



Government of Nepal  
Ministry of Urban Development  
Department of Urban Development and Building Construction

# **Planning Norms and Standards**

## **2013**

Urban Development Division  
Physical Planning and Urban Development Section

**Approved**

**According to the Department of Urban Development and Building Construction**

**Decision on 2069/12/30**

## **Preamble**

Department of urban Development and Building Construction intends to prepare a single Planning Norms and Standards to use as a tool for standardizing the planning of urban development projects.

This draft was prepared after completing a comprehensive literature review of national and international planning documents, existing norms and standards and policy of urban development related agencies. Also, discussions and meetings were held with experts from related planning organizations.

The complete Planning Norms and Standards will have three broad headings: infrastructure norms and standards, land use norms and standards and urban form norms and standards. This document has only the infrastructure section and the other two will be added later. Similarly, standard guideline needs to be further worked on and added to this document before bringing it into practice.

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## 1. Background

The process of preparing and implementing the Physical Development Plan of cities, towns and market centers in Nepal have been going on since a long time. However, these Physical Development Plans are not coherent and urban infrastructure and services lack appropriate norms and standards. Consequently, many of these infrastructures have failed to provide an appropriate level of services vis-a vis have also failed to meet the long term service demand of the cities. Hence, formulation of Planning Norms and Standard has become necessary to manage an urban environment, improve an economic efficiency and the quality of life of urban area. It is for this reason that the Department has undertaken this initiative. For the sake of this Planning Norms and Standards, the term "Norms" has been defined as the socially or institutionally set values which does shape and govern the behavior pattern including physical and social relations in a given space, while the term "Standards" has been defined as level and quality of infrastructure services that would be required to make the built environment functional and desirable.

## 2. Objective:

The main objective of this planning norms and standards are:

- To facilitate urban designers, planners and policy makers to identify and forecast essential infrastructure need of an urban areas as well as help prepare urban plans and programs.
- To enrich understanding of urban form and land use and ensure balance between them.
- To guide the development and management of physical, social and economic infrastructure services in a planned manner.

## 3. Scope of the Work

The scope of this planning Norms and Standards shall be limited to the following three thematic areas namely a. Urban infrastructure services b. Land use and c. Urban form. This theme is elaborated for all five urban hierarchies that have been identified for the purpose of this planning norms and standards.

### a. Urban Infrastructure

It has been classified into three categories as follows; the level of infrastructure services becomes more specialized as we move up the urban hierarchy:

- Physical Infrastructure: Road, Water Supply, Sanitation/ Sewerage, Solid Waste management, Electricity, Tele communication.
- Social Infrastructure: Education Institution, Health Institution, Open Space, Community Hall, Library.
- Economic Infrastructure: Parking Space, Stadium, Sports Complex, Movie Hall.

**b. Land Use**

Land use is the functional dimension of land for different human purposes or economic activities and has been broadly divided into two categories. It corresponds to the Land Use Policy-2069, Government of Nepal.

- Settlement Discouraged Area: Some of the land uses within the area are Agriculture, Forest, Water Bodies etc.
- Settlement Encouraged Area: Land uses within this area are Residential, Commercial, Mixed Use, Open Space, Industrial and Institutional.

The settlement discouraged area will decrease and encouraged area will increase as we go above the urban hierarchy.

**c. Urban Form**

It essentially depicts the city's built structure - comprising primarily of transportation network, Central Business Districts (CBDs), prime activity zones, growth centers and national resource areas. The form may preferably be conceived in three dimensional views. Therefore, the density (population, dwellings and office space) becomes the key variables to distinguish the various urban forms. Such form may vary from high densities-compact to low density settings.

**d. Hierarchy of Urban Areas**

The urban areas have been classified into 5 classes based on the population.

- Metro city: It corresponds to the current metropolitan city i.e Kathmandu. This is the highest level in the urban area hierarchy. The population for this level of urban areas will be above 300,000. This can include either a single city with population more than 300,000 or neighboring settlements/cities within a certain distance of each other having a combined population of more than 300,000 and who share the common resources and services.
- Sub Metro City: It corresponds to the current sub metropolitan cities like Pokhara, Biratnagar, Lalitpur etc. The population for this level of urban areas will be above 100,000 and equal to or less than 300,000.
- City: It corresponds to the current municipalities like Bharatpur, Dhangadi, Bhaktapur etc. The population for this level of urban areas will be above 40,000 and equal to or less than 100,000.
- Sub City: It corresponds to the current small towns and the population for this level will be above 10,000 and equal to or less than 40,000.

