



CITY LEVEL PROJECTS

HARI NAGAR GREENS

Three City Level Landscape Projects





(An ISO 9001 : 2008 Certified Organisation)

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East Delhi Municipal Corporation
South Delhi Municipal Corporation
New Delhi Municipal Council
Geospatial Delhi Limited
Delhi Metro Rail Corporation
Delhi Urban Shelter Improvement Board
BSES Rajdhani Power Limited
BSES Yamuna Power Limited
RWA

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.

March, 2015

Sd/-
Prof. Dr. P.S.N. Rao
Chairman, DUAC

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Summary

The city of Delhi as a Metropolis has a distinctive green character with its rich Ridge and other greens. The connection between these greens is crucial to form a continuous green space encouraging pedestrianization. A park or a green space serves as an impetus to revitalize or rejuvenate the neighbourhood or community in which it is located. It plays an integral role in the life of a neighbourhood and the lives of the people who reside there. It also serves as a touchstone for a sense of community for those who live, work and play there.

'Greenway' aims to re-establish the role of these green spaces as a connective tissue. The proposal aims to establish an interconnected green belt system for the West Delhi Region. Once established this approach could be applied to other such locations in the city. It also aims to establish local shopping centres at different locations in the neighbourhood to cater to the daily needs of the people.

The focus of the greens in West Delhi is Hari Nagar Lake as it acts as a local centre of attraction. The proposal comprises three approaches which includes recharge of Hari Nagar Lake, connect the nearby bus stops/Metro stations with the greens with localized e-rickshaw networks to cater to visitors to the greens and thirdly linking the potential greens through continuous pedestrian/cycle trails by defining connective nodes between greens.

Design proposals have been done with compedium of conceptual drawings and details with 3D views which can be used as pilot projects applied to other areas of Delhi.

- | | |
|-------------------|--|
| Aim | Revive and recharge the existing Lake and improve its surrounding areas. |
| | Connect the urban greens through Greenway to enable practice of everyday living. |
| Objectives | Create local shopping areas with lightweight prefabricated blocks to cater to the daily needs of the people which include Safal store, Kendriya Bhandar, newspaper store, restaurants etc. |
| | Use DEWATS system to clean the black/grey water to freshwater to recharge the Lake. |
| | Create e-rickshaw route networks to connect nearest bus stops with the Greens. |
| | To create continuous pedestrian trail system to connect the various Greens and to make it cyclable. |
| | Identify and rejuvenate the entrance and connector nodes between the Greens |

1.1 Lakes in Delhi

Lakes are spread all over Delhi, a source of water in the city. Some brimming with abundance, and some dried up in today's waterless climate. Some are natural lakes, and some are man-made ones.

Hauz Khas Lake



This expansive lake at Hauz Khas near Deer Park is a favourite place for many morning and evening walkers. It was built in the 13th century and contains fountains in the evening which brings this almost dead waterbody back to life.

Sanjay Lake



Sanjay Lake is an artificial lake developed by DDA in Trilokpuri in East Delhi. It spans across 69 ha, attracting migratory birds. This complex is known for an abundance of fine indigenous trees. A well-laid-out fitness track is very popular with walking enthusiasts. Sanjay Lake is a tourist location of Delhi. This is a lake along with a long park. Sanjay Lake has an area of about 38 acres and it is one of the longest parks of East Delhi.

Old Fort Lake



The Old Fort or the Purana Qila is also known as the 'Qila-e-Kuhna Masjid' built by Sher Shah Suri. A shimmering lake below the Old Fort of Delhi allows boating facilities for the tourists.

Bhalswa Lake



A multi-disciplinary sports complex, Bhalswa Lake, as the name denotes, is notable for the range of watersports facilities it offers like boating, canoeing, kayaking, rowing etc.

Naini Lake

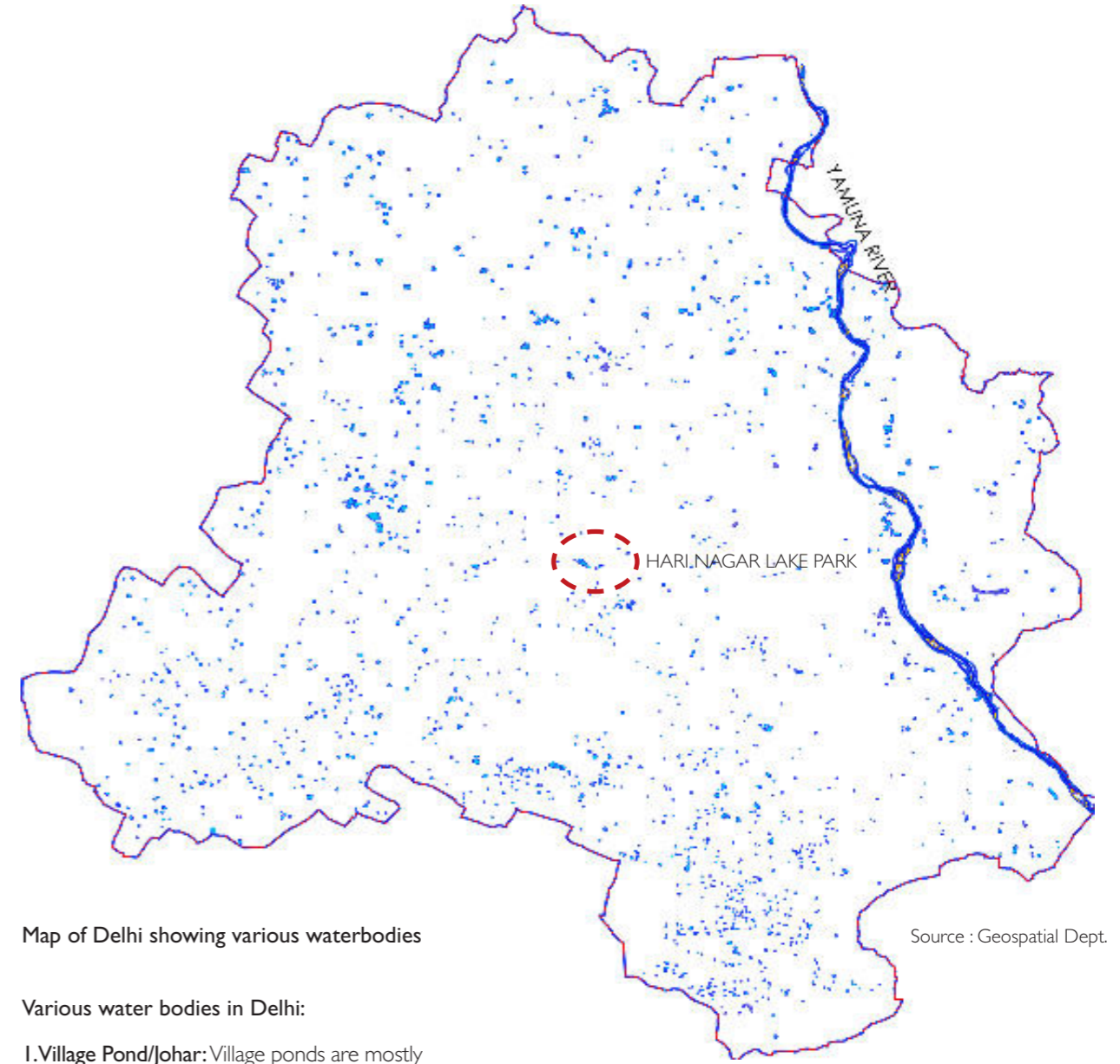


Naini Lake is a recent man-made, artificial lake situated in Model Town in Delhi. It is rectangular in shape and 3 feet deep with an area of 12 acres and surrounded by small trees on the southern banks. The lake has recently become one of the main lakes in Delhi.

Najafgarh Lake/Jheel



This lake along with the drain is good for birding. A small motorable road along the drain, which starts from Najafgarh-Kapashera Road near Chawla Tourist Complex till the Dhansa Barrage via the Najafgarh Lake, is the best route to explore the area and for birding. The total distance from the tourist complex till Dhasana Barrage is around 18 km.



Map of Delhi showing various waterbodies

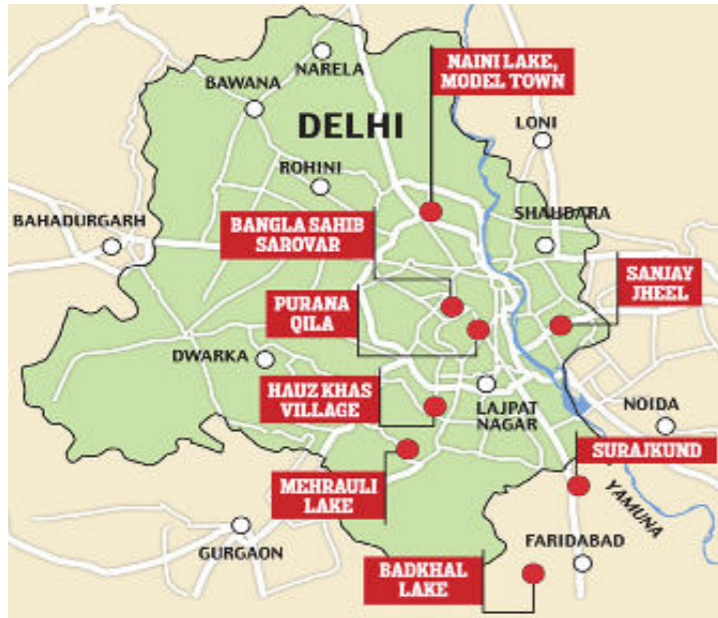
Source : Geospatial Dept.

Various water bodies in Delhi:

- 1. Village Pond/Johar:** Village ponds are mostly created water bodies having very small localized catchments for gathering rainwater. Most ponds are now in a state of neglect. Some of the ponds have been absorbed in the urban area or village abadi area and local wastewaters are being discharged into them, making them cesspools.
- 2. Lakes:** Most prominent are Bhalswa Lake (a freshwater oxbow lake on the river floodplain), Sanjay Lake (apparently a meander scour on the floodplain) in East Delhi, Najafgarh Jheel which used to be the largest lake in this area, now lies mainly on the Haryana side of the interstate border; Hauz Shamshi, Hauz Khas, Old Fort Lake.
- 3. Marshes:** Jahangirpuri Marshes are presently the largest water body in Delhi, they are now outside the floodplain embankments.
- 4. Stepwells and Baolis** are different categories of water bodies. They are created for drinking water purposes and the supply comes from ground water.



1.2 Water Bodies in Delhi



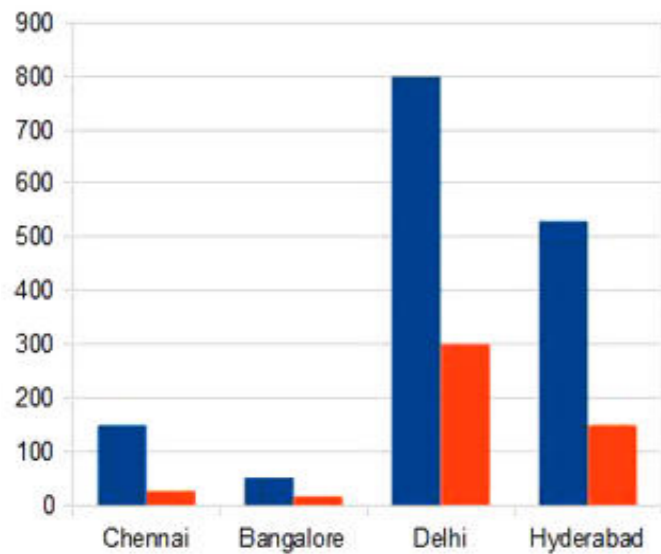
Source : DDA

Status of Water Bodies in Delhi:

Most of the water bodies in the national capital seem to be gasping for life if one goes by an official data, which claims that around 70 per cent of the 96 ponds surveyed are unfit for aquatic life.

A recent study undertaken in these ponds by the Delhi Pollution Control Committee (DPCC) across the city showed that 42 ponds were dried up. Another 24 were choked with sewage, making them unfit for the survival of aquatic life such as fish and other species.

Only 30 water bodies were found to be ecologically healthy, according to the survey. As per the sample survey of 96 ponds, inflow of sewage along with heaps of garbage have made life unfit for aquatic species in the water bodies located at Burari, Tikri Khurd, Midangarhi, Aya Nagar, Rajokri, Rangpuri, Bajitpur, Dariyapur, Dichaon Kalan, Chhawla, Khera Kalan, Bijwasan, Babarpur, Pooth Khurd and some others.



■ Number of water bodies - Earlier
■ Number of water bodies - Now

As compared to Chennai and Bangalore, the percentage of water bodies has deteriorated considerably over the years.

Source : CPCB

S.No.	Department/Authority/Autonomous body	Approximate number of water bodies in their jurisdiction
1.	Revenue Dept./Irrigation and Flood Control Dept.	476
2.	Delhi Development Authority	118
3.	Department of Archaeological Survey	15
4.	Department of Forests	12
5.	Central Public Works Department	04
6.	Public Works Department	02
7.	IIT	01
TOTAL		629

Source: DDA

1.3 Greenway Concept

Greenway

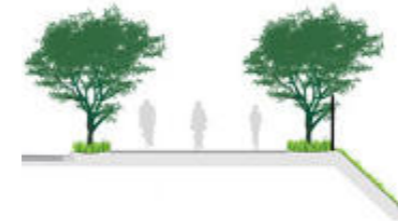
The Greenway provides thematic and scalar opportunity to engage directly with the system of forces that continuously reconfigure the city. It also offers the double opportunity to re-frame urban problems in these areas and to re-contextualize them in general.

Greenway Objectives

- Connecting neighbourhoods
- Vehicular free movement – city network
- Animating intersections

Greenway Activities

- NATURAL: Habitats (flora and fauna)
- HEALTH AND WELLNESS: Cycling, jogging, yoga, sports
- LEISURE AND RECREATION: Amphitheatre, picnic hut, food kiosks, children's play area, yoga
- CULTURE AND HERITAGE: Monuments



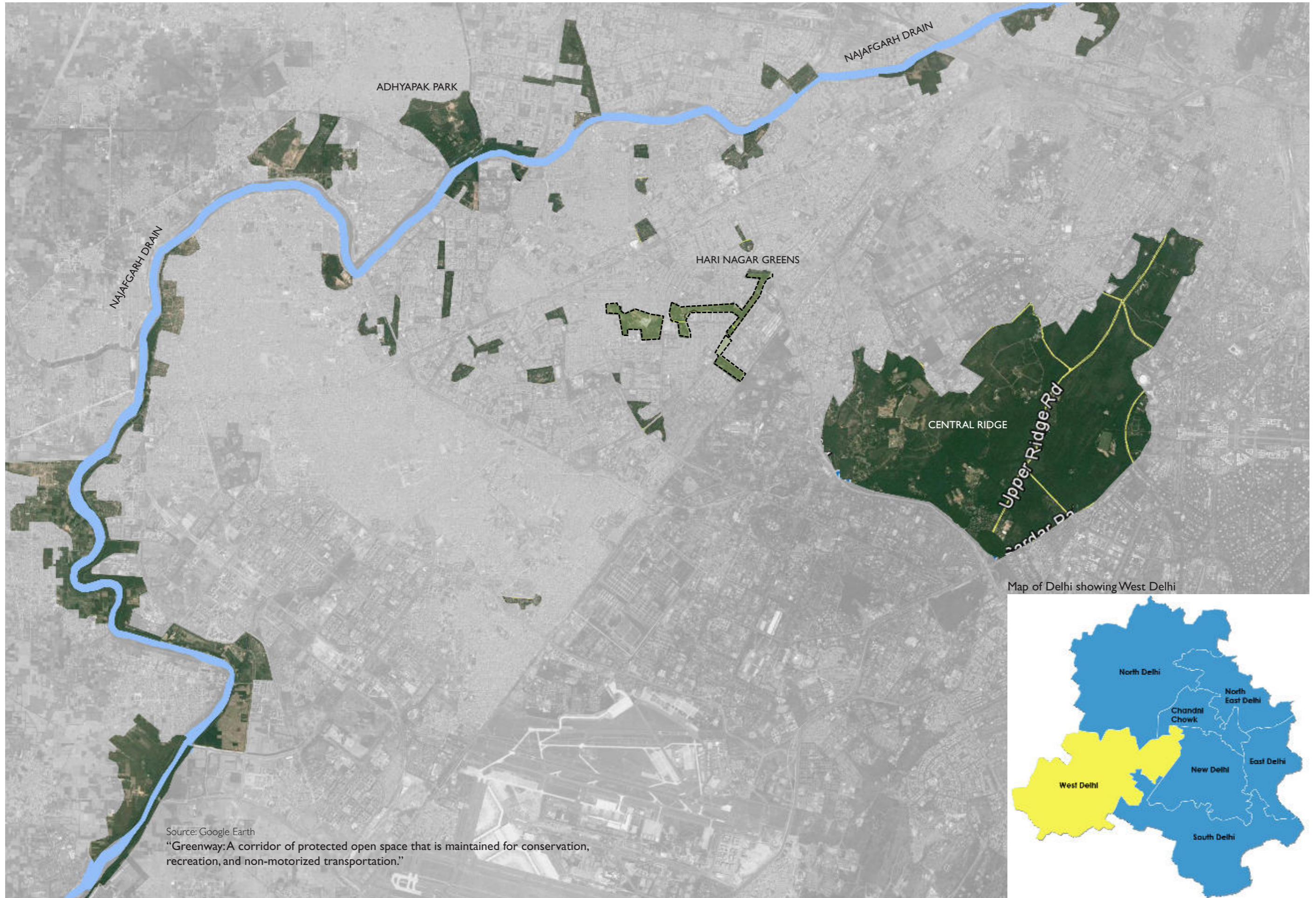
Plan showing proposed cycle and pedestrian tracks



Mapping and Site Analysis

- Significant Greens in West Delhi
- Location of Site
- Site of Hari Nagar Greens
- Existing Infrastructure
 - Area of Intervention
 - Major Landmarks
 - Existing Land Use Patterns
 - Circulation Patterns
- Site Scenario of Hari Nagar Lake Park
- Key Issues of Hari Nagar Lake Park

2.1 Significant Greens in West Delhi

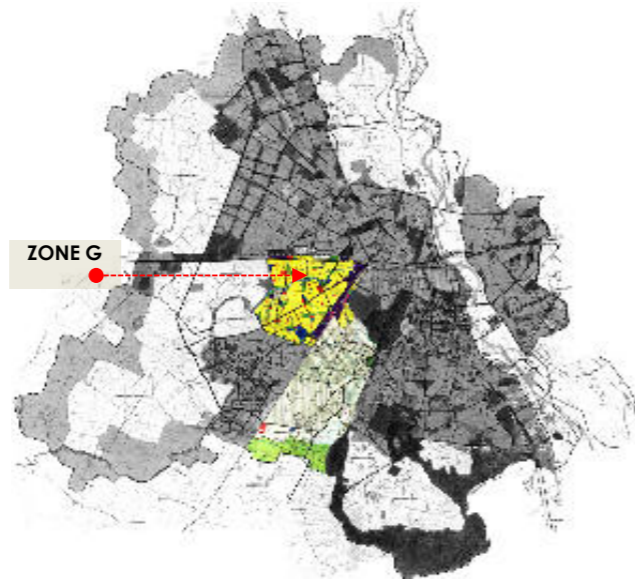


2.2 Location of Site

Hari Nagar Greens

Hari Nagar Lake or Tihar Lake is a part of a DDA district park, also popularly called Hari Nagar Lake Park which is located in West Delhi. The total area of the park is around 50 acres with a natural jheel or lake. The water of the lake has depleted and water activities like boating have been stopped since four years.

There are many other existing parks/gardens around that park in West Delhi which can be linked and can be pedestrianized/made cyclable. Some of them are maintained parks while some are in a very bad state. Some areas are just open/barren lands which are not being used and have been left as they are.



Map of Delhi

Source : DDA

Zone G in Delhi Zonal Map

Hari Nagar Lake Park is located in Zone G. Zone 'G' is located in West Delhi and covers an area of about 11,865 ha. It consists of 18 subzones (17 old as per MPD 1962 and 1 new).

The zone is surrounded by Delhi-Rohtak railway line in the North, Delhi-Rewari railway line in the South-East, Pankha road in the South-West and Agricultural Green-Belt/Rural Area in the West.

Des-cription	Name	Area
Zone	G (Called as West Delhi-I)	11865 ha
Subzone	G-8	866 ha
Total Site Area	Hari Nagar Lake Park	49.60 acres
	Other Potential Greens	110.7 acres



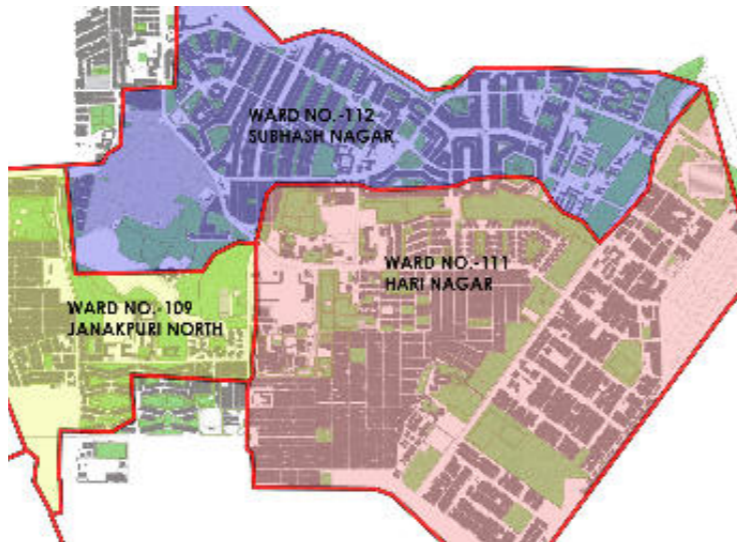
Location of Hari Nagar Greens in Zone G Map

Source : DDA

Green Belt	870 ha
Urbanizable Area	605 ha
Masterplan Green (40 in no.)	84 ha
District Park (57 in no.)	188 ha
Neighbourhood Park (50 in no.)	73.33 ha
Sports Complex (2 in no.)	10.36 ha
Protected Forest (6 in no.)	168.55 ha

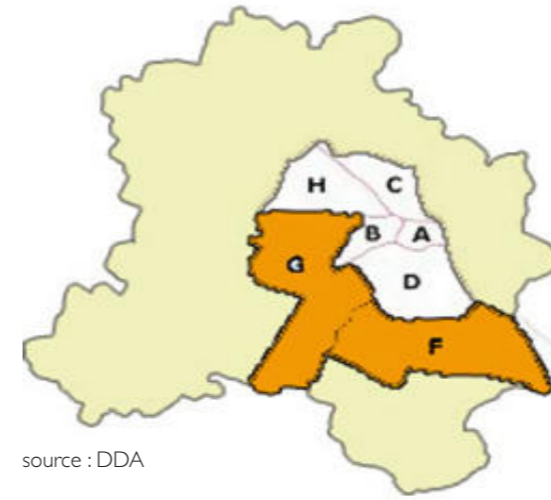
Hari Nagar Lake Park Covers:

- Ward 112- Subhash Nagar
- Ward 111- Hari Nagar
- Ward 109- Janakpuri North



MCD wards covered under Hari Nagar Greens

Source : MCD

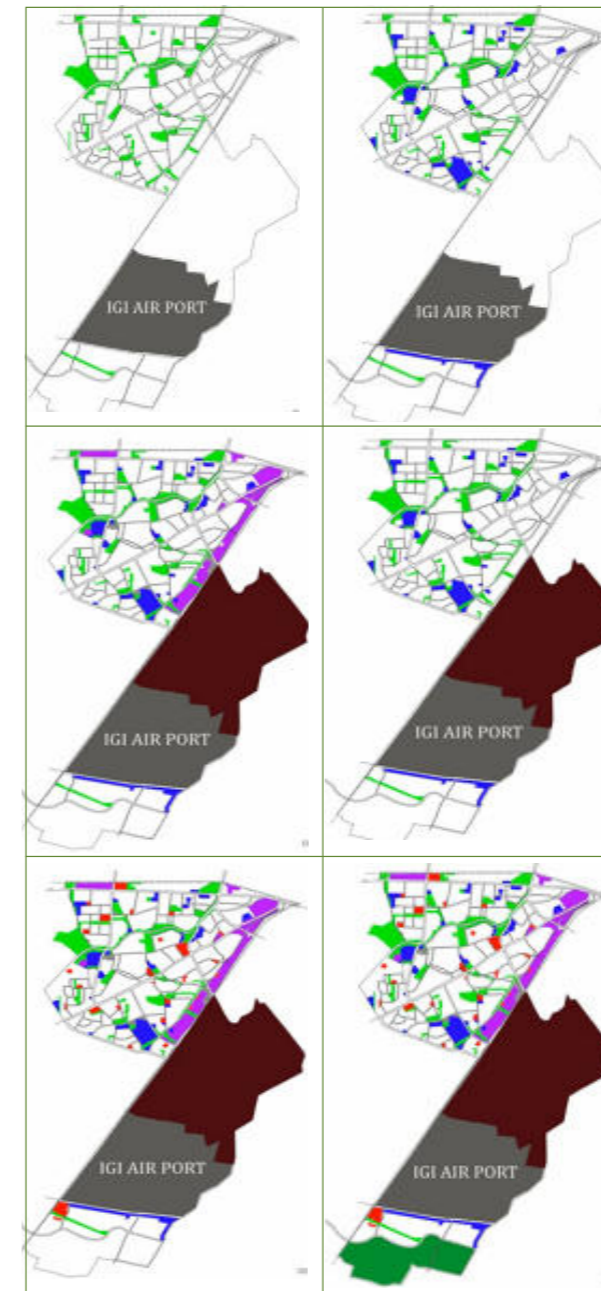


source : DDA

Map of Delhi showing Zone G and Zone F

Zone G and F in Delhi Zonal Map

	Zone G (As per MPD 2021)	Zone F (As per MPD 2021)
Zone Description	West Delhi-I	South Delhi-I
Total Area	11,865 ha	11,958 ha
Population Holding Capacity	19,55,000 persons	19,75,000 persons
City Level Density	250-300 persons/ha	250-300 persons/ha
Area under greens including recreational spaces likes parks	1451 ha	3159 ha



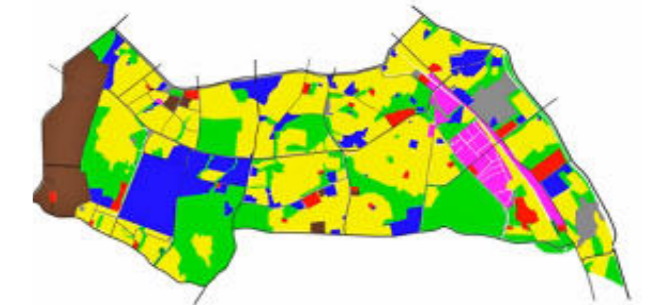
Land Use Patterns in Zone G

source : www.delhiland.in

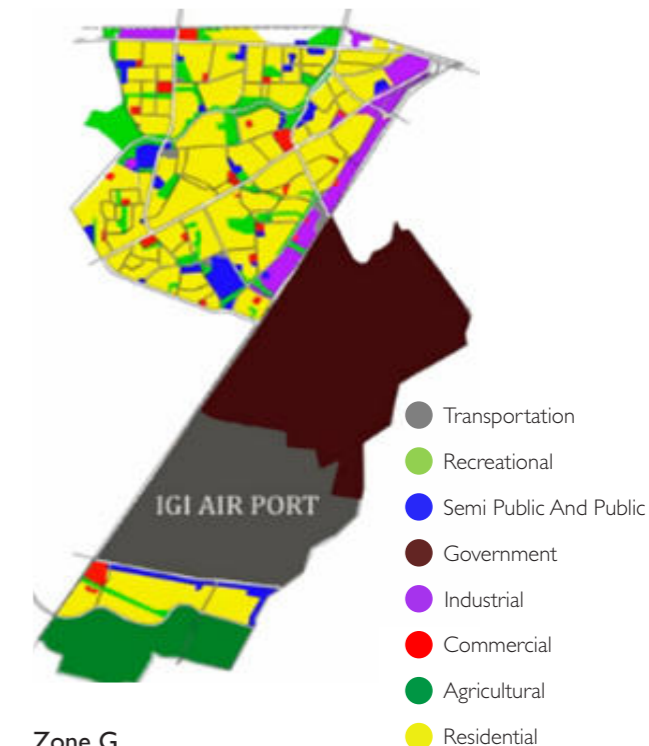
Comparative study between Zone G and F

The area under greens in Zone F is almost double the area that exists in Zone G

source : www.delhiland.in



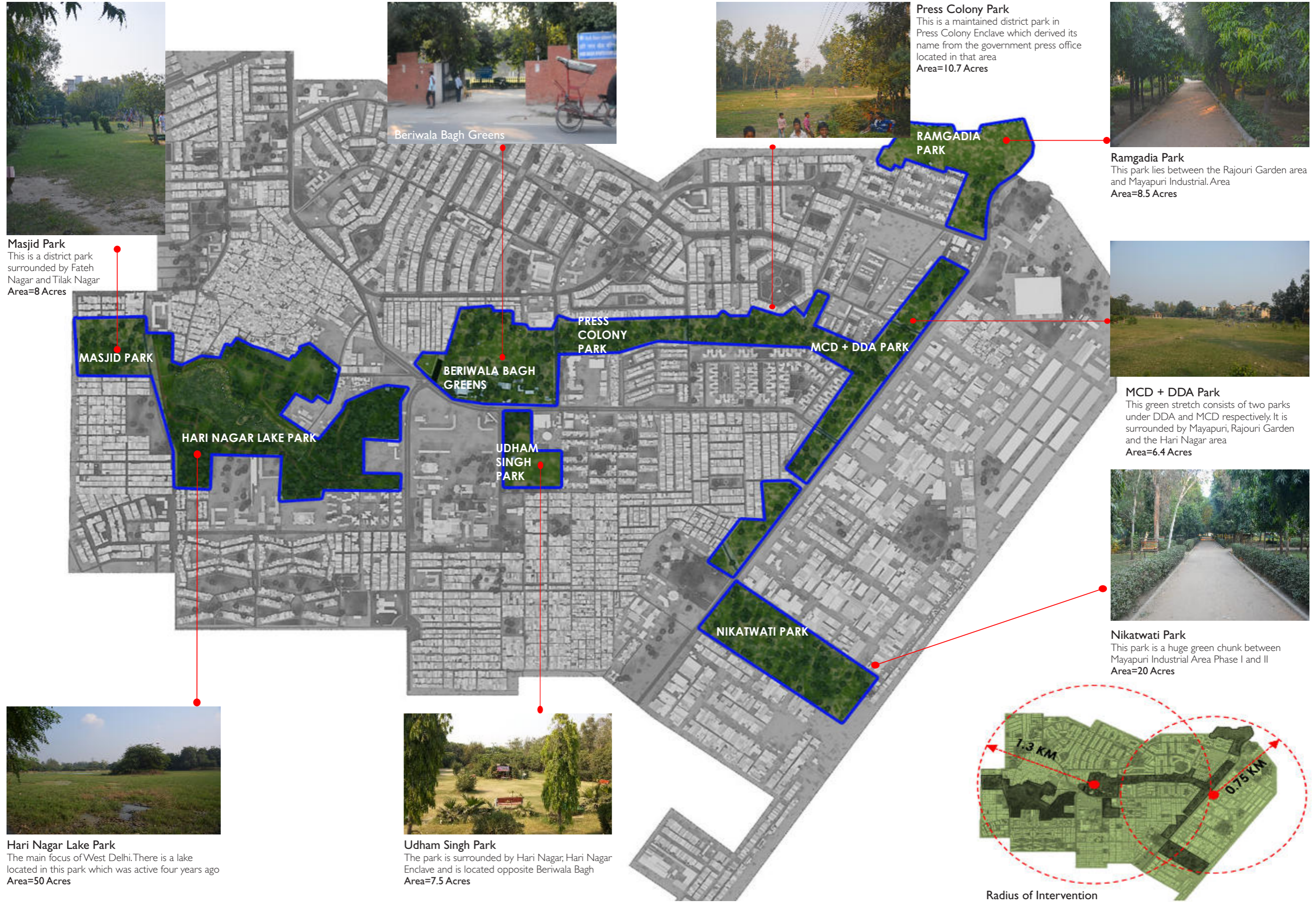
Zone F



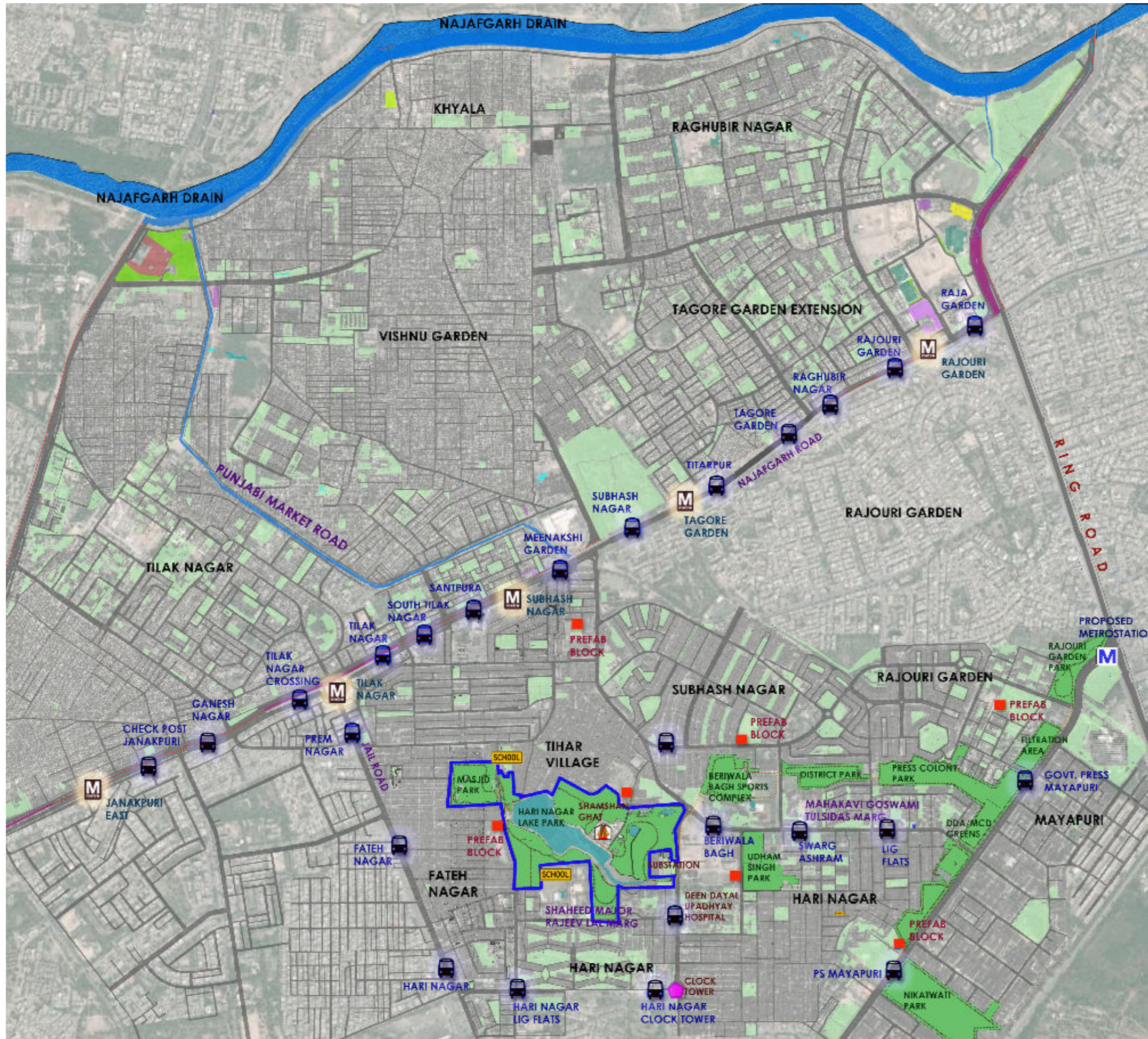
Zone G

- Transportation
- Recreational
- Semi Public And Public
- Government
- Industrial
- Commercial
- Agricultural
- Residential

2.3 Site of Hari Nagar Greens



2.4 Existing Infrastructure



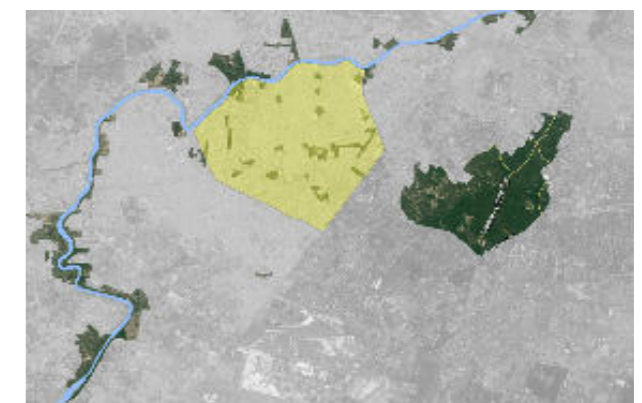
Houses in Hari Nagar



Shopping complex in Tilak Nagar

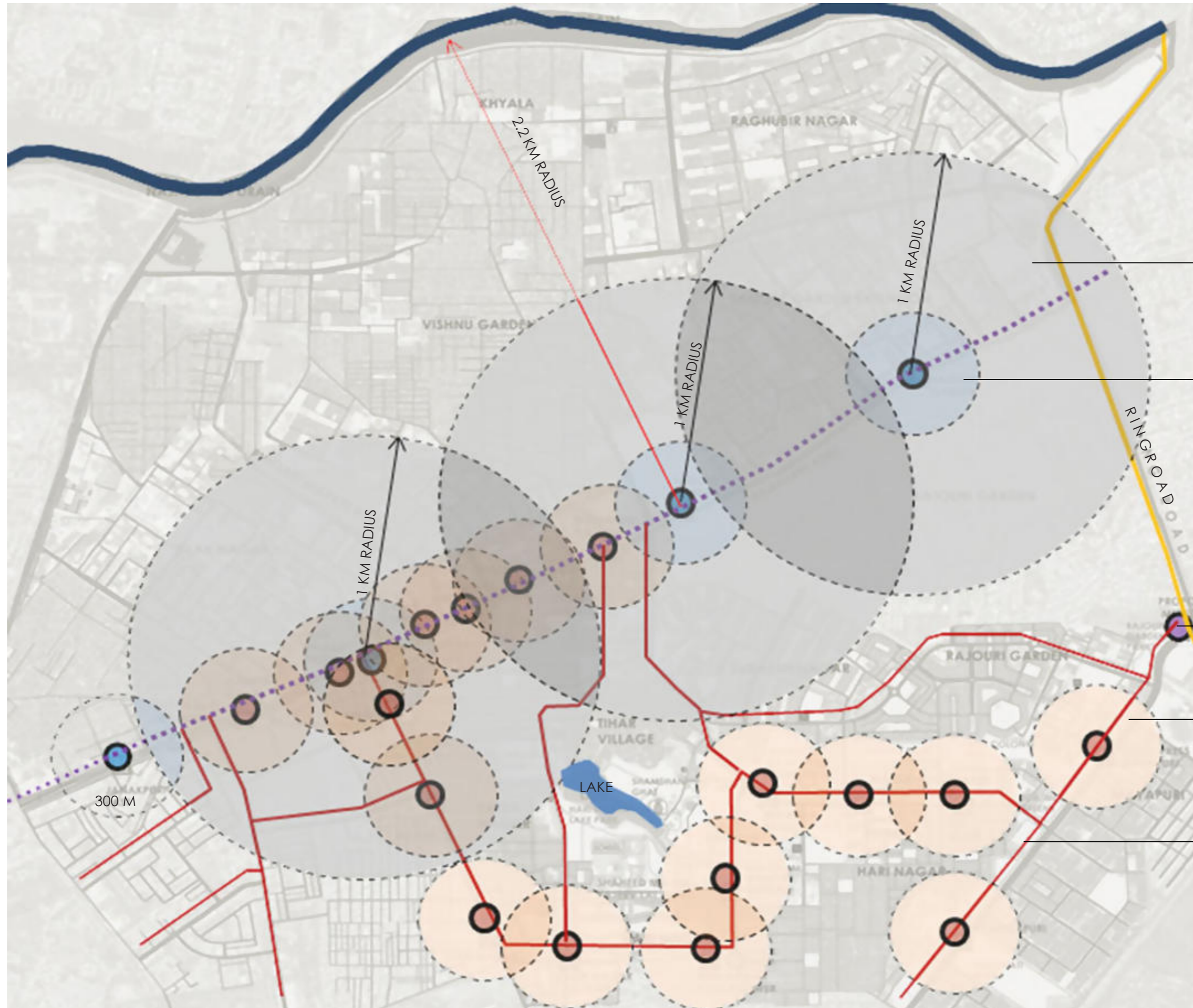


Schools in Hari Nagar and Janakpuri



Key Plan

2.4.1 Area of Intervention



Area of Intervention:
1 Kilometre radius from existing Metro station

Area of Intervention:
300-Metre radius from existing Metro station

Proposed Metro Station:
Rajouri Garden

Area of Intervention:
300-Metre radius from existing bus stand

Circulation Networks
Between different areas of intervention

2.4.2 Major Landmarks



Nearby Local Market
Central Market located in Tilak Nagar Area



Bus Stops:
Janakpuri, Beriwalla Bagh, Hari Nagar, Deen Dayal Upadhyay Hospital

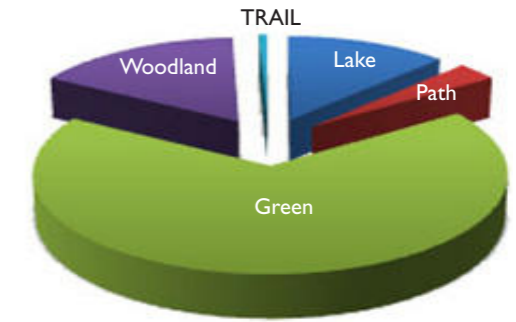


Metro Stations:
Tagore Garden, Tilak Nagar, Subhash Nagar, Janakpuri East, Janakpuri West

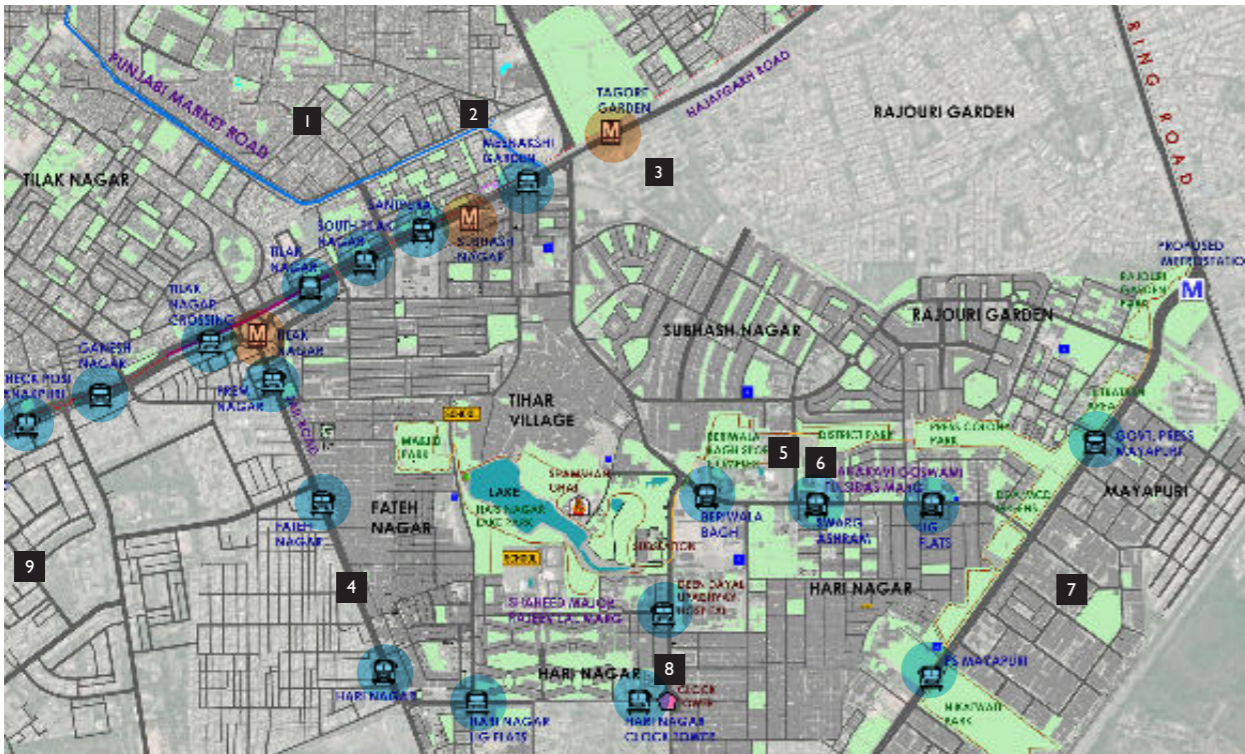


Roads:
Shaheed Kulwant Singh Marg
Shaheed Mangal Pandey Marg
Mahakavi Goswami Tulsidas Marg

Area Statement for Hari Nagar Lake Park:



Total Area of Scheme = 49.60 Acres
Area Under Lake = 5.89 acres
Area Under Path = 1.50 acres
Area Under Green = 32.00 acres
Area Under Woodland = 7.60 acres
Area Under Trail = 0.3 acres



Schools and Colleges:
Sarvodaya Vidhyalaya
Government Senior Secondary School
Guru Nanak Public School
Guru Tegh Bahadur Institute of Technology

Timeline Showing Depletion of Lake:

Source : Google Earth



2000



2004



Nearby District Centres
A. Peeragarhi (Rohtak Road G-17)
B. Paschim Vihar (G-17)
C. Janakpuri (G-13)
D. Raja Garden (G-9)



Nearest Landmark:
Hari Nagar Clock Tower is located at a busy junction in Hari Nagar Area



Industrial Areas:
Mayapuri Industrial Area Phase I
Mayapuri Industrial Area Phase II



2008



2012

The lake has depleted considerably and the ground water level has reduced due to deep boring and low rainfall in the last four years

2.4.3 Existing Land Use Patterns



Tihar Village
Tihar Village is one of the oldest urban villages in Delhi. It is also known as Kachcha Tihar or Tihar Gaon. Once it was divided into three parts: Tihar Village, Tihar 1 (Subhash Nagar) and Tihar 2 (Ashok Nagar).



Subhash Nagar
Subhash Nagar is basically a refugee colony inhabited by people who migrated from West Punjab, Sindh and Northwest Frontier Province, but now people from Uttarakhand, Rajasthan, West Bengal, East Punjab and South India also live here.

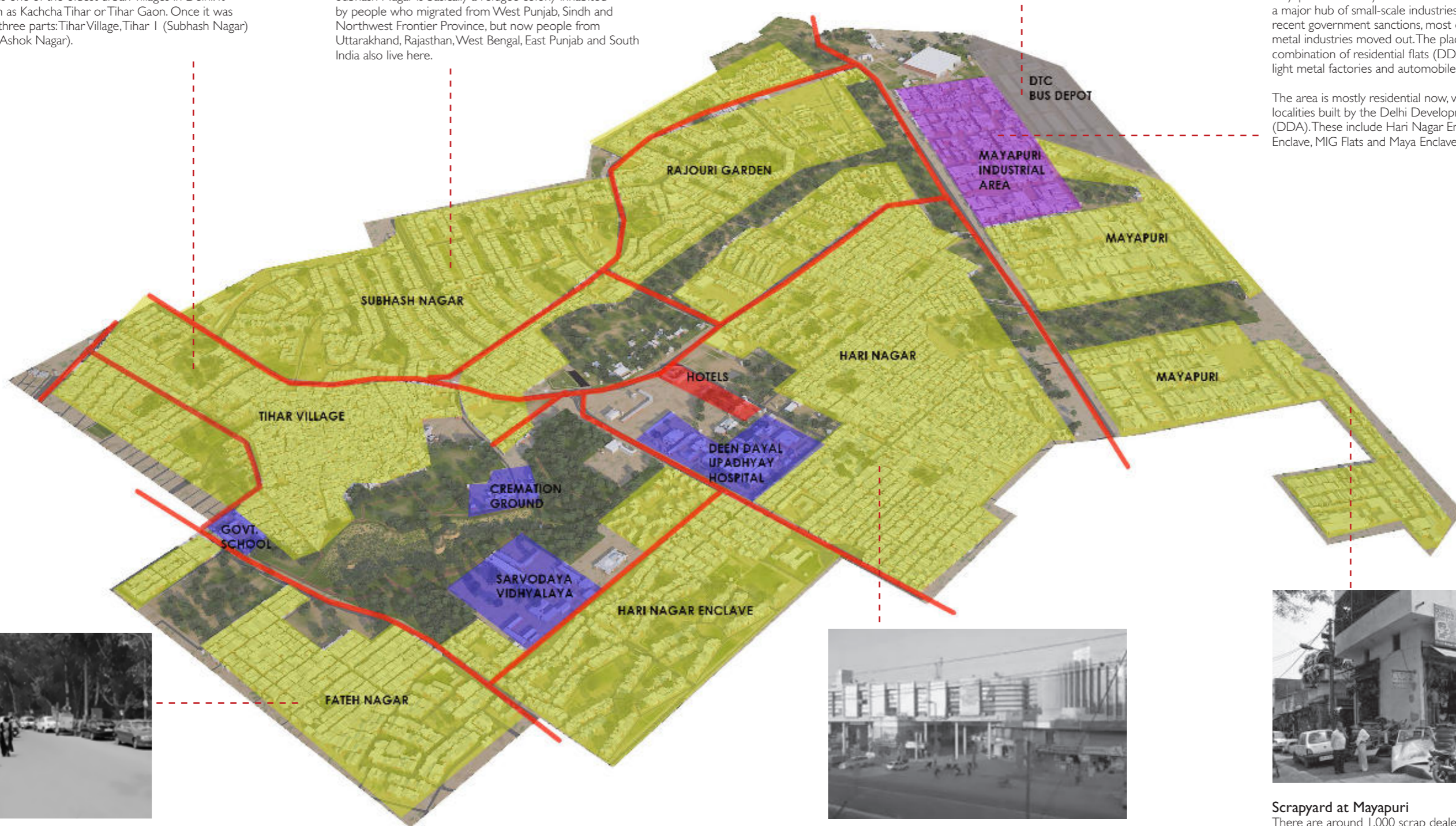


Delhi Transport Corporation (DTC) Depot



Mayapuri Industrial Area
Mayapuri is a locality in West Delhi. It used to be a major hub of small-scale industries, but following recent government sanctions, most of the heavy metal industries moved out. The place is now a combination of residential flats (DDA and private), light metal factories and automobile service stations.

