[RE]SHAPING URBAN ENVIRONMENTS IN CHENNAI CITY

Urban transformation through an integrated densification process to facilitate liveable environments

P5 PRESENTATION

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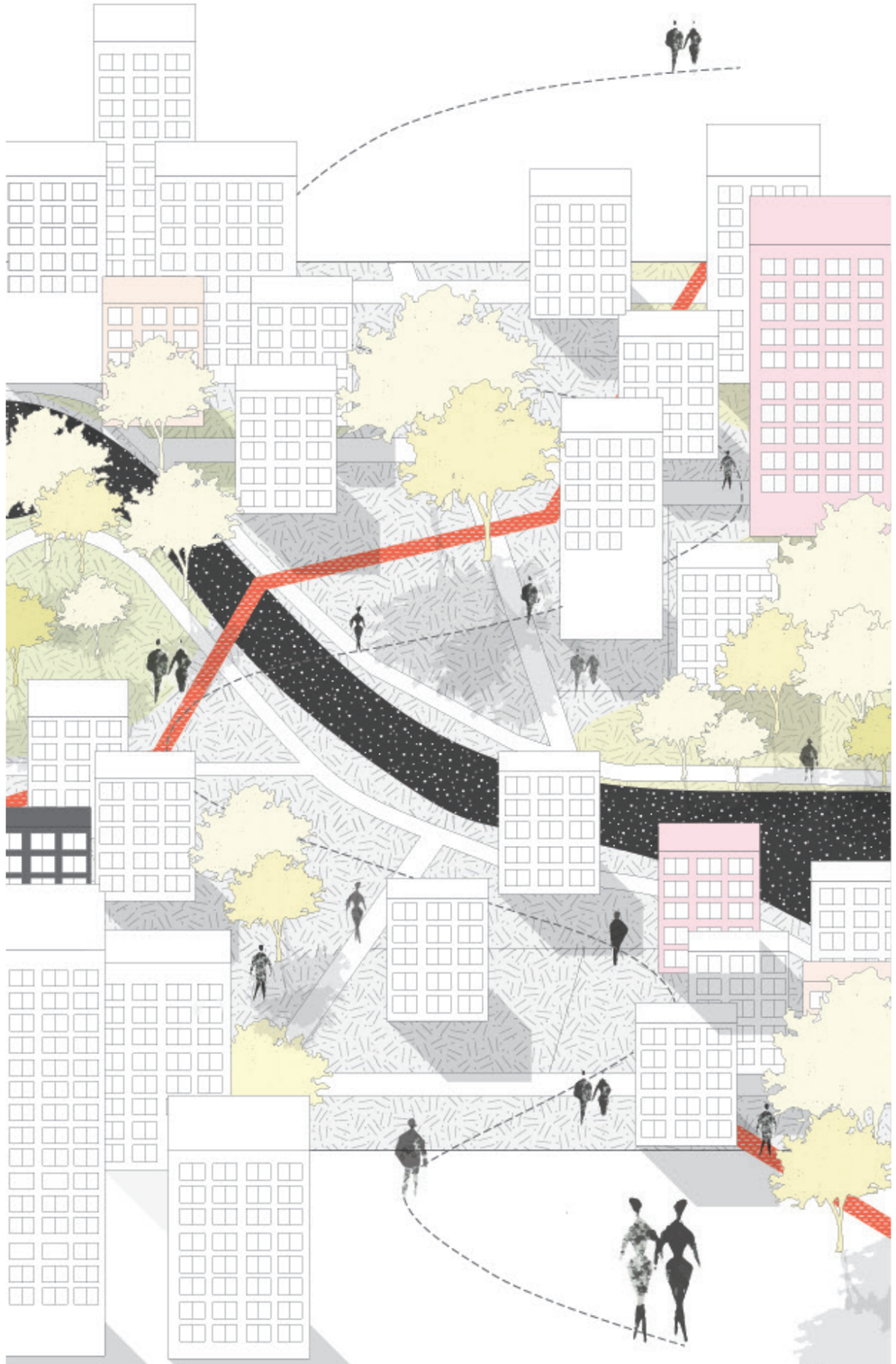

PERSONAL MANIFESTO

Chennai is a historical seaside city on the southern coast of India, steeped in rich culture and diverse landscapes. Mismanaged growth has led to a situation of congestion, lack of public space and forgotten ecological networks in the city. These issues, over time, have added up to a living environment that is negligent of the pedestrian, and lacks many opportunities for social interactions, opportunities to walk, sit or just wander in the city. The motivation for this project comes from being one of the many people who lives in this city, observing it both as “home” and more recently, with a critical eye.

This project aims to find potentials in the ever changing and densifying city, to facilitate these spatial qualities and create liveable and vibrant environments for those who inhabit it.

context PROBLEM FIELD

Chennai Metropolitan area

Area : 1189 sq.km
Population : 10,560,000



Indian cities have undergone extensive urbanisation ever since the postcolonial economic reform of the nineties. Chennai, an Indian coastal city, has experienced significant transformation in its urban fabric during its 400-year journey from a port outpost in the British colony, to its current role as one of the largest urban agglomerations and globalisation hotspot in India. (Dowall & Monkkonen, 2007)

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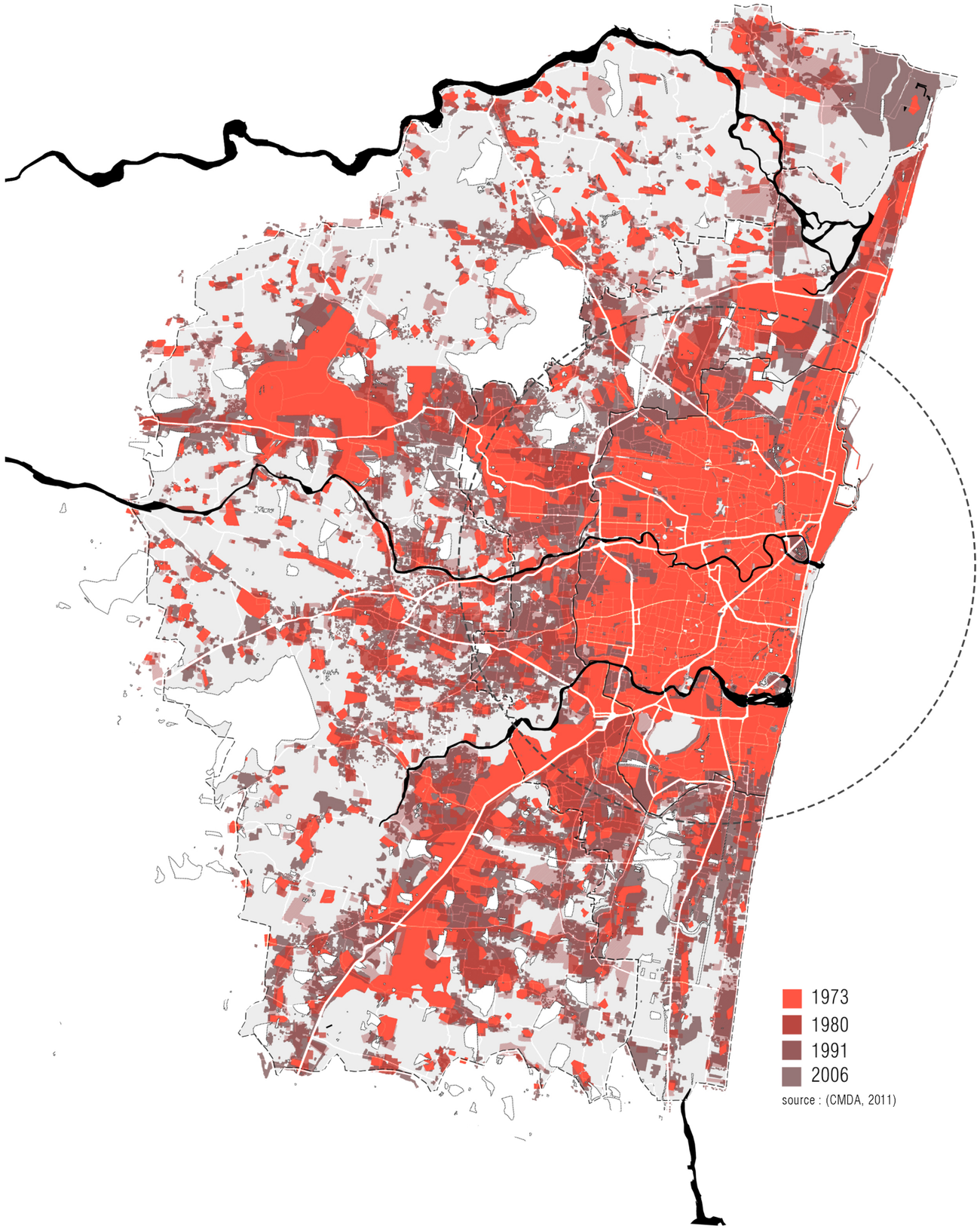
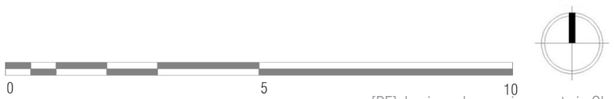
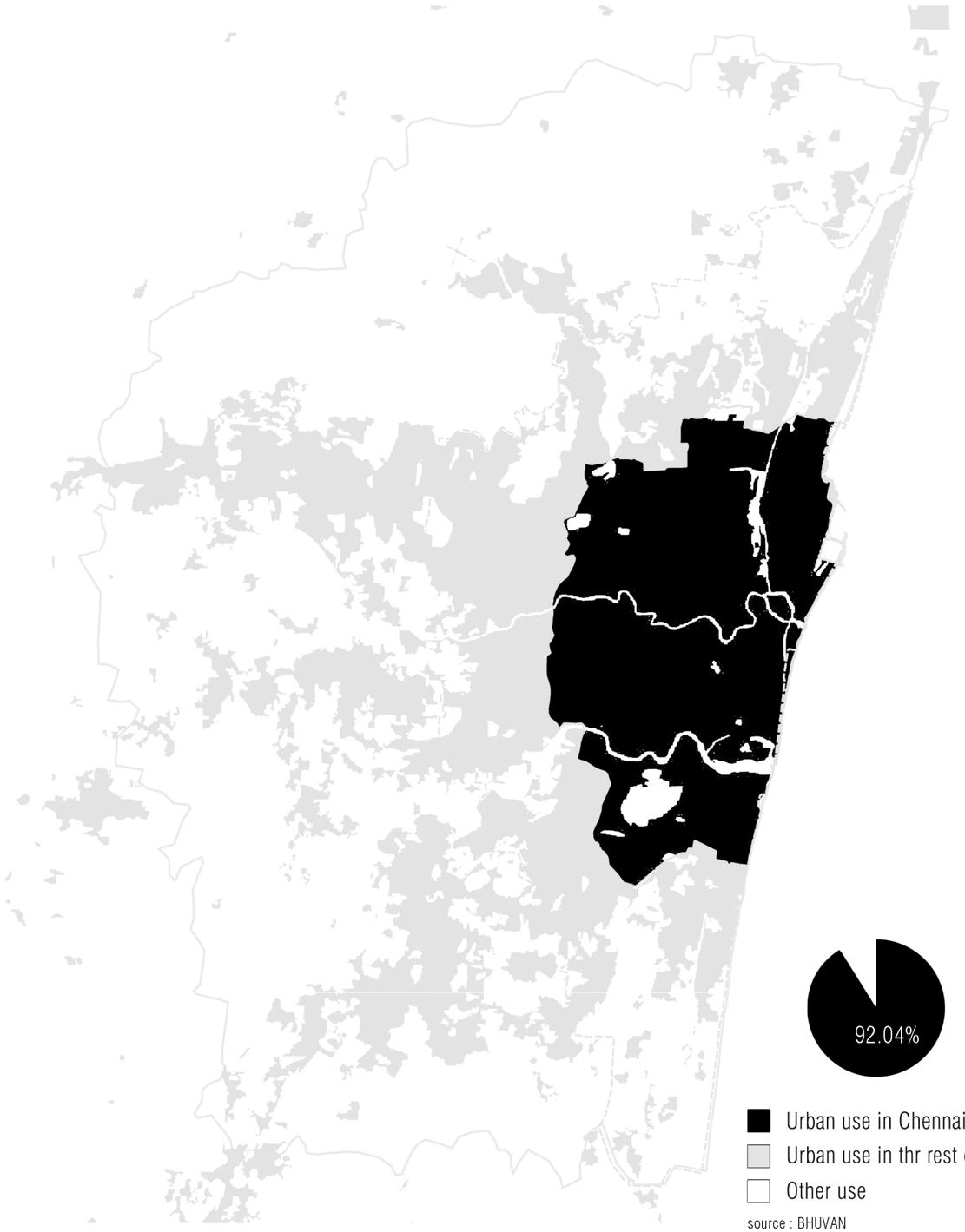
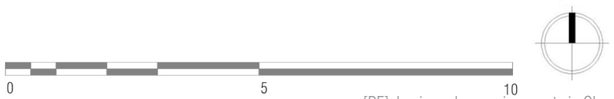


Chennai has a long history of being a city of corridors. A spatial pattern that was established from the inception of the city, today these corridors are major infrastructure routes along which the city grows. This leads to a situation of sprawl, as the areas beyond the immediate vicinity of the infrastructure are underdeveloped (Srivathsan, 2015)



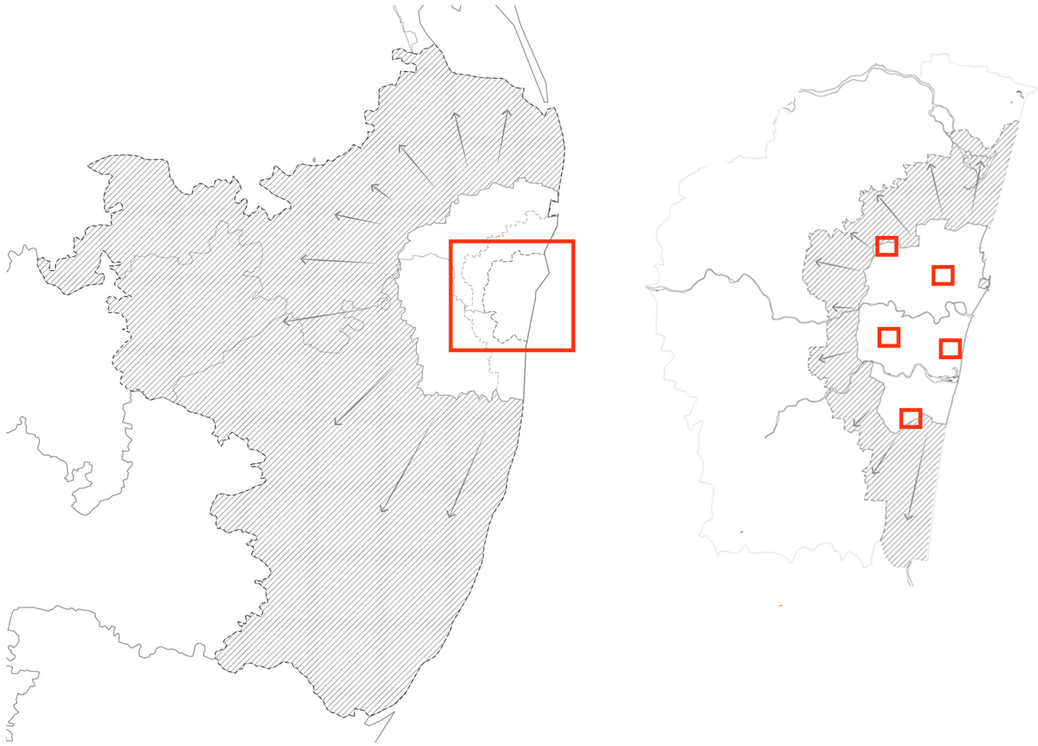


With complete urbanisation within the old city limits and the sprawling growth of the city into its periphery, urban transformation was necessary in order to sustain the continuously growing population in the city and to bring the development under the city authority.



PROBLEM FIELD

URBAN TRANFORMATION THROUGH GOVERNANCE



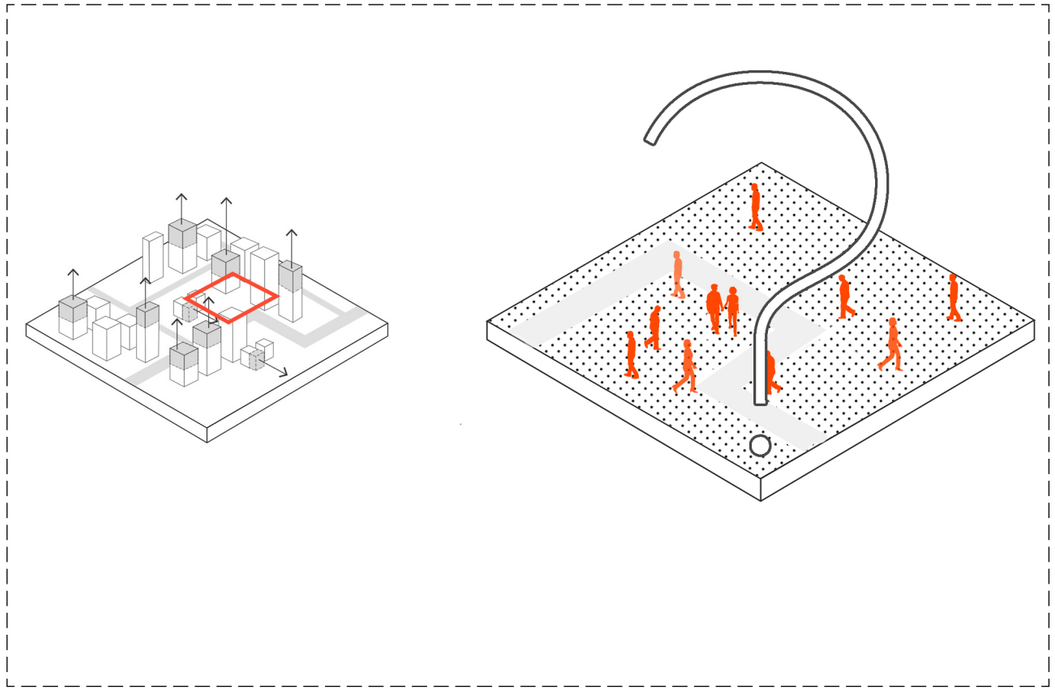


Fig. 01 Urban transformation across scales

PROBLEM FOCUS

XL → L → M → S

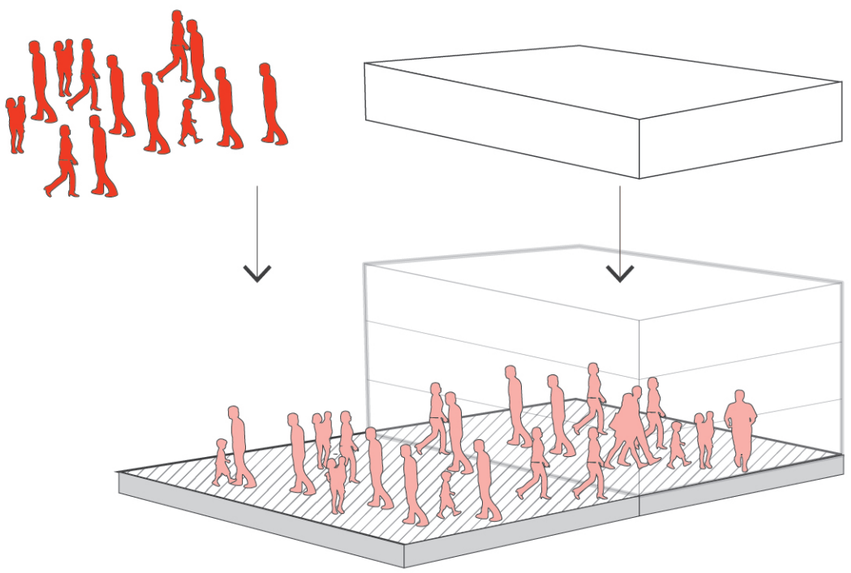
1. Chennai Metropolitan Area
2. Chennai City Corpration
3. Chennai City
4. neighbourhood

This project will focus on the expansion and densification of Chennai city, and its spatial implication on the local scales in the city.

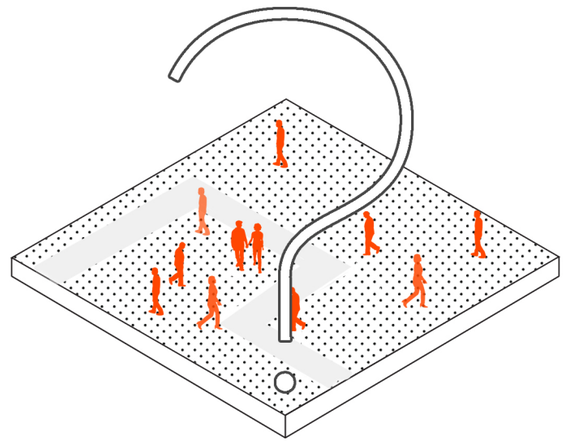
PROBLEM STATEMENT
IMPLICATION OF DENSIFICATION

+ 1000 PEOPLE / HECTARE

30% INCREASE IN BUILT DENSITY



CHENNAI
FSI 1.5
2667 PEOPLE / HECTARE



DENSITY X PUBLIC SPACE
DENSITY X MOBILITY SYSTEMS
DENSITY X ECOLOGICAL SYSTEMS

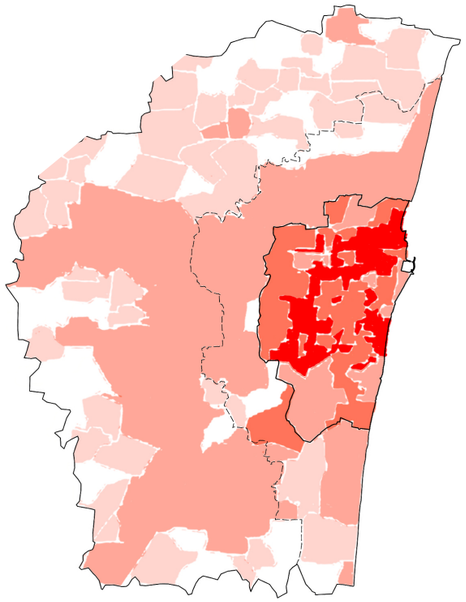
PROBLEM STATEMENT

DENSITY X PUBLIC SPACE

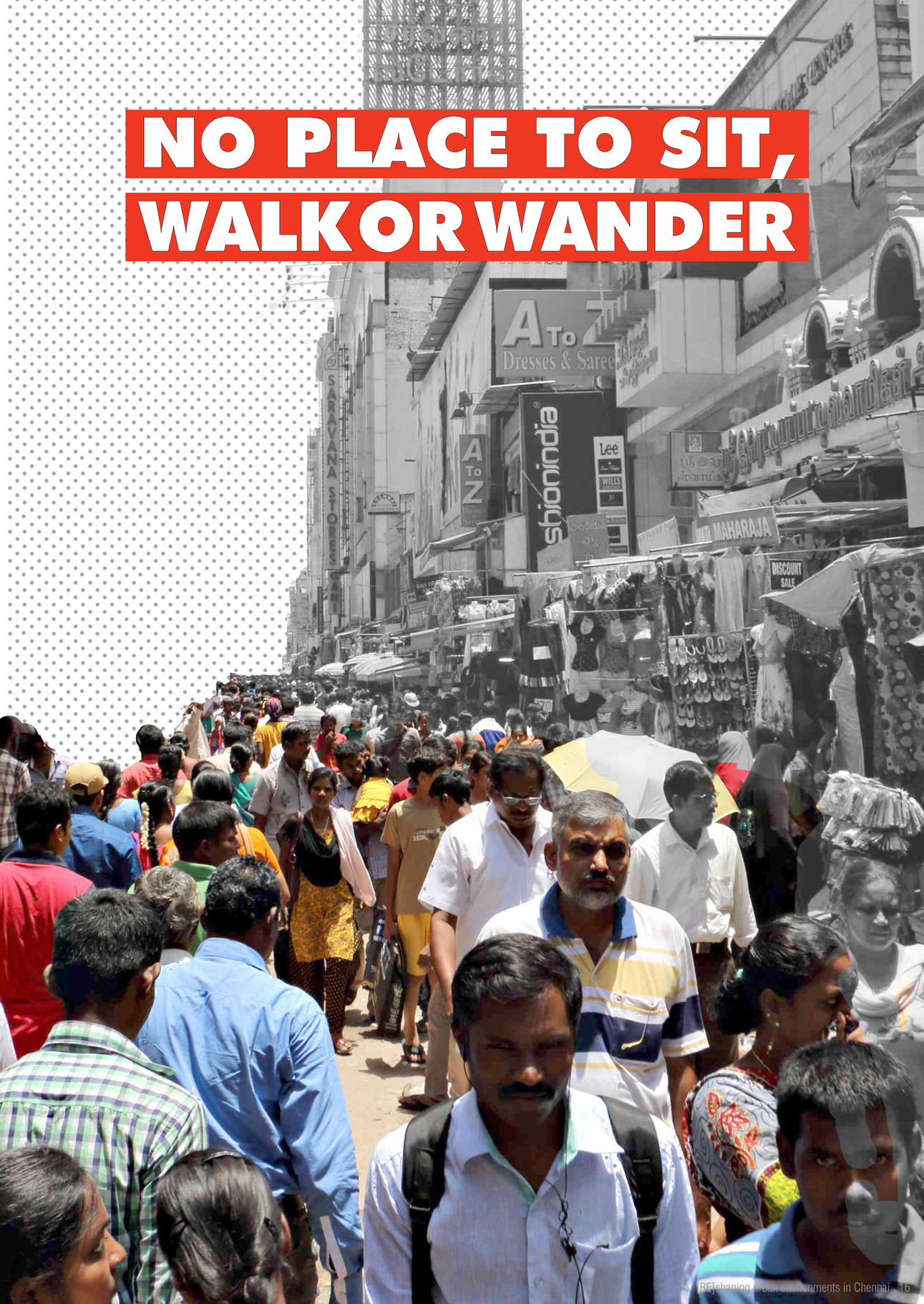


proposed landuse year	Population	Total (Ha)	Open space	Open space / sq.m.
2026	12582000	17617.7	1000.65	0.80

Fig. 02 Open space per person in Chennai city. Source : (Town and country planning



NO PLACE TO SIT, WALK OR WANDER



PROBLEM STATEMENT

DENSITY X MOBILITY

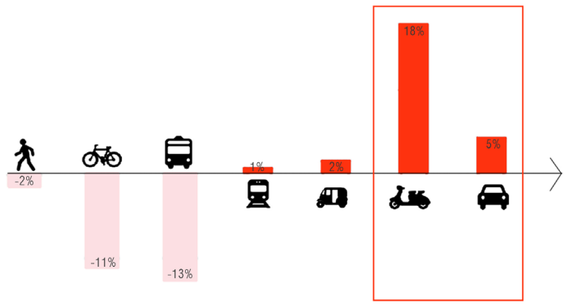


Fig. 03 Percentage change in transport modes in Chennai city. (Chennai Metropolitan Development Authority, 2005)

change in transit mode usage in Chennai city, 1980 - 2010

Projection of transit mode usage in Chennai city, two scenarios

A CITY DRIVEN BY CARS



PROBLEM STATEMENT

DENSITY X ECOLOGICAL SYSTEMS

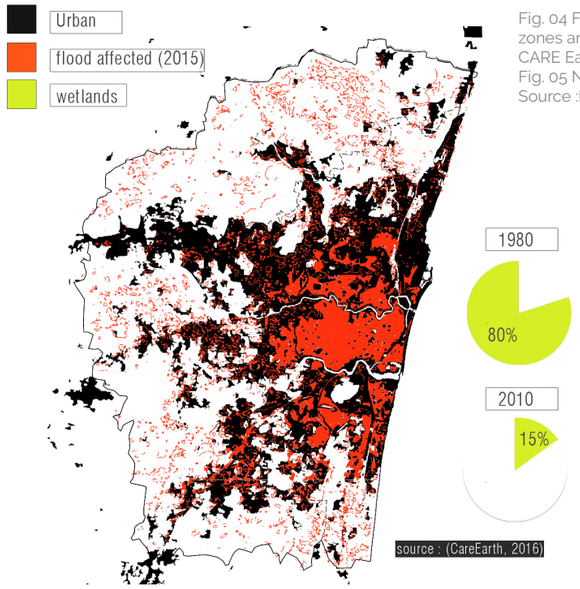


Fig. 04 Flood affected areas in urbanised zones and wetland percentage. Source : CARE Earth
Fig. 05 Neglected ecological systems. Source :Retrieved from https://www.

THE CITY TURNS ITS BACK TO THE WATER



PROBLEM STATEMENT
CONCLUSIONS

The proposed densification is a quantitative approach towards the issue, with the primary aim being to accommodate a certain quantity of people within the city. However, a qualitative approach is required to ensure that it does not lead to overcrowding, congestion, a lack of open space and deterioration of ecological systems, all of which are already urban issues present in the city. This requires a shift in the planning strategy and building regulation process at the city scale and effective design interventions at the local scale.

Therefore this project aims to take a holistic and phenomenological approach to densification, where it is not considered the end goal, but a process that is an opportunity to provide liveable, vibrant, diverse and accessible spaces within the city.









RESEARCH AIM





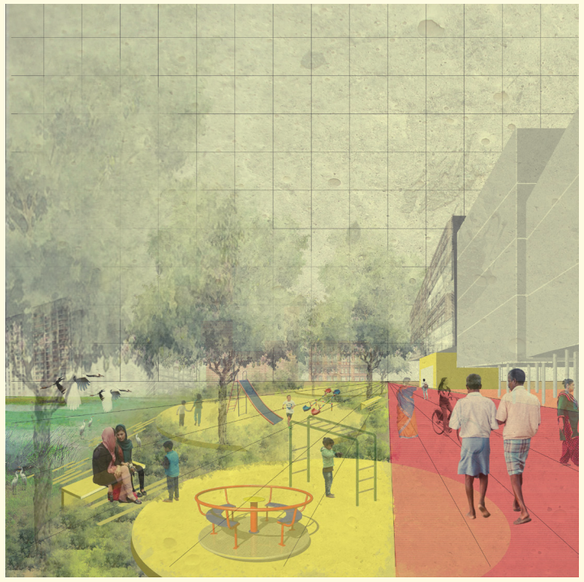


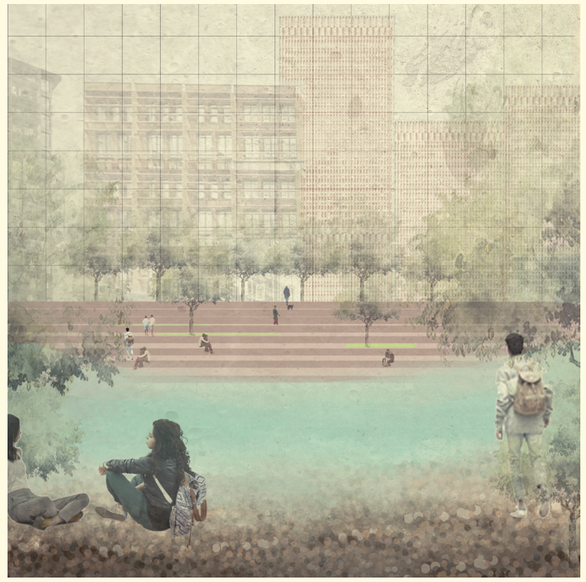




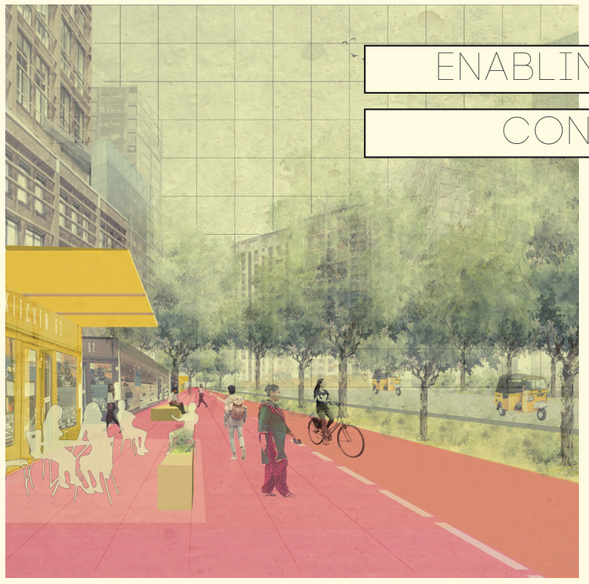


RESEARCH AIM









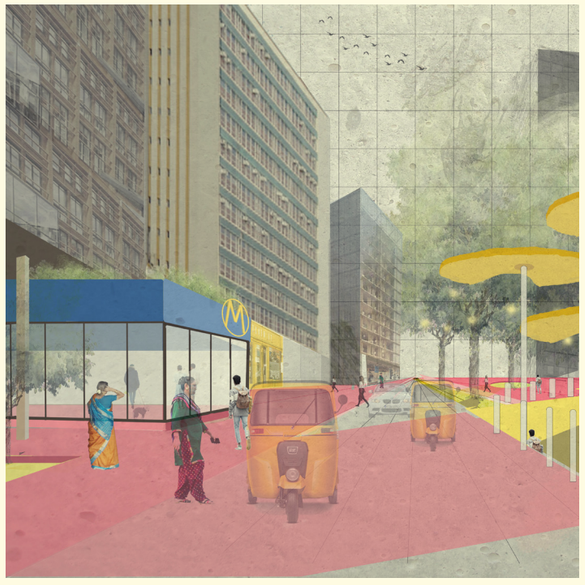




ENABLING DIVERSE AND CONTRASTING EXPERIENCES

CONTRIBUTING TO A LIVEABLE PUBLIC REALM







RESEARCH AIM

DENSITY

CONFIGURATION

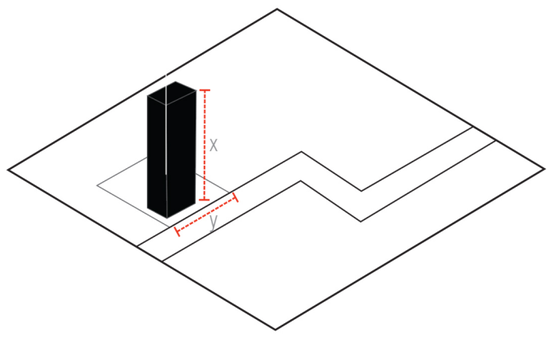
RESEARCH AIM

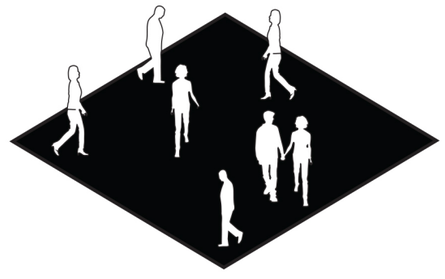
ECOLOGICAL SYSTEMS

MOBILITY SYSTEMS

L CITY SCALE

S LOCAL SCALE





SPATIAL GOVERNANCE

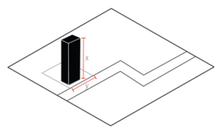
FRAMEWORK

Redefined building and development rules

SPATIAL DESIGN

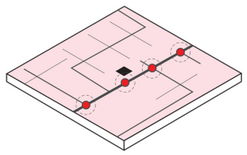
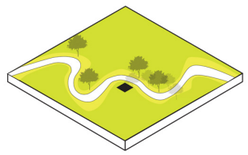
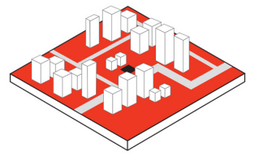
INTERVENTIONS

Spatial qualities creating liveable, accessible environments

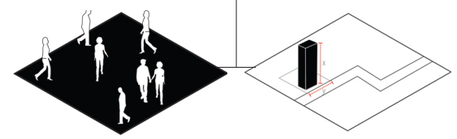
RESEARCH QUESTION

How to facilitate the spatial transformation of the urban fabric of Chennai to enable liveable environments for all people, in different contexts of the city, through a reorganisation of the building density using a holistic approach that takes into account mobility infrastructure and ecological systems?

