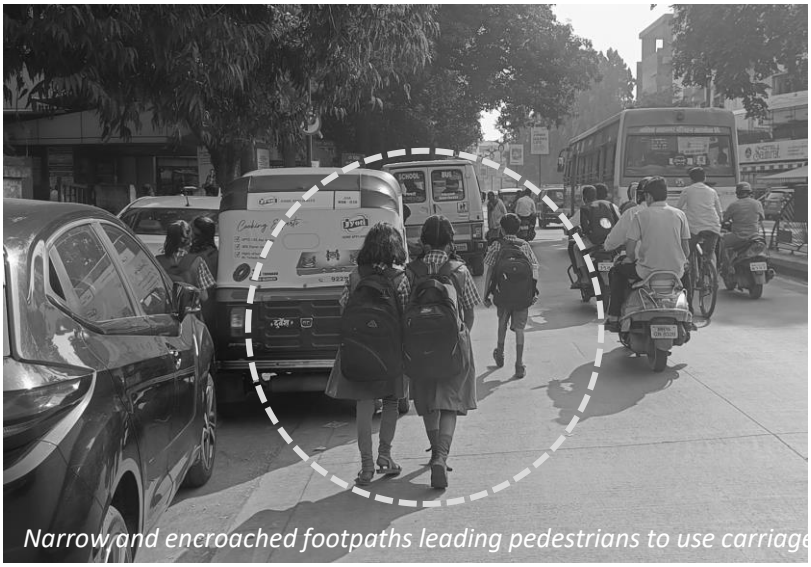
Children movement during school closing time: *Students in hundreds move out of the school in a short time crossing the street. There is* ***no security guard/ traffic warden*** *to manage traffic and assist students in crossing.*



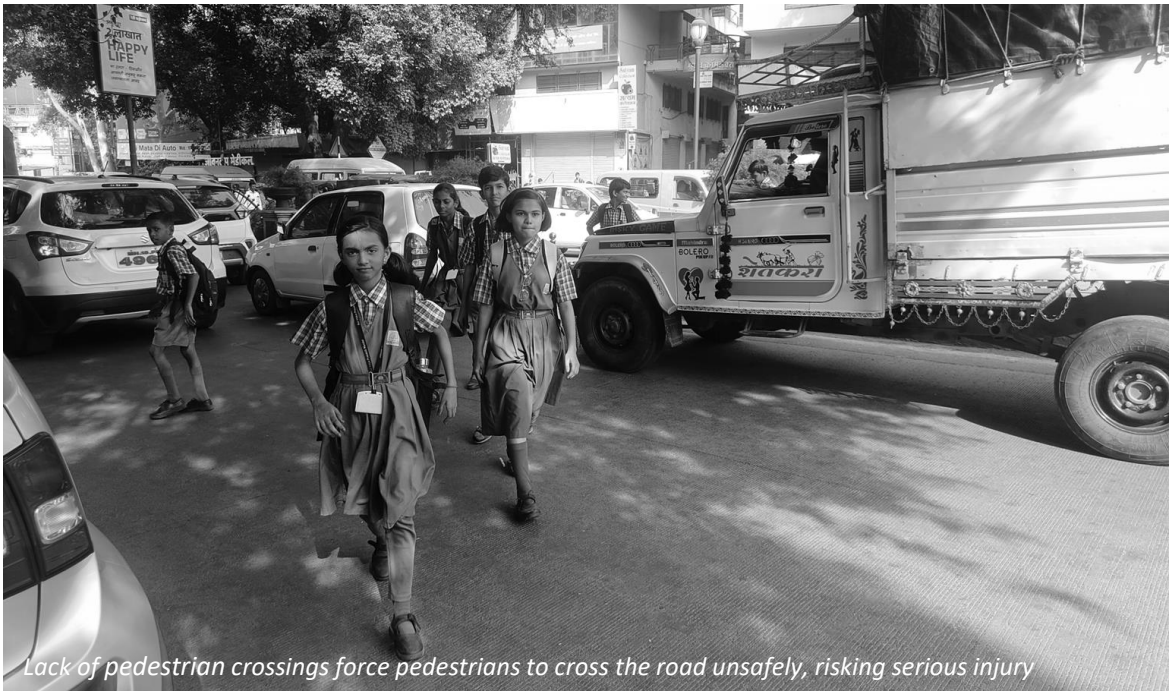
Street section in front of the school

The street edge conditions are poor for pedestrians and cyclists, with parking encroachments on both sides. The pedestrians are forced to use the carriageway creating ***potential vehicular pedestrian conflict*** *making the conditions unsafe for all.*

Cyclists forced to use carriageway due to encroached cycle track

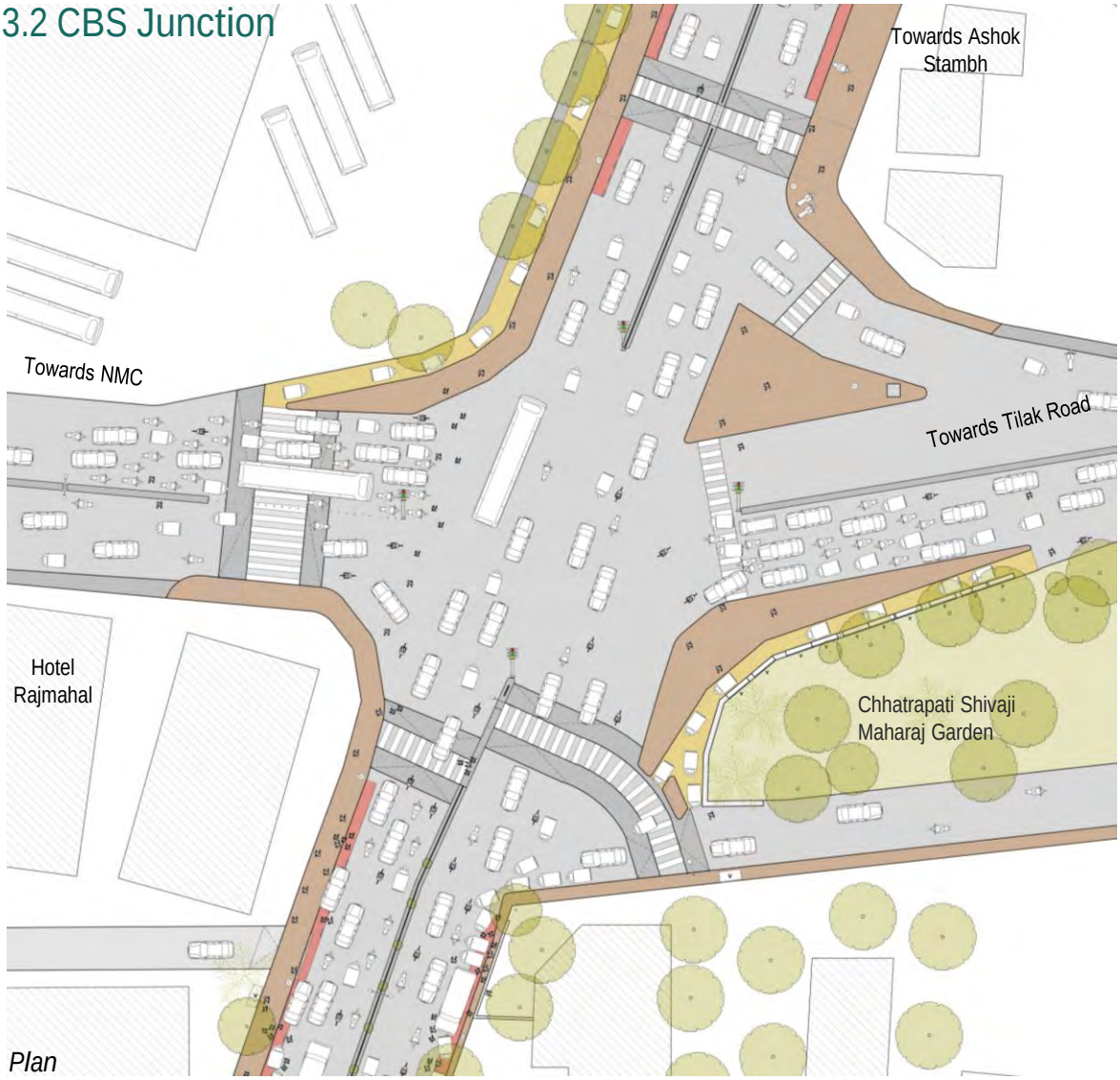


Narrow and encroached footpaths leading pedestrians to use carriageway creating potential conflict

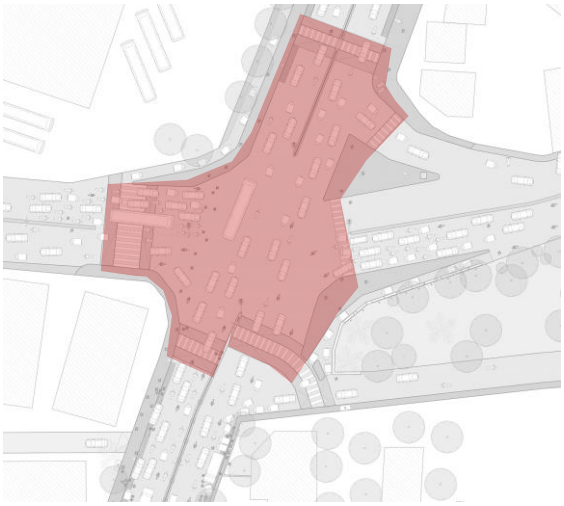


Lack of pedestrian crossings force pedestrians to cross the road unsafely, risking serious injury

3.2 CBS Junction

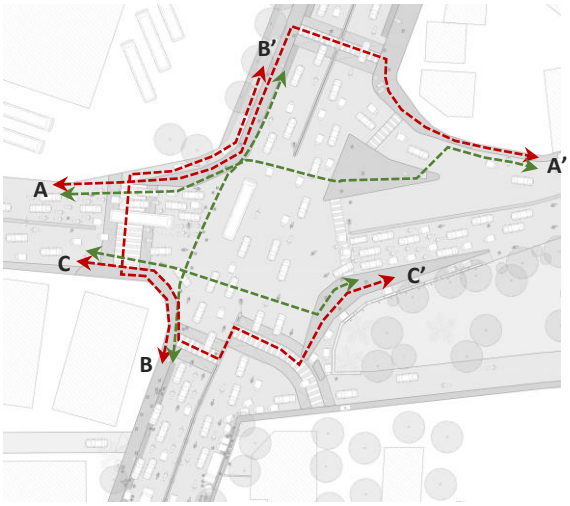


Plan



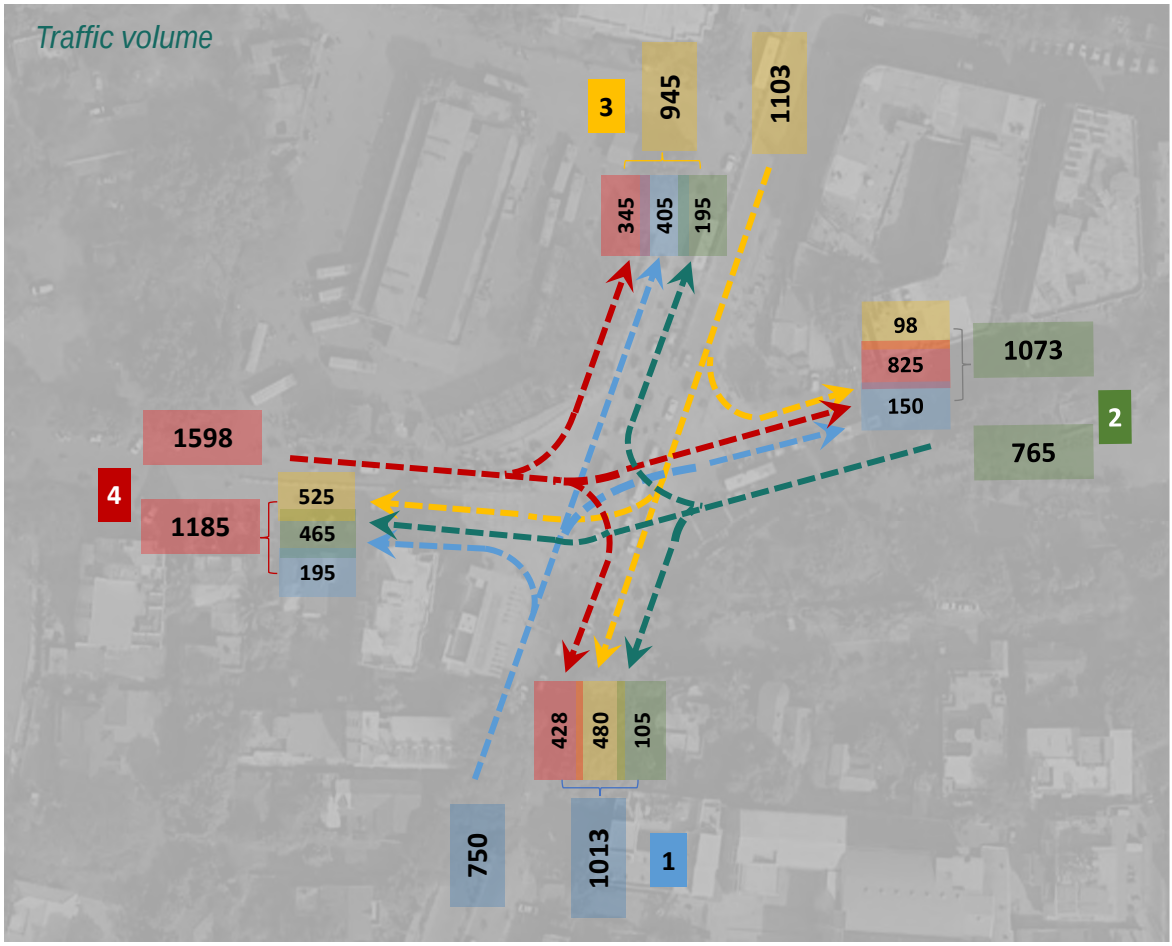
Junction Area – 2620 Sq.m

The existing junction is inefficient and unsafe. It needs geometry correction and has the potential for compaction by 35 to 40%



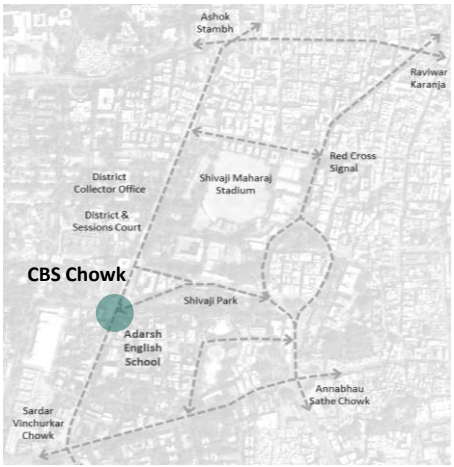
Expected Pedestrian Movement as per crossings at the junction

Actual and desirable pedestrian movement, with shortest crossing distance



Peak Hour Traffic Volume Count			
Time	Junction Arm	Direction	PCU/hr
10.30am – 11.30 am	Arm 1	2	150
		3	405
		4	195
	Arm 2	1	105
		3	195
		4	465
	Arm 3	1	480
		2	98
		4	525
	Arm 4	1	428
		2	825
		3	345


Lack of pedestrian crossings, refuges



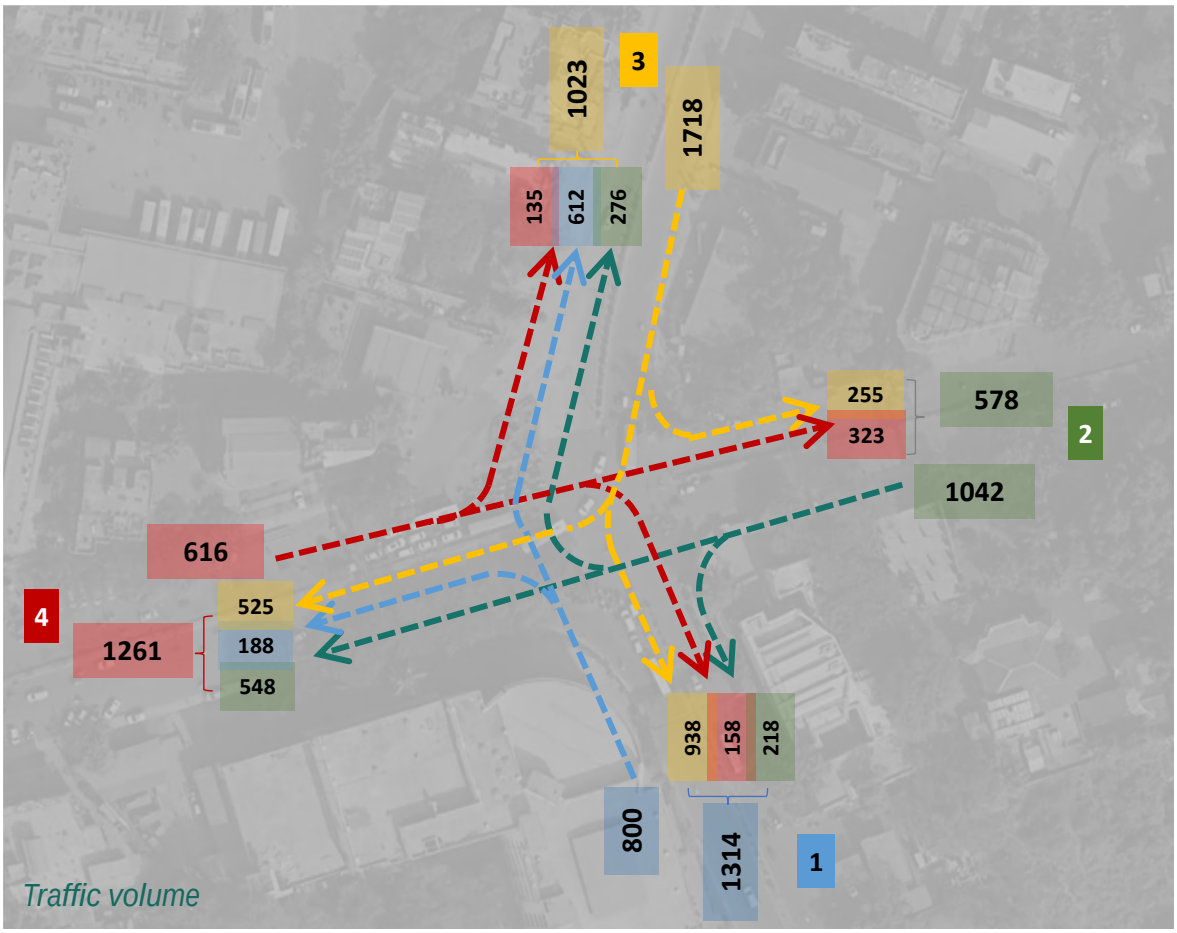

Potential vehicular-pedestrian conflict

CBS junction is large with no or faded road markings. Crossings are away from the desired pedestrian lines and have a high potential for pedestrian-vehicular conflict. The junction is inefficient and unsafe for all users

Assessment Matrix

Ease Of Movement	Remark	Grade
Adequate Footpath	Encroached at a few locations	Average
Cycle lane continuity	Absent at junction	Poor
Junction Geometry and compaction	Large junction, skewed geometry	Poor
Safety		
Road Markings	No lane markings	Poor
Signages	Few signages	Average
Pedestrian Crossings	Faded, not as per shortest pedestrian path	Below Avg.
Pedestrian Refuges	Present but inadequate, slip lanes with free left turn	Below Avg.
Pedestrian Signals	Absent	Poor
Lighting	Adequate street lighting	Excellent
Universal Accessibility		
Accessible Footpath	Lack of ramps	Poor
Accessible Crossings	Partially accessible	Average
Wayfinding Signages	Inadequate	Below Avg.
Comfort		
Seatings	Absent	Poor
Dustbins	No dustbins	Poor
Pause & Play Opportunity	Active street with vending	Good

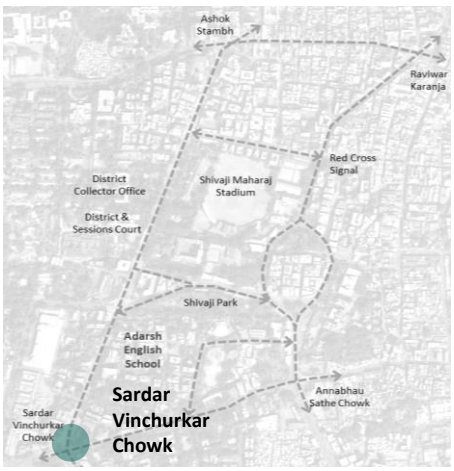
3.3 Sardar Vinchurkar Chowk



Traffic volume

Peak Hour Traffic Volume Count			
Time	**Junction Arm**	**Direction**	**PCU/hr**
10.30am – 11.30 am	Arm 1	3	612
		4	188
		1	218
	Arm 2	3	276
		4	548
		1	938
	Arm 3	2	255
		4	525
		1	158
	Arm 4	2	323
		3	135
		3	612


No lane and pedestrian line marking




Potential vehicular-pedestrian conflict

Sardar Vinchurkar Chowk is large with no or faded road markings. There is high potential for pedestrian-vehicular conflict. The junction is inefficient and unsafe for all users

Assessment Matrix

Ease Of Movement	Remark	Grade
Adequate Footpath	Encroached at a few locations	Average
Cycle lane continuity	Absent at junction	Poor
Junction Geometry and compaction	Large junction, skewed geometry	Poor

Safety		
Road Markings	No lane markings	Poor
Signages	Few signages	Average
Pedestrian Crossings	Faded, not as per shortest pedestrian path	Below Avg.
Pedestrian Refuges	Present but inadequate, slip lanes with free left turn	Below Avg.
Pedestrian Signal	Absent	Poor
Lighting	Adequate street lighting	Excellent

Universal Accessibility		
Accessible Footpath	Lack of ramps	Poor
Accessible Crossings	Unavailable, ramps absent	Poor
Wayfinding Signages	Inadequate	Below Avg.

Comfort		
Seatings	Absent	Poor
Dustbins	No dustbins	Poor
Pause & Play Opportunity	Active street with vending	Average

3.4 Road safety perception of users

Date of Survey - 02.11.2023 & 03.11.2023

Day of Survey – Thursday & Friday

Timing of Survey – Full day

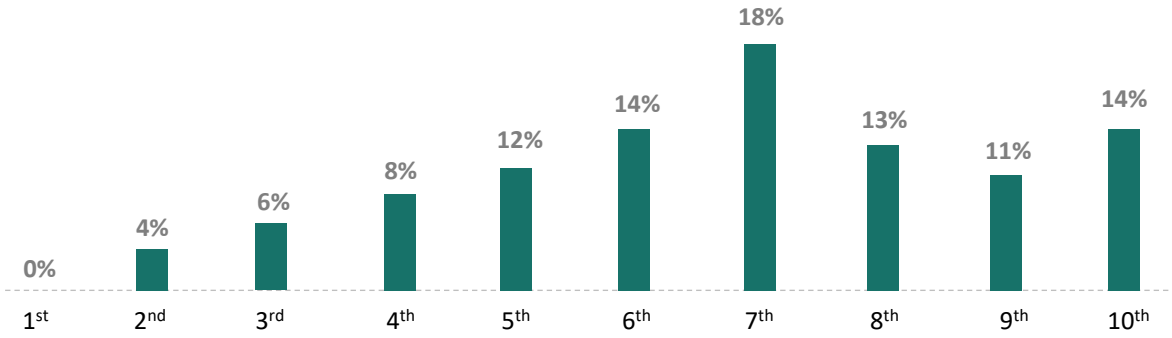
Sample Size - 160 persons

Gender bifurcation of Sample

Age group of Sample

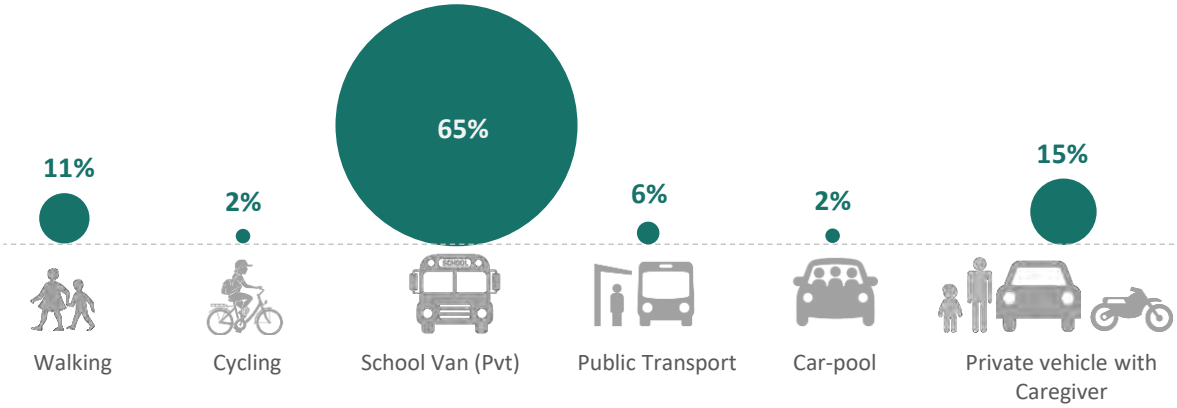
School Kids	Care Givers	Watchmen & School Van Drivers	School Staff
68%	26%	5%	1%

Grade/ Class of Students



3.4.1 Understanding the children

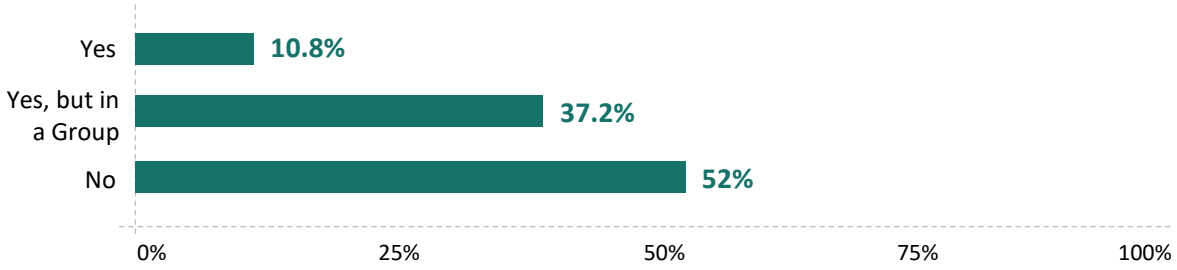
Q. How do you usually travel to school?



Q. What difficulties do you encounter when traveling on the school bus or van?
(following are the major responses)

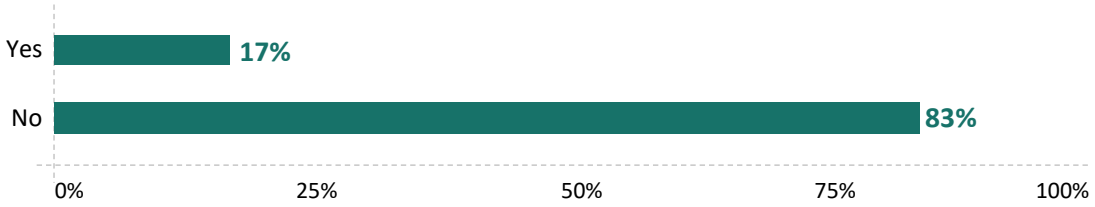
- Overcrowded Bus/Van
- Main road drop-offs despite available space in the school campus
- No assistance to cross the road when the bus/van is parked on the other side

Q. Do you feel safe while crossing the main road/ junction?

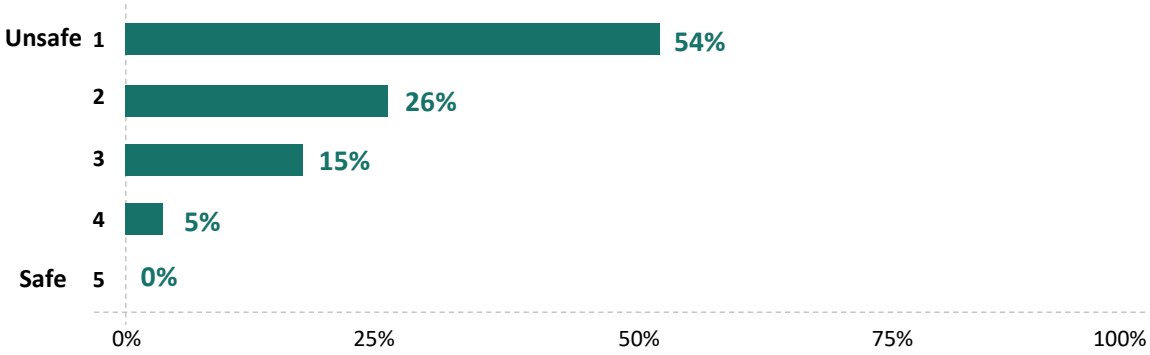


Crossing of the street by students during the school closing time

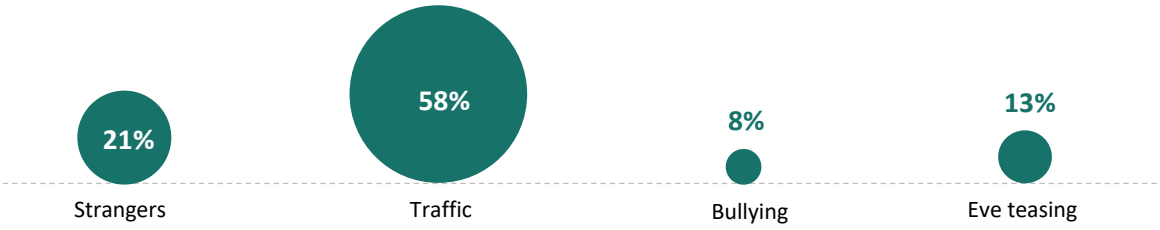
Q. Does the school guard or traffic warden help you cross the road?



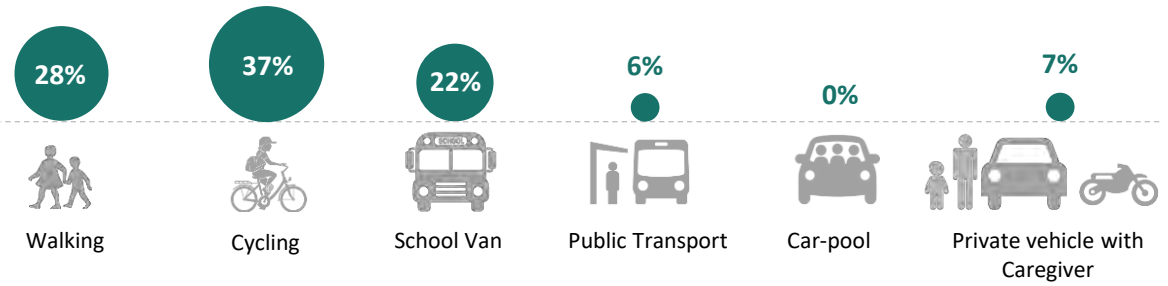
Q. When you walk out or cycle from school, how safe do you feel on the street and junction? (rate on 1 to 5, where 1 is very unsafe and 5 is the safest)

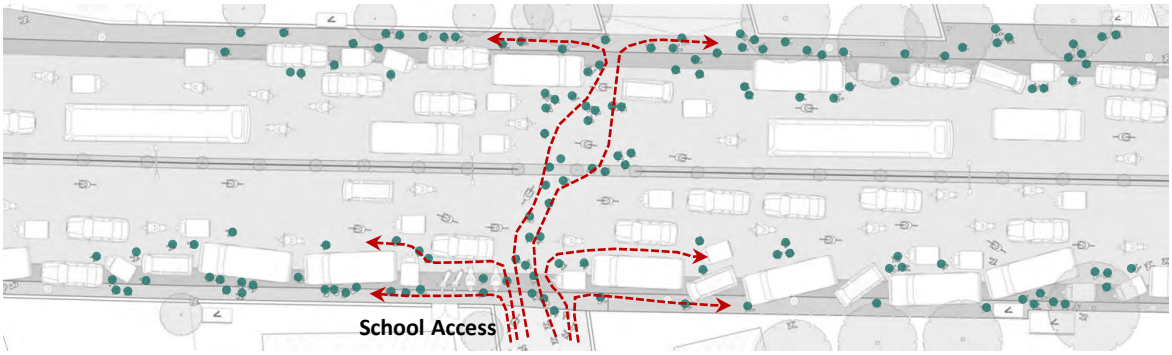


Q. When you are outside on your own or with friends, what are you worried the most about?



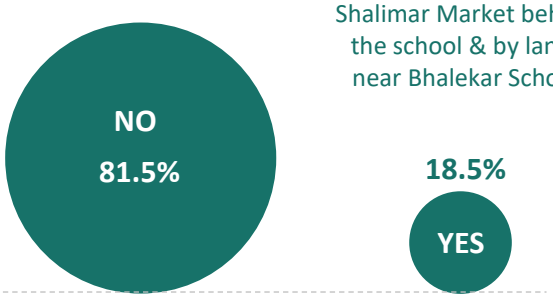
Q. If the road safety is improved, How would you like to travel to school?





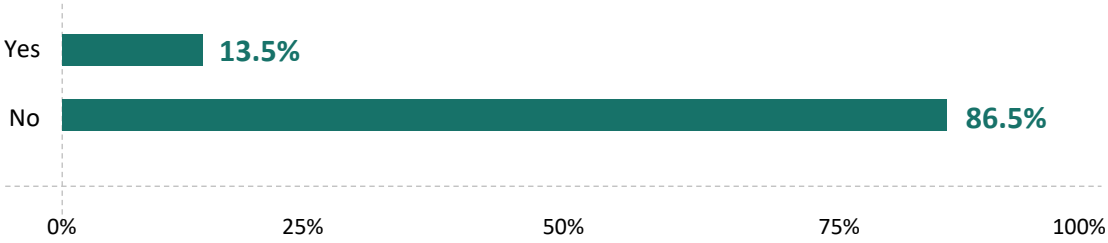
Movement of students and caregivers on the carriageway due to narrow and encroached footpath

Q. Have you ever experienced eve-teasing/ harassment / bullying on streets, in or around your school zone?



Shalimar Market behind the school & by lanes near Bhalekar School

Q. Have you witnessed a road crash in the school zone? Where?



While crossing CBS Junction near School

Outside CBS station

on street outside the School

Infront of the school gate, while crossing the road

Near Shalimar Market

Q. Why do you feel unsafe walking along your route to school?


No or narrow footpath

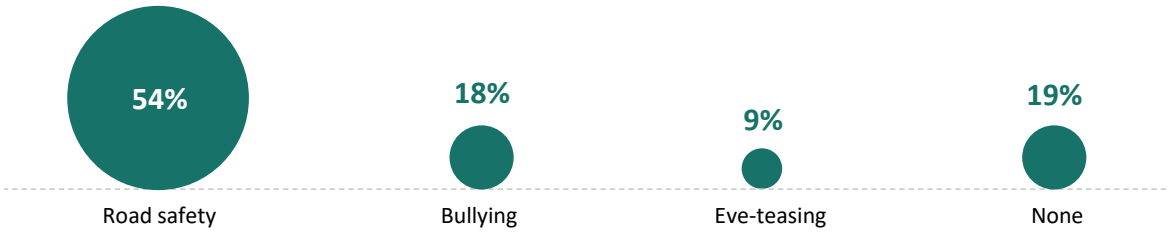
Large junction without crossing and refuge


Lack of safe pedestrian crossings

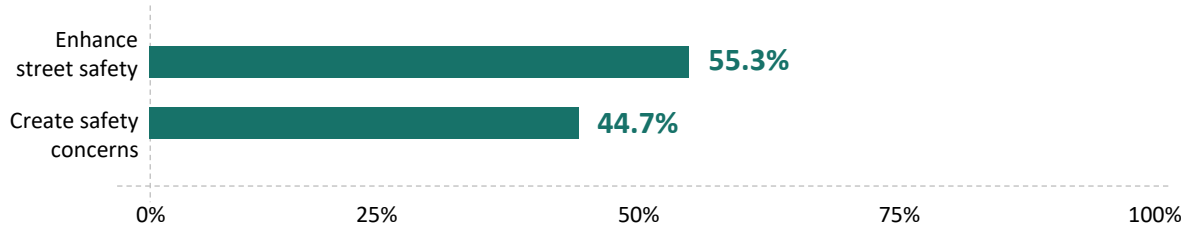

Encroachment on footpath

3.4.2 Understanding the caregivers

Q. Has your child ever experienced any safety issues in the journey to and from school?



Q. There are street vendors around the school. What's your opinion about them with regards to your child's safety?



Paan shops outside the school should be moved to some other place.

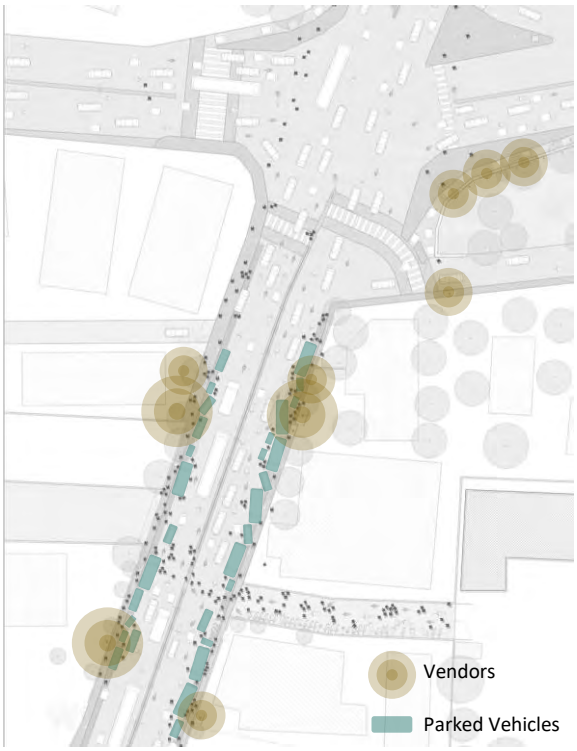
Vendors keep the children occupied while they wait for their school van or caregivers to come

Vendors are causing more congestion and traffic on street

Vendors create disturbance in immediate surrounding of school

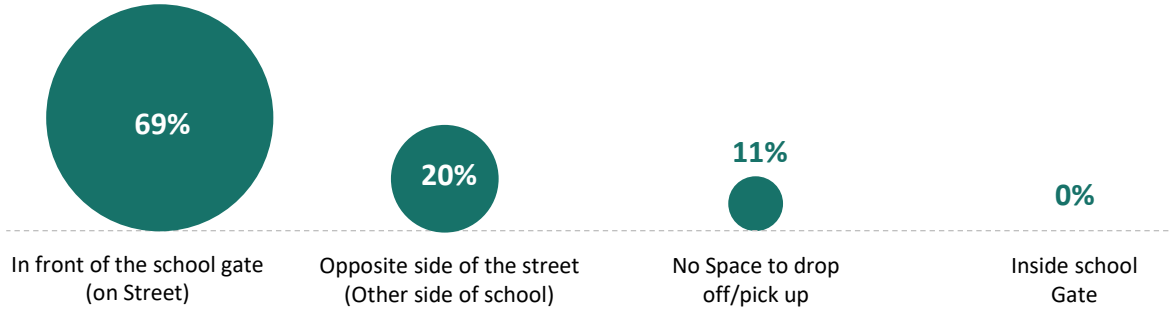
Make the street active

Crash-prone Zones because of vehicular pedestrian conflict

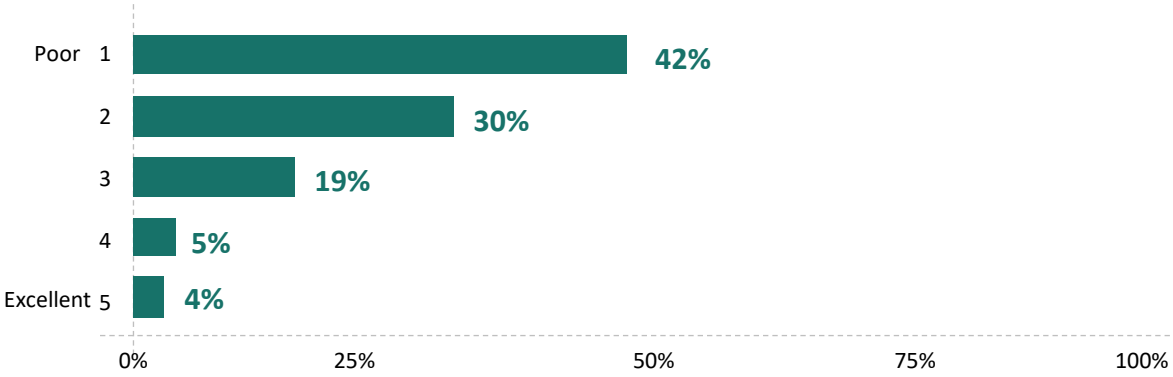


Vendor and parking encroachments force children to walk on the carriageway.