The area is mostly residential now, with major localities built by the Delhi Development Authority (DDA). These include Hari Nagar Enclave, Vikrant Enclave, MIG Flats and Maya Enclave.



Fateh Nagar
Fateh Nagar is mainly a Sikh and Punjabi Hindu colony in West Delhi behind Jail Road. The Furniture Market is one of the landmarks of this colony.



Hari Nagar Enclave
Hari Nagar is part of the West Delhi Lok Sabha constituency along with nine other Vidhan Sabha segments, namely, Uttam Nagar, Rajouri Garden, Madipur, Tilak Nagar, Janakpuri, Vikaspuri, Dwarka, Matiala and Najafgarh.



Scrapyard at Mayapuri
There are around 1,000 scrap dealers in the area who deal in smaller margins. Such dealers buy scrap in auctions and sell iron to the firms who use such metals in their manufacturing units. They even sell it to the companies who use such iron in making bars widely used in the real estate sector.

2.4.4 Circulation Patterns



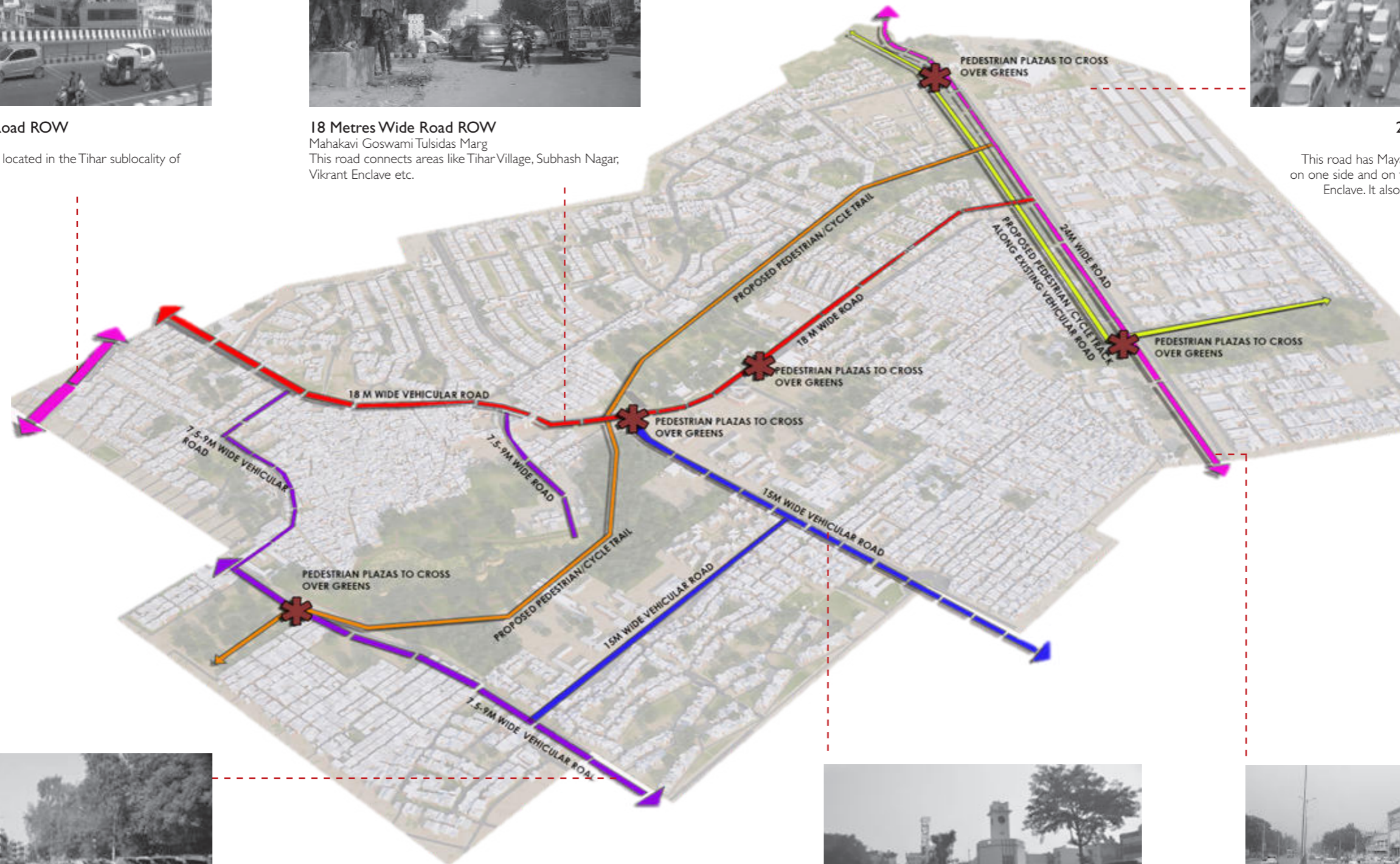
24 Metres Wide Road ROW
 Shivaji Marg Flyover
 Shivaji Marg Flyover is located in the Tihar sublocality of West Delhi.



18 Metres Wide Road ROW
 Mahakavi Goswami Tulsidas Marg
 This road connects areas like Tihar Village, Subhash Nagar, Vikrant Enclave etc.



24 Metres Wide Road ROW
 Satguru Ram Singh Marg
 This road has Mayapuri Industrial Area Phase I and II on one side and on the other side there is Hari Nagar Enclave. It also has many schools and institutions



9 Metres Wide Road ROW
 Shaheed Kulwant Singh Marg
 This road is the main road which leads to Hari Nagar Lake Park. On the other side, is Fateh Nagar and Masjid Park, a maintained DDA park.

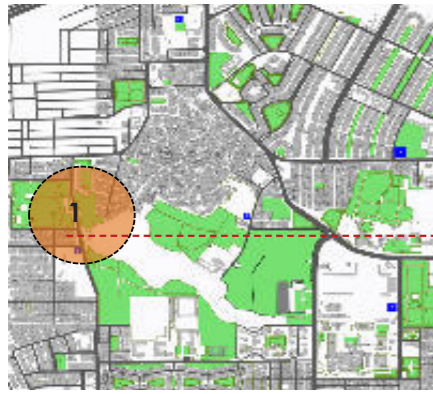


15 Metres Wide Road ROW
 Shaheed Mangal Pandey Marg
 This road has Hari Nagar Lake Park or Tihar Park on one side and on the other side it has Hari Nagar Enclave. The main landmark of this road is Hari Nagar Clock Tower.



24 Metres Wide Road ROW
 Satguru Ram Singh Marg
 This road has the Green line Metro station called Satguru Ram Singh Metro station. This Metro station is 11 km from New Delhi Metro station.

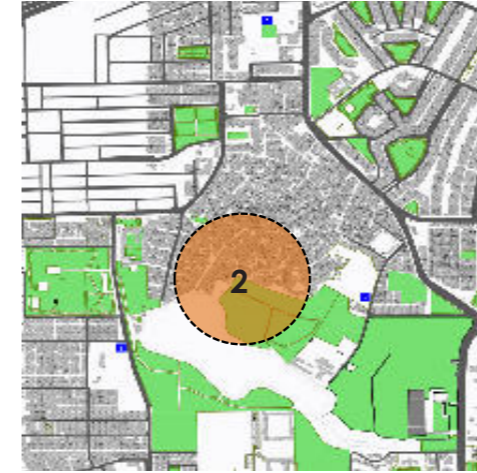
2.5 Site Scenario of Hari Nagar Lake Park



Plan Showing Hari Nagar Greens



Key Plan



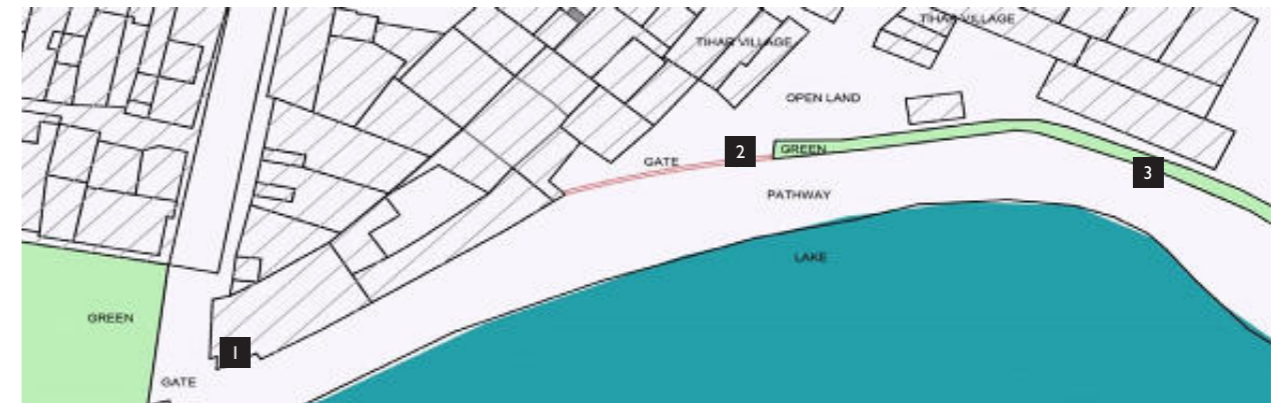
Plan Showing Hari Nagar Greens



Key Plan



Detail Plan Showing Entrance of Hari Nagar Lake Park



Detail Plan Showing Entrance of Hari Nagar Lake Park



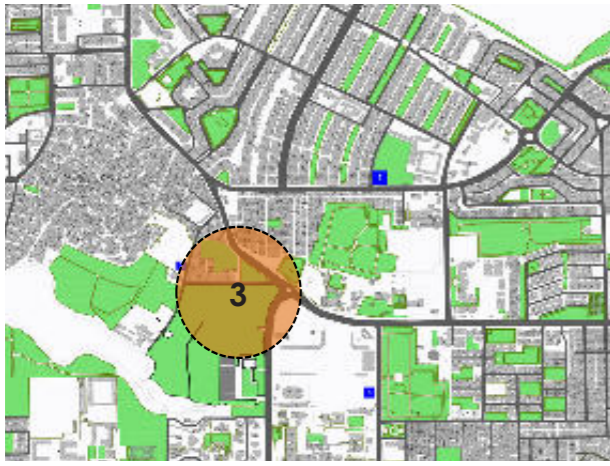
Points:

1. The image shows the approach road of 9 m Right of Way, which is also called Shaheed Kulwant Singh Marg. The road connects Ashok Nagar Area to Hari Nagar Area. It has on one side Masjid Park (maintained DDA park) and local shops. On the other side is Hari Nagar Lake Park.
2. One side of the road is now used as a dumpyard at certain areas wherever there are barren lands.
3. One side of the road is also being used as haphazard rickshaw and car parking.

Points:

1. Shops have also encroached upon the road pushing the parked vehicles on to the main road.
2. The existing trees are dense, restricting direct sunlight to the roads.
3. There is no path for pedestrians or cyclists to move along and they have to walk on the road.





Plan Showing Hari Nagar Greens



Key Plan



Detail Site Plan
Showing Hari Nagar Greens



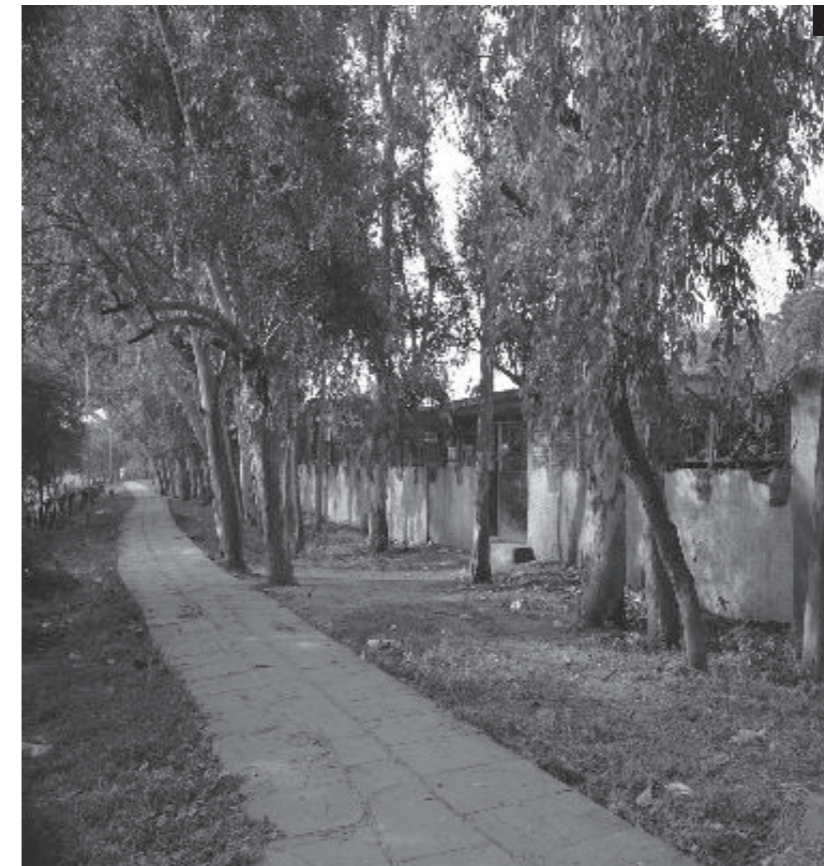
Detail Plan Showing areas within Hari Nagar Lake Park like the unmaintained children's play area and pathways in bad shape



Points:

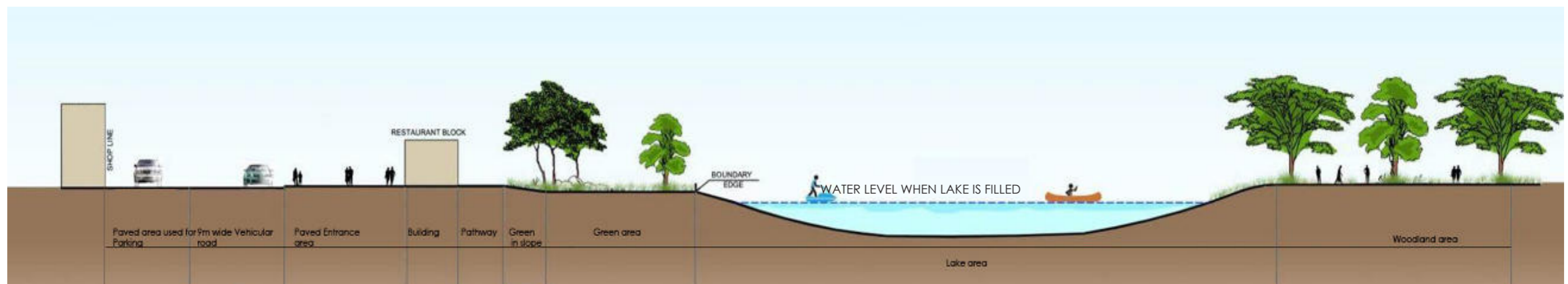
1. People from the Tihar Village and nearby residential colonies cross over the Lake Park to go to the crematorium.
2. People indulge in illegal activities making this an active zone for anti-social elements.
3. Park has become a dumpyard for some people.
4. People use the park for grazing of cattle.
5. Low boundary wall gives easy access to outsiders to trespass into the park.





Inferences:

- Restaurant/Boating Club Building: Both these blocks are inactive and are not being used. The paving of the common front patio is too hard. Four years ago, these were all active and used to draw huge numbers of visitors. The canteen was a happening place for people from all walks of life.
- Lake Conditions: Since the last four years the lake has been in bad shape and has dried up. The source of water, whether natural (rainwater) or artificial (borewell), is also rarely available.



Detail of existing section showing water level of Lake Hari Nagar Greens



2.6 Key Issues of Hari Nagar Lake Park

- **Lake Conditions:** Since the last four years the lake has been in bad shape and has dried up. The source of water, whether natural (rainwater) or artificial (borewell), is also rarely available.

- **Restaurant/Boating Club Building:** Both these blocks are inactive and are not being used. The paving of the common front patio is too hard. Four years ago, these were all active and used to draw huge numbers of visitors. The canteen was a happening place for people from all walks of life.

- **Defined Entrances:** Also called Celebrated Entrances, these have been properly defined with entrance gates that cater to the surrounding planned colonies.

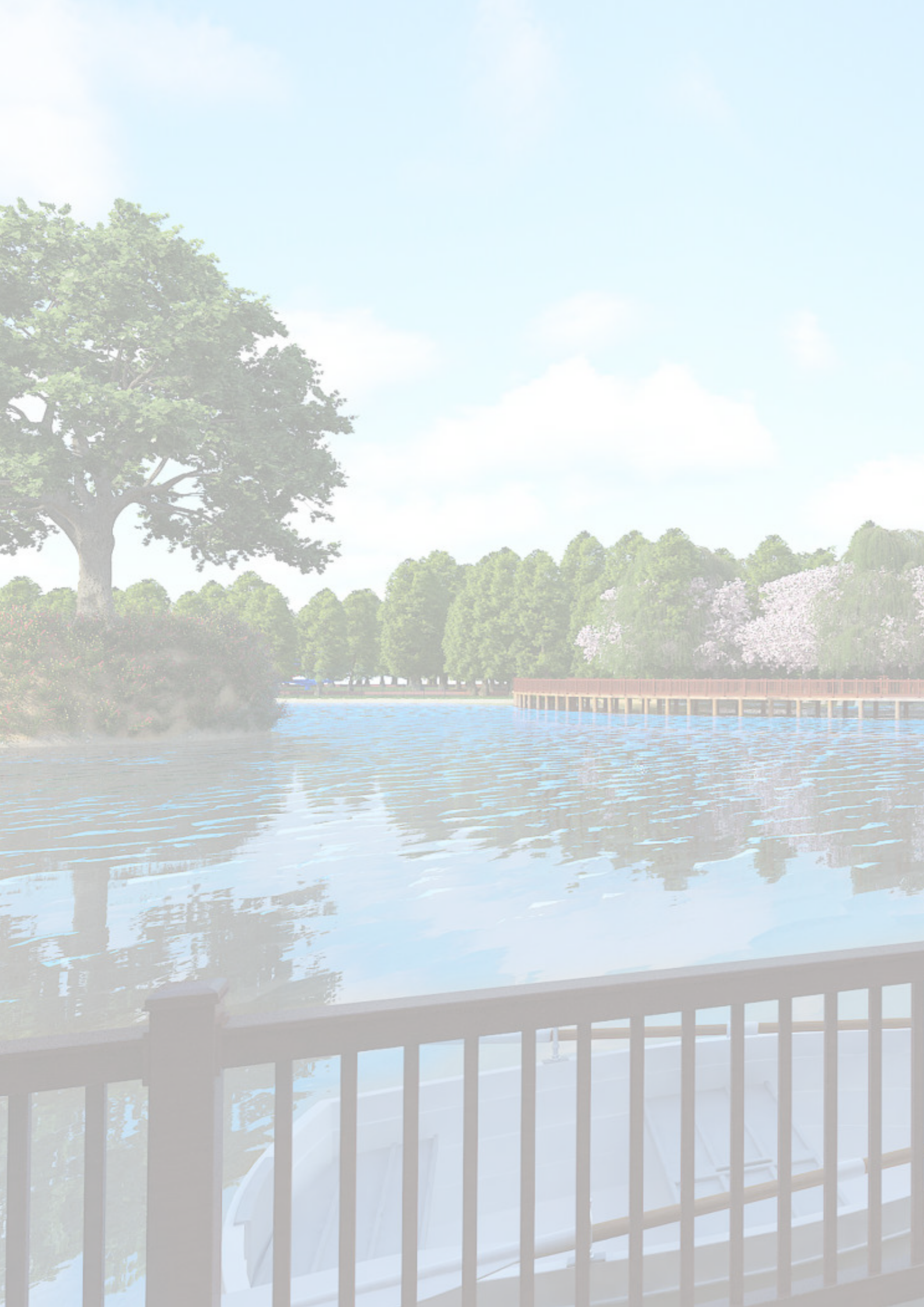
- **Pathways:** In this area pathways are not maintained and the existing landscape is in bad shape. Some areas have no pathways at all.



- **Boundary Wall** is not maintained properly. It is in bad condition in some areas near the urban village

- **Some of the Gates** are in very bad shape with security cabins or guard rooms to restrict people from entering

- **The Village People** have made too many access points to the Lake Park making it even more unsafe. People have encroached into the park and it has become a grazing ground for cattle



Design Proposal

- Design Approach
- Urban Infrastructure Regeneration
 - Proposed Urban Connections
 - Landscape Design Concept
 - Proposal for Prefab Block
- Project 2: Recharge of Lake
 - Strategy
 - Step One: DEWATS System
 - Step One: Grading and Drainage Patterns
 - Step Two: Rainwater Harvesting
 - Water Bench
 - Water Calculations
- Rejuvenation of Greens
 - Location of Nodes in Hari Nagar Greens
 - Node 1: Analysis and Proposal
 - Node 2: Analysis and Proposal
 - Node 3: Analysis and Proposal

3.1 Design Approach



Activate Edges of Existing Greens

To make the Greens more inviting and active through entrance plazas

Recharge the Lake

To encourage boating facilities and other lake activities

Activate Greens

Include activities like children's play area, restaurant, botanical garden etc.