Current morphology of city fabric - physical and social composition

Contextualised meaning of liveability



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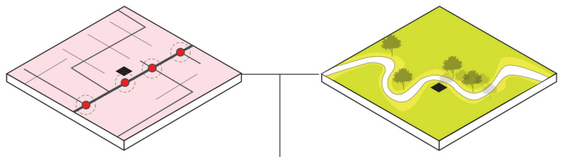
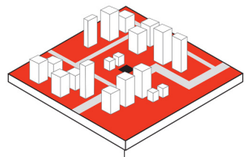




Current development plans

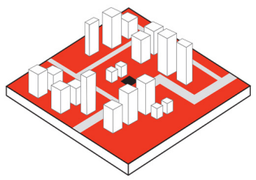
Daily use patterns and local perceptions

Current density configuration in the city and impact of new changes

Building density x population density x social infrastructure x liveability

THEORETICAL UNDERPINNING

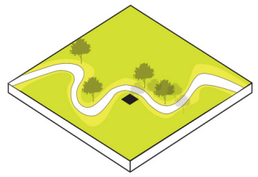
INTEGRATED APPROACH TO DENSIFICATION



TRANSIT ORIENTED DEVELOPMENT

(Thomas, et al., 2018)

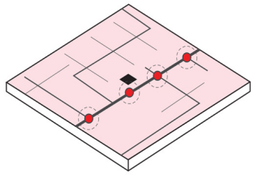
(Urban task force, 2005)



SOCIO ECOLOGICAL INTEGRATION

(Barthel, et al., 2013)

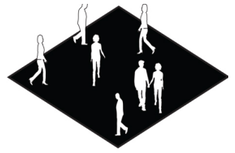
(Forgaci, 2018)



TWO NETWORK STRATEGY

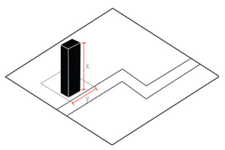
(Tjallingii, 2015)

RESEARCH AIM



LIVEABILITY

(Bosselmann, 2008)



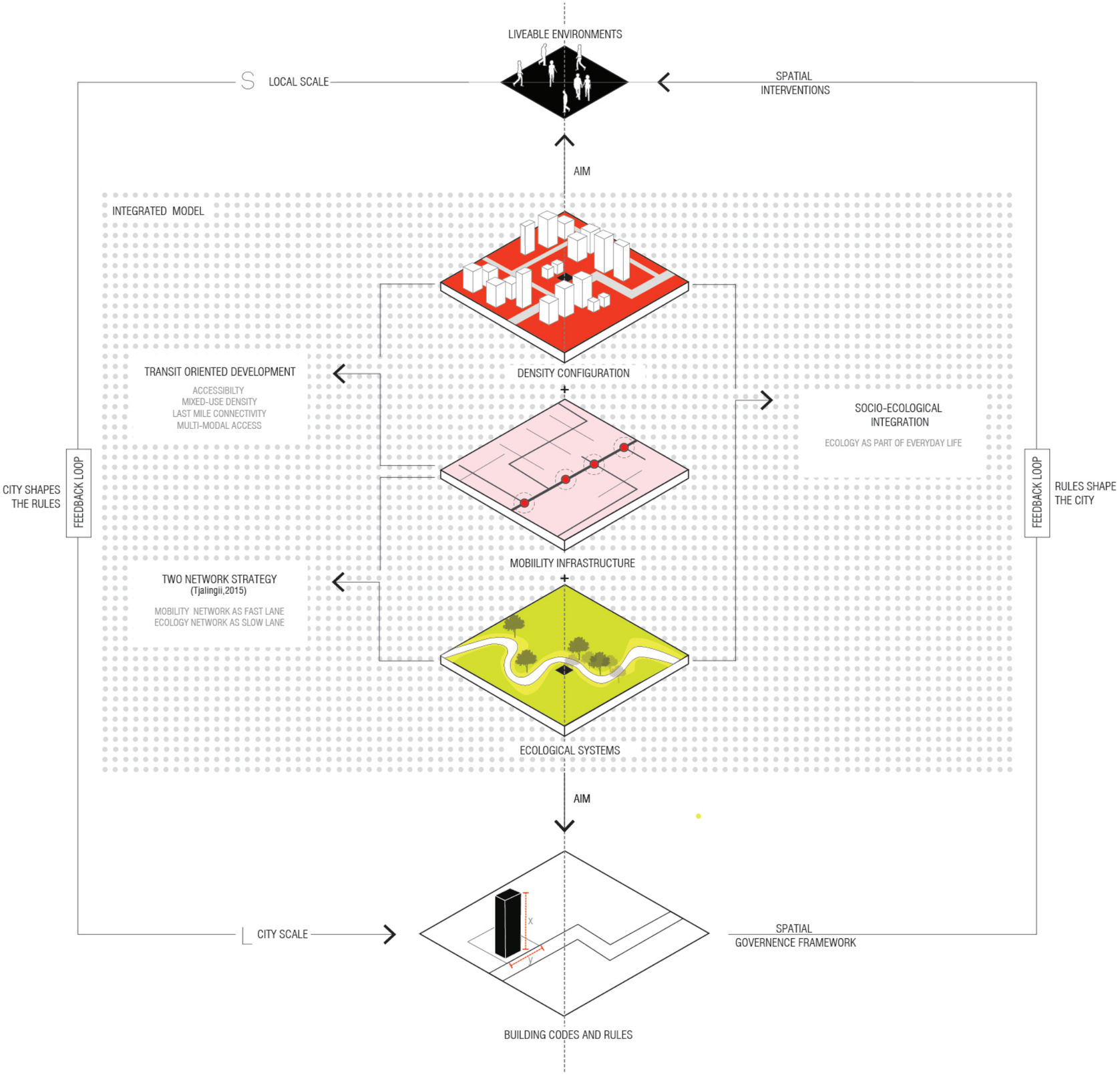
BUILDING RULES

X

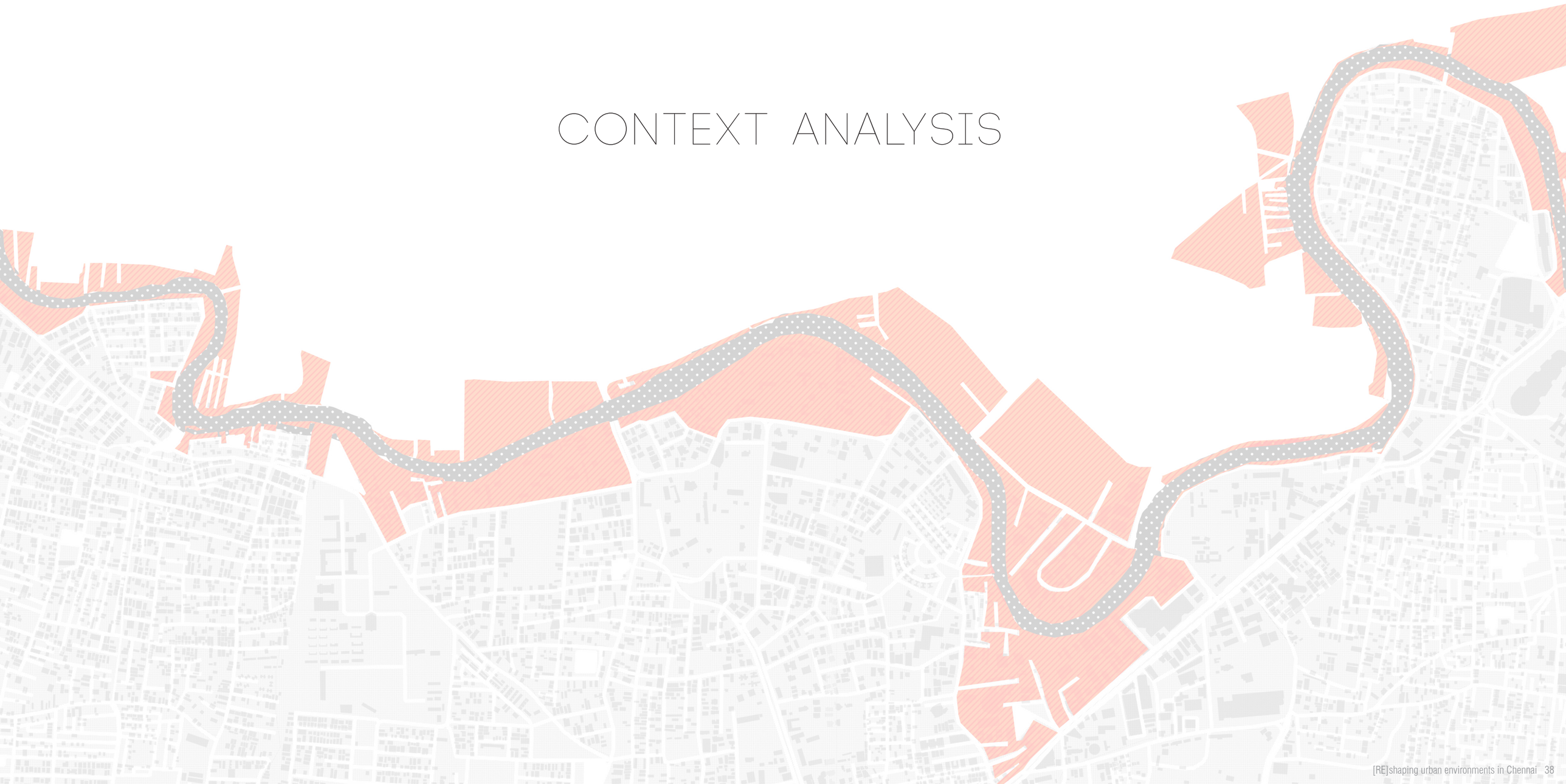
SPATIAL FORM OF THE CITY

(Lehnerer, 2013)

CONCEPTUAL FRAMEWORK



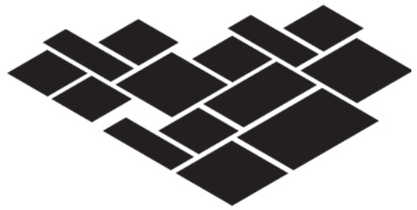
CONTEXT ANALYSIS



ANALYTICAL FRAMEWORK

01 PATTERNS

characteristic physical and social composition



SITE SELECTION

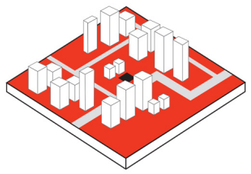


02 INTENTIONS

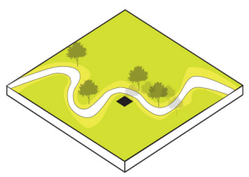
spatial impact across scales.



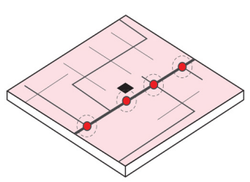
THE Ddensifying CITY



RESTORING ECOLOGICAL SYSTEMS



RECONFIGURING THE MOBILITY NETWORKS



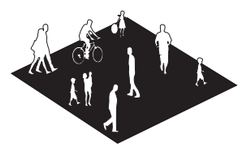
03 PERCEPTIONS

Using perception studies to understand local interpretation of public life and liveability.

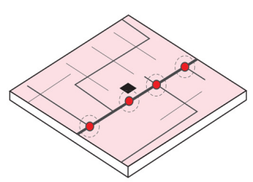


ENGAGING WITH ECOLOGY

PEOPLE AND PUBLIC SPACE



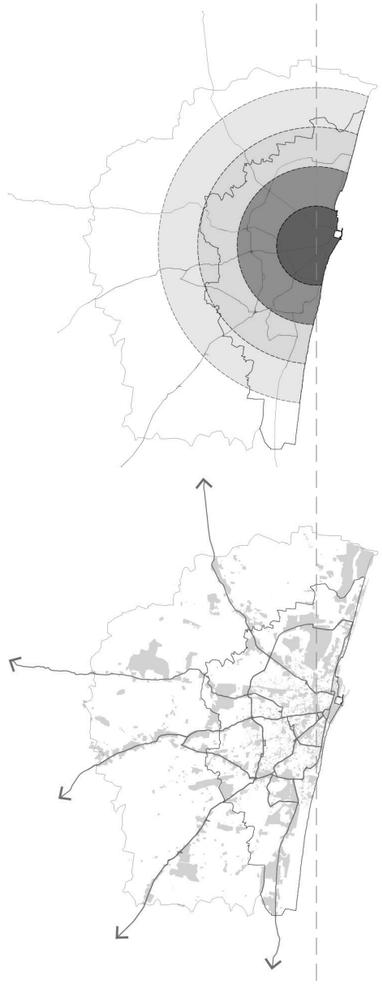
MOVING IN THE CITY



MORPHOLOGICAL PATTERNS

Looking at the three patterns together, certain common charecteristics emerge. Three locations with typical characteristic were further chosen to analyse the network configurations and morphology patterns at a smaller scale.

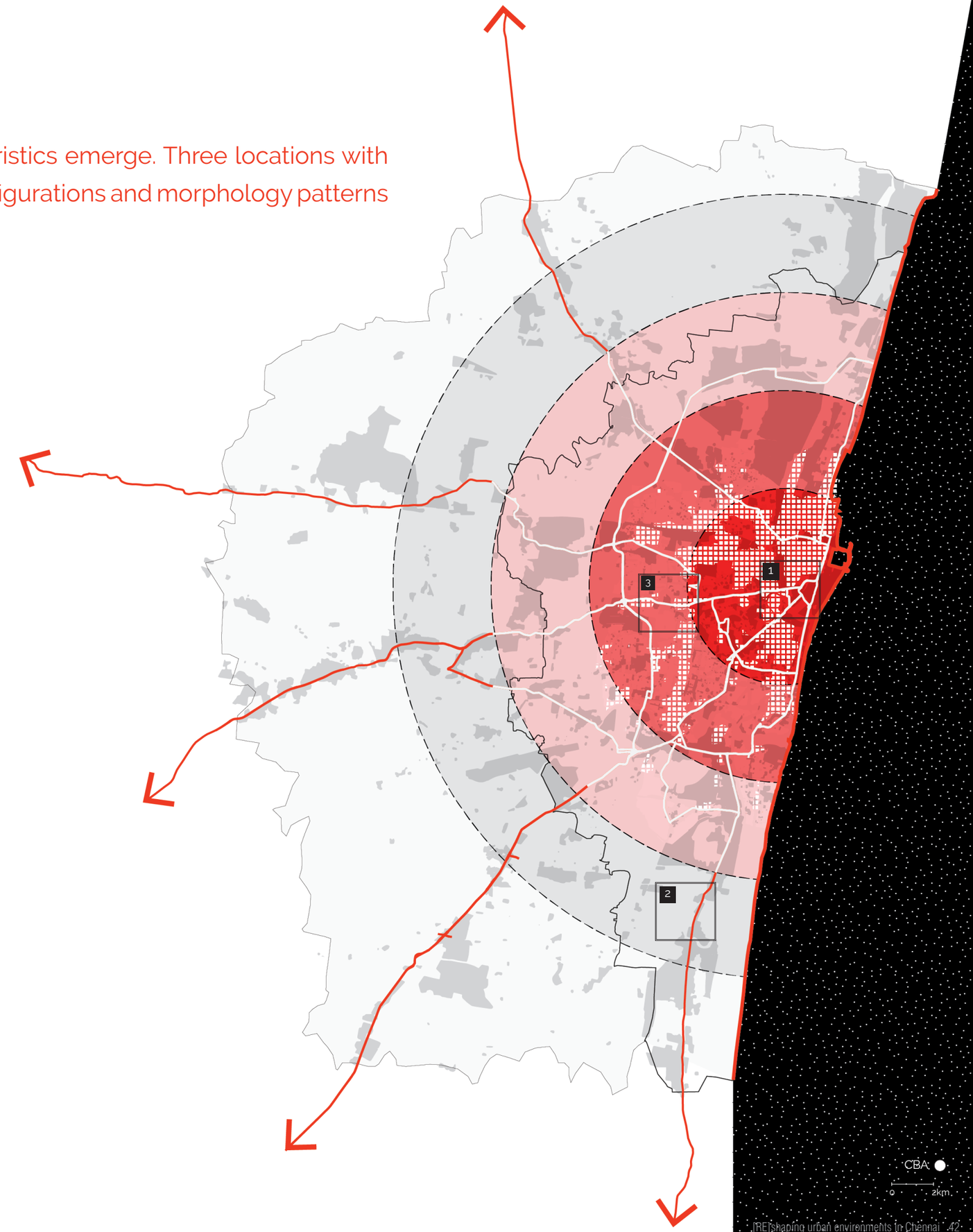
URBANISATION AND POPULATION GROWTH PATTERNS



FUNCTIONAL ZONING PATTERN ALONG MAJOR INFRASTRUCTURE CORRIDORS

BUILT ENVIRONMENT MORPHOLOGY





THE TWO NETWORKS

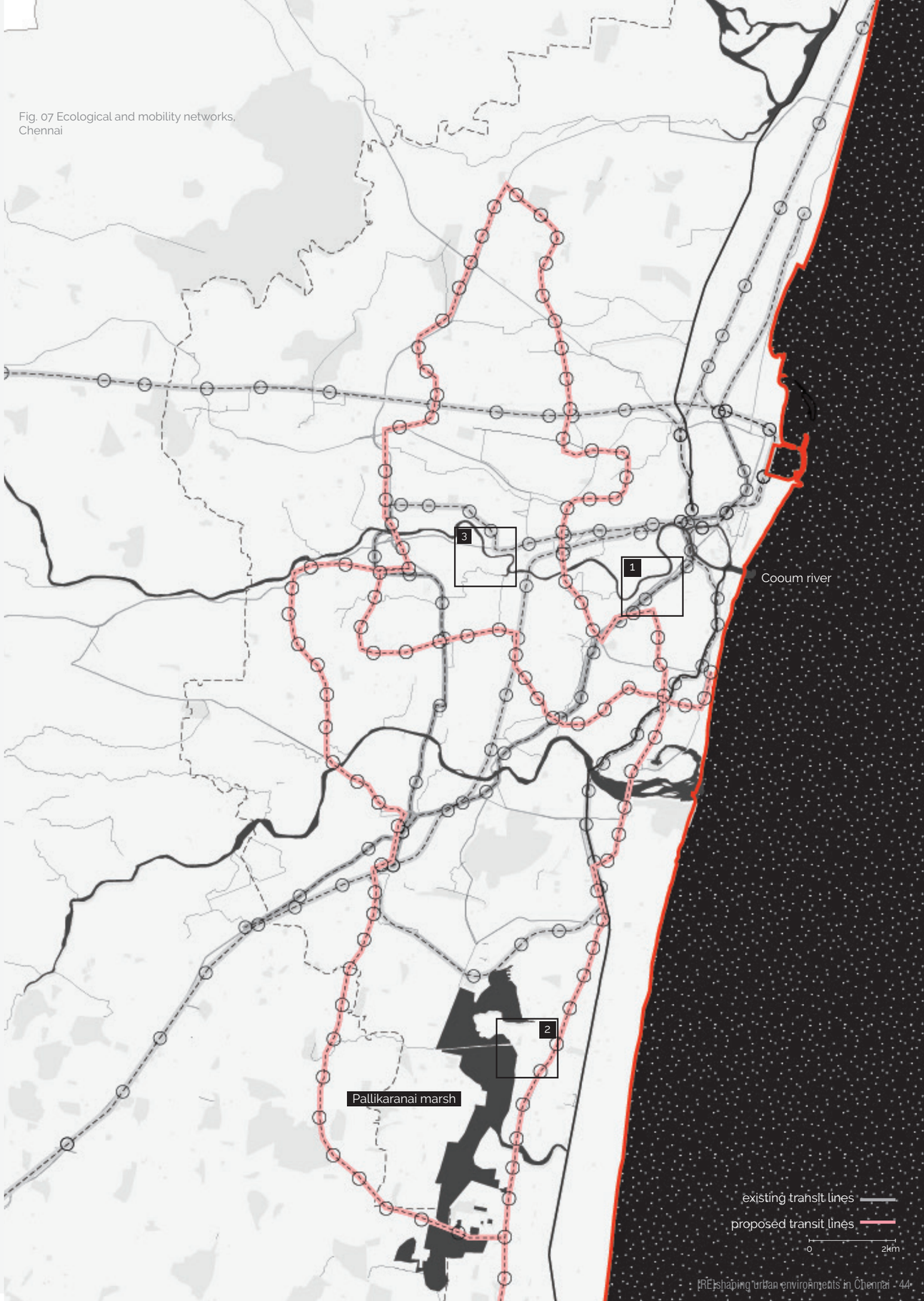


Fig. 07 Ecological and mobility networks, Chennai

THE TWO NETWORKS

AVG TRAVEL TIME TRAVELLED - ONE WAY (IT CORRIDOR) : 21 KM

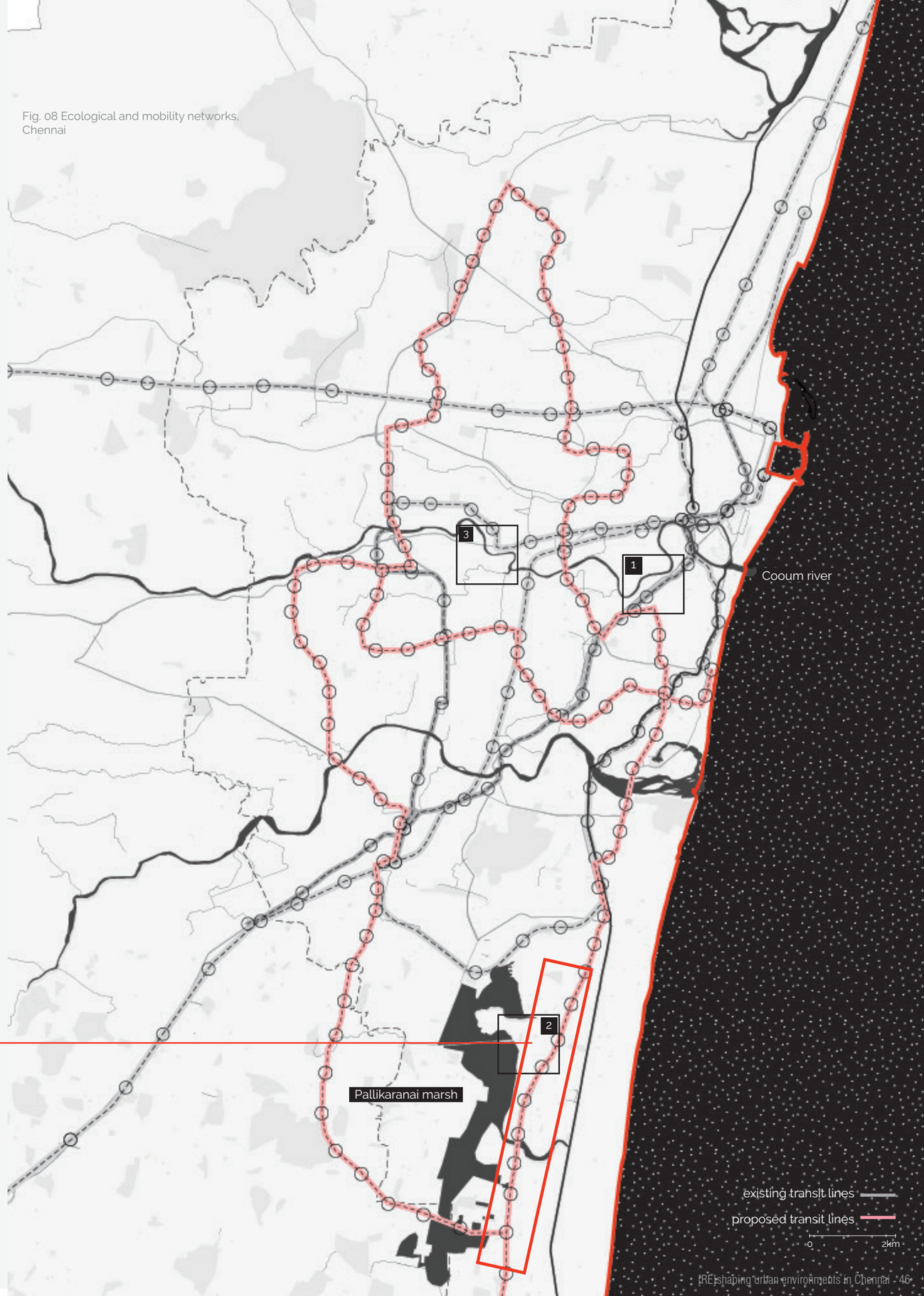
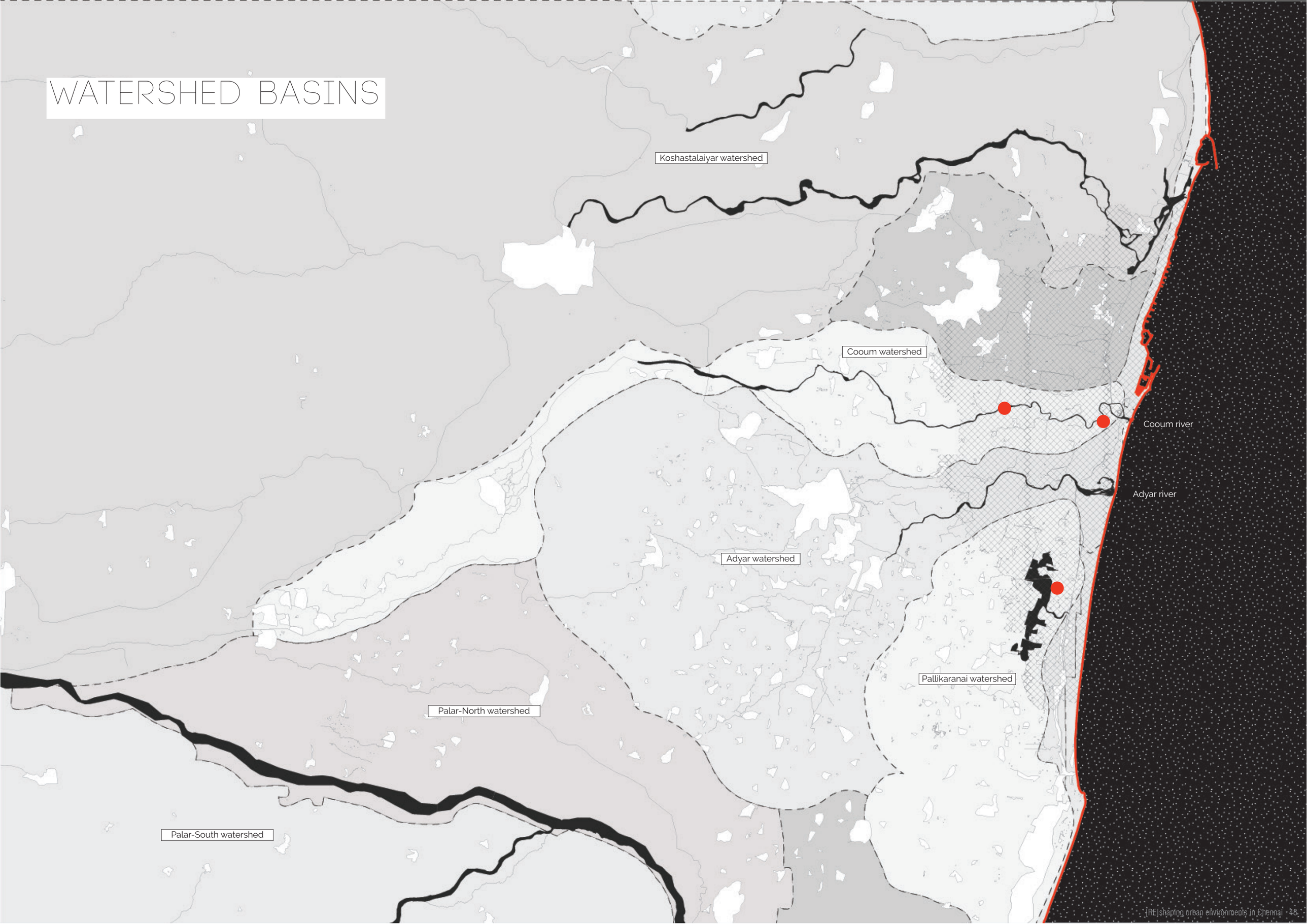
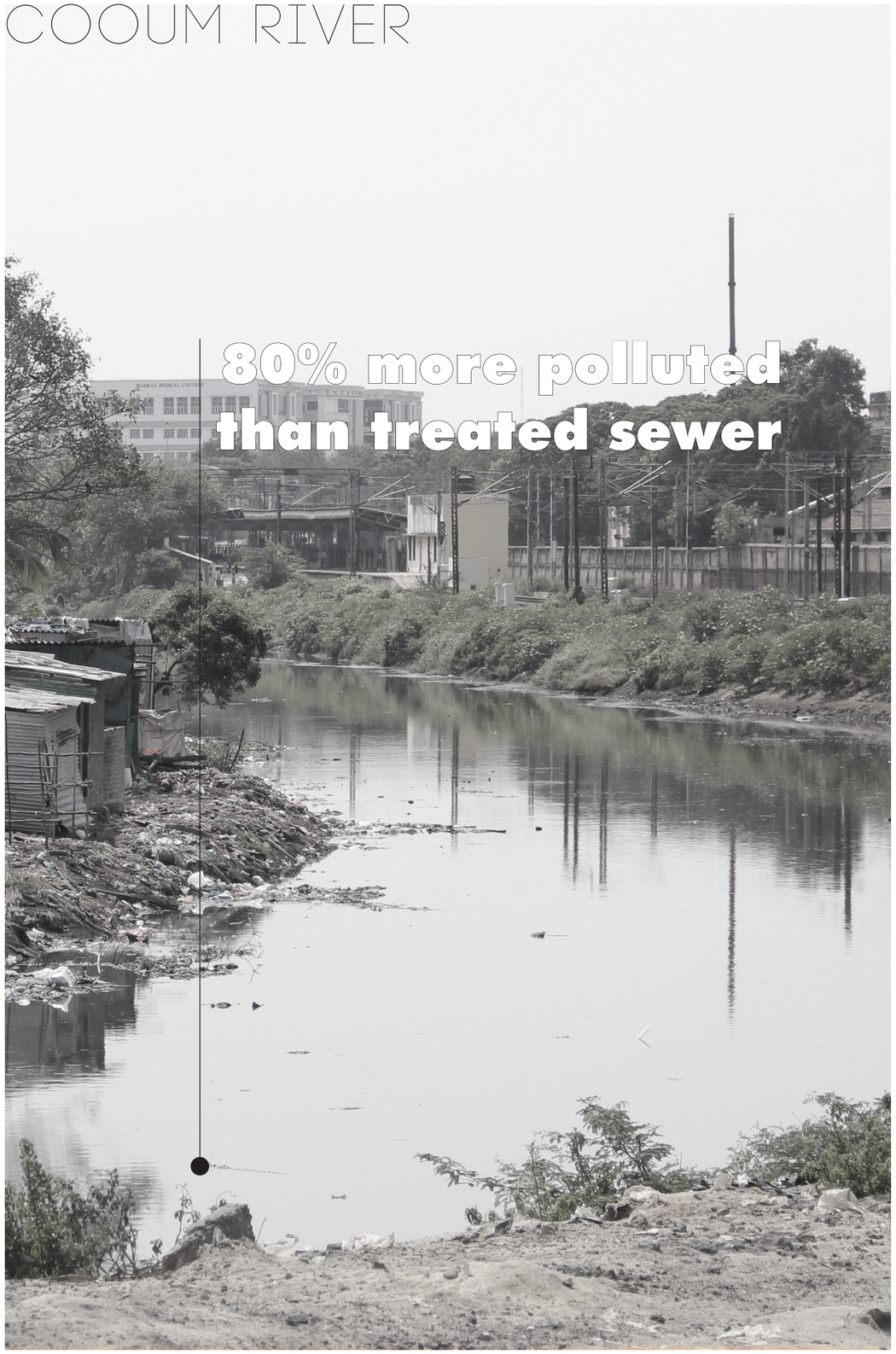


Fig. 08 Ecological and mobility networks, Chennai

WATERSHED BASINS



COOUM RIVER

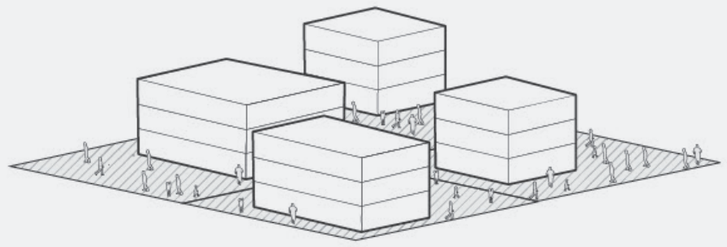


PALLIKARANAI MARSH

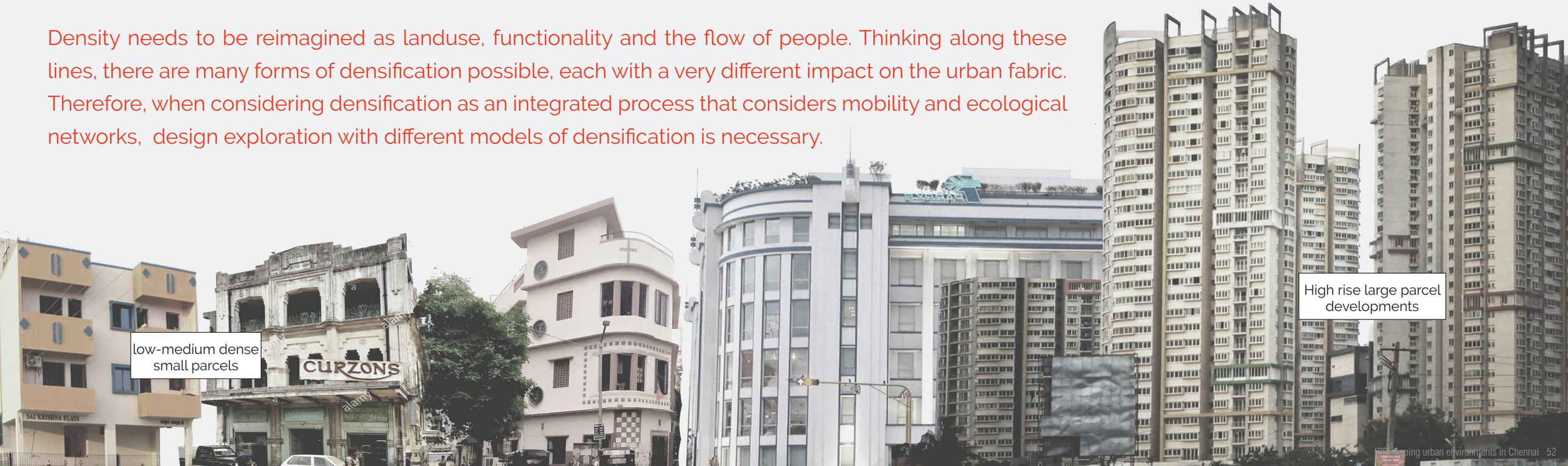


Fig. 09 Cooum river, Source: Flikr.com

DENSIFICATION POTENTIALS



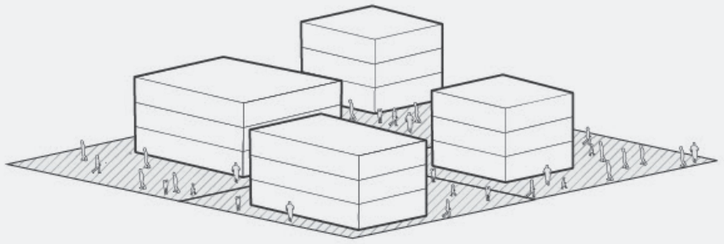
Density needs to be reimagined as landuse, functionality and the flow of people. Thinking along these lines, there are many forms of densification possible, each with a very different impact on the urban fabric. Therefore, when considering densification as an integrated process that considers mobility and ecological networks, design exploration with different models of densification is necessary.

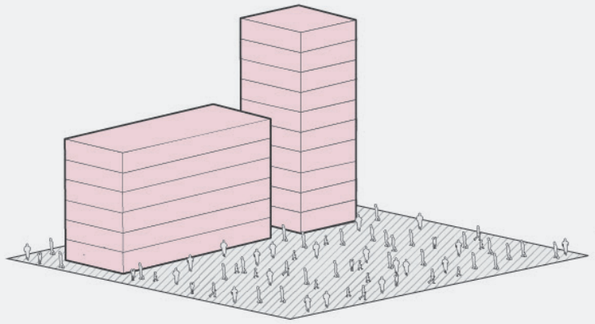


low-medium dense small parcels

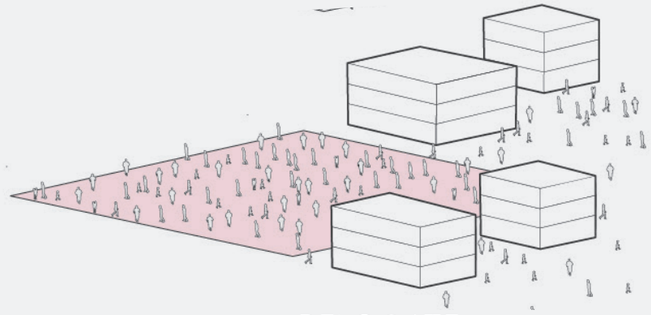
High rise large parcel developments

DENSIFICATION POTENTIALS

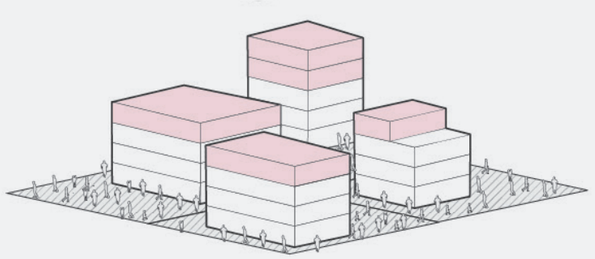




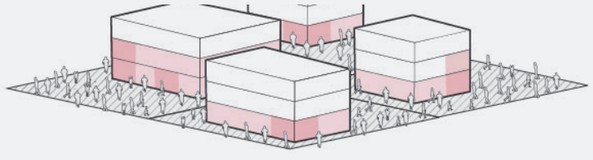
REBUILD



RELOCATE



INFILL



TRANSFORM

Density needs to be reimagined as landuse, functionality and the flow of people. Thinking along these lines, there are many forms of densification possible, each with a very different impact on the urban fabric. Therefore, when considering densification as an integrated process that considers mobility and ecological networks, design exploration with different models of densification is necessary.



low-medium dense small parcels



High rise large parcel developments

ENGAGING WITH ECOLOGY

WHATS IN A WORD?