- Market Center: It is at the lowest level in the urban hierarchy and corresponds to the current market centers. Areas having at least 50 shops or outlets within 100 m from the center will be categorized as market centers.

#### **4. Norms and Standards**

For this Planning Norms and Standards, only the theme of urban infrastructure services has been dealt. They are presented in the following tables.

# Annex



## Infrastructure Norms and Standards

### Market Center (Above 50 shops)

S.No	Types of Infrastructure	Norms	Standards					Source
<b>A</b>	<b>Physical Infrastructure</b>							
1.	Road	Collector street and Local Street		ROW	Setback	Footpath	Cycle Track	Nepal Urban Road Standard, 2011
			Collector	14	1	2	1.5	
			Local	10	1	2	-	
2.	Water Supply	Standpipe	Quantity: 45 lpcd (1 standpipe for 15-25 HH)  Accessibility: Within 100 meters (communal taps)					National Urban Water Supply and Sanitation Sector Policy, 2009  Human Settlement Planning and Design, South Africa, 2000
3.	Sanitation/ Sewerage	On site sanitation with septic tank (household) Provision of public latrines (PL)	1 public latrine/ bath house for 1 market center					Conversation within PPUD Section, 2013
4.	Solid Waste Management	Collection Center with Bio Gas Plant (Bio Gas Digester, Gas Storage Tank)  Compost Plant at household level	Communal Collection Max distance to disposal point < 500m from the market center					Human Settlement Planning and Design, South Africa, 2000
5.	Electricity	Electricity Supply System through national grid Alternative energy (panels, battery capacity 15AH)	100% electricity coverage  20 Watt Solar Home System					Conversation within PPUD Section, 2013
6.	Tele-communication	Community Telephone Booth (CTB)	1 CTB per market center (Standard booth)					Conversation within PPUD Section, 2013
<b>B</b>	<b>Social Infrastructure</b>							
7.	Educational Institution	Primary/basic level	1 per 3000 population at a distance of 0.4 – 0.8 km (0.2 ha per site)					Preparation of Urban Planning Manual, 2007
8.	Health Institution	Sub Health Post	1 per 1000 population (0.04 ha per site)					Periodic Plan of Lekhnath, 2063
9.	Open Space Parks	2.5 % of the total area Neighborhood Park (serving surrounding settlements)	1 per 800 population (0.4 ha per site)					Human Settlement Planning and Design, South Africa, 2000

10.	Community Center	Community building including library	1 community center per market center (0.2 ha)	Conversation with PPUD Section, 2013
11	Security	Police Post	0.1 ha per market center	Master Plan of Delhi, DDA 2001
<b>C</b>	<b>Economic Infrastructure</b>			
12.	Hatbazaar	Twice a week (open area) Vegetable/ meat market with cold storage facility	0.2 ha per site	Master Plan of Delhi, Delhi Development Authority (DDA), 2001
13.	Parking Space	Public Parking Space (Two/ Three/ Four Wheeler) Bus park/ Truck park	1 parking lot for one market center (0.2 ha)	Periodic Plan of Lekhnath, 2063

