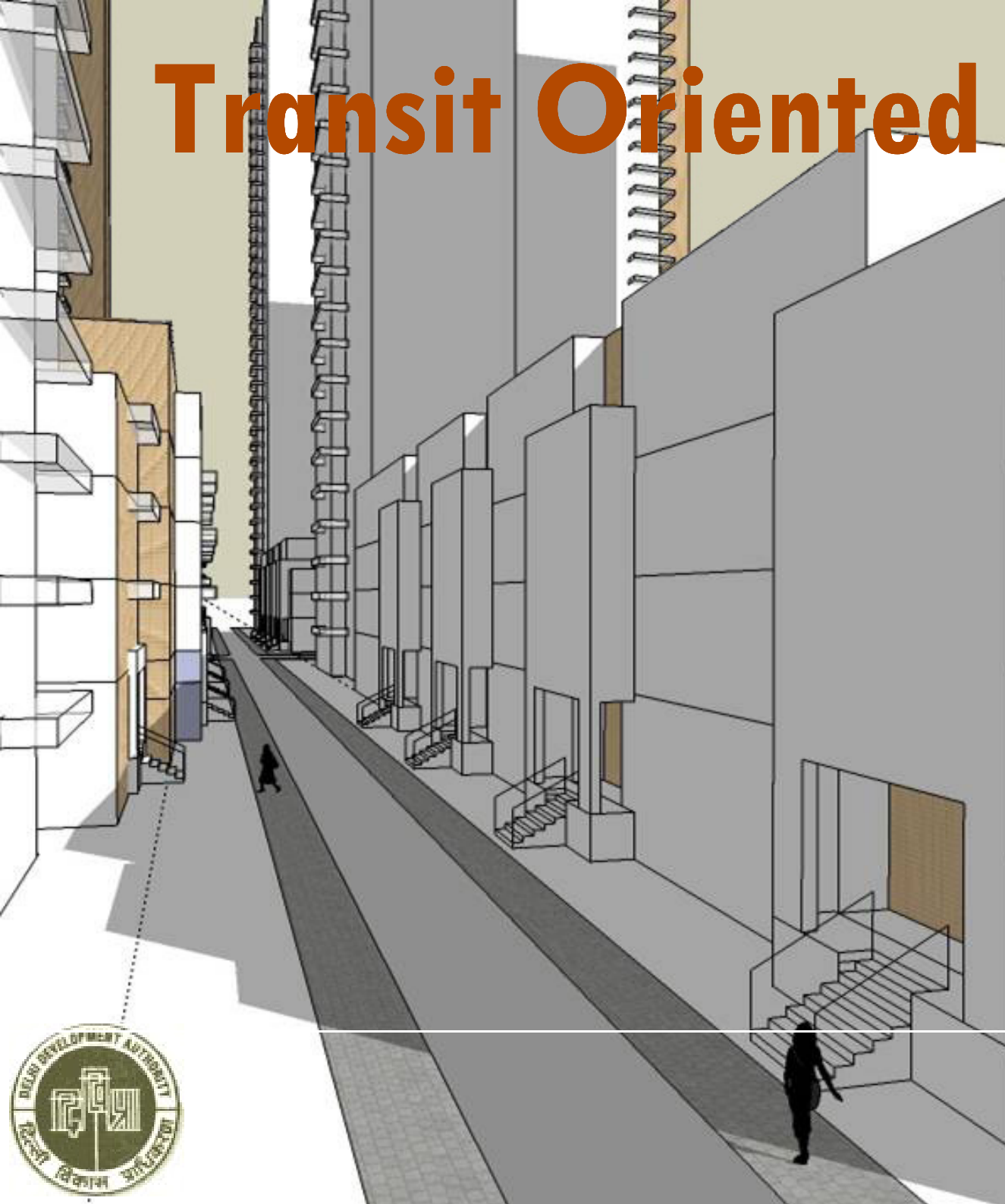


# Transit Oriented Development

Policy . Norms . Guidelines



**Masterplan of Delhi 2021 - CHAPTER 19: TRANSIT ORIENTED DEVELOPMENT**

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### 19.1. CONTEXT FOR TOD IN DELHI

In spite of Delhi's recent investments in Public Transport Systems which include a world class Metro System and a planned BRT Network, Delhi has been unable to deliver efficient, comfortable and affordable mobility options to its citizens. The current lack of connectivity (in particular to Metro stations), abundant subsidized parking options as well as a lack of safety for walkers, cyclists and women in the city has resulted in public transportation being relegated to second or even last choice of travel. This has consequentially resulted in the ever increasing number of private vehicles plying in the city. The problem has reached a state where it is feared that it might have an irreversible damage on our city fabric, its environment (twenty-one people die of respiratory diseases in the Capital everyday and vehicular emissions contribute to 70% of the air pollution in Delhi), the social structure and much more.

The city has a very long history of auto-centric planning which prioritised segregated landuses, low density sprawl and large unwalkable block sizes. The supply of extra wide roads with heavily encroached footpaths/ cycle tracks, discourage non- motorised travel modes and ensure that the citizen is auto-dependent. The result has been an exponential growth in private motor vehicle ownership, and a corresponding increase in pollution and congestion, with loss of man-hours and increase in urban poverty (ref: National Urban Transport Policy). Major arterials of the city are currently down to 10 km/hr average speed in peak hours, which essentially means that we have hit gridlock. This trend has been aggravated through the rampant construction of flyovers and grade separated interchanges within city limits. Congestion is still as it is, and such infrastructure has actually caused a reverse modal shift, by making travel more difficult for walkers and public transport users, consequently adding them to the private-vehicle using population and hence more congestion!

In this alarming situation, it is imperative that a rapid paradigm shift is undertaken in order to move people away from private vehicles towards the use of public transportation. The objective of achieve this paradigm shift is to offer more attractive alternatives to the use of personal modes – low cost, comfortable, non- motorised transport, pleasurable walking experiences and very easily accessible and comfortable mass transportation with easy, convenient and comfortable intermodal transfers for last mile connectivity.

Our city needs to restructure and redefine how it works, lives and finds means of recreation. This is possible through Transit Oriented Development (TOD).

### 19.2. DEFINITION OF TOD

**Transit Oriented Development is essentially any development, macro or micro, that is focused around a transit node, and facilitates complete ease of access to the transit facility, thereby inducing people to prefer to walk and use public transportation over personal modes of transport.**

**The Primary Goals of TOD are to:**

- i. **Reduce/ discourage private vehicle dependency and induce public transport use** – through design, policy measures & enforcement.
- ii. **Provide easy public transport access to the maximum number of people within walking distance** – through densification and enhanced connectivity.

The above goals cannot be addressed by mere addition of transport infrastructure. To achieve this paradigm shift, TODs offer attractive alternatives to the use of personal modes – pleasurable walking experiences, very easily accessible and comfortable mass transportation with easy, convenient and comfortable intermodal transfers for last mile connectivity and other low cost, comfortable, non- motorized transportation options.

In addition, highest possible population densities (as per local context), enhanced street connectivity, multimodal networks around transit stations and compact mixed-use development providing housing, employment, entertainment and civic functions within walking distance of the transit system offers:

- an enhanced level of accessibility by non-motorised modes,
- a reduced trip length to the average commuter, and
- economic viability of the public transportation system through substantial non-fare box revenues.

This, overall, results in lower levels of energy consumption per person for the city for the transport sector, besides numerous city/ local level benefits, as explained below.

### 19.3. GOALS AND BENEFITS OF TOD IN DELHI

Chapter: 12.4.1 “Synergy Between Transport and Land Use” states that “The concept of the Master Plan for Delhi 1962 was based on a poly-nodal, polycentric, distribution of work centres, largely based on road transport nodes. A major fall-out of this has been distortion between infrastructure, transport and land use. To achieve spatial balance, development should take place according to new corridors of mass movement. This has implications in terms of land use planning along major transport corridors and the Mass Rapid Transport / Transit System. This would not only help to solve, to some extent, the enormous problems of mass transportation, but would also generate a dynamic potential for growth and employment.” In addition, Chapter 3.3.1.1 A. further states that “The proposed MRTS network will bring sizable urban area within walking distance from the proposed stations. This will have an impact on the existing structure of the city and consequently its development. This changed scenario provides opportunities for city restructuring and optimum utilization of the land along the MRTS corridors. In this process, a sizable proportion of the additional population with requisite facilities and employment can be absorbed along these corridors”, allowing them to live, work and entertain within walkable distance of MRTS stations. In addition, the MRTS influence zone may catalyze the private sector into cross subsidizing and providing the various public amenities, greater affordable housing stock and high-quality public transport.

### **TOD shall provide the following benefits to Delhi:**

- i. **Mobility Options for all** - Change the paradigm of mobility by enabling a shift from use of private vehicles towards the use of public transport and alternative modes, as explained in 4.2. Help in achieving Clean-Air Quality targets for Delhi and the targeted 70-30 (public-private transport) modal share in favour of public transportation by 2021, as envisaged in the Transport Demand Forecast Study for 2021.
- ii. **Better Quality of Life for All** - Provide a variety of high-density, mixed-use, mixed-income housing, employment and recreation options within walking/cycling distance of each other and of MRTS stations - in order to induce a lifestyle change towards healthier living and better quality of life. Integrate communities rather than segregating them and reduce social stigma and dissent.
- iii. **Give Everyone a Home** - Increase the supply of housing stock and commercial space in the city which would bring down prices and make living and working in Delhi more affordable. (Current Need as per Table 18.1 is to provide approx. 3 lakh new dwelling units per year, with more than 50% of the new housing in the form of 1 and 2 room units with average plinth area of about 25 - 40 sq.m.)
- iv. **Market Participates in Better City** - Open up development opportunity to the private sector to bring in investment into the city's growth and revenue, and also help cross-subsidize social amenities, affordable housing and public transport, using a variety of possible development models. Low-income groups can be provided space and shared amenities in integrated mixed-income communities, thereby reducing further proliferation of gentrified slums and unauthorized colonies.
- v. **Self-Sufficiency** - Creating high densities would make decentralized infrastructure provision and management techniques more feasible, thus making it more economical to recycle water/sewage locally to meet community needs.
- vi. **Cheaper Public Transport** - Provide a significant source of non-farebox revenue for a public transport fund, which may help reduce ticket prices and increase provision of public transport facilities.
- vii. **Reduce Environmental Degradation** - Set a clear vision for the growth and redevelopment of the city in a compact manner, by minimizing sprawl (low density spread out development). Help save environmentally sensitive lands and virgin lands through high-density compact development.
- viii. **Save Public Money** - Provide savings in public money through reduction of investments in physical infrastructure like additional road expansion, piping/cablings costs, time-cost of traffic congestion and other large costs associated with low-density sprawl.
- ix. **Multi-disciplinary Multi-Departmental Approach** - Provide a shift to a more holistic paradigm of planning where all sectors work together – mobility, planning policy, urban design, infrastructure and economics – to deliver integrated development.

### **Benefits to Transit Agencies:**

- x. Increased ridership due to larger population living/working within walking distance.
- xi. Value Capture of increased land values for long term cross-subsidy & maintenance of public transportation.

### **Benefits to Land, Road & Service Owning Agencies:**

- xii. Potentially increased revenue from land due to increased development with lesser public money investment.
- xiii. City level reduced infrastructure costs (reduced length of roads, pipes, cables, tunnels, etc.) due to accommodating the overall planned population within lesser net land area, in a more sustainable way.
- xiv. Increased feasibility for sustainable decentralized physical infrastructure.
- xv. Increased and more efficient use shared social infrastructure facilities.