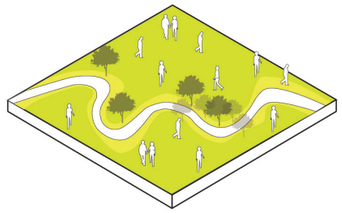
PORAMBOKE [n.]
/ por-um-pokku /

Places reserved for communal shared uses (rivers, river banks, marshlands irrigation tanks)

A prejarative meant to demean or devalue a person or a place.

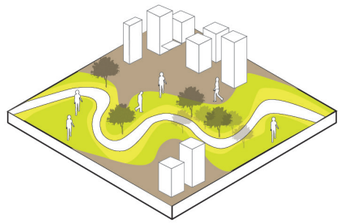


Fig. 10 Etymology - Poramboke. Source : https://www.indiawaterportal.org/articles/no-mans-land
Fig. 11 Buckingham canal . Source : https://eyesonthecanal.in/2019/08/07/central-railway-station-madras/
Fig. 12 Evolution of Poramboke. Data source : (100 resilient cities, 2019).



PORAMBOKE

Communal lands were classified as Poramboke, which could not be owned or profitted from, and was maintained by the community as common space. This included rivers, river banks, irrigation tanks, marshlands and salt pans.

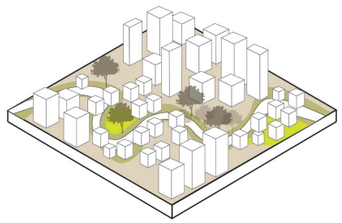


PUBLIC VS PRIVATE
WASTELANDS

Lack of economic benefit from these communal lands lent them the translation of “wastelands” in English, during the colonial period.

Concepts of public and private were established based on property ownership right and economical value, as opposed to a communal space

The “wastelands” were rezoned into institutional and colonial buildings.



NEGLECTED
ENCROACHED
POLLUTED

Rapid urbansiation and a race for economic development has led to these communal lands being built upon.

PRE COLONIAL PERIOD

COLONIAL PERIOD

POST COLONIAL PERIOD

ENGAGING WITH ECOLOGY

> Perceived as a service, has lost its status as a space in the city due to prolonged deterioration.

> Further exacerbated by lack of visibility and accessibility - backyards of the city.



WHAT IS YOUR IMPRESSION ABOUT THE RIVER/ MARSH/ CANAL CLEANING PROCESS?

There is no point cleaning it, would be better to find a different source of water

It will never happen.

They keep cleaning it and it keeps getting polluted. There is no point.

The amount of garbage in the marsh has decreased, but there is still a lot.

No idea

It must be cleaned. When it rains, the whole place starts smelling, as its downwind from the marsh. Yes comfortable, though roads are not very good.

The process is too slow. It is causing a lot of mosquitoes.

It causes mosquito and diseases and smells really bad. They have been saying they are cleaning it for a long time but I don't see any change.

They should spend money on something more useful to the people. This will never happen.

Fig. 13 Potential interventions along water edge.
Fig. 14 Cooum water edge, Anna nagar.
Source : Author

ACCESSIBILITY OF THE COOUM

Fig. 15 Accessibility of the Cooum river

Suburban train

Mount road

0

2km

ACCESSIBILITY OF THE PALLIKARANAI MARSH

Fig. 16 Accessibility of the Pallikaranai marsh



ENGAGING WITH ECOLOGY

Top down planning process such as activating water edges are rarely executed successfully in the city. This also causes a lack of trust/ hope for such projects. Over time, this causes a disconnect from these spaces, turning them into backyards for the city.



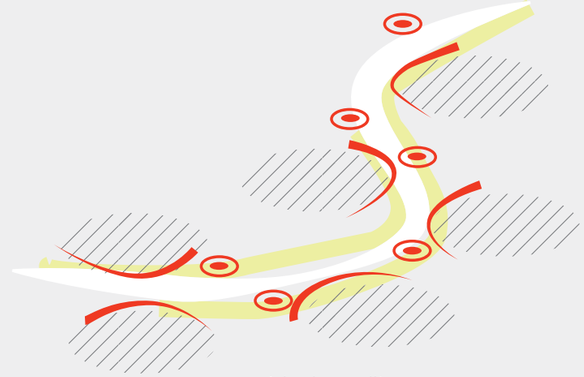
POTENTIAL INTERVENTION STRATEGY



Existing conditon



Implementation process

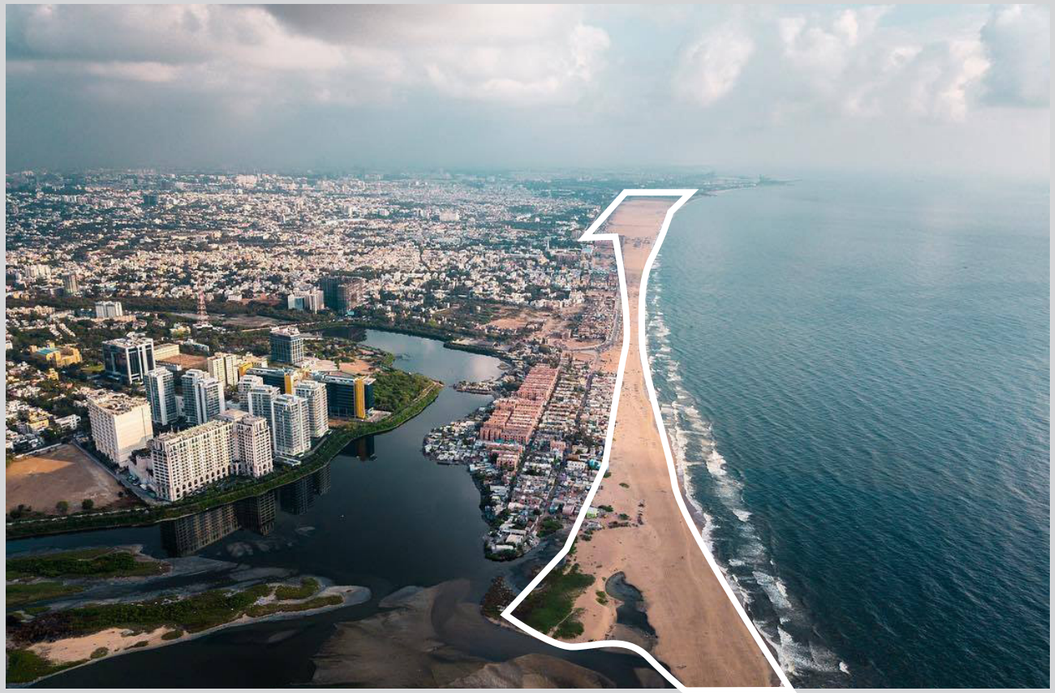


Ideal conditon

Fig. 17 Potential interventions along water edge.
Fig. 18 Cooum water edge, Anna nagar.
Source : Author

PUBLIC SPACE USE PATTERNS

Fig. 19 Chennai coast. Source : Harish T



CITY SCALE PUBLIC SPACES



LOCAL SCALE PUBLIC SPACES

CITY SCALE PUBLIC SPACES POTENTIALS

Fig. 20 Potentials : city scale public space



LOCAL SCALE PUBLIC SPACES



Fig. 21 Interview responses : local scale public space destinations

LOCAL SCALE PUBLIC SPACES

DO YOU FIND IT COMFORTABLE TO WALK IN YOUR NEIGHBOURHOOD? WHY/WHY NOT?

Yes. However too many cars and dust sometimes but that's a part of the roads.

No not really, it gets hot.

Yes, but sometimes in the day its too noisy because of the vehicles.

Yes its comfortable but too many cars.

Yes it is.

It's okay but too many vehicles as there is no space for pedestrians.

Yes comfortable, though roads are not very good.

Yes it is fine. A bit too many cars.

Its too dusty to walk outside. There are too many cars.

Too many cars

No. There is no shade and it is very hot.

Yes, a bit dusty and noisy.

LOCAL SCALE PUBLIC SPACES

DO YOU FIND IT COMFORTABLE TO WALK IN YOUR NEIGHBOURHOOD? WHY/WHY NOT?

Yes. However too many cars and dust sometimes but that's a part of the roads.

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Too many cars

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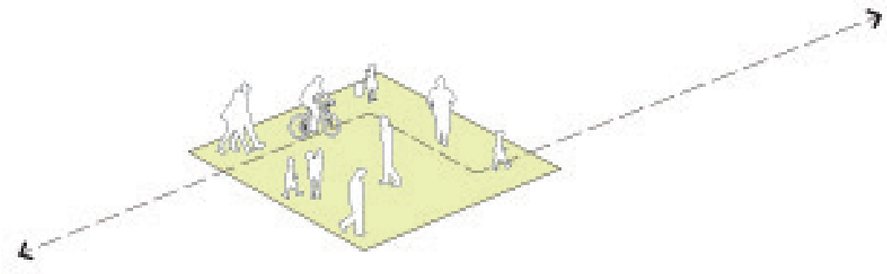
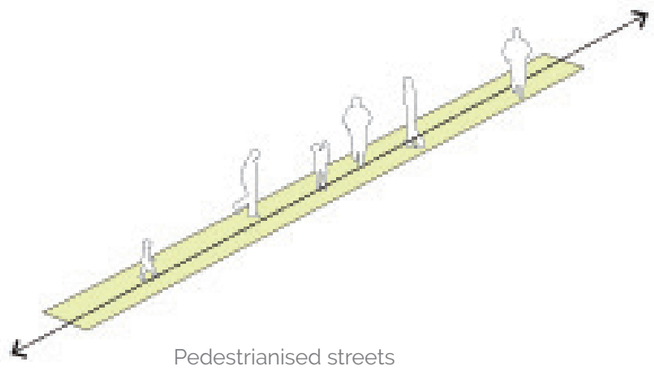
Yes, a bit dusty and noisy.

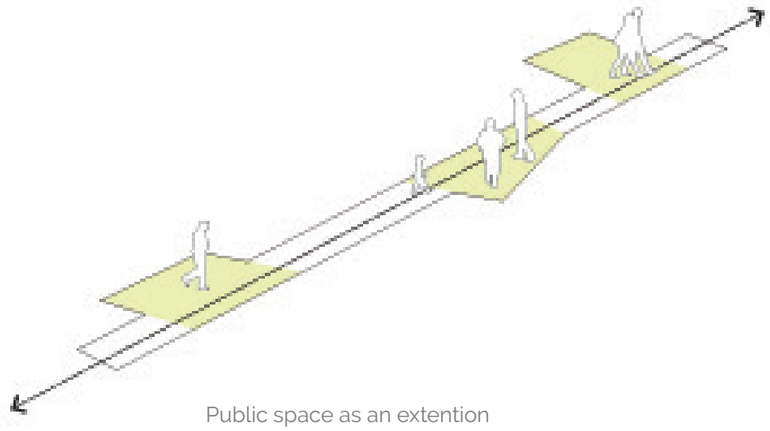
POTENTIAL INTERVENTION STRATEGY



Small spaces as a part of everyday mobility



Pedestrianised streets



Public space as an extention of streets

PRELIMINARY DESIGN INPUTS
PUBLIC SPACES

Fig. 22 Design Inputs - 3 sites

Cooum river

Marina beach

LOCATION 01
Mt. Road



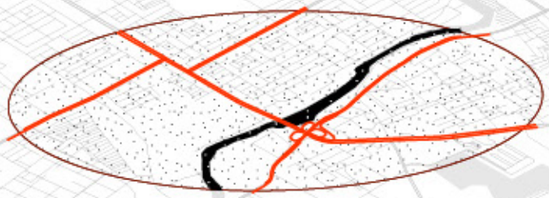
> Lack of local public spaces

> Highly accessible river - potential for public space

Elliots beach

Thiruvanmayur beach

Buckingham canal



LOCATION 03
Poonamale high road

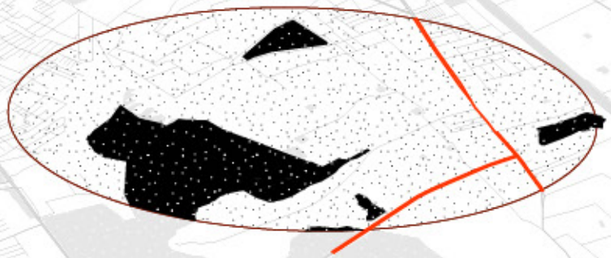
> Need for city scale public space (Cooum as potential with existing access to water edge)

> Planned neighbourhoods with many parks - potential connections to water edge

> Need for city scale public space (Pallikaranai marsh as potential)

> Lack of local public spaces

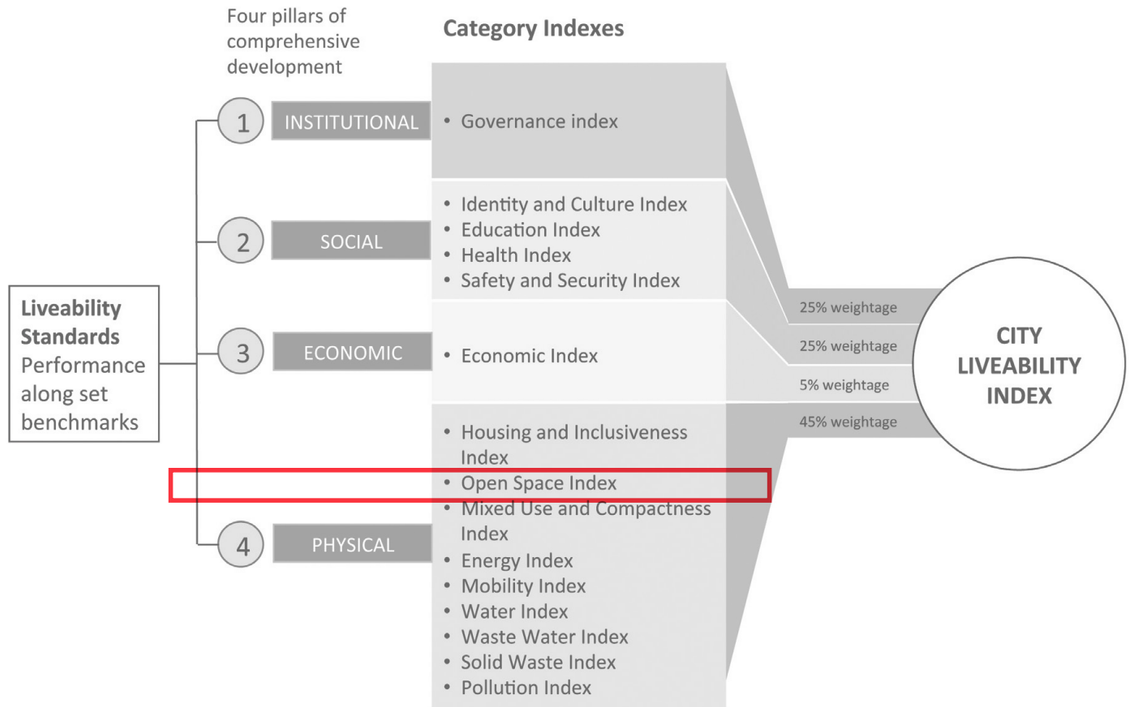
LOCATION 02
OMR Road



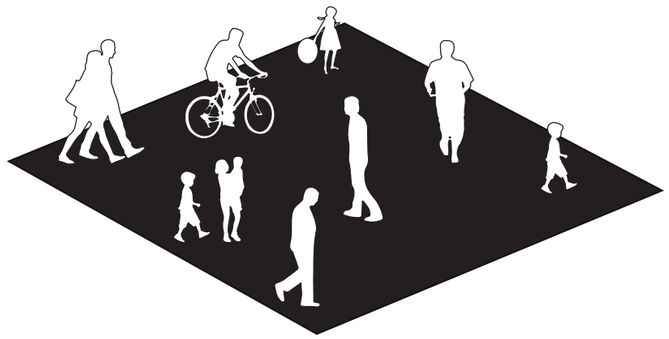
Pallikaranai marsh

CONTEXTUALISING LIVEABILITY

Housing and Inclusiveness	7.1 Percentage of Slum/EWS households covered through formal/ affordable housing	C	Target 1.4 Indicator 1.4.2 Target 11.1
	7.2 Percentage of slum areas covered through basic services	C	Target 1.4 Indicator 1.4.1 Target 11.1
Public Open Spaces	8.1 Per capita availability of green spaces	C	Target 11.7
	8.2 Per capita availability of public and recreational places	C	Target 11.7
Mixed Land Use and Compactness	9.1 Share of mixed land use area in overall city land use	C	Target 11.3
	9.2 Net Density	C	Target 11.3
Transportation and Mobility	11.1 Geographical coverage of public transport	C	Target 11.2
	11.2 Availability of public transport	S	Target 11.2
	11.3 Mode share of public transport	C	Target 11.2 Target 12.2
	11.4 Percentage of road network with dedicated bicycle tracks	C	Target 11.2
	11.5 Percentage of interchanges with bicycle parking facilities	S	Target 11.2
	11.6 Mode share of non-motorized transport	C	Target 11.2 Target 11.3 Target 12.2
	11.7 Availability of Passenger Information System	S	Target 11.2
	11.8 Extent of signal synchronization	S	Target 11.2
	11.9 Availability of paid parking spaces	C	Target 11.3
	11.10 Percentage coverage of footpaths – wider than 1.2 m	C	Target 11.2 Target 11.3
	11.11 Percentage of traffic intersections with pedestrian crossing facilities	S	Target 11.2
	11.12 Extent to which universal accessibility is incorporated in public rights-of-way	S	Target 11.2



CONTEXTUALISING LIVEABILITY



LIVEABILITY
PUBLIC SPACES

AVAILABILITY

OPEN SPACE
PER PERSON

PUBLIC SPACE
PER PERSON

ACCESSIBILITY

SPATAL ACCESS

NO TIME IN THE DAY TO
USE PUBLIC SPACE

TOO MUCH TRAVEL TIME
IN THE DAY, NO LEISURE
TIME.

