

URBAN95

Safe Pune | सुरक्षित पुणे



Active and lively
Neighborhoods



Safe Streets



Clean, Green and
Playful



Safe Public
Transport



Rejuvenate Urban
Leftovers



Mixed Use

Infant, Toddler and Caregiver Friendly Safety Design Guidelines for Pune City



Pune Municipal Corporation





The report is developed with the support of Bernard van Leer Foundation through the Urban 95 Program for Pune. The report is developed through the understanding, literature review and analysis by the Pune Urban 95 technical team and inputs from the contributors as well as experts.

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Pune Municipal Corporation

City Partner, Urban95, Phase II, Pune

The Pune Municipal Corporation is the civic body that governs Pune, is in charge of the civic needs and infrastructure development of the city. It formulates policies, develops plans and guidelines for holistic and sustainable urban development of the city. A MoU has been signed between Pune Municipal Corporation and Bernard Van Leer Foundation for transforming Pune City into a Child and family-friendly city in 2018 to develop neighbourhoods that promote early childhood development.

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Bernard van Leer Foundation

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Acknowledgments

Egis India Consulting Engineers Pvt Ltd. would like to thank all the contributors, and experts for their valuable support throughout all the aspects of developing the reports for Pune Urban95 Phase II Program. (Following individuals include everyone who has contributed to the deliverables for the entire project and not restricted to this document only)

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Document Information

GENERAL INFORMATION

Report Title	Infant, Toddler and Caregiver Friendly Safety Design Guidelines for Pune City
Project Title	Urban95, Phase II, Pune
Client	Bernard van Leer Foundation
Submission Date	31 st August 2023

DOCUMENT CONTROL

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DOCUMENT NO.	DATE ISSUED	REVISION NO.	NO. OF COPIES	APPROVED BY
URBAN95/PHASE-II/ _Infant, Toddler and Caregiver Friendly Safety Design Guidelines for Pune City	31 st August 2023	R0	1 soft copy	-----

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ABBREVIATIONS

AQI	Air Quality Index
AMRUT	Atal Mission for Rejuvenation and Urban Transformation
BRTS	Bus Rapid Transit System
CCDO	Chief Child Development Officer
CCTV	Closed Circuit Television
CMP	Comprehensive Mobility Plan
CP	Community Park
CPCB	Central Pollution Control Board
CPHEEO	Central Public Health & Environmental Engineering Organization
CPTED	Crime Prevention Through Environmental Design
DCPR	Development Control and Promotion Regulations
DP	Development Plan
DP	District Park
ECBC	Energy Conservation Building Code
FOB	Foot Over Bridge
HAP	Housing Area Park
ICT	Information and Communication Technology
IEC	International Electro technical Commission
IGBC	The Indian Green Building Council
IMC	Indore Municipal Corporation
IPT	Intermediate Public Transport
IRC	Indian Road Congress
ITC	Infant Toddler Caregiver
ITCN	Infant Toddler Caregiver Friendly Neighbourhood
KMPH	Kilometers Per Hour
LED	Light Emitting Diode
MoEFCC	The Ministry of Environment, Forest and Climate Change
MUZ	Multi Utility Zones
NAAQ	National Ambient Air Quality Standards
NBC	National Building Code
NGO	Non-Governmental Organization
NIUA	National Institute of Urban Affairs
NMT	Non-Motorized Transport

NO _x	Nitrogen Oxides
NP	Neighbourhood Park
NUTP	National Urban Transport Policy
PCMC	Pimpri Chinchwad Municipal Corporation
PIS	Passenger Information System
PMC	Pune Municipal Corporation
PMR	Pune Metropolitan Region
PWD	Public Work Department
RWH	Rain Water Harvesting
SAFAR	System of Air Quality and Weather Forecasting and Research
SC	Smart City
SCP	Sub-City Park
SPTM	Save Pune Traffic Movement
SWM	Solid Waste Management
URDPFI	Urban and Regional Development Plans Formulation and Implementation
USDG	Urban Street Design Guidelines
WHO	World Health Organisation