### **19.4. DEMARCATION OF THE TOD INFLUENCE ZONE:**

- i) A maximum up to 2000 m. wide belt on both sides of centre line of the MRTS Corridor is designated as TOD Influence Zone which has been identified in the combined Zonal Development Plans of Delhi for public notification, as per **Annexure-B**.
- ii) The entire influence zone shall be considered as “white zone”. Application of Development Control Norms in the White Zone shall be based on (a) Section 19.6, and (b) the Influence Zone Plan (approved by competent Authority). Final boundaries of Influence Zones shall be demarcated as per the Influence Zone Plans.
- iii) The overall Influence Zone further consists of three sub zones – Zone 1: Intense TOD Zone, Zone 2: Standard TOD Zone, and Zone 3: TOD Transition Zone. Application of zones is as per Table 19.1 below. Development Control Norms as per Section 19.6.1 - 19.6.5 apply to all three TOD zones.
- iv) Development Control Norms as per para 19.6.6 ‘High Density Mixed Income Development’ shall not be applicable to the TOD Transition Zone.
- v) All properties public or private shall be able to avail the norms and benefits of TOD while complying to an approved Influence Zone Plan as per 19.5, with the following exceptions:
  - a. Special Areas - Lutyens' Bungalow Zone, Chanakyapuri., DIZ Area and Matasundari Area and Civil Lines Bungalow Area which may have height restrictions.
  - b. Monument Regulated Zones (as per ASI guidelines).
  - c. Flight funnel zones shall follow the height restrictions as per regulations of Airport Authority of India.
  - d. Environmental Protection Zones (as per Chapter 9).
  - e. Seismic Zones such as fault lines.

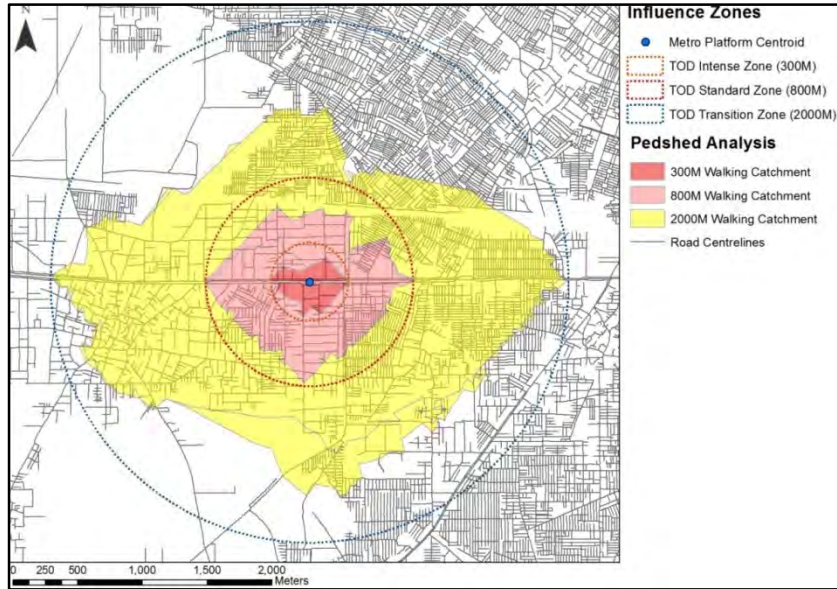


**Table 19.1: Application of TOD Influence Zones**

Zone 1: Intense TOD Zone	Zone 2: Standard TOD Zone	Zone 3: TOD Transition Zone
<ul style="list-style-type: none"> <li>• 300 M influence zone of all MRTS Stations</li> <li>• 800m* (10-min walking) influence zone of Regional Interchange Station (i.e. Rail -MRTS, or two MRTS lines.)</li> </ul>	<ul style="list-style-type: none"> <li>• 800m* (10-min walking) influence zone of all MRTS Stations.</li> </ul>	<ul style="list-style-type: none"> <li>• 2000m** (10-minute cycling distance) influence zone of all MRTS Stations.</li> <li>• 300 M influence zone of BRT corridors.</li> <li>• Zones within Intense or Standard TOD Zones which are not permitted for redevelopment but need enhancements in public realm and network connectivity. (refer para. 19.6.2)</li> </ul>

\*Walking speed is considered approx. 5 km/hour. \*\*Cycling speed is considered approx. 12 km/hour.

**19.4.1. Demarcation of TOD Influence Zones at Station level**



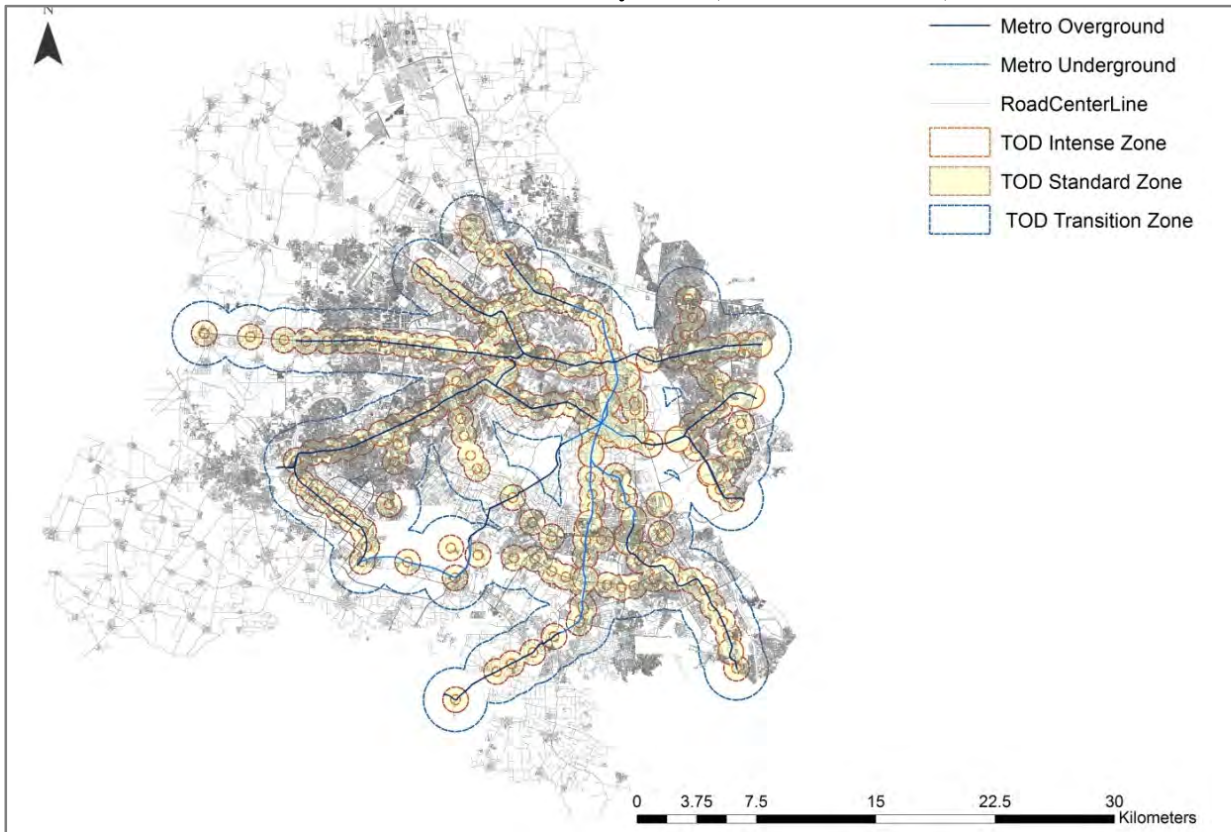
**Figure 19.1: Example showing plotting of the 300m, 800m, 2000m catchments and actual pedshed of an MRTS Station**

i. The “TOD influence zones” shall be plotted at each Station area level by drawing the travel distance from the Centre of the Station. An additional ‘Pedshed Analysis’ may be used to evaluate actual walkability of the catchment based on on-ground street networks, crossings, barriers, FOBs, etc.

ii. All TOD influence Zone Maps will be identified in the respective Zonal Development Plans, and demarcated on the GIS database. The same will be available for public reference online. This online map will be used as material consideration for all planning matters and approvals.

iii. The approval of schemes will be granted only after approval of the respective phase of MRTS.

**19.4.2. Demarcation of TOD Influence Zones at City level. (See also Annexure B)**



**Figure 19.2: Map of three types of TOD Influence Zones on map of Delhi**

### 19.4.3. Development Types within Influence Zones based on Ground Situation:

Delhi is a conglomeration of various types of development that has taken place over the years. Therefore adapting ground realities and existing development types to the principles of Transit Oriented Development will require different types of approaches, incentives and restrictions, in order to yield cohesive results on ground.

Broadly the types of planned and unplanned development existing in Delhi which may fall **within the Zone 1 Standard TOD and Zone 2 Intense TOD influence zones** may be categorized into three broad categories:

- A. Redevelopment/ Infill** – Sites within the Intense/ Standard TOD Zones which are within Existing Urban Area of Delhi and suitable for development/ redevelopment.
  - A.1. Infill Sites are empty sites within Existing Urban Area which may have opened up for development.
  - A.2. Redevelopment sites could be any of the following:
    - i. Low density areas with gross density less than 250 du/ha
    - ii. Shopping/ Commercial centres
    - iii. Industrial areas/ clusters
    - iv. Resettlement Colonies
    - v. Unauthorized colonies
    - vi. Urban Villages
    - vii. JJ clusters
- B. Greenfield** – Sites within the Intense/ Standard TOD Zones which are in the Urban Extension Area of Delhi i.e. Zones J, K, L, N & P-I & P-II, where provision of road networks, services and social facilities has not yet taken place.
- C. Retrofit** – In addition to TOD Transition Zones, sites within Intense/ Standard Zones which have existing gross density higher than 250 du/ha may not be suitable for redevelopment, but may need retrofitting to meet TOD Zone requirements as per 19.6.1 – 19.6.4. The following criteria may be used as benchmarks for selecting such dense sites for need for retrofitting:
  - C.1. Lack of street network and connectivity as per 19.6.2.
  - C.2. Lack of fire access to buildings.
  - C.3. Lack of adequate physical and social infrastructure facilities.

