Presentation on

Integrated Land use - Transport Planning framework at Local Area level: Case study- Delhi

Presentation by

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Project no. 14

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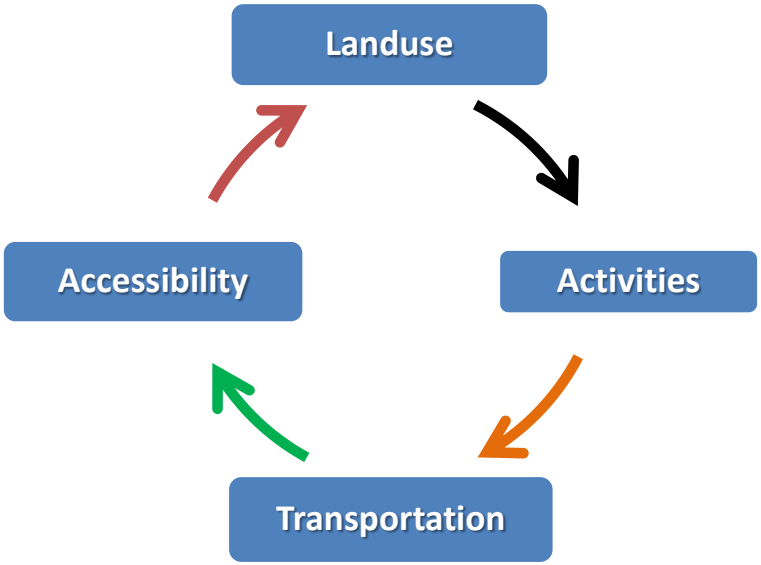
Background

- Master Plan / Zonal Plans are guiding policies and plans which aim at providing direction of spatial planned development.
- The Primary objectives of Master plans is to provide guidelines for planned development of city and local areas
- The Strategies / policies of development as per present practice follow top down approach
- Local Area Plans are the actual plans that will be implemented on ground & hence its mobility requirements needs be formulated along with city level /zonal level

Concerns related to Transportation in Local Plans

- Landuse and Transportation are intrinsically inter linked
- Transport Master Plans are prepared at city level wherein zonal / local area level transportation plan details are missing.
- Absence of sustainable mobility plans at local level affects the overall city sustainable mobility.
- Existing practice of city level transport planning neglects the local level needs of mobility options such as Walking, Cycling and NMV etc.



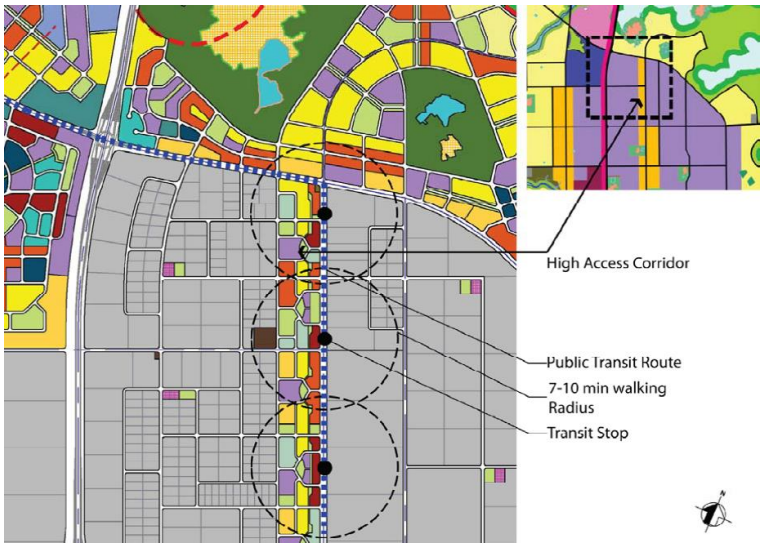
Project Aim and Objectives

- **AIM**:
  - ✓ To evolve integrated Landuse transport planning framework at local area - Delhi
- **OBJECTIVES**:
  - ✓ To appreciate the importance of integrated Landuse – transport planning at local level
  - ✓ To review a best practices of integrated Landuse – transport planning practices at local area / micro level.
  - ✓ To propose a planning framework for integrated Landuse transport planning at local level.

Case studies on Integrated Land use - Transport Development- Attempts of New Towns in India

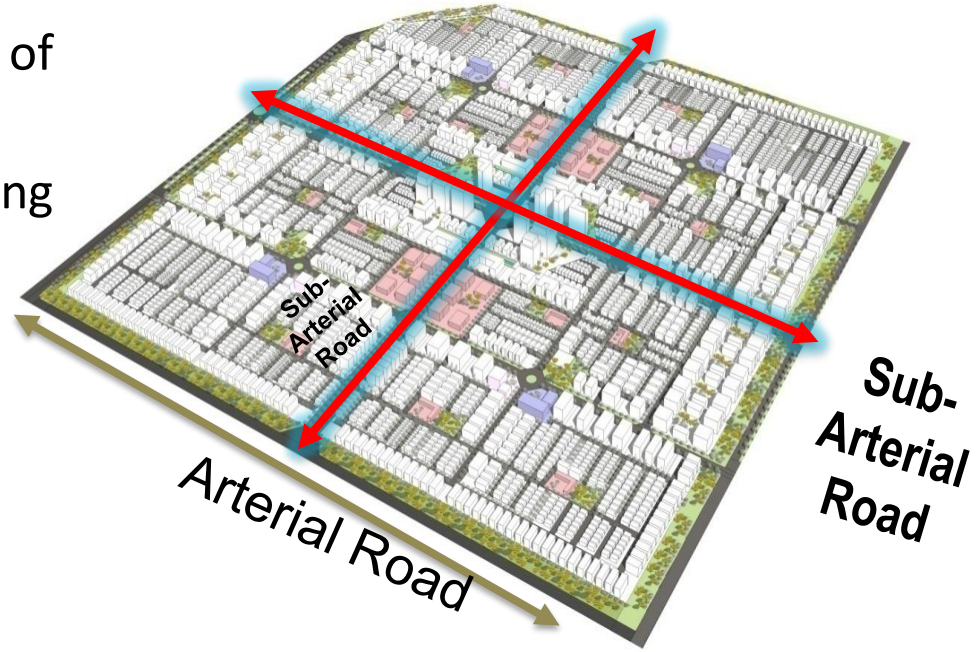
High Access corridor Development in Dholera

