

BUILDING NEIGHBOURHOODS TO THRIVE IN

URBAN PLANNING, DESIGN, POLICY, AND EVALUATION FOR
INFANTS, TODDLERS AND THEIR CAREGIVERS IN INDIA

DESIGN GUIDELINES



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Cover and book design by BDP.

Released December 2018

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New Delhi 110019

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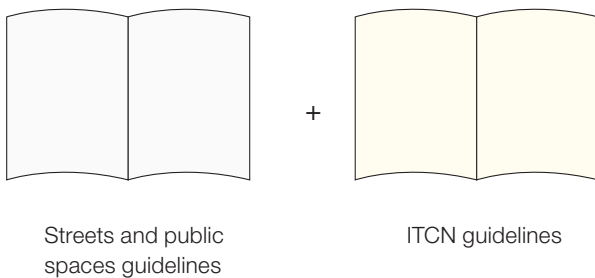
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ABOUT THE DESIGN GUIDELINES

Design guidelines answer the question of “how” we achieve the benchmarks in the ITCN indicators from chapter two.

The guidelines herein are conceived as a supplement to other urban design guideline packages that already exist for the Indian context. This document looks at key features of pedestrian-oriented public space, and offers pointed insights about what ITCs needs from those features.

Installing a bench in the public realm can be a positive expenditure. But when that bench is carefully coupled with quality shading, and is designed with an extra wide and flat surface for a baby to crawl on, the generic bench becomes specific, and a piece within the public realm that supports early childhood development outcomes. The ITCN emerges when a critical mass of those pieces is achieved.



The purpose of this guidelines section is to:

- Define physical components and approaches that specifically improve the quality of the public realm for ITCs.
- Illuminate the interrelationships of these elements placed the neighbourhood, giving users greater depth of insight.
- Communicate the means by which objectives are achieved, as well as make a clear connection to the evaluation and monitoring methodology.

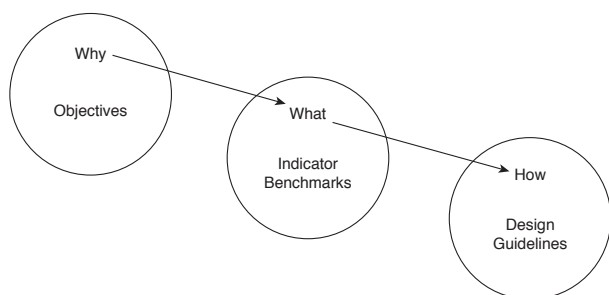
The following ITCN design guidelines are organized so that they can be read as a supplement to other established streets guides. ITCs need to be considered at every step of the planning process. These guidelines offer focus on what is pertinent to ITCs within current best-practice walkability and pedestrian-oriented urban design.

**We suggest reading the next
7 pages in sequence**

HOW TO READ THE GUIDELINES

In the preceding chapter there are 65 indicators of a successful ITC neighborhood. For each indicator there are three service level benchmark values that give users clear definition on the provision of a feature ranging from “surviving:” the most basic provision, through “striving,” to “thriving.” For many of the indicators it can be apparent how the neighborhood is doing with a quick count.

If the indicator benchmarks tell users “what” interventions a neighborhood needs to be ITC friendly, the design guidelines offer guidance on “how” to bring the interventions in to being.



Benchmark Value		
Thriving	Striving	Surviving
100% government school allow usage of school campuses during non-school hours	50% - 80% government school allow usage of school campuses during non-school hours	< 50% government school allow usage of school campuses during non-school hours

Indicator 50/65
PERCENTAGE OF GOVERNMENT SCHOOLS THAT ALLOW USAGE OF SCHOOL CAMPUSES DURING NON-SCHOOL HOURS

Definition
 Percentage of government schools out of total number of government schools that allow multi usage of school campuses during non-school hours

Rationale for the Indicator
 Extending the use of frequently visited destinations for ITCs such as government school campuses to the wider community can provide extra opportunities, space and accessibility for time spent outdoors.

Units	Data Requirements	Frequency of Measurements	Jurisdiction of Measurements
%	Sample Survey	Half Yearly	Neighbourhood

Reliability of Measurements

Comprehensive survey at all housing blocks/cluster	Sample survey at specific housing blocks at averages	Desk based estimation e.g. based on earlier survey & with systematic on-site verification	Desk based estimation e.g. based on earlier survey
----------------------------------------------------	------------------------------------------------------	-------------------------------------------------------------------------------------------	----------------------------------------------------

Benchmark Value		
Thriving	Striving	Surviving
100% government school allow usage of school campuses during non-school hours	50% - 80% government school allow usage of school campuses during non-school hours	< 50% government school allow usage of school campuses during non-school hours

Design Guidelines to Refer to:

Sample page from the Evaluation and Monitoring section of this book.

These guidelines are organized by the five components of a neighbourhood covered in the Framework, giving the reader an easy-to-navigate list covering the breadth of the public realm.

- Neighbourhood Layout: covers the larger scale organizational factors, such as the overall character, the density, distance and mix of facilities with the area
- Streets: are mainly mobility-related spaces concerning the practicalities of moving comfortably in the public realm between stops.
- Parks and Open Spaces: cover one of the key green destinations that matter to ITCs.
- Public Services: cover local amenities and community facilities.
- Utilities: cover water, electricity, waste, drainage and other environmental factors

Streets and Destinations share a list of components that can be applied to both, i.e. benches and shade elements.

HOW DOES ONE DECIDE WHICH COMPONENT TO USE?

Understanding ITCN objectives and the service level benchmarks of the ITCN indicators will give city managers a clear way forward in addressing the shortcomings of their respective neighbourhoods. Still though, interventions need to be planned wisely.

Most cases of recent success in the Indian urban context has come from collaborations between urban design firms and ULBs. (See JM Road Pune et al.) A well-selected design professional will possess sensitivity in materiality and thinking through the complexities of combining elements. But it's worth reiterating here for both eventual clients and contractors who may use this book, that not all benches are created equal!

It is when a bench is well located and is installed in combination with other key ITC factors, like good shade and even and clear lighting, where the bench is transformed from a neutral piece of equipment into something that is actively contributing toward early childhood development goals.

Infrastructure becomes developmentally supportive in the right combination with other elements.

More people will use a great bench. A bad bench will usually be empty.

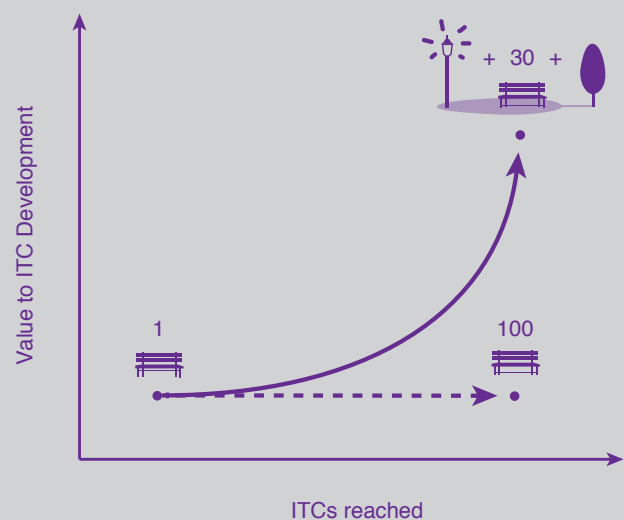
The elements included here for guidance work best for ITC support when they are used in combination.

For example,

Next time you are thinking about a new public property

Fence add a sittable surface, plant vines at its base for shade, and include solar lighting.

Crosswalk include bollards, paint extra color into the crossing, include solar lighting, and think about a cistern for rainwater catchment.



ITCs Use the Public Realm in Specific Ways that Design Needs to Respond to

ITCs use the public realm in specific ways. This bench offers a clear example of what an ITC needs from a place to sit. It is low, keeping any potential falls short. It is very wide and totally flat which would allow a mother to lay a baby on its back or to lay a baby carrier flat next to her instead of on the ground. And it provides a back to lean against which makes a huge difference in comfort for longer stays—say, in the case that there is an older sibling playing nearby.



Fontaine d'Ouche Dijon district, France. Mmcite group.

In combination with other key elements like a sense of quiet, trees and shrubs, and benches in the right number and with plenty of variation, seating systems can become rich spaces of wonder and learning for ITCs.



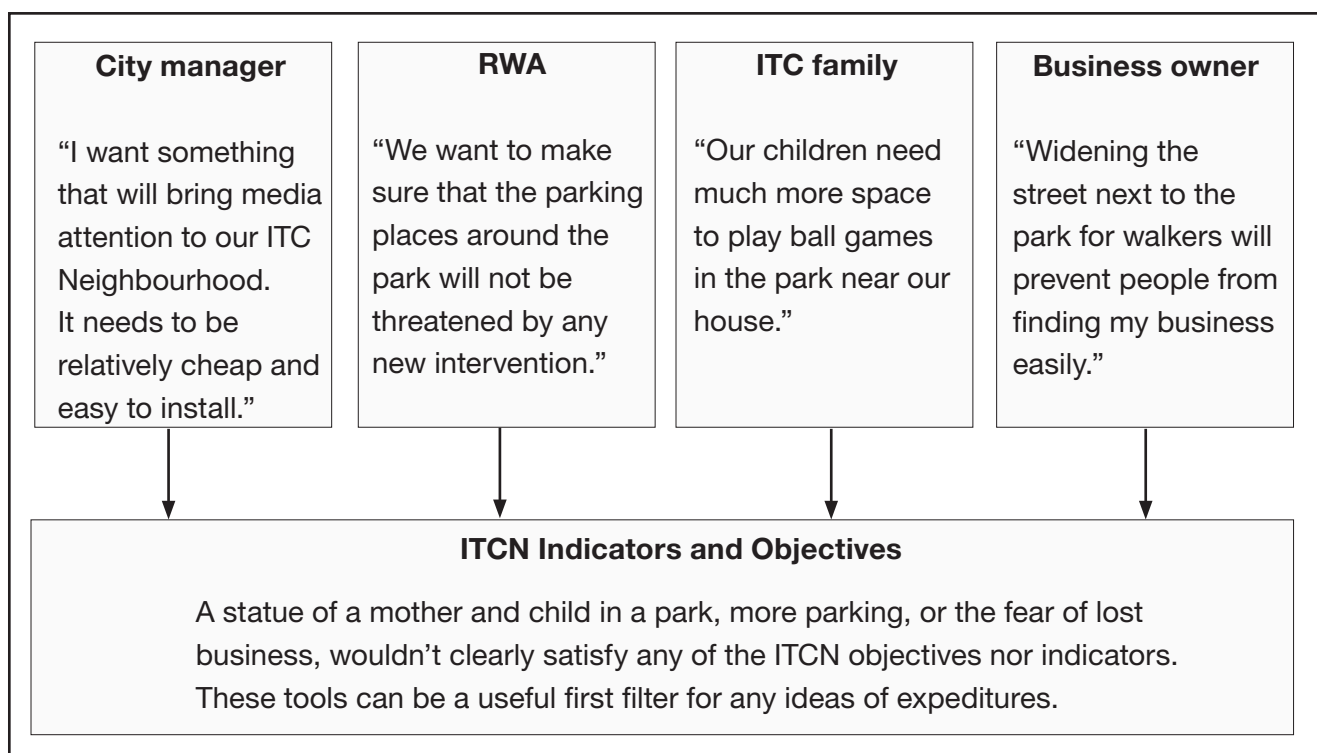
DECISION MAKING STORIES

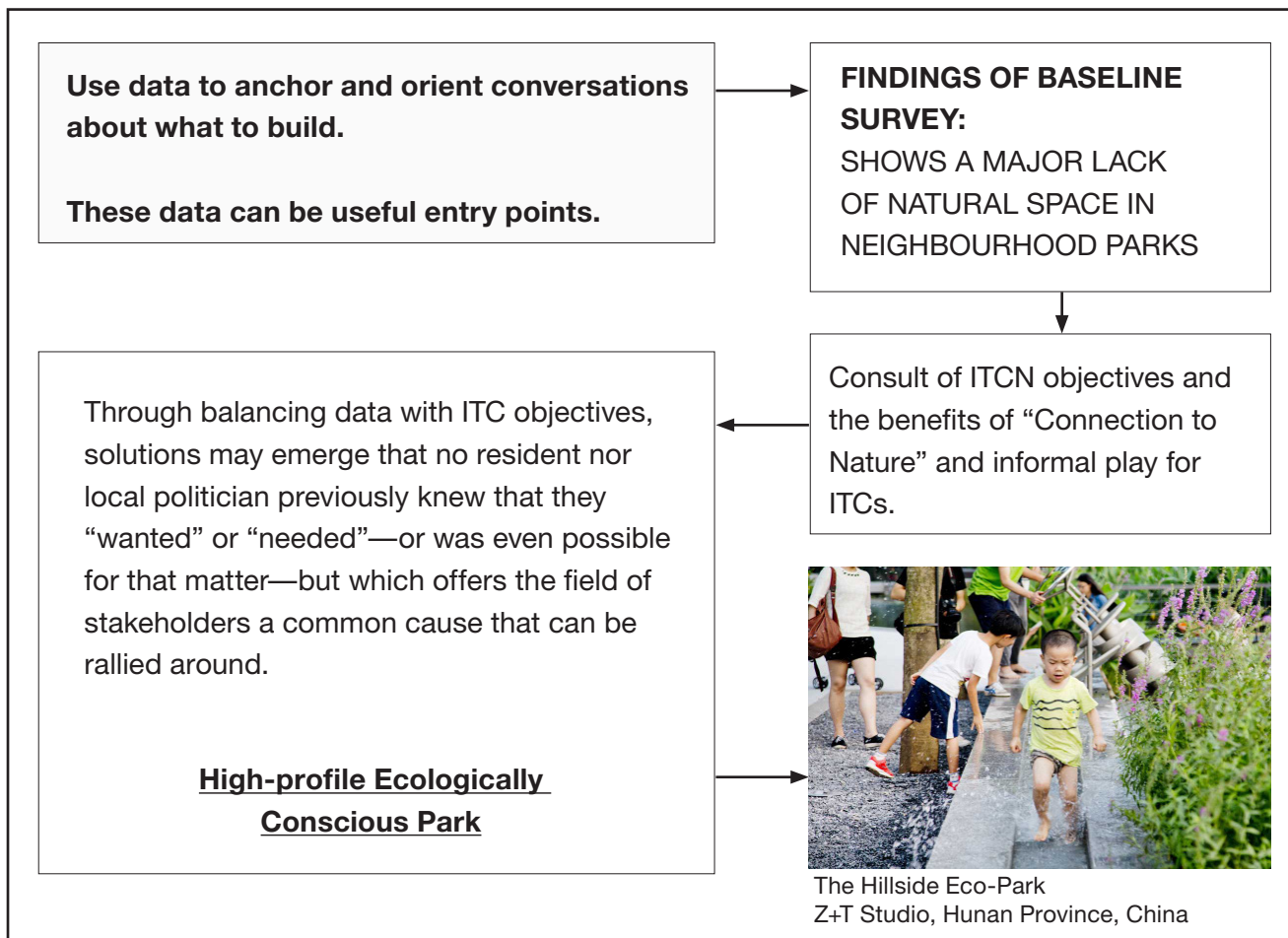
‘ ITC Statue effect ‘

New projects in the ITC Neighbourhood will have competing points of view on what to do, where to do it, and when it should happen. The “Statue effect” describes the tendency to push for high-profile projects that are attention grabbing, but which have minimal positive effects on the wellbeing of residents. The statue effect can be counteracted by fair use of data, to enter into and drive a dialogue about ITC interventions.

Data can focus discussion by delimiting the possibilities of what can be proposed. As well as offer stakeholders a common language.

Examples of unfocused stakeholder viewpoints in the absence of data are below. Stakeholders’ frequent first impulse is to think personally and to say “no.” Data can help to ground dialogue in the realm of what is possible; rallying residents around positive outcomes, not threats.





MANAGEMENT, MAINTENANCE AND ORGANISATION

Integrating management, maintenance considerations and the organisation of public space at the outset of the planning and design process is essential. It helps to optimise the benefits and support the productive functioning and ultimate success of public spaces.

Examples of these considerations include good organisation of functions, durable materials and design quality, wayfinding and free public activators of space such as music, storytelling, food or nature education events.

These considerations include elements like as:

A combination of short-term, hands-on action and long term strategies

- Long term strategies can include elements of regulation (for example for building approval), stimulation (incentivising occupiers or owners to make improvements) activation of public space and physical improvements as well as ITC focussed communications campaigns.
- Combining uses and transforming spaces throughout the day, for example between playspace/parking or water retention/green space
- Be aware of the places that the community already spends time and meet e.g. pay attention to street corners, commonly used walking paths,
- Reusing vacant and leftover spaces can (temporarily) become natural areas, people watching or gathering spaces.
- Building in modularity enables the space to be adapted by the community for the uses desired at any time e.g. depending on weather, number of people and space available etc.

Co-creation, public space coalitions and self-organisation

- Creatively involving the community in decision making and the planning design process will make spaces more relevant and usable by responding to demand, prompting buy-in and bolstering civic pride.
- Integrate co-creation and engagement into the community's existing gatherings and places they spend time, rather than organising events they need to visit
- Create incentives for long term ownership and care of public space by the community and the consideration of spaces as something truly for the public rather than for the city.
- Community involvement in management and operation, directly or indirectly.
- Cross-sectoral approaches including between parks and recreation, health, culture, transport, urban development, sport and leisure

Place management

- Visibly active maintenance program that comforts and encourages ITCs to spend time in public spaces and explore, especially women and girls
- Progressive policies that address an adult's misconception of play, the risks for children in public space and support creative ideas to provide safe spaces for young children that reduce the risk of socially imposed restrictions on public space.
- Inclusive policies for activities important for ITCs such as breastfeeding and interaction with water.



This park possesses some good features including safety from the street, sound protection, and a good amount of open space for kids to run. However, they can never use it because it is always occupied by large groups of men. Even without changing the rules of usage, programming day- or weekend-long events in the park will re-define the sense of ownership for ITCs to feel comfortable and welcome there.

- Maintenance, cleaning, waste and water management, lighting that can adapt to different uses and seasons

Quick wins experiment




- Demarcate new approaches and catalyse improvements with pilots and trials, e.g. play streets / happy streets (street closures to traffic) or 'building parties' - where the community are involved in cleaning streets, planting trees or painting facades as spaces change. Children can be the most active members of such events.
- Build trust and encourage buy-in from building owners/occupiers, decision-makers and the community
- Must be combined with a long-term

strategy for evaluation, scalability and replicability.

Costs and benefits

- Understanding underlying financial patterns and the actors influencing public space such as managers, building owners, occupiers and developers.
- Allocation of funds for maintenance and social components such as placemaking

 NEIGHBOURHOOD LAYOUT

Objectives Achieved	Indicators
	<ol style="list-style-type: none"> 1. Perception of safety for ITCs of key public amenities - streets, parks, playspaces, school, health services, etc.
	<ol style="list-style-type: none"> 2. Percentage of caregivers and infants/toddlers walking to public amenities (schools/kindergartens, playground, parks, health services) 3. % of buildings within 300m distance of a green space 4. % of buildings within 300m distance or 5-10 min walking distance of a public facilities like day care centres, pre -primary and primary schools, primary health facilities, local markets 5. % of daily trips by non-motorized means. 6. % of journey destined at creche / kindergarten / play school is by walking or cycling. 7. % of creches within accesible 500 mt distance from housing cluster. 8. Number of tot lots 9. Number of good quality housing area park spaces in the neighbourhood 10. Number of good quality neighbourhood park spaces in the neighbourhood
	<ol style="list-style-type: none"> 11. % of open space in the neighbourhood 12. Per capita organised green open space for a neighbourhood 13. % of encroached/ informal area of total neighbourhood area

Neighbourhood Layout

Neighbourhood Layout guidelines are concerned with the larger scale organizational factors within an area, its urban design. This is the process of giving form, shape and character to urban spaces that will influence the overall physical environment.

Major urban layout changes within existing neighbourhoods can only be implemented over a long period. In the short term it is possible to bring about changes and improvements to destinations in a neighbourhood, but then only in a step-by-step manner. New Greenfield developments should aim to follow the guidelines for destinations given below for a thriving ITC community.

MIXED USE

Ideally, neighbourhoods should be planned to enhance everyday journeys and experiences outdoors. A neighbourhood planned for small children and their caregivers has a mix of uses and services that give reasons to be outdoors and within comfortable walking distances.

This means that positioning of destinations such as health care centres, day care centres, play grounds and other amenities within a neighbourhood requires careful consideration. Where there are more than one of the same type of amenity in a neighbourhood, these should be spread as evenly as possible around the neighbourhood. If there is only one specific amenity, such as a health centre, this should be placed at an easily accessible point in the neighbourhood.¹



1 BVL Urban Starter Kit page 78 talks about the concept of setting up a Children's Priority Zone, which is focused around the main amenities frequented by children. It is worth looking this up to see if it can apply to your neighbourhood.

HIERARCHY, DISTANCE AND DENSITY OF ITC FACILITIES

Because ITC's have a shorter range of mobility, it makes sense to cluster a mix of destinations and complimentary services together. For example, a playground could be positioned close to a shop so that both destinations could be visited in one trip. Facilities for the young and old could be placed together to foster contact between these age groups.

Strategically positioning mixed facilities along frequently used pedestrian routes in the neighbourhood will stimulate more active mobility because all are within a convenient and comfortable walking distance. A caregiver often visits different amenities in one trip: a trip to fetch small children from a day care centre may be combined with buying food and with a visit to the playground. Where amenities cannot be placed close together, link them via a clearly marked, continuous pedestrian route that is well marked.

Amenities can also be placed along or in close vicinity to the bus/ train/ BRT stops at the edge of a neighbourhood. Putting these daily destinations within walking distance of transit could increase the likelihood of working parents utilizing transit while balancing the logistics of getting to daycare and work each day.

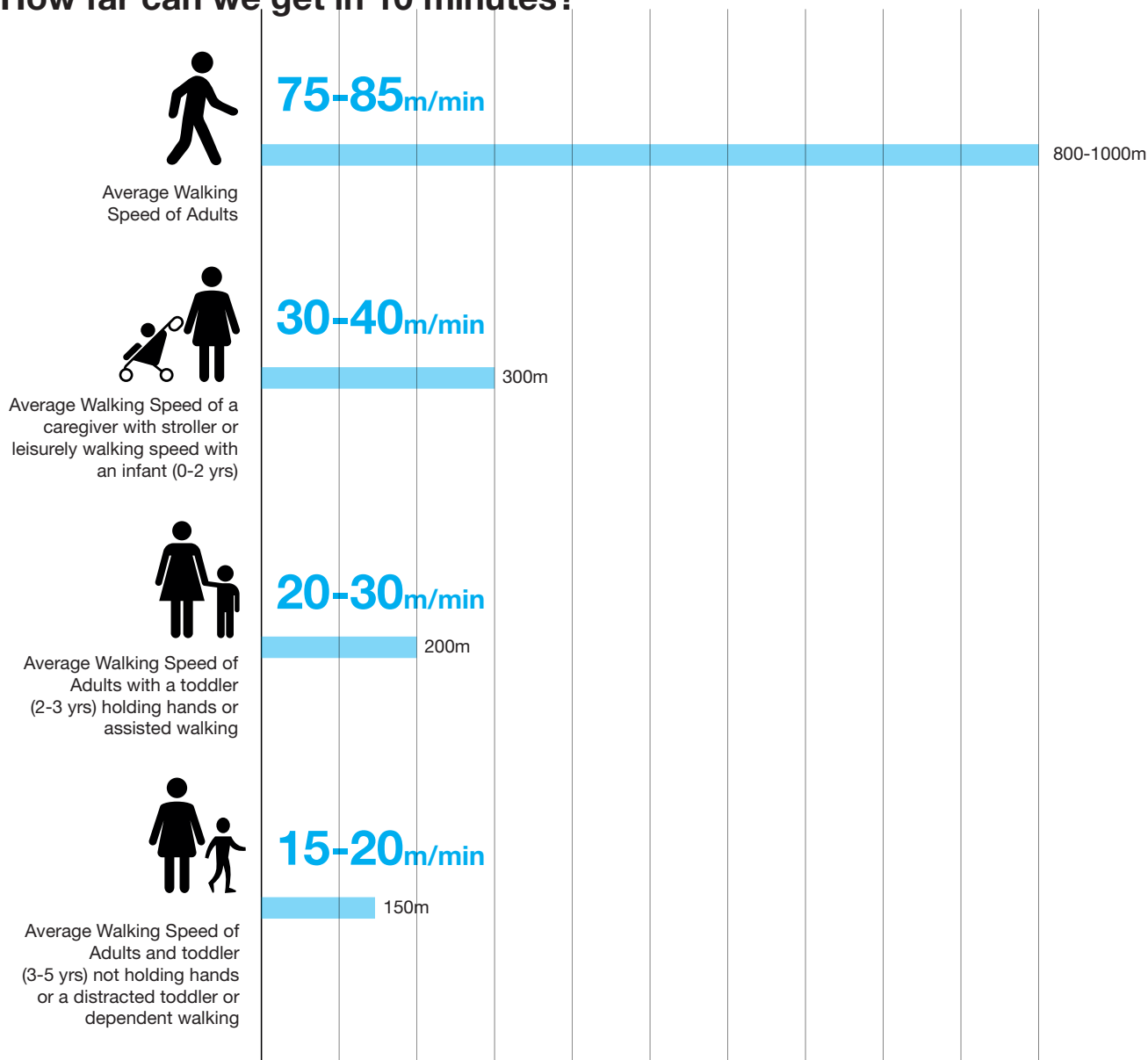
The placement of various ITC based infrastructure is currently given based on the city development plan or the master plan. These guidelines, however, do not specifically cater to ITCs. We have to consider that the journeys of ITCs are slightly different than the ones of a regular adult using the urban space. The walking speeds, distances covered and things observed are very specific to this group. Also, the local climate and weather conditions make the whole experience of

using the public space quite challenging in India. The needs of babies and toddlers differ from those of children in general as they are always with caregivers, their range of mobility is shorter, and their bodies and brains are more vulnerable.