Q. Where do you wait or park your vehicle when you come to drop off/pick up your child?



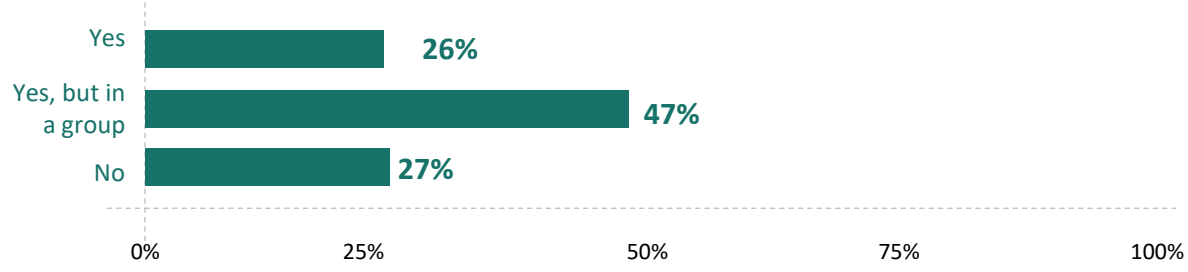
Q. How would you rate the traffic management in the school zone during school hours?



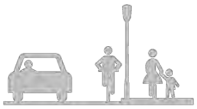
Q. What is the barrier for you to send your child to school independently (walk, cycle or public transport)?

26%	44%	3%	9%	7%	11%
Distance to school	Road safety related issues	Weather	Crime danger	Lack of efficient public transport	Other Reasons (not identified)

Q. If the road safety in the school zone is improved, would you like to send your child to school on their own by walk/cycle?



Q. What improvements or changes would you like to see in the school zone to enhance safety for children and parents? *(Top 4 responses are listed below, in order)*



Wider, walkable and segregated Footpath and cycle track

Traffic Management System by School Authority/Police

Traffic Calming Measures (speed breaker, signage etc)

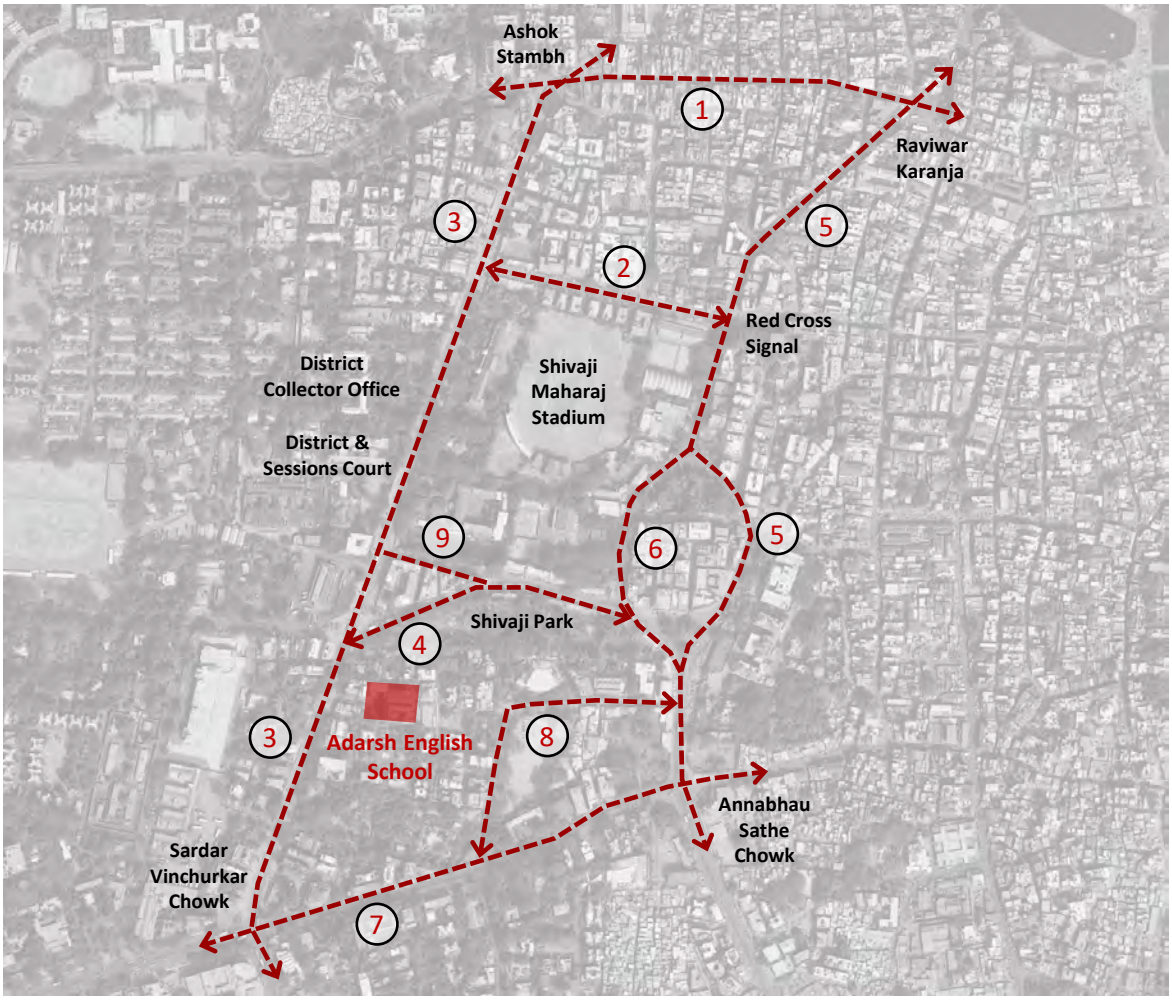
Safe Zebra Crossings

Tobacco vendor near the school

Chaos outside the school during closing time

Students crossing the street in group

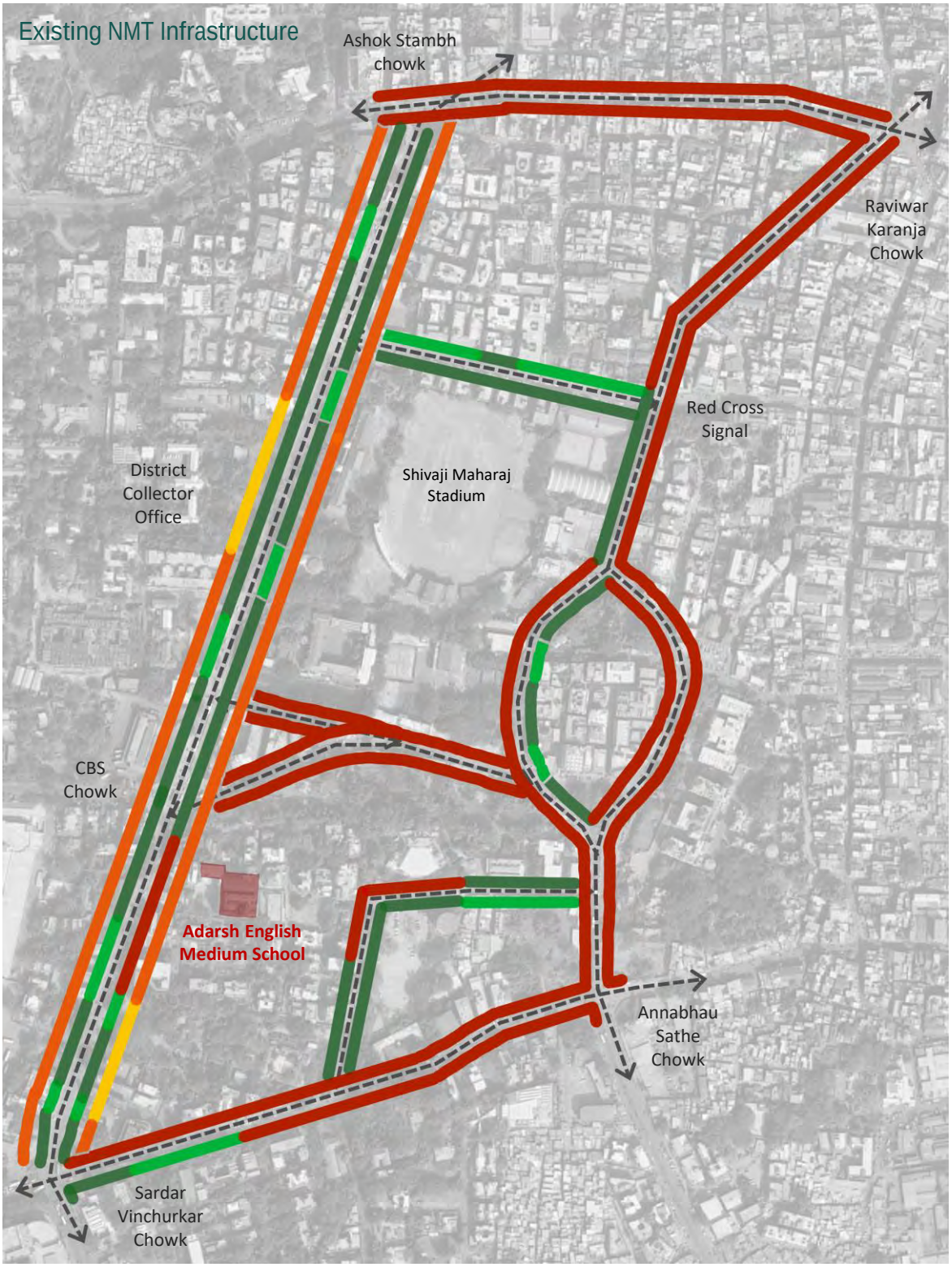
3.5 Street Assessment around school



Streets surveyed near Adarsh English Medium School

No	Name of Road	Length (m)
1	Raviwar Peth Road	440 m
2	Mahatma Gandhi Road	315 m
3	Old Agra Road	1000 m
4	Shivaji Road	315 m
5	Tilak Road	1100 m
6	Shalimar Road	730 m
7	GPO Road	565 m
8	Annabhau Sathe Chowk Road	420 m
9	CBS Road	305 m

A total of nine streets around the school were surveyed under the study, covering a **total length of 5.2km**



Footpaths and cycle lanes are termed **unusable here due to encroachment by vendors/parking or narrow width or unmaintained/broken infrastructure.** It has been observed that the NMT infrastructure on streets around the school is poor, discouraging the students to walk or cycle to school while creating potential risks.

3.5.1 Old Agra Road

Parking encroachment on footpath

Potential pedestrian-vehicular conflict


Cyclist prefer carriageway as cycle lane is encroached by parking

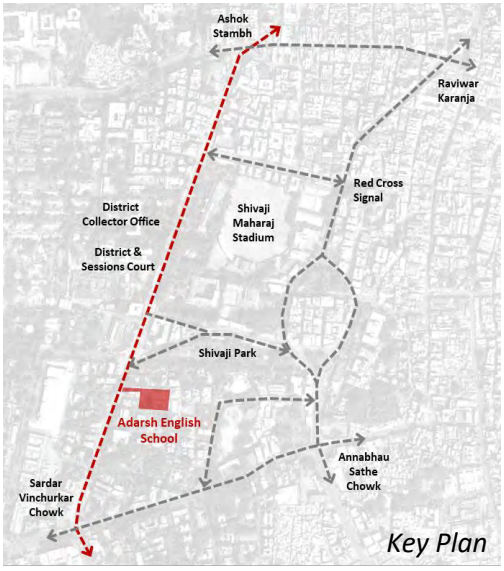

Wide footpath near Collector's office

Street type: Arterial

RoW: Varying from 18 – 27m

Length: 1km

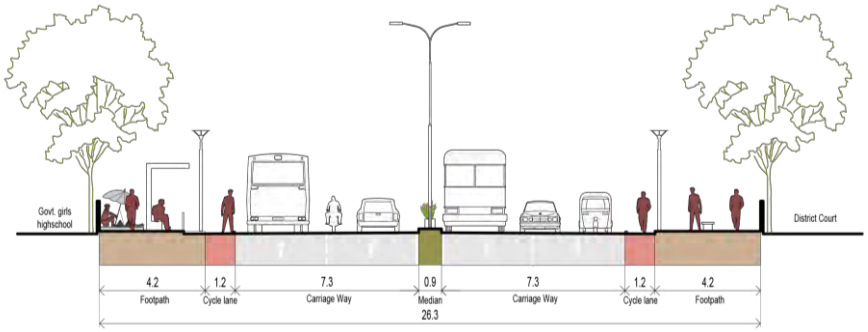
Old Agra Road has wide footpaths near public buildings, however they are narrow and encroached in other stretches, affecting its continuity. Cycle lane is present on both sides, but is encroached by parking at majority locations. It's a wide street with high speed, but few traffic calming measures and lack road markings affecting safety of all the users.

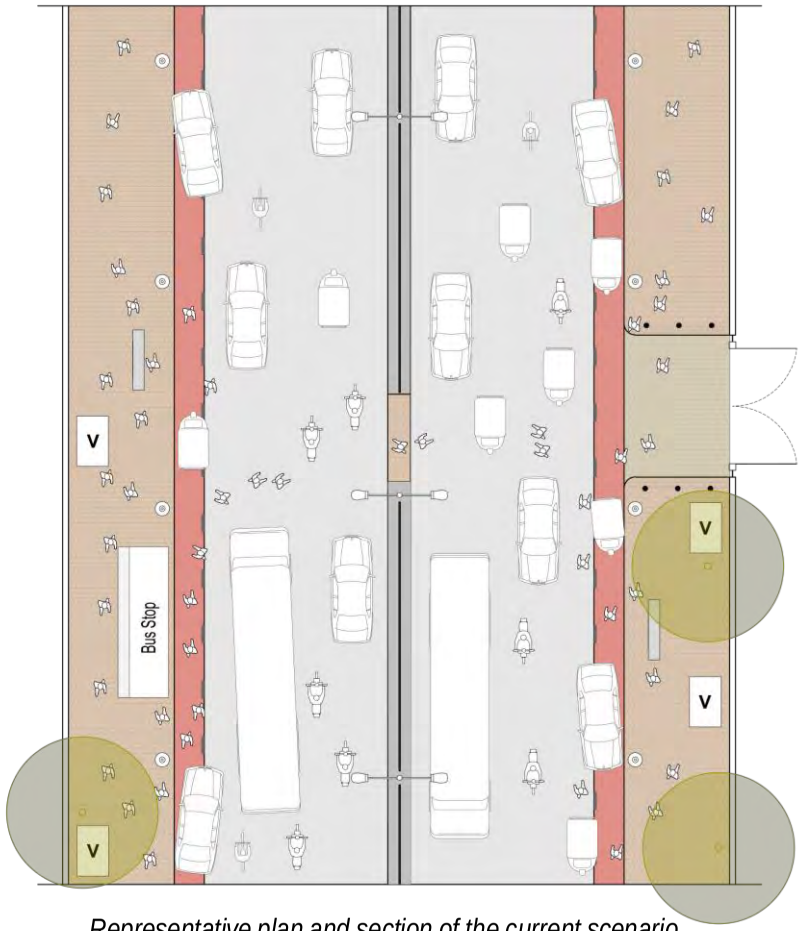


Key Plan

Crash Data: Based on data collected from local police station, this road seems to be the most crash prone. One fatal crash & four minor crashes were reported in 2020. In 2021, one fatal crash & 4 minor crashes were reported in which one student was involved. Three fatal crashes including one student & 3 minor crashes were reported in 2022.

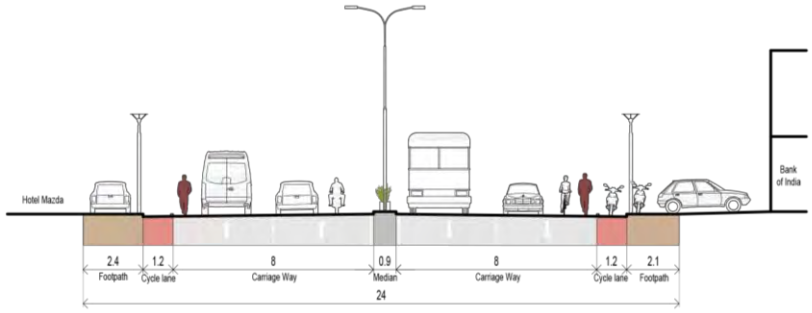
Part 1 - Ashok Stambh Junction to CBS Chowk

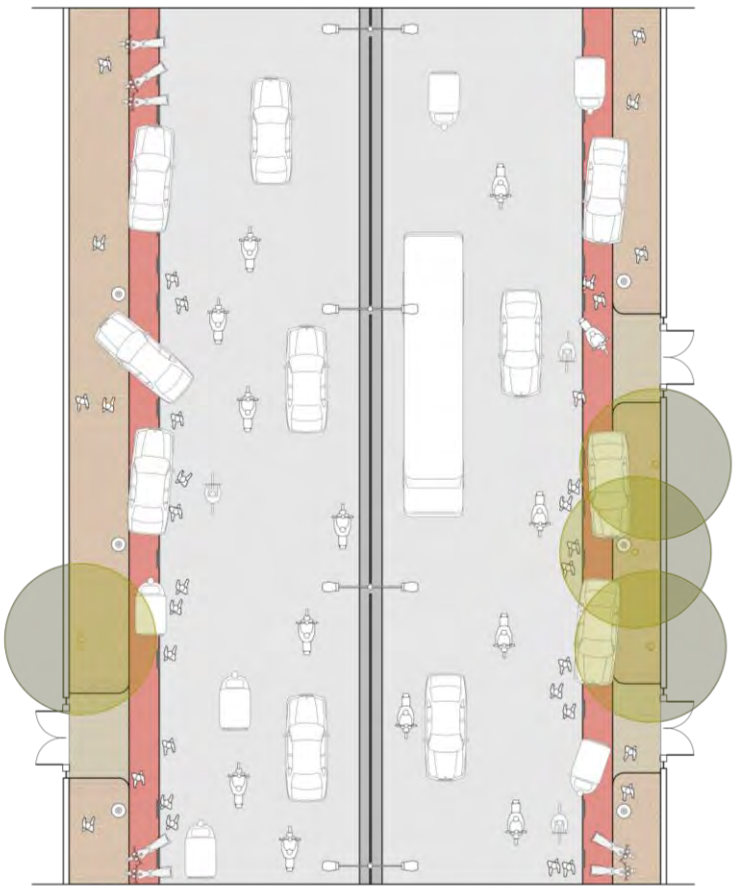




Representative plan and section of the current scenario

Part 2 - CBS Chowk to Sardar Vinchurkar Chowk





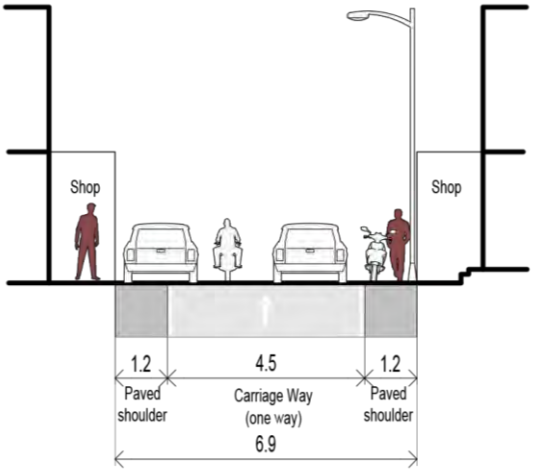
Representative plan and section of the current scenario

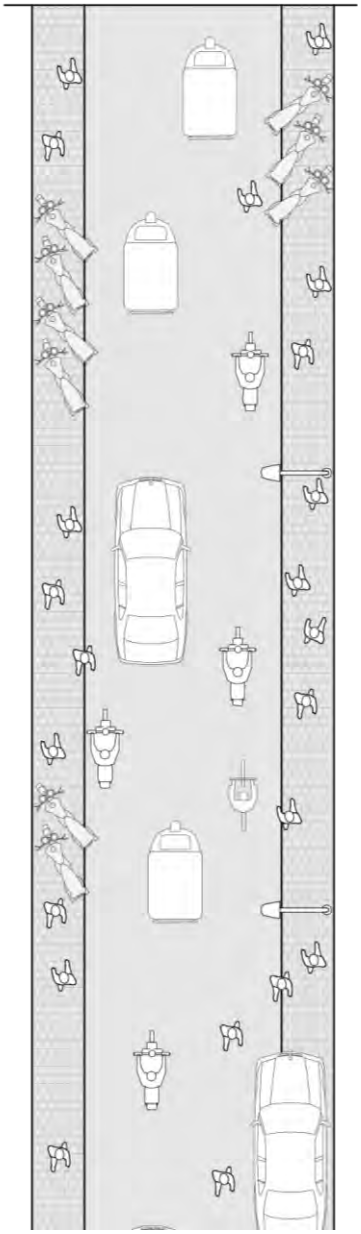
Street edge in front of the school

Assessment Matrix

Ease Of Movement	Remark	Grade
Adequate Footpath	Wide footpath but varying widths, broken at places	Above Avg.
Continuous cycle track	Cycle lane with no safety verge, encroached by parking	Poor
Designed Parking	No, Vehicles parked on footpath and cycle track	Poor
Safety		
Traffic Calming	High speed road, with few traffic calming measures	Below Avg.
Road Markings	No lane markings	Poor
Signages	Signages only near Junctions	Average
Pedestrian Crossings	Only 1 midblock crossing observed. Others at junctions	Average
Lighting	Adequate street lighting	Excellent
Universal Accessibility		
Accessible Footpath	Lack of ramps	Poor
Accessible Crossings	Only at junctions (Partially)	Average
Wayfinding Signages	Inadequate	Average
Comfort		
Seatings	Available at a few locations on footpaths	Average
Dustbins	No dustbins	Poor
Pause-Play Opportunity	Active street with vending	Above avg.

3.5.2 Raviwar Peth Road





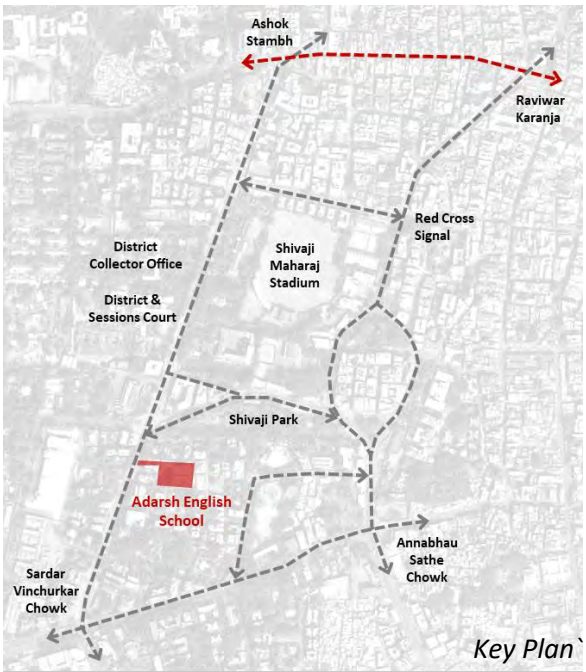
Representative plan and section of the current scenario

No segregated footpath. Shoulder is paved

Pedestrian-vehicular conflict

RoW: Varying from 7-10m
Length: 0.44km

Raviwar Peth road is a narrow one-way road with no physical segregation of footpath. It's a commercial street with paved shoulder, which is occupied by parking



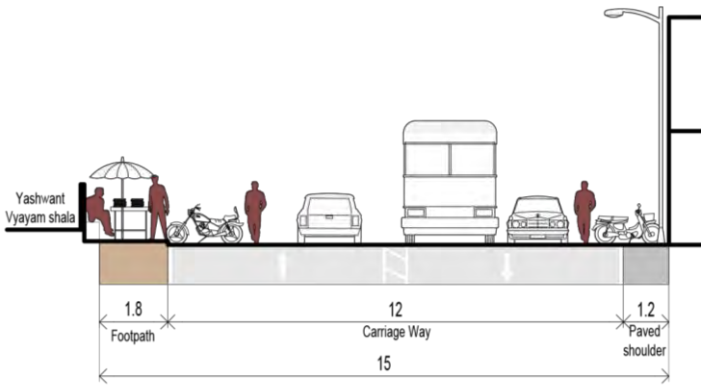
Key Plan

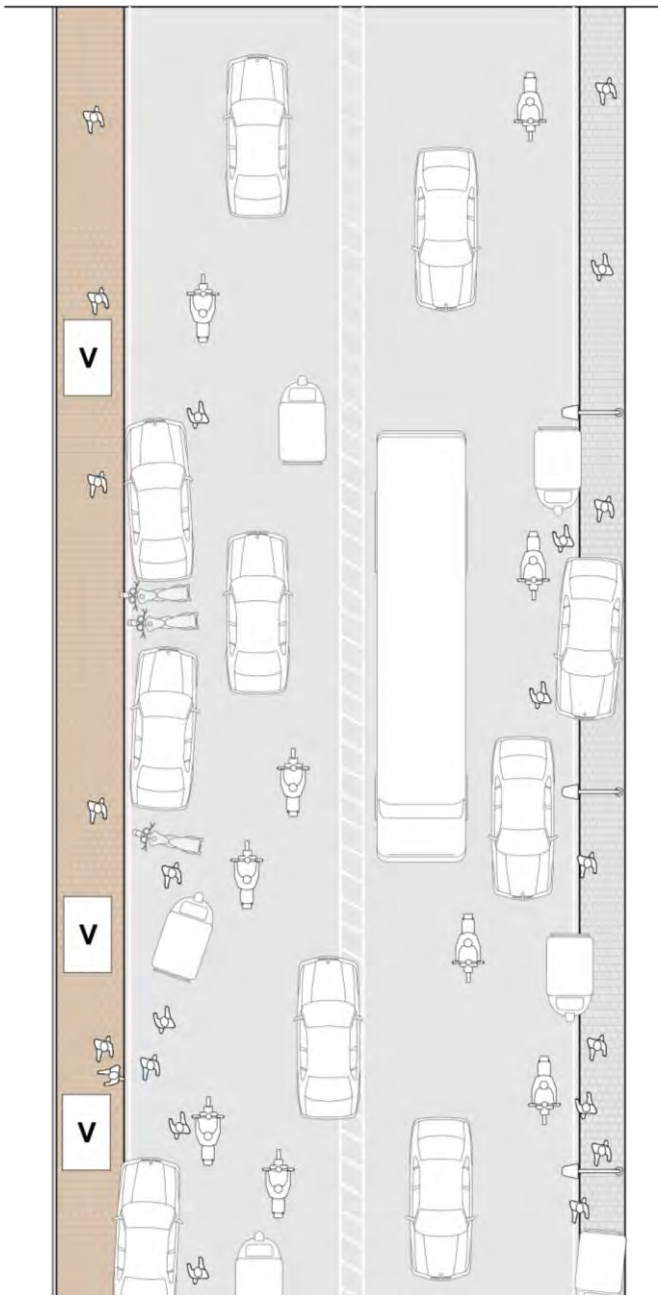
One-way street, with edge occupied by parking.

Assessment Matrix

Ease Of Movement	Remark	Grade
Adequate Footpath	No footpath, paved street shoulder used for parking	Poor
Pedestrian vehicular conflict	High. Pedestrians walk on carriageway.	Poor
Designed Parking	Narrow street, illegal parking	Poor
Safety		
Traffic Calming	No speed breakers	Below Avg.
Road Markings	Present partially	Above Avg.
Signages	No signages	Poor
Pedestrian Crossings	No pedestrian crossings	Poor
Lighting	Streetlights present on street edges	Above Avg.
Universal Accessibility		
Accessible Footpath	Unavailable	Poor
Accessible Crossings	Unavailable	Poor
Wayfinding Signages	Unavailable	Poor
Comfort		
Seatings	Unavailable, paved shoulder but encroached	Poor
Dustbins	Unavailable	Poor
Pause & Play Opportunity	Shops on street edges attract pedestrians	Above Avg.

3.5.3 Mahatma Gandhi Road





Representative plan and section of the current scenario

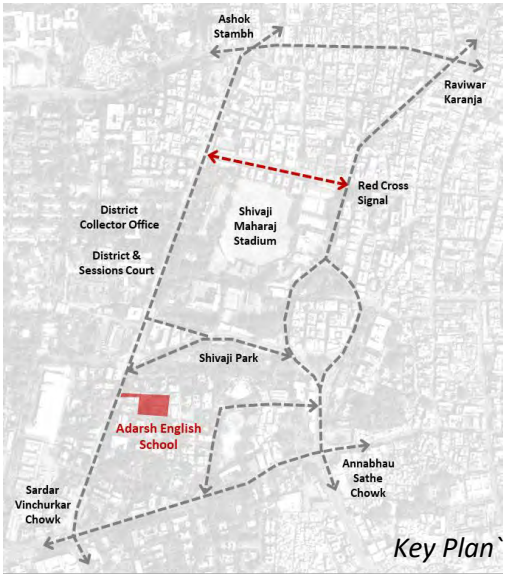

Vendors on footpath


Pedestrian movement on carriageway


Pedestrian-vehicular conflict

Right of way: Varying from 15-18m
Length: 0.3km

MG road is a two way street with retail at the edge. Narrow Footpath is available on one side and is encroached by vendors. Illegal parking is observed.



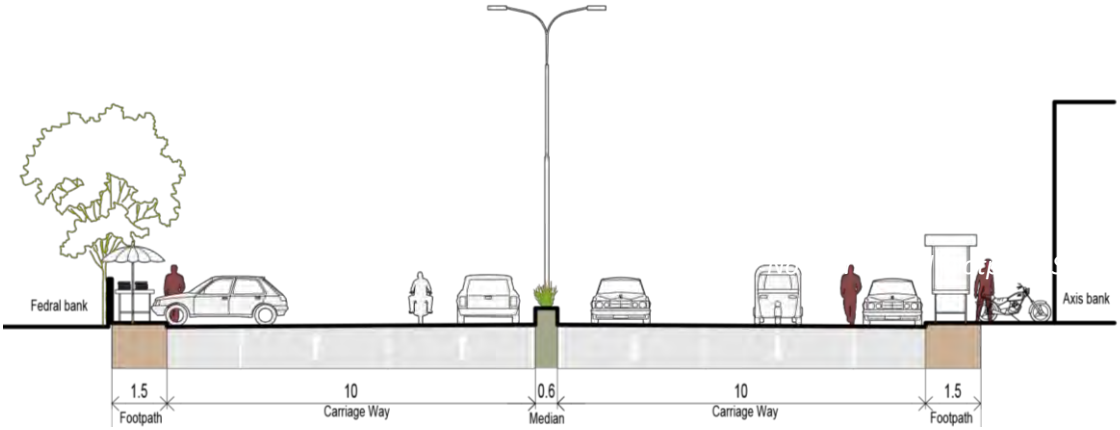
Key Plan`

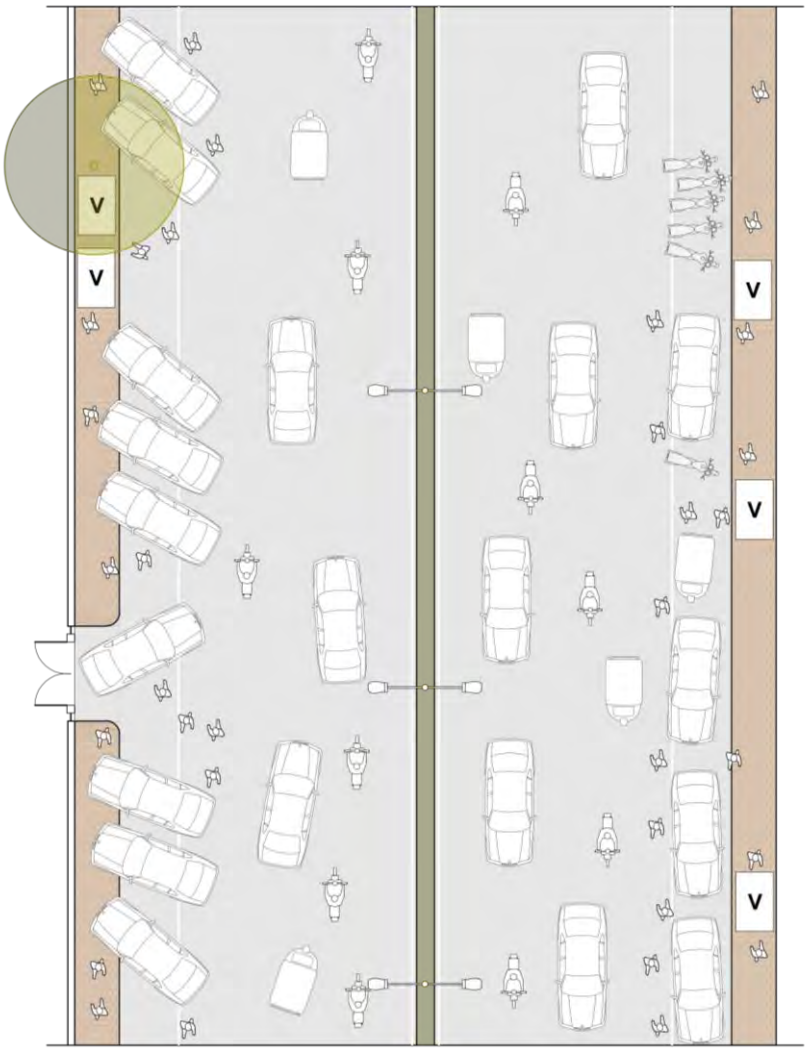
Street with wide carriageway, no or narrow footpath. Vendors and retail make the street active

Assessment Matrix

Ease Of Movement	Remark	Grade
Adequate Footpath	Footpath available only along one side of the street	Average
Pedestrian Vehicular Conflict	Very High	Poor
Designed Parking	Illegal parking	Below Avg.
Safety		
Traffic Calming	No traffic calming measures	Poor
Road Markings	Faded markings	Below Avg.
Signages	No parking and Junction signages are available	Average
Pedestrian Crossings	Unavailable	Poor
Lighting	Moderately lit	Average
Universal Accessibility		
Accessible Footpath	Raised footpath, Discontinued at property entrance	Poor
Accessible Crossings	Unavailable	Poor
Wayfinding Signages	Unavailable	Poor
Comfort		
Seatings	Unavailable	Poor
Dustbins	Unavailable	Poor
Pause & Play Opportunity	The majority of only shops	Average

3.5.4 GPO & Zilla Parishad Road



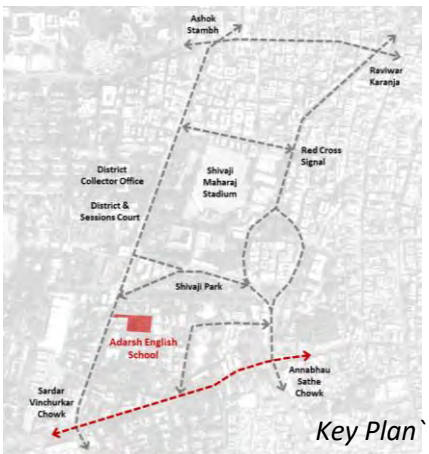


Representative plan and section of the current scenario


Pedestrian-vehicular conflict


Parking on carriageway


Pedestrian-vehicular conflict



Key Plan

Right of Way: 16 to 24m
Length: 0.5km

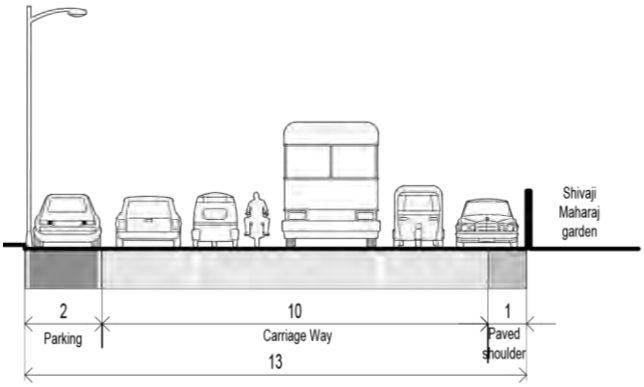
Street has wide carriageway, footpaths are encroached by parking and vendors. It is observed that majority of the pedestrians prefer using the carriageway.

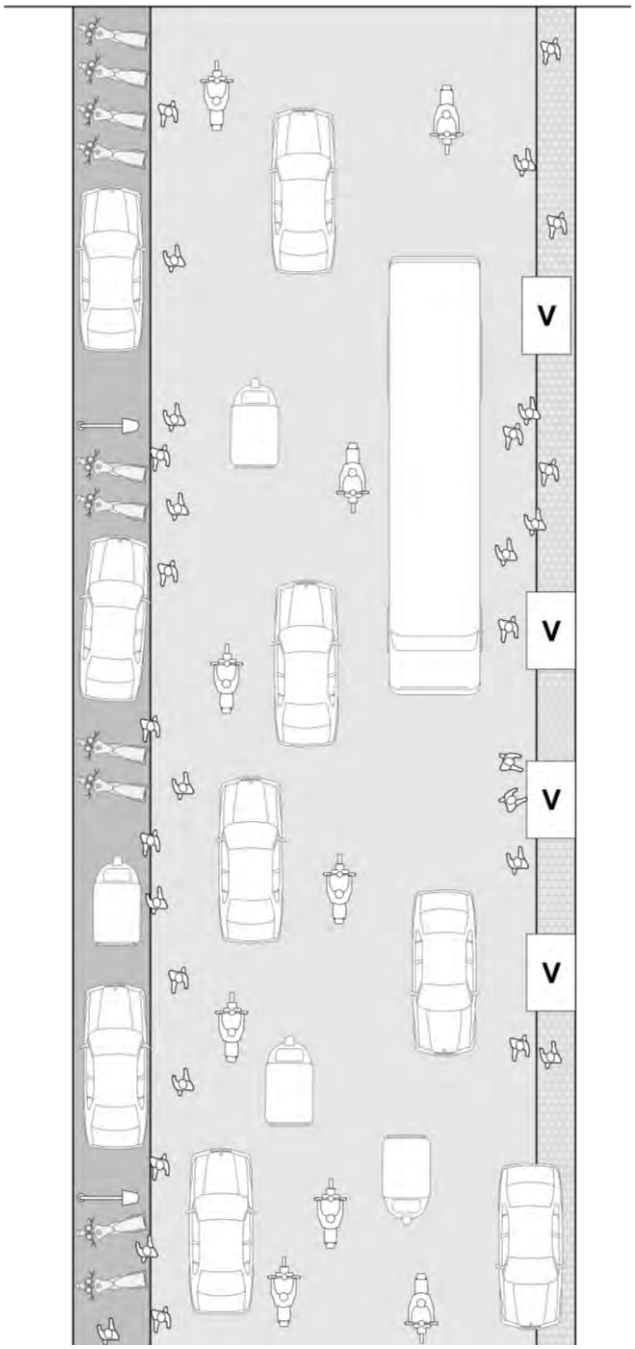
Wide carriageway, no or faded road markings. High potential for pedestrian-vehicular conflict.

Assessment Matrix

Ease Of Movement	Remark	Grade
Adequate Footpath	Partially available, narrow and occupied by vendors	Below Avg.
Pedestrian Vehicular Conflict	High conflict	Poor
Designed Parking	Illegal parking	Poor
Safety		
Traffic Calming	Street signages, speed breaker at junction, no crossings	Average
Road Markings	Available only on one carriageway	Below Avg.
Signages	Available at medians and street edges	Average
Pedestrian Crossings	Unmarked	Poor
Pedestrian Refuges At Intersections	Occupied by street furniture	Below Avg.
Lighting	Available at medians	Average
Universal Accessibility		
Accessible Footpath	Raised Footpath. Broken at multiple locations	Poor
Accessible Crossings	No crossings	Poor
Wayfinding Signages	Only seen at junctions	Below Avg
Comfort		
Seatings	Unavailable	Poor
Dustbins	Unavailable	Poor
Pause & Play Opportunity	Vending Street	Average

3.5.5 Shree Chhatrapati Shivaji Maharaj Road





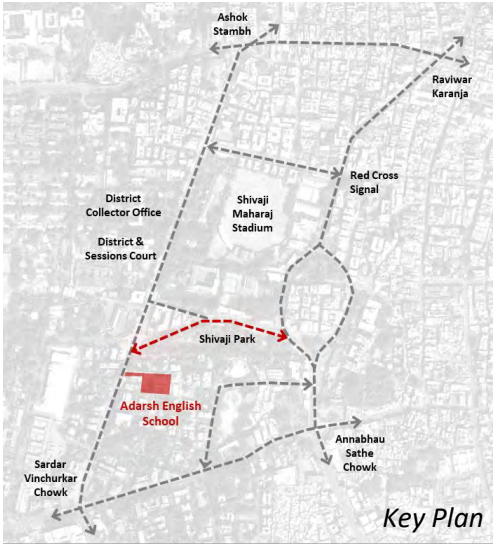
Representative plan and section of the current scenario


No footpath


Parking on carriageway

Right of Way: 13 to 18m
Length: 0.4km

Street has two-way movement with no median and road markings. Footpath is available only on one side and is encroached by parking. Lack of median and traffic calming measures lead to speeding of vehicles.



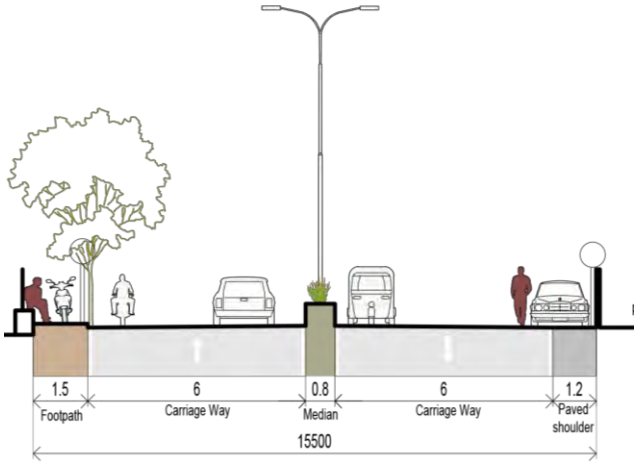
Key Plan

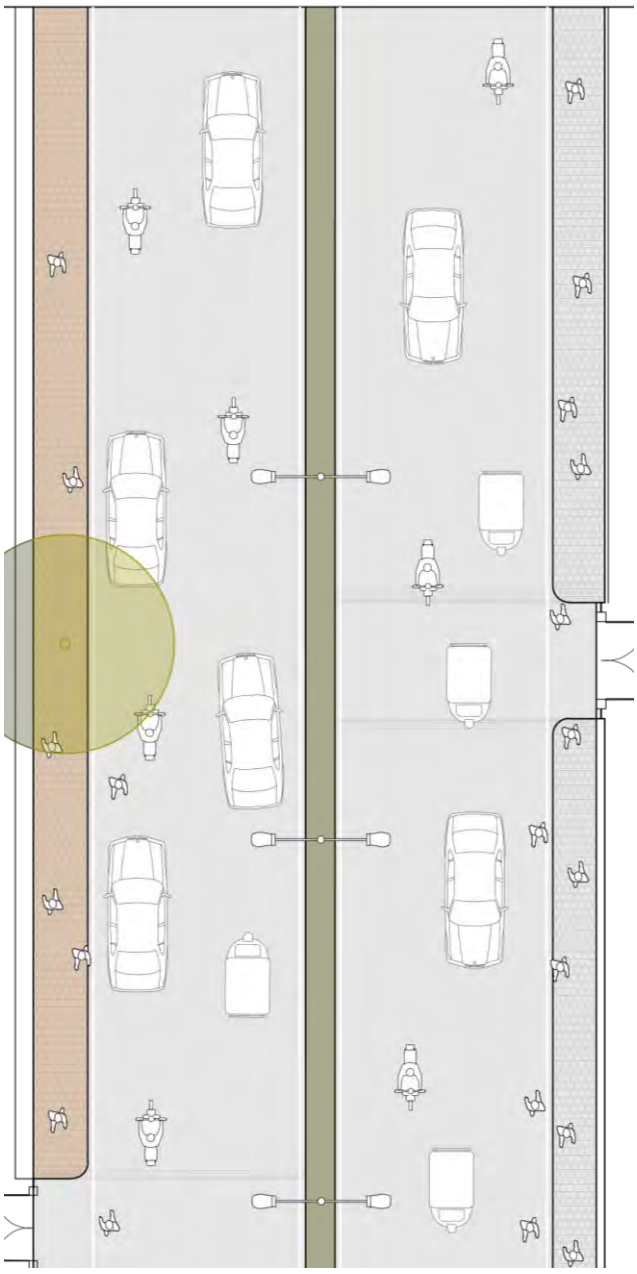
No road and pedestrian markings. High potential for pedestrian-vehicular conflict.

Assessment Matrix

Ease Of Movement	Remark	Grade
Adequate Footpath	Unavailable. Paved shoulder on one side, occupied with vendors	Poor
Pedestrian Vehicular Conflict	High Conflict	Poor
Designed Parking	Unavailable, one edge occupied by parking	Below Avg.
Safety		
Traffic Calming	Absent. Median partially available	Below Avg.
Road Markings	Unavailable	Poor
Signages	Only parking signages	Below Avg.
Pedestrian Crossings	Unavailable	Poor
Pedestrian Refuges At Intersections	Unavailable	Poor
Lighting	Moderately lit	Above Avg.
Universal Accessibility		
Accessible Footpath	No Footpath, paved shoulder encroached	Poor
Accessible Crossings	No Crossings	Poor
Wayfinding Signages	Unavailable	Poor
Comfort		
Seatings	Unavailable	Poor
Dustbins	Unavailable	Poor
Pause & Play Opportunity	Vending seen near junctions	Average

3.5.6 Kalidas Kalamandir Road





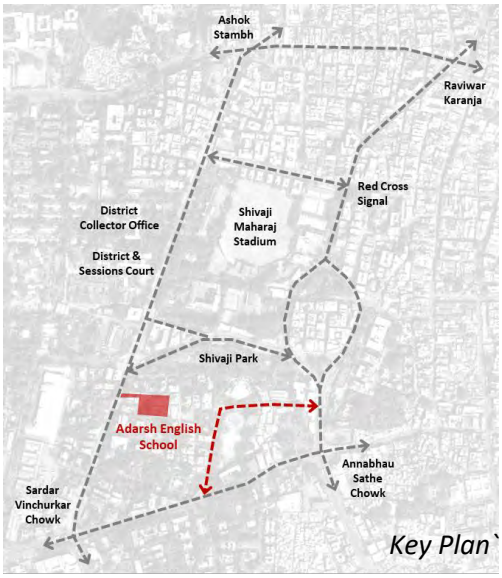
Representative plan and section of the current scenario

Pedestrian-vehicular conflict

Clear lane markings

Right of Way: 12 to 15m
Length: 0.4km

The footpaths are well shaded. However, the continuity of footpath is broken at the property entrances with a sudden drop. Footpaths are free of encroachments. Lane markings help in visibility and guide the motorists.



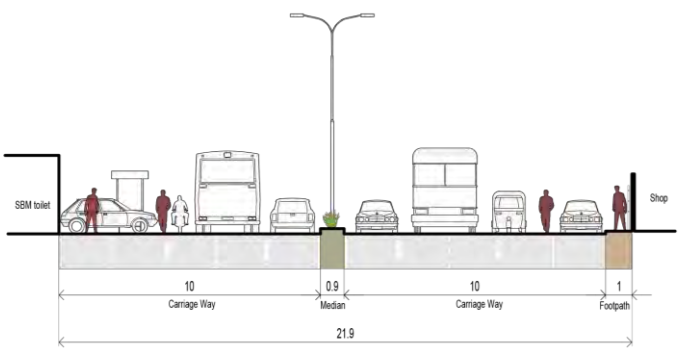
Key Plan

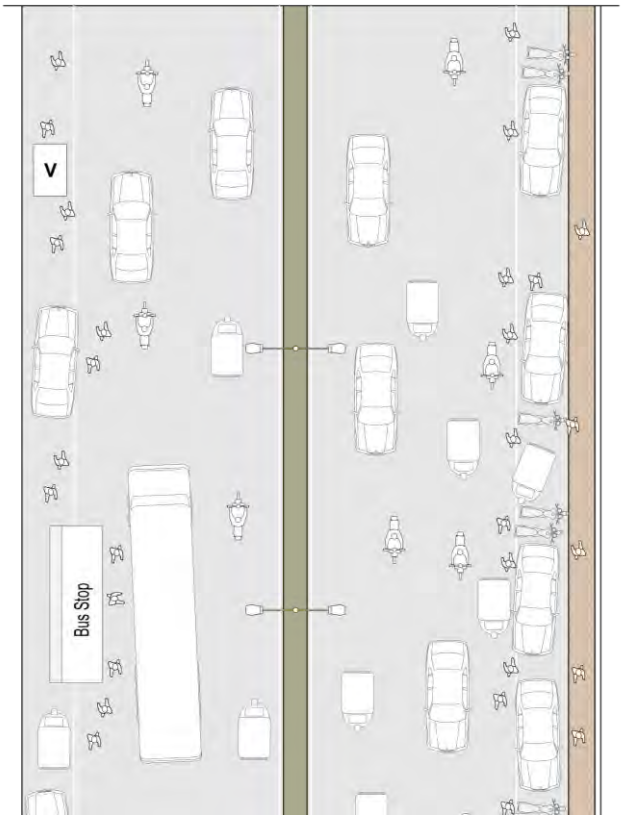
Wide carriageway, with clear lane and pedestrian marking

Assessment Matrix

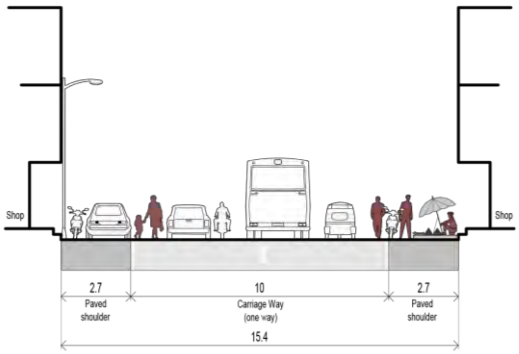
Ease Of Movement	Remark	Grade
Adequate Footpath	Adequate footpath available on one side	Above Avg.
Pedestrian Vehicular Conflict	Partially seen on side where there is broken footpath	Average
Designed Parking	Unavailable	Poor
Safety		
Traffic Calming	Speed breakers present	Above Avg.
Road Markings	Available	Above Avg.
Signages	Limited signages available	Average
Pedestrian Crossings	Midblock crossings absent	Above Avg.
Lighting	Well lit	Above Avg.
Universal Accessibility		
Accessible Footpath	Raised footpaths, no ramps	Poor
Accessible Crossings	Unavailable	Average
Wayfinding Signages	Only at the junction and near Kalidas kalamandir	Average
Comfort		
Seatings	Unavailable	Poor
Dustbins	Unavailable	Poor
Pause & Play Opportunity	Unavailable	Poor

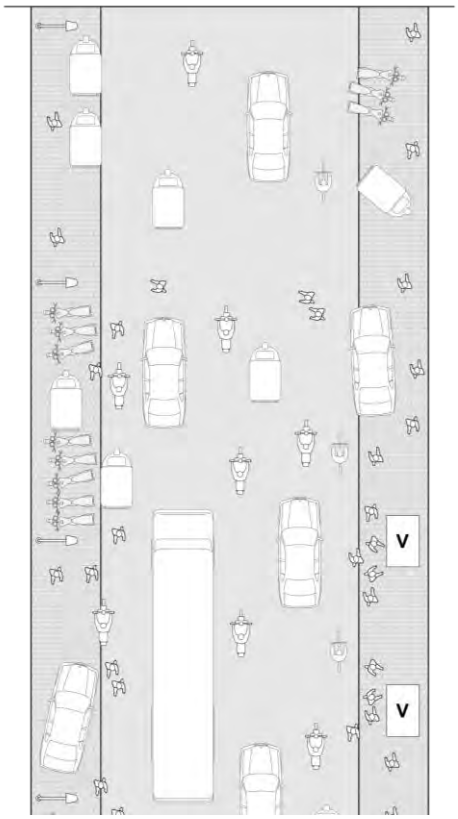
3.5.7 Tilak Road





Representative plan and section of the current scenario (From Shivaji Maharaj road chowk to Annabhau Sathe Chowk)

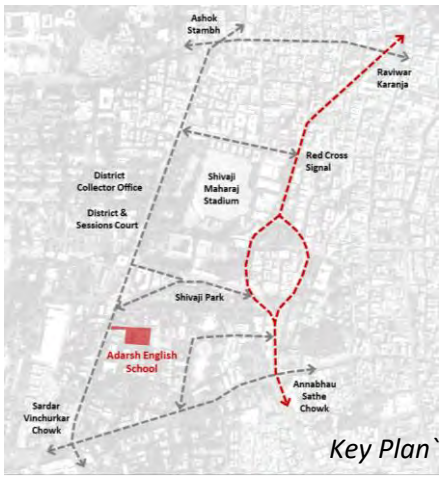




Representative plan and section of the current scenario (from Shivaji Maharaj road Chowk to Raviwar Karanja Chowk)

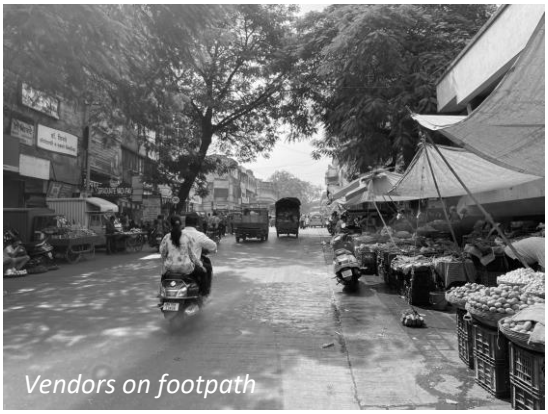
Right of Way: 15 to 24m
Length: 1km

Wide carriageway, no pedestrian marking



Key Plan

Wide carriageway, no pedestrian marking



Vendors on footpath

Assessment Matrix

Ease Of Movement	Remark	Grade
Adequate Footpath	Narrow and encroached footpath	Below Avg.
Pedestrian Vehicular Conflict	High. Pedestrians at risk due to high vehicular speed.	Poor
Designed Parking	Designated parking bays. No bulbouts	Below Avg.
Safety		
Traffic Calming measures	Absent	Poor
Road Markings	Partially available	Below Avg.
Signages	Seen only near junctions.	Average
Midblock Pedestrian Crossings	Absent	Poor
Lighting	Well lit	Above Avg
Universal Accessibility		
Accessible Footpath	Unavailable	Poor
Accessible Crossings	Unavailable	Poor
Wayfinding Signages	Unavailable	Poor
Comfort		
Seatings	Unavailable	Poor
Dustbins	Unavailable	Poor
Pause & Play Opportunity	Vendors and eateries seen	Above Avg.

3.6 Assessment Matrix of streets near Adarsh English Medium School

Streets near Adarsh English Medium School

A. Old Agra Road

B. Raviwar Peth Road

C. Mahatma Gandhi Road

D. GPO & Zilla Parishad Road

E. Shree Chhatrapati Shivaji Maharaj Road

F. Kalidas Kalamandir Road

G. Tilak Road

0-3	4-6	7-9	10-12	13-15
Excellent	**Good**	**Average**	**Below Avg.**	**Poor**

Ease of Movement	A	B	C	D	E	F	G	Overall
Adequate Footpath								Average
Pedestrian Vehicular Conflict								Poor
Designed Parking								Poor

Safety	A	B	C	D	E	F	G	Overall
Traffic Calming								Below Avg.
Road Markings								Poor
Signages								Average
Pedestrian Crossings								Below Avg.
Lighting								Good

Universal Accessibility	A	B	C	D	E	F	G	Overall
Accessible Footpath								Poor
Accessible Crossings								Poor
Wayfinding Signages								Below Avg.

Comfort	A	B	C	D	E	F	G	Overall
Seatings								Poor
Dustbins								Poor
Pause-Play Opportunity								Average

Overall assessment shows significant deficiencies, indicating an **urgent need for improvements in pedestrian vehicular conflict, designed parking, road markings, accessible footpaths & crossings, signage and street elements.**

3.7 Crash Data

Crash data for last 3 years have been collected from Sarkar Wada police station. It is observed that every year 2-3 fatal crashes & 4-7 minor crashes occur on these roads surrounding the school. Old Agra road (road no. 3) appears to be the most crash prone, recording most of the major crashes. Crash data as collected are presented in the following tables,

2022 Crash data

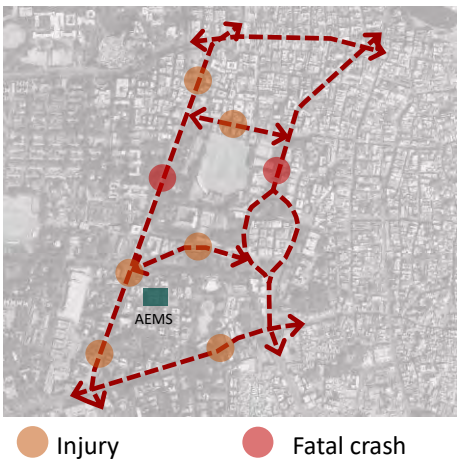
Road no	Major/ Minor crash	Crash Details	Fatal	Injury	Remarks
3	Major	bike with median	1	1	
3	Major	bus with bike	1	-	22 years student
3	Major	bus with pedestrian	1	1	
3	Minor	bike with bike	-	1	
5	Minor	car with bike	-	2	
9	Minor	auto rikshaw with bike	-	1	
7	Minor	bike with pedestrian	-	1	

2021 Crash data

Road no	Major/ Minor crash	Crash Details	Fatal	Injury	Remarks
3	Major	bike with bike	1	1	
5	Major	hit and run	1	-	
3	Minor	bike with pedestrian	-	2	
3	Minor	bike with pedestrian	-	1	23-year old student
6	Minor	bike with pedestrian	-	1	
8	Minor	bike with bike	-	1	

2020 Crash data

Road no	Major/ Minor crash	Crash Details	Fatal	Injury	Remarks
3	Major	car with pedestrian	1	-	
6	Major	bike with bike	1	1	
4	Minor	bike with median	-	1	
4	Minor	rikshaw with bike	-	3	
7	Minor	bike with bike	-	2	20 year student
3	Minor	bike with pedestrian	-	1	
3	Minor	car with bike	-	2	
2	Minor	bike with bike	-	2	
3	Minor	car with bike	-	1	



3.8 Reflections

The current state of the streets surrounding the AEMS school, in our assessment reveals a predominantly car-friendly environment, leading to frequent conflicts between slower modes of traffic (pedestrians, cyclists) and faster modes (motorists). This ongoing conflict compromises the safety of all road users and hampers the overall efficiency of the streets.

58% of the students claimed traffic and road safety as their major worry, whenever they are out on their own.

One significant issue is the **absence or unusable state of footpaths** due to narrow widths, frequent level differences, encroachments by vendors and parked vehicles, or poor pavement conditions. This forces pedestrians to share the carriageway with motorists, creating a potential for conflicts. Moreover, the **limited number of midblock crossings** compels pedestrians to cross streets at random locations, further exacerbating safety concerns.

While the streets are adequately lit, they **lack effective traffic calming measures**. The absence of speed breakers, rumble strips, and medians contributes to an environment where motorists may not adhere to safe speeds. **Precautionary signages** are concentrated primarily at junctions, leaving the streets devoid of necessary guidance and warnings. The **absence of lane markings** further diminishes visibility for motorists and contributes to a lack of direction.

These unfavorable conditions render the streets **unsafe not only for children but for all road users, including motorists.** To address these issues and enhance safety, ease of movement, accessibility, and comfort, a comprehensive approach is needed, encompassing improvements in infrastructure, increased awareness through signage, and the implementation of traffic-calming measures. It is crucial to create an environment where all users can coexist safely and efficiently on our streets.

65% of the interviewed children have expressed their desire to walk or cycle to school, if the road safety scenario is improved in the school zone.

Mahatma Gandhi Road, Nashik

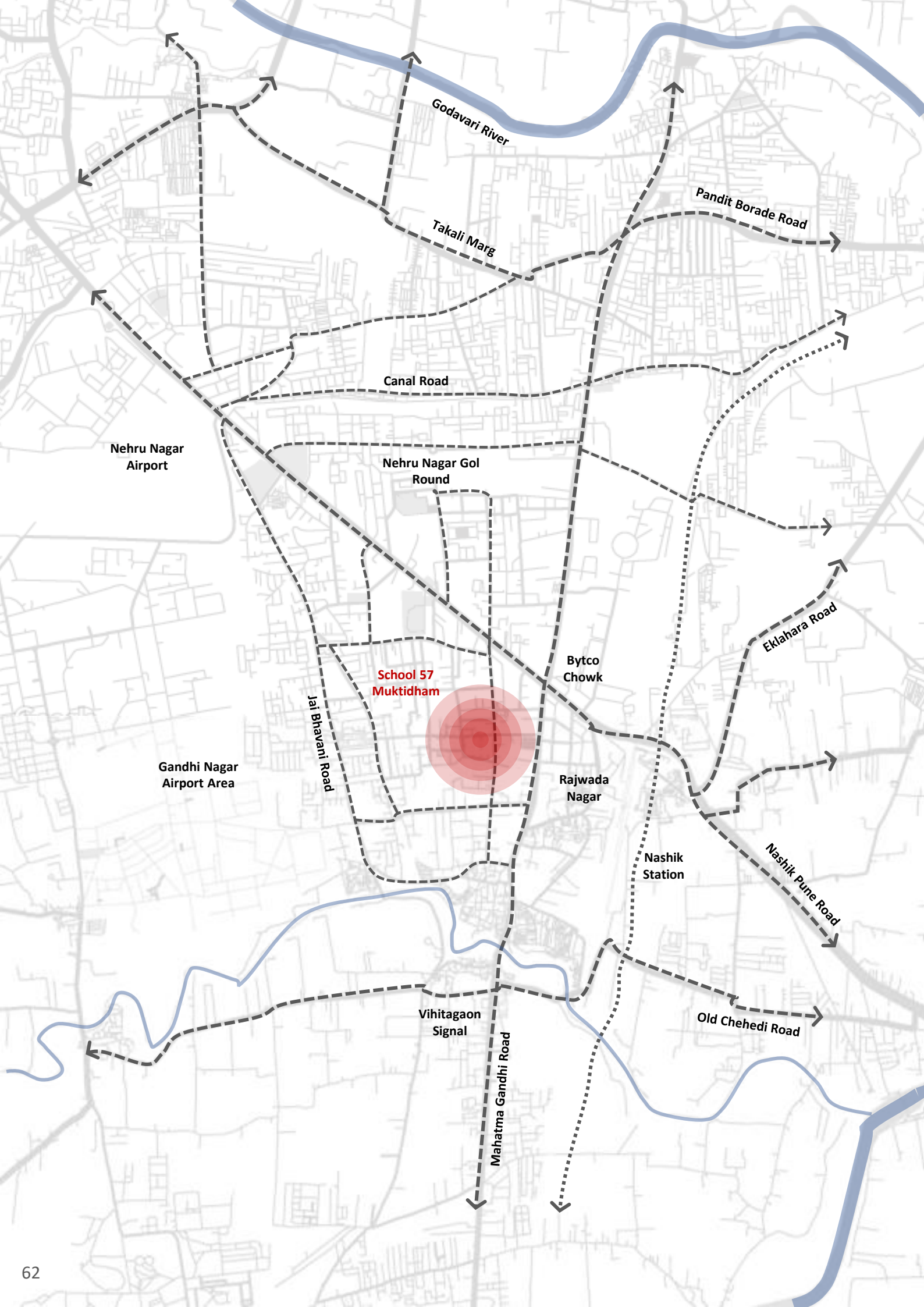

Old Agra Road, Nashik

GPO & Zilla Parishad Road, Nashik

Photo: Anand Nagar Road, Nashik

04 Assessment

NMC School 57, Muktidham


Godavari River
Takali Marg
Pandit Borade Road
Canal Road
Nehru Nagar
Airport
Nehru Nagar Gol
Round
Eklahara Road
Bytco
Chowk
School 57
Muktidham
Jai Bhavani Road
Gandhi Nagar
Airport Area
Rajwada
Nagar
Nashik
Station
Nashik Pune Road
Vihitagaon
Signal
Mahatma Gandhi Road
Old Chehedi Road

04 Assessment - NMC School 57, Muktidham

- **Location:** Muktidham, Nashik
- **Number of Students:** 255
- **School timing:** 12 pm to 5pm

Access road to the school

Scenario while the school leaves

Immediate School Premise – School closing time – Student spillover on street

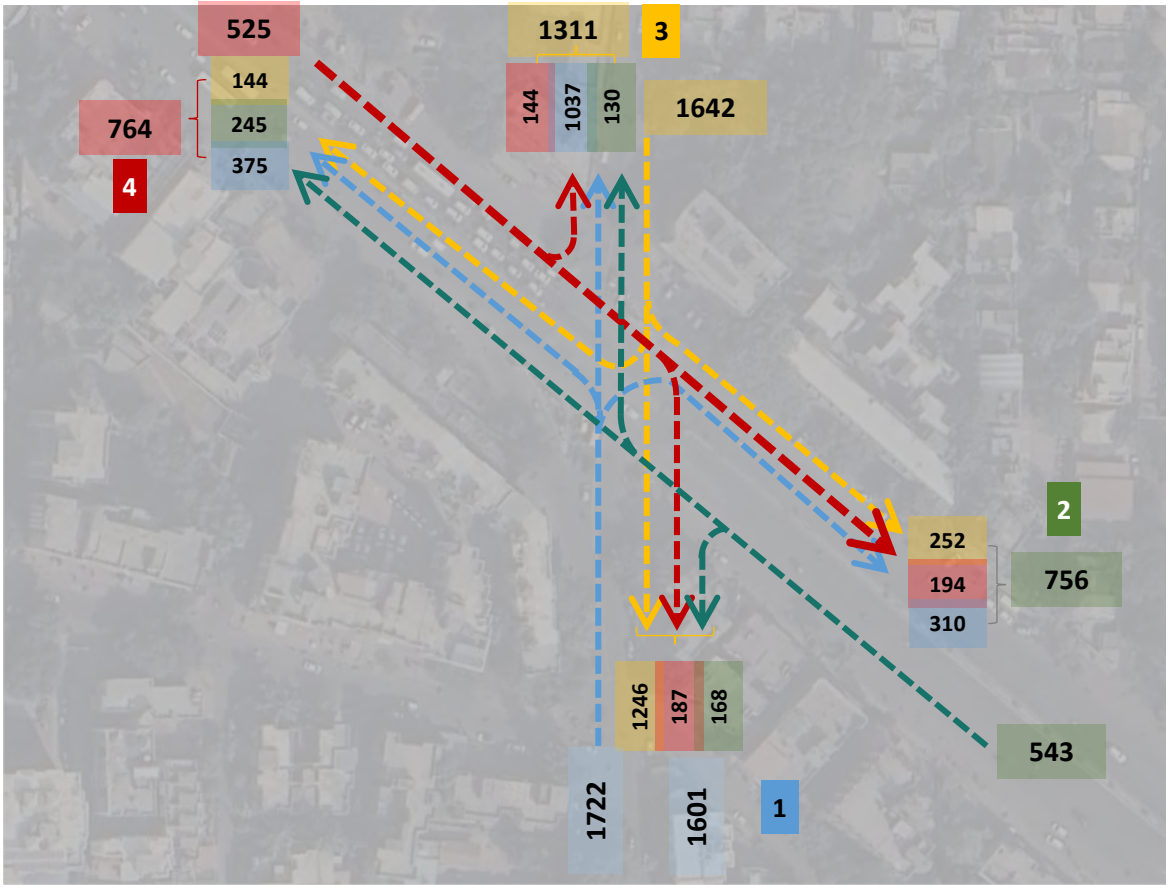
4.1 School Access Road

Access road to the school

Potential vehicular-pedestrian conflict

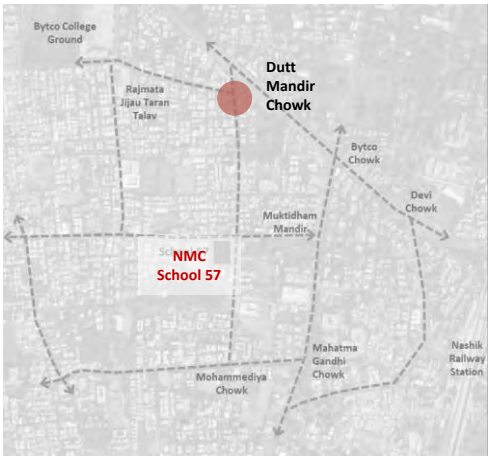
Students walking on the carriageway, unpaved shoulder occupied with parking

4.2 Dutt Mandir Chowk

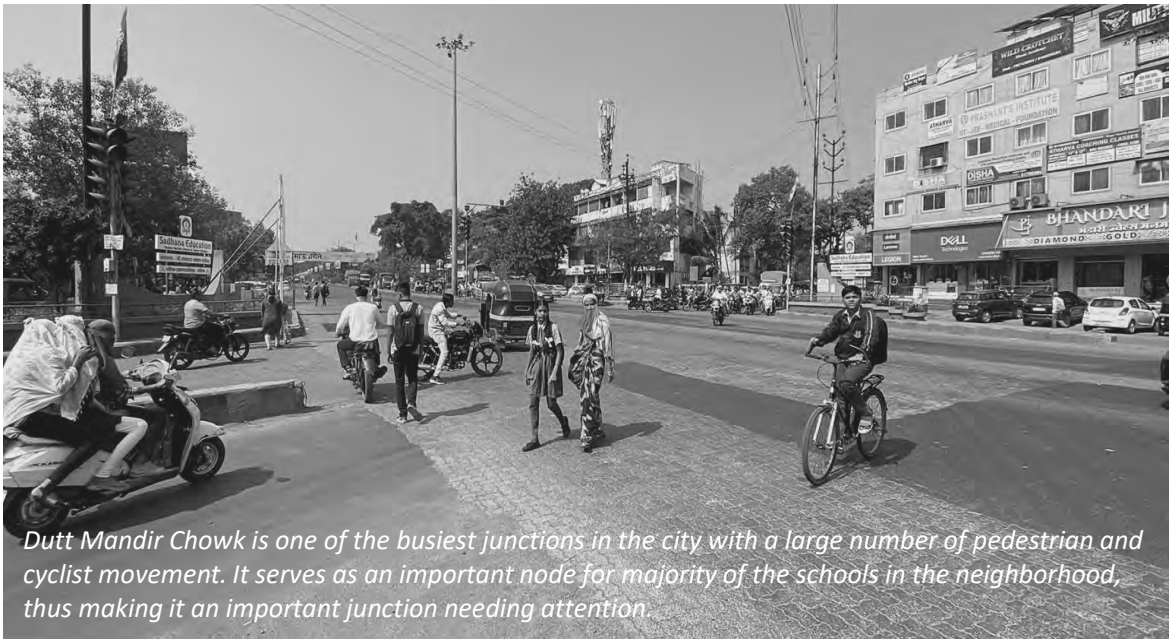


Peak Hour Traffic Volume Count			
Time	**Junction Arm**	**Direction**	**PCU/hr**
10.30am – 11.30 am	Arm 1	2	310
		3	1037
		4	375
	Arm 2	1	168
		3	130
		4	245
	Arm 3	1	1246
		2	252
		4	144
	Arm 4	1	187
		2	194
		3	144


Large junction without pedestrian refuge




No crossings and marking

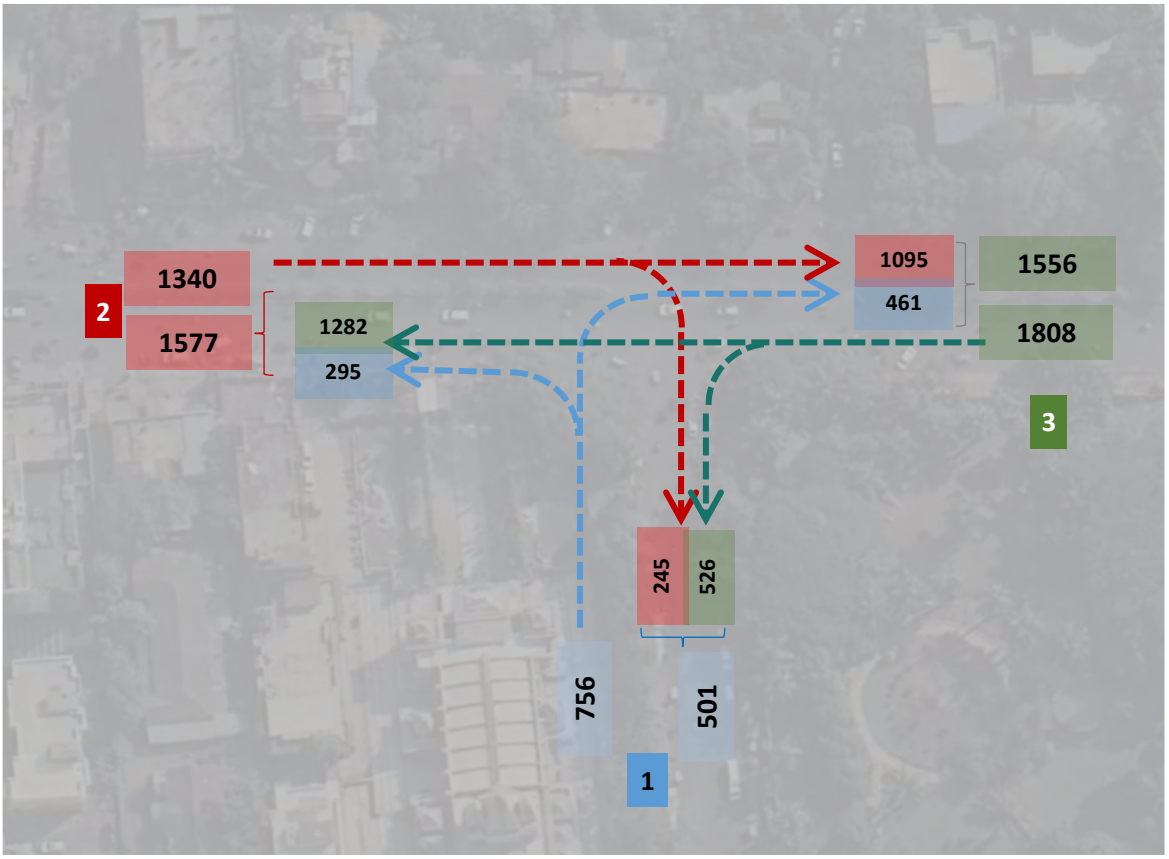


Dutt Mandir Chowk is one of the busiest junctions in the city with a large number of pedestrian and cyclist movement. It serves as an important node for majority of the schools in the neighborhood, thus making it an important junction needing attention.

Assessment Matrix

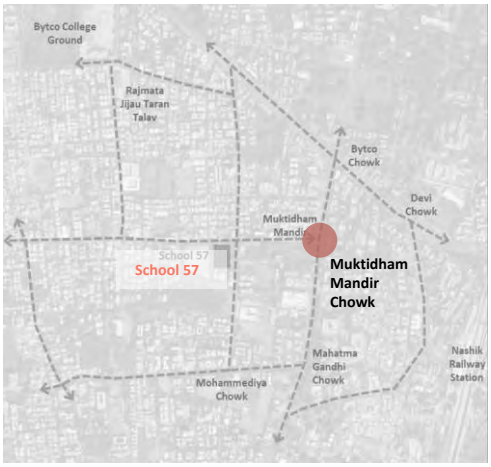
Ease Of Movement	Remark	Grade
Adequate Footpath	Narrow, insufficient footpath	Below Avg.
Junction Geometry and compaction	Large junction. Skewed geometry	Poor
Safety		
Road Markings	No lane markings	Poor
Precautionary Signages	Few signages present	Average
Pedestrian Crossings	Not visible	Below Avg.
Pedestrian Refuges	Present but inadequate	Below Avg.
Pedestrian signals	Absent	Poor
Lighting	Adequate street lighting	Excellent
Universal Accessibility		
Accessible Footpath	Inappropriate for universal accessibility	Poor
Accessible Crossings	No ramps present	Poor
Wayfinding Signages	Inadequate	Below avg.
Comfort		
Dustbins	No dustbins	Poor
Pause & Play Opportunity	Not available	Poor

4.3 Muktidham Mandir Chowk



Peak Hour Traffic Volume Count			
Time	**Junction Arm**	**Direction**	**PCU/hr**
10.30am – 11.30 am	Arm 1	2	295
		3	461
	Arm 2	1	245
		3	1095
	Arm 3	1	526
		2	1282

No pedestrian crossings marked at the junction




Non signalized traffic flow making it difficult for pedestrians to cross

The Junction with no road markings. This being a non signalized junction makes it difficult for the pedestrians to commute. *Image Source: Google Maps*

Assessment Matrix

Ease Of Movement	Remark	Grade
Adequate Footpath	Narrow, insufficient footpath	Below Avg.
Junction Geometry and compaction	Large junction. Good geometry	Average
Safety		
Road Markings	No lane markings	Poor
Precautionary Signages	Few signages present	Below Avg
Pedestrian Crossings	Absent	Poor
Pedestrian Refuges	Present but inadequate	Poor
Pedestrian Signal	Unsignalised junction	Poor
Lighting	Adequate street lighting	Above Avg
Universal Accessibility		
Accessible Footpath	Inappropriate for universal accessibility	Poor
Accessible Crossings	No ramps present	Poor
Wayfinding Signages	Inadequate	Poor
Comfort		
Dustbins	No dustbins	Poor
Pause & Play Opportunity	Not available	Poor

4.4 Road safety perception of users

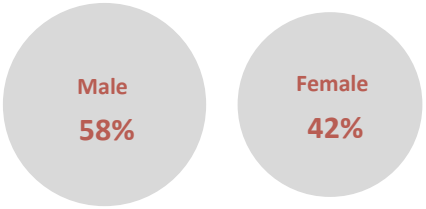
Date of Survey - 02.11.2023 & 03.11.2023

Day of Survey – Thursday & Friday

Timing of Survey – Full day

Sample Size - 96 persons

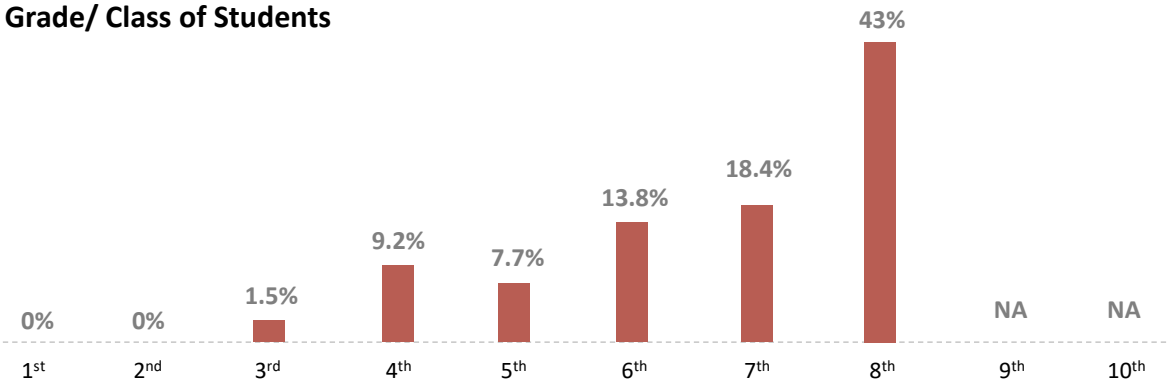
Gender bifurcation of Sample



Age group of Sample

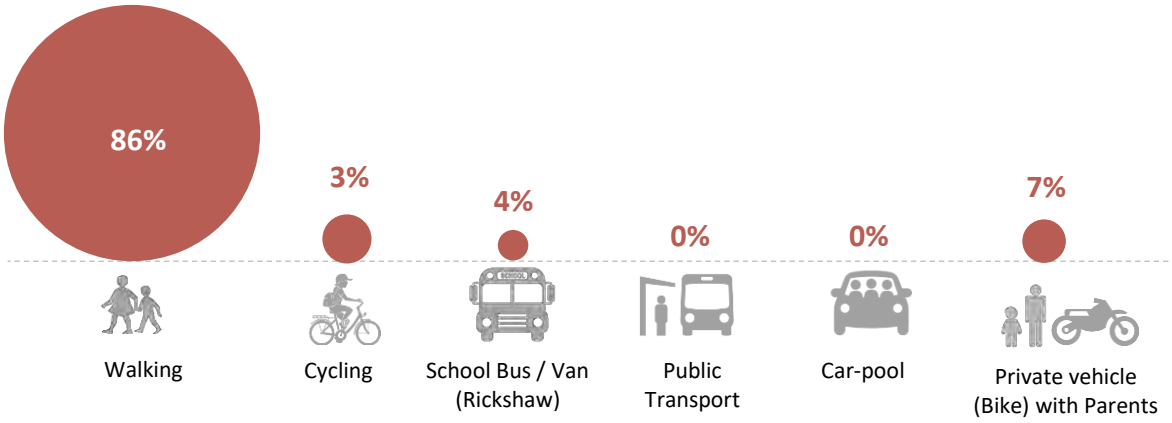
School Kids	Care Givers	Watchmen & School Van Drivers	School Staff
76%	21%	1%	2%

Grade/ Class of Students

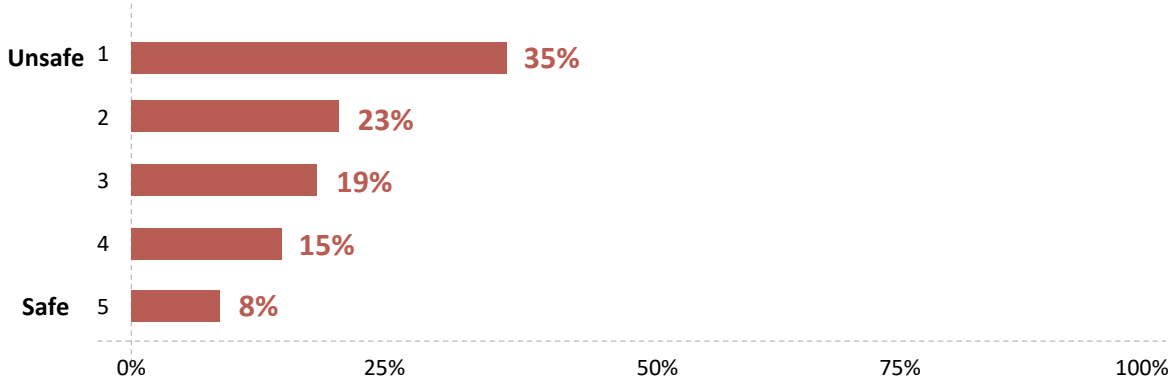


4.4.1 Understanding the children

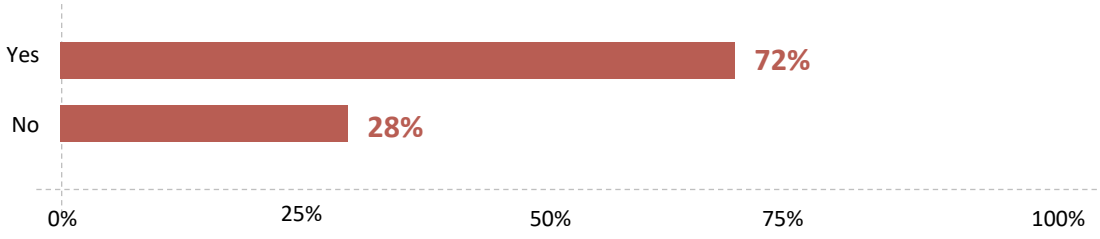
Q. How do you usually travel to school?



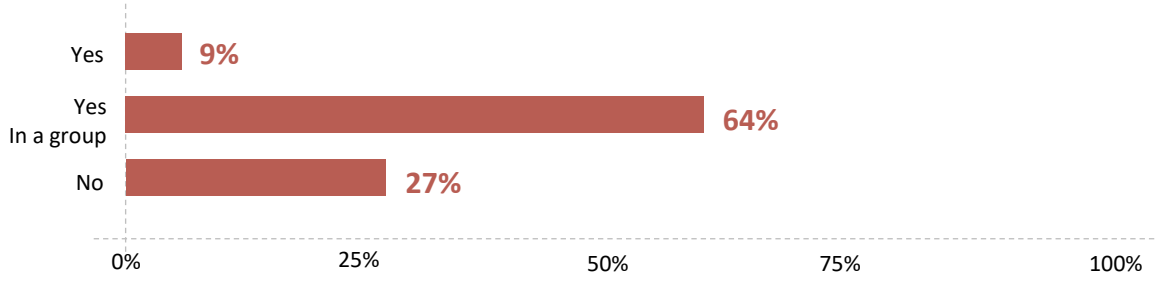
Q. When you walk/cycle to and from school, how safe do you feel on the street and junctions?



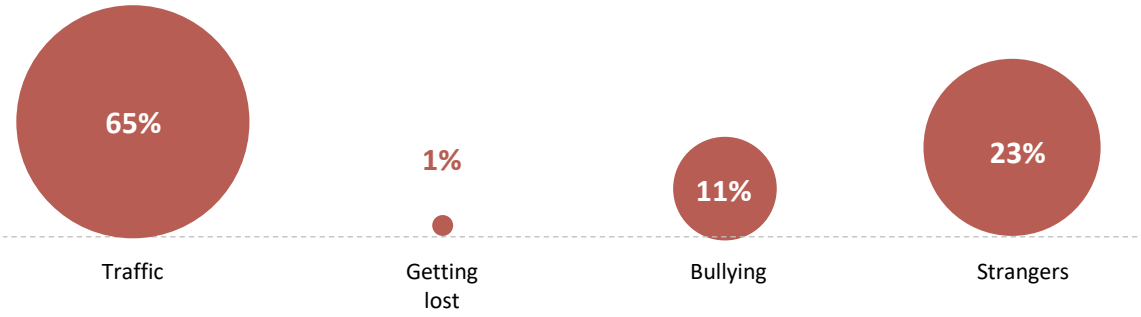
Q. Is there a traffic warden (school crossing guard) present to help you cross the road safely?



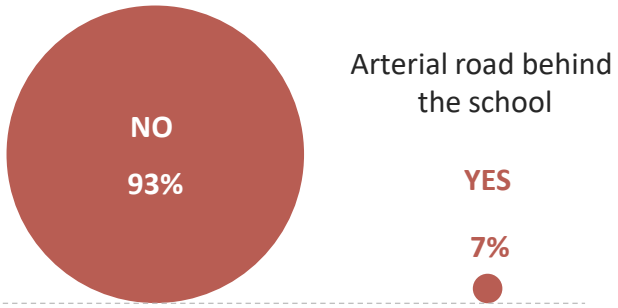
Q. Do you feel safe while crossing the main road or junction?



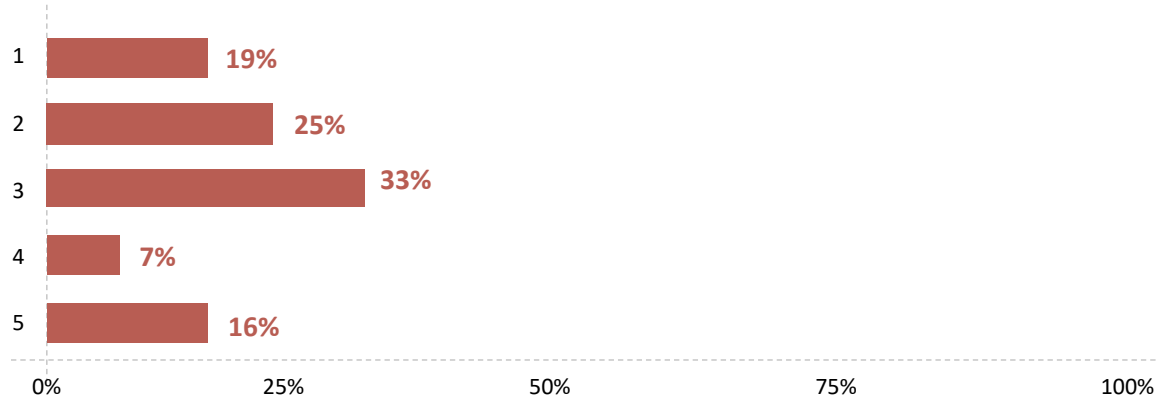
Q. When you are outside on your own or with friends, what are you worried the most about?`



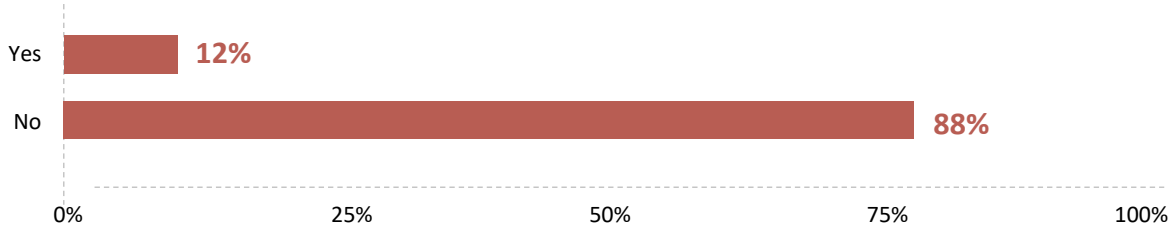
Q. Have you ever experienced eve-teasing/ bullying in or around your school zone? If yes, where?

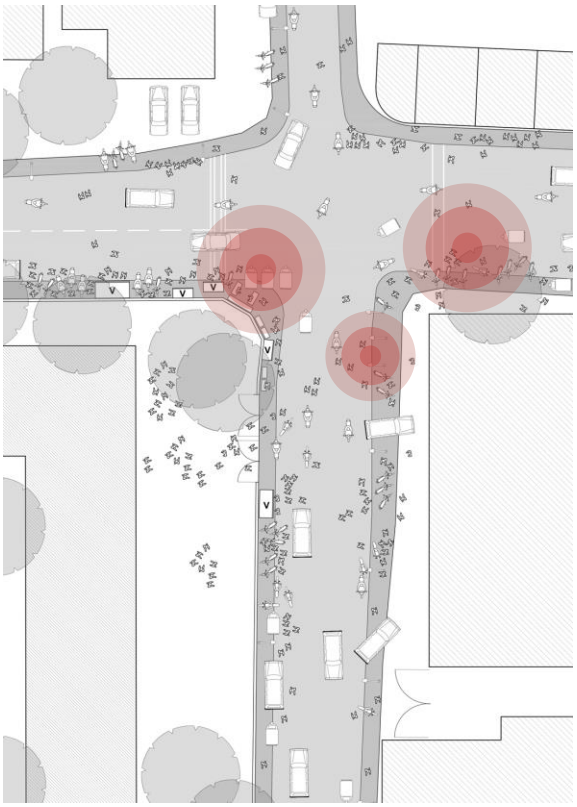


Q. If you cycle, how safe do you feel riding your bicycle to school? Rate between 1 to 5 (5- Safest)

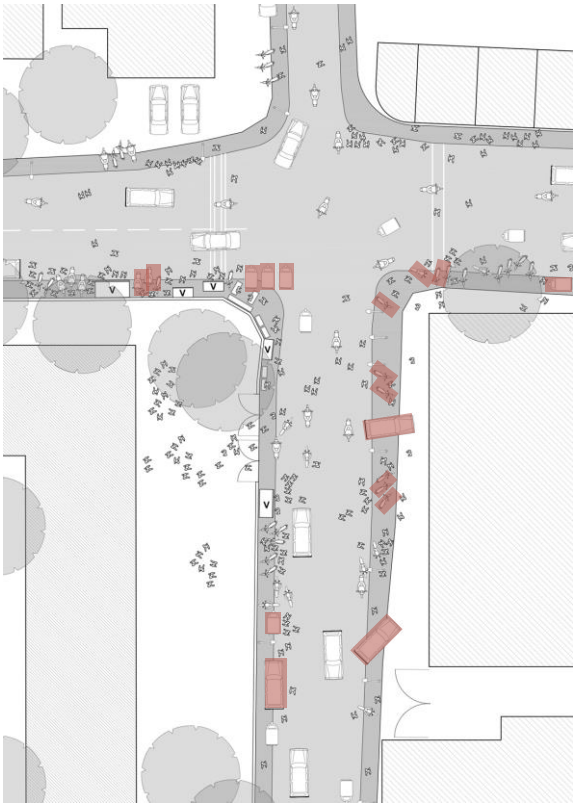


Q. Have you witnessed a crash near the school?



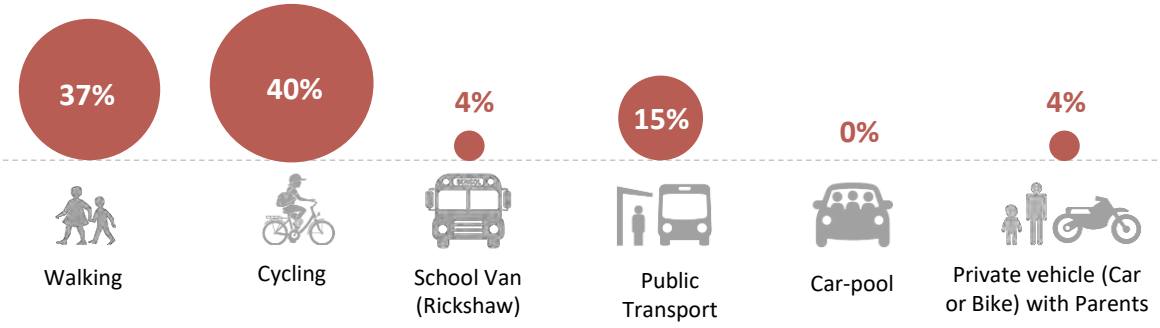


High risk locations due to pedestrian - vehicular conflict



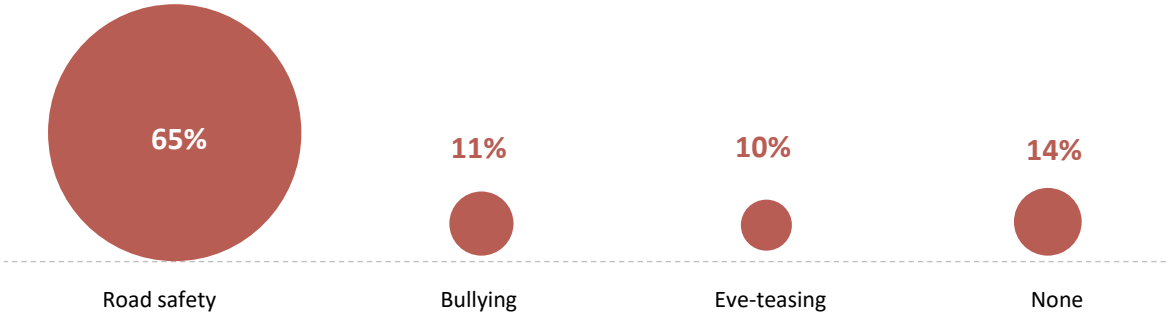
Haphazardly parked vehicles on the street resulting in obstruction for pedestrian movement

Q. If the road safety is improved, How would you like to travel to school?

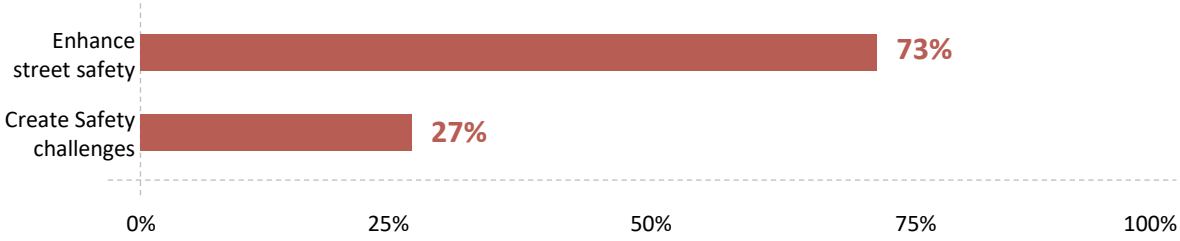


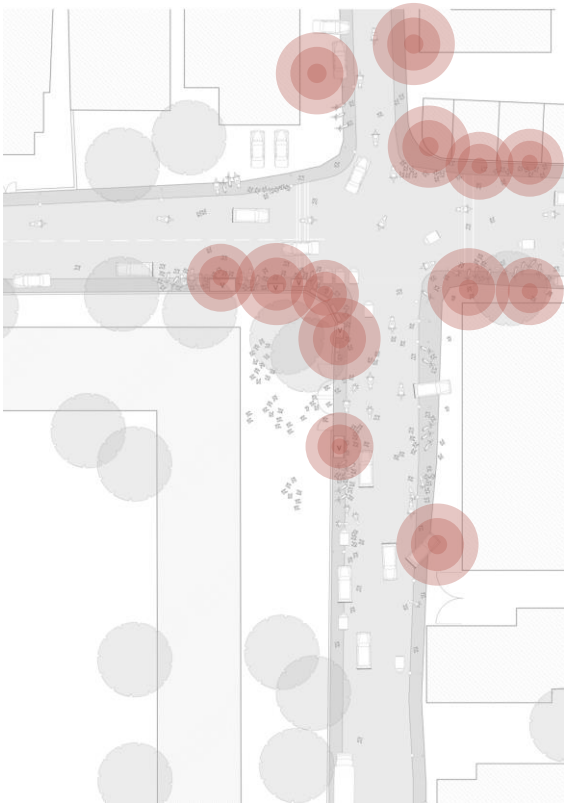
4.4.2 Understanding the Caregivers

Q. Has your child ever experienced any safety issues in the journey to and from school?



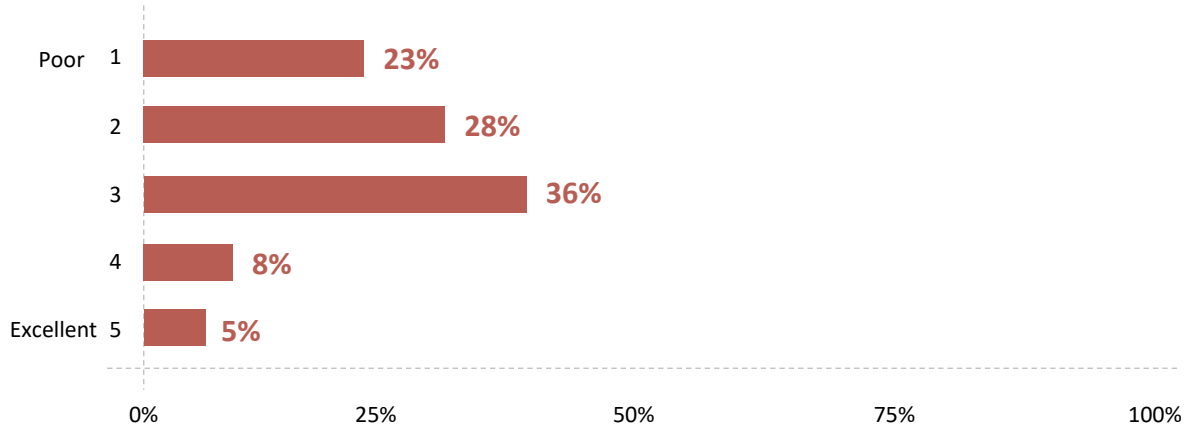
Q. There are street vendors around the school. What's your opinion about them with regards to your child's safety?





Vending & Eatery joints near the school

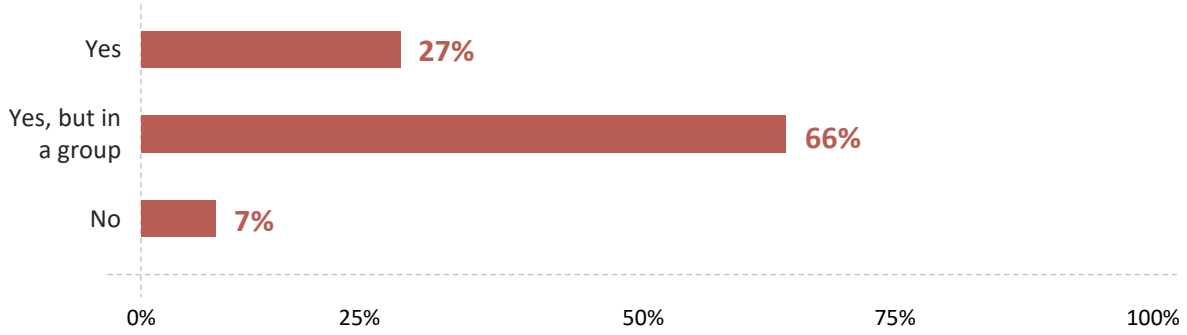
Q. How would you rate the traffic management in the school zone during school hours?



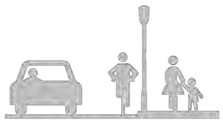
Q. What is the barrier for you to send your child to school independently (walk, cycle, public transport)?

31%	21%	6%	12%	22%	8%
Distance to school	Traffic related issues	Weather	Crime danger	Lack of efficient public transport	Other Reasons (not identified)

Q. If the road safety in the school zone is improved, would you like to send your child to school on his/own by walk/cycle?



Q Are there any improvements or changes you would like to see in the school zone to enhance safety for children and parents? *(Top 4 responses are listed below, in order)*



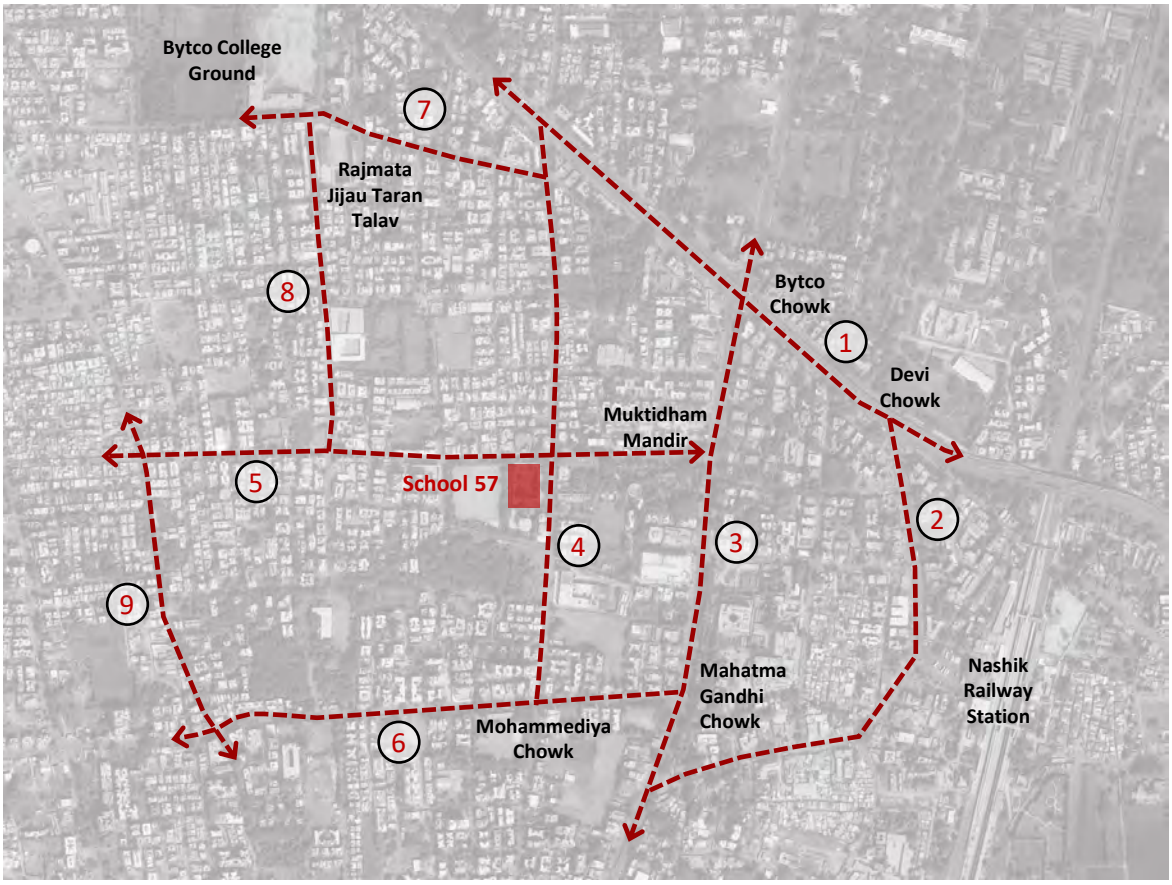
Wide walkable footpaths

Safe Zebra Crossings

Traffic Calming Measures (speed breaker, signage etc)

School Bus/Public transport

4.5 Street Assessment around school

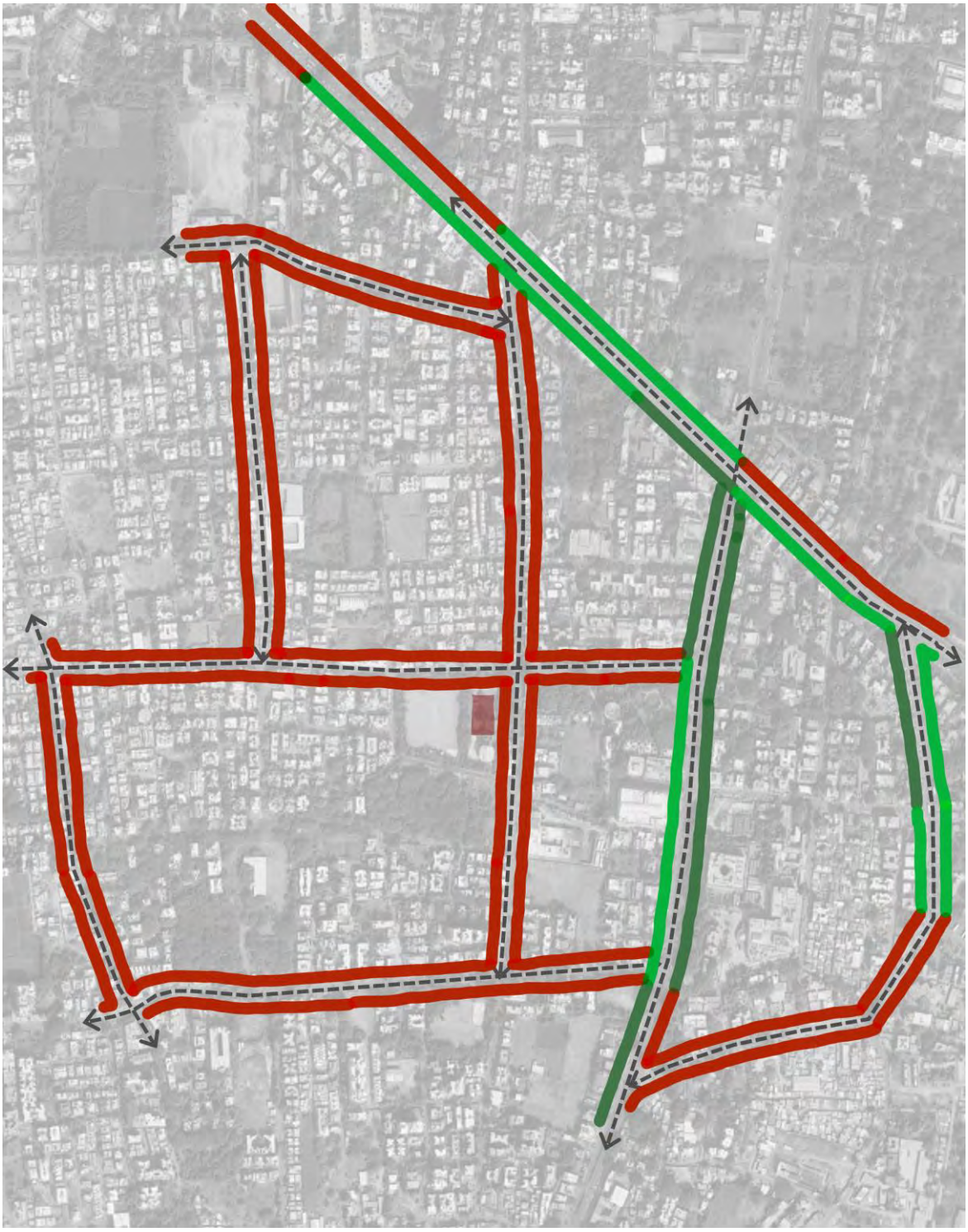


Streets surveyed near NMC School 57

No	Name of Road	Length
1	Pune Nashik Road	800 m
2	Ambedkar Road	915 m
3	MG Road	852 m
4	Datt Mandir Road	985 m
5	Anand Nagar Road	985 m
6	Artillery Centre Road	800 m
7	Gayakthe Colony	430 m
8	Gayakthe Colony / Taran Talav Road	580 m
9	Jai Bhavani Road to Artillery Centre Chowk	520 m

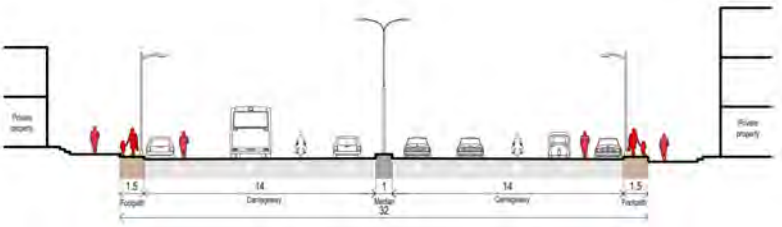
A total of nine streets around the school were surveyed under the study, covering a **total length of 6.86km**

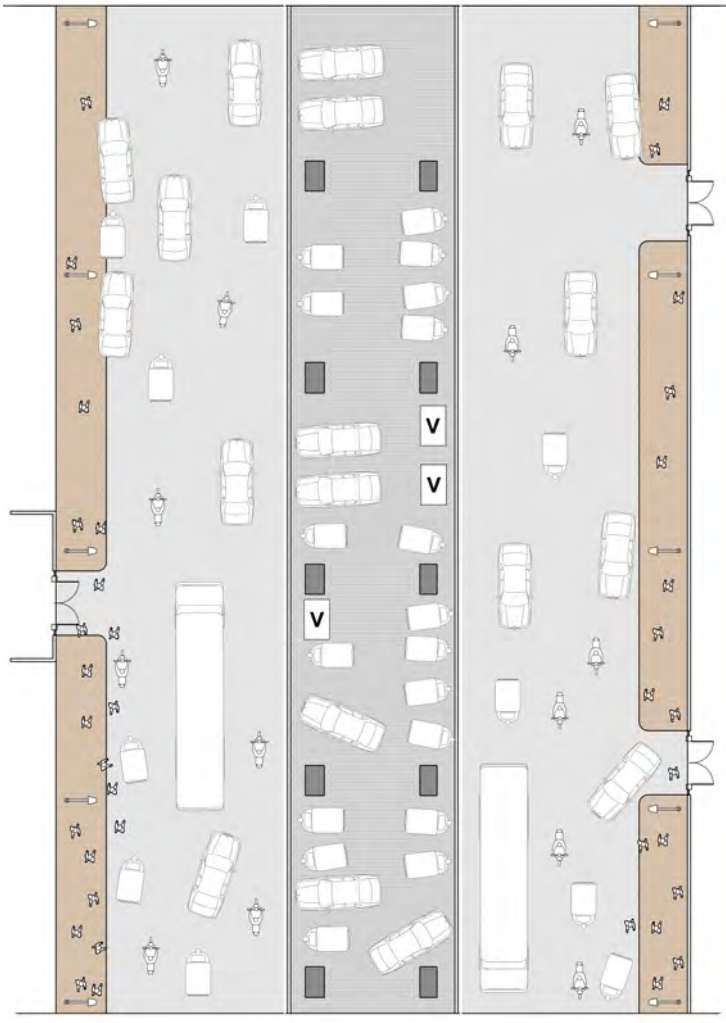
Existing NMT Infrastructure



Footpaths are termed **unusable here due to encroachment by vendors/parking or narrow width or unmaintained/broken infrastructure.** It has been observed that the NMT infrastructure on streets around the school is poor while creating potential risks.

4.5.1 Pune Nashik Road





Representative plan and section of the current scenario

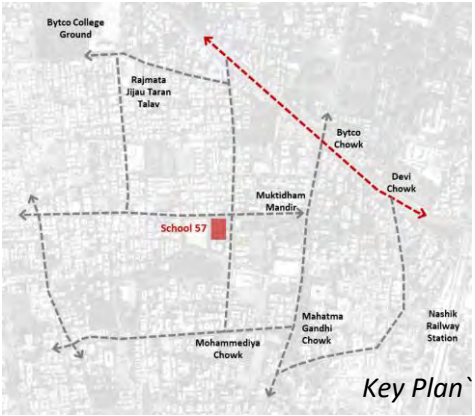

No footpaths


Parking over footpaths


No walkway present

Right of Way: 23m to 32m
Length: 1.4 Km

Pune Nashik road is an arterial road of the city. The road has broken footpaths on both sides. No lane markings, crossings can be seen.



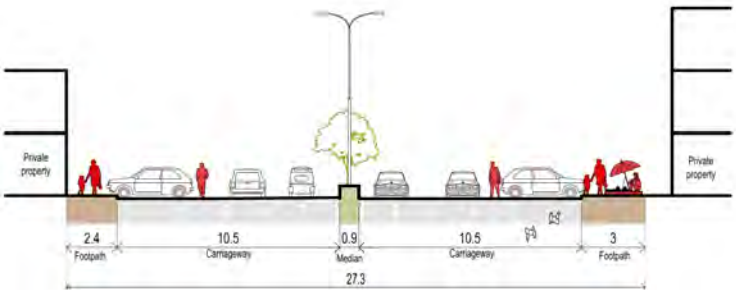
Key Plan

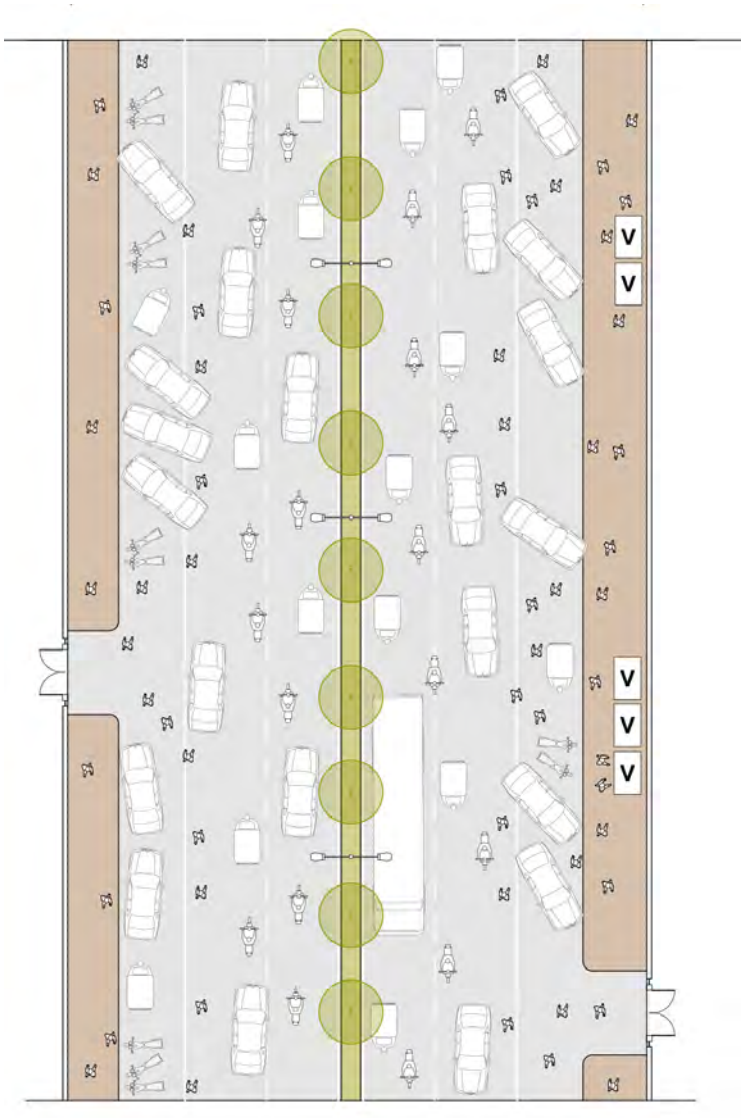
Lack of footpaths, Pedestrian-vehicular conflict

Assessment Matrix

Ease Of Movement	Remark	Grade
Adequate Footpath	Footpath available but remains unusable and encroached	Below Avg.
Pedestrian Vehicular Conflict	Very high	Poor
Designed Parking	Unavailable	Poor
Safety		
Traffic Calming	High speed road. Lack of speed traffic calming measures	Below Avg.
Road Markings	Faded lane markings	Below Avg.
Signages	Limited signages	Below Avg.
Pedestrian Crossings	faded	Below Avg.
Lighting	Street edge underlit	Average
Universal Accessibility		
Accessible Footpath	Raised Footpaths and discontinuous	Poor
Accessible Crossings	Unavailable	Poor
Wayfinding Signages	Unavailable	Poor
Comfort		
Seatings	Unavailable	Poor
Dustbins	Unavailable	Poor
Pause & Play Opportunity	No opportunities	Poor

4.5.2 Ambedkar Road





Representative plan and section of the current scenario

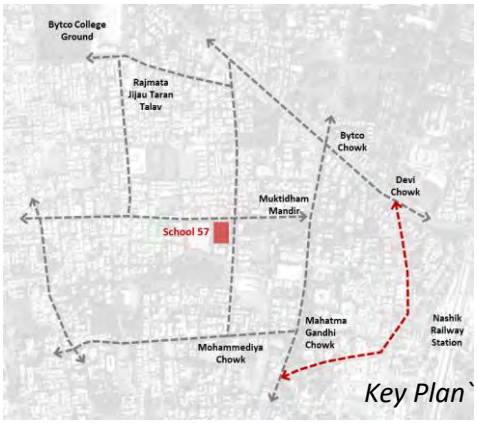
No footpaths

Pedestrians using carriageway

No footpaths

Right of Way: 12m to 24m
Length: 1.0 Km

Ambedkar road is an important street as it has connectivity with Nashik railway station and Nashik bus stand. However, the vendors make the footpaths inaccessible for pedestrians. Improper parking on street edge result in traffic congestion.



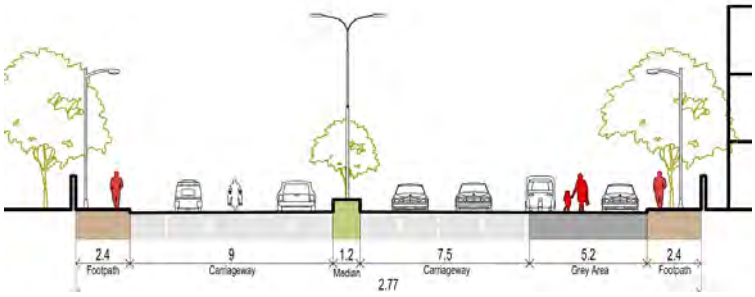
Key Plan

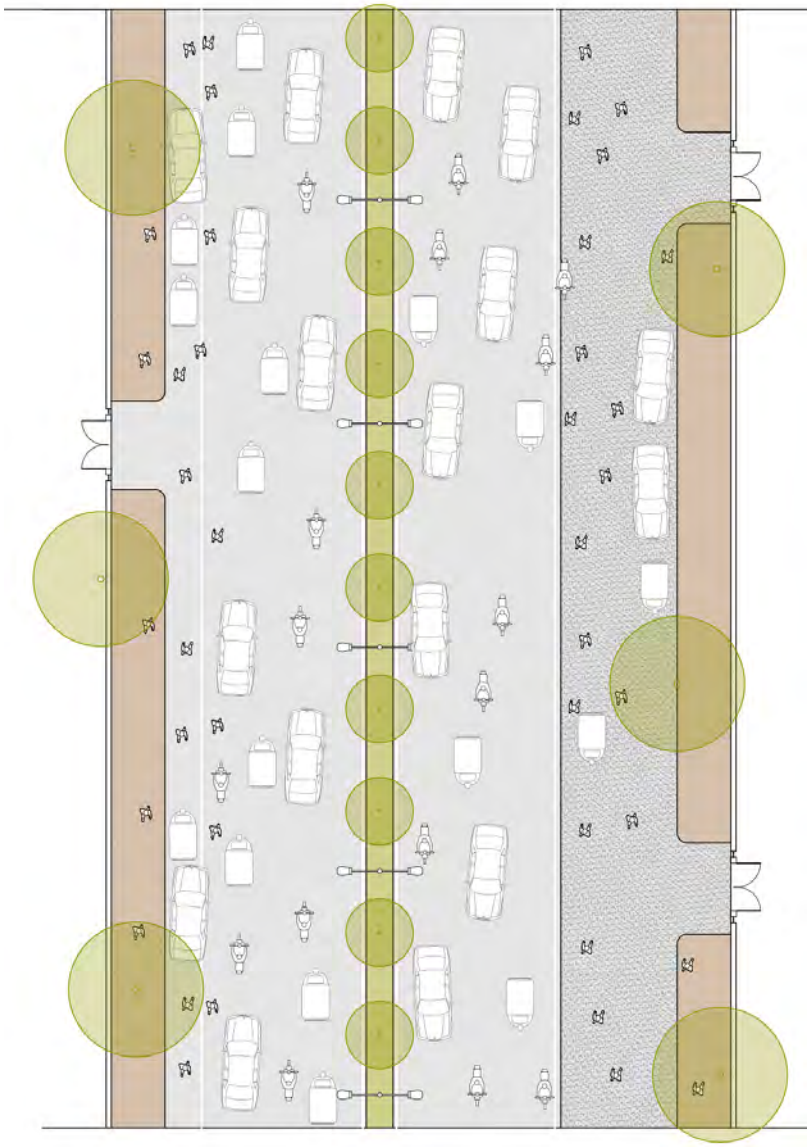
Potential Pedestrian-vehicular conflict *Image Source: Google Maps*

Assessment Matrix

Ease Of Movement	Remark	Grade
Adequate Footpath	Footpath available but remains unusable and encroached	Below Avg.
Pedestrian Vehicular Conflict	Very high, pedestrian use carriageway	Poor
Designed Parking	Unavailable	Poor
Safety		
Traffic Calming	Lack of traffic calming measures	Poor
Road Markings	Faded lane markings	Below Avg.
Signages	Limited signages	Below Avg.
Pedestrian Crossings	Midblock crossings absent	Poor
Lighting	On median	Above Avg.
Universal Accessibility		
Accessible Footpath	Raised Footpaths and discontinuous	Poor
Accessible Crossings	Unavailable	Poor
Wayfinding Signages	Unavailable	Poor
Comfort		
Seatings	Unavailable	Poor
Dustbins	Unavailable	Poor
Pause & Play Opportunity	Vending street	Average

4.5.3 Mahatma Gandhi Road





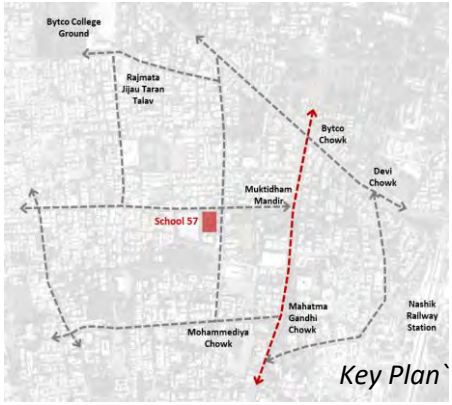
Representative plan and section of the current scenario

No footpaths present

Pedestrian vehicular conflict

Pedestrian vehicular conflict

Right of Way: 27m to 32m
Length: 1.0 Km



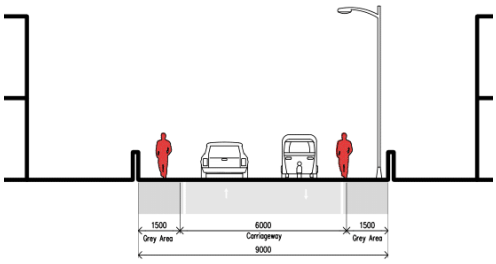
Key Plan

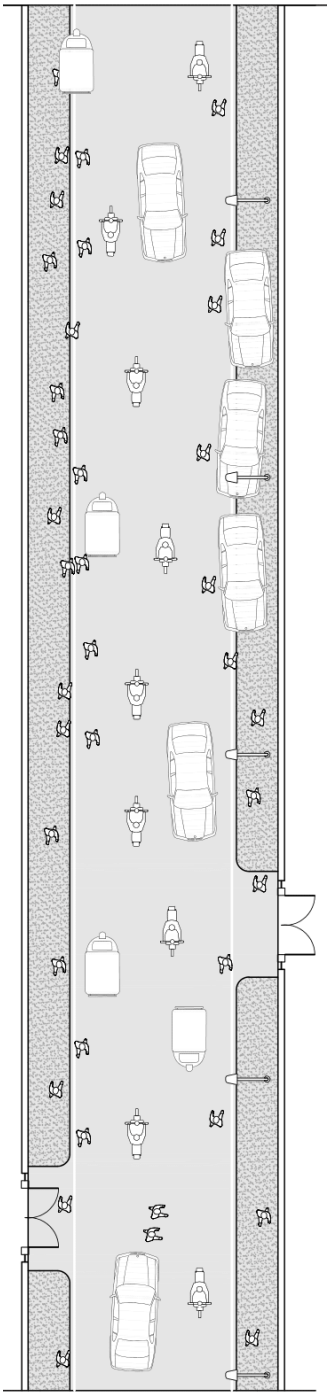
Potential Pedestrian vehicular conflict

Assessment Matrix

Ease Of Movement	Remark	Grade
Adequate Footpath	Footpath available. Partially encroached	Average
Pedestrian Vehicular Conflict	Very high, pedestrian use carriageway	Poor
Designed Parking	Unavailable	Poor
Safety		
Traffic Calming	Lack of traffic calming measures	Poor
Road Markings	Faded lane markings	Below Avg.
Signages	Limited signages	Average
Pedestrian Crossings	Midblock crossings absent	Poor
Lighting	Well lit	Excellent
Universal Accessibility		
Accessible Footpath	Raised Footpaths and discontinuous, ramps absent	Poor
Accessible Crossings	Unavailable	Poor
Wayfinding Signages	Unavailable	Poor
Comfort		
Seatings	Unavailable	Poor
Dustbins	Unavailable	Poor
Pause & Play Opportunity	No opportunities	Poor

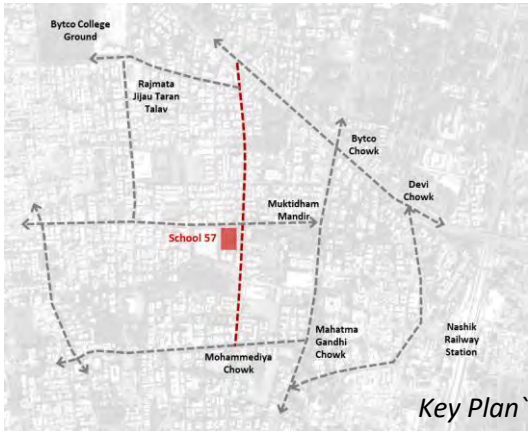
4.5.4 Dutta Mandir Road





Representative plan and section of the current scenario

Right of Way: Varying from 8m to 12m
Length: 1.0 Km

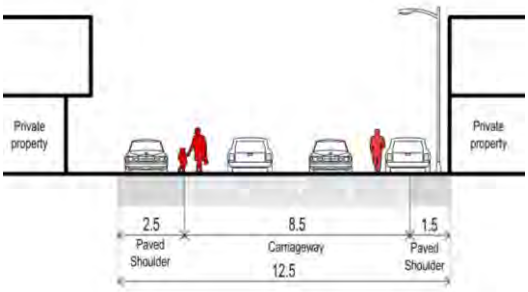


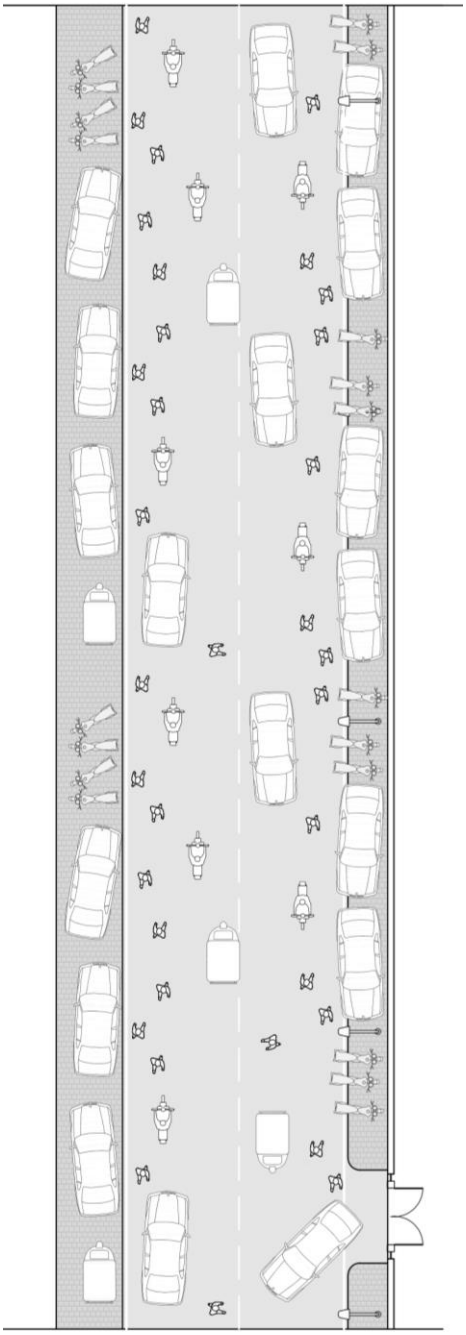
Absence of mid-block crossings

Assessment Matrix

Ease Of Movement	Remark	Grade
Adequate Footpath	Footpath is absent. Shoulder is unpaved	Poor
Pedestrian Vehicular Conflict	Very high, pedestrians use carriageway	Poor
Designed Parking	Unavailable	Poor
Safety		
Traffic Calming	Lack of traffic calming measures	Poor
Road Markings	Absent	Poor
Signages	Absent	Poor
Pedestrian Crossings	Absent	Poor
Lighting	Sparsely lit	Below Avg.
Universal Accessibility		
Accessible Footpath	Unavailable, shoulder is unpaved	Poor
Accessible Crossings	Unavailable	Poor
Wayfinding Signages	Unavailable	Poor
Comfort		
Seatings	Unavailable	Poor
Dustbins	Unavailable	Poor
Pause & Play Opportunity	No opportunities	Poor

4.5.5 Anand Nagar Road





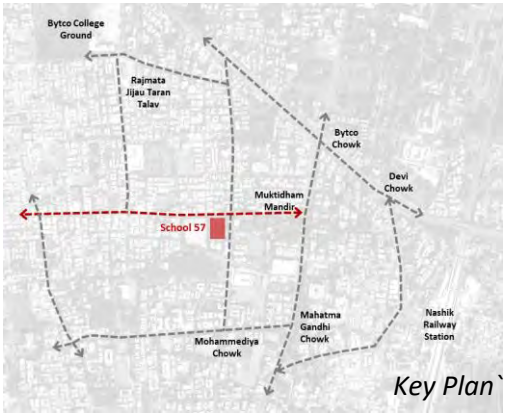
Representative plan and section of the current scenario

Walking on carriageway

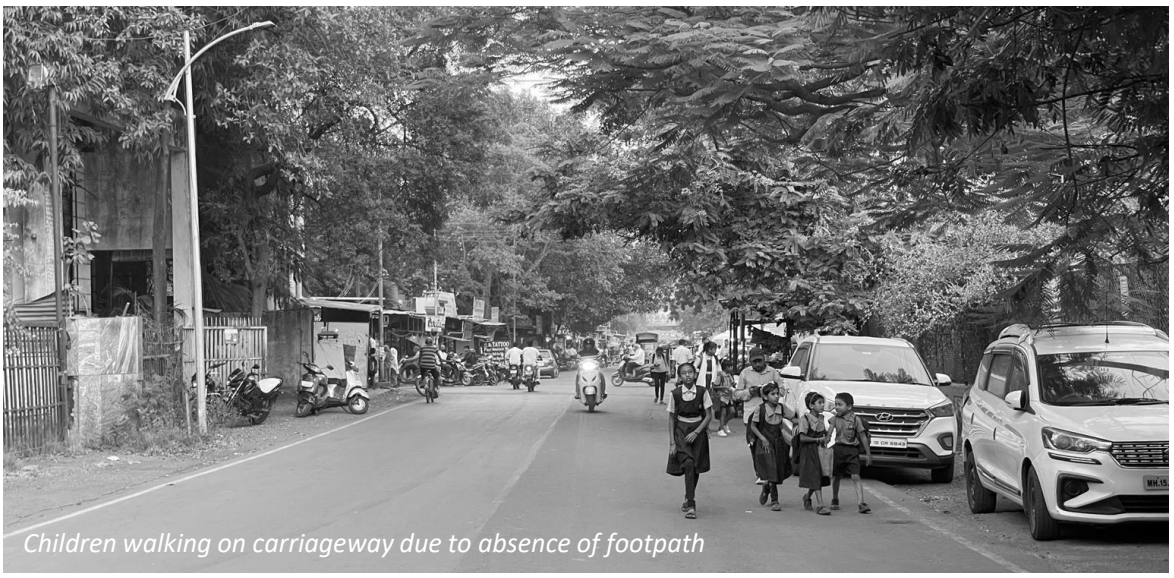
No footpaths

Pedestrian vehicular conflict

Right of Way: 10m to 12m
Length: 1.2 Km



Key Plan

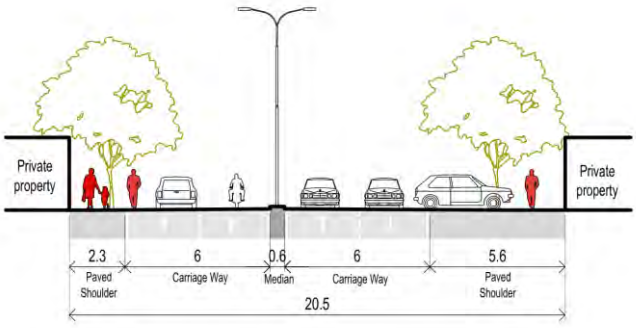


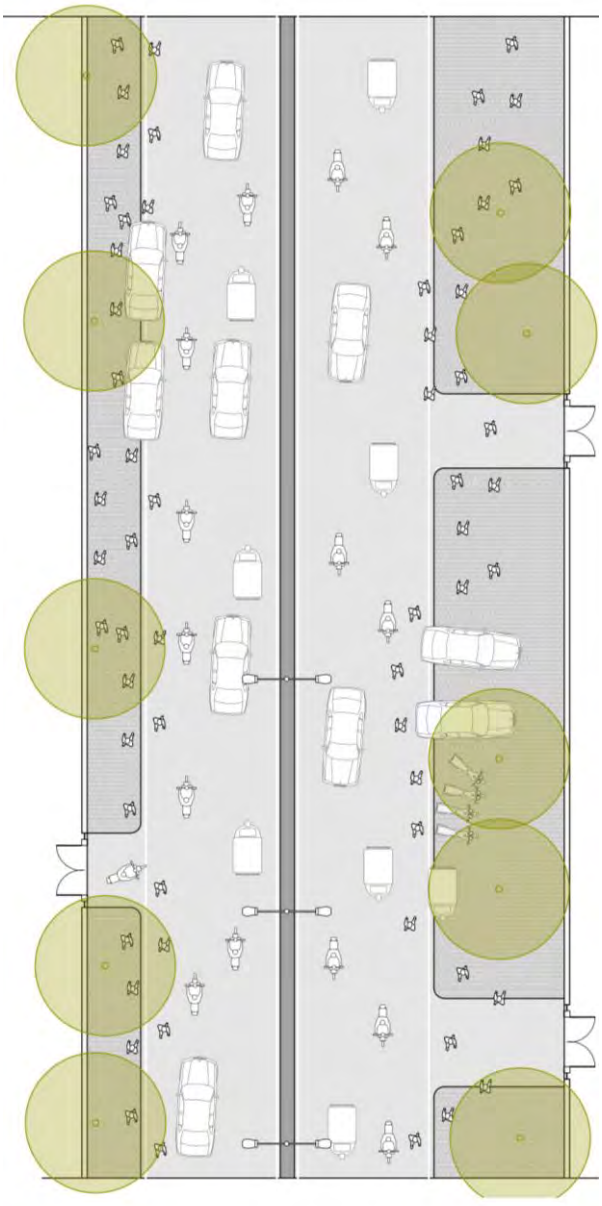
Children walking on carriageway due to absence of footpath

Assessment Matrix

Ease Of Movement	Remark	Grade
Adequate Footpath	Footpath is absent. Shoulder is unpaved	Poor
Pedestrian Vehicular Conflict	Very high, pedestrians use carriageway	Poor
Designed Parking	Unavailable	Poor
Safety		
Traffic Calming	Lack of traffic calming measures	Poor
Road Markings	Partially marked	Average
Signages	Absent	Poor
Pedestrian Crossings	Absent	Poor
Lighting	Sparsely lit	Below Avg.
Universal Accessibility		
Accessible Footpath	Unavailable, shoulder is unpaved	Poor
Accessible Crossings	Unavailable	Poor
Wayfinding Signages	Unavailable	Poor
Comfort		
Seatings	Unavailable	Poor
Dustbins	Unavailable	Poor
Pause & Play Opportunity	No opportunities	Poor

4.5.6 Artillery Road





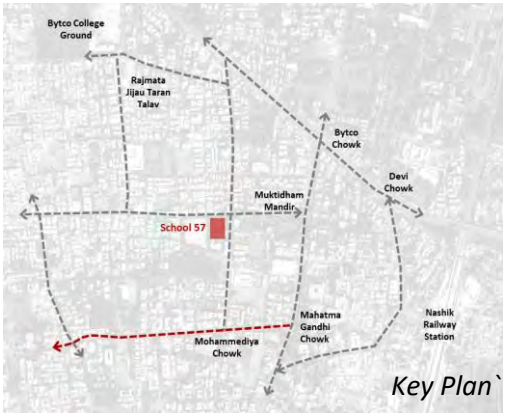
Representative plan and section of the current scenario


No lane markings


No footpaths


No footpaths

Right of Way: 18m to 22m
Length: 1.0 Km



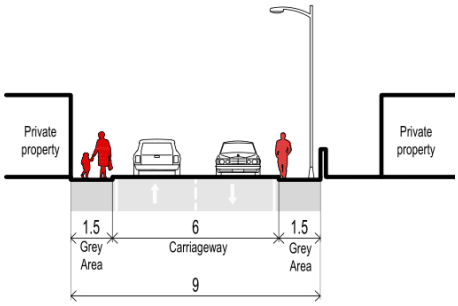
Key Plan`

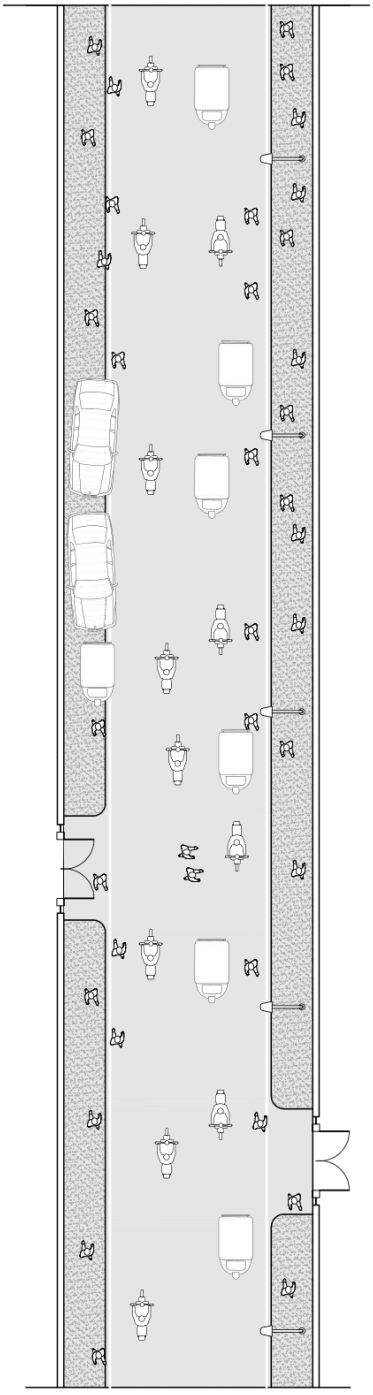
Pedestrian movement on the carriageway, increases vehicular-pedestrian conflict

Assessment Matrix

Ease Of Movement	Remark	Grade
Adequate Footpath	Footpath is absent. Shoulder is paved	Below Avg.
Pedestrian Vehicular Conflict	Very high, pedestrians walk on carriageway	Poor
Designed Parking	Unavailable	Poor
Safety		
Traffic Calming	Lack of traffic calming measures, median present	Below Avg.
Road Markings	Absent	Poor
Signages	Absent	Poor
Pedestrian Crossings	Absent	Poor
Lighting	Sparsely lit	Below Avg.
Universal Accessibility		
Accessible Footpath	Unavailable, shoulder is paved but encroached	Below Avg.
Accessible Crossings	Unavailable	Poor
Wayfinding Signages	Unavailable	Poor
Comfort		
Seatings	Unavailable	Poor
Dustbins	Unavailable	Poor
Pause & Play Opportunity	No opportunities	Poor

4.5.7 Taran Talav Road



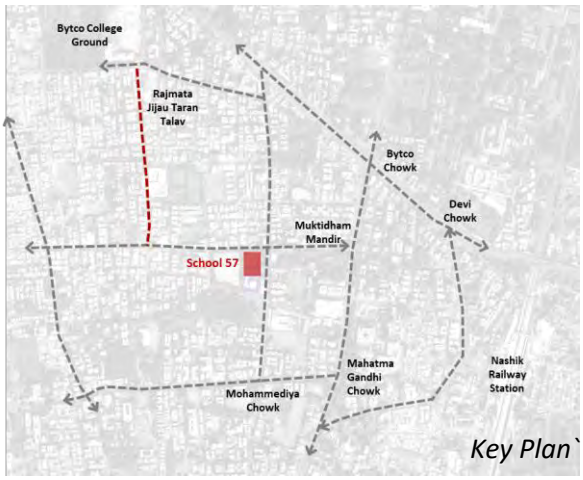


Representative plan and section of the current scenario

No lane markings

No footpaths

Right of Way: 8m to 10m
Length: 0.93 Km



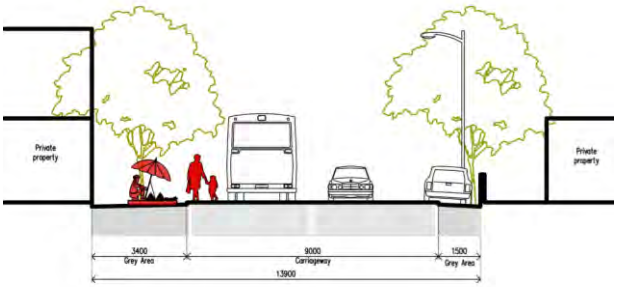
Key Plan

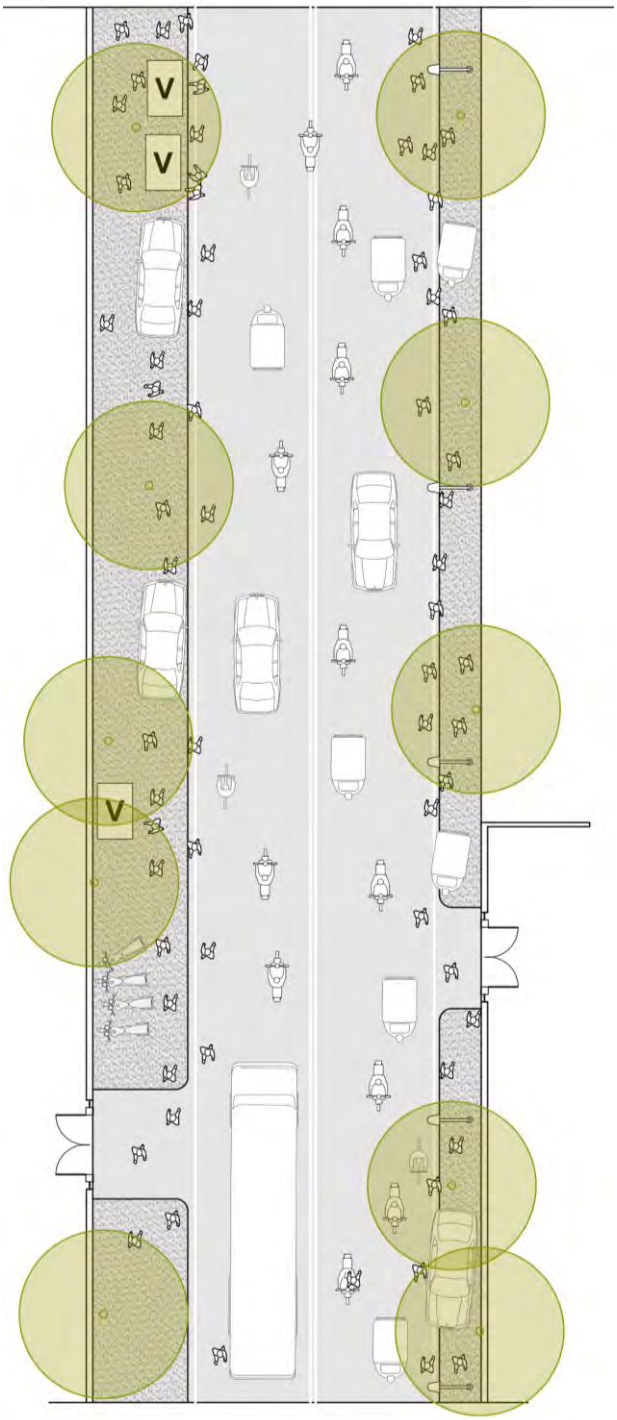
No footpath, Pedestrian movement on the carriageway

Assessment Matrix

Ease Of Movement	Remark	Grade
Adequate Footpath	No footpath, unpaved shoulder	Poor
Pedestrian Vehicular Conflict	Very high, pedestrians walk on carriageway	Poor
Designed Parking	Unavailable	Poor
Safety		
Traffic Calming	Speed breakers available near junctions	Average
Road Markings	Partially available	Below Avg.
Signages	Absent	Poor
Pedestrian Crossings	Absent	Poor
Lighting	Sparsely lit	Below Avg.
Universal Accessibility		
Accessible Footpath	Unavailable, shoulder is unpaved	Poor
Accessible Crossings	Unavailable	Poor
Wayfinding Signages	Unavailable	Poor
Comfort		
Seatings	Unavailable	Poor
Dustbins	Unavailable	Poor
Pause & Play Opportunity	No opportunities	Poor

4.5.8 Jai Bhavani Road





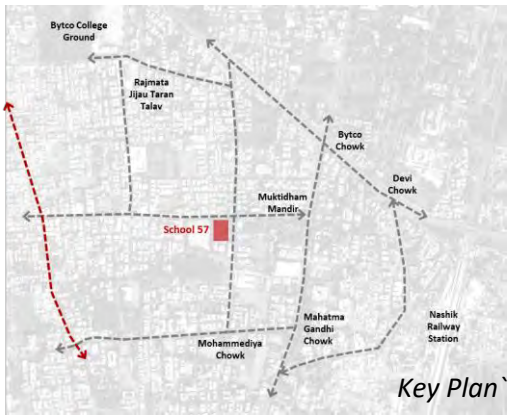
Representative plan and section of the current scenario

Clear lane markings

No footpaths

No walkway present

Right of Way: 12m to 14m
Length: 1.5 Km



No footpath, no or faded lane demarcation

Assessment Matrix

Ease Of Movement	Remark	Grade
Adequate Footpath	No footpath, unpaved shoulder	Poor
Pedestrian Vehicular Conflict	Very high, pedestrians walk on carriageway	Poor
Designed Parking	Unavailable	Poor
Safety		
Traffic Calming	High speed road. No traffic calming measures	Poor
Road Markings	Partially available	Average
Signages	Absent	Poor
Pedestrian Crossings	Absent	Poor
Lighting	Sparsely lit	Below Avg.
Universal Accessibility		
Accessible Footpath	Unavailable, shoulder is unpaved	Poor
Accessible Crossings	Unavailable	Poor
Wayfinding Signages	Unavailable	Poor
Comfort		
Seatings	Unavailable	Poor
Dustbins	Unavailable	Poor
Pause & Play Opportunity	Vending on street makes its active	Average

4.6 Assessment Matrix of streets near NMC School 57

Streets near NMC School 57

A. Pune Nashik Road

B. Ambedkar Road

C. Mahatma Gandhi Road

D. Dutta Mandir Road

E. Anand Nagar Road

F. Artillery Road

G. Taran Talav Road

H. Jai Bhavani Road

0-3	4-6	7-9	10-12	13-15
Excellent	**Good**	**Average**	**Below Avg.**	**Poor**

Ease of Movement	A	B	C	D	E	F	G	H	Overall
Adequate Footpath									Below Avg.
Pedestrian Vehicular Conflict									Poor
Designed Parking									Poor

Safety	A	B	C	D	E	F	G	H	Overall
Traffic Calming									Poor
Road Markings									Below Avg.
Signages									Below Avg.
Pedestrian Crossings									Poor
Lighting									Average

Universal Accessibility	A	B	C	D	E	F	G	H	Overall
Accessible Footpath									Poor
Accessible Crossings									Poor
Wayfinding Signages									Poor

Comfort	A	B	C	D	E	F	G	H	Overall
Seatings									Poor
Dustbins									Poor
Pause-Play Opportunity									Below Avg.

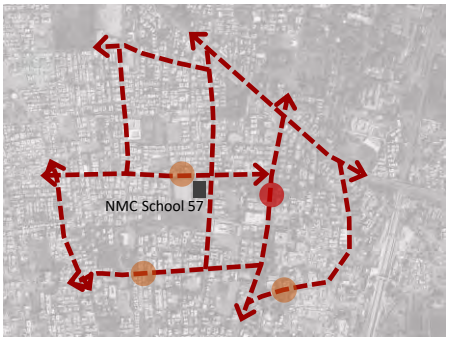
Overall assessment shows significant deficiencies, indicating an **urgent need for improvements in pedestrian vehicular conflict, designed parking, accessible footpaths & crossings, signage and street elements.**

4.7 Crash Data

Crash records collected from local police station is presented below. The crash records show that fatal crashes are also recorded on roads near the school, especially road no 3 & road no 1. Records also shows that bike & pedestrians are the victims. Hence footpath facilities shall be provided for safe movement of pedestrians. Similarly, signs, markings & speed calming measures shall also be proved. All junctions shall be improved & shall be provided with necessary safety devices.

2022 Crash data

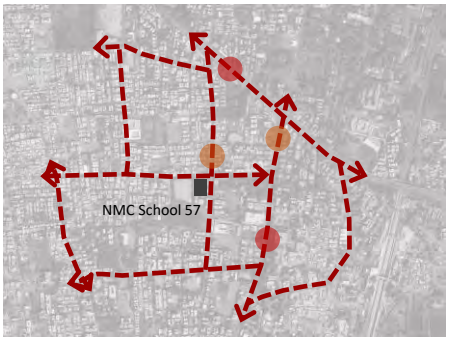
Road no	Major/ Minor crash	Crash info	Fatal	Injury	Remarks
3	Major	car with bike	1	-	
3	Minor	bike with bike	-	2	
6	Minor	bike with pedestrian	-	1	
4	Minor	bike with cycle	-	1	school kid



Injury Fatal crash

2021 Crash data

Road no	Major/ Minor crash	Crash info	Fatal	Injured	Remarks
1	Major	bike with bike	1	-	
3	Major	bike with pedestrian	1	-	
5	Minor	car with bike	-	1	
3	Minor	bus with car	-	2	



Injury Fatal crash

4.8 Reflections

In our assessment, the current state of the streets surrounding NMC School 57 reveals a predominantly car-centric environment, **lacking NMT infrastructure and traffic calming measures.** This deficiency leads to frequent conflicts between slower modes of traffic (pedestrians, cyclists) and faster modes (motorists), compromising the safety of all road users and impeding overall street efficiency.

One notable issue is the **absence of footpaths** and paved shoulders on local streets, compelling pedestrians to share the carriageway with motorists and creating potential conflicts. Additionally, the absence of midblock crossings forces pedestrians to cross streets randomly, increasing safety concerns. **Unsignalized junctions lack proper crossings and pose visibility challenges.** The lack of effective traffic calming measures, such as speed breakers, rumble strips, and medians, contributes to an environment where motorists may not adhere to safe speeds.

65% of the students claimed traffic and road safety as their major worry, whenever they are out on their own.

While Pune Nashik Road, Ambedkar Road, MG Road, and Muktidham street are well-lit, other surveyed streets and junctions suffer from sparse lighting, resulting in safety challenges during evening and night hours. Precautionary signage is predominantly concentrated at signalized junctions, neglecting streets and minor junctions that require necessary guidance and warnings. The **absence of lane markings** further contributes to a lack of direction and traffic discipline.

These unfavorable conditions render the streets **unsafe for all road users, including children.** This necessitates improvements in infrastructure, increased awareness through signage, and the implementation of traffic-calming measures. It is crucial to create an environment where all users can coexist safely and efficiently on our streets.

86% of the students currently walk to school, despite the unsafe conditions

Jai Bhavani Road, Nashik

Taran Talav Road, Nashik

Anand Nagar Road, Nashik

Photo: CBS Junction, Nashik

05 Recommendations

05 Recommendations

Delineation of School Zones:

A school zone refers to an area around school covering road network i.e. streets, bus stops, intersections and parking areas[5]. Within this area, movement of higher number of children is expected especially during the school opening and closing times.

The school zones can be categorized as follows:
a. School Proximal Zone (SPZ)
b. School Zone

a. School Proximal Zone (SPZ) can be considered as an area around a school[5]. Following table provides the radius of school zone to be measured from school for defining school proximal zone.

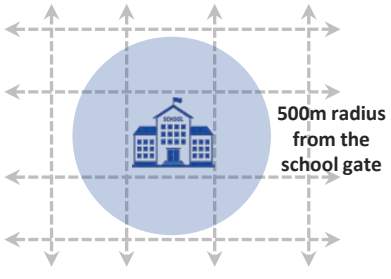
Matrix for Value of Radius for defining School Proximal Zone for schools adjacent to different types of roads (Source: IRC SP: 32 Road Safety Manual for Schools)

	Primary (m)	Secondary (m)	Senior Secondary (m)
Arterial Road	400	450	500
Sub Arterial Road	300	350	400
Collector Street	200	250	300
Local Street	150	200	250

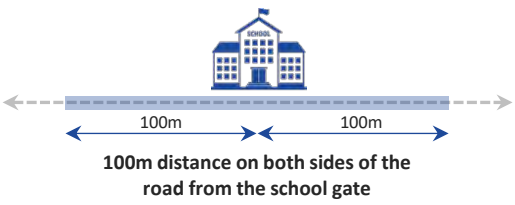
Note:

- *In the unlikely event that a school is situated along an Urban Expressway, the local authorities shall make sure that the school gate(s) do not open on to the expressway directly, and instead open on to the Service Roads having all forms of traffic calming measures .*
- *If a school has more than one age group of students, then the values for the oldest age group studying in the school, shall be considered as the zone radius for that school.*
- *Since children below primary school are almost always accompanied by an adult, demarcation of a school proximal zone for any educational institute catering to such young age group, is not mandatory.*

b. School Zone can be considered as the road leading to every entrance of the school, extending 100 m on either side of the entrance. Efforts need to be taken to make walking, cycling and public transit use attractive, safe and comfortable, to induce a modal shift among children towards independent mobility and sustainable transport modes.



School Proximal Zone



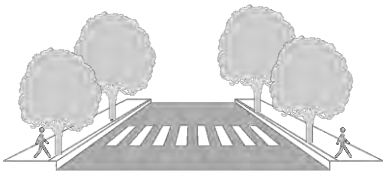
School Zone

5. IRC SP: 32 Road Safety Manual for Schools

5.1 Recommendations for School Proximal Zone (SPZ)

1. Walkable Footpaths and cycle tracks

To make walking, cycling and public transit use attractive and comfortable, the SPZ should feature well maintained, shaded footpaths and cycle tracks/lanes.

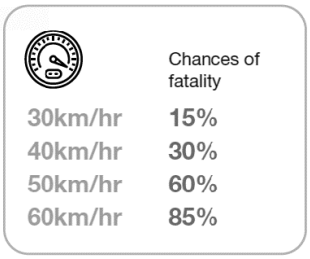


Shaded footpaths and cycle tracks

Existing infrastructure may undergo retrofitting or upgrading to meet IRC standards. The footpaths should have a minimum clear walking zone of 2m to facilitate comfortable walking, as children tend to walk in groups. The designs should adhere to IRC:103 - Guidelines for Pedestrian Facilities.

2. Traffic calming measures

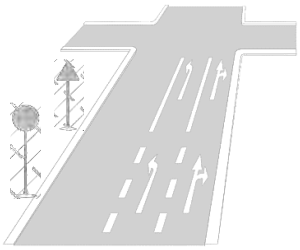
To establish a secure environment for all road users within the Safe Pedestrian Zone (SPZ), the implementation of traffic calming measures is essential. Measures such as speed breakers, rumble strips, tabletop crossings, cobblestone paving, etc., should be adopted to enforce a reduced speed limit of 30 km/hr. For comprehensive guidance on these measures, refer IRC:99 - Guidelines for Traffic Calming Measures.



Source: ITCN Framework, BvLF

3. Road marking and signage

They are essential components of road infrastructure that contribute to the overall safety, efficiency, and traffic discipline. Their purpose is to guide, inform, regulate, and enhance the experience for all road users, promoting a safer and more orderly transportation system. Refer IRC: 67 Code of practice for road signs, IRC: 35 Code of Practice for Road Markings



4. Pedestrian Crossings

The crossings should be at regular intervals, aligned with the pedestrian desired lines and rationalized to improve mobility and safety of the pedestrians . This creates a more porous and walkable neighbourhood. A pelican crossing activated by call buttons for pedestrians are recommended in school proximity.

5. Universal Accessibility

Achieving universal accessibility involves ensuring that public spaces, including streets and footpaths, are designed to accommodate the needs of all individuals, regardless of their physical abilities. Implementing universally accessible sidewalks with ramps, tactile paving, and clear pathways for wheelchairs can significantly improve pedestrian mobility.

6. Strict Enforcement

This is the key for the success of any efforts taken in the school proximal zone to improve the safety conditions. The footpaths should be free from encroachment and parked vehicles. Efforts should be taken to curb illegal parking, which is one of the major reasons for chaos at the street edge. Schools and Police should closely work together to strictly and consistently enforce the regulations.

7. Increase public transit routes and frequency

To encourage the usage of public transit amongst the students, it is important to make it comfortable, accessible and reliable. This can be done by increasing the routes and frequency during the school hours. The access to the bus stops should be improved with usable and paved footpaths.

Bus stop should be in close proximity of the school

8. Designed Streets

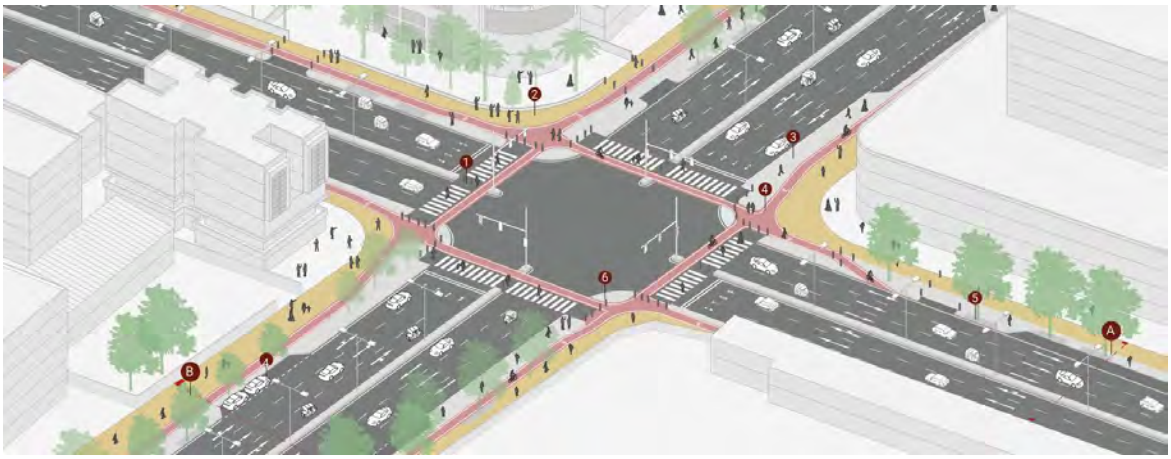
For holistic development of streets, they should be designed on complete street principles, creating safe, liveable streets with high service delivery standards. The RoW distribution should be fair, with priority for sustainable transit modes. This shall help in creating a network of vibrant and safe streets in the SPZ, enhancing the experience on school routes, and making it attractive for independent mobility of children. The streets should be designed by street design professionals.

JM Road, Pune. Source: Oasis Designs Inc.

Creating a Safe Street Environment for children is a Universal Benefit

9. Designed Junctions

The study highlights that the students feel the most unsafe at the junctions. It is recommended that all junctions in SPZ should be designed on junction compaction principles with a focus on efficiency and safety. The junction designs may be tested on ground with low-cost and quick **tactical urbanism strategies**.

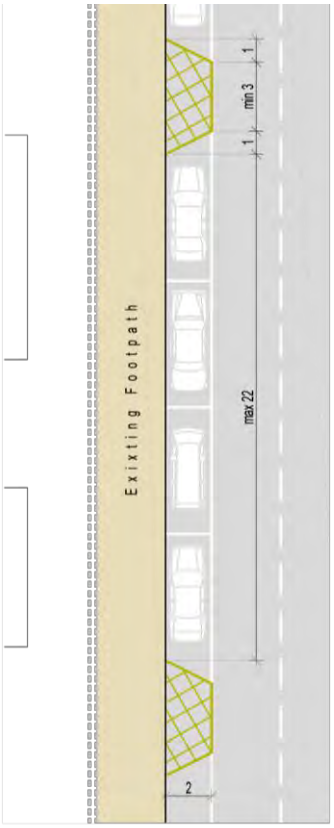


Shyamal Junction, Ahmedabad. Source: The Urban Lab Foundation

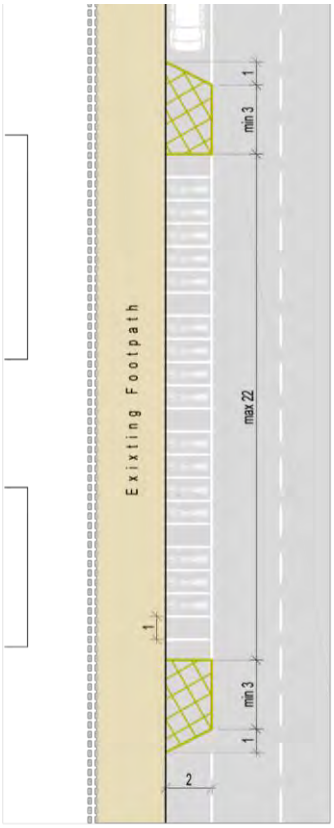
10. Parking management plan

Designed parking bays create opportunities to organise on-street parking. Parking management plan with ticketed parking can help curb illegal parking. It has been proven that parking management measures help balance the parking supply-demand while generating revenue for the city. **Painted parking bays can be tested as low-cost interim measures.**

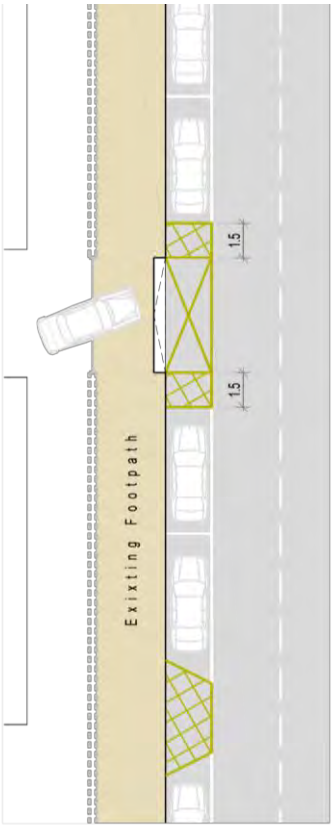
Indicative Parking design Combinations on street edge in paint marking (interim measure)



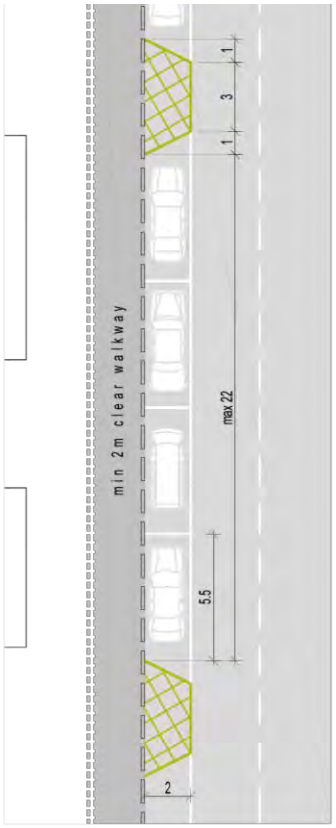
Typical bay with parking slots for cars



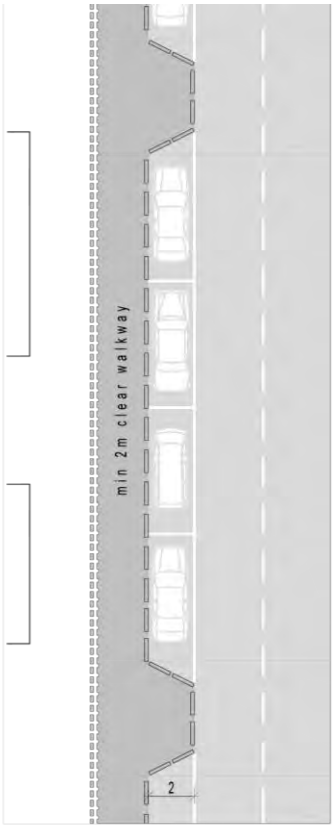
Typical bay with parking slots for two-wheelers



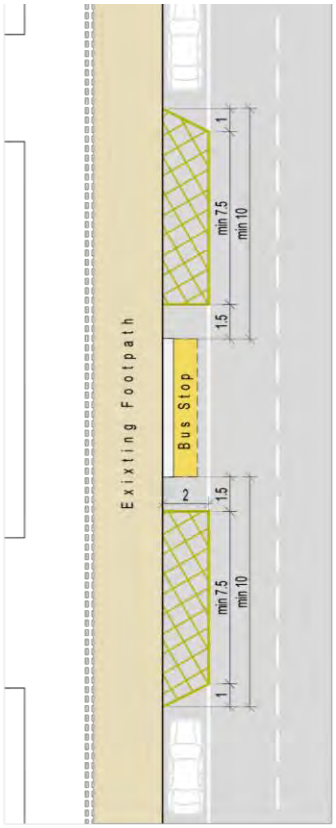
Typical bay at entrance and bulb-out



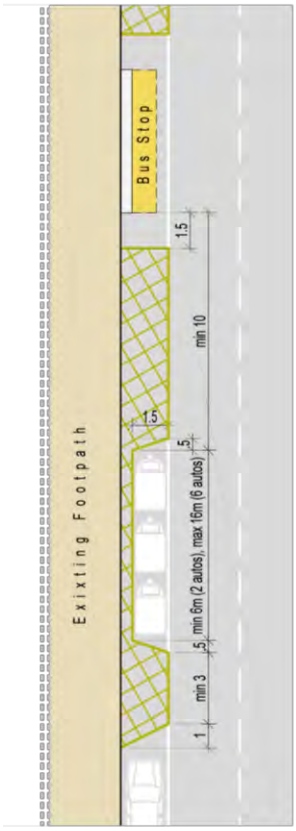
Footpath delineation with kerbs. Typical bay with parking slots for cars



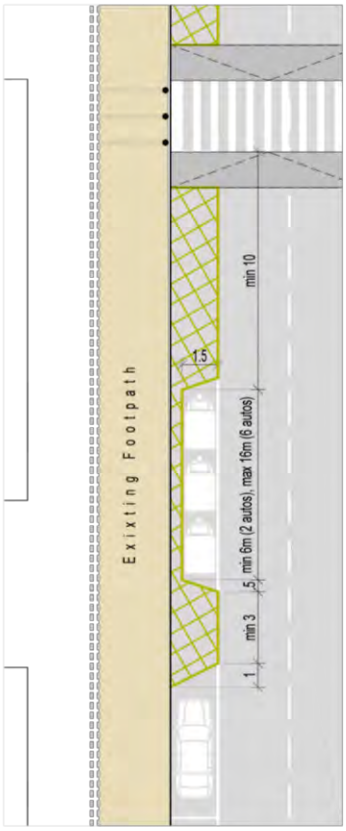
Footpath and bulbout delineation with kerbs.



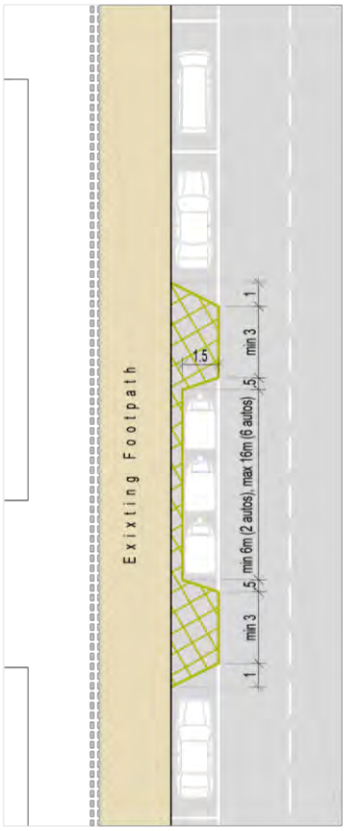
Typical bus-stop



Typical rickshaw stand near bus top



Typical rickshaw stand and table-top crossing



Typical rickshaw stand

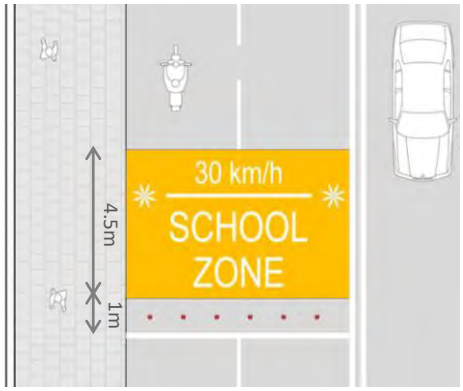
5.2 Recommendations for School Zone

The street elements within the school zone (extending 100m on either side of school gate) must prioritize safety and a children friendly design. It should ensure high visibility and feature a distinctive color that represents school zones in the city. The use of yellow is recommended for its heightened visibility and appealing nature. Yellow thermoplastic paint may be used for the traffic calming measures, compliant with IRC codes, making it suitable for the school zones.

1. School Zone Marking and signage

The school zone marking should be painted on the carriageway for easy visibility. It should be located at a distance of **100m on either side of the school entrance.** The marking should be painted in yellow thermoplastic paint for its high visibility and durability.

School zone signage should be located 15m before the start of the school zone and should be easily visible to the motorists.



School zone marking at 100m from school gate

2. Pedestrian crossings: A pedestrian crossing should be located 4.5m away from the school gate. A crossing with traffic signals for both pedestrian and vehicular traffic, activated by call buttons for pedestrians is recommended in the school zone. A table top crossing design acts as a traffic calming measure in the school zone. The school zone crossing should be different from the other crossings in the city, offering a distinct identity to the school zone.

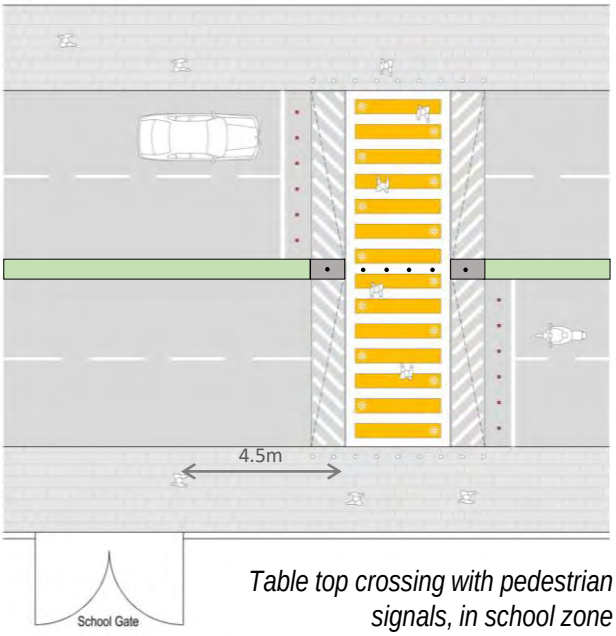
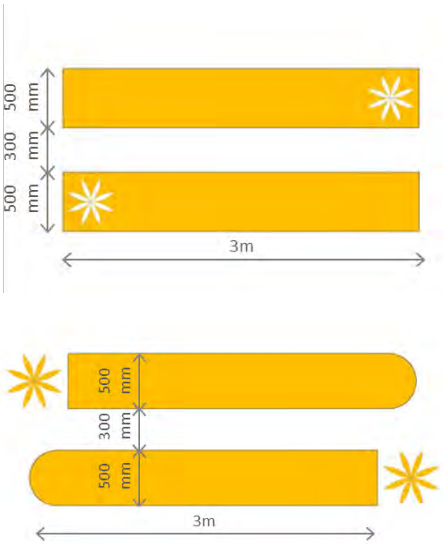


Table top crossing with pedestrian signals, in school zone

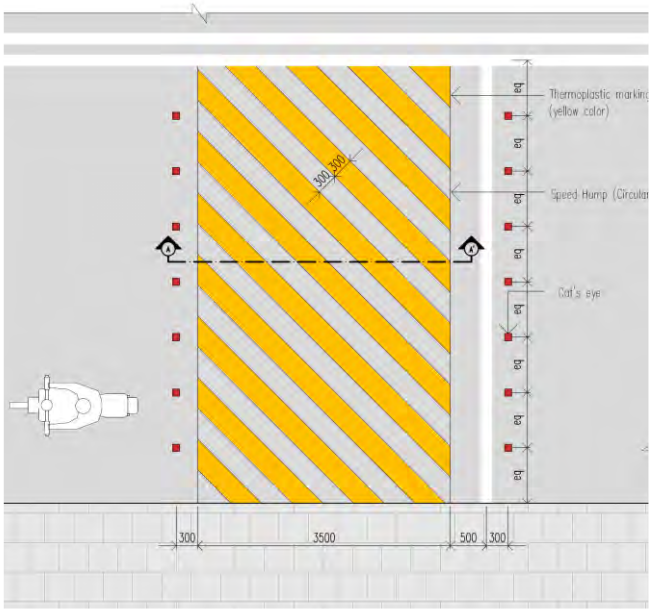


Zebra band alternatives

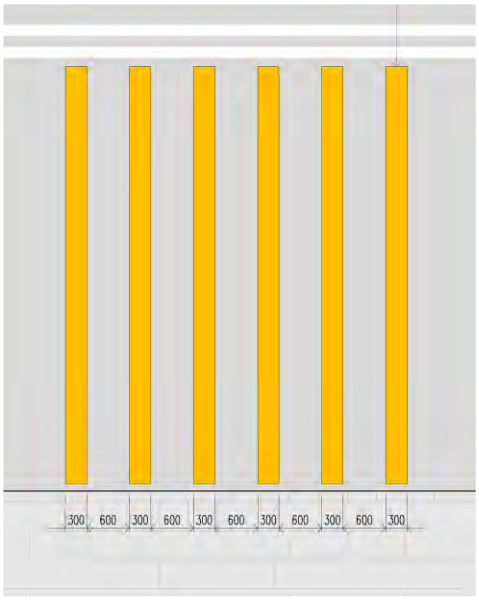
3. Pick-up and drop-off zone: Where space is available, a pickup and drop off zone should be created within the school campus for the safety of children and to reduce the traffic chaos on the street during the school pickup and closing times. This is highly recommended for primary and pre-primary children considering their young age.

4. Traffic calming measures

The traffic calming elements within the school zone aim to reduce speeds to below 30 km/h, fostering a secure environment for school children. For detailed guidance on effective measures, please refer IRC[6]:99 - Guidelines for Traffic Calming.



Speed hump - Plan

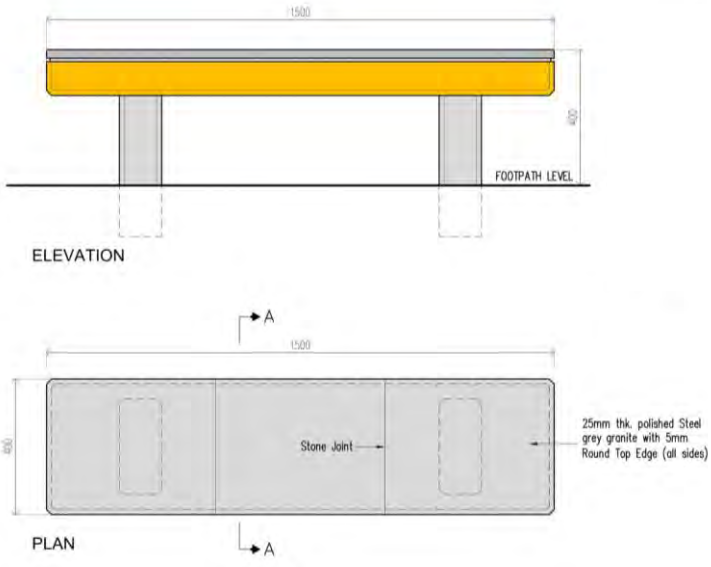


Rumble strips – elevated by 15mm

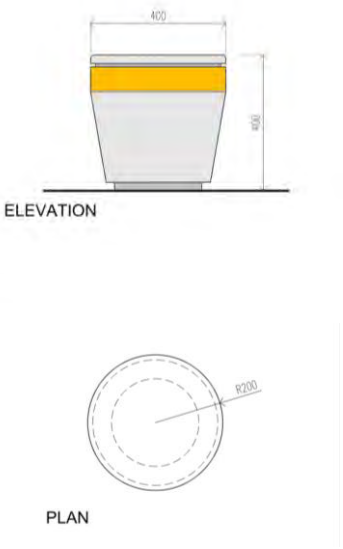
5. Street Furniture

The school access zone should incorporate street furniture and elements designed to enhance the overall livability of the area, providing comfort and convenience to its users. Consideration should be given to the inclusion of seating arrangements and strategically placed dustbins, offering valuable support to caregivers as they wait to pick up their children from school. Dedicated vending zones can help organize the chaos on street.

To prioritize child safety, all street furniture should be corner less to mitigate any potential risks of injury. Additionally, the installation of bollards can effectively safeguard children from motor vehicles ensuring a secure environment within the school access zone.



Reference design - Concrete bench with yellow band for school zone



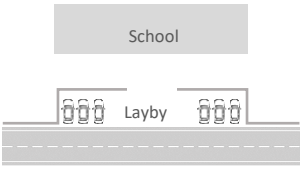
Reference design - Concrete puffy seating with yellow band for school zone

6. IRC- Indian Road Congress

6. Ban/Closure of liquor and tobacco sale in school zone There should be a strict enforcement of the government order prohibiting the sale of liquor (*Maharashtra Prohibition Act, 1949*) and tobacco (*section 6 of the COTPA*[7] *act 2003*) near schools during school hours.

7. Partial ban on commercial heavy vehicles during school timings: This shall facilitate a safe environment on street for all vulnerable users

8. Mandatory layby at school gate: This can be mandated for new schools in order to partially accommodate the school peak hour spillover. It may offer as a space for a safe pickup and drop-off zone. Necessary change may be required in the building regulations.



Mandatory layby for new schools

9. Cameras in the school zone: Surveillance cameras within the school zone should be strategically placed along streets to enhance security.

5.3 Recommendations for Schools

1. Road Safety Workshops: The schools should facilitate conducting road safety workshops with the support of traffic police and civil society organizations working in the sector. This shall help create awareness among students and educate them on responsible road behaviour.

2. Security Guards/wardens for traffic management

The school may deploy extra personnel to oversee traffic management during peak hours, ensuring the safe crossing of students. This not only adds an extra layer of security for children at the gate and beyond the school premises but also serves as a deterrent to potential suspicious activities. Schools may sought assistance from traffic police, and civil society organizations.

3. Promote independent mobility (ST) & offering incentives

Schools are encouraged to promote independent mobility as an integral aspect of holistic child development. Embracing sustainable modes of transportation, such as walking, cycling, and the use of public transit, not only contributes to the well-being of the children but also fosters a healthier urban environment. Schools should keep a track of mode of transit of the students. Consideration could be given to offering incentives to encourage children to adopt these sustainable modes of transportation.

4. Create School Zone Road Safety Committee: It should comprise of representatives of school administration, civil society organisations, parents, school van association, secondary school students. The safety landscape in the school zone should be regularly evaluated by the committee and necessary action points should be communicated to NMC and responsible stakeholders.

7. COTPA- Cigarettes and Other Tobacco Products Act

5.4 Action Points and Responsibilities

Here is a proposed list of action points and responsibilities of different stakeholders with suggested goal timeline, to enhance school zone road safety in Nashik,

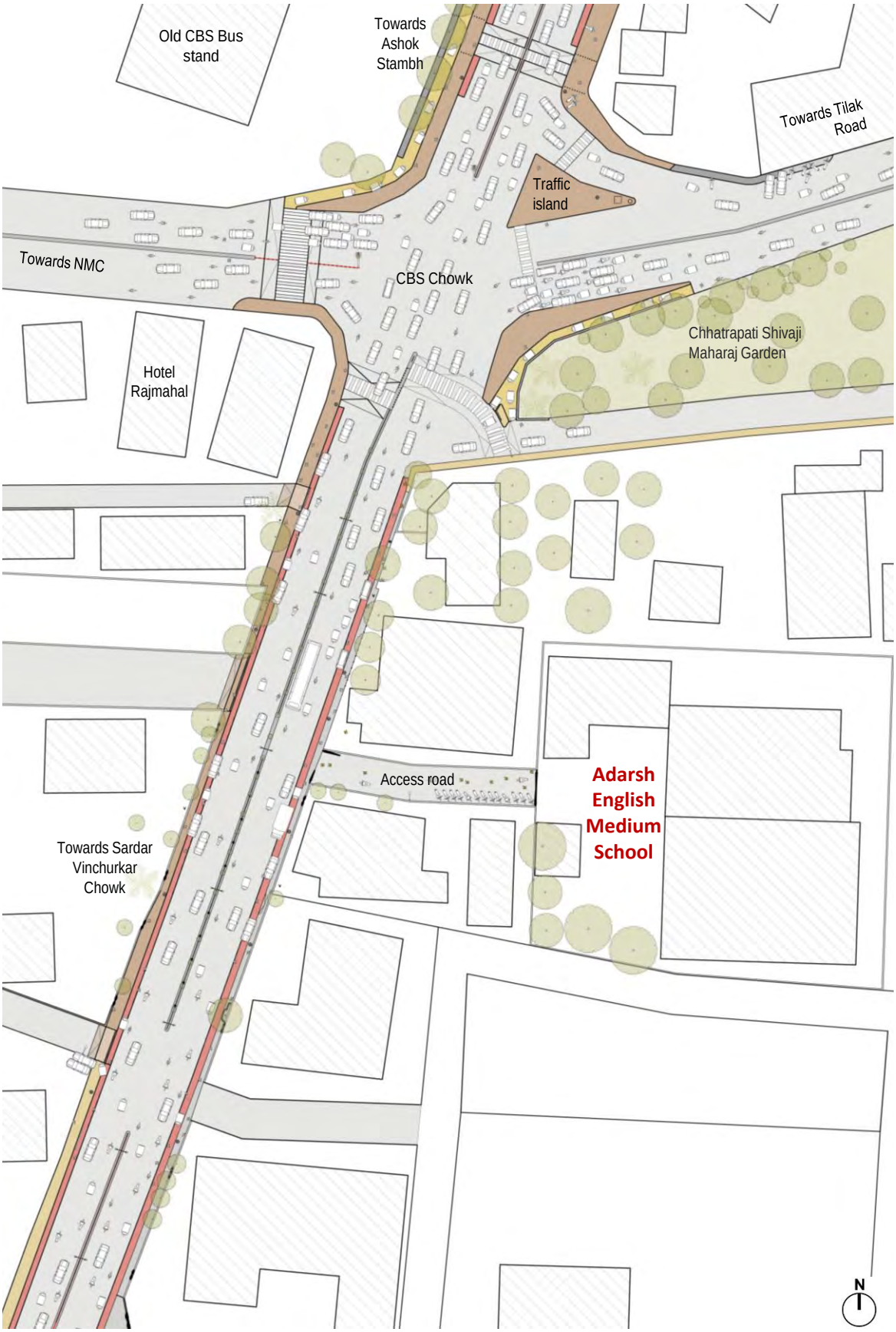
IMMEDIATE GOALS (1 YEAR)

Sr. No	Action point	Intent	Cost	Impact	Responsibility
1	Delineation of school zone with reduced speed limits	Better Visibility and concentrated efforts	Low	High	NMC
2	Retrofitting/upgrading existing footpath	Make footpath walkable with adequate width, evenly paved surface	Moderate	High	NMC
3	Rigorous enforcement with stricter penalties for violations in school zones	To enforce traffic regulations & curtail encroachment on footpath, cycle tracks and illegal parking	Revenue raising	High	NMC, Nashik Police
4	Pedestrian Crossings (at regular intervals) & road markings in thermoplastic paint	To facilitate safe crossings in school proximal zone.	Low	High	NMC
5	Traffic calming measures	To curtail over speeding and enhance safety	Moderate	High	NMC
6	Signages and wayfinding	For warnings and enhanced sense of direction	Low	Moderate	NMC
7	Adequate Street Lighting	For safety in the evening/night	Moderate	High	NMC
8	Road Safety Workshops in Schools	For awareness among students and educate them on responsible road behaviour	Low	Moderate	Traffic Police, NGOs, School Management
9	Adequate number of security guards and Traffic wardens during school closing hour	For student safety and surveillance at gate and outside school premises for efficient traffic management during the peak hour	Moderate	High	Traffic Police, School management
10	Tactical urbanism intervention at junctions	Test and demonstrate junction designs for efficiency and safety	Moderate	High	NMC, GDCI, Bloomberg Philanthropies
11	Enforce liquor & tobacco sale ban in school zone	To discourage wrong habits and inappropriate behavior	-	High	Nashik Police, NMC

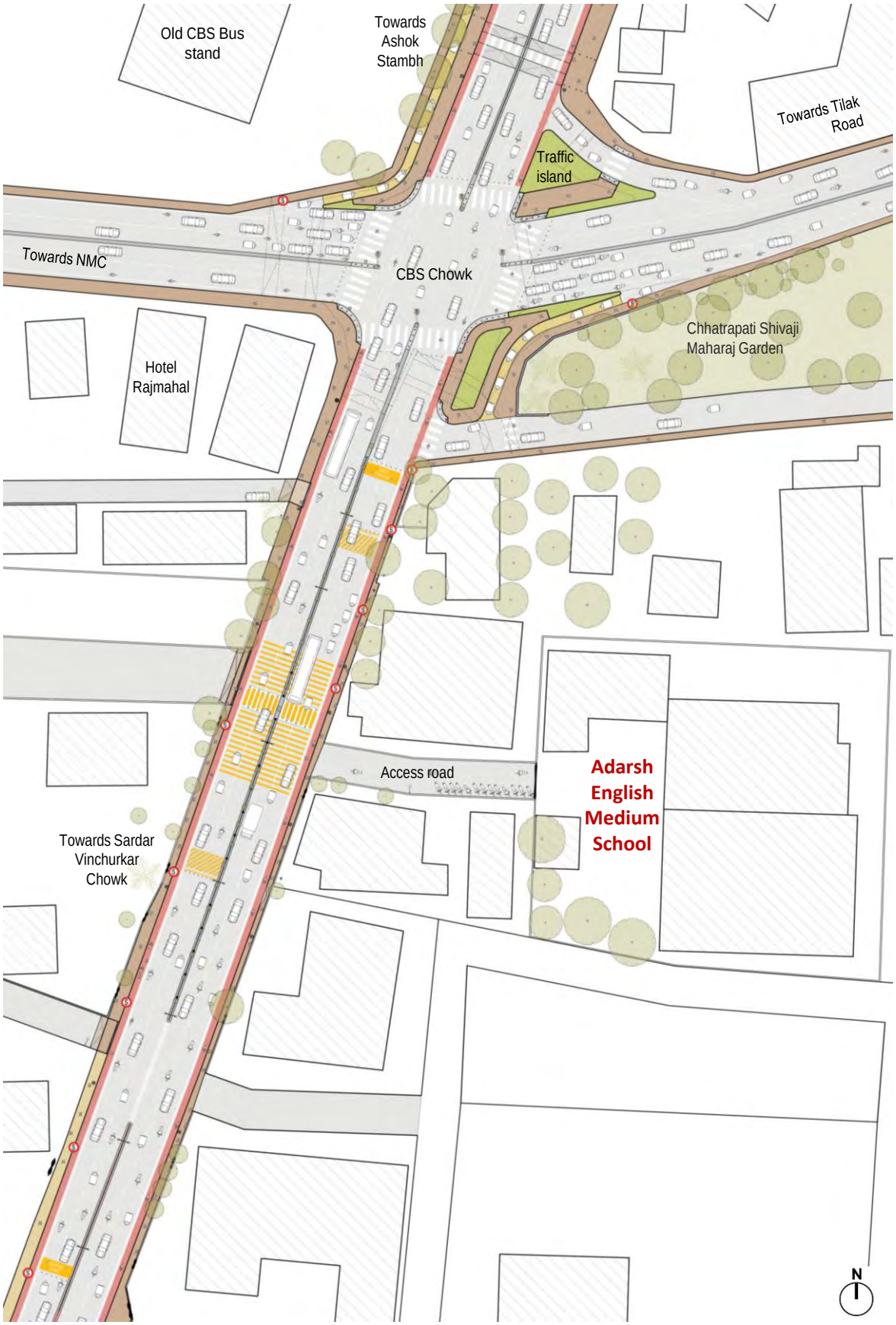
	Sr. No	Action Point	Intent	Cost	Impact	Responsibility
SHORT-TERM GOALS (3 YEARS)	12	Make existing street infrastructure universally accessible, table top mid-block crossings	To make streets inclusive	Moderate	High	NMC
	13	Increase city bus routes and frequency during school peak hour. Improve accessibility to bus stops	To facilitate travel to & from school by public transport	Moderate	Moderate to High	NMPML, NMC
	14	Public Awareness campaigns	To inform about importance of safety regulations in school zones	Low	High	NMC, local media, school management
	15	Encourage Children for Independent mobility	For holistic development & switch to ST modes	Low	High	Caregivers, School Management
	16	Install cameras in the school zone near the school entrances	For surveillance	Moderate	Moderate to High	
LONG-TERM GOALS (5 YEARS)	17	Designed Streets and Designed junctions with alignment correction	Creating liveable and safe streets based on complete streets principles, with designed parking bays. Junction compaction with pedestrian refuges ensuring overall efficiency & safety	High	High	NMC, UD Consultants, technical support from GDCI, Bloomberg Philanthropies
	18	Create Cycling infrastructure	Create a network of cycle tracks/lanes to encourage a safe environment for students and other cycle commuters	High	High	NMC
	19	Parking Management Plan with chargeable parking	To curb illegal parking, generate revenue, manage parking demand-supply	Moderate	High	NMC, Consultant
	20	Policy for School zone road safety program	Comprehensive approach to school zone safety	-	High	State Urban Development Ministry, NMC

5.5 Design Recommendations for Adarsh English Medium School

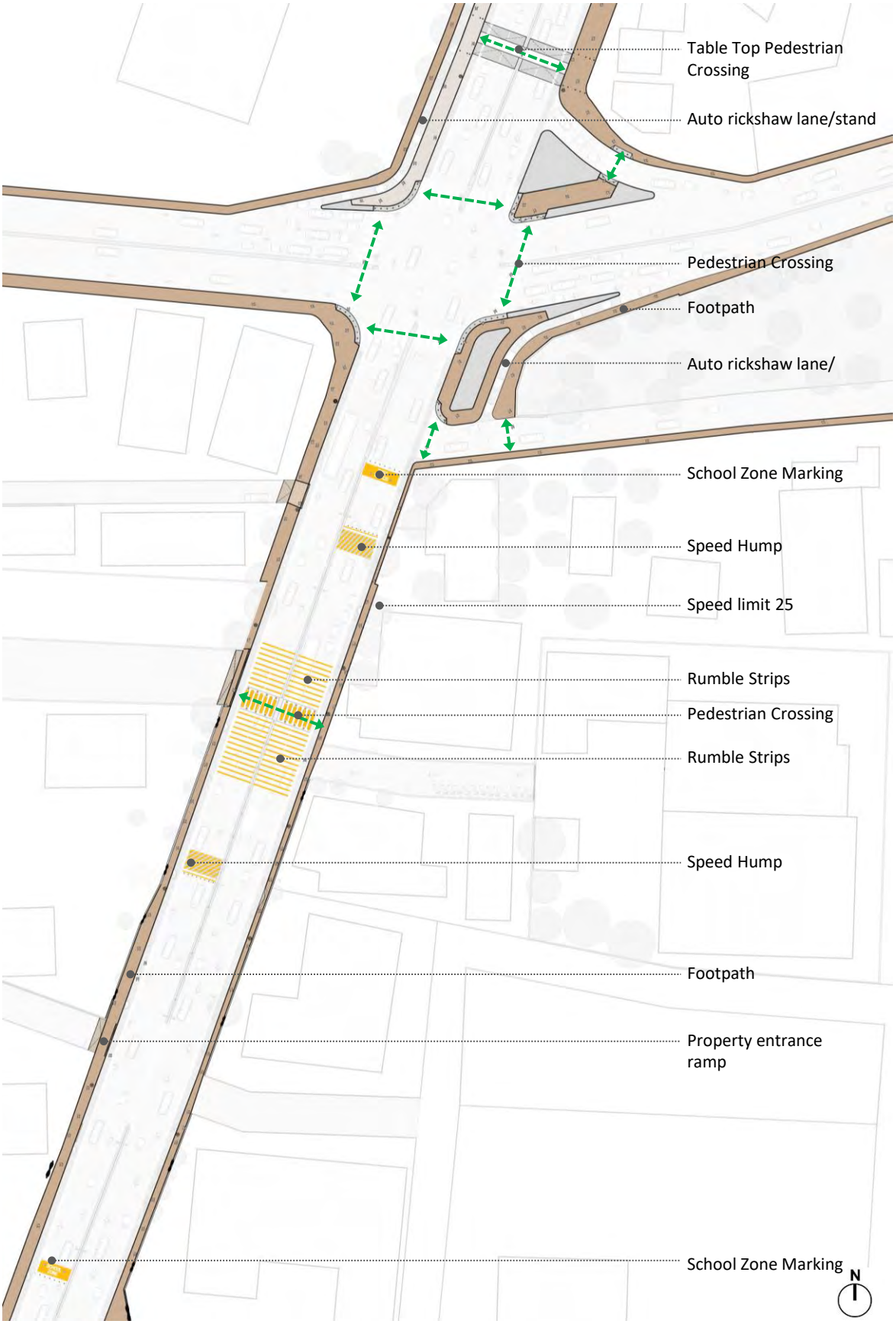
Existing School Zone:



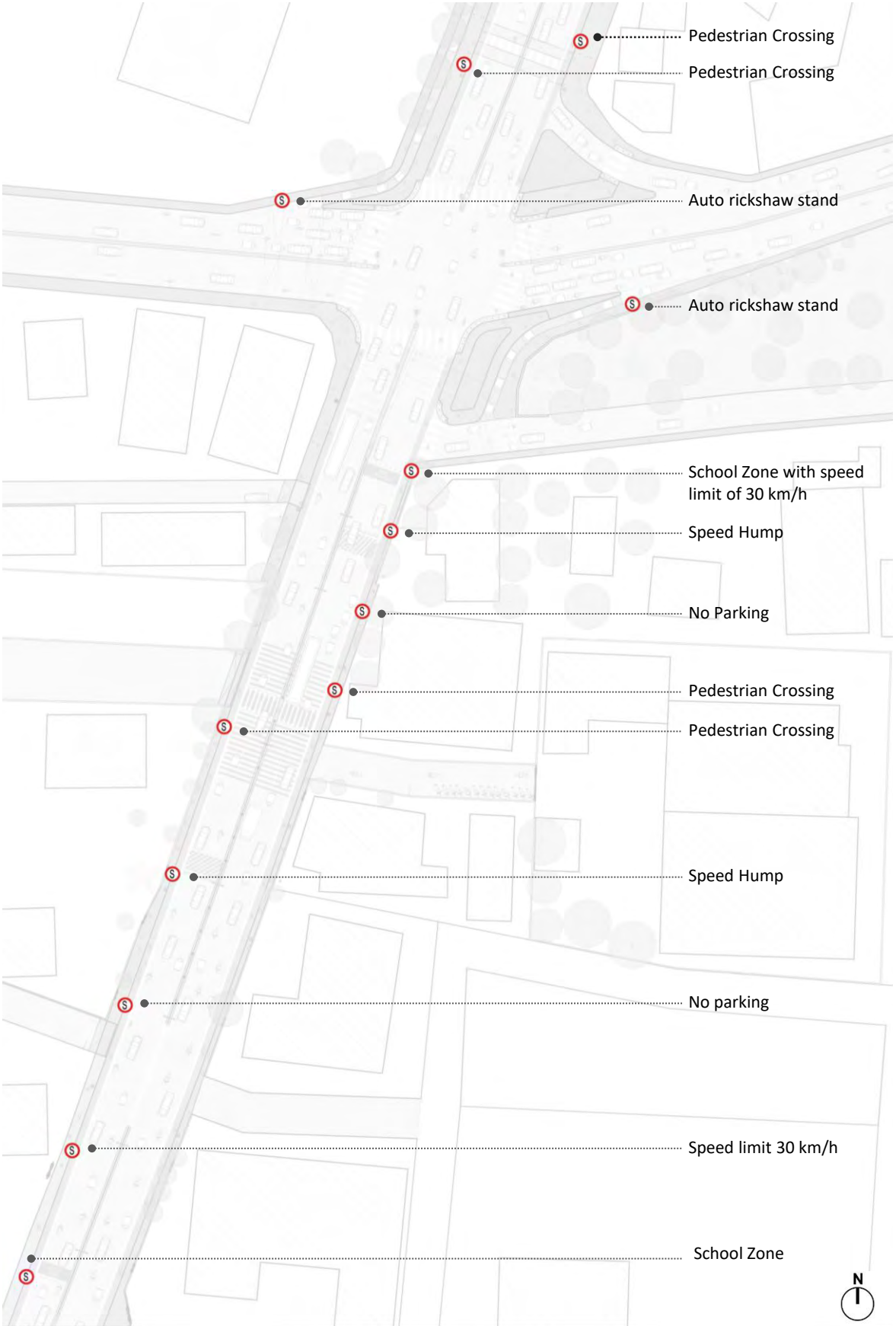
Proposed School Zone:



Pedestrian and Traffic calming strategies:



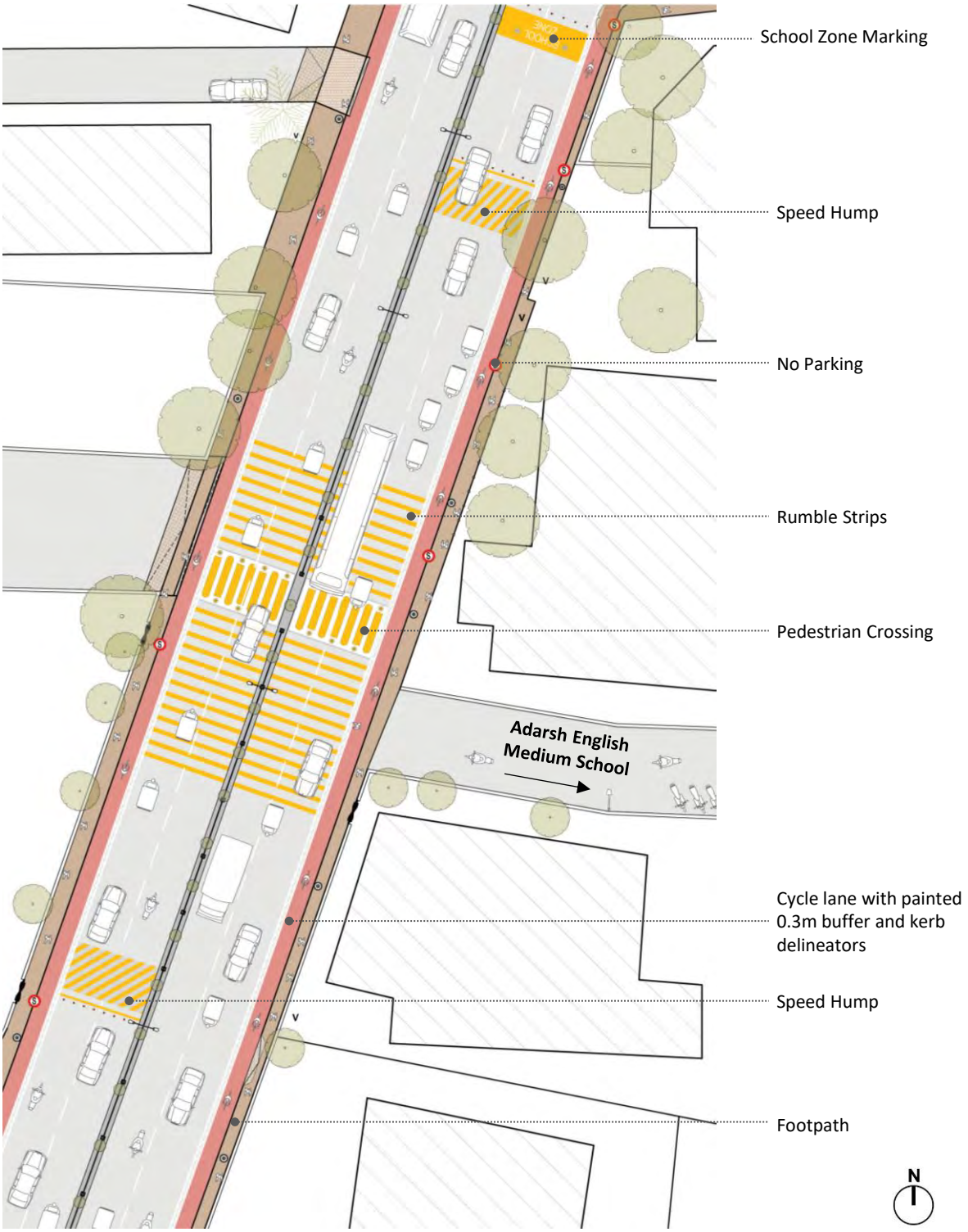
Signages


Pedestrian Crossing
Pedestrian Crossing
Auto rickshaw stand
Auto rickshaw stand
School Zone with speed limit of 30 km/h
Speed Hump
No Parking
Pedestrian Crossing
Pedestrian Crossing
Speed Hump
No parking
Speed limit 30 km/h
School Zone
N

Existing premise outside the school:

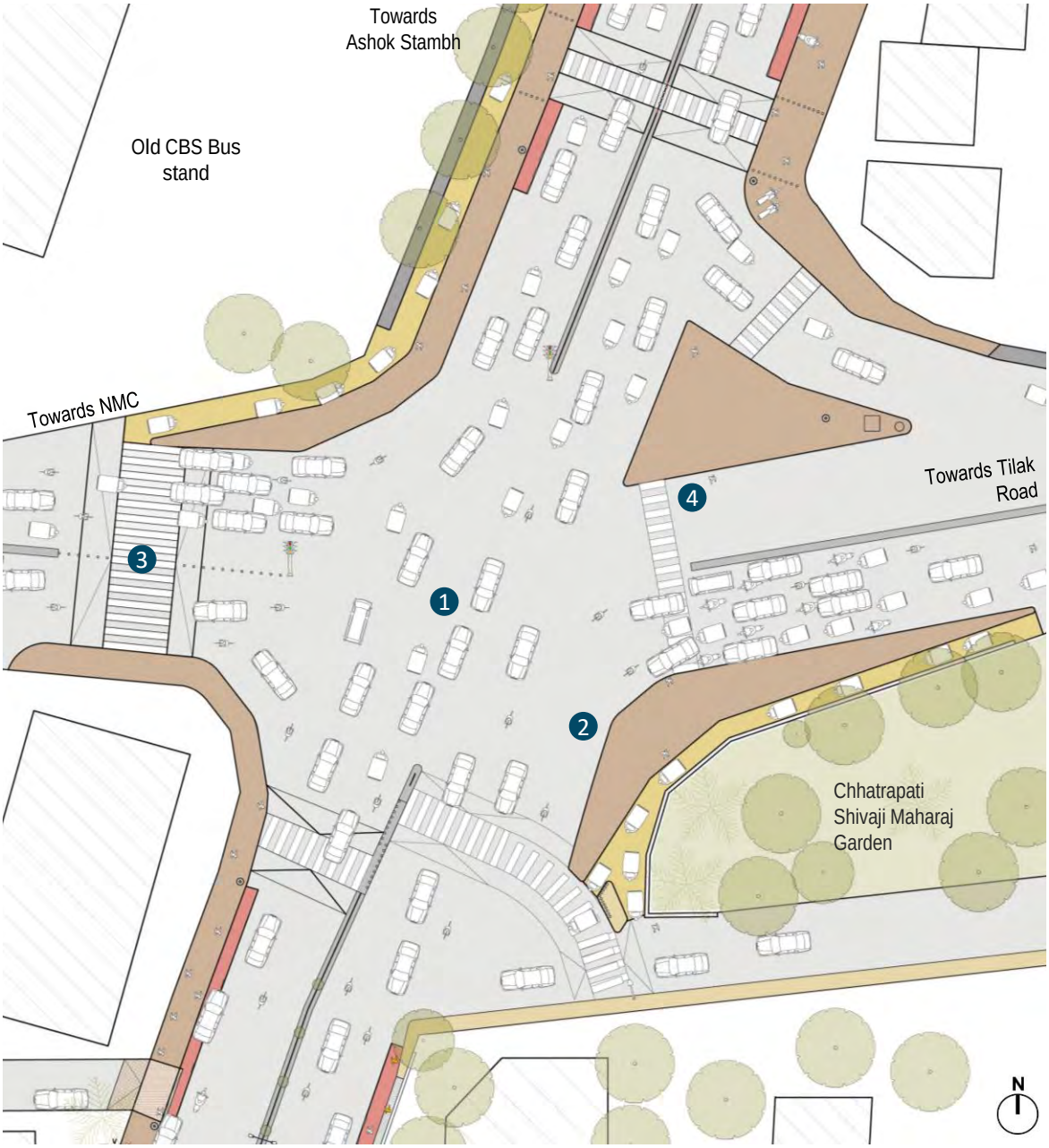
The existing street lacks road markings, traffic calming measures, pedestrian crossings, continuous walkable footpaths and signages posing safety risks for all users.

Proposed premise outside the school:



The proposal makes provisions for traffic calming measures with a speed limit of 30kmph in the school zone. Continuous walkable footpaths, pedestrian crossings help in creating a pedestrian friendly environment and reducing the pedestrian vehicular conflict. Appropriate road markings, and signages are proposed to guide users and assist in traffic discipline ensuring safety for all. Delineators are proposed in painted cycle lane buffer curbing parking encroachment.

Existing CBS Junction:



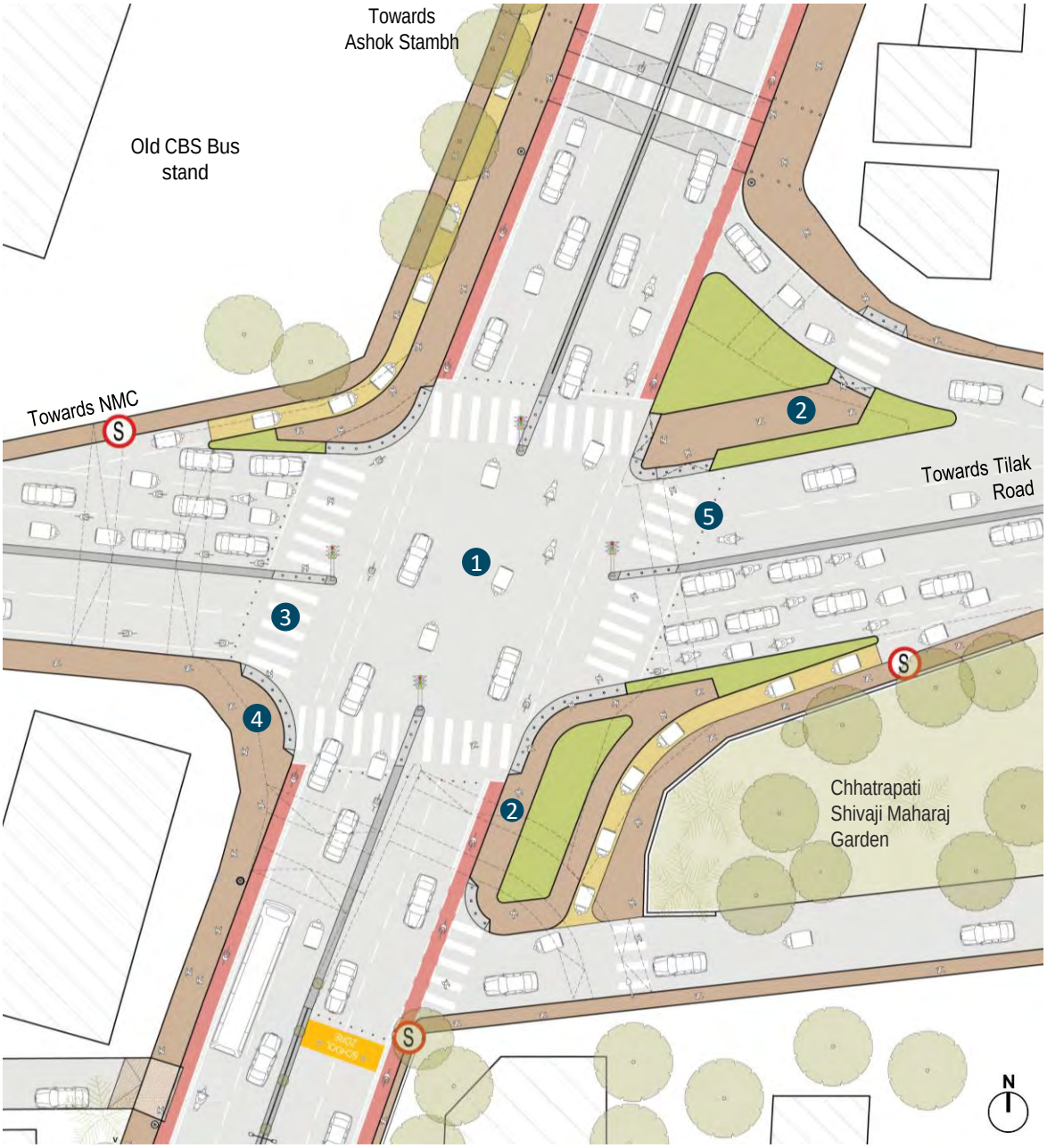
1. The existing junction is chaotic, large in size affecting the efficiency and safety of the junction for both, motorists and NMT users.

2. There is unused grey area at the junction, with large turning radii inducing vehicular speed and posing risk for NMT users.

3. The zebra crossings do not align with the desired pedestrian lines with large crossing distances.

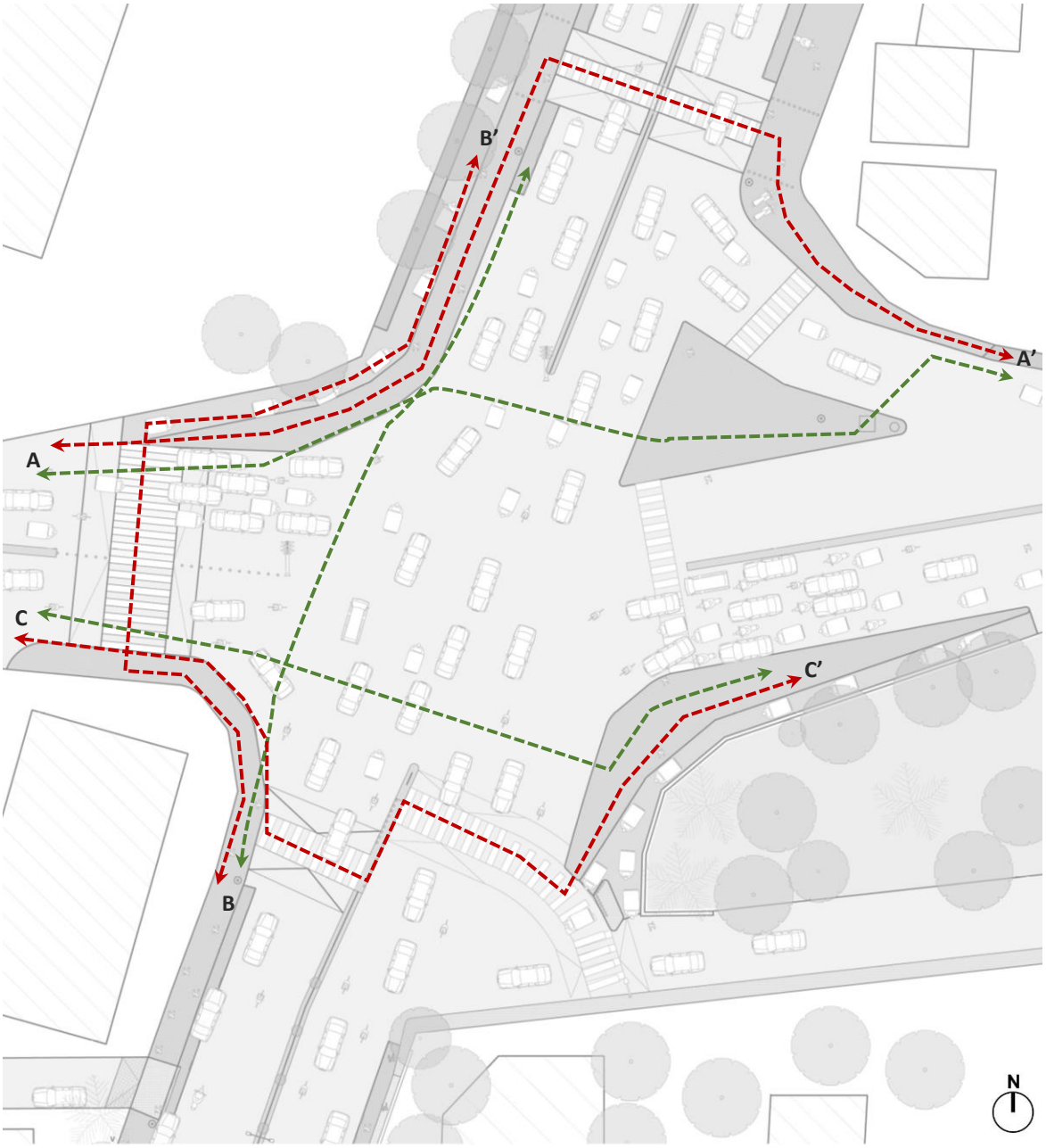
4. The junction lacks universal accessibility, signages and road markings.

Proposed CBS Junction:



1. The design solution proposes junction compaction with geometry correction, enhancing the visibility, efficiency and safety of the junction.
2. The unused grey area of the junction is added to the traffic islands helping in better channelisation of traffic and creating place-making opportunities. The traffic islands and medians act as pedestrian refuges assisting in crossing the junction.
3. The zebra crossings align with the desired crossing lines of the pedestrians ensuring short crossing distances.
4. The footpaths and refuges are universally accessible.
5. Road marking, cat's eyes and signages are appropriately placed to guide the users and assist in traffic discipline.

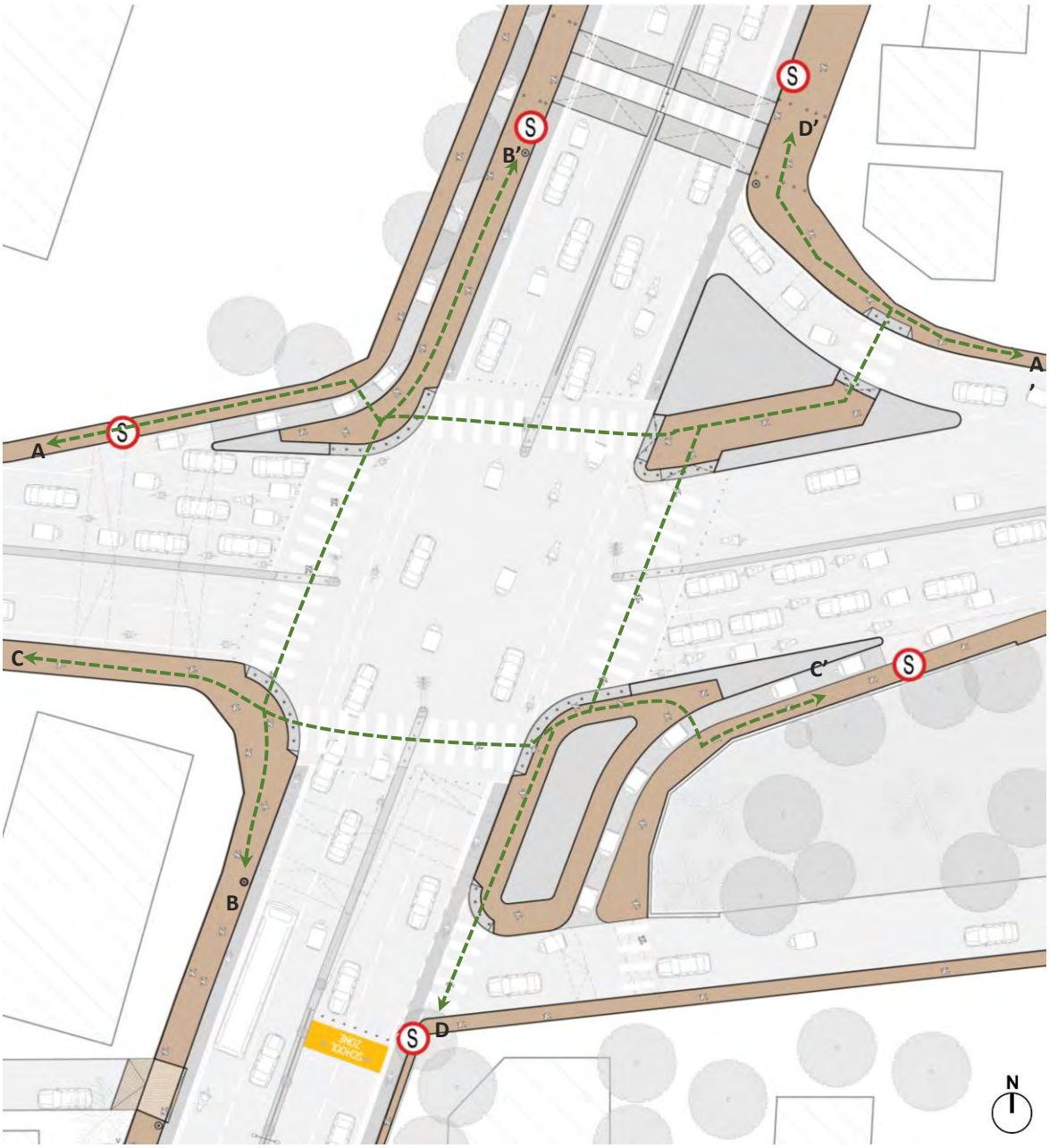
Existing Pedestrian movements at CBS Junction:



Expected Pedestrian Movement as per existing crossings at the junction

Actual and desirable pedestrian movement, with shortest crossing distance

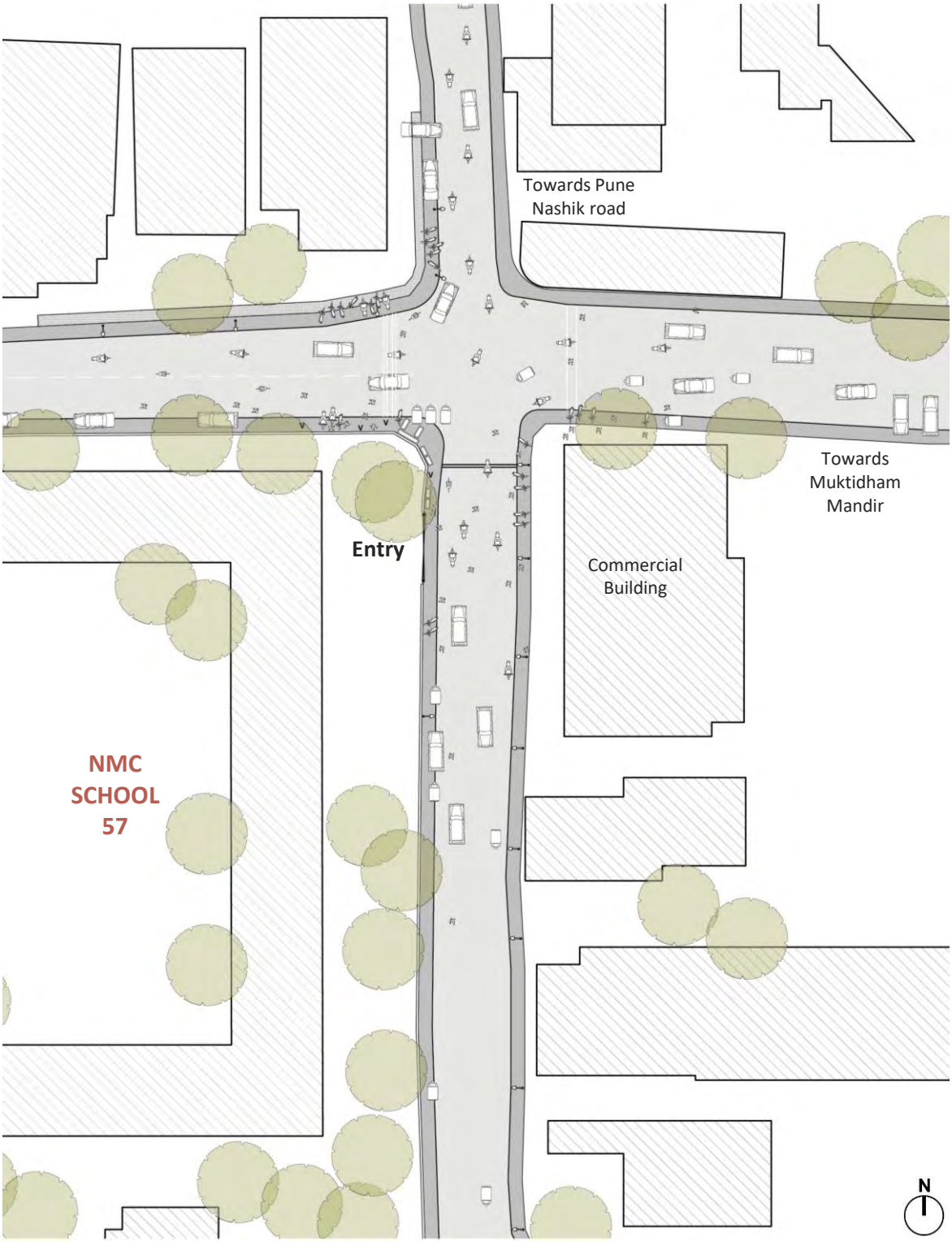
Proposed Pedestrian movements at CBS Junction:



Pedestrian movement, with shortest crossing distance

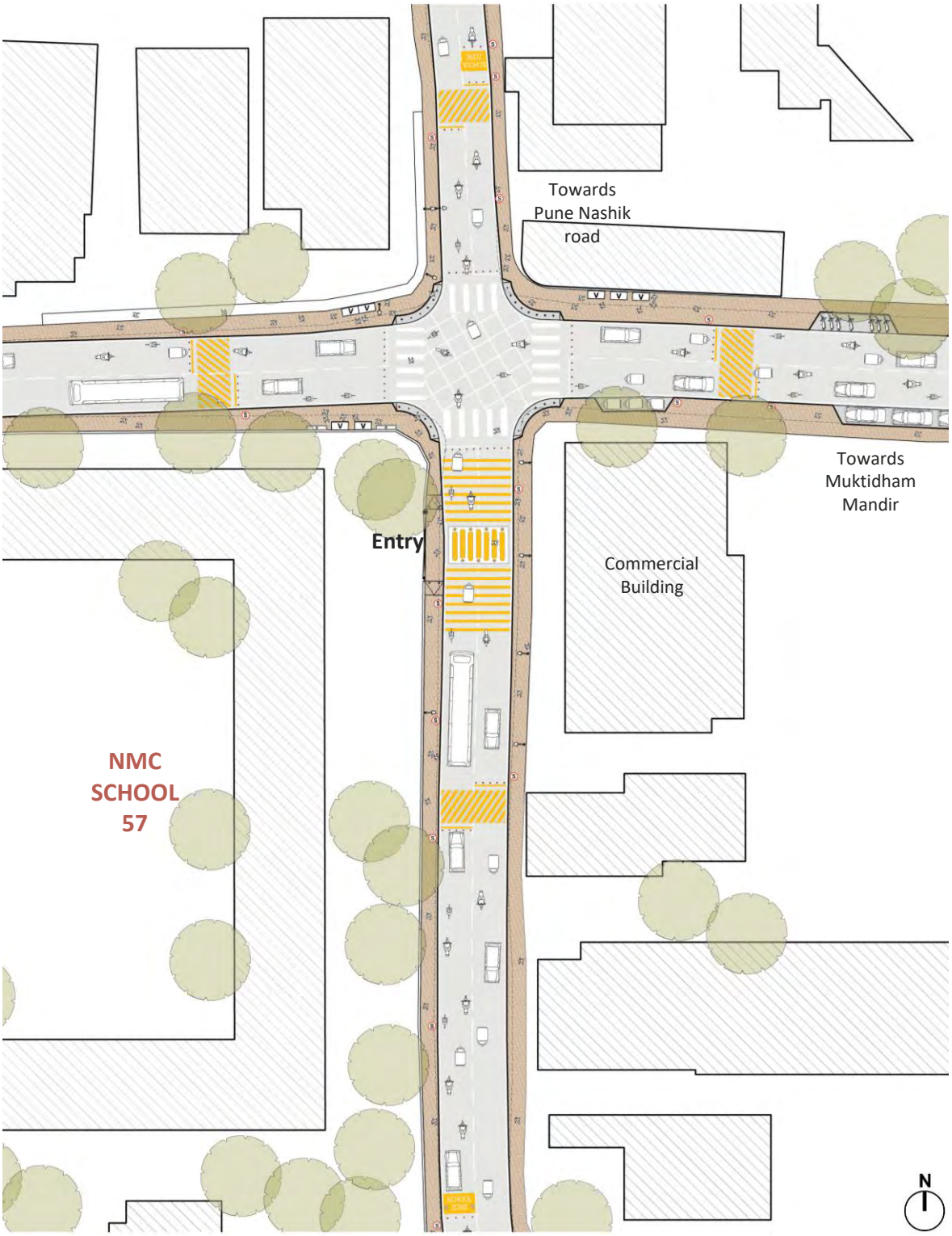
5.6 Design Recommendations for NMC School 57, Muktidham

Existing School Zone



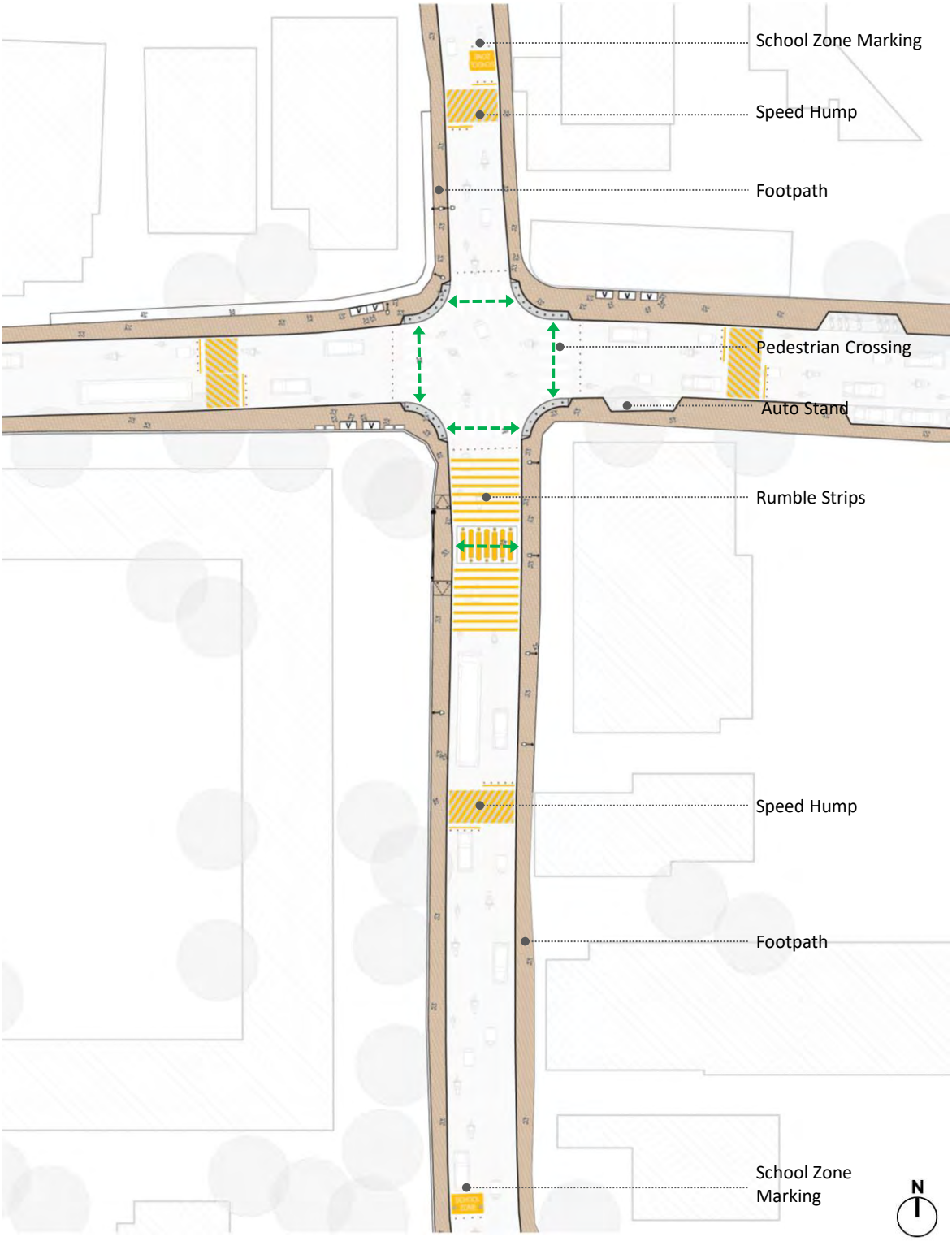
The existing street lacks road markings, traffic calming measures, pedestrian crossings, continuous walkable footpaths and signages, posing safety risks for all users.

Proposed School Zone

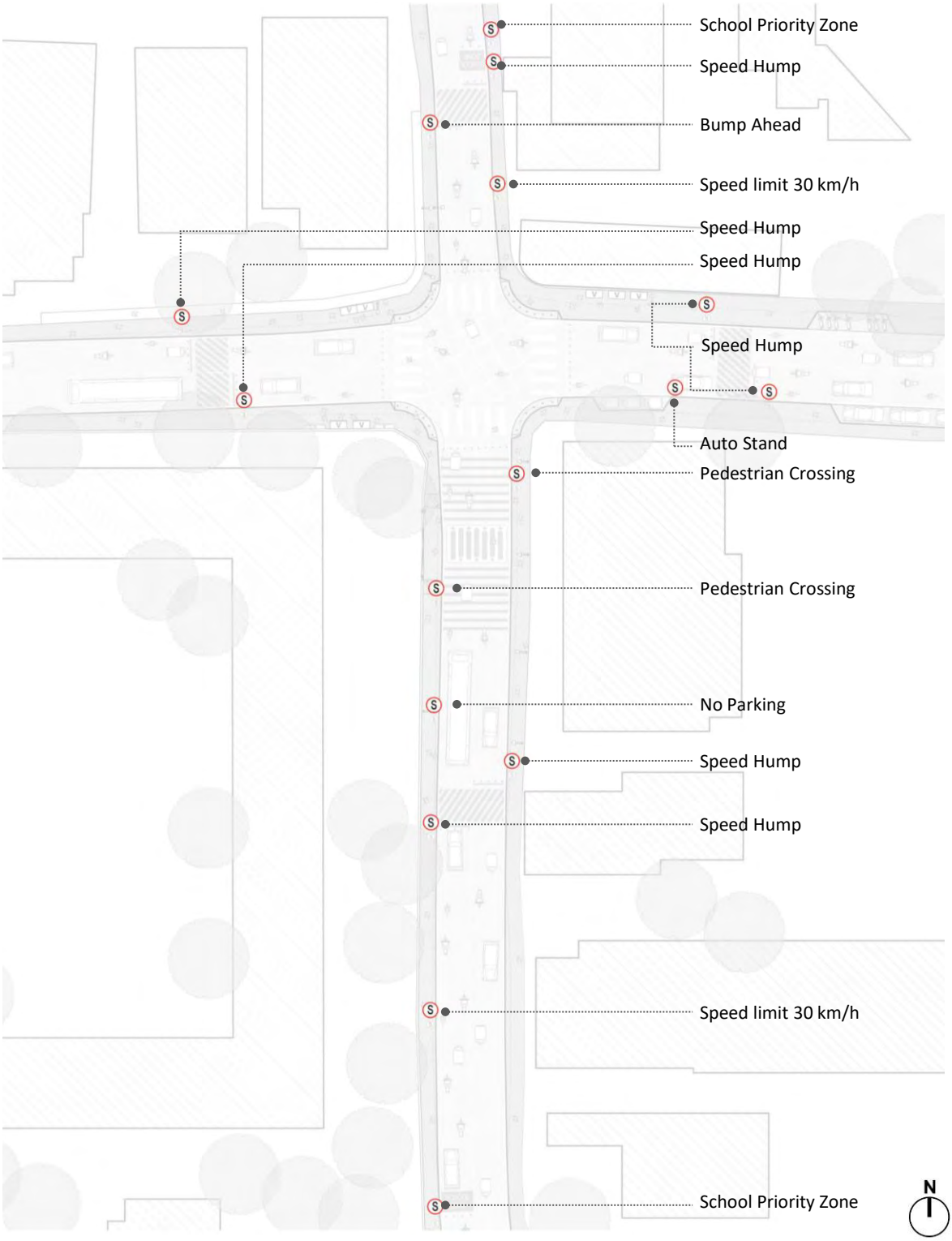


The proposal makes provisions for school zone marking, traffic calming measures with a speed limit of 30kmph in the school zone. Continuous walkable footpaths, pedestrian crossings help in creating a pedestrian friendly environment and reducing the pedestrian vehicular conflict. Appropriate road markings, and signages are proposed to guide users and assist in traffic discipline ensuring safety for all. The footpaths are made universally accessible and the junction is compacted ensuring safety for all.

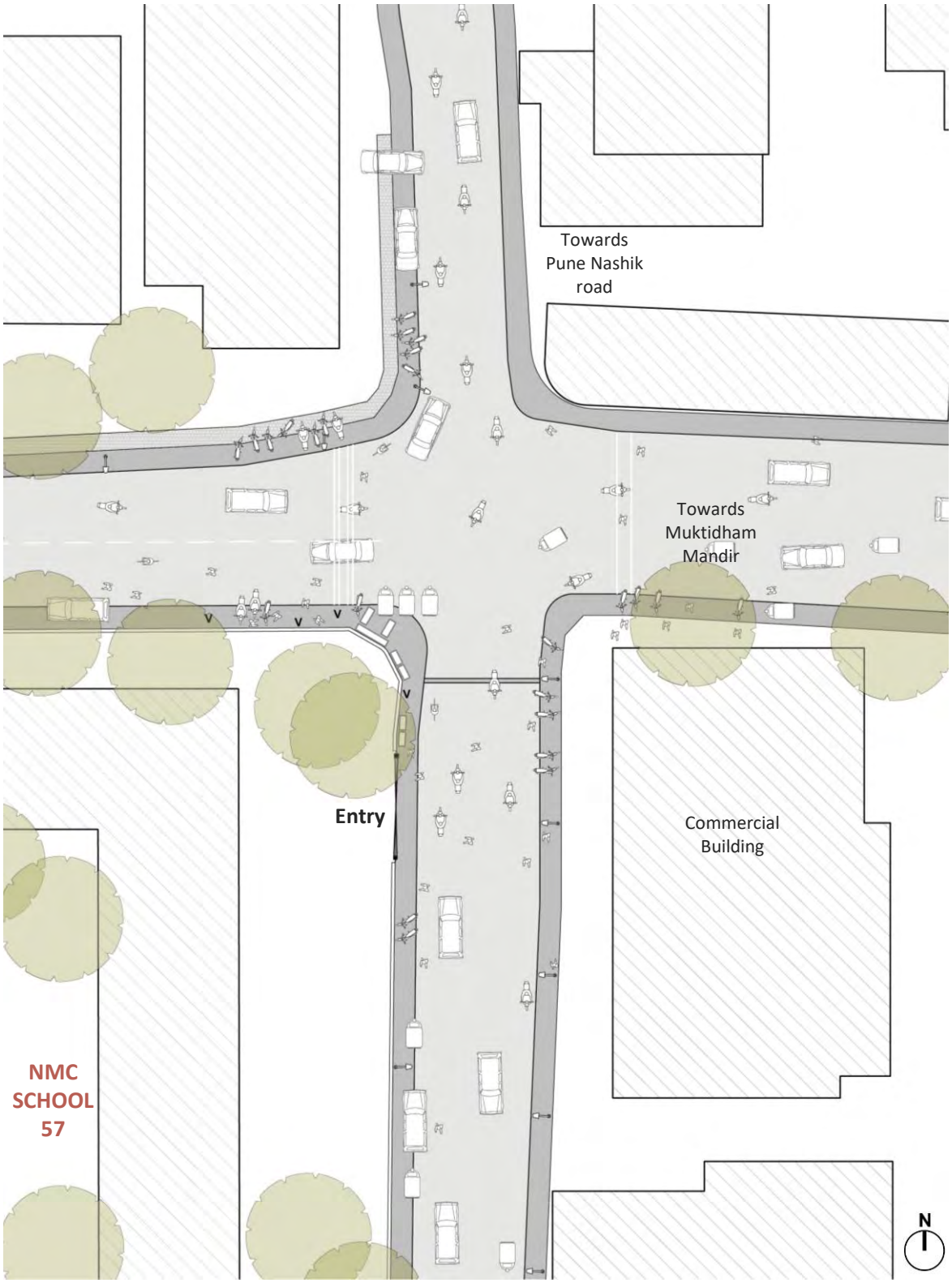
Pedestrian Crossings and traffic calming



Signages

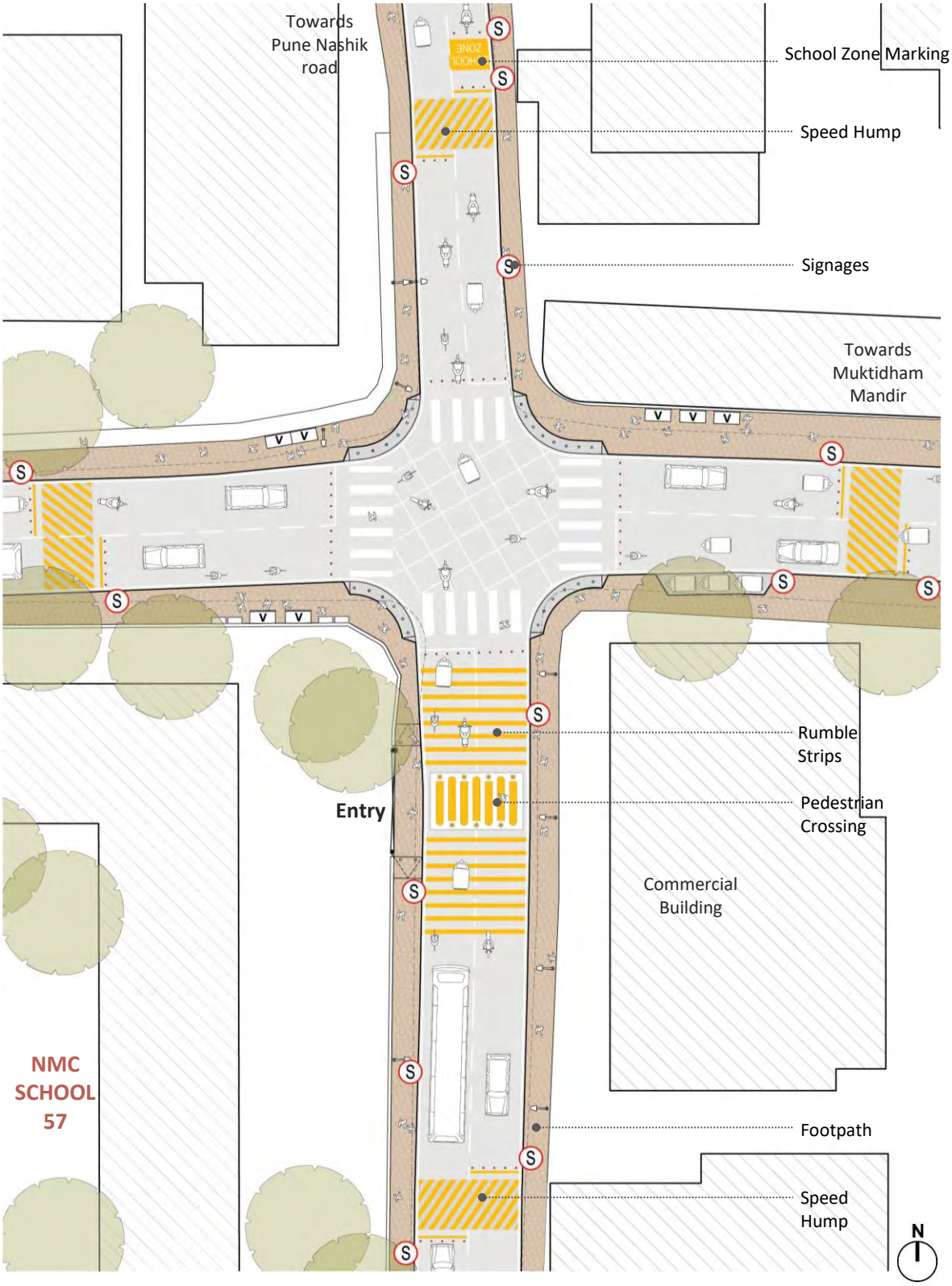

School Priority Zone
Speed Hump
Bump Ahead
Speed limit 30 km/h
Speed Hump
Speed Hump
Speed Hump
Auto Stand
Pedestrian Crossing
Pedestrian Crossing
No Parking
Speed Hump
Speed Hump
Speed limit 30 km/h
School Priority Zone
N

Existing Junction near school



The existing street lacks road markings, traffic calming measures, pedestrian crossings, continuous walkable footpaths and signages, posing safety risks for all users.

Proposed Junction near School



The proposal makes provisions for school zone marking, traffic calming measures with a speed limit of 30kmph in the school zone. Continuous walkable footpaths, pedestrian crossings help in creating a pedestrian friendly environment and reducing the pedestrian vehicular conflict. Appropriate road markings, and signages are proposed to guide users and assist in traffic discipline ensuring safety for all. The footpaths are made universally accessible and the junction is compacted ensuring safety for all.

Photo: Entrance of Adarsh English Medium School, Nashik

06 Tactical Urbanism

Short-term projects for long-term goals

Pop-up and interim street transformations, also frequently referred to as “tactical urbanism” projects, offer the opportunity to quickly and economically demonstrate possibilities with existing infrastructure and refine new designs before making capital investments. By partnering with local stakeholders throughout the process, this can inspire similar types of projects citywide and create stronger social bonding and acceptance from communities.

To learn more about this, one could also look into GDCI’s guide around, How to Implement Street Transformations. It is an approachable tool that provides a starting point for any reader interested in understanding the process, value, and impact of implementing pop-up and interim street transformation projects aiming for permanent changes. It is intended for a diverse audience of public sector leaders, practitioners, local NGOs, community members, advocacy groups, students, community groups, local business groups, and others interested in implementing temporary street transformations to catalyze change.

The photograph illustrates the intersection improvement efforts at Chatrapathi Shivaji Maharaj Terminal (CSMT) in Mumbai. This project utilizes interim/ tactical urbanism strategies to enhance Road safety and accessibility for all the users at the intersection. Photo credits : GDCI

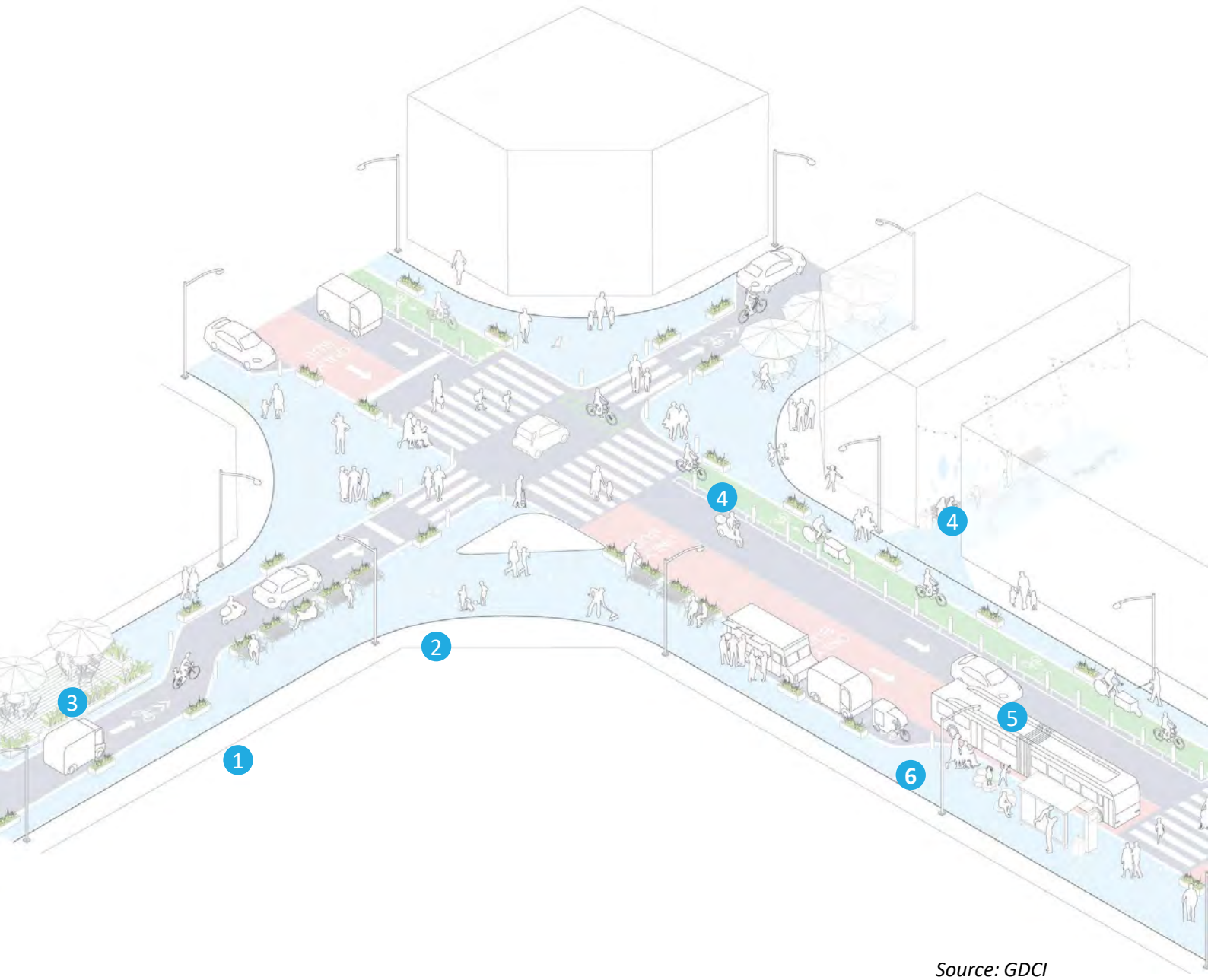
Pop-up and interim street transformations can help cities to:

- **Demonstrate bold or new ideas** and gather evidence of their success
- **Engage and empower stakeholders** to participate in changing their neighbourhood streets
- **Implement changes quickly** with easily accessed, low-cost materials
- **Repurpose existing infrastructure** into safer and accessible spaces for pedestrians and cyclists
- **Trial and refine designs** prior to capital investments
- **Inspire new policies and practices** and build capacity to design in new ways citywide

6.1 What is possible

After some time, the original design and geometry of a street may no longer meet the needs of the community. Pop-up and interim designs can reimagine the urban space and repurpose existing infrastructure with new facilities, redistributing the space to prioritize different street users.

The following are some ideas that can be implemented to enhance the use of the street. They can be used in different combinations depending on project goals, local needs, risks, budget, and time.



Source: GDCI

1 Traffic Calming

- Low speed limits
- Vertical and horizontal deflection elements (e.g., chicanes, speed bumps, lane narrowing)
- Reduced number of lanes
- Modal filtering
- Diverters
- Signals and signs
- Traffic enforcement

2 Intersection Redesign

- Compact intersection design
- Visible crossings and reduced crossing distances
- Reduced turning radii for lower vehicular speed
- Signals and signs
- Protected cycling intersections

3 Plazas and Parklets

- Reclaimed pedestrian spaces
- Street furniture
- Landscape elements
- Programming (cultural and artistic activations)
- Retail activation
- Play elements and games

4 Pedestrian Facilities

- Clear and continuous walking paths
- Curb extensions
- Visible crossings and refuge islands
- Accessibility elements
- Wayfinding
- Barrier elements
- Protection from weather
- Street closures around key destinations

5 Plazas and Parklets

- Dedicated bicycle lanes
- Buffers
- Protected lanes and intersections
- Signals and wayfinding
- Bicycle crossings
- Racks and parking
- Basic tools (tire inflators and multitools)
- Water fountains

6 Public Transport Facilities

- Dedicated lanes
- Transit stops and shelters
- Accessible boarding areas with seating
- Wayfinding and timetables
- Signals and signs

6.2 Demonstrate Short-term Impact

Cities can benefit from implementing temporary street transformations, as it allows them to trial new ideas before committing to them. It also creates an opportunity to demonstrate alternative ways of experiencing the street to people who may be hesitant about changes.

Interventions might last for days, weeks, or months. Collecting data during such transformations is crucial for measuring the impact of the changes and supporting a shift in long-term practices.

Example Pop-up Transformation

Mith chowki, Mumbai

Project Goals

This project was a crucial pilot for the city to trial and evaluate design strategies that address road safety risks at major intersections in Mumbai. A new metro line was under development, and an increase in vehicular volumes and pedestrian movements was anticipated. The lessons learned from this pop-up have been used to refine longer-term design strategies at this intersection and inform future projects around Mumbai.

This intersection transformation was the first project implemented with **GDCI's** support in Mumbai. Striking strokes of bright blue, green, and yellow filled in the new refuge islands; wide, direct crosswalks; and medians. These all contributed to a shorter, safer pedestrian crossing experience. 81% of surveyed road users felt safer after the pop-up intervention.

Design Strategies

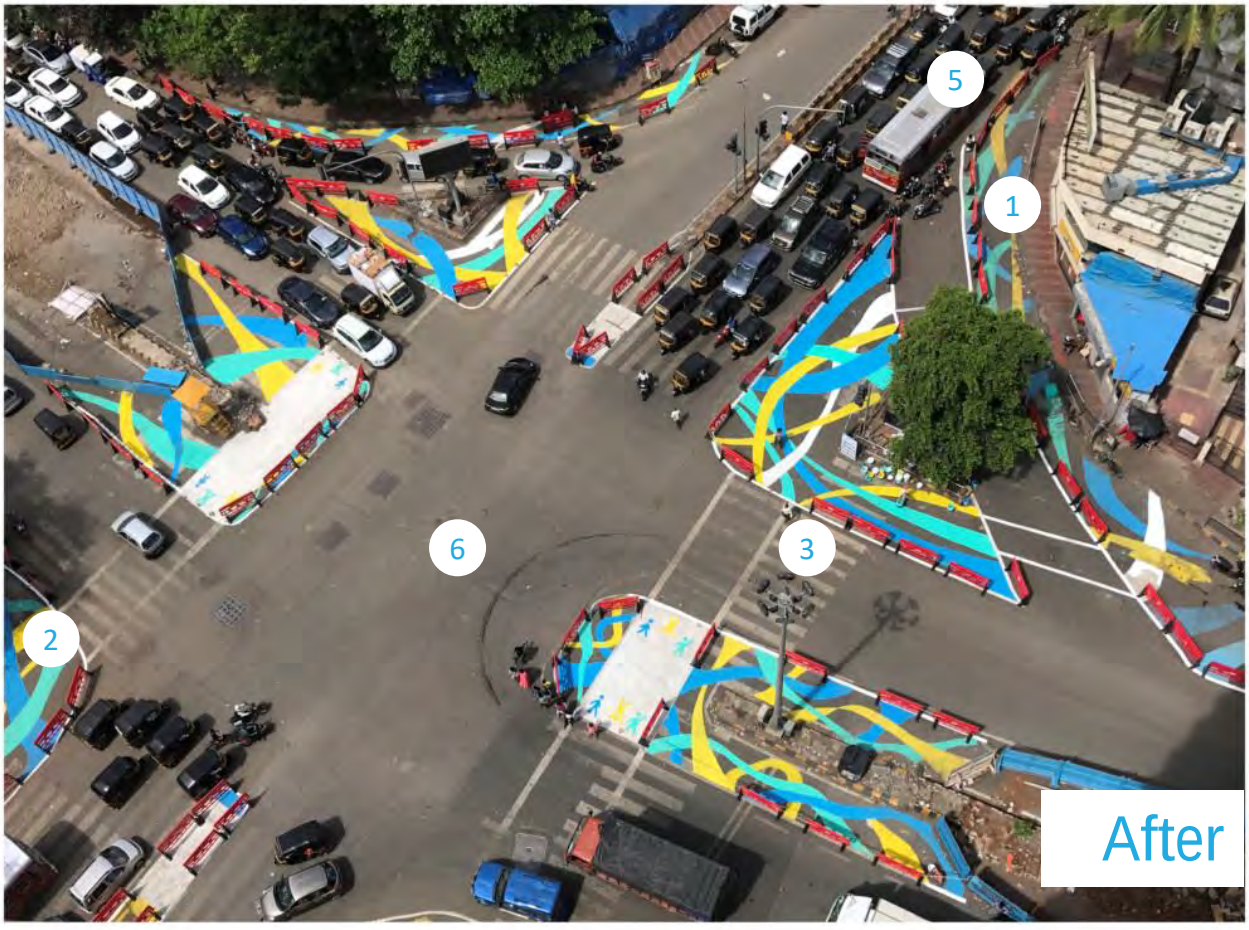
- Aligned travel lanes and reclaimed the underutilized roadbed as space for pedestrians
- Reduced dedicated turn lanes to be single-lane only to ease the navigation of safe pedestrian crossing
- Crossing distances, and pedestrians' exposure to vehicular traffic, were reduced
- Added four wide refuge islands and medians

Materials Used

- Water-based paints
- Water-filled traffic barriers

DESIGN MOVES

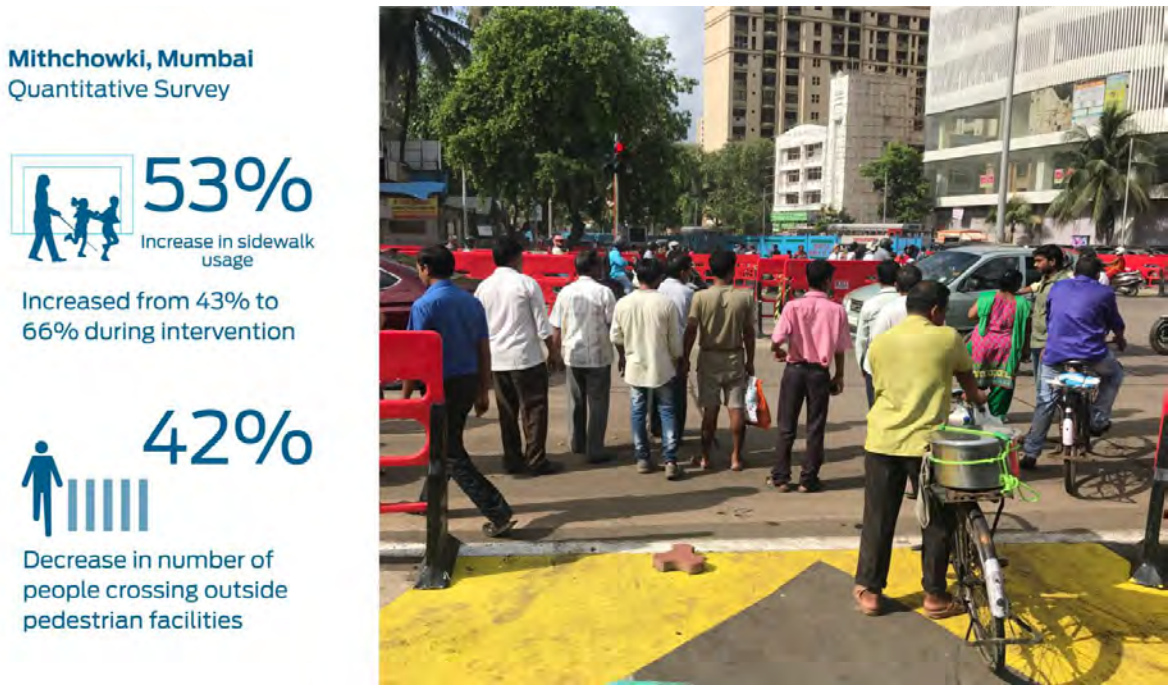
1. Wider sidewalks / sidewalk extensions
2. Reduced corner radii
3. Reduced crossing distance
4. Refugee Islands
5. Narrower lanes
6. Compacting Intersection



Source: GDCI

6.3 Evaluate

It is important to observe and learn from the context by collecting both qualitative and quantitative data about all street users. This approach sets a benchmark for analyzing the impacts of the project after its completion. It also enables fairer and more equitable conversations about whom streets should serve and the functions they support, moving away from car-centric data collection processes



Source: GDCI

6.4 Types of street transformations

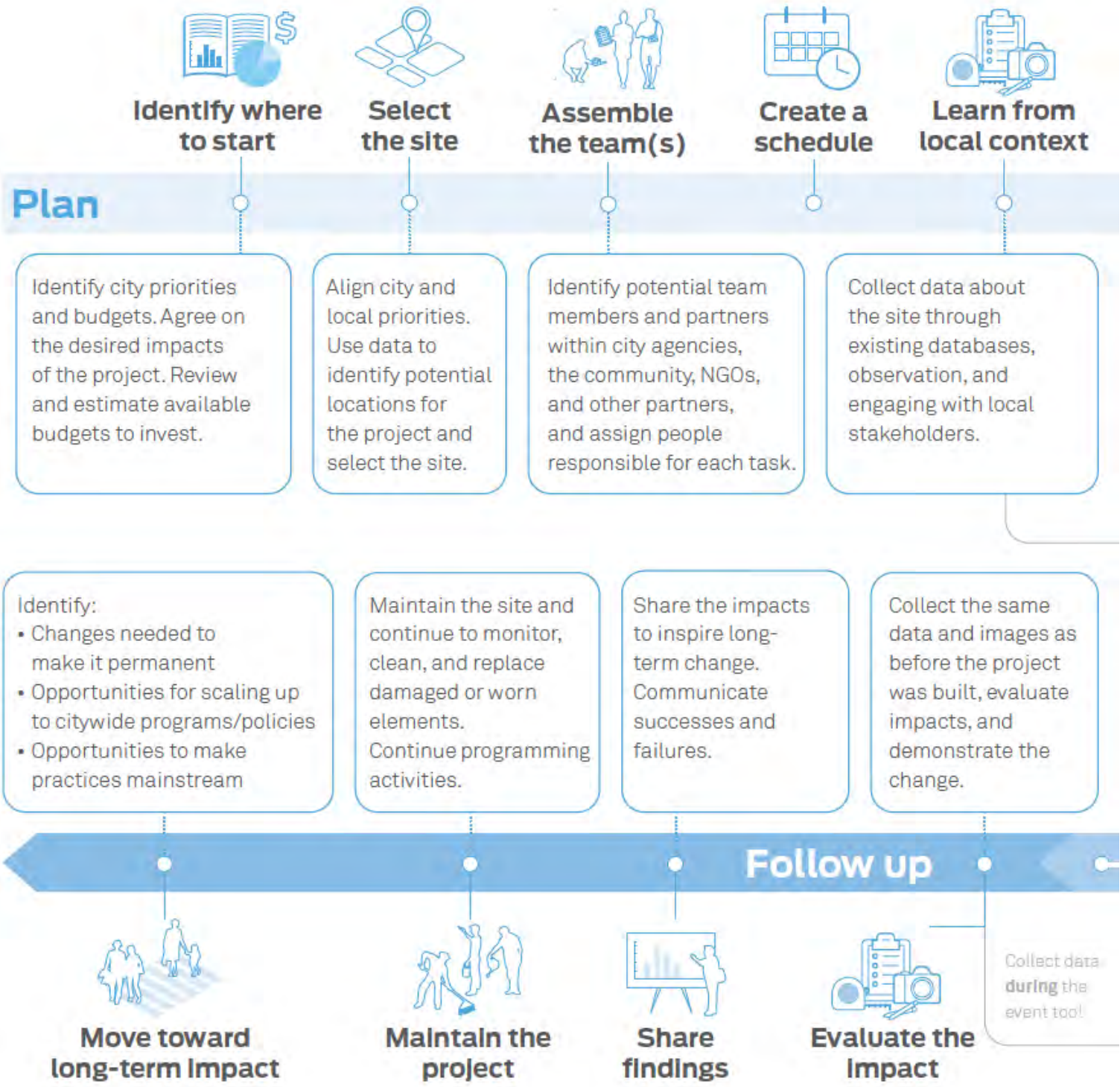
Depending on the project goals, available resources, and timeline, a pop-up, interim, or capital project may be most appealing. Quick-build materials or phased solutions provide opportunities to quickly demonstrate change at a lower cost, and therefore can be easier to approve and implement.

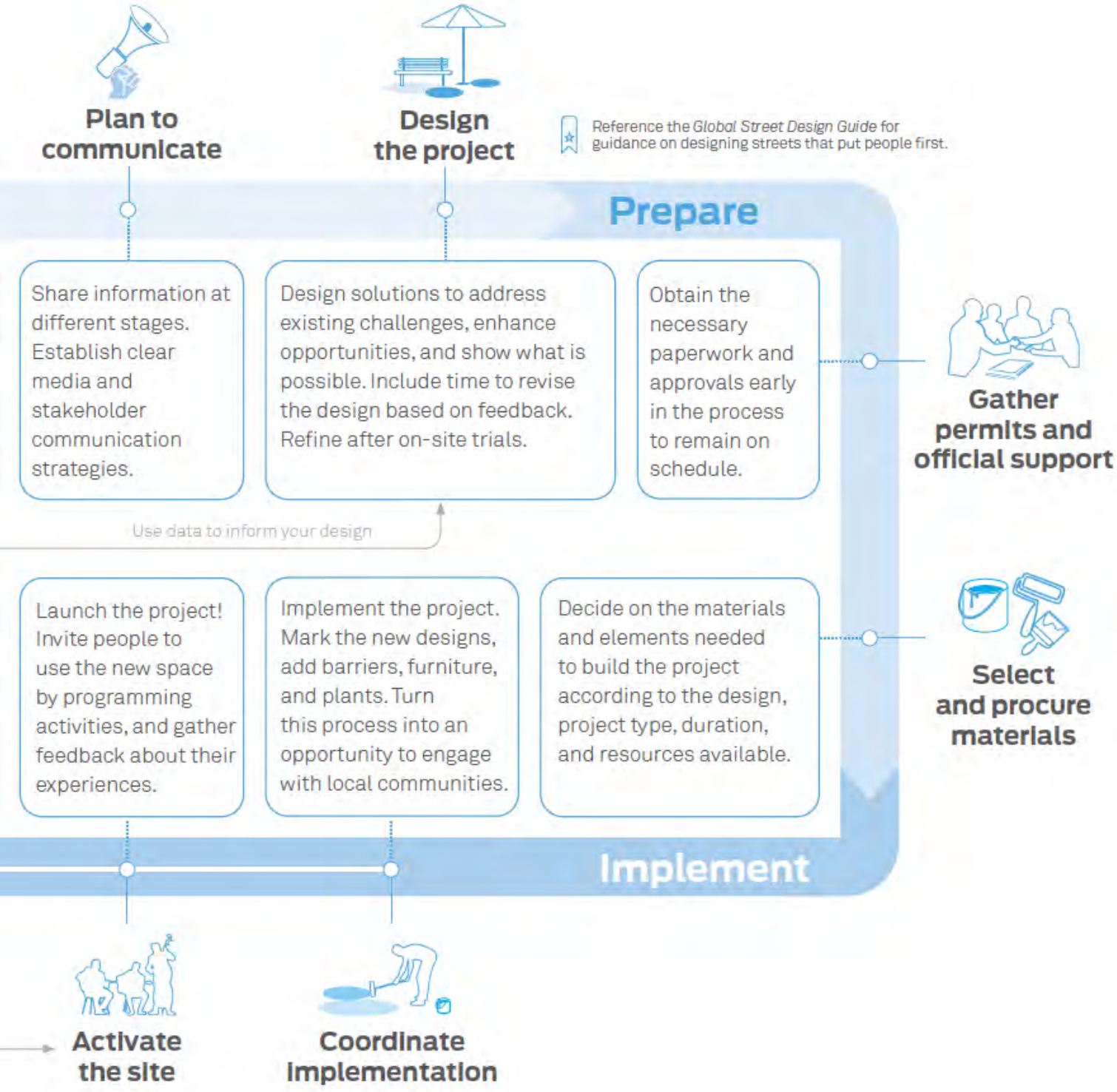
Lasting a few hours up to a few days, a pop-up project is a quick way to generate excitement, demonstrate the immediate impacts of a design on a project site, and make the case for an interim or permanent project. Sometimes it happens weekly as a recurring event, like weekend play streets or bike lanes. A pop-up project uses temporary paint, cones, freestanding delineators, moveable street furniture, and/or barriers.

Lasting a few weeks to a few months, and sometimes years, an interim transformation provides instant benefits while advocating for scalable solutions. Interims generally use street markings, paint, signs, fixed delineators, moveable street furniture, and/or barriers. Interims give the opportunity to experience the project and collect data over a slightly longer timeframe: before, during, and after the project.

Often, **the ultimate goal of pop-up and interim transformations is to lead to capital construction of the project**. Although the methodology in this chapter focuses on planning, implementing, and scaling up pop-up and interim street transformations, these can also be powerful strategies to enable capital or permanent change.

6.5 The process of reshaping streets




Plan to communicate
Design the project
Reference the Global Street Design Guide for guidance on designing streets that put people first.
Prepare
Share information at different stages. Establish clear media and stakeholder communication strategies.
Design solutions to address existing challenges, enhance opportunities, and show what is possible. Include time to revise the design based on feedback. Refine after on-site trials.
Obtain the necessary paperwork and approvals early in the process to remain on schedule.
Gather permits and official support
Use data to inform your design
Launch the project! Invite people to use the new space by programming activities, and gather feedback about their experiences.
Implement the project. Mark the new designs, add barriers, furniture, and plants. Turn this process into an opportunity to engage with local communities.
Decide on the materials and elements needed to build the project according to the design, project type, duration, and resources available.
Select and procure materials
Implement
Activate the site
Coordinate implementation

Source: GDCI

Photo: Old Agra Road, Nashik

07 Way Forward

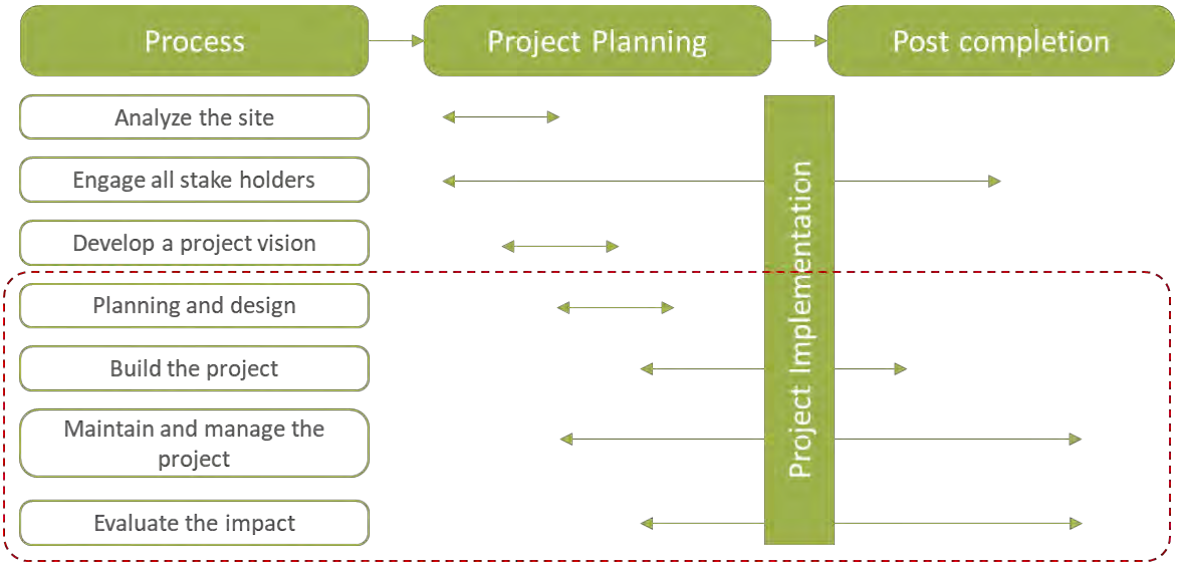
Enhancing School Zone Road Safety

The School Zone Road Safety Assessment has shed light on critical challenges affecting the safety of children and all road users. Moving forward, a concerted effort is required to implement effective strategies and improvements.

The assessment report aids Nashik Municipal Corporation in evaluating the two selected school sites on the road safety parameters. The project aims to go beyond traditional methods by testing solutions using chalk and cone trials. The project consists of three stages:

Project Planning Phase: Identifying and analysing the site, and developing a Project Vision with Community Engagement:

Through assessments, we identified critical challenges around the schools, especially those faced by young vulnerable road users and their risk exposure. We have provided recommendations based on existing guidelines like IRC and the Global Street Design Guide (GSDG). These recommendations include short and long-term infrastructure measures to be considered at the assessed sites.



Source: GDCI

Next Steps for the City

The way forward involves testing the solutions before the capital construction of the project and measuring their impact. This can be achieved through pop-up and interim street transformations, also known as “tactical urbanism” projects. These projects offer the opportunity to quickly and economically demonstrate possibilities with existing infrastructure and refine new designs before making capital investments.

Scaling up

By partnering with local stakeholders throughout the process, we can inspire similar projects citywide, fostering stronger social bonds and community acceptance. Use metrics to convey information to decision-makers and community members. Collect

metrics before and after implementation to inform future design approaches and build political and community support for other projects and **develop a school zone safety program**. It is crucial to encourage stakeholders to agree on the right metrics to be collected early in the process and use the results to benchmark the project against prior conditions, other local street projects, citywide data, or national and international projects.

By implementing the recommended measures collaboratively, Nashik can pave the way for safer school zones, ensuring the well-being of children and contributing to an overall culture of road safety in the city. The success of these initiatives depends on the active participation and commitment of local authorities, educational institutions, and the community at large.

A child's journey to school should be filled with joy, not laced with worries. Let's pave their way with safety.

Photo: Old Agra Road, Nashik

07 Annexures

Annexure A – Questionnaire for Students

Q. How do you usually travel to school?

a. Walking
b. Cycling
c. School Van
d. Public Transport
e. Car Pool
F. Private Vehicle

Q. What difficulties do you encounter when travelling on the school bus or van?

Q. Do you feel safe while crossing the main road/ junction?

a. Yes
b. Yes, But in a group
c. No

Q. Does the school guard or traffic warden help you cross the road?

a. Yes
b. No

Q. When you walk out or cycle from school, how safe do you feel on the street and junction?
(Rate on 1 to 5, where 1 is very unsafe and 5 is the safest)

Q. When you are outside on your own or with friends, what are you worried the most about?

a. strangers
b. Traffic
c. Bullying
d. Eve Teasing

Q. If the road safety is improved, How would you like to travel to school?

a. Walking
b. Cycling
c. School van
d. Public transport
e. Car pool
f. Private vehicle with care giver

Q. Have you ever experienced eve teasing/ harassment/ bullying on streets, in or around your school zone?

a. No
b. Yes

Q. Have you witnessed a road crash in the school zone?

a. Yes
b. No

Q. Why do you feel unsafe walking along your route to school?

Annexure B – Questionnaire for Caregivers

Q. Has your child ever experienced any safety issues in the journey to and from school?

a. Road Safety
b. Bullying
c. Eave Teasing
d. None

Q. There are street vendors around the school. What's your opinion about them with regards to your child's safety?

a. Enhance street safety
b. Create safety nuisance

Q. Where do you wait or park your vehicle when you come to drop off/pick up your child?

a. In front of the school gate (on street)
b. On the opposite street (opposite side of school)
c. No space to drop off/ pick up
d. Inside the school

Q. How would you rate the traffic management in the school zone during school hours? (Rate on the scale of 1 to 5)

Q. What is the barrier for you to send your child to school independently (walk, cycle, public transport)?

a. Distance to the school
b. Road safety related issues
c. Weather
d. Crime danger
e. Lack of efficient public transport
f. Other reasons

Q. If the road safety in the school zone is improved, would you like to send your child to school on his/her own by walk/cycle?

a. Yes
b. Yes, but in a group
c. No

Q. What improvements or changes would you like to see in the school zone to enhance safety for children and parents?

References

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- **IRC:103 -Guidelines for Pedestrian Facilities (Draft)** http://www.irc.nic.in/admnis/admin/showimg.aspx?ID=345
- **IRC SP:32 –Road Safety Manual for Schools -** www.irc.nic.in/admnis/admin/showimg.aspx?ID=398
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"A city's greatness is measured by how well it safeguards the smallest footsteps—those of our school children navigating the urban landscape." - Jan Gehl

All photographs and graphics are by project team, unless mentioned otherwise.