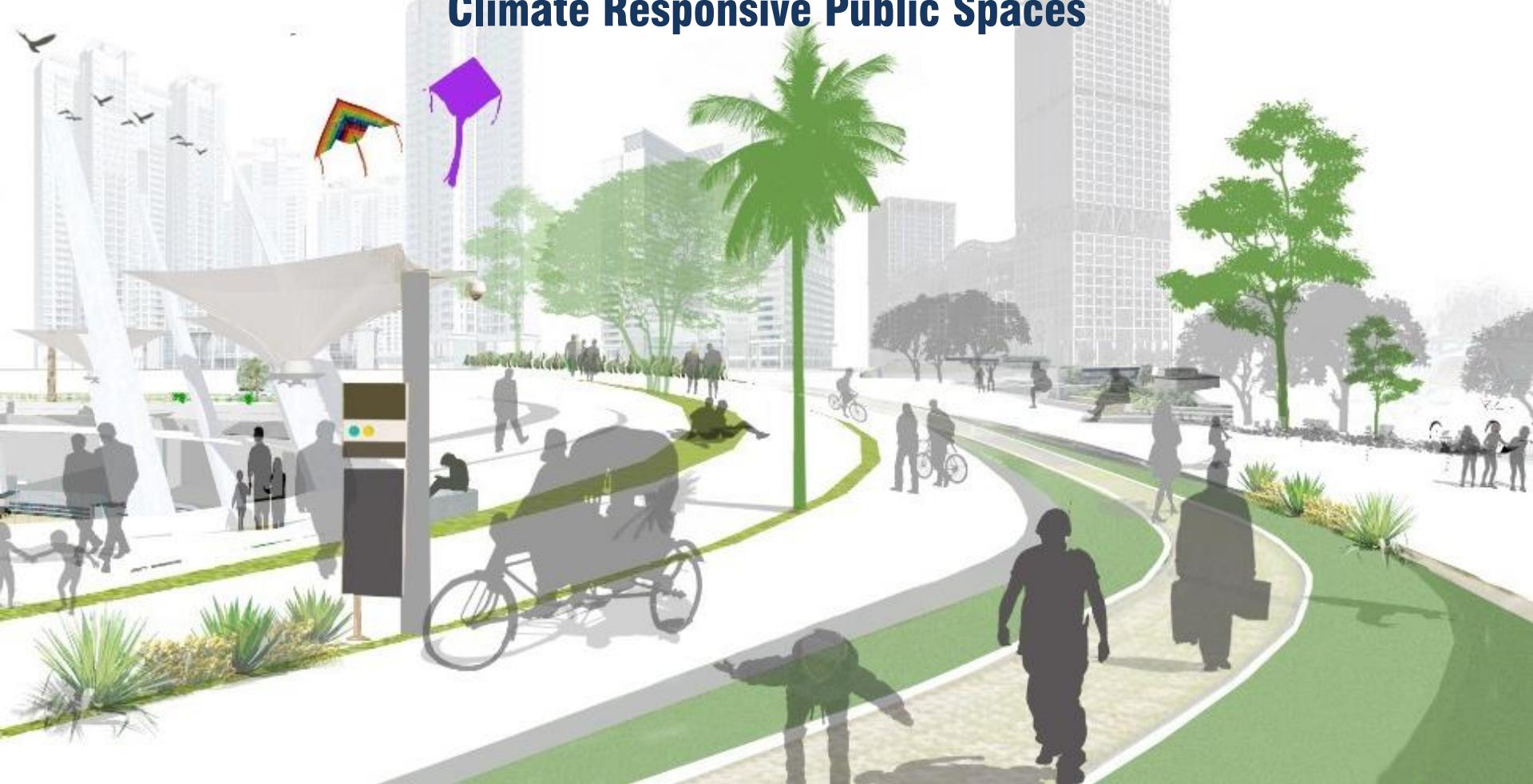


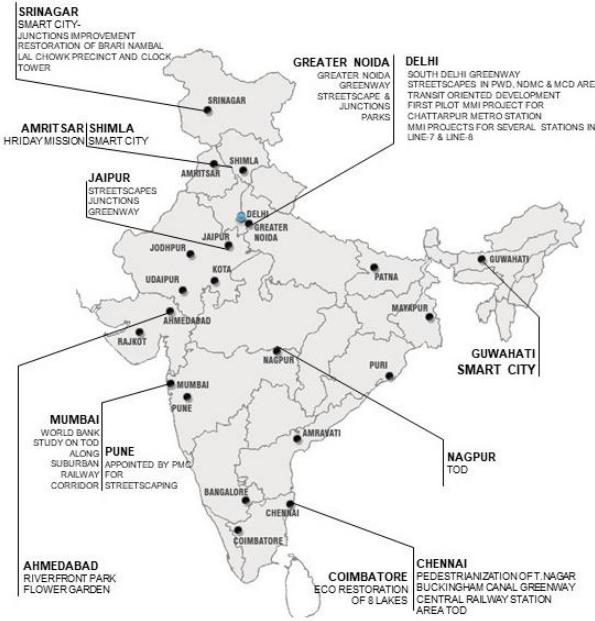
Climate Responsive Public Spaces



NATIONAL URBAN PLANNING & MANAGEMENT CONCLAVE - 23-24 SEPTEMBER 2022, LUCKNOW

AKASH HINGORANI
OASIS
DESIGNS INC.

WORKING WITH VARIOUS CITIES



About OASIS DESIGNS INC.

PUBLIC REALM DESIGN TIMELINES

APPROACH

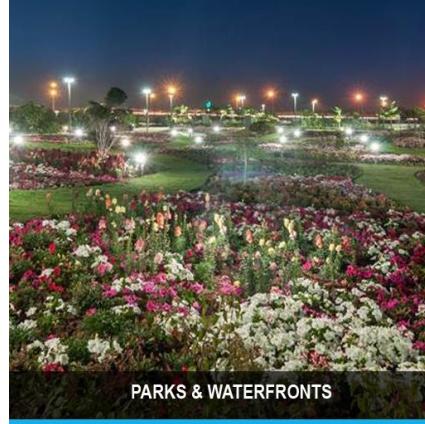
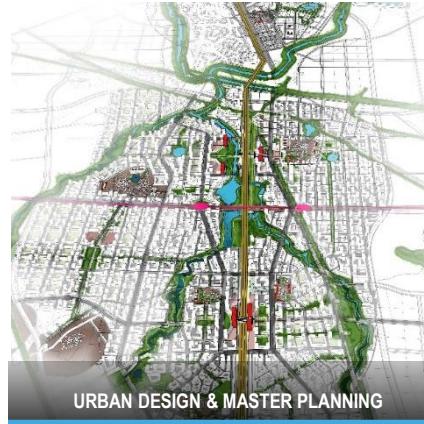
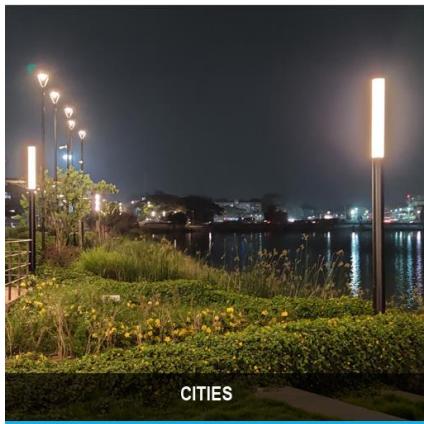
Holistic approach to looking at public realm projects, and finding solutions which are workable and sustainable in the short and long run.

Understanding the key factors that make a good city

- Good transportation system
- Good open spaces- streets, parks, plaza
- Sustainable use of natural resources like water
- Economic sustainability

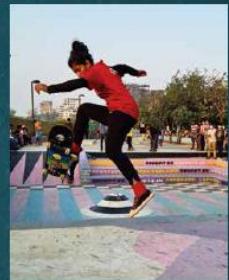
		2001		2006		2011		2012		2013		2014		2015		2016		2017		2018		2021	
Pedestrianization of Malcha Marg Market	2001																						
South Delhi Greenways	2006																						
GREENWAYS & MARKETS		STREETSCAPES, MULTI MODAL INTEGRATION & GUIDELINES		URBAN PARKS & TRANSIT-ORIENTED DEVELOPMENT (TOD)		SMART CITIES																	
																							
																							
																							
																							
																							
																							
																							
																							
																							
																							
																							
																							
																							
																							
																							
				<img alt="A photograph of a greenway under a bridge with people walking and cycling																			

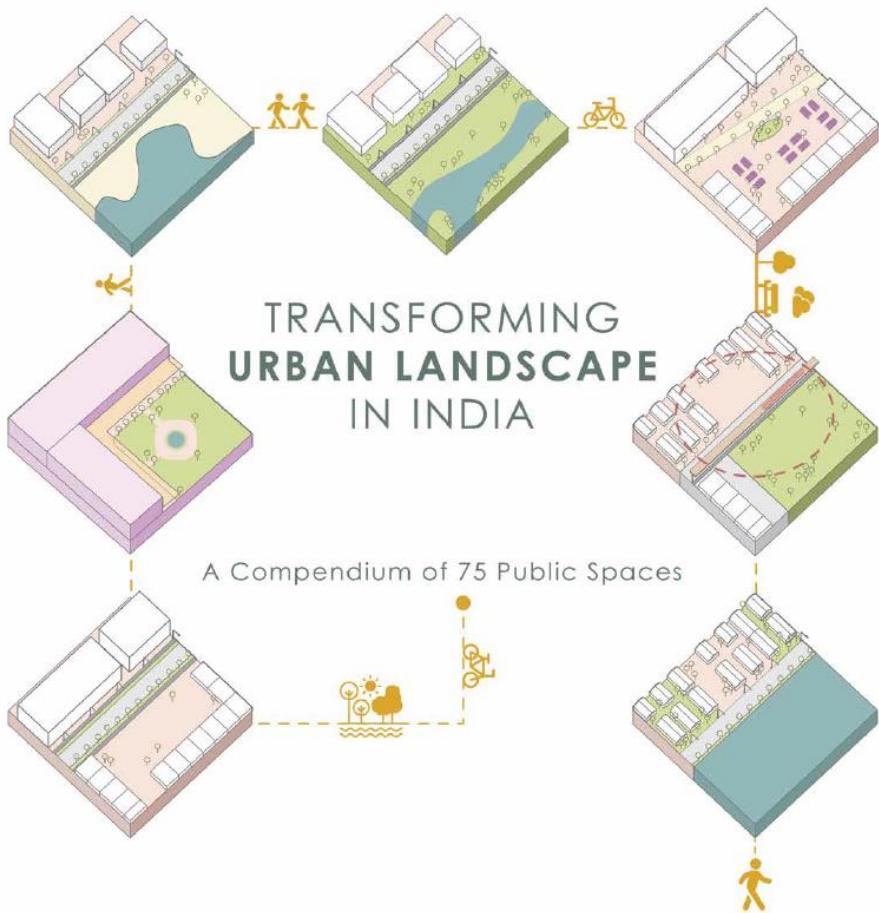
FEATURED PROJECTS CATEGORY



TRANSFORMING URBAN LANDSCAPE IN INDIA

A Compendium of 75 Public Spaces





Editorial Team



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Consultant, Director's Team
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NIUA



Bhavneesh Bhanot
Senior Design Associate
NIUA



Tehan Katar
Graphic Designer
NIUA

OPEN SPACE DESIGN IS THE BEST TOOL TO COMBAT THE CLIMATE CHANGE CHALLENGES

STREETSCAPE DESIGN

Walkable
Cyclable
Safe streets

Enabling people to move about in
the city

As per data

50-60% of all trips are 5 to 6km

A modal shift to take out all these vehicular trips
to NMT shall solve the congestion problem in our
cities

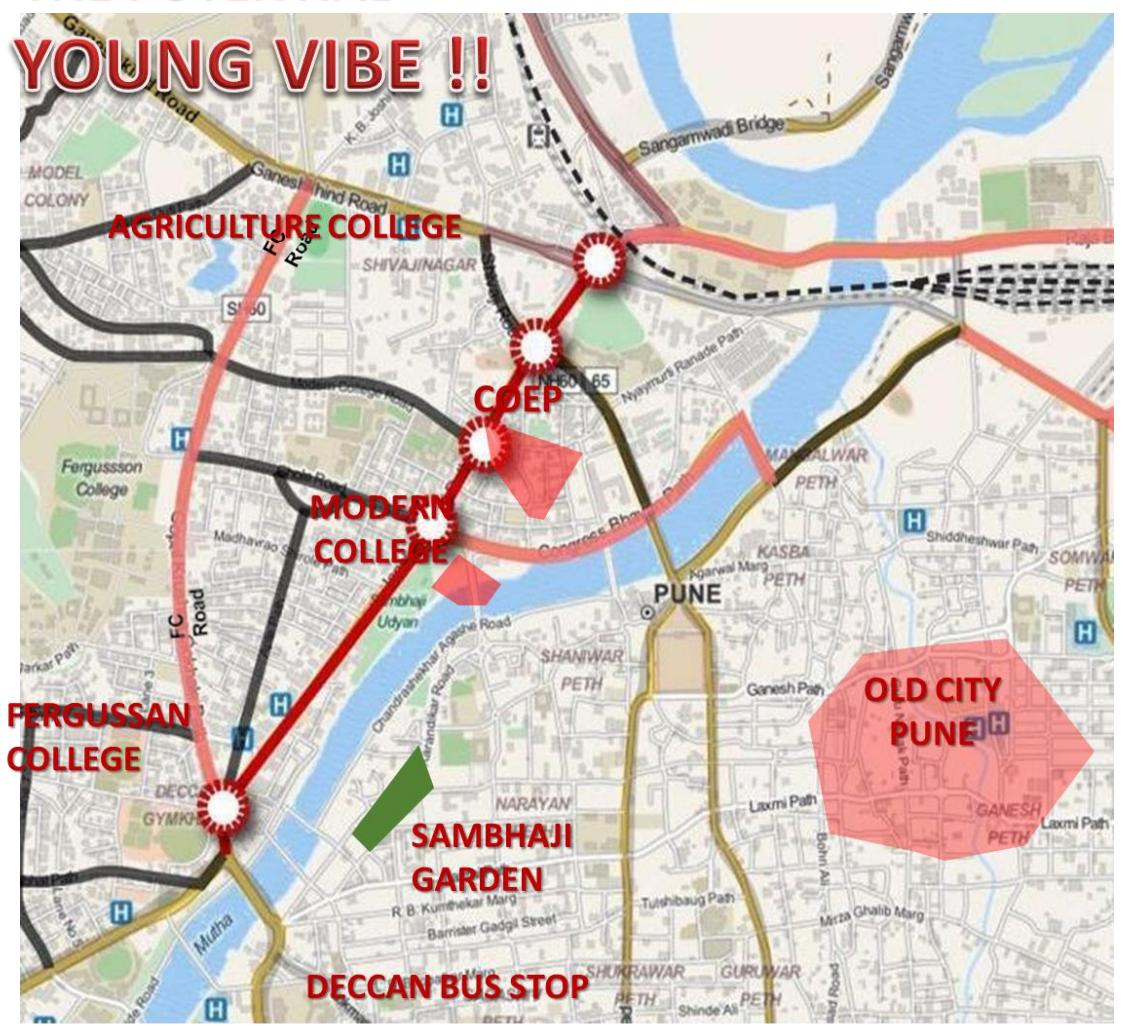
Shared mobility – all your small trips are NMT or
walking – you can connect to the metro – and if
needed always hire a cab or a car for some
holiday – so car ownership is something that can
reduce



THE POTENTIAL

THE POTENTIAL LOCATION....LOCATION....LOCATION

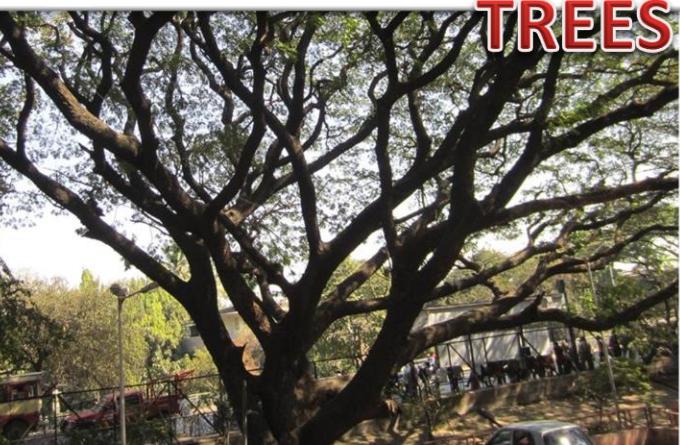
YOUNG VIBE !!



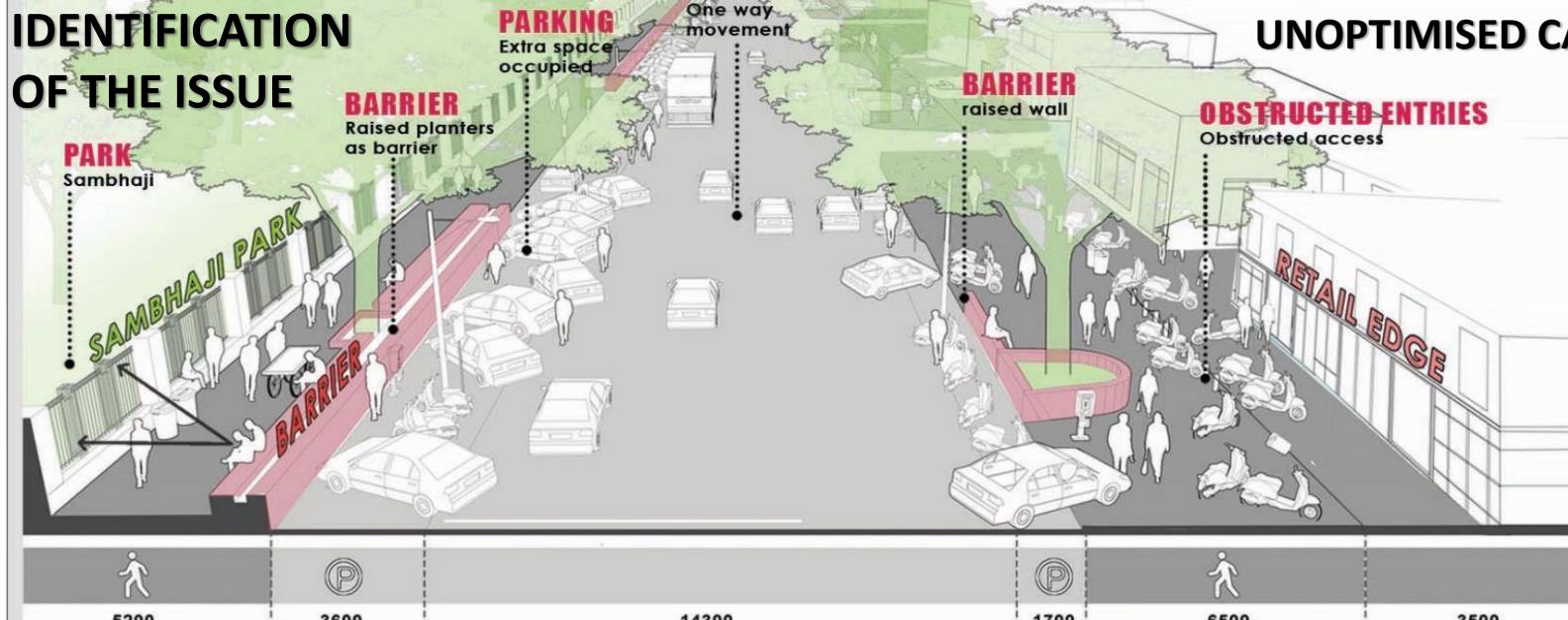
RETAIL



TREES

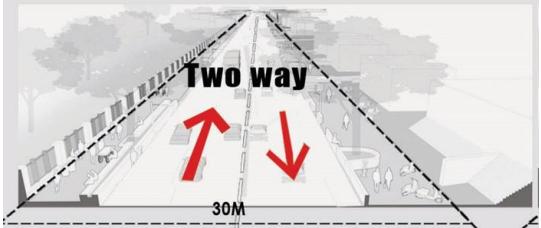


IDENTIFICATION OF THE ISSUE



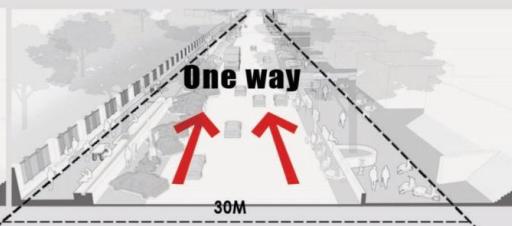
Previously two way

Previously, JM and FC road were two way roads loaded with heavy traffic jams due to the insufficient capacity of the Roads.



later one way

The traffic movement was re-organized and JM which was earlier two way was converted into one way street because of which there was leftover unoptimised tar space.

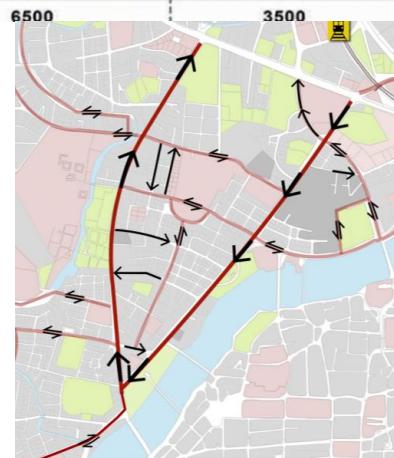


UNOPTIMISED CARRIAGeway

OBSTRUCTED ENTRIES

Obstructed access

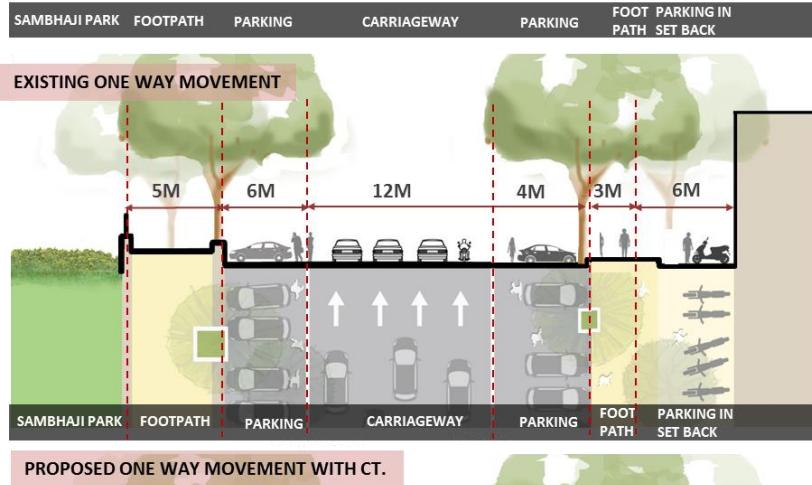
RETAIL EDGE



THE NON NEGOTIABLES

CARVING OUT PEDESTRIAN SPACE

Ensuring Equitable distribution of Space for improving **UNIVERSAL
ACCESSIBILITY** for all



CARVING OUT PEDESTRIAN SPACE

Ensuring Equitable distribution of Space for improving **UNIVERSAL ACCESSIBILITY**