Consider the following:

- Place amenities where they are well connected to the whole neighbourhood. For example, place along major pedestrian connections, or at junctions of pedestrian paths.
- Cluster different types of amenities together that can be visited in one trip
- Fences around amenities may be necessary for safety reasons, but they should not become obstacles. Give gateways generous dimensions, so that caregivers with prams/ children can pass through easily. (Page 48/72)
- Planting close to amenities should not become an obstacle. Ensure that there is space to comfortably walk with a pram or while holding hands with a small child around planting.
- Carefully consider the choice of ground surface materials around amenities. Materials should ensure that the facilities always have good accessibility, independent of weather. (page 54/74)

How far can we get in 10 minutes?



Note: We estimate that 3-5 y/o moves slower than a 2-3 y/o because they are more confident in the public realm to be curious.

Figure 2: How far can we get in 10 minutes

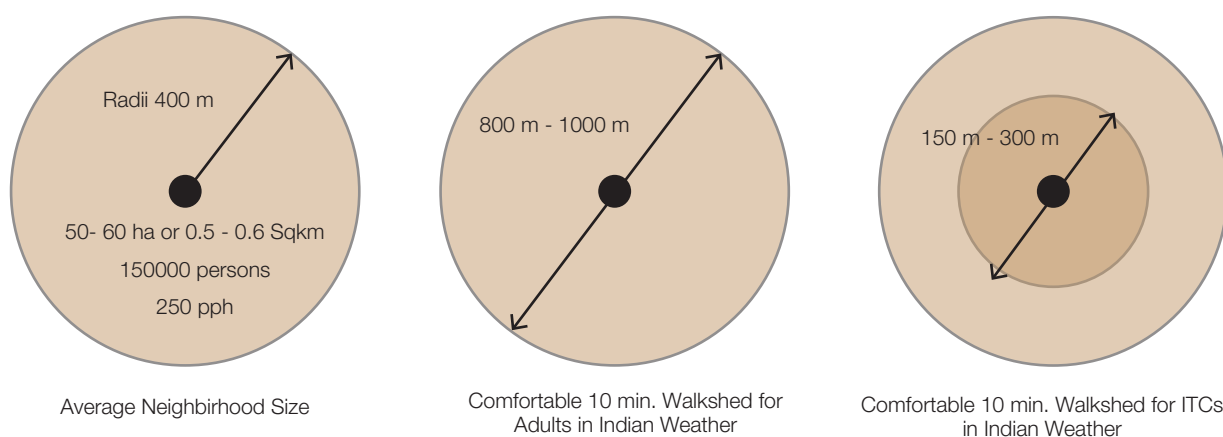


Figure 3: Neighbourhood size

Neighbourhood Model for ITC

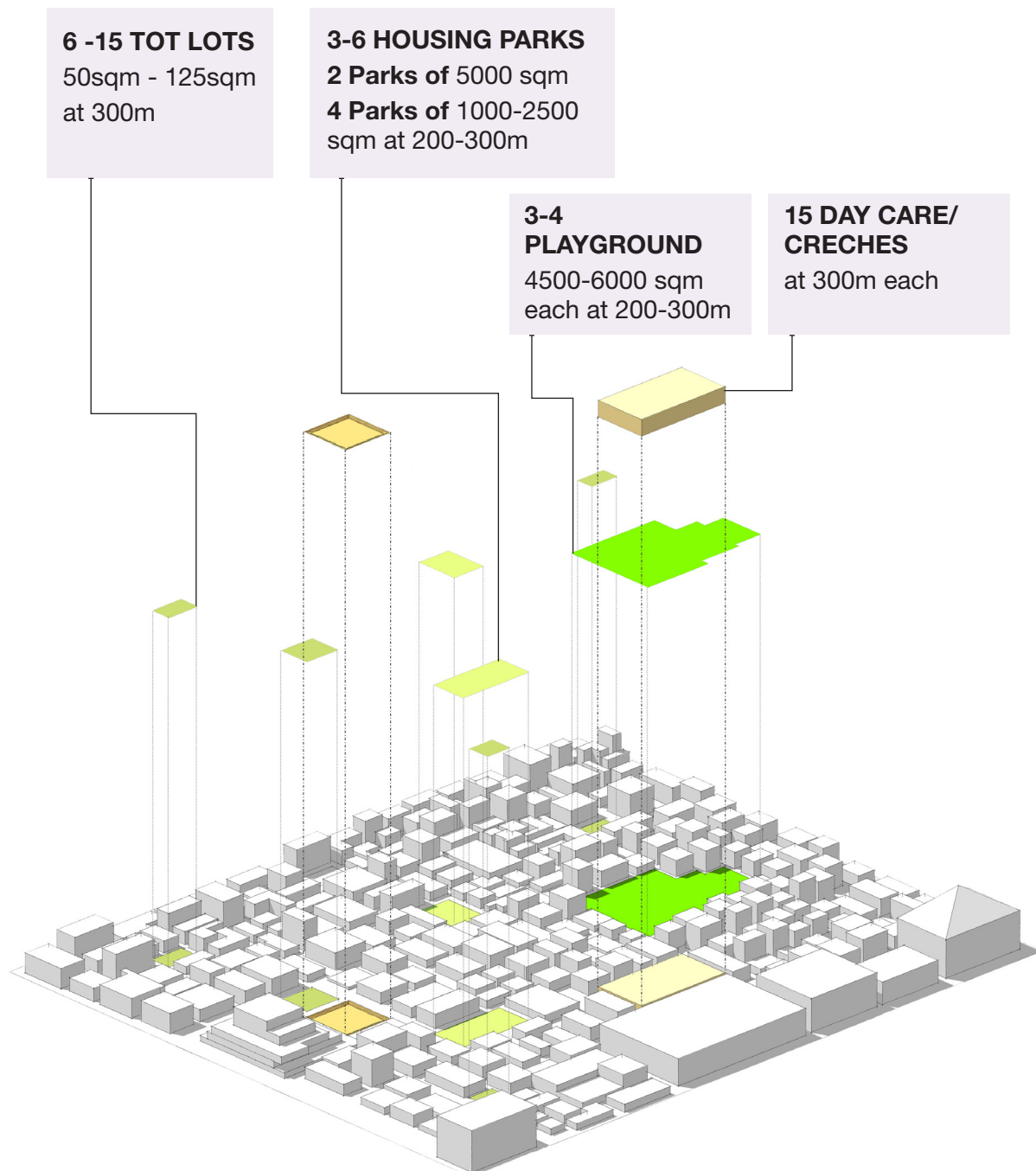


Figure 4: Neighbourhood model for ITC

Total Area of the Neighbourhood is 60 Ha Approx. and total population is 15,000 people.

*The recommendations mentioned here are based on the existing space standards suggested by URDPFI. The existing norms have been modified keeping in view the reduced speed of movement and comfortable outdoor time relevant for Indian climate. The recommendations are not mandatory and should be understood with respect to ITC specific needs only

ITC specific recommended changes to norms for facilities in a neighbourhood (as per URDPFI)

	Hierarchy	Distance	Density	Area	Remarks	Indicator to Refer
Open Spaces	Tot Lot <i>Infants and caregivers : 0-2 yrs.</i>	No existing Data Recommended: Placed at walking distance of max.10 minutes or 300m.	6 Nos. for a neighborhood * Recommended: 6 - 15 Nos.	125 sqmt each covering a total area of 750sqm * Recommended: 50 - 125sqm. Covering a total area of 750sqm	The existing norms specify the area of a tot-lot as 125sqm. We suggest that spaces as small as 50sqm can also be converted to tot-lots. This will increase their spread and ITC reached across the neighborhood.	No.8
	Housing Area Park <i>Toddlers with caregivers: 2-3 yrs.</i>	No existing Data Recommended: Placed at 200 - 300m	3 Nos. # Recommended: 3 - 6 Nos.	5000 Each. covering a total area of 15000 Sqm. # Recommended: 2500 - 5000sqm. covering a total area of 15000sqm	The number of Housing area parks is suggested to be increases for better reach.	No.9
	Neighbourhood Park/ Playground <i>Toddlers with or without caregivers: 3-5 yrs</i>	No existing Data Recommended: Placed at 200 - 300m	1 Nos. # Recommended: 3 - 4 Nos.	10000 Sqm. # Recommended: 4500 - 6000sqm. covering a total area of 18000sqm	The existing norms suggest 1 No. Neighborhood Park of 10000sqm. We suggest the area coverage should increase from 10000 to 18000sqm. (as per Dutch standards a Min 300 sqm/Ha is provided for a Neighborhood Park i.e. 18,000sqm). Also the area should be broken into 3-4 Nos. of parks for better distribution and ITC reached.	No.10
	Average per capita Open Space		10 -12sqm per person Including recreational space, Organised green & Other common open spaces (such as vacant lands/ open spaces including flood plains, forest cover etc. in plain areas. Min. 3sqm/ person In the built up area (excluding recreational space, vacant land, flood plain, forest) # Recommended: 3-4sqm per person		The range provided in URDPFI is a gross figure of open space and therefore not relevant for ITCs. The NBC stadard of 3.0sqm is a baseline standard. A range of 3-4 sqm is suggested in an attempt to better the existing norm.	No.11 No.12

* Page 7, Urban Greening Guidelines, TCPO, GoI, MoUD

Pt.8.4.5. Open Spaces, Page 362-63, URDPFI Guidelines 2014, Ministry of Urban Development

The ideal location of amenities and open spaces from every home in a neighbourhood.

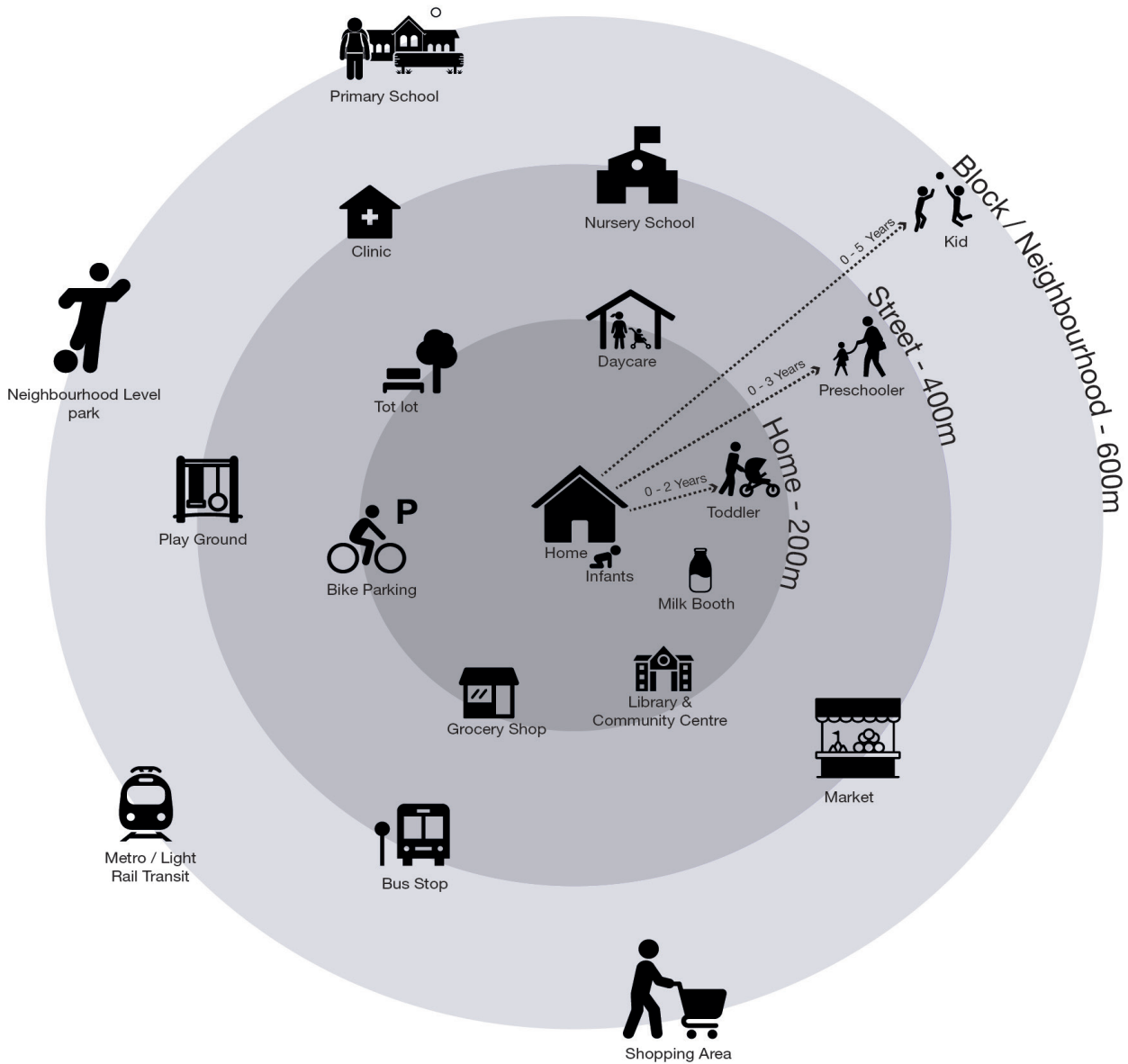


Figure 5: Location of amenities linked to child's physical development

	Hierarchy	Distance	Density	Area	Remarks	Indicator to Refer
Education Facilities	Day Care Centers or Crèches <i>ITC : 6 months to 6 years</i>	5-15 minutes walking distance (300 -800m) Recommended: Walking distance of 5 - 10 minutes or 150 - 300m	No existing Data Recommended: 6 - 15 Nos.	150-200 Sqft 6-8sqft per child [§]	The day care centers or creches should be placed preferably with a tot lot or open space. So the density of creches is suggested to be matched with density of tot-lots. Number of children in the crèche should not be more than 25. Of these, at least 40 percent of children should, preferably, be below 3 years of age. [§]	No.2 No.4 No.6
	Pre- Primary, Nursery School <i>Toddlers: 3-5 yrs.</i>	5-15 minutes walking distance (300 -800m) Recommended: 200 - 400m	6 Nos. [?] Recommended: 6 Nos.	800sqm each [?]	To be located near a housing area park or a neighbourhood park. [?]	
	Primary School <i>Toddlers: Above 5 yrs.</i>	5-15 minutes walking distance (300 -800m) Recommended: 400 - 600m	3 Nos. [?] Recommended: 3 Nos.	4000sqm, 2000sqm built foot print and 2000sqm playground [?] Recommended: 4000sqm, 2000 sqm built foot print and 2000 Sqm playground[?]	Playfield area with a minimum of 18m x 36m to be ensured for effective play [?] and open during non-school hours for ITC use.	No.47
Health care Facilities	Dispensary <i>ITCs</i>	5-15 minutes walking distance (300 -800m) Placed at walking distance of 5 - 10 minutes or 150 - 300m	1 No. [!] Recommended: 2-3 Nos.	800 - 1200sqm each [!] Recommended: 800 - 1200 sqm		No.50
	Anganwadi <i>ITCs</i>	5-15 minutes walking distance (300 -800m) Placed at walking distance of 5 - 10 minutes or 150 - 300m	3 Nos. ⁽⁾ Recommended: 3 Nos.	200 - 300 Nos. ⁽⁾ Recommended: 200 - 300 sqm	To be located near a Housing Area park	No.48

? Pt.8.4.2. Education Facilities, Page 357, URDPFI Guidelines 2014, Ministry of Urban Development

! Table 8.50 Health Care Facilities, Page 360, URDPFI Guidelines 2014, Ministry of Urban Development

() Pt.8.4.4 Socio-Cultural , Page 361, URDPFI Guidelines 2014, Ministry of Urban Development

& Pt.8.4.10.2 Amenities, Page 368, URDPFI Guidelines 2014, Ministry of Urban Development

§ Rajiv Gandhi National Creche Scheme for children of working Mothers, under the The Maternity Benefit Act 2017



STREETS

Objectives Achieved	Indicators
	14. Presence of walk zone/footpath/sidewalk at significant routes in the neighbourhood. 15. Provision and quantity of public seating to stop and rest, by neighbourhood
	16. % of clear and unobstructed pedestrian footpath of total road length. 17. Presence of curb cuts. 18. % of streets with adequate lighting. 19. Streetlight spacing in the neighbourhood. 20. Presence of cycle routes inside the neighbourhood and on major bordering roads (km would be a future indicator). 21. Encroachment on NMT roads at neighbourhood level by Vehicle Parking (%) 22. Presence of traffic calming measures in the neighbourhood and average speed of vehicles in the neighbourhood 23. % of intersections containing timed signals and lighting in the neighbourhood and along its border roads. 24. % of one-way streets in a neighbourhood. 25. % of total street length closed to 4-wheel traffic. 26. % of total street length closed to 4-wheel and 2-wheel traffic. 27. Presence of informal wayfinding in the vicinity of schools and parks. 28. Instances of observable standing water, overflowing drains, sewage.
	29. Presence of green corridors on major routes and number of corridors in a neighbourhood. 30. % of streets with decibel levels above standard 55 dB inside the neighbourhood. 31. Presence of no-honking zones in the neighbourhood.
	32. Fatality rate for pedestrian and NMT (%) 33. The number of fatal accidents occurring due to traffic in the neighbourhood.

Streets



THE FIRST PUBLIC REALM

The first space that small children encounter outside the home is the street. Streets make up for over 20% of a city's space,² and are a very important open space available to us, that can be attractive and enjoyable places. There has been a global shift in designing urban streets where pedestrians take top priority, followed by cyclists and transit riders, then by people providing city services, and lastly by people in private vehicles.³

The Indian neighbourhood street serves primarily as a place of movement. Except for quick stops at vendors, it is generally not a safe or pleasant place to spend time. Completely pedestrianizing streets gives the entire streetscape back to residents of a neighbourhood. Other solutions that can

balance conflicting demands, like prioritizing pedestrians while also reserving space for vehicles, making better use of the space available and keeping neighbourhoods accessible. Redesigning or "re-profiling" a street can offer care-takers and infants the vital space they need for free and safe movement while still allowing for cars.

The first step when designing a good, balanced street, is to consider the different uses and forms of movement taking place: pedestrians, cyclists, transit riders, cars, parking spaces, vendors, local inhabitants etc. all vie for street space. By re-allocating the space available and sharing the space between the users more equitably, a more balanced design of the street can be achieved.

2 CDP, Delhi, Chapter 11, page 4 in https://ccs.in/sites/default/files/files/Ch11_Review%20of%20Road%20Network%20and%20Transport%20System.pdf

3 <https://globaldesigningcities.org/publication/global-street-design-guide/introduction/prioritizing-people-in-street-design/>

LIMIT, LINK AND SHARE STREETS - 3 STEP APPROACH

Streets are a vital part of our cities and facilitate a range of uses, from vehicular transport to pedestrian movement. But the different users of streets can have conflicting needs. These conflicts have at times been resolved by completely banning cars from certain streets in the city. Not every city or neighbourhood is ready for such a big step.

To make our streets friendly for ITC, we need to undertake 3 main steps. These are to **limit** the use of streets by vehicles, to **link** key destinations within the neighbourhood and establish a priority route, and to **share** the street, by improving on the use efficiency. ⁴

LIMIT- TRAFFIC CALMING TO ALLOW MORE CHILDREN ON ROADS

As identified in the Framework, Indian neighbourhoods are car-centric. (Framework, Page 15). One of the critical challenges is the unsafe nature of the street, which allows through-way traffic, limiting the child's independent mobility. The first step to take in your neighbourhood is to reduce car dominance by:

- **Preventing unnecessary traffic movement:** Prohibiting vehicular traffic completely from streets wherever possible to give pedestrians and ITC's priority and more space to move freely, without fear of traffic. Access for emergency vehicles should be permitted if there is a calamity.
- **Set Speed Limits:** Globally, many neighbourhoods have set and imposed speed limits of 15-30 km/hr in local streets. Research has shown that children are unable to gauge the speed of vehicles travelling faster than 32km/h, and may believe it is safe to cross when it is not. It is important to enforce this limit as well. ⁵
- **Calm one-way traffic movement :** Neighbourhood streets with ITC activity need a clear obstacle-free pedestrian space. This arrangement in access streets will be possible with narrow carriageways.
- **Chicanes:** Chicanes increase the amount of public space available on a corridor and can be activated using benches, bicycle parking, and other amenities. Chicanes break long lines of traffic and have the added benefit of calming traffic. In a neighbourhood context, consider having chicanes with alternate off-street parking spaces on one side of the street.
- **Shared street spaces:** Shared street spaces are increasingly becoming popular worldwide, where streets are places for people, rather than cars. These also help in reducing the speed of through traffic. (See page 28)
- **Crossings/ Speed Tables:** Speed bumps, the way they are currently used in Indian streets are ineffective in reducing the traffic speed. Sign-posted crossings or Speeds Tables are a better option on routes where restriction of traffic is not possible. (See page 48-49)



Dibrugarh Traffic Safety Week, Sentinel Assam, April 2018
 © www.sentinelassam.com/news/29th-national-road-safety-week-2/



St Marks Road Bangalore in Global Street Design
 Guide ©<https://globaldesigningcities.org/>

4 Cai Liangwa. The Research on Safety Children's Travel Route on Child-Friendly City of Netherlands. International Journal of Environmental Protection and Policy. Vol. 5, No. 6, 2017, pp. 94-98. doi: 10.11648/j.jiepp.20170506.12

5 <https://www.sciencedaily.com/releases/2010/11/101123101539.htm?trendmd-shared=0>



LINK - ESTABLISH PRIORITY ROUTES THAT CONNECT DAILY ACTIVITIES OF CHILDREN

A child priority route within the neighbourhood can be established by identifying the key destinations that are frequented by infants, toddlers and their caregivers. These would include key public services such as primary schools, tot-lots, day care centres, anganwadis, convenient shopping and so on.

Cities in the Netherlands and some other European countries have adopted this by creating a route called 'kindlint'⁶ in their neighbourhoods.

“The idea of Kindlint is to create marked trails that connect different locations relevant for children in a neighbourhood. Trails can be marked by signs, objects, tracks, safe crossings etc. Children of different ages can move independently along these trails.”⁷

- This route must be an obstacle-free pedestrian right of way. It should be minimum 1.8m wide for a 2-way movement of single strollers;
- The route should lead to an important anchor facility of a neighbourhood, which can also become the centre of the route;
- Traffic calming measures must be taken on priority with no or minimal parking in the delineated area. Shared surface would be the most preferred treatment for streets (page 28);
- Micro markers of resting and play equipment shall be added at regular intervals;
- Signages and wayfinding measures should be placed at either end, and along the route to signal and create awareness;
- Safety from strays and other dangers shall be tackled;
- and the route should be shaded with large foliage trees/ other elements for better microclimate, cleaner air and shade.

⁶ The Kindlint is developed by SOAB, a traffic consultancy firm with the idea that by using this route children can safely and independently move across different places in their neighbourhood. It is assumed that play does not only occur at particular destinations (playgrounds, community centers for

example) but also on the route to these places. Child-Friendly Urban Design: Observations on public space from Eindhoven (NL) and Jerusalem (IL)

⁷ <https://www.reframingstudio.com/projects/kindlint>

THE FIRST KINDLINT IN SPAARNDAMMERBUURT, AMSTERDAM

The first Kindlint (child route) was established in 2007 in Spaarndammerbuurt, Amsterdam. “The Kindlint consists of blue pavement tiles with images of animals. The animal motifs in the pavement are portrayed through different poses and display where children should wait, where they can walk and where they can run. On the route different play elements, specific measures for traffic safety and adequate lighting are added.”⁸

There were some immediate benefits.

