



CITY LEVEL PROJECTS

# DECONGESTION OF IGNOU ROAD

Site Specific Street Design & Development  
Alternatives





सत्यमेव जयते

### **Delhi Urban Art Commission**

The Delhi Urban Art Commission was set up by an Act of Parliament in 1973 to “advise the Government of India in the matter of preserving, developing and maintaining the aesthetic quality of urban and environmental design within Delhi and to provide advice and guidance to any local body in respect of any project of building operations or engineering operations or any development proposal which affects or is likely to affect the skyline or the aesthetic quality of the surroundings or any public amenity provided therein”.



सत्यमेव जयते

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Geospatial Delhi Limited  
Delhi Metro Rail Corporation  
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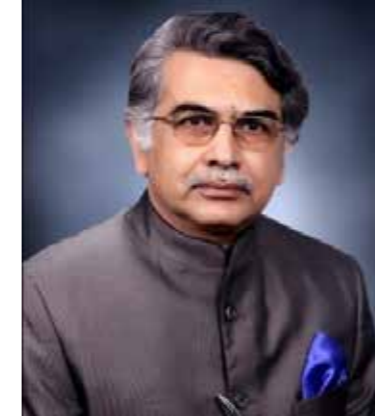
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## Preface



The city of Delhi, capital of this vast land of diversities, is a city laden with layers of history, a place where civilizations have lived, prospered and perished over centuries. The modern city today, built over and around a rich tapestry of heritage, presents an opportunity at every turn, to allow for co-existence of the past, present and the future. In order to understand this multidimensional urban spectrum and attempt to plan the future, various city level studies have been initiated by the DUAC. I hope that these studies will help the planners of modern day Delhi to carefully articulate urban space, structure, form and environment and sensitively address future requirements.

I convey my thanks to all the Consultants and Members of the Commission who have tirelessly worked on this research project to bring out this document. I also take this opportunity to place on record my sincere appreciation of the efforts of Secretary and other staff of DUAC for providing the necessary administrative support to make this happen.

I fondly hope that the authorities of the local, state and national government take these studies seriously and implement, in right earnest, the suggestions given herein.

December, 2020

**Prof. Dr. P.S.N. Rao**  
Chairman, DUAC

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## Summary

**Criteria for Area Selection:** Delhi is a historic city. The history is manifested both at the monumental and mundane level equally by outstanding monuments on the one hand and housing of the masses on the other; all connected with avenues and streets. Housing determines the historic continuity of a place. Needless to state that a large part of this housing is informal, unregulated and unplanned. The informal physical geometry of growth is a documentation of the supply/demand equation over time. The older parts of the city illustrate this trait more strongly than the comparatively newer ones. Also the medieval texture of the older parts is a clear give-away of the areas that have come into the ambit of planned Delhi very late.

The selected areas have all the elements of organic growth (very high density, narrow lanes, small plots, high ground coverage and structures of about 3-4 floors height, mixed land use and a general deficiency of circulation and infrastructure). Also the study area is characteristic of this typical typology, found uniformly scattered all over the extended boundary of Delhi.

It will not be wrong to assume that it would be impossible to apply the principles of planning normally used for newer or planned areas. These are living, pulsating areas with very little manoeuvring space available for planners. A slightly improved level of circulation and infrastructure services can be surgically implanted for a better quality of life for the residents by causing least inconvenience.

**Objective:** The site specific study undertaken is of IGNOU road and its adjacent settlement areas. These settlement areas mostly fall under the category of unauthorized colonies and the rest under urban villages. Despite being an unauthorized colony, the area largely violates the Master Plan. The issues dealt with, at this stage, call for following interventions that can be explored.

- Regional Transportation Plan which includes Street Design, New Road Networks and Enforcements to Curb Encroachments and other illegal usage of Public Streets.
- Alternate solutions for Stormwater drainage.

### Methodology:

- The report represents a thorough analysis and subsequent plausible solutions to the area in terms of its road networks, transportation plan, and mixed-use street design.
- Demography analysis & land-use analysis along with identification of activities help to get an overview and understand the issues prevalent in the area of study.
- The issues of the area have also been analysed based on the comparison of the current situation and that mentioned in the Master Plan of Delhi 2021 (MPD 2021) and the Zonal Development Plan (ZDP).

**Approach:** In order to decongest the streets and bring about a semblance of planned order in the area, minimal and suitable intervention by selective and specific alternatives have been proposed. The approach thus requires planning for a design strategy which can accommodate present traffic volumes by restructuring and reorganizing of the spaces, while encouraging walkability and safety.

Strategies to streamline transport in the area and provide for an increased accessibility would represent a feasible design solution for replication in other areas of similar dynamics.

The estimated change would have favourable effect on housing, local businesses, local tourism, physical and social infrastructure and pave a way for other such pockets of Zone J, Delhi. This would also represent a model of street design and urban design for all such areas in the city.

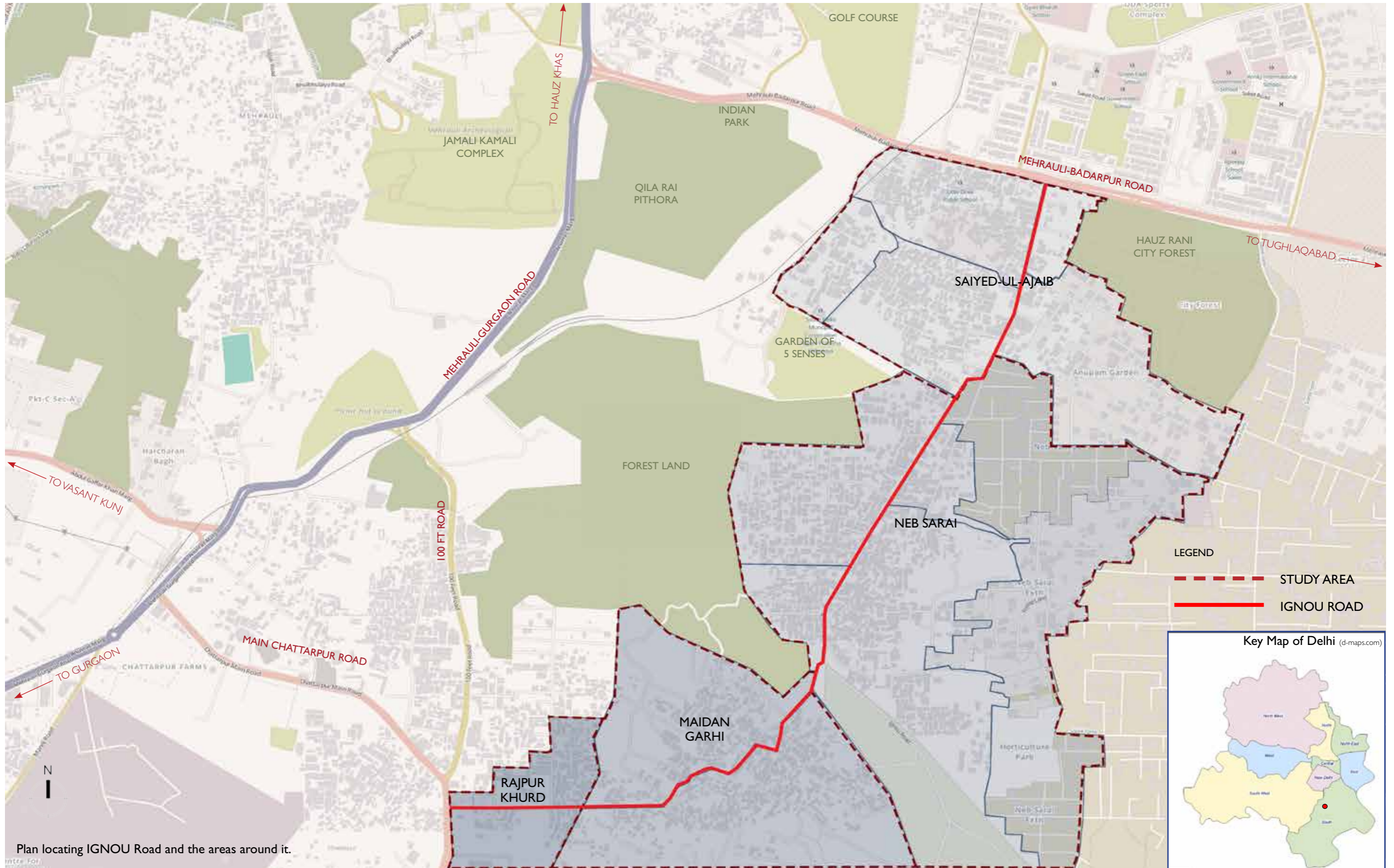
### 1.1 Area of Interest

The site comprises of IGNOU road, the spine of the region, which spans a distance of 3.85 km from Mehrauli-Badarpur Road in the north to Main Chattarpur Road in the west. This spine is encompassed primarily by residential pockets and some commercial spaces, together covering an area of approximately 200 Ha.

### Surrounding Sites

IGNOU Road is located in the South Municipal District of Delhi which covers an area of 247 sq. km. With a population of almost 30 lakhs, South District is the 2nd most populated and 6th in terms of population density, as compared to all the other districts of Delhi. (Census of India, 2011)

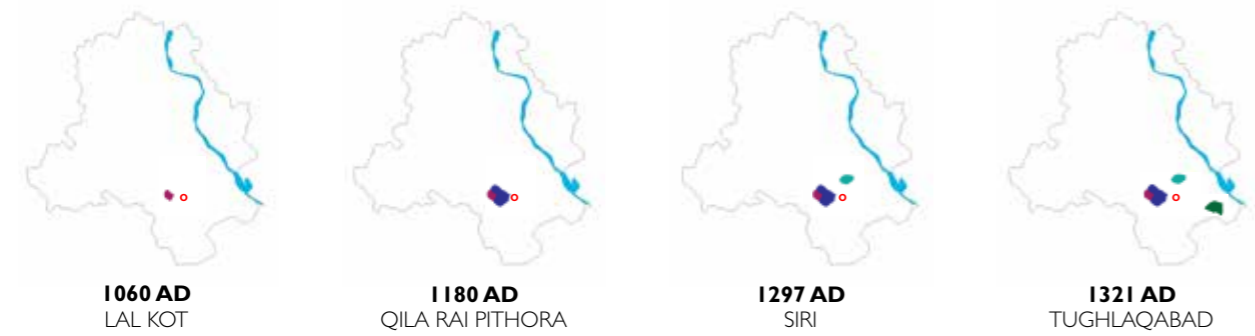
Popular places, historical monument and tourist attractions like Qutab Minar, Garden of Five Senses, Golf Course, Qila Rai Pithora (Lal Kot) and Hauz Rani City Forest are located in the vicinity of the area of interest.



Plan locating IGNOU Road and the areas around it.

## 1.2 Historical Context

In the year 736 A.D. King Anangpal Tomar founded Lal Kot. 'Lal Kot', basically meaning 'Red Fort', was basically a walled citadel or Military Garrison which also served as the capital of the kingdom of Tomars. King Prithviraj Chauhan (Prithviraj III) captured Lal Kot in the year 1180 A.D. and made extensive renovations to the structure and extended the citadel by building massive ramparts around it. It was made into a thirteen gated fort. This city became to be known as Qila Rai Pithora. The Chauhans and the Mamluks (Slave Dynasty) ruled from Qila Rai Pithora and it remained the capital city of the empire of Northern India for over a hundred years. (Travelerohan, 2012)



**1060 AD**  
LAL KOT  
Anangpal Tomar II shifts and declares new capital for Tomar dynasty by building a fortress. (Bhavika, 1990)

**1180 AD**  
QILA RAI PITHORA  
Prithviraj Chauhan inherits throne and expands fortified area.

**1297 AD**  
SIRI  
Ala-ud-din Khilji builds first muslim city in India as a defense against attacks by the Mongols.

**1321 AD**  
TUGHLAQABAD  
Ghiyath-al-din Tughlaq builds a new capital, but is abandoned due to scarcity of water.



Lal Kot (Nirdesh Singh, ghumakkar.com)



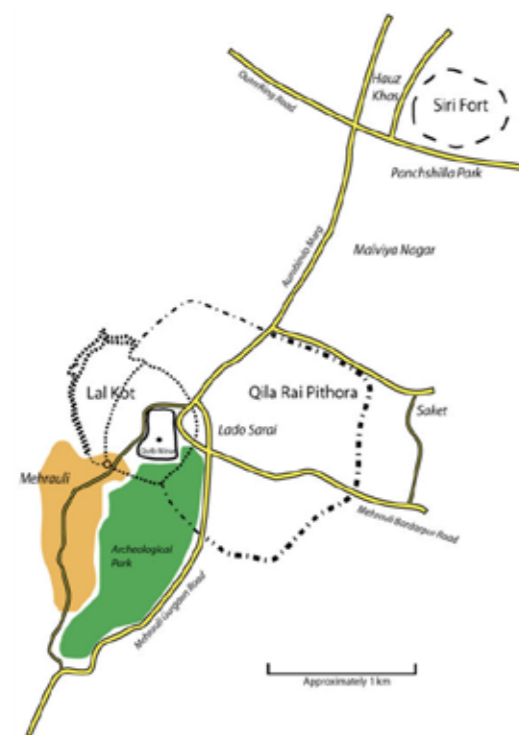
Qila Rai Pithora (Nirdesh Singh, ghumakkar.com)



Tomb of Alauddin Khilji (wikipedia.org)



Tughlaqabad Fort (Jason Staines)



Key Plan for Lal Kot and Qila Rai Pithora walls (taborme.uk)

IGNOU Road and the areas around it, primarily existed as agricultural land (abadi deh) that was part of the various cities that were built and consequently plundered by future dynasties. As shown in the figure, the area of interest starting from Sayyidulajab lies just outside the South-East wall of Qila Rai Pithora. The influence of the dynasties and their establishments are still prevalent at the site to this day.

- Mehrauli-Badarpur Road was once an avenue that connected Lal Kot & Qila Rai Pithora to the city of Tughlaqabad.
- Sayyidulajab, village draws its name from the Sufi saint 'Saiyyd' who was said to have the power to perform miracles. (Shrangi V., 2016)
- Maidan Garhi houses were inspired by architecture of that era.



Qila Rai Pithora Tower (Nirdesh Singh, ghumakkar.com)



Prithviraj Chauhan Memorial (Nirdesh Singh, ghumakkar.com)

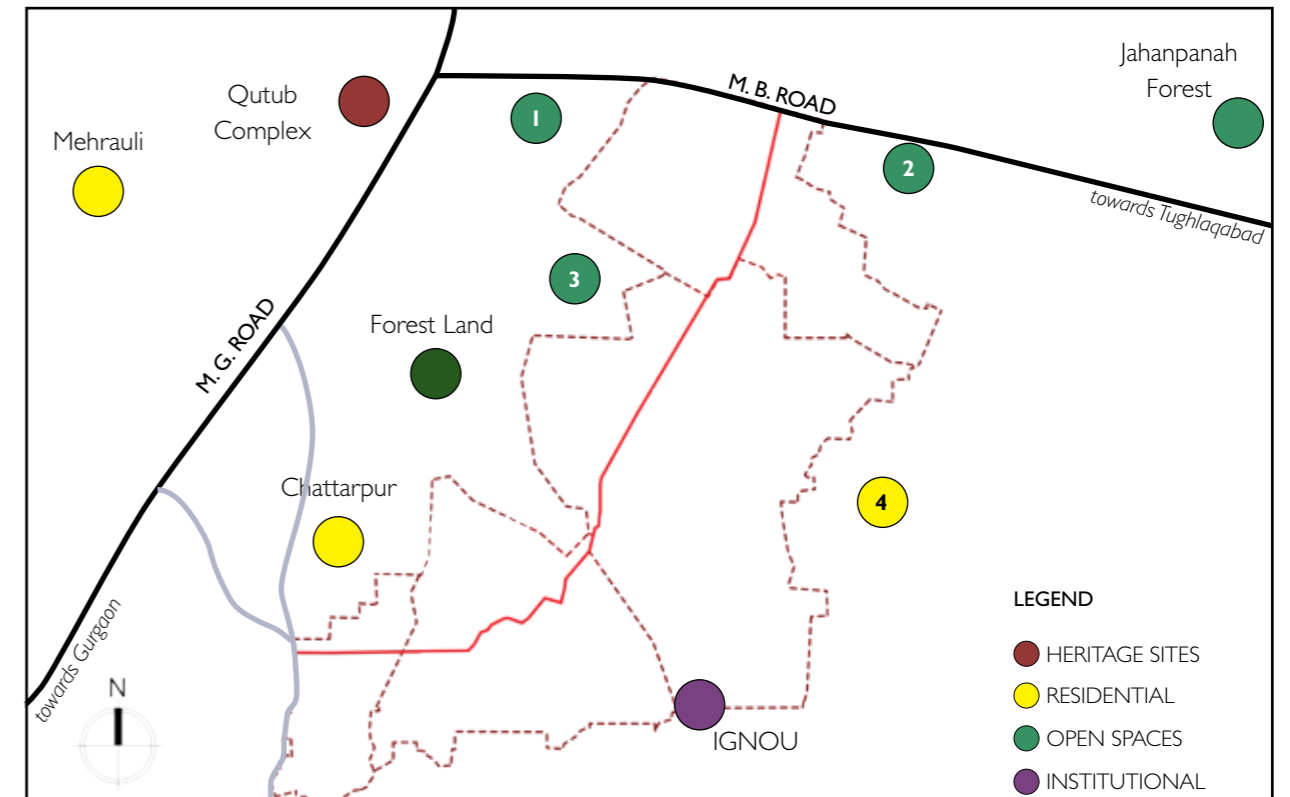
## 1.3 Regional Context



Qila Rai Pithora (sarsonkaket.in)



Hauz Rani City Forest



Schematic Plan highlighting important sites and landmarks



Garden of 5 Senses (mouthshut.com)

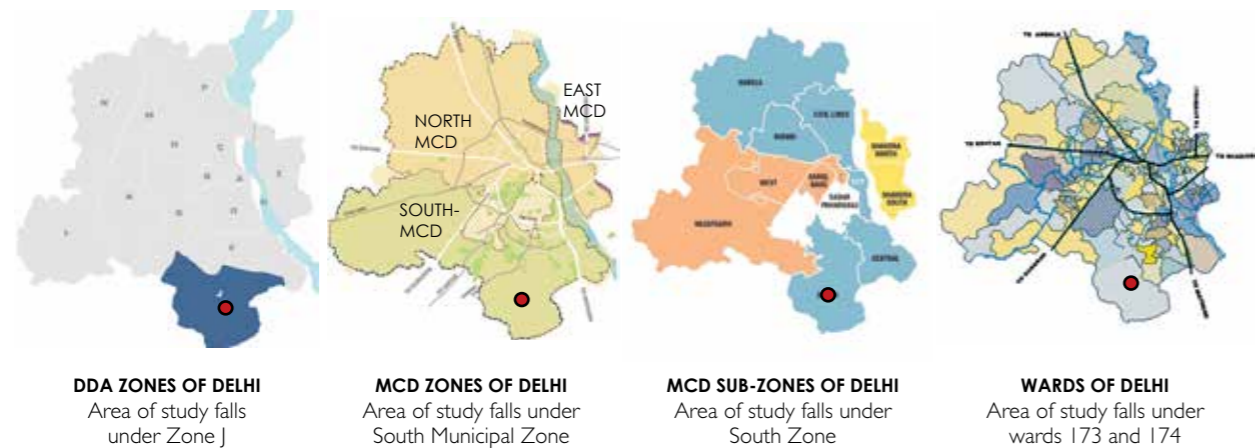


Sainik Farms (dailymail.co.uk)

This is a peculiar Zone where major part of the region is under Regional Park (6200 Ha.). Other greens cover an area of 710 Ha which includes Green Belt (410 Ha). & Asola Bird sanctuary (300 Ha). Hence more than 40% (6910 Ha) of the Zone is not available for Urban development. Out of remaining 8,268 Ha, area under Villages and Unauthorized Colonies is about 71.12 Ha & 1630 Ha respectively, resulting in a remainder of 6567 Ha for planned development. (DDA, 2010) This puts pressure on both urban habitation and ecology. On one hand, developers are eyeing vacant land for opportunities, while conservation bodies are working hard to retain the city forests and greens. Hauz Rani City Forest was the first city forest created in 1997.

## 1.4 Administrative Context

### Administrative Boundaries pertaining to Study Area



Key Plans showing different types of boundaries of Delhi (dnaindia.com, censusindia.gov.in)

The study area lies in South Delhi, Zone 'J' of DDA. The 3.85 km long IGNOU road makes its way through 2 sub-wards, namely, Saiyed-ul-ajab and Chattarpur (173 and 174 respectively). These sub-wards primarily comprise of unauthorized colonies and urban villages.. Of these, IGNOU road passes through the following colonies and villages:

#### SAIYED-UL-AJAIB (173)

##### Villages

- Saiyed-ul-ajab village
- Saiyed-ul-ajab extension
- DDA Anupam Garden
- Paryavaran Complex
- Neb Sarai extension
- Freedom Fighter Vihar
- Harijan Colony
- Neb Valley
- Bees Sutri Harijan Basti
- Neb Sarai
- Maidan Garhi Village
- Maidan Garhi extension.