CYCLE TRACK INFRASTRUCTURE



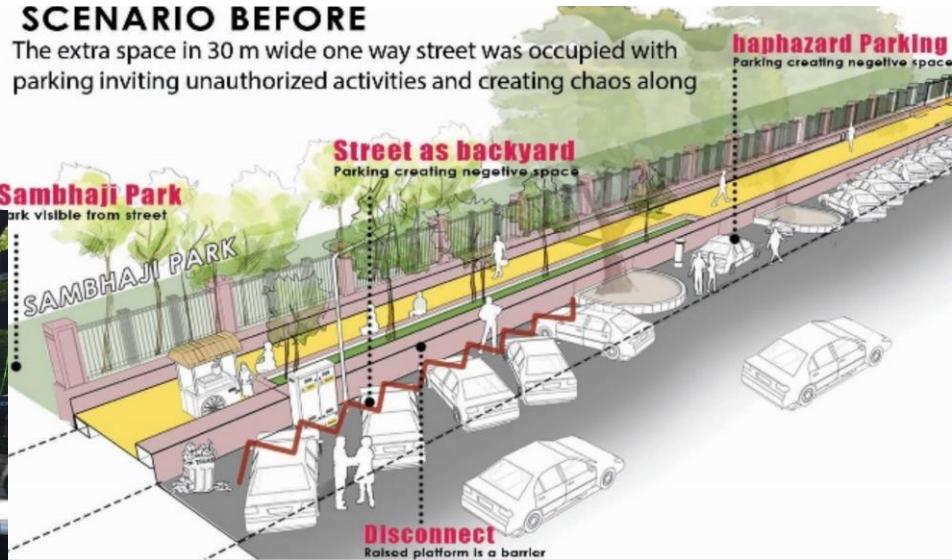
NEGOTIATIONS

SELECTION OF THE FIRST SAMPLE STRETCH

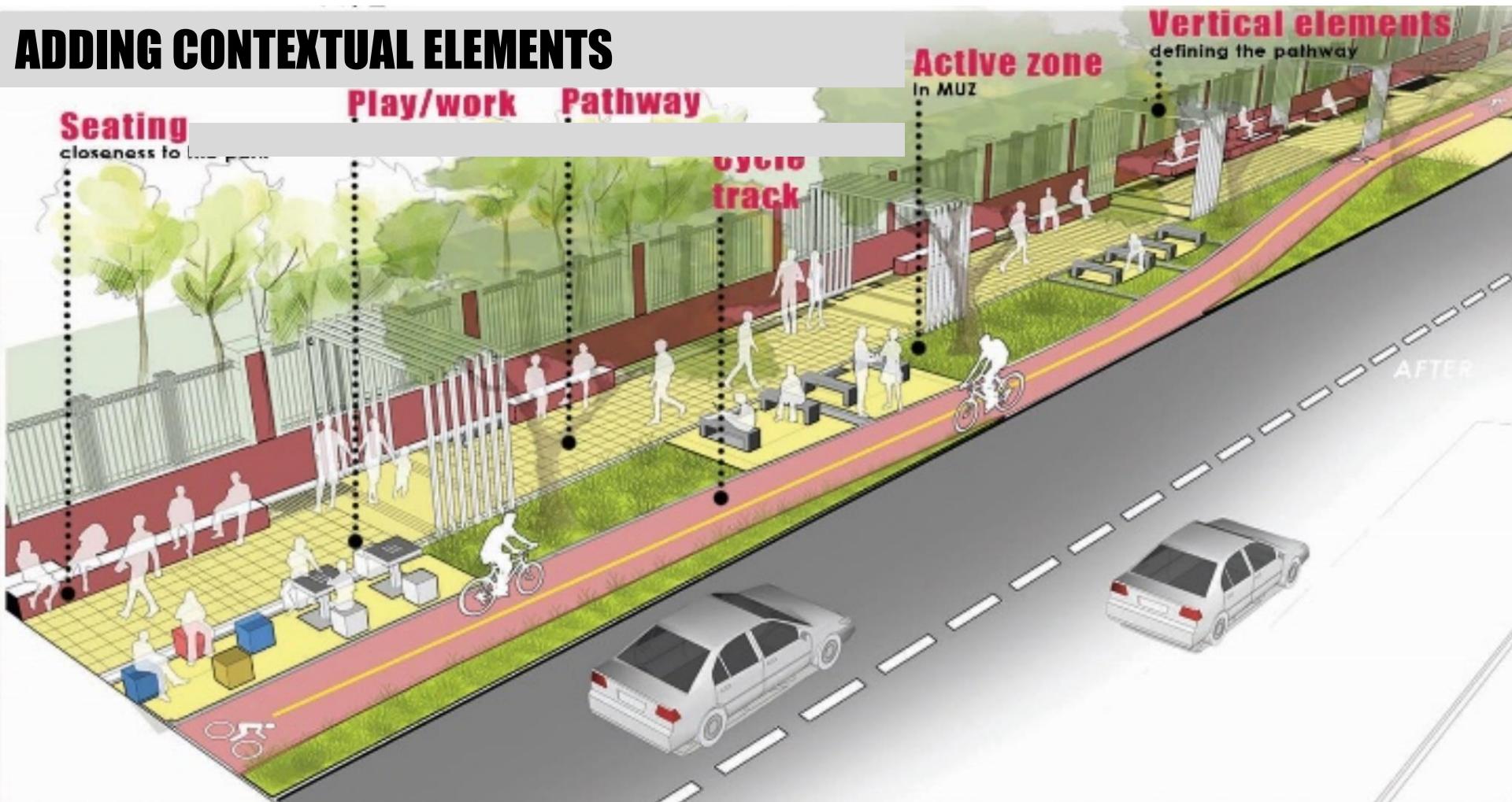


SCENARIO BEFORE

The extra space in 30 m wide one way street was occupied with parking inviting unauthorized activities and creating chaos along



ADDING CONTEXTUAL ELEMENTS



STREET AS SOCIAL PLATFORM



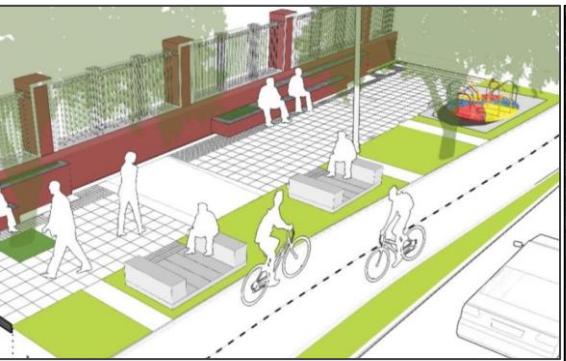


BEFORE



AFTER

SEATING OPTIONS



COZY
OUTDOOR
ROOMS-
REFUGE

SEATING OPTIONS

Visual connection

No negative spaces



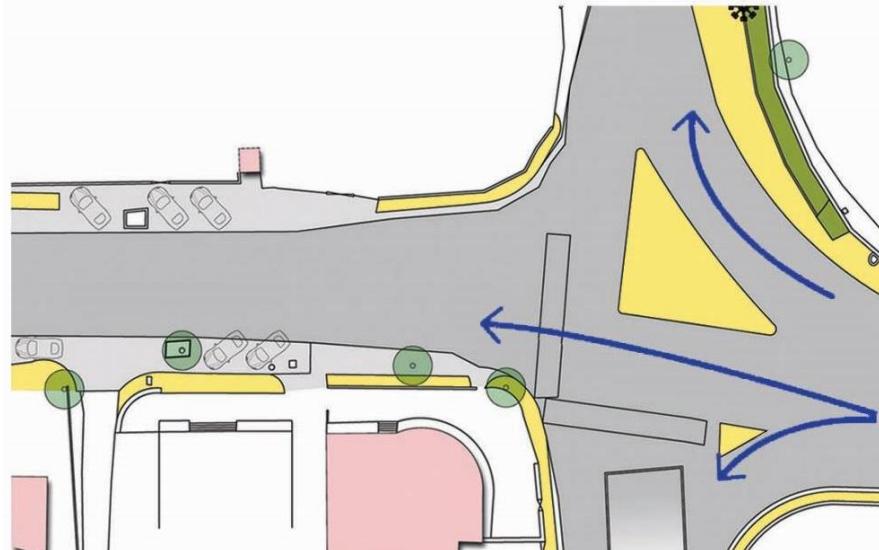
SEATING OPTIONS

NUKKAD



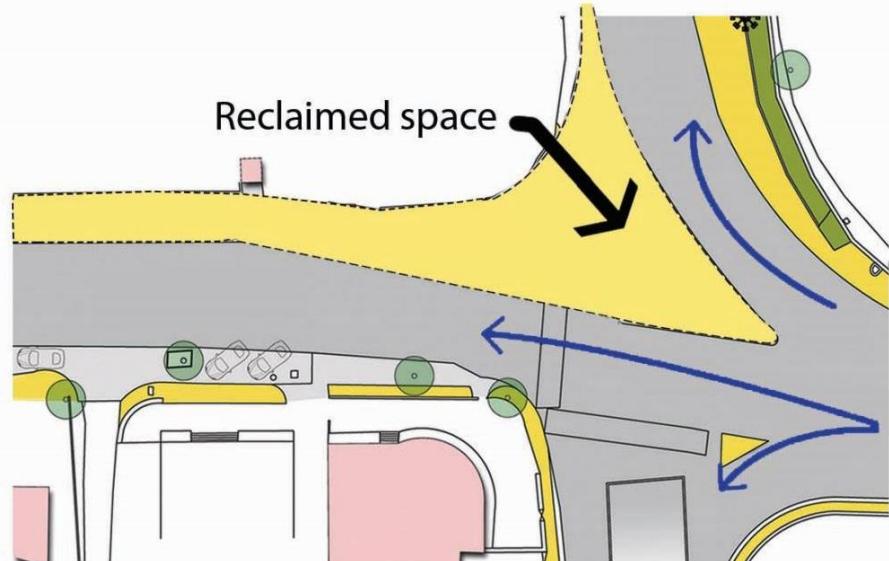
SCENARIO

The extra space in 30 m wide one way street is occupied with parking inviting unauthorized activities creating chaos along the street.



MOVEMENT

The extra space in 30 m wide one way street is occupied with parking creating chaos along the street.



BATA CHOWK -AFTER



THE REDESIGNED BATA CHOWK FLESHED OUT A LARGE PUBLIC SPACE BY OPTIMIZING THE CARRIAGeway.



VALUE OF A PLACE- INCREMENTAL CHANGES



VALUE OF THE PLACE



**VENDOR ZONES
IN PRIVATE
SETBACKS**

VALUE OF THE PLACE

MEASURABLE IMPACTS



tree coming on carriageway
dead wall hiding front setback of property



before

Space realigned for planting till the tree

VENDOR ZONES





WRI CONNECT KARO AWARDS 2018

Special mention in universal accessibility for 'JM Road, Pune'



WRI CONNECT KARO AWARDS 2018

Special mention in universal accessibility for 'JM Road, Pune'



HUDCO AWARD 2018

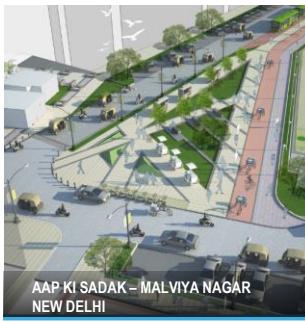
PUNE MUNICIPAL CORPORATION WINS BEST PRACTICE CERTIFICATE TO IMPROVE THE LIVING ENVIRONMENT -for 'JM Road, Pune'

PMC wins HUDCO award for innovative street design for JM ROAD on the 48th FOUNDATION DAY at India Habitat centre, Delhi

STREETSCAPES



PONDY BAZAAR PEDESTRIANIZATION
CHENNAI



AAP KI SADAK - MALVIYA NAGAR
NEW DELHI



SHIVDASPURI MARG & PATEL ROAD
NEW DELHI



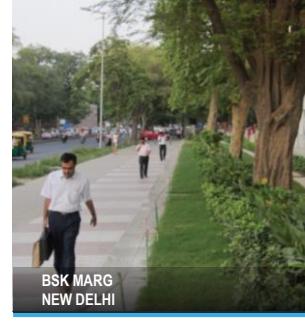
RING ROAD - FROM ASHRAM TO ITO
NEW DELHI



BHAIRON MARG
NEW DELHI



RING ROAD - FROM MOTIBAGH TO
PREMBARI - NEW DELHI



BSK MARG
NEW DELHI



SMART STREETS
NDMC, NEW DELHI



IP MARG
NEW DELHI



PUNE STREETS PROGRAM
PUNE



RITHALA ROAD
NEW DELHI



MEGA STREET PROGRAM
CHENNAI

INNER RING ROAD

From Moti Bagh Crossing to Mayapuri

RITHALA ROAD

From Wazirpur Depot till Rithala Metro Station

SHIVDASPURI MARG & PATEL ROAD

From Moti Nagar T- Point to Pusa Round About

MAY 2022

Prepared By:

OASIS
DESIGNS INC.

For :

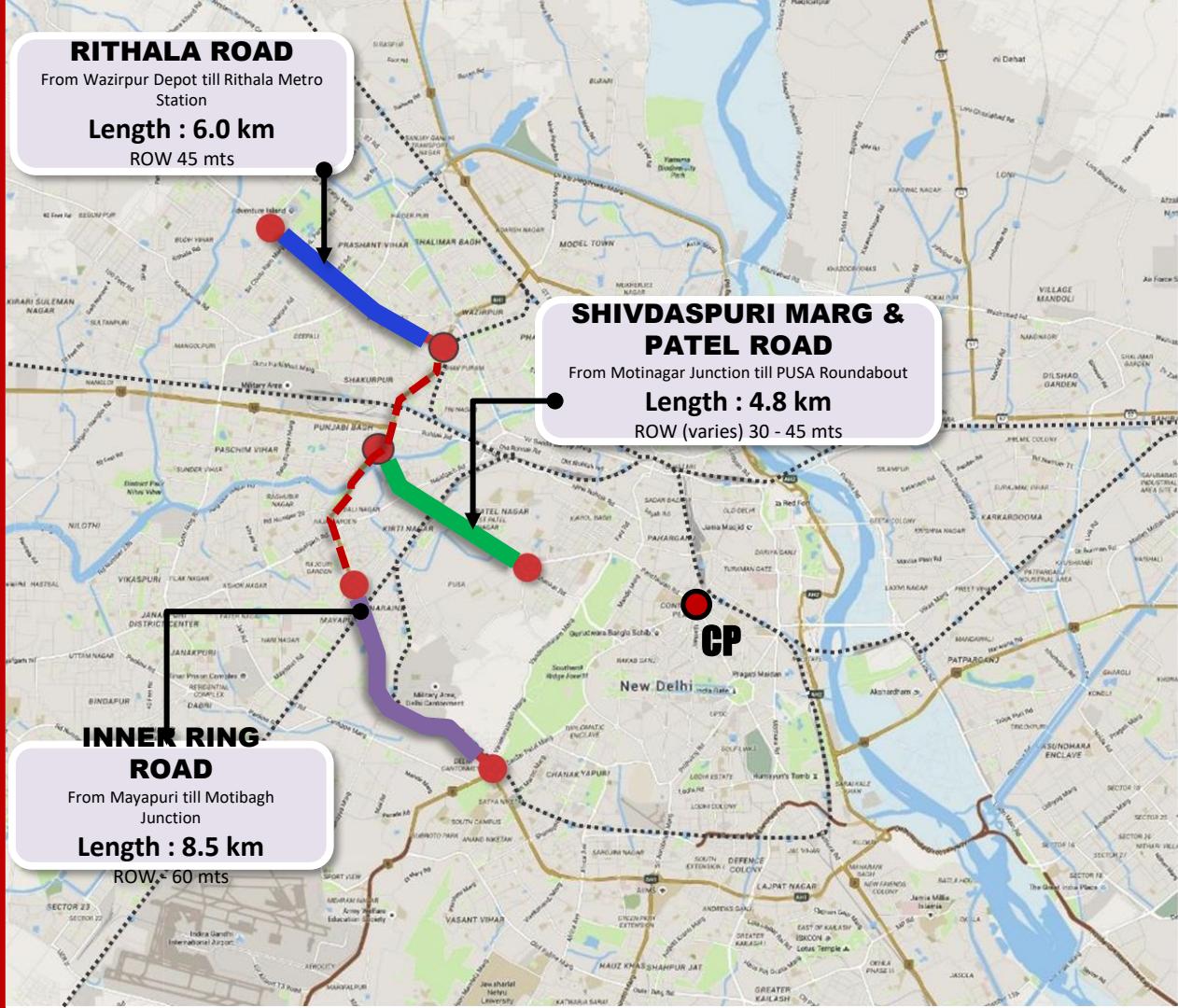
PUBLIC WORKS DEPARTMENTS, DELHI

RITHALA ROAD

From Wazirpur Depot till Rithala Metro Station

Length : 6.0 km

ROW 45 mts



INNER RING ROAD

From Mayapuri till Motibagh Junction

Length : 8.5 km

ROW 60 mts

SHIVDASPURI MARG & PATEL ROAD

From Motinagar Junction till PUSA Roundabout

Length : 4.8 km

ROW (varies) 30 - 45 mts

CP

Ongoing Streetscape Projects

Inner Ring Road



msisodia.aap • Follow

msisodia.aap Inspected ongoing work of street-scaping in different parts of Delhi with PWD officials.

Under CM @arvindkejriwal 's vision, we will provide citizens with world-class civic infrastructure - to increase road safety, accessibility, & make Delhi beautiful city in the world.

23h

fahad551khan I want to visit Delhi to see how AAP is working awesome

7m Reply

Liked by armgayathri and 8,625 others

23 HOURS AGO

Add a comment... Post

A screenshot of a social media post from the account 'msisodia.aap'. The post shows a group of people walking on a sidewalk. The caption reads: 'Inspected ongoing work of street-scaping in different parts of Delhi with PWD officials.' Below the caption, a longer message from the CM is quoted: 'Under CM @arvindkejriwal 's vision, we will provide citizens with world-class civic infrastructure - to increase road safety, accessibility, & make Delhi beautiful city in the world.' There are 8,625 likes and a reply from a user named 'fahad551khan'.

Rithala Road

Aam Aadmi Party

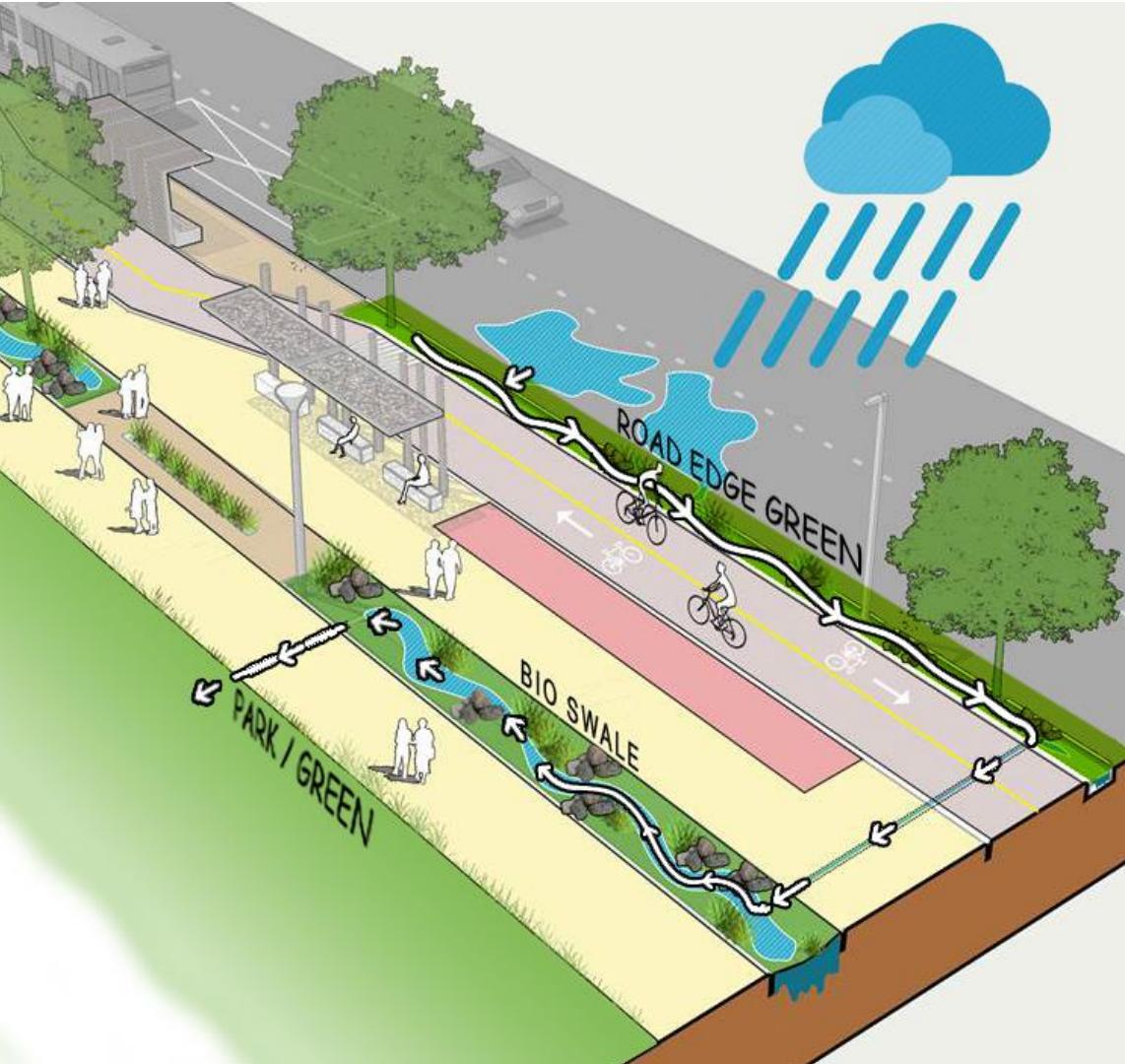
25 March at 11:24

Delhi Minister Satyendar Jain visited the streets caping project site at Rani Bagh today along with Dy CM Manish Sisodia to inspect its ongoing work.

This project intends to make Delhi's roads as per European standards and will make the roads safer for cyclists as well as pedestrians.







Deconcretizing the Surface

Working Landscape

SWALE STRATEGIES - BIG MOVE



Grey to Green



























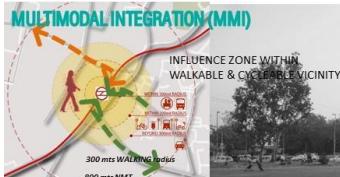
OASIS
DESIGN IN



MULTI MODAL INTEGRATION AROUND THE METRO STATIONS

CHATTARPUR METRO STATION

MULTIMODAL INTEGRATION (MMI)



Before



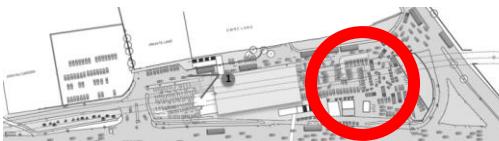
MILESTONES ACHIEVED

- 13.1.12 13th Working Group III B
- 28.2.12 35th Governing Body Meeting
- 26.3.12 17th Working Group II A
- 1.5.12 Core Group with UTIPEC & DMRC
- 14.5.12 18th Working Group II A
- 28.5.12 Meeting with DMRC MD
- 19.6.12 Meeting with DMRC Phase 3 & 4 Consultants

After

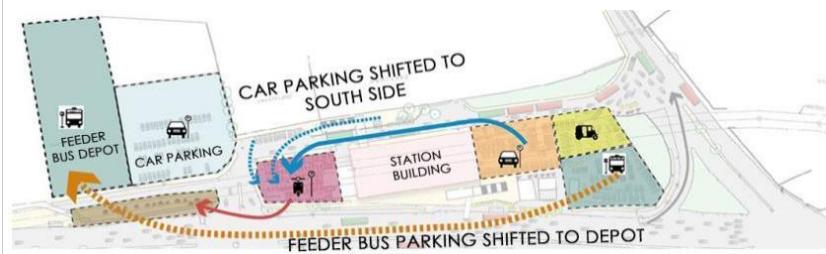
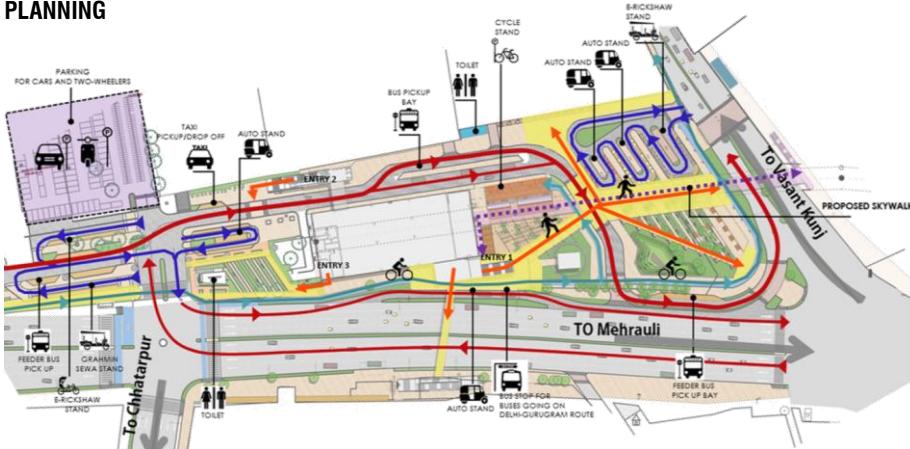


Spatial allocation of various para-transit/ IPT modes, such that convenience to public transport users is maximized, and efficiency of all modes is improved. Well designed public spaces, parks, shopping areas near the transit hub, creates a vibrant destinations, encouraging people to use them as hang out spaces.