### 19.5. INFLUENCE ZONE PLAN

A Detailed Influence Zone Plan is a document that provides a framework and vision for future TOD development for a single or a set of MRTS stations. Any public or private development within the Influence Zone Plan Areas must adhere to the overall strategies, framework and benchmarks provided by the Plan. The Plan shall be prepared or be approved by the competent Planning Authority for each influence zone area in a phased manner, customized to site characteristics and context. The plan shall include the following components:

- A. Urban Design Framework – This would include:**
  - A.1. Street Network Plan indicating street hierarchy and character
  - A.2. Landscape and Open Space Structure indicating type of open spaces and distribution of play areas. To include planting strategy for all street trees.
  - A.3. Net FAR and residential densities for each block within the Influence Zone
  - A.4. Vertical mix of uses for each TOD parcel indicating location of civic amenities within mixed –use blocks. To include location of ‘unbundled’ parking sites for shared use.
  - A.5. Three-dimensional site briefs for each block within the Influence Zone indicating recommended massing and organisation of uses.
  - A.6. Location and numbers of short and long term parking spaces
- B. Transport Impact Assessment & Mitigation Strategies – This would include strategies for:**
  - B.1. Achieving the desired modal shift, in particular mode shift for short trips
  - B.2. Street network improvement through assessment of existing capacity and augmentation of network as required through new linkages, alternate routes, junction designs etc for all modes with priority for public transport, pedestrians, cyclists / NMT.
  - B.3. Integrated strategy for Public transport, Pedestrian and Cycle access
  - B.4. Determining the optimum mix of uses to mitigate negative impact on surrounding land uses and transport networks
  - B.5. Parking Strategy as a Demand Management Tool
  - B.6. Mitigation strategies for traffic noise and vibration
- C. Decentralized Infrastructure and Sustainability Plan – This would include:**
  - C.1. Water and Waste Water management strategy including recycling and re-use of waste water. To include strategy for both potable and non-potable water.
  - C.2. Rain water strategy, to be integrated with the Landscape and Public Open Space Strategy
  - C.3. Solid Waste Management Strategy
  - C.4. Energy Strategy maximising use of renewable sources
  - C.5. Integrated Infrastructure and Services Systems Plan indicating space requirements for all infrastructure

**D. Economic Viability and Implementation Model – This would include:**

- D.1. Determining a financially profitable mix of uses based on the current demand and supply, coupled with the projected land values for the TOD zone. To include cost delivering of Social and Physical infrastructure
- D.2. Determining a financial model and delivery mechanism for affordable housing, public infrastructure and public transport facilities through mechanisms of cross subsidy, FAR benefits or any other possible benefit that the TOD authority can give.
- D.3. Strategy for revenue collection from the TOD zone based on the benefits enjoyed by a piece of land lying within the TOD zone. To determine total profit generated from the TOD Zone in a phased manner for individual owners, consortiums and TOD administration.
- D.4. Determining appropriate mechanisms for land-pooling by individual plot holders to avail the benefits of TOD, based on the specific characteristics of the site.
- D.5. Determining the structure of the administrative body of the TOD zone and the cost of operation of the body.
- D.6. Strategy for implementing the TOD policy in the TOD zone through the principle of award and penalty.

NOTE: After preparation of Influence Zone Plans for Urban Extension areas, the TOD Zones shall accommodate substantially greater proportion of the population of planned areas of Zonal Plans, which may therefore require subsequent modification.

**19.5.1. REDEVELOPMENT CRITERIA AND MINIMUM PROJECT SIZE CRITERIA**

**Policy:**

- a) Redevelopment within developed areas of the city would be permitted only when an overall Influence Zone Plan has been prepared for the Station. This is to ensure that local street networks, physical and social infrastructure and shared parking facilities have been planned for the area, before densification commences.
- b) For achieving the higher FAR it would be desirable to incentivize amalgamation of plots as well as make appropriate amendments in the bye laws, as per TOD norms. However, though amalgamation is desirable but it may not be a pre-requisite. Densification should be allowed in all plot sizes subject to the project complying to the approved Influence Zone Plan, so that incremental development and densification can start taking place.
- c) It is highly inappropriate to allow land banking in TOD zones. Penalties such as vacant land tax, etc. on underutilized land and/or underutilized FAR could be levied, in order to ensure time bound densification along with MRTS corridor. Such penalties should apply to all developers as well as Govt. bodies, to prevent inefficient use of valuable land.

**Norms:**

**A. If Influence Zone layout plan for the station area does not exist, no individual developments with TOD norms shall be permitted.**

**B. If Influence Zone Plan for the station area exists:**

- B.1. Any projects size of **≤ 50 Ha** may be taken up for development/ infill or redevelopment, if in adherence to the influence zone plan prepared by the Planning Authority.
- B.2. Individual buildings shall be given sanction by the concerned authority within the framework of the overall influence zone plan.
- B.3. For projects accommodating more than 5000 residential population, the residents/ cooperative societies/ private developers should get the detailed layout and services plan prepared in consultation with the concerned authority for final approval. Variations from the existing influence zone plan prepared by DDA would be permissible subject to adherence to all TOD norms and Codes.

**19.6. TOD POLICY AND DEVELOPMENT CONTROL NORMS:**

Each TOD must have the following components:

- 1. Pedestrian & Cycle/ Cycle-Rickshaw Friendly Environment**
- 2. Connectivity:** Create dense networks of streets and paths for all modes.
- 3. Multi-modal Interchange:** Mass transportation modes servicing the area should be well integrated to afford rapid and comfortable modal transfers.
- 4. Modal Shift Measures:** Shift to Sustainable Modes by Using Design, Technology, Road Use Regulation, Mixed-Use, Parking Policy and Fiscal Measures
- 5. Placemaking and Safety:** Urban places should be designed for enjoyment, relaxation and equity.
- 6. High Density, Mixed-Income Development:** Compact Neighbourhoods for Shorter Commutes and Equity for All Sections of Society.

Policy details and development norms for each of the above components are provided below.

**19.6.1. PEDESTRIAN & CYCLE/ CYCLE-RICKSHAW FRIENDLY ENVIRONMENT**

A pedestrian and cycle friendly environment is the most fundamental and essential requirement of any TOD zone. If investments made in developing high quality public transport systems are to be efficiently utilized, pedestrian access to public transport must be given highest priority.



- Pedestrian connections play a fundamental role in multi-modal integration. Good walking environment encourages people to walk longer to reach public transport. Use of walking and cycling to access stations reduces the overall cost of travel. A significant number of trips in our cities are short distance trips that are less than 3km. These include trips to access essential services like education, local shopping, leisure trips within neighbourhoods and local job centres. Good pedestrian and cycling/non-motorized transport (NMT) facilities with appropriate climatic design will reduce dependence on motor-vehicles for such short trips and induce a modal shift.
  - Delhi's urban poor are too poor to even afford a bus ride for daily commuting. Often the only option for them is to walk. This poses a serious equity challenge. Mobility of more than half of the people of Delhi is severely compromised if walkways and cycle-ways are not well-maintained and usable.
  - In addition it may be noted that as per RITES Household Survey data collected in 2008, 35% of people in Delhi own cycles while only 19% owned cars. (% of people Yet use of cycles is much less due to the lack of safe facilities on our roads. Given the high ownership of cycles, as well as the fact that cycling provides a no-cost feeder mode for long distances, appropriate provision for safe cycling and parking must be made.
- Therefore the public realm for pedestrian and cyclists must be designed as per the following policy and standards.

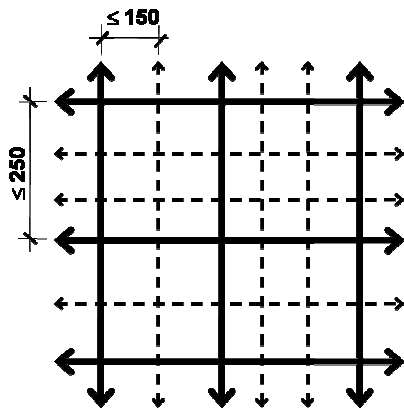
**Policy:**

- a) Design for pedestrian safety, comfort and convenience on all streets.
- b) Create street-level activity and well-watched streets for pedestrian security and enjoyment.
- c) Provide adequate amenities for pedestrians, cyclist, NMT and public transport users.
- d) All streets, public spaces and buildings must be universally accessible.

**Norms and Standards:**

Adherence to Chapter 12 UTTIPEC Street Design Standards is mandatory.

**19.6.2. CONNECTIVITY: Create Dense Networks of Streets and Paths for All Modes.**



**Policy:**

- a) Disperse high traffic volumes over multiple parallel human-scale streets rather than concentrating traffic on fewer major arterial streets. Create a fine network of streets that provides choice of routes for all modes, reducing distances between places as well as journey times.
- b) Provide fast, convenient interchange options and spatial provision for various modes of Intermediate Public Transport (IPT) and buses. Provide multiple mode choices for last-mile connectivity at various prices and comfort levels. Distances between modal changes to be as per Table 19.3.
- c) Provide the shortest direct route to pedestrians and non-motorized modes to Station as well as between individual buildings/complexes.

**Norms:**

**2A. Street grid criteria for MT, NMT and pedestrians.**

Street grid is a network of streets in perpendicular/ multiple directions which provide a multi-directional movement network to various modes.

- 2A.1. The maximum distance between two vehicular streets in a network should be no greater than 250m (C/C) at any point, with additional public access thoroughfares cutting through the block, as required. Therefore any block which is longer than 250m on any side, must provide a public thoroughfare for all modes, with additional public pedestrian thoroughfares, as required.
- 2A.2. The maximum distance between two pedestrian/ NMT only streets in a network should be no greater than 150m (C/C) at any point. Any block which is longer than 150m on any side therefore, must provide a public thoroughfare for pedestrians.
- 2A.3. All street intersections must have at-grade pedestrian and NMT crossing facilities.
- 2A.4. No vehicular Street R/W within TOD Influence Zones shall be more than 30m, unless already notified in the Masterplan as a City level Arterial.
- 2A.5. Signalized safe at-grade crossings to be provided for pedestrians and NMT aligned with the street grid network and/or desire lines of movement.
- 2A.6. Streets meant primarily for NMT movement as well as all streets of ROW 12m or below, should be limited to maximum Speed of 20km/hr by design.
- 2A.7. Traffic calming is mandatory for all streets with ROW of 12m or less through various measures like narrowing of driveway, meandering path with use of trees, islands, kerbs, street furniture, provision of sharp 90° turns, traffic-calmed surfaces, green buffers, etc. UTTIPEC Street Design Guidelines may be referred to for more details.
- 2A.8. 'NMT-only' streets shall be of width 6m or less, designed to prevent motor-vehicle thoroughfares, and enabling only emergency vehicle access. Note: Emergency vehicles can ply on paved or soft surfaces and also move over kerbs of 6" or less.



2A.9. Adequate measures to be taken to minimize impervious cover and Heat Island Effect, by use of permeable materials and ample greenery within Street R/Ws.

**2B. Primary pedestrian entry location of buildings.**

- 2B.1. At least one primary pedestrian entry to each building/complex to be located from the main street.
- 2B.2. Primary pedestrian access to building or complexes should be located at the shortest possible distance from the nearest Station/ bus stop/ primary road junction. Where such entries are absent, they must be added.
- 2B.3. Vehicular / service access should preferably be from Secondary Street wherever access to building is possible from multiple streets.

**2C. Large Footprint Uses: Bridging over R/W**

For continuity of uses and floor-plates of buildings in adjacent blocks, connections may be provided over Public Right-of-Ways in the form of bridges, covered corridors, skywalks, etc. Clearance below any pedestrian bridge should be minimum 5.5 m to allow for movement of emergency vehicles (same as flyovers, etc.). Width of any bridge over R/Ws may not exceed 6m.

**2D. Table 19.2: Specific Policies for achieving desired block sizes based on TOD Development Type:**

<b>Retrofitting</b>	<b>Redevelopment/ Infill</b>	<b>Greenfield</b>
<ul style="list-style-type: none"> <li>• Existing large blocks/ properties where pedestrian/ NMT Networks are to be added, 0.1 FAR on full plot shall be given to the private owner forego land to the public realm.</li> <li>• The new street or connections added must conceptually adhere to the overall Station Influence Zone Plan.</li> </ul>	<ul style="list-style-type: none"> <li>• Public Street Grid to be laid out connecting to exiting Street Networks</li> </ul>	<ul style="list-style-type: none"> <li>• Public Street Grid to be laid out as per Standard, before any development takes place. Overall TOD Plan must respond to existing movement patterns within the Site context, connecting to exiting Street Networks</li> </ul>
<ul style="list-style-type: none"> <li>• In existing area where a fine-grain of pedestrian networks already exists, the same should be preserved. Only to ensure fire access to buildings, widening of critical streets may be undertaken.</li> </ul>	<ul style="list-style-type: none"> <li>• Provision of safe at-grade crossings at junctions and mid-blocks is required (where they are missing) to complete the Street Grid Network as per standards.</li> </ul>	<ul style="list-style-type: none"> <li>Public transport, para-transit and walking facilities should be provided before development takes place.</li> </ul>

**19.6.3. MULTI-MODAL INTERCHANGE:**

Mass transportation options servicing the TOD should be well integrated with each other as well as the pedestrian and cycling networks, so that the time spent in modal transfers is reduced to the minimum. Modal transfers should be integrated spatially, through ticketing and through information.