Activate Nodes

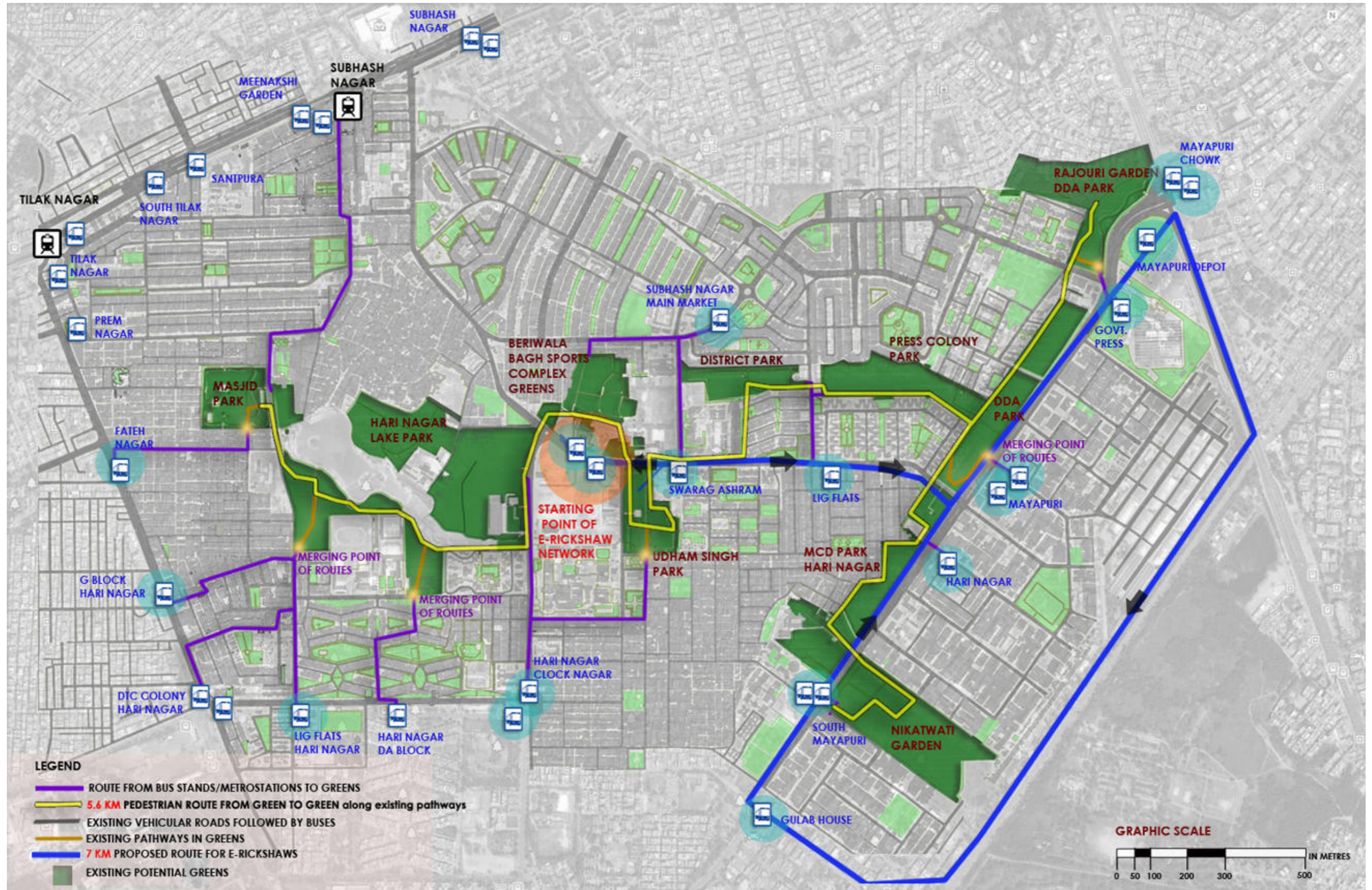
Invite people from one Green to another

Pedestrian-Friendly and Cyclable

To connect the Greens through pathways and cycle tracks

3.2 Project 1: Urban Infrastructure Regeneration

3.2.1 Proposed Urban Connections



Regeneration-Integration of Transport System (like Metro, bus, e-rickshaw networks) and Urban Greens

3.2.2 Landscape Design Concept

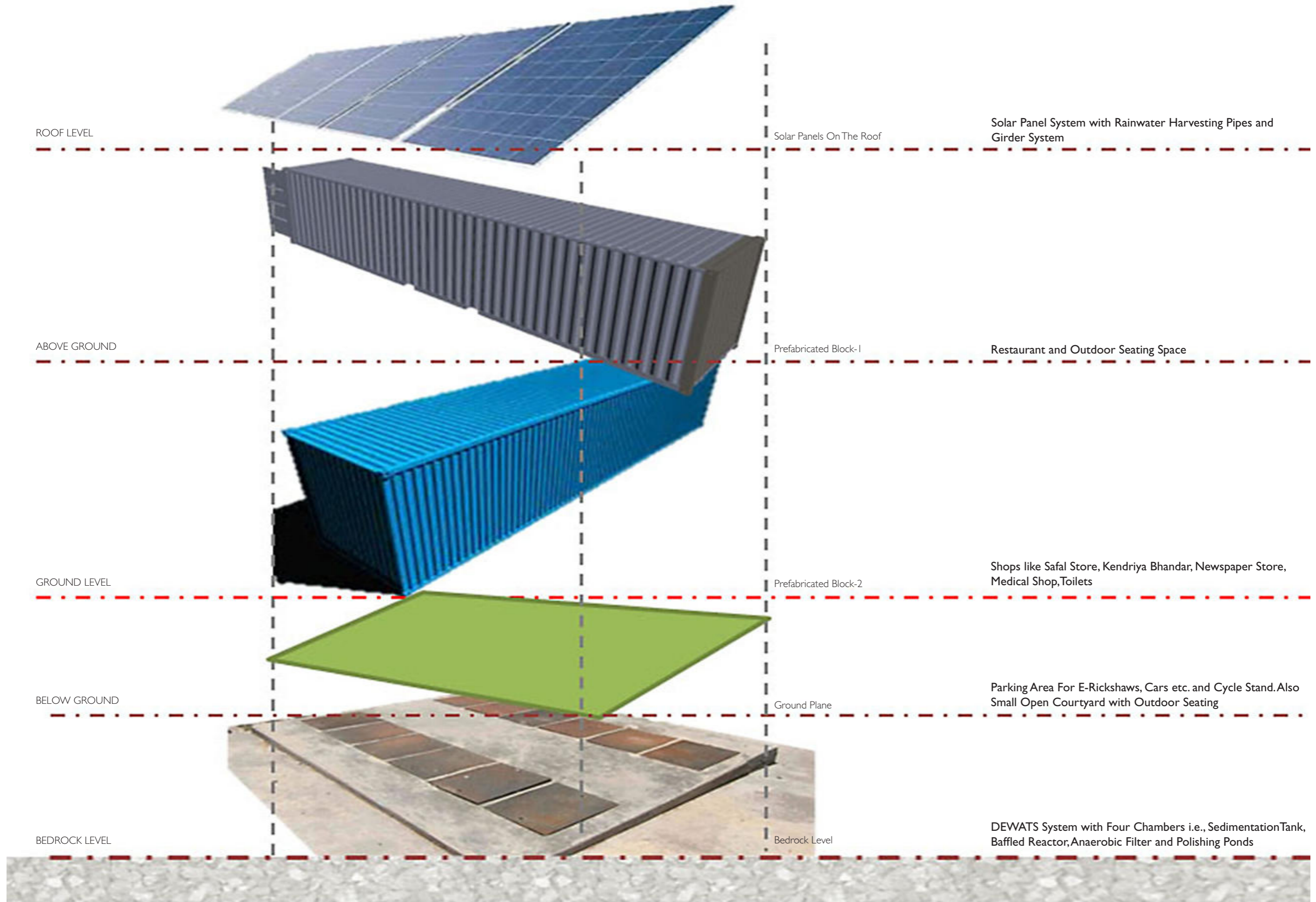


3.2.3 Proposal for Prefab Block

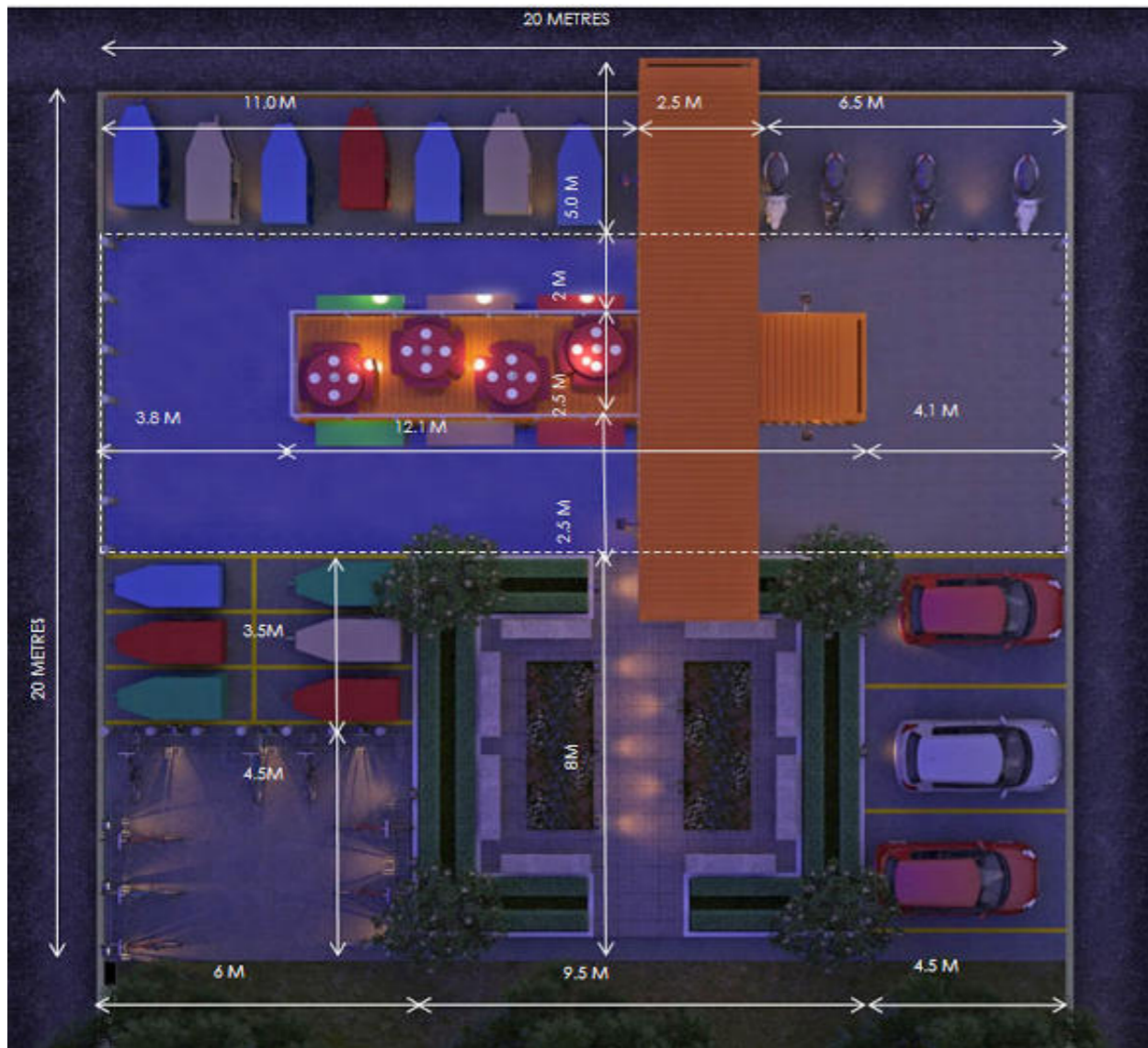


Plan Showing Location of Proposed Prefab Block

Structure of Lightweight Prefab Block in Different Levels



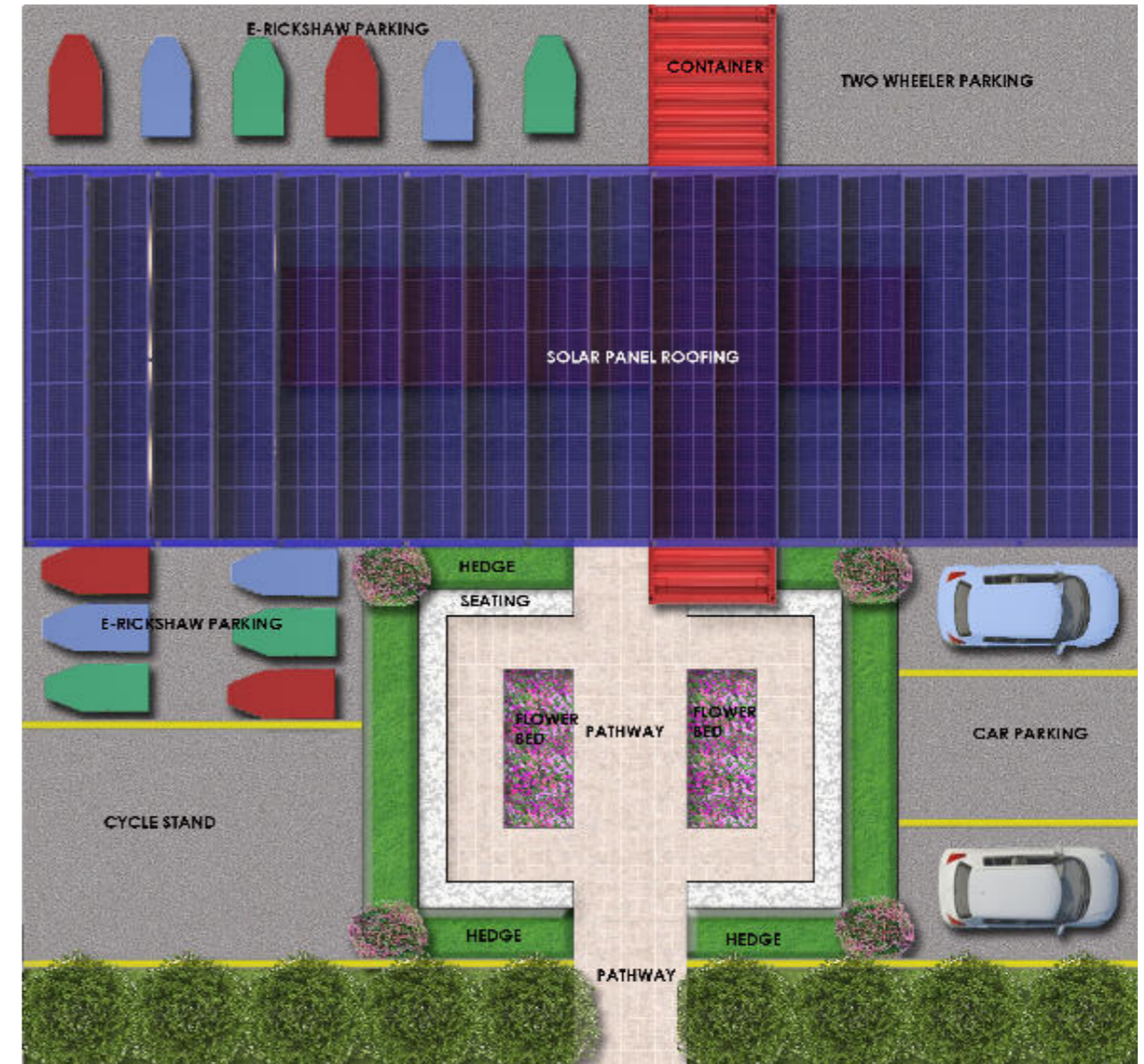
Prefab Block System with DEWATS System placed at different locations on the site.
The Prefabricated block acts as a recreational hub for the neighbouring areas



Dimensions of Light Weight Prefab Block's Structure at Ground and Roof Level



Existing Site before proposed prefab block



Plan of Prefab Block System



Site after Proposal



PARKING ON REAR SIDE

SOLAR PANEL ROOF

RAINWATER PIPE: ROOF WATER TO UNDERGROUND LEVEL

CONTAINER UNIT (40'X8'X8'): RESTAURANT AND OPEN SEATING

CAR PARKING

CONTAINER UNIT: SHOPS LIKE SAFAL STORE, KENDRIYA BHANDAR, NEWSPAPER STORE, MEDICAL SHOP, TOILETS

LANDSCAPE COURTYARD WITH SEATING AS A SPILL OUT SPACE

COUNTER WITH SEATING FOR EATING/SITTING/READING

PARKING: E-RICKSHAW PARKING AND CYCLE PARKING



Front view showing the landscaped courtyard and main pathway leading to the kiosk



Side view showing front of the kiosk with e-rickshaw parking and cycle stand



Side view showing rear two-wheeler/e-rickshaw parking behind the kiosk

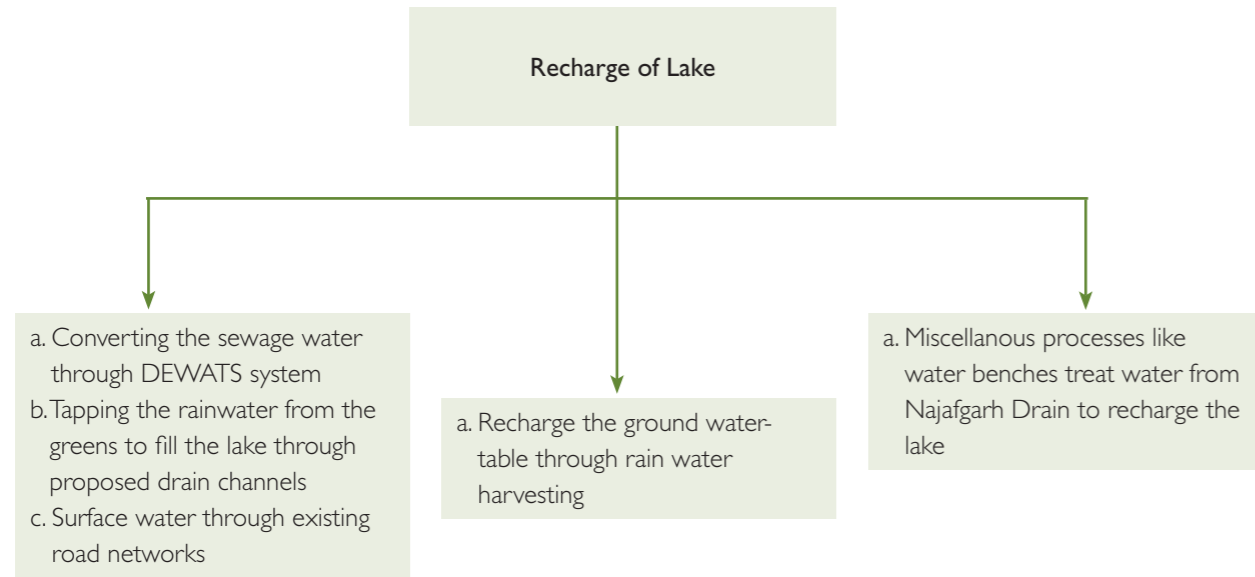


Side view showing detailing of kiosk with different counters

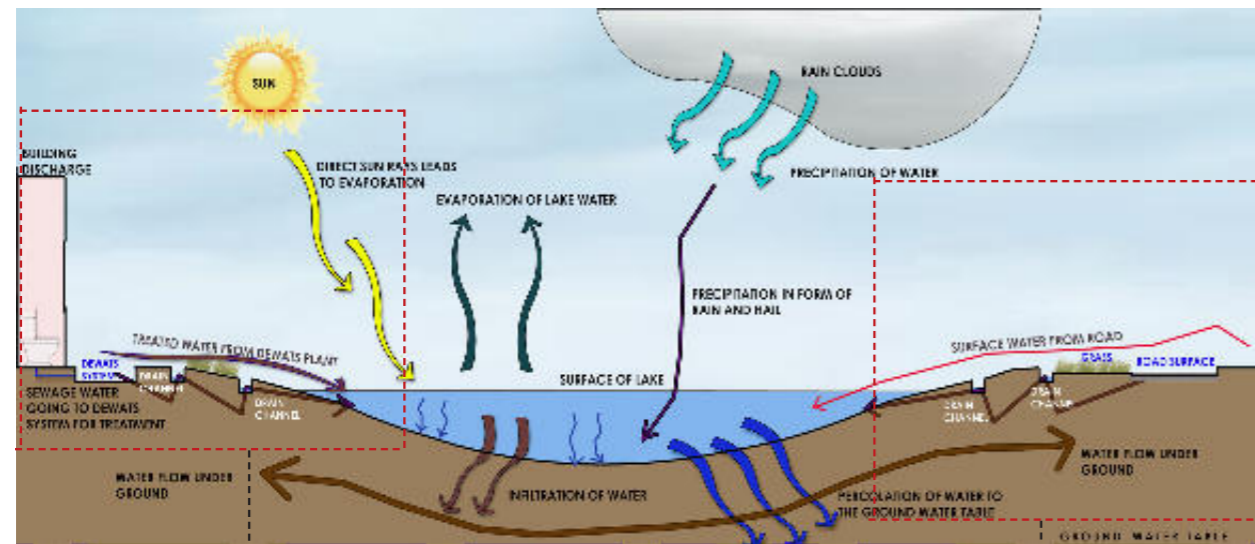
3.3 Project 2: Recharge of Lake

3.3.1 Strategy

Flowchart showing steps to recharge the lake:



Typical Section showing steps for the Recharge of Lake



Q1= Quantity of Sewage Water which is treated through DEWATS SYSTEM and filled into the Lake

Q2= Quantity of water from Greens is being brought to the Lake through the drain channel

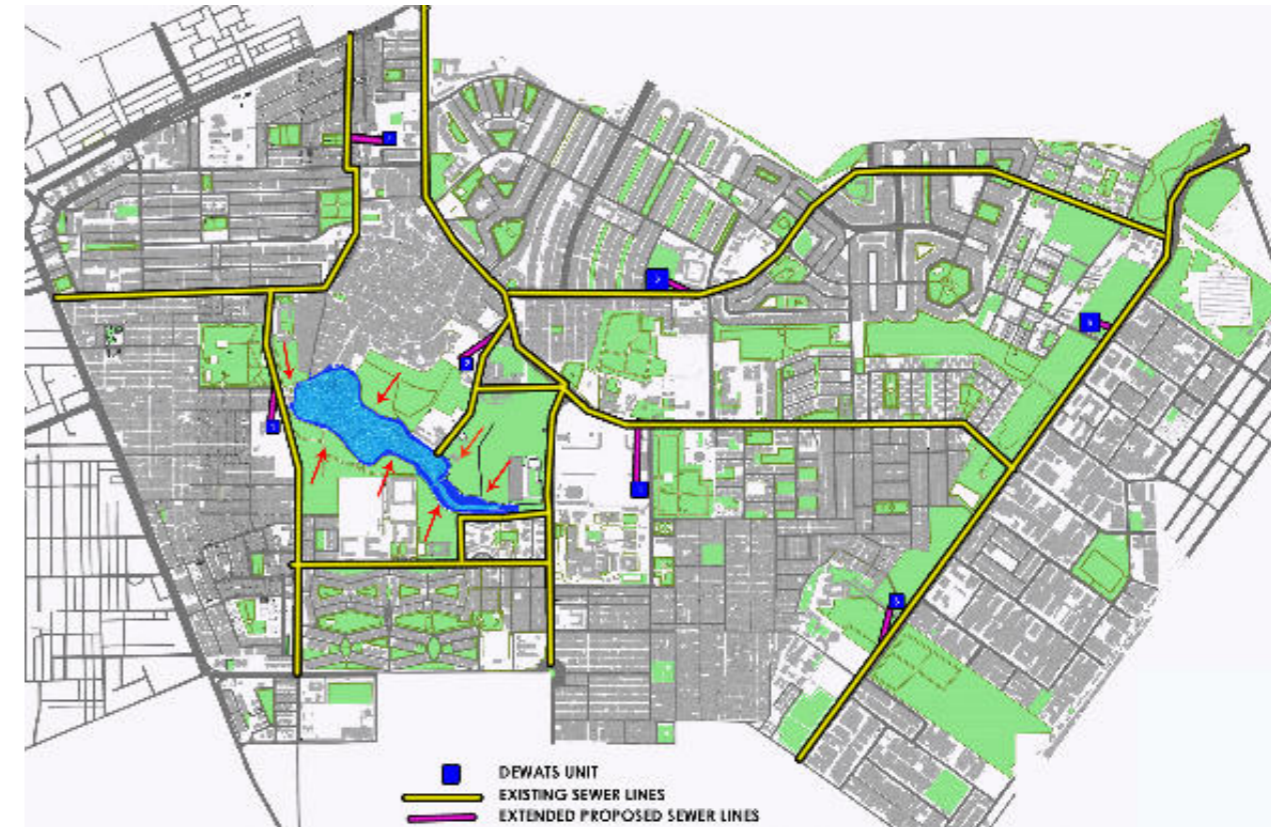
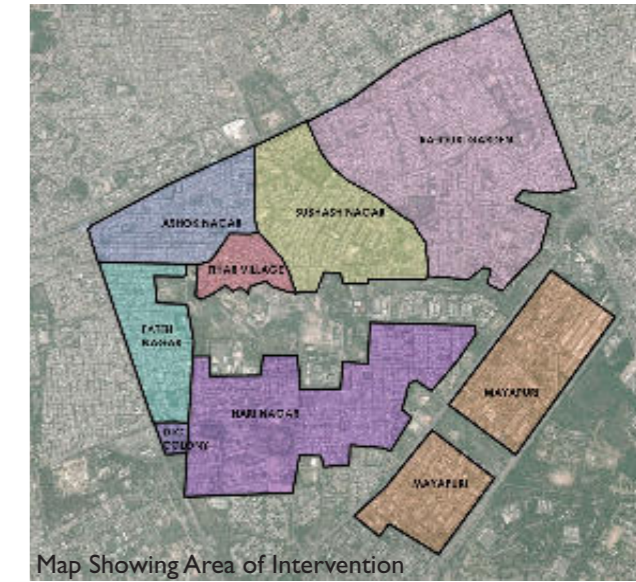
TOTAL QUANTITY(Q)= Q1+Q2 > VOLUME OF THE LAKE

Plumbing Consultants: Proion Consultants

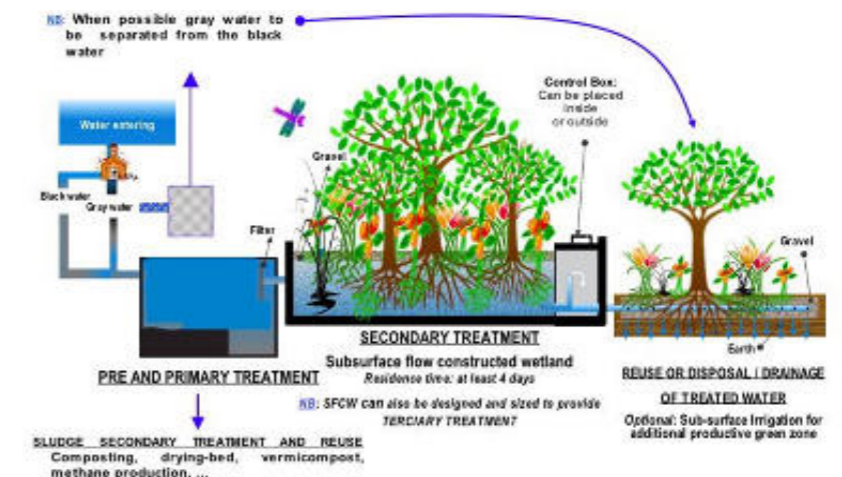
Step One

The Area of Intervention is the area that surrounds Hari Nagar Lake Park and includes Subhash Nagar, Fateh Nagar, Ashok Nagar, Tihar Village, Hari Nagar, Mayapuri and Rajouri Garden.