Transit Oriented Development in Naya Raipur



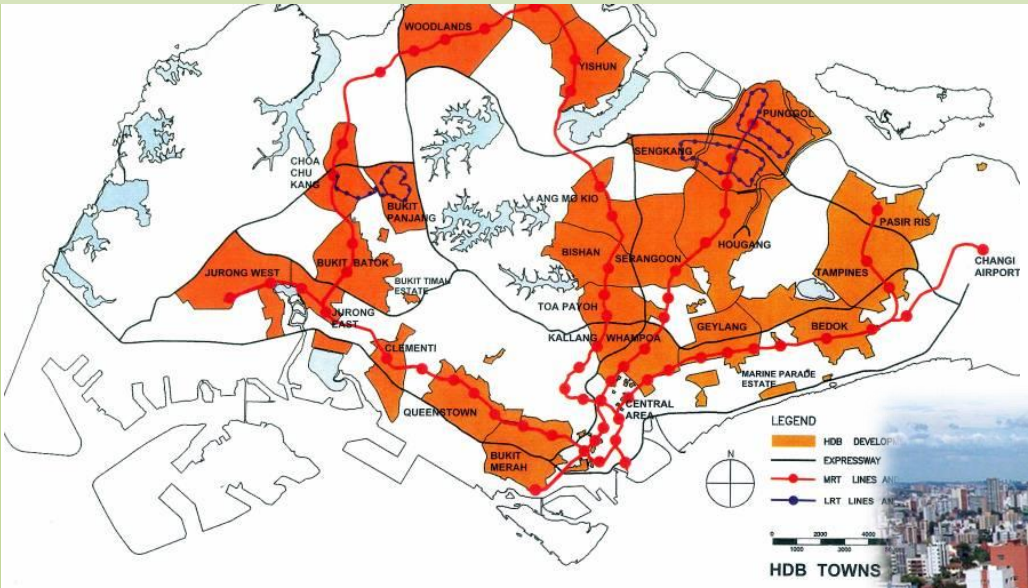
Case studies on Integrated Land use - Transport Development- Attempts of New Towns in India

- Town center at the intersection of two sub-arterials
- Dedicated MRT/BRT corridor along Sub-arterials
- Prioritized NMT network
- Mixed use developments
- Transit station
- Interconnected streets
- Pedestrian friendly environment
- Continuous NMT Corridors
- Street facing buildings
- Streetscape design
- Safety and security



Amaravati Town ship development

Case studies on Integrated Land use - Transport Development – International Experiences



Integration of housing and metro in Singapore

Transit Oriented Development along BRTS in Curitiba

Literature Review

Ahmedabad :

- ✓ City has well defined road hierarchy and adequate ring and radial roads, river crossings.
- ✓ Well defined and comprehensive network along with city's mixed Landuse development.
- ✓ Well-integrated transit and land development create urban forms and spaces that reduce the need for travel by private motorized vehicles (ATL 7-8 KM).
- ✓ Areas with good access to public transit and well-designed urban spaces – leading to attractive places for
  - People to live
  - Work
  - Learn
  - Play and
  - Interact

Literature Review

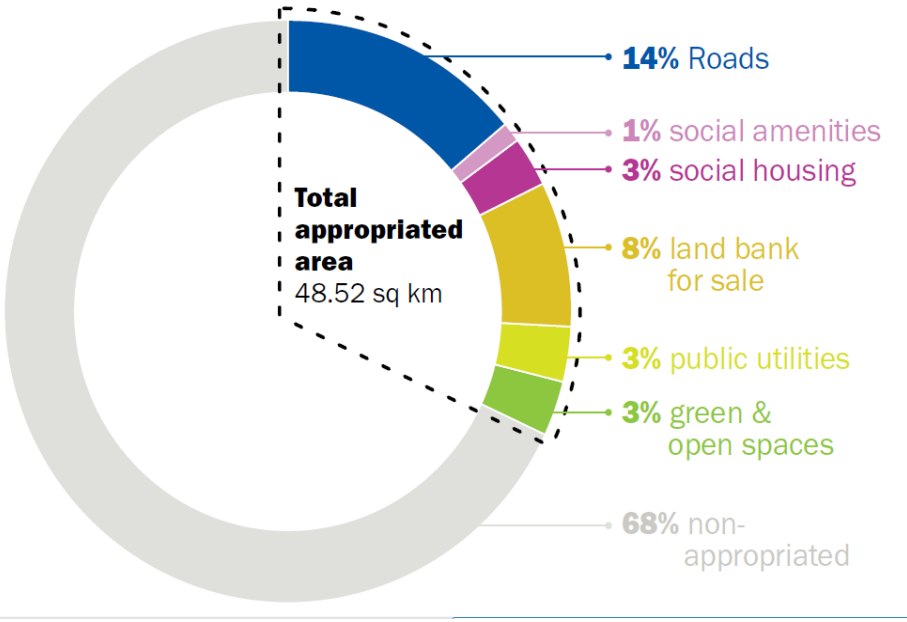
Ahmedabad Town Planning Scheme : Equitable development

- ✓ Urban expansion managed through structures process - TPS
- ✓ Landuse Planning integrated with service provisions at peripheral areas
- ✓ TPS is pooling and readjustment of lands
- ✓ Appropriating part of land for public purpose
- ✓ Widely used after amendments to Gujarat State Town Planning and Urban Development Act - 1999
- ✓ Enables negotiations between Local Planning Authorities and Landowners
- ✓ **TPS salient features**:
  - More equitable allocation of urban land
  - Reserving land for public purpose
    - ➢ Low Income housing
    - ➢ Open spaces
    - ➢ Road s
    - ➢ Utility infrastructures
    - ➢ Social amenities

Literature Review

Ahmedabad Town Planning Scheme :

- ✓ Private landowners benefit in two ways :
  - Compensation payment for land acquired
  - Rise in land prices after development of trunk infrastructure