**Policy/ Strategy:**

- a) Minimize the number and the time required for mode transfers for maximum commuters.
- b) Minimize travel time and cost for majority of commuters. Provide multiple mode options for all sections of society with safety and affordability. Ensure reliable, frequent and affordable public transport systems/networks across the city.
- c) Prioritize pedestrians, public transport, IPT and NMT modes over private modes in the design, management, and spatial planning of public spaces.
- d) Monitor demand vs. supply to be at par which each other. Provide multiple public transport options in developed areas and along growth corridors.
- e) Wherever inadequate, create new networks and facilities for various NMT and IPT modes including but not limited to pedestrians, cycles, cycle-rickshaws, e-rickshaws, auto-shares, car-shares, etc. through public or private enterprise.

**Norms:**

**3A. MRTS multimodal integration checklist.** The following checklist for multi-modal interchange, facilities and parking location is to be followed for design of Station Areas within the 300m influence zone of Stations and/or bus stops. All walking routes and public spaces must be made universally accessible.

**Table 19.3: MRTS multimodal integration checklist**

<b>Walking distance from Station Exit.</b>	<b>Facility/ Amenity and preferred Location:</b>
<b>Within 50 m</b>	<b>Bus Stops; Vendor Zones; Cycle-Rental Station.</b> <ul style="list-style-type: none"> <li>• Locate Within station premises and/or Multi-Functional Zone (MFZ) within Road R/Ws, as per UTTIPEC Street Design Guidelines.</li> <li>• Provide cycle rental stands also at nearby important destinations, like schools, civic buildings, large offices, Malls, etc. and provide informational Signage at both end locations.</li> </ul>
<b>Within 100 m</b>	<b>High occupancy Feeder Stop/ stand.</b> <ul style="list-style-type: none"> <li>• Within Multi-Functional Zone (MFZ) within Road R/Ws, as per UTTIPEC Street Design Guidelines.</li> </ul>
<b>Within 150 m</b>	<b>Cycle-Rickshaw Stand; Cycle Parking stand; IPT/ Auto-rickshaw Stand.</b> <ul style="list-style-type: none"> <li>• Within Multi-Functional Zone (MFZ) within Road R/Ws, as per UTTIPEC Street Design Guidelines.</li> </ul>
<b>Beyond 150 m</b>	<b>Private Car/ Taxi "Drop-off" location; Public Toilets.</b> <ul style="list-style-type: none"> <li>• Within Multi-Functional Zone (MFZ) within Road R/Ws, as per UTTIPEC Street Design Guidelines.</li> </ul>
<b>Within 300m</b>	<b>Enhanced Lighting.</b> <ul style="list-style-type: none"> <li>• Lighting of Bus stops, underside of Metro Stations and elevated walkways = 30 Lux.</li> <li>• Lighting of commercial streets, busy public spaces and important street crossings = 20 Lux.</li> <li>• Lighting of all other streets and public areas = 10 Lux.</li> <li>• For footpaths, yellow light is recommended to allow visibility of tactile pavers.</li> </ul> <b>Signage/ Way-finding information, Maps.</b> <ul style="list-style-type: none"> <li>• At Station Exists, display map of 500m influence zone around stations showing road network with names, major landmarks and destinations and location of all the above facilities within and outside station premises.</li> <li>• Roads within 500m influence zone to have Street name signage as per UTTIPEC guidelines.</li> <li>• All bus stops must display the route numbers and route description with list of major stops.</li> </ul>
<b>Beyond 300 m (preferably)</b>	<b>Validated Car Parking facility (park &amp; ride).</b> <ul style="list-style-type: none"> <li>• Private car parking facility may be provided only at Terminal Stations and major interchange stations.</li> </ul>
<b>Within 500m</b>	<b>Interchange between any two Rapid Transit Modes (e.g. Railway, Metro, RRTS, etc.)</b> <ul style="list-style-type: none"> <li>• Distance to be measured form centre of Station platforms.</li> </ul>

**3B. Table 19.4: Approximate proportion of parking spaces to be provided at/ near MRTS Stations (of the total space available)**

<b>Mode</b>	<b>Parking space dimensions (in metres)</b>	<b>% of total number of spaces allocated* within 300m of MRTS Stations</b>
Cars/ Taxis	2.5 X 5	5%
2 Wheelers	1.5 X 2.5	10%
Auto Rickshaws	2.5 X 2.5	25%
Cycle Rickshaws	1.5 X 2.5	40%
Cycles	0.5 X 2	10%
Vans/ RTVs / any Metro Feeder services, etc.	12 X 3	10%
		100%

\*Percentages are allocated as per the projected Modal Share for 2021 as per RITES Transport Demand Forecast Study 2011. The proportions are approximate and shall be customized to site conditions based on local feeder mode share surveys.

**3C. Table 19.5: Accessibility Standards for Public Transport Facilities from all homes/ work places.**

<b>Hierarchy of Facilities</b>	<b>Desired frequency/ availability (non-peak hour based on requirement)</b>	<b>Accessibility Standard from each home/ work place.*</b>
MRTS Station	Approx. every 2 min in peak hour.	Approx. 800 m or 10 min walk
Metro feeder/ HOV feeder Stop	Approx.0.5-1 min or less in peak hour.	Approx. 400 m or 5 min walk
Bus Stop	Every 1-5 min in peak hour	Approx. 400 m or 5 min walk
IPT/ auto-rickshaw Stand	24 hour availability	Approx. 250 m or 3 min walk
Cycle Rickshaw Stand	Flexible	Approx. 250 m or 3 min walk
Cycle Rental Stand	24 hour availability	Approx. 250 m or 3 min walk
Shared private parking garage	Paid shared facility for night and day use.	Approx. 500 m or 6 min walk

\*All public transport and IPT modes shall be available within accessible distance of homes/ offices within all three influence zones, in order to encourage public transport use and provide various mode options based on their time, cost and convenience choices.

#### 19.6.4. MODAL SHIFT MEASURES: Shift to Sustainable Modes by Using Design, Technology, Road Use Regulation, Mixed-Use, Parking Policy and Fiscal Measures

##### Policy:

- Wherever possible, locate public transport stations, homes, jobs and facilities within easy access of each other, to incentivize walking and cycling/NMT use for short trips.
- Create compact, mixed-use developments and enable sharing and multi-use of spaces to reduce number and length of trips. (See 19.5.6)
- Dis-incentivize private motor vehicle use as a feeder and as a general mode of transport. Incentivize use of public transport, IPT and NMT modes by making them comparatively cheaper, convenient, safe and easily available. Limit and price private parking appropriately to discourage private vehicle use in TOD catchment areas.
- Parking caps to be enforced in MRTS influence zones based on capacity/ availability of space, as well as supply of public transport, IPT and NMT options.
- Stringent implementation & enforcement is required, to ensure the success of all modal-shift policies.

##### Norms:

#### 4A. Accessibility Criteria for Social Infrastructure.

**Table 19.6: Accessibility Criteria for Social Infrastructure and Open Space to ensure walkability.**

Hierarchy of Facilities	Population/ Unit (approx.) Ref: Masterplan Chapter 9	Accessibility Standard* from each home (whichever is lesser).
Cluster level	250	Approx. 100 m or 1 min walk
Housing Area level	5000	Approx. 250 m or 3 min walk
Neighbourhood level	10,000	Approx. 400 m or 5 min walk
Community level	1 lakh	Approx. 800 m or 10 min walk
District level	5 lakh	Approx. 2000 m or 10 min cycling

\*The above criteria are applicable to all new/ redevelopment projects only.

#### 4B. Minimum Mixed-Use Criteria:

##### Policy:

- The entire influence zone is considered as “white zone” with mixed use permitted throughout the zone. All projects and sites within TOD influence zones may have a mix of uses. Intensity and type of mix would vary by distance from station, street hierarchy and network, and level of public transport and IPT service.
- An optimal mix of housing, commercial uses, incomes and services need to be planned at the neighbourhood level, to reduce dependency on private vehicle and shift short trips from private vehicles to walking, cycling, cycle-rickshaw or public transport.
- A variety of shared parks and multi-use public spaces shall be provided, which can be active round-the-clock and open for use by users of a variety of age-groups, income groups and gender, and also reduce number and length of trips.

##### Norms:

**4B.1.** At least 30% residential and 20% Commercial & Institutional use (min. 5% commercial and min. 5% institutional use) of FAR is mandatory in every new/ redevelopment project within the Influence Zone.

- New/ Redevelopment projects with more than 1.5 FAR of Commercial use shall be permitted/ located only within the 300 m walking distance from the MRTS station (Intense TOD zone).
- At least 50% of total street frontage length of any TOD project should have an active frontage, i.e. a mix of at least two types of uses with different peak hours of activity stacked vertically, to provide round-the-clock ‘eyes on the street’.

**4B.2.** Projects/ uses generating >200 peak hour peak direction trips (PHPDT), or of size  $\geq 20000$  sq.mtrs and <1,50,000 sq.mtrs. of built-up area would require a Transportation Impact Assessment (TIA) and must comply with Mitigation Strategies required for the project.

- If the proposed project generates peak hour peak direction trips between 100-200 PHPDT, a traffic statement that addresses trip generation and any site specific issues may be submitted in place of a full traffic impact analysis. These projects are assumed to have insignificant impacts on the surrounding transportation system.
- TIA for TOD projects to be submitted for approval to competent authority, as per requirements of Chapter 12: Transportation.
- In case the project adheres to the approved Influence Zone Plan with an approved TIA, then individual project level TIA is not required.
- All new Industrial dominated projects shall have at least one approach from a road of at least 24 m R/W.
- Uses generating more than 200 PHPDT shall be permitted only Right-of-Way of 18m or above, or else there shall be multiple access roads to supply capacity equivalent to 18 m R/W roads for permitting such uses.

#### 4C. Parking Policy in TOD for Travel Demand Management

The aim of parking policy in TOD zones is to manage and control the parking supply and demand within the area, in order to:

- Reduce vehicular trips to/from, through, and within the area,
- Reclaim public land for more equitable uses, and
- Shift people to alternate modes of transportation i.e. metro, buses, IPT, NMT and walking.