WALKABILITY

SHADE

LACK OF VEHICLE
COLLISION

ACCESS TO MIXED USE
DIVERSE FUNCTIONS

DESIGN PROPOSALS

STRATEGY - CITY SCALE



ECOLOGICAL NETWORK



MOBILITY NETWORK

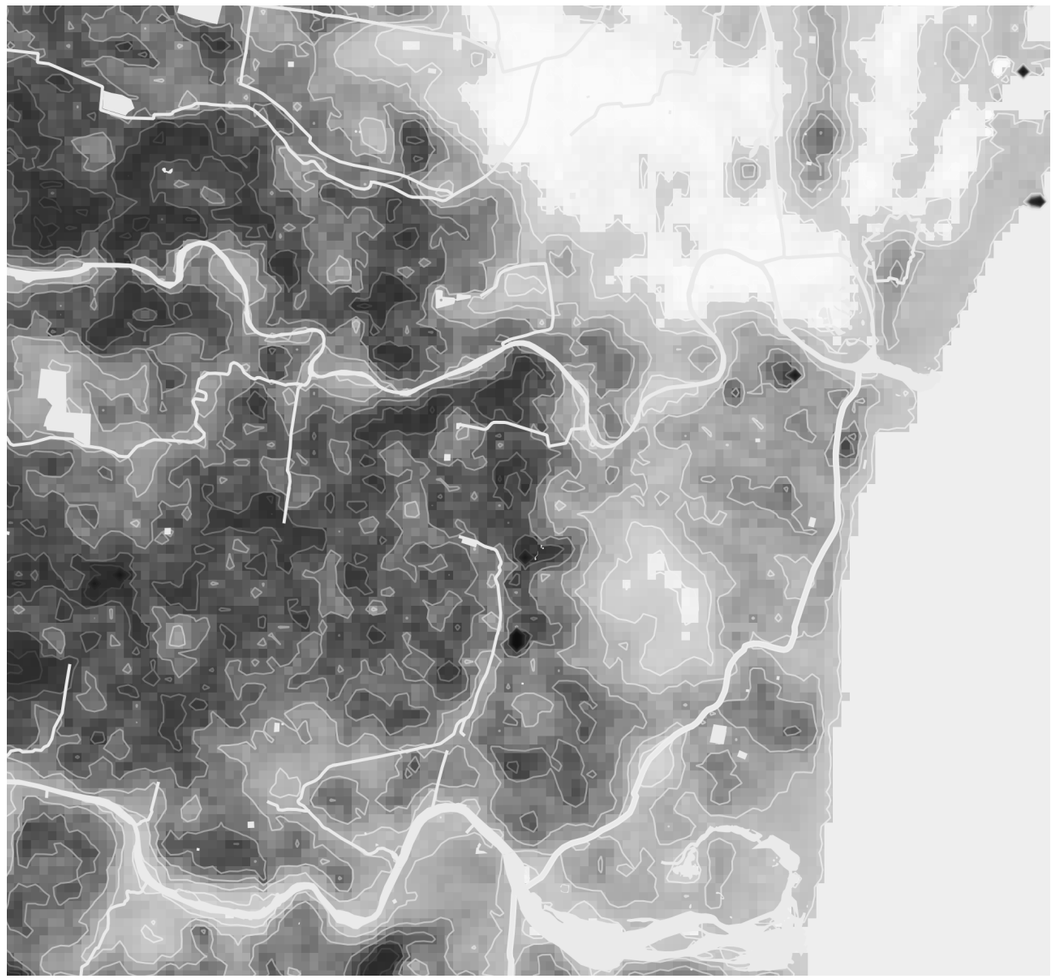
STRATEGY - CITY SCALE

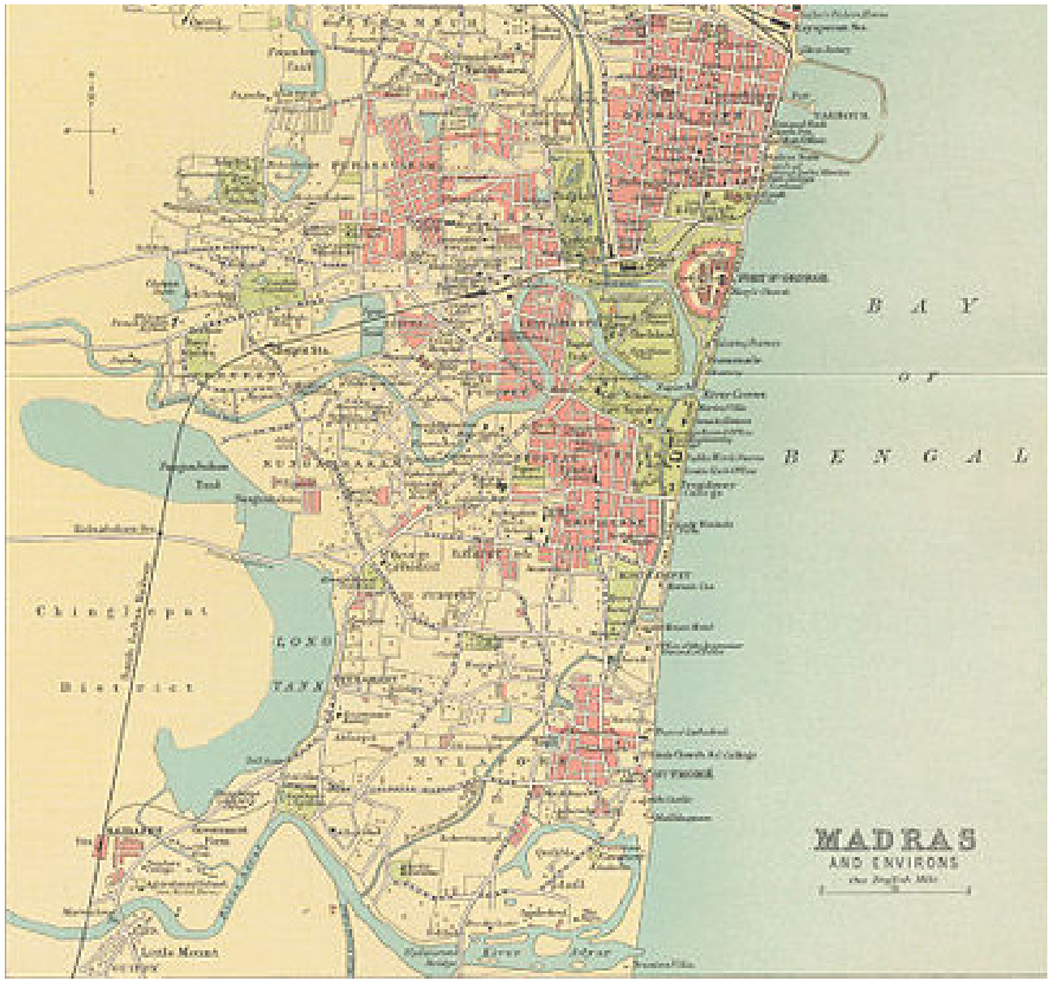
GREEN BLUE NETWORK



STRATEGY - CITY SCALE

GREEN BLUE NETWORK



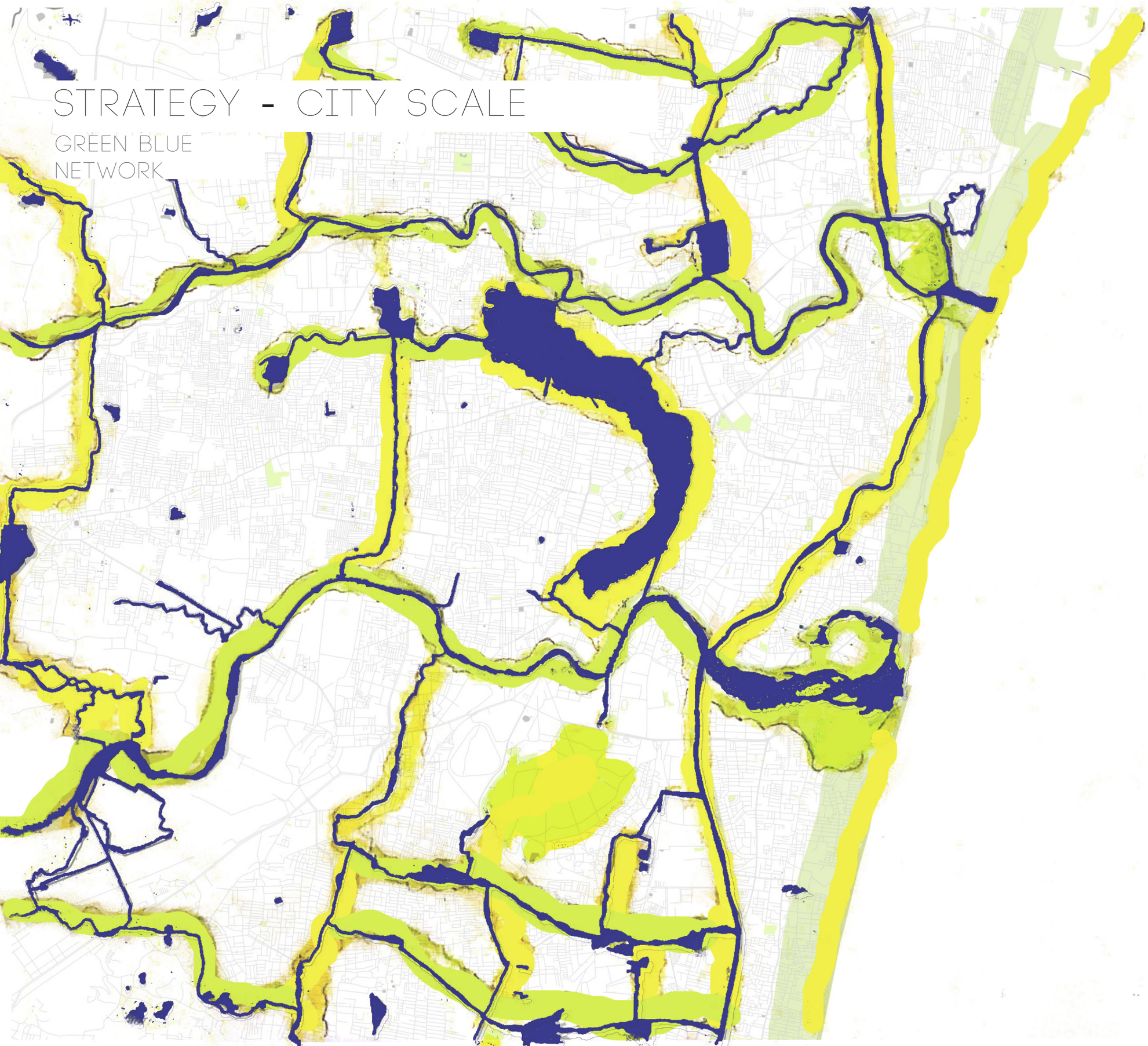


STRATEGY - CITY SCALE

GREEN BLUE
NETWORK

STRATEGY - CITY SCALE

GREEN BLUE NETWORK



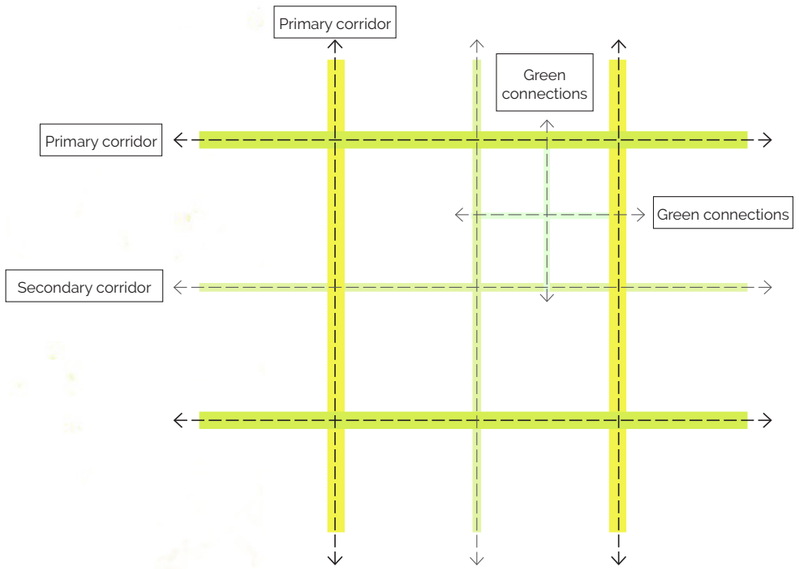
STRATEGY - CITY SCALE

GREEN BLUE
NETWORK



STRATEGY - CITY SCALE

GREEN BLUE NETWORK



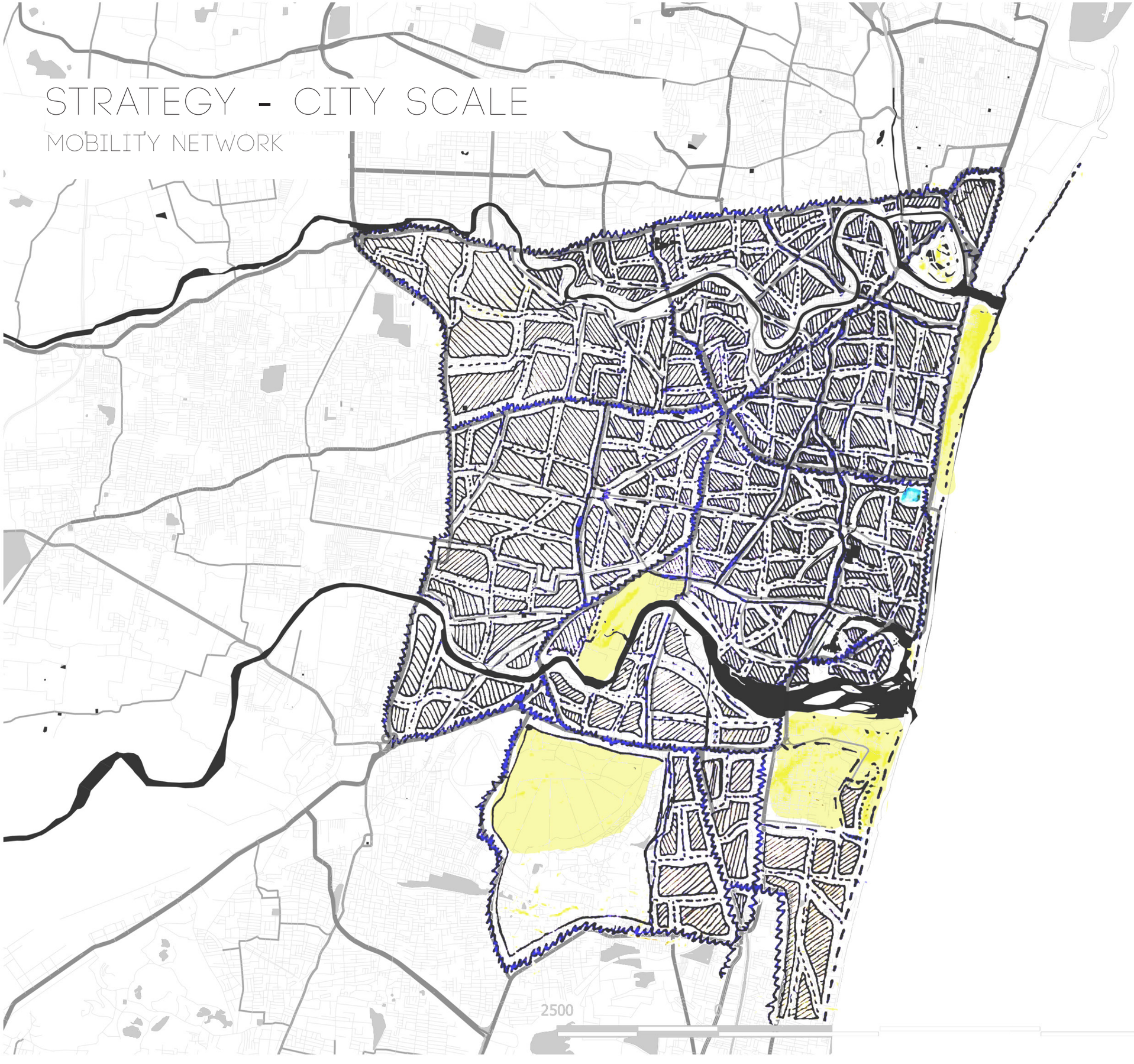
STRATEGY - CITY SCALE

MOBILITY NETWORK



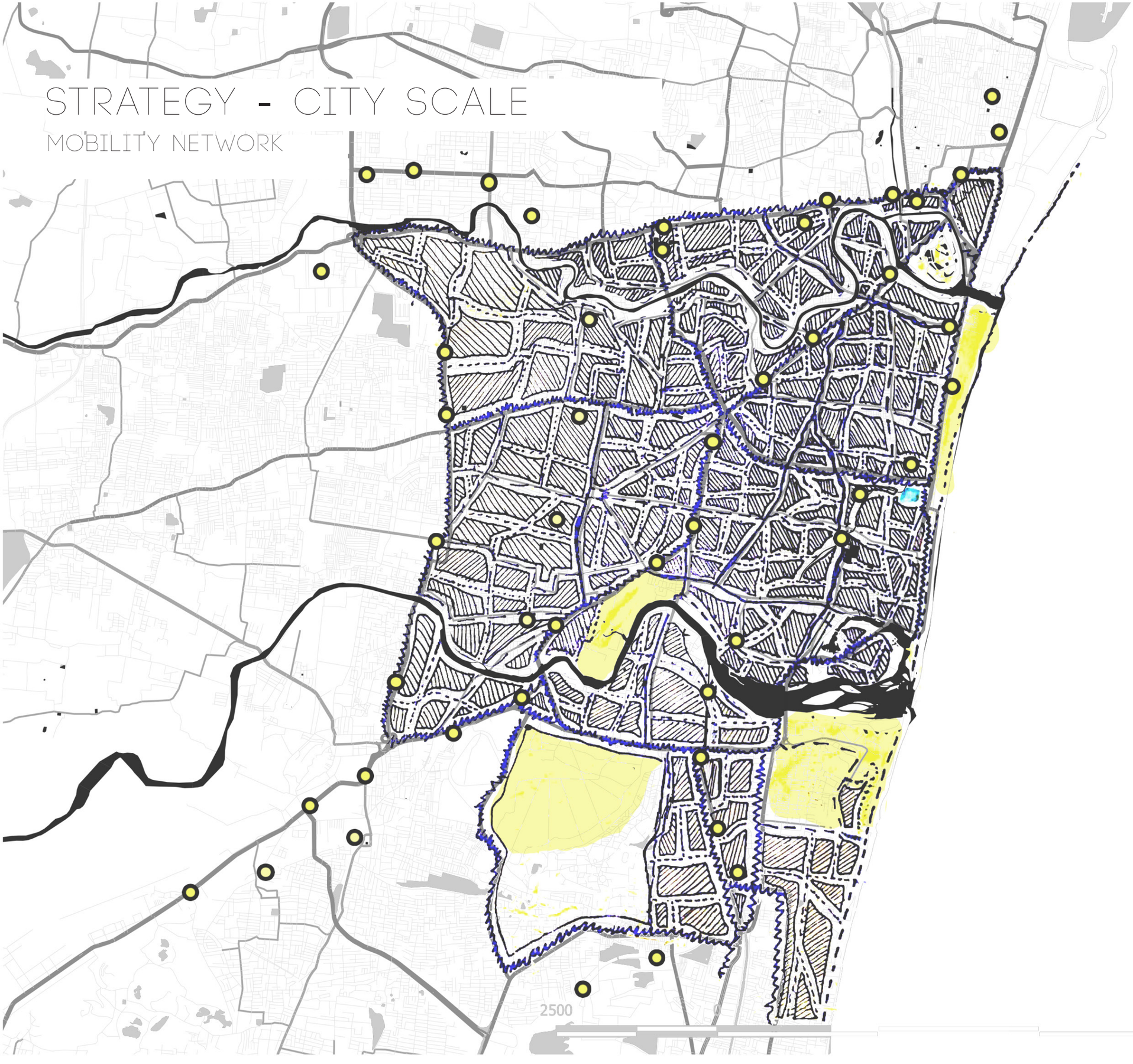
STRATEGY - CITY SCALE

MOBILITY NETWORK



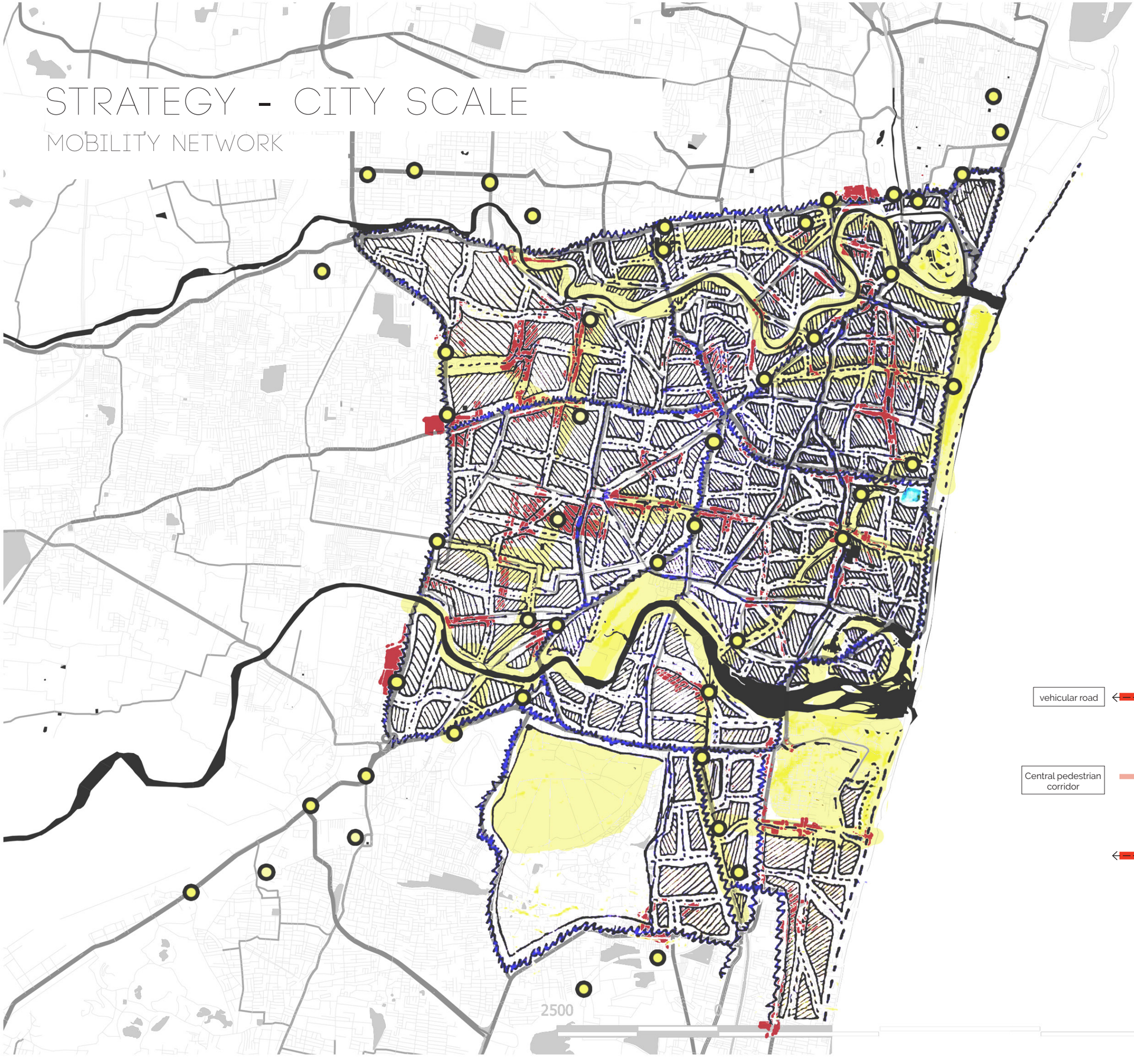
STRATEGY - CITY SCALE

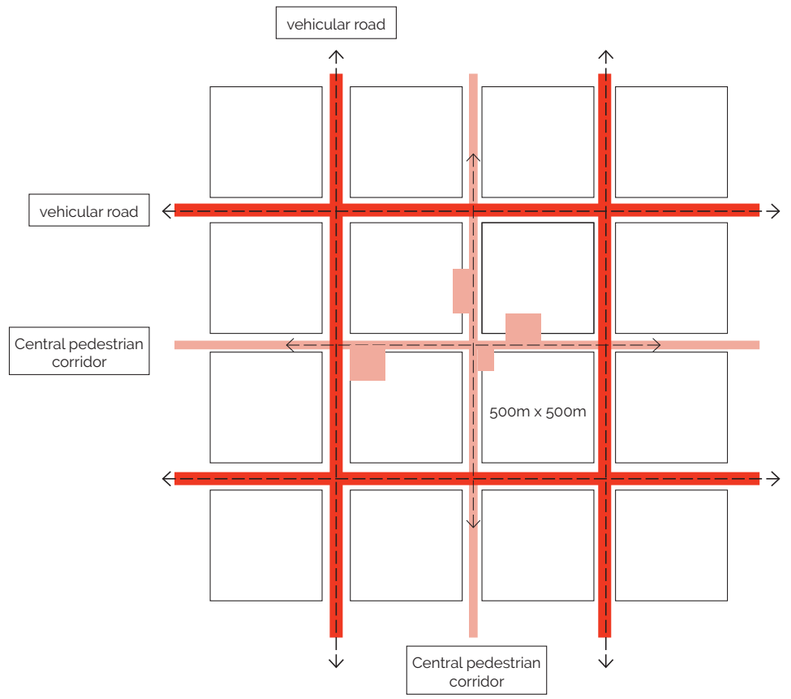
MOBILITY NETWORK



STRATEGY - CITY SCALE

MOBILITY NETWORK

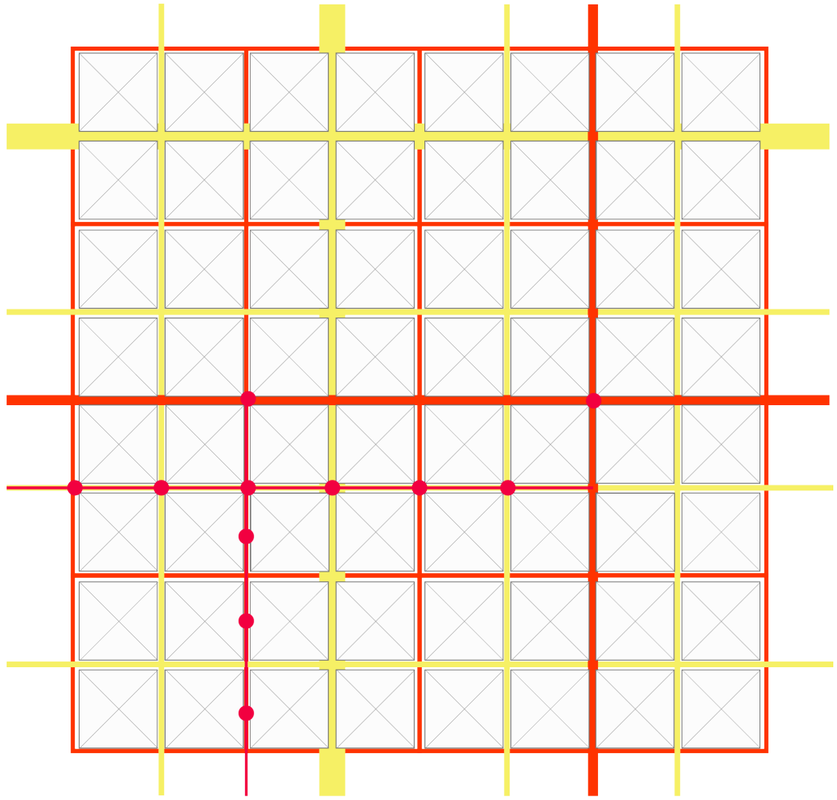




STRATEGY - CITY SCALE

COMBINED STRATEGY
SUPERGRIDS





SPATIAL ELEMENTS TO DEFINE

Hierarchial grids from blue-green grids to mobility grids

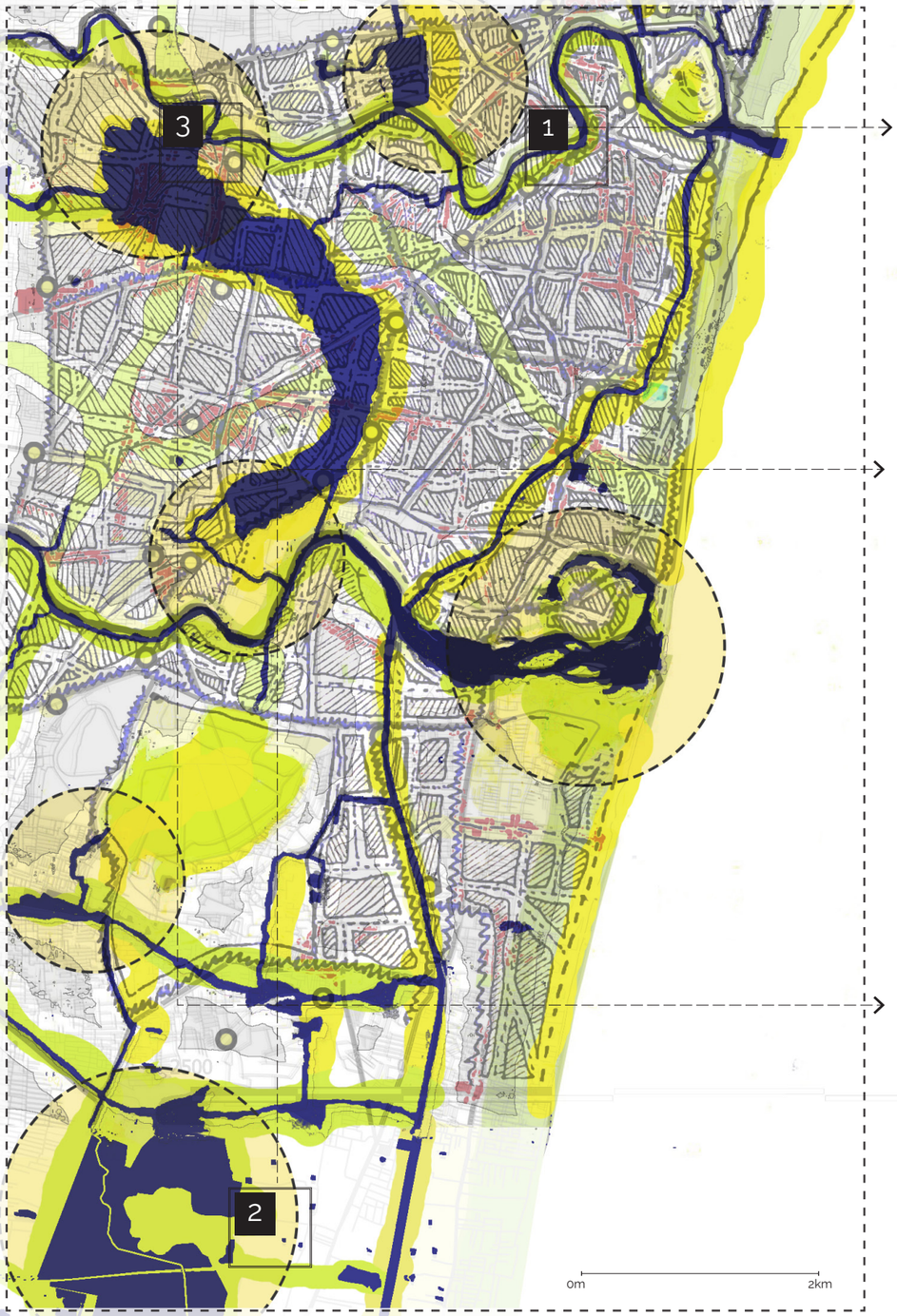
Transit lines

Mobility grid encompassing four basic blocks

basic block 500M X 500M

STRATEGY - CITY SCALE

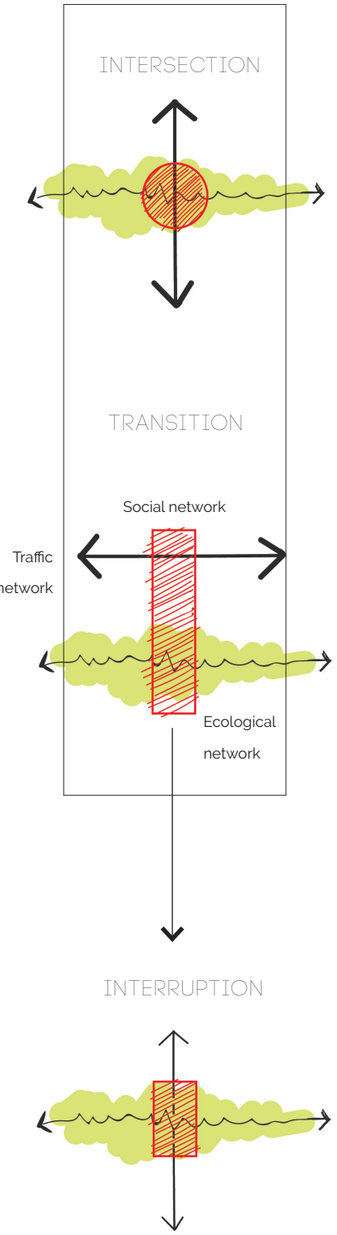
COMBINED STRATEGY
SUPERGRIDS



LOCATION 01
INNER CITY

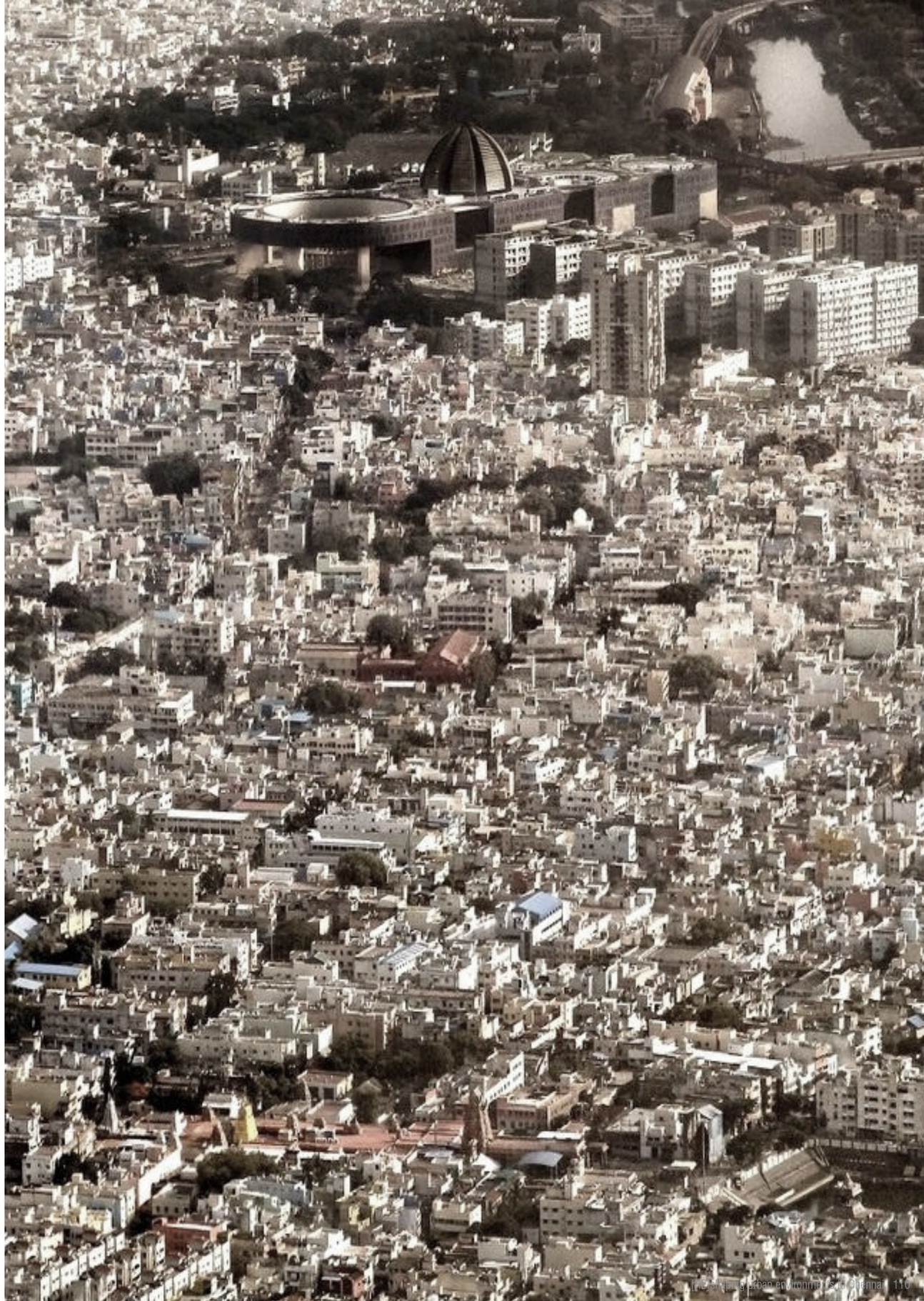
LOCATION 02
PERIPHERAL
CORRIDORS

LOCATION 03
NEW GREEN-BLUE
CORRIDOR



LOCATION 01

REGENERATING THE INNER CITY



LOCATION 01




JP
Digital
ACP
LED
NEON
FIRDOUSE
1969
BILAL


NEW FASHION
TAILOR



EXISTING CONTEXT

FUNCTIONS AND NETWORKS

Hockey stadium
Govt. Hospital
Egmore Museum
Stadium
park
LIC station
500 m
1 km
Napier park
Island grounds
Government estate station
Multi-speciality hospital
Triplicane high street
Mosque
park
Shopping mall
Shopping mall
Thousand lights station
Govt. Hospital
Chepauk stadium
Cricket ground
Parthasarathy temple

scale : 1:10,000

Important sites and functions

- Existing metro line
- Proposed metro line
- Suburban line
- Metro station
- Suburban station
- Bus station
- Industry
- Hospitals
- Cinemas
- Parks
- Schools
- Government buildings
- Mosques
- Shopping malls
- Temples

EXISTING CONTEXT

POPULATION DENSITY AND SERVICE AREAS

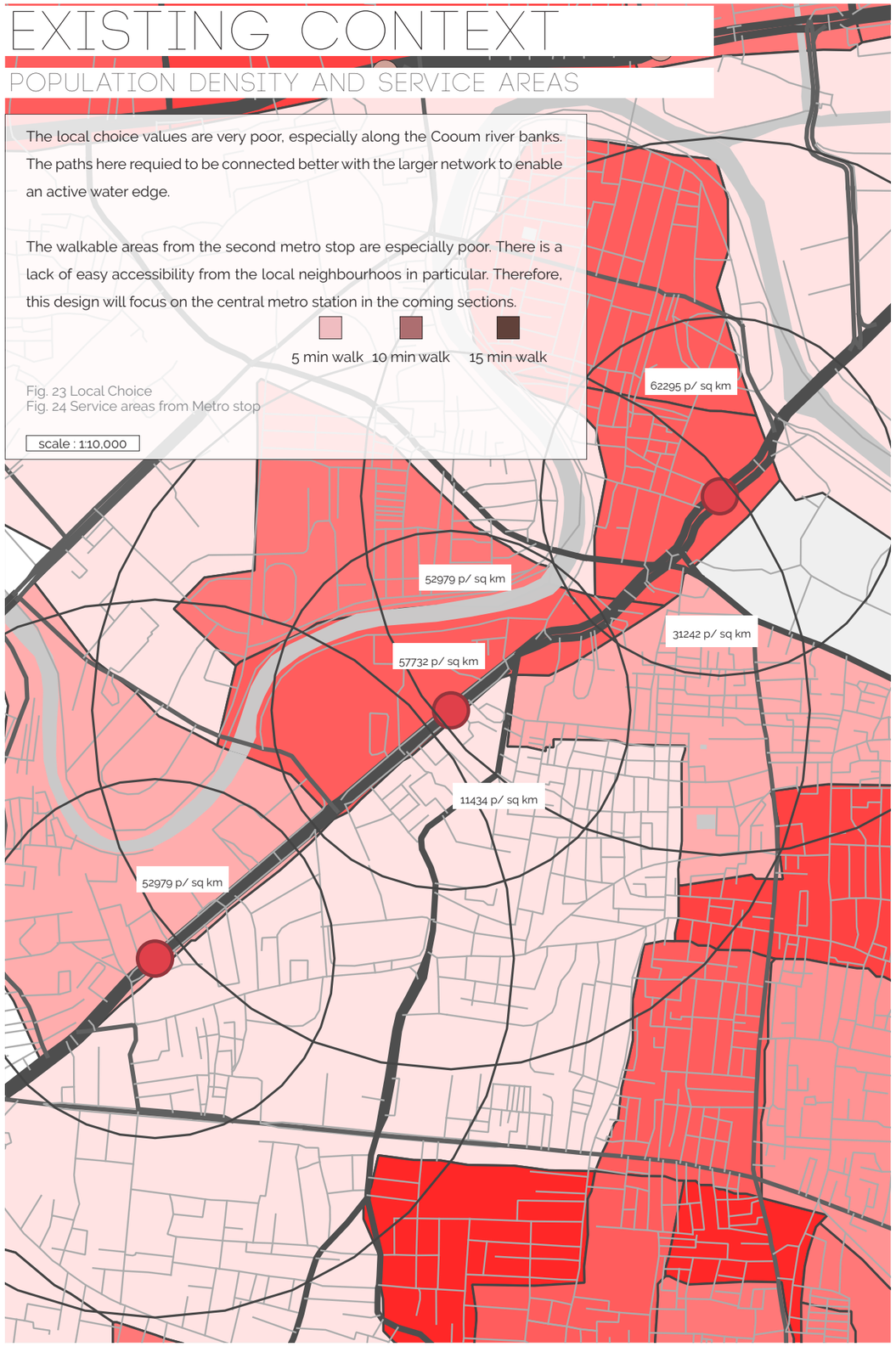
The local choice values are very poor, especially along the Cooum river banks. The paths here requied to be connected better with the larger network to enable an active water edge.

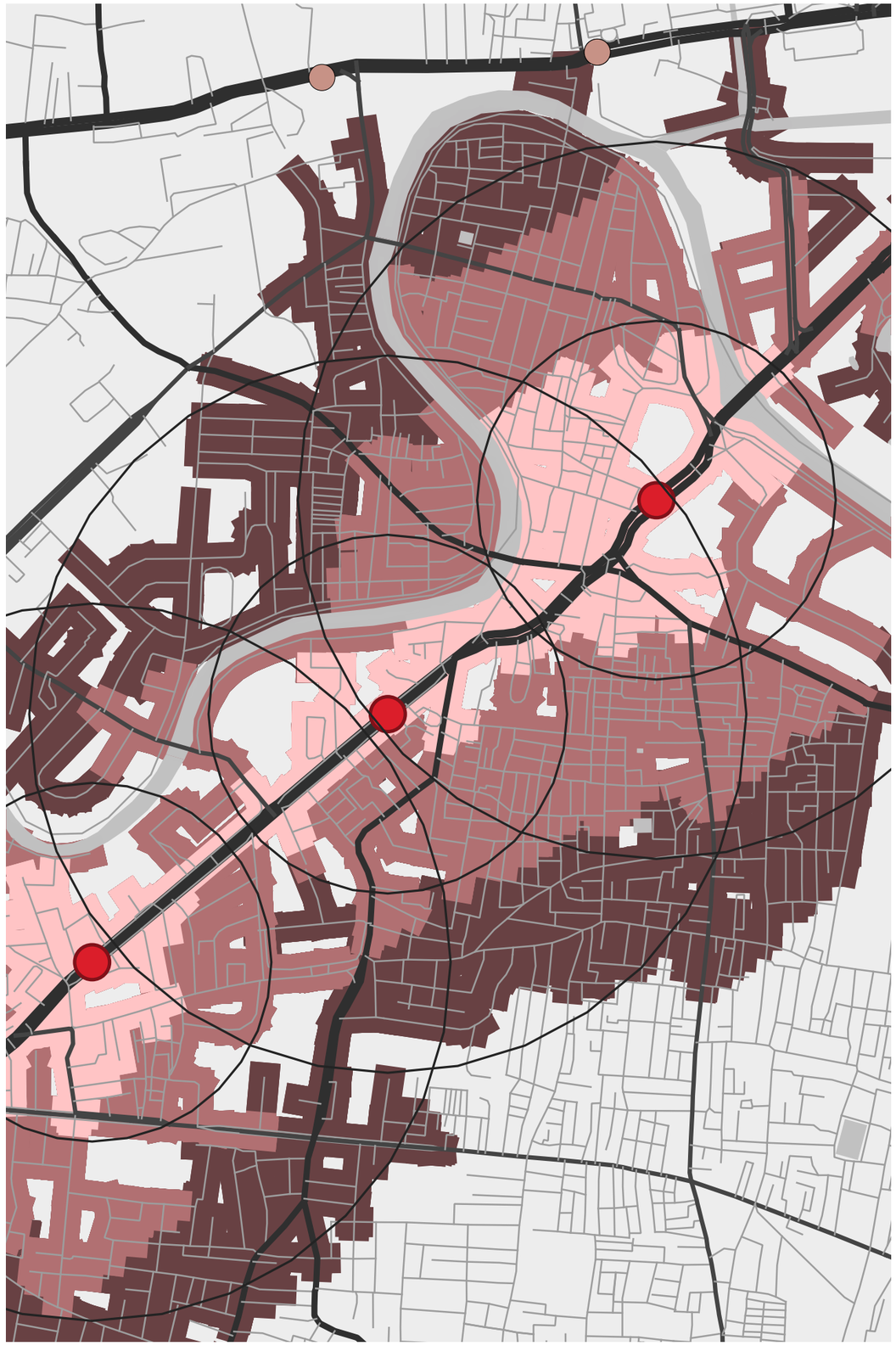
The walkable areas from the second metro stop are especially poor. There is a lack of easy accessibility from the local neighbourhoos in particular. Therefore, this design will focus on the central metro station in the coming sections.

5 min walk 10 min walk 15 min walk

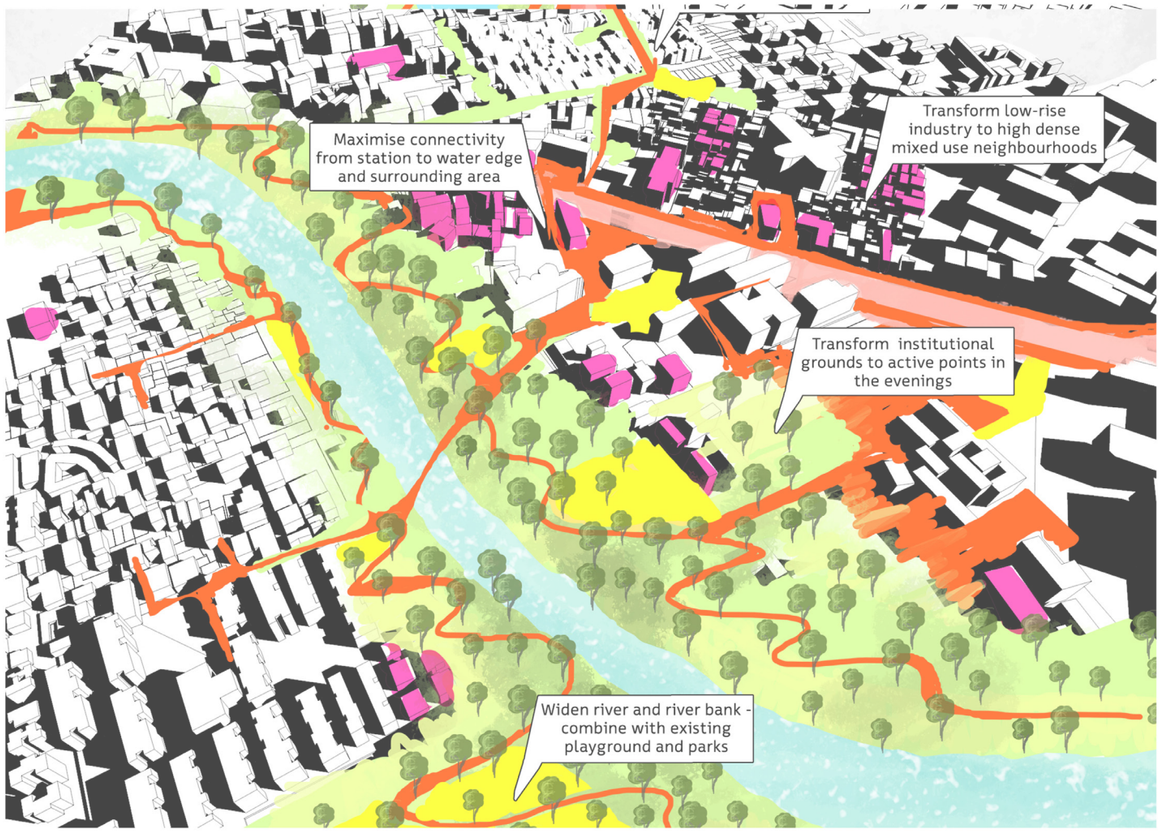
Fig. 23 Local Choice
Fig. 24 Service areas from Metro stop

scale : 1:10,000

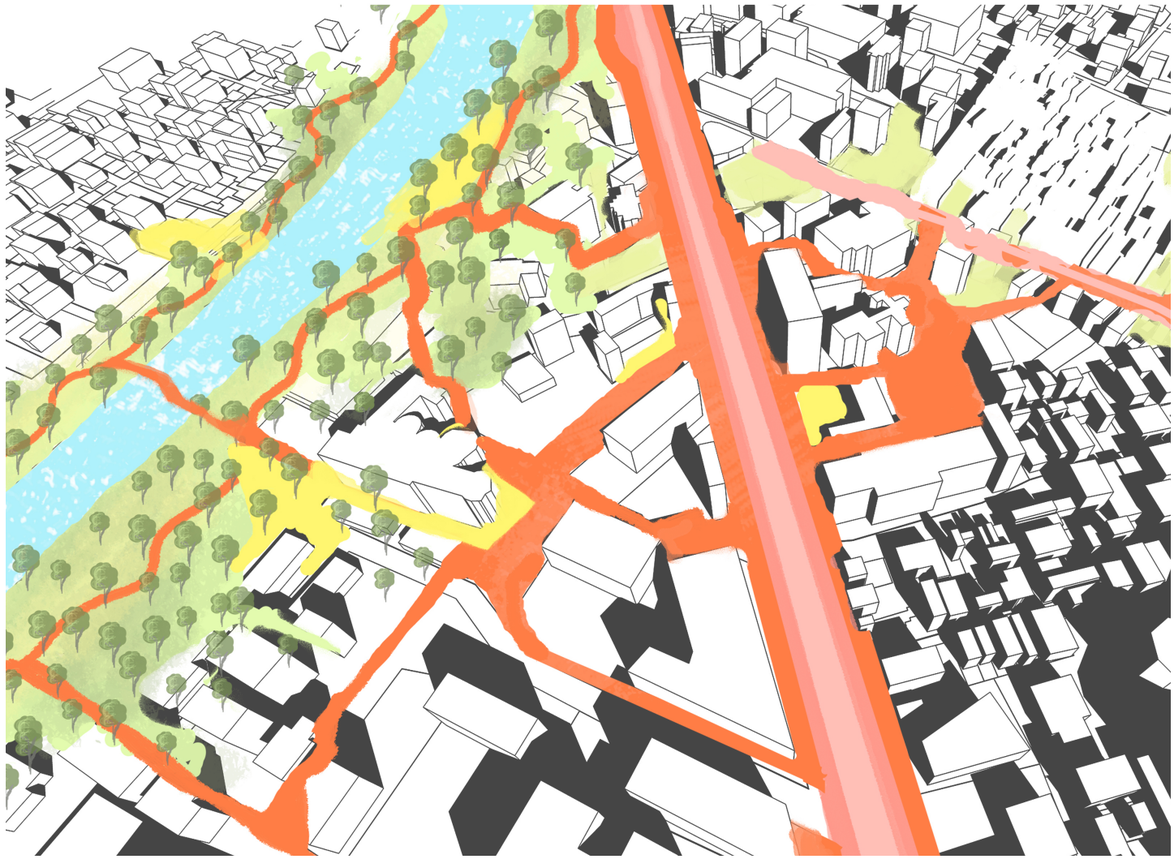




CONCEPT VISIONS



LARGE OPEN GREENS IN THE CITY CENTRE



STRONG NETWORK OF PEDESTRIAN REALM
WITH DIVERSE ROUTES AND EXPERIENCES

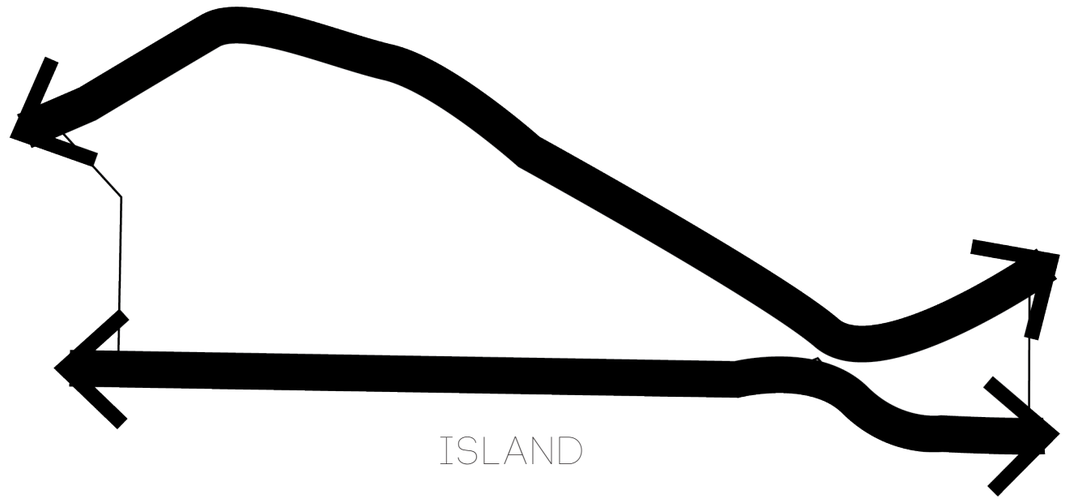


PRESENT SITUATION

Institutional
Commercial
Industry
Mixed use
Residential
Open space and recreation