The existing sewage water flowing along the existing roads will be treated in DEWATS plants at various places located in open/barren lands. This treated water will then be brought through drain channels and extended along proposed lines to fill the Lake.



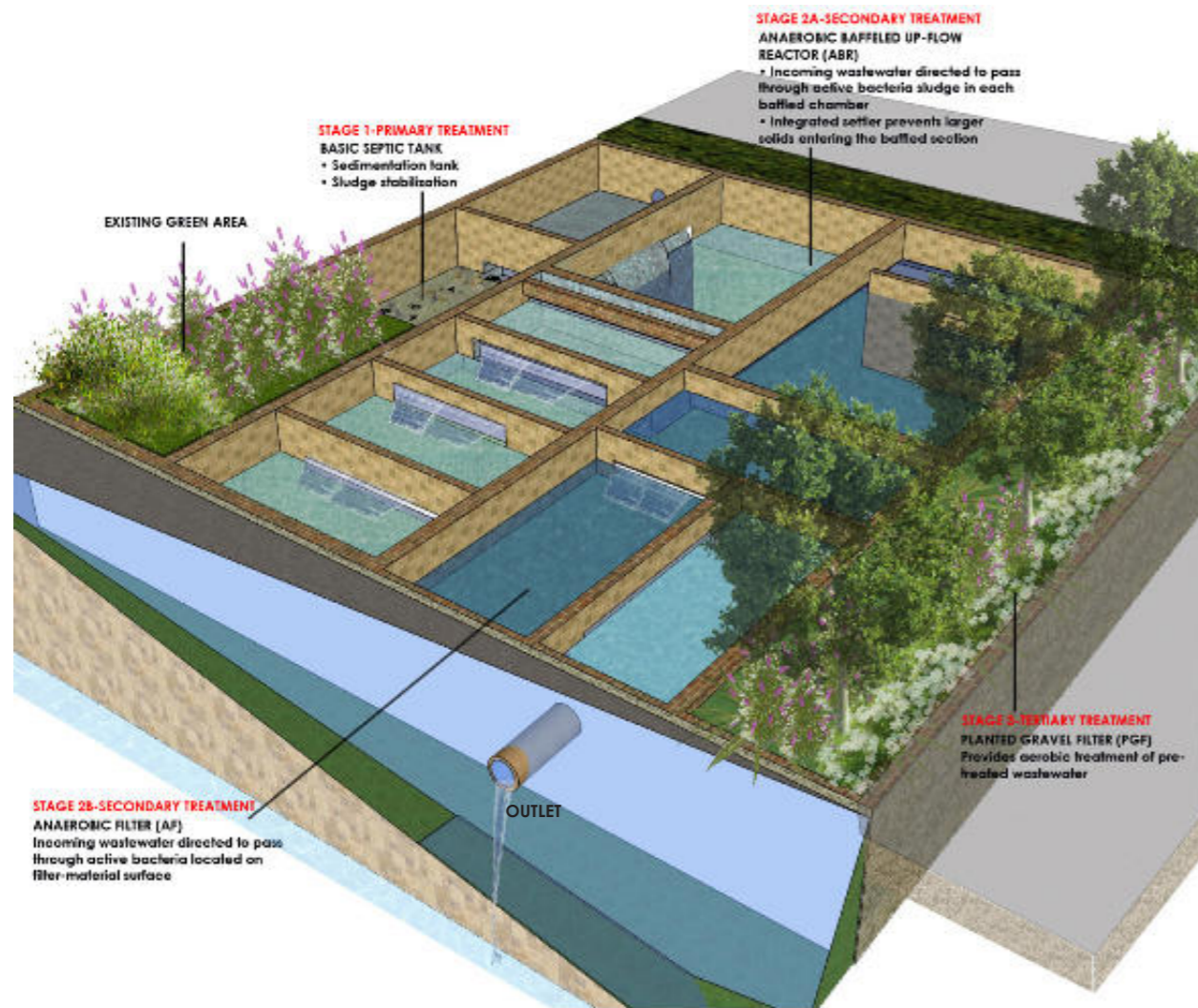
Sewage Line Network in Hari Nagar Greens



Sewage Treatment Plant Showing Various Processes

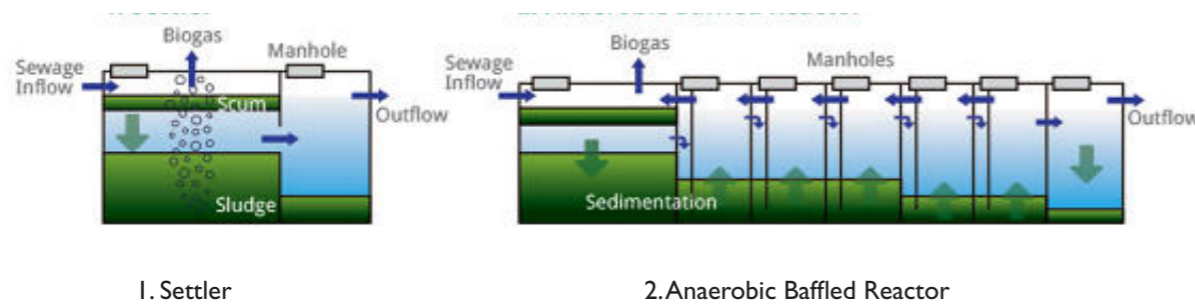
3.3.2 Step One: DEWATS System

DEWATS Unit Model:



DEWATS System: This is a system which converts the black/grey water; i.e. sewage water (coming from surrounding areas) to freshwater which is suitable for irrigation and for recharging the Lake. The DEWATS capacity is calculated according to the population density in the surrounding areas of the Lake/Greens.

Different Processes Involved in DEWATS System:



DEWATS System Table for Different Areas:

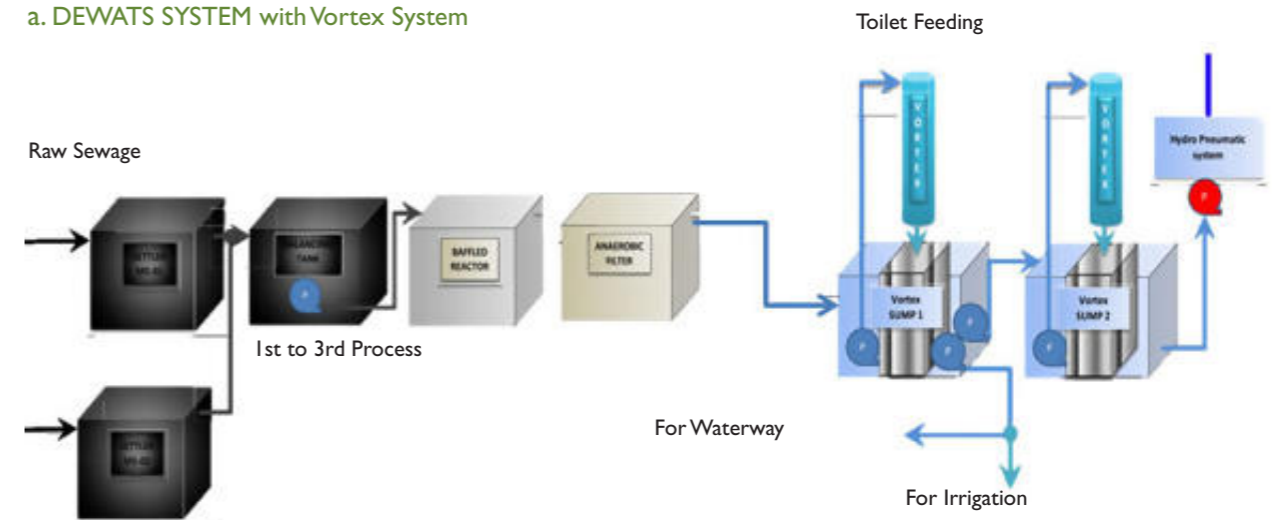
As Per DEWATS System:

For every 2250 persons we need 300 CUM;

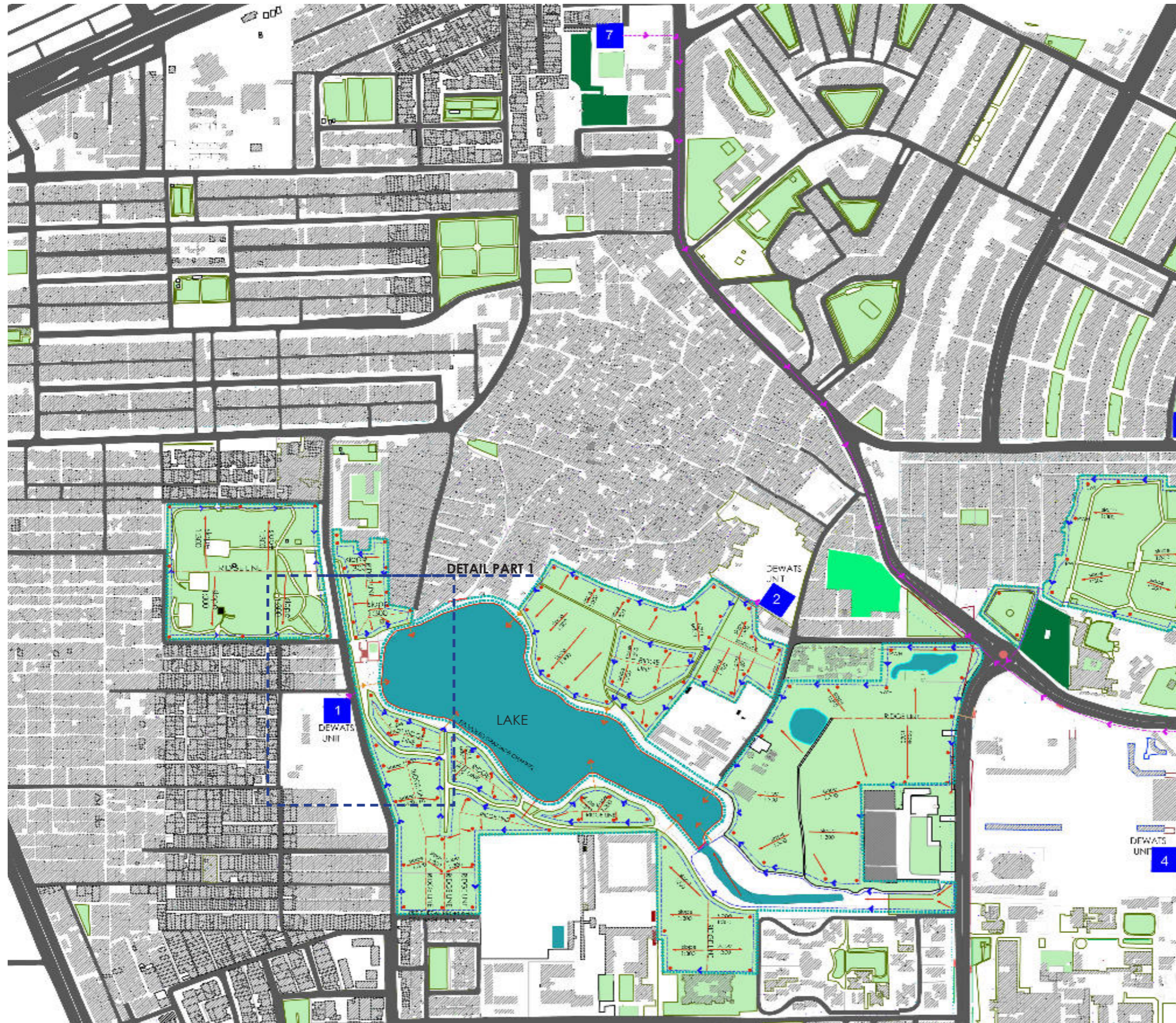
Depth ranges from 1 to 3 m (MAX.)

S.No.	Area (in persons)	Population	Dewats Capacity (in CUM)
1.	Tihar Village	22,790	3054
2.	Hari Nagar	37,239	4990
3.	Subhash Nagar	55,128	7387
4.	Mayapuri	48,713	6527.5
5.	Fateh Nagar	22,612	3029.9
6.	Rajouri Garden	53,769	7205
7.	Ashok Nagar+part of Meenakshi Garden	22,843	3060.9
8.	Vikrant Enclave	2,369	317.5

a. DEWATS SYSTEM with Vortex System

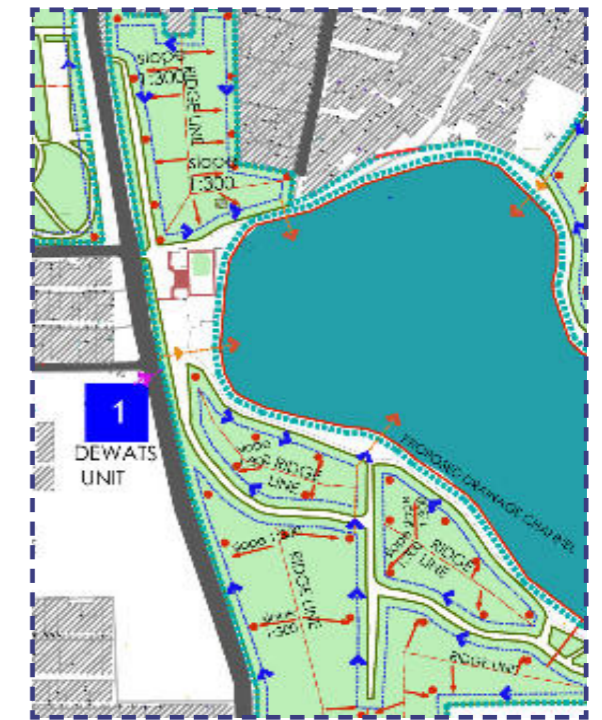


3.3.3 Step One: Grading and Drainage Patterns

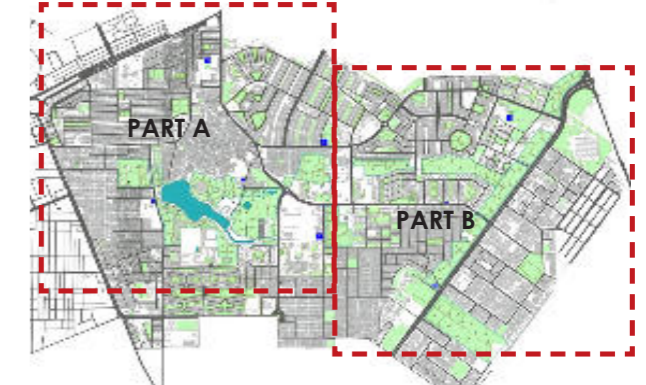


Detail Plan of Part A

Detail Plan of Part I



Key Plan of Hari Nagar Greens



Legend

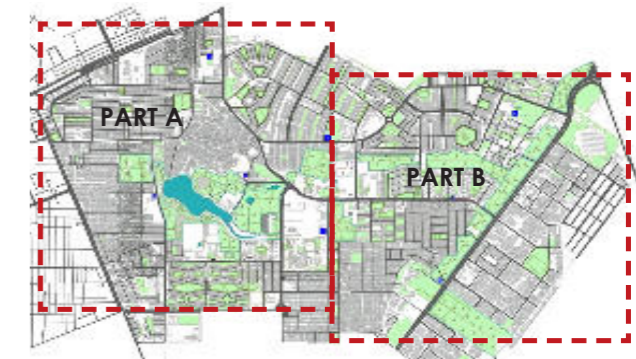
- INNER DRAIN CHANNEL
- OUTER PERIPHERAL DRAIN CHANNEL ALONG PARK BOUNDARY
- OUTER PERIPHERAL DRAIN CHANNEL ALONG LAKE BOUNDARY
- RIDGE LINE
- GRADING SLOPE
- EXISTING GREENS
- DEWATS UNIT SYSTEM
- CONNECTIONS BETWEEN DEWATS UNIT WITH THE PERIPHERAL DRAIN CHANNEL
- RAIN WATER HARVESTING PIT
- CHANNEL CONNECTING TWO PERIPHERAL DRAINS ALONG PARK BOUNDARY AND ALONG LAKE







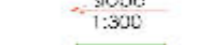





Detail Plan of Part 2



Key Plan of Hari Nagar Greens



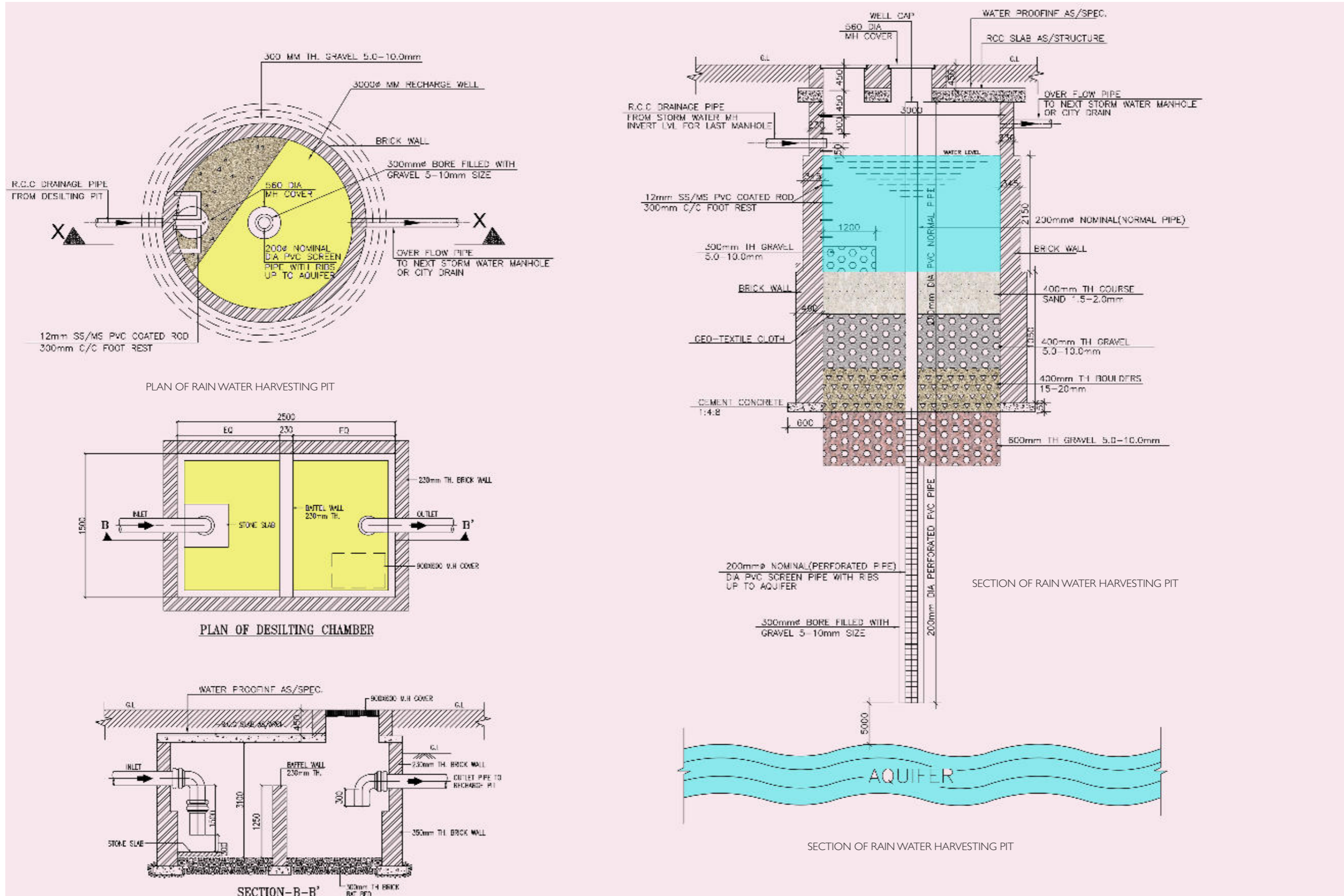
Legend

-  INNER DRAIN CHANNEL
-  OUTER PERIPHERAL DRAIN CHANNEL ALONG PARK BOUNDARY
-  OUTER PERIPHERAL DRAIN CHANNEL ALONG LAKE BOUNDARY
-  RIDGE LINE
-  GRADING SLOPE
-  EXISTING GREENS
-  DEWATS UNIT SYSTEM
-  CONNECTIONS BETWEEN DEWATS UNIT WITH THE PERIPHERAL DRAIN CHANNEL
-  RAIN WATER HARVESTING PIT
-  CHANNEL CONNECTING TWO PERIPHERAL DRAINS-ALONG PARK BOUNDARY AND ALONG LAKE

Detail Plan of Part B

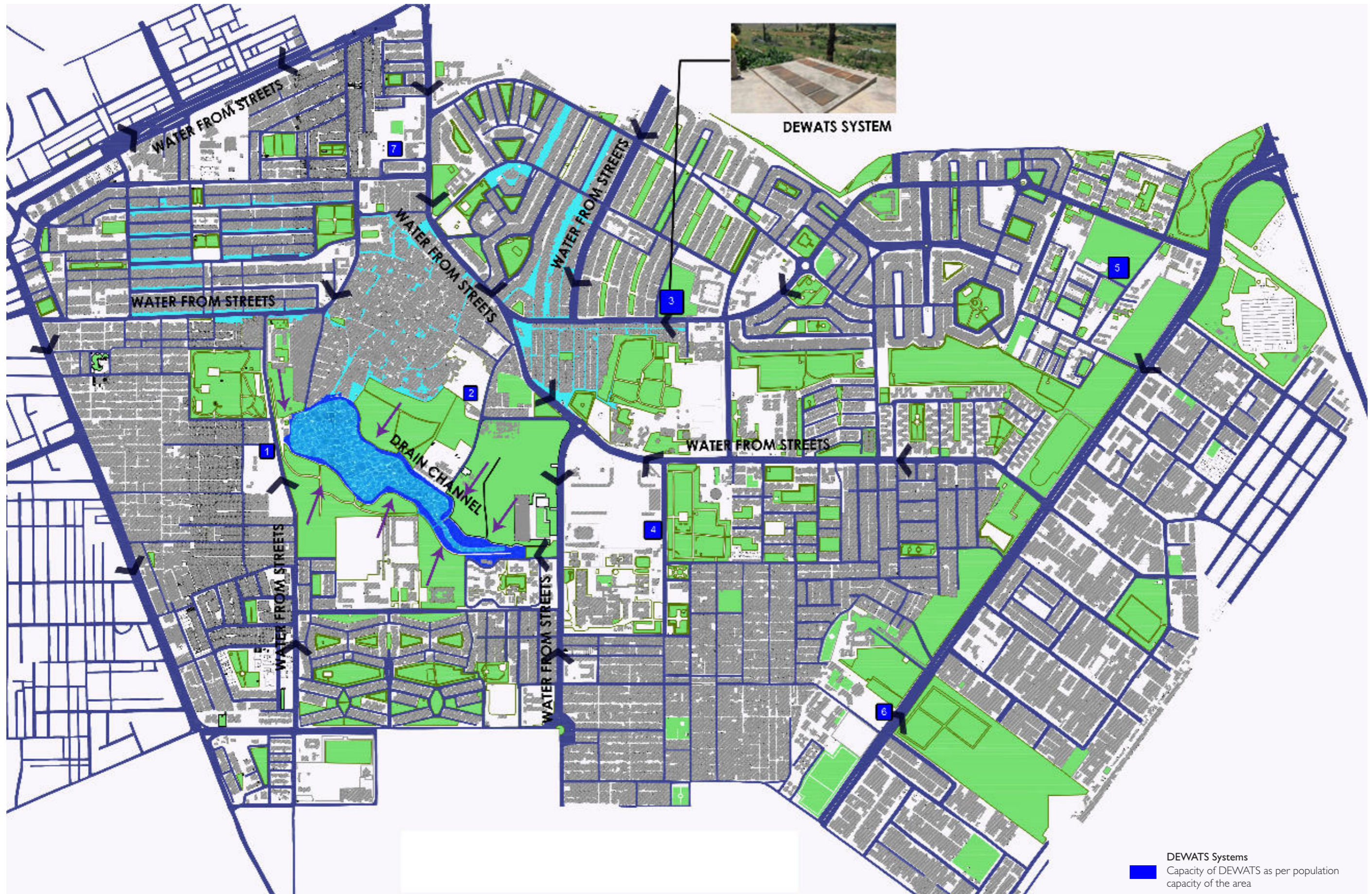
Step One

Detail Drawing of Rainwater Harvesting Pit



Step One

Alternative Step: Stormwater from the surface of existing roads can be used to recharge the Lake