##### Colonies

#### SAIYED-UL-AJAIB

#### NEB SARAI

#### MAIDAN GARHI

#### CHATTARPUR (174)

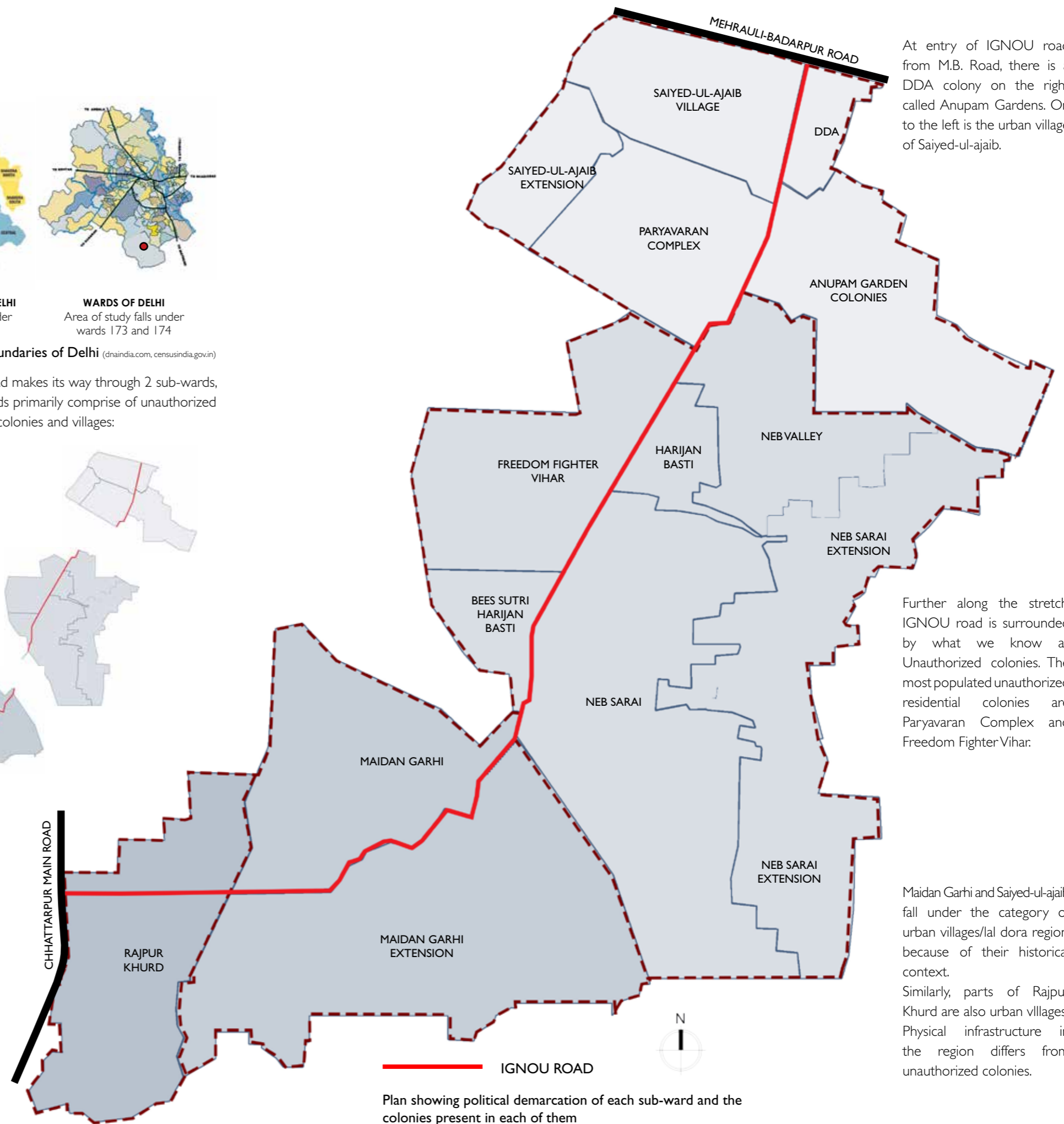
- Chattarpur Colony
- Rajpur Khurd
- Rajpur Khurd Extension
- Dr. Ambedkar Colony

#### RAJPUR KHURD



If the government goes ahead with the regularisation of Sainik Farms, it will also open the doors for regularisation of other posh illegal colonies like Anantram Dairy, Mahendru Enclave and Freedom Fighters' Colony in Neb Sarai. (Jain A., 2014)

Some flats built allegedly by the builder mafia in the reserved forest area at Neb Sarai. (thehindu.com)



Plan showing political demarcation of each sub-ward and the colonies present in each of them

At entry of IGNOU road from M.B. Road, there is a DDA colony on the right called Anupam Gardens. On to the left is the urban village of Saiyed-ul-ajab.

Further along the stretch, IGNOU road is surrounded by what we know as Unauthorized colonies. The most populated unauthorized residential colonies are Paryavaran Complex and Freedom Fighter Vihar.

Maidan Garhi and Saiyed-ul-ajab fall under the category of urban villages/lal dora region, because of their historical context. Similarly, parts of Rajpur Khurd are also urban villages. Physical infrastructure in the region differs from unauthorized colonies.



### 1.4.1 Zonal Development Plan - South

The area in context lies in Zone J which falls under the category of Urban Extension/Rural area.

#### Planning Zone J

Zone J is bounded by Mehrauli Badarpur road in the North, National Highway No.8 in the West, and National Capital Territory of Delhi boundary in the South and East. The total area of the zone as per MPD-2021 is about 15,178 Ha., out of which around 6,200 Ha. comprises of the 'Regional Park'/'Ridge'. There are 30 villages/census towns falling in the zone. (DDA, 2010)

#### Sub Zone J3

Area between MB Road in the North, MG Road in the west, proposed 45m wide Road in the south and Asola Bird Sanctuary/NCT Boundary in the East.

According to the Zonal Development Plan:

- The villages which have potential to provide immediate public facilities like multi purpose grounds for marriages/social functions and large parking areas near Metro Stations/road network should be taken up on priority for redevelopment.
- Gaosabha land in these villages/areas should put to PSP use and integrated with overall planning of the zone.
- Similarly unauthorised colonies /regularized unauthorised colonies / PSP facilities should be identified as per the provisions of MPD-2021. (DDA, 2010)

#### Village Periphery Development

In order to control unintended horizontal expansion of villages in urban area a continuous peripheral road may be proposed along the periphery of villages. Particularly Villages which are surrounded by Agriculture Land. A 10-12 Mtr. wide road along the periphery of the village should be planned and developed. (DDA, 2010)

**The Zonal Development plan, envisions the Road to be an urban road of 45mts till the Z-turn and 30 m from there on, along-with a MMI (Multi-Modal Interchange)**

Zonal Development Plan showing proposed land use and highlighting Area of Interest. (dda.org.in)

#### Circulation

A major road network of 45M and 30M road R/W has been proposed to effectively cater to the circulation requirements of the zone. This road system would be further connected to a hierarchy of roads of 20M and 12M R/W as per the detailed plans. (DDA, 2010)

According to the ZDP, IGNOU road too, is supposed to be 45m and 30m ROW.

There are no multi-level parking sites in the vicinity of the area of interest.

#### Water Supply

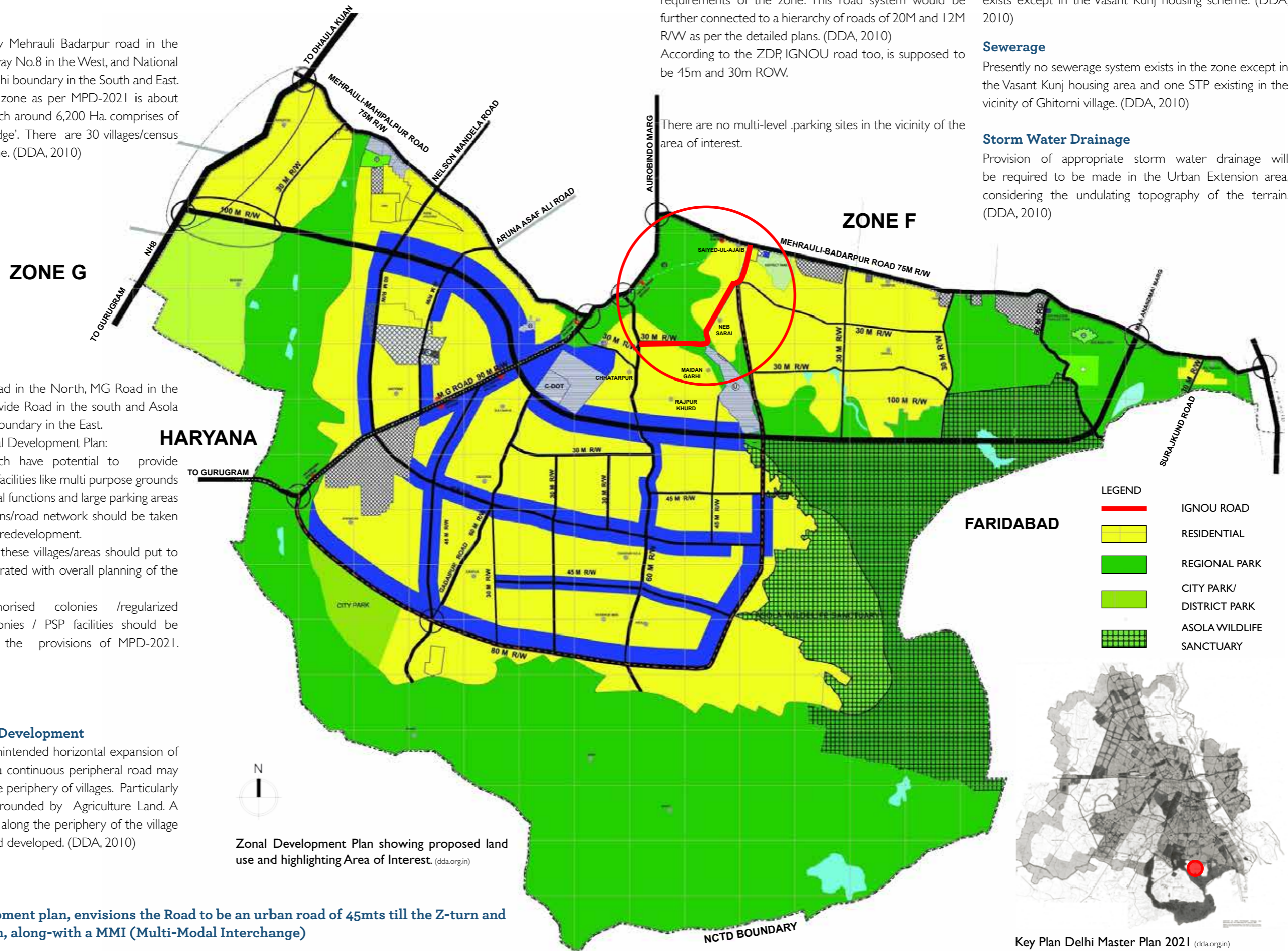
At present water supply requirement is met through individual sources / tube wells as no water supply system exists except in the Vasant Kunj housing scheme. (DDA, 2010)

#### Sewerage

Presently no sewerage system exists in the zone except in the Vasant Kunj housing area and one STP existing in the vicinity of Ghitorni village. (DDA, 2010)

#### Storm Water Drainage

Provision of appropriate storm water drainage will be required to be made in the Urban Extension area, considering the undulating topography of the terrain. (DDA, 2010)



## 2.1 Land-Use Study

Most of the built structures in the colonies are either residential or mixed-use. However, the stretch along IGNOU road has a distinct land-use. For this reason, this study is restricted to the land-use of plots adjacent to IGNOU road, and not of the whole colonies and sub-wards.

### 2.2.1 Land-Use along IGNOU Road

There is a distinct change in land-use character as we move along the 3.85km stretch of the IGNOU road. This also brings in specific characteristics to the building elevation.

#### A. DDA Housing

Anupam Gardens is the only DDA colony situated at the entry of the IGNOU road from M.B. Road. The periphery of the colony is lined with trees and a distinct boundary wall. Hence, the elevation is in stark contrast to the other side of the road which mainly comprises of small shops and dense residential setup of Saiyedulajab village.

#### B. Commercial Intersections

Although the whole stretch is lined with commercial establishments, there are a few specific intersections which act as mini commercial hubs. This includes the intersection at Paryavaran Complex turn, Z turn and IGNOU chowk.

#### C. Mixed Use

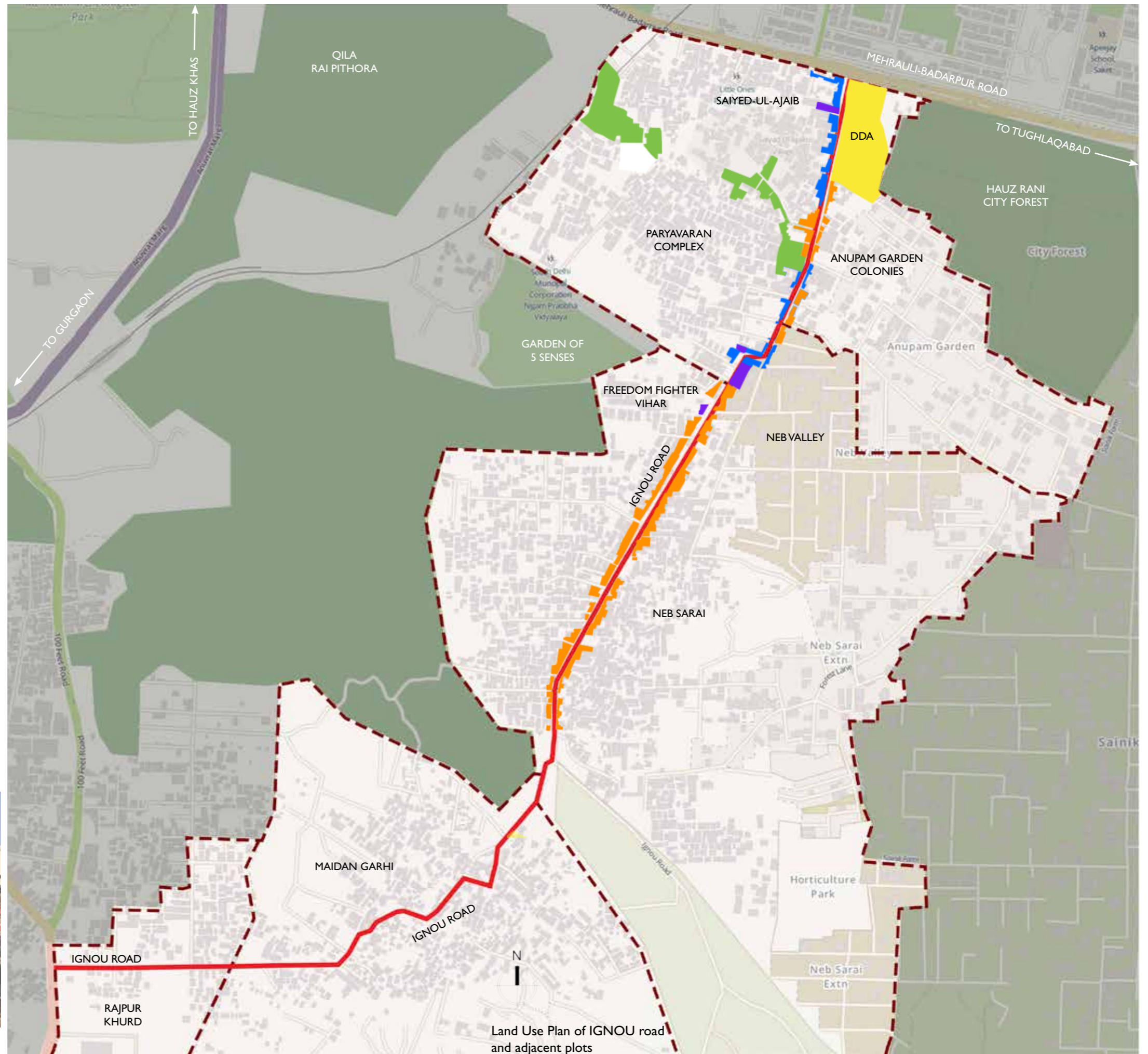
South of Z-turn, the road is predominantly lined with mixed use developments. Moreover, the commercial establishments in this stretch mainly comprise of housing-related shops (Paint & hardware stores, real estate agents, etc), due to the upcoming residences coming up in Freedom Fighter Vihar and Paryavaran Complex.

#### D. Educational Institutes

IGNOU University has an influence on the area as well. There are quite a few schools, coaching institutes and educational establishments prevalent in the stretch.

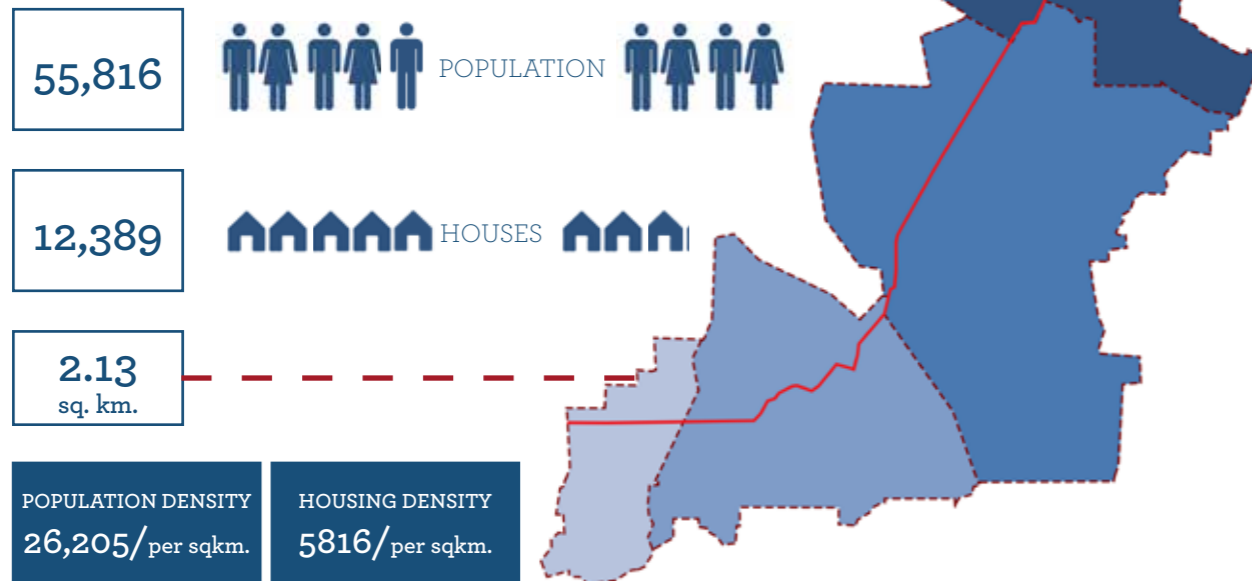


One of the entries to the residential colonies of Saiyed-ul-ajab, Anupam Enclave



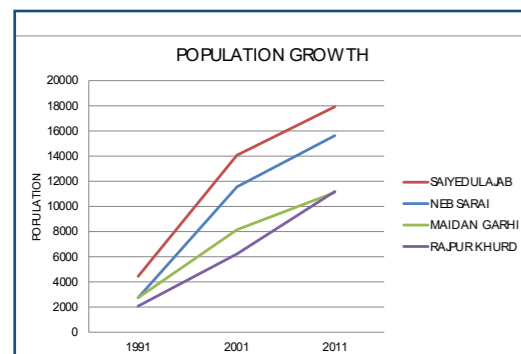
## 2.2 Demography

For the demographic analysis and its effect on IGNOU road, the 2.13 sq. km. area has been divided into 4 major colonies, namely Saiyed-ul-ajab, Neb Sarai, Maidan Garhi and Rajpur Khurd. (From North to South west)



### Population Growth

The present issue with traffic is primarily due to the population growth of the area which has been due to the flood of affordable and rental housing that has come up in the recent past. The figures below show the drastic difference in the population growth of the area compared to the city at large. Interestingly, there has been a dip in the population growth of Delhi in the last 15 years.

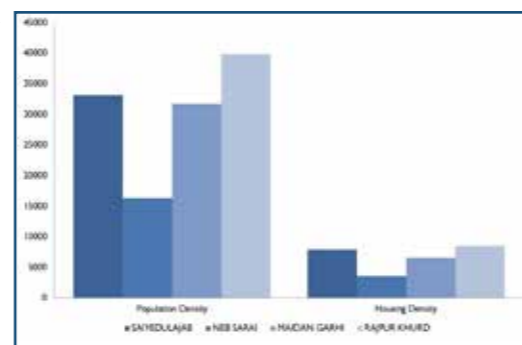


COLONY / DECADE	1991-2001	2001-2011
SAIYED-UL-AJAIB	215.27%	27.23%
NEB SARAI	324.00%	35.52%
MAIDAN GARHI	195.72%	36.18%
RAJPUR KHURD	195.67%	79.76%

LEFT: Graph showing population growth of the colonies.  
ABOVE: Table enumerating population growth

### Demographic Issues

- Each of the 4 areas (Saidulajab, Neb Sarai, Maidan Garhi & Rajpur Khurd) had a growth of 200% between 1991 and 2001 which reduced to 35% between 2001 and 2011.
- Saidulajab with density 14805 PPH lies adjacent to Neb Sarai 6627 PPH.
- There has been a boom in rental housing, hence an untapped floating population.
- Maidan Garhi, most densely populated at 1452 PPH (Census 2011) is most congested on site.
- The area in context is predominantly inhabited by people following Hinduism. Only Saiyedulajab has an increase in the Muslim community at 9% compared to 3% in other areas.