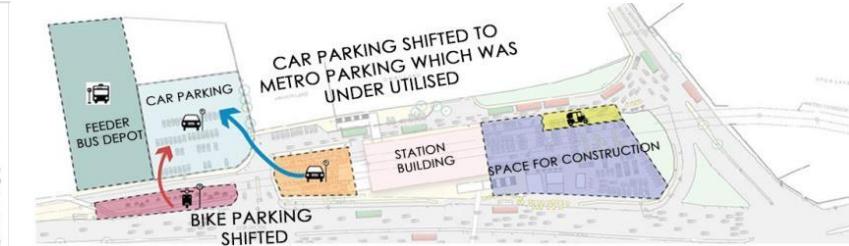
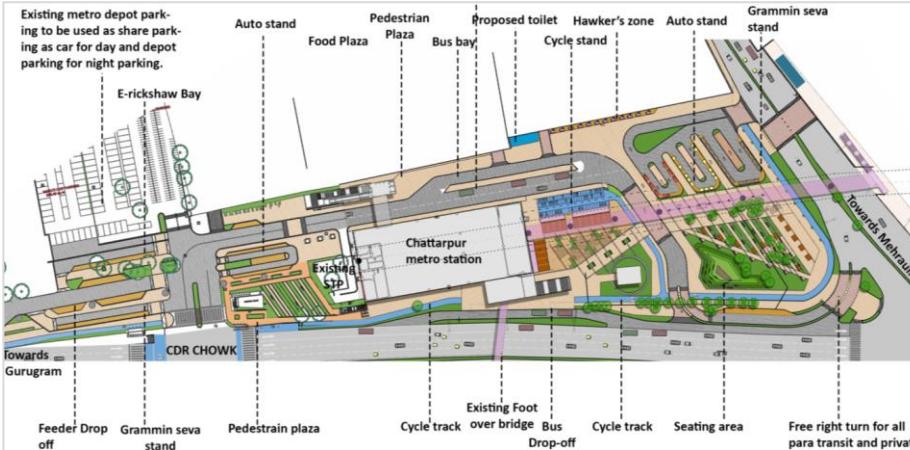


CHATTARPUR METRO STATION

PLANNING



FINAL DESIGN



CHATTARPUR METRO STATION



Existing



Proposed

CHATTARPUR METRO STATION



DESIRE LINES



CHATTARPUR METRO STATION



Existing

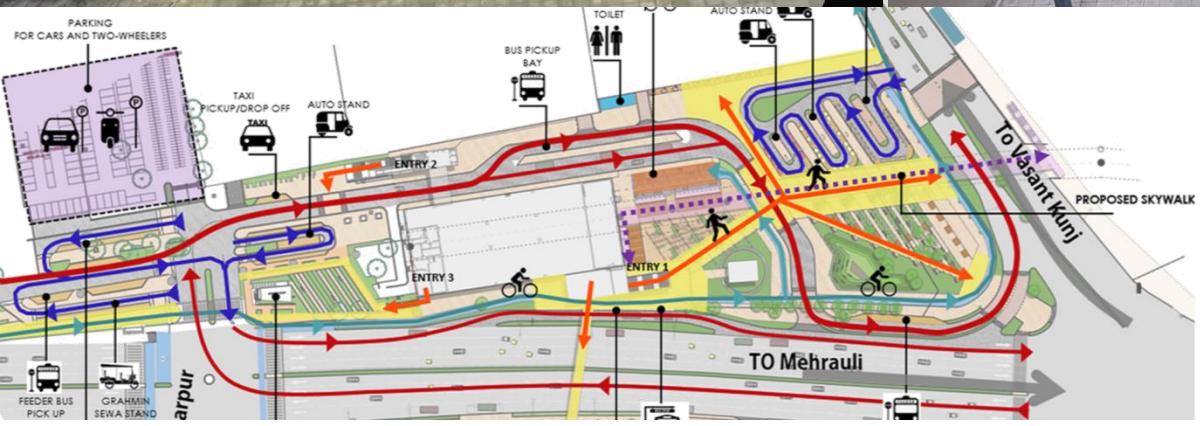


Proposed

CHATTARPUR METRO STATION MULTI MODAL INTEGRATION



CHATTARPUR METRO STATION MULTI MODAL INTEGRATION









CHHATARPUR STATION



CHHATTARPUR METRO STATION – THE HUMAN SCALE





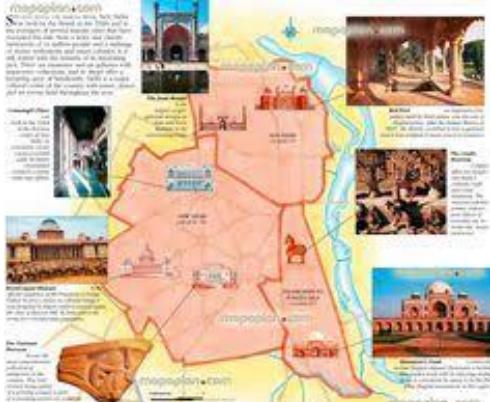


THE CITY AND WATER



REIMAGINING WATER IN DELHI . . .

HERITAGE

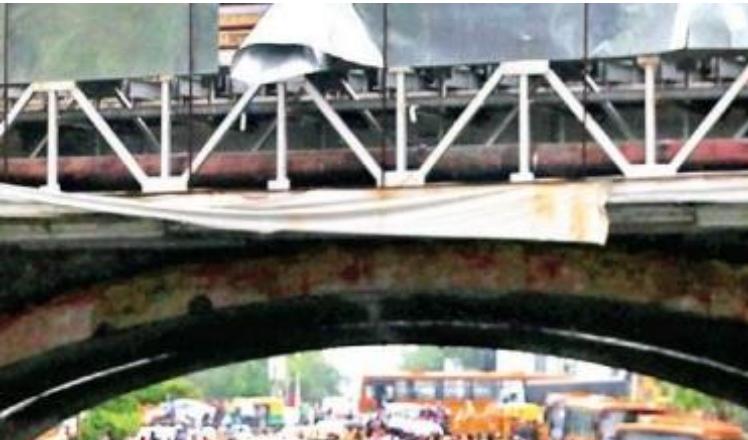
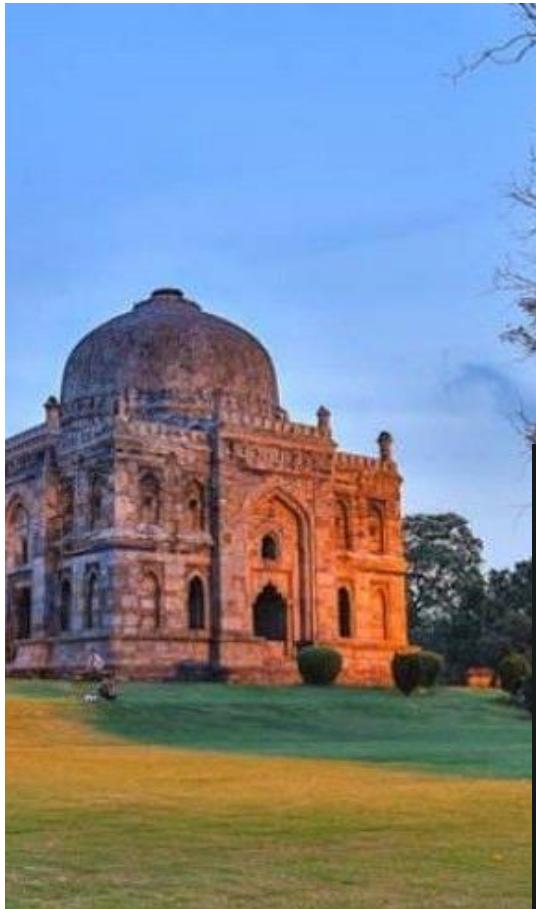


GREENERY



CONTEMPORARY INFRA





Delhi's date with Zero Day: Frightening reality can hit Capital by 2020

Delhi and 20 other cities in India are likely to run out of ground water in less than two years' time, according to a report by Niti Ayog.



Groundwater level is declining by 0.5 to 2 metres annually in most parts of Delhi

1960

Where water was found
(in metre below ground level)

- 0 to -2
- -2 to -5
- -5 to -10
- -10 to -20
- -20 to -30
- -30 to -40
- -40 to -50
- Delhi quartzite



2002

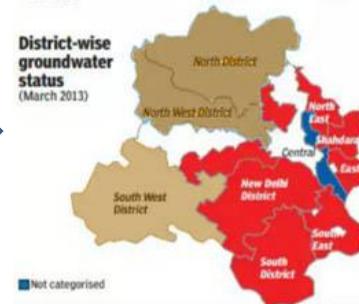
Where water was found
(in metre below ground level)

- 0 to -2
- -2 to -5
- -5 to -10
- -10 to -20
- -20 to -30
- -30 to -40
- -40 to -50
- Delhi quartzite



2013

District-wise groundwater status
(March 2013)



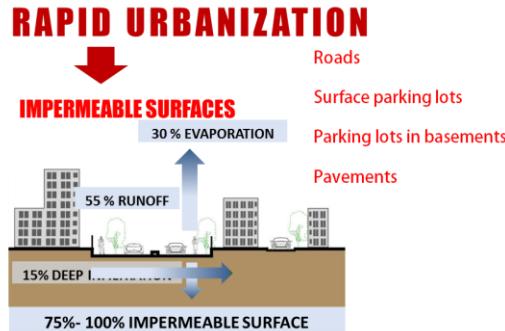
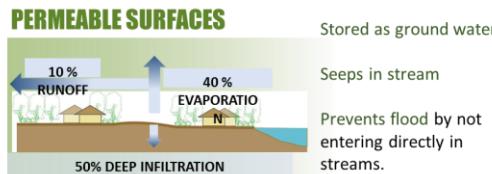
2019?



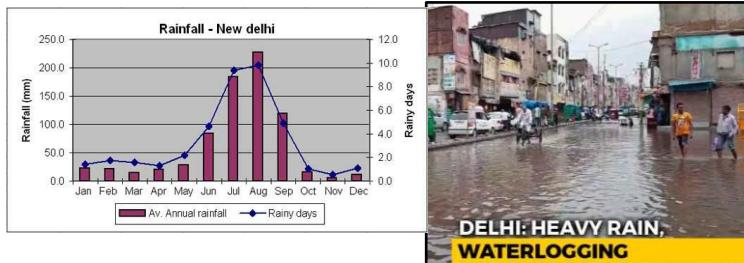
Delhi's Day Zero

April 14, 2019 239

AND ON THE OTHER HAND



CITY RAINFALL DATA IS **CONSTANT** BUT COEFFICIENT OF RUNOFF INCREASING



CLIMATE CHANGE and NATURAL (Manmade?) CALAMITIES

NATIONALLY ALL OUR CITIES ARE GOING THOUGH THE SAME

FLOODING

ISSUES

SRINAGAR

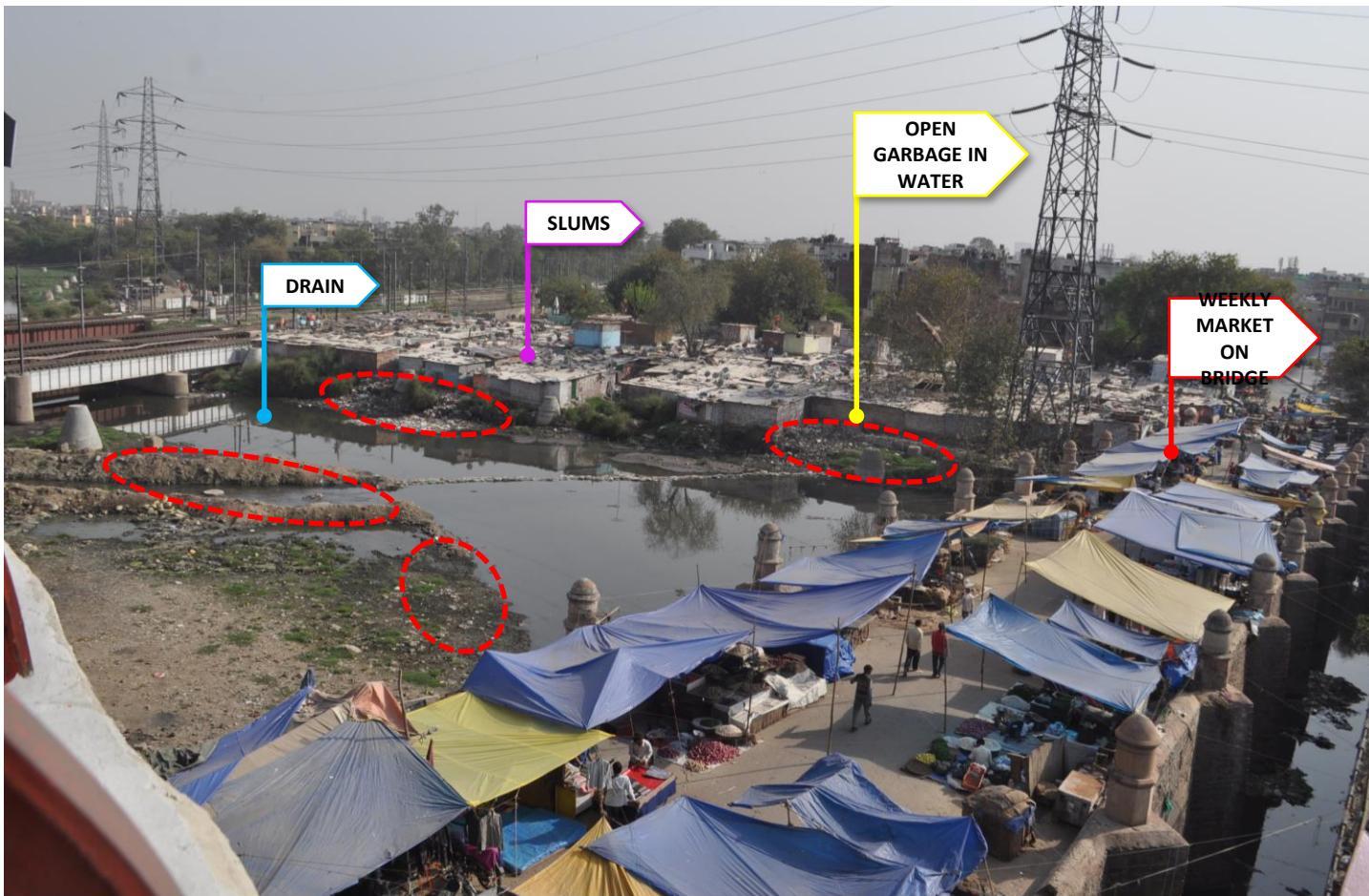


CHENNAI



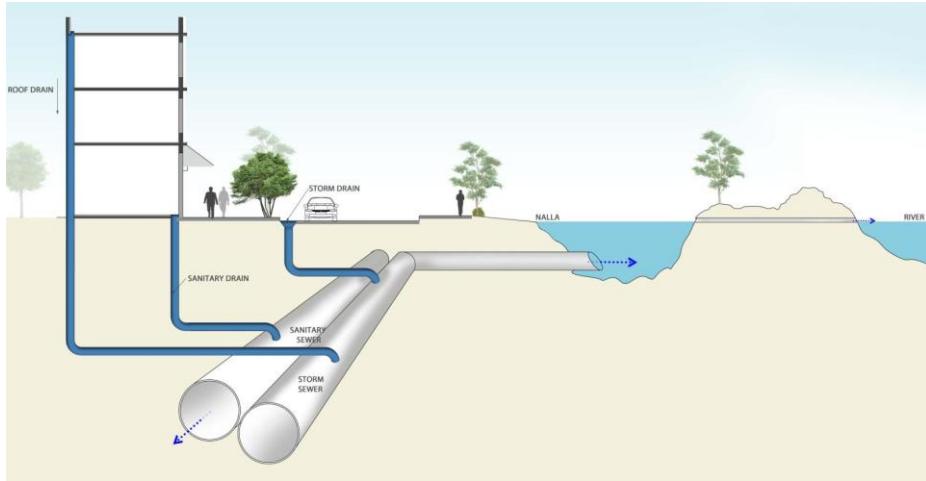
Slums next to drains

DELHI





Existing drainage system in the city



© oasis designs inc.

Delhi has separate storm & sewer channel, that connect to nala & then to river.

Each house

Neighboring street

Main street

City drain

RIVER

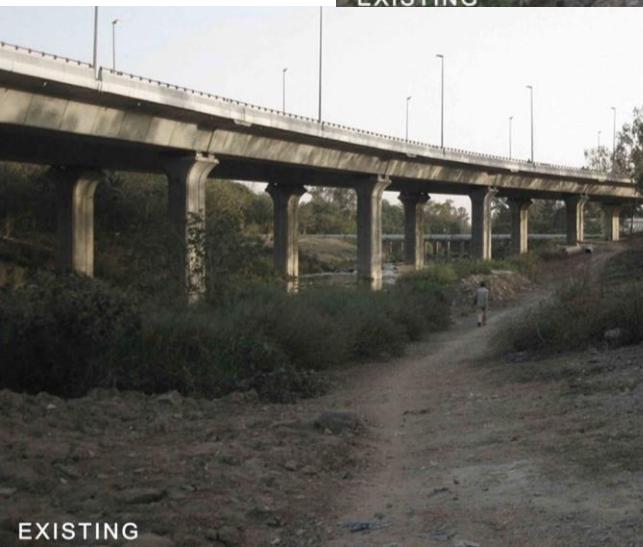




EXISTING



FUTURE



EXISTING

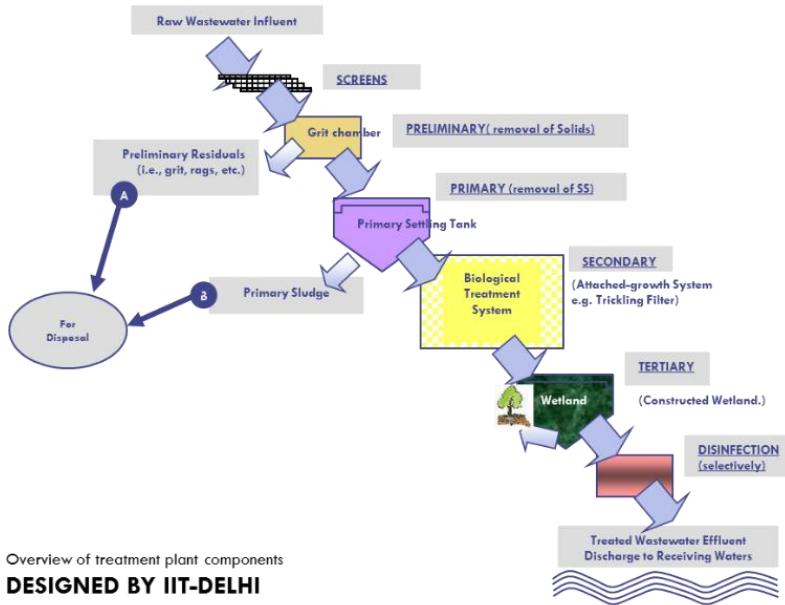


FUTURE

STOP THE POLLUTION AT THE SOURCE

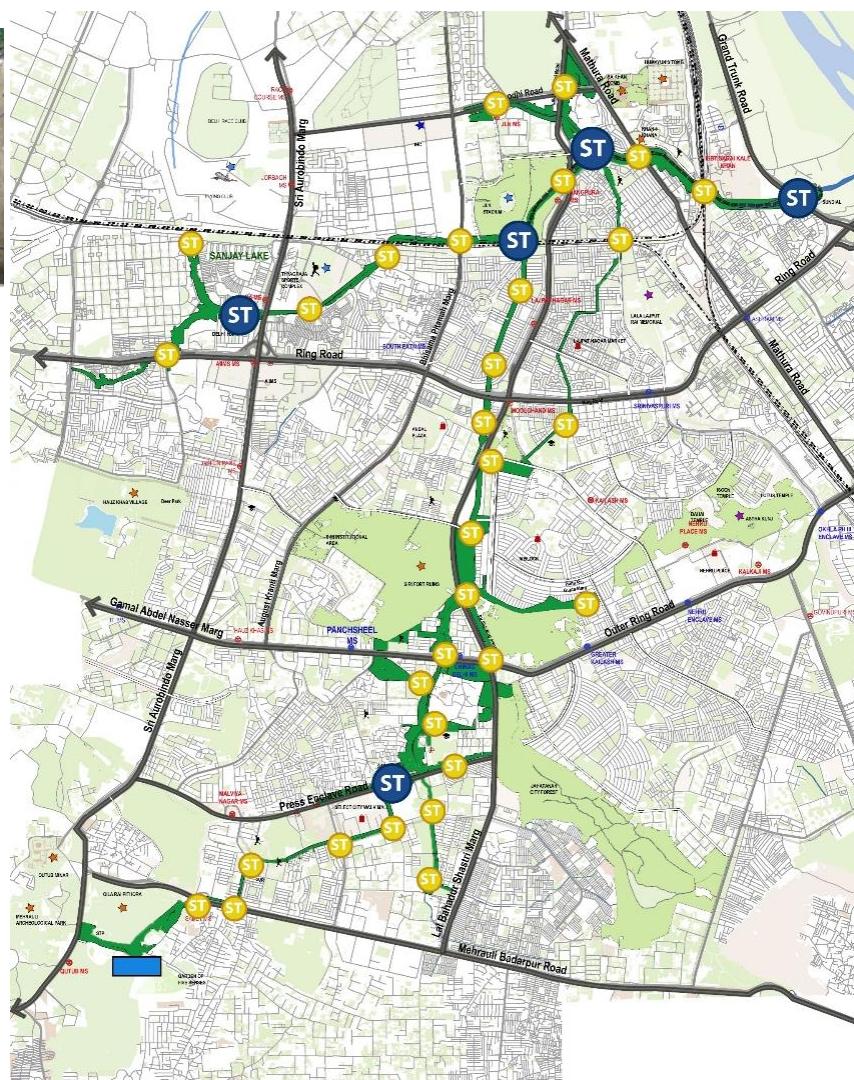


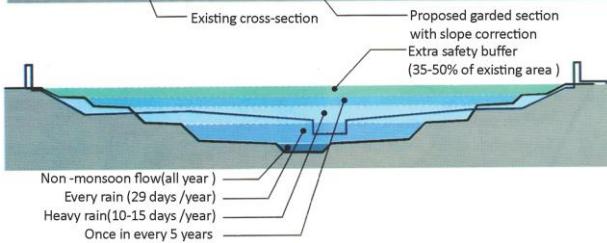
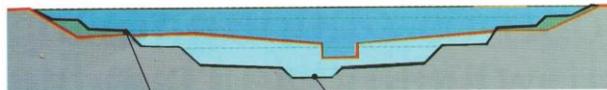
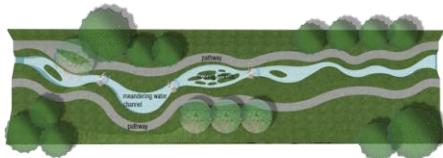
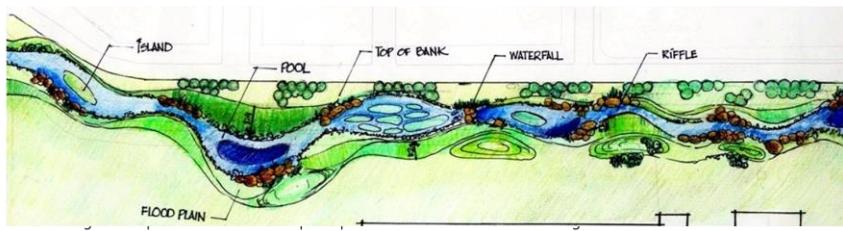
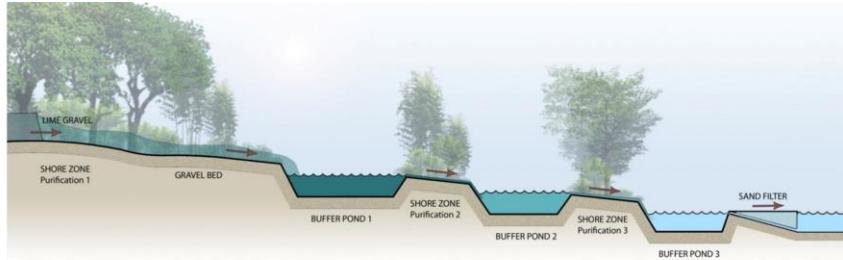
Better to catch and treat the pollution at source rather than treating the entire polluted waterbody



Overview of treatment plant components

DESIGNED BY IIT-DELHI





Linking open space Neighborhood parks and institutional greens



The Greenway Trail Project Components

ACCESS FACILITY

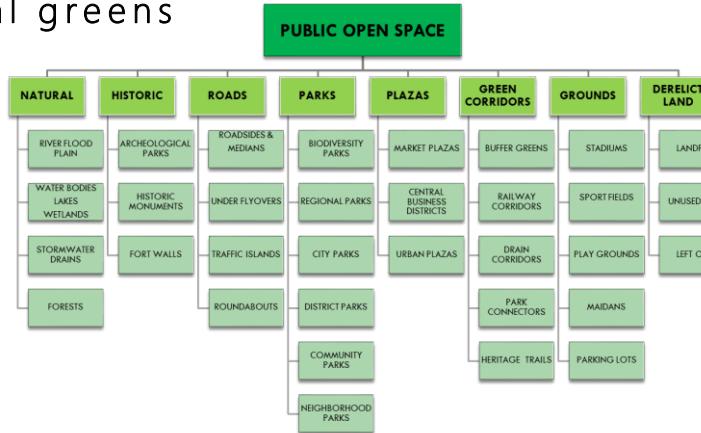
3 types of access for green trail:

- Big Gateway entrances with parking (5)
- Formal access (10)
- Small neighborhood access

Criteria for location of access facilities

- Visible, identifiable
- Parking facilities
- Planned on secondary roads, avoiding traffic on main roads

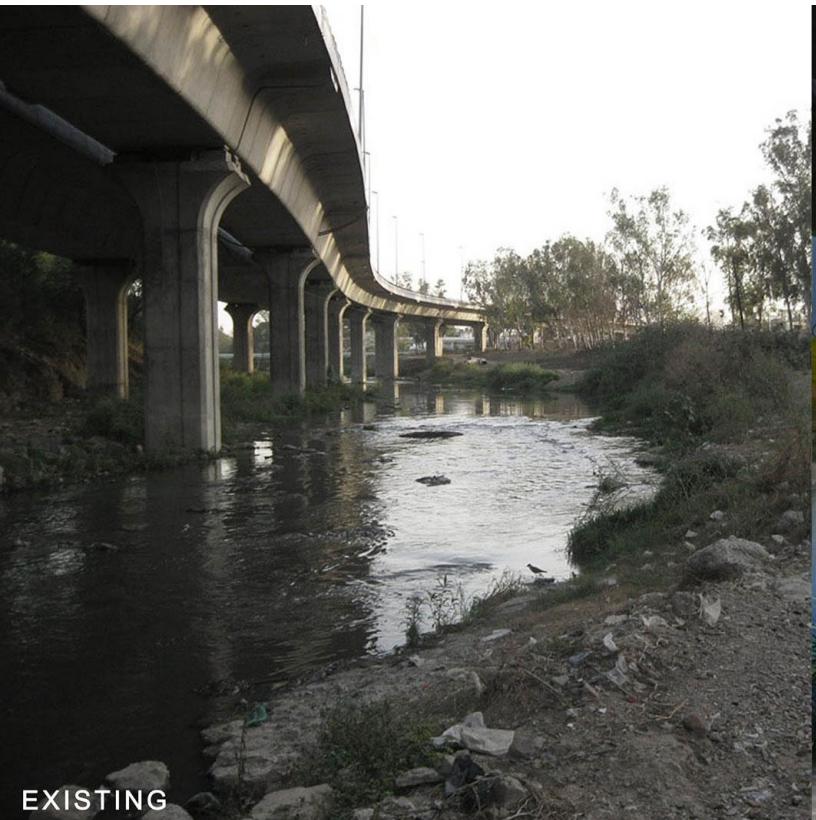
→ Gateway Access points
→ Formal Access Facility