GLOSSARY

Built environment	Any structure that is man-made and that provides a space for human activity. This includes buildings, streets, man-made parks, etc.
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.
Childcare Facilities/ITC destinations	A place/business offering childcare amenities such as crèche, anganwadi, pre-school, primary school, maternity home, child healthcare, etc.
Child-friendly Design	Design features that are tailored to the specific needs of young children and enhance and support their experience outdoors.
Education	It is the imparting of knowledge, skills, values, beliefs, and habits. Here it means crèche, pre-primary to primary education facilities
Exposure	Exposure is the state/ likelihood of being exposed to risk.
Healthcare	It is a formal and organized way to provide medical care and assistance to people. Here, ITC health care covers facilities like anganwadi, dispensaries, maternity homes, etc.
ITC-safe zones	Trails/ areas in the city that are highlighted to indicate high footfall of children. These zones are characterized by lower speed limits, visual cues, and playful signages.
Mobility	It is the movement of people between their homes and places where they work and play. It is also the movement of the entities that are needed to sustain all aspects of a person's life in the city like automobiles, public transport, etc.
Open Space	Open space is any space open to the sky that is an integral part of a site (land parcel with definite boundaries).
Public space	It is the entire built environment in the city that can be accessed freely by all people. It includes streets, footpaths, open plazas, parks and green open spaces, shopping areas, etc.
Risk	Risk is potential exposure to a situation involving uncertain danger, injury, loss that may involve certain factors such as perceptions, prosperity, or rewards. Here, risk encompasses risk from crime, road accidents, air pollution, noise pollution, and unclean urban environment.
Social Infrastructure	Public Amenities apart from recreational places that are a part of the daily routine of ITCs like daily shopping, cultural facilities, health centers, daycare centers, and public toilets.
Urban safety	Safety-related to the design and planning of the physical built environment.
Young Children	Children who are between the ages of 0 – 5 years.

Executive Summary

A safe urban environment for young children is crucial for their healthy early childhood development (ECD) as childhood experiences in modern environments can have a long-term impact on their holistic well-being. Growing up with a sense of security in their neighbourhoods positively impacts the mental development of young children than growing up in neighbourhoods that foster crime, illegal activities, road accidents, etc. The presence of dark alleys, isolated areas, speedy traffic, etc. can develop trepidations in both ITCs and their caregiver, restricting their quotidian liberty and choices, safe free movement and negatively impacting their perception and urban experiences. As neighbourhoods are the first urban space that a child interacts with, it is important to plan and design them with an increased perception of safety for both ITCs and their caregivers. The present neighbourhoods in our cities are not primarily designed to manifest this perception and hence, many instances of crimes, road accidents are recorded every year. Also, due to rapid urbanization, our environmental quality (air, noise pollution, etc.) degrading, therefore, impacting the health of the surroundings. Growing up in unsafe or unhealthy urban environments will negatively impact the ECD of our next generations. Hence, it is important to include this vision of providing a safe and healthy environment while designing and planning our urban spaces. Thus, as a part of Pune Municipal Corporation's Urban95 program, supported by the Bernard van Leer Foundation, Design Guidelines for Safe City for Infant, Toddlers, and Caregivers (ITC) have been developed for Pune City.

As there are no specific guidelines on safe city or safety for infants, toddlers, and their caregivers (ITC) in Pune, this document will act as a base for guiding all those involved in city planning & designing of safe urban environments. It will be a comprehensive set of urban designing, planning, and management guidelines specifically catering to the safety needs of ITCs in the context of Pune. It will address both real and perceived risks (based on baseline study) encountered by ITCs across the city, to help construct a suitable environment. This guideline will supplement other existing policy and planning documents charted for Pune city. These guidelines are structured into 3 Chapters and supported by an Annexure.

Chapter 1: Provides a brief introduction to the theme of safety, the purpose of the document, its scope and applicability.

Chapter 2: Identifies the safety risks encountered by ITCs in the context of Pune, outlines the applicable guiding principles for achieving safer urban environments. Further, it provides detailed design strategies and guidelines for each safety components identified, supporting them with best relevant global practices and illustrations. Also, how the guidelines will supplement the existing policy and planning framework has been illustrated in each safety component section. This chapter also contains a section at the end, which describes how designing the urban built environment from the ITC lens will add resiliency to the city and help in increasing the preparedness of the city in the situation of pandemics. Thus, promoting safety from climate change and pandemic impacts/risks.

Chapter 3: Provides the operational and management mechanism for the implementation of the safety components and provides evaluation and monitoring mechanisms for future sustenance of safe ITC-friendly urban environments.