For TOD influence zones, parking policy, principles and standards as per Chapter 12 will be applicable with the following exceptions and/or additions:

##### 4C.1. Public Parking Norms for Provision of On-street and Off-street facilities:

- (i) **Limit and Area-wise Cap** private motor vehicle parking in TOD zones. Caps shall be calculated by the process of a Traffic Impact Assessment (TIA) to be conducted for each influence zone or TOD project. The TIA may refine/ redefine the maximum permissible ECS as well as number of on/off-street public parking spaces in an area, based on the vehicle carrying capacity of the roads from/within the Influence Area.
- (ii) **Public parking supply as well as ECS requirements** for motorized modes shall be restricted in TOD Influence zones and will be based on location/ distance from MRTS stations. Details of parking norms will be as per Table 19.7. Mandatory component of parking for cycles, 2-wheelers and shuttle buses shall be part of ECS requirements for all private and public new/ redevelopment projects as per Table 19.8.
- (iii) **Parking for IPT and NMT** modes shall be prioritized at-grade and on-street, within 300m of the Station and also provided within 300m walking distance of every home within all TOD zones.
  - iii.1. On all streets, parking for IPT and NMT shall be provided within the Multi Functional Zone of the R/W.
  - iii.2. In areas where provision of adequate IPT/ NMT parking is not possible within R/W, setbacks of buildings may be reclaimed (with appropriate incentives) to provide IPT/ NMT parking.
  - iii.3. Parking spaces for differently-abled to be provided as **per IRC 103:2012.**
  - iii.4. Cycle parking to be provided.
- (iv) **Long-term and Short-term public parking for private vehicles:**
  - iv.1. Reclaim street space, especially footpaths and cycle-tracks, from all private vehicle parking. Illegal car parking on footpaths and cycle tracks make these facilities unusable and therefore endanger the life of these vulnerable roadusers. On-street IPT, NMT and pedestrian facilities shall be provided in the reclaimed street space, along with highly priced and designated short-term parking as per requirement.
  - iv.2. Long term on-street parking for private modes is not permissible in Standard and Intense TOD zones, in order to ease congestion and provide space for other higher-priority public uses such as NMT lanes, cycle-rickshaw stands, IPT/ TSR stands, widened sidewalks, hawker zones or multi-utility zones. MRTS multimodal integration checklist for Intense TOD Zones and Table 12. Street Design Checklist for all TOD zones shall be followed for road space allocation.
  - iv.3. If required, designated short-term on-street private vehicle parking for shoppers may be provided in commercial areas, but highly priced during peak hours and exponentially increased with temporal demand.
  - iv.4. As per the Parking Plan developed as part of the overall Influence Zone Plan, each on-street parking space shall be marked physically on ground and notified on the web, before commissioning, so as to facilitate enforcement by authorities and convenience for users.
  - iv.5. Long term parking facilities shall be only at off-street locations, priced relatively cheaper than on-street parking and both shall be managed by a single agency. Standards and conditions as per **Table 12..... Parking Management Zones** shall apply.
  - iv.6. Shopkeeper parking may also be consolidated in off-street 'park-and-walk' facilities, located within walking or cycle-rickshaw distance (300m - 500m) from destinations.
  - iv.7. Temporary service parking may be provided on street at off-peak hours, but without creating conflict with pedestrians, NMT and public transport users. Within new/ redevelopment projects, service parking shall preferably be co-located with off-street parking, minimizing conflict with other users.
- (v) **Shared Public Parking Facilities:**
  - v.1. **In New/ Redevelopment Projects**, all parking facilities shall be shared between uses with different peak hours of activity, so that they are efficiently used round the clock. Appropriate signage shall display it clearly to users as 'public'.
  - v.2. Shared public parking facilities may be developed by the public agencies or private developers/ owners/ Traders' Associations. Parking spaces shall not exceed the parking cap allocated for the Influence Zone area.
  - v.3. Shared Parking could be integrated into a new mixed-use project or be provided in free-standing structures, based on the Influence Zone Plan for the Area.
  - v.4. **In existing areas**, shared public parking facilities can be created as part of comprehensive Redevelopment schemes of local shopping/ commercial areas/ underutilized Govt. lands/sites, etc., but not under public parks or open spaces.
  - v.5. Design standards as **per para 19.6.4 (4C.4) apply.** Standards and conditions as per **Table 12..... Parking Management Zones** shall apply.



- (vi) **Curb Spillover Parking Impact:** To prevent parking from highly priced areas from spilling over to neighbouring areas, several measures may be taken:
- vi.1. Common paid parking facilities may be provided for visitors, overflow parking, irregular users, etc. in neighbourhoods as per point (e).
  - vi.2. In residential neighbourhoods, residents may be provided with stickers or certification from the RWAs so that un-identified vehicles may be towed or impounded by the Traffic Police.

**Table 19.7: Public Parking Policy for On-street and Off-street Facilities within TOD zones**

Zone 1: Intense TOD Zone	Zone 2: Standard TOD Zone	Zone 3: TOD Transition Zone
<ul style="list-style-type: none"> <li>• The 300m walking zone (from the centre of the MRTS Station is to be designated as a Pedestrian/NMT priority zone and be designed for multi-modal interchange as per 19.6.3 (3A).</li> <li>• Parking for IPT and NMT modes is mandatory.</li> <li>• No long term public parking is to be provided in this zone.</li> <li>• Drop off facilities to be provided.</li> <li>• Short-term on-street parking within this zone, if provided, shall be exponentially priced (higher than rest of the city), to ensure high turnover.</li> <li>• Pricing should be increased every 15 minutes, during peak hours.</li> </ul>	<ul style="list-style-type: none"> <li>• Shared Parking Zone;</li> <li>• On-street parking for NMT and IPT to be provided within 300m of all homes.</li> <li>• Off-street shared public parking facilities may be provided. Single agency shall manage both on-street and off-street parking facilities. Parking Management Zone conditions will apply.</li> <li>• All projects providing parking facilities should have it open for use for general public at all hours.</li> <li>• Short-term street parking to be priced higher than non-TOD zones. Pricing should be increased every 30 minutes during peak hours.</li> </ul>	<ul style="list-style-type: none"> <li>• Shared Parking is desirable.</li> <li>• On-street parking for NMT and IPT to be provided within 300m of all homes.</li> <li>• High priced short-term street parking as per city level policy for non-TOD zones.</li> </ul>

(vii) **Parking provision at/ near Metro Stations:**

- vii.1. Park-and-Ride Facilities for private modes may be provided only at Terminal MRTS Stations or major Multimodal Interchanges.
- vii.2. If off-street long term public parking facilities are provided, they shall be preferably located beyond 300m (3-minute walk) from the centre point of the Metro Station platform.
- vii.3. If on-site parking facilities are provided within the 300 m Intense TOD Zone, the same shall not be exempt from FAR consumption.
- vii.4. Only highly priced short term parking facilities and drop of locations for private vehicles may be provided within 300m Intense TOD Zone.
- vii.5. Transit supportive uses as per 6E.3 which are high pedestrian generators, have low parking demand and directly promote greater transit ridership and opportunities for multi-purpose trips, shall be preferred near stations.
- vii.6. Parking for various public transport and IPT/ NMT modes shall be provided as per **para 19.6.3A & 3B.**

(viii) **Bus Depots and Terminals.** All Bus depots within TOD zones must function as Terminals as well, and be developed as multi-level bus-parking facilities as per TOD planning norms. Underutilization of FAR below 3.0 shall not be permitted.

**4C.2. On-site Private Parking Requirements based on Landuse, for new/ redevelopment projects:**

- (i) Parking requirements are based on distance from an MRTS station or stop, as per **Table 19.8.**

**Table 19.8: On-site Parking Requirements for projects within TOD influence zones**

Zone 1: Intense TOD Zone	Zone 2: Standard TOD Zone	Zone 3: TOD Transition Zone
<ul style="list-style-type: none"> <li>• No minimum ECS requirements applicable within this zone.</li> <li>• If parking facility for private vehicles (on-ground or structured) is provided, it will be counted as consumption of FAR and shall be unbundled and shared.</li> <li>• Parking spaces for differently-abled to be provided <b>per IRC 103:2012</b>, which shall be exempt from FAR.</li> <li>• Cycle parking to be provided and shall be exempt from FAR.</li> </ul>	<ul style="list-style-type: none"> <li>• Reduced ECS norms applicable as per Table 19.7 below.</li> <li>• Parking facilities shall be exempt from FAR.</li> <li>• Parking space shall be unbundled from saleable floor area, and may be also used as shared public parking facilities.</li> </ul>	<ul style="list-style-type: none"> <li>• Parking facilities to be provided as per city level policy for non-TOD zones (section 12.X)</li> </ul>

- (ii) **Unbundled Parking:** The entire parking required for a project shall be provided within the project site as an 'unbundled' facility i.e. parking spaces shall be sold / leased / rented independent of the dwelling unit or

saleable floor space, so that the same space may be used by different users at different times of day. E.g. a space used by a local resident during the night could be used by an office employee during the day.

- This would cut down the net parking space requirement for projects and allow optimal utilization of space.
- End users shall have more flexibility and affordability, as people who do not wish to own a vehicle shall not be required to pay for a parking space as a ‘bundled’ cost with saleable floor area.
- Parking spaces may either be rented or leased, or sold separately. The purchaser of a parking space may in turn rent the space to a secondary shared user for hours and/or days when the primary user of the space is not occupying the space.
- Unbundled parking within projects may also function as Shared Public Parking facilities as per 4B.1(v).
- The development of parking spaces for any project shall not exceed the allotted parking cap established for the geographic Plan Area in which the Project is located, as per 4B.1(i).

#### 4C.3. Parking Space Ratios for all New/ Redevelopment Projects

- (i) The Intense and Standard TOD Zones are designated as ‘mixed use’ as per para 19.6.4B. Parking @ 2.0 ECS per 100 sq.m. built up area as per Masterplan Chapter 15 para 15.4, shall be applicable within the premises of all projects. Lower parking standards may be adopted based on the requirements of the Influence Zone Plans prepared for the Station Areas.
- (ii) ECS requirement shall include provision of parking spaces for all types of vehicles i.e. cars, scooters, cycles, light and heavy commercial vehicles, buses etc., as per the minimum ratios in Table 19.9.
- (iii) All parking spaces for different modes must be designed as per their specific sizes and actual parking space requirements shown in Table 19.9 along with securing facilities, as required.

**Table 19.9: On-site Parking Requirements for projects within TOD influence zones**

Mode	ECS	Area (as per ECS) in Sq.m. (including circulation)**	Parking space dimensions (in metres)	Minimum % of total number of parking spaces allocated* within projects
Cars/ Taxis	1	23.00	2.5 X 5	30%
2 Wheelers	0.25	5.75	1.5 X 2.5	20%
Cycles	0.1	2.30	0.5 X 2	30%
Buses/ Shared Vans	3.5	80.50	12 X 3	2%
Commercial vehicles	3.5	80.50	12 X 3	2%

\*Percentages are allocated as per the projected Modal Share for 2021 as per RITES Transport Demand Forecast Study 2011. Based on local or project specific demand, maximum provisions may be adjusted.

\*\* Space standards for ECS vary with type of parking, as per Table 17.3.

#### 4C.4. Parking Design, Access and Street interface regulations

- (i) **For all on-site (off-street) parking facilities:**
  - i.1. Locate parking behind buildings, not directly facing the footpath of the main R/W.
  - i.2. Access to parking will be from a street lower in the hierarchy amongst the streets demarcating the block / plot.
  - i.3. Parking access should be located in a mid-block location and with minimum number of access driveways, to minimise kerb cuts and maintain continuity of footpath. Conflict with bus-stops, NMT and pedestrians must be minimized.
  - i.4. Parking and loading access shall be shared where feasible.
  - i.5. Raise all driveways/ vehicular entries to the finished footpath level (using table tops or raised driveways), to maintain continuity and level of the footpaths/ cycle tracks. Plan and locate access / entries to parking facilities so that curb cuts are minimized and footpath continuity is maintained.
  - i.6. Only the minimum driveway width of 6 M required for access to parking shall be permitted.
  - i.7. Illuminate all parking areas and accessing pedestrian walkways with minimum 20 lux.
  - i.8. Drop-off zones shall be located within parking facilities or alongside footpaths such that conflict with pedestrians is minimized and continuity of footpaths is maintained.
- (ii) **At-grade parking:**
  - ii.1. No boundary wall shall be constructed around parking lots. If required, they may be fenced or cordoned off with low growing landscape, so that visual connection between parking lot and adjacent footpath is maintained.
  - ii.2. Parking lots must also function as stormwater management systems, as per UTTIPEC Guidelines.
- (iii) **Structured parking:**
  - iii.1. Ground floor of all parking structures must be lined with active uses i.e. civic, community, or retail uses along the street frontage.