3.3.4 Step Two: Rainwater Harvesting

Rainwater harvesting pit calculations for different Greens



MASJID PARK:
 AREA=32748 sqm
 =8 ACRES
 1 ACRE=1RWHP
 8 ACRES=8 RWHP



UDHAM SINGH PARK:
 AREA=30070 sqm
 =7.5 ACRES
 1 ACRE=1 RWHP
 7.5 ACRES=7-8 RWHP



PRESS COLONY PARK:
 AREA=43426.74 sqm
 =10.7ACRES
 1 ACRE=1RWHP
 10.7 ACRES=11 RWHP



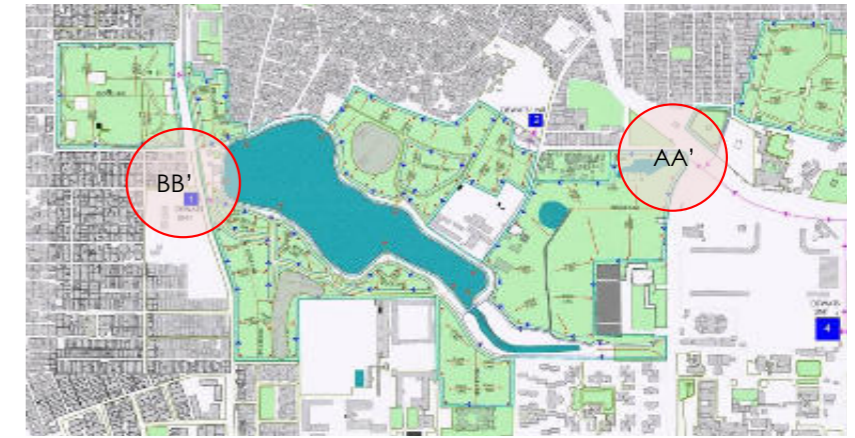
RAMGADIA PARK:
 AREA=34189 sqm
 =8.5ACRES
 1 ACRE=1RWHP
 8.5 ACRES=8-9 RWHP



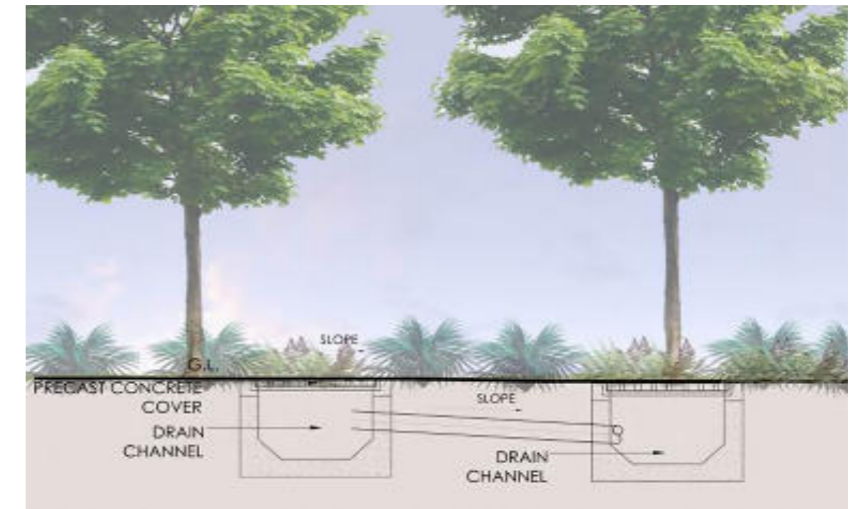
DISTRICT PARK, SUBHASH NAGAR:
 AREA=26035.68 sqm
 =6.4ACRES
 1 ACRE=1RWHP
 6.4 ACRES=6-7 RWHP



NIKATWATI PARK:
 AREA=79490 sqm
 =20 ACRES
 1 ACRE=1RWHP
 20 ACRES=20 RWHP

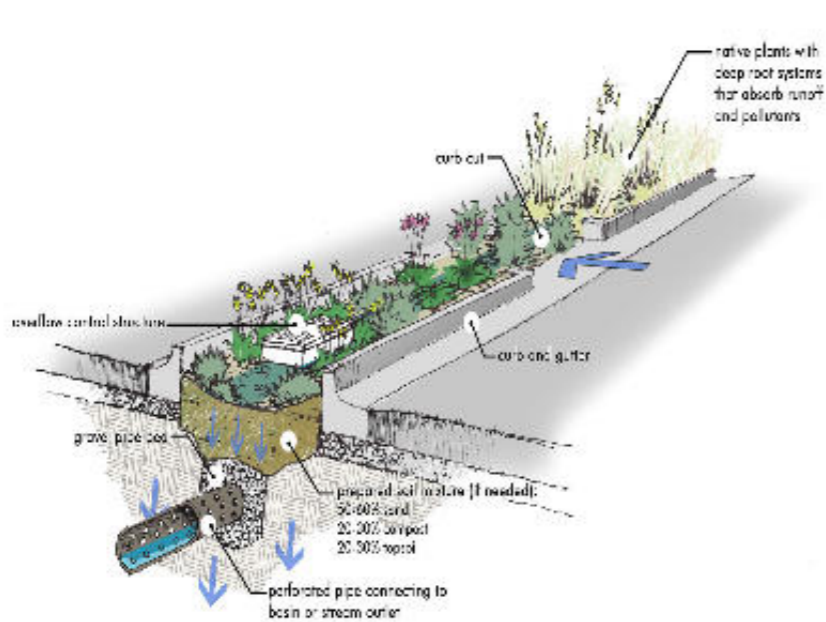


Key Plan
 Showing rainwater harvesting for Greens

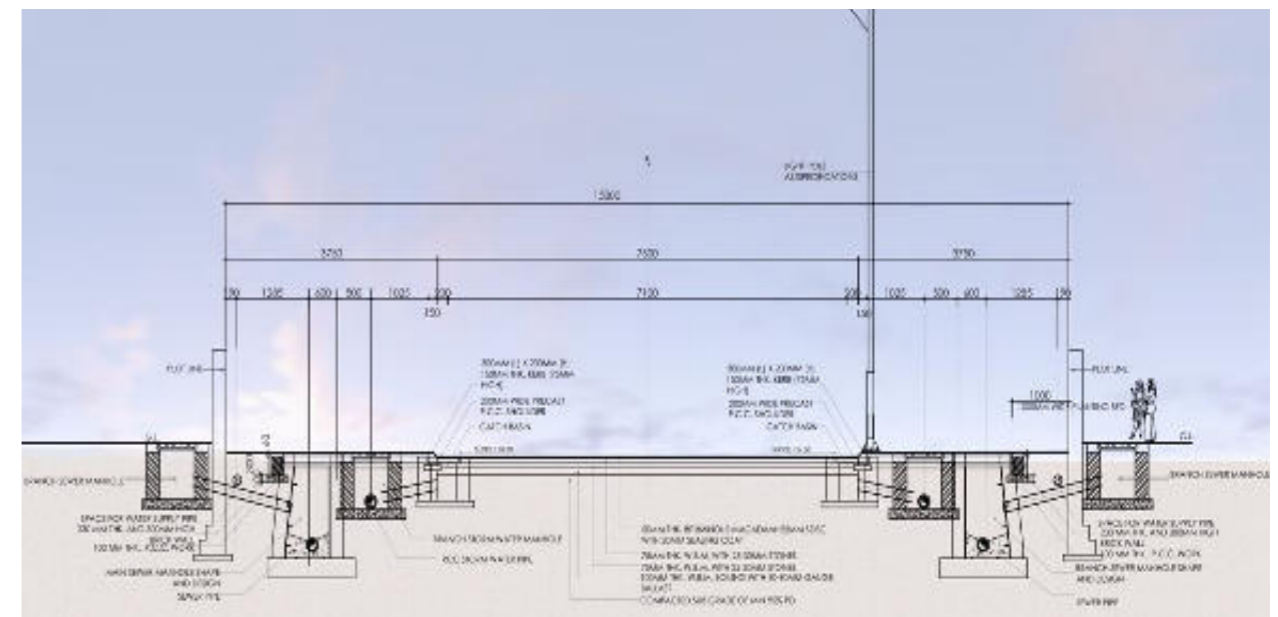


Road Section Showing Drain Channel Connection – Section BB'

Bioswale Typical Section



Drain Channels



Road Section Showing Services – Section AA'

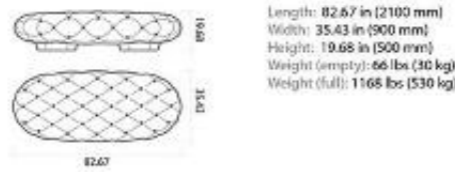
3.3.5 Water Bench

Step Three

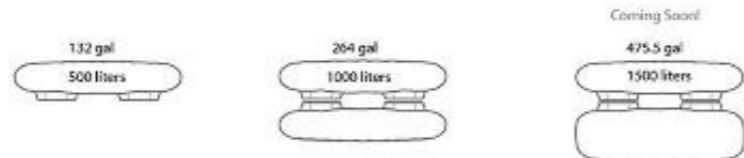


Water Bench
Source : Mars

Size and Weight



Capacity



Rain Collection

1700 liters with 1700 mm annual rainfall (450 gallons ; 67 inches rainfall)

Material

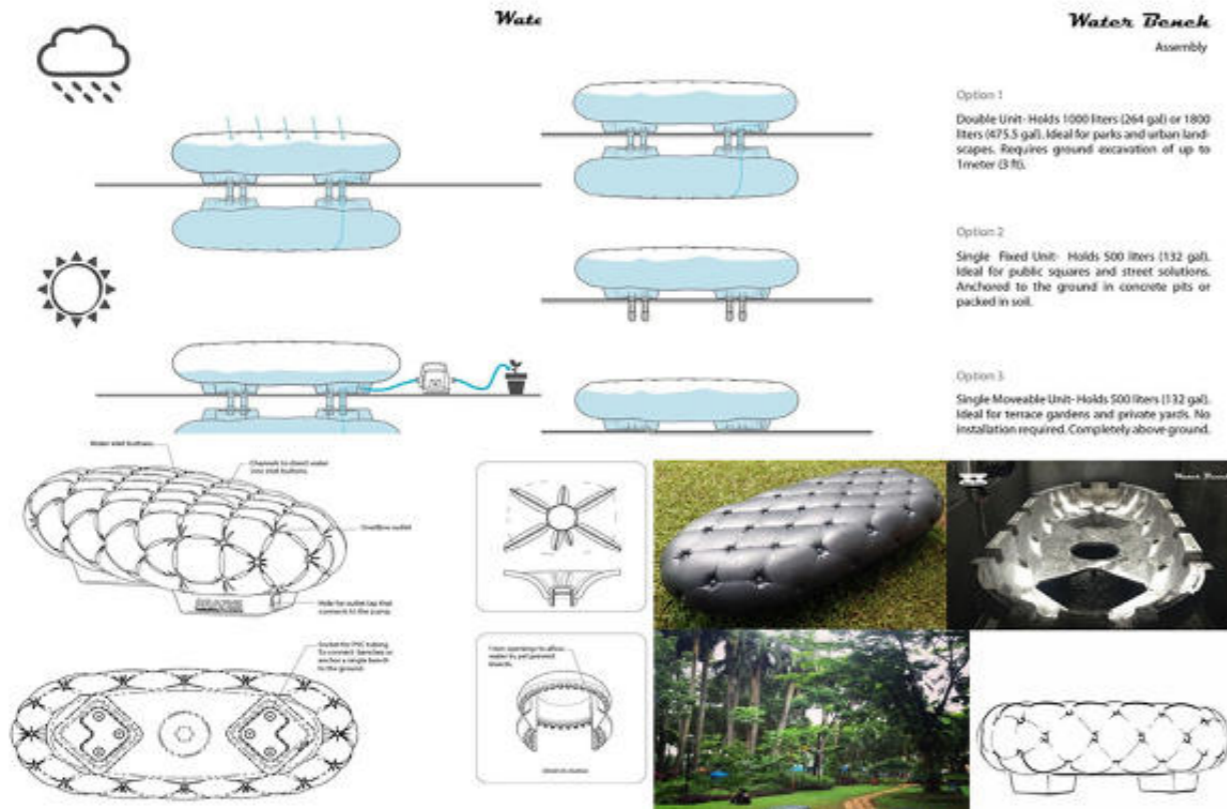
50% Recycled Polyethylene (LLDPE). UV Resistant

Components

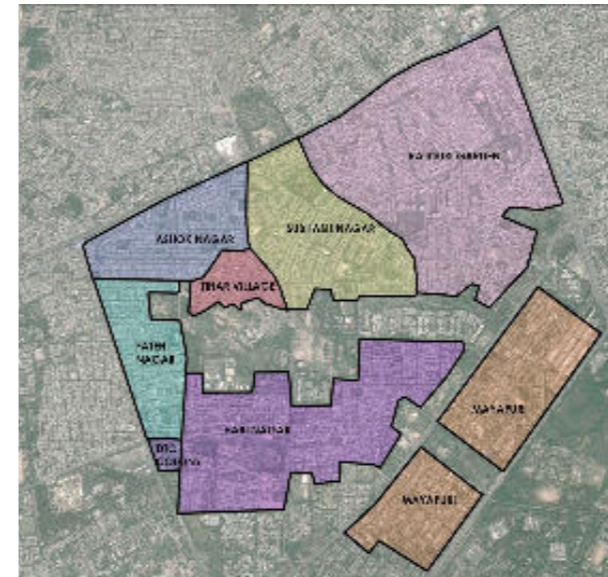
- Single Unit**
 - Bench x 1
 - PVC socket x 4
 - High pressure PVC pipe
 - PVC elbow x 4
 - PVC screw in cap x 2
 - Inlet buttons x 50
 - Outlet fitting
- Double Unit**
 - Bench x 2
 - PVC socket x 6
 - High pressure PVC pipe
 - Inlet buttons x 50
 - Outlet fitting
 - Rechargeable pump bat
 - Self priming water pur



Source: Mars



3.3.6 Water Calculations



Area of Hari Nagar Lake = 5.89 Acres = 5.89 x 4046 = 23831 sq m
Volume of Hari Nagar Lake = 142986 CUM

Road Area Calculations:

Total area of surrounding roads = 940422.235 sq m/3
Volume of surface water on roads = 0.95 x 313474 CUM = 297800 CUM

Step One

Sewage Water Calculations for Surrounding Areas:

- Population of Tihar Village = 22,790
DEWATS System Capacity = 3054 CUM (22790 x 0.134)
- Hari Nagar = 37238.5
DEWATS System Capacity = 4989.95 CUM
- Subhash Nagar = 55,128.5
DEWATS System Capacity = 7387.20 CUM
- Mayapuri = 48713.52
DEWATS System Capacity = 6527.54 CUM
- Rajouri Garden = 53770
DEWATS System Capacity = 7205.13 CUM
- Fateh Nagar = 22612
DEWATS System Capacity = 3030 CUM
- Ashok Nagar (+Meenakshi Garden) = 22843
DEWATS System Capacity = 3060.92 CUM
- Vikrant Enclave = 2370
DEWATS System Capacity = 317.48 CUM

Water in DEWATS System Capacity = 35571.8 CUM
35571800 Litres

Step Two

Rainwater Harvesting Calculations For Surrounding Existing Green Areas:

- Total area of all Greens = 113 acres
- 1 acre = 1 rainwater harvesting pit
- 113 acres = 113 RWH
- Volume of water in rainwater harvesting pit = 3.14 x 1.5 x 1.5 x 3.2
- Depth = 22.5 CUM
- Rainwater through Greens (by rainwater harvesting) = 22.5 x 113 = 2542.5 CUM

Step Three (Miscellaneous)

Water Benches

- Minimum 25 water benches in all Greens
- 1 Water Bench = 25 x 1000 L
- 25 Water Benches = 25000 L



3.4 Project 3: Rejuvenation of Greens

3.4.1 Location of Nodes in Hari Nagar Greens



3.4.2 Node I: Analysis and Proposal



Landscape Concept for Node I



- Integrating the nearby existing institutional blocks and connecting them with the existing Greens.
- Making continuous pedestrian trails from one block to another:



- Restricting encroachments from nearby urban village, i.e. Tihar Village.
- Close the encroached entries from the village to the park to restrict unnecessary movements.



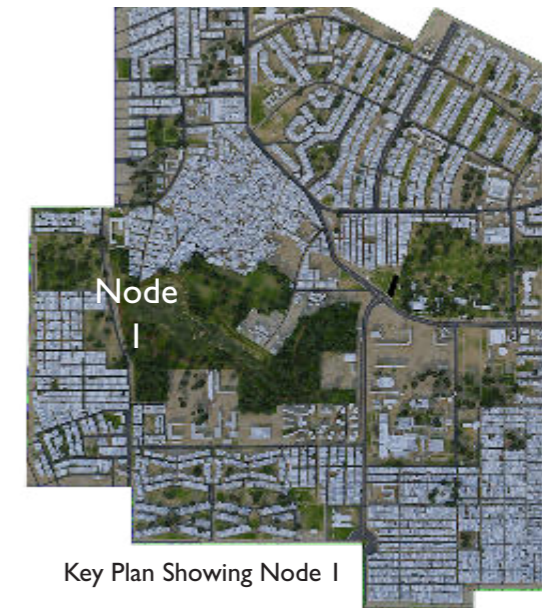
- Open up the entrance area of the Hari Nagar Lake Park and make it a Celebrated Entry.
- Make the entrance more inviting and lively.



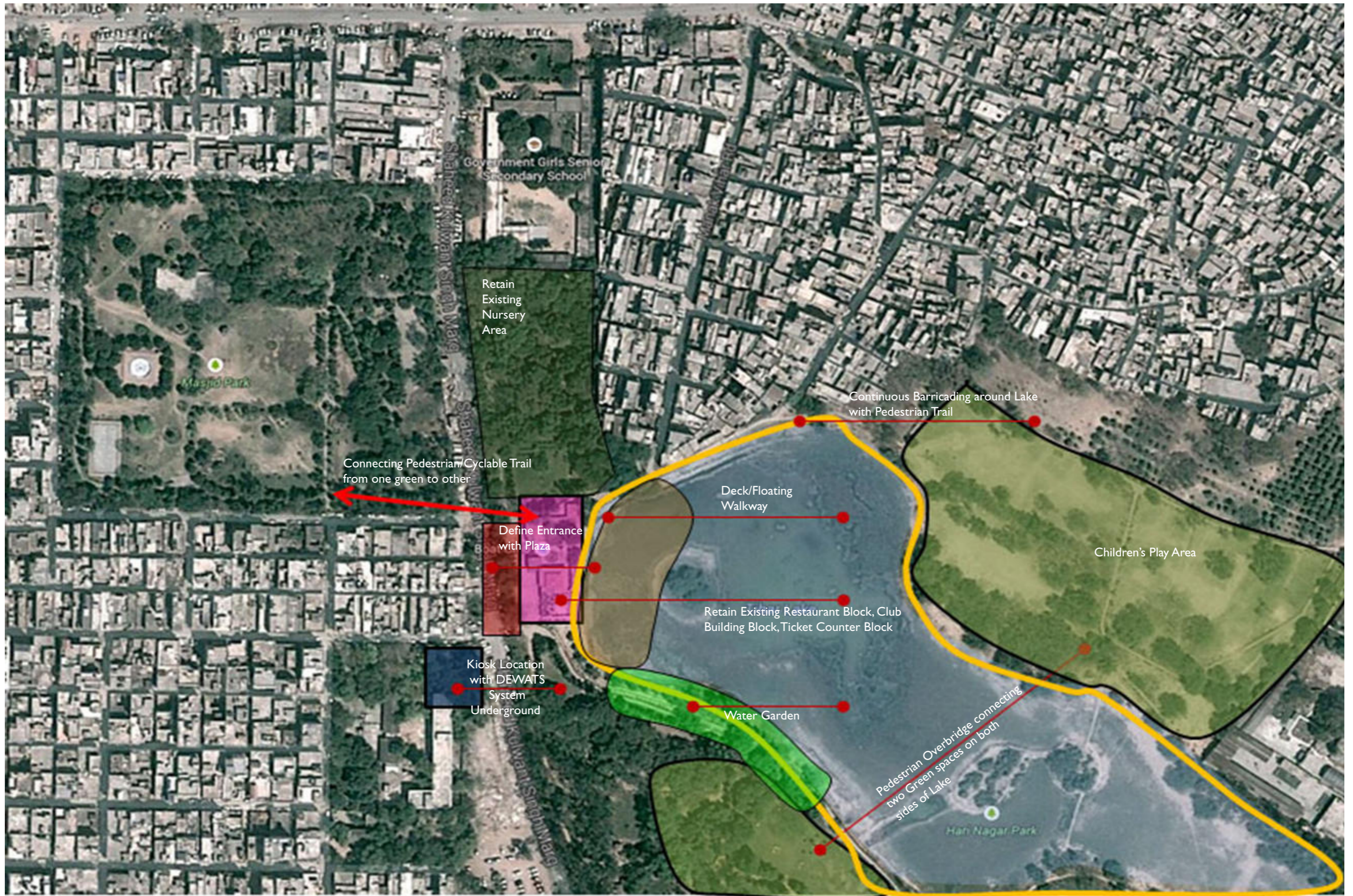
- Retain the existing blocks, i.e. restaurant, ticket counter, club building etc.
- Common entrance plaza with tree edging for the visitors within the blocks.



- Integrate the local market area with the existing Lake Park and other Greens to make it a more happening place.
- To reduce encroachments from the local market on either side of the road to get clear Right of Way.