Recommendations:

- **High Visibility** from the road
- **Easily Accessible** – proper parking facilities, Green trail connections from neighborhoods
- **Eco-mobility Trail** to achieve First & Last Mile Connectivity to and from Metro stations and Bus stops
- **Security** – proper lighting, good view lines, surveillance cameras and central control rooms, guards on duty
- **Maintenance** – all areas of park should be maintained, clean and looked after
- **Public Comforts** – toilet blocks, drinking water, a place to sit in the shade, paths to walk, lawns to enjoy a outdoor picnic, a place to pick up a sandwich and coffee.
- **Urban Biodiversity** protection and regeneration
- **Ecological services**, such as Storm water management and Waste water treatment



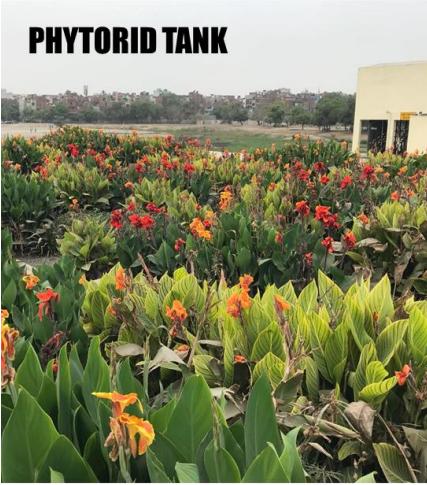


EXISTING



FUTURE

PHYTORID TANK







WASTE WATER AS A RESOURCE



Unorganized colony



Waste enters nala



Organized colony



Polluted water is rich in Phosphate & Nitrates

Food for plants



Water Lily



Canna



Typha Grass

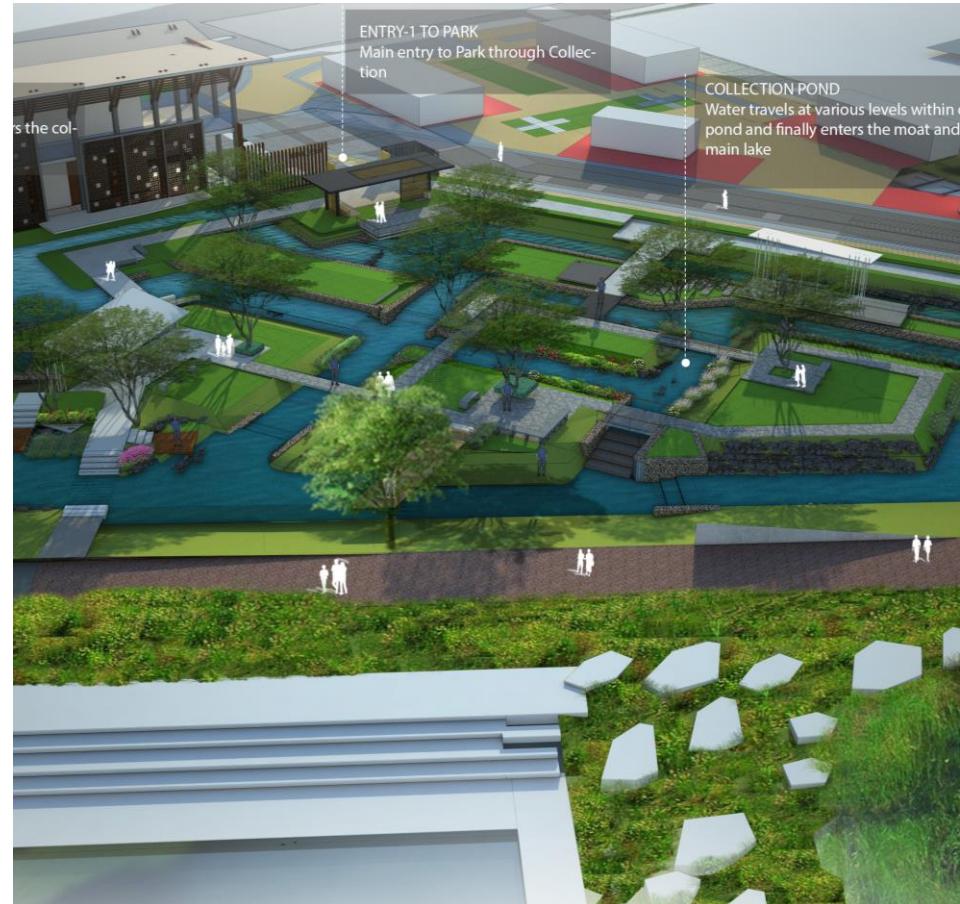


Mustard



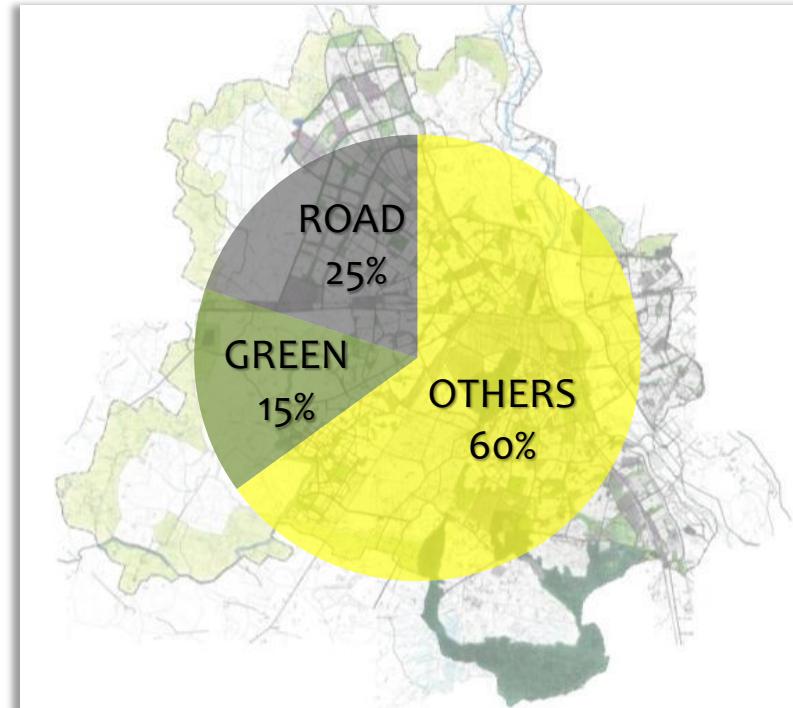
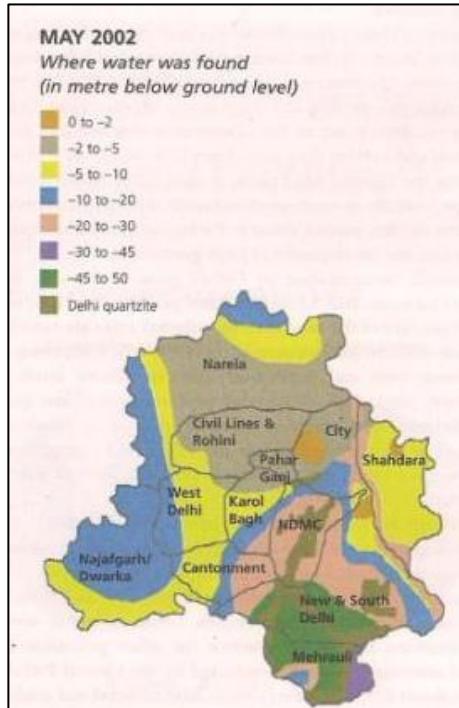
Sunflower

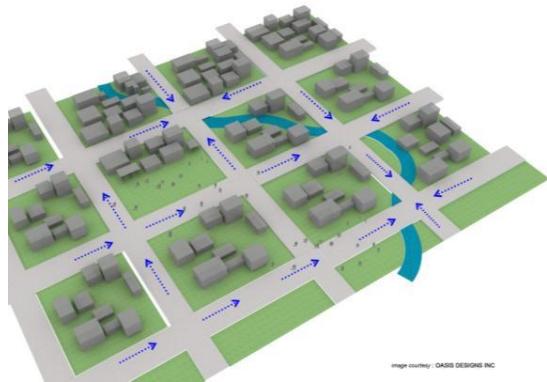




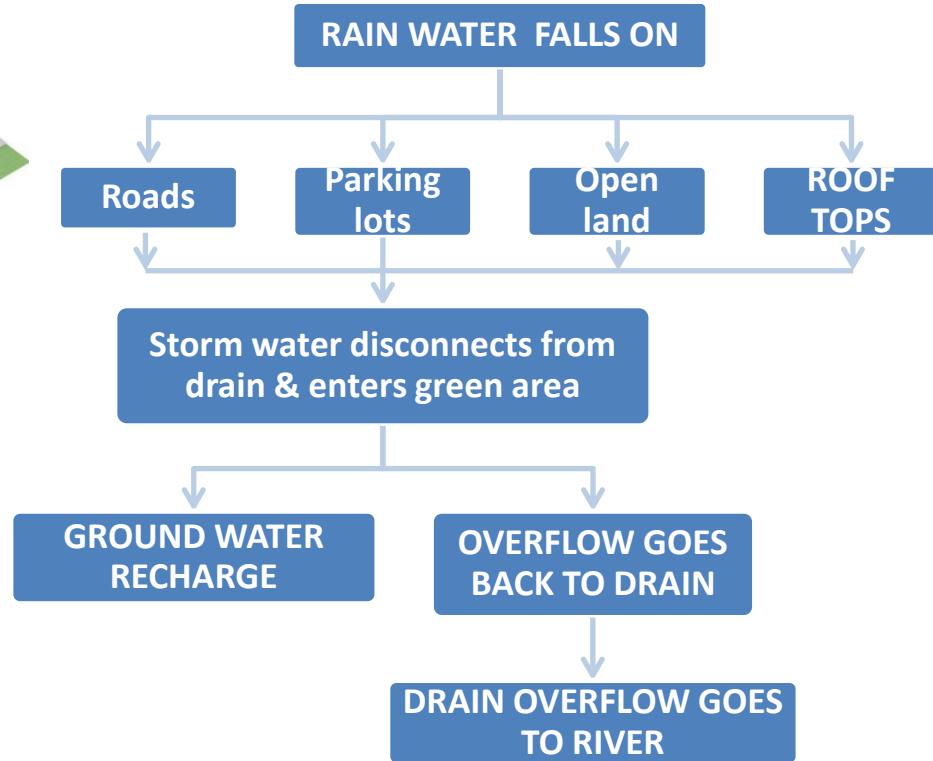
DELHI

Delhi Area 1486 sq. kms





New strategy for disconnecting from the conventional pipe system and using all possible alternate areas for recharge.



CATCH RAIN WATER WHERE IT FALLS



SLOW



SPREAD



SOAK

SWM STORM WATER MANAGEMENT

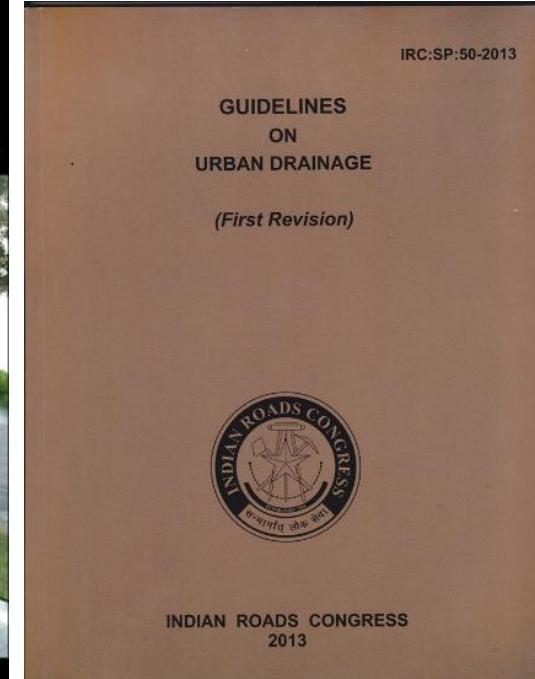
retrofitting our urban streets for sustainable drainage

Draft copy , July 2012

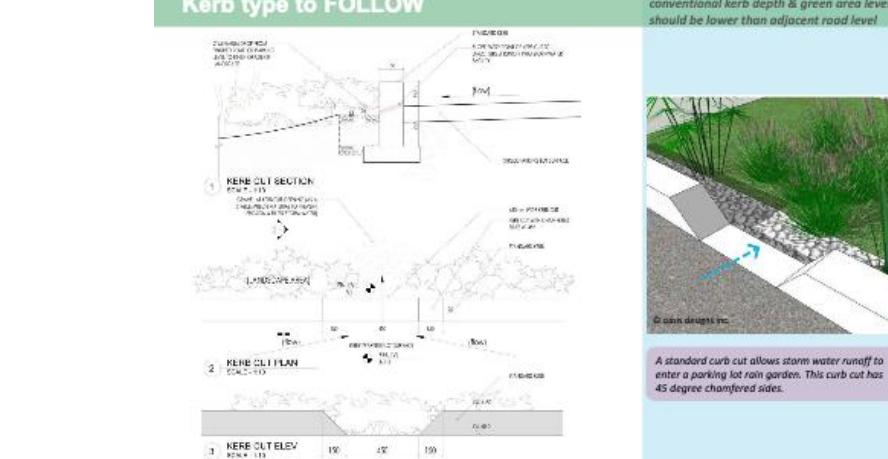
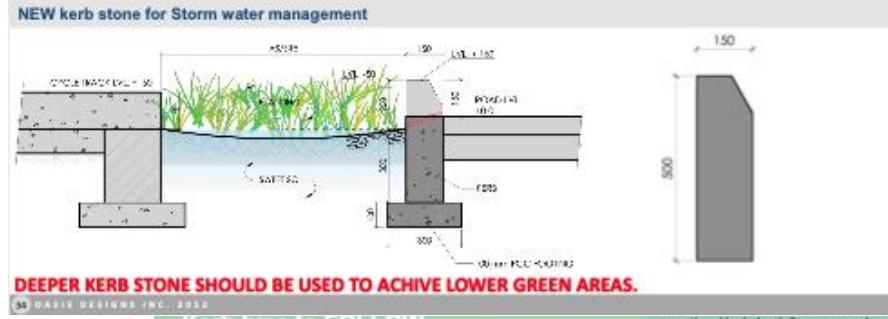
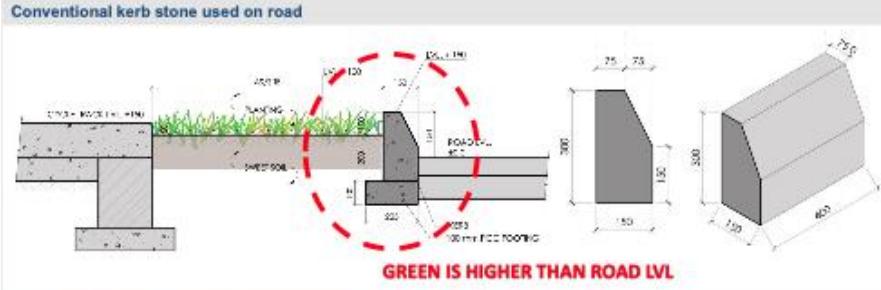
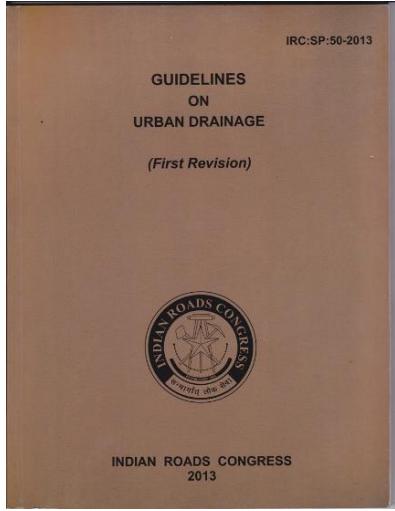


Prepared by:
OASIS DESIGNS INC.

For : **UTTIPEC**
DELHI DEVELOPMENT AUTHORITY
&
DoE - GNCTD



LOWER THE GREENS

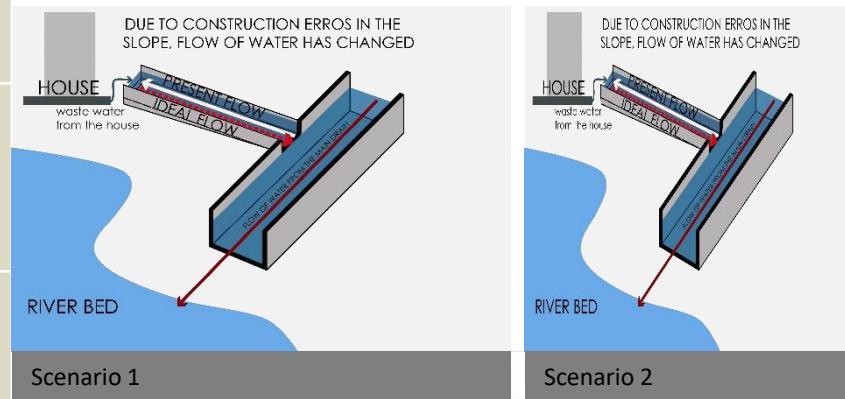


S. No.	Scenarios	Highlights
1.	Simulation with the data provided by the departments	The model has been setup for each of the basins using the data which IIT Delhi received from various departments/ agencies
2.	Simulation with changed/corrected cross sections of the drains	Invert Levels and width of the cross sections have been changed wherever adverse slopes or constriction is encountered
3.	Simulation after incorporating the water bodies	Water bodies have been incorporated in the modelling to absorb the surplus water wherever feasible
4.	Simulation after diverting storm water to additional storages/ recharge areas	Storm water is diverted from drains to nearby parks and depression storages to reduce flooding at the location through detention and recharge
5.	Simulation with no flooding junction for 2 year return period	Flooded junctions were transformed into the storages. However, these storages may be replaced by other LID structures if feasible.

IIT DRAINAGE MASTERPLAN

Solution always – increase the velocity of water

So in last scenario – when landscape is used the velocity of water is slower & will mitigate the flooding effect



MANAGING STORMWATER FOR THE SHORT PERIOD OF HAEVY INTENSE RAINS

NEED A STRATEGY TO DIVERT & SPREAD WATER FOR A SHORT DURATION -SO THE STREETS DON'T GET CHOKED
ONCE THE INTENSE RAIN HAS STOPPED THE OVERFLOW CAN BE CONNECT TO THE DRAINS

DECENTRALISED STORMWATER COLLECTION /RECHARGE
TAP IT WHERE IT FALLS

RATHER THAN TRANSPORTING IT TO ANOTHER LARGER WATER BODY

SLOW



SPREAD



SOAK

ALONG WATERFRONTS - RIVERFRONT PARK,



PRIZE WINNING ENTRY FOR HUDCO AWARDS 2014



ALONG WATERFRONTS – RIVERFRONT PARK, AHMEDABAD



ALONG WATERFRONTS - RIVERFRONT PARK, AHMEDABAD



PRIZE WINNING ENTRY FOR HUDCO AWARDS 2014



ALONG WATERFRONTS - RIVERFRONT PARK,

AHMEDABAD



ALONG WATERFRONTS – RIVERFRONT FLOWER PARK, AHMEDABAD

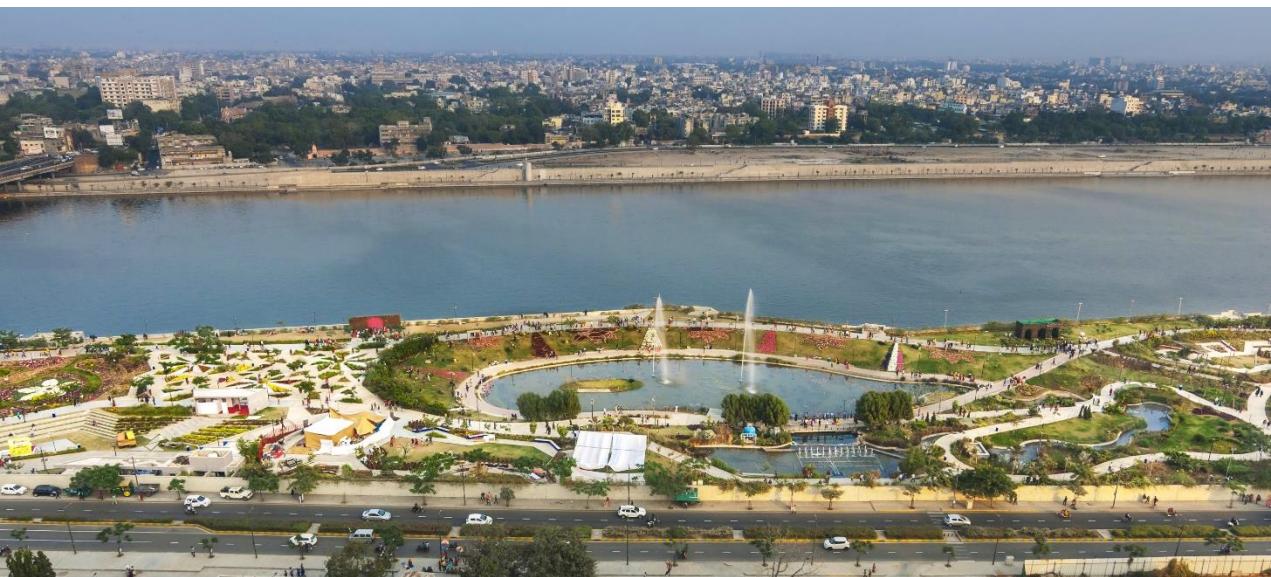


Name of Project :Riverfront Flower Park -Ahmedabad
Cost of project: 18.2 cr.
Duration: Feb 2014- Jan 2017
Status of project: **COMPLETED**

Riverfront flower park by AMC on over 1 lakh sq. ft. area at Sabarmati Riverfront upper promenade behind V. S. Hospital & Tagore Hall was inaugurated by Hon. Gujarat Chief Minister Vijay Rupani on 3rd January 2017.