Annexure I: Provides a detailed Safety Assessment Checklist which will act as a ready reckoner for the respective Pune municipal corporation (PMC) officials, urban practitioner to assess the safety risk of an area and develop an ITC friendly design strategy to mitigate the risk encountered by selecting appropriate safety components and guidelines outlined in this document.

Urban safety for ITCs encompasses safe access to all ITC destinations like pre-primary and primary school, day-care centres, maternity homes, dispensaries, vendor kiosks, safe public transport facilities etc, fostering safe play in neighbourhoods, crime prevention, and providing a clean and healthy environment. This document encompasses all these areas and provides detailed guidelines to help make them safe for ITCs and thus, a safe urban environment for all.

The guidelines are targeted to assist a range of stakeholders with an interest in working towards creating safer environments for ITCs. These include urban practitioners, Pune Municipal Corporation officials, Relevant District and State Departments, Local communities, activist groups, NGOs, working in any field related to safety in an urban environment, and ITC well-fare.

1. Introduction

1.1 Vision of the guideline

To make the urban environment in Pune safe and secure for Infant, Toddlers, and their Caregivers for living, playing, and moving, fostering a healthy and habitable city.

1.2 Purpose of the guideline

As there are no specific guidelines on safe city or safety for infants, toddlers, and their caregivers (ITC) in Pune, this document will act as a base for guiding all those involved in city planning & designing of safe urban environments. It will be a comprehensive set of urban designing, planning, and management guidelines specifically catering to the safety needs of ITCs in the context of Pune. It will address both real and perceived risks (based on baseline study) encountered by ITCs across the city, to help construct a suitable environment.

1.3 Applicability of the guideline

This guideline is applicable to all the urban built environment within the jurisdiction of Pune Municipal Corporation (PMC) - city limit. These include all hierarchy of the streets, open spaces, public parks, playgrounds, plazas and other public spaces. It includes both brownfield and greenfield areas within the existing PMC limit as well as those within the extended or future boundaries of PMC.

1.4 Scope of the guideline

The scope of safety in this document is restricted to the safety from built environment risks only, such as risks from road accidents, risks from crime and violence in isolated/ unsafe public areas, risks from an unhealthy environmental quality, and other risks which are a result of inappropriate urban planning, design, and management of the built environment. Also, these risks are assessed from ITCs' safety perspectives focusing on ITC routes and destinations across the city.

1.5 Relevant policy frameworks

Although few safety provisions for safeguarding from crime, road accidents, unhealthy environments are addressed in few policies and guidelines mentioned below:

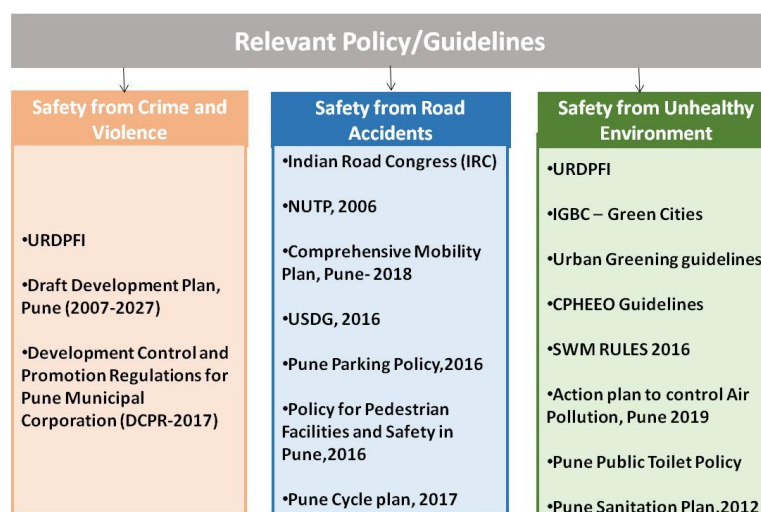


Figure 1.1: Relevant Guidelines and Policy frameworks

Source: Urban 95, Phase 1

2. Towards Safer Pune for ITCs

Analysis of Potential Risks in the City

2.1 How Safe is Pune Today?

This section examines the idea of safety in Pune city by evaluating potential risk factors leading to crime and violence, road accidents and unhealthy environments by analysing data recorded over the past five years along with caregiver's perceptions of safety derived from the Baseline Report Urban 95.