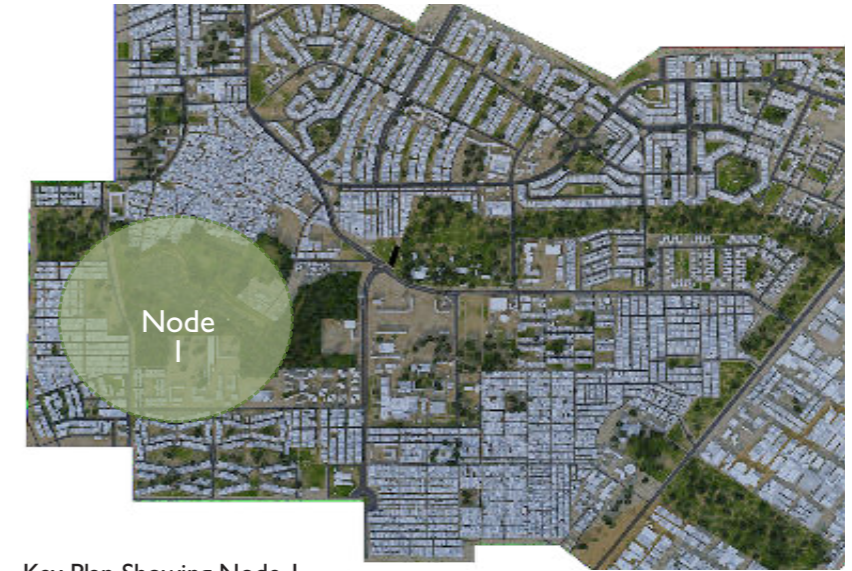
Key Plan Showing Node I



Existing Surrounding Site Forces for Node I



Entrance Node to Hari Nagar Lake Park



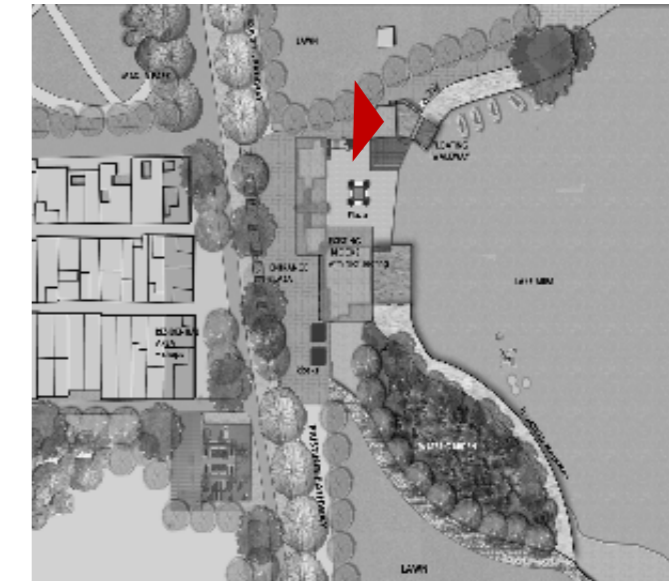
Key Plan Showing Node I

Key Points:

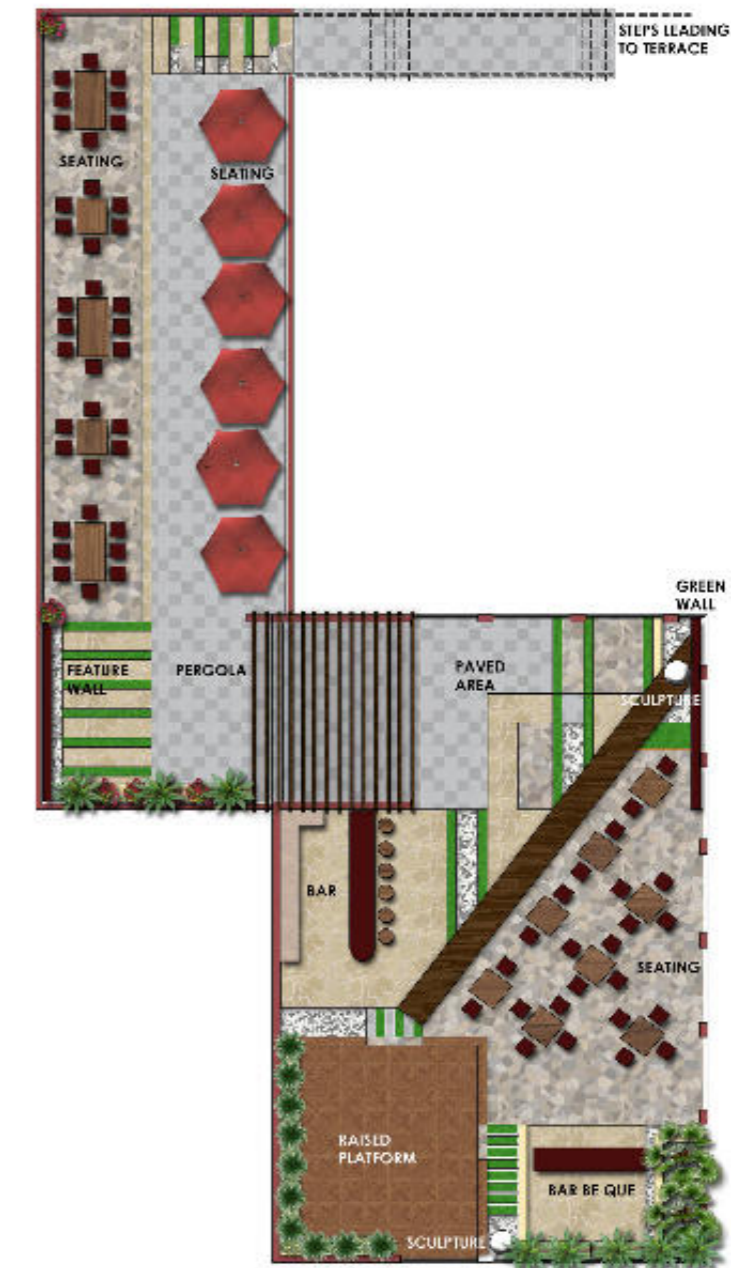
1. Existing blocks, i.e. restaurant, boating club, ticket counter have been retained and the entrance has been defined with plazas.
2. Various water facilities like boating, open deck seating, swimming, zorbing, dancing fountains etc.
3. Open plaza in front of the lake has been stepped up and leads to the restaurant block on the roof level where there is an open spill out space.
4. Design caters to the nearby surrounding schools and residential areas.

Terrace is designed over the roof of existing retained blocks as shown below. The various activities like seating, pergola, paved platform, bar, BBQ counter with edge planting will be along the periphery of terrace.





Key Plan of Node I



Terrace Plan of Node I

3D views for Node I



1 Bird's eye view of the Hari Nagar Lake Park showing the recharged lake, entrance plaza with restaurant, terrace garden, pedestrian crossover bridge to access both sides of the lake.



View from one end of the floating walkway near water garden



Key Plan of Node I



View from one end of the pedestrian crossover bridge from one end of the lake to other



View of terrace which is designed over the roof of existing retained blocks, with various activities like seating, pergola, paved platform, bar, BBQ counter with edge planting on the periphery.



View from one end of the floating walkway which has boating facilities

Plant Species used in Water Garden in Node I



Nymphaea alba



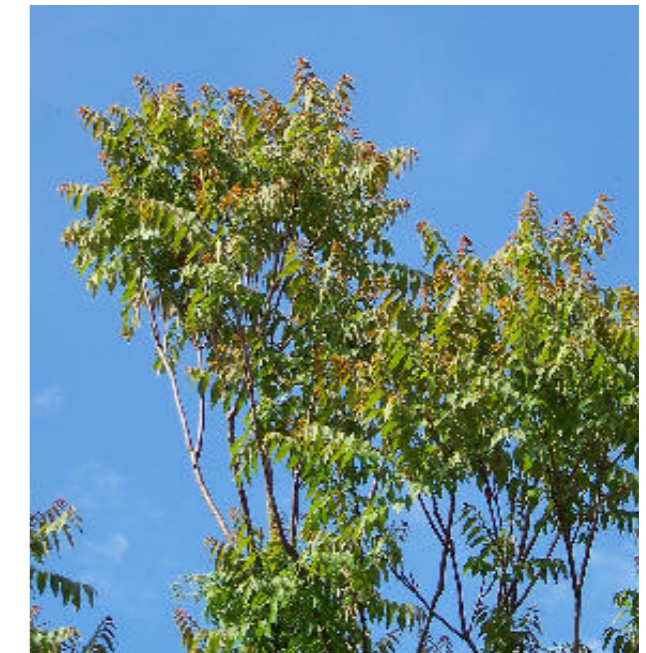
Iris pseudacorus



Hydrocharis morsus-ranae



Casuarina equisetifolia



Ailanthus malabarica

Mosquito Repellant Plants and Trees:



Citronella



Horse Mint



Ageratum

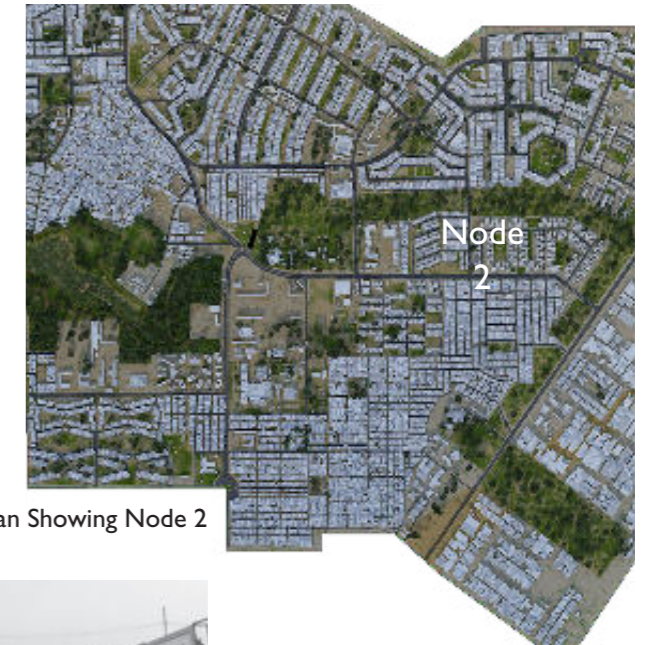


Catnip

3.4.3 Node 2: Analysis and Proposal



Reuse and utilize the existing barren lands which are currently used as dumpyards



Key Plan Showing Node 2



- Define the edge of the roads with a continuous pedestrian/cyclable trail along vehicular roads
- Integrate the surrounding adjoining local market areas and functional areas



- Define the edge of Greens and make a continuous pedestrian trail
- Open up the green areas and make it more inviting and pedestrian friendly

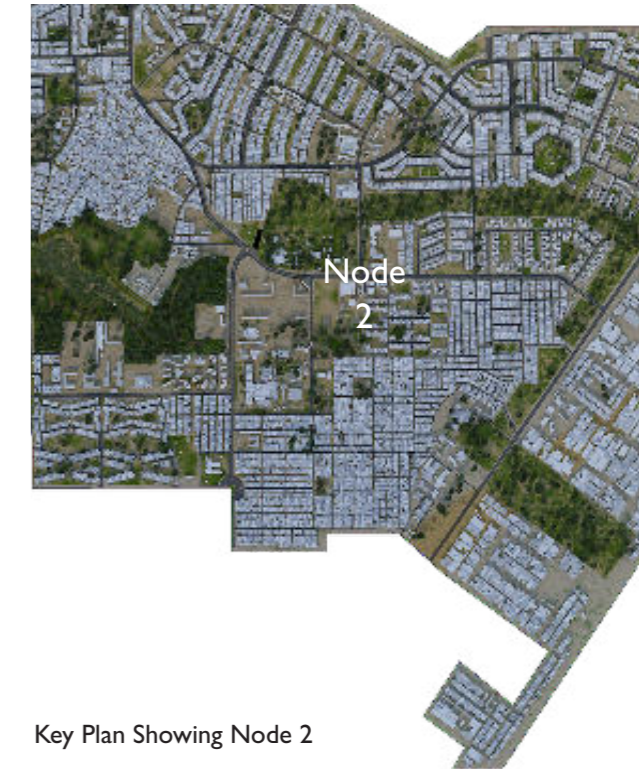
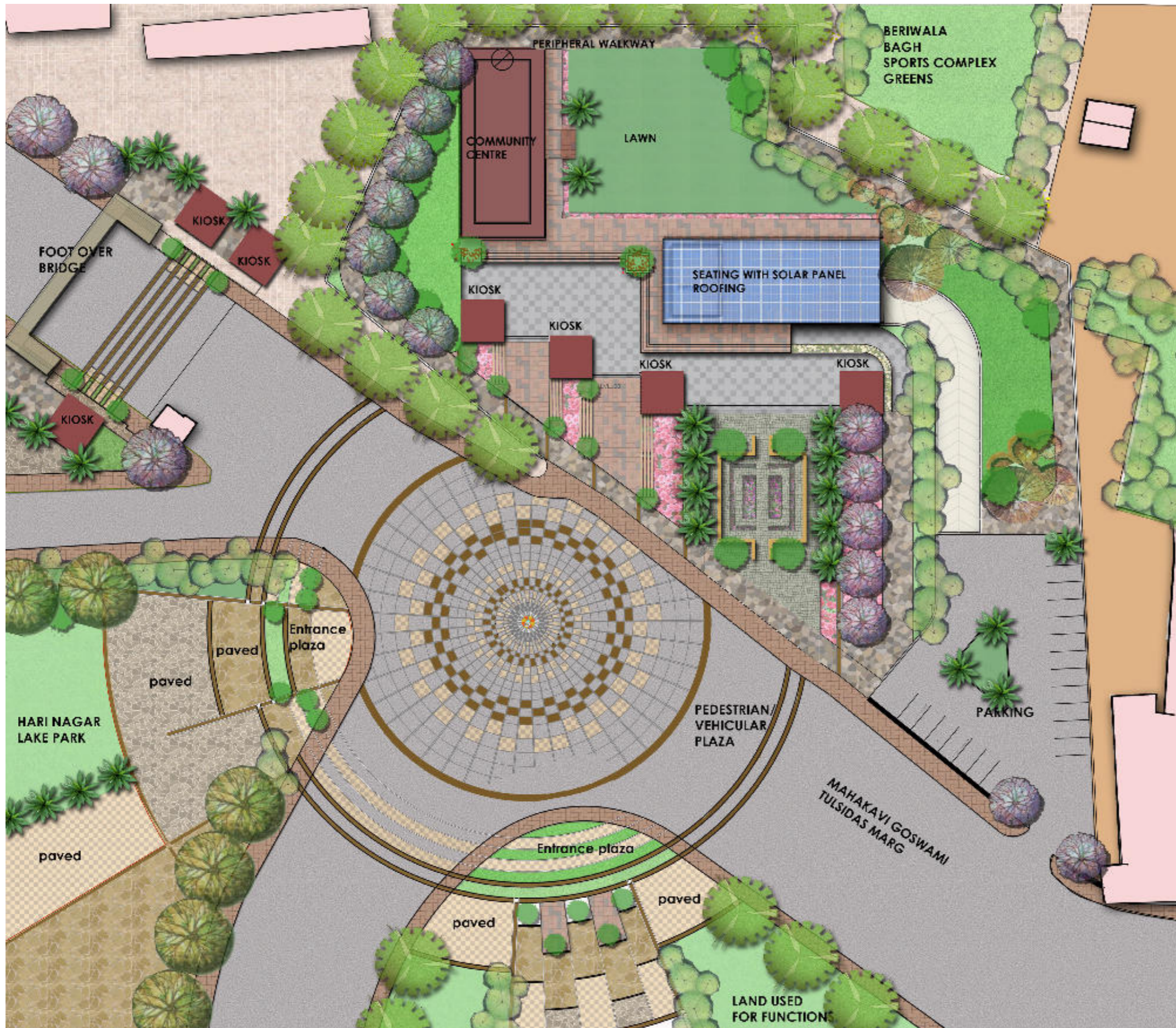


- Design the road junction and make it pedestrian friendly with adequate Right of Way
- Focal point will be a water feature or sculpture.



- Integrate the nearby DDU Hospital and office complexes with the Greens to make them more pedestrian accessible and to provide relaxation space

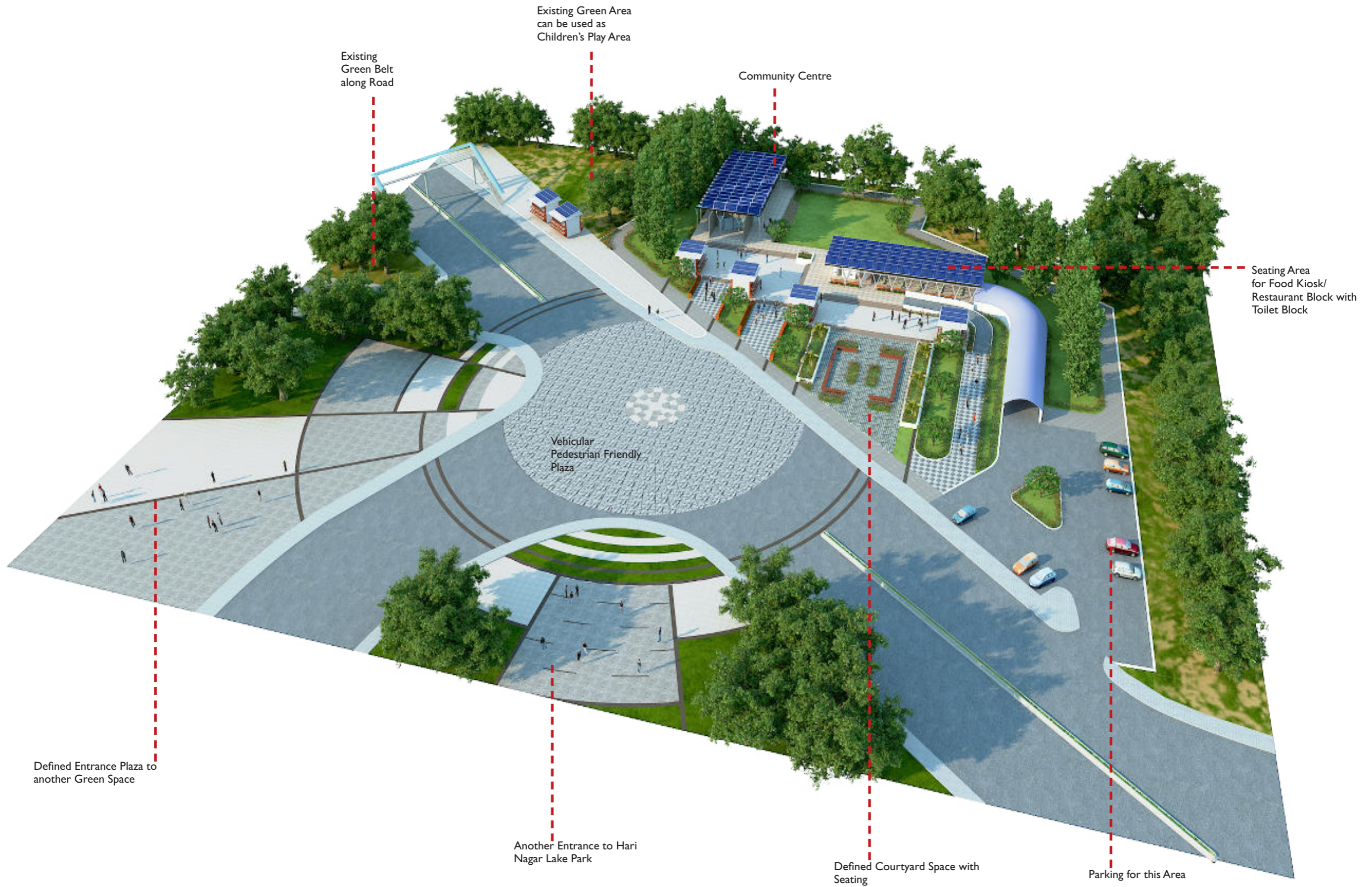




Key Plan Showing Node 2

Key Points:

1. Community hall which is 325 sq m has been designed with an adjoining open green space for spill out.
2. There is spill out space for the restaurant block with solar panel roofing. Toilet block is present near the seating area.
3. Open-air parking is for 20 cars with two-wheeler parking; other vehicles to be accommodated in underground parking.
4. Other facilities include children's play area and landscaped area with seating.
5. Road crossing is so designed to make it pedestrian friendly with a central focal point.
6. Small food kiosks with solar roofing are placed at various locations within the site to cater to the people.
7. Open courtyard seating has shrubbery beds for people to relax and spend time.



3D Views of Design Proposal for Node 2



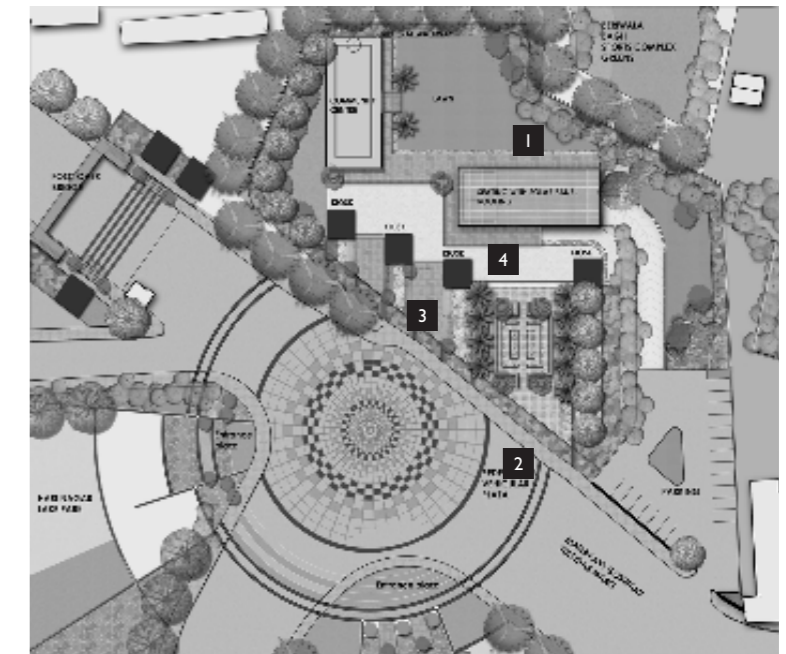
View from the pathway of seating block with Community Centre on the front side



Bird's-eye view showing the front courtyard with Community Centre and Seating Block

Key Plan of Node 2

Main features are the community centre, seating block, food kiosks, parking and entrance courtyard



View showing the front courtyard with seating and food kiosks on both sides



View showing the seating block with toilets and food kiosks on the other side

3.4.4 Node 3: Analysis and Proposal



- Define the edge of Greens and make a continuous pedestrian trail.
- Define the entrance of the parks/gardens and make it a Celebrated Entry.



Key Plan Showing Node 2



- Connect the existing urban infrastructure like bus stops, Metro stations with the Greens.
- Continuous pedestrian trail linking the same to make it more pedestrian accessible.



- Integrating the nearby existing institutional blocks and connecting them with the existing Greens.
- Making continuous pedestrian trails from one block to another.



- Define the junctions inside the Greens with continuous pedestrian walkways.





Key Plan Showing Node 3

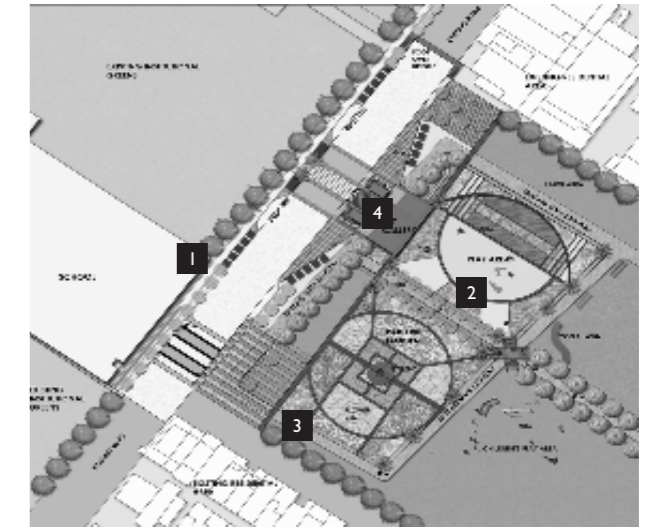
Key Points:

1. Art Gallery/Interpretation Centre will be placed in the centre of the plaza for people/schoolchildren to know more about the history of Delhi.
2. The entrance of the Greens is defined and the park is activated by introducing various features like parterre garden, children's play area, open seating, yoga lawn etc.
3. Existing main pathway is integrated with proposed plazas/pathways
4. Food kiosks are placed on both sides of the vehicular road to activate the road edges.
5. People can cross over from one Green to another through foot overbridges making the Greens pedestrian friendly.

3D Views of Design Proposal for Node 3



Bird's-eye view showing entrance plaza with site offices, art gallery and kiosks with drop off area which has a parterre garden (French garden style) on one side. The other landscape activities include children's play area, paved plaza with feature wall etc.