- Children **walked** to school more often.
- Almost all children and parents know the Kindlint and like it
- It contributed to **safer traffic**
- The route was **engaging** for children

However, the limitations included:

- Children **do not always use** the Kindlint, only if it aligned with where they were already going.
- It **did not link to some key destinations** within the neighbourhood
- Not everybody understood the intention of the tiles.⁹

Subsequent examples of Kindlint have been more successful in other cities.

Therefore, before setting up a child priority route in your neighbourhood, make sure that

- the **needs** of the residents are considered,
- **many of the key destinations** and **frequented walking routes** are identified and connected; and
- the route is made as **clear and legible** as possible.



Kindlint in Amsterdam

©www.verkeersnet.nl/verkeerseducatie/2193/project-kindlint-draagt-bij-aan-veiligere-omgeving/

⁸ <http://www.metamorphosis-project.eu/case-studies/kindlint-%E2%80%93-child-route-amsterdam>

⁹ Child-Friendly Urban Design: Observations on public space from Eindhoven (NL) and Jerusalem (IL) Page 28



SHARE- ALLOWING CHILDREN TO USE THE FULL WIDTH OF THE STREET

Shared Streets, applied to a residential context, are called Woonerfs¹⁰ in the Netherlands, or Homezones¹¹ in the UK. or also commonly named as “living streets,” or “living yards.” For residents of a woonerf, the public space in front of their homes is a place to play, socialize, and engage in the community. There are substantial safety improvements that have made them a success: In Dutch areas that have adopted the concept, traffic accidents dropped by 40% or more.

In the shared street concept, cars, cyclists and pedestrians share the same street surface. In the shared street situation, where the zoning is unclear, drivers become more alert and drive slower. Traffic may be further prompted to slow down by strategically placing planters or bollards in the street so that cars have to drive around them and in so doing, slow down. Shared streets have no level differences, and one paving material is applied to the whole area. This makes shared streets easy to use by toddlers and their caregivers, as there are no level differences between the pavement and the road surfaces.

Keep the following in mind when designing shared space/ living streets:

- Choose a material that is associated with pavements for the shared street. For example, brick pavers or concrete tiles. This encourages traffic to slow down and sends a clear signal to drivers that they are entering a zone with pedestrian priority.
- Use planters or bollards that cars have to drive around to slow them down further.
- Keep the planters low, so that small children playing or walking behind the planters are visible to oncoming traffic.
- Place clear signs at the beginning of the shared street to indicate to vehicles that they are entering a shared street zone.
- Introduce a clear speed limit to the zone: 10mph is a speed limit that is often used.

10 The concept of Woonerf originated in Delft, NL as a result of citizens action in reclaiming their residential street (1960s) https://nacto.org/docs/usdg/woonerf_concept_collarte.pdf

11 <http://www.legislation.gov.uk/ukpga/2000/38/section/268>

SHARED STREETS

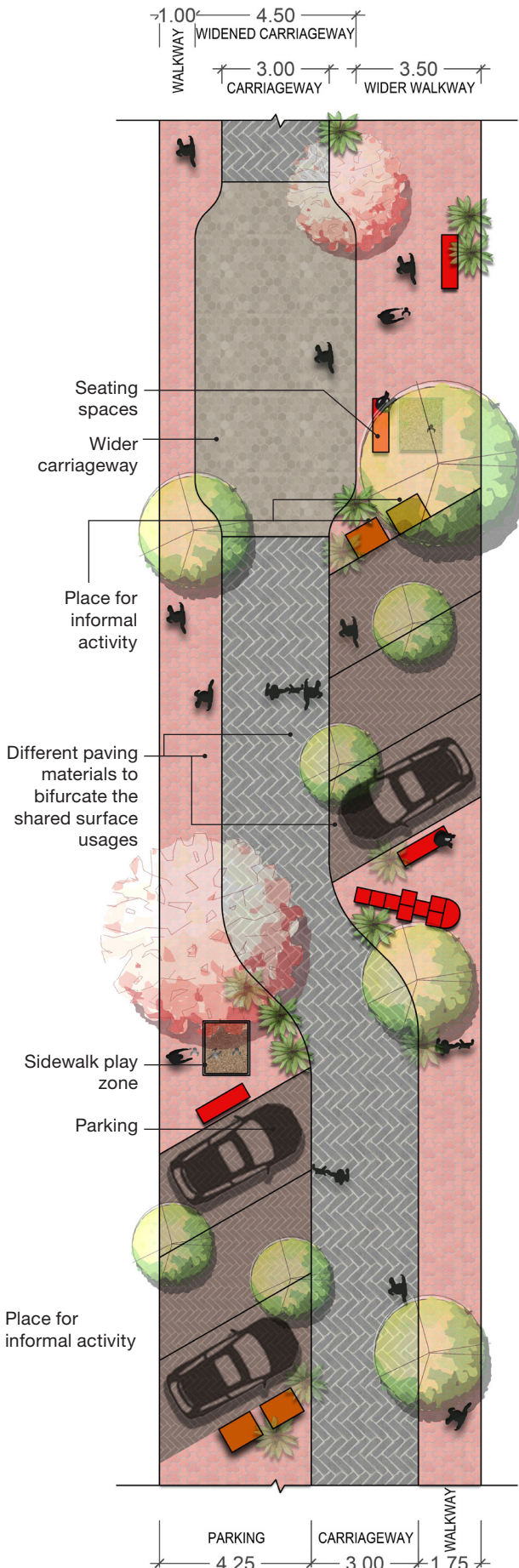


FIGURE 6: Ideas for implementing home zone streets



Successful shared streets/ home zones can:

- Reduce or remove the dominance of the car in residential streets;
- Foster a sense of community;
- Encourage a greater diversity of activity and use of the street by residents;
- Reduce social isolation, particularly among older people;
- Increase opportunities for active and creative children’s play;
- Increase natural surveillance, deterring casual crime;
- Reduce traffic speeds significantly – to around 10mph;
- Improve the safety of residential areas, and perhaps more importantly, residents’ perception of safety;
- Enable all members of the community – including children, older people and disabled people – to reclaim their local environment from the car;
- Encourage people to walk and cycle within their local area, and to nearby destinations;
- Improve the quality of the built environment; and
- Help to increase the demand for urban living.

SEGREGATION OF USES

Street widths in urban neighbourhoods in India predominantly range between 6 - 15m. Space is scarce in the dense urban fabric of Indian cities. Therefore it is critical to use the space available judiciously to accommodate the various and sometimes conflicting uses.

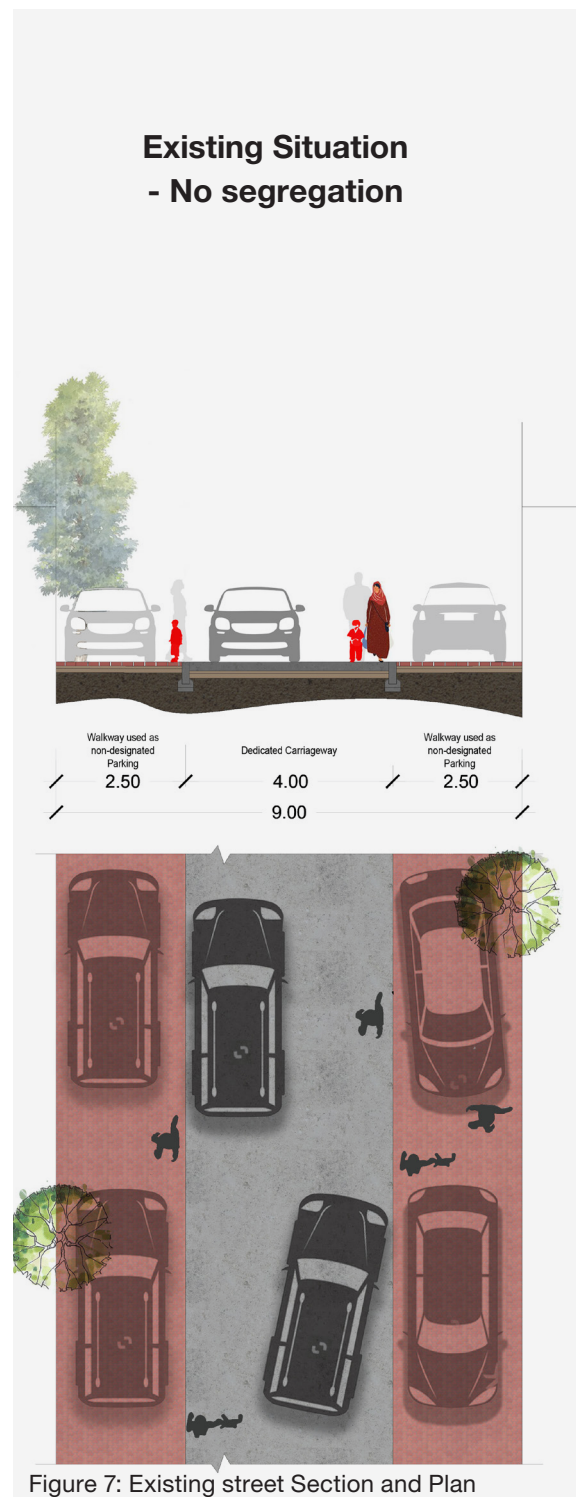
Current streets in India do not have marked segregation of uses. The streets are predominantly used for car parking with space allocated for footpaths taken over by cars, access ramps to homes, cabins for home security guards, unauthorised privatisation by homeowners or by vendors.

The section below is of a typical 9m street in Indian neighbourhoods that shows cars dominating the space.

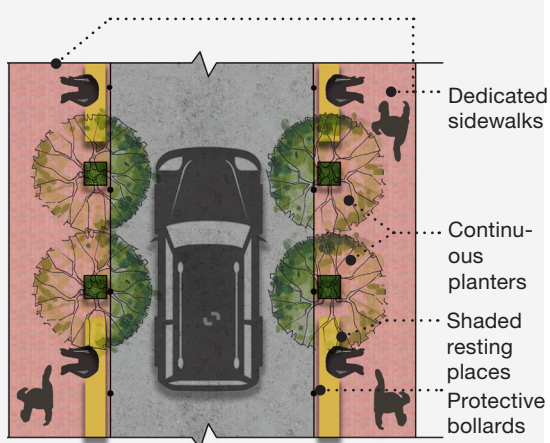
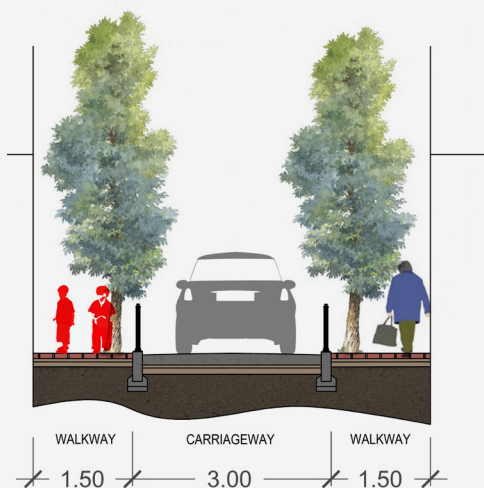
To address this it is critical that neighbourhood wide parking strategies are adopted at the outset. (See page 32)



Street in East of Kailash, New Delhi ©SIMON BATISTI

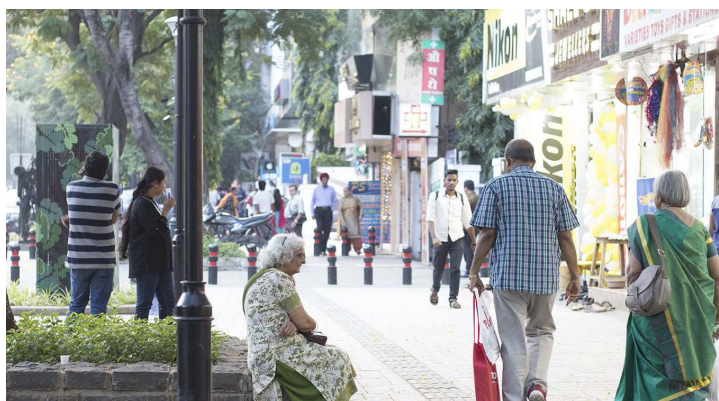


**And what you can do?
- Divide It!**



Note that all of these situations contain “equipment”: Elements that are added to the street to improve its usability and comfort. Later in this section, we will cover common equipment and how they impact ITCs.

Figure 8: Proposed Street Section and Plan



PARKING STRATEGY

Parking is one of the most recurring urban issues of Indian megacities. Most of the public space is taken over by unauthorized parking. Addressing unauthorized parking in an ITC friendly neighbourhood is very critical to free up public space for pedestrians. Parking is also the most visually obstructing activity for infants at their eye level.

- Designated parking to be provided wherever possible in neighbourhoods;
- No parking on 6m wide roads;
- One-side parking on 9 and 12m roads, in designated areas only;
- Two-side parking to be broken down by planted areas;
- Two-side parking streets to be either shared surfaces or one-way streets for calmer traffic.
- No parking at intersections. Prohibit on-street parking within 20 to 50ft of intersections.

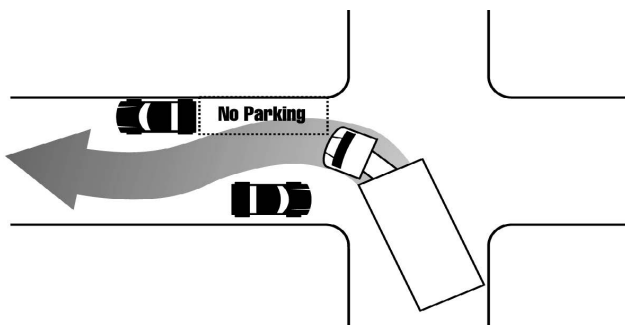


Figure 9: No parking at intersections

- Two-way streets under 9m are not recommended.
- Queuing – Designing streets so that the moving cars must occasionally halt between parked cars before moving forward, which will help in successfully developing narrow streets while encouraging vehicles to move slower, and also allowing areas where a wide clear area is available for parking.
- The length of parking rows should be limited to 60m (20-23 contiguous spaces) to create breaks for landscaping and sidewalk play spaces.
- Kerbside motorcycle parking can be easily integrated with the parallel car parking space about the same width of 2.50m
- Bicycle parking can be placed between the main walkway and the kerb. A minimum clearance of 0.6m from kerb to a parallel bicycle stand should be kept in mind.
- In cases of wider footpaths, clusters of bicycle parking may be oriented perpendicular to the kerb.

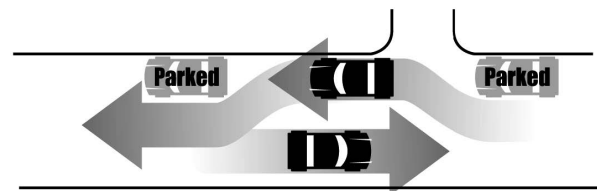


Figure 10: Queuing to slow traffic

HOW TO APPROACH THE DESIGN OF STREETS AND PUBLIC REALM

The following section (page 34-45) show examples of how some of the standard streets (widths as per IRC guidelines) can be redesigned. We have suggested many variations in some cases, keeping in mind that each neighbourhood will have a different requirement. Pedestrians have been given priority. Also, standard carriageway for two way traffic is considered to be 5.6 m as per UTTIPEC street guidelines for roads 12.0 m wide and less, and minimum footpath width to be considered is 1.8 m.

When re-designing the streets in your neighbourhood, consider the following as your priority with the first being the topmost priority and decreasing down to the last.

1. Pedestrians and ITCs movement space
2. Special components addition space
3. On-street Parking Space – single side and two sides
4. Space for traffic calming measures
5. Crossings of streets
6. Vehicular movement – one-way
7. Vehicular movement – two-way



Paid Parking on a main street in Pune



Dedicated Bicycle Parking in Pune



Reclaiming the street- green spaces on neighbourhood streets in place of parking in a neighbourhood in London, UK.
@healthystreets.com/home/new/.



NEIGHBOURHOOD LANE - 6M WIDE

A narrow neighbourhood lane with a width of 6m should have a predominantly pedestrian feel to it. These lanes should never have two-way traffic, as this reduces the space available for pedestrians to almost nothing, making it impossible to use by ITCs. The street can either have a symmetrical or asymmetrical solution. One, dedicated wide walkway and a carriageway, the paving material is maintained the same and laid at the same level to slower the vehicular movement. Second, being a symmetrical one with a dedicated walkway on either side, accompanied with seating spaces and planters acting as a barrier from the vehicles. In both these applications, the width of the traffic lane is reduced to the minimum, to maximise the space available for pedestrians. In neighbourhood streets cyclists share the traffic lane with vehicles.

Single-sided Dedicated Shared Walkway - One Way Traffic

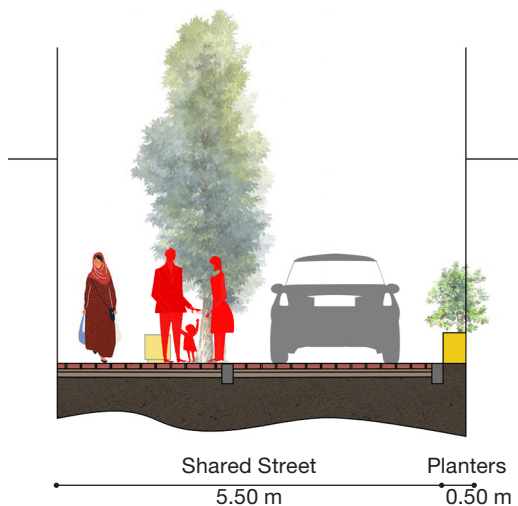
- Single shared surface for ITC, pedestrians and vehicular movement;
- A narrow zone of planters and seating spaces at intervals, on the opposite side of the lane with close to the adjacent buildings / open space;

- Clear walkway of 1.8m on one side, with seating spaces beyond it, trees acting as barriers from the traffic.
- Applicable adjacent to a park, tot-lot, day care or other ITC destination with an open edge condition;
- Cyclists share lane with vehicles;
- Singly paved surface material for calming the traffic

Two-sided Dedicated Shared Walkway - One Way Traffic

- Single shared surface for ITC, pedestrians and vehicular movement;
- Applicable in streets with buildings on both sides;
- Clear walkway of 1.8m on both sides;
- Seating spaces and trees at intervals providing shade and acting as a barrier from the traffic;
- Single lane, one way traffic only;
- Singly paved surface material for calming the traffic

Single-sided Dedicated Shared Walkway - One Way Traffic



Two-sided Dedicated Shared Walkway - One Way Traffic

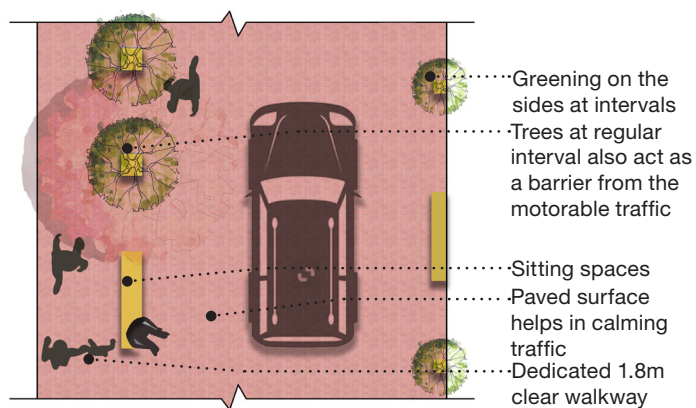
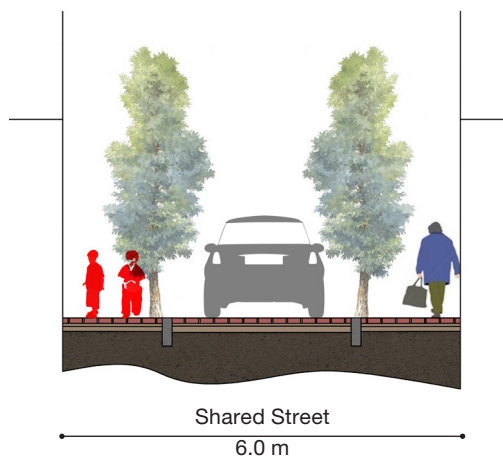


Figure 11: Shared Street Section and Plan

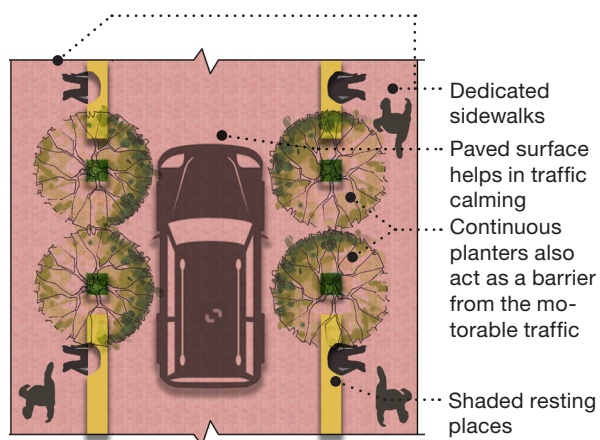


Figure 12: Shared Street Section and Plan



LOCAL STREET - 9M WIDE

A 9m wide neighbourhood local street carries more traffic and should provide space for two-way traffic. It is advisable to keep the traffic lanes as narrow as possible so that more space can be allocated to pedestrians and so that the speed of traffic reduces.. It is preferable to have at least a clear walkway of 1.8m on either side of the street. One solution is to have a symmetrical street section with equal pavements on both sides. Another solution can be having a shared street design. In this scenario, the levels are maintained same throughout the section, with different paving materials laid to demarcate carriageway, parking, informal activity zone, transition space for two-way traffic, pop-up play zone. The carriageway is made in a meandering manner to further slowdown the traffic.

Two-sided footpath - Two-way Traffic

- One footpath on either side of the street: with a clear width of 1.8m each;
- Two-way traffic. Lane widths kept to a minimum, as a traffic calming

measure and prioritizing ITCs and pedestrian movement;

- Preferably used with a safe table top crossing at the beginning of street for zone demarcation;
- Smaller plants provided at intervals acts as a protective element for ITCs from traffic.

Shared Street

- Encourage a greater diversity of activity and use of the street by residents;
- Holistic paved surface treatment increases pop-up playing zones and children's activity area;
- Paving material, multiple activities, narrow bending carriageway reduces the traffic speed significantly ;
- People are encouraged to walk and cycle within their local area, and to nearby destinations safely.