ALONG WATERFRONTS – RIVERFRONT FLOWER PARK, AHMEDABAD



ALONG WATERFRONTS – RIVERFRONT FLOWER PARK, AHMEDABAD



Lake Area - during Flower Show 2017

ALONG WATERFRONTS – RIVERFRONT FLOWER PARK, AHMEDABAD



THE COIMBATORE SMART CITY LAKE PROJECT

- RECONNECTING THE CITY BACK TO ITS CULTURAL HERITAGE
- SYSTEMS APPROACH
- ECO-SYSTEM SERVICES

ECO-RESTORATION OF 8 LAKES Under Coimbatore Smart City Proposal

Name of Project :Eco Restoration of 8 Lakes

Comprehensive Project

- **1000 ACRES** OF PUBLIC REALM CREATED
- **35 KM** LONG LAKE-FRONT PROMENADE
- **18 KM** LONG CYCLING HIGHWAY
- **5000** NEW NATIVE TREES ADDED
- **750 TONNES** OF CO₂ SEQUESTRATION
- **10** NEW COMMUNITY CENTRES PROPOSED



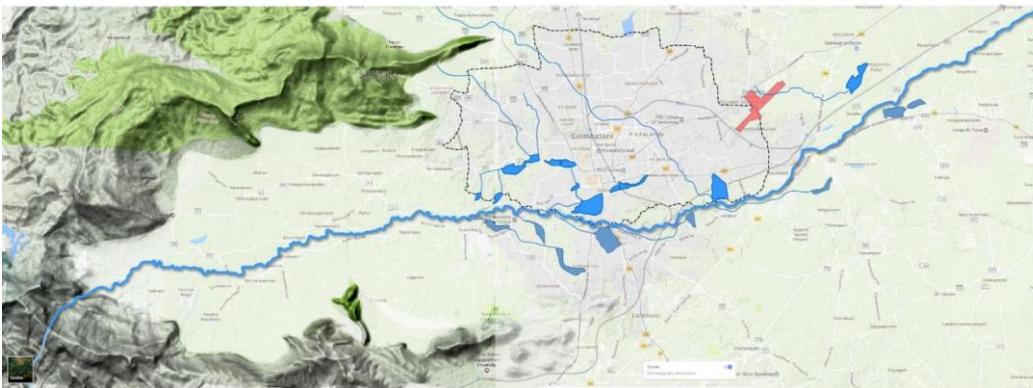
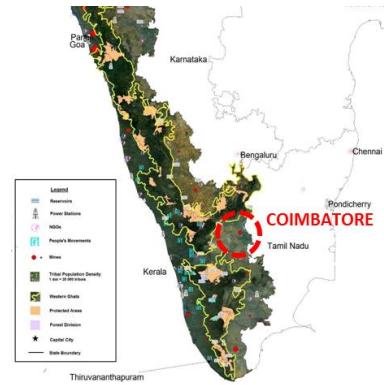
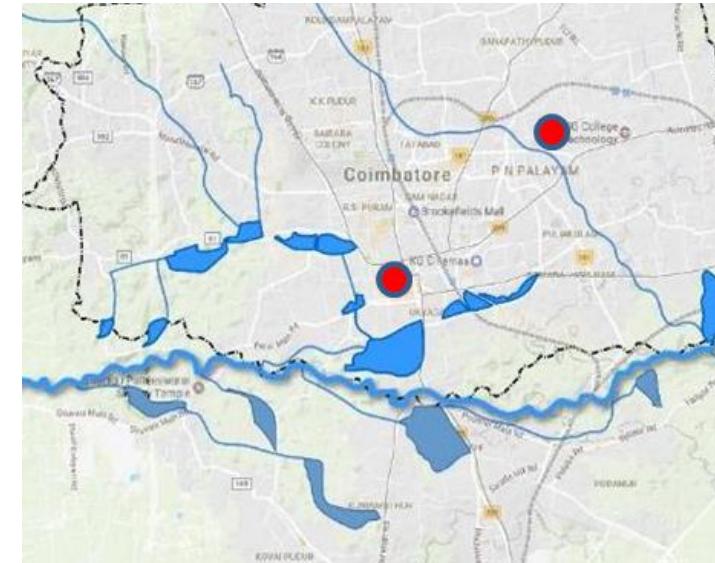
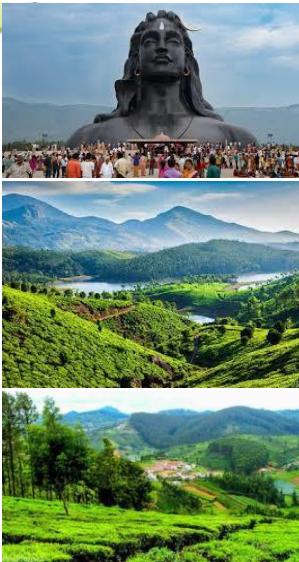
Urban design Landscape design Transport planning

Working with experts

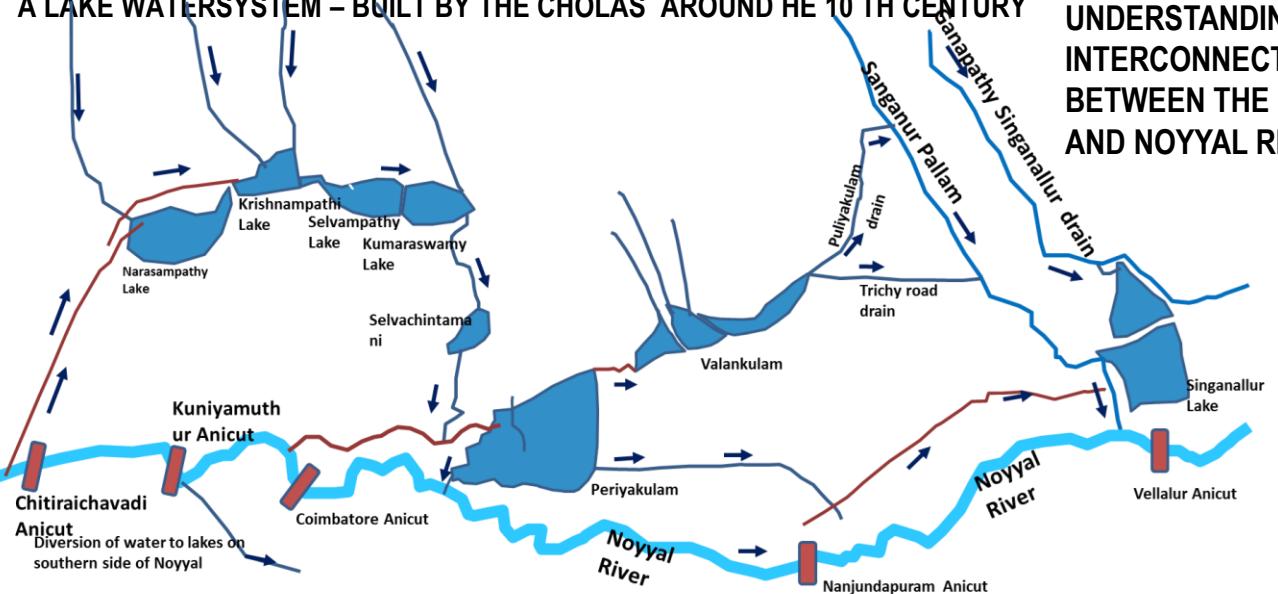
Waste Water Management-CDD Hydrology-ALCON Environment experts

ACTIVE PARTICIPATION

COIMBATORE CORPORATION RWAS AND NGOS



A LAKE WATERSYSTEM – BUILT BY THE CHOLAS AROUND HE 10 TH CENTURY



UNDERSTANDING INTERCONNECTION BETWEEN THE LAKES AND NOYYAL RIVER



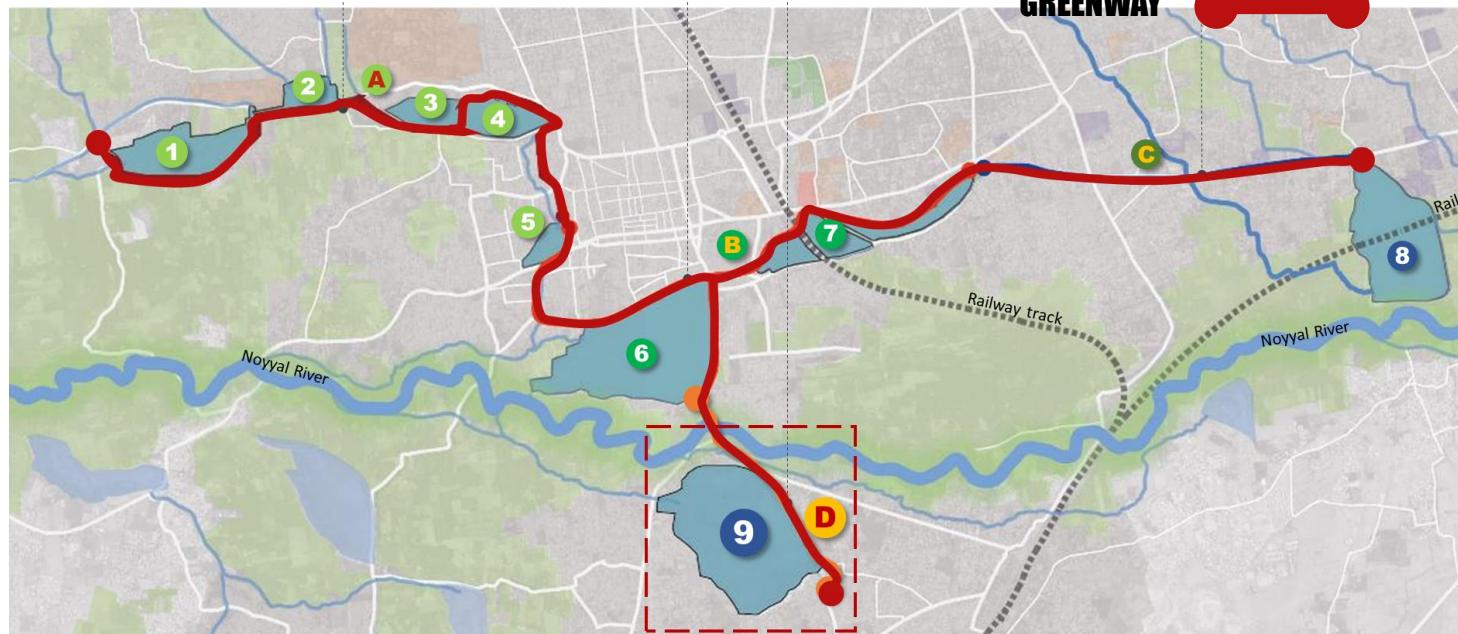
PHASE 03	
1	Narasampathy Tank
2	Krishnampathy Tank
3	Selvampathy Tank
4	Kumarasamy Tank
A	NMT TRACK till Gandhi Park Traffic Island

PHASE 01	
5	Selva Chinthamani Kulam Tank
6	Periya Kulam Tank
7	Valan Kulam Tank
B	NMT TRACK from Gandhi Park Traffic Island till Sangam Junction

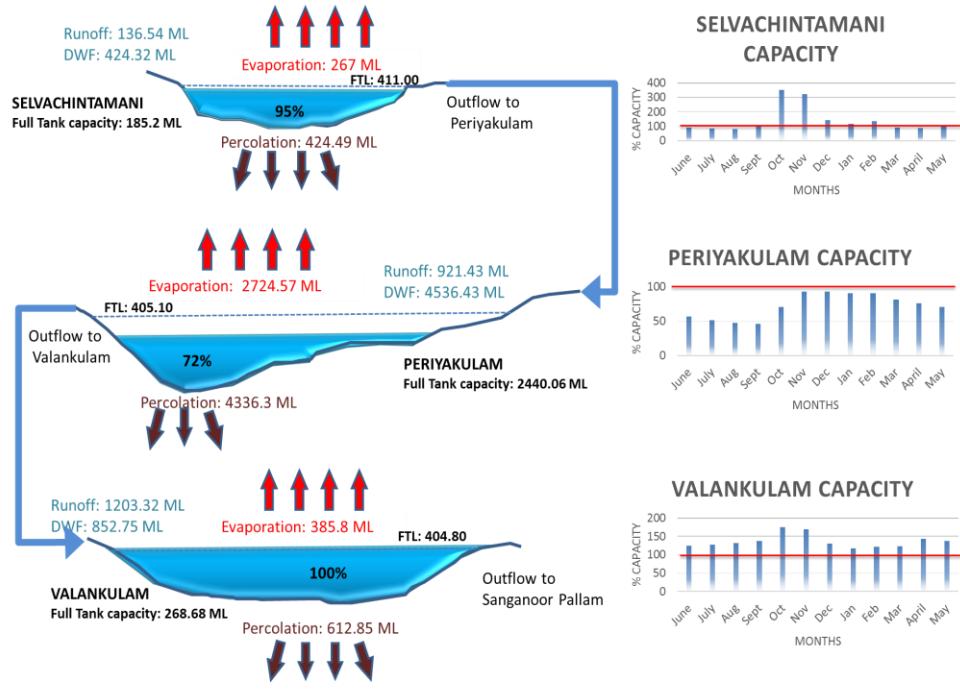
Phase 04	
9	KURICHI LAKE
D	NMT TRACK from Periyakulam South East point to Aathupulam Junction ending at Sundaraouram Junction along Pollachi Rd (NH 209) – 2.5 km

PHASE 03	
8	Singanallur Tank
C	NMT TRACK from Sangam Junction till Singanallur Tank

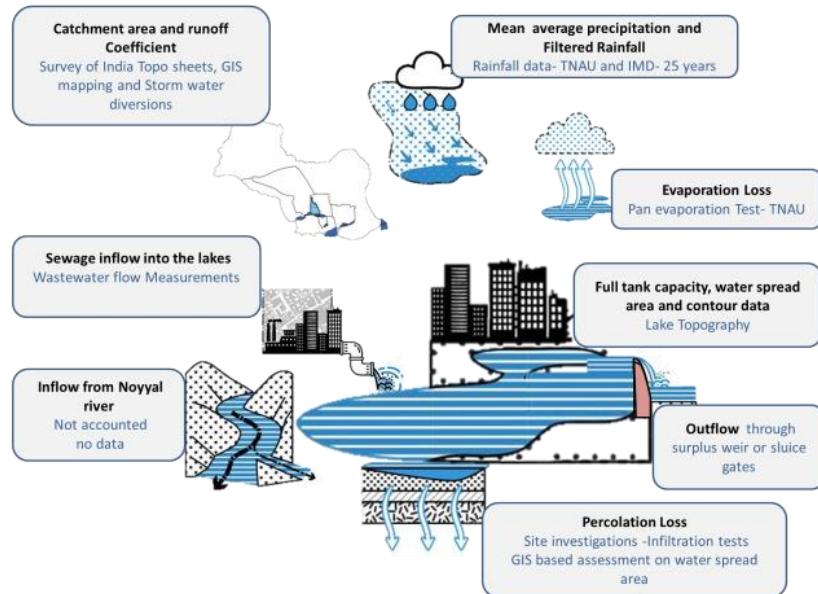
KOVAI LAKE CONNECTOR GREENWAY



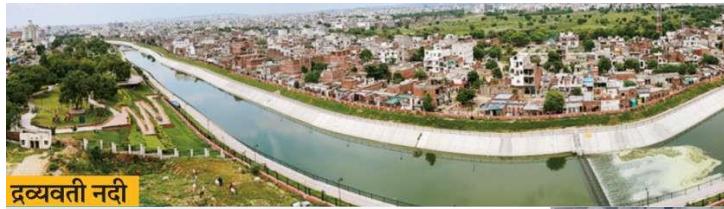
ANNUAL WATER BALANCE BASED ON WET AND DRY WEATHER FLOWS



WATER BALANCE COMPUTATION - INPUT PARAMETERS

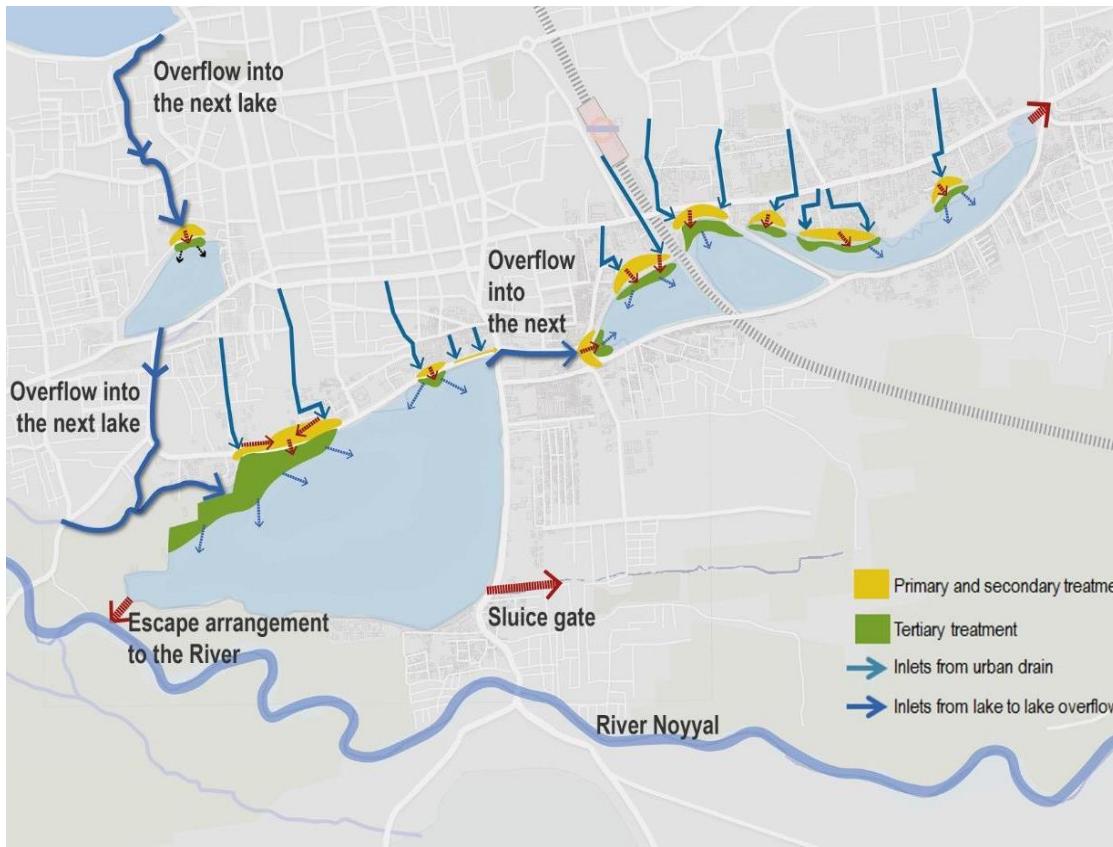


PARADIGM OF WATERFRONT DEVELOPMENTS IN RECENT

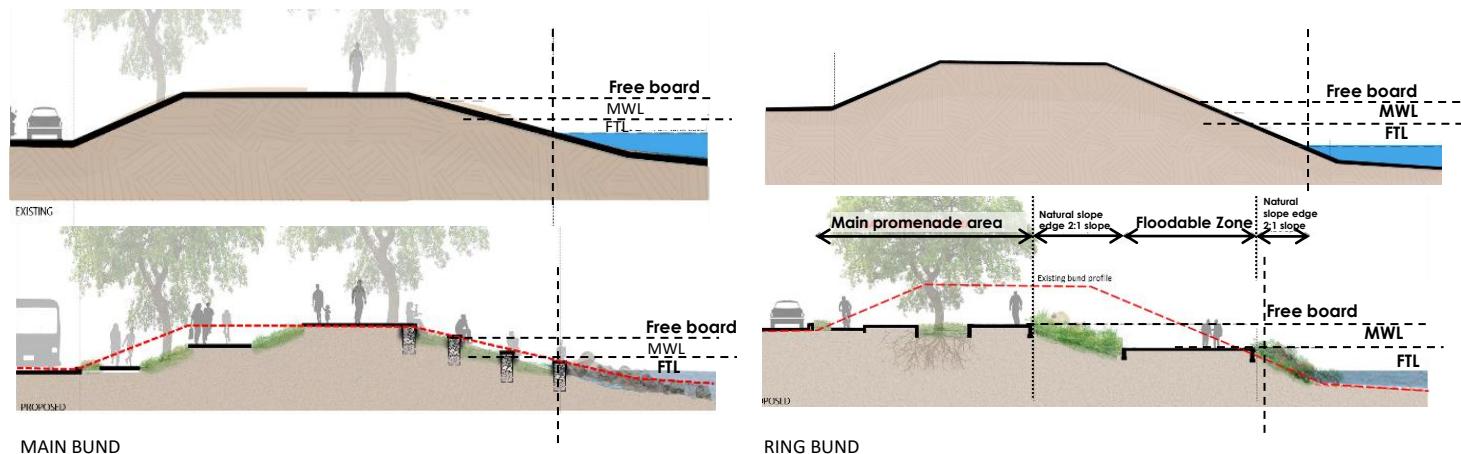


EXISTING EDGE CONDITION

Depending on the catchment area of each lake, the codal requirement of maintaining a maximum water level 1mt above the full tank level & then adding a freeboard of 0.9mt the main bund for all the big lakes has been fixed at 2mt above the FTL; while the ring bund (the non-critical bund) shall be 0.9mt higher than the FTL.

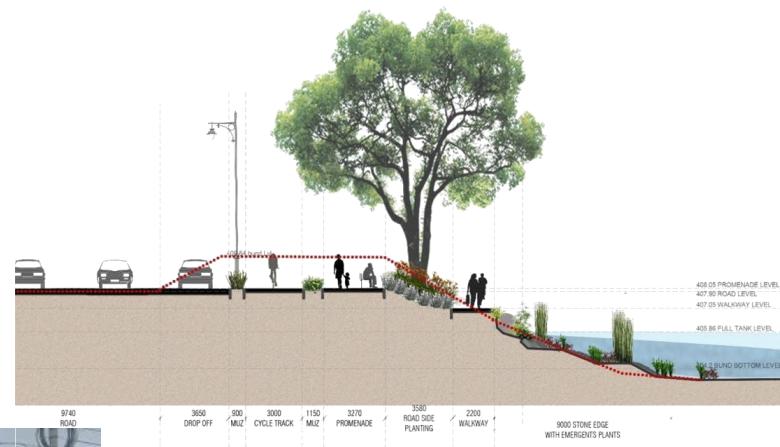


RINGBUND AND MAIN BUND CONCEPT



SITE PROGRESS- Lowering of the Ring Bund

FIRST STRETCH OF BUND BEING LOWERED TO ACHIEVE CLEAR VIEW OF LAKE FROM THE ROAD



RE-ESTABLISHING THE VISUAL CONNECTION FROM THE ROAD LEVEL





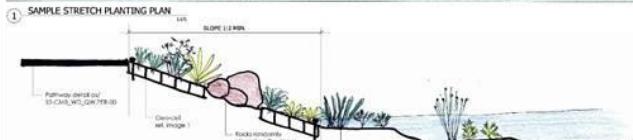
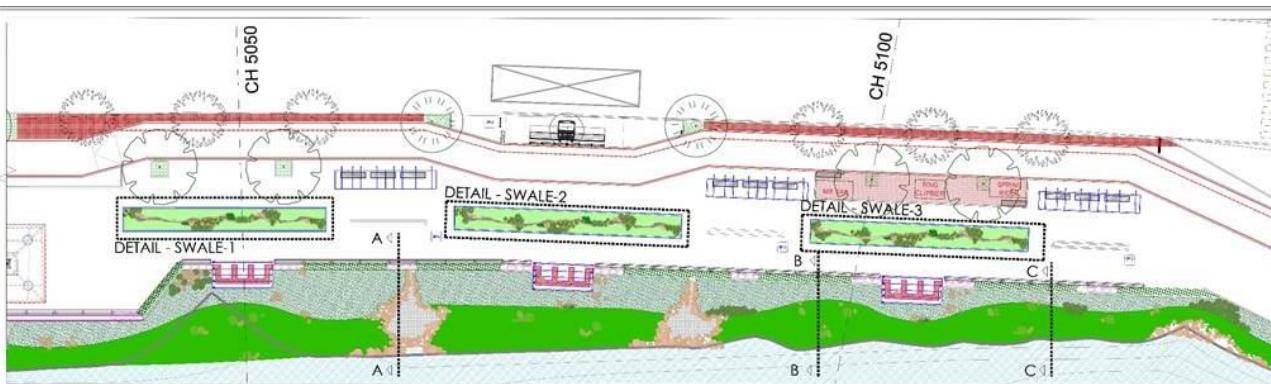
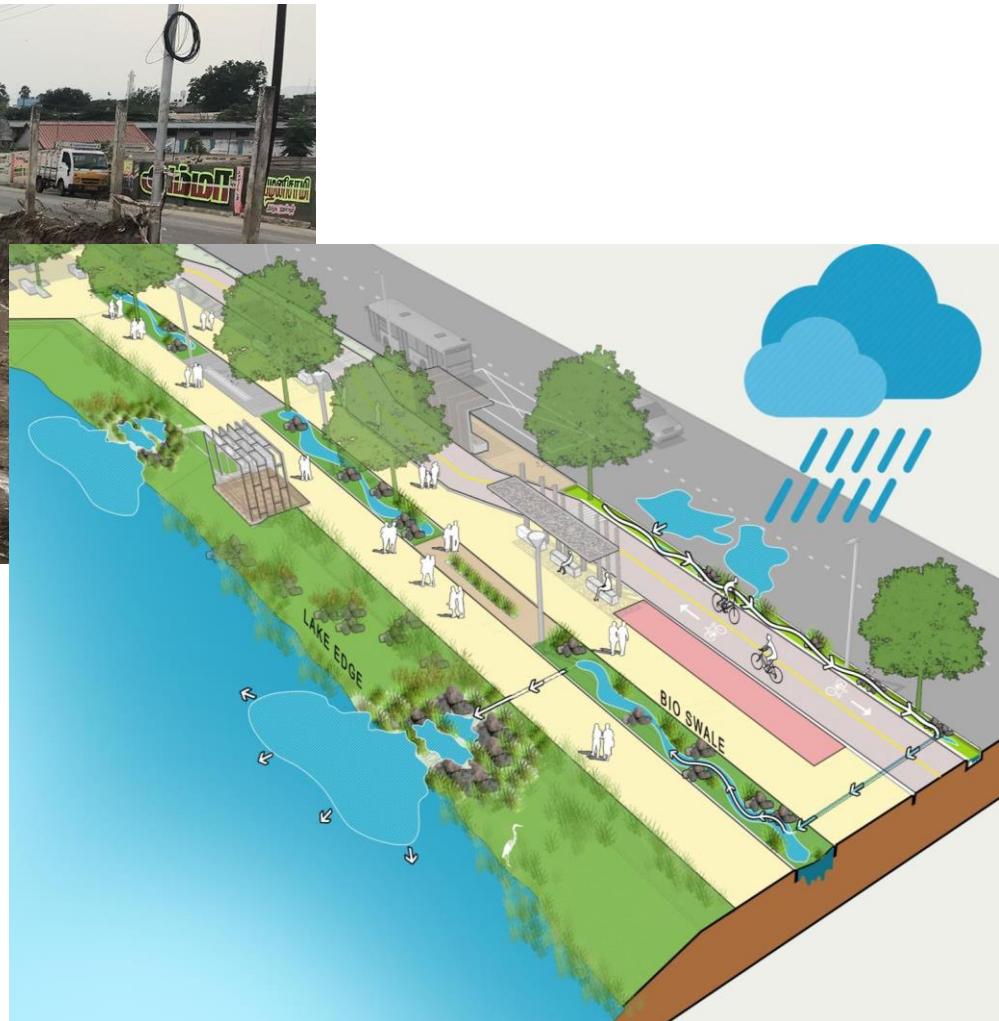
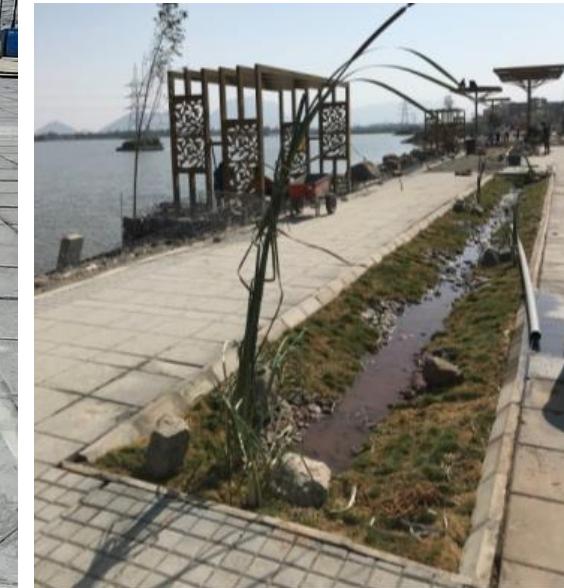


IMAGE 1			Alcea procera	7m	4 m	6 nos
IMAGE 2			Erythrina suberosa	as shown in the pic	4 m	3 nos.
			Mitragyna speciosa	as shown in the plan	4 m	4 nos.
			Calophyllum inophyllum	9m	4M	6 nos