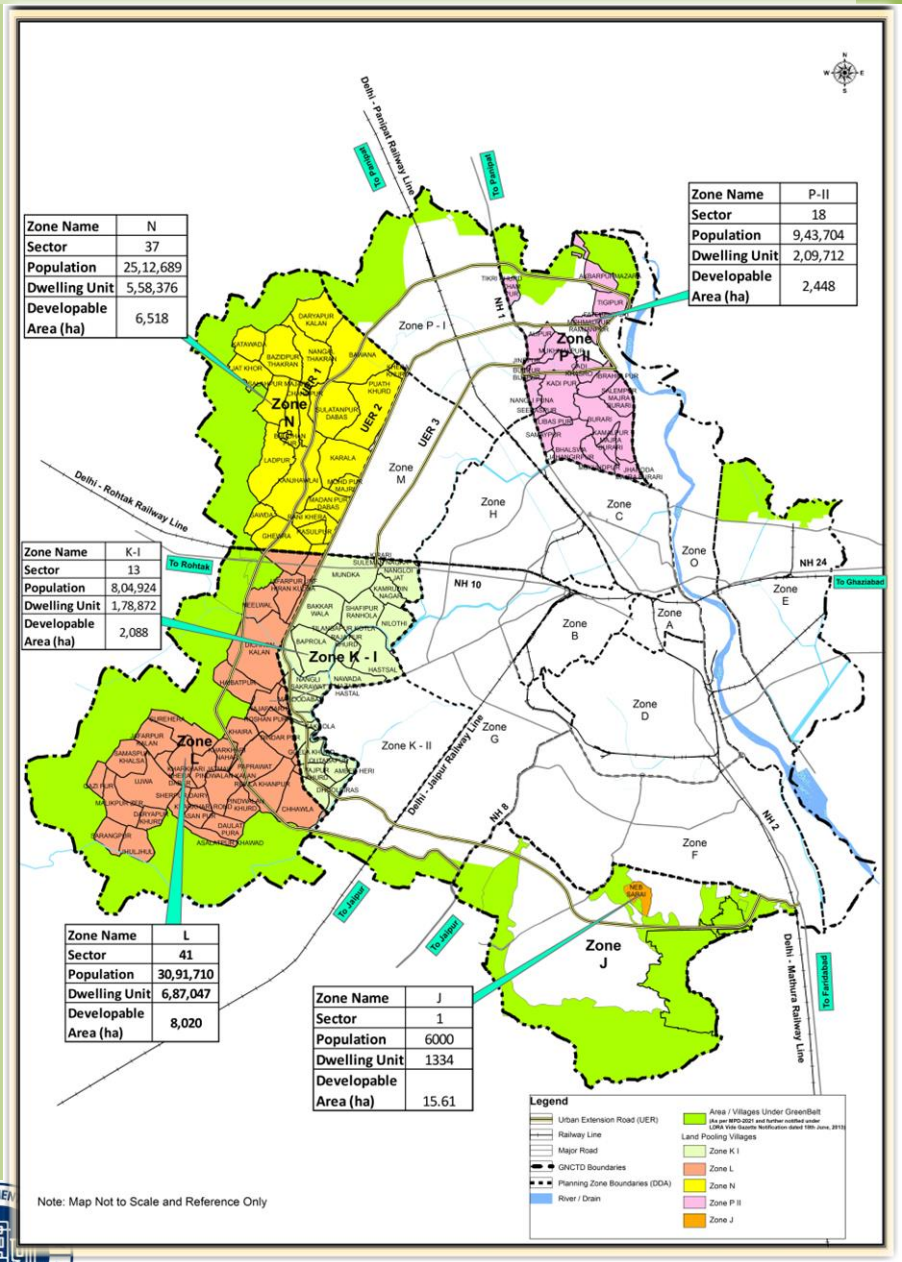
- ✓ Landowners receive a reduced area after the appropriations
- ✓ Appropriated land reserved for various public purposes
- ✓ Participation of landowners through local level negotiations and flexible in terms of accommodating existing informal settlements

Profile of Case City of Delhi

- Delhi the National Capital Territory (NCT) of India is a large metropolitan area in India : 1483 Sq. KM
- 5th populous city of the World
- Population – 1.67 Crore (2016)
  --1.98 Crore (2019)
- Migration : 2 to 3 lakh every year

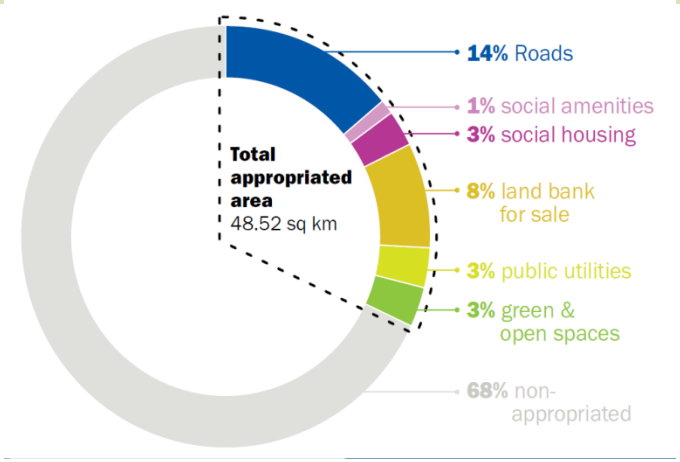
- Literacy rate : 86 %
- Vehicular growth – 19 lakhs to 1 crore (in last 26 years)
- Metro operational length 373 KM