## Infrastructure Norms and Standards

### Sub City (10,000 to 40,000 population )

S.No	Types of Infrastructure	Norms	Standards					Source
A	<b>Physical Infrastructure</b>							
1.	Road	Sub arterial, Collector and Local Street ( All or 90% of houses are within 2 km from motorable road)		ROW	Setback	Footpath	Cycle Track	Nepal Urban Road Standard, 2011
			Sub Arterial	22	1	2	1.5	
			Collector	14	1	2	1.5	
			Local	10	1	2	-	
2.	Water Supply	Courtyard Connection/ Provision of Rainwater Harvesting  Treatment plant (lab, dosing and guardhouse) with Storage : Reservoir (24hrs requirement)	Quantity: 60 - 80 lpcd  Accessibility: 90% of household have tap within 50m  1 ha per site (treatment plant and storage) Store capacity: 25% of the total treatment capacity					National Urban Water Supply and Sanitation Sector Policy, 2009  Conversation with staff at KUKL, February 2013  Conversation with Consultant at STIUEIP, January 2013
3.	Sanitation/ Sewerage system Storm Water Drainage system	30% of the household is covered by public sewer system (pit latrine, septic tank etc) Sewage Pumping Station Treatment plant  Provision of public latrines	Min diameter of trunk line: 200mm  0.01 ha – 0.02 ha per site 2.5 ha – 3.5 ha per site  1/3000 passerby at distance of 500m					Consolidated Design Criteria Report, STIUEIP, 2012  Conversation with Consultant, STIUEIP, January 2013  Preparing the Ktm Valley Urban Environment Improvement Project – Final report
4.	Integrated Solid Waste Management	25% of solid waste is collected and properly disposed  Collection Point	Communal Collection (1 collection point/container/ roadside pickup point serves a radius of 200m)					Human Settlement Planning and Design, South Africa, 2000  Conversation with Consultant, STIUEIP, January 2013

		Sanitary Landfill Site	Sanitary Landfill Site: Small (Greater than 1 and less than 25 tons per day)	
5.	Electricity	National Grid supply line  Alternative energy (panels, battery capacity 100AH)	100% of the household is covered by electricity city supply line  Electric substation 33/11 KV : 0.07 ha per site  Transmission Tower: 80 – 100 sq. m  Distribution Tower: 20 – 25 sq. m  40 – 100 Watt Solar Home System	Conversation within PPUD Section, 2013
6.	Tele-communication	House connection  Community telephone booth	100 % coverage  1 telephone booth for 2 neighborhood (Standard booth)	Conversation within PPUD Section, 2013
<b>B</b>	<b>Social Infrastructure</b>			
7.	Educational Institution	Primary/basic level  Higher Secondary  Graduate/ Post Graduate  Vocational and Technical Schools	1 per 3000 population at a distance of 0.4 – 0.8 km - 0.2 ha per site  1 per 7500 population at a distance of 30min in public transportation – 0.65 ha per site  1 per 25,000 population at a distance of 45min in public transportation	Preparation of Urban Planning Manual, 2007
8.	Health Institution	Sub Health Post  Health Post	1 per 1000 population (0.04 ha per site)  1 per 5000 population (0.15 per site)	Periodic Plan of Lekhnath, 2063 Conversation with Health Section, DUDBC
9.	Open Space/ Disaster Mgmt Recreational areas - Parks	5% of total sub city area Neighborhood Park (with play equipment)  Local Park	1 @ 800 population (0.4 ha per site)  1 @ 10000 population (1 ha per site)	Human Settlement Planning and Design, South Africa, 2000  Periodic Plan of Lekhnath, 2063

10.	Library	City level	1 per 7500 population (0.5 ha per site)	Conversation with PPUD Section, 2013 Periodic Plan of Lekhnath, 2063
11.	Security	Police Post	1 per 10,000 population (0.1 ha per site)	Master Plan of Delhi, Delhi Development Authority (DDA), 2001
12.	Fire Stations	1 (3 to 4 km radius)	1 fire engine @ 25,000 – 75,000 population 0.5 ha per sub city	National Reference Manual on Planning and Infrastructure services, Government of Pakistan, 1986
<b>C</b>	<b>Economic Infrastructure</b>			
13.	Hall	Multipurpose	1 (0.2 ha per site)	National Ref. Manual on P/I services, Got. of Pakistan, 1986
14.	Vegetable Market	1 vegetable/ meat market with cold storage facility and other commodities	0.5 ha per site	
15.	Public parking space	Two/ Three/ Four Wheeler (Bus park/ Truck park)	1 parking lot (0.8 ha per site)	Periodic Plan of Lekhnath, 2063