PRESENT SITUATION

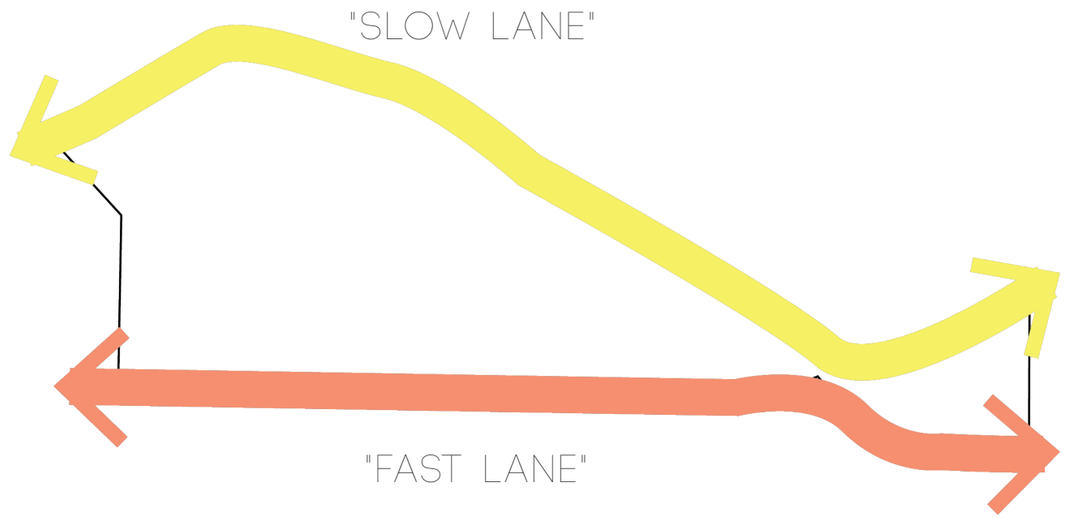




ISLAND

PRESENT SITUATION



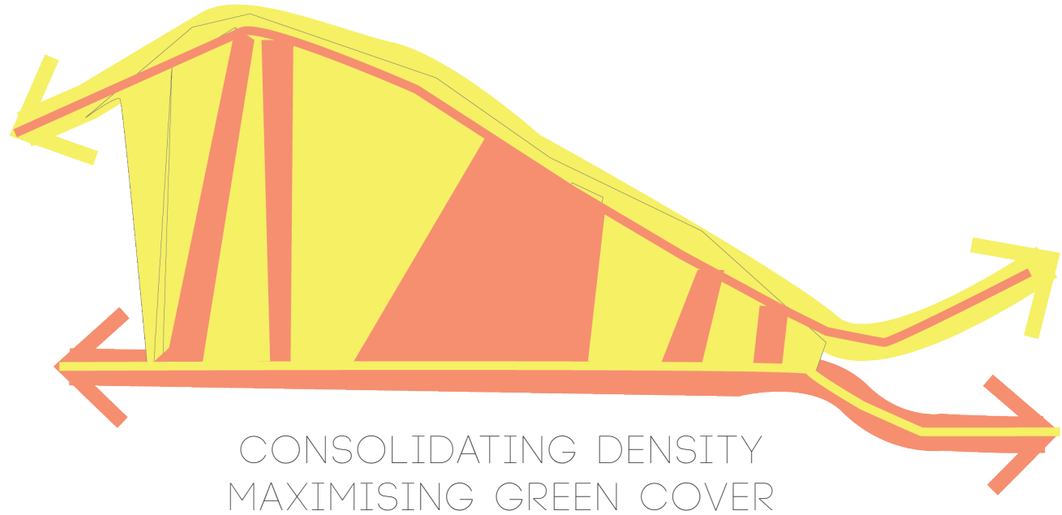


CONCEPT EVOLUTION



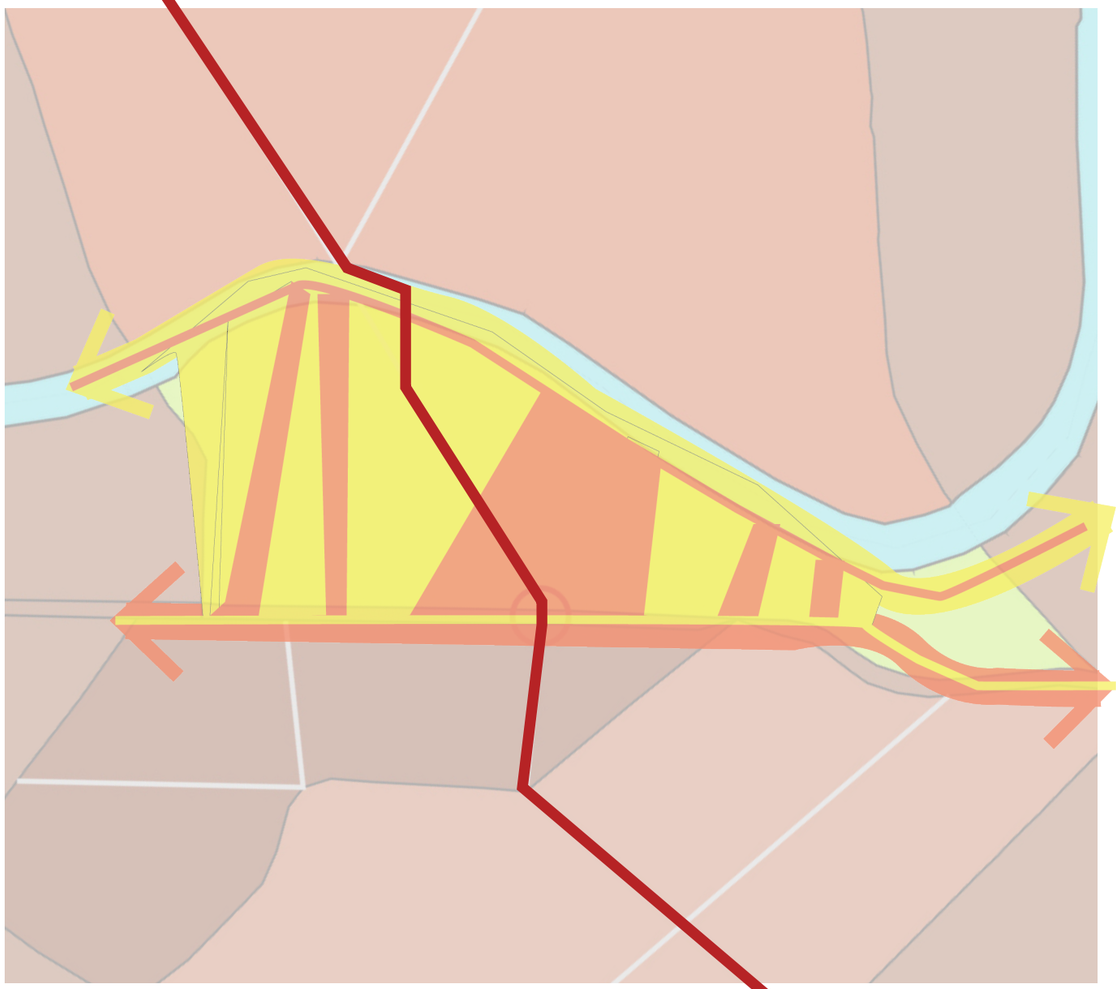
A DIALOGUE BETWEEN
RIVER AND CITY

BLOCK DEFINITION



CONSOLIDATING DENSITY
MAXIMISING GREEN COVER

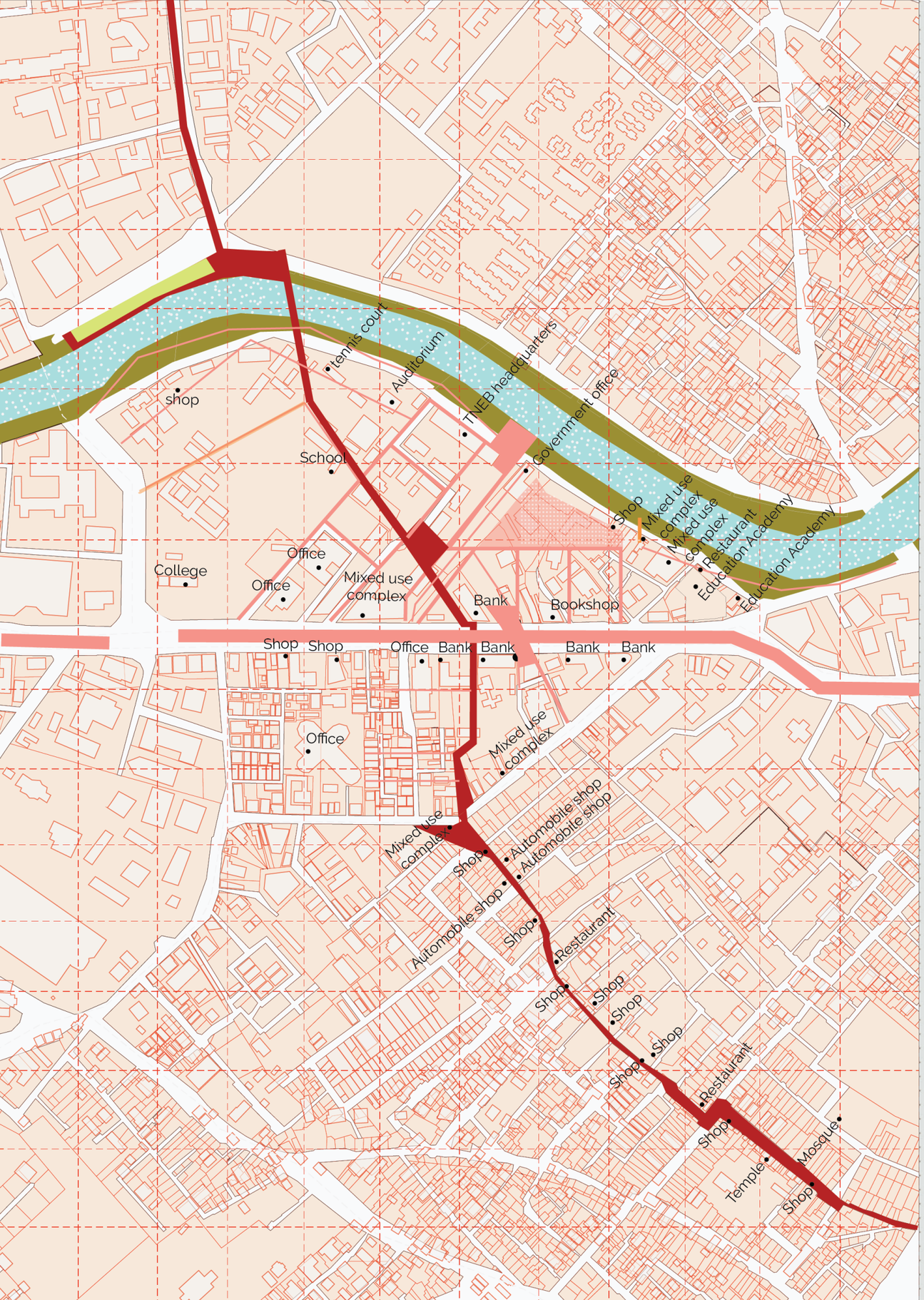
LOCAL CONNECTION

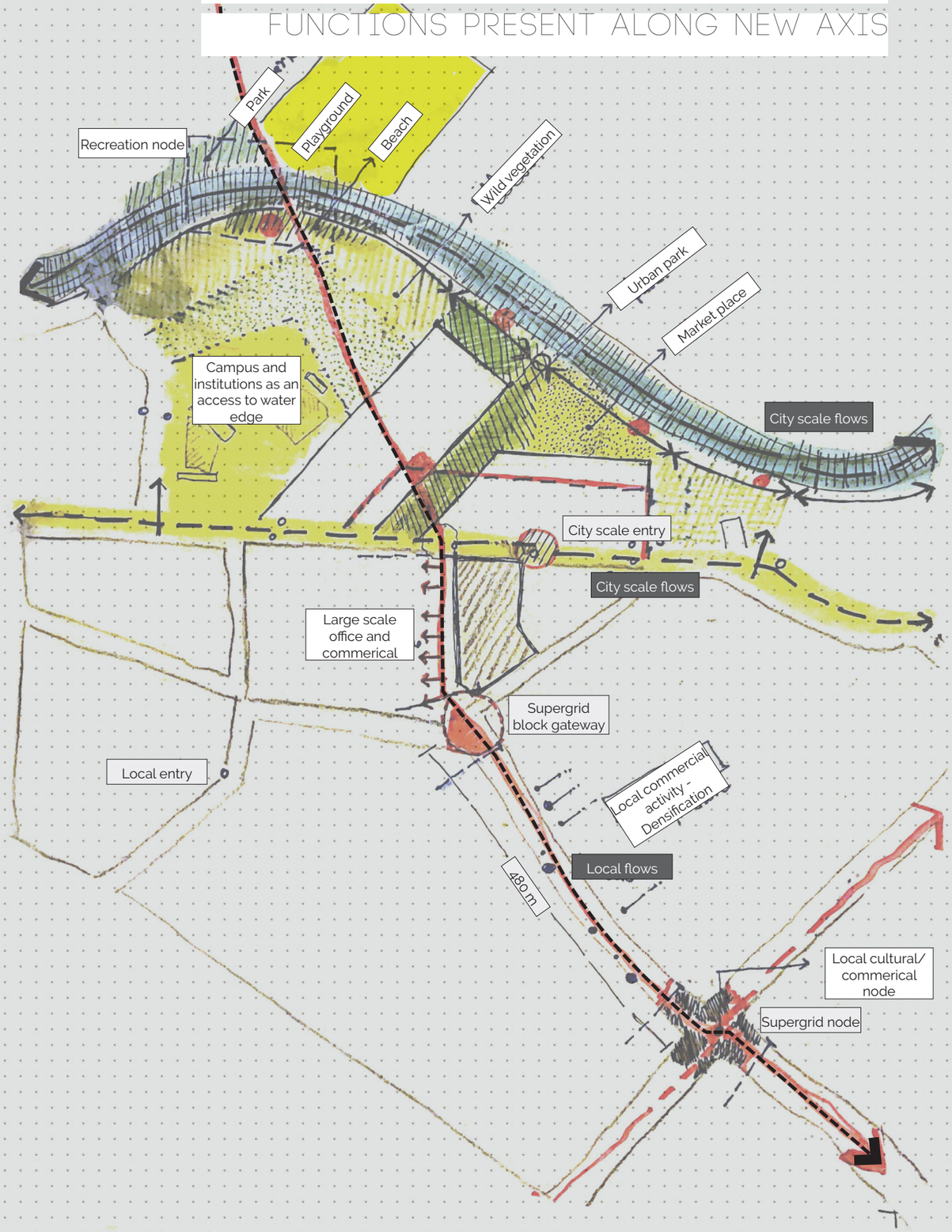


LOCAL CONNECTION BETWEEN
SUPERBLOCKS

FUNCTIONS AND FLOWS

FUNCTIONS PRESENT ALONG NEW AXIS





PROPOSED DESIGN

Focus 04:
Local square

Focus 01:
Coum river
edge

Focus 02:
Mount road
transformation

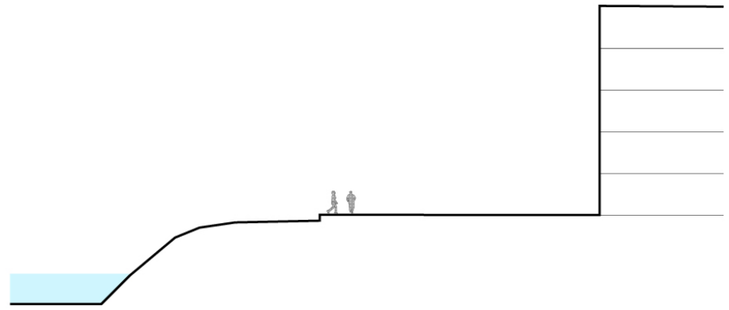
Focus 02:
Metro stop

Mixed use residential - small scale commercial activity - mid to high

Mixed use office residential and commercial activity - high dense

Mixed use with recreational public activities at ground level

COOUM RIVER EDGE
EXISTING CONDITION







COOUM RIVER EDGE

CURRENT PROPOSALS FOR RESTORATIONS



MAINTAIN MINIMUM
ECOLOGICAL FLOWS THROUGH
THE YEAR



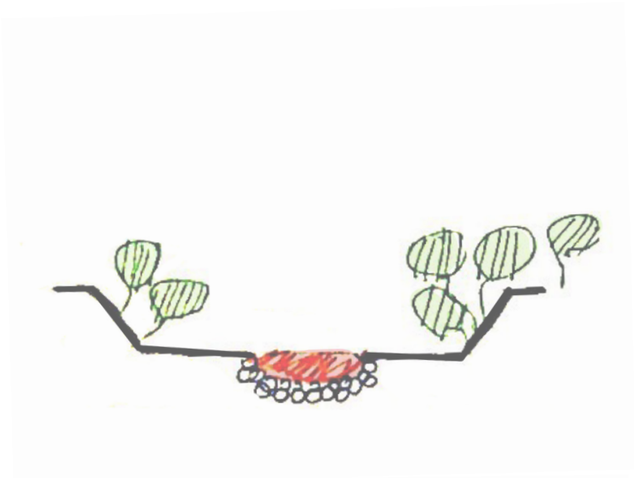
IMPROVE AND MAINTAIN FLOOD
CARRYING CAPACITY

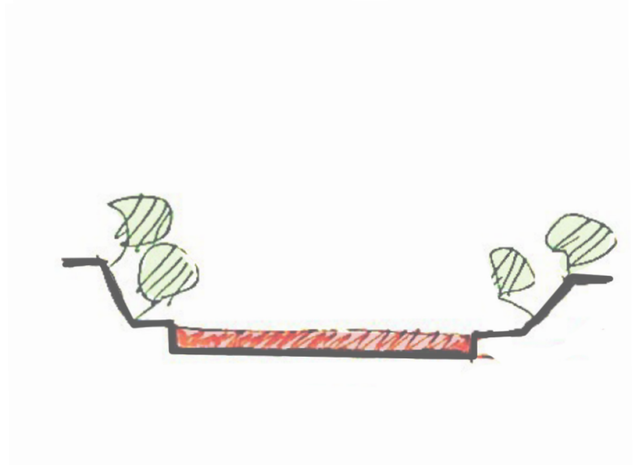


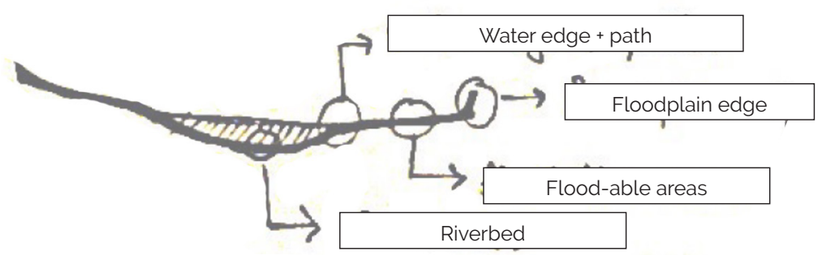
URBAN WATERFRONT DEVELOPMENT



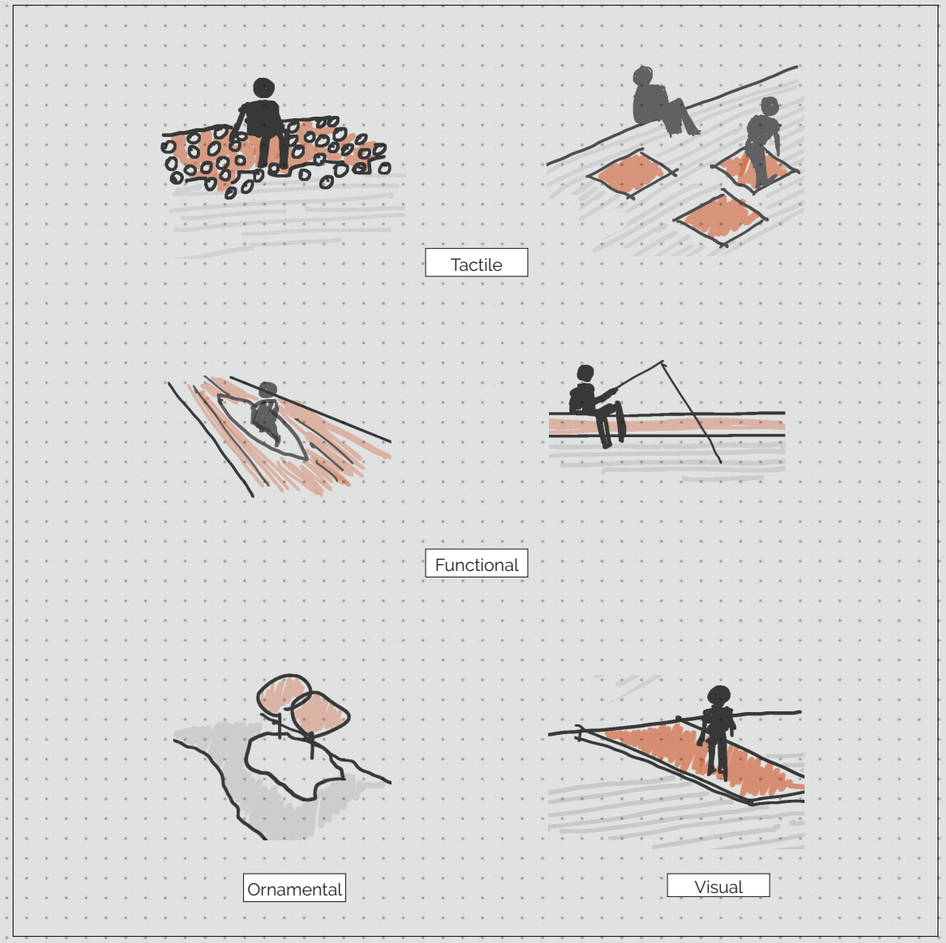
EXPLORE NAVIGATION POTENTIAL



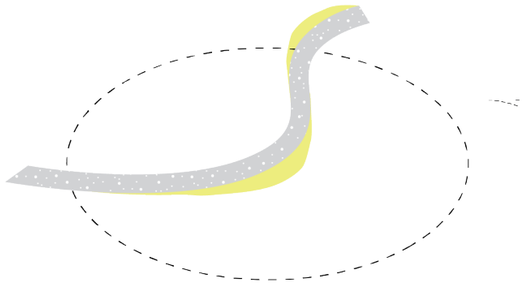




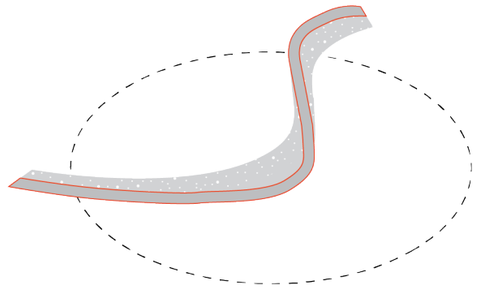
COOUM RIVER EDGE
DESIGN PROPOSAL



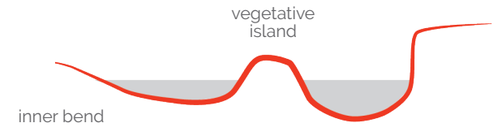
ENGAGING WITH THE COOUM RIVER

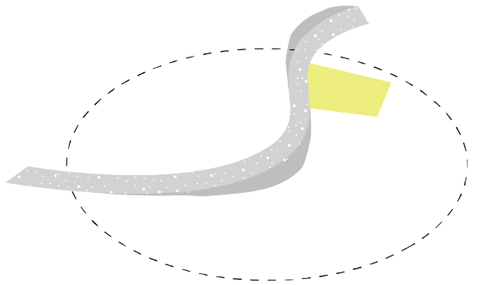


WIDEN RIVER ALONG THE
OUTER BENDS

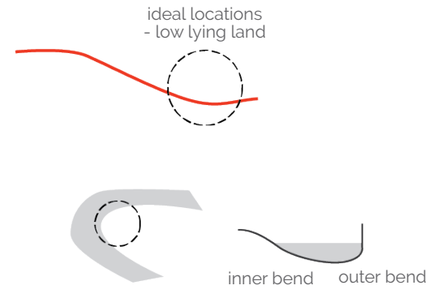


FACILITATE A SMALLER CHANNEL ALONG
THE OUTER BENDS TO CARRY WATER
DURING LOWER SEASONAL FLOWS





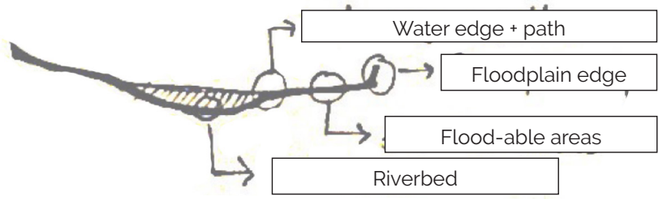
CREATE SOCIAL SPACES THAT FUNCTION
AS WATER STORAGE AT THE IDEAL
LOCATIONS.



TREATMENT OF WATER EDGE

DESIGN PROPOSAL

The predominant ecological goals considered are the need for a smaller channel to allow perennial flow, the need to increase flood carrying capacity and the need for an accessible path along the river edge. The design proposal considers the potential floodable areas, the charecteristics found in the inner and outer bend of the river and the flow of the water.



Playground opened up to water edge

Integrated park and playground with the river edge

Island used to define a smaller channel for continuous flow

River expanded along the outer bend

Shallow beach in the inner bank

Dense natural vegetation with minimum paved paths

EB Building - activated lower floors with a viewing deck

River expanded along the outer bend

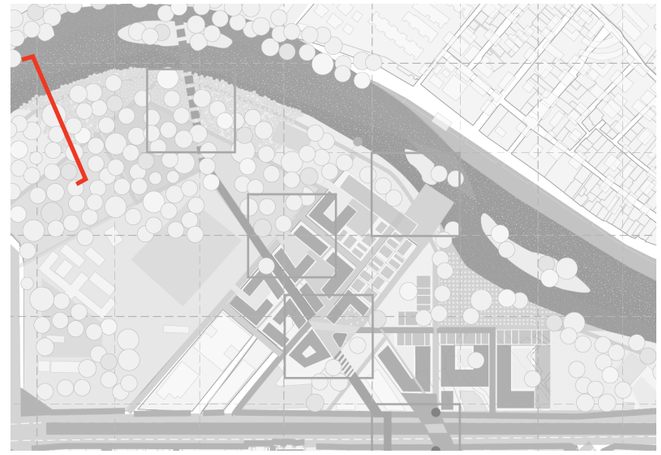
Accessible public capus as path to water edge

Urban market place abutted by small local shops at ground level

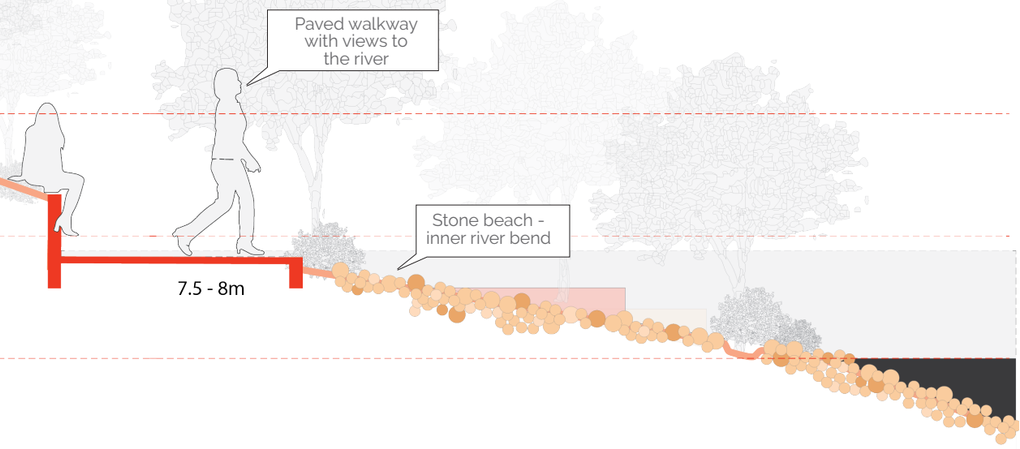
Urban park

N

SECTIONAL VIEW
TYPICAL CROSS SECTION

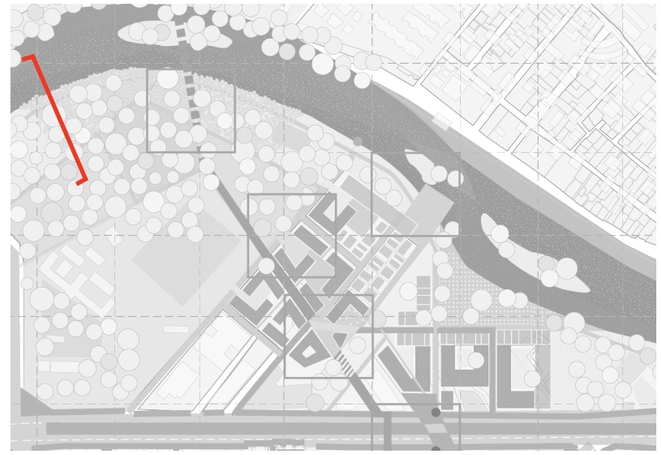


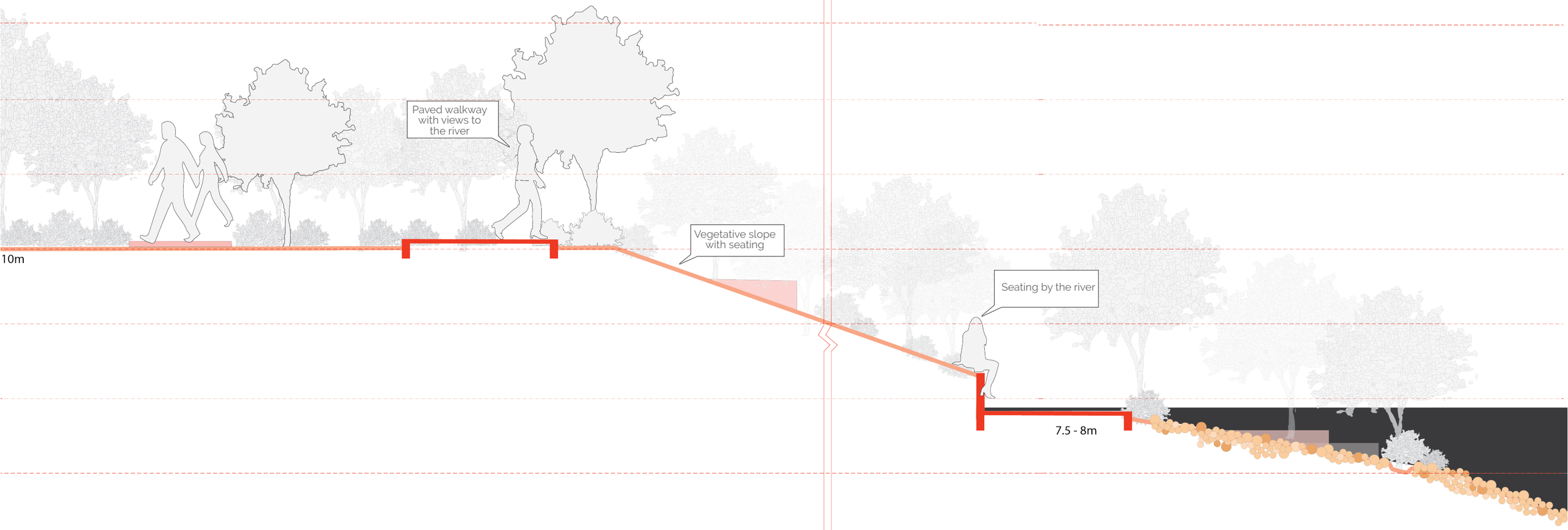




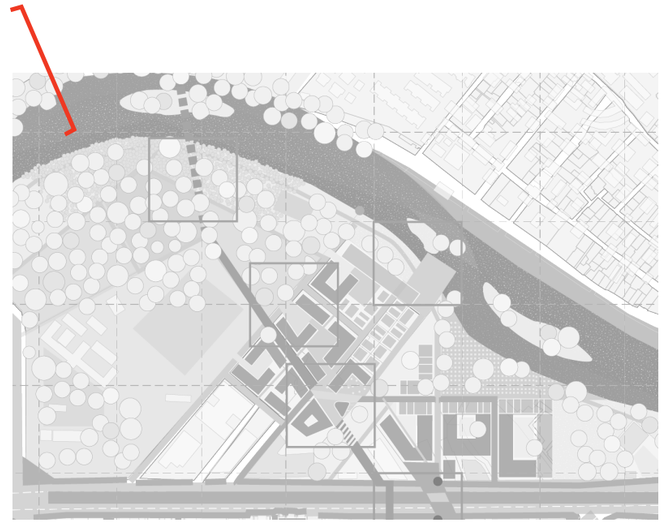
SECTIONAL VIEW

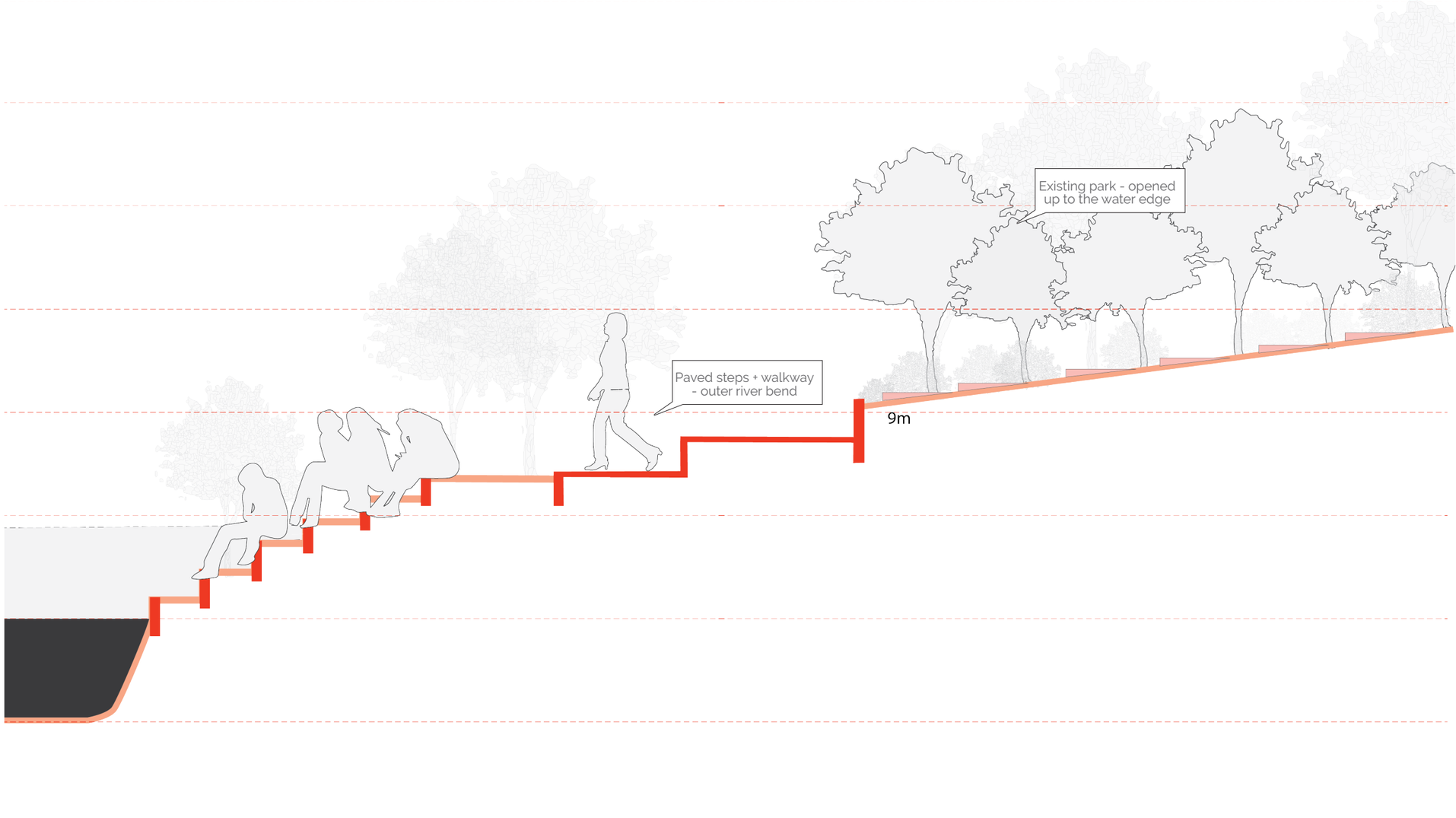
TYPICAL CROSS SECTION
HIGHER WATER FLOW





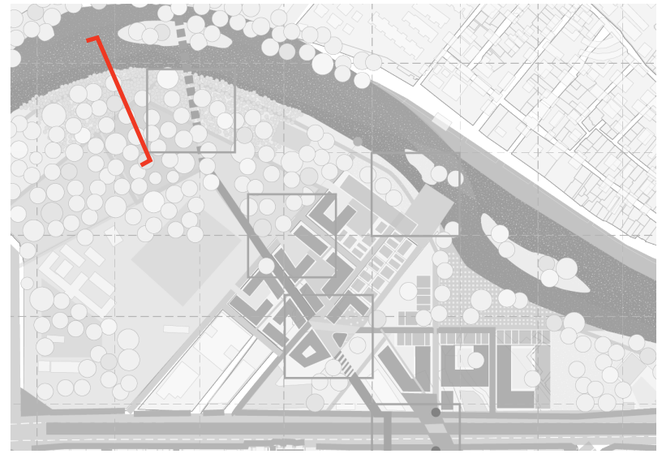
SECTIONAL VIEW
CROSS SECTION THROUGH PARK