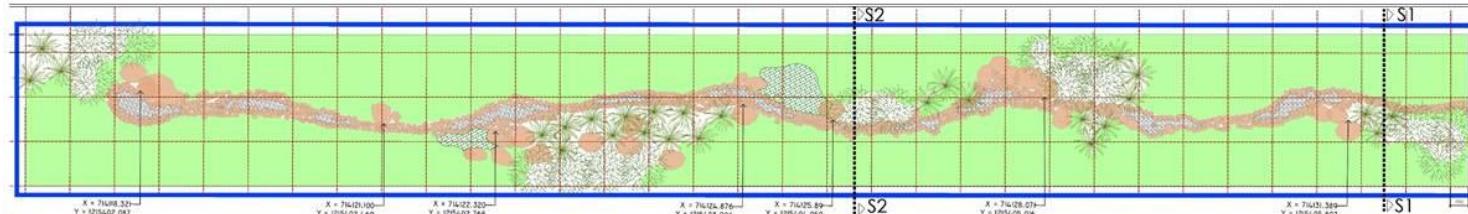




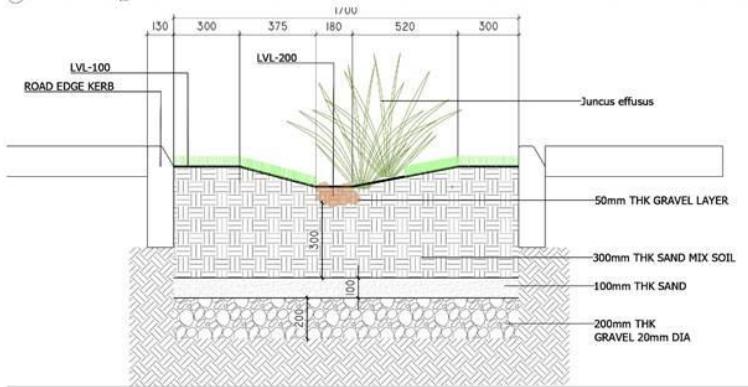


PERIYAKULAM NORTH PROMENADE- PLANTING (NATIVE)

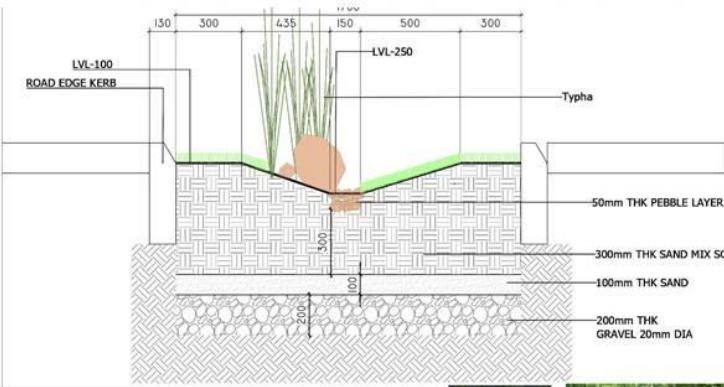




1 SWALE DETAIL-1



4 SWALE SECTION - S1

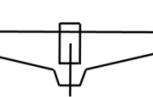
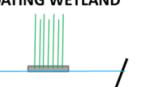
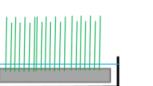


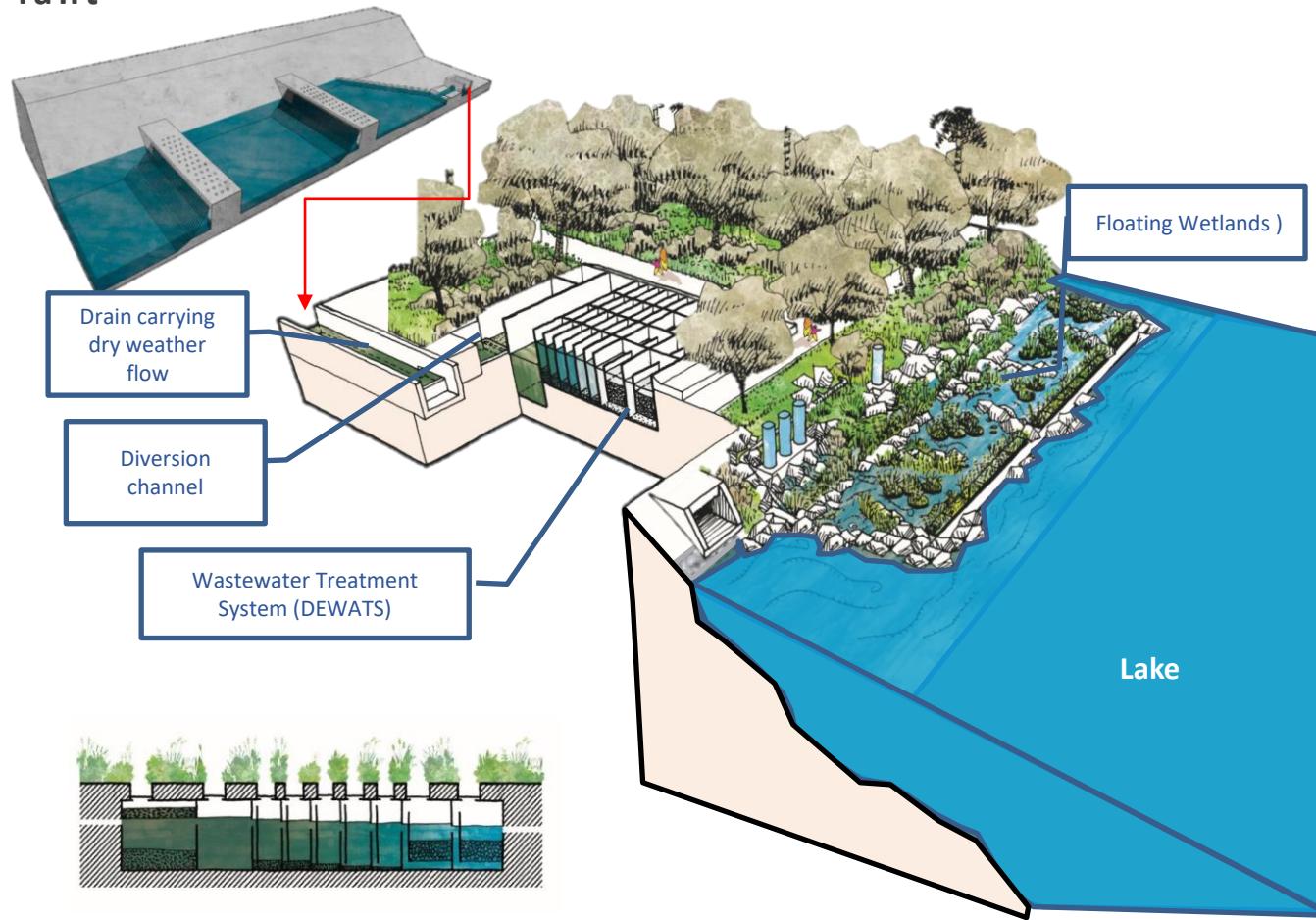
5 SWALE SECTION - S2



REFERENCE IMAGE

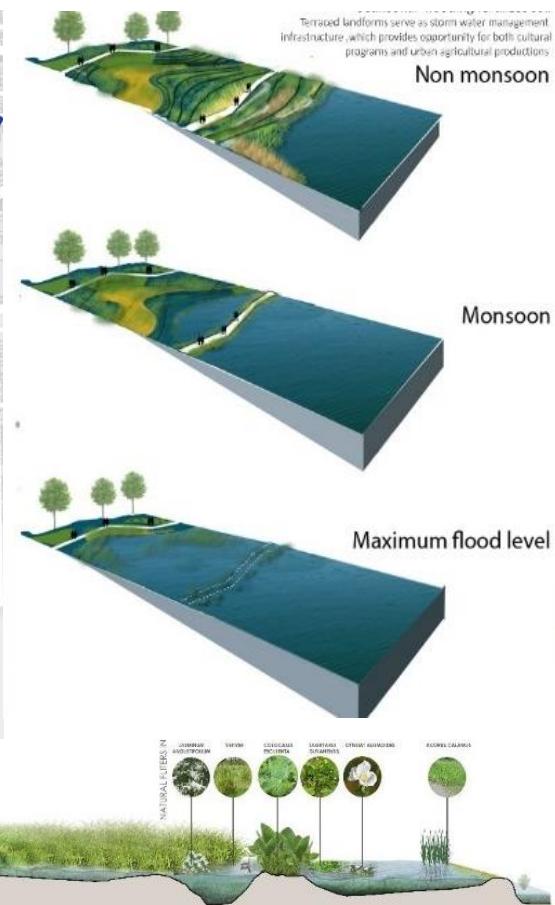
Wastewater Treatment Plant

Pre-treatment		Primary treatment	
In drain	On lake bund/ inside the lake		
Always proposed	High solids (organic/inorganic) content		
COARSE SCREEN		SEDIMENTATION TANKS	
			
DIVERSION CHAMBER		SETTLERS/ SETTLING TANKS	
			
Secondary treatment		Tertiary treatment	
Outside the lake/ bund		Inside the lake/ bund	
BOD > 120 mg/l		BOD < 40 mg/l	
AEROBIC		FLOATING WETLAND	
Influent + Aeration (100 kWh)	Heat loss		Effluent 12-10 kg COD
Sludge, 30-40 kg			
ANAEROBIC		SURFACE WETLAND	
Influent 100 kg COD	Biogas 40-45 m ³ (~ 70% CH ₄)		Effluent 10-20 kg COD





Waste water treatment strategies



PLANTING STRATEGY- NATIVE PLANTING



Native plants are planted in stratified layers and varying character to create active edges and also habitat for different species



*Barleria
grandiflora*
*Sansevieria
roxburghiana*



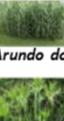
*Bacopa
monnieri*
*Clematis
triloba*



*Alangium
salvifolium*
*Barringtonia
acutangula*



*Mesua
nagassarium*
*Calophyllum
inophyllum*



Arundo donax
*Buchanania
elliptica*



Papyrus
*Geissaspis
cristata*



Acorus calamus
*Ipomoea
aquatica*



*Sagittaria
guyanensis*
*Geissaspis
cristata*



Ottelia alismoides
Hydrocera triflora



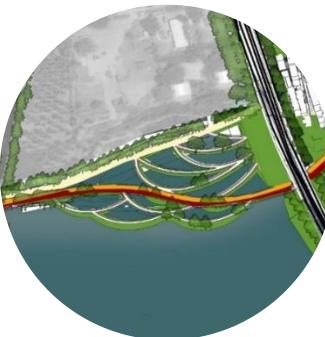
*Aponogeton
natans*
Blyxa aubertii

WETLANDS - TYPOLOGIES

Decentralized Ecological Waste Water Treatment



PERIYAKULAM



VALANKULAM



VALANKULAM



SELVACHINTAMANI

BEFORE



AFTER



IS
DESIGNS INC.







NRN FOODS
Sree Saran Cars (Best Used Cars and Pre...

EARLIER



Image © 2022 Maxar Technologies

282 m

PRESENT

COIMBATORE SMART CITY – LAKES PROJECT



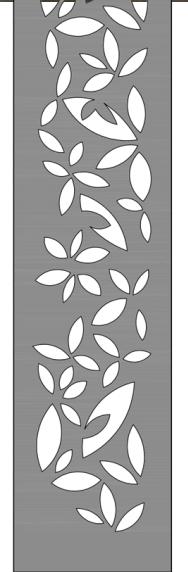
PERIYAKULAM NORTH

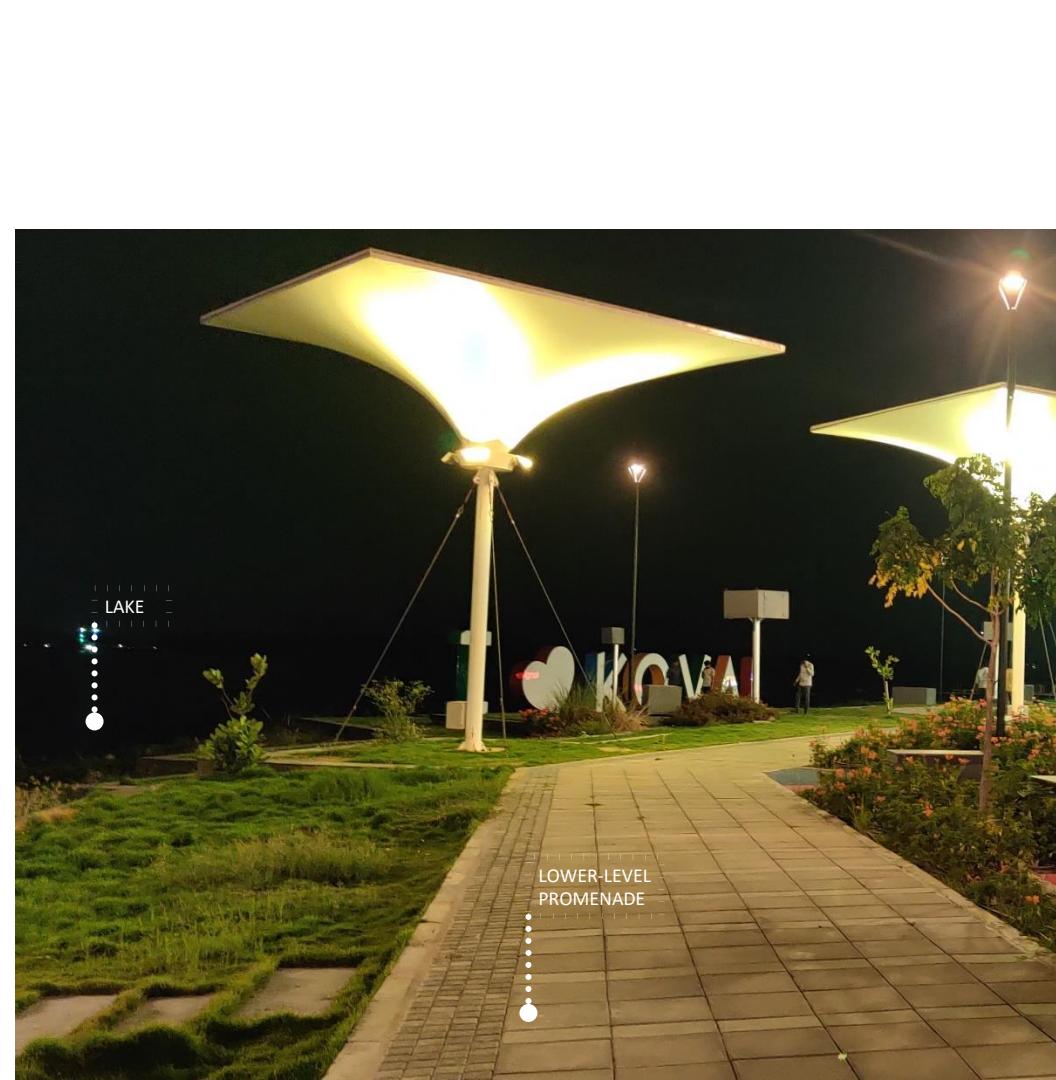




VIEWING DECK









CYCLE TRACK

DECK AREA

PATHWAY

BEFORE



AFTER



BEFORE



AFTER



BEFORE



AFTER



DESIGNS INC.



BEFORE



AFTER

BEFORE



AFTER



BEFORE



AFTER

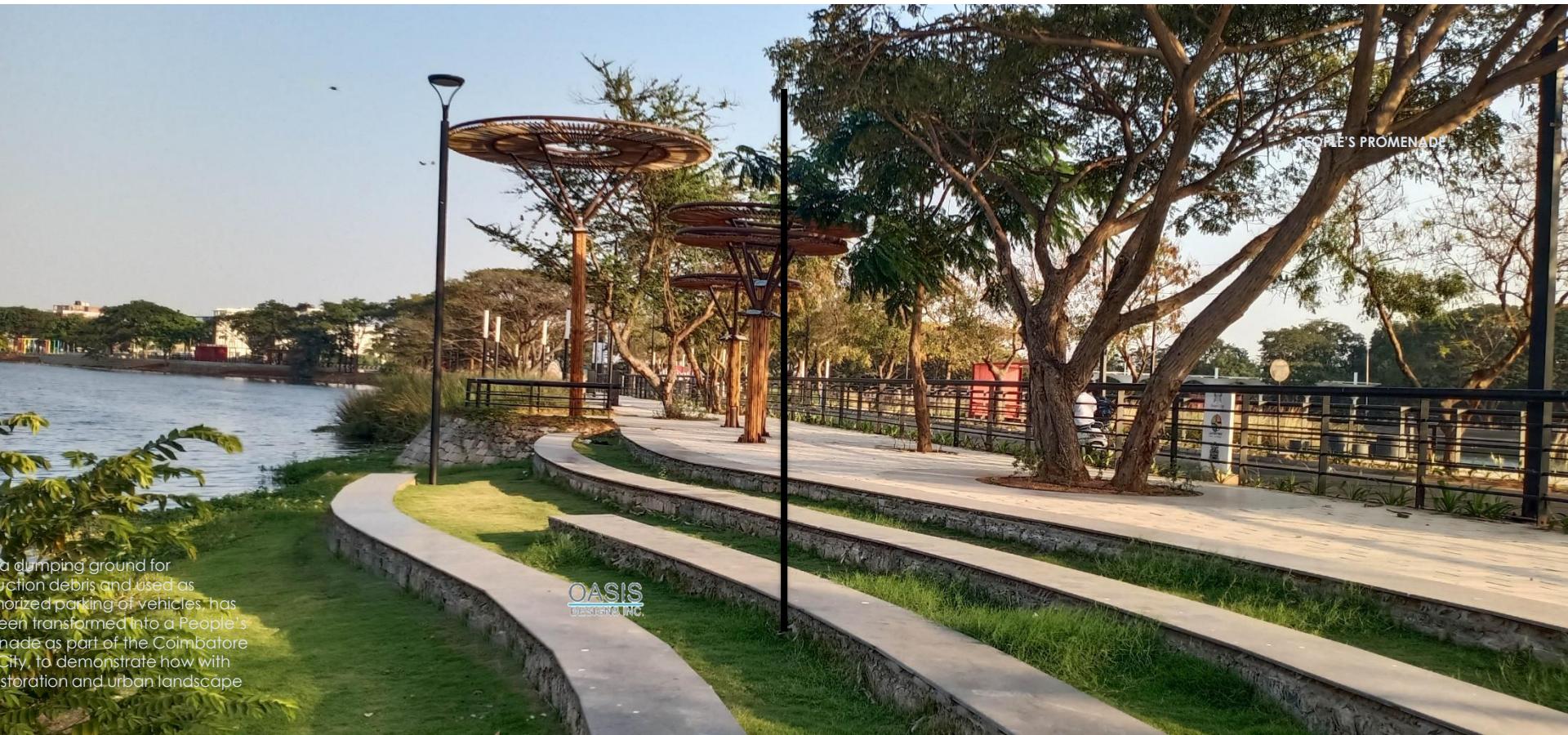


S
DESIGNS INC.

BEFORE



AFTER





OASIS
DESIGNS INC.

OASIS
DESIGNS INC.



OASIS
DESIGNS INC.

OASIS
DESIGNS INC.

The Verandah | Valankulam under Flyover



The comfort of a shaded spot, next to the lakefront was what the under-flyover offered – Realizing this potential this project of Coimbatore based OASIS has transformed this derelict landscape into the City's cultural hub, with its unique Float-Walk attracts people – young & old. With a host of performance spaces, plazas, and mini amphitheaters, this has become a popular venue for people for skating, yoga, dance, painting etc. also has facilities of co-working spaces, with free Wi-Fi

OASIS

BEFORE



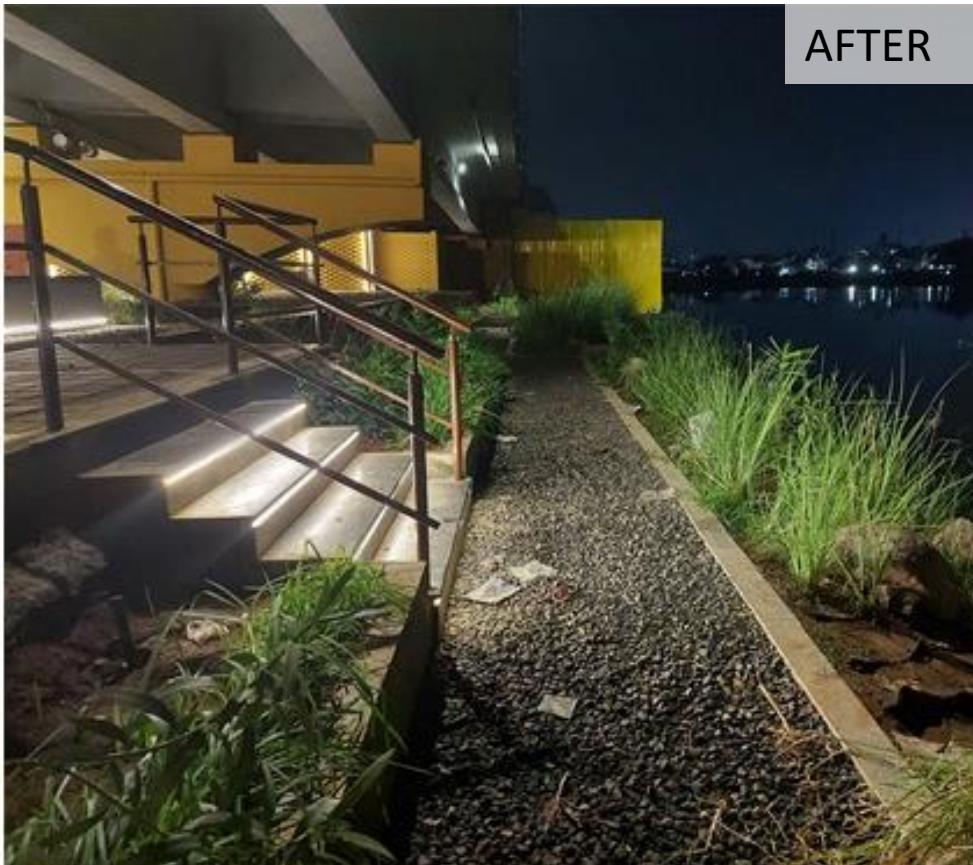
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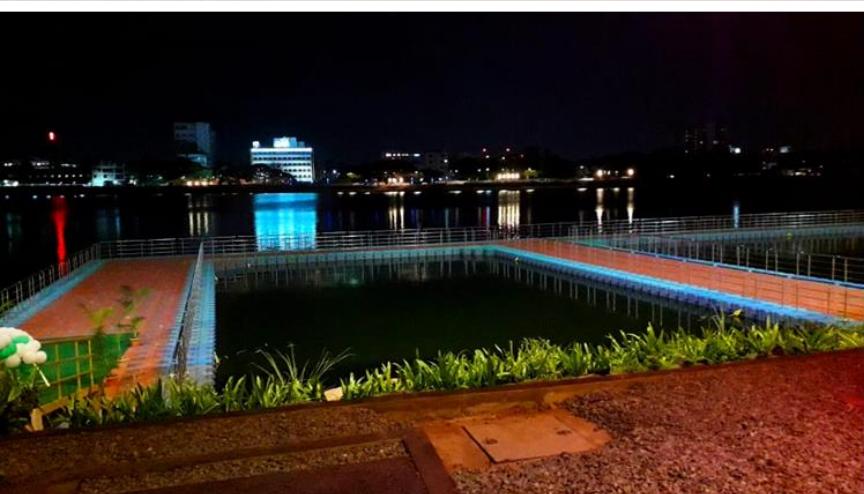


AFTER









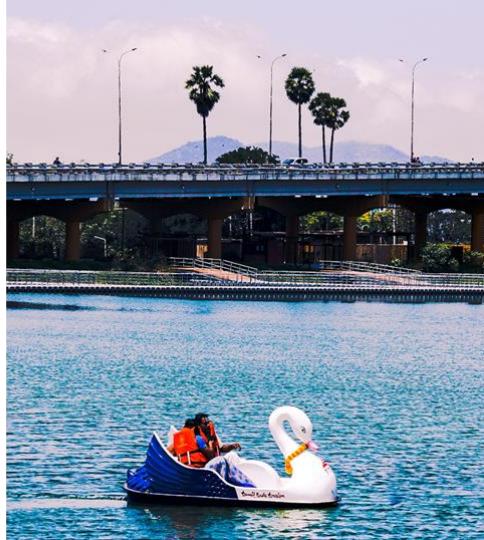
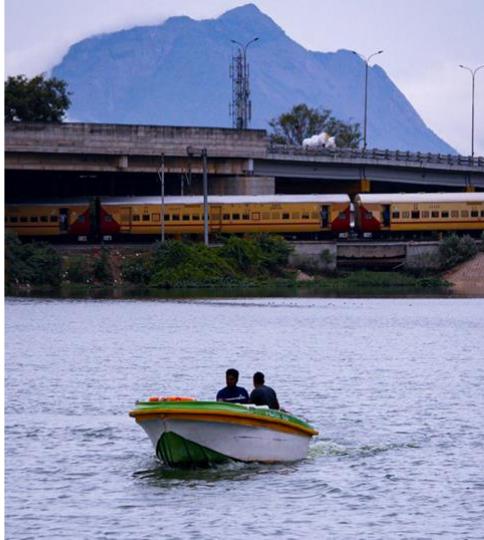
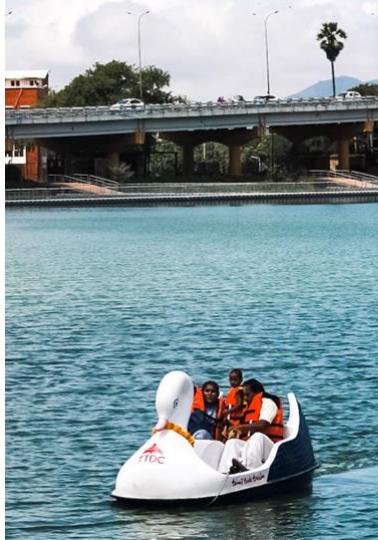


OASIS
DESIGNS INC.