## Infrastructure Norms and Standards

**City:** (40,000 + to 1 lakhs)

S.No	Types of Infrastructure	Norms	Standards	Space Requirement	Source																														
A	<b>Physical Infrastructure</b>																																		
1.	Road	Expressway, Arterial, Sub arterial, Collector street and Local Street  All or 90% of household are within 1km from motorable road	<table border="1"> <thead> <tr> <th></th> <th>ROW</th> <th>Setback</th> <th>Footpath</th> <th>Cycle Track</th> </tr> </thead> <tbody> <tr> <td>Expressway</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Arterial</td> <td>30</td> <td>1</td> <td>2</td> <td>2</td> </tr> <tr> <td>Sub Arterial</td> <td>22</td> <td>1</td> <td>2</td> <td>1.5</td> </tr> <tr> <td>Collector</td> <td>14</td> <td>1</td> <td>2</td> <td>1.5</td> </tr> <tr> <td>Local</td> <td>10</td> <td>1</td> <td>2</td> <td>-</td> </tr> </tbody> </table>		ROW	Setback	Footpath	Cycle Track	Expressway					Arterial	30	1	2	2	Sub Arterial	22	1	2	1.5	Collector	14	1	2	1.5	Local	10	1	2	-	20% of the total built up area	Nepal Urban Road Standard, 2011
	ROW	Setback	Footpath	Cycle Track																															
Expressway																																			
Arterial	30	1	2	2																															
Sub Arterial	22	1	2	1.5																															
Collector	14	1	2	1.5																															
Local	10	1	2	-																															
2.	Water Supply System	80% household have metered house connection and distribution  Treatment Plant (lab, dosing and guardhouse) with storage facility: Reservoir (24hrs requirement)  Provision of Rain Water Harvesting in Public Buildings (Catchment area, Storage and Treatment Facility)	Quantity: 80-100 lpcd Minimum diameter of distribution pipe: 80mm $10 \times 10^6 \text{ l} = 10 \text{ MLD (capacity)}$  Storage Capacity: 25% of the total treatment capacity	2 ha per site (treatment plant and storage)	National Urban Water Supply and Sanitation Sector Policy, 2009  Conversation with Consultant, - STIUEIP, January 2013  Bode Water Treatment Plant (Conversation with staff at KUKL)																														
3.	Sanitation / Sewerage system Storm Water Drainage system	Public sewer system (septic tanks) Sewage Pumping Station  Treatment plant  Provision of public latrines	Min diameter of trunk line: 200mm  0.2 hectare/MLD – 0.75 Hectare/MLD  1/2000 passerby at a distance of 500m	0.01ha – 0.02ha per site 5 ha – 7 ha per site	Consolidated Design Criteria Report, STIUEIP, 2012  Conversation with Consultant, STIUEIP, January 2013  Preparing the Ktm Valley Urban Environment Improvement Project – Final Report (Guheswari Treatment Plant )																														

4.	Integrated Solid Waste Management System	<p>Collection Point (0.3 kg/person/day)</p> <p>Total waste = Around 33 tons/day</p> <p>Transfer Station</p> <p>Sanitary Landfill Site</p>	<p>Separation of waste at household level</p> <p>Community collection/ Door to Door collection.</p> <p>1 collection point/container/ roadside pickup point serves a radius of 200m</p> <p>1 Transfer Station for 1 city if the final disposal is at distance of more than 10 km</p> <p>Only 30% of the total waste generated should go to landfill site. 70% = reduce, reuse, recycle Sanitary Landfill Site: Medium (&gt; 25 and &lt; 500 tons per day)</p>	<p>0.15 ha – 0.2 ha per site (waste only gets collected and transferred)</p> <p>1 ha per site (if there are recycling platform, compost plant and window composting etc) 3 ha – 5 ha (without buffer zone) A buffer of at least 100m needs to be provided</p>	<p>Human Settlement Planning and Design, South Africa, 2000</p> <p>Conversation with Consultant, STIUEIP, January 2013</p> <p>Conversation with staff at Solid Waste Mgmt Technical Support Center, February 2013</p>
5.	Electricity Supply System	<p>National grid supply line and</p> <p>Alternative energy (panels, battery 400 AH)</p>	<p>Power access to 100% coverage. Electric sub station 66/33 KV Transmission Tower Distribution Tower</p> <p>150 – 200 Watt Solar Home System</p>	<p>0.55 ha per site 80 - 100 sq. m 20 - 25 sq. m</p>	<p>Conversation within PPUD Section, 2013</p>
6.	Tele-communication	<p>Landline/mobile</p> <p>Public telephone booth (TB)</p>	<p>100 % coverage Telephone Exchange Office (1 Exchange with a capacity of 6500 line capacity) Telephone transmission tower</p> <p>1 TB per 5000 population</p>	<p>0.02 ha per site ROW: 5m Standard booth</p>	<p>Conversation within PPUD Section, 2013</p>