### Saiyed-ul-ajab

Population	17,914
DUs	4,279
Area	0.54 sq. km.
Population Density	33156/sq. km.
Housing Density	7924/sq. km



An old haveli (Sanchit Khanna, hindustimes.com)

"It is believed that the village draws its name from Sufi saint 'Saiyyd' who was said to have the power to perform miracles (Ajaiab means mysterious powers). The urban village also houses some ancient havelis and is home to students and young professionals who live here in rented accommodations as most of the owners have moved out for lack of amenities." (Shrangi V., 2016)

### Neb Sarai

Population	15,640
DUs	3,433
Area	0.96 sq. km.
Population Density	16292/sq. km.
Housing Density	3576/sq. km



Behind Freedom Fighters Enclave (thehindu.com)

"The reserved forest area in Neb Sarai is gradually turning into a concrete jungle. Allegedly, illegal construction is taking place under the nose of the authorities concerned, despite an adverse order from the Supreme Court, the Delhi High Court and the National Green Tribunal. There is no shortage of SUVs but there is shortage of water and proper sewer lines." (Jain A., 2015)

### Maidan Garhi

Population	11,111
DUs	2,289
Area	0.35 sq. km.
Population Density	31746/sq. km.
Housing Density	6540/sq. km



Maidan Garhi streets (Rahul Sharma, youtube.com)

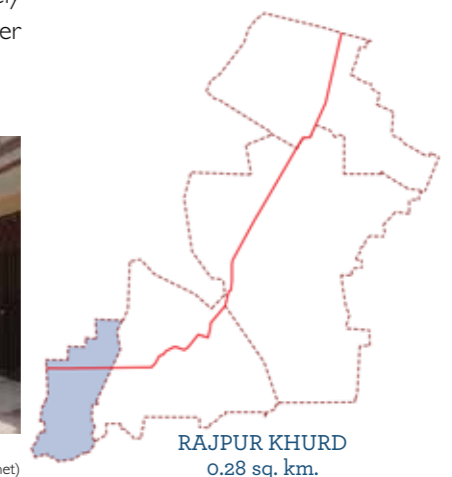
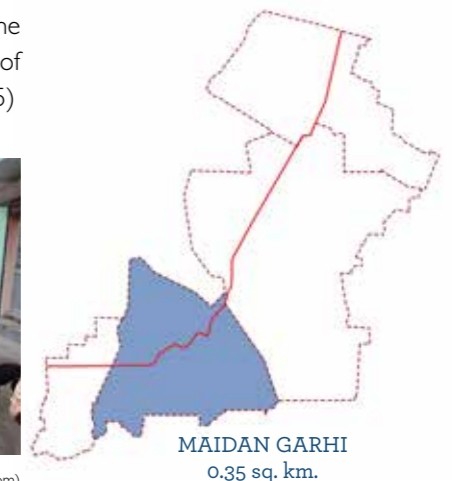
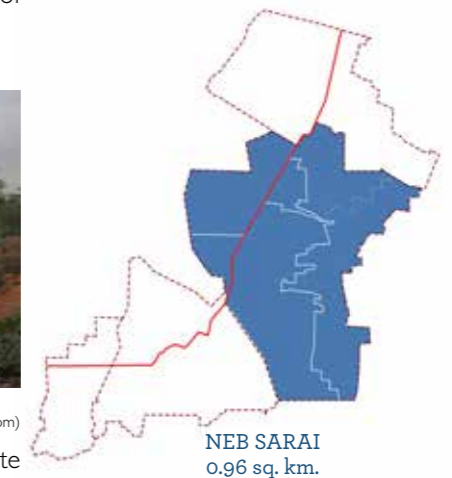
The villages of Maidan Garhi and Rajpur Khurd have been affected massively by land grabbing and encroachment. These areas also house a decent number of African nationals.

### Rajpur Khurd

Population	11,161
DUs	2,388
Area	0.28 sq. km.
Population Density	33156/sq. km.
Housing Density	8529/sq. km



Rajpur Khurd Extn. (delhi.locanto.net)



### 2.3 Connectivity & Accessibility

#### Metro Rail Link

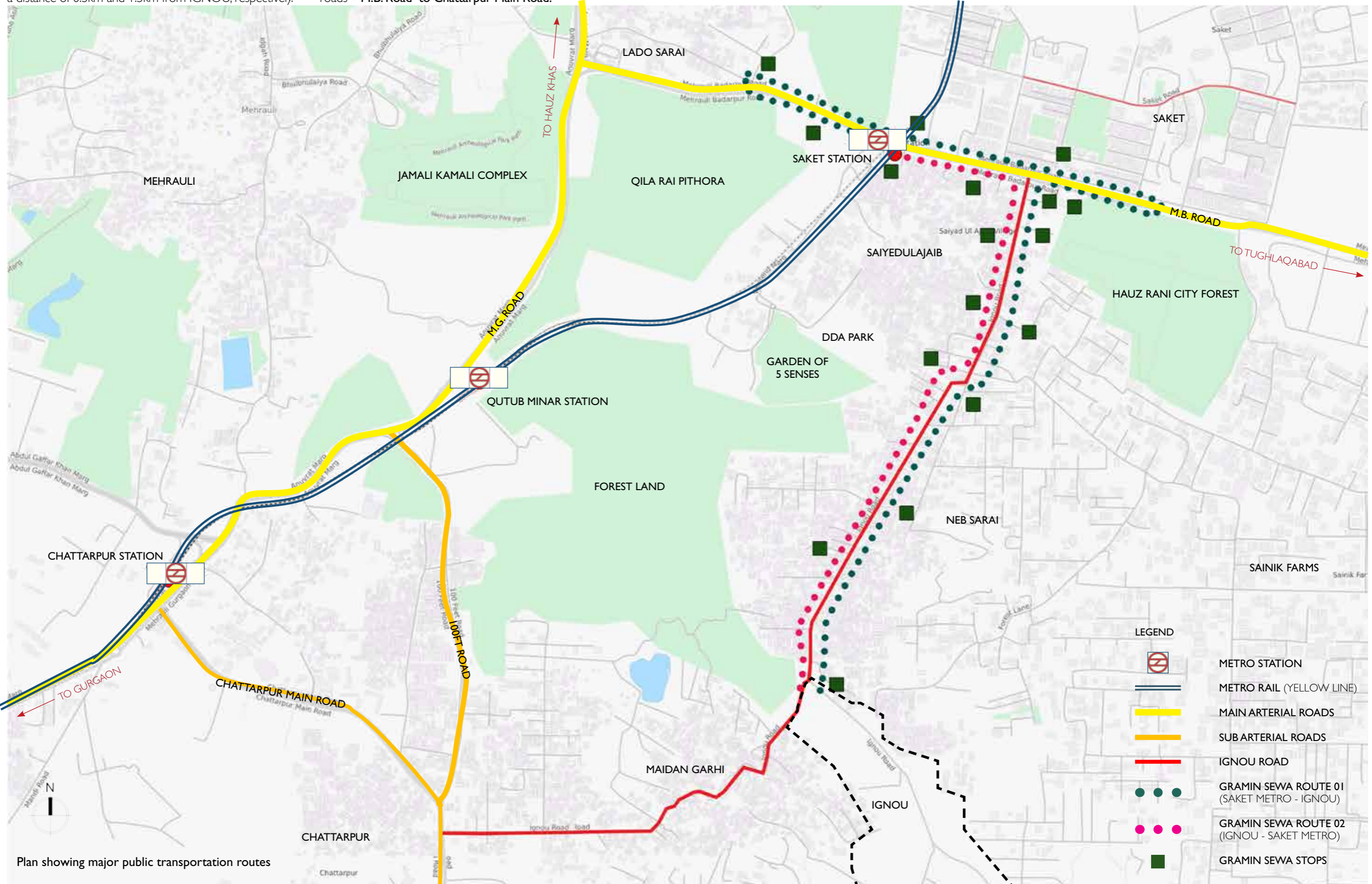
The area is also connected by Metro rail. The closest Metro stations are Saket Metro and Chattarpur Metro, at a distance of 0.5km and 1.5km from IGNOU, respectively.

#### Roads

The area around IGNOU Road is located near the northern edge of Zone J, in subzone J3. It connects two city level roads – M.B. Road to Chattarpur Main Road.

While a major highway (NH48A), popularly known as Mehrauli Gurgaon Road (M.G. Road) lies to the west of the study area, an array of abadi areas (village/agricultural land) lie towards the east. A group of Gramin Sewa vehicles ply on the route from Saket Metro Station to the inner reaches of IGNOU Road

and back. This provides accessibility to the residents of the nearby colonies and to the students admitted at IGNOU University and the numerous coaching centres that have come up in the recent past due to the growth of such premier institutes in the vicinity.



### 3.1 Street Characteristics

#### Footpath

This existing footpath does not accommodate for all user-groups because of inadequate width. It does not allow pedestrians to effectively use the footpath either.



DDA Anupam Gardens boundary



Maidan Garhi to Rajpur Khurd

#### On-Street Parking

As the vehicles are parked haphazardly, pedestrians are forced to walk on carriageway causing discomfort to both pedestrian and vehicular traffic and adding to the congestion.



Neb Valley shops



Paryavaran Complex side

#### Medians & Pedestrian Refuges

This median is continuous along the road forcing people to cross the road unsafely, in the absence of refuge islands.



IGNOU road entry from Saiyedulajab



Z - Turn

#### Landscaping

There is hardly any tree cover and no green strip throughout the stretch.



Saiyedulajab side



St. Mary's School, Neb Valley

#### Vending Spaces

Existing site condition with no tree cover create discomfort to the pedestrian traffic as well as vendors/ hawkers. Also, hawkers often encroach upon footpaths thus breaking seamless connections.



Near DDA Market, Anupam Gardens

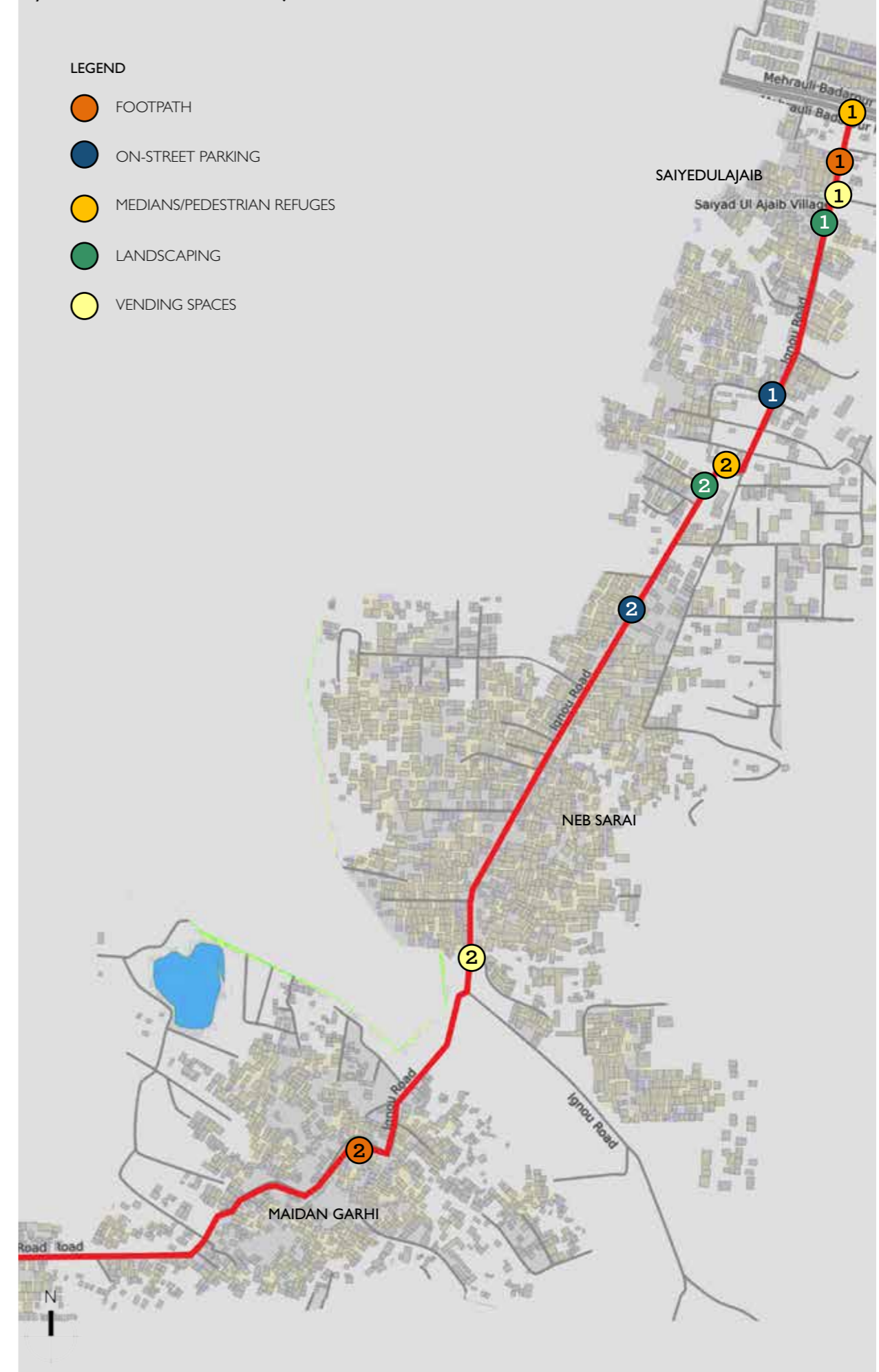


IGNOU Chowk

#### 3.1.1 Streetscape Issues

1. No space for pedestrian movement, hawkers or vendors.
2. Effective carriage way reduces due to on-street activity like parking, hawking etc.
3. Lack of footpaths and shade on arterial road make pedestrian movement difficult.
4. No guidelines for the Facade control which creates aesthetically unpleasant street-scape and lack of visual interface.
5. Absence of organised hoardings, signage and street furniture.
6. Unhygienic conditions due to inadequate sewage & waste disposal systems.
7. No hierarchy of green/ open Spaces.
8. Infrastructure is below average conditions, i.e. lighting, electrical poles, etc.

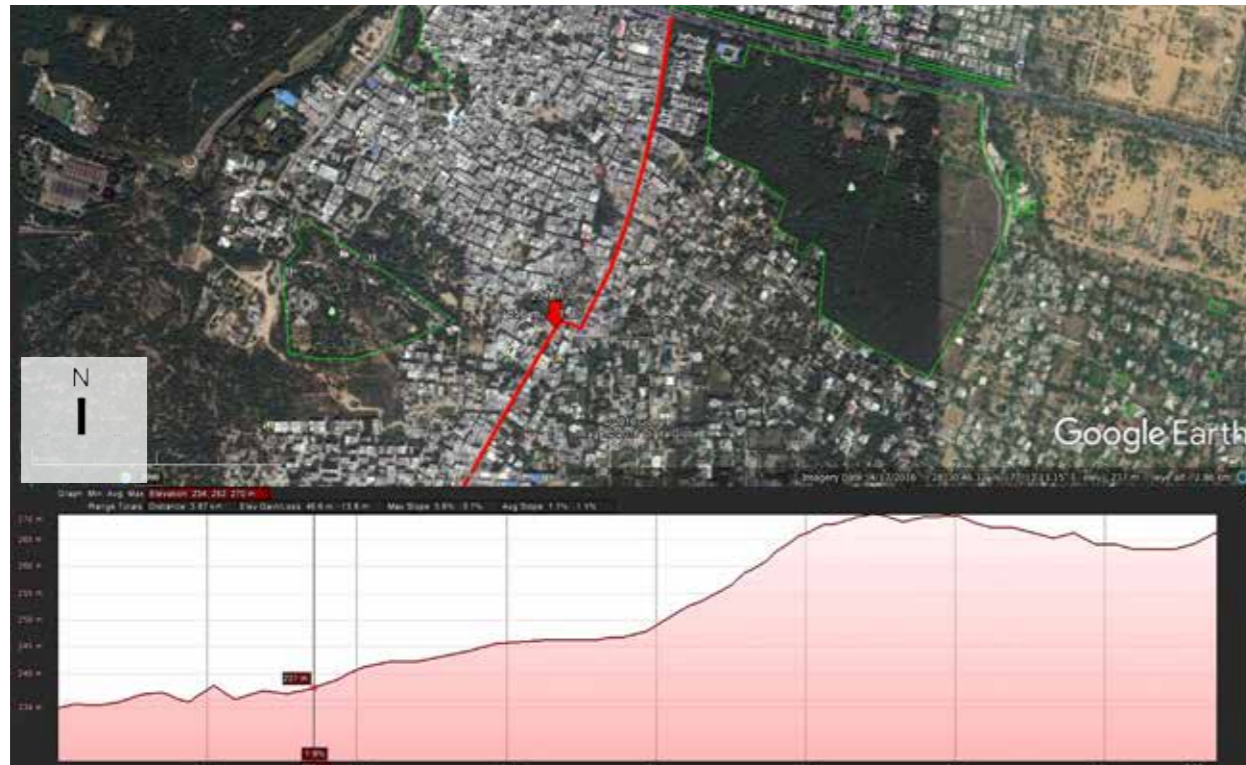
#### Layout Plan of IGNOU road and adjacent settlements



### 3.2 Street Chainage

Chainage is the horizontal distance as measured along a combination of curves and straight lines (curvilinear) between two points. For the purpose of this study, IGNOU road has been divided into 3 distinct chainages for a clear assessment.

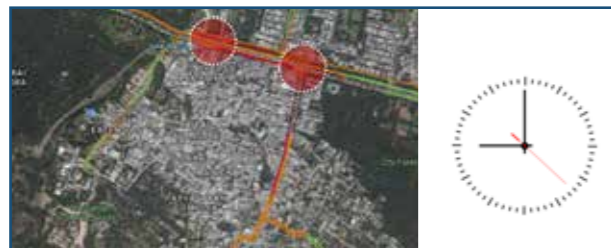
#### 3.2.1 Chainage 01: M.B. Road to Z-Turn.



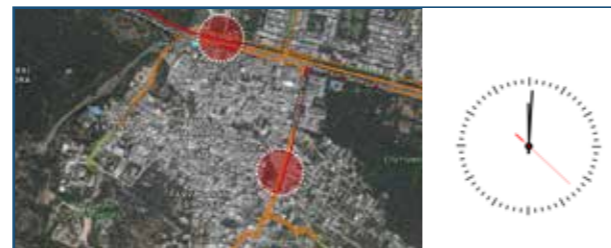
Map showing altitude along the IGNOU road from M.B. Road to Z-turn (Google Earth)

- The stretch runs from the IGNOU road entry from M.B. Road till the Z-Turn. (0 - 856 M)
- The effective carriage way is 12m, and remaining ROW is used for on street parking.
- Presence of slow moving vehicles along the traffic causes large delay in traffic movement.
- The space on ROW after electric pole is encroached by vendors.
- All roads coming from colonies bring in large amount of car traffic which causes heavy congestion at intersection.

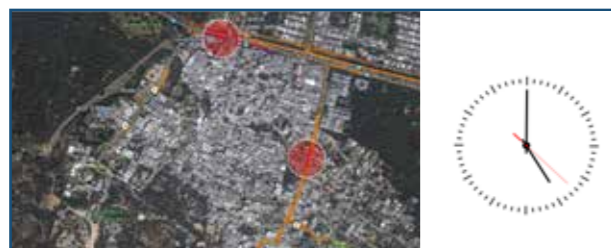
#### Choke Points



The morning peak hours cause choke points at the area around Saket metro station and the mouth of IGNOU road at the junction of M.B. Road.



Saket Metro station area is choked throughout the day except after evening. In the afternoon the focus shifts to the commercial stretch near Paryavaran Complex turn.



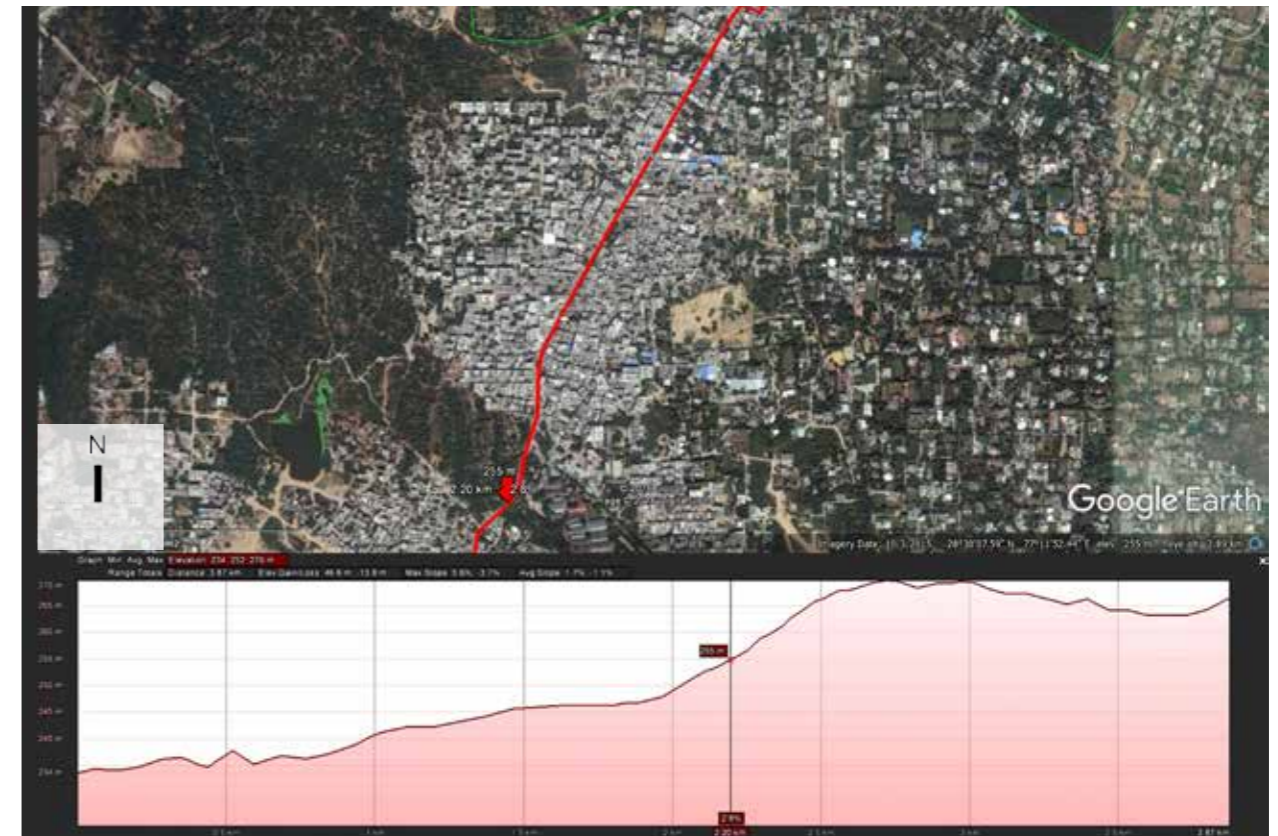
Choke points remain the same from 12 noon till 5 in the evening. This period witnesses heavy footfall in this chainage mainly due to schools and coaching institutes.



In the evenings, the Sainik Farms' residents depend on this stretch as an alternative route. For Freedom Fighter Vihar residents, it is the only route though.