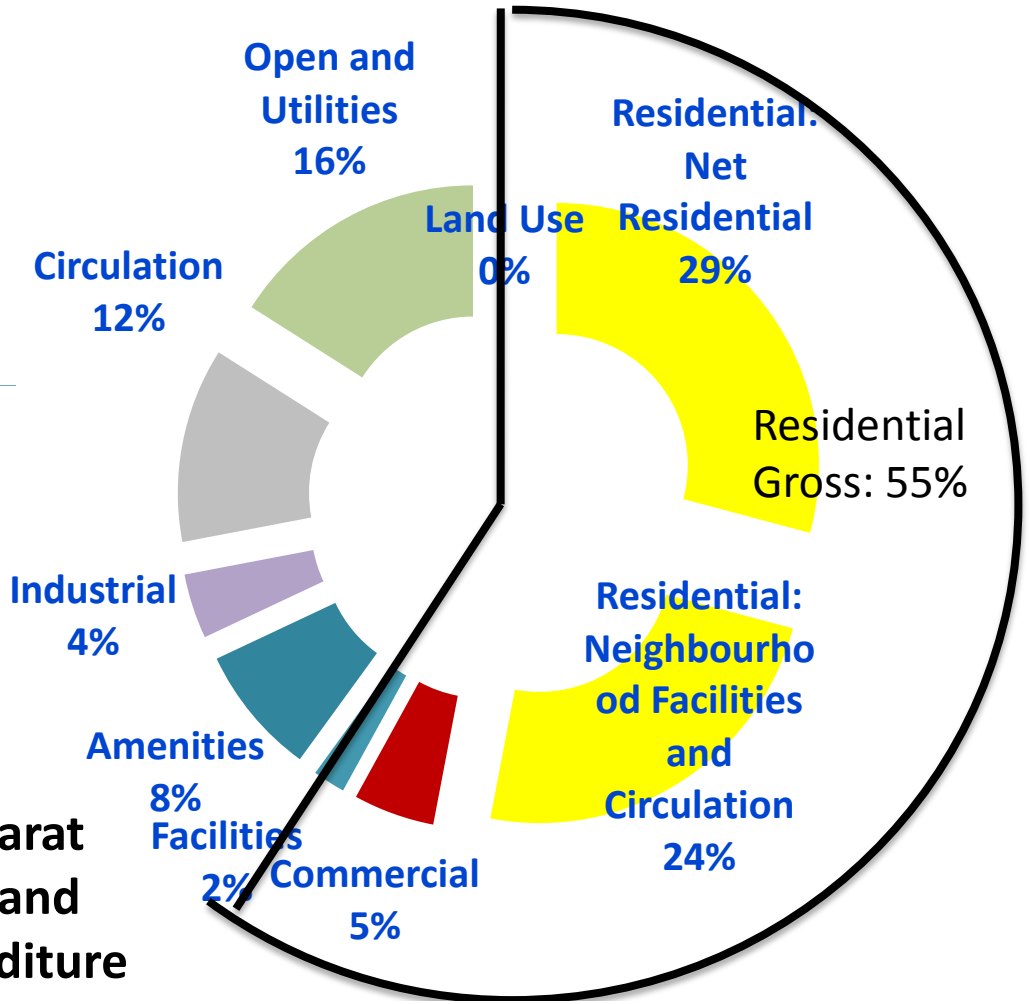
Delhi Zonal level profile



- For the planning purpose Delhi is divided in to 15 Zones as MPD 2021
- Zonal development for all zones were notified
- 5 zones were identified as urbanisable area (Zone K-I, L, N, P-II and J zones
- Area available for urbanisable 30,000 Ha
- 19,000 Ha of net available for development
- 17 L housing and its facilities are to be designed

Delhi Land Pooling Scheme





Government 40%

- Similar to TPS scheme of Gujarat
- Infra cost would be born by land owners as per actual expenditure
- Additional 15 % of FAR for Social Housing

Land owners 60%

Regulations of LPS

- Eligibility
  - Minimum 70% to be pooled
  - Contiguous land
  - At least minimum 30 m wide road
- Zonal Plans were notified, but for participation under pooling Landuse is not the criteria and there is no minimum size of land to participate
- DDA will prepare spatial distribution of 60 : 40 and developer will prepare the 60% land utilization plan based on Master Plan and get the Provisional development license
- On payment of External development charges, developer will get the Final Development License to execute the development as per the approved Layout plan and building plans.
- Completion/Occupancy certificate shall be issued.
- Entire process will be done through Single window system for smooth function of the development.

Concerns in the LPS with Reference to Transport

- Development Controls are as per Master / Zonal Plans which are rigid in nature
- FAR is uniform based on Landuse,
- There is no **entropy**
- Segregated land use will increase the local motorized trips, dependence on motorized trips leads to congestion and pollution
- Macro level network is defined but micro level is to proposed by developers, but there is no clarity how it is to be developed – affect the **accessibility**
- Land-uses along proposed Transit corridors are not defined, which may leads to **non utilization** of potential of the corridors.
- No additional benefits for Green certified buildings
- Parking norms are rigid for all types of development
- Environmental Sensitivity analysis is absent at Zonal level

Proposed Transport Sector planning norms

- Major Regional and City level connectivity by Urban Extension roads and laying of **Major Trunk lines**
- Each zone is divided into Sectors
- Development shall be as per modules of Sectors, and is bounded by minimum **30 m roads**
- Hierarchy of road network:
  - Urban Extension road 80 – 100 M (segregated space reserved for Trunk Infra and Mass transportation corridor)
  - Arterial road 60 – 45 M
  - Sub-Arterial road 30-24 M
  - **Local street** – not defined
  - **Collector streets** – not defined
  - Pedestrian / NMV only street – not defined.
- Micro level network is for 60 % of land to be developed and to be defined at Layout levels.

Interventions required for Local Area Plan in terms of Transport network

- Micro level **hierarchy of road network** to be introduced from 6,12,18 and 24 m road network in preparation of LAP – **Accessibility**
- Mandate green corridors by introduction of exclusive pedestrian and Cycle only roads at Neighborhood and Community level development and connecting transit stations – **Walkability** .
- Encourage non- motorized network – segregated lanes for NMV at 24m and above roads
- Additional **development control** norms for Mass transit corridors
- Flexibility of allowing **FAR utilization** within the sector
- Mixing of uses at Neighborhood and Community level and at Transit stations – **bringing entropy**
- **Parking norms** for individual buildings shall be as per the public transport accessibility criteria
- Layout development should respect the local flora and fauna

Relation between Road width, FAR for different land se

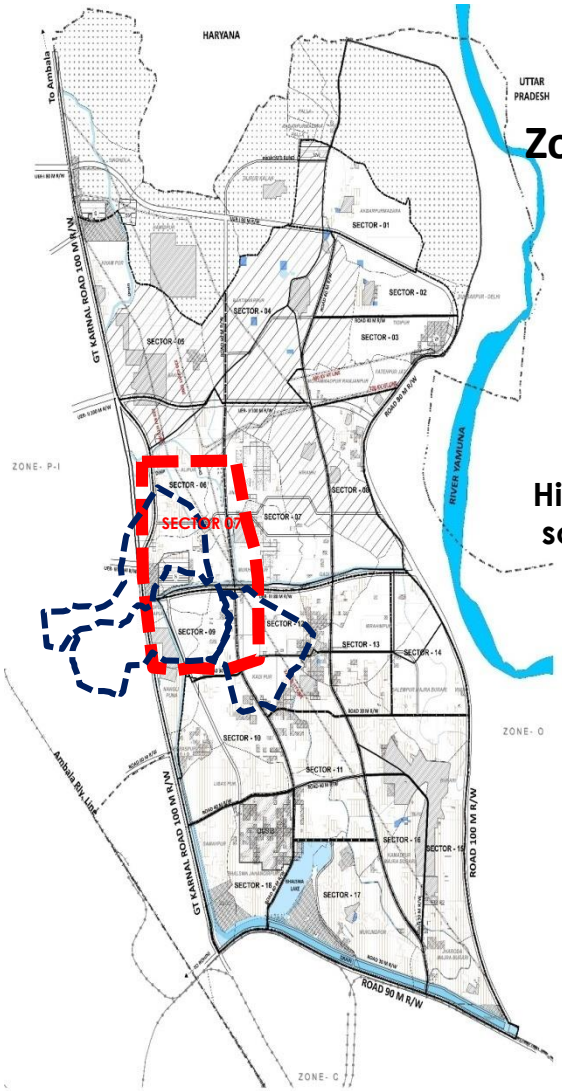
TABLE – 3 : Maximum Floor Area Ratio & Road Widths for Different Sital Areas

Road width in metres	Residential	Commercial	Public & Semi-public, T&T, Public utility
Up to 9	1.50	1.50	1.25
Over 9	1.75	1.75	1.50
Over 12	2.00	2.00	1.75
Over 18	2.25	2.50	1.75
Over 24	2.50	3.00	2.00

Note : Only effluent treatment plant, open to sky swimming pool, car parking are excluded from FAR computations.