Two-sided footpath - Two-Way Traffic

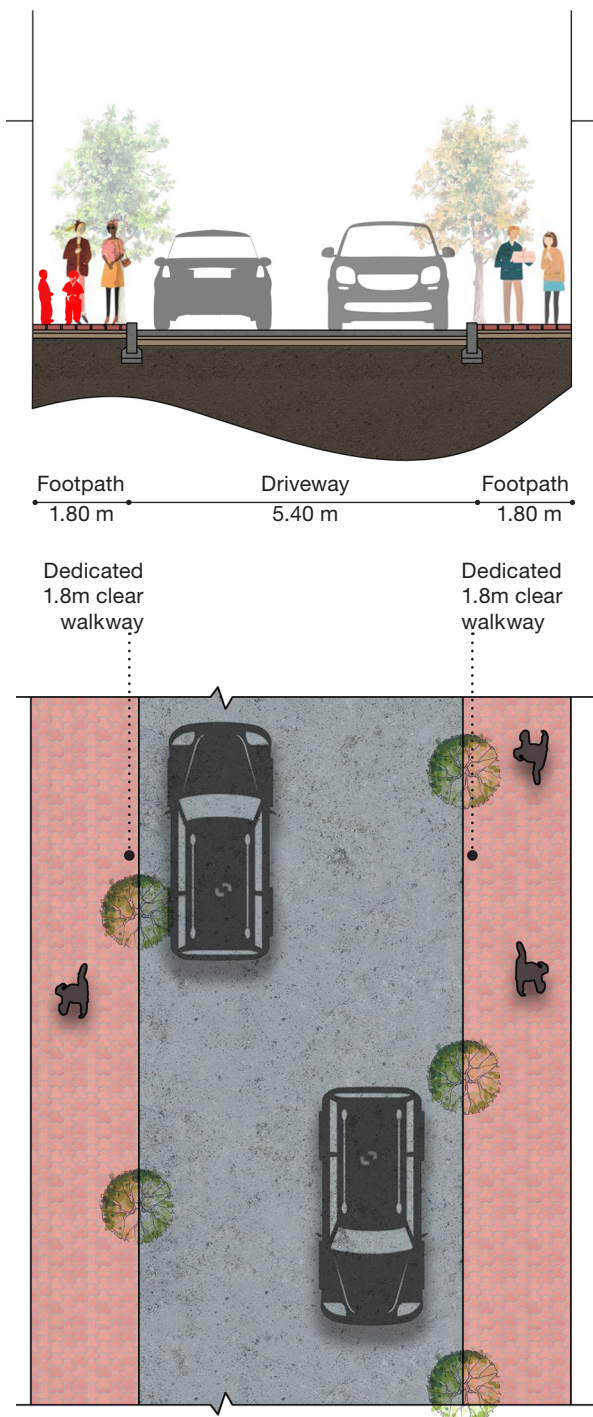


Figure 13: Local Street Section and Plan

Shared Street

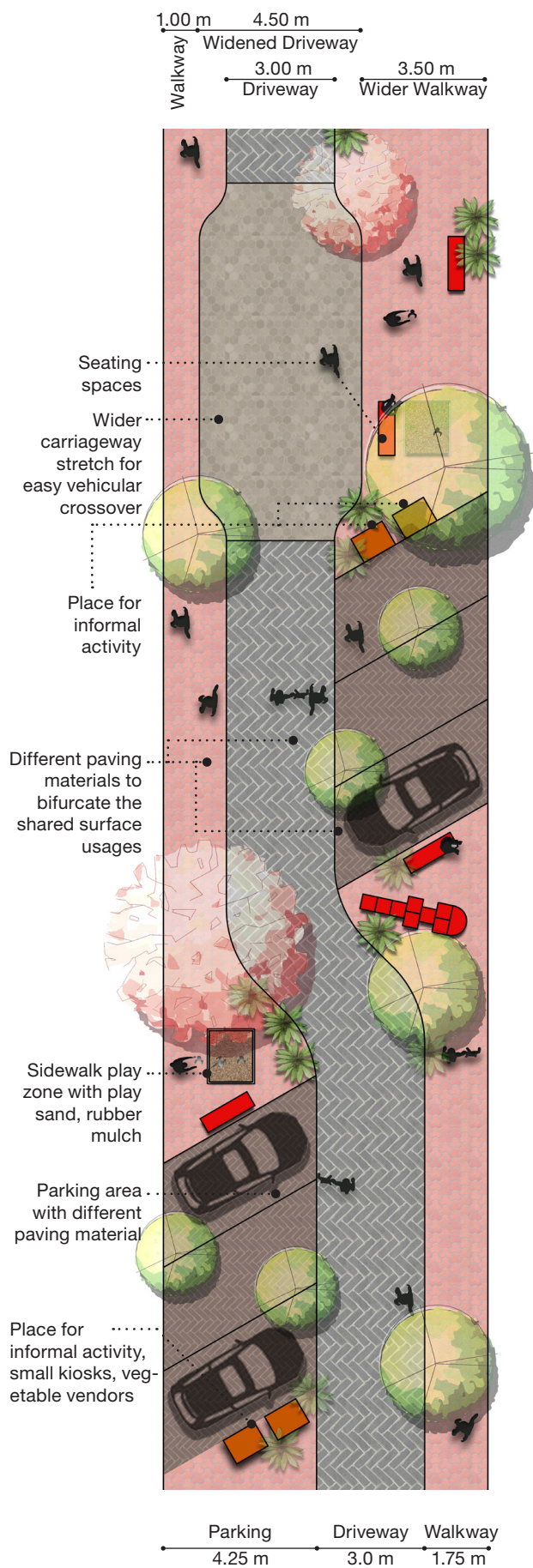


Figure 14: Shared Street Section and Plan



NEIGHBOURHOOD STREET - 12M WIDE

A 12m wide neighbourhood street will in most cases have two-way traffic. This should ideally have a designated cycle/stroller lane as the traffic moves faster on this street. A very wide pedestrian zone may be made on one side of the street only, which can accommodate play zones, resting zones and green. Alternatively, two footpaths, one on either side of the traffic lanes may be provided for. A 12m wide local road may also accommodate parking alongside the lanes. In such cases, the parking areas may be interrupted at places to create extra wide pavement areas at intervals along the street.

Dedicated Stroller/Cycle Lane With Two-Sided Footpath and Two-Way Traffic (without parking)

- Two-way Street;
- Dedicated stroller/cycle lane;
- Separate planter zone with trees, lighting acting as a buffer between the vehicular road and stroller path;
- Two side footpaths, with one being wider and can be used for sidewalk games, seating spaces, and the other having a clear 1.8m of walkway sans seating;
- Preferably used in areas which do not require on-street car parking.

Dedicated Stroller/Cycle Lane With Two-Sided Footpath and Two-Way Traffic (without parking)

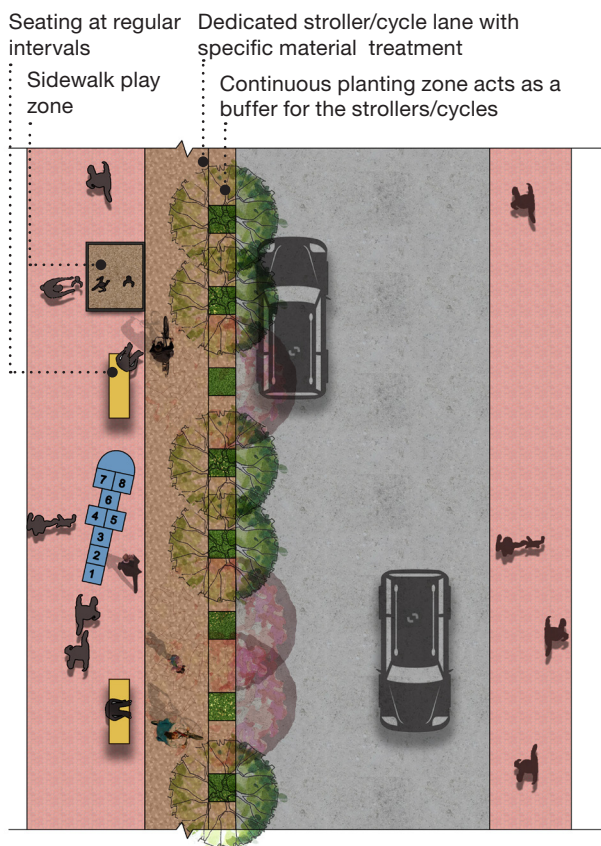
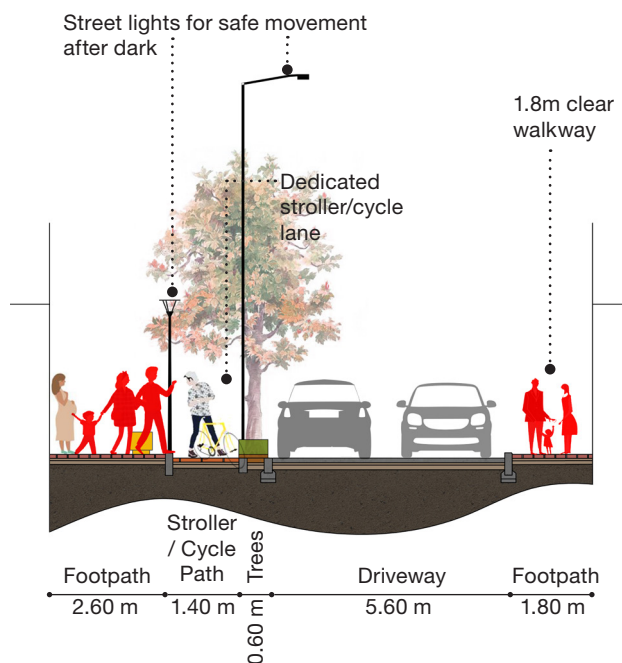
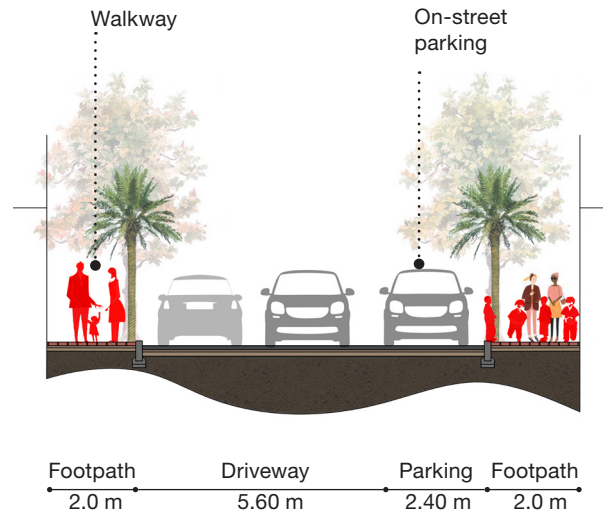


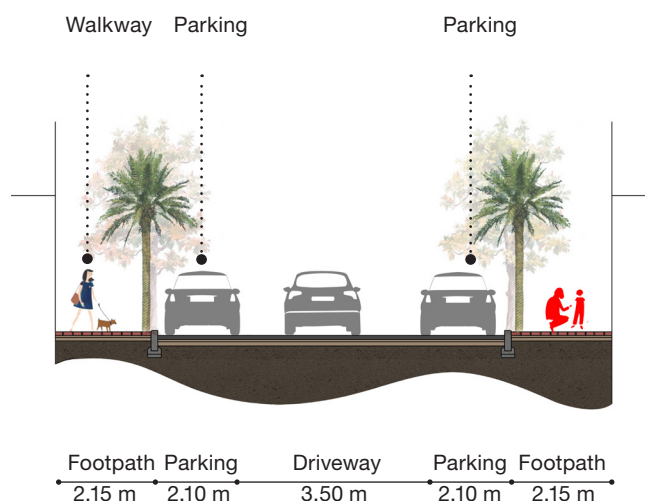
Figure 15: Neighbourhood Street Section and Plan



Chicanes: two footpaths and two way traffic with parking

- Two-way chicane street with pavements on either side;
- Alternate parking spaces on one side of the street only;
- Where the parking switches to the other side, the projected green areas become multifunctional spaces;
- Green multifunctional spaces also serve as an interactive art zone for children, while the trees on the side facing the road act as a safety buffer from the traffic;
- Clear walkway of 1.8m on either side is maintained
- Footpaths are wide enough to accommodate planter zones, street lighting at regular intervals.

Figure 16: Neighbourhood Street Section and Plan



One Way Pinch Points: two footpaths and one way traffic with parking

- One-way street with continuous parking on both sides;
- Footpaths on both sides, with 1.8m of clear walkway and planters at intervals;
- ‘Pinch points’ create safe crossing zone, a wider pavement area with an area for pop-up play zone, larger trees for shading and seating spaces;
- Table-top crossing point with stroller-friendly surface materials.

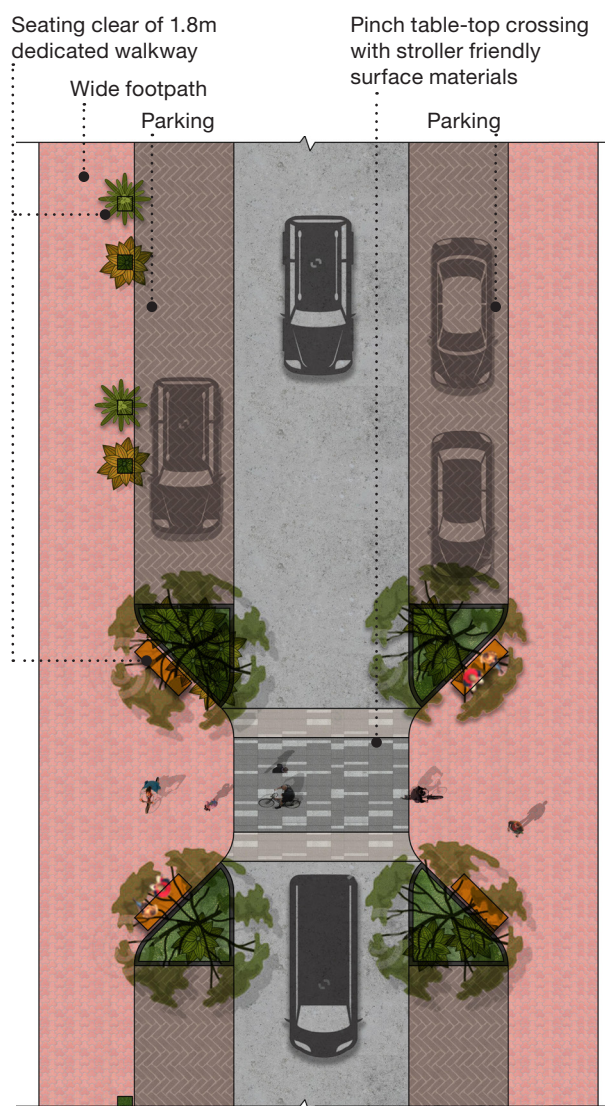


Figure 17: Neighbourhood Street Section and Plan



NEIGHBOURHOOD MAIN STREET - 15M (OR 18M) WIDE

The main street is the main access road within a neighbourhood and the main traffic thoroughfare. Main streets will often have two way traffic and may have continuous street parking on both sides of the road. Pavements are required on both sides of the street. It is

advisable to create safe crossing points at regular intervals, where the parking zone is removed to create a wider pedestrian area that may be used for various activities. This is the most effective two-way street cross section for dense neighbourhoods.

Two-way traffic, with parking, two footpaths and pinch points

- Two-way street with continuous footpaths and parking on both sides;
- Strongly advisable to create several pinch point safe crossing zones;
- The pinching allows a visual break in the parking, creates spaces for greenery and resting;
- The table top crossing acts as a traffic calming measure and is also a barrier free movement space for strollers.

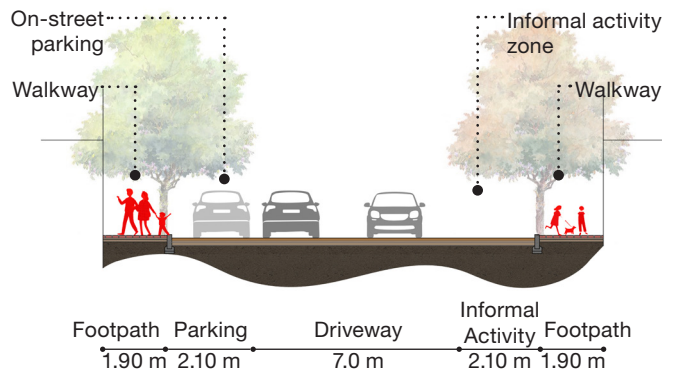


Figure 18: Neighbourhood Main Street Section

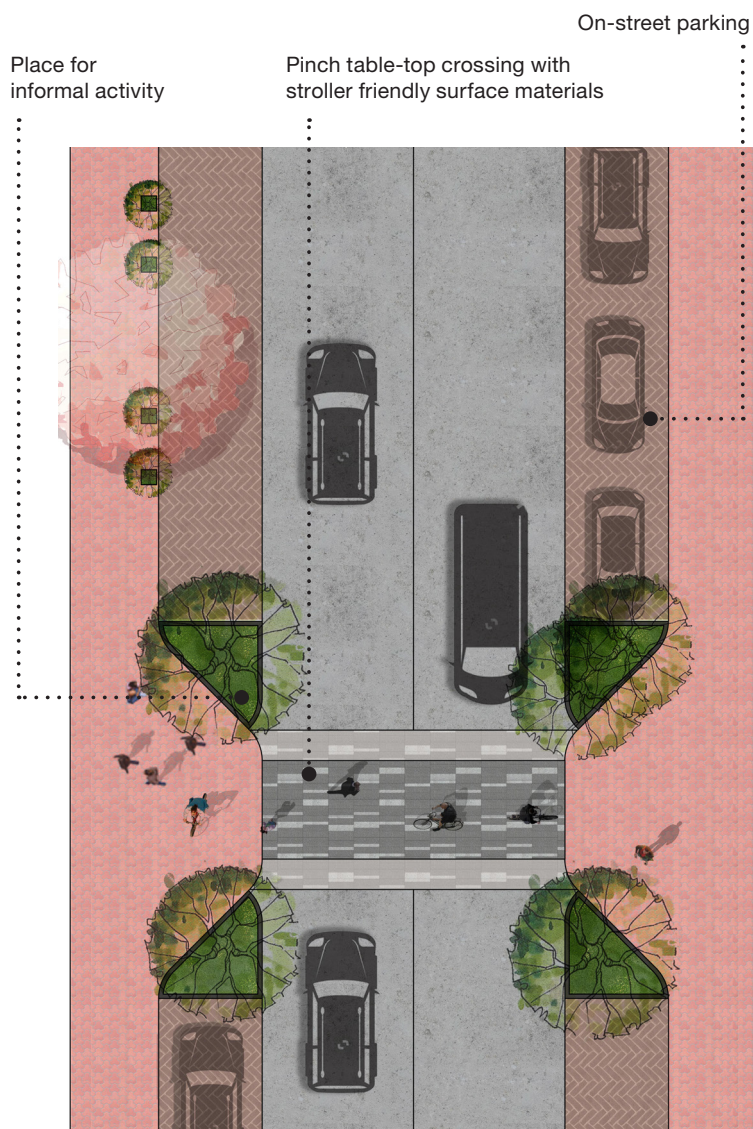
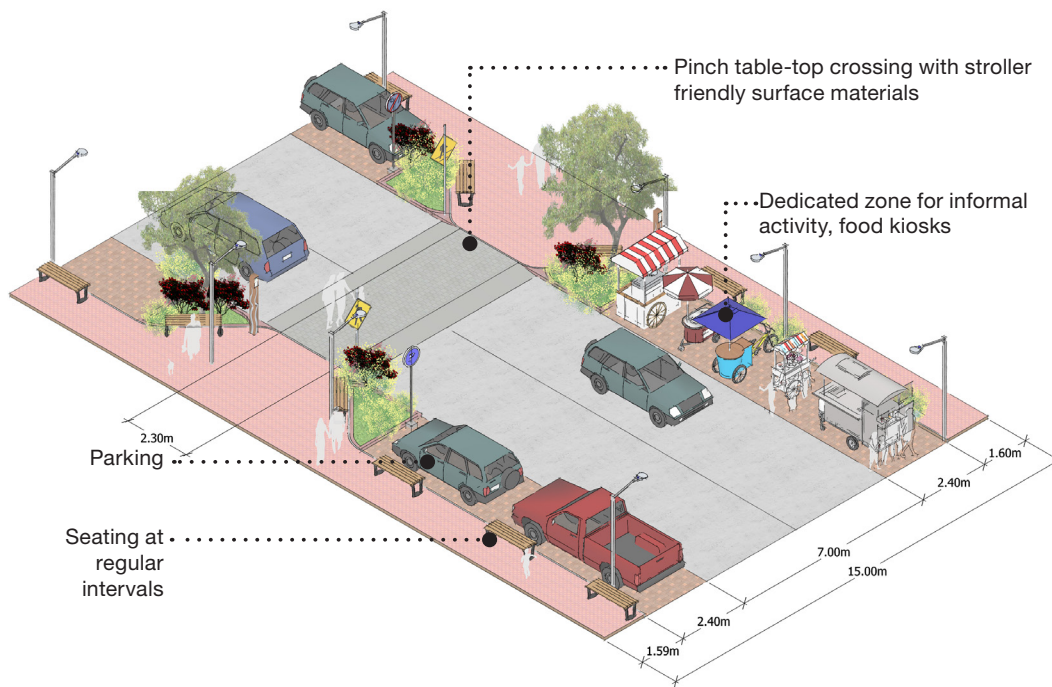
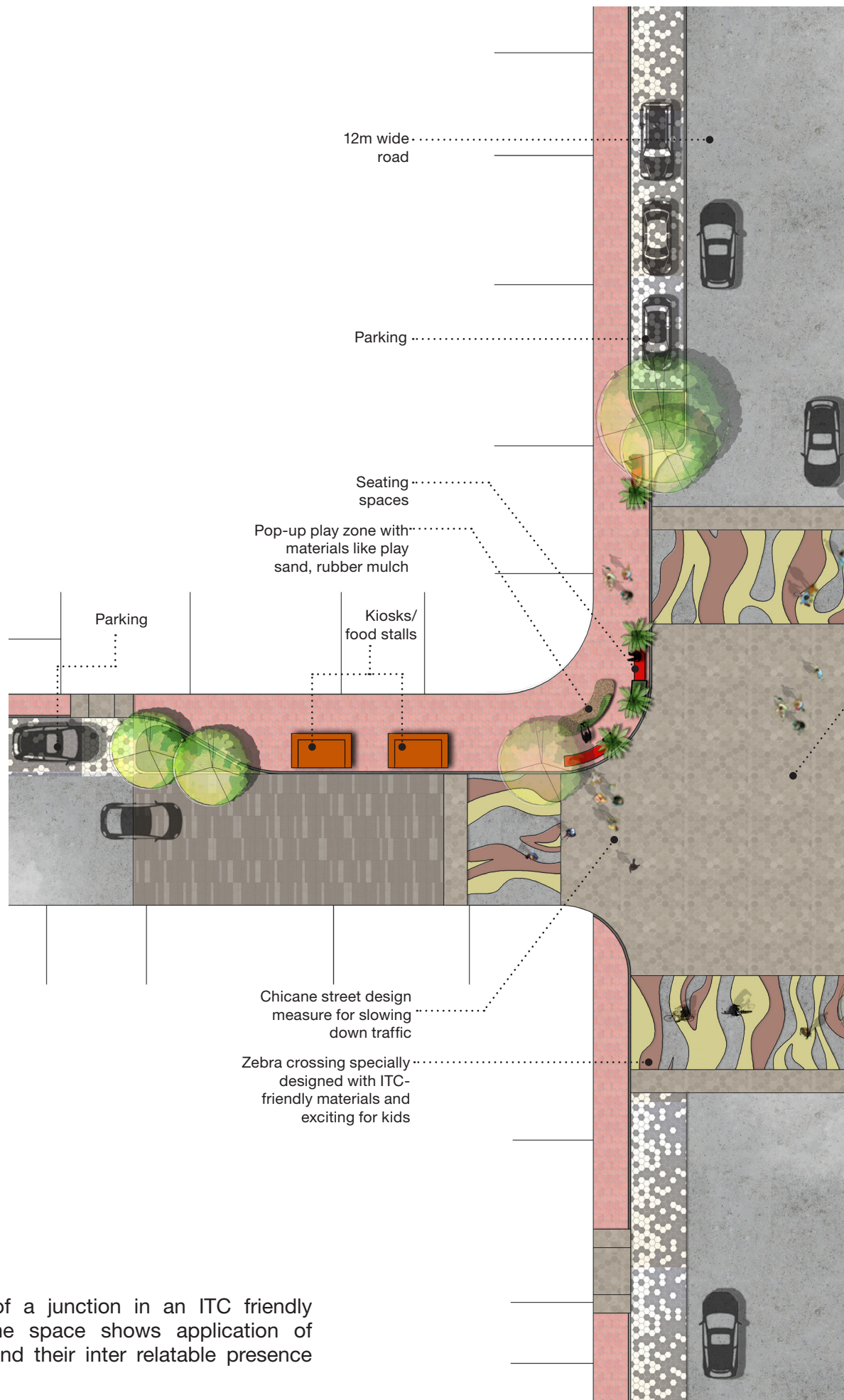


Figure 19: Neighbourhood Main Street Plan and View



A sample layout of a junction in an ITC friendly neighbourhood. The space shows application of various elements and their inter relatable presence with each other.