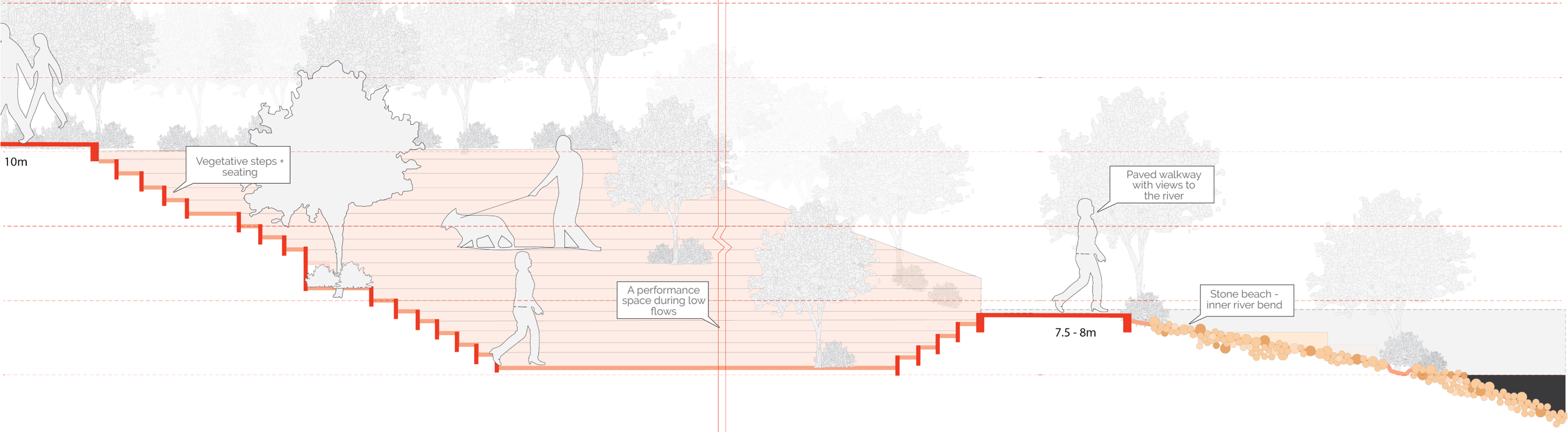




SECTIONAL VIEW

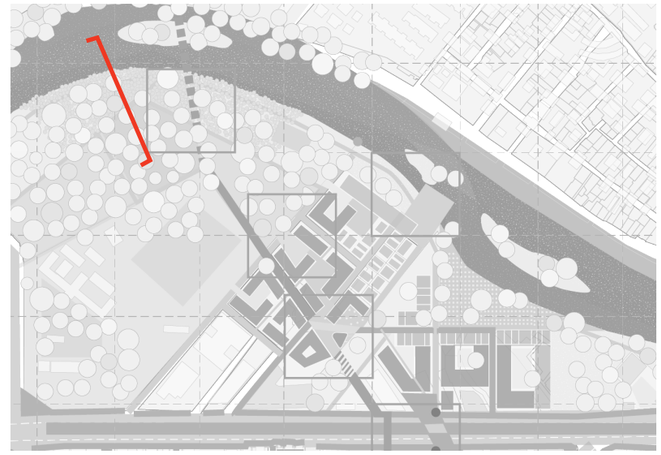
CROSS SECTION THROUGH WATER STORAGE

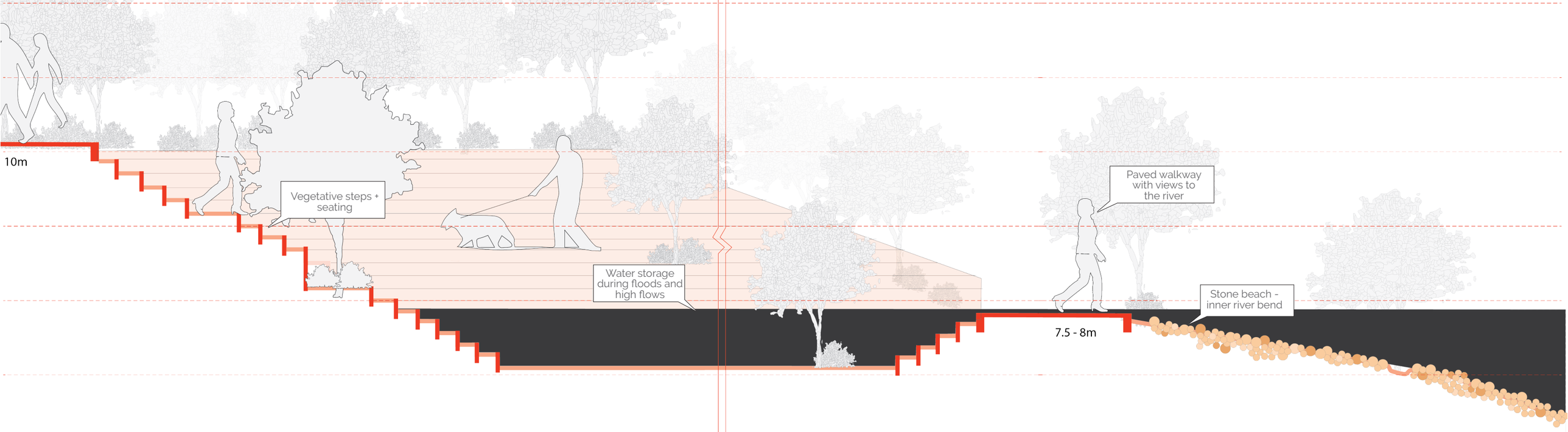




SECTIONAL VIEW

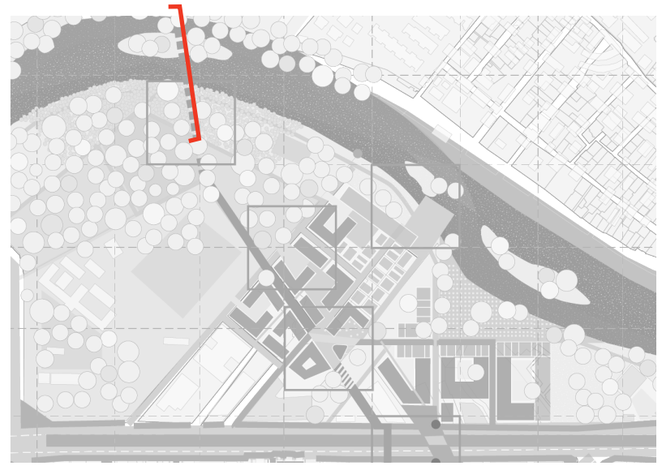
CROSS SECTION THROUGH WATER STORAGE
HIGHER WATER FLOW

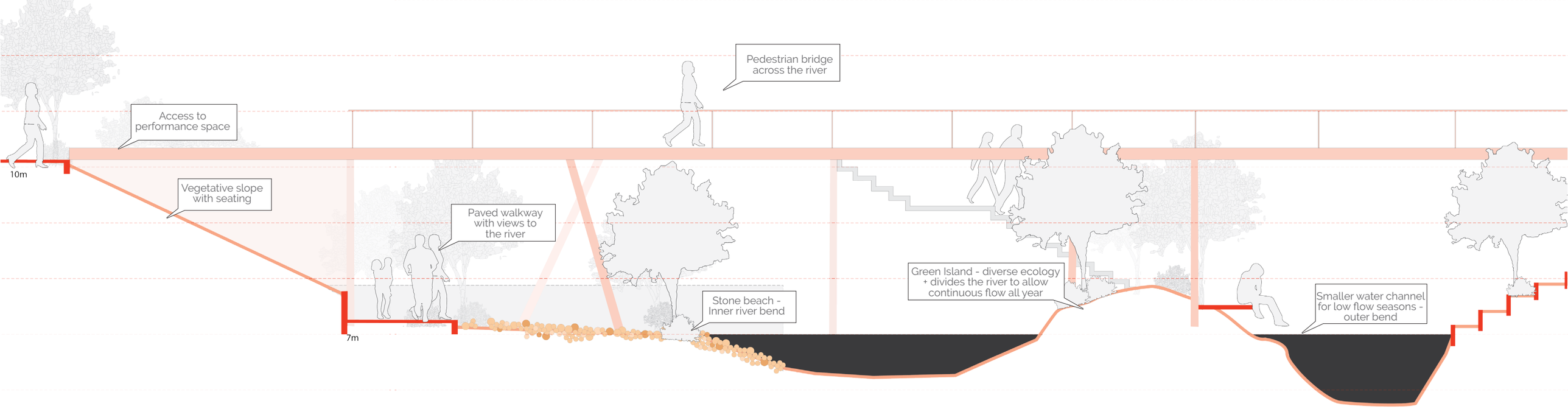




SECTIONAL VIEW

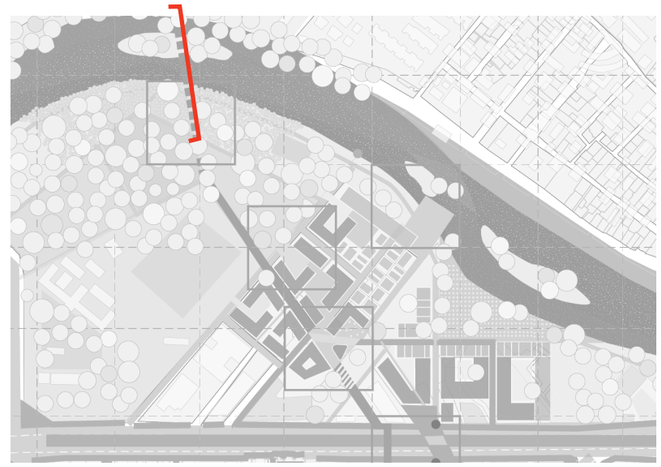
CROSS SECTION THROUGH PEDESTRIAN BRIDGE

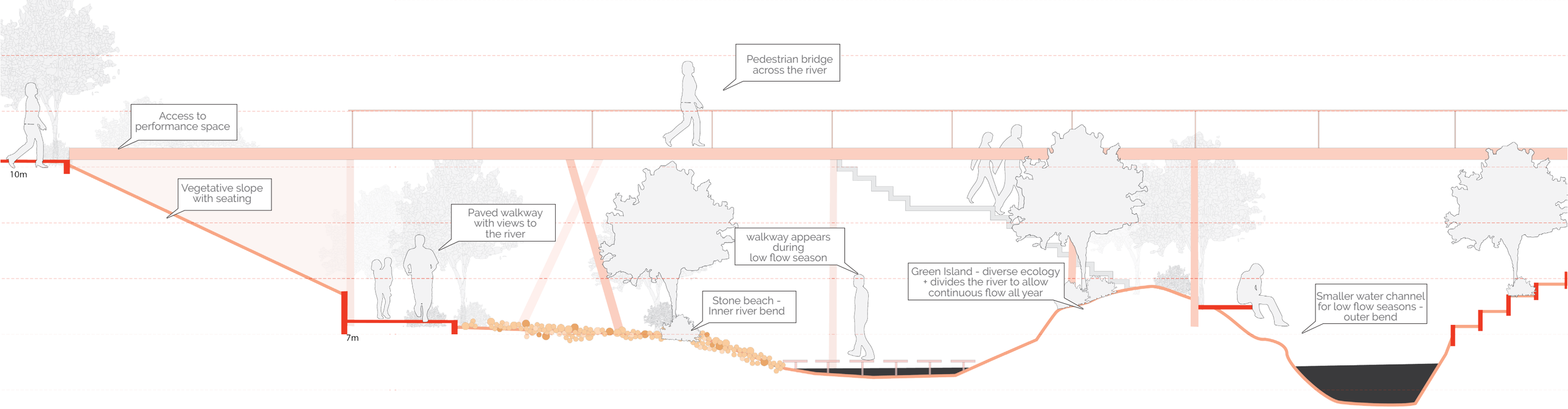




SECTIONAL VIEW

CROSS SECTION THROUGH PEDESTRIAN BRIDGE
LOW SEASONAL FLOWS



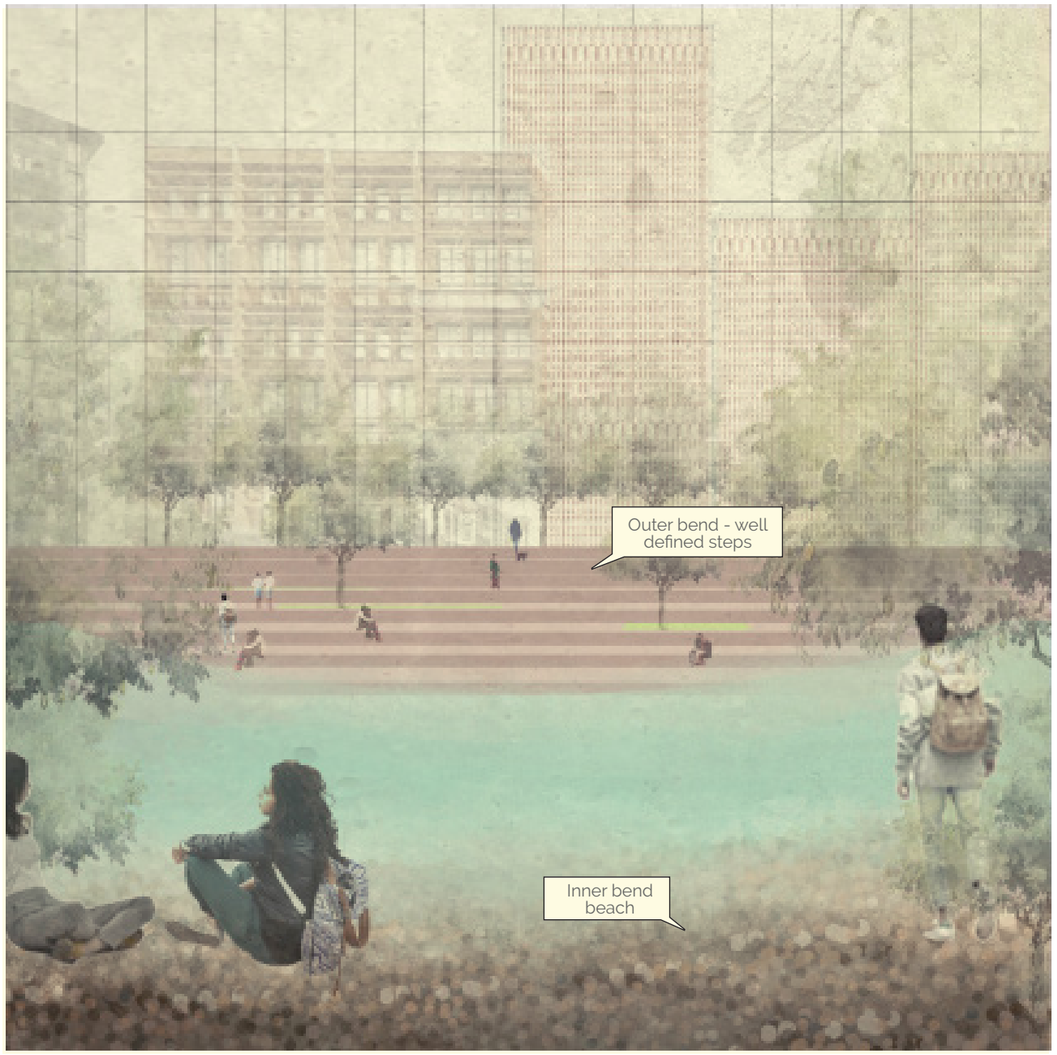


PERSPECTIVE VIEWS

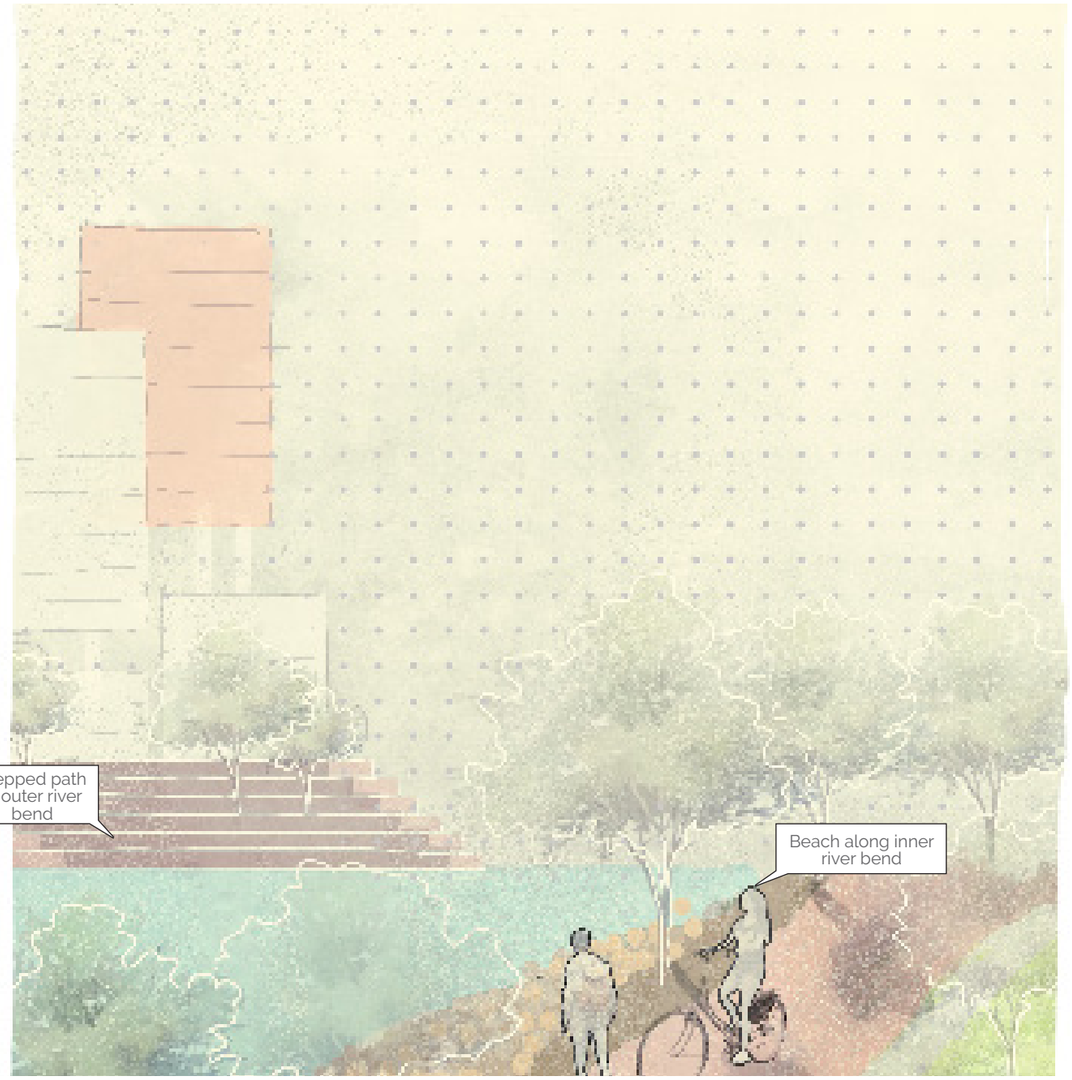




PERSPECTIVE VIEWS



NEW PUBLIC SPACE ALONG MOUNT ROAD



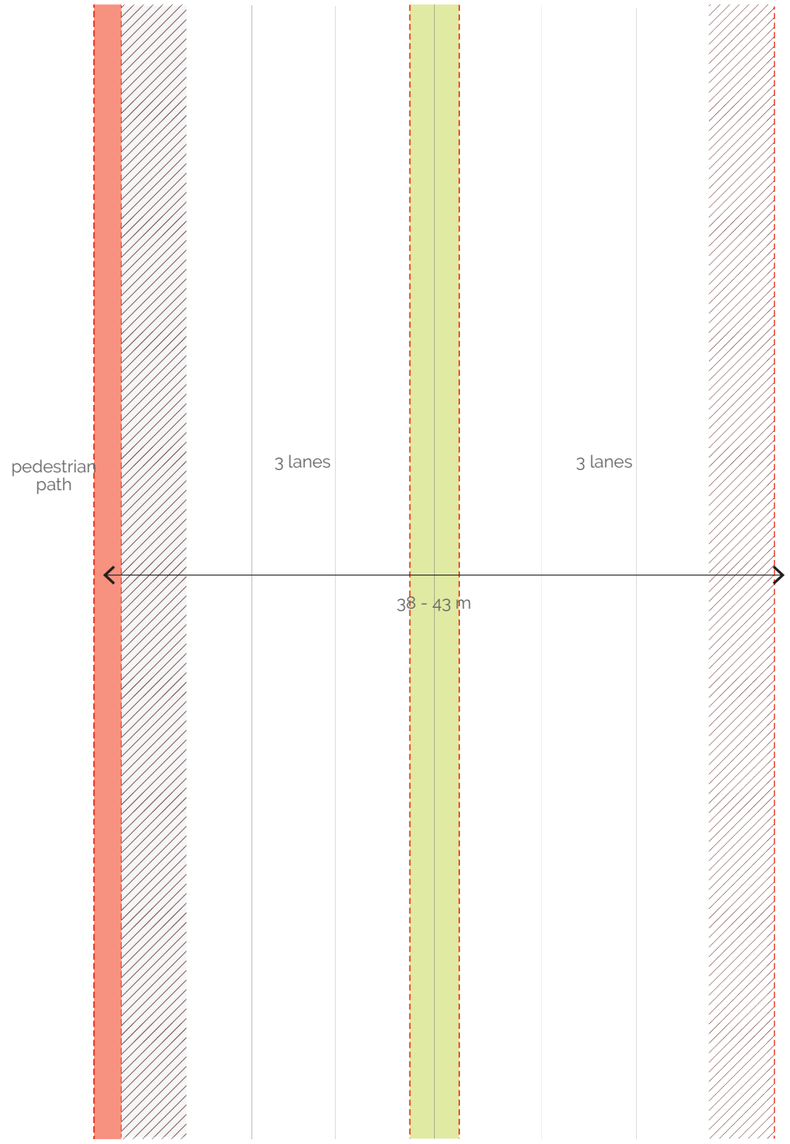
ACTIVATING THE WATER EDGE





MOUNT ROAD

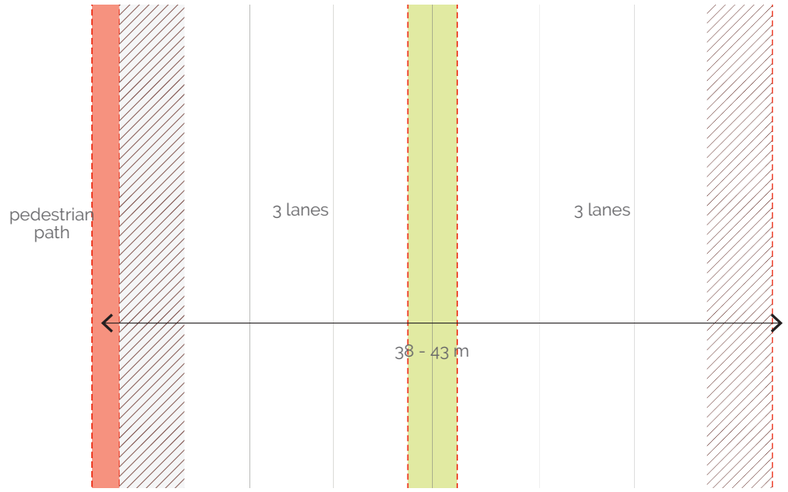
FROM DIVIDING SPACE TO CENTRAL SPACE

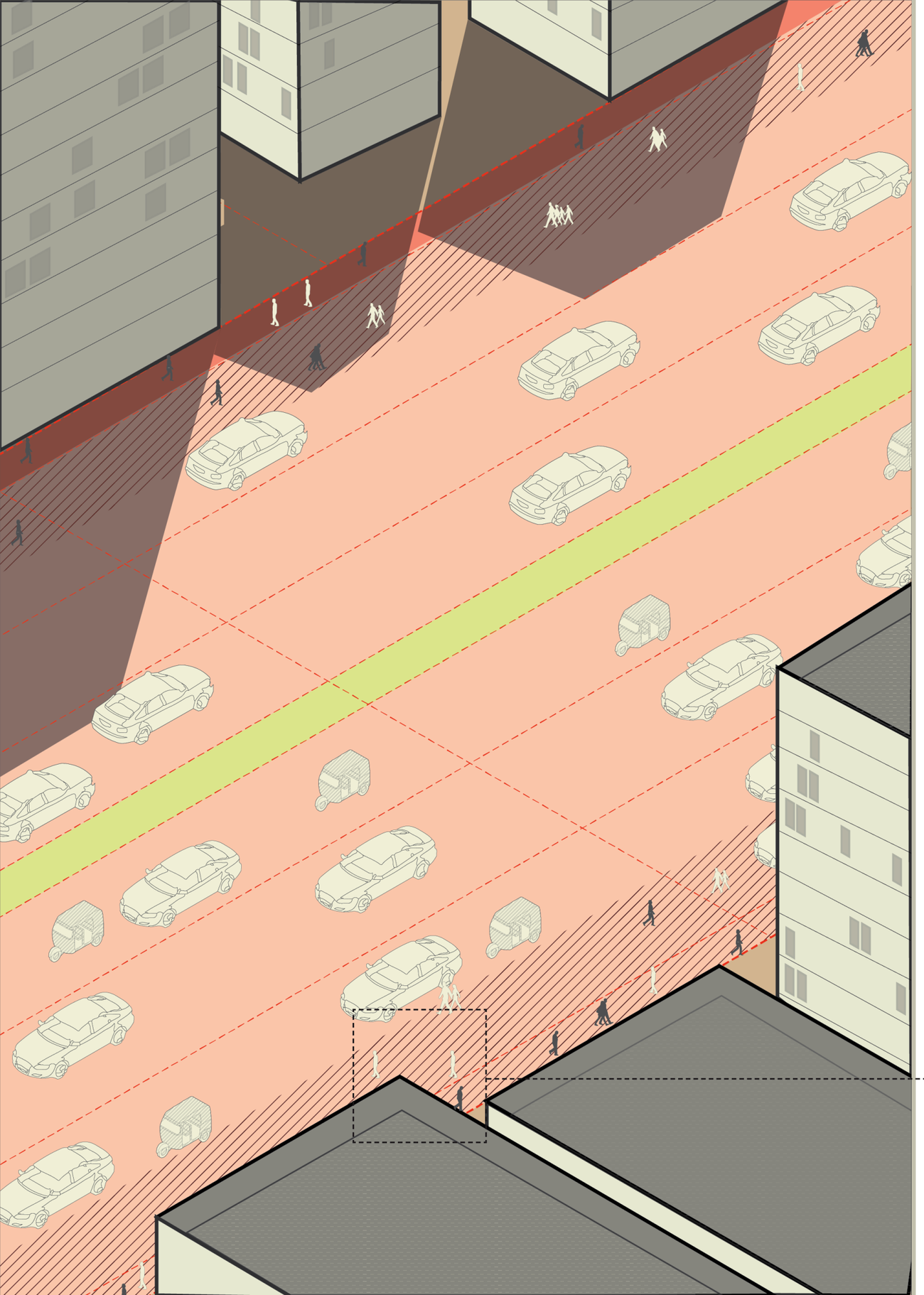


CURRENT USE OF 6 LANES, WITH THE EDGE LANES BEING USED FOR BUS STOPS AND PEOPLE WALKING : EFFECTIVELY TWO LANES

MOUNT ROAD

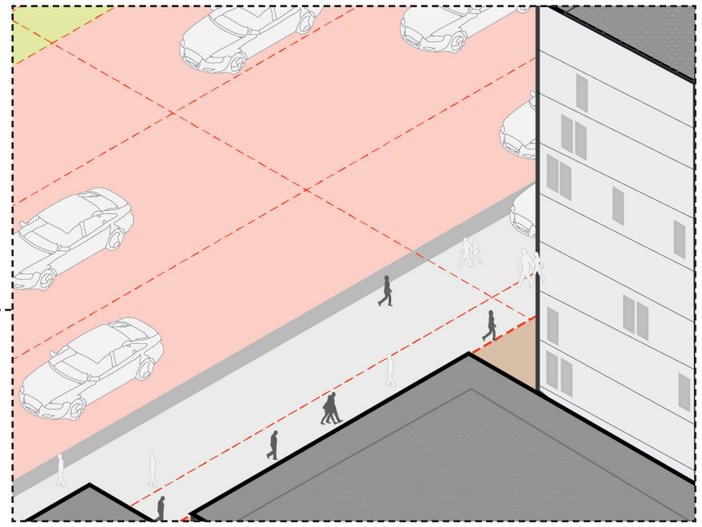
ALTERNATE ROAD SECTION

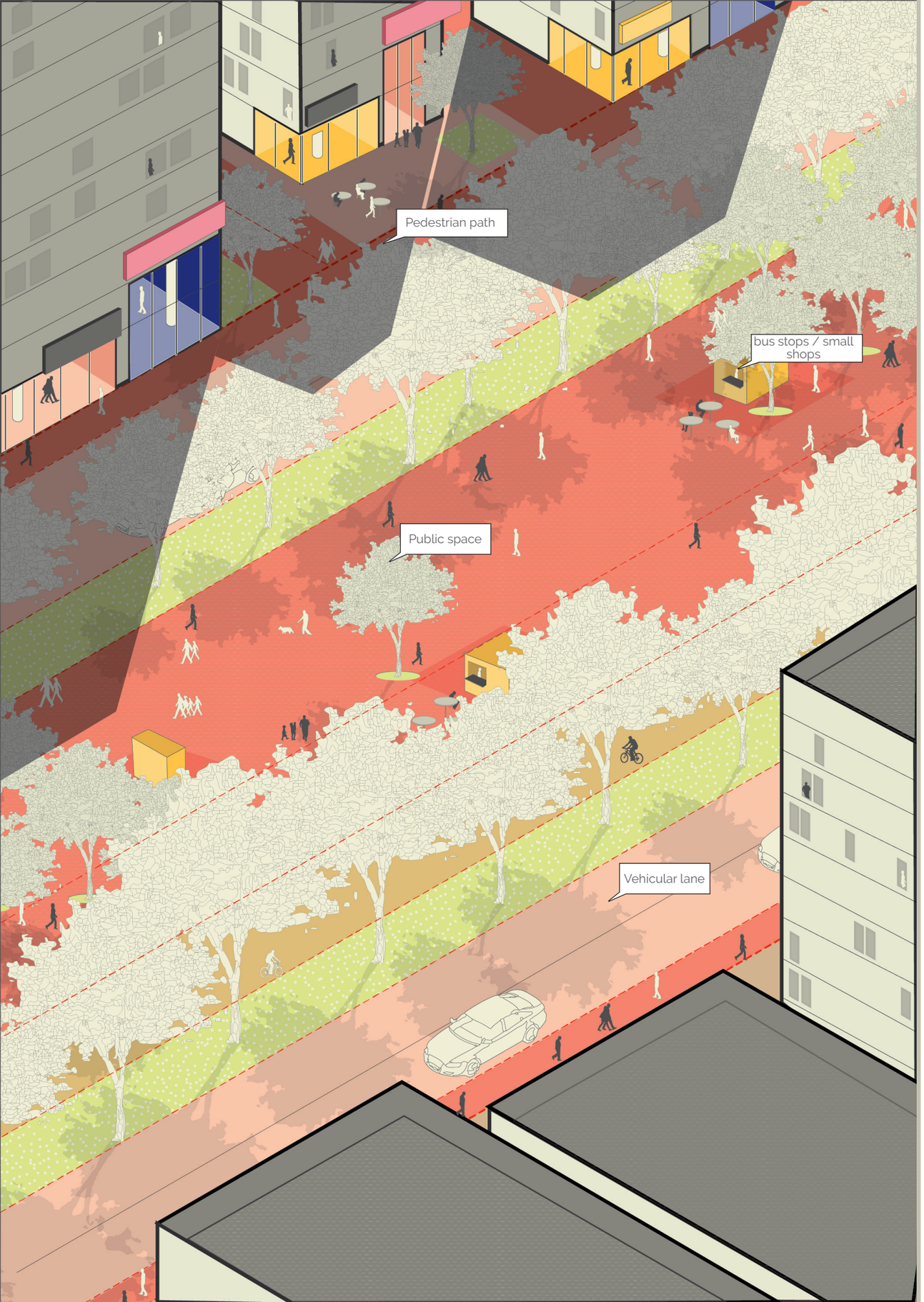




Service roads to access parcels with

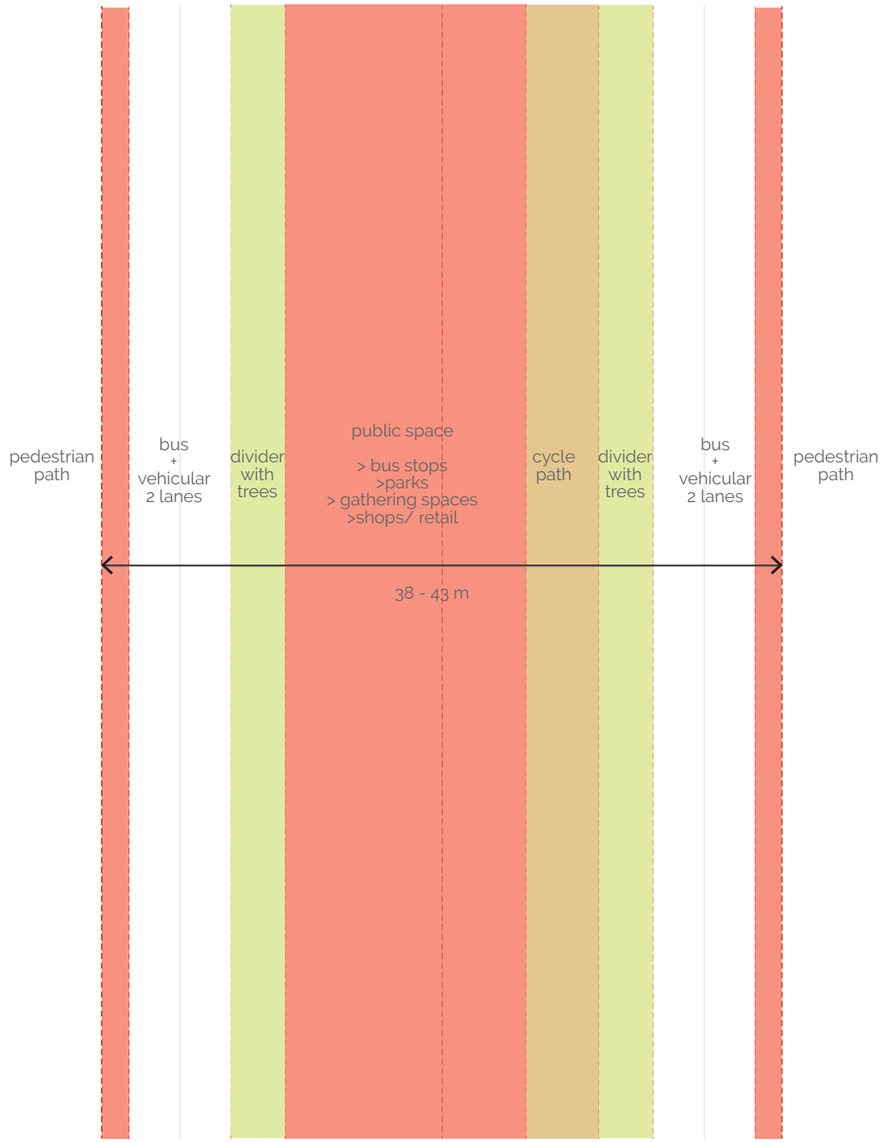
high traffic or important road turns.