OASIS
DESIGNS INC.

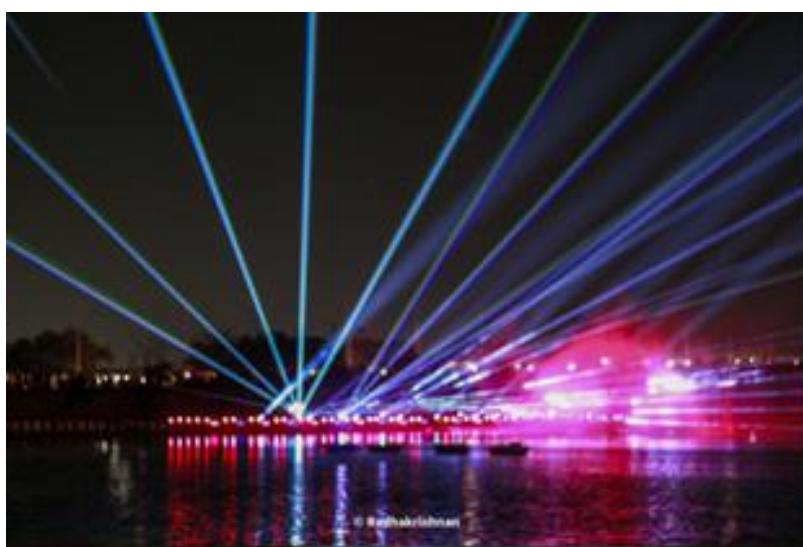


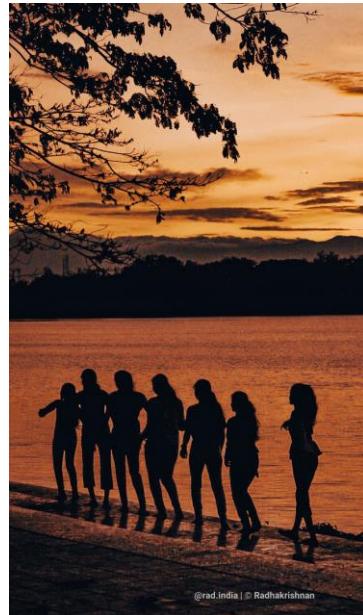
OASIS
DESIGNS INC.



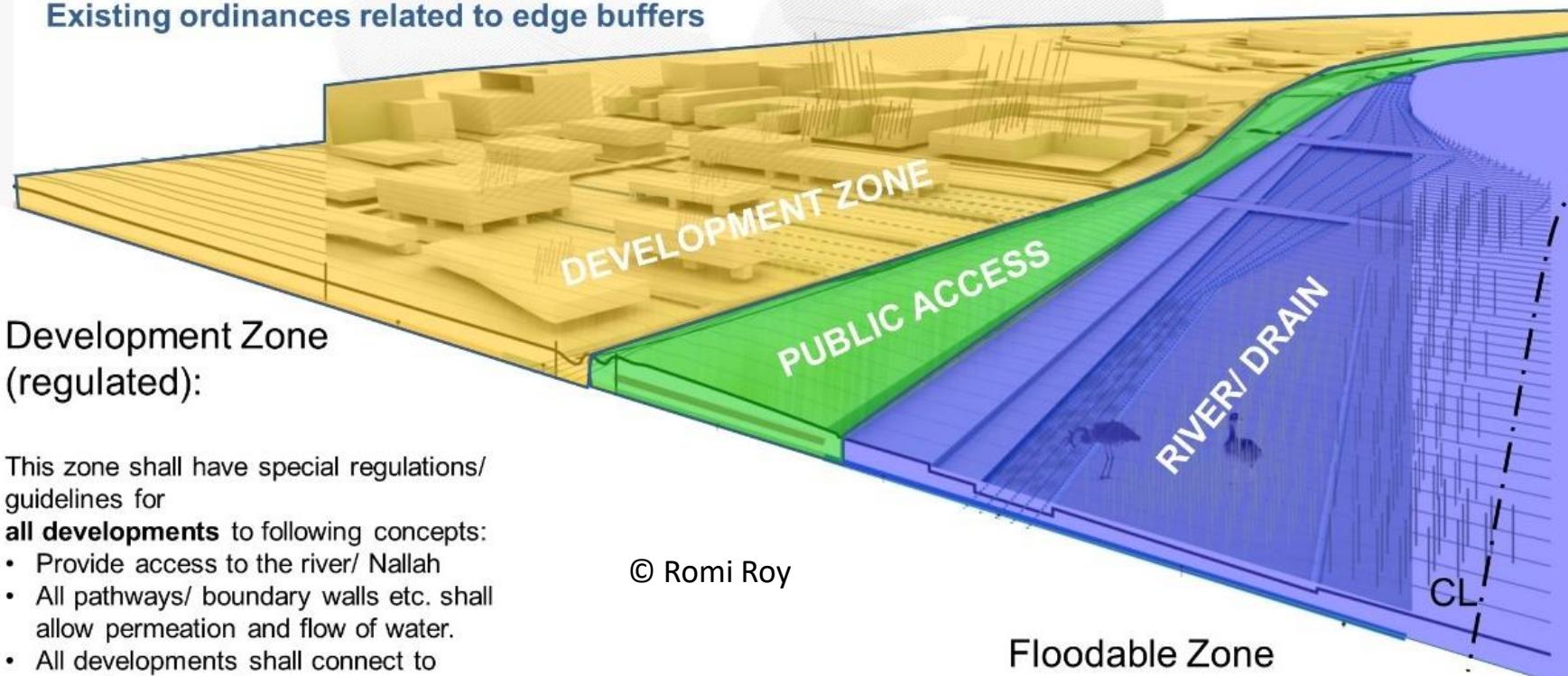


© Radhakrishnan





Existing ordinances related to edge buffers



Development Zone
(regulated):

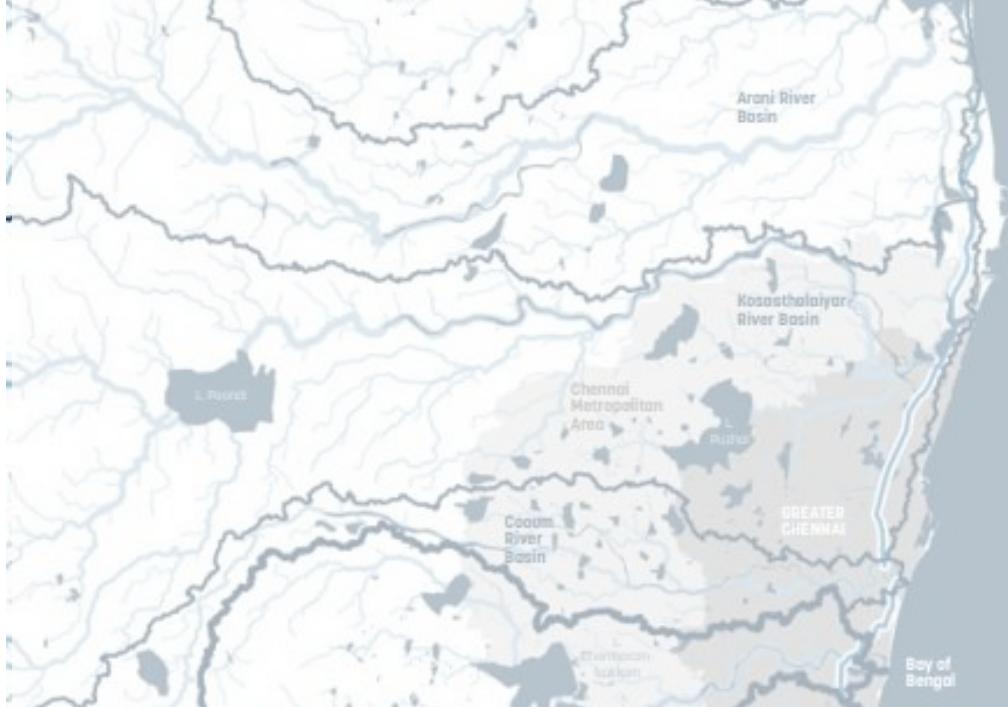
This zone shall have special regulations/
guidelines for
all developments to following concepts:

- Provide access to the river/ Nallah
- All pathways/ boundary walls etc. shall allow permeation and flow of water.
- All developments shall connect to municipal sewer line
- Direct discharge of sewage or rain-water into ground or natural water body should be a criminal offence.
- Strict impervious cover norms.

© Romi Roy

Floodable Zone
(protected)

This is the protected zone where no development shall be permitted other than cleaning and ecological restoration.



The Role Of Streets in Creating Resilient Cities

Feb 2022



GREATER CORPORATION
OF CHENNAI



CHENNAI SMART
CITY LIMITED

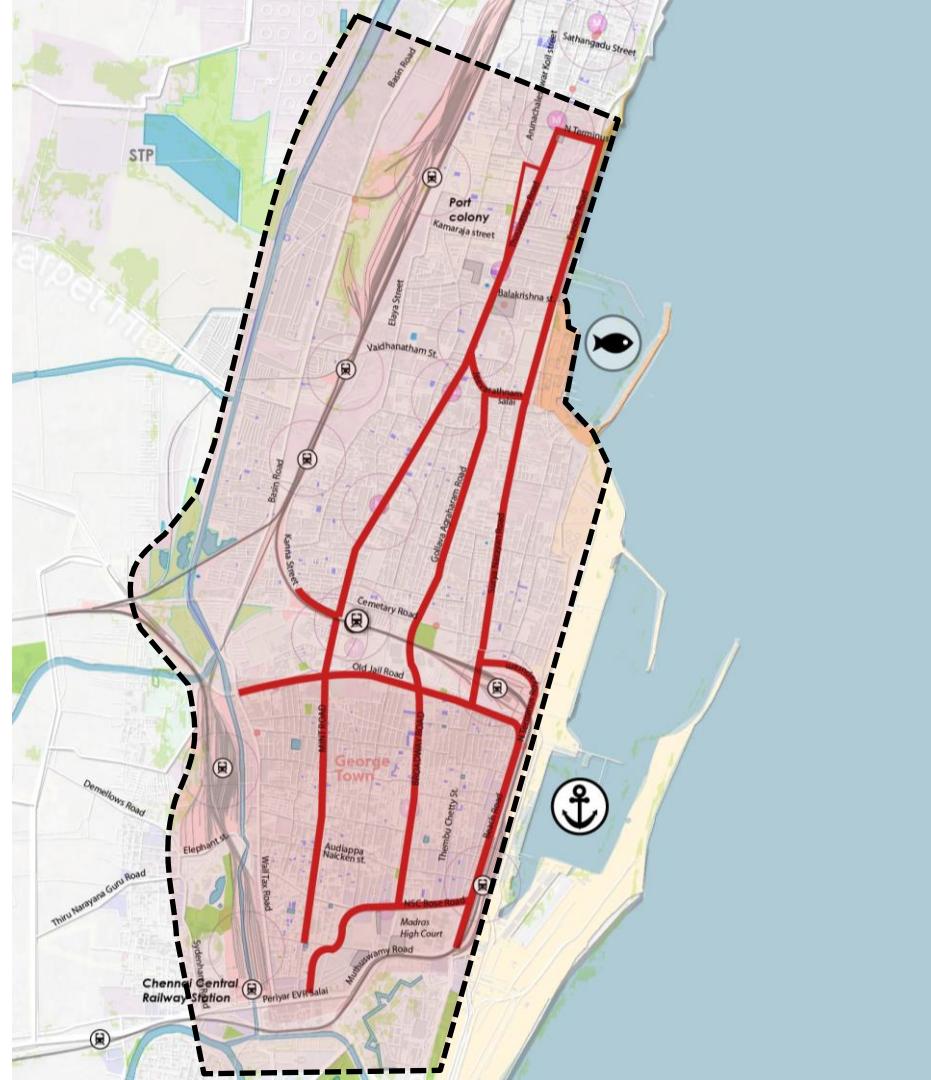
MEGA STREETSCAPE PROJECT

NORTH CHENNAI – Package 2

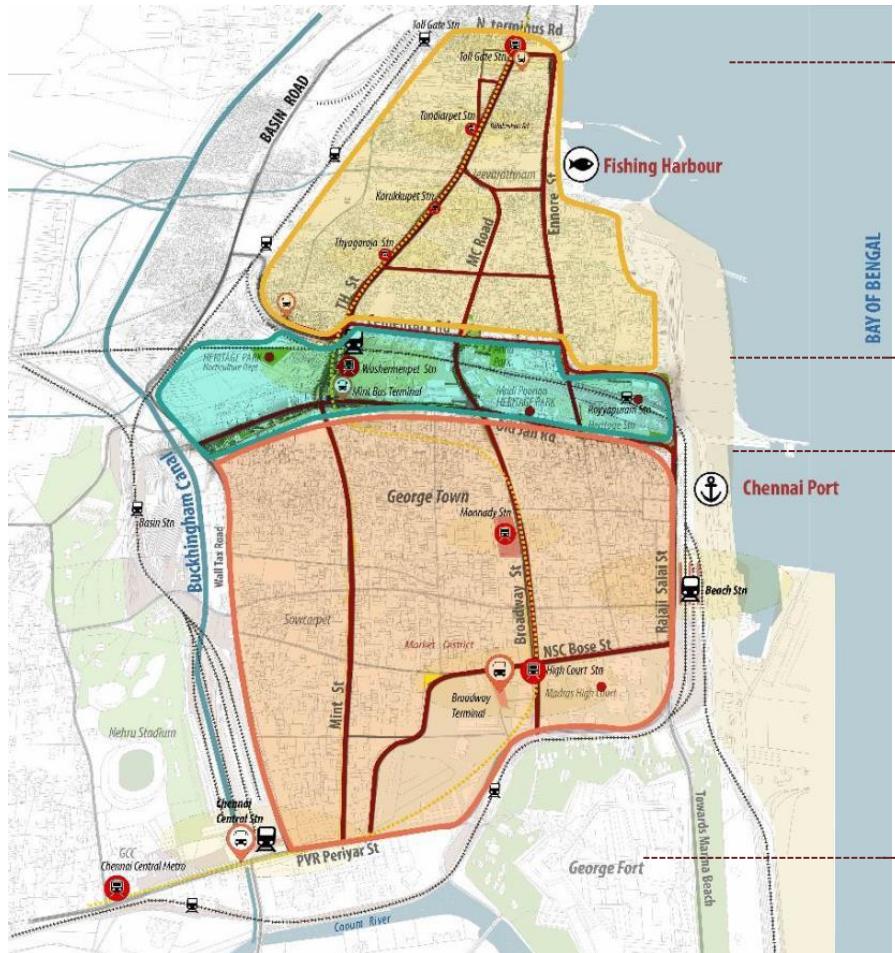
Tondiarpet, Georgetown, Thiruvottiyur

Total Length Roads: 25.81 km

Area: 18.7 sqkm /4620 acres



RE-IMAGINING NORTH CHENNAI AS A DESTINATION



THREE DISTINCT
CHARACTER ZONES

1 | NORTH CHENNAI

STRUCTURING &
TRANSFORMING MARKETS
TO EXPLORE PLACE MAKING OPPORTUNITY

STRENGTHENING PEDESTRIAN
INFRASTRUCTURE
TO DECONGEST & DEVELOP PUBLIC REALM
BEACH FRONT PROMENADE
TO REVIVE THE SEA FRONT EXPERIENCE

2 | CENTRAL PARKWAY

RECLAIMING 16 ACRES OF OPEN
SPACE TO STITCH
THE EAST WEST GREENWAY

MOVEMENT NETWORK & NMT
BRIDGES TO STITCH
THE NORTH SOUTH

3 | GEORGE TOWN

CONSERVE & LINK HERITAGE
TO STRENGTHEN THE IDENTITY OF PLACE

STRENGTHEN & SUSTAIN EXISTING
SOCIAL, ECONOMIC & MOVEMENT
NETWORK
TO REVITALISE THE PRECINCT

STRENGTHS

HERITAGE



FISHING HARBOUR



SEAFRONT

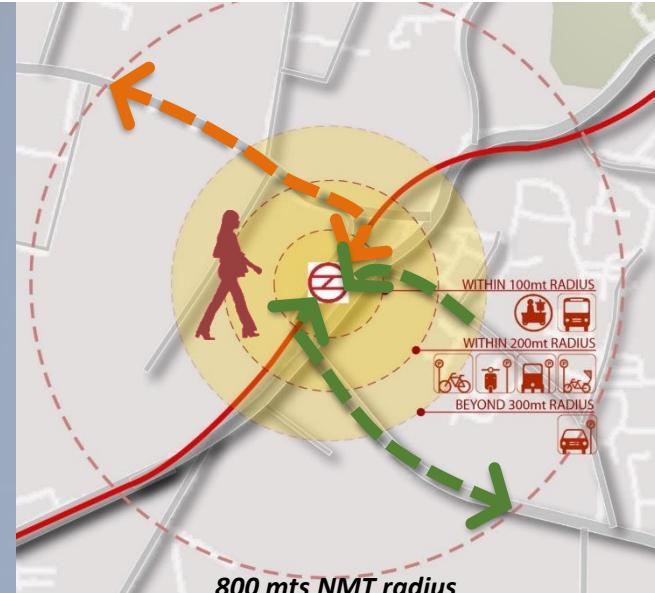
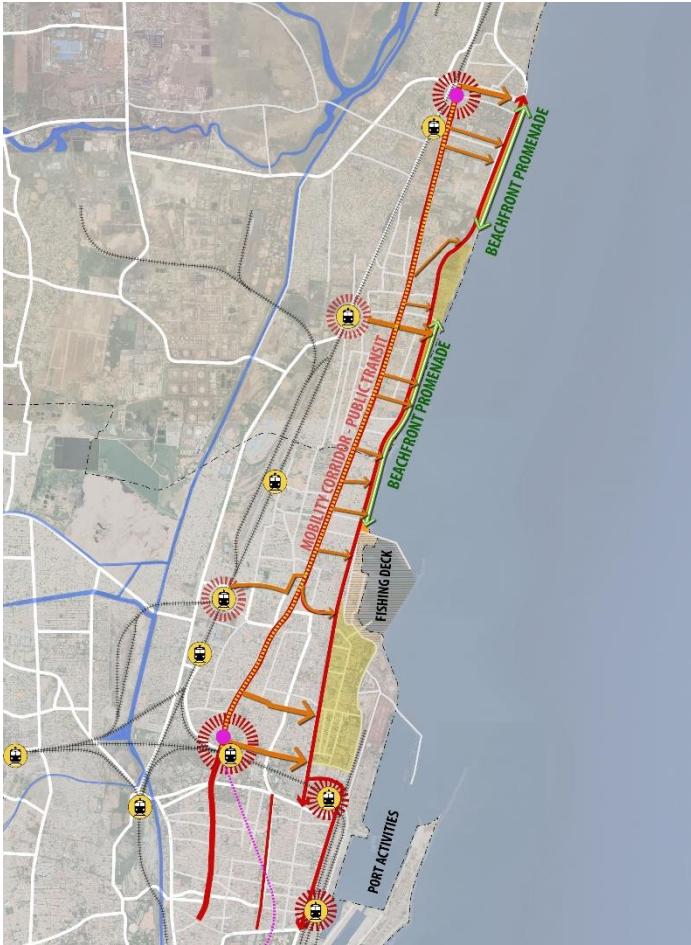


NORTH CHENNAI



OPPORTUNITY

PUBLIC TRANSIT-NEED FOR MMI



- 1st & LAST MILE CONNECTIVITY
- PEDESTRIAN PRIORTORISED PLANNING
- CYCLING FACILITIES
- ORGANISED INTERMEDIATE PUBLIC TRANSPORT (IPT) PARKING
- INTEGRATION WITH OTHER PUBLIC TRANSITS LIKE BUS STOPS...ETC.

major issues RELATED TO WATER in CHENNAI

1 FLOODING

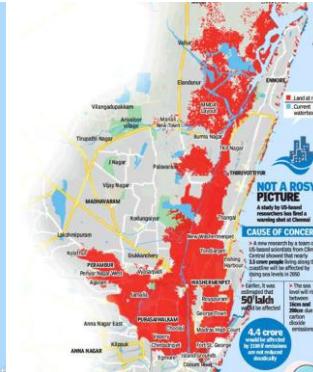
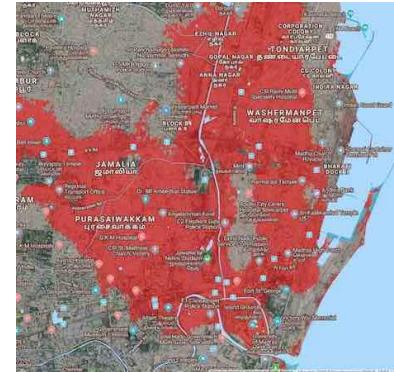


2 DROUGHT CONDITIONS



3 CLIMATE CHANGE – FLOODING DUE SEA RISING

Mostly along Buckingham Canal



4 THREAT OF SALINE WATER INTRUSION





Chennai comes to a standstill as heavy rains flood city in 2021

Climate Resilience

'Code Red for Humanity': Sinking Indian Cities

By Shivali Jainer and Ashwathy Anand September 13, 2021



The findings of the IPCC's 2021 climate report have immense consequences for the urban centers of India.
Photo by Talukdar David/Shutterstock



'Smart' drain network that sunk T Nagar

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Flooding in State's prestigious shopping hub, Thyagaraya Nagar, raises a lot of questions on the Smart City project and hundreds of crores of public money that went down the drain in the name of setting up a storm water drain network

Chennai: Thyagaraya Nagar aka T Nagar, the famed shopping hub of not only the metropolis but also the entire State, was forced to remain standstill for more than two weeks after incessant rains lashed the much 'pampered' locality. The residents watched the flooded roads in perplexion even as the Greater Chennai Corporation choked. The reasons for the floods are poor designs of the storm water drains and poorly conceived smart city projects.

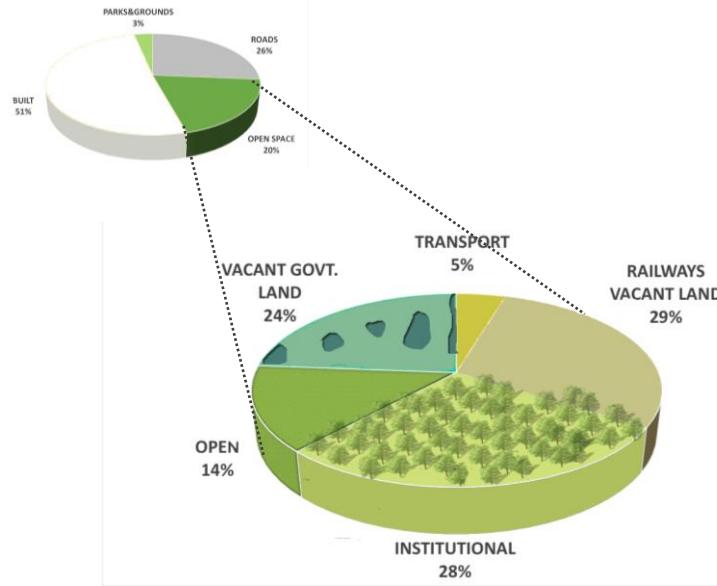
To identify the reasons for the flooding, DT visited the major streets and roads in T Nagar. Similar to KK Nagar, another heavily affected area that has MGR Canal, T Nagar has Mambalam Canal, which also drains into the Adyar River. Most of the storm water drains in the locality are inadequate to carry the excess rainwater to the Mambalam Canal.