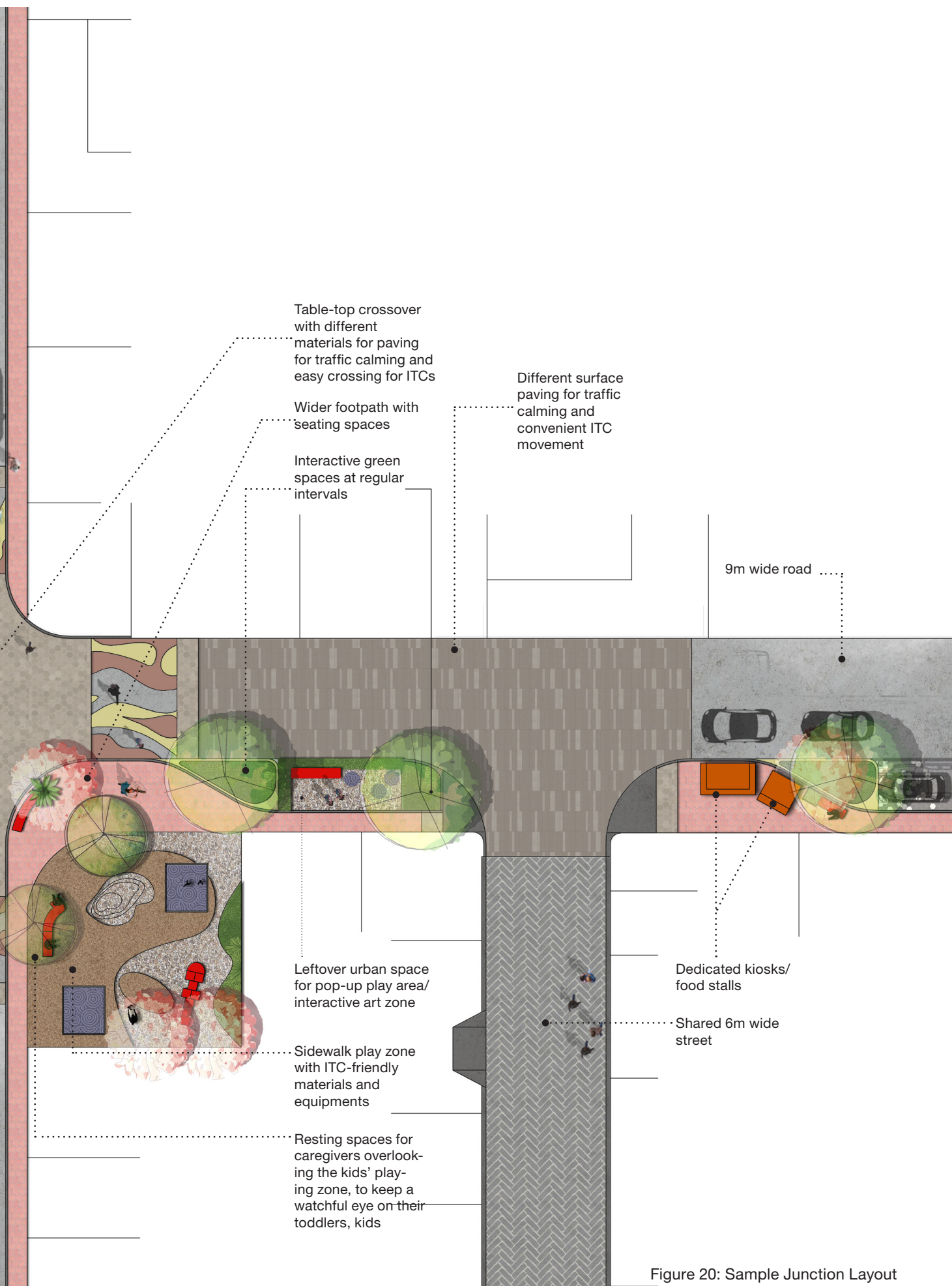




Figure 20: Sample Junction Layout

GUIDELINES FOR STREET COMPONENTS

There are many elements that need to come together to make streets that are welcoming, safe and inclusive of young children and their caregivers. These have been sub-divided on the basis of the five objectives for a healthy ITC neighbourhood.

 STREETS	
Safe Streets 	<ul style="list-style-type: none"> • Active facade along Routing • Private - Public Interface • Protective Elements from Traffic • Crossings • Lighting • ITC Wayfinding
Green Streets 	<ul style="list-style-type: none"> • Guidelines for Street Planting • Shading and Colling Elements
Accessible Streets 	<ul style="list-style-type: none"> • Ground Cover Materials & Cover • Inclination Ramps • Continuous Borders • Bench Types
Playful & Inclusive  	<ul style="list-style-type: none"> • Playful furniture • Terrace Equipment • Side Walk games • Temporary Street Closure • Pop Up Playing

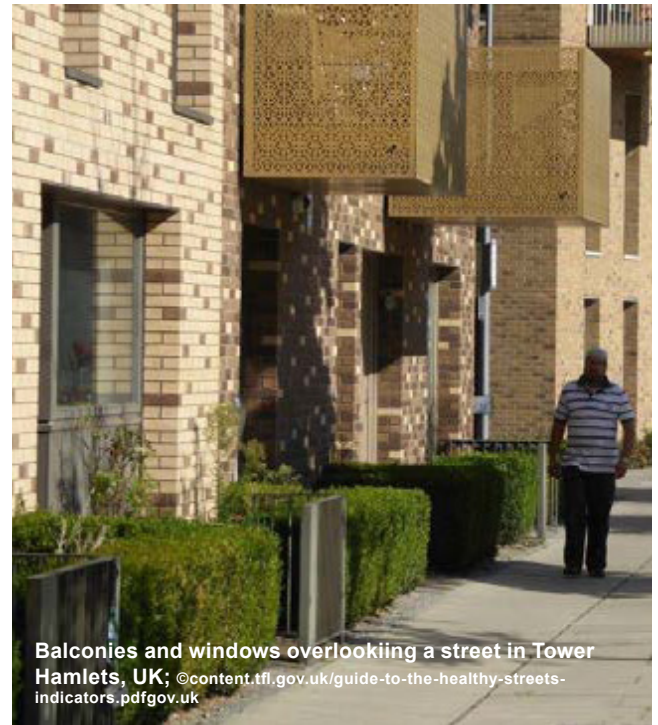
SAFE STREETS

The number one priority for parents when children are outside is to keep them safe. Only then will they have the freedom to explore the public realm and derive the maximum benefit by playing, socializing, running or coming into

contact with nature. Modern cities are full of dangers for young children and their caregivers. Therefore safety issues are to be considered and addressed when designing the public realm.



Community Shopping along DP Road, Pune ©www.itdp.org/category/location/india/pune/



Balconies and windows overlooking a street in Tower Hamlets, UK; ©content.tfl.gov.uk/guide-to-the-healthy-streets-indicators.pdfgov.uk

ACTIVE FACADE ALONG ROUTING

Caregivers are less likely to send children on an isolated street. The presence of people and activity along a street acts as a means of passive control, and form the ‘eyes on street’¹¹. Vandalism and crime incidents can be reduced by unofficial, passive control of the public realm. This is provided by residents or passers-by having an unobstructed view of streets. If streets or seating areas are surrounded by buildings with windows looking onto them an active, open facades on the ground floors, then people feel safer.

Passive control is achieved by:

- Make sure that all corners of a street are visible from the surrounding buildings.
- Designing pedestrian routes along buildings that have open and active facades.
- Avoiding structures in the public realm that obstruct views.
- Introduce carefully placed neighbourhood amenities such as food vendors, local *presswallahs*.

PRIVATE-PUBLIC INTERFACE



Beside including activity, the interface between the private domain of the home and the public street needs to be carefully managed. Currently, homes turn their backs towards the street at the ground level and residential streets are edged with high boundary walls. A porous and active residential edge should be promoted. Boundary walls should be avoided or kept at a low height. Guard cabins if any, should be in the private domain, looking outwards. Sitting at your doorstep, allowing children to play there are the first steps towards community bonding and safer neighbourhood.

Passive control is achieved by:

- Boundary walls to be avoided, and if not possible, then to be kept at a lower height.
- Windows and main doorways to have a good view of the street.
- Residential edge to be as porous as possible. Concerns over personal safety get addressed when the street is safer and more lived-in.

¹¹ Concept coined by Jane Jacobs in “The Death and Life of Great American Cities”, 1961



Safety Bollards in DP Road, Pune by Prasanna Desai Architects
©www.itdp.org/category/location/india/pune/

PROTECTIVE ELEMENTS FROM TRAFFIC



Traffic, even slow-moving traffic, can inflict a great deal of harm on a small child and thus forms a significant danger to children. Children in the age group of 0 – 5 are small and therefore less visible from a car. At the same time, a small child may not see oncoming traffic because their view may be obstructed, for example by a parked car next to the street.

Young children tend to act on impulse, and a very young child, unaware of these dangers could, for example, unexpectedly run out after a ball onto a road. Where popular walking routes cross streets, extra measures are needed to protect children from oncoming traffic. Measures need to be taken to prevent children from accidentally running out onto the road.

These include safety bollards, low fences, or introducing a green lane with trees between the home and the street.

The following traffic protective measures could be implemented in a neighbourhood:

- First of all, traffic has to be regulated and become safer for children.
- Placing a low fence around neighbourhood areas where children go to, such as playgrounds, parks and informal play areas.
- Keeping parked cars at a distance from popular street crossing areas.
- Introduce traffic calming measures before street crossings
- Taking measures to prevent balls from going onto the street, like placing high fences around areas where ball games are played.
- Putting obstacles between the pavement area and the road to prevent vehicles from accidentally veering onto the pavement areas.
- Boulders or sturdy bollards along street edges for deterring cars.



Safer, well signposted and legible crossings in a street in Jersey city, USA ©www.street-plans.com/jc-walks-pedestrian-enhancement-plan-jersey-city-nj/

CROSSINGS



ITCs are especially vulnerable at crossings because they move slower than adults or older children. In addition, the views of children in age group 0-5 can easily be blocked by low planting or parked cars. The interface between the road and the crossing needs to be considered. Navigating high curbs without curb-cuts is an obstacle for small children and also when with their caregivers in pushing a pram.

Consider involving children in designing crossings. This has been successfully implemented by aProCH, an organisation in Ahmedabad alongside Riverside School.

Street Crossings designed by Children in Ahmedabad
 © www.aproch.org/Home/innerpage/India/INITIATIVES/City%20as%20My%20Landscape



Consider the following:

- Place crossings at regular intervals, to avoid ITC's having to walk extra to find a suitable crossing point
- If there is a median, create a large enough space on the median for caregiver and toddler to wait halfway as they may not be able to cross a wide street at once.
- Keep crossings clear of obstacles that obstruct the view. No parked cars close to crossings, no low planting close to crossings
- Major crossings to be visible by motorists. For example with flashing lights.
- Where there are crossings with traffic lights, consider that these will have to allow for more time for caregivers and toddlers to cross safely.
- Brightly coloured zebra crossing markings make the crossing identifiable for small children.



A varied use of lighting fixtures, at Liverpool Ropewalks, Landscape by BDP © BDP.com

LIGHTING



Good lighting plays a vital role in the perception of safety. Good lighting also prevents small children from tripping over obstacles lying on the pavement or uneven paving. Well-lit routes along streets will attract more people, be safer and allow for extended use of the street into the evening hours. Well-chosen light-poles and armatures can contribute to the character of a street and make them feel friendly.

Take the following into account for a well-lit street:

- Choose a lighting type to reflect the use of the public realm being lit: High unadorned lights to shine onto road surfaces, and lower, attractive armatures to light footpaths and pavements.

- Add low-level lighting where the paving is uneven, or where there are steps to illuminate these obstacles better.
- Place lighting elements for pavement areas at frequent intervals. As a general rule of thumb, at least **every 20 to 30 meters**.
- Have a lighting expert calculate the level of lighting along the whole street. Ideally, the lighting level along the entire length of the pavement area should be constant.
- Avoid significant changes in lighting levels along a street.
- Consider the position lighting elements relative to the position of trees and other plants. Make sure that branches do not obstruct any light.
- Always keep in mind that, apart from safety, lighting can give added value to a place in many and creative ways.



ITC WAYFINDING



When small children walk in their neighbourhood with their caregivers, they gain important knowledge of the world around them. They also gain self-esteem and learn to explore. The urban environment in cities can be very hostile and bewildering for small children. It is difficult if not impossible for children to move and explore independently, as they could get lost easily. Small children cannot read street names and so have to rely on other measures to show them the way. A good signing and wayfinding system designed especially for children will teach them to recognize where they are and show the route to familiar destinations. A wayfinding system designed for children prepares them for the next step in their development when they will step out into the world independently without their caregiver.

When designing way finding for young children, consider the following:

- Place the system so that it is visible at an eye-level of 95cm.
- Use bright and recognizable features. Small children cannot read, clear symbols should be used instead.
- The use of (enhanced) existing landmarks can also work well for children wayfinding, while street art can further help children orient in the city.
- Easily recognizable objects, placed at regular intervals on the pavement, could be used to indicate routes. -Or a more complex signage system with symbols on boards can indicate the way to familiar destinations.

GREEN STREETS

The quality of the air we breathe, our exposure to the sun, noise or car-fumes and many other environmental factors drastically affect the way young children act, live and develop. Green streets provide climatic protection to ICT and buffer from noise and pollution, and harsh climatic conditions.



GUIDELINES FOR STREET PLANTING



Planting is important to create shade and cooling on streets. They create a pleasant environment (protection from glare and heat)

In a retrofit context, there are opportunities to add green to the public realm which do not require much space, such as window boxes or climbing plants against facades, and arbors across small streets. These don't require great amounts of time for maturation before healthy amounts of shade are provided.

Planting zones, if placed alongside roads act as a buffer between the street and the pavement, double up as protection.

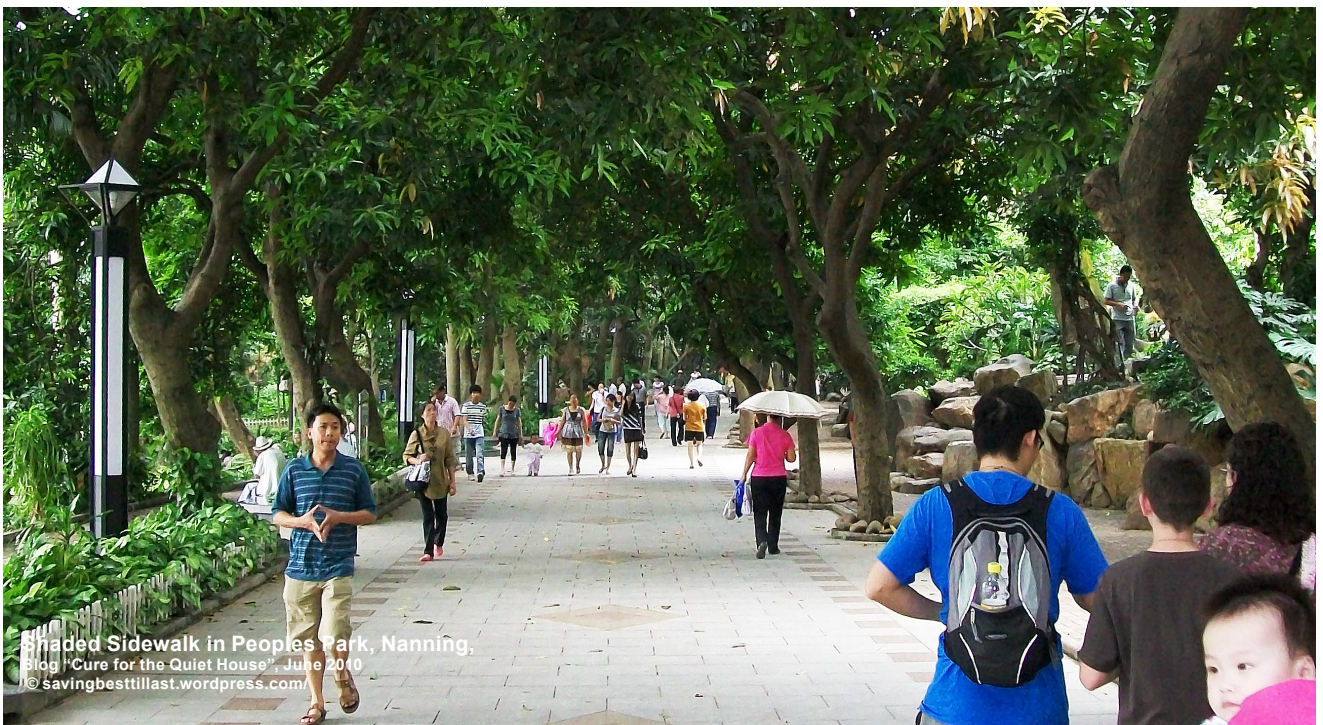
Planting zones, if placed along facades, mitigate heat absorbed and radiated from the buildings.(cooling factor)

Plants let small children come in contact with nature.

Underground utilities can obstruct root growth: It is important to consider how utilities are placed in relation to trees.

Consider the following:

- Use planting at different heights- trees for shading and lower plants at the scale of small children.
- Plants can be placed in various zones in the street: against facades, in a zone between traffic and pedestrians. If there is no space for planting on the pavement, consider planting between parked cars.
- Where streets are very narrow, consider using climbing plants against the facades. Place potted plants along a façade. However, ensure that there is still enough pavement width for a caregiver pushing a pram.
- Use indigenous plants.
- Try to retain existing trees when retrofitting a street. Large trees add instant character to a street.



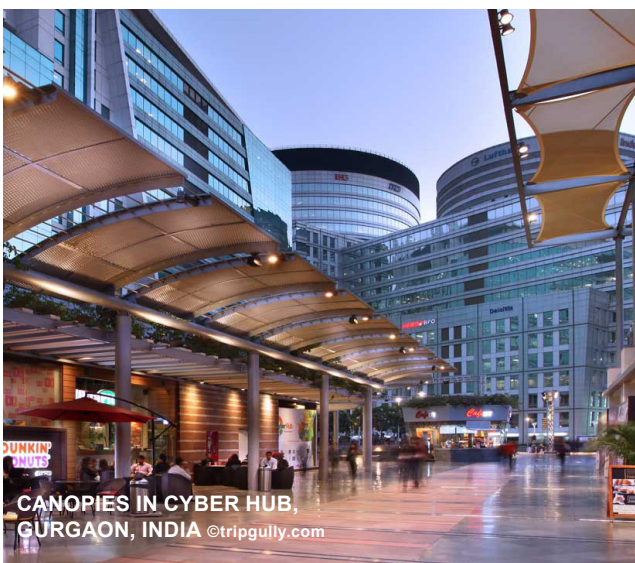
SHADING AND COOLING ELEMENTS



A well-used street is a street that provides a comfortable environment to its users. In India, this often means protection from extreme heat. Providing shaded areas on pavements, creating canopies along well-used routes is crucial for small children and their minders.

Consider the following shading elements:

- Ideal shading is natural shading, where possible: use trees, bushes and climbers.
- Provide continuous shade on well-used neighbourhood routes.
- Besides built canopies, consider trellises overgrown with climbing plants. These provide shade while also having a cooling factor.
- Provide shaded spots where children and their caregivers need to wait: at bus stops, at busy traffic junctions and in play areas.
- Make sure that resting elements have shade



ACCESSIBLE STREETS

As with a park or a small neighbourhood square, the pavement area can also be a place where people wish to linger and so make streets more livable and vibrant. To make streets accessible for ITCs, it is important to consider components such as ramps for strollers, low kerb-stones that allow a young child to climb up, ground cover, and safe resting equipment.



GROUND COVER MATERIALS & COLORS



Ground cover materials used for pavements should be carefully selected. Small children stumble and fall easily where paving is uneven, and wheels of prams could get stuck in rough surfaces. At the same time, different types of paving may also subtly indicate zones where it is safe to walk. A change in the paving pattern around a playful piece of street furniture could indicate this informal playing area on the pavement.

In the same way, colors can be used to indicate zones on a pavement for children. For example, yellow painted pavements at each street corner will make these recognizable for children.

Consider the following when choosing groundcover materials for pavements:

- Avoid uneven ground cover materials.
- If a pavement is made of gravel pavement or a soil, add a smaller smooth strip of paving over which prams can easily be pushed.
- Use different types or patterns of paving to divide the pavement area into recognizable zones, such as safe walking zone, playing zone, and an unsafe zone next to parked cars.
- Indicate 'events' such as street crossings or bus stops by adding color to the pavements of these areas.



A combination of steps and inclination ramps in Santiago, Chile © Beau Lebens on Flickr

INCLINATION RAMPS



ITCs have special requirements in the public realm where level differences are concerned. A small level difference, such as a kerb of just 10cm high, is an obstacle for a small child and a pram. Kerbs should be inclined at all street-crossings, to ensure a safe and easy crossing.

Steps in the public realm could pose an insurmountable problem for a caregiver pushing a pram and a small child. Adding a ramp where there are larger level differences in the public sphere will ensure that all children, wheelchair-users, caregivers with buggies can have access to the full extent of the public realm.

Consider the following when designing inclinations and ramps:

- Ramps should not have an incline steeper than 4%. Even then, flat parts are needed between a few meters of the ramp.
- Depending on the incline, a flat part should be placed every 1-4 meters.
- Ensure that the ramp is sufficiently wide to accommodate an adult with a pram and a small child walking beside them – at least 1.8m wide. The ramp will then be accessible for wheelchairs as well.
- Provide a good handrail beside the ramp. Include a lower rail at the height of a small child.



Seating around tree planter in DP Road, Pune
© www.itdp.org/category/location/india/pune/



Seating along Continuous wall at CHICHESTER, UK,
Landscape by BDP © BDP.com

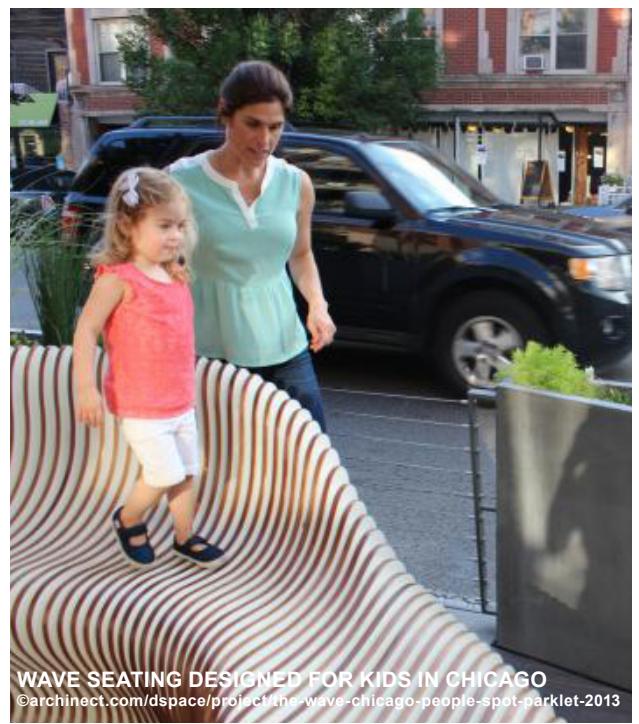
CONTINUOUS BORDERS



Informal seating can be provided by structures along pavements areas such as built edges for planters or retaining walls where there are level differences. This generally provides long, continuous seating surfaces and could become small informal gathering spaces for a group of caregivers.

Consider the following when designing planters or retaining walls:

- Build planters up to a suitable seating height.
- Design the edges wide enough to double up as seating
- Design the tops of the planters or retaining walls with a slight incline so rainwater runs off.
- Consider wooden slats placed at intervals on low structures, to become informal benches.



WAVE SEATING DESIGNED FOR KIDS IN CHICAGO
 ©architect.com/dspace/project/the-wave-chicago-people-spot-parklet-2013



BENCH TYPES

Resting equipment, particular along streets, provide the means for infants and toddlers and caregivers to spend more time outside. The possibility for a parent carrying his child of resting for a few minutes under a good shadow, while doing the groceries, can be a highly valued quality of the pavement area.

Flip-down wall bench

In areas where space is limited, for example, a narrow pavement, flip-down benches can be a space-efficient method to provide resting spaces.

Wide bench for a crawling baby

Where there is space, install extra wide benches. This provides caregivers with a place to safely set down a baby.

Height-split bench

Where there is extra space, benches can be height-split, to allow toddlers to climb onto them easily. This can be well combined with an extra-wide bench design.

“Found” or integrated elements for seating

Seating should be integrated into public space as much as possible. It doesn't have to be an installed bench as such.

A few suggestions for ‘found’ or integrated elements for seating are:

- Choosing low bollards with flat tops
- Providing a wider flat edge to the top of low walls
- Water features with seating
- Cut logs or large stones at the edge of streets



Flipdown Bench

PLAYFUL AND INCLUSIVE

There are endless possibilities for informal play along streets and lanes. With careful planning and simple objects, children can be stimulated to use their imagination to transform any object or space into a perfect playground. It is up to designers to provide children with the right creative tools that to create their own play-world.



PLAYFUL FURNITURE



Urban furniture in public spaces or primarily along streets, if well-chosen and placed, can become playful elements for toddlers and infants.

The same applies to everyday objects like the border of a tree planter or number of steps, which can give new play experiences for the children. For example, a simple bus stop shading rail may double up as a place to put up a pop-up swing from for small children while waiting for the bus. For small children, simple, colorful benches can become exciting elements to climb, crawl, and have different playful experience.

Think of the following when choosing outdoor furniture:

- Consider the street furniture through the eyes of a small child. Think of how they would perceive and use it.
- Choose low benches and seating with flat tops, so that children can use them with easily.
- Choose colorful street furniture.
- Choose edging along planters that railings that are low and wide enough for small feet.





SIDEWALK GAMES



Sidewalk games are an excellent example of how children can use their imagination to create a world of play within the boundaries of a pavement area. As a first step, designers need only provide children with an empty and protected space and some stimulating pointers, to fire the imagination and keep them reinventing and interested for hours.

Sidewalk games can be stimulated by:

- Introducing patterned pavement over a small portion of the pavement area
- Providing a smooth flat area of pavement, where children can draw their own pavement figures.
- Painting simple lines or squares onto pavement areas
- Drawing the beginnings of a game or some shapes on the pavement for children to fill in.