<b>B Social Infrastructure</b>					
7.	Educational Institution	Primary Higher Secondary Graduate/ Post Graduate University	1 per 3000 population at a distance of 0.4–0.8 km 1 per 7500 population at a distance of 30min in public transportation 1 per 25,000 population at a distance of 45min in public transportation 1 per 40,000 population at a distance of 1hr in public transportation	0.2 ha per site 0.65 ha per site	Preparation of Urban Planning Manual, 2007
8.	Health Institution	Primary Health Care Center District Hospital	1 per 20000 population (5- 15 beds) 1 per 50000 population (25 – 50 beds)	0.25 ha per site 1.3 ha per site	Conversation with Health Section, DUDBC
9.	Open Space: Parks Parade Ground (Tundikhel)	5% of total city area Neighborhood Park (with play equipment) Local Park Community Park Parade Ground	1 @ 800 population 1 @ 10000 population 1 @ 20000 population 1 @ each city	0.4 ha per site 1 ha per site 2 ha per site	Human Settlement Planning and Design, South Africa, 2000 Master Plan of Delhi, Delhi Development Authority (DDA), 2001
10.	Library	Community level Central Level	1 per 10000 population 1	0.5 ha per site	Conversation within PPUD Section, DUDBC, 2013  Periodic Plan of Lekhnath, 2067
11.	Fire Stations	City level service	1 fire station for 5 to 7 km radius	1 ha per site	National Ref. Manual on P/I services, Got. of Pakistan, 1986
12.	Religious Institutions	Incineration /Cremation areas Cemetery/ Burial Ground	1	0.5 ha per site	Conversation within PPUD Section, 2013
13.	Museum/Art Gallery	City Level	1/1	0.5 ha per site	Periodic Plan of Lekhnath, 2067
14.	Old age home, orphanage, center for differently able people	City and community level	1 per 20,000 population	0.3 ha per site	Master Plan of Delhi, Delhi Development Authority (DDA), 2001
15.	Security	Police Post Police Station	1 per 10,000 population 1 per 40,000 population	0.1 ha per site 0.5 ha per site	Master Plan of Delhi, Delhi Development Authority (DDA), 2001
16.	Exhibition Centers	City level	1 per 50,000 population	4 ha per site	Master Plan of Delhi, Delhi Development Authority (DDA), 2001



<b>C Economic Infrastructure</b>					
17.	Hall	City hall (Multipurpose)	1 per 10000 population	0.2 ha per site	National Ref. Manual on P/I services, Got. of Pakistan, 1986
18.	Sport complex	City level (football ground, volley ball, swimming pool etc) District Sports Centre	1 per 50000 population 1 per 1,00,000 population	1 ha – 3 ha per site 3ha– 19ha per site	Master Plan of Delhi, Delhi Development Authority (DDA), 2001
19.	Movie Hall	City and local level	5 seats per 1000 population		National Ref. Manual on P/I services, Got. of Pakistan, 1986
20.	Vegetable Market	Neighborhood Level	1 wholesale, 1 retail and 1 Slaughter House for 2 neighborhood (1 Neighborhood = 3000 population)	0.5 ha per site	Periodic Plan of Lekhnath, 2063
21.	Parking Space	Parking (Two/ three/ four wheeler) Taxi park	1 parking lot for 3000 population (1 Neighborhood = 3000 population)	0.04 ha per site	Master Plan of Delhi, Delhi Development Authority (DDA), 2001
22.	Transportation system	Intra City Bus Terminal (Linking with other cities) Inter City Bus Terminal (within the city)	1 parking lot for 100 buses and 100 trucks 1 parking lot for 100 buses	4 ha per site 2 ha per site	Periodic Plan of Lekhnath, 2063
23.	Airport	National Airport	National Airport	134-227 hectares	National Ref. Manual on P/I services, Got. of Pakistan, 1986