Maps highlighting choke points during different times of the day (Google Earth)

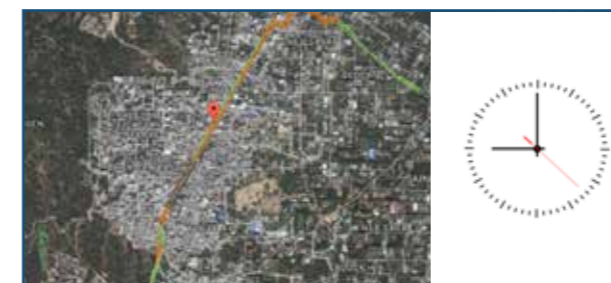
#### 3.2.2 Chainage 02: Z-Turn to IGNOU



Map showing altitude along the IGNOU road from Z-turn to IGNOU chowk (Google Earth)

- The stretch runs from the Z-Turn till IGNOU University. (856 - 2200M)
- This section, currently, has a carriage way width ranging from 16 - 21m.
- Only congestion point is IGNOU Junction/chowk.
- This stretch caters to one of the major residential colonies of the region, Freedom Fighter enclave..
- On approaching IGNOU university, character of adjoining areas change gradually from dense residential to commercial.

#### Choke Points



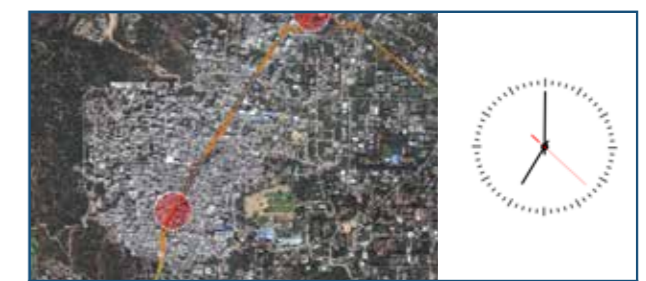
Carriageway after the Z-turn increases to 15m and in some places even 18m. This allows for relatively smooth flow of traffic in the mornings.



Although, the area doesn't witness much traffic issues throughout the day, it is sandwiched between 2 densely populated areas



In the evenings, IGNOU chowk is partially choked. This is mainly due to university and its closing time. Grameen Sewa vehicles are parked in array anticipating trips.



At around 7pm, the focus shifts a bit further down the road near Freedom Fighter Vihar gates, where cars are waiting to enter the residential hub and get parked.

Maps highlighting choke points during different times of the day (Google Earth)

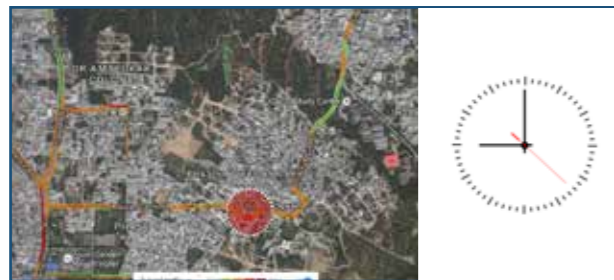
3.2.3 Chainage 03: IGNOU to Chattarpur Main Road



Map showing altitude along the IGNOU road from IGNOU chowk to Main Chattarpur Road (Google Earth)

- The stretch runs from the IGNOU University till the other end of IGNOU Road where it meets Chattarpur Main Road.
- Most of this section lies in Maidan Garhi Village which has carriage-ways as narrow as 4.5 m.
- Only congestion point is IGNOU Junction/chowk.
- In this stretch the road climbs up to the village of Maidan Garhi and Rajpur Khurd, which has its own unique streetscape with old traditional buildings and narrow streets.

Choke Points



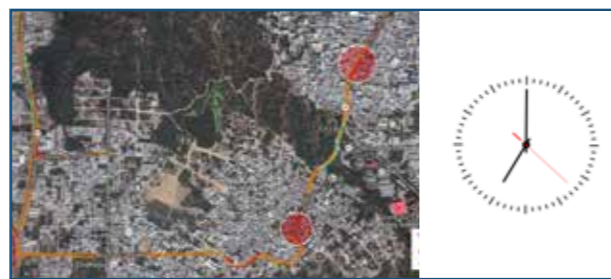
Many vehicles from inside the colonies try to take this route to get to Chattarpur and beyond to Gurgaon. The traffic volume is less but the streets are as narrow as 4m.



During afternoons, commercial and school vehicles' traffic causes choke points in the narrow streets of Maidan Garhi and the entry point from Chattarpur road.



After IGNOU, the road suddenly climbs to Maidan Garhi while getting drastically narrow. This causes a bottleneck which creates a choke point throughout the afternoon.



Till about 8 in the evening, the situation remains the same. This again, is due to the bottleneck situation. Also, the lack of enough street lights add to the existing problem.

Maps highlighting choke points during different times of the day (Google Earth)

3.2.4 Transition Points

IGNOU Road Entry



Existing Site Plan of IGNOU Road entry

Z-Turn



Existing Site Plan of Z-turn



Z-turn (Freedom Fighter Vihar side)

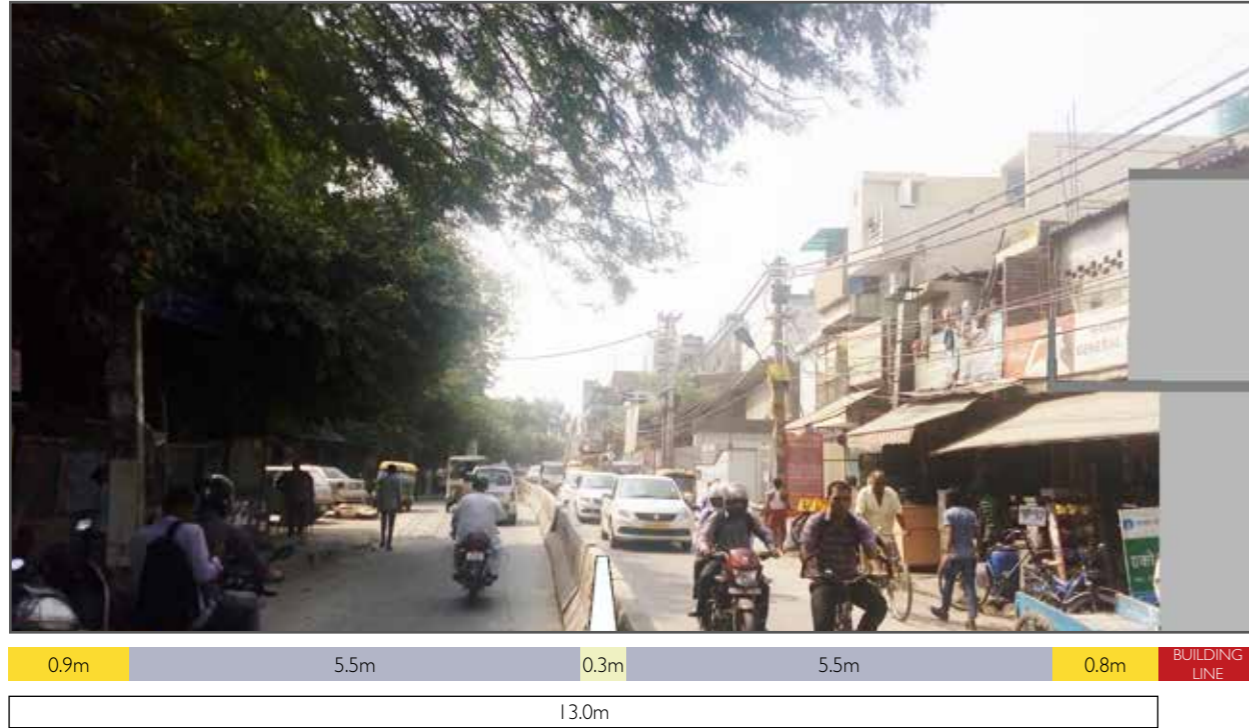


Z-turn (Sainik Farms side)

The Z-turn in itself is unique to IGNOU road. It divides major residential areas to the predominantly commercial areas and Freedom Fighter Vihar

Chainage 01: M.B. Road to Z-Turn

(A). Entry to IGNOU road



This stretch comprises of the major residential pockets and educational institutes of the region in which Gramin Sewa vehicles ply. Being low-lying, it is mostly flooded with rainwater and drainage water, especially during monsoon.

(B). After DDA colony Anupam



Key Plan: Highlighting Chainage 01 of IGNOU Road



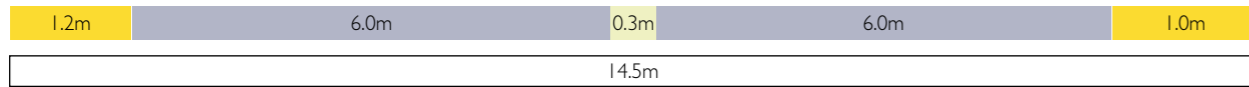
(C). Sainik Farms turn





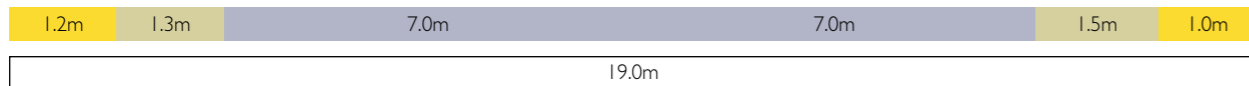
Chainage 02: Z-Turn to IGNOU

(A). Z - Turn



The major choke points of IGNOU road occur at this stretch between M.B Road & Z-turn. Major reasons besides the Gramin sewa service, are the breaks on the, supposedly, continuous dividers; on-street parking; and the presence of road facing shops. These shops range from Hardware stores near Anupam Enclave to Paint/Wood shops near Z turn, which display their products on the ROW as well.

(B). Freedom Fighter Vihar



This stretch is comparatively less burdened with traffic. There are no dividers for most of the stretch and the ROW increases to 16m. On-street parking does not hamper the traffic because of the widened ROW and lesser vehicles. The residential area of Freedom Fighter Enclave, which is expanding on both sides of the road, cater to a different segment of the middle class unlike other residential pockets that lie before the Z-turn.

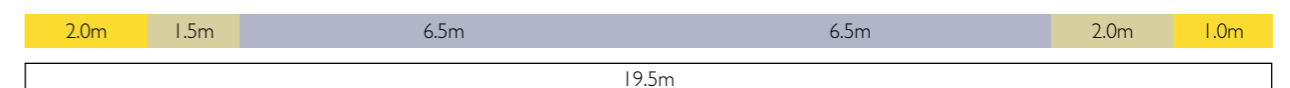


Different views of IGNOU chowk

Key Plan: Highlighting Chainage 02 of IGNOU Road

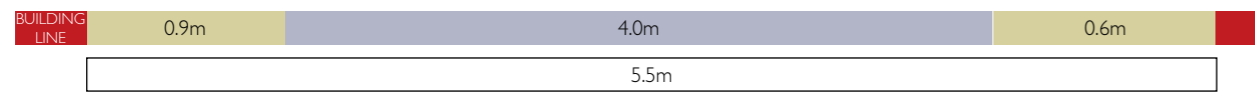


(C). IGNOU Chowk

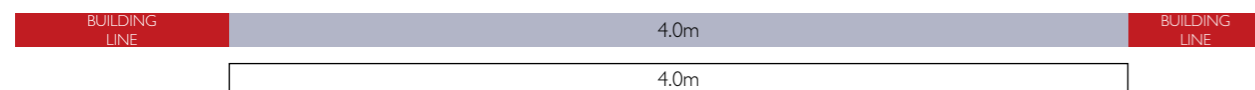


Chainage 03: IGNOU to Main Chattarpur Road

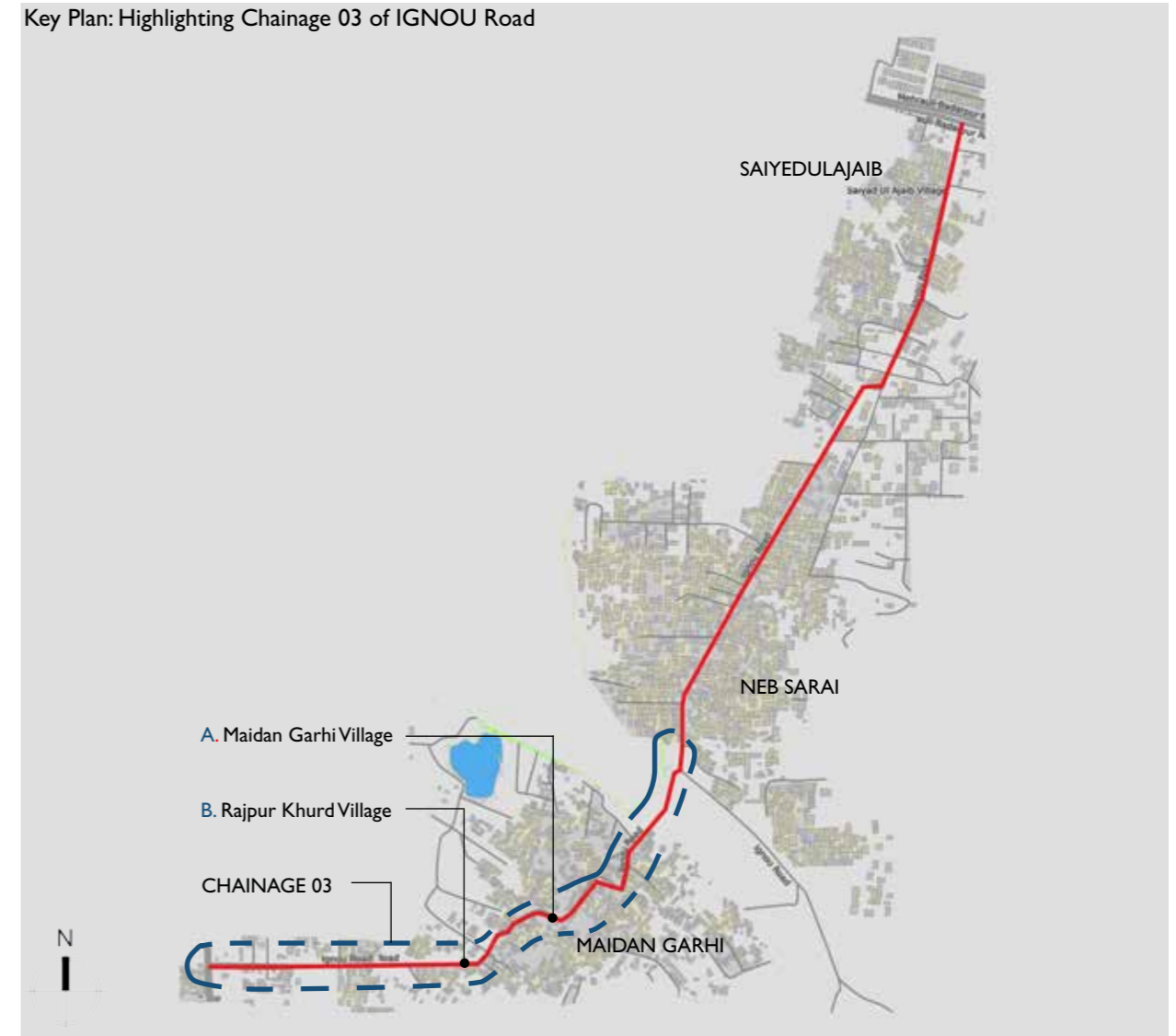
(A). Maidan Garhi Village



(B). Rajpur Khurd Village

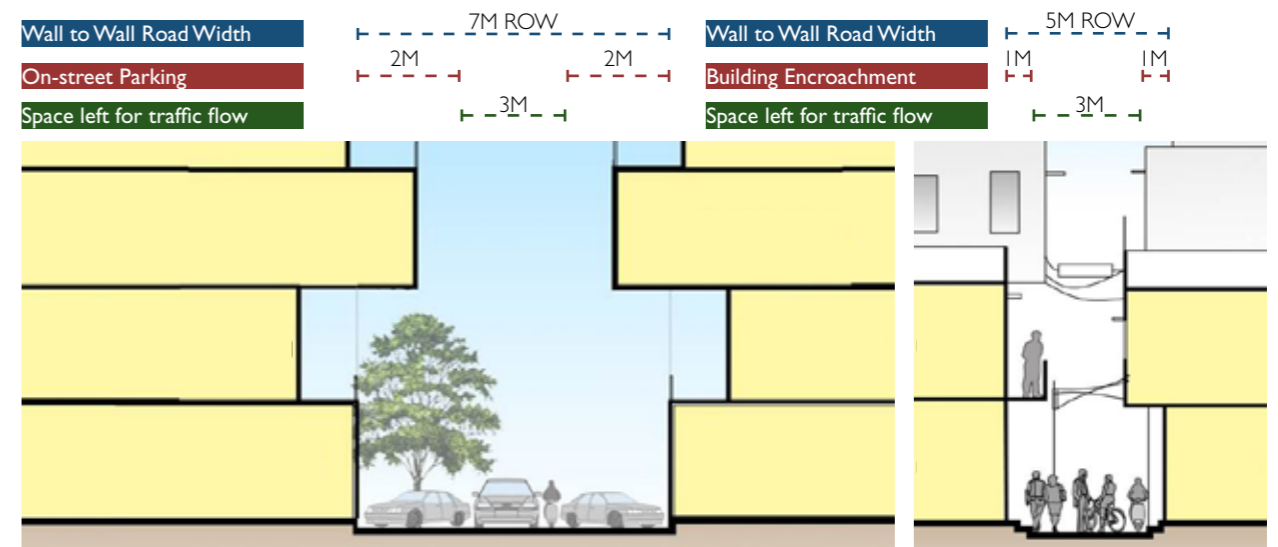


Key Plan: Highlighting Chainage 03 of IGNOU Road



Although the stretch does not receive much vehicles compared to the previous chainages, the narrow ROWs cause enough choke points.

Despite such widths, there are areas that provide opportunities for a small square or IPT bays. Residences of the village are relatively larger in size and represent an individualistic built fabric.



Typical Existing Section of Maidan Garhi and Rajpur Khurd streets

## 3.3 Conclusive Analysis

### 3.3.1 Issues

Following are the major issues compiled after the above explained analysis:

- **Congestion**- Major congestion due to several modes of transport.
- **Accidents** along the spine, Several village Roads opens up to the spine, which causes a major problem, several accidents takes place.
- **Choke points** at the 'U' turns,, road links and pick/drop points
- No space segregated for pedestrians (No Continuous Pedestrian Path)
- Storm water hasn't been channelized through out the stretch.
- The Social and Physical infrastructure along the stretch hasn't been planned.
- Spillover- The Spillover is due to the shops directly opening to the spine, which is used for advertising etc.



### 3.3.2 Restrictions

#### • Urban Villages:

In the wake of current planning mechanisms, urban villages remain isolated and alienated entities to be exploited by property dealers, political power brokers and speculators. The pattern of development that emerges in these areas is haphazard and chaotic (Aggarwal M., 2003). In the case of IGNOU road, Saiyed-ul-ajab in the north and Maidan Garhi & Rajpur Khurd in the South of the stretch form narrow entry and exit gates for the road.



#### • Unauthorized Colonies

These settlement colonies that are officially categorised as illegal, are built in contravention of zoning regulations, developed on "illegally subdivided" agricultural land. Although, they are not considered encroachments like Jhuggi Jhopri Clusters (JJC), they do exist in a minimal legal space as they are not considered to be part of the 'planned city'. (Bhan G., 2013)



#### • Forest Land

To the west of IGNOU road beyond Freedom Fighter Vihar, the large expanse of forest land upto M.G. Road, forms a green wall where different kinds of birds and animals can be spotted. This area cannot be tampered with as it contributes significantly to the ecology and city forest cover.



#### • Sainik Farms

If Forest Land lies to the west as the natural green wall, then Sainik Farms acts as the artificial wall built onto the east of IGNOU Road. Sainik Farms and parts of Neb Valley are full of private farm houses and most have access via IGNOU road as the Sainik Farm road is too narrow and choked.



### 3.3.3 Opportunities

- Zonal Development Plan (Zone J, Delhi)

#### • Westend Marg

Westend Marg runs parallel to IGNOU road till Garden of 5 Senses.



#### • Metro Phase IV

Delhi Metro Phase IV DPR was cleared in June 2016. Out of the 6 proposed routes, the Tughlaqabad-Aerocity link passes along the M.B Road connecting the ancient cities of Delhi to the Airport.



Map showing Delhi Metro link, Tughlaqabad to Aerocity, proposed for Phase IV (delhimetrorail.com)

#### • Art

For broke artists living on a dream to make it big, Neb Sarai village offers an affordable roof and unlimited canvas space. Once the granaries of Delhi, these villages of South Delhi are turning into hubs of art, designer apparels, furniture, etc. (Chitlangia & Verma, 2015)



Source: nivartcentre.com

#### • Historical Significance

The area in context has witnessed the birth of the first city of Delhi and subsequently of many others. We can still see signs of those times in the form of architecture, culture, communities and avenues. Conservation and restoration of these forms will help increase the significance of the area.