Figure 2.1: Constraints encountered by children in the built environment.

Source: Urban95 Phase 1

2.2 Inference: Urban Safety

From the safety analysis conducted across the city, it is apparent that the spatial and physical attributes of the city and the transit corridors play an important role in urban safety. The city center and peripheral areas experience unique challenges of facing dense, traffic convergence in the core area, and isolated, fast moving traffic in the peripheries. The analysis brings to light the gaps in pedestrian infrastructure that accounts for an evident imbalance of gender participation in public areas. Urban infrastructure necessitates the inclusion of gender diverse spaces to increase safe access of women and children in public spaces.

Unavailability of public transport after dark and low presence of pedestrian infrastructure at transit stops, highlights mobility challenges for the ITC users. The city centre's smaller urban block sizes present favourable conditions for shorter walking distances. The convergence of streets increases the rate of transit accidents. The pavements are often encroached by street vendors, parked vehicles, or even taken up by two-wheelers motorists, threatening pedestrian safety. At the city peripheries, low visibility and access to public transit points, leads to higher secluded and deserted areas, increasing the risks of crime. Efficient Street lighting supports the visible security and surveillance in the identified areas will improve people's perception of the area and increase the crowd.

2.3 Guiding Principles for Safe Pune for ITCs

To help Pune achieve the benchmarks and become a safer city for ITCs, below are the guiding principles and safety components for the three risks identified i.e.

- i. **Safety from Crime and Violence**
- ii. **Safety from Road Accidents**
- iii. **Safety from an Unhealthy Environment**

2.3.1 Safety from Crime and Violence

Principle 1: Active and Lively Neighbourhood Spaces

This Principle focuses on making the neighbourhoods lively and active by introducing design elements such as promoting mixed land use spaces, eliminating dark spots, activating isolated areas, increasing natural surveillance (by increasing eyes on street/space), increasing open spaces and play areas, connectivity and introducing children friendly elements on floors, street/public spaces, furniture, etc.



Principle 2: Revitalize Urban Leftovers and Negative Urban Spaces

This Principle focuses on refurbishing the urban leftover spaces/voids with meaningful functions related to ITCs to positively transform the spaces and foster safer neighbourhoods. Revitalizing these design components/elements such as natural surveillance, clear sightlines, adequate lighting, and ITCs friendly elements/materials should also be considered

2.3.2 Safety from Road Accidents



Principle 3: Traffic calming measures that reduce vehicle speeds and allow safe crossing

This Principle focuses on making routes to ITCs destinations safer by introducing traffic regulating measures such as speed bumps, chicanes, refuge islands, shared streets and other street design applications to reinforce safety.

It should also include design components/ elements such as natural surveillance, adequate lighting, good signage, and navigation provision, etc.

Principle 4: Safe Access to Public Transport

This Principle focuses on ensuring ITC's accessibility to public transport system along with their safety across the city. It should include design elements/components to increase natural surveillance, provide clear sightlines, increase friendliness, provide adequate lighting, etc.

2.3.3 'Safety from an Unhealthy Environment

Principle 7: Clean and healthy Neighbourhood environment

This Principle focuses on reducing air, noise pollution in the entire city especially near ITCs' destinations, routes, and in residential neighbourhoods. It also focuses on providing an effective solid waste management system to keep the urban spaces/ ITCs areas clean and provisions of the good drainage system in neighbourhood for reducing instances of floods/water-logging. Thus, reducing the negative impacts of waterlogging, pollution, and unclean environment on children.



Principle 8: Increase Neighbourhood level green open areas to foster play and exercise

This Principle focuses on increasing the green open spaces in the neighbourhood to encourage outdoor activities for healthy early childhood development. It also focuses on providing safe and accessible playground facilities. These open spaces should include design components for natural surveillance, clear sightlines, adequate lighting, ITC friendly elements/features, etc.

2.4 Safety Design Components/ Elements

The in the comprehensive report, the guideline sets out a series of key safe design elements which are elaborated in the following manner:

- **Safe design context and objectives** –this describes how the respective component is applicable to ITCs safety and its context for Pune city;
- **Design guidelines** – These are recommended solutions to the issues described under each component. They need to be modified to suit the context of each area.
- **Best Practices/ Case Examples** – Illustrations of do's and don'ts for each principle

The Comprehensive ITC Safety Design Guidelines for Pune City reports include 11 Safety Design Components/Elements, including; Urban Structure, Green Open Spaces, Urban Leftovers, Urban Playfulness, Safe Transit, Safe Zones, Safe Streets, Surveillance, Signages and Wayfinding, Lighting, Urban Sanitation.