- iii.2. To minimize impact of parking structures on residential uses, garage floors and ramps should use textured surfaces to minimize tire squeal, and exhaust vents should not be located along sides closest to residential uses.

**ILLUSTRATIONS REQUIRED:**

**Multi-level parking above ground floor – plan and 3d or section to show ‘wrapping’ of habitable uses along street; Location of drop-off points, Location of access points along ground floor, stand-alone parking structures**

**4D. Employer Based TDM Strategies must be encouraged within TODs:**

- i. For all Government organizations having offices within TOD influence zones, universal transit passes (linked to photo I-cards) valid on all public transport modes such as Metro, buses and BRT, may be provided to employees as part of remuneration package.
- ii. Vanpools/ shuttle bus facilities should be provided by all govt offices as well as large trip generating private uses like Malls, institutions, colleges, etc. if the Station is beyond 300m walking distance.
- iii. Options to work through telecommuting and flexible work schedules should be encouraged in Delhi.
- iv. Cycle rental facilities and parking for High Occupancy Vehicles (HOV) to be prioritized on premises.

**19.6.5. PLACEMAKING AND SAFETY: Create Urban Places for Enjoyment, Relaxation and Equity.**

**Policy:**

- a) Create a safe, vibrant, comfortable urban “place”, by encouraging round-the clock active streets and incidental places to relax. Introduce mixed land use and other informal street activities like vendors, etc. to promote round-the-clock activity and informal surveillance.
- b) Create climate-sensitive streets and public spaces through adequate street tree planting, building edge conditions to facilitate shading of public realm, orientation of spaces, etc.
- c) Create “eyes on the street” by removing boundary walls of compounds and building to the edge of the street R/W. This would allow people from inside to look out on to the pavement, thus discouraging misbehavior, shady corners, urinating in public places, etc. Street walls with transparency, built-to-edge buildings, minimum setbacks and non-opaque fences help provide natural surveillance of public spaces.
- d) All public spaces shall be universally accessible, safe and usable for all age, gender and income groups.

**Norms:**

**5A. Street Edge Regulations.**

**5A.1. Boundary Walls:**

- i. In all new, retrofitting and redevelopment projects, boundary walls are prohibited. In case enclosure of sites is required, transparent fencing shall be used above 300 mm high toe wall from ground level.
- ii. In case any toe-walls around soft areas and green open spaces are provided, adequate inlets for rain water are required.

**5A.2. Setbacks:**

Buildings shall be built to the edge of the setback line, without fences/ boundary walls in order to define the street wall and provide a comfortable scale for pedestrians. Breaks in the street wall should be limited to those necessary to accommodate pedestrian pass throughs, public plazas, entry forecourts, permitted vehicular access driveways, and hotel drop-offs.

- i. The main building façade (with primary pedestrian entry) should face the street, located on the property line without setback, or with minimal set back and transparent edge that contribute to street safety. Refer **Table 19.10** for Maximum permissible setback norms.
- ii. In certain cases, the ground floor of the building could be set further back from the setback line if the first floor of the building sits along the setback line as a continuous façade,
- iii. Building height and ventilation requirements shall be applicable as per as per 6F.2.
- iv. A minimum percentage of the Frontage/ Street Wall shall be set along the setback line pursuant to the Table ....and as illustrated in the Building Frontage Requirement Figure.....
- v. Setback Requirement is based on Street Hierarchy. The intent is to maximize eyes on the Street and also create a sense of enclosure and comfort along streets, based on their widths/ hierarchy and desirable character, at the same time, without compromising light and ventilation access to buildings.

**Table 19.10: Maximum permissible setback norms.**

Use	Setback requirement for façade facing:		
	Public R/W ≥ 9m	Public R/W = 9m	Public R/W = 6m
<b>Commercial, Non-residential</b>	Max. 0 m	Max. 1.5 m	Max. 3.0 m
<b>Educational (schools, colleges, etc.)</b>	Max. 1.5 m	Max. 1.5 m	Max. 3.0 m
<b>Residential</b>	Max. 1.5 m	Max. 3.0 m	Max. 4.5 m

## Annexure – ‘A’

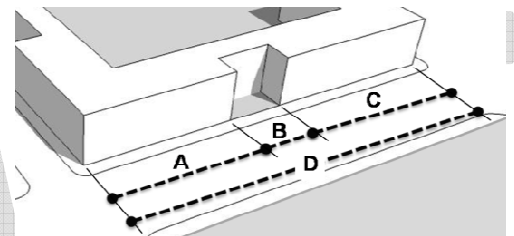


**Figure 19.3:** Setbacks have a negative effect on safety, walkability and public transport usage of a place. Cluster building entries near nodes, bus stops, etc. to offer a one-stop opportunity to conveniently access a variety of destinations on foot.

### 5A.3. Minimum Frontage (built-to setback line) requirements.

**Table 19.11: Building Frontage/ Street Wall Requirement at Setback line**

Facing Street Right-of-Way	Minimum Percent of Building Frontage (Street Wall) at Setback Line
R/Ws above 24m	70%
R/Ws of 12 - 24m	60%
R/Ws of ≤ 9 m	No minimum frontage requirement



**Fig 19.4:** % Building Frontage at Setback line =  $\frac{(A+C)}{D} \times 100$

- A maximum length of 20M of an 'unwatched' frontage (e.g. gaps in frontage, fences or building walls of properties where there are no access points, doors, or windows) is permitted at any one instance.
- Two stretches of unwatched or non-active frontage must be punctuated by an active frontage of minimum 6 m.

### 5B. Active Frontage (Mixed Use Edge Condition).

An active frontage is a street edge/ wall with at least two types of uses with different peak hours of activity stacked vertically, to provide round-the-clock 'eyes on the street'.

The following norms are applicable for new, redevelopment or infill projects:

- At least 50% of total street frontage length of any TOD project should have an active frontage.
- Commercial frontages at street level should have facades with minimum 50% transparency (un-tinted) and active uses looking onto the main streets, to facilitate visual surveillance. Additional recessed walking zones may be created at the edges of the lot boundary (e.g. arcades, colonnades, etc.) while maintaining the transparency of the inner façade edge condition.
- Other non-residential and non-educational facades should have minimum 30% transparency at street level.
- Residential frontages should preferably have balconies/ verandas and active spaces facing the street. Higher plinths may be used to create privacy for ground floor windows.

### 5C. Minimum Ground Coverage.

5C.1. The minimum Ground Coverage requirement for all plots, blocks and projects within TOD influence zones is 50%. In developed areas, this norm would apply to redevelopment or infill development projects only.

5C.2. Open Space requirements as per Table 19.14 and Solar Access Regulations have to be met as per 19.5.6.2.

### 5D. Vending Zones.

- Vending zones shall be provided at regular intervals (approx. 10 minute walk from every home/ workplace) to encourage walkability, increase street activity and provide safety.
- They should be prioritized near street intersections, bus stops, metro station entry/ exit points, public toilets, etc. where women may be expected to wait at various hours of the day/night. Often bus stops & station exit points become deserted at off-peak hours making these areas unsafe for commuting women.
- Vendors, drinking water kiosks, toilets and other amenities must be given designated space in the Multi Functional Zone (MFZ) within the road Right-of-Way, so that they don't occupy the Minimum Clear 2.0 M



Pedestrian Walking Zone. Number of vendor spaces shall be provided based on the abutting street-edge uses, as per Table 5.3 (Chapter 5).

5D.4. It is recommended that 'dead', opaque boundary walls of existing properties, in particular large public / semi-public uses, are retrofitted as per above requirements. In the interim, boundary walls could be changed in character to have eyes on street by demarcating hawking / commercial zones along the edges provided a clear, safe and unobstructed footpath is available beyond this zone.

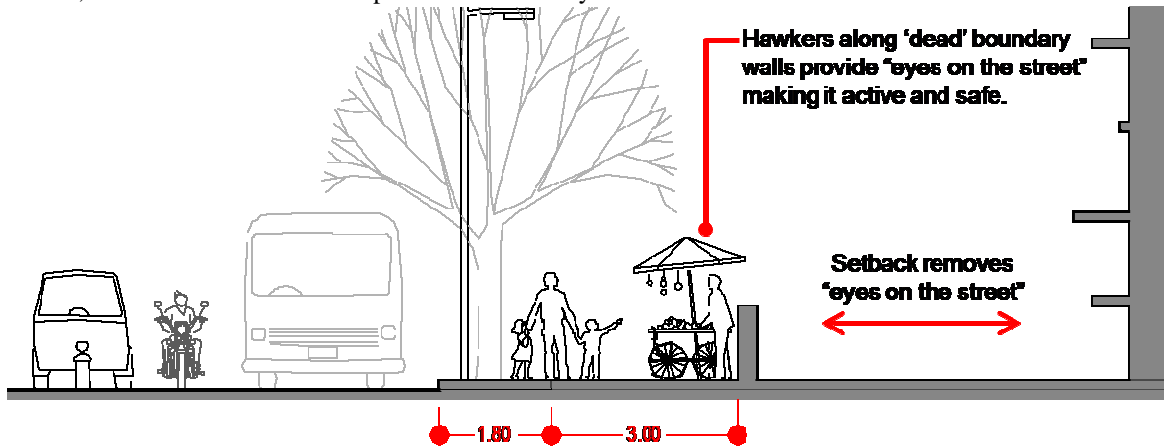
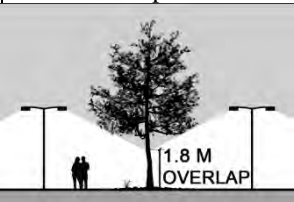


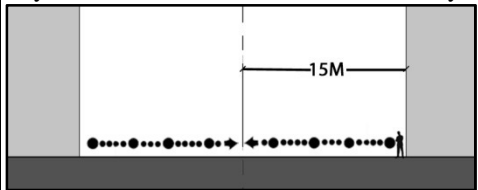
Figure 19.5: Vendor zones to activate unwatched boundary wall edges in already developed areas

### 5E. Additional Amenities for 'Placemaking'.

All parks, plazas, public spaces and streets within TOD influence zones must have all basic amenities, as follows:

Table 19.12: Amenities required for 'Placemaking'