Source: www.lib.utexas.edu

### 4.1 DUAC Proposals

The proposals have been formulated keeping the Issues, Restrictions and Opportunities in consideration. Opportunities help identifying the starting point of ideation and concept, whereas Restrictions help defining the scope of those ideas on site. The final Proposal structure is as follows:

**PROPOSAL 01: Transportation Plan**

- Zone J Development Plan
- ROW studies: 45M ROW & 30M ROW
- Alternate Link Road: Westend Marg
- Local Transport Route
- Chainage 01: Detailed Plans, Sections & View
- Chainage 02: Detailed Plans, Sections & View
- Meharauli-Badarpur Road Sections

**PROPOSAL 02: Utilities Strategy**

- Storm-water Drainage

### 4.2 Proposed Transportation Plan

After analysing the current scenario and estimating future changes, the following 3 proposals have been put forth:



**1. ROW Studies**

- 45M wide ROW
- 30M wide ROW



**2. Alternate Link Road**

- Westend Marg Link
- Local Transport Route



**3. Street-scape Intervention.**

- Continuous Dividers
- Cycle Lane
- IPT/Bus bays and On-street parking facilities.
- Pedestrian Infrastructure

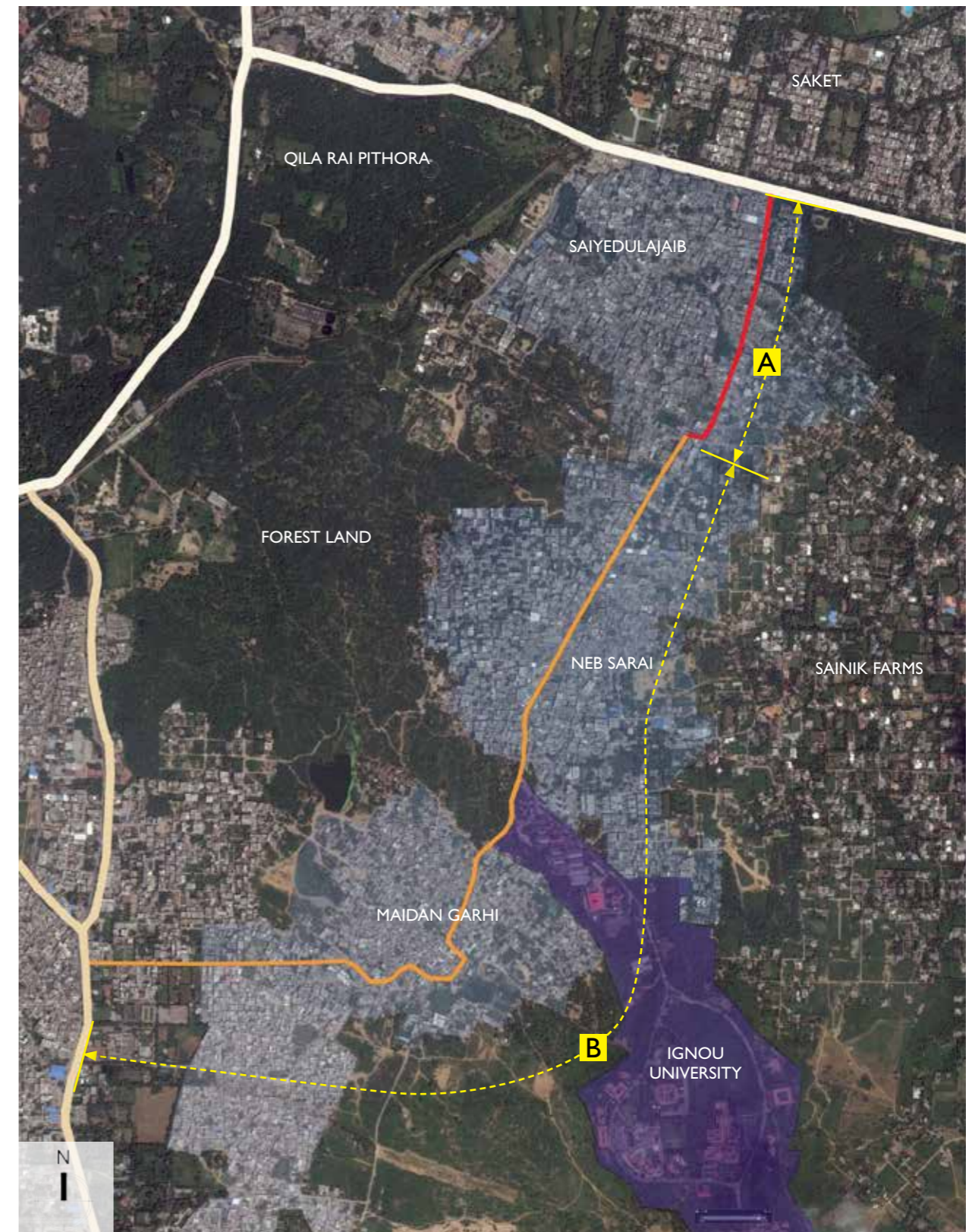
### 4.2.1 ROW Studies

The Zonal Development plan, envisions the Road to be an urban road of 45mts till the Z-turn and 30 m from there on, along-with an MMI (Multi-Modal Interchange)

Hence, the 3.85 km stretch has been divided into 2 parts:

**Part A:** Stretch of Chainage 01 from 0 to 856 m till the Z-turn. This is proposed to be 45m ROW.

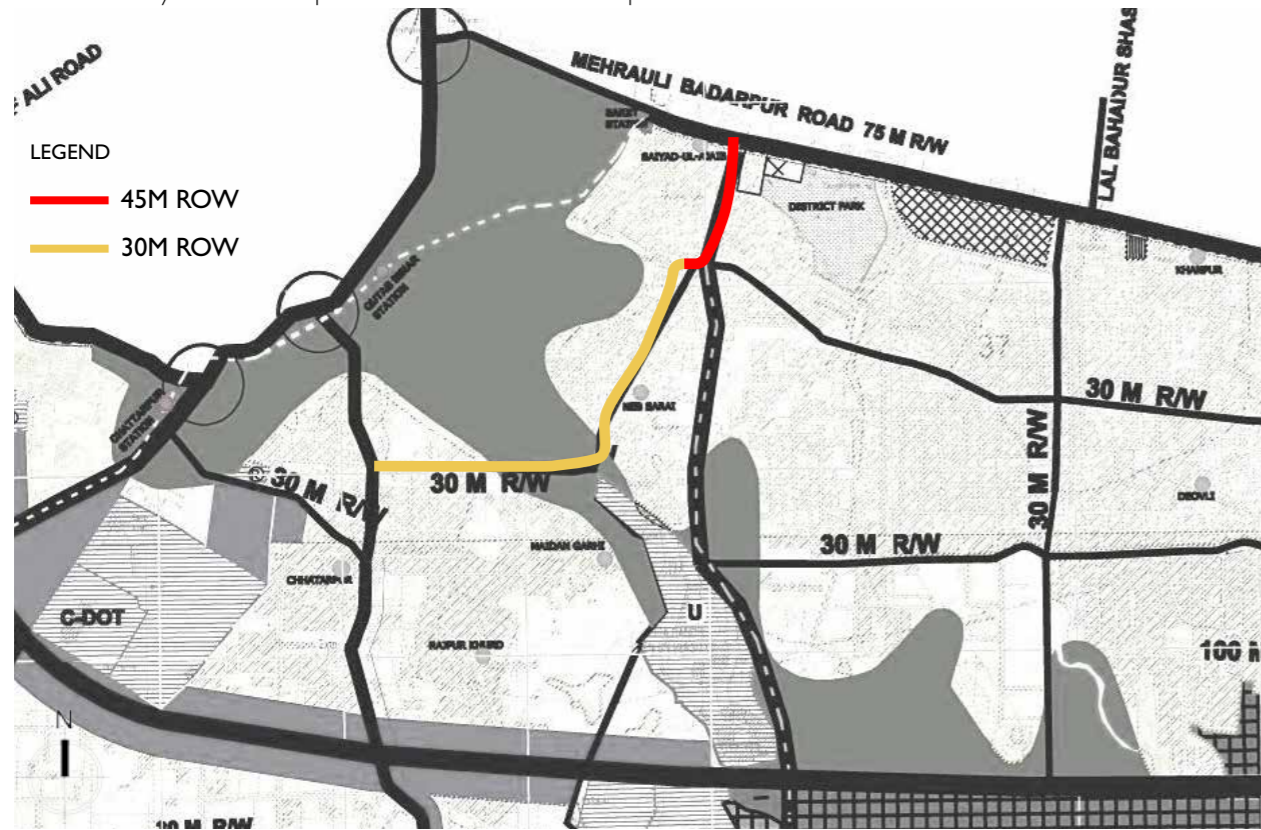
**Part B:** Stretch of Chainage 02 and 03 from 856 to 3850m. This is proposed to be 30m ROW



Key Map showing the proposed ROWs as mentioned in the Zone J Development Plan

**Zone 'J' Development Plan**

Currently, IGNOU road starts at approximately 12m ROW at M.B. road; which increases to about 16-18m after the Z-turn; and reduces drastically to 4m ROW as it makes its way through Maidan Garhi & Rajpur Khurd village. These widths are way below the stipulated ROWs as also the requirement.



Zonal Development Plan highlighting IGNOU road into 2 parts. (dda.org.in)

According to the Zone J Development Plan, the present IGNOU road is shown as 45m wide till the Z-turn and 30m further on..This will mean that many buildings along the road will have to be rehabilitated. elsewhere. There are vacant pockets of land along the parallel road called Westend Marg. These pockets of land are owned by DDA.

**Existing Scenario**

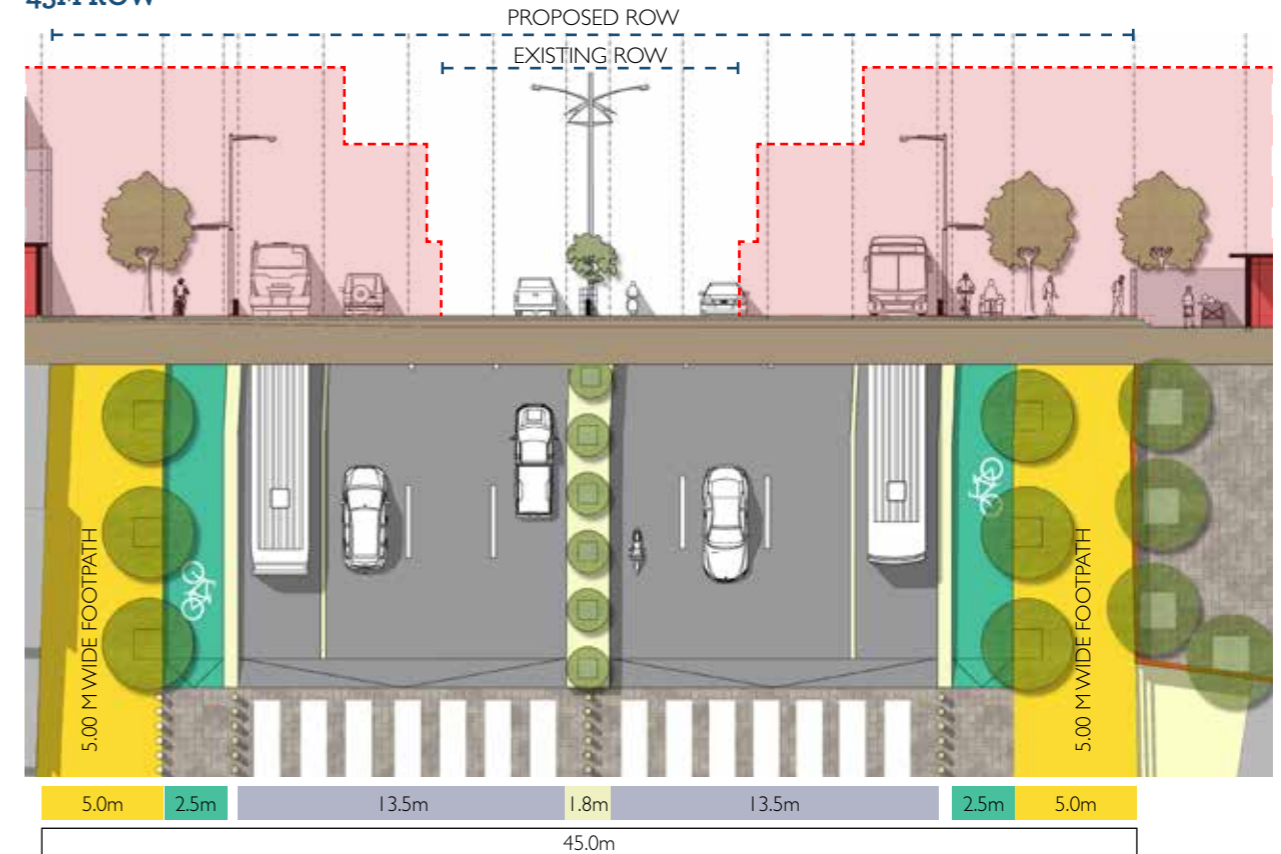


General Existing Section of IGNOU Road

Below are the sections and plans of the proposed ROWs (as mentioned in ZDP), which can include:

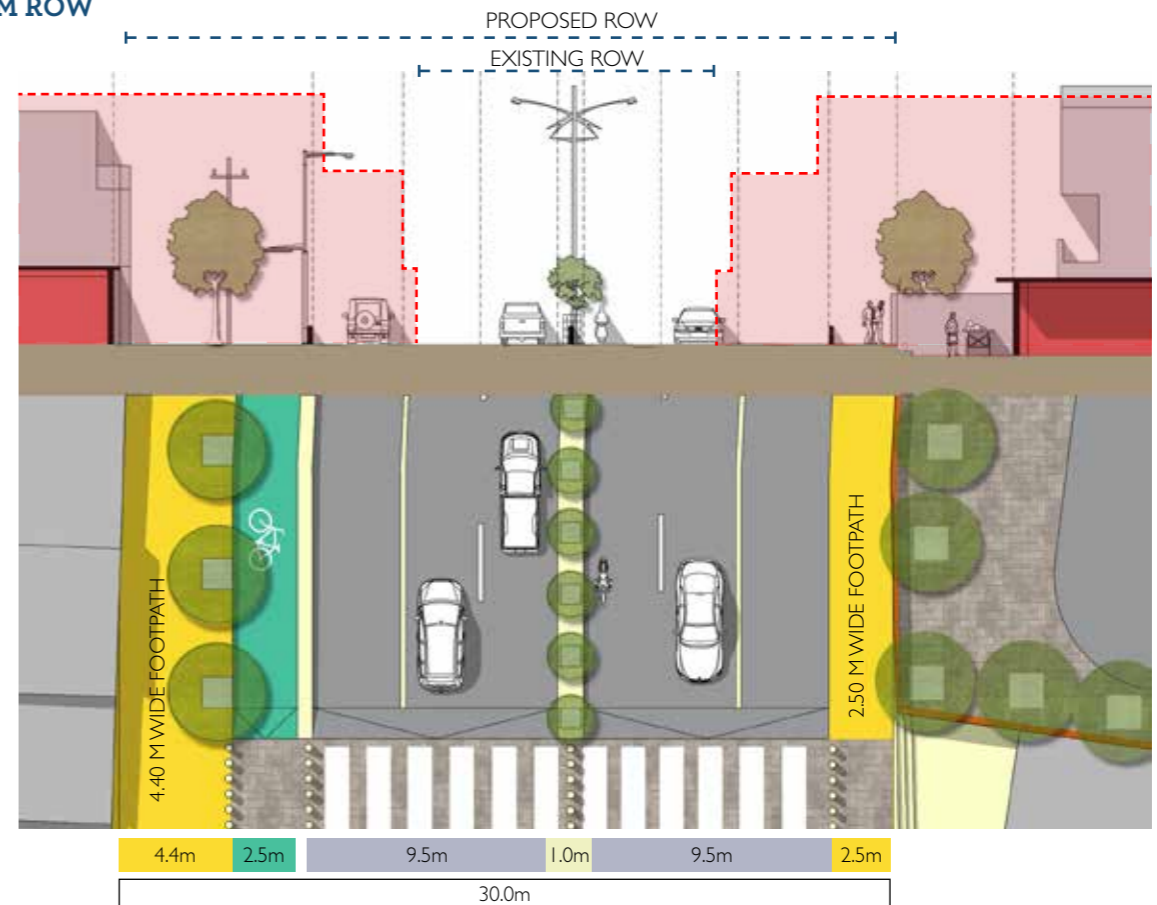
- Broadened Footpaths
- Bicycle Lanes
- Table-top Crossing
- Carriage-way (13.5m & 9.5m each side, respectively)
- Kerb / Divider
- Existing Built-up Cover

**45M ROW**



Combined Section and Plan illustrating the proposed ROW of 45M.

**30M ROW**






Combined Section and Plan illustrating the proposed ROW of 30M.



4.2.2 Alternate Link Road

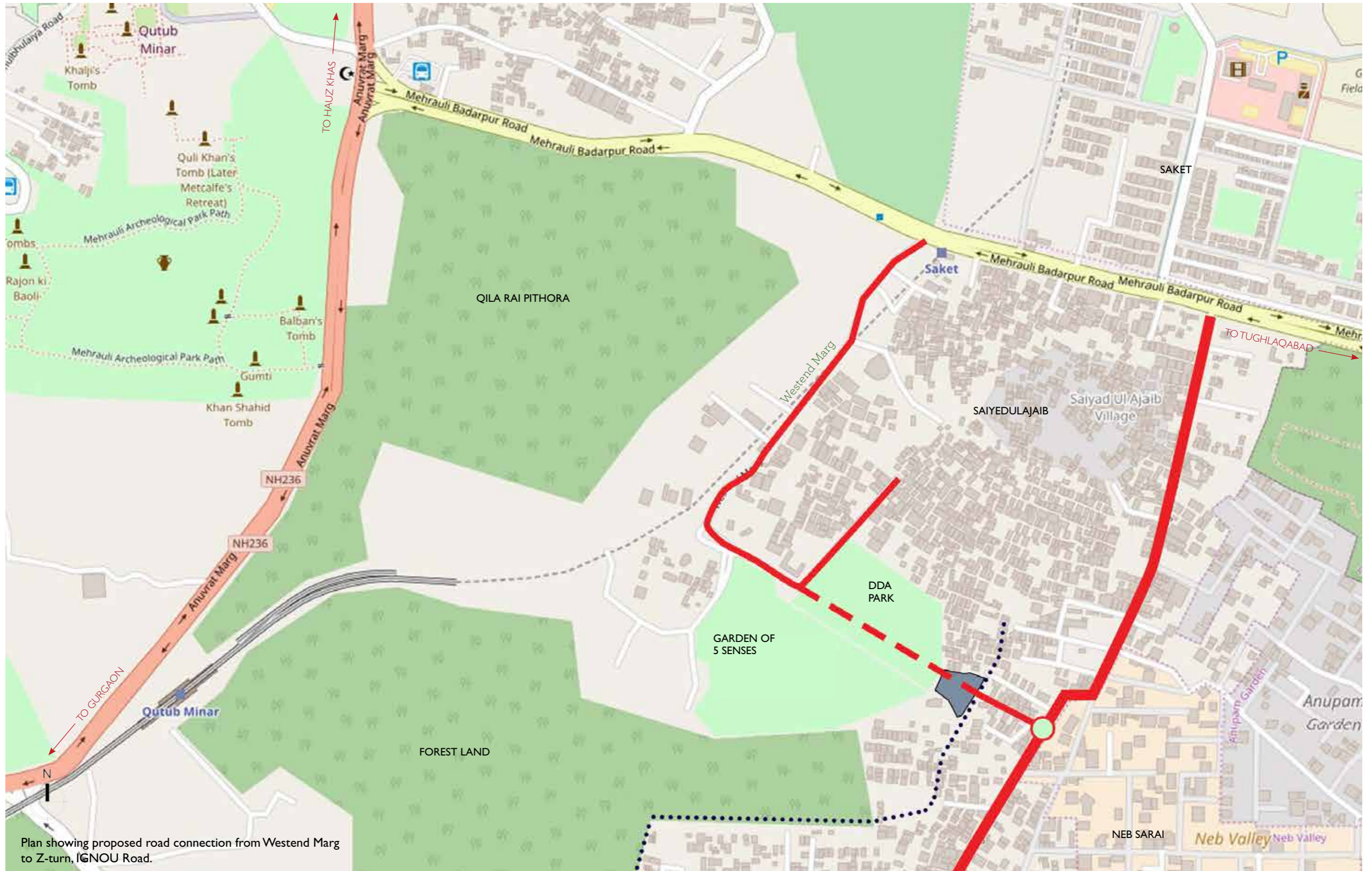
Westend Marg Link

The road starts from Saket Metro station, where it is wider as compared to IGNOU road, with ROW of 16m or more for most of its length. At present the road is used mainly by some residents, shop owners and visitors for the Garden of 5 Senses. Usage of this road will significantly bring down the pressure on IGNOU road.

LEGEND

-  EXISTING ROADS (WESTEND MARG & IGNOU ROAD)
-  PROPOSED ROAD LINK
-  JUNCTION AT Z - TURN

-  VACANT LAND OCCUPIED BY KUTCHA HOUSES
-  WALL ERECTED BY DDA TO CURB ILLEGAL CONSTRUCTION ON FOREST LAND



Plan showing proposed road connection from Westend Marg to Z-turn, IGNOU Road.

**Westend Marg Link**

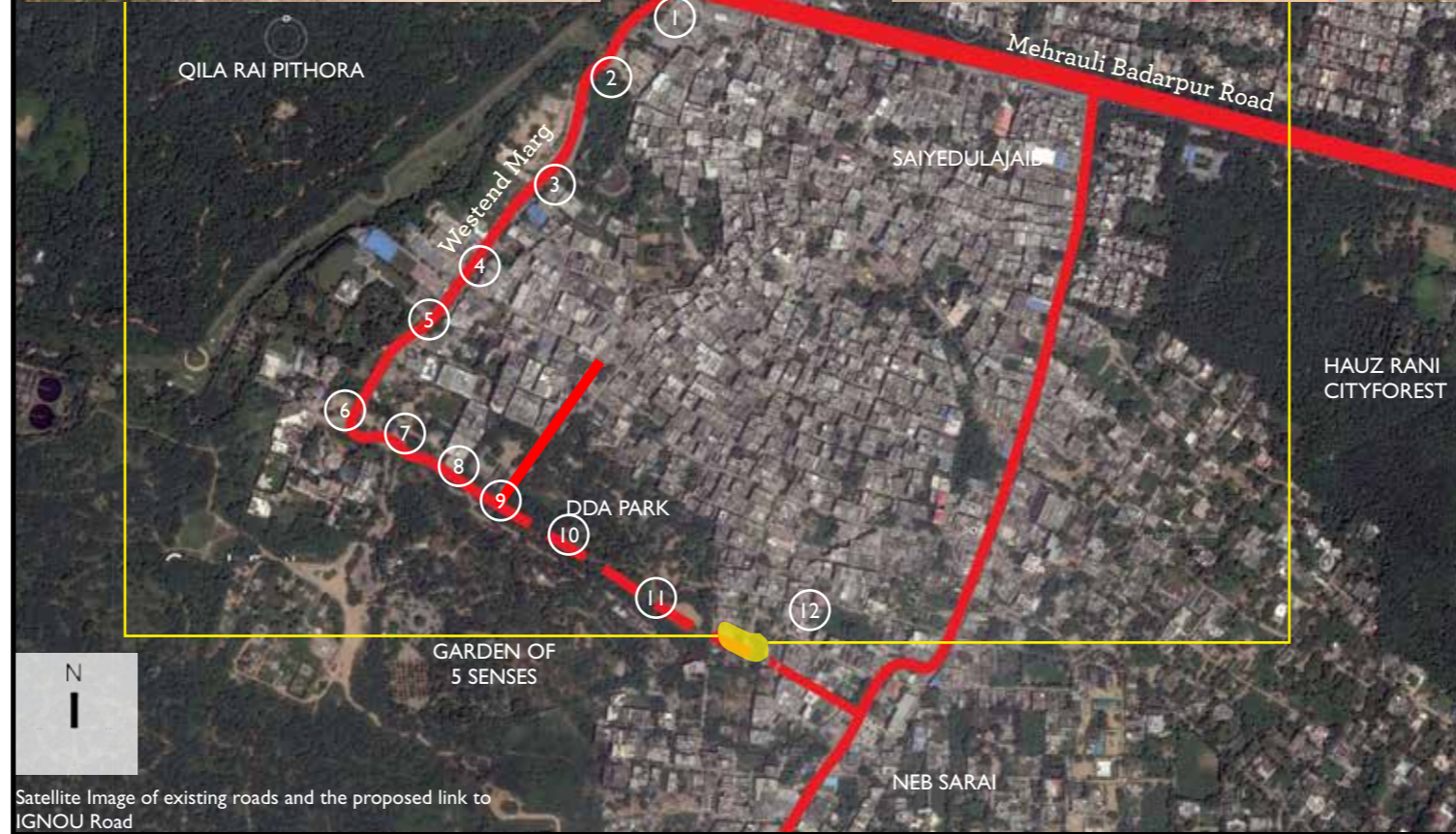
The following layout and pictures highlight the actual site condition of the proposed link via Westend Marg. As it can be seen in the pictures, 90% of the proposed link already has proper paved road.