1. D1 Urban Structure

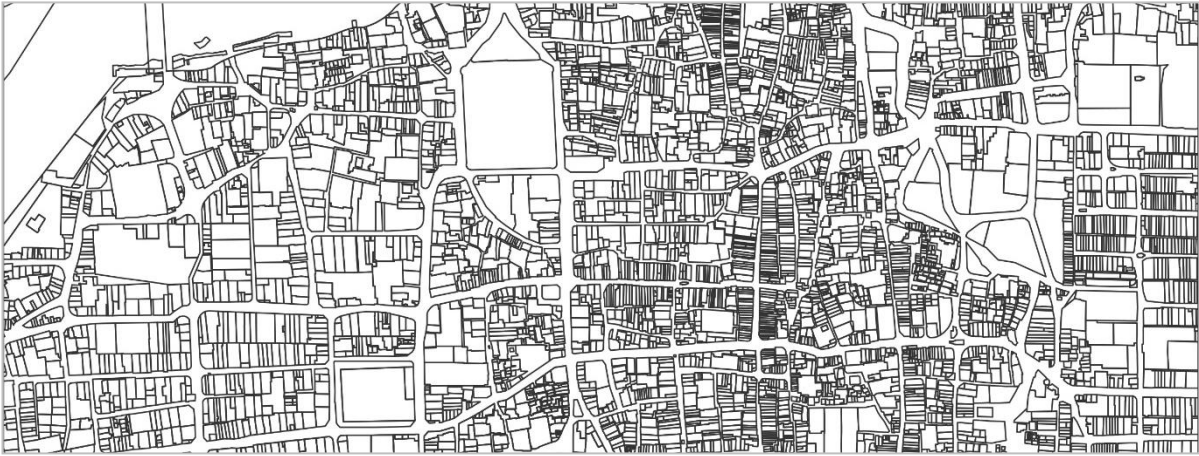


Figure 2.2: Urban Structure of Old City, Pune

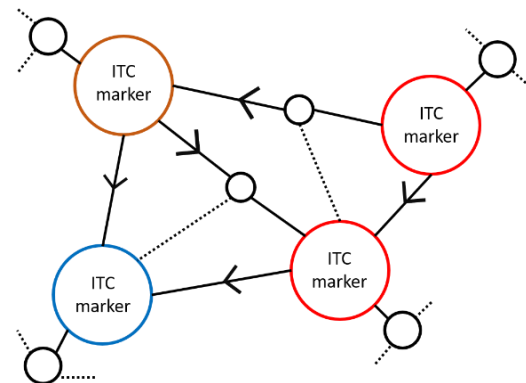
Source : Open Source data

Definition Urban structure refers to the layout of an area including where the streets are located, how street blocks are arranged, and how building lots and open spaces are set out on these blocks. It contributes to both the ambiance and the functionality of an area.

A well configured urban structure can help define a neighbourhood and elaborate logical spacing and organization of the place. A well-designed urban structure can achieve more 'eyes on the street' and maximize activity to deliver enhanced real safety and sharper insights of the same.

Objectives

- ITCs have a shorter range of mobility, it thus makes sense to **conglomerate a network of ITC destinations** and complimentary services in close proximity.
- **Mixed-use, well-connected**, urban structure with passive surveillance and a good mix of ITCs activities located at walking distances can make the neighbourhoods more safe and friendly to the ITCs.



Key Design Guidelines

1| Continuity of Street Network and Urban structure

Continuity prevents spatial fragmentation allowing the city to function as an integrated system. **Integrate** and **connect** with the street pattern and urban structure of the surrounding areas for uninterrupted urban flows, enhance movement, urban vitality and natural surveillance.

2| Locating ITC's Destinations- Layout Planning

ITCs destinations (public spaces, parks, play areas, day care/crèche, healthcare and educational institutions) should be well-connected, in agglomeration, close proximity and walkable.

3| Land use Mix and Social Mix

Encourage land use mixes that promote activity, surveillance and legitimate contact between people near ITCs destinations and on ITC routes with active facades.