Key Plan of Node 3



Parterre garden in detail

View showing parterre garden which is a French garden style with different species of ground cover having unique colours



View showing paved court with feature wall made with soft material to be used as a play area



View from the main pathway giving direct access to art gallery



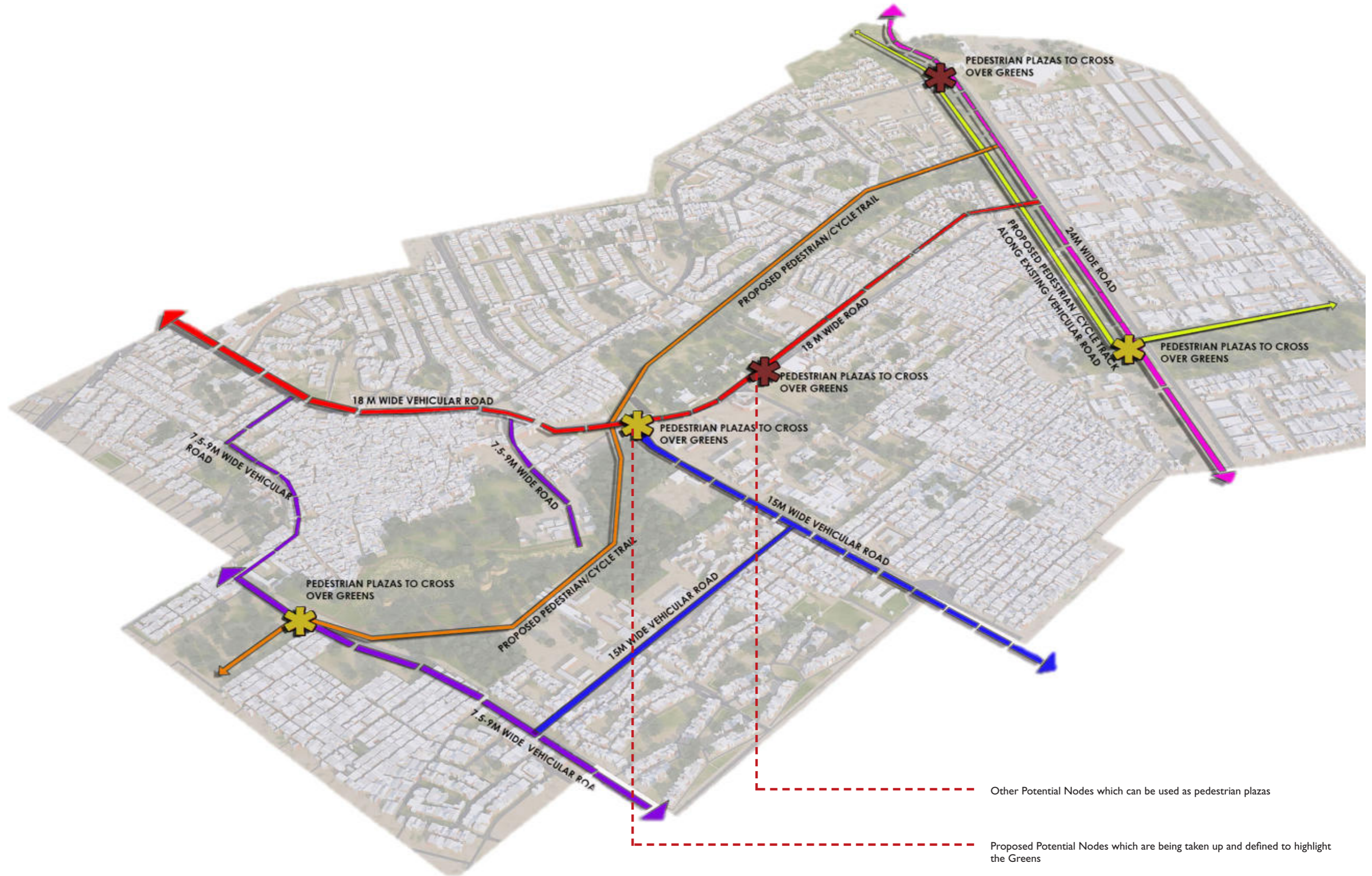
Annexure

- Landscape Details
- Proposed Typical Section-1
- Proposed Typical Section-2
- Before/After

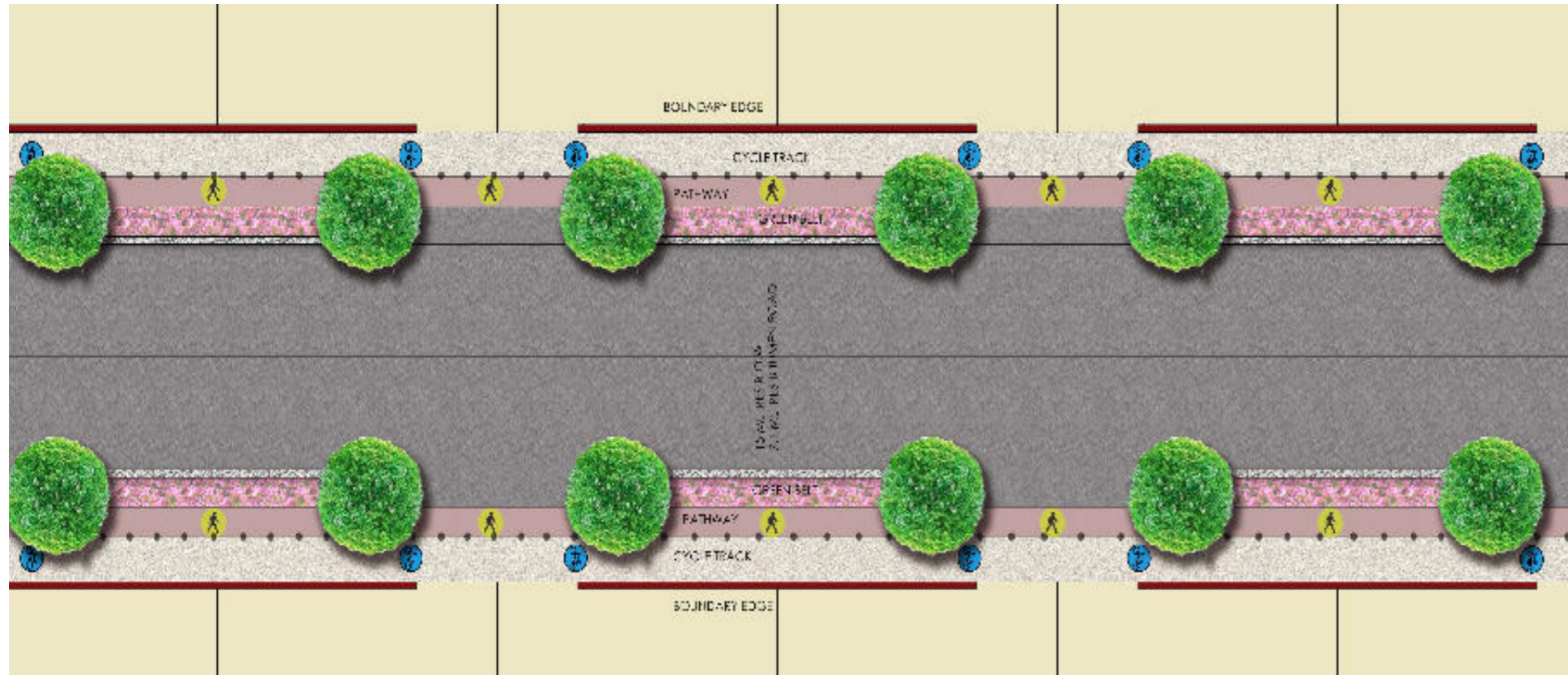
Future Intervention

4.1 Landscape Details

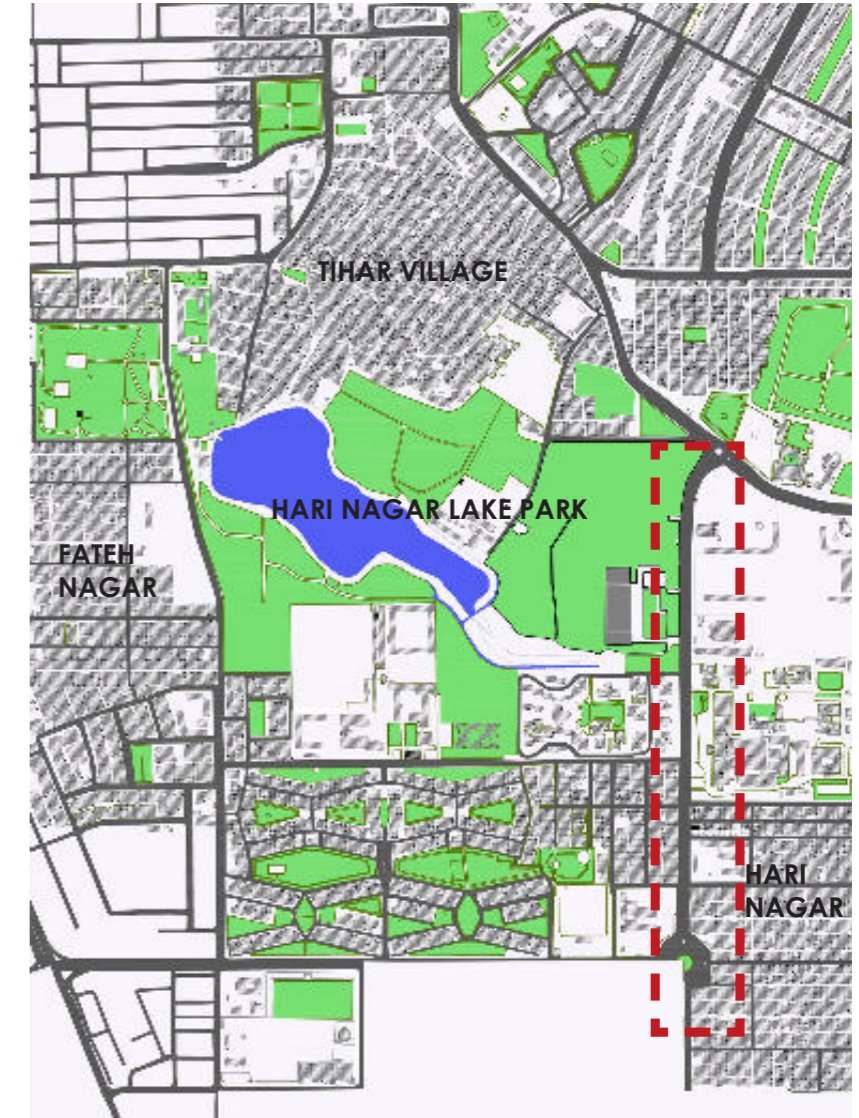
View Showing Existing and Proposed Circulation Networks



4.2 Proposed Typical Section-1

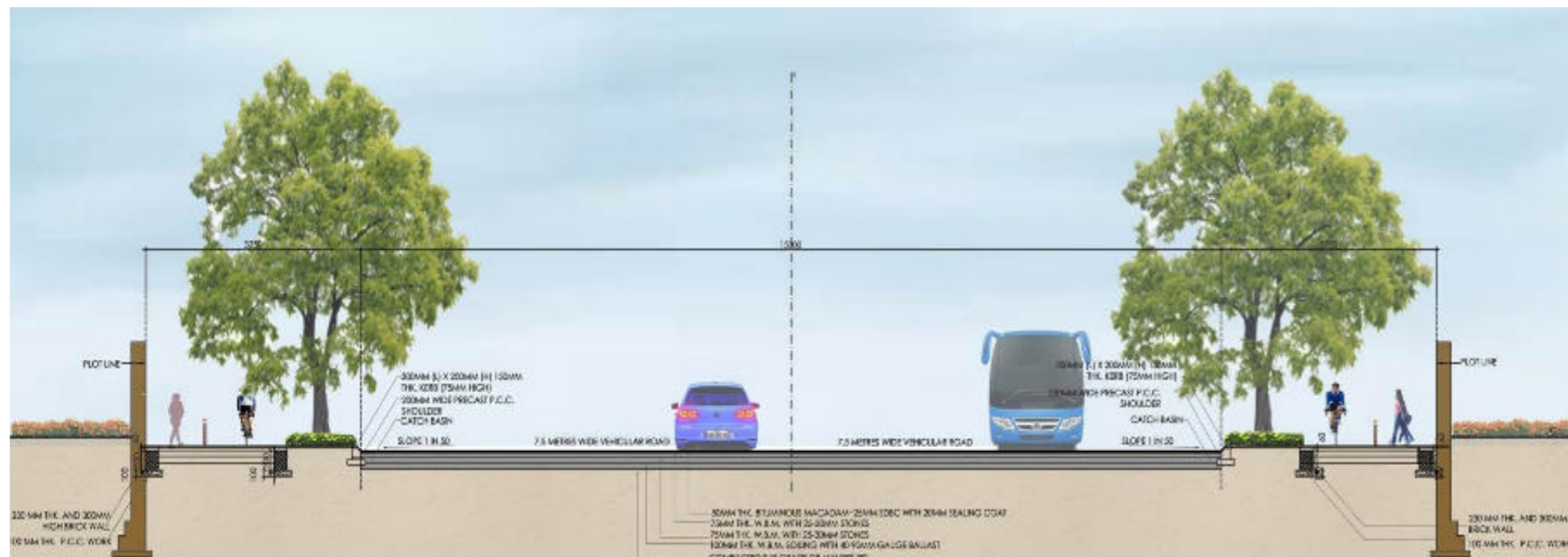


Typical Plan Showing 15 m Road Section



Key Plan showing location of 15 m wide road connecting Hari Nagar Area to Subhash Nagar Area

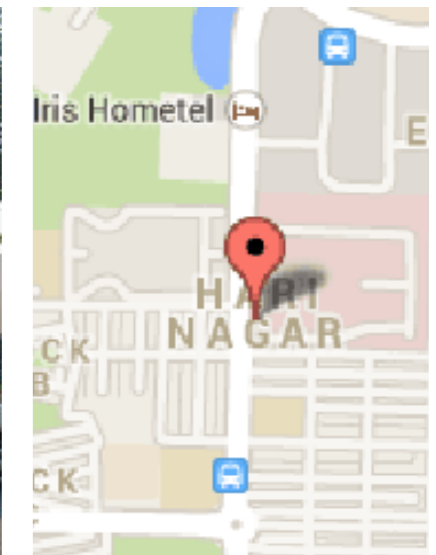
The main junction on this road is being defined by Hari Nagar Clock Tower



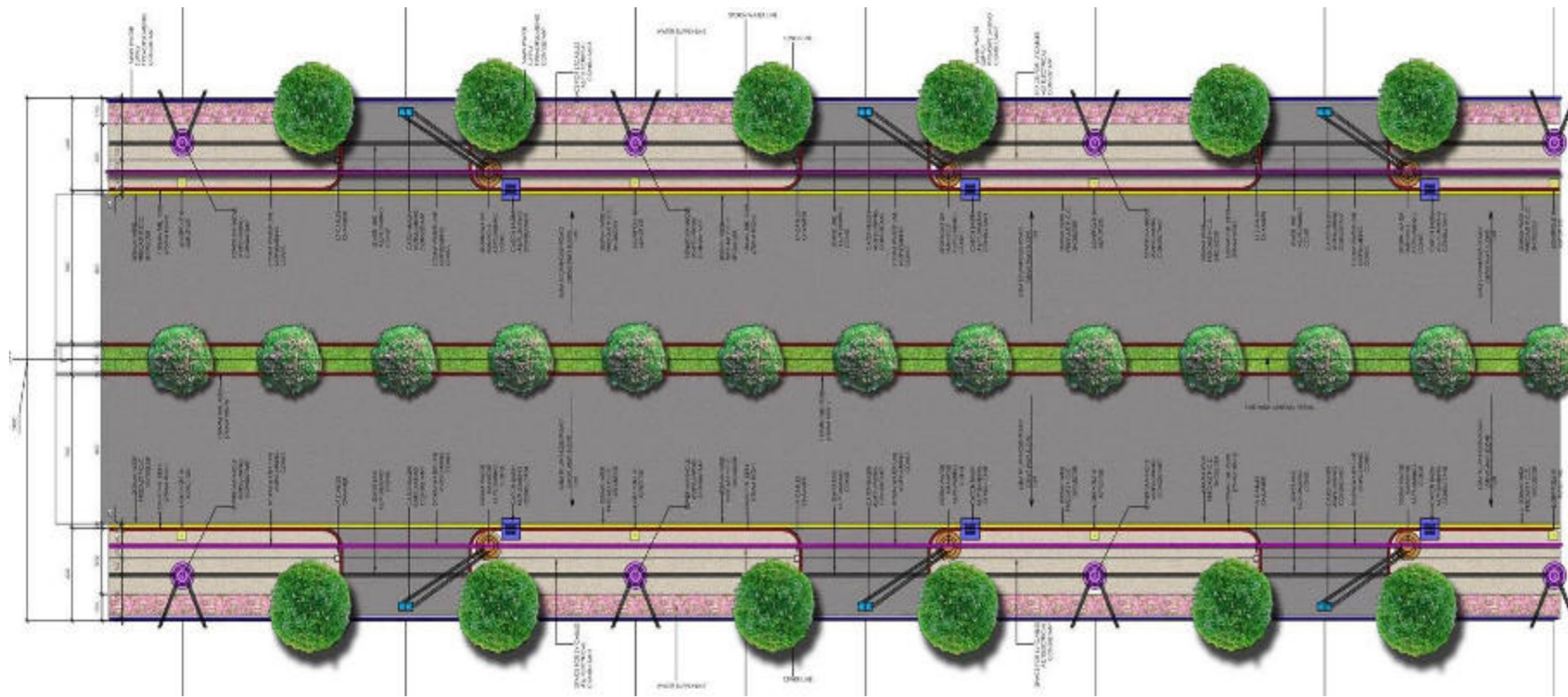
Typical Section Showing 15 m Road Section



Clock Tower in Hari Nagar



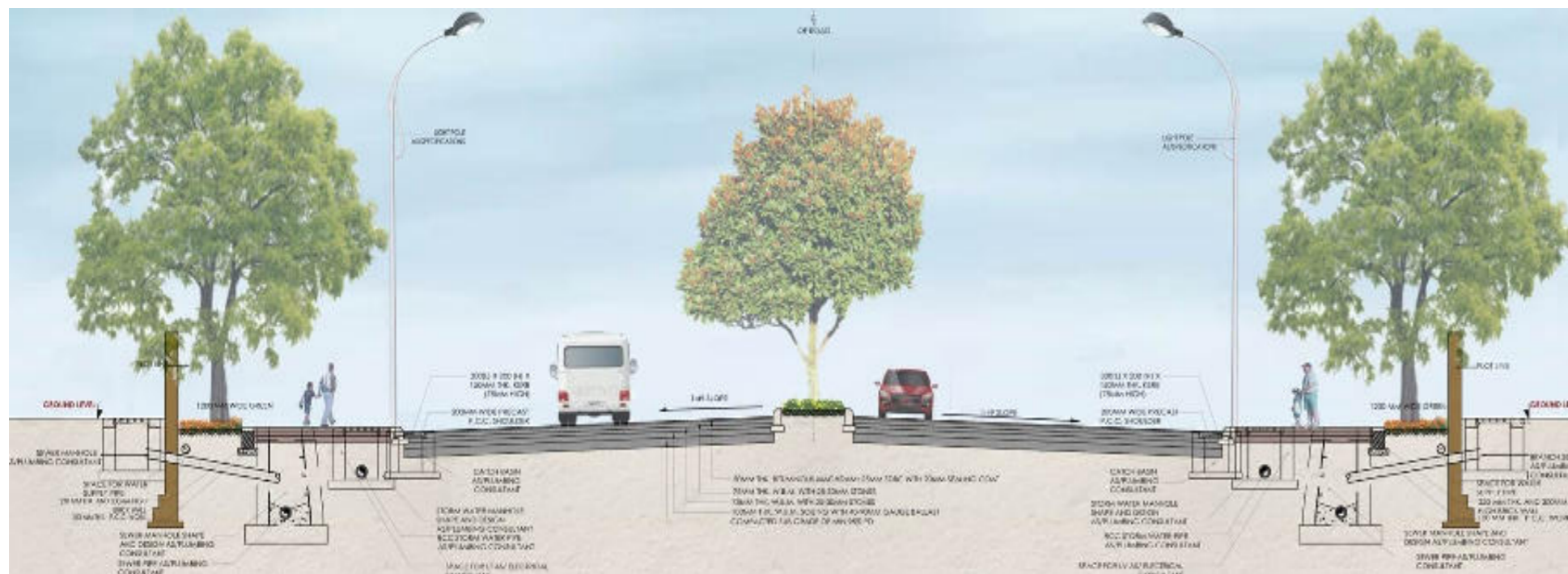
4.3 Proposed Typical Section-2



Typical Plan showing 24 m road section showing existing/proposed services



Key Plan showing location of 24 m wide road connecting Rajouri Garden to Hari Nagar and Mayapuri Area



Typical Section showing 24 m road section showing existing/proposed services

Legend:

- Main Catch Basin Sewer Manhole as/Plumbing Consultant
- Stormwater Manhole Sewer Manhole as/Plumbing Consultant
- Sewer Manhole as/Plumbing Consultant
- Sewer Manhole as/Plumbing Consultant
- Stormwater Line along the road
- Precast PCC Shoulder along road

4.4 Before/After



Before



After



Before



After



Before



After



Key Plan of Hari Nagar Lake Park

The views showing before/after of various situations:

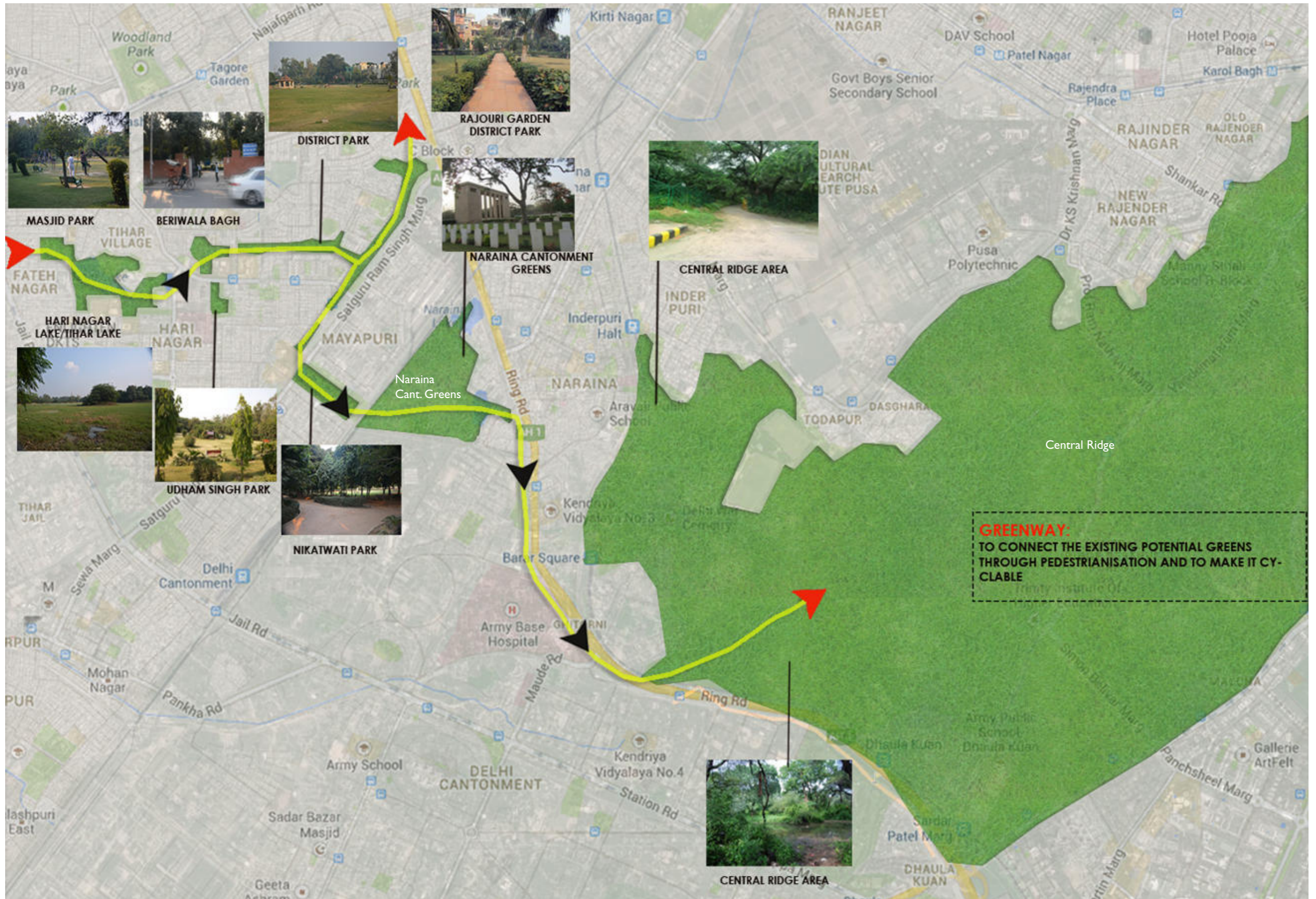
1. The boundary wall of the Shamshan Ghat with the lawn area revived.
2. The secondary entrances of the Hari Nagar Lake Park will be converted into Celebrated Entries.
3. The pathway will have a focal point to attract people.
4. The Lake will be recharged and the water activities like boating etc. will be revived.



Before



After





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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 like to affect the skyline or the aesthetic quality of the surroundings or any public amenity provided therein”.



(An ISO 9001 : 2008 Certified Organisation)

एक शहर एक कला

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