The stretch through the DDA Park is also partly paved. The only unpaved stretch is at the area near the DDA wall. Beyond the wall we can see existing streets of Freedom Fighter Vihar which connect to IGNOU road near the Z-turn.



Existing Condition of the stretch before the DDA wall

The area is encroached by Kutcha houses



The only unpaved stretch is the area near the DDA wall. Beyond the wall we can see existing streets of Freedom Fighter Vihar which connect to IGNOU road near the Z-turn.

90% of the proposed link already consists of tarred roads. This tarred portion leads to Garden of 5 senses and merges into narrow streets of Saiyed-ul-ajaib.



Road Link Details



Existing Plan



Existing View



Proposed Plan

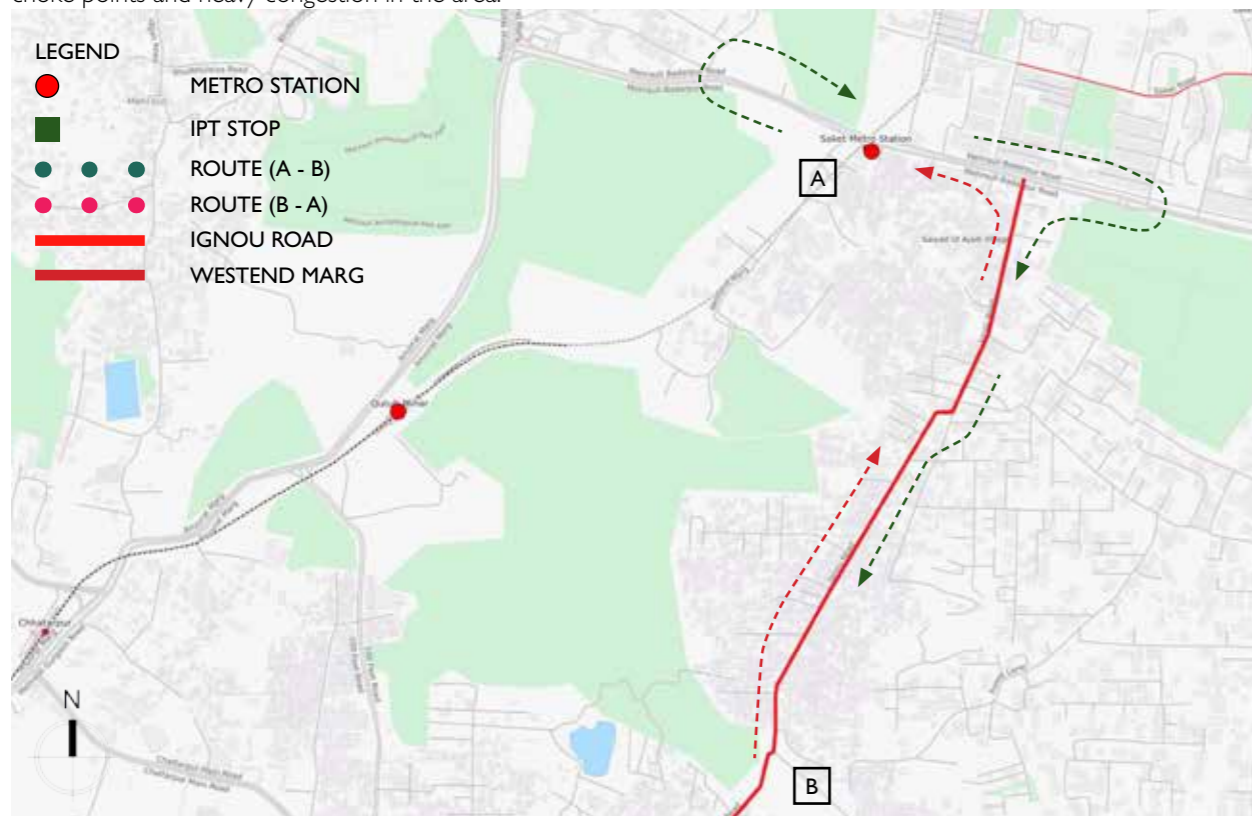


Proposed View



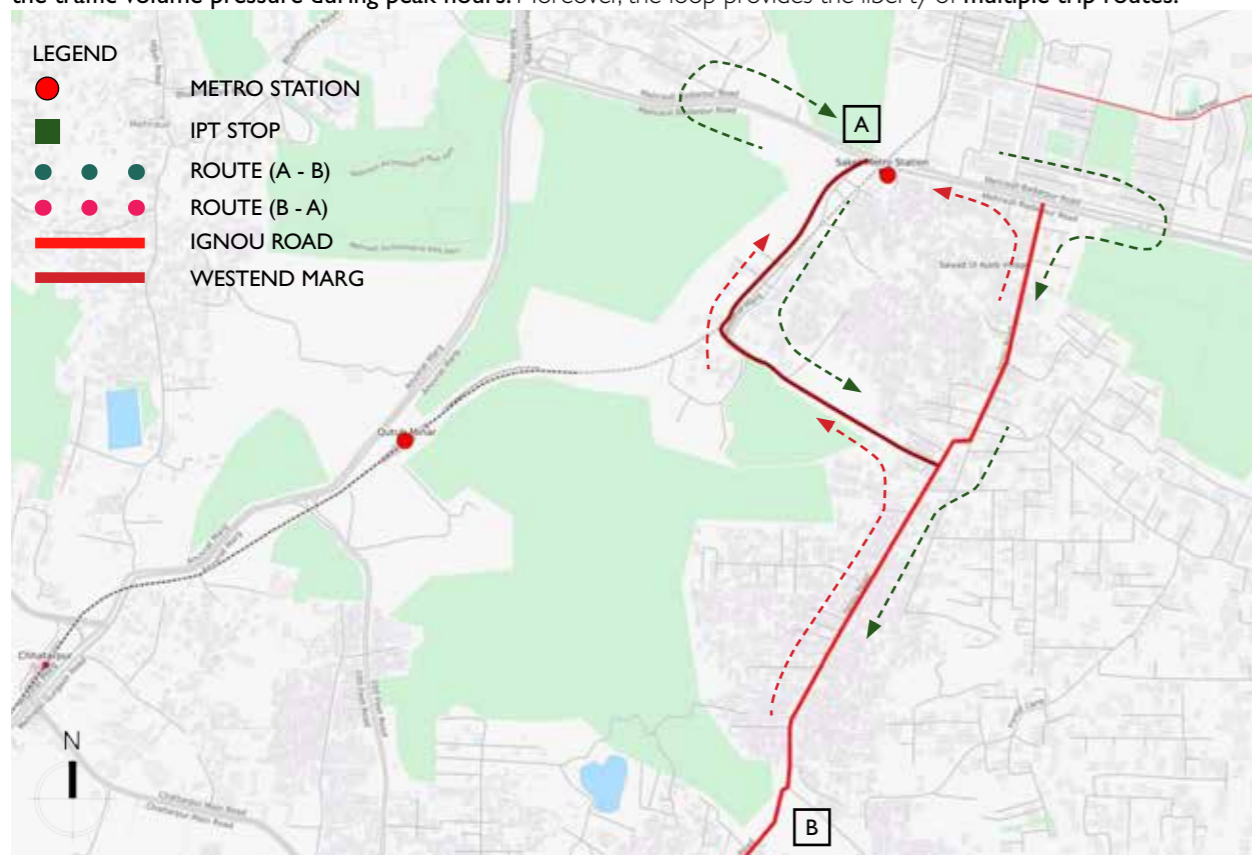
**Local Transport Route**

The existing route plan includes 2 U-turns, 2 stops at Saket Metro station in the same trip on either sides, and traffic volume pressure on any one side depending on the time of the day/peak hours. These points are the reason behind choke points and heavy congestion in the area.



Existing Transport Route

Proposed route plan with the Westend Marg link provides opportunity for a loop and an alternate parallel entry into the area. This route plan includes only 1 U-turn, 1 stop each on either side of metro station per trip, and thus distributes the traffic volume pressure during peak hours. Moreover, the loop provides the liberty of multiple trip routes.



Proposed Transport Route

**4.2.3 Street-scape Interventions**

**Parameters considered for the Proposal:**

- According to the Master Plan of Delhi 2021, the suggested ROW for ‘Local Streets’ is 12 to 20m in the existing and proposed urban area. For areas having plot sizes below 90sqm, minimum ROW of 9m may continue. Considering this rule, the following proposal does not interfere with the existing ROW of IGNOU road which varies between 10.5m and 19m.
- The proposal excludes the stretch from IGNOU University to Chattarpur Main Road which constitutes Chainage 03 of the road. A major part of this stretch is less than 6m ROW and the following proposals would have little or no effect on this stretch.
- The strategy focuses on making the road more accessible and safe for pedestrians and bicycles. This is to encourage use of non-motorized vehicles and public transport instead of private vehicles. This in turn would bring down the traffic volume on the road. According to MPD 2021, on all arterial roads fully segregated cycle tracks should be provided with provision for safe parking in park and ride lots. In urban extension, cycle tracks should be provided at the sub-arterial and local level roads and streets. (DDA, 2010)
- Following the guidelines of the Master Plan of Delhi 2021, few other measures incorporated by concerned agencies shall be:
  1. Provision of adequate pedestrian facilities.
  2. Removal of encroachments from footpaths.
  3. Improvement in accident handling and reporting. (DDA, 2010)
 IGNOU road has been encroached on both sides throughout the length of the road.
- ‘Street-scape interventions’ proposal would work best in conjunction with the ‘Alternative link road’ proposal. This will distribute both incoming and outgoing traffic from the settlements.

**Salient Features of the Proposal:**

- Continuous carriage way of 5.5m on either side with varying footpath width depending on the existing ROW throughout the length of the road.
- Continuous divider along the length of the road with strategic break-points to facilitate accessibility to the adjacent settlement areas.
- Table-top crossings at an interval of 500m, strategically positioned to meet a junction or market area if necessary.
- Street Furniture and proper signages proposed where space allows.
- Spaces earmarked throughout the stretch at different points for on-street parking.
- Bays proposed for IPT stops and loading/unloading of commercial vehicles.
- Narrow entry into IGNOU road from Mehruli-Badarpur road proposed to be redesigned to facilitate a smoother entry into the road, keeping in mind the IPT volume and IPT stand.
- Westend Marg link proposed to connect IGNOU road after the Z-turn, thus creating a junction.
- Continuous footpath along the full length of the road, encouraging walkability and safety.
- Continuous bicycle lane proposed on Mehrauli-Badarpur Road as per the guidelines mentioned in Master Plan of Delhi 2021.

Chainage 01A



Chainage 01A



Entry to IGNOU road from Mehrauli-Badarpur Road. Oddly placed concrete dividers are the most noticeable elements of the street.



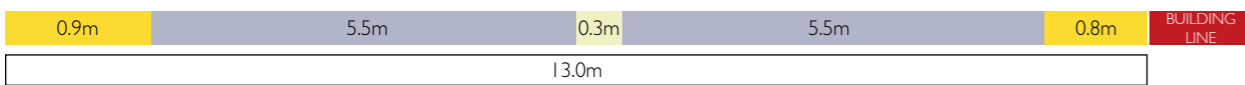
DDA Market next to Anupam Gardens DDA Colony. Opposite to Saiyedulajab, this market and colony is in stark contrast to the urban fabric of the area.



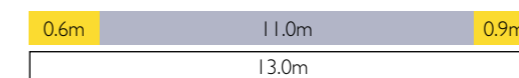
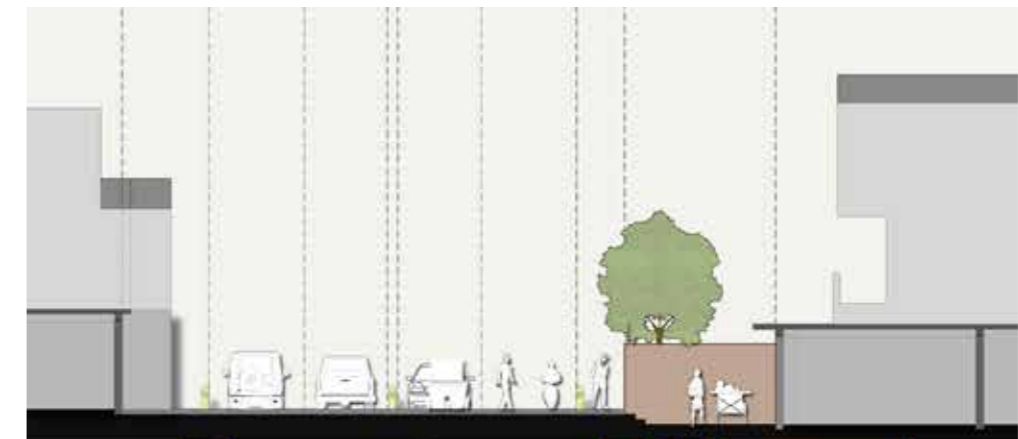
Corner shops such as these facing both IGNOU road and M.B. Road have encroached upon the unpaved area of the roads. This make-shift arrangement by pushing the footpath further into the road is a common sight.



The DDA Market extends on to the footpath in the form of hawkers and vendors. This encroachment leads to greater footfall around these vendors, further aggravating the congestion on the street.