4.2.4 DESIGN PROPOSAL

ALTERNATE ROAD SECTION

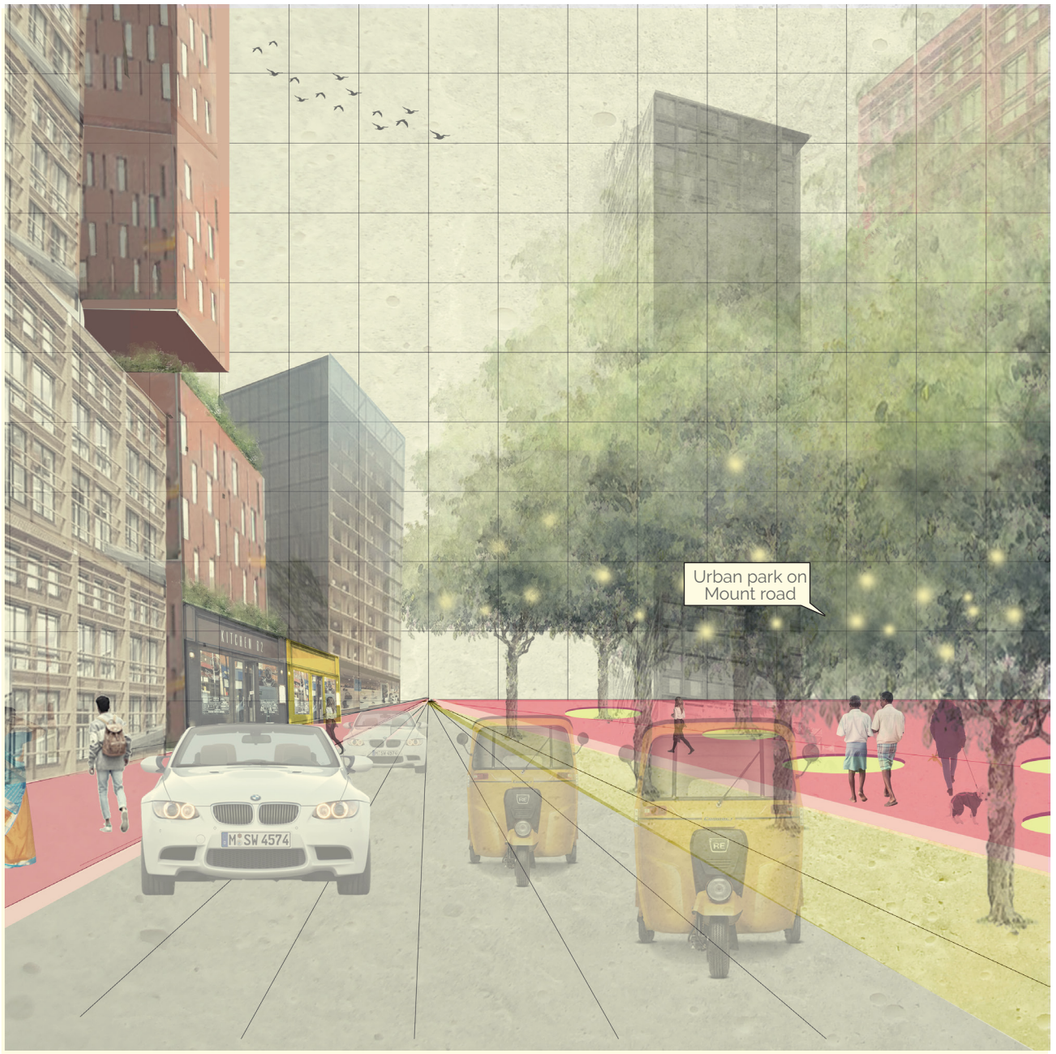


PERSPECTIVE VIEWS





PERSPECTIVE VIEWS



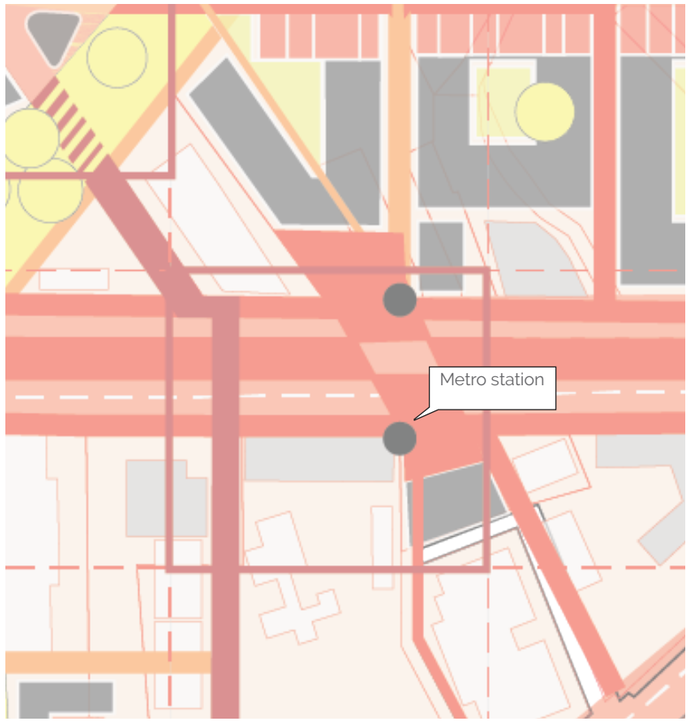
NEW PUBLIC SPACE ALONG MOUNT ROAD

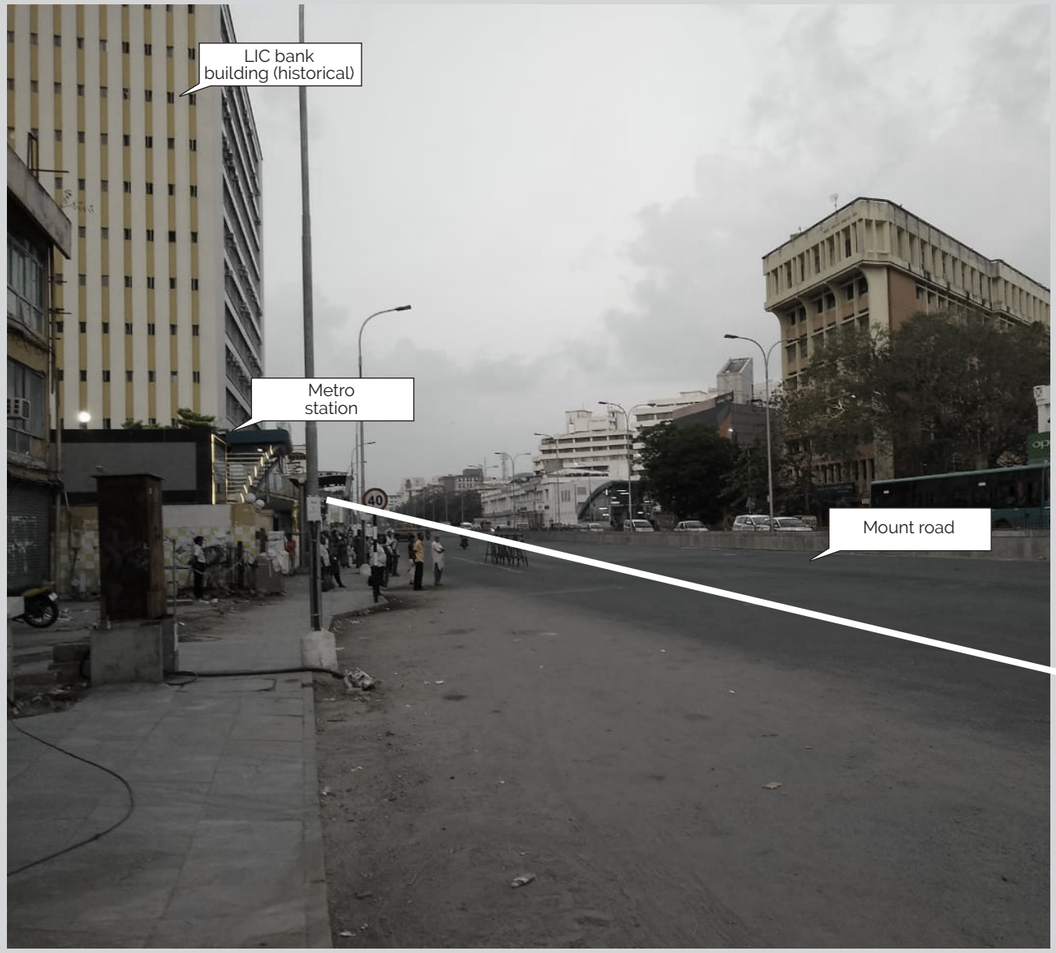


NEW PUBLIC SPACE ALONG MOUNT ROAD

MOUNT ROAD

METRO STATION SQUARE

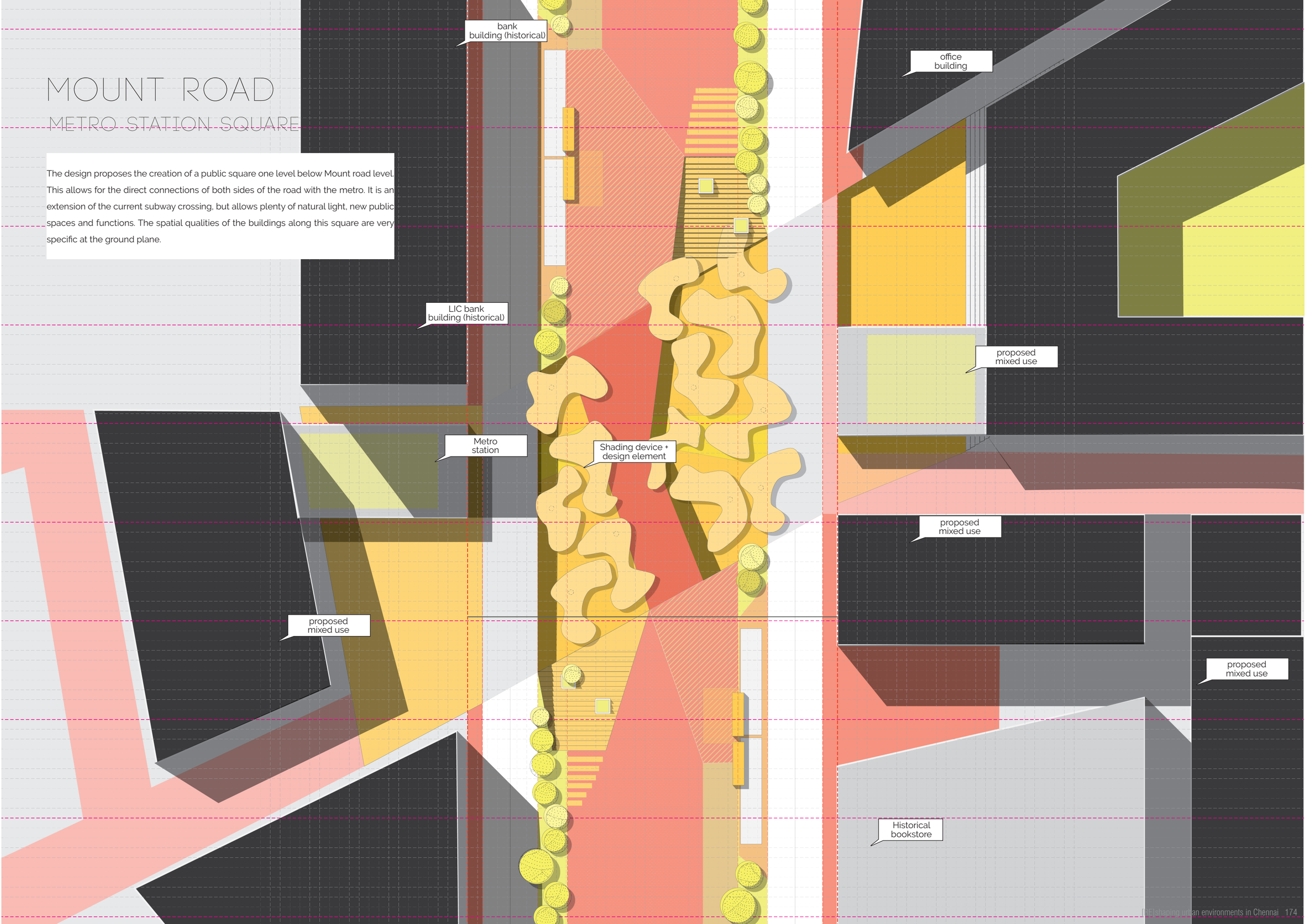




MOUNT ROAD

METRO STATION SQUARE

The design proposes the creation of a public square one level below Mount road level. This allows for the direct connections of both sides of the road with the metro. It is an extension of the current subway crossing, but allows plenty of natural light, new public spaces and functions. The spatial qualities of the buildings along this square are very specific at the ground plane.



MOUNT ROAD

METRO STATION SQUARE

Bus stop

commercial activity

Shared path

Shaded entrace from Metro

commercial activity

Path to square/waterfront

commercial activity

Retail/ supermarkets

Metro entrance

Sunken square

small shops/ hawkers

Cycle path

Bookstores/ library

MOUNT ROAD

VIEW OF METRO STATION SQUARE

Pedestrian path

small shops/ hawkers

Metro station entry

Repurposed lower floor with active functions

Bus stops

Shading device + visual identity for the metro station

Shared space

cycle path

Repurposed lower floor with active functions

Pedestrian path

PERSPECTIVE VIEWS

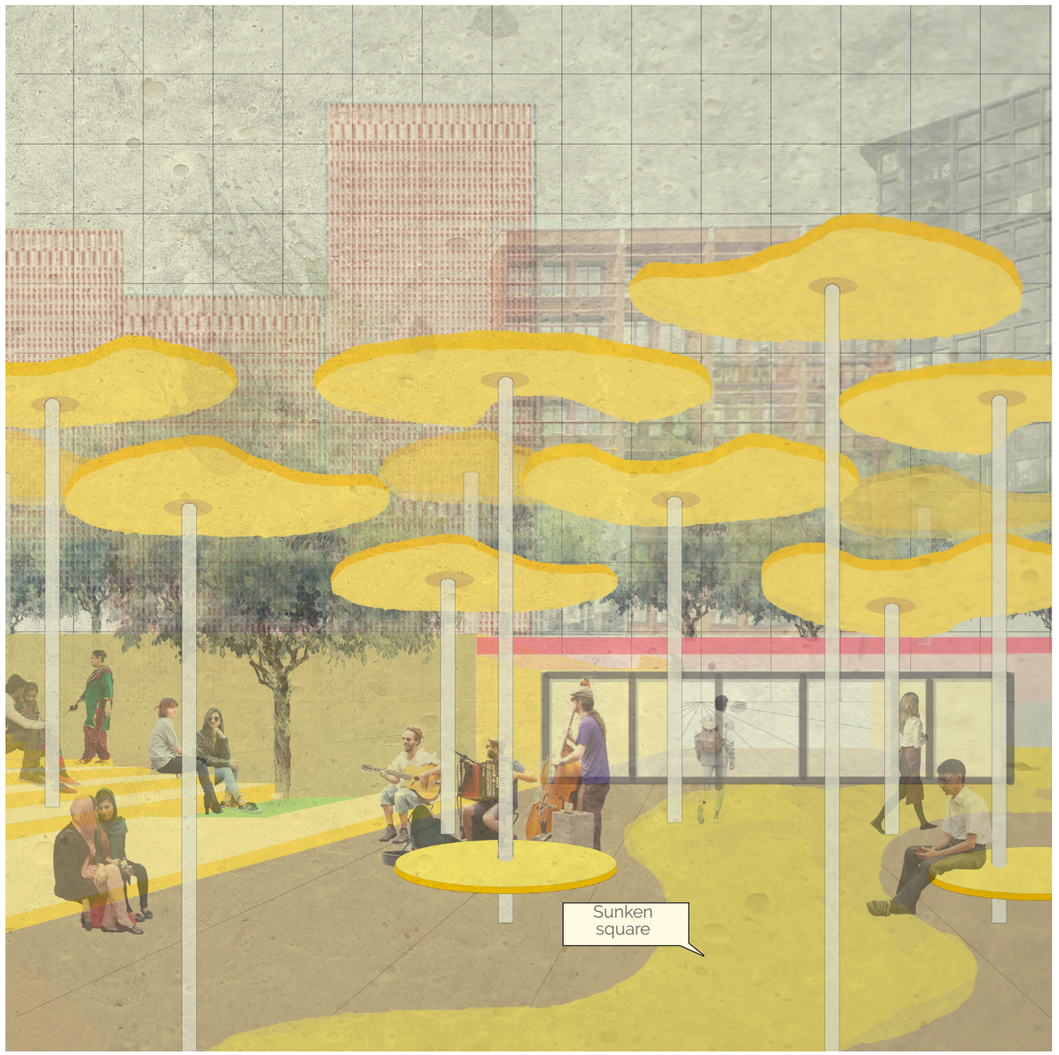




PERSPECTIVE VIEWS



NEW PUBLIC SPACE ALONG MOUNT ROAD



NEW PUBLIC SPACE ALONG MOUNT ROAD

LOCATION 02

REINFORCING LOCAL NODES



EXISTING CONTEXT

FUNCTIONS AND NETWORKS

marsh

Dumpyard causing soil + ground water pollution

OMR Road

Proposed metro stop

Buckingham canal

Proposed metro stop

Important sites and functions

- Proposed metro line
- Metro station
- IT Offices
- Low dense light industry
- Industry
- Hospitals
- Cinemas
- Parks
- Schools
- Government buildings
- Mosques
- Shopping malls
- Temples

EXISTING CONTEXT

CONTRASTS IN BUILT MORPHOLOGY

Fig. 25 Gated community. Source: https://www.magicbricks.com/property-for-sale-rent-in-Chennai/residential-real-estate-Chennai
Fig. 26 Local streets near OMR
Fig. 27 Neighbourhoods in OMR
Fig. 28 OMR Industries along OMR. Source: Google maps
Fig. 29 Service vehicle on OMR. Source: Google maps



ADJACENT NEIGHBOURHOODS



MOUNT ROAD





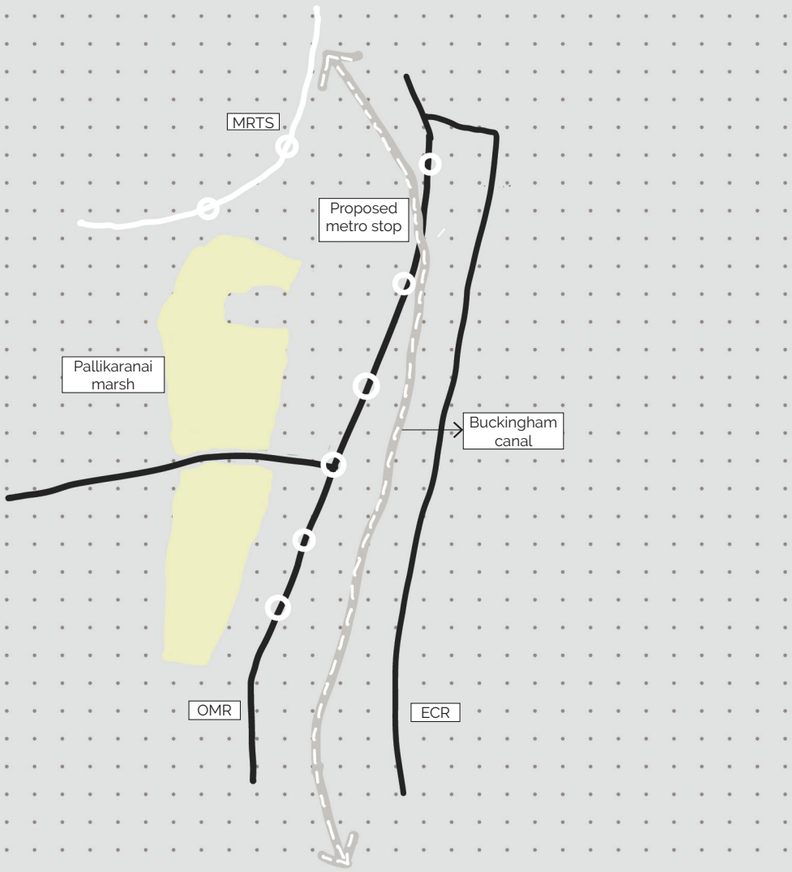


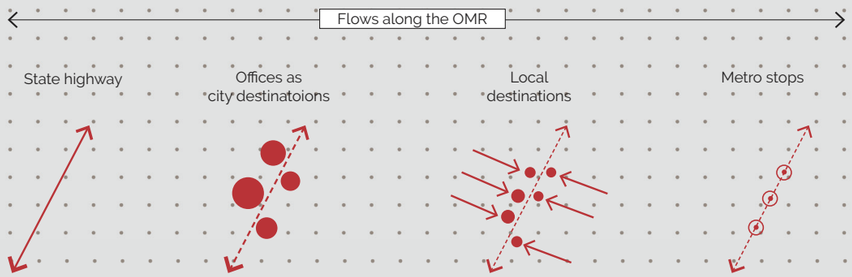


EXISTING CONTEXT

FLOWS ALONG THE OMR

Fig.30 ECR Source : https://theculturetrip.com/asia/india/articles/best-cycling-routes-explore-chennai/
Fig.31 OMR



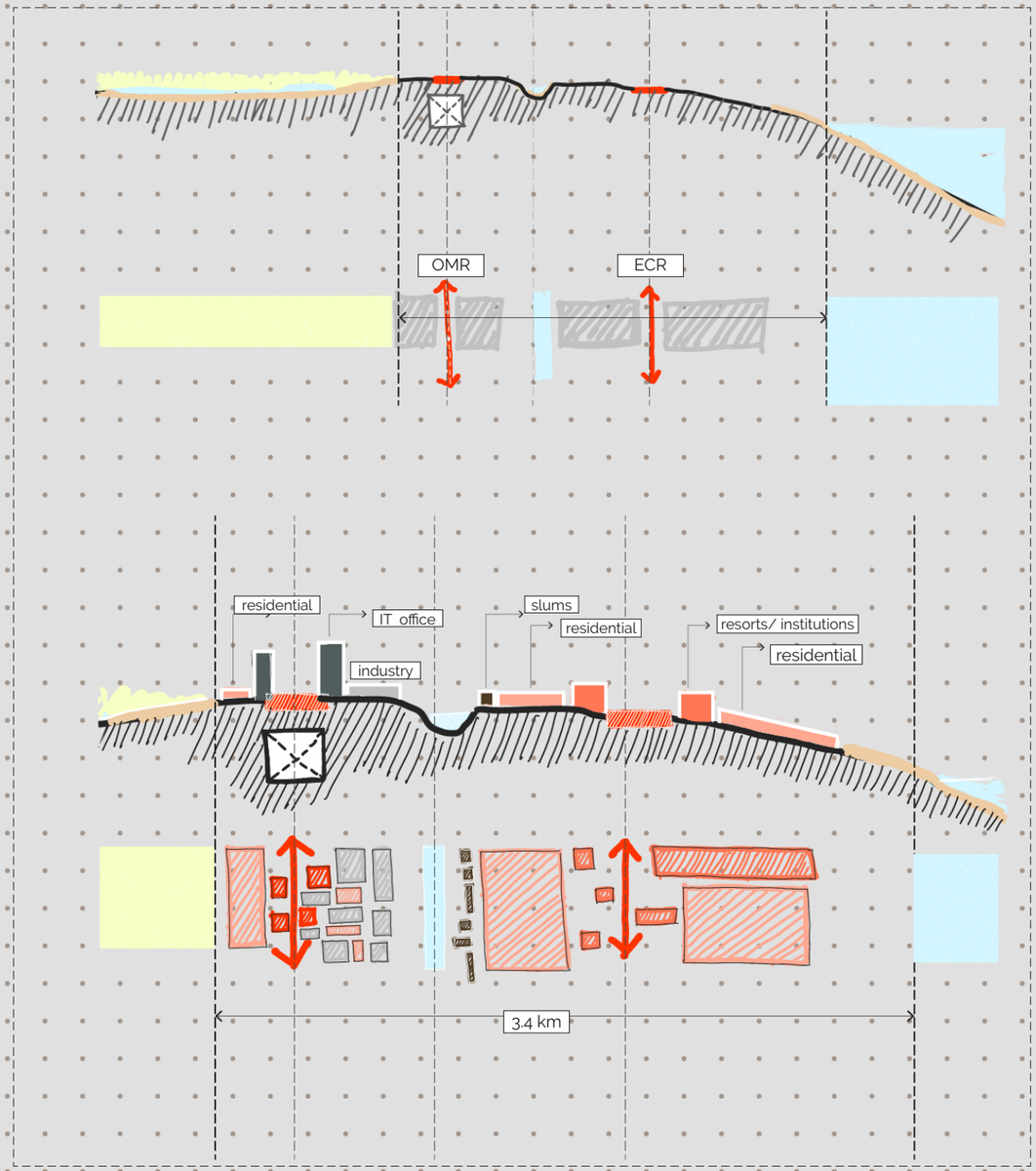


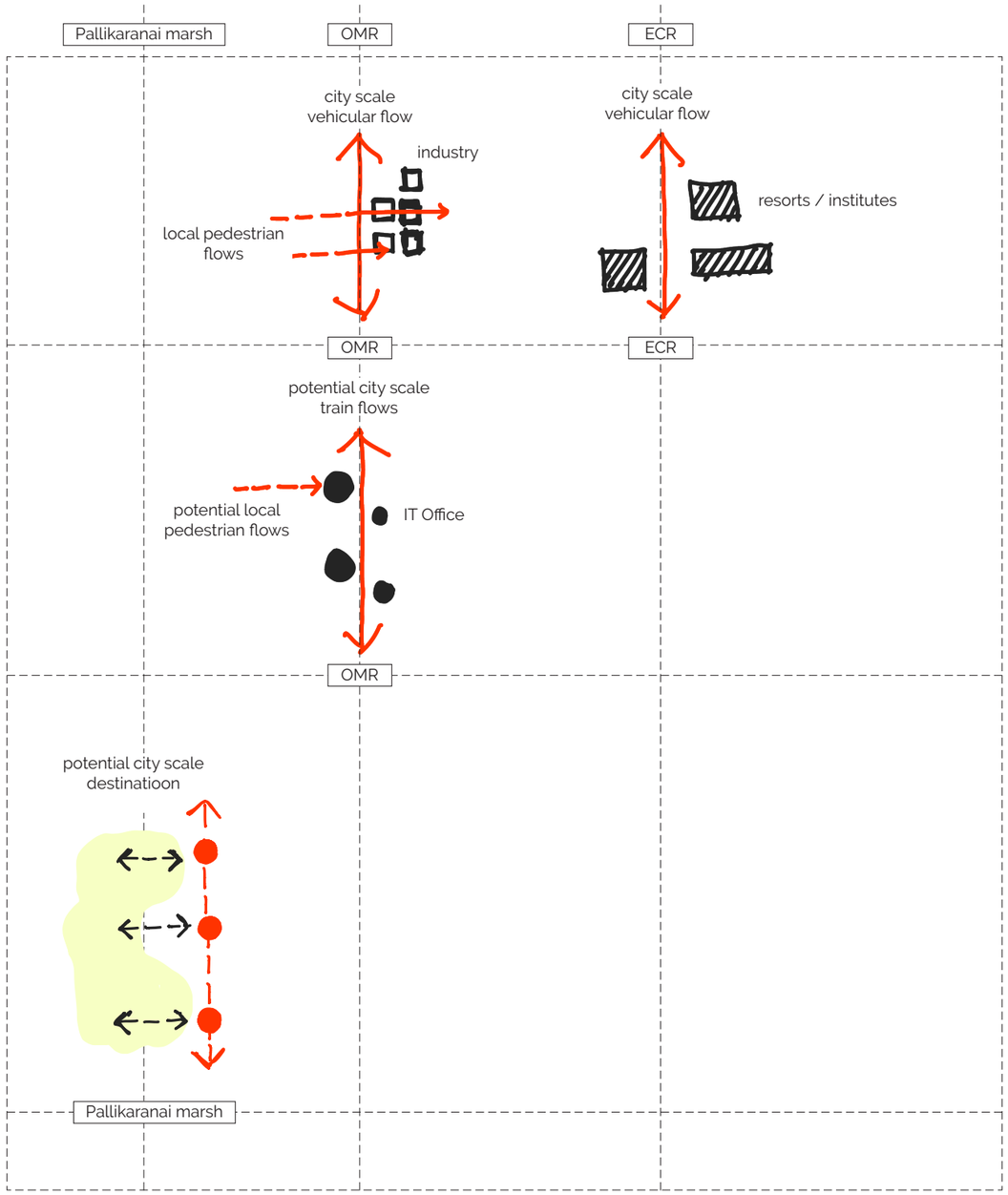




EXISTING CONTEXT

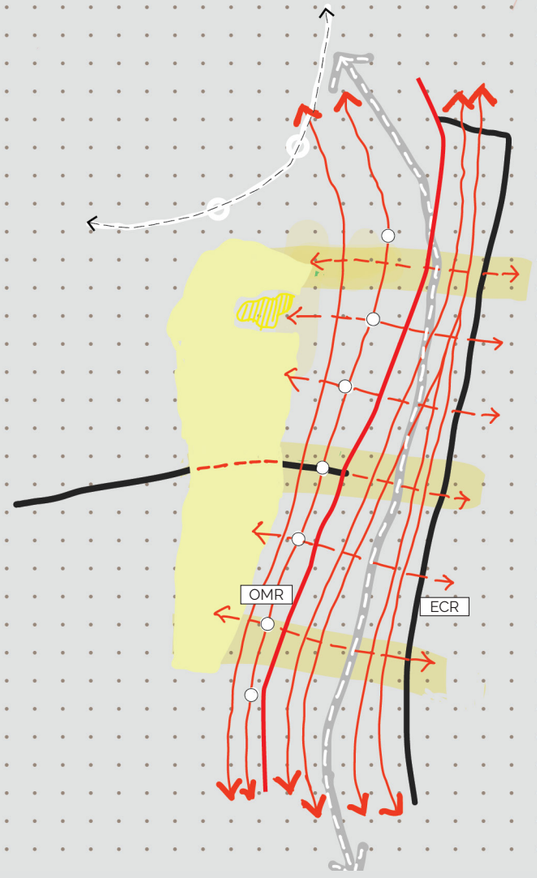
SYSTEMIC SECTION OF MAJOR FLOWS



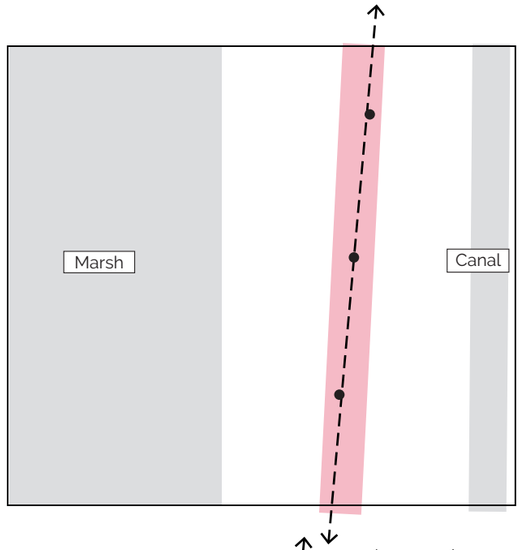


RECONFIGURING FLOWS

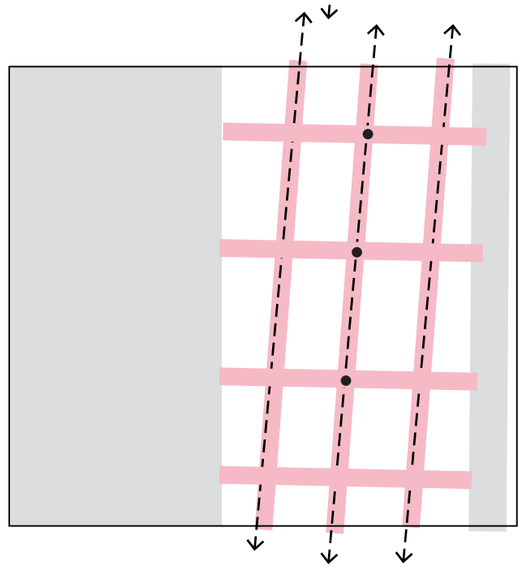
PROPOSING AN ALTERNATE METHOD OF DISTRIBUTION



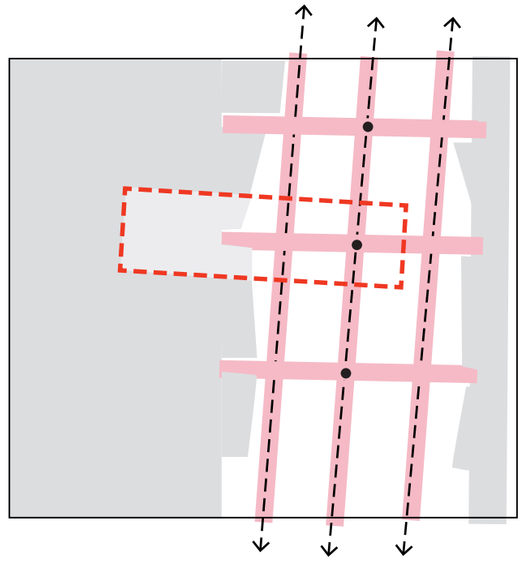
STATE HIGHWAY + ARTERIAL
DESTINATION + LOCAL ROAD
+ METRO STOPS

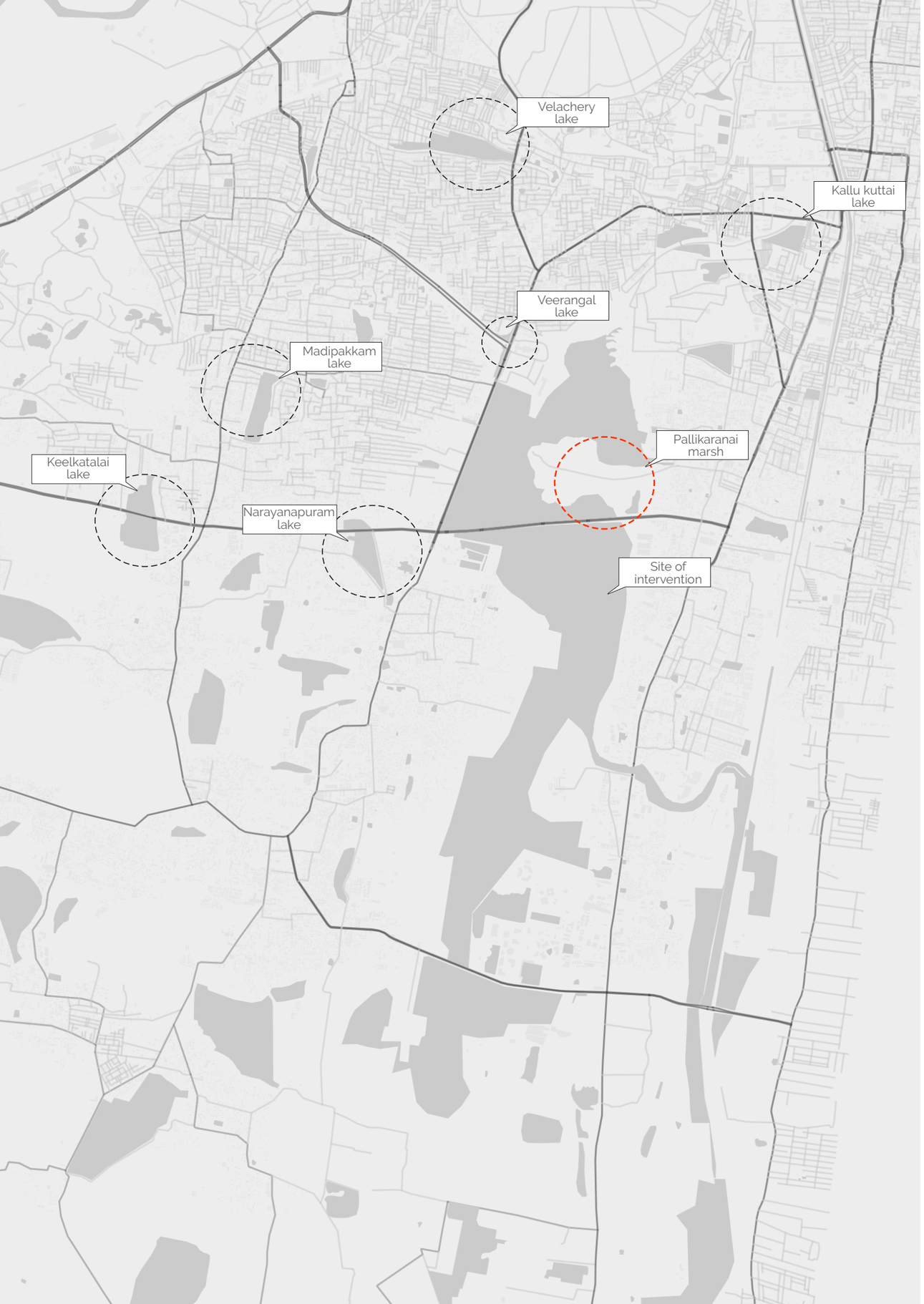


STRENGTHEN GRID AND
SEPARATE ROAD FUNCTIONS



CREATE CITY SCALE
DESTINATION AND NEW CENTRE



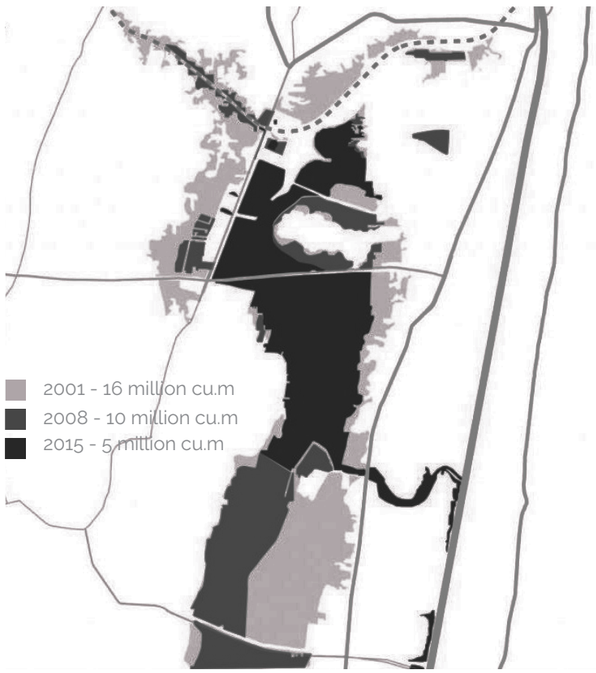


PALLIKARANAI SUB-BASIN

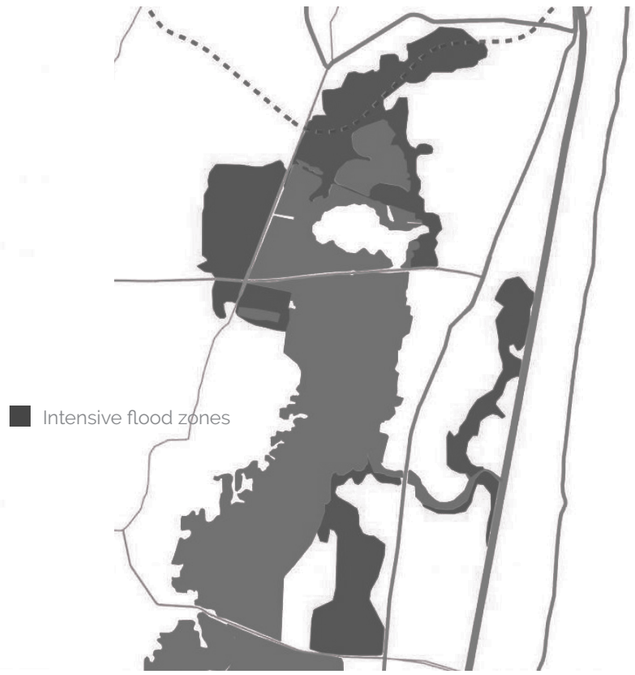
RESTORATION GOALS

The goals identified by the government research project in the restoration of these marshlands are as follows -