2. D2 Green Open Spaces



Figure 2.3: Schematic diagram of Green Open Space network

Source: Egis India

Green Open spaces are defined as areas that are publicly accessible, green and open to sky, with minimal human interventions. These plots of land are earmarked in the landuse. The creation of a hierarchy of green open space network makes it an important component to enable access at a neighbourhood scale to a city scale.

The availability of green open spaces in the neighbourhood plays a vital role in encouraging routine physical play in its residents. With changing lifestyles, children today spend most of their time in static activities like travelling, playing video games, watching television, etc. and comparatively lesser time in active outdoor play. As play contributes to healthy childhood development, adequate play can contribute to the overall growth and health of children.

Objectives

- To increase the number of open spaces at neighbourhood level.
- To encourage outdoor physical activities and play in urban areas.

Key Design Guidelines

Green Open Spaces - Hierarchy

Assess the open space in your neighborhood and assess its adequacy as per URDPFI and ITCN guidelines given below: Post the gap analysis; identify the number and define a hierarchy of parks to be added in your neighborhood/ region.

Within Safe Zones and Integrated Network

While allocating land for the new parks, try to develop an integrated open space network that is well connected and easily accessible by NMT or public transport.

Dedicated Zones for 0-6 years/ ITC-specific Activities

Ensure that the play area is reserved for the age group of 0-5 years in all the categories of parks.

Provision must be made to promote different kinds of play like imaginative play, sensory play, nature play, etc. for the overall development of children.

3. Safe Zones



Figure 2.4: Indicative proposed School Safety Zone Diagram, Douglas County, USA

Source: Physical School Safety and Protection funding Committee Recommendations <https://www.douglas.co.us/documents/special-work-session-presentation-physical-school-safety.pdf/>

Zones around ITCs destinations such as children’s playgrounds, parks, schools, maternity homes, community centers, etc. are areas that require special attention to provide safety for children. Safe Zones aims to create a safer environment for children on road by slowing down of vehicles through the introduction of traffic regulating measures and urban design features.

Children move differently than adults in the public realm. Their activities and movements are exploratory and more unpredictable in nature hence requiring particular design considerations such as their lower eye levels, narrower peripheral vision, lower capacity for decision-making, and the tendency for sudden action. This makes them more vulnerable to collisions with traffic than adults. So, it is critically important to reduce vehicle speeds in areas having a higher number of children.

Objectives

- To emphasize child and student safety, special considerations are taken to enhance play and school zones.
- To improve student pedestrian safety along the school trip routes.
- To enhance walking and cycling environment; encouraging more physical activity and reducing vehicle speeds.

Key Design Guidelines

Signages

Installation of standardized traffic signs for Safe Zones near ITCs destinations as follows:
Traffic signs for protecting children.
These signs shall give notice for the protection of children within a Safe ITCs Zone.

Installation of Sidewalks and other Road elements Pedestrian-friendly elements

The connecting routes shall be equipped with pedestrian facilities such as Anti-Skid Pavement on both sides of the road with street furniture, table-top crosswalks, speed bumps, bollards, etc.

Parking restrictions: Temporary Parking and No stopping signs

Parking signs (for example, some streets near schools have 15-minute parking limits during school zone hours).