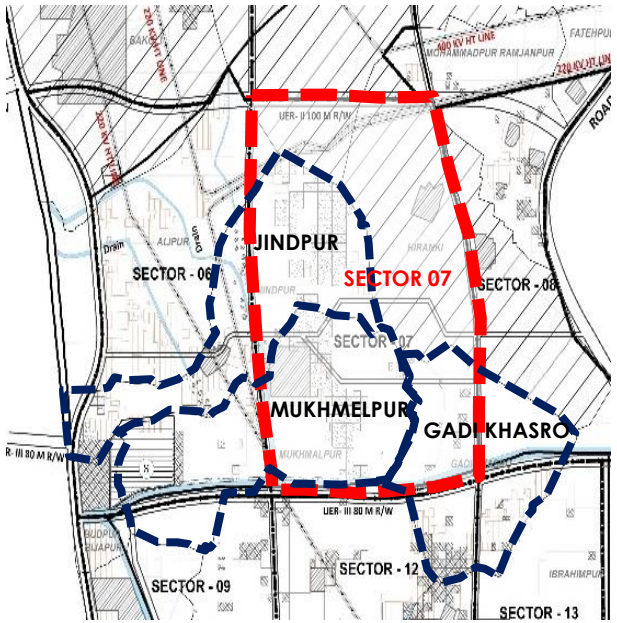
Source : Bangalore Local Area Plans guidelines

Integrated Land use Transport approach at Local area Level : Case study Zone P – II : Sector 7



Zone – P II

High potential for a sound green-blue infrastructure

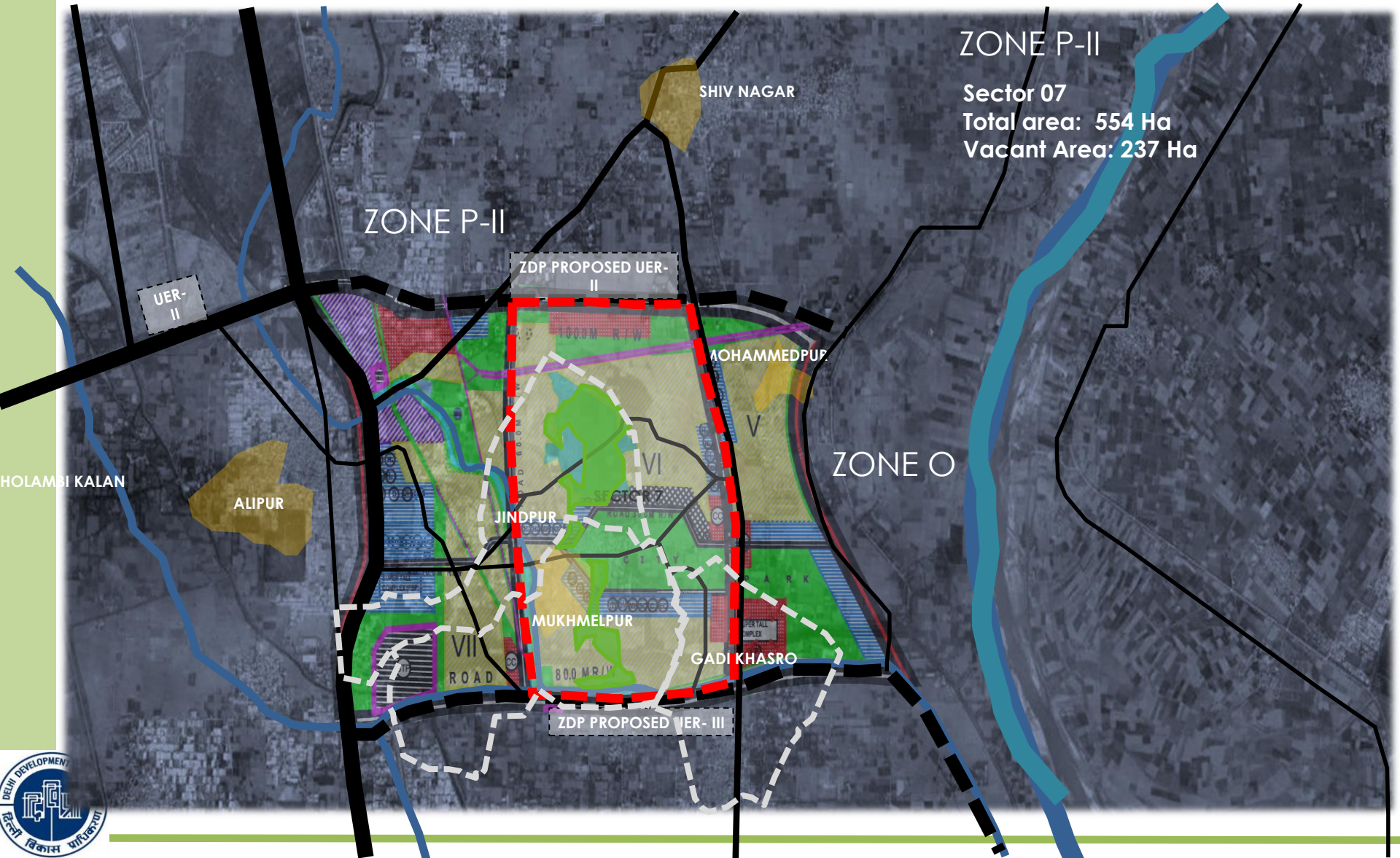


Sector area (**P-II 07- 554/237 Ha**)