## Infrastructure Norms and Standards

### Sub Metro City: (1 lakh + to 3 lakhs population)

S.No	Types	Norms	Standards					Source
A	<b>Physical Infrastructure</b>							
1.	Road	Express way , Arterial, Sub Arterial, Collector street and Local Street All or 90% of household are within 0.5km from motorable road		ROW	Setback	Footpath	Cycle Track	Nepal Urban Road Standard, 2011
			Expressway					
			Arterial	30	1	2	2	
			Sub Arterial	22	1	2	1.5	
			Collector	14	1	2	1.5	
			Local	10	1	2	-	
2.	Water Supply System (with storage and treatment facilities)	Metered house connection and distribution  Non domestic demand Treatment Plant (lab, dosing and guardhouse) with storage facility: Elevated or Underground Reservoir (24 hrs requirement)  Provision of Rain Water Harvesting in Public Buildings (catchment area, Storage and Treatment Facility)	Quantity: 120 lpcd Minimum diameter of distribution pipe: 80mm 8 to 10 % 2 ha per site (2 Nos) Storage Capacity: 25 % of the total treatment capacity					National Urban Water Supply and Sanitation Sector Policy, 2009  Human Settlement Planning and Design, South Africa, 2000  Conversation with Consultant, STIUEIP, January 2013
3.	Sanitation (Sewerage System)	Full coverage by public sewer system Sewage Pumping Station Treatment plant  Provision of public latrines (male, female, disabled)	Min diameter of trunk line: 200mm 0.01 ha – 0.02 ha per site 5 ha – 7 ha per site (2 Nos)  1 public toilet at a distance of 5km along the main road.					Consolidated Design Criteria Report, STIUEIP, 2012  Conversation with Consultant, STIUEIP, January 2013
4.	Integrated Solid Waste Management	Household level waste separation Collection Point (0.4 kg/person/day)  Transfer Station	Community collection/ Door to Door collection. 1 collection point/container/ roadside pickup point serves a radius of 200m 1 Transfer Station for 1 city if the final disposal is within a distance of 10 km					Human Settlement Planning and Design, South Africa, 2000  Conversation with Consultant, STIUEIP,

		Sanitary Landfill Site	Sanitary Landfill Site: Large (> then 500 tons per day)	January 2013
5.	Electricity	National grid supply line and Alternative energy  Alternative Energy (panels, battery)	Power access to 100% coverage. Electric Sub Station: 3 ha Transmission Tower : 80 - 100 sq. m Distribution Tower: 20 - 25 sq. m Solar Home System	Conversation within PPUD Section, 2013
6.	Tele-communication	Landline/mobile  Public telephone booth (TB)	100 % coverage 1 Exchange with a capacity of 6500 line capacity (0.02 ha per site) Telephone Transmission tower (ROW: 5m) 1 TB at a distance of 2.5km along the main road (Standard booth)	Conversation with PPUD Section, 2013
7.	Climate Change Center/ Disaster Management Center	City Level	1 ha along with suitable open area (2ha) for soft parking, temporary shelter, parade ground etc	Master Plan of Delhi, DDA, 2001
<b>B</b>	<b>Social Infrastructure</b>			
8.	Educational Institution	Primary  Higher Secondary  Graduate/ Post Graduate  University (Specialities)	1 per 3000 population at a distance of 0.4–0.8 km – 0.2 ha per site 1 per 7500 population at a distance of 30min in public transportation – 0.65 ha per site 1 per 25,000 population at a distance of 45min in public transportation 1 per 40,000 population at a distance of 1hr in public transportation	Preparation of Urban Planning Manual, 2007
9.	Health Institution	District Hospital Zonal Hospital	1 per 50000 population (25 – 50 beds) 1 per 100000 population (50 – 100 beds)	Master Plan of Delhi, DDA, 2001
10.	Open Space	5% of total sub metro city area Neighborhood Park (with play equipment) Local Park Community Park Zoo park Specialized Park	1 @ 800 population (0.4 ha per site) 1 @ 10000 population (1 ha per site) 1 @ 20000 population (2 ha per site) 1	Human Settlement Planning and Design, South Africa, 2000  Master Plan of Delhi, DDA, 2001
11.	Library	Community level National/Central	1 per 10000 population (0.5 hectare per site) 1	Conversation within PPUD Section, 2013  Periodic Plan of Lekhnath, 2063