> Determining a protected edge for the marsh to prevent further encroachment
> Connecting the upper and lower parts of the marsh
> Reconnecting the marsh to the other lakes and tanks in the vicinity.
> Stop waste dumping



WATER CARRYING CAPACITY



FLOOD RISK

PROPOSED STRATEGY

Proposed demarcated protected zone

Central pedestrian path integrted with metro line

Industrial site partially redeveloped as part of the green corridor

City destination park th forms a ring with the metro stations and marsh

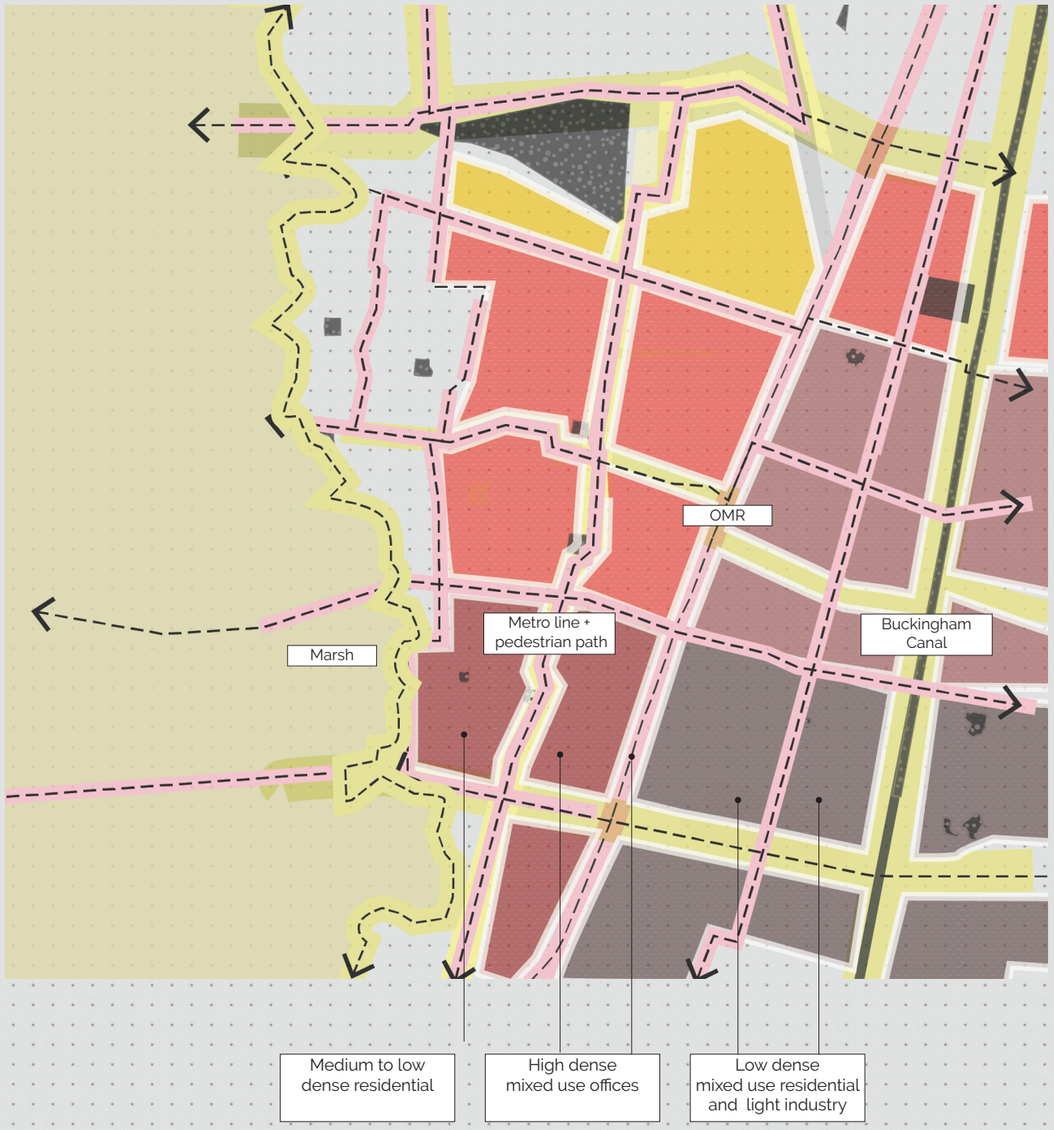
Regenerated dumpyard as city scale park

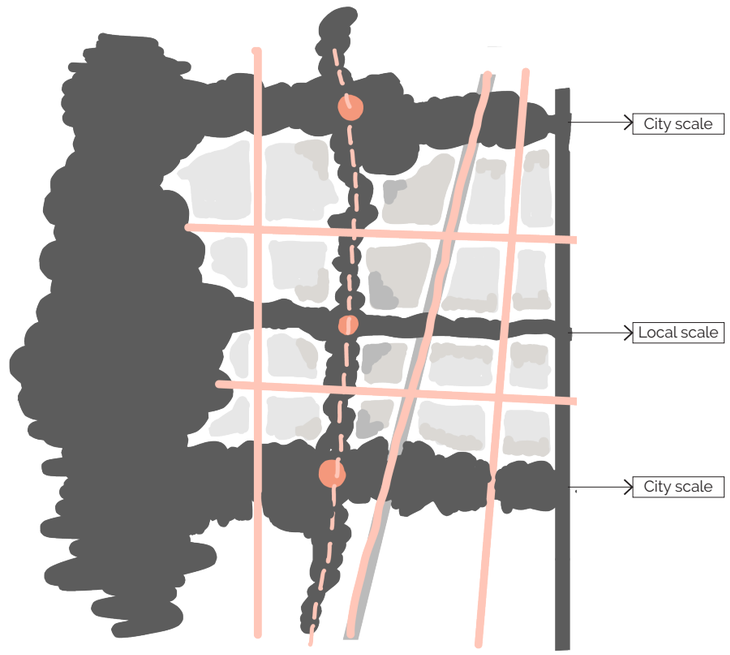
Arterial road is elevated, allowing the two sides of the marsh to reconnect.

Pallikarnai marsh

SUPERGRID STRUCTURE

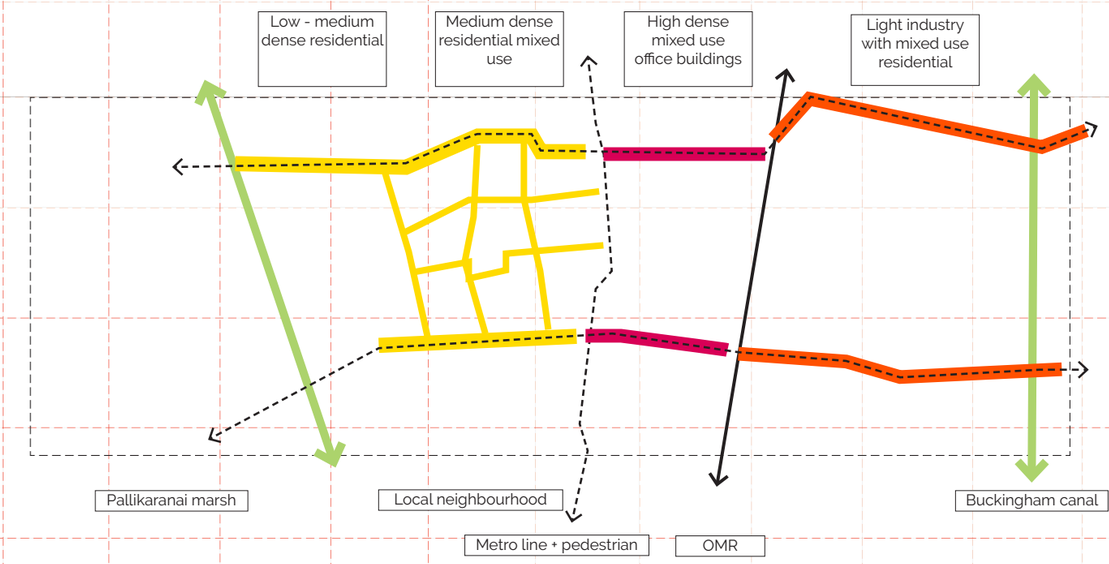
The pedestrian path with the metro line below becomes the central pedestrian path for many of the base blocks
. While the marsh and Buckingham canal serve as primary green-blue corridors, the two secondary green-blue corridors are aligned with the two metro stations on either extreme.
The tertiary, pedestrian oriented corridor aligns with the metro station in the middle, making this path an important structure in the local neighbourhood context.

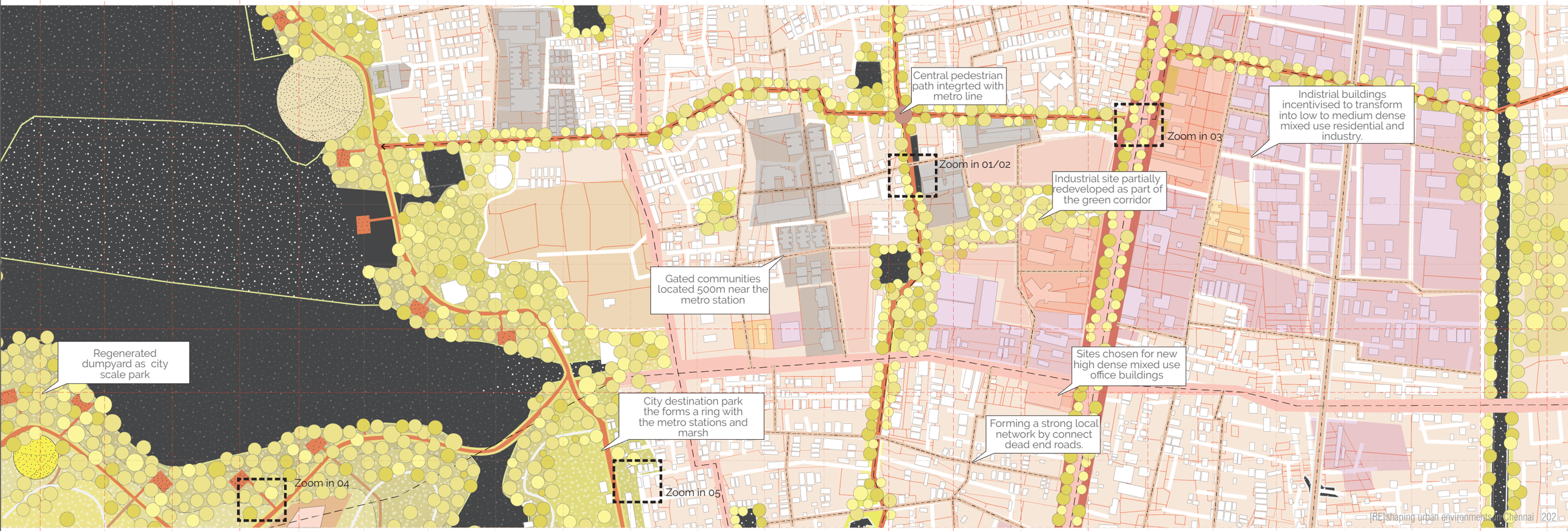




DESIGN FOCUS

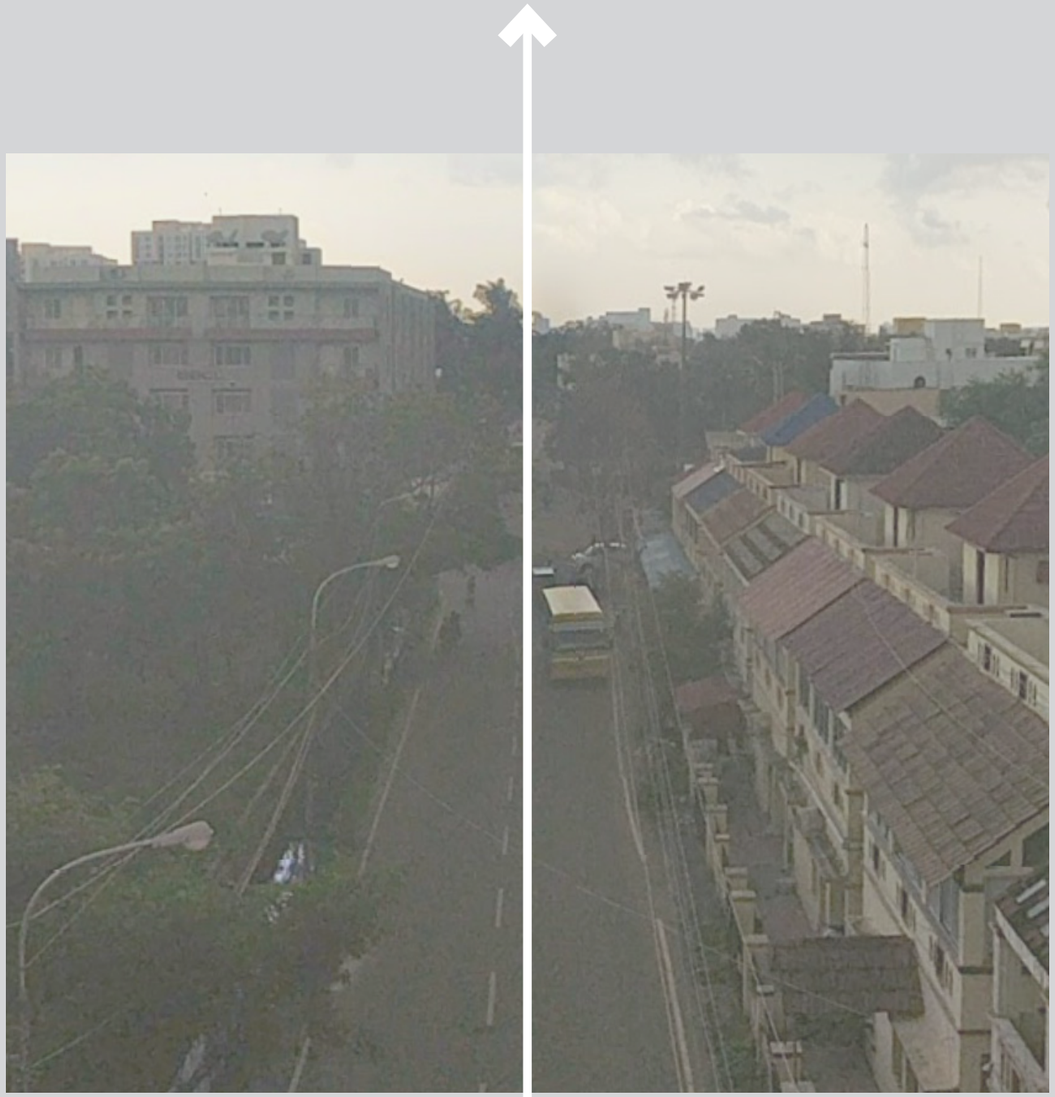
SPATIAL TRANSITIONS AND LOCAL NEIGHBOURHOOD STRUCTURES



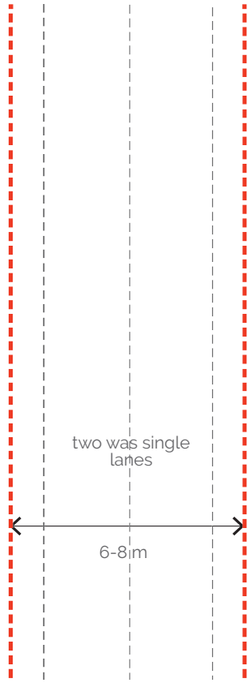


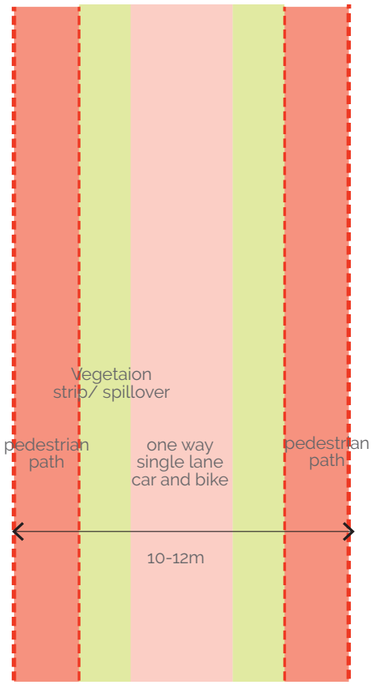
ZOOM IN 02

CENTRAL PEDESTRIAN PATH









ZOOM IN 02

CENTRAL PEDESTRIAN PATH

Fig. 32 Isometry depicting the proposed street layout

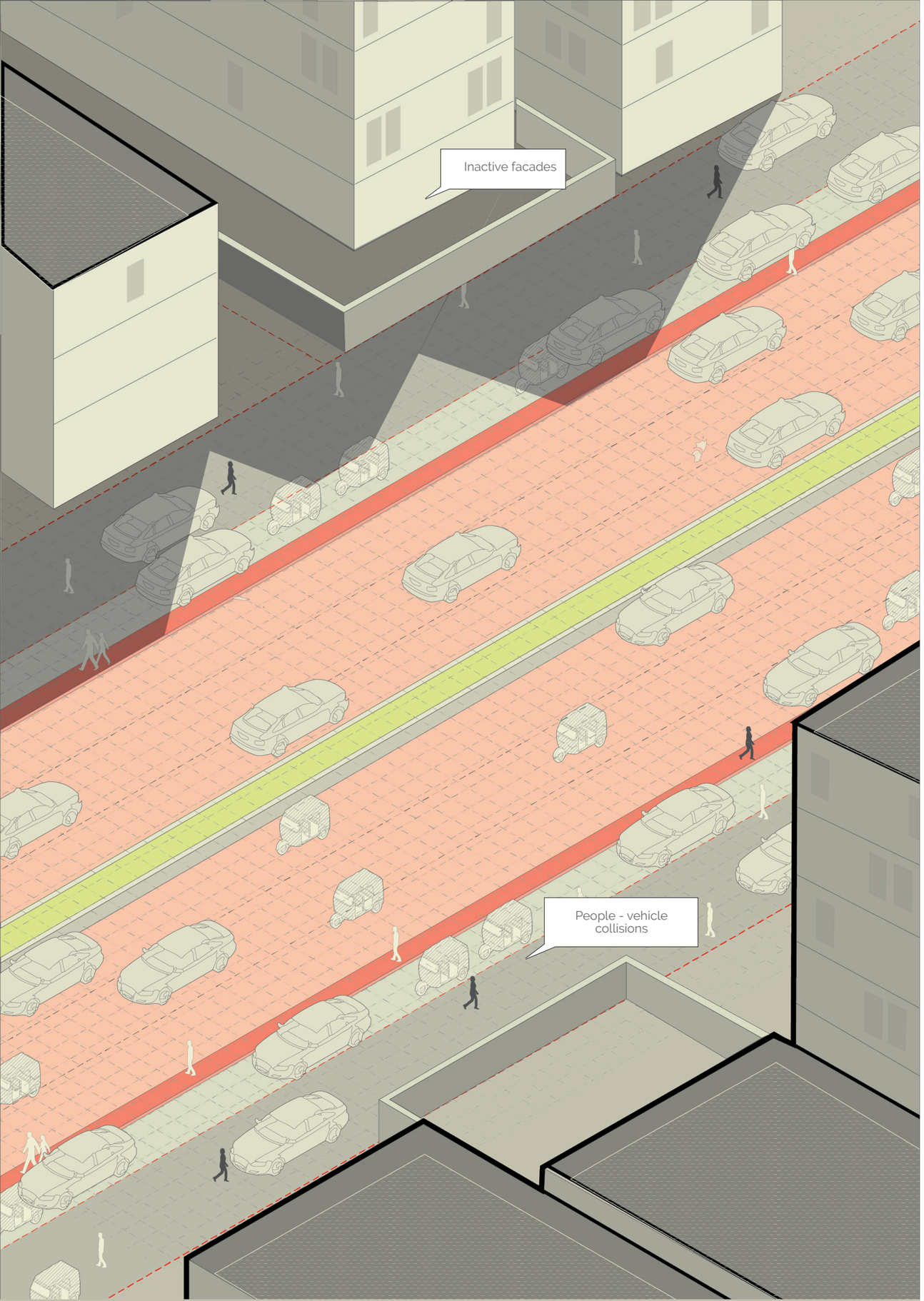
One lane shared space for cars and bikes to encourage slow traffic

Continuous vegetation strip in front of gated communities to create layers of privacy

Development of new mixed use high rise buildings with an active ground floor

Vegetative strip breaks down to allow for positive encroachments and seating outside mixed use buildings

Narrow street, tall buildings and trees ensure shading

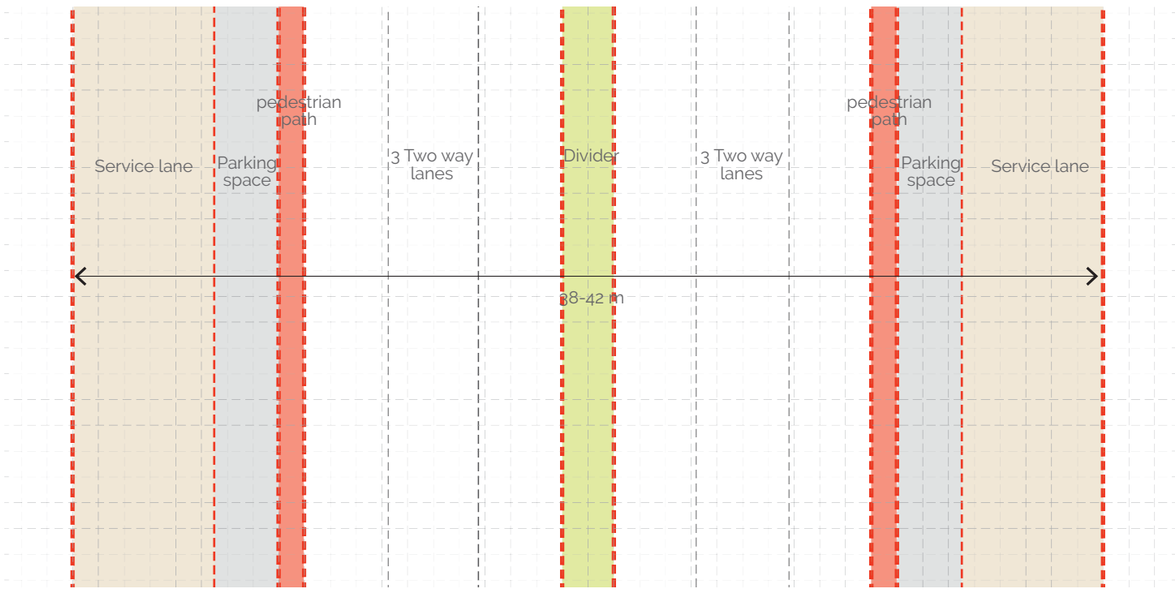


ZOOM IN 03

TRANSFORMATION OF OMR

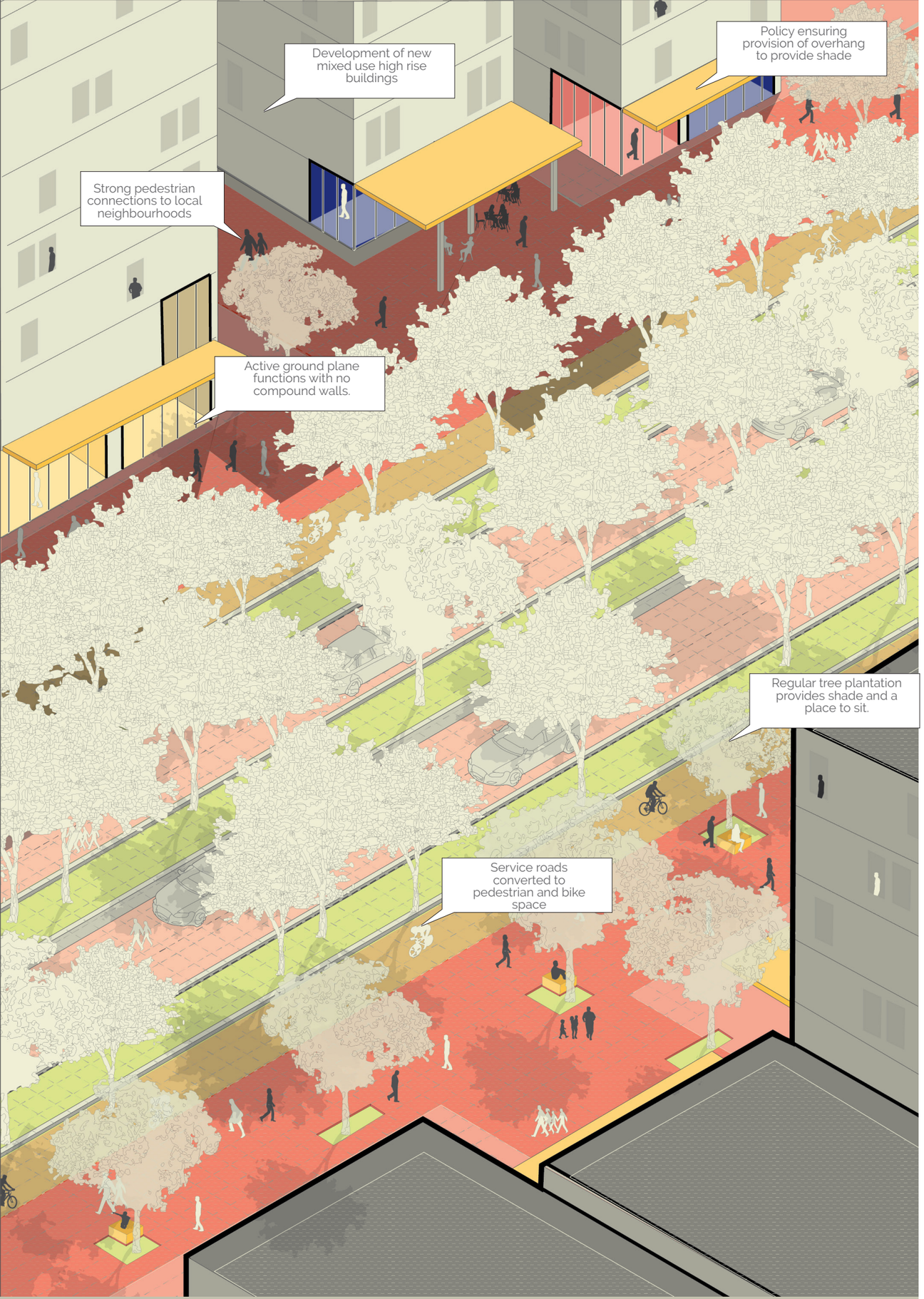


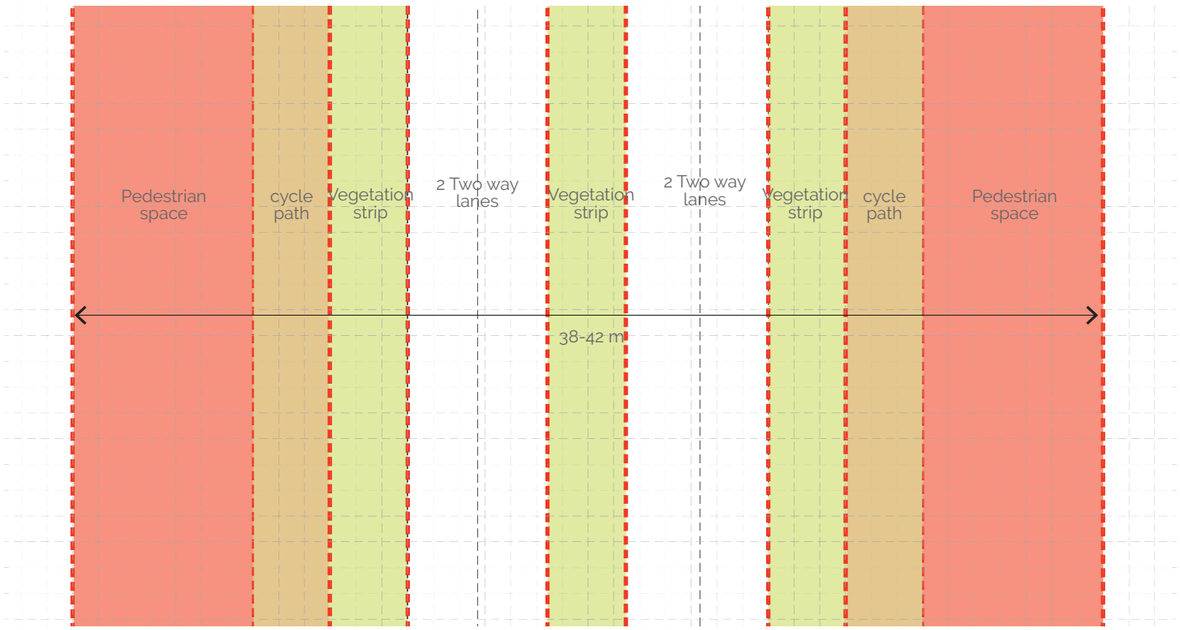




ZOOM IN 03

TRANSFORMATION OF OMR






MONEY
CHANGING
&
FOREIGN
EXCHANGE


CK's
BAKERY

PERSPECTIVE VIEWS



TRANSFORMATION OF OMR

Fig. 33 Perspective View 01

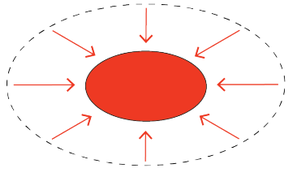


TRANSFORMATION OF LOCAL THROUGH ROAD

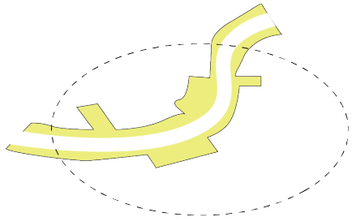
Fig. 36 Perspective view 02

DESIGN STRATEGIES

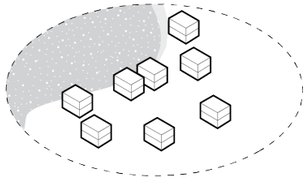
LOCATION 01

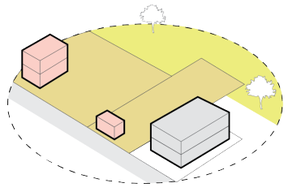


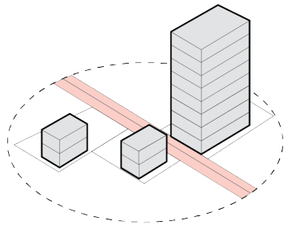
S.T.1
TRANSIT STOPS AS LOCAL CENTERS

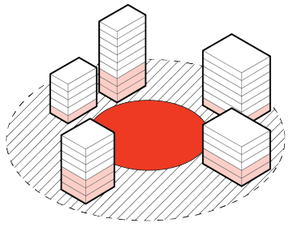


S.E.1
ACTIVATE WATER EDGE

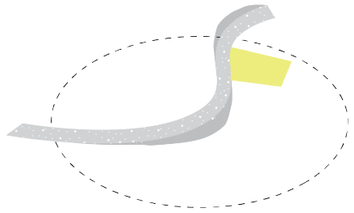




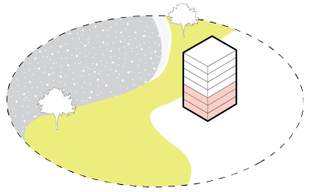




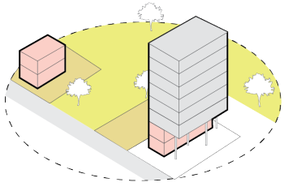
S.T.2
HIGH DENSE MIXED USE AROUND TRANSIT STOPS



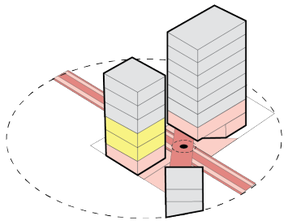
S.E.2
SOCIAL SPACE X WATER STORAGE



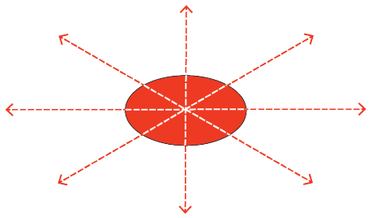
S.D.1
RELOCATE + REBUILD



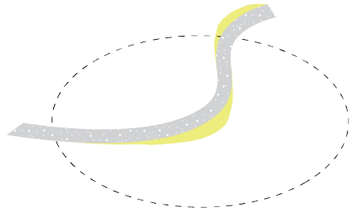
S.D.2
PUBLIC ACCESSIBILITY + GREEN COVER ON INSTITUTION SITES



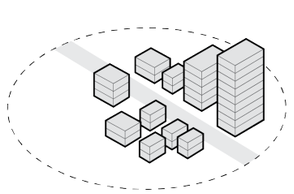
S.D3
TRANSFORMATION OF METRO SQUARE

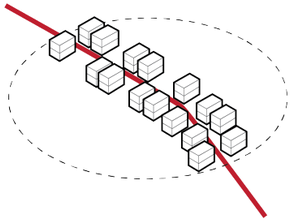


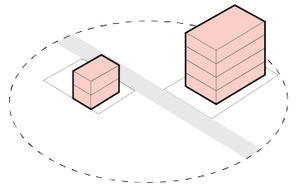
S.T.3
MAXIMUM CONNECTIONS FROM TRANSIT STOPS

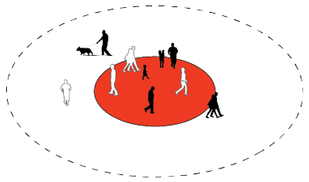


S.E.3
WIDEN RIVER ALONG OUTER BEND

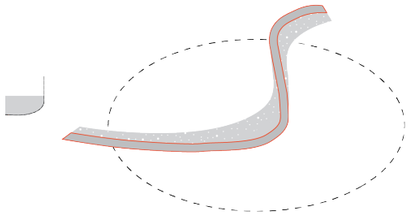




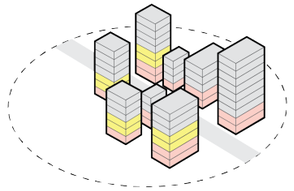




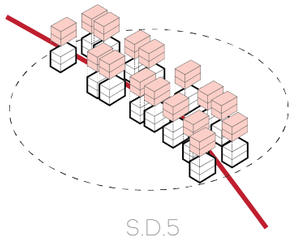
S.T.4
HIGH OPPURTUNITY FOR PEDESTRIAN MOVEMENT



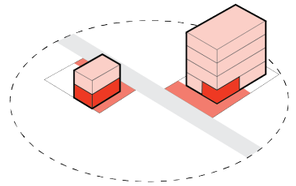
S.E.4
CREATE SMALLER CHANNEL FOR PERINNIAL FLOW



S.D.4
MIXED USE TRANSFORMATION OF OFFICE AND INDUSTRY

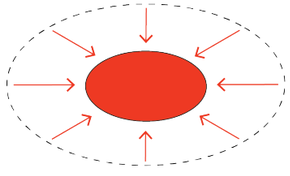


S.D.5
INCREASE IN PERMISSIBLE DENSITY ALONG PEDESTRIAN PATH

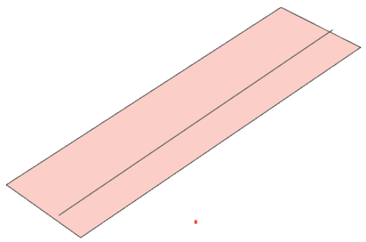


S.D.6
PUBLIC ENGAGEMENT WITH HISTORIC BUILDINGS

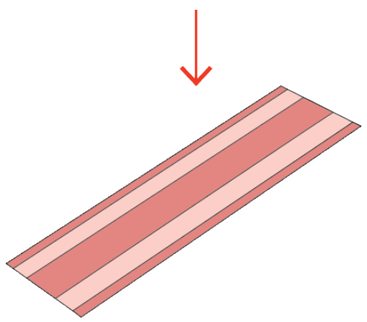
DESIGN STRATEGIES



S.T.1
TRANSIT STOPS AS LOCAL CENTERS