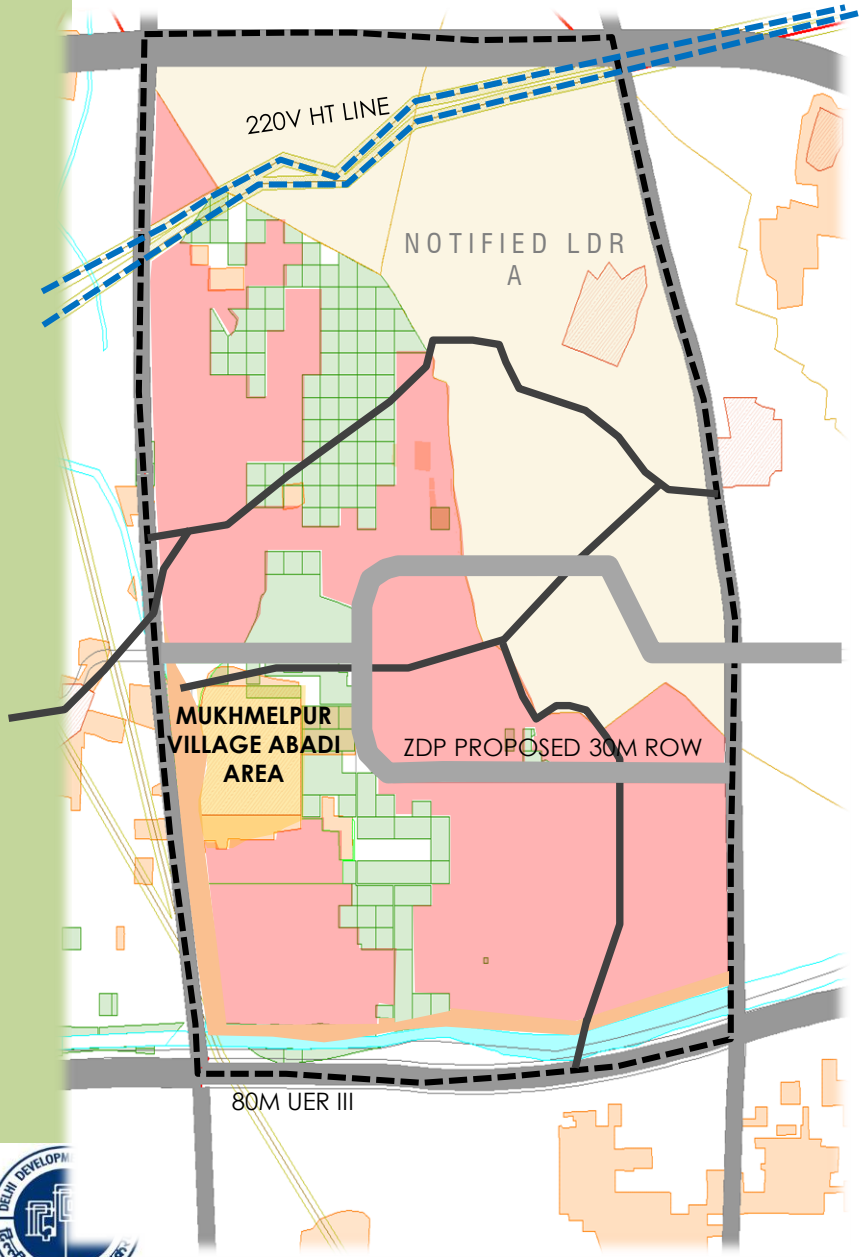
- Presence of a big **LDRA and large parcels of forest land.**
- Bounded by UER II and III on top and bottom of sector and 45 m on North to South directions
- Proximity to Zone O and presence of Nalas.

Demonstration of Principles

SECTOR CONTEXT – Landuse



Demonstration of Principles.....



LEGEND

- Sector area: 554 Ha
- Forest Land
- LDRA
- Village Abadi Area
- HT Line
- Developable Land Area: 237 Ha
- Existing Nala and Water Bodies
- Nala Buffer

DEVELOPABLE LAND (237 Ha)

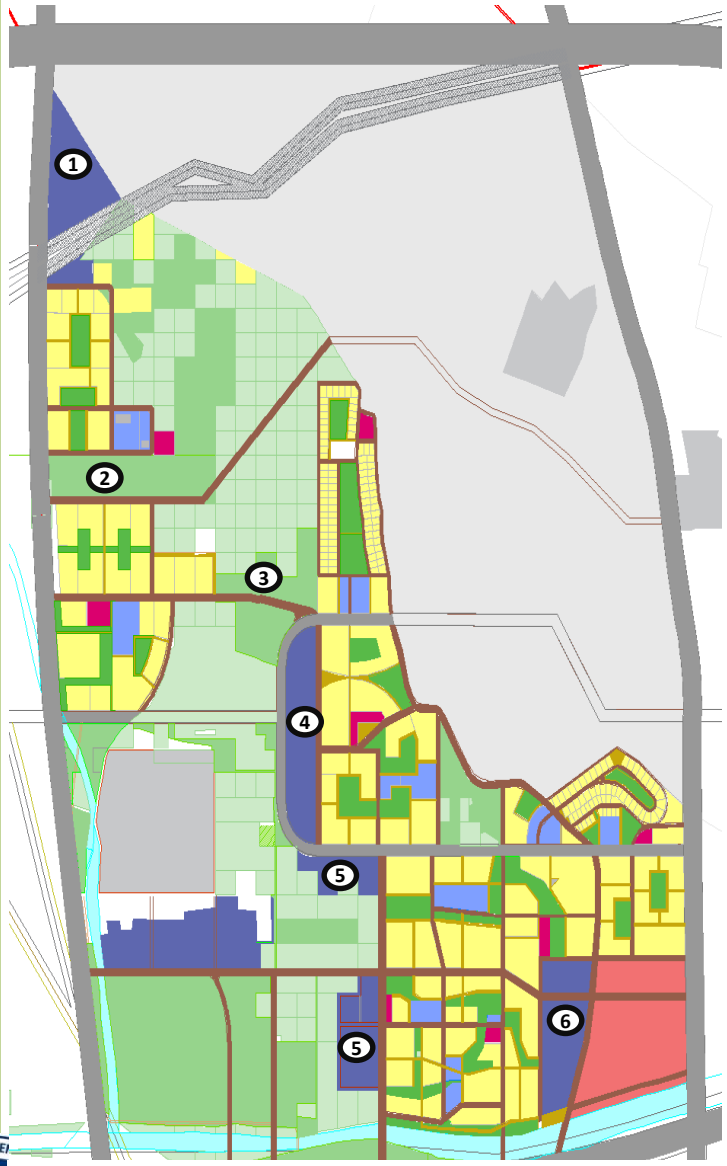
60% Land Component for Developer Consortium **(142.20 Ha)**

40% Land Component for City level amenities **(94.80 Ha)**

BREAK-UP OF 60% LAND	
53 % land component for residential (Gross Residential)	125.61 Ha
5% of land component for commercial	11.85 Ha
2% of land component for public-semi public	4.74 Ha

40% Land would be utilized for provision of roads, greens, City-level PSP, Utilities etc. as per the Notified policy.