12.	Fire Stations	City level (5 to 7 km radius)	1 fire station @ 1,00,000 population (10,000 sq m per site)	National Ref. Manual on P/I services, 1986
13.	Religious Institutions	Incineration /cremation areas	0.4 ha per site	Master Plan of Delhi, DDA, 2001
14.	Museum	Regional Level	0.5 ha per site	Periodic Plan of Lekhnath, 2063
15.	Art Gallery	RL	0.5 ha per site	Periodic Plan of Lekhnath, 2063
16.	Old age home, orphanage, center for differently able people, sanatorium	RL/LL	1 per 20,000 population (0.3 ha per site)	Master Plan of Delhi, DDA, 2001
17.	Security	Police Post Police Station Police Headquarter	1 per 10,000 population (0.1 ha per site) 1 per 40,000 population (0.5 ha per site) 1 per 100000 population (1 ha per site)	Master Plan of Delhi, DDA, 2001
18.	Science and Innovation Center (Exhibition Centers)	Regional Level	1 per 50,000 population (4 ha per site)	Master Plan of Delhi, DDA, 2001
<b>C</b>	<b>Economic Infrastructure</b>			
19.	Convention Hall	City level	1 per 100000 population (2 ha per site)	Government of Pakistan, 1986
20.	Sports Complexes	Regional level	1 per 100000 population (3 ha per site)	Master Plan of Delhi, Delhi DDA, 2001
21.	Movie Hall	Multiple halls	5 seats per 1000 population	National Ref. Manual on P/I services, 1986
22.	Vegetable Market	Neighborhood level	1 wholesale, 1 retail and 1 Slaughter house for 2 neighborhood (0.5 ha per site) 1 Neighborhood = 3000 population	Periodic Plan of Lekhnath, 2063
23.	Parking space	Public parking (two/ three wheeler) Public parking (four wheeler) (including provision for vertical parking)	1 parking lot for each neighborhood (1 Neighborhood = 3000 population)	Conversation within PPUD section, 2013
24.	Transportation system	Intra City Bus Terminal (Linking with other cities) along with urban service centers/ motels/ gas stations Inter City Bus Terminal (within the city)	1 parking lot for 200 buses and 200 trucks  1 parking lot for 200 buses	Conversation within PPUD Section, 2013
25.	Airport	National and International Airport	346 hectares – International Airport 134-227 hectares – National Airport	Government of Pakistan, 1986

## Infrastructure Norms and Standards

### Metro City: (Above 3 lakhs)

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2.	Water Supply System	Metered house connection and distribution  Non domestic demand Treatment Plant (lab, dosing and guardhouse) with storage facility: Elevated or Underground Reservoir (24 hrs requirement)  Provision of Rain Water Harvesting in Public Buildings (catchment area, Storage and Treatment Facility)	Quantity: 120 lpcd Minimum diameter of distribution pipe: 80mm  8 to 10 % 2 ha per site Storage Capacity: 25 % of the total treatment capacity	National Urban Water Supply and Sanitation Sector Policy, 2009  Human Settlement Planning and Design, South Africa, 2000  Conversation with Consultant, STIUEIP, January 2013																														
3.	Sanitation/ Sewerage System	Full coverage by public sewer system Sewage Pumping Station Treatment plant  Provision of public latrines (male, female, disabled)	Min diameter of trunk line: 200mm 0.01 ha – 0.02 ha per site 5 ha – 7 ha per site  1 public toilet at a distance of 5km along the main road.	Consolidated Design Criteria Report, STIUEIP, 2012  Conversation with Consultant, STIUEIP, January 2013																														
4.	Integrated Solid Waste Management	Household level waste separation Collection Point (0.4 kg/person/day)  Transfer Station	Community collection/ Door to Door collection. 1 collection point/container/ roadside pickup point serves a radius of 200m 1 Transfer Station for 1 city if the final disposal is within a distance of 10 km	Human Settlement Planning and Design, South Africa, 2000  Conversation with Consultant, STIUEIP, January 2013																														