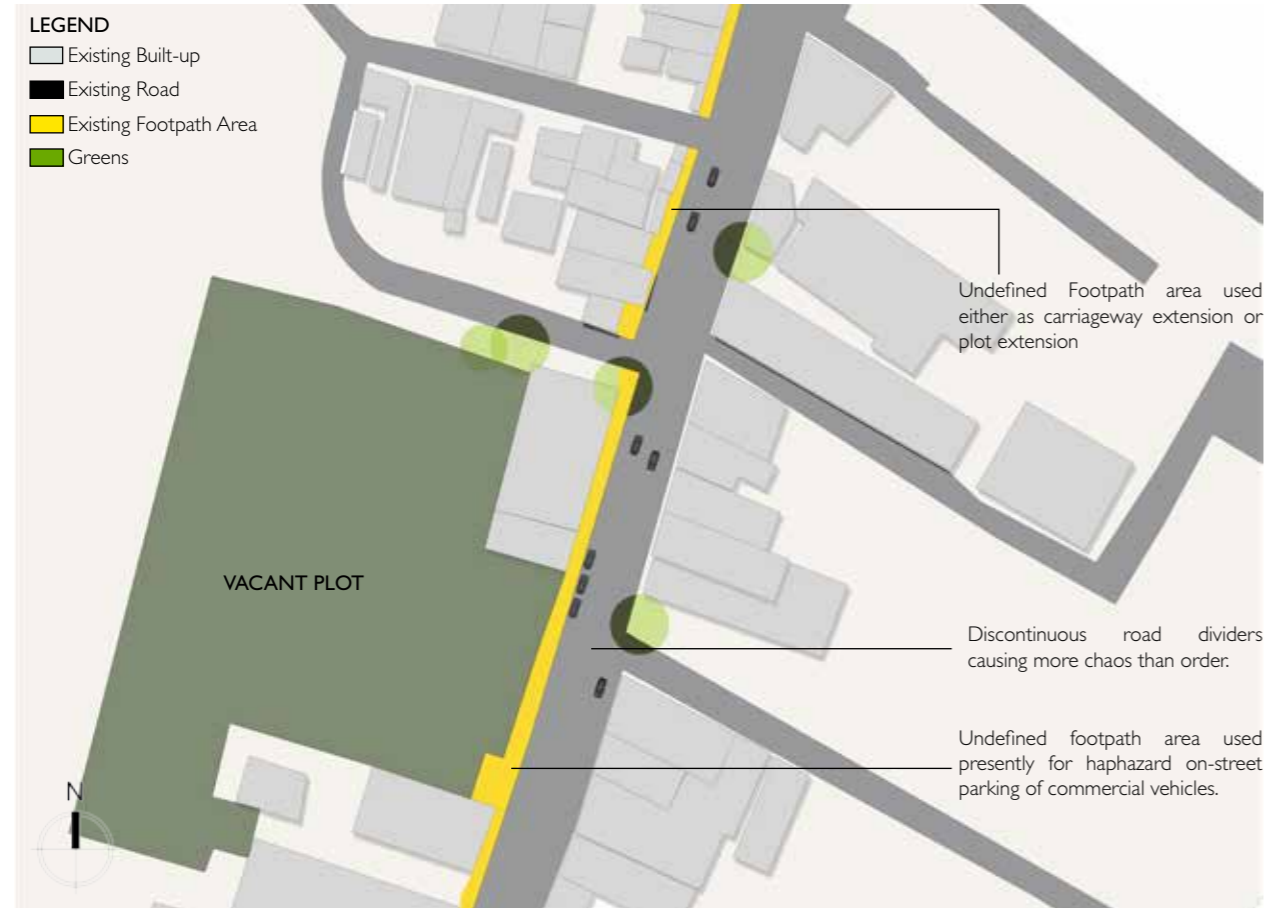


Existing Road Section

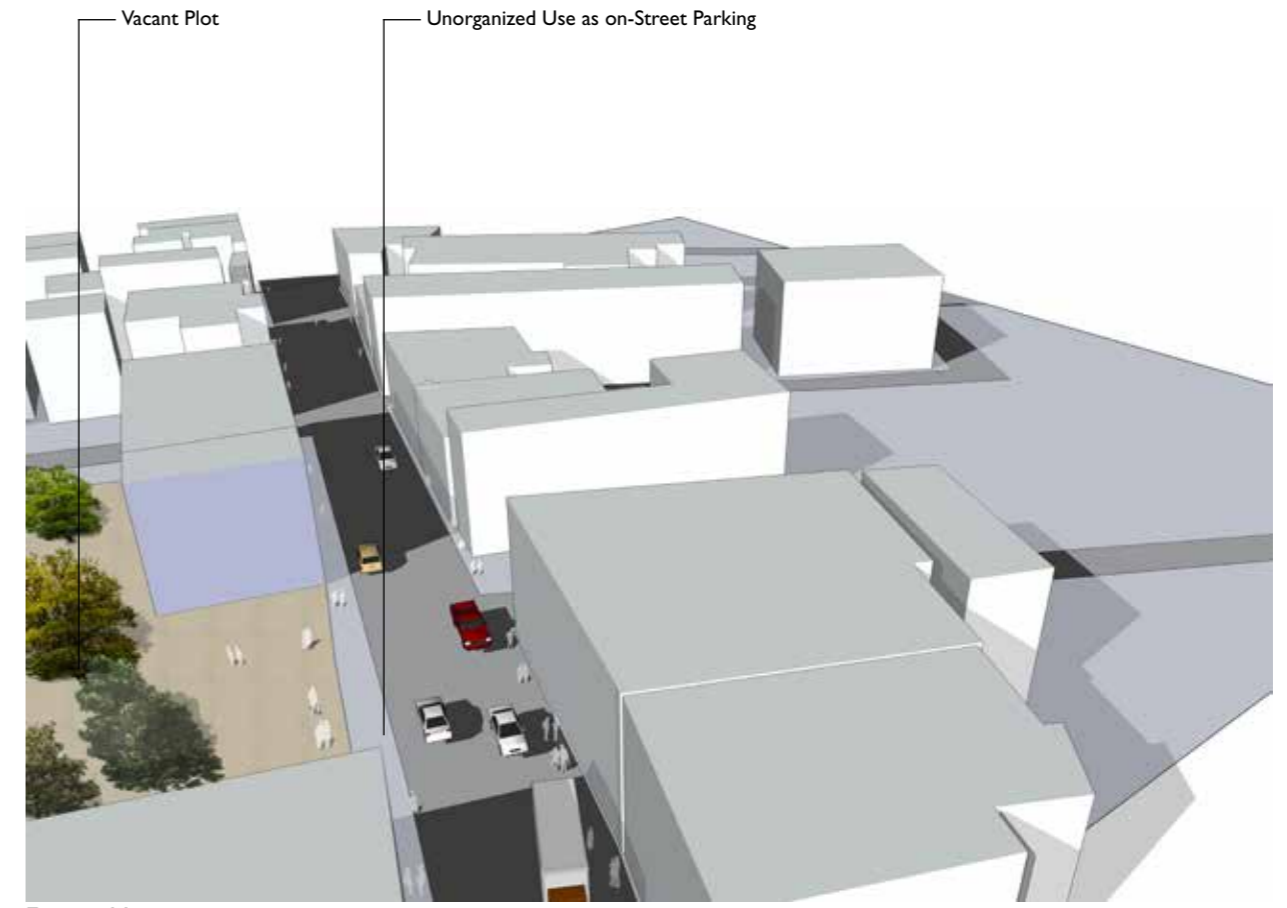


Proposed Section

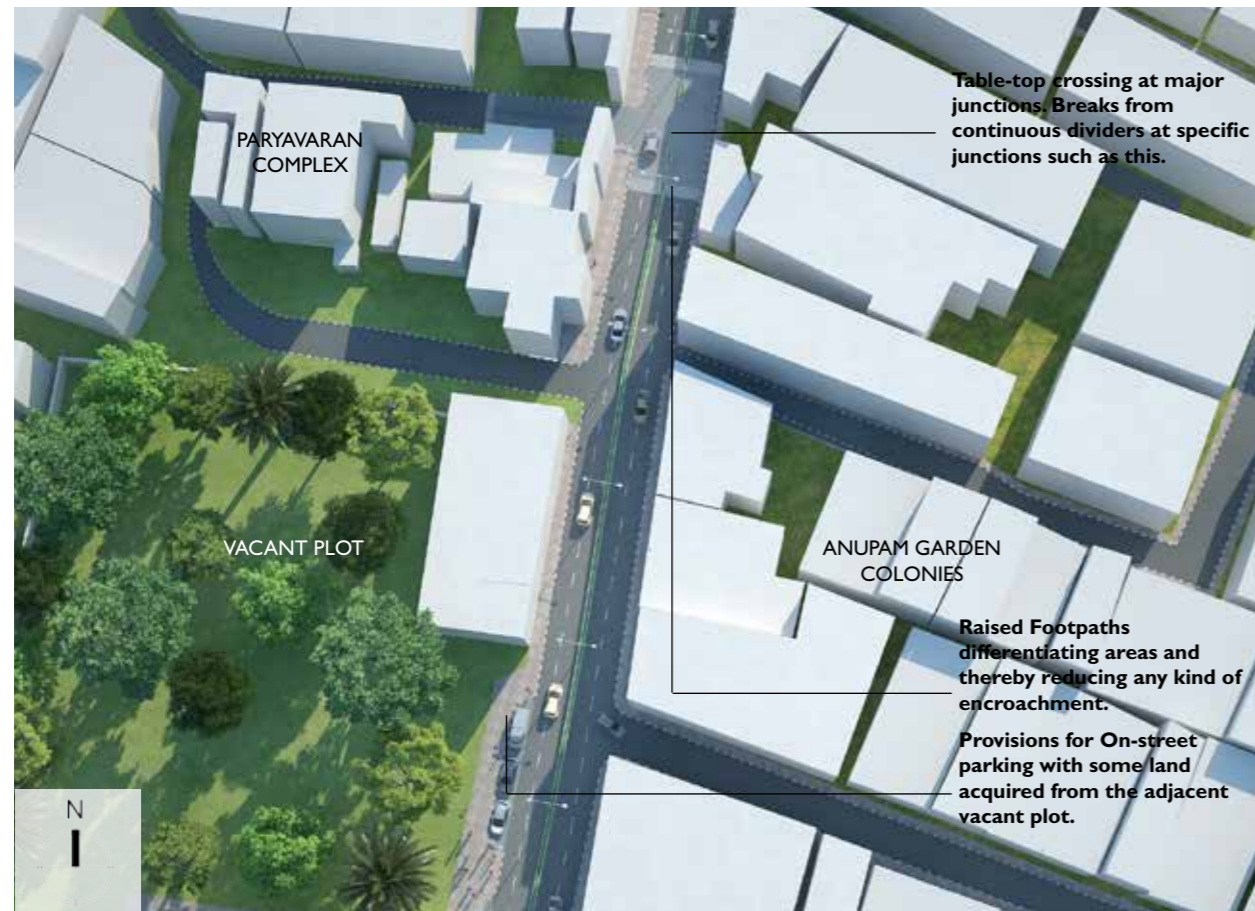
Chainage 01B



Existing plan at 'Chainage 1'



Existing View

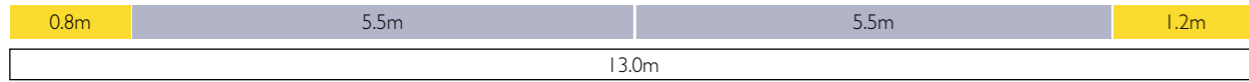


Proposed Plan at 'Chainage 1'

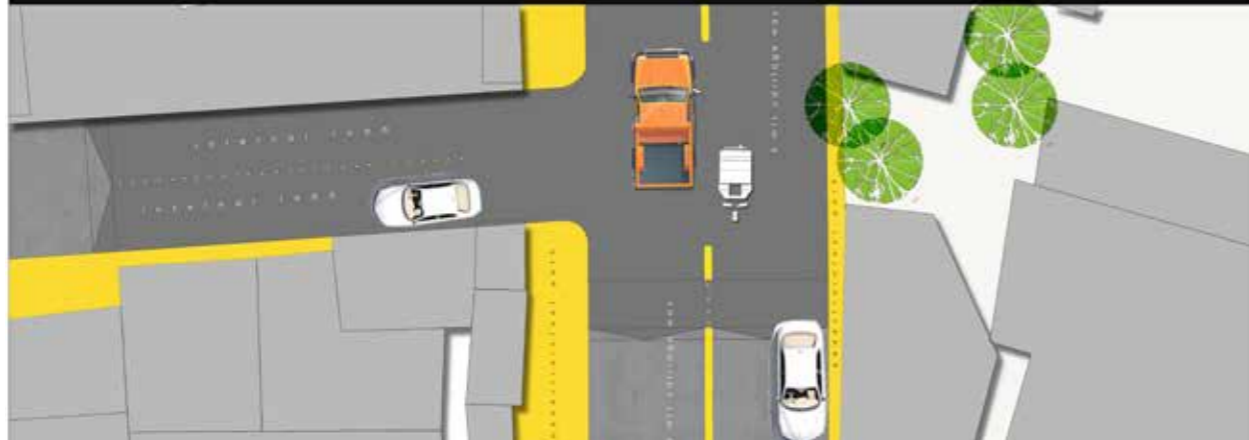
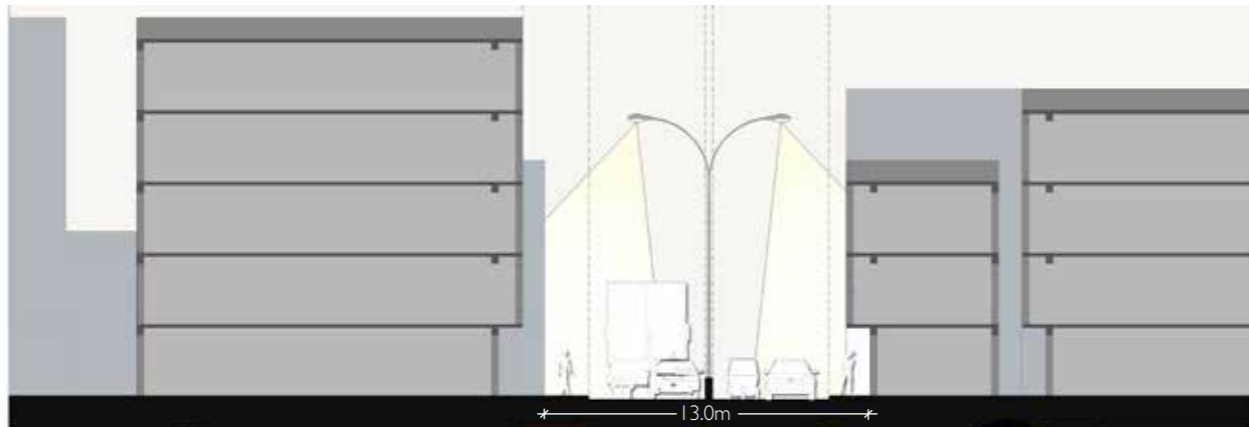


Proposed View

Chainage 01B



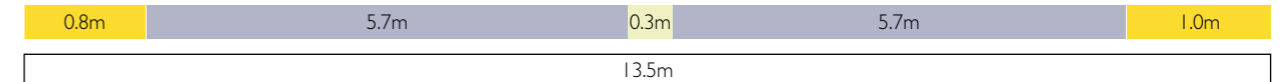
Existing Road Section



Proposed Section



Key Plan



Existing Road Section



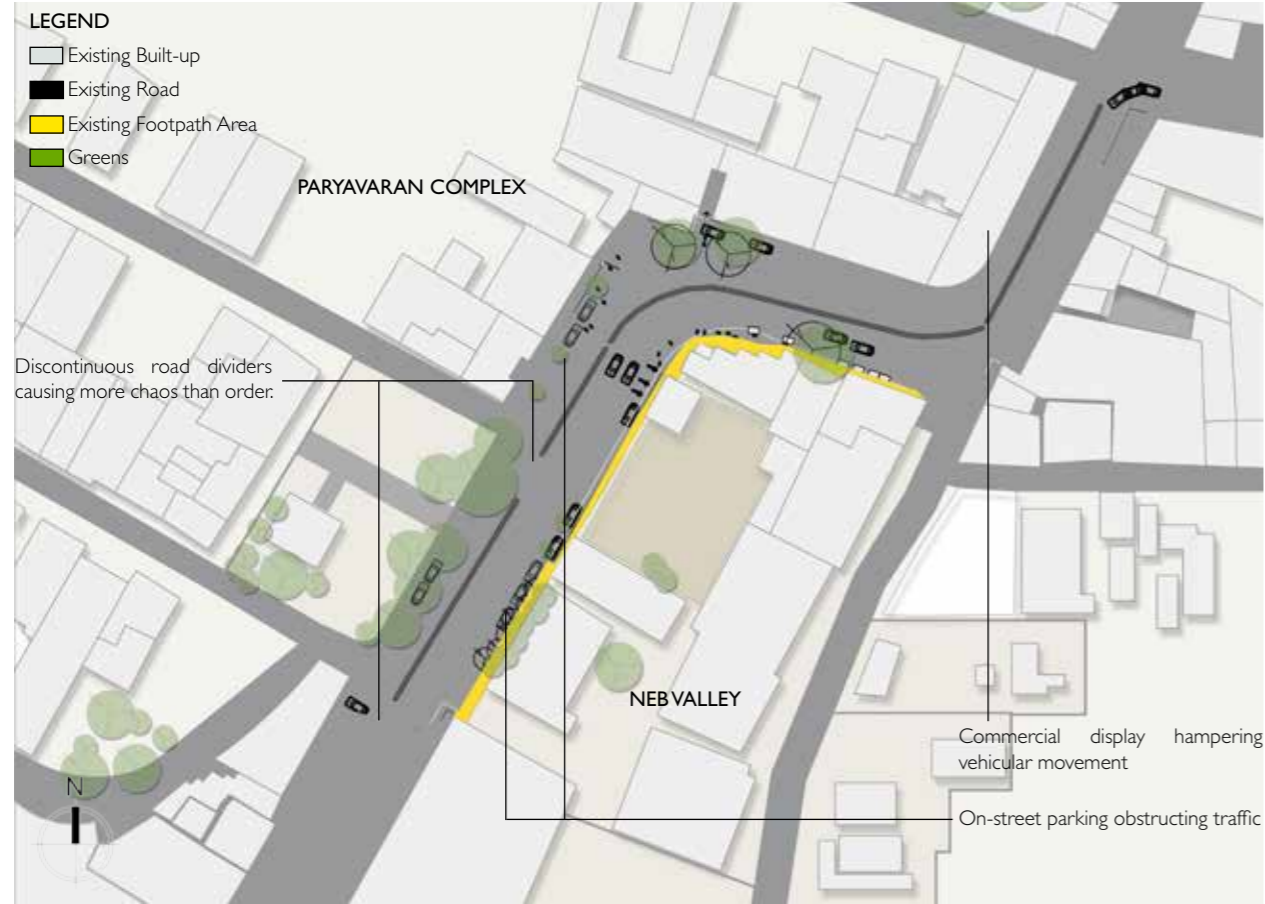
Proposed Section



Key Plan

Chainage 02A

Z-Turn



Existing plan at 'Chainage 2'



Proposed Plan at 'Chainage 2'



Existing View



Proposed View

Chainage 02B



Existing plan at 'Chainage 2'



Existing View

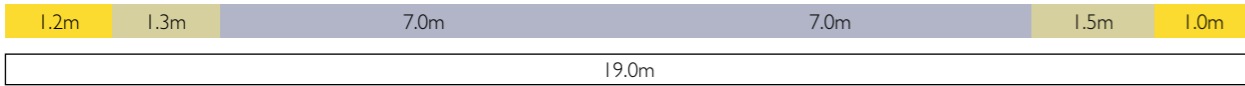


Proposed Plan at 'Chainage 2'



Proposed View

Chainage 02B



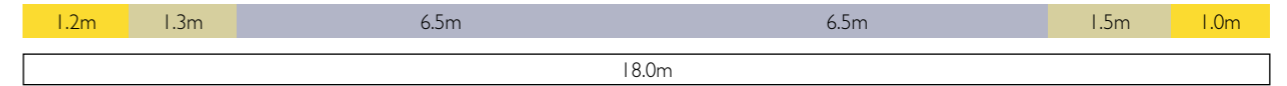
Existing Road Section



Proposed Section



Key Plan



Existing Road Section



Proposed Section



Key Plan



**Chainage 02C**

No specific footpath area as it has not been defined and thus used for display and carriageway.

No dividers along this stretch of the road

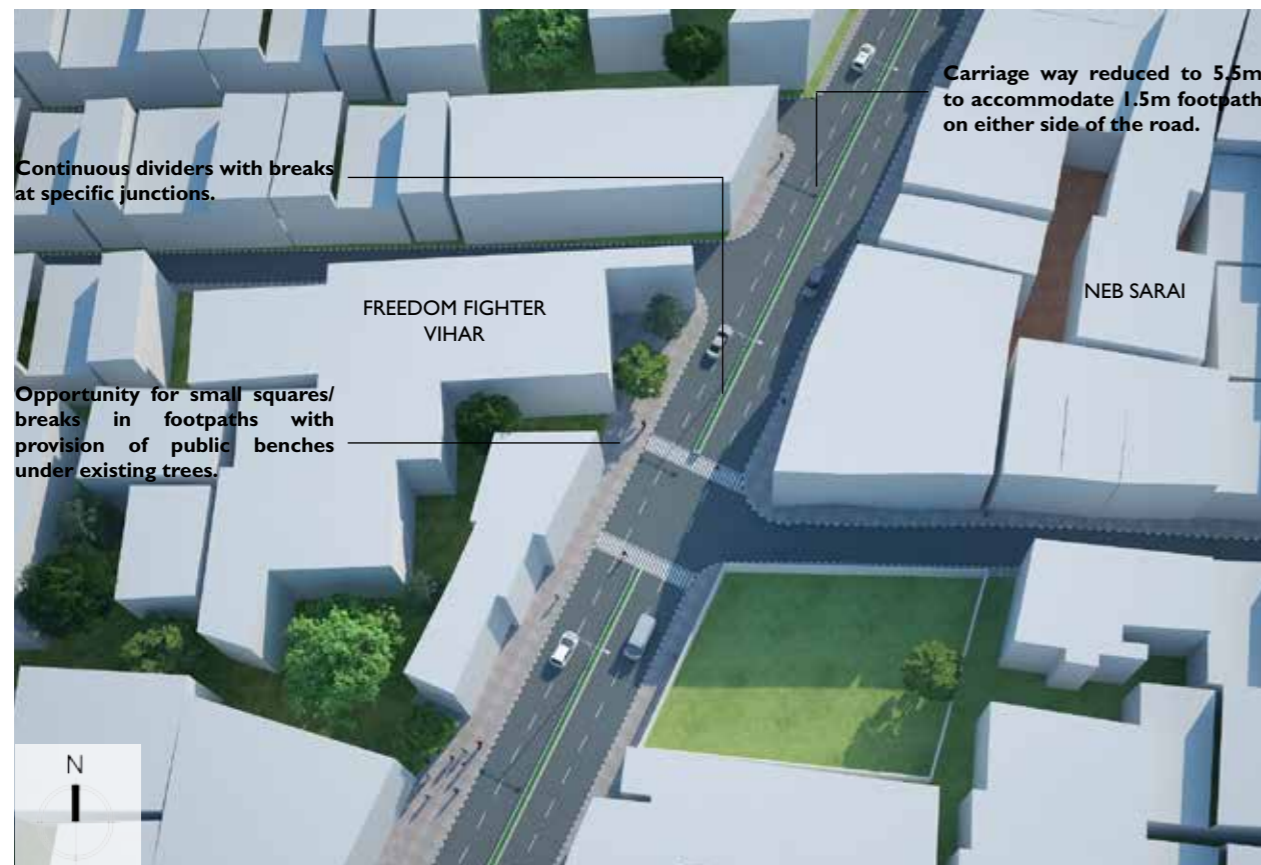
Public Toilet beside vacant plot encroaching onto the ROW.



Existing plan at 'Chainage 2'



Existing View

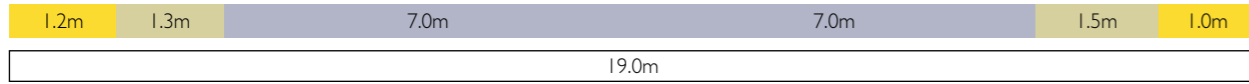


Proposed Plan at 'Chainage 2'

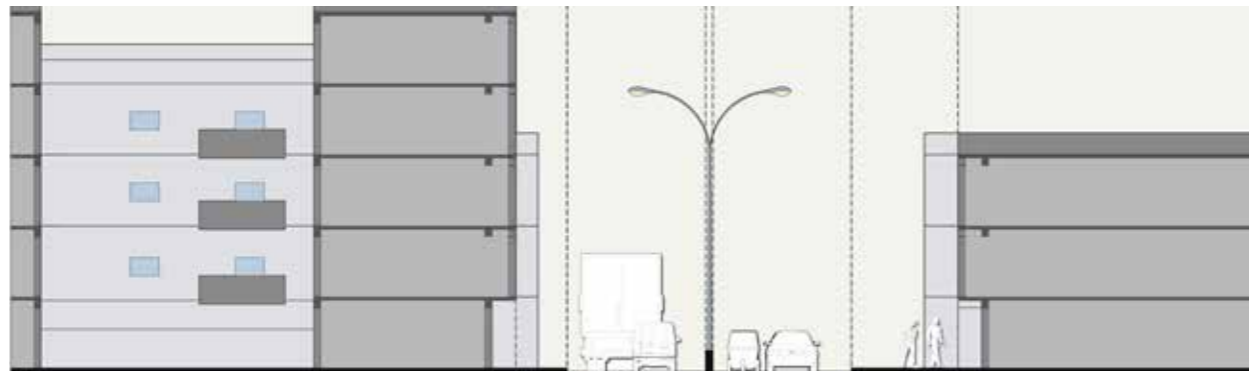


Proposed View

Chainage 02C



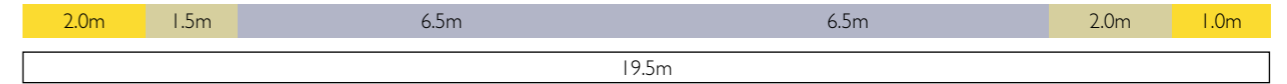
Existing Road Section



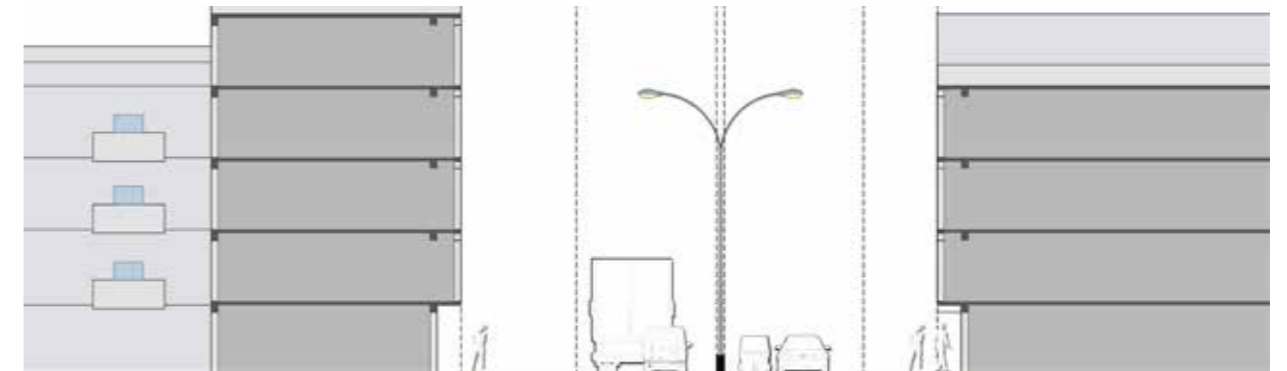
Proposed Section



Key Plan



Existing Road Section



Proposed Section



Key Plan

Chainage 02D: IGNOU University Junction



Existing plan at 'Chainage 2'



Existing View

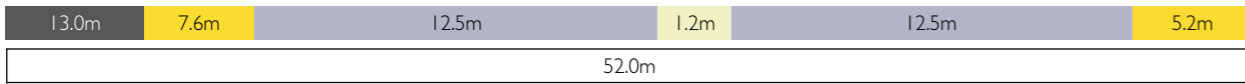


Proposed Plan at 'Chainage 2'