Photo of Terrace along sidewalk in Elizabeth Street, London; Landscape by BDP © BDP.com

TERRACE EQUIPMENT



Terraces outside cafés often encroach onto pavement areas and can obstruct pathways. At the same time, they provide comfortable spaces outside to eat and protect clientele from sun, wind, rain or direct urban pollution. If designed well, terraces become pleasant places for caregivers and children to take a break and rest. They also provide a sheltered area where informal play outdoors can happen, under the supervision of their parents or caregivers.

When designing terraces, keep the following in mind:

- Leave at least 1.5m pavement space free of tables and chairs, to allow free movement of pedestrians walking past.
- Provide shading by using large umbrellas, trees, mobile canopies
- Provide shelter and protection by placing screens or planters along the edges of the terrace.



POP-UP PLAYING



Pop-up-playing is when a playing area with a temporary character is introduced into a neighbourhood in a place that is normally not used for play. This could be for a few hours, or a whole day. This offers small children the opportunity and space to play outside, close to the home that they would typically not have and also brings caregivers together, helping to build healthier and stronger societies.

Some examples of pop-up play are:

- Using temporary structures to fence off an area, for example, a parking space, and bringing temporary play objects for small children to use.
- A mobile pop-up play area could be placed on a large cart, which can be towed to different areas of the neighbourhood.
- A small area of the pavement could be fenced off with temporary structures. This can be used for a small gathering of toddlers to watch a puppet show or to have a story read to them.



TEMPORARY STREET CLOSURE



A neighbourhood street can temporarily be closed to vehicular traffic so that other street-activities can be facilitated and explored.

This can be an annual closure, for example, to facilitate a street party, but could also happen more often. For example, a neighbourhood street can be closed on a weekly or monthly basis, to give small children the opportunity and freedom to safely play on the streets while parents and caregivers can socialize. Quite often these closures are a test for the future and may lead to a permanent closure.

Keep the following in mind when organizing temporary street closure:

- Consider which street is most viable to close on a temporary basis and how this will affect neighbourhood traffic. Closing a major entrance street of the neighbourhood will only block traffic and cause irritation.
- Inform all residents well in advance of the upcoming street closure.
- Organize events to take place on the day the street is closed. Street games, street art, a barbecue, music will create a positive vibe and attract people.
- Consider how traffic will be diverted on the days that the street is closed. Give clear signs to direct the diverted traffic.





PARKS AND OPEN SPACES

Objectives Achieved	Indicators
	34. Number of hours per day open areas are occupied in a neighbourhood. Tot-lot, housing area park, neighbourhood playground. 35. Average no of time per week caregivers engage with their 0-5 in outdoor playing/activities in organized green spaces/recreation spaces. 36. Average duration of visits for infants, toddlers and their caregivers at park facilities. 37. % utilization of parks by infants, toddlers and their caregivers. 38. % of area in parks dedicated to play spaces suitable for young children 0-3. 39. Presence of natural materials in play equipment (y/n) by play space, presence of natural areas (e.g. greenery, sand, safe and clean water) as percentage of total play space. 40. Number of parks that have quality seating, facing 0-3 play areas.
	41. % of parks with adequate lighting. 42. Presence of stray animals in parks.
	43. % of parks at neighbourhood level with free public drinking water, toilets and other facilities for families.
	44. Percentage distribution of Children engaged in formal & informal play in organized green spaces.
	45. Frequency of maintenance of parks.
	46. % of municipal budget allocated for open spaces or parks (including management/maintenance and programming)
	47. Air Quality Index in the neighbourhood 48. RSPM (Size less than 10 microns)

Parks & Open Spaces

STRATEGIES FOR PLAY

Next to streets, public spaces like neighbourhood parks and playgrounds are important elements of daily urban life for ITCs. While streets are primarily used for movement and for connecting, the open spaces of the neighbourhoods are the destinations and used primarily for recreation.

Toddlers need a safe outdoor space for play. Babies and caregivers need fresh air and the stimulation of plants, trees, wind, and connection to the natural. Playing is a prime activity for small children. For the 0-5 age group especially, playing is a way to have fun, to socialize but also to learn. A big portion of this valuable playing time happens in designed playgrounds, where the playing environment is designed especially for playing. Small tot-lots, playgrounds in parks, squares or green areas, are all examples of designated play areas for children. If a city invests in better quality play areas for children, it also invests in creating better citizens for tomorrow.

Outdoor play gives children physical exercise, closer contact with nature and a means of socializing with their peers. However, playing outdoors can also be dangerous and unhealthy, due to bad design choices and poor planning. But this should not be a reason for children to spend less time outdoors. This is all the more reason why designing play areas for children requires special consideration.

TYPE OF OPEN SPACES

According to the present guidelines, the open spaces in a neighbourhood have been segregated into majorly three categories.

This has been done on the basis of the minimum area each of these spaces require, the minimum distance from a residential zone and density required as per the population present in the neighbourhood.

Tot-lots being the smallest require a minimum of 125sqmt. Whereas, a housing area park and a neighbourhood park require 5,000sqmt and 10,000sqmt respectively. The average per capita open space stands at 3sqmt as per norms.¹²

¹² Open Spaces, Page 362-63, URDPFI Guidelines 2014, Ministry of Urban Development



HOUSING GARDENS/ NEIGHBOURHOOD PARKS

Neighbourhood parks/ Housing Area parks are the main recreation spaces for children in the age group of 3-5 and beyond. These parks serve in strengthening social ties in a neighbourhood and create more coherent societies. They can offer an excellent form of recreation and bring children closer to nature.

The URDPFI norms suggest placing three housing area parks that are 5000sqm in size in a neighbourhood. These can, however, be smaller, starting at 2500sqm and more in number so that the access to these parks is increased. Similarly, one neighbourhood park of 10,000sqm is suggested. However, as per international standards, two such parks can be provided. (page 19)

POCKET GREENS

In neighbourhoods where there is no space to add parks and public gardens due to lack of open space, some form of green can still be added in very small pockets. These small 'pockets' when viewed together, can make a visible different to the streetscape and soften the hard surfaces of the street. These 'pockets' can take on different forms, such as a green façade, small planters positioned in the pavement area or even turning a neglected car parking space into a greener area. Although individually small, together these pockets of green can have an impact and help to improve the air quality of a neighbourhood and contribute to the mitigation of the heat island effect of paved areas. This in turn will improve the environment for small children and their minders.





Poirier Street Tot, Coquitlam, Canada
 © www.habitat-systems.com/project/poirier-tot-lot/

TOT-LOTS

Small children in the 0-5 age group do not need large areas for play. Instead, they need many smaller areas, near their home. The guidelines for the density and proximity of tot-lots (page 19) suggest placing at least 6 to 15 such spaces in a neighbourhood of fifteen thousand people; within 300 metres of most residential homes. Additionally, the size of tot-lots can vary between 50 to 125sqm.

Keep the following in mind:

- Have at least three different play objects in the tot-lot.
- Choose play objects specially designed for the youngest children.
- A low fence around a tot lot is sufficient to confine children to the tot-lot. Caregivers relax better if they do not have to keep a constant eye on the toddlers.
- Try to create tot lots where there are existing trees, or plant trees at the tot-lot.
- Place tot-lots along routes that are frequently used by ITC's. For example the route to the shops, or on the way to a health centre.
- Consider how caregivers will wait while the children are playing. Place a bench, or design a planter with a wide edge, or design a bench with the fence, etc.



Children skate under Matunga Flyover, Mumbai
© www.swatantrabharatnews.com/index.php/news/2097

USE OF SEMI-PRIVATE SPACES & URBAN LEFTOVERS







In neighbourhoods one often comes across small underutilized spaces in the public realm. These are 'left over' spaces, unbuilt because they have an awkward shape, or not used for car parking because they do not have the correct dimensions. These areas may-be found next to building entrances, besides parking zones, or may be a forgotten and neglected pocket of green. Toddlers do not need large playgrounds, and it is often possible to transform these small 'left-over' spaces into a play area for children in the 0 – 5 age group.

Scrutinize the neighbourhood for the following types of spaces to transform:

- Are there any underutilized areas in the neighbourhood, no matter how small?
- Are there any areas with forgotten parking spaces, that are seldom used?
- Are there any neglected planted areas, that could better be transformed into a small neighbourhood play area?

GUIDELINES FOR PARK AND OPEN SPACES

There are many elements that need to come together to make open spaces that are welcoming, safe and inclusive of young children and their caregivers. These have been sub-divided on the basis of the five objectives for a healthy ITC neighbourhood.

 PARKS AND OPEN SPACES	
Safe Open Spaces 	<ul style="list-style-type: none"> • Visibility and sightlines • Lighting • Fencing/ Permeable Perimeter • Camera Monitoring
Green Open Spaces 	<ul style="list-style-type: none"> • Green/ Planting • Shading & Cooling Elements • Natural Play Elements
Accessible & Playful Open Spaces  	<ul style="list-style-type: none"> • Furniture for ITC • Play Equipment • Entrances & Ramps for ITC • Art • Amount & Combinations of Uses/Activities
Inclusive Open Spaces 	<ul style="list-style-type: none"> • Toilets & Drinking Water • Lactation Booths

SAFE OPEN SPACES

The design of a park can have a direct impact on a caregiver's perception of its safety and their willingness to use the space. If parents or caregivers know that their children are safe within the boundaries of a play area, they will

relax more and be less stressed. Safety in parks needs to consider its overall layout, clear sightlines, passive and active surveillance, permeable boundaries and a clear signage and lighting system. ¹³

¹³ <https://www.pps.org/article/what-role-can-design-play-in-creating-safer-parks>



LEGIBILITY AND SIGHTLINES

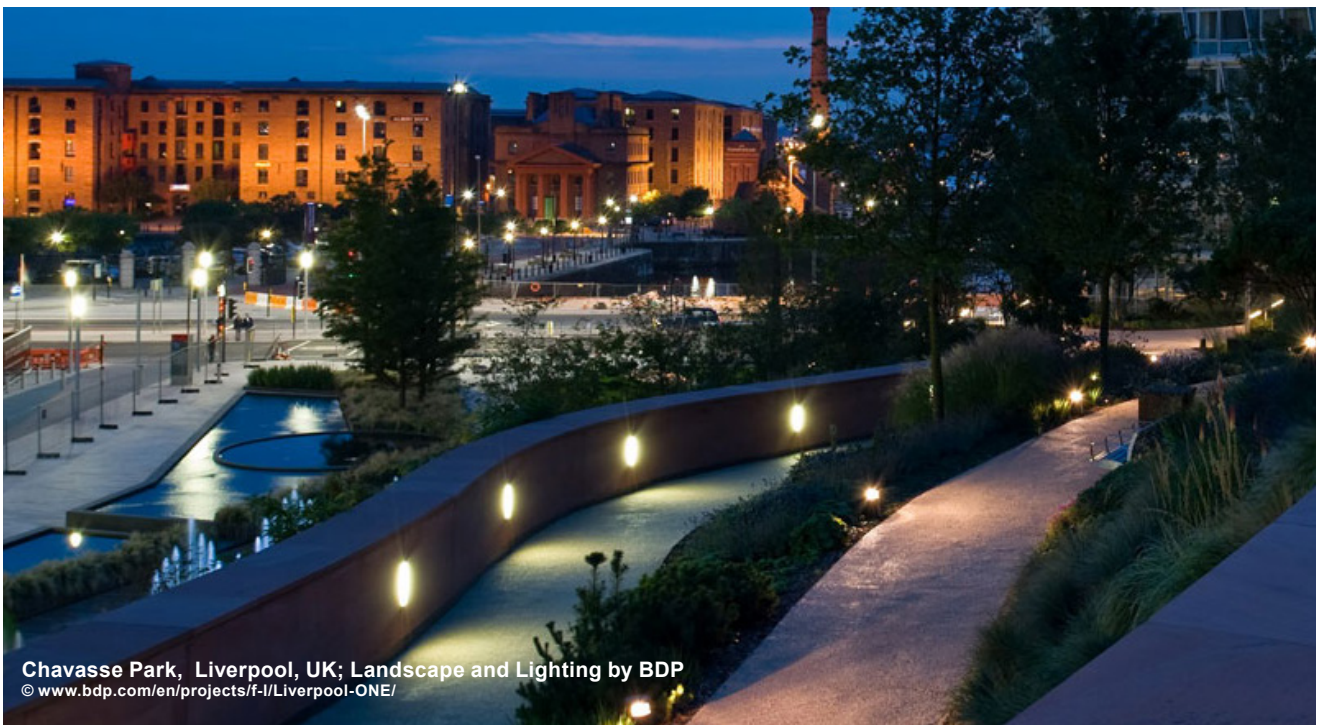


The 'eyes on the street' approach towards planning parks is important. This ensures that parks and open spaces are overlooked by active facades, and hence informal surveillance. In bigger parks, and those with a diverse landscape of trees, shrub thickets etc, it will be difficult to achieve natural surveillance everywhere.

The layout of the park should then be clearly understandable to a first time user. Visibility and clear sightlines are an important factor in enhancing the perception of safety. Creating this sense of open-ness in parks needs to be balanced with the desire to create a diverse and natural landscape.

Take the following into account for a legible park:

- Entrances and exits should be easy to locate for a first time user, and especially for a caregiver with young children.
- Have pathways connect with destinations, and well sign-posted.
- Locate active areas such as playing fields within a park such that there is clear visibility between them to encourage surveillance.
- Make sure that there are no solid walls, planting edges along main routes that obstruct sightlines



LIGHTING AND SIGNAGE



Good lighting in a park provides a caregiver with a good overview of the situation by emphasizing paths, focal points, entrance and exits and gathering places. Lighting and signage systems can be coordinated to provide a sense of order and clarity in a park.

Take the following into account for a well-lit park:

- Establish a hierarchy of lighting types and intensities in a park's layout. The main activity areas and routes should be the first priority.
- Cluster night time activities in parks such that they are connected by a well illuminated routes
- Provide lighting at the perimeter to complement street lighting and ensure that the park is inviting to enter from the street.
- Choose a lighting type to reflect the use of the public realm being lit: High unadorned lights to shine onto grassed surfaces, and lower, attractive armatures to light footpaths and pavements.
- Add low level lighting where the paving is uneven, or where there are steps to better illuminate these obstacles.
- Place lighting elements for pavement areas at frequent intervals. As a general rule of thumb, at least every 20 meters.
- Ideally the lighting level along the whole length of the pavement area should be constant.
- Consider the position lighting elements relative to the position of trees and other plants. Make sure that branches do not obstruct any light.
- Ensure that play areas are well lit. Also lighting levels should not cause excessive glare.
- Always keep in mind that, apart from safety, lighting can give added value to a place in many and creative ways.
- Locate signage at key entry points and activity areas. Ensure that signage is positive, informational and well lit.



FENCING/ PERMEABLE PERIMETER



Fencing around a playground or play area is required for a variety of reasons. If the perimeter of the park is permeable and inviting from the street, people will be more inclined to enter it. Also fencing as a safety measure, will prevent children from accidentally running out onto oncoming traffic and wandering off. A fenced playground may be closed and locked at night, to deter, if not prevent vandalism.

When designing fencing around play areas, keep the following in mind:

- Fencing does not necessarily mean using of actual fences. Depending on the needs of a public space, fencing can be achieved with the use of hedges or plants in general, other objects and street furniture or simple ground demarcation.
- Consider where most pedestrians will be coming from and how they will arrive at the playground.
- Position gates and entrances accordingly.

- Carefully consider how high the fence needs to be. A fence with the main purpose of keeping stray animals out or prevent small children from accidentally wandering off, can be kept low. A fence around a field where ball games are played needs to be extra high.
- Keep fencing permeable, with frequent openings every 50-80 metres.
- Make entrances welcoming and with large dimensions. Caregivers carrying small children or pushing a pram need gates that are fairly wide to pass through.
- Consider the fence as an attractive object. It can add value to a space, by doubling up as a trellis plants, having benches incorporated in the fence, or having an attractive pattern.
- Fences can also be seen as a field for the development of creativity: other uses can be combined with fences like playing and climbing for children, or combined with street art.



SURVEILLANCE



In parks, having a camera monitoring system can make parents feel safer, because they have the perception that someone is keeping an eye on activities on the play space.

At the same time cameras also act as a deterrent for criminals simply by the mere existence of the camera monitoring system.

The presence of parks staff, gardeners, or regular patrols will also provide a sense that help is available if needed.

Consider placing cameras at the following areas:

- In corners of the public realm obstructed from views from overlooking windows.
- Use cameras that are vandal-proof.
- Place cameras in high positions, where they give a good overview of the space and are not easily reached.

GREEN OPEN SPACES

Increased contact with nature has benefits that impact the child's overall development.^{14/15}

Similarly for caregivers, access to a green space will have a direct bearing on their mental health.¹⁶ A study by Finnish researchers showed that even a ten minute visit to an urban park or woodland significantly improved stress indicators. Parks and open spaces should have a diverse landscape and varied vegetation, natural groundcover, shading and natural play materials.



GREEN/ PLANTING



Plants and trees provide shelter from the sun, mitigate the effects of heat stress and they clean the air. The Indian climate supports planting in urban areas. The challenge can be to find creative ways to incorporate more plants and trees in our cities and in an efficient way such that young children come into close contact with them while being safe from other dangers, so that they can explore freely.

A concern to improve safety in parks can sometimes result in a sterile landscape, which will more likely result in less frequent use of the park. It is important that parks have a diverse and visually rich mix of landscape elements that are balanced throughout the various seasons.

Consider the following when adding green to neighbourhoods:

- Choose planting and green elements with a range of colour, texture, shape and use.
- Consider that the open space should be interesting to visit at different times of the day and the year.
- Look at all scales of planting, from avenues of trees, large beds with flowers to shrub thickets
- Choose indigenous plants, that suit the climatic conditions of the area
- Plan for the future: consider how much space fully developed trees and plants will need above and below ground and plan accordingly.

14 Childhood development and Access to nature <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3162362/>

15 The importance of outdoor play for young children's healthy development <https://www.sciencedirect.com/>

[science/article/pii/S2444866416301234](https://www.sciencedirect.com/science/article/pii/S2444866416301234)

16 The influence of urbangreen environment on stress relief measures <https://www.sciencedirect.com/science/article/abs/pii/S0272494413000959>



Shade Structures in Yagan Square, Perth
©worldlandscapearchitect.com/yagan-square-a-welcoming-active-cultural-and-civic-destination-for-perth/#.XCCJSFUzZaR

SHADING & COOLING ELEMENTS



A well-used open space provides a comfortable environment year round to its users. In India, this often means protection from extreme heat for most parts of the year.

A caregiver is less likely to bring a young child to a park, if he/she does not have a shaded and comfortable spot to rest whilst children play. Providing shade in outdoor play areas is crucial for small children and their minders.

Shade structures can be provided over seating areas, protect playground equipment and allow visitors to spend more time at parks.

Consider the following shading elements:

- Ideal shading is natural shading, where possible: use trees, bushes and climbers.
- Besides built canopies, consider trellises overgrown with climbing plants. These provide shade while also having a cooling factor.
- Provide shaded spots where caregivers need to wait and have good sightlines of play areas.
- Consider providing shading over play areas and play equipment as well to ensure that children are cool and comfortable during the hot months.



Logs become natural climbing elements at Mountsfield Park, London, UK, Landscape by BDP @bdp.com



Children love playing with soil and water © Manisha Bhartia

NATURAL PLAY ELEMENTS



Children have an unlimited imagination and they never miss a chance to use it, especially when they are playing. Apart from the pre-designed play devices that children love playing with, less defined objects offer countless possibilities of play.

Natural playing objects are open ended materials. A stick can be used to draw patterns on the ground or become a boat in a puddle. “In this process of reinvention and assigning new meaning to objects, it is possible to mobilize skills related to divergent thinking, creativity, problem solving, among others.”¹⁷

Natural materials are eco-friendly, cheap, easy-to-find and they can offer children a unique experience: to get contact with nature and the materialization natural objects have: textures, smells, properties and colors. Contact with such elements can also stimulate their learning ability in a very creative way, whilst also developing a sensibility towards nature from a young age.

Think of the following:

- There is an abundance of such, simple, materials in low prices: water, sand, tree branches and trunks, stones and pebbles, different plants or insects and way more.
- Be sure that the used materials are clean and non-allergenic
- Keep in mind that natural materials are maintained under different conditions compared to artificial materials.
- Be sure of safety regulations.

¹⁷ The importance of outdoor play for young children’s healthy development <https://www.sciencedirect.com/science/article/pii/S2444866416301234>

ACCESSIBLE AND PLAYFUL OPEN SPACES

Making sure that open spaces are accessible to infants, toddler and their caregivers needs to be given special concern. This includes measures such as age specific play equipment, resting facilities, inclination ramps for strollers and safety from stray animals. Similarly, playing facilities need to be age specific and allow adventurous and sensory play for a child's overall development, accessible for all children, including those with disabilities.



Adventurous Play equipment Mountsfield Park, London, UK. Landscape by BDP © bdp.com



PLAY EQUIPMENT

Indian playgrounds are still dominated by manufactured steel or plastic equipment, that consists of the standard suite of slides, see-saws, swings and monkey bars. These have limited repeat play value for a young child.

It is important to consider other equipment that promotes adventurous and sensory play. Besides the use of natural play elements, other

objects such as balance beams, vine walks, playhouses, treehouses, use of sound enabling objects can be considered.

Another point to consider is to allow risk-taking opportunities in children's play. Parent's risk-averse approach towards play has resulted in boring playgrounds.¹⁸ Allow children to run around, climb, make and discover.

Kilburn Grange Park- Erect Architecture¹⁹

The playpark is an adventure playground that consists of new topographies, and climbing structures designed around the theme of playing in and around trees.



©erectarchitecture.co.uk

Think of the Following:

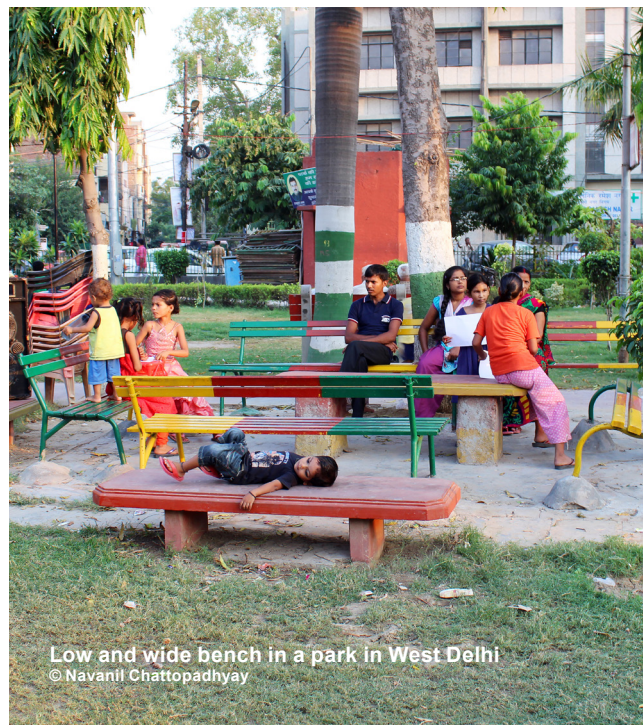
- Combine playing objects with the adequate floor covering: soft, elastic, artificial rubber, sand or cork etc.
- Carefully check safety regulations
- Introduce equipment that promotes adventurous and sensory play.
- Always combine a minimum of 3 playing objects for a successful playground.

¹⁸ Risky Play: Losing a Childhood "right" of passage <https://www.childrenandnature.org/2018/04/05/risky-play-losing-a-childhood-right-of-passage-and-a-tool-to-help-protect-that-right/>

¹⁹ <http://erectarchitecture.co.uk/projects/play/141-p-kilburn-grange-park-play.html>



Bench in Walthamstow Town Centre, London, UK;
Landscape and Lighting by BDP
© www.bdp.com/en/projects/p-2/Walthamstow-Town-Centre/



Low and wide bench in a park in West Delhi
© Navanil Chattopadhyay

BENCH TYPES



Well chosen and well design resting equipemnt can extend the time spent in a space.

Resting equipment for caregivers needs to provide a comfortable space where they can sit and watch their children play. Also, parks are an ideal place for caregivers to meet other adults. Grouping benches together make it possible for relaxation and socialising.

Small children need more downtime than bigger children and would want to rest between playing. Consider benches that are low in height for toddlers to crawl onto, wide for a young child to lie down on and safe.

Vandalised and broken furniture make a park or open space feel neglected. Choose robust, vandal proof furniture and furniture that is easy to maintain.

Caregivers and small children spend longer time in a park than along a street. They may become thirsty or hungry. Consider where and how a drink or a snack may be eaten in the open space.