	Streets (within MFZ)	Plazas, Parks
<b>1. Universal Access</b>	All public spaces to be barrier free and universally accessible.	
<b>2. Climatic Comfort and shade:</b> i. Trees ii. Overhangs/ arcades iii. Artificial canopies. iv. Cool, light-coloured high albedo materials.	<ul style="list-style-type: none"> <li>At least 100 trees per km for streets with R/W smaller than 12m. At least 100 trees per km per footpath on streets with R/W greater than 12m. Spacing of trees at no place should be greater than 12m except at intersections.</li> <li>Street level arcades are desirable for commercial frontages.</li> <li>Overhangs from building facades overpublicrealm is desirable upto a max. 2 m. to shade the footpath, etc.</li> </ul>	<ul style="list-style-type: none"> <li>At least 200 trees per sq. km.</li> <li>Trees should be planted along movement paths as well as in groups to shade seating/waiting areas, plazas, children play areas, tot-lots, etc.</li> <li>Temporary shade structures like pergolas, tensile shades, etc may be used in plazas, till full growth of trees.</li> <li>Dense tree areas should be thinned out at eye level &amp; below in order to provide clear visibility and visual surveillance.</li> </ul>
<b>3. Seating:</b> to be provided in well watched, busy areas, well shaded by trees or artificial canopies - to provide safe pause places and climatic protection.	<ul style="list-style-type: none"> <li>Seating to be provided in Multi-Utility Zones and not on footpaths.</li> </ul>	<ul style="list-style-type: none"> <li>They should be installed for groups (at least 10 people) and preferably not in isolation, in order to provide a secure environment.</li> </ul>
<b>4. Dustbins</b>	<ul style="list-style-type: none"> <li>Source separated dustbins must be provided at each station exit, bus-stop, street intersection and entry/exits to public spaces.</li> </ul>	
<b>5. Lighting</b> i. Basic lighting for safety & usability ii. Accent lighting to define spaces.	<ul style="list-style-type: none"> <li>Lighting of Bus stops, Metro Station exits and elevated walkways = 30 Lux.</li> <li>Lighting of commercial streets, busy public spaces, plazas, parks and important street crossings = 20 Lux.</li> <li>Lighting of all other streets, walkways and public areas = 10 Lux.</li> <li>Distance between lamps should be such to allow a vertical height distribution overlap of 1.8 m, so that visual recognition is there.</li> <li>Coordination of tree plantation and lighting plan required to avoid undesirable foliage shadows and patches of dark zones along streets</li> <li>Provide glare free ambient street lighting for pedestrians, using full cut off fixtures for pedestrian zones.</li> <li>Other lighting design standards as per Chapter 12 Street Design Standards.</li> </ul>	
		
<b>6. Public Toilets</b>	<ul style="list-style-type: none"> <li>Public toilets to be provided at every 500 - 800M along roads, and/or at every bus stop with minimum 1 WC for women.</li> </ul>	<ul style="list-style-type: none"> <li>Public toilets to be provided within a radius of 500m at all entry and exits points parks/ plazas, with minimum 1 WC for women.</li> </ul>
	<ul style="list-style-type: none"> <li>In addition one accessible toilet should also be provided, to be marked as Multi-</li> </ul>	

	<p>use toilet to be used by senior citizens, families with young children and disabled persons.</p> <ul style="list-style-type: none"> <li>• Urinating in public spaces should be fined appropriately and heavily.</li> </ul>
<p><b>7. Good design</b></p> <ol style="list-style-type: none"> <li>Scale spaces for natural surveillance.</li> <li>Minimize hard areas and maximize trees/planted areas.</li> <li>Plant or pave (as per requirement) all surfaces, to minimize dust/ SPM pollution.</li> <li>Use deciduous trees to shade all surfaces, but allow sunlight access to spaces in winter.</li> </ol>	<ul style="list-style-type: none"> <li>• Help create a sense of enclosure and placemaking on streets by creating relaxation spaces.</li> <li>• Flowering or deciduous trees create a changing seasonal urban experience on streets.</li> <li>• In new projects, depth of plaza/ park (Community level and below) should not be greater than 30m in width, due to the visibility limit (15m) of the human eye.</li> <li>• Park fences to use shrubs (50-70 cm high) in order to avoid interference in visibility and minimise territory division.</li> <li>• Dense tree area should be thinned out at eye level and below, for natural visibility.</li> </ul> 

#### 19.6.6. HIGH DENSITY, MIXED-INCOME DEVELOPMENT: to facilitate shorter commutes and travel times, and equity for all sections of society.

**Note: Norms and Standards for 19.6.6 are applicable only to all new, retrofitting and redevelopment projects within Zone 1 Intense TOD and Zone 2 Standard TOD zones.** All properties public or private, within these zones shall be able to avail the norms of TOD, with the exceptions noted in para 19.4.

##### Development Policy:

- Maximize densities within TOD, in order to facilitate maximum number of people walking or cycling easily to public transit. Low urban densities tend to go together with a high level of reliance on private vehicles, with low use of alternate modes. High density along with mixed-use and interconnected street networks makes average trip lengths shorter, thus promoting walkability and use of non-motorized modes of transport, and reducing per capita vehicular trips.
- In urban extension areas, higher the density, lower the per capita infrastructure cost of new road lengths, pipe lengths and physical infrastructure.
- Encourage transit supportive uses near stations, which are high pedestrian generators and directly promote greater transit ridership and opportunities for multi-purpose trips.
- Discourage non-transit supportive uses that generate little or no transit ridership. These uses can be problematic in that they may consume large amounts of land, result in extremely low density development, or create environments that are “unfriendly” to pedestrians, and yet, not generate much ridership.
- Enable a balanced mix of jobs and housing along MRTS corridors and caps on parking supply should be adopted to support rapid densification, housing affordability and improve the efficiency and equity of the resulting developments. Provide a range of affordable housing options and market-responsive uses customized to local context.
- Use private development to cross-subsidize public transport and affordable housing. Create flexibility to allow market customization and financial viability of projects and allow customization to locally changing market trends and ground situations.
- Plan at a macro scale to meet additional localized demands for social and physical infrastructure. Incentivize and facilitate decentralization of infrastructure to minimize resource utilization.
- Ensure healthier living environment with sustainable design practices.

#### 6A. Far and Density Thresholds:

##### Policy:

- In order to facilitate most efficient use of land in TOD zones, maximize the population holding capacity of each TOD, to prevent low density development (sprawl) elsewhere.
- Densification through redevelopment and infill within existing Urban Areas is to be prioritized over development in Urban Extension, to minimize acquisition of land for development in peripheral sub-urban/ agricultural/environmentally sensitive lands. New growth in urban extension should be in the form of dense growth along MRTS corridors, to create a compact city.
- Underutilization of FAR (below 3.0 and the corresponding minimum density) is not permissible for any new or redevelopment projects. Development of empty sites within 800m influence zone must begin within 5years of operationalization of MRTS Station.
- Higher FAR would not automatically result in densification as provision of large unit-sizes would defeat the very purpose of densification. Therefore it is essential to couple the FAR threshold with a minimum density requirement.

- e) For effective TOD, high density is more important than increased FAR. Current settlements within the city may already be existing at relatively high densities; therefore increased FAR could lead to gentrification of these neighbourhoods. Higher FAR would be an effective tool only for redevelopment of low density and/or dilapidated neighbourhoods existing along transit stations. FAR should not become a mechanism for gentrification of lower and middle income neighbourhoods, by replacing them with predominantly high-income high-priced car-dependent developments.
- f) Maximum permissible FAR and densities in various TODs shall be based on the capacity of public transport modes, circulation network and the physical infrastructure thresholds of the area.
- g) New FAR allowances above current caps can be taxed or otherwise monetized to fund infrastructure while increased future property taxes could fund operation and maintenance of public transport systems.
- h) A TOD Cess may be levied to fund public transport facilities and infrastructure management cost of the development. Revenue sharing as well as infrastructure maintenance models to be worked out based on Initial projects taken up.

**Norms:**

- 6A.1. The minimum standard for gross density permissible for any TOD project is 250 du/ha.
- 6A.2. Minimum percentage of mix-of uses and housing mix to be adhered to even if full permissible FAR is not consumed/ availed of.
- 6A.3. Net FAR availed for any project of size 0.6 Ha (80x80 block) or above, is to be coupled with Density minimums as per the table below:

**Table 19.13: Permissible FAR and Density\***

Gross FAR (site)	Minimum permissible density (with ±10% variation)	
	Residential dominated project (Residential FAR ≥ 50%)	Predominantly non-residential (Residential FAR ≤ 30%)
Below 1.0	Under-utilization of FAR (not permitted)	
1.1 - 2.0	200- 400 du/ha	100 - 200 du/ha
upto 3.0	400 - 600 du/ha	250 - 400 du/ha
3.1 - 4.0	600 - 800 du/ha	400 - 600 du/ha

\* Site level FAR shall be based on Approved TOD Influence Zone Plan.

- 6A.4. For ‘Redevelopment’ projects within the Intense or Standard TOD Influence zones, FAR-Density bonuses permitted only if:
  - a. Existing density is ≤250 du/ha.
  - b. If existing gross density is greater than 250 du/ha, FAR-density bonus may be availed only if the area is notified for redevelopment (e.g. slums, unauthorized colonies, special areas, etc.). Retrofitting for better access and physical infrastructure provision in these areas may also be required.

**6B. Open Space and Social Infrastructure**

- 6B.1. To ensure efficient and optimum use of land, social amenities shall no longer be given individual plots of land within the influence zone. They shall be allocated the required built-up area within planned redevelopment schemes as per Masterplan requirements.
  - i. Open area requirement of the social infrastructure facilities shall be accommodated within the Block/ Cluster plan, or integrated into the multi-use Public Open spaces provided in the area. For example, school playgrounds may be provided within the Neighbourhood Play Area and must be open for use after-hours by general public.
  - ii. Open space requirements with different hours of use may also be provided as shared spaces, with appropriate programming.
- 6B.2. Open Space requirements for Residential population may be provided on site, as per the following Table:

**Table 19.14: Accessibility Standards and Location Criteria for Open Spaces**

Open Space Type	Functional Requirements	Ha./ unit	Pop./Unit (approx.)	sq.m./ person	Location	Sq.m./ person
<b>HOUSING CLUSTER (BLOCK) LEVEL:</b>						
Tot Lot	Soft un-grassed play areas for toddlers/ small children. May be provided on rooftops of buildings.	0.0125	250	0.5	Within Block/ Housing Cluster	2.5
Housing Park Area	Park programmed for all age groups, open-air food court, playground, rain water management and recharge, etc.	0.5	5000	1		

Housing Area Playground	<ul style="list-style-type: none"> <li>Includes sports facilities required for schools, educational institutions.</li> <li>New play fields shall be preferably provided/ developed in the vicinity of educational institutions and landscape areas.</li> <li>To incentivize development of sports facilities and swimming pool (upto maximum 100 sq.m.) within the group housing areas, schools, clubs, etc. shall not be counted towards ground coverage and FAR.</li> </ul>	0.5	5000	1			
<b>NEIGHBOURHOOD LEVEL:</b>							
Neighbourhood Park	Park programmed for all age groups, open-air food court, playground, rain water management and recharge, etc.	1.0	10,000	1		<b>In Public Realm, within 400m walk</b>	
Neighbourhood Play Area	Active Sports Facilities, Rain water management and recharge, etc.	0.5	10,000	0.5			
<b>COMMUNITY LEVEL:</b>							
Community Park	Park, Children Park, Open-air food court, Playground, Rain water management and recharge, etc.	5.0	100,000	0.5		<b>In Public Realm, within 800m walk</b>	
Community Sports Centre	Active Sports Facilities, Rain water management and recharge, etc.	1.0	100,000	0.1			
Community multipurpose ground	Public meeting ground, Public address podium, Social functions, Soft drink and snack stalls, Rain water management and recharge, etc. Multipurpose Ground can be sub-divided suitably with minimum of 0.5 ha of plot area to accommodate number of functions at one time.	2.0	100,000	0.2			
						<b>TOTAL</b>	<b>4.8</b>

### 6B.3. Other norms:

- All open spaces shall be programmed for different income groups, age-groups and activity types, based on hierarchy and functional requirements.
- All public spaces and buildings shall be universally accessible.
- All public parks / multipurpose grounds shall have provisions for natural rain water management.
- Creation of opaque boundary walls and locking of open spaces is prohibited. In case toe-walls with fences are provided, frequently placed openings must be kept to allow rain water to flow into the open spaces.
- Use of public open spaces for parking, unless designated for such use, shall be punishable by Law as per Municipal Act.
- No minimum parking requirements for sports facilities. Parking to be provided as per need within block/ cluster/ building plan. Parking in public spaces and roads, if provided, shall be priced.