Development scenario



LEGEND

- PUBLIC AND SEMI-PUBLIC FACILITES
- NEIGHBOURHOOD FACILITIES
- NEIGHBOURHOOD PARKS
- NEIGHBOURHOOD FACILITIES
- CONVENIENCE SHOPPING

1. SOCIO- CULTURAL CENTRE
2. DISTRICT PARK
3. COMMUNITY PARK
4. DISTRICT HOSPITAL
5. COMMUNITY HOSPITAL/ SERVICES
6. MULTI-PURPOSE PARK, SPORTS, OTHER COMMUNITY SERVICES

BREAK-UP OF GROSS RESIDENTIAL LAND (125.61Ha)	
Net Residential (55% of Gross Residential)	69.09 Ha
Land for Neighbourhood facilities, green and roads (45% of Gross Residential)	56.52 Ha

FAR AND BUILT-UP CALCULATIONS FOR NET RESIDENTIAL	
DESCRIPTION	**AREA**
Net residential area	69.09 Ha
Built-up Area (FAR 2)	1381710 Sq.m.
Additional EWS Built-up (15% of the net residential built-up area)	207256.50 sqm
Total Built-up Area	**1588966.50 sqm**

Assumption
Average size of DU – 100sqm
Size of EWS – 32 sqm.

POPULATION CALCULATIONS	
DESCRIPTION	
Estimated Population	**91,322**
Existing Population +VILLAGE ABADI	16,971
LDRA	**12,652**
Total Population (including existing)	**1,20,946**

8 NEIGHBORHOODS
(13,000 population / neighborhood)

PROPOSED SCHEMATIC LAYOUT PLAN

Entropy Analysis of Proposed Landuse mix

- Entropy is a measure to check the mixing of land uses. Higher entropy implies higher mixing
- In the case study area the entropy index is 0,
- Which indicates these is no mixing of uses leads to generation of local motorised trips

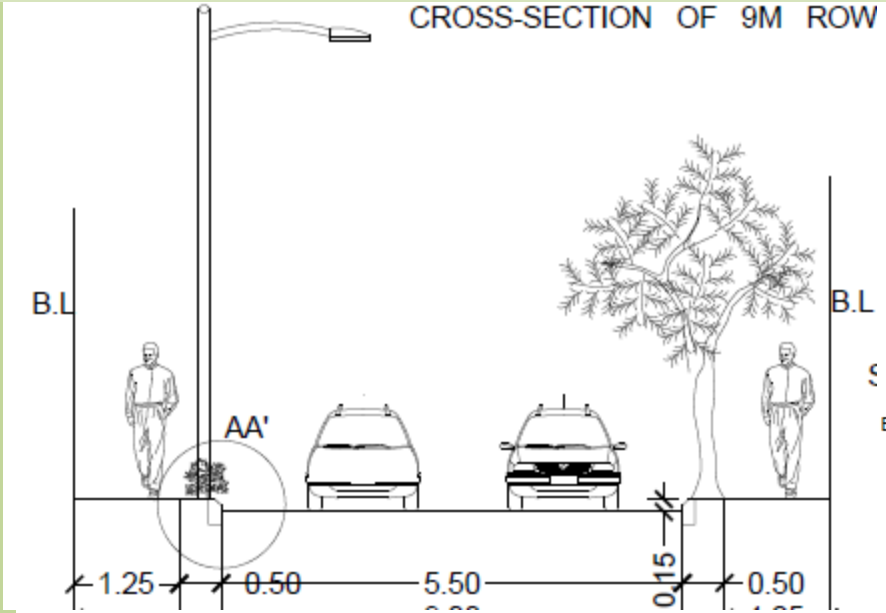
Planning Approach for Desired Integrated landuse Transport Structure at Local area level

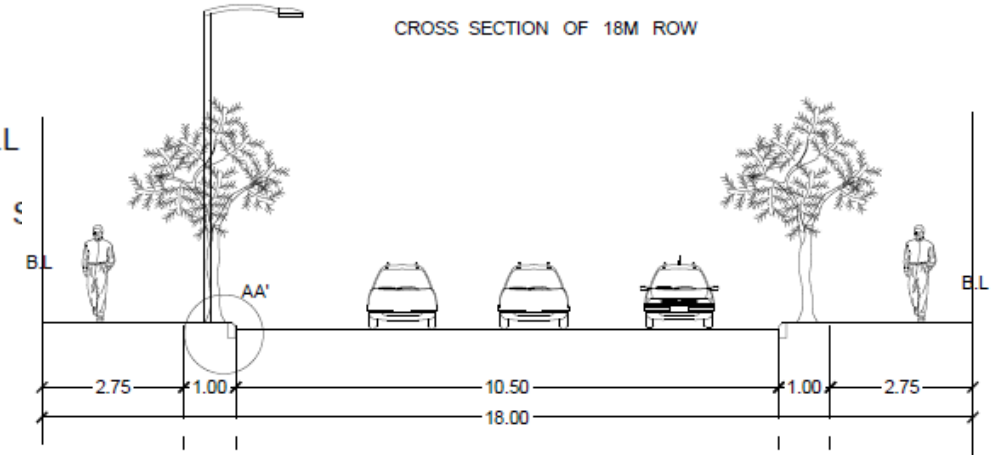
- Development of high **mix of landuses**
- Ensuring centrality of various facilities from all sub areas within LPA in terms of **accessibility**
- Ensure desired transport system development to access different land uses for various purpose in terms of
  - ✓Connectivity
  - ✓Continuity
  - ✓Segregation
  - ✓ width,
  - ✓availability,
  - ✓parking infrastructure etc.