		Sanitary Landfill Site	Sanitary Landfill Site: Large (> then 500 tons per day)	
5.	Electricity	National grid supply line and Alternative energy  Alternative Energy (panels, battery)	Power access to 100% coverage. Electric Sub Station: 3 ha Transmission Tower : 80 - 100 sq. m Distribution Tower: 20 - 25 sq. m Solar Home System	Conversation within PPUD Section, 2013
6.	Tele-communication	Landline/mobile  Public telephone booth (TB)	100 % coverage 1 Exchange with a capacity of 6500 line capacity (0.02 ha per site) Telephone Transmission tower (ROW: 5m) 1 TB at a distance of 2.5km along the main road (Standard booth)	Conversation with PPUD Section, 2013
7.	Urban Service Center	Includes all urban services	1 urban service at a distance of 2.5km along the main road or near the bus/truck stations	Conversation with PPUD Section, 2013
8.	Climate Change Center/ Disaster Management Center	City Level	1 ha along with suitable open area (2ha) for soft parking, temporary shelter, parade ground etc	Master Plan of Delhi, Delhi Development Authority (DDA) 2001
<b>B</b>	<b>Social Infrastructure</b>			
9.	Educational Institution	Primary  Higher Secondary  Graduate/ Post Graduate  University	1 per 3000 population at a distance of 0.4–0.8 km – 0.2 ha per site 1 per 7500 population at a distance of 30min in public transportation – 0.65 ha per site 1 per 25,000 population at a distance of 45min in public transportation 1 per 40,000 population at a distance of 1hr in public transportation	Preparation of Urban Planning Manual, 2007
10.	Health Institution	District Hospital Zonal Hospital Regional Hospital Teaching Hospital/ Specialized Hospital (Cancer, Tb etc)	1 per 50000 population (25 – 50 beds) 1 per 100000 population (50 – 100 beds) 1 per 500000 population (above 500 beds)	Master Plan of Delhi, DDA, 2001
11.	Open Space	5% of total metro city area Neighborhood Park (with play equipment) Local Park Community Park District/ Regional Parks	1 @ 800 population (0.4 ha) 1 @ 10000 population (1 ha) 1 @ 20000 population (2 ha) 1 @ 50000 population	Human Settlement Planning and Design, South Africa, 2000  Master Plan of Delhi, DDA, 2001

12.	Library	Community level (Children library) Regional/ National level	1 per 10000 population (0.5 hectare per site) 1	Periodic Plan of Lekhath, 2063
13.	Fire Stations	100 % coverage	1 fire station per 1,00,000 population (0.5 hectare per site)	National Ref. Manual on P/I services, Got. of Pakistan, 1986
14.	Religious Institutions	Incineration /Cremation areas/Burial Ground	0.4 ha per site	Master Plan of Delhi, DDA, 2001
15.	Museum	National	0.5 ha per site	Periodic Plan of Lekhnath, 2063
16.	Art Gallery	National	0.5 ha per site	Periodic Plan of Lekhnath, 2063
17.	Old age home, orphanage, center for differently able people, sanatorium	N/RL	1 per 20,000 population (0.3 ha per site)	Master Plan of Delhi, DDA, 2001
18.	Security	Police Headquarter	1 per 100000 population (2 ha per site)	Master Plan of Delhi, DDA, 2001
19.	Science and Innovation Center (Exhibition Centers)	NL	1 per 50000 population (4 ha per site)	Master Plan of Delhi, DDA, 2001
<b>C</b>	<b>Economic Infrastructure</b>			
20.	Convention Hall	International state of the Art	1 per 100000 population (2 ha per site)	Government of Pakistan, 1986
21.	Sports Complexes	National Level Specialized complexes	1 per 500000 population (10 ha per site)	Master Plan of Delhi, DDA, 2001
22.	Movie Hall with multiple halls	Multiple halls	5 seats per 1000 population	National Ref. Manual on P/I services, Got. of Pakistan, 1986
23.	Vegetable markets with wholesale(Central/regional/district/local)	Neighborhood Level	1 wholesale, 1 retail and 1 Slaughter house for 2 neighborhood (0.5 ha per site) 1 Neighborhood = 3000 population	Periodic Plan Of Lekhnath, 2063
24.	Parking Space	Public parking (two/ three wheeler) Public parking (four wheeler) (including provision for vertical parking)	1 parking lot for each neighborhood (1 Neighborhood = 3000 population)	Conversation within PPUD Section, 2013
25.	Transportation system	Intra City Bus Terminal (Linking with other cities) along with urban service centers/ motels/ gas stations Inter City Bus Terminal (within the city)	1 parking lot for 400 buses and 400 trucks  1 parking lot for 400 buses	Periodic Plan Of Lekhnath, 2063
25.	Airport (National and International)	National and International Airports	346 hectares – International Airport 134-227 hectares– National Airport	National Ref. Manual on P/I services, Got. of Pakistan, 1986