A few suggestions for seating are:

- Group benches together, so that care givers can socialise
- Position benches so that they give a clear view of the area where small children will be plaing.
- Choose benches that can be used by both caregivers and small children.
- Consider the material of the furniture. Concrete and steel benches absorb heat and can be uncomfortable to sit on in the summer. Wood stays cooler.
- Besides benches, consider how a drink or a snack can be given at the playground. Place an element with a flat top close to the benches.
- Place litterbins close to benches.
- Provide shade over benches.



A combination of steps and inclination ramps at Tres Aguas, Madrid Landscape by BDP © bdp.com

ENTRANCES & RAMPS FOR ITC



Open spaces need to consider that young children, either independently or with their caregivers in strollers, have limited accessibility. Narrow entrances, a level difference such as a 10cm high kerb, steps are all obstacles for a small child and for a caregiver with a stroller.

Consider the following:

- Entrances should have at least a clear 1.8m passage to allow a person with stroller move easily.
- Kerbs should be inclined wherever there is a designated entrance to the park to ensure a safe and easy access.
- Ramps are necessary where there are larger level differences from the access streets, to ensure easy passage for all children, wheelchair-users, caregivers with buggies
- The entrances should directly connect to a continuous dedicated stroller-friendly walkway inside the park.



Giant ant is both public art, and play
© everydaytourist.ca/2014/2014/6/10/playgrounds

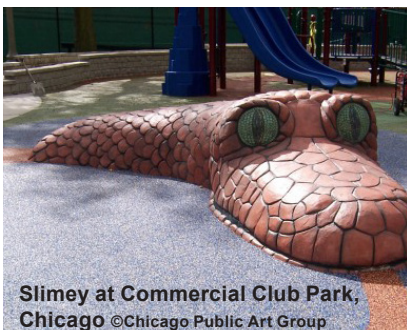
PUBLIC ART



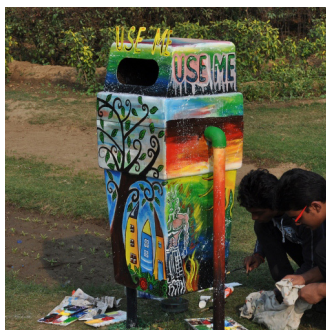
There is a natural synergy between combining Public art with play spaces. Artwork can give identity to a playground, and make it a destination. Children naturally engage with art and works of art can stimulate young children’s imagination. Public art can be combined with play as an interactive element, or also as individual art works/elements integrated with the play spaces. Sometimes park spaces are fronted with dead walls, which could be an excellent canvas for young children to paint on, or engage. Or litter bins and toilet walls could be painted on. Engaging children and their caregivers in co-creating art can have a powerful impact.

Consider the following:

- Use bright colors, that stimulate children
- Think about what the artwork looks like, from a children’s eye level
- Depict scenes that relate to and interest small children, such as animals or everyday activities.
- Consider how children can learn through the artwork; add numbers to the work, use distinct shapes.
- Engage caregivers and children when designing street art.



Slimey at Commercial Club Park, Chicago ©Chicago Public Art Group



Painting bins in Lodhi Park, Delhi St Art with NDMC in 2013 © thebetterindia.com



AMOUNT & COMBINATIONS OF USES/ACTIVITIES



The design of a successful public space is more than just choosing play objects from a catalogue. Thinking how space will be used and designing the space to accommodate those uses, should be the main objective of designers.

Children of different age groups will use neighbourhood play areas. Games and play objects should be chosen that serve the need of different age groups.

How the space of a playground is allocated between different users should also be considered, as small children could interfere with the games and irritate older children. Only a good mix of activities and a careful allocation of the space can guarantee a successful public space, to be used by all.

Consider the following when designing combinations of activities in playgrounds:

- Consider that children of different age groups will be using a playground. Choose play objects that suit the needs for a diverse age group.
- As a rule of thumb, at least three different play objects are required for each playground.
- Provide seating for caregivers that allow supervision, but is still far away enough for children to feel free.
- A cafeteria next to the play area is a positive addition and provides space for caregivers to relax and meet with other adults while also keeping an eye on the children.
- Design for flexible use: ensure that a part of a playground is also free of objects, leaving space for a ball game, skipping, hop-scotch, a picnic, etc. This will maximize the use of the space.

AMOUNT AND COMBINATIONS OF USES/ACTIVITIES

Jake's Place, Cherry Hill, NJ, USA

Jake's Place in Cherry Hill, New Jersey is an all-inclusive and accessible playground for children of all abilities. The playground has:

- A cushioned, synthetic surface that accommodates wheelchairs and other assistive devices
- Wide ramps for easy wheelchair access throughout the playground
- Various types of bridges, balance beam and stepping circles to work on coordination and balance skills
- Various sensory & tactile play activities for learning
- Specialized areas for people with Autism
- Swings with molded bucket seats
- A wheelchair-accessible glider
- Rock walls and various climber equipment
- Various freestanding play areas throughout the playground
- Shaded areas, picnic tables, & plenty of seating, and restrooms
- A security fence around the perimeter of the playground



INCLUSIVE OPEN SPACES

Inclusive spaces are important to make sure that parks and open spaces serve everyone in a neighbourhood equally. An inclusive space is thoroughly and consistently supportive of everyone who uses it. Facilities such as drinking water, toilets, lactation pods should be provided in parks to ensure that ITC needs are catered for. Inclusive parks should cater to children of all abilities and social classes. (see case study on the left)



Toilet facilities in Public park in Dwarka Sector 11, Delhi ©Radhika Mishra

TOILETS AND DRINKING WATER

ITCs are especially vulnerable to the lack of toilet facilities in and around parks, where they spend a subsequent amount of their time in a day.

Free water sources in public spaces, historically provided by philanthropists or cities themselves, were one of the major progressive steps forward for civilization.²⁰

Young children and toddlers frequently require fresh drinking water while they are engaged in high-energy activities in the park. And along with them, their caregivers as well. Thus, it is necessary to have fresh drinking water sources in all parks, which can also be independently accessed by children.



Girl drinking water from a fountain © Shutterstock

20 <http://www.ideas.swagroup.com/the-importance-of-drinking-fountains/>

Consider the following :

- Ramp access to toilets with min. 1.8m width;
- Provision of handrails, hoists;
- Toilets as safe and convenient ITC friendly amenity;
- Drinking water facility easily accessible by kids;
- Stroller-friendly walkway access to drinking water taps
- Maintenance of both these facilities is as important as installing them. Provision of toilets should only be undertaken if there is a clear programme for maintenance; otherwise the facility will seek to drive away people, rather than attract.



Lactation Booth in San Jose, Costa Rica
© Municipalidad de San Jose

LACTATION BOOTHS



Lactation booths or pods are an integral part of a child-friendly neighbourhood. Breastfeeding is associated with everything from better resistance to disease to the healthier bodyweight of the infant. With cities worldwide integrating lactation stations or booths in their neighbourhood design, it is necessary to keep in mind some of the most important aspects for booth setup.

Consider the following :

- The space should be fitted with comfortable seats, washing facilities;
- The space should be homey and not shabbily put up;
- The space should be checked routinely for cleanliness;
- The room should be dimly lit and quiet;
- The access to the space should be stroller-friendly and the room should have sufficient area to accommodate a stroller;
- Availability of a change table or a diaper deck is necessary;
- Ideally, should overlook a tot-lot.

HOW TO APPROACH THE DESIGN OF PARKS AND OPEN SPACES

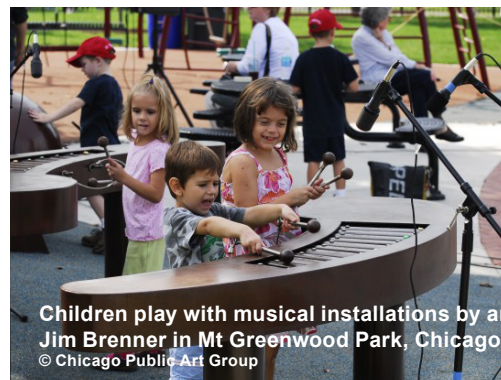
Similar to streets, the components toolkit can be very useful when designing parks and open spaces. However, it is important to carefully consider the effect that a combination of the several tools will have. To illustrate the use of the components, examples of how they can be applied are given here.

In the examples, the inter-relationship between the components become clearer and the relevance in the current urban scenario more meaningful.

The ITC destinations are a network of daily mobility chains which connect a parent or a caregiver to its surroundings. Apart from babies homes, destinations may also be open spaces, health facilities, education areas and community utilities. These spaces too need to create an ITC friendly atmosphere for a far-reaching impact in the neighbourhood.

In applying the components to the ITC destinations, the following has been assumed:

- The distance covered by an ITC in within a certain timeframe is less than an adult would cover in the same time.
- Spaces need to be defined for different age groups. This ensures that the specific requirements of the younger / early childhood group are met
- Parent and caregiver interaction space needs to be created to support communication and encourage contact between them.



TOT-LOT



Figure 21: Model Tot-Lot

Size - **50sqm - 125sqm**

Distance - **@ 300m**

Density - **6 to 15 nos. every neighbourhood; total 750sqm minimum**

Guidelines/Standards - **Existing URDPFI standard of 20nos. tot lots for 5000 population**

Must have:

- Accessible footpaths
- Natural ground
- Soft surface play area
- Resting equipment
- Shade
- Fencing
- Green/ planting area

Should have:

- Play equipment
- Lighting

Good to have:

- Visually porous fencing
- Special play equipment
- Plants
- Toilets
- Lactation Booth



Tarr Coyne Tot Lot, NY, USA

© www.centralparknyc.org/things-to-see-and-do/attractions/tarr-coyne-tots-playground.html

PLAYGROUND



Figure 22: Model Playground

Size - **4500-6000sqm**

Distance - **@ 200-300m**

Density - **3-6 nos. every neighbourhood**

Guidelines/Standards - **Existing standard is 1 No. 10,000sqm. The Dutch standard is min 300sqm**

Must have:

- Delineated areas for younger age group
- Resting equipment
- Play equipment
- Lighting

Should have:

- Toilets
- Lactation Booth

Good to have:

- Multi-functinal space
- Fencing



Playground in Strathcona, Canada
 ©www.strathcona.ca/recreation-events/parks-and-trails/parks-trails-sports-venues/parks-and-playgrounds/



URBAN SERVICES

Objectives Achieved	Indicators
	49. Total number of private kindergarten in the neighbourhood and whether they have attached outdoor space.
	50. % of Government schools that allow usage of school campuses during non-school hours. 51. Presence of affordable health clinic inside (anganwadi) the neighbourhood 52. Number of doctors employed within the neighbourhood 53. Presence of Dispensary in the neighbourhood 54. Community-based organisations deliberately inviting women to planning meetings and delivering recommendations to ULB
	55. Provision of public art expenditure in the budget to enhance the aesthetic of public spaces - (Y/N) & Percentage change in investment in public art- year by year

Public Services

HOW TO APPROACH THE DESIGN OF PUBLIC AMENITIES

Besides open spaces, children in a neighbourhood will also have other destinations that they go to on a regular basis. They may accompany their caregiver to the shops. They may make regular visits to day care centres and health centres. These public facilities need also to be designed with the needs of the young in mind.

Every neighbourhood when planned by the city generally provides basic amenities as per the guidelines and norms set by the governance system. These are most of the time the "minimum" possible solutions given. It's important to note that amenities like daily shopping, health care, cultural facilities and utilities like toilets are the most frequented spaces in a neighbourhood. Therefore its necessary to design such spots to be ITC friendly.

Young parents and caregivers generally perform these daily trips with little or no assistance. Access to these facilities and their design should consider ITCs as a target group.

General rules to keep in mind when designing child-friendly public spaces are good access, an interesting array of uses, an environment that stimulates the imagination, and peaceful and friendly space for caregivers. If caregivers also enjoy their time outside, they will be encouraged to take small children out more, which will, in turn, give them more time for outdoor play and opportunities to learn and have fun.





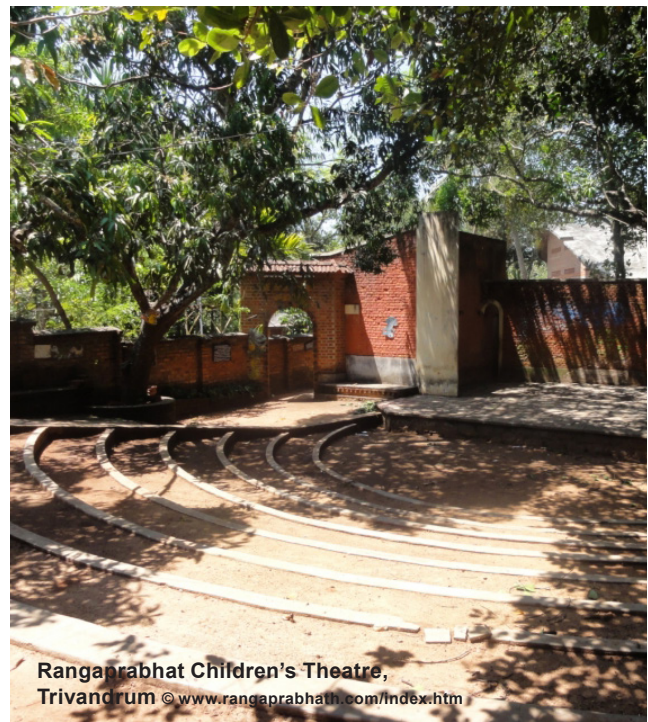
Fontainhas, Old Goa, India
© Shambhavi Karapurkar / Wikimedia Commons

PUBLIC BUILDING INTERFACE

Public buildings could create and maintain porches in front of their entrances to offer caregivers some seating places. The added advantage of these areas is that they are shaded and under supervision, which makes them safe. These porches can be combined with other, interesting uses, like small food stalls, or game activities. Furthermore, stoops outside residential buildings can also offer resting possibilities to a passerby in a more informal context.

Consider the following when designing porches:

- Build seating into the walls of porches where passers-by can rest.
- Give porches generous dimensions, so that seated people do not block the entrance to the building.
- If steps lead up to the porch, design these to seating height at the edges.
- Provide ramps for strollers



Rangaprabhat Children's Theatre,
Trivandrum © www.rangaprabhat.com/index.htm

CULTURAL FACILITIES

Children need to have access to cultural facilities from the earliest age to maximize their development: music or theater help children to learn about the world while also recreating.

Outdoor spaces, especially in countries with mild weather, which certain parts of India have, are ideal for implementing spaces specially designed to facilitate cultural activities.

Cultural activities can be stimulated by planning the following:

- Open-air theater
- Podiums for small performances
- Placement art objects
- Open air museums
- Puppet theatre
- Reading corners
- Land art
- Mobile libraries



USE OF SCHOOL RESOURCES AFTER HOURS

Many neighbourhoods may not have adequate open space for young children. Engaging with schools in the neighbourhood to open facilities outside of school hours for the community children can provide a safe and familiar space for children and their families.

Schools have indoor and outdoor spaces to offer to students and the community after school. Consider the exercise rooms, fields, and playgrounds providing direct access to spaces to increase opportunities to play and socialize.

Joint Use Agreements

In California, school districts, local governments, and community-based organizations share the costs and responsibilities of opening school property to the public after hours through joint use agreements. For further information on this, and how to incorporate in your neighbourhood, read the toolkit developed by ChangeLab Solutions, USA.

www.changelabsolutions.org/sites/default/files/CA_Joint_Use_Toolkit_FINAL_%28LS_20120530%29_2010.01.28.pdf

Consider the following:

- Work with administrators, school boards and authorities to have the school open during non-school hours for community physical activities;
- Send flyers home with students, post announcements in local newspapers, and alert the media to notify the community about school facility availability and upcoming programs;
- Make sure lighting, both natural and artificial are adequate, and that the school has ITC specific furniture;
- Dedicated play area for 0-3 years should be designed as part of the accessible opened school ground;
- Some of the indoor amenity/space can be converted into temporary lactation booths with appropriate safety measures;
- See page 21 on number and proximity of schools to be provided in a Greenfield development.



Children's School, New Delhi
© learningmatters-india.org/childrens-school/

DAY CARE CENTRES/ PLAY SCHOOLS

Day Care Centres or Playschools for infants and toddlers should be well planned and offer a stimulating environment. They should create a sense of well-being and purpose for the caregivers, infants/toddlers and their families.

Consider the following:

- Ceilings, walls and lights need to be pleasantly co-ordinated. Avoid bold colours, patterns, bare light bulbs.
- For infants; the areas for play, diapering, feeding and napping shall be set up to maximise contact between the caregiver and the infant. These areas shall allow the interaction to be unhurried and quiet.
- Play areas for mobile infants and toddlers shall be separate from those for non-mobile infants. They need sufficient uninterrupted space for exploration and discovery.
- The napping area shall be physically separate from other activity areas.

- The outdoor activity area shall be suitably surfaced and well-drained.
- The outdoor activity area shall be equipped with a variety of age-and developmentally-appropriate toys and equipment for large-motor and sensorial play.
- Outdoor activity area shall be enclosed by a barrier (fence, wall or building) at least 1.5m high.
- Outdoor activity area should have some part which is well shaded
- Every level of the premises shall be equipped with diapering, feeding and napping areas. They should also have facilities for food preparation and storage.
- See page 21 on number and proximity of centres to be provided in a Greenfield development.

For detailed guidelines, there are a number of resources online. See childcarelink.gov.sg/ccls/uploads/Infant_Care_Guidelines.pdf

DAY CARE CENTRE

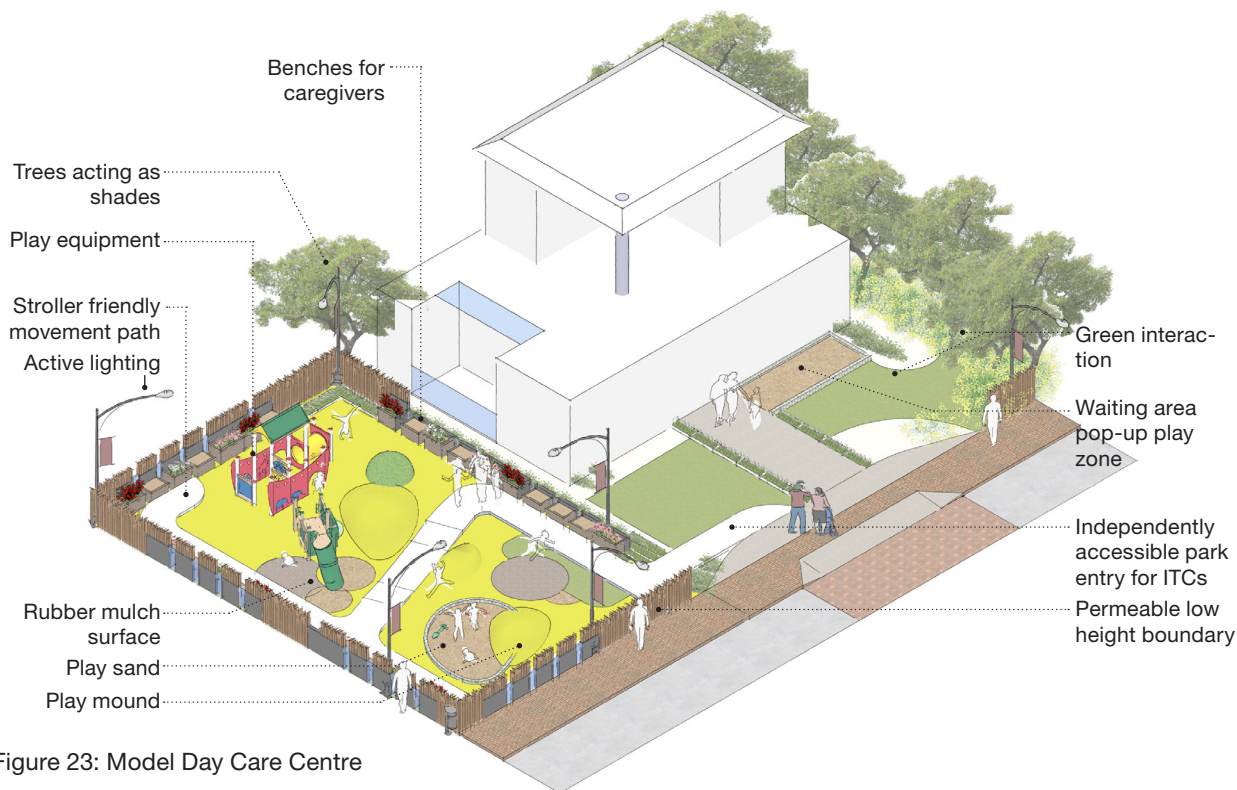


Figure 23: Model Day Care Centre

Size - **800sqm - 2000sqm**

Distance - **@max. 500m**

Density - **6 nos. every neighbourhood**

Guidelines/Standards - **800sqm / 2500 Population**

Must have:

- Continuous footpaths to reach
- Open to sky area
- Play area with soft cover
- Natural play area
- Shade

Should have:

- Resting equipment
- Toilets
- Lactation Booth

Good to have:

- No Parking at the edge
- Landscape elements





Anganwadi, Dandadhar Road
©Wikimedia Commons

DISPENSARY AND ANGANWADI

Support from services such as health clinics, particularly in early childhood development is important. Health clinics may be frequently visited by ITCs and can provide anchors of the community and activity in the neighbourhood.

Healthcare facilities for ITCs consist of dispensaries and anganwadis. Dispensaries are part of the mandatory requirement in Indian planning norm, and provide basic health and family welfare services to a population within 1 - 3kms.

Anganwadi's are supported by the Ministry of Women and Child Development and provide health care, community support, organize pre-school activities, provide health and nutrition education to families especially pregnant women on how to breastfeed, motivating families to adopt family planning, educating parents about child growth and development, and so on.

Consider the following:

- There should be at least 2-3 dispensaries in a neighbourhood of population 15,000. These can be smaller in size but spread out so that most homes have access to them within a 5 to 10 minute walking time.
- There should be at least three anganwadis in a typical neighbourhood within 200 to 300 metres of most homes. These should ideally be located near a housing area park.
- Dedicated play area for 0-3 years
- Some of the indoor amenity/space can be converted into temporary lactation booths with appropriate safety measures.
- See page 21 on number and proximity of health facilities to be provided in a Greenfield development.



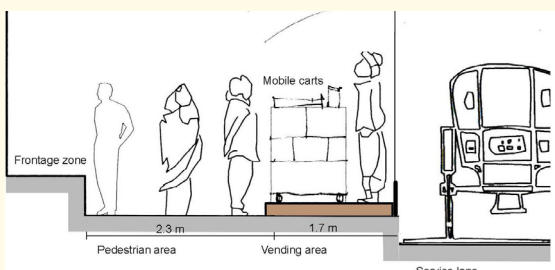
Vegetable Stall, Dwarka, New Delhi
©Radhika Mathur

VENDORS AND KIOSKS

Apart from living in healthy cities, children and their caregivers need to have access to clean water and healthy food. Having food or vegetable shops close to every child is not always possible.

One option to solve this is to design specific spots within the neighbourhood where mobile food stalls can sell food without constructing other city facilities like car or pedestrian traffic. Food auto-vendors could also be used and positioned within public spaces.

Inclusive Design for Street Vendors in India Guide by Centre for Urban Equity, CEPT University: This is a very informative guide for detailed guidelines on incorporating food vendors and kiosks in the public realm.



<https://smartnet.niua.org/sites/default/files/resources/Inclusive-Design-for-Street-CUE-02-12-14.pdf>

When designing food stalls, take the following into account:

- Mobile food stalls can be designed to precisely fit the dimensions of a parking space, including the area needed for customers to stand.
- Other places for the stalls can be specially designed areas within public spaces, like parks or schools where people often come.
- Consider where possible locations for food auto-vendors could be within the public realm. Creative ways to combine vendors with playgrounds, schools, or recycle points are possible.



Convenience Store
 ©www.stockpicturesforeveryone.com/2011/11/small-retailers-in-india.html

CONVENIENT SHOPPING

As part of neighbourhood public services, convenient shopping areas play an important part in an ITCN. They should be well designed and planned, keeping in mind the wellbeing of ITC.

When providing for convenient shopping, keep the following in mind:

- Ideally, should be placed along a tot-lot, play area for kids;
- Play area should be easily accessible from the shopping area and low height fencing for continuous visibility;
- Central open space in between the convenient shops as a socializing area;
- Pop-up play zone along with the shops should be planned with different materials, like play sand, soft grass, rubber mulch;
- Resting benches with wide tops and designed with varying heights for the kids and the caregivers;

- Stroller-friendly surface paving for the entire shopping area/plaza;
- Green interactive play zones should be designed;
- Natural shading;
- Continuous stroller path from the shopping plaza to the tot-lot park area forming an uninterrupted movement path for ITC;
- Well-lit throughout, making sure the area is accessible and safe for ITC after dark;
- Central resting place in the shopping plaza;
- Ramps connecting the shopping area surface level to the stroller-pathway inside the park area;
- Vibrant colours for the shops, making it exciting for the kids;
- Side-walk play zones in the plaza;
- Integrating safe street crossing from the shopping zone.