### 6C. Minimum Housing Mix Criteria (by Unit Sizes)

#### Policy:

Ensure a minimum supply of affordable housing options for low and medium income population within walking/ cycling distance of Stations, and in close proximity to sources of employment and recreation.

#### Norms:

- 6C.1. Minimum **15%** of FAR for all TOD projects to be allocated to rental or for-sale housing with unit sizes no larger than **25sq.m.** Of this, minimum **5%** should be of one of the following types:
- Units with only kitchen and no attached toilets. Toilets to be provided as a shared facility on every floor, segregated for male and female. Standard to be used: 1 bathroom and 1 separate WC for every 5 persons (UK standard).
  - Units with shared kitchen and dining space as well as shared toilet facilities. Maximum 8 units to a shared kitchen and toilet/ bathing facility. (Confirm standard)
  - Dormitories with shared toilets and kitchens. Standard to be used
  - Hostels
  - Daily rental homes, which may be rented in shifts.
- 6C.2. In addition to above, a minimum **15%** of FAR for all TOD projects should be of unit sizes **40sq.m.** or less.
- 6C.3. Through policy, architectural design and monitoring mechanisms, the affordable housing stock within TOD zones is to be preserved.



**6D. Non-Permissible Uses and Desirable Uses within Intense TOD Zone (300m)**

**Policy for non-permissibility of Uses with 800m influence zones of MRTS:**

- a) Large land-intensive uses (>2.25 Ha) not allowing public thoroughfare at required frequency.
- b) Uses that discourage/ hinder safe pedestrian movement or create pedestrian unfriendly environment.
- c) Uses that primarily depend on private motorized modes, or generate a lot of truck/ heavy vehicle traffic.
- d) Any use that has high parking requirement that cannot be “unbundled” to an off-site location.

**Norms (valid for all projects taken up after Notification of policy):**

6D.1. **Non-Permissible Uses** for all new projects within TOD Intense Zone as per above policy:

- i. Car-sales showrooms
- ii. Banquet halls
- iii. Automobile-repair/ services/ vehicular servicing shops
- iv. LPG Godowns
- v. Electric Substation 220 KV (Check Buffer requirement/restriction)
- vi. Bus Depot (permitted only if clubbed with terminal and in the form of mixed-use development site)
- vii. Cremation ground
- viii. Stand-alone Multi Level Parking without on-site mixed use.
- ix. Open ground parking lot (if provided shall be counted as FAR consumption)
- x. Any trade or activity involving any kind of obnoxious, hazardous, inflammable, non-compatible and polluting substance or process shall not be permitted.

6D.2. **Essential Uses:** All uses as per Table 19.2

6D.3. **Desirable Uses:**

- i. Residential uses: Affordable/ low-income housing, one and two-room apartments for sale and rent, dormitories, homes for the aged, serviced apartments for young professionals, Govt. housing for low-income employees, working women’s hostels, youth hostels, studio apartments, night shelters, etc.
- ii. Commercial and Civic uses: Daily-need stores like department stores, Cultural Institutions, health clubs, day-care facilities, clinics, entertainment facilities, dry-cleaners, coffee shops, small restaurants, budget-hotels, transit hotels, neighbourhood oriented retail (like clinics, cyber cafes, stationery shops, Banks, financial institutions, post offices, etc.), call centres, small institutes, training centres, health clubs, day-care facilities, clinics, entertainment facilities, dry-cleaners, etc.
- iii. Informal sector uses like vendors, etc.

**6E. Physical Infrastructure and Resource Standards:**

**Policy:** Decentralized infrastructure is mandatory in all Station Influence Zone Plans - to ensure long term sustainability and resource efficiency.

**Norms and guidelines:**

6E.1. **Water:**

	Policy/ Norms	Proposed Strategies:
Rainwater	<p>1. Rainwater harvesting is mandatory, <b>irrespective of project size</b>. All projects must show compliance with an on-site or a connection to off-site harvesting facility. All rainwater (including from roads/public spaces) must be harvested for reuse or ground water recharge only after primary treatment.</p> <p>2. In addition, for undeveloped sites, maintain pre-development rainwater run-off rates to ensure that development does not increase surface run-off rates creating potential (on-site or off-site) flooding hazard. Preserve natural drainage patterns and water systems.</p>	<ul style="list-style-type: none"> <li>• Pervious/ permeable paving.</li> <li>• Rainwater systems on roads/ public spaces including bioswales, detention/ retention facilities, etc.</li> </ul>
Potable Water and Waste Water	<p>3. If project size is below 5000 resident population, then TOD norms can be availed only if a Specific Area Plan exists and Decentralized Systems for Infrastructure (Water Supply, Sewage) and Shared Parking facilities are implemented already for the Station influence zone.</p> <p>4. For projects of 5000 resident population or more, on-site decentralized infrastructure systems e.g. local sewage treatment and recycling systems are mandatory, in order to meet the non-potable per capita demand (90 lpcd for domestic and 115 lpcd for non-domestic).</p> <p>5. Potable per-capita requirement (135 lpcd for domestic and 20 lpcd for non-domestic) should be available from the Municipality or any other source other than ground water.</p> <p>6. Dual piping is mandatory irrespective of project size, to facilitate black/ grey separation and recycled water use.</p>	<ul style="list-style-type: none"> <li>• Use recycled water for non-potable uses like flushing, cooling, car-washing, irrigation, etc.</li> <li>• Use water-efficient fixtures like dual flush, low-flow fixtures, etc) in all bathrooms, kitchens and other wet areas.</li> <li>• Landscaping in all public areas should use native, drought resistant species.</li> <li>• Water balance systems for domestic and non-domestic uses should be designed and implemented in conjunction, to</li> </ul>

	7. Groundwater extraction is punishable by Law. 8. Underground/ overhead tanks, sewerage-pumping systems etc. must be provided as per requirement.	mutually offset per-capita potable and non-potable requirements.
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## 6E.2. Energy

Following Norms are mandatory in all Greenfield, Infill and large Redevelopment projects, to reduce energy load of projects/ buildings:

### At Site level:

- i. Large sites should be laid out with street grids such that habitable areas of residential buildings are oriented to face North-South (within 15°) direction.
- ii. Shade from trees and building enclosures to be used to shade streets, plazas and all paved areas, to minimize Urban Heat Island (UHI) Effect.
- iii. Electric sub-stationstobe provided as per requirement.

### At Building level, the following Solar Access Regulations need to be followed:

- iv. All dwelling units should get minimum 2-hour solar access in at least one habitable area (living room, bedroom or private open space) on the shortest winter day of Dec 21 (Winter Solstice).
- v. In all residential buildings i.e. each unit should face the exterior, in two opposite directions. No double-loaded corridor<sup>1</sup> buildings are permissible in TODs. Openings shall be located suitably to allow for natural ventilation and daylighting of habitable rooms and access to open air for all rooms including toilets and kitchens.
- vi. No building floor-plate depth it to be more than 15 m, except for towers (buildings taller than 8 stories). Tower dimensions may not exceed 30 m in any direction. If tower dimension is required to be more than 30m in any direction, width of tower is not to exceed 15m, in order to allow the daylighting and natural ventilation of spaces.
- vii. No “row-type” building (show diagram) will be permitted to go higher than 15 metres, unless it is oriented within 15° of North-South direction. To utilize FAR, towers in conjunction with 15m high “row-type” buildings are recommended as a typology.
- viii. On 6m and 9m R/Ws, buildings higher than 15 m height are not permitted. Solar Envelopes studies should be used to determine heights and step-backs on buildings facing narrow street R/Ws.
- ix. All parks should get minimum 2-hour solar access on shortest winter day in at least 50% of their area.
- x. No building on the site is to block sunlight to the living rooms and private open spaces of another dwelling and/or an adjacent multi-dwelling development so that it is reduced to less than two hours between 9 am and 3 pm on the winter solstice (Dec 21).
- xi. Where windows are located on west or south-west facing facades, external shading must be integrated into the building design to protect windows in summer. Other energy saving measures such as new glass technology may be used, in addition to shade protection.

## 6E.3. Landscape

Landscape and plant selections should be designed for:

- i. All R/Ws above 9m must have street tree plantation as per standards in Table 19.10.
- ii. Drought resistant native species should be used to minimize water demand. Native deciduous trees are appropriate for Delhi to have dense foliage and shading in summer and sunlight penetration in winter.
- iii. Appropriately locate trees to provide shading to buildings, streets and public spaces in summer.

## 6E.4. Solid Waste

- i. Each TOD Station Influence Zone Plan must accommodate at least one decentralized recycling, buy/sale and reuse centre, doing all of the following:

- Organic Waste – Primarily food waste from kitchens, parks/ gardens and markets, can be purchased from residents, composted and sold at the centre.
- Dry Recyclables – paper, card, metals, plastic etc; to be purchased from residents, sorted and sold to industries recycling such waste.
- Hazardous Waste to be purchased from users and sent to city level hazardous waste facility.
- Construction Waste and materials can be purchased and sold to recycling centres and/or municipalities.
- Residual – remaining waste to be handed to municipality for landfill.

The Waste Management Centre should run on an economically feasible model.

- ii. At Building level: All residential complexes to have segregated garbage chutes ssss accessible at all floors.

## 6E.5. Incentives for Additional Green Building Compliance.

Additional Incentives are provided for adherence to Green Building Standards for individual projects as follows:

- i. Faster clearances from authorities including fire department and the civic body.
- ii. Government concessions for builders who opt for guidelines that are not mandatory include:
  - Single window clearance for buildings

<sup>1</sup> Building with an external corridor located on one wall of the building such that it may be provided direct openings in two opposite directions, is called a “Single-loaded” building. A building with an internal corridor, providing access to units on both sides is called a “double-loaded” corridor building.

- Reduced government fee for processing clearances
- iii. The applicant who shall construct Green Building on a plot of 5000 sq.m. and above for any use may be allowed an additional FAR of 10% of the permissible/ availed FAR (excluding additional 15% of prescribed FAR for services), free of cost, provided that the applicant fulfils the following conditions:
  - The Building is completed and rated by Leadership in Energy and Environmental Design (LEED) as 'Gold or Platinum'.
  - The Building is recommended by the Bureau of Energy Efficiency Government of India for the provision of energy efficiency.
  - The Building has been completed fulfilling the parking and landscaping norms of the prevailing regulations in TODs.
  - The applicant has made sufficient provisions for using the additional FAR.
  - The applicant has to submit a certificate of compliance of green building from Leadership in Energy and Environmental Design (LEED)/ Bureau Energy of Efficiency after every three years. In case he fails to submit this certificate the Authority, after giving him one month notice, may charge the compounding fees of the FAR given free of cost at the rate of 200% of the cost of purchasable FAR.

#### **19.7. ACTION PLAN FOR IMPLEMENTATION**

- i) The following four corridors have been taken up for preparation of Influence Zone Plans in the first phase (Annexure-C):
  - a. Corridor 1: Chattarpur to Arjangarh
  - b. Corridor 2: Peeragarhi to Teekri Kalan.
  - c. Corridor 3: Dwarka Mor to Dwarka Sector 21.
  - d. Corridor 4: Nehru Place to Badarpur.

#NOTE: Final boundaries of the Influence Zones will be demarcated as per final Influence Zone Plans which will be approved by the Competent Authority.
- ii) Along with the above Phase 1 corridors, all government agencies holding land within the TOD catchment zones can avail the benefits of Transit Oriented Development after preparation and subsequent approval of the influence zone plans by the competent authority, conforming to the regulations of the tod policy as per this chapter.