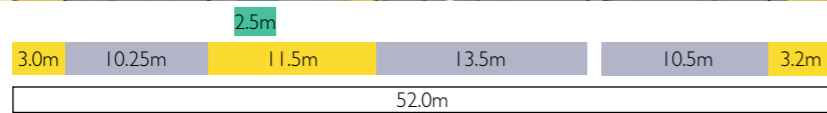


Proposed View

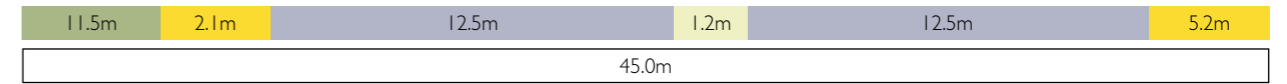
Mehrauli - Badarpur Road



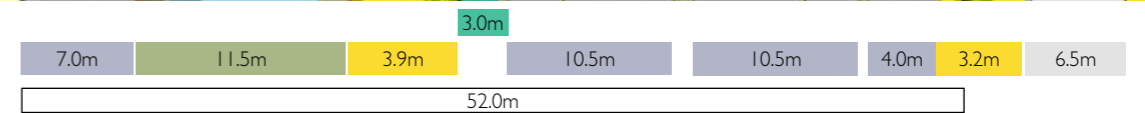
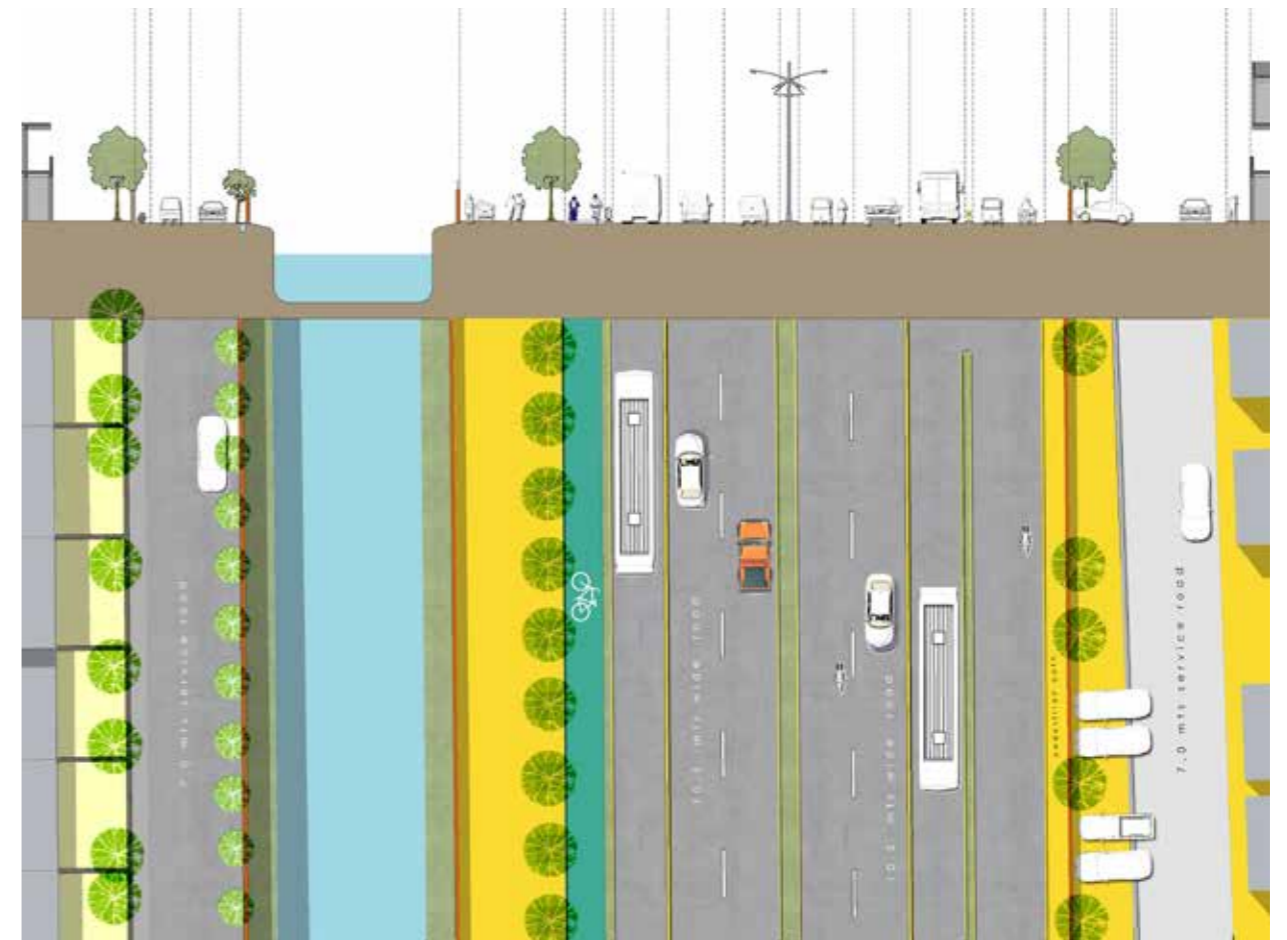
Existing Condition



Proposed Section/Plan



Existing condition



Proposed Section/Plan

### 4.3 Utilities Strategy

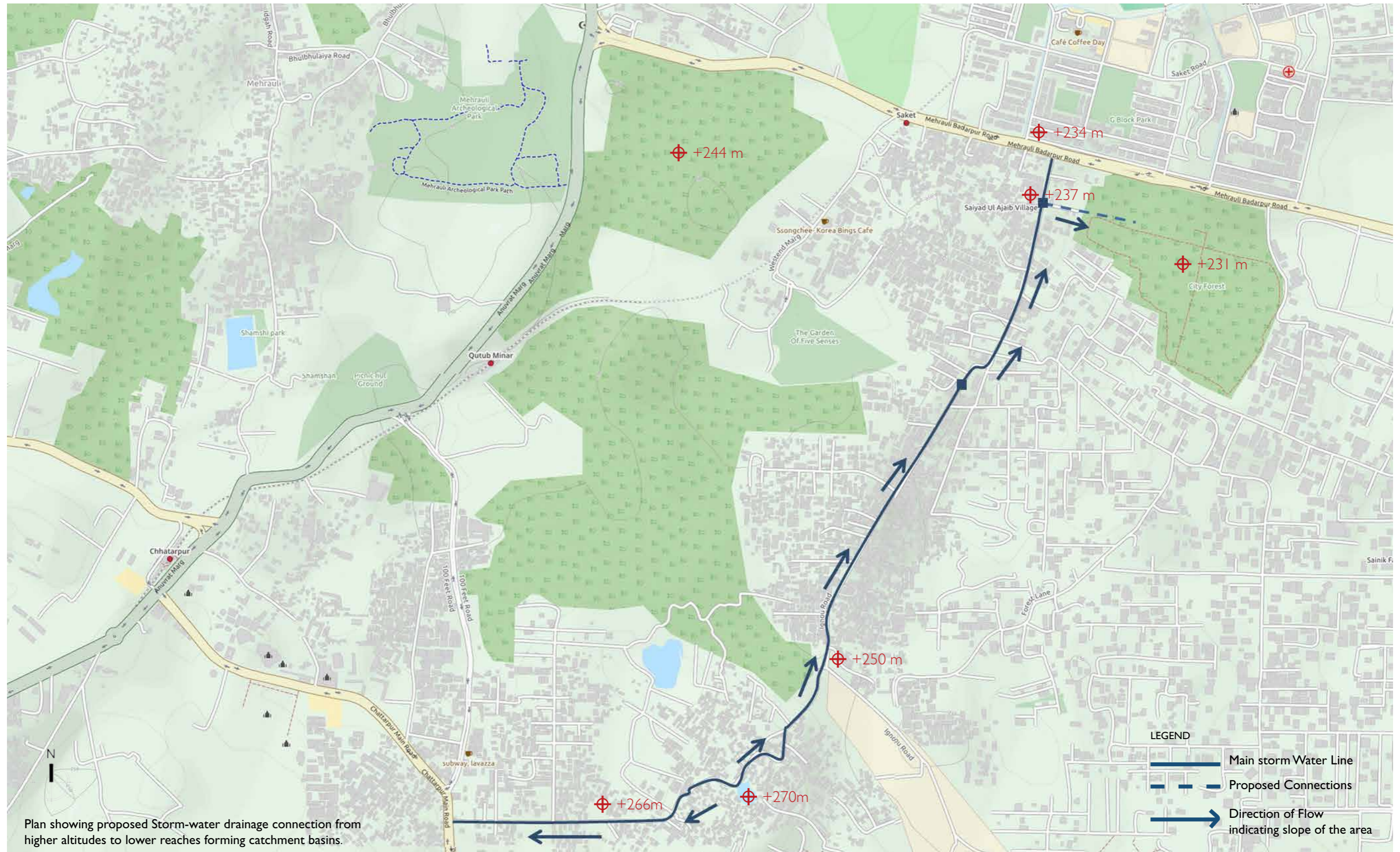
Monsoon has wreaked havoc on the busy IGNOU road. The 1.3km-long stretch that gets huge volume of traffic remains very busy during peak hours. Its existing condition has made it difficult to commute on this stretch. The road is full of potholes and the drainage system is also in a mess. During monsoon, the road gets waterlogged. At many places the drain is open and one can easily see the polluted water flowing out of these places. According to residents, there is no separate sewer system in area and it goes into the drain only (SPA/HT, 2016). Although, laying of a pipeline for smooth functioning of drain, has commenced.

### Storm Water Management

It is the process of managing the quantity and quality of storm water by using both structural or engineered control devices and systems (eg. bio-retention ponds) to treat polluted storm water. (Oasis Designs, 2012)

### Case Proposal

The gradual slope along the road and presence of parks, forests and other greens in the vicinity, provides with an opportunity to facilitate better drainage systems. The lowest altitude of the road is at the entry from M.B. Road. A storm-water drainage connection from DDA market to Hauz Rani Forest via the DDA colony of Anupam Gardens has been shown in the plan below



Storm water runoff occurs when rain falls over land surface, such as roads, driveways, parking lots, rooftops that prevent water from soaking into the ground to the landscape. This increases the runoff volume during monsoon. This runoff, which also contains pollutants is easily carried through the engineered drain channels to the nearby nala and then to the river. This also cause flooding and erosion (Oasis Designs, 2012). Typically, monsoon has wreaked havoc on the busy IGNOU road, waterlogging streets and thereby choking traffic.

**Retention Basin**

Retention basins are among the most frequently implemented storm water management systems. They are used to collect surface runoff and to improve the quality of water by natural processes such as sedimentation, decomposition, solar disinfection and soil filtration. In comparison to dry ponds (which hold runoff for a limited period of time and then release the stored water at once), retention basins constantly keep standing water, allowing the development of a new habitat. This also allows settled particles to be treated biologically (GSDSDS 2005). Water from retention ponds can then be reused for groundwater recharge, irrigation or any other purpose, optionally requiring further treatment. As a natural system, retention basins do not need energy or high-tech appliances. Primary implementation costs of retention basins are high and constant maintenance is inevitable, as otherwise pollutant export and erosion can occur (UNHSC 2010).

**Basic Design Principles**

The design of a retention basin needs to be well fitted to its surroundings. When choosing a suitable site, the main factors to consider are the cost effectiveness of the area as well as its ability to support the pond environment. Also, retention basins are best built where stormwater naturally flows and collects (EPSS 2002). Enough space should be available, as the ponds require a minimum contributing area of five hectares.

Working	Surface run-off is stored permanently in ponds, allowing increased storm water management and quality enhancement through natural processes.
Capacity/ Adequacy	Retention basins require a large area of land and are only applicable to areas with high rainfall and enough free space.
Performance	Retention basins filter pollutants such as metals, nutrients, sediments, or organics by sedimentation. Further removal of pollutants is achieved through algal and wetland plant uptake as well as bacterial decomposition (EPA 1999)
Costs	High costs arise for the construction of retention basins and the value of the land. Once in operation, only minimal maintenance costs occur.
O & M	Basins have to be cleared from excess sediment and trash. Also, quarterly inspections of water in- and outlets are needed.
Reliability	Reliability persistence of retention basins is very high if well maintained, with a life span of usually more than 20 years.
Main strength	Floodwater can be controlled and water quality is enhanced.
Main Weakness	Large land areas need to be available to build ponds; risk of uncontrolled reuse and mosquito breeding.

**Applicability**

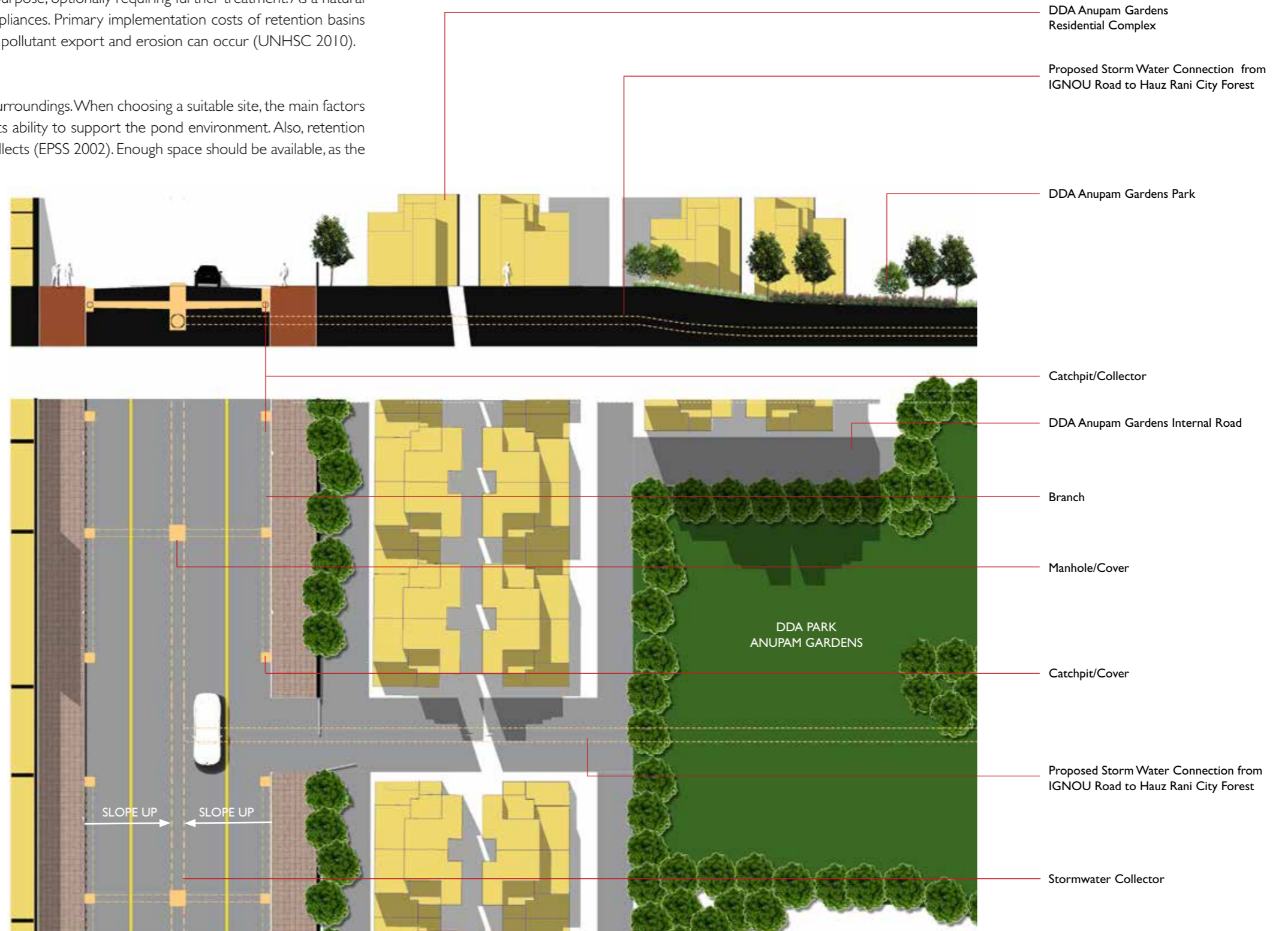
One main prerequisite for the construction of retention basins is space. A minimum contributing area of five hectares is necessary for a successful implementation (GSDSDS 2005).

**Disadvantages**

1. Can be of drowning danger for children, etc.
2. Large land areas are needed
3. If not designed correctly, negative impacts on water quality can occur.

**Advantages**

1. Simple, if space is available
2. Collection and improvement of water quality at the same time
3. Natural processes, no energy or high-tech appliances required
4. Improved storm water management and flood control
5. New habitat can be created
6. Can also be used for recreational purposes
7. Is also suitable for sites with high nutrient loading



## 4.4 Regulatory Support

### Master Plan of Delhi, 2021

Delhi with huge intra city trip lengths and increasing number of personalized vehicles, few imperatives cannot be ignored for its sustainable and healthy growth, such as more dependency on efficient, convenient and safe modes of public transport, linking large number of work centres with residential areas and overall disincentives for the private vehicle ownership. (DDA, 2010)

#### Roads:

- Non-residential public buildings with pleasing appearance should be located on entry corridors.
- Attractive landscape should be developed in accordance with the highway landscape norms.
- Segregation of goods and passenger vehicles at the entry point through separate lanes to improve the visual environment. (DDA, 2010)

#### Street Furniture & Signage

- Public art is an important part of the urban spatial experience, which can be incorporated in the form of functional objects such as street furniture and paving designs.
- Street furniture and signage should be designed sensitively considering the land use, intensity of activity and other identified design districts. Their design must also reflect respect to pedestrians and differently abled persons.
- Exclusive parking bays are proposed near major intersections as part of road R/W with adequate landscaping to provide for parking of mobile repair vans, PCR vans, ambulances, cranes, fire tenders and other public utility vehicles. (DDA, 2010)

#### Road Signage & Safety

- Safety of road users shall be one of the prime consideration while planning / designing of road network and infrastructure. A major cause for present day chaos on the roads is that the road infrastructure, signage and road markings are not in accordance to the standards laid down by the Motor Vehicle Rules and Highway Code.
- Appropriate road signage and markings prevent the deviant behaviour of motorists and at the same time provide useful route related information. Concerned road owning agencies shall be responsible for installing the appropriate road signage and markings on regular basis.
- Few other measures by the concerned agencies shall be:
  1. Provision of adequate pedestrian facilities.
  2. Removal of encroachments from footpaths.
  3. Improvement in accident handling and reporting. (DDA, 2010)

#### Road Hierarchy

The proposed roads are classified taking into account the land use pattern and road system hierarchy with recommended right of ways as follows:

- National Highways
  1. **Mehrauli-Gurgaon Road** towards the west of the site
  2. Recommended minimum ROW of 90m, wherever possible. Within the city, not less than 60m.
- Arterial Roads
  1. **Mehrauli-Badarpur road** towards the north of the site.
  2. Include primary roads with access control and other primary roads
  3. Recommended ROW for **Primary Roads** in existing urban area is 60-80m and minimum 80m in the proposed urban extension. Recommended ROW for **Other Primary Roads** in existing urban area is 45-60m and minimum 60m in the proposed urban extension.
  4. While designing roads with 30m ROW and above, provision should also be made for public mass rapid transport system, which may include BRT/MRTS.
  5. **Cycle tracks** should also be constructed along all arterial roads wherever possible.
- Sub-Arterial Roads
  1. **Primary Collector:** These roads will connect major arterial roads and inter residential district collectors. The recommended ROW in existing urban area is 30-40m and minimum 45m in the proposed urban extension. In addition to this, a separate cycle track should be provided wherever possible.
  2. **Secondary Collector:** These roads are intended to collect traffic from local streets within one residential district. The recommended ROW in existing urban area is 18-24 m. and minimum 30 m. in the proposed urban extension.

- Local Streets
  1. These are intended for neighbourhood (or local) use on which through traffic is to be discouraged..
  2. The suggested ROW is 12 to 20 m. in the existing and proposed urban area.
  3. These roads should be made pedestrian and bicycle friendly by using modern traffic calming designs to keep the speeds within limits as per design.
  4. In existing areas like Rohini project, having plot sizes below 90sqm, minimum ROW of 9m may continue. (DDA, 2010)

**As a matter of general policy, it is proposed that for all categories of roads, the full cross section should be developed in future and no encroachments will be permitted on the existing road network. Further, the development of roads should start from the extremes of the designated ROW. (DDA, 2010)**

#### Urban Relief Roads (URR)

In order to reduce congestion on the existing roads, it is proposed to identify additional/alternative links and access corridors. Such links termed as Urban Relief Roads, may be proposed subject to feasibility, along drains (including their covering), identification of new alignment, or upgradation/ strengthening of an existing road/alignment or in the form of elevated roads/grade separators etc. All the options should be exercised for restoration of full ROW, including relaying of services etc., if affecting ROW. (DDA, 2010)

#### Bicycle/Cycle-Rickshaw

Bicycle/ Cycle-Rickshaw could be an important mode of travel, particularly with reference to short and medium trip lengths. To the extent that it meets individual or public transport requirements, it is a non-energy consuming and non-polluting mode of transport. However, there are several issues, which have to be kept in view while planning in respect of these modes. With a mixed type of fast moving traffic on the roads, travel by bicycle and rickshaws is very unsafe.

In view of the above, the following actions should be considered/ taken:

- On all arterial roads fully segregated cycle tracks should be provided with provision for safe parking in park and ride lots.
- In urban extension, cycle tracks should be provided at the sub-arterial and local level roads and streets.
- In specific areas, like the Walled City / Chandni Chowk / Sadar Bazar / Karol Bagh / Lajpat Nagar and Trans Yamuna Area, the use of cycles/rickshaw as a non-motorized mode of transport should be consciously planned along with pedestrianization. (DDA, 2010)

#### Transportation for Special Areas

Central congested areas of the Walled City, Sadar Bazar, Karol Bagh and other similar areas like certain Trans Yamuna areas are characterized by heavy traffic congestion. In order to address this problem a medium capacity Mass Transit system comprising of BRTS, Light Rail Transit System (LRT) and battery operated bus system may be considered on selected routes based on feasibility.

For proper functioning of above said systems a restraint on the use of private modes and provision of parking would be required. This would be necessary in order to revitalize the area and to improve its environment quality. This will also increase accessibility to such areas considerably.

The following management measures are required to be taken:

- Need based Traffic circulation schemes integrating various modes.
- Improvement of major road stretches and intersections like Ajmeri Gate, Fountain Chowk, Fatehpuri Chowk, Kaudia Pul, Khari Baoli, etc.
- Removal of encroachments from footpaths to facilitate smooth movement.
- The movement of heavy vehicles will continue to be banned in such areas. However, for the services of this area Light Commercial goods vehicles may be allowed during the night. (DDA, 2010)

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