CONVENIENT SHOPPING

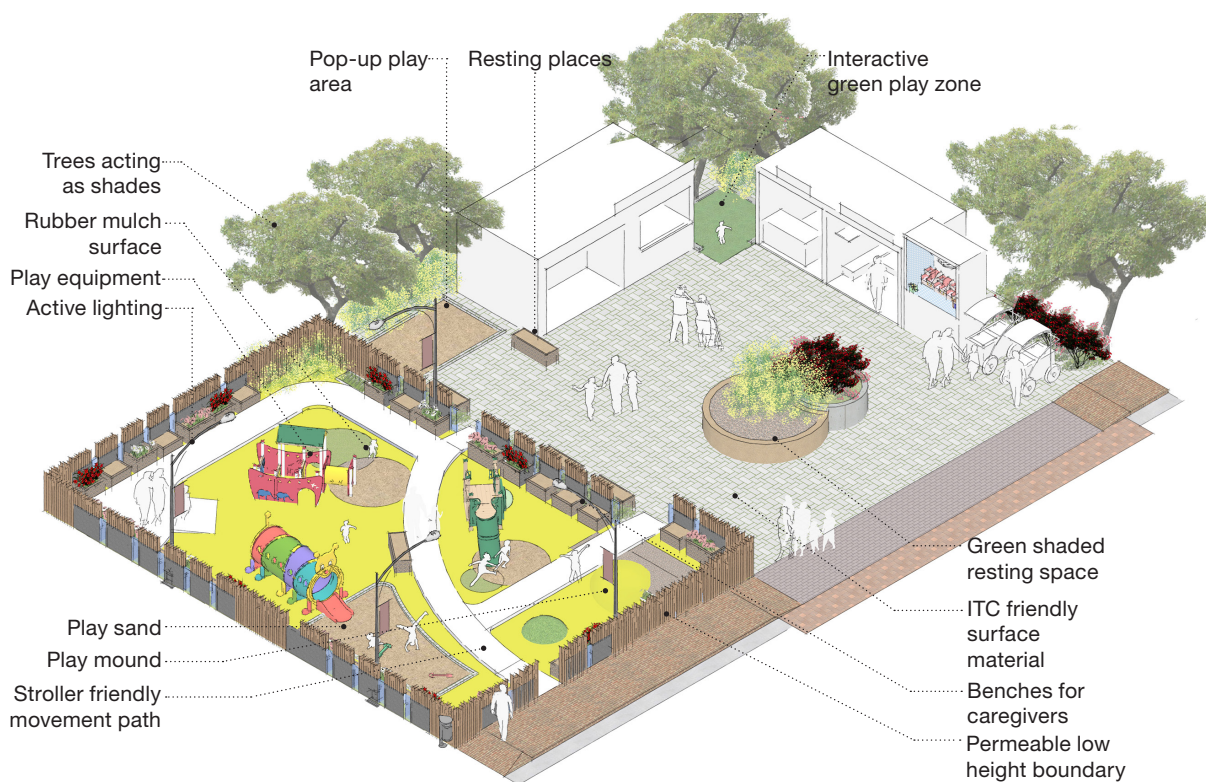


Figure 24: Model Convenient Shopping

Size - **1500sqm**

Density - **3 nos. every neighbourhood**

Guidelines/Standards - **1500sqm / 5000 Population**

Must have:

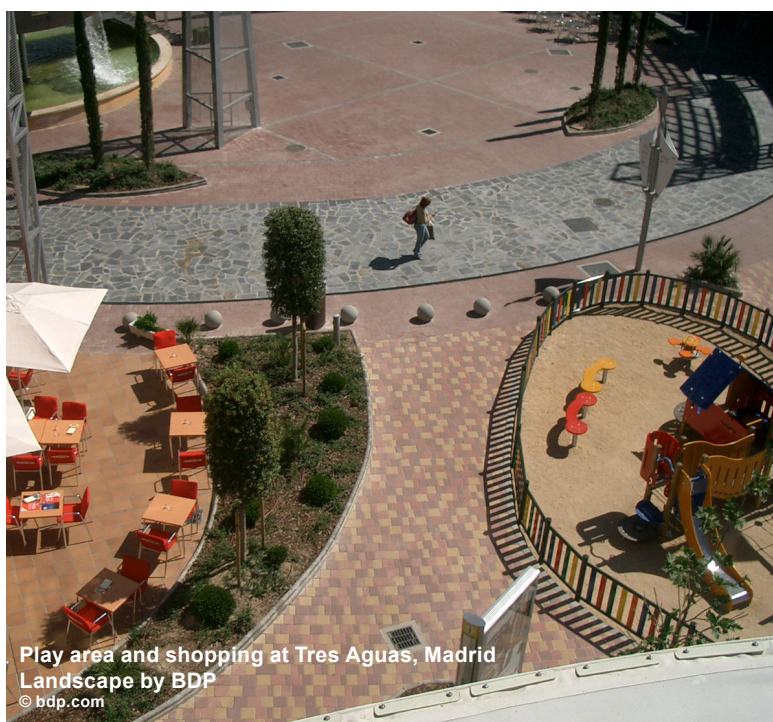
- Resting equipment
- Shade
- Fencing

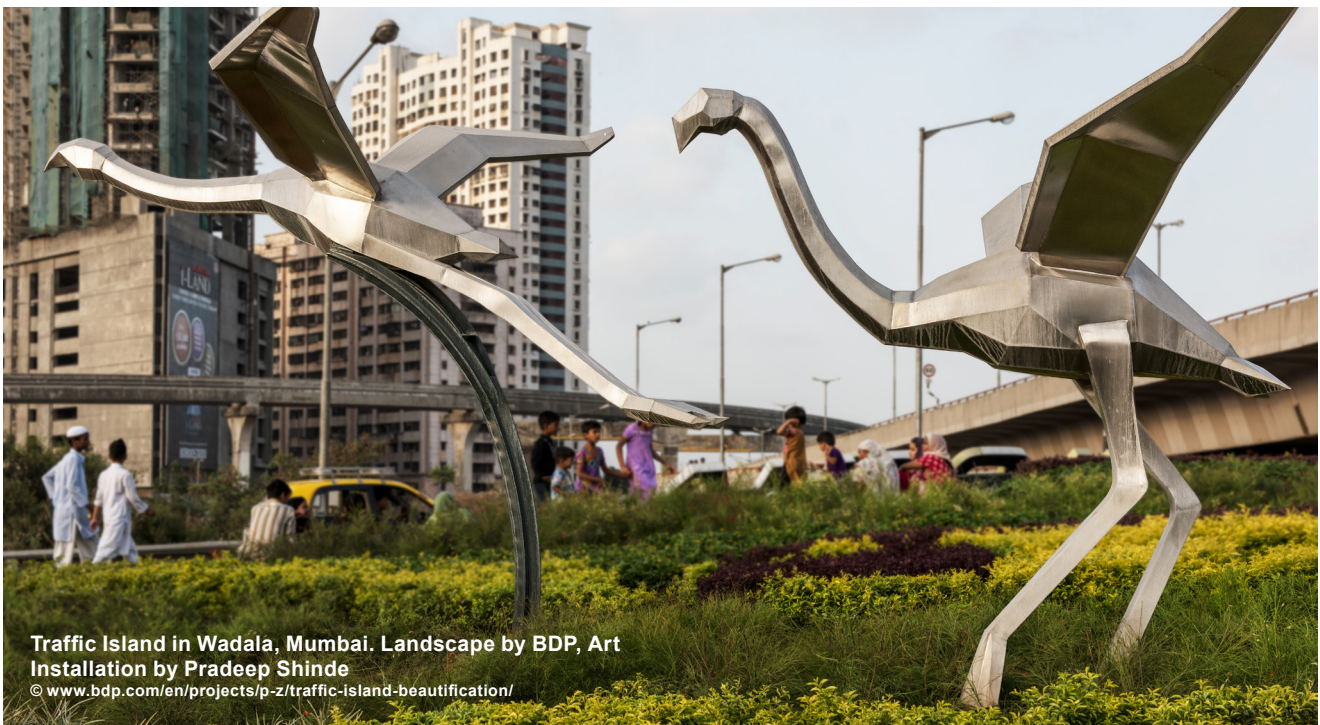
Should have:

- Reserved Parking Space for new parents
- Stroller friendly surfaces
- Curb ramps
- Bollards
- Lighting

Good to have:

- Play equipment
- Toilets





Traffic Island in Wadala, Mumbai. Landscape by BDP, Art Installation by Pradeep Shinde
© www.bdp.com/en/projects/p-z/traffic-island-beautification/

A PROGRAMME FOR PUBLIC ART

Through public art, cities have found a creative way to transform dull places into attractive areas. Public art can also be stimulating for young children. It could have an educational character, so children can learn by looking at it.

Public art can also function as a background for children's play. It could also attract caregivers and children to a particular spot in a neighbourhood and make that spot more populous and so safer to be. When we think of public art we should broaden our range of thinking and also imagine hybrid forms of it, in combination with movable, interactive elements, light or playing objects and planting.

When considering public art in a neighbourhood, keep the following in mind:

- Use bright colors, that stimulate children
- Think about what the artwork looks like, from a children's eye level
- Depict scenes that relate to and interest small children, such as animals or everyday activities.
- Consider how children can learn through the artwork; add numbers to the work, use distinct shapes.
- Engage caregivers and children in the process of co-creation. This will have significant benefits in connecting the community.





PUBLIC TOILETS AND DRINKING WATER

To extend the hours spent outdoors some basic facilities such as toilets are needed for both parents and young children.

- Design public toilets close to large public spaces where people tend to gather and spend longer periods of time.
- Protected (with a door) toilets are preferred since the chances of vandalism will be less.
- Ideally, child-sized toilets should also be provided.
- Maintenance and periodic cleaning of the toilet is probably the biggest problem and no toilet should be designed unless the issue of maintenance is resolved.
- Young children require frequent fresh drinking water when out and about in cities. It is necessary to have fresh drinking water sources as a key public service, which can also be independently accessed by children.





BRT stop in Ahmedabad
© Manisha Bhartiia



Low kerbs along with low floor buses can facilitate caregivers using public transit, Bus stop in London

TRANSIT STOPS

- By locating childcare centres and pre-schools or other daily destinations within walking distance of transit stops may increase the likelihood of working parents utilizing transit while balancing the logistics of getting to daycare and work each day.
- Children often use transit to get to and from school and afterschool activities.
- Stroller friendliness while using public transport is a little-discussed topic which needs as much attention as wheelchairs and bicycles.
- The height of the curb at a bus stop, a resting area near an auto rickshaw stand or a shaded corner while one waits for a bus/taxi/rickshaw can become the reasons for parents and caregivers to take or not take public transport with babies.
- Make sure transit stops are well shaded, have proper resting equipment and have clear sightlines for safety. Information display on availability of the next service is also useful for caregivers.



Sheltered Bus stop with low seating, clear sightlines and service information © RADHIKA MATHUR



UTILITIES

Objectives Achieved	Indicators
	56. Presence of SWM collection facility and efficiency in the neighbourhood.
	57. Household level coverage of SWM services through the door-to-door collection of waste.
	58. Presence of SWM segregation facilities in the neighbourhood. 59. Efficiency in Redressal of customer complaints on SWM.
	60. Quality of water supplied to a household in the neighbourhood.
	61. Percentage of households with rainwater harvesting systems. 62. Percentage of parks, schools, and other public plots within the neighborhood with rainwater harvesting systems. 63. Percentage of households with renewable source of energy like Solar/PNG, etc. 64. Percentage of public buildings and plots using solar / wind or non-carbon means (mapped). 65. Presence of solar lighting in and immediately surrounding parks.

Utilities

HOW TO APPROACH THE DESIGN OF UTILITIES

In India, the proper provision and management of public utilities in a neighbourhood are as equally relevant as the physical design and layout of the neighbourhood.

Water collection in neighbourhoods, due to poorly designed public realm are breeding grounds for mosquito-born diseases such as Dengue, and Chikungunia. Both viral diseases are debilitating, and more so for children.

The problem of waste in our cities will affect young children for decades to come. Bad waste management diminishes the healthfulness of the urban environment, the air quality and can also be a source of diseases, especially in impoverished areas. Cities like Delhi produce 8000 tonnes of garbage a day²¹, all of which is distributed in landfill sites. These sites contaminate the neighbourhoods around,

the groundwater and are a significant cause for air pollution.²² Of the waste produced, 40% is biodegradable, which if addressed at a neighbourhood level, can substantially reduce our dependency on land to dispose of waste.²¹

Utilities need both adequate provision, and constant management. Building trust is central both ways, both from the management system and also by the residents to use it properly. From the earliest stages of development, small children can be taught to contribute to keeping streets, parks and playgrounds tidy and free of waste, and contribute to economical use of resources. Not only it is necessary for our cities, but letting children learn about concepts of “Reduce, Re-use, Recycle”²³ at a young age is the best investment for the future of the cities. The 3 R’s apply to the management of waste, water and power.

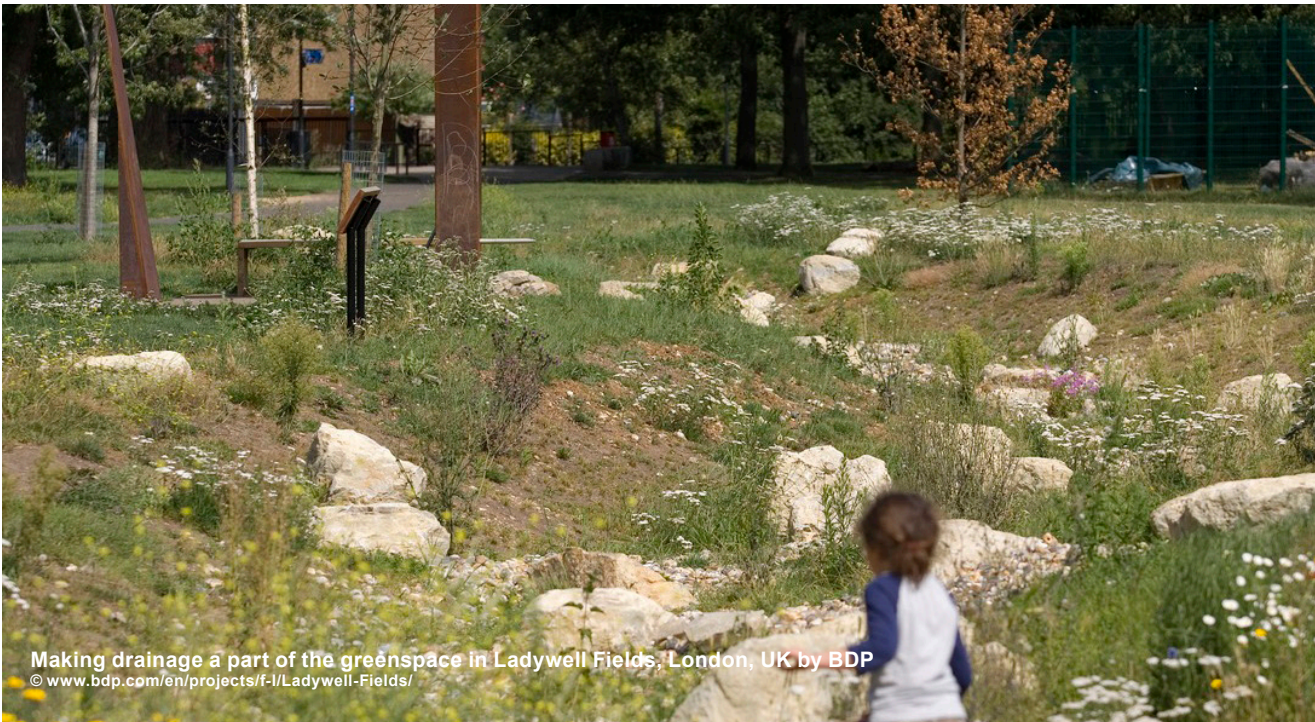


Involve Children in caring for their neighbourhoods © www.greenandgrowing.org/

Create Infographics to educate children on the 3 R’s- Reduce Reuse Recycle © www.wwf.org.au/get-involved/change-the-way-you-live/reduce-reuse-recycle#gs.Bhb4l00

21 Make Wealth from Waste by Satwik Mudgal, Aug 2015 www.downtoearth.org.in/coverage/waste/make-wealth-from-waste-47164
 22 [https://www.hindustantimes.com/india/india-s-cities-](https://www.hindustantimes.com/india/india-s-cities-are-faced-with-a-severe-waste-management-crisis/story-vk1Qs9PJT8I1bPLCJKsOTP.html)

[are-faced-with-a-severe-waste-management-crisis/story-vk1Qs9PJT8I1bPLCJKsOTP.html](https://www.hindustantimes.com/india/india-s-cities-are-faced-with-a-severe-waste-management-crisis/story-vk1Qs9PJT8I1bPLCJKsOTP.html)
 23 Reduce Reuse, Recycle kids.niehs.nih.gov/topics/reduce/index.htm



Making drainage a part of the greenspace in Ladywell Fields, London, UK by BDP
 © www.bdp.com/en/projects/f-/Ladywell-Fields/

WATER COLLECTION MANAGEMENT

Water management is a constant issue in cities, whether it is the conservation of water in dry areas or preventing flooding during the monsoons. Extreme weather events through climate change are exacerbating the problems of both drought and flooding in.

In neighbourhoods it is important to have good drainage to prevent stagnant water and puddles from forming in the public realm where mosquitos can breed.

Additionally, houses should be encouraged to collect and store rainwater collected at rooftops to either individual rainwater collection tanks or feeding it back into the surface to recharge the ground water level. Groundwater recharge can be done by some economical methods at the building level such as with plastic barrels, through bore wells or infiltration galleries.

In parks, provide percolation pits, or create artificial aerated water harvesting ponds. In roads, ensure that slopes are accurately calculated to allow rainwater to drain properly. Infiltration trenches, paved with porous pavers, should be provided for absorbing excess rainfall along the pavement. Ensure segregation of sewage from storm water run off.²⁴

On a neighbourhood level consider the following to improve the water collection in streets:

- Ensure that every neighbourhood has a good drainage system.
- Try to design natural drainage systems like raingardens, where possible.
- Make sure drains are kept clear of leaves and other debris and kept unblocked.
- Fill up pot-holes as soon as they form.
- Consider the drainage of play areas and plazas.
- Ensure segregation of sewage from storm water run off.
- Provide for percolation ponds or infiltration trenches depending on the type of public realm.

24 RWH- Karnataka State Council for Science & Technology www.kscst.iisc.ernet.in/rwh_files/rwh_recharge.html



Neighbourhood and home level segregated bins
 © www.dustbins.co.in/waste-segregation-bins.htm

SOLID WASTE MANAGEMENT

Establishing an efficient waste management system is one of the first steps to create healthy neighbourhoods. The management system should dispose of waste in a systematized, regulated way that is reliable for residents.

Defence Colony Compost Facility, New Delhi:^{25 & 26}

Decentralised Solid Waste Management in Defense Colony project is a collaborative effort of RWA, Defense colony and NGO, Toxics Link. Residents of the colony set up and manage a composting facility for their kitchen and park waste.

The facility was set up in a small unused corner within the neighbourhood, in 2004 at cost of Rs 70,000.

The RWA has trained two rag pickers to run it and their salaries come from the money generated by the plant itself.

Technology: EM1 microbial pit composting
Final Product: Organic compost
Composting Period: 3-4 months cost
Per Household Cost :Rs 45 only
Land Required: 30 sq m

25 Make Wealth from Waste by Satwik Mudgal, Aug 2015
www.downtoearth.org.in/coverage/waste/make-wealth-from-waste-47164

26 [http://toxicslink.org/docs/munispalwaste/06215_report_decentralised_swm\[1\].pdf](http://toxicslink.org/docs/munispalwaste/06215_report_decentralised_swm[1].pdf)

Consider the following steps as part of a healthy and responsible waste management approach:

- Provide garbage bins beside benches, resting points and along frequently used pedestrian routes in the neighbourhood.
- Provide adequate garbage bins in play areas, parks, plazas and other areas where people gather.
- Choose garbage bins that children can also reach.
- Use symbols on garbage bins to indicate what type of garbage should be disposed of in different bins.
- Inform residents of a neighbourhood about the importance of proper waste disposal. Encourage residents to compost kitchen waste
- Organise collection of household compostable waste along with biodegradable waste in open areas for neighbourhood wide composting (local waste management plants).



RENEWABLE SOURCES OF ENERGY

The benefits from the use of renewable sources of energy in the design of child-friendly cities mostly fall under two main categories.

The first one is the result of the actual need of energy in places where it cannot be found. **Public space lighting, smart sensors and applications or cooling and shading systems** can all be powered by RSE very easily and in a cost that keeps on reducing year after year, making renewable energy an affordable technology. Renewable sources of energy have been used in many projects around the world in a very successful way, especially in developing countries. Good examples can be found in the chapter “Best practices compendium” of the current document.

The second group of benefits for renewable sources of energy is a result of the educational role these sources can have, especially between young members of society. The environmental awareness RSE can raise is the most important investment for the future of a society with a huge impact on the children of the future.

On a neighbourhood level consider the following:

- Make use of cheap technology. Cheap doesn't only refer to buying price but mostly to maintenance prize, which can be a continuous and heavy expense for local communities.
- Public Space lighting, smart sensors and applications or cooling and shading systems can all be powered by RSE very easily.
- Find creative ways to incorporate renewable sources of energy. The result can always be playful and not just technical.
- Always follow safety rules while implementing RSE to avoid electrocution of children.
- Think wisely when using RSE. Each climate is appropriate for specific sources of renewable energy.



MANAGEMENT OF UTILITIES AND COMPLAINTS REDRESSAL

Intrinsic to the Indian Smart Cities Mission is the use of Citizen Dashboards for complaints redressal and community engagement. The Ministry of Housing and Urban Affairs has launched a mobile and web complaint redressal platform called Swachhata. The app sets service level benchmarks and allows citizens to address issues of dead animals on roads, overflowing garbage, issues for garbage dumps or vehicles, malfunctioning public toilets and dirty streets.²⁷

The success of this app and other digital complaints box will be with adoption by a large number of residents.

DigiTaf Card, Tel Aviv, Israel ^{28 & 29}

Tel Aviv has introduced a unique residents card called DigiTaf which is specifically for parents with young children. This is a new addition to their citizen dashboard called Digitel.

DigiTaf connects families with local childcare facilities, healthcare, upcoming public events specific for young children and so on. This card recognises the need to support parents with very young children in navigating the city, and has been very well received since its implementation.

²⁷ swachh.city/

²⁸ www.tel-aviv.gov.il/en/Live/ResidentsCard/Pages/

²⁹ bernardvanleer.org/cases/strategic-partnership-families-tel-aviv/

Consider the following:

- Promote the use of already available digital complaints boxes amongst a wide group of residents in the neighbourhood.
- Encourage residents to set up a digital bulletin board via Whatsapp groups or other platforms to discuss and address neighbourhood issues.
- Set up Whatsapp or voice-based help-lines.
- Train civic officials in adopting such applications. Digital exposure for public officials is critical to the success of such platforms.
- Consider integration of digital dashboards across all utilities and public services in a neighbourhood - for example, a single app that allows residents to address issues with water supply, mosquito breeding, waste management, park mulch, community events, school availability, childcare facilities and so on.

DESIGN GUIDELINES SORTED BY OBJECTIVES

Safe



- Recommended street widths
- Cycling Lanes
- Parking Types
- Active facade along routing
- Protective elements from traffic - Surface materials, Curbs, bollards, ramps, safe crossings & lane markings
- Legibility and sightlines
- Lighting
- Fencing
- Camera monitoring
- Children Wayfinding
- Protection from Strays

Green



- Street Planting
- Groundcover in parks, adding green
- Shading and cooling elements
- Natural Play Elements
- Solid waste management
- Surface drainage and rainwater harvesting
- Use of renewables
- Noise control
- Air Pollution measures

Accessible



- Density and proximity of community facilities
- Furniture for ITC
- Play Equipment
- Entrances and Ramps for ITC
- Benches
- Continuous borders and planters
- Public Building interface
- Daycare

Playful



- Ground cover materials and colors
- Playful furniture
- Sidewalk games
- Engaging with street art
- Amount and combinations of uses/ activities
- Provision of adequate parks, tot-lots, playgrounds

Inclusive



- Shared-space streets
- Benches
- Temporary street closure
- Pocket green
- Community gardens
- Pop-up playing
- Use of semi-private spaces
- Use of urban left-overs
- Toilets and Drinking Water
- Lactation Booths
- Digital Complaints and community app
- School use after hours
- Health Centres



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