File photo of an inundated T Nagar street after the recent rains



CATEGORIZATION OF OPEN SPACE

Area: 18.7 sqkm



- WATER BODIES & TEMPLE TANKS
- TRANSPORT
- INSTITUTIONS
- PARKS & GROUNDS
- VACANT LAND (GOVT.)
- CEMETERY
- RELIGIOUS

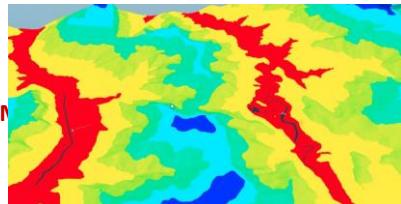


DETAIL CATCHMENT STUDY – IDENTIFY THE MICRO WATERSHED AREAS

1. STUDY WATERSHED AREA



2. SLOPE ANALYSIS

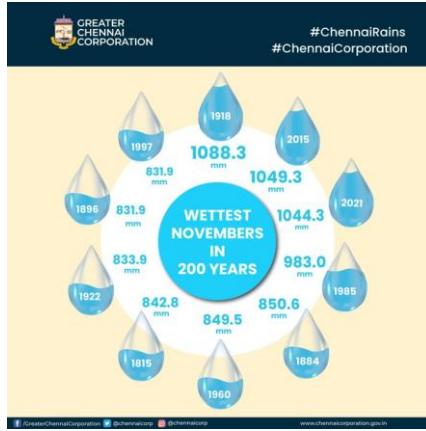


3. DRAINAGE AREA



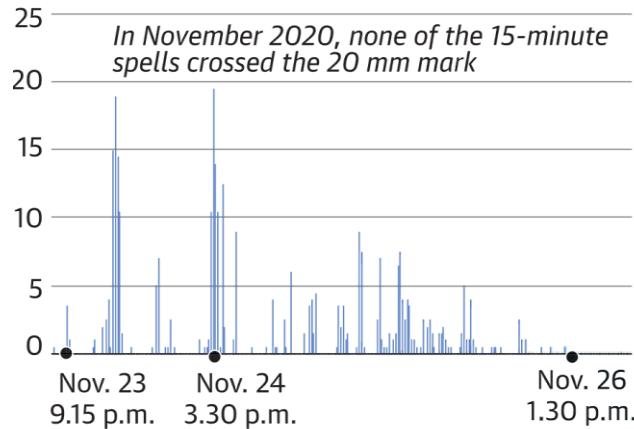
4. IDENTIFY high point / low points/ major



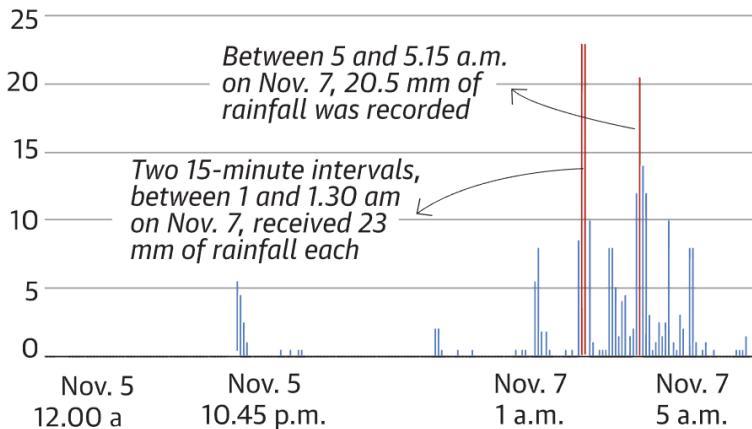


The total rainfall received was **lower** in 2021 than 2020
BUT still led to
waterlogging as large amounts of rainfall in short
time periods

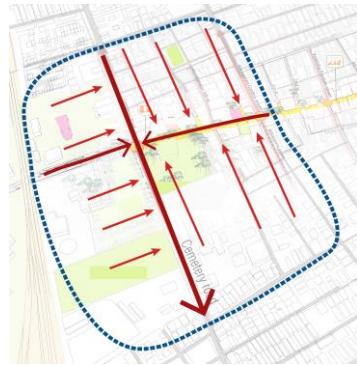
More rainfall in 2020, but in longer spells



Less rainfall in 2021, but in short & intense spells



Demonstration Area –TYPICAL CASE



Catchment Area :
59500 sqmt

Total Rainfall on this area:
59500 sqmt X 0.2 mt
11900 cum



Streets Become Biggest Channel To Diver Water From One Pipe To Other Into The River

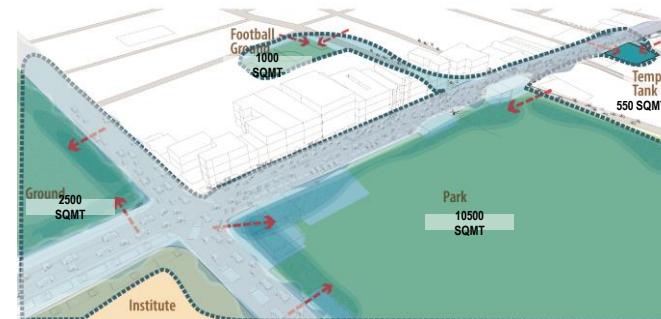


SPREAD RAIN WATER

Increased SURFACE AREA by 10000 SQMT
ADDING OPEN SPACE 2X

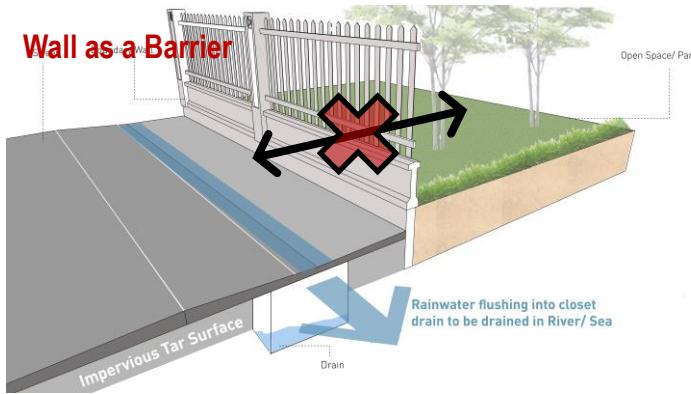


USE OPEN SPACES



TWO ISSUES –CITY OPEN SPACES

OPEN SPACES Disconnected with the street



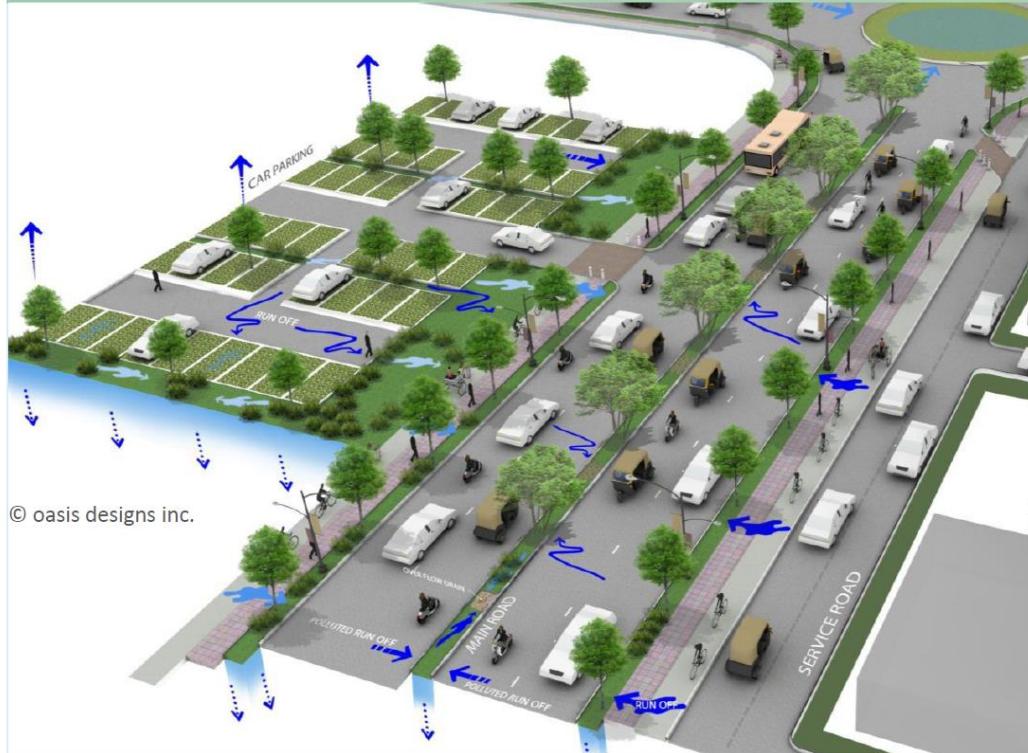
TWO ISSUES –CITY OPEN SPACES

OPEN SPACES NOT DESIGNED TO PERFORM ECOLOGICAL SERVIES OR ACT AS SPONGE OF THE CITY



using **trees** to reduce stormwater runoff

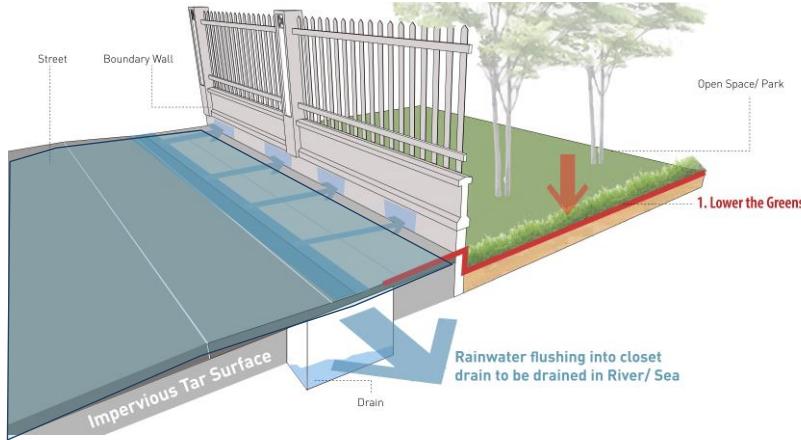
Storm water facilities that can be put on Road



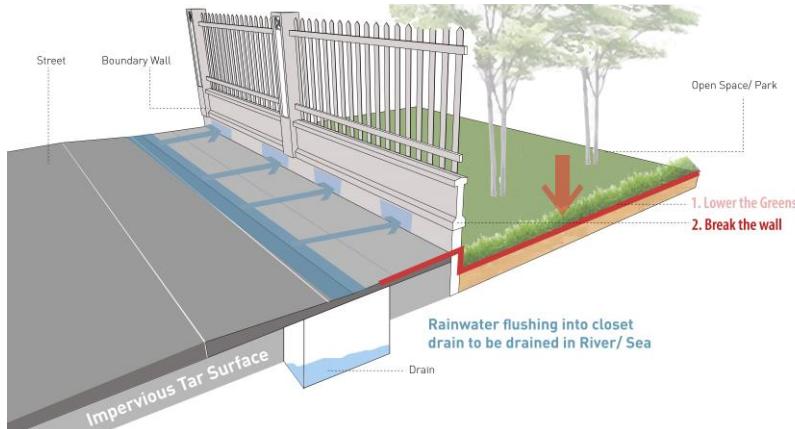
- BY PLANTING TREES –
VELOCITY OF RUNOFF REDUCES
- TREE –ROOTS helps in soaking
the SW



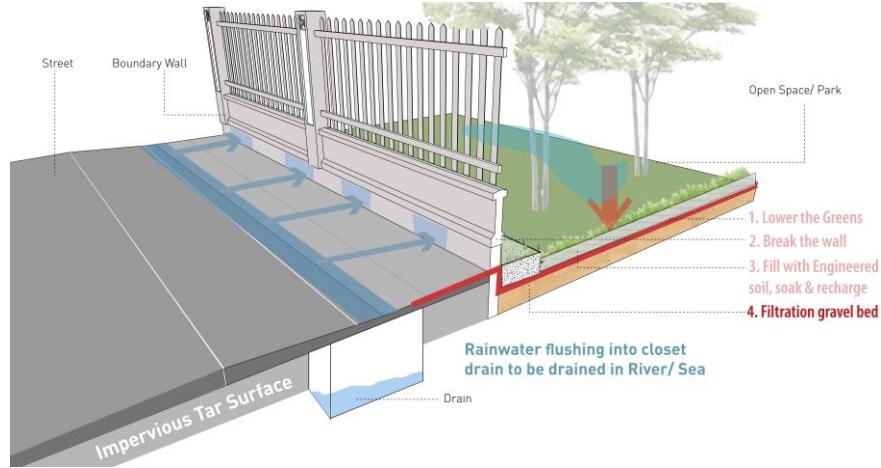
SOLUTION –STEP 01 – LET THE WATER IN - Lower The Green



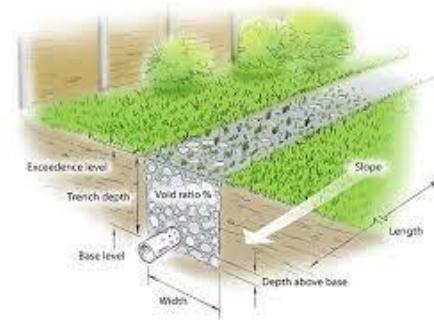
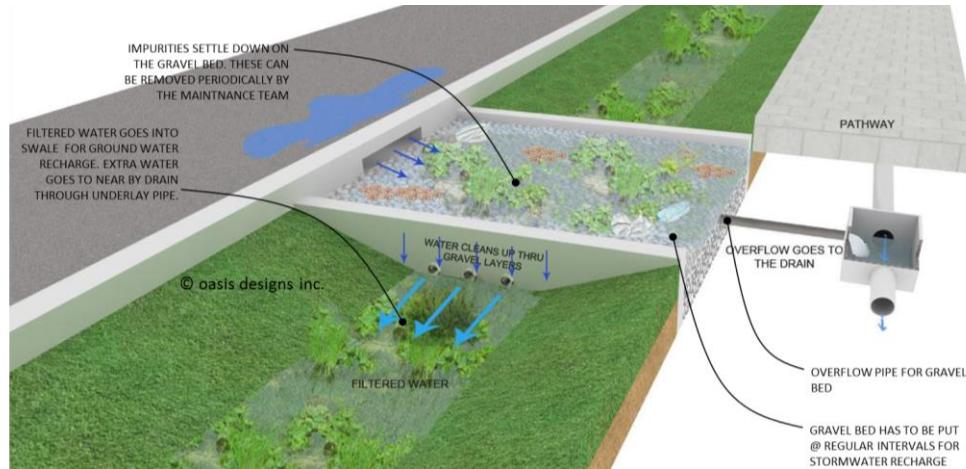
SOLUTION –STEP 02 – DISCONNECT / DIVERT



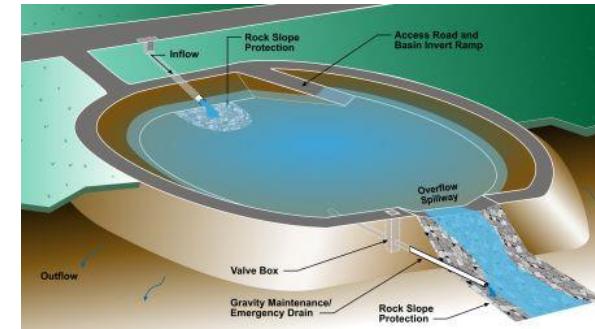
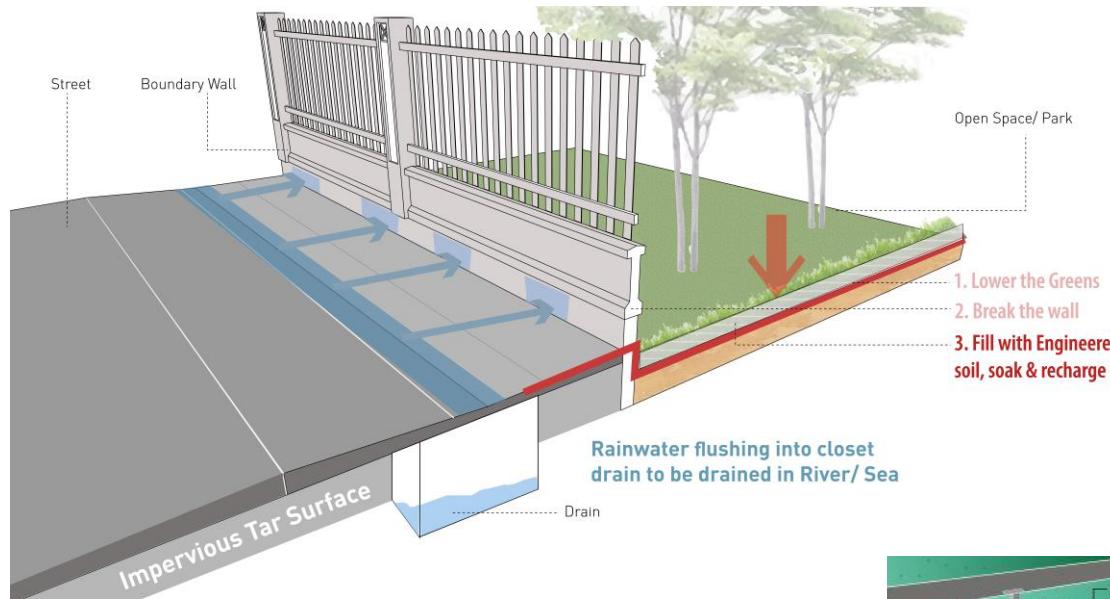
SOLUTION –STEP 03 – FILTER BED



FIRST FLUSH CARRIES ALL THE DEBRIS AND WASTE MATERIAL INTO THE DRAIN LINE, MAKING IT UNABLE TO WORK- we need to send as clean water to the drain as possible



SOLUTION –STEP 04 – SOAK IT –SPREAD IT - Fill With Engineered Soil

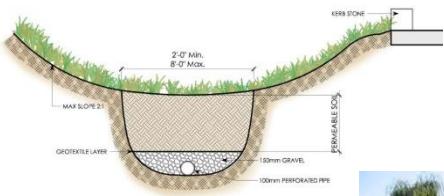
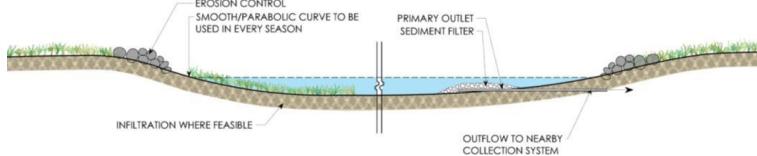


INFILTRATION BASIN

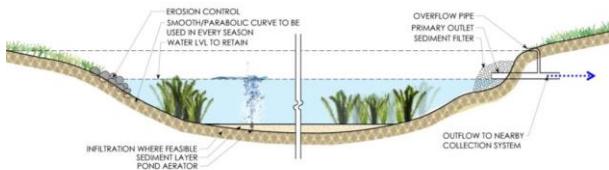
For reference source @internet

3. OPEN SPACE MANAGEMENT

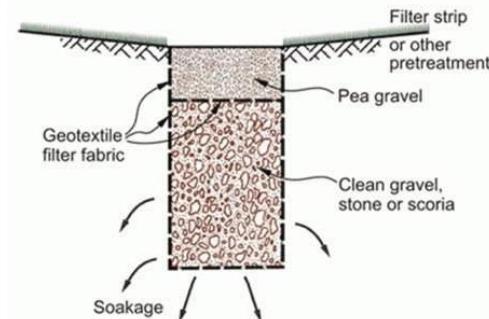
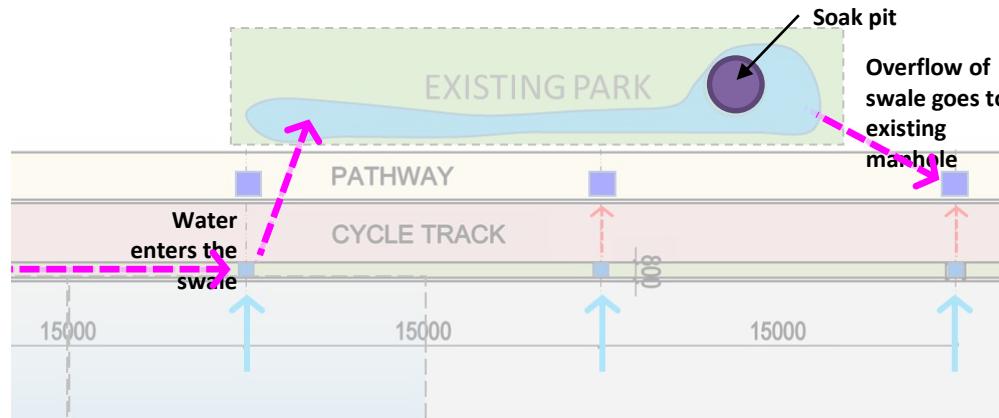
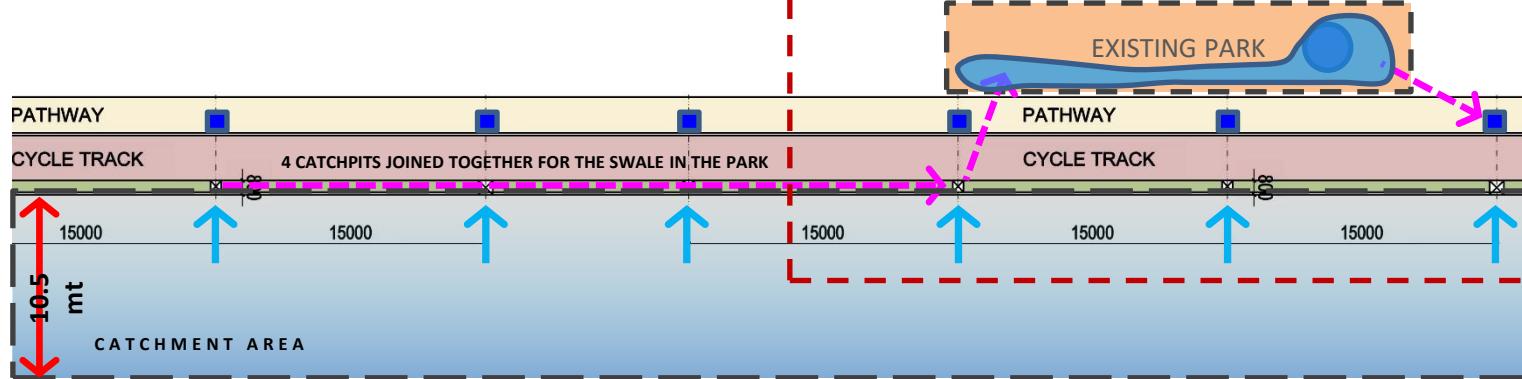
DETENTION



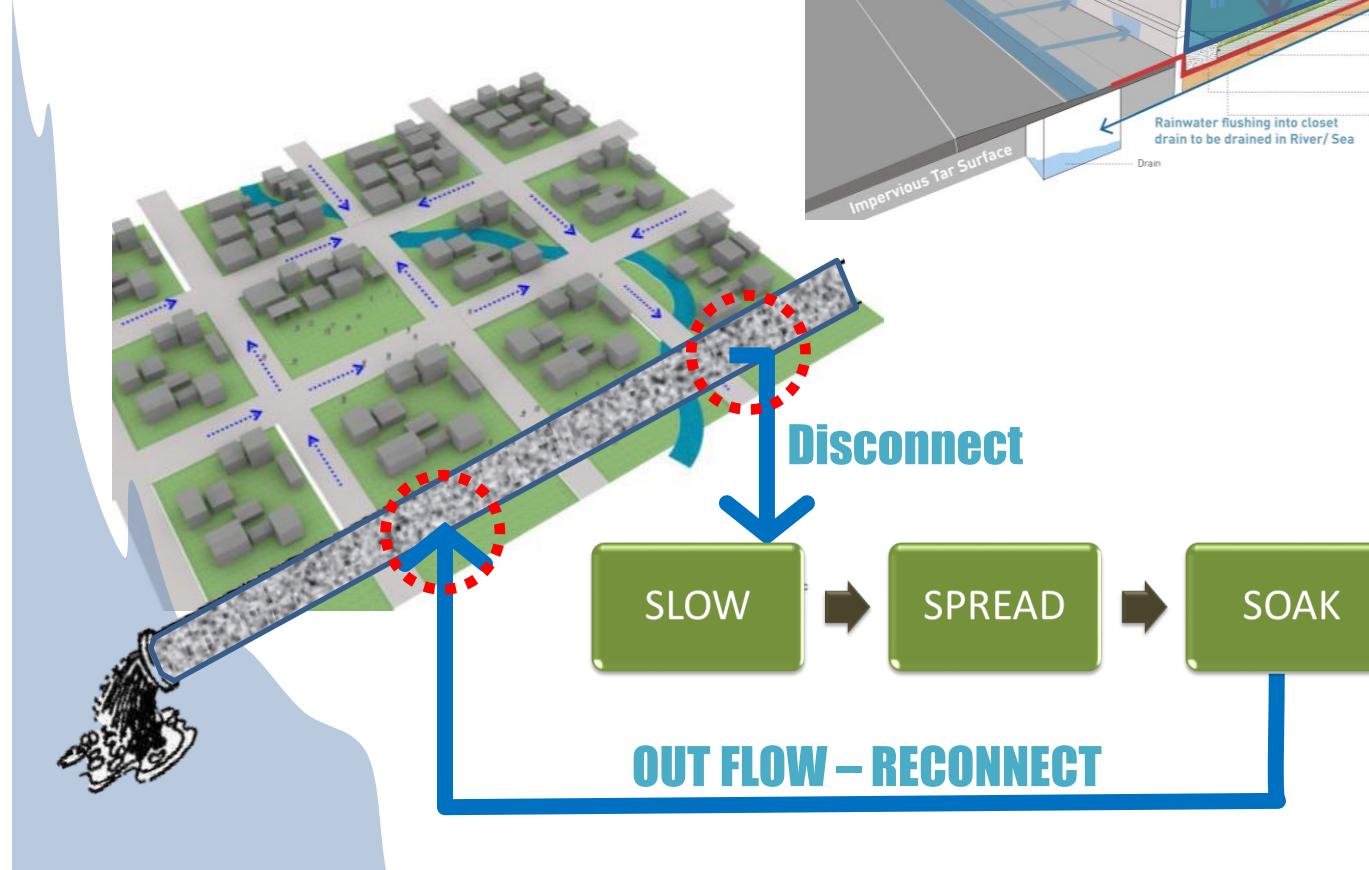
RETENTION



Along the streets



SOLUTION –STEP 05 – RE-CONNECT - *on saturation*







6 | CENTRAL PARKWAY LINEAR UNDERFLYOVER PARK

1 | Art and cultural hub

- Regional Cultural events
- Art district
- Sculpture park

2 | Sports and recreational zone

- Skating
- Outdoor play equipment
- Sports ground

3 | Exhibition and performance

Centre

- Amphitheatre
- Exhibition ground
- Outdoor Performance events
- Musical nights/fests ground



Depressed Seating Area





THANK YOU