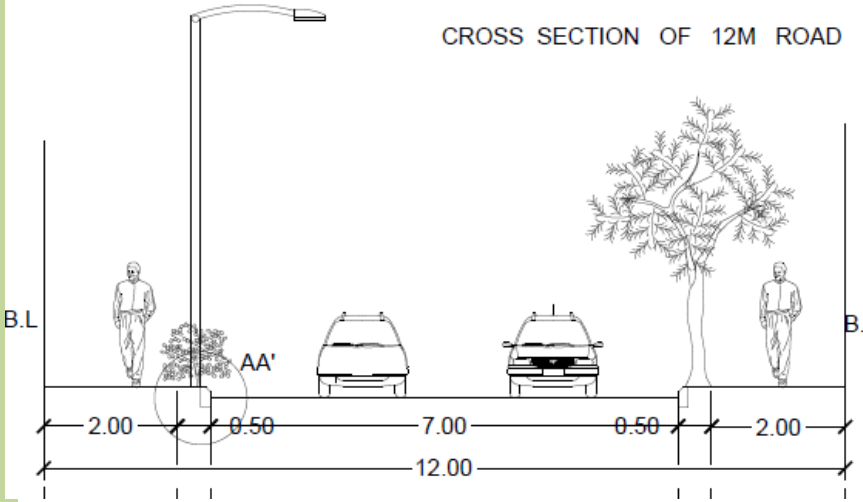
Demonstration of Principles

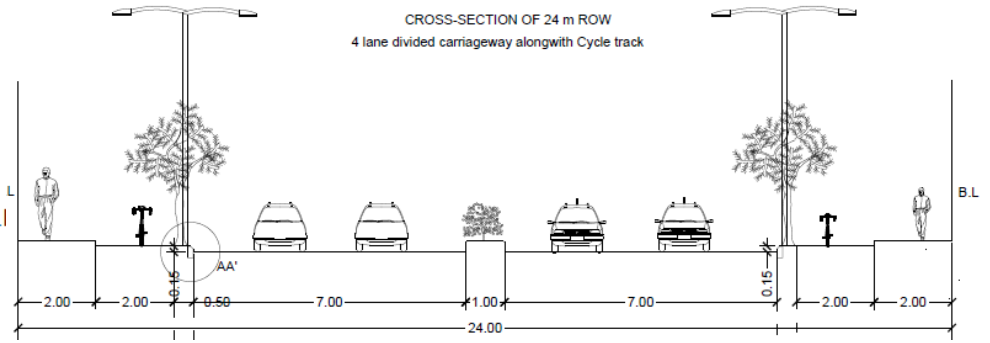
NEIGHBOURHOODS & BLUE GREEN NETWORK

Typical proposed road cross sections







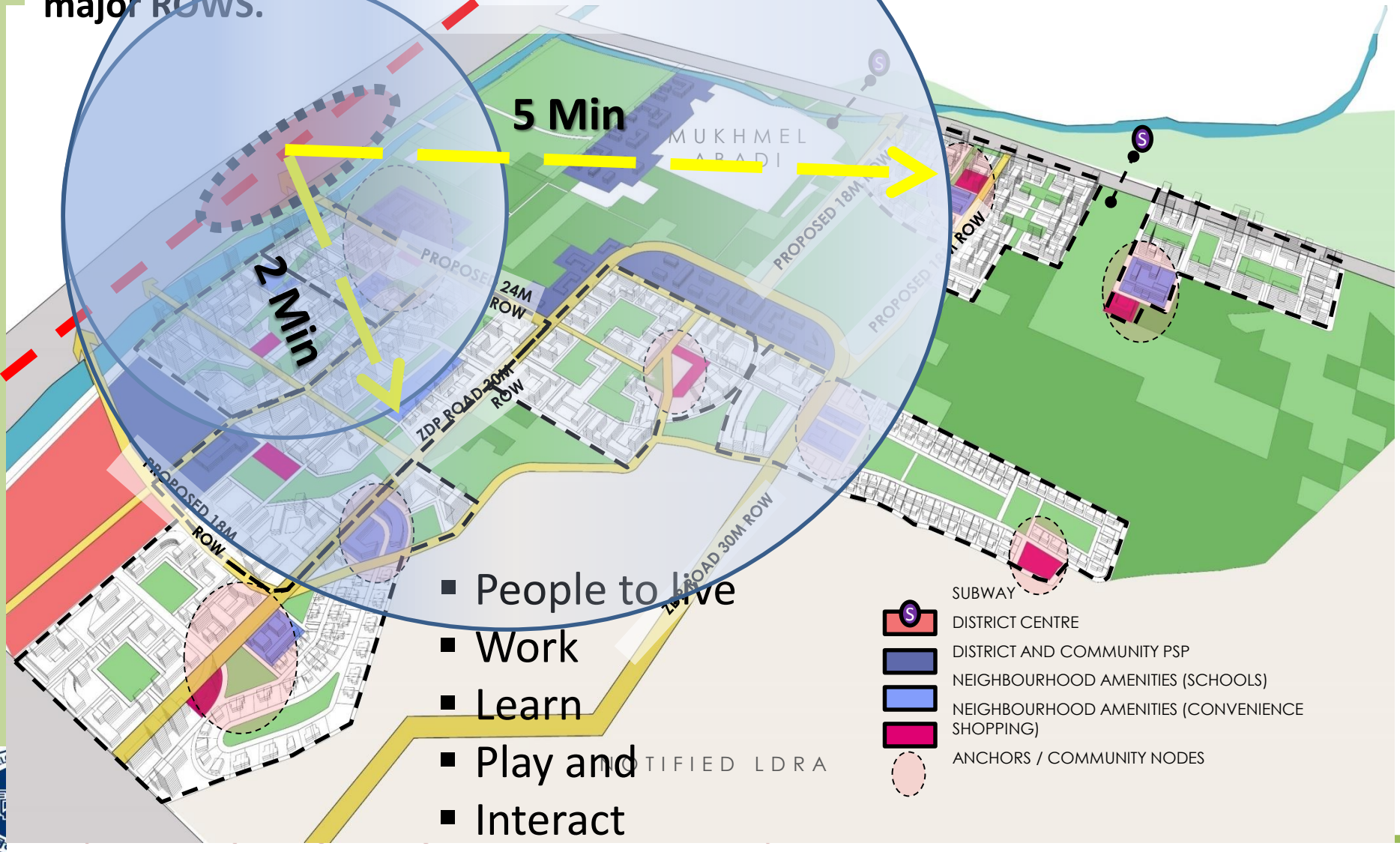


Demonstration of Principles

Making pedestrian and cycling interlinkages between neighbourhoods through community greens, that also integrate with Neighborhood Greens through a continuous 6m *pedestrian/ cyclist only* network.

Demonstration of Principles

Locating the Neighbourhood facilities within 500m walking distance in all neighbourhoods and providing access to District and Community facilities from major ROWS.



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