4. Safe Routes

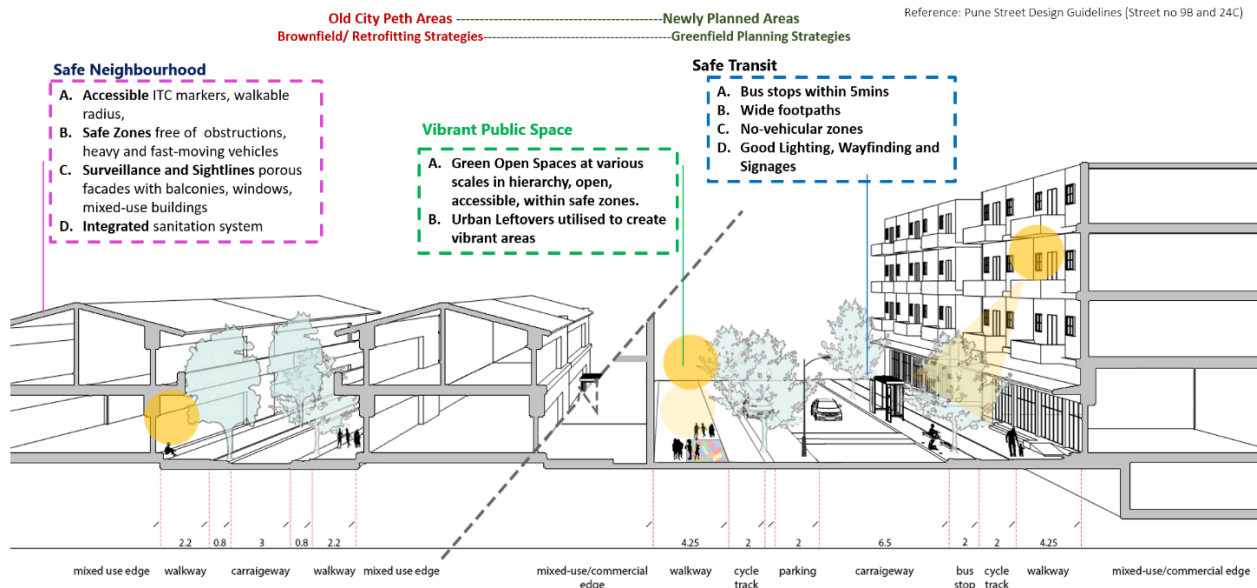


Figure 2.5: ITC-friendly Street Sections for Greenfield/Brownfield site as per Pune Street Design Guidelines considering Safety, Vibrancy and Accessibility for ITC.

Source: Egis India

A safe route is a primary route taken by ITCs connecting child-focused destinations in a neighborhood. Safe Routes aims to improve accessibility for people walking, bicycling, and taking public transportation, addressing personal danger from real/perceived crime and violence as well as safety from traffic; creating routes that are safe for ITCs. Safe routes are ideally located on local streets helping to mitigate real and/or perceived risk associated with personal safety.

In Pune, neighborhoods experience high levels of traffic incidences, lack of infrastructures such as footpaths, crosswalks, and speed humps to support safe walking and bicycling. The residents of the neighborhood do not walk to the child-focused destinations as they find it dangerous due to safety concerns regarding road accidents. Threats to personal safety, whether real or perceived, strongly discourage walking or bicycling.

Objectives

- To ensure safe access to child amenities on ITCs routes/in one stretch.

Key Design Guidelines

Active Land Use

ITCs destinations should be located in active/mixed land use areas or medium/high-density ones for natural surveillance.

Consider vicinities to other community services and facilities.

Near Transit Points

Should be located near pedestrians, cycling, and transit routes to minimize dependency on vehicles.

Public transport facilities should also be provided in close access to these destinations.

Close Proximity

ITCs facilities should be in 5-10 minutes of walking distance from their residences.

using numerous ITC network options for users to reach their destinations provides for safety-

5. Surveillance and Wayfinding



Figure 2.6: Active interface of the building façade and street to create natural surveillance leading to safe streets

Source: Egis India

Good natural surveillance and clear sightlines are very crucial to enhance the perception of the safety of space. Perception of safety influences the nature and the extent to which people use spaces and places. If our public spaces, walking and cycling routes, parks, playgrounds, entrances and exits to buildings, public transport facilities are designed with good natural surveillance and with clear sightlines they can encourage people to use them and feel secure while using them. People's ability to see around themselves, particularly relating to what is ahead is also important to develop a sense of security.

Objectives

- To ensure maximum visibility and natural surveillance on all ITCs daily routes and destinations across the city to enhance real and perceived safety.
- To avoid physical barrier due to landscaping and other built form elements that can potentially obscure clear sightlines.

Urban planning in the old city of Pune had facilitated good natural surveillance through its planning. But this element was lost in new developments with high walls, long front setbacks, gated communities, isolated streets; location of parks, public transit in isolated areas, etc. Clear sightlines provide individuals with the opportunity to see the route ahead of them and identify possible risks. It also increases the probability of offenders being seen, heard, reported, and potentially apprehended, reducing the chances of crime/ accidents.

Porous and Active Building Facades and Street Edges

Ensure that in commercial areas, the ground level of commercial buildings is designed to maximize the opportunity for activate frontages and allow clear observation of ITCs public areas and easy accessibility. Ensure that building entrances are clearly visible.

Natural Surveillance in Parks

Parks and other public open spaces should be bound on at least three sides, and preferably four sides, by streets with active building frontages that provide good surveillance and clear and in-depth sightlines of the park.

Clear sightlines in public transit stops

Entrances to parking structures, metro stations, other transit stops should be located in places well visible from the surroundings. Transit shelters should be transparent, open, and located far from entrapment spots.

3. Operations and Management

1.1 Action Plan for Implementation of the safety components

Effective implementation and management is the key to ensure that the city and its neighbourhoods become progressively safer for ITCs overtime.

3.1.1 Proposed Institutional Arrangement -Who will be responsible for overseeing implementation?

For each of the safety component described in Chapter 2, various stakeholders will be responsible for different stages of design until implementation and a **cross-collaboration** between them comes into effect.

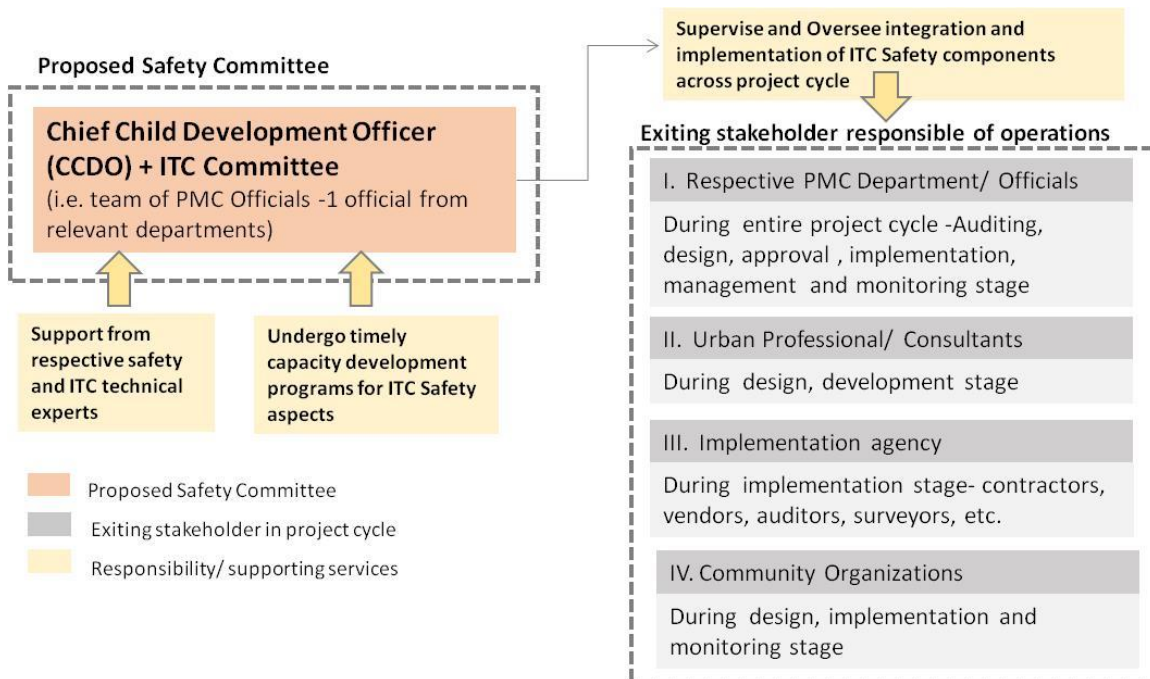


Figure 3.1: Proposed institutional arrangement for the operationalizing safety component

Source: Urban95 Phase 1

3.1.2 Integration & Operationalization of Safety Components

Below are a few strategies that will support operationalizing the safety guidelines via various channels:

- 3.1.2.1 Application through on-going projects, plans, and programs and in combination with existing city-level policy framework
- 3.1.2.2 Prioritization of intervention areas
- 3.1.2.3 Arranging for support Funding
- 3.1.2.4 Developing local community models for active policing and participation
- 3.1.2.5 Outreach and capacity building

1.2 Monitoring Mechanism and Performance Evaluation

A monitoring and evaluation system allow the implementers to assess the effectiveness of their design interventions, get a contextual understanding of their successes and loopholes. It thus helps them provide an evidence-based feedback/input which can be helpful to develop or modify guidelines that did not work and sustain the ones that did. The proposed Safety committee will appoint a third-party consultant to conduct post-intervention monitoring. For this, it is recommended to use the Safety Audit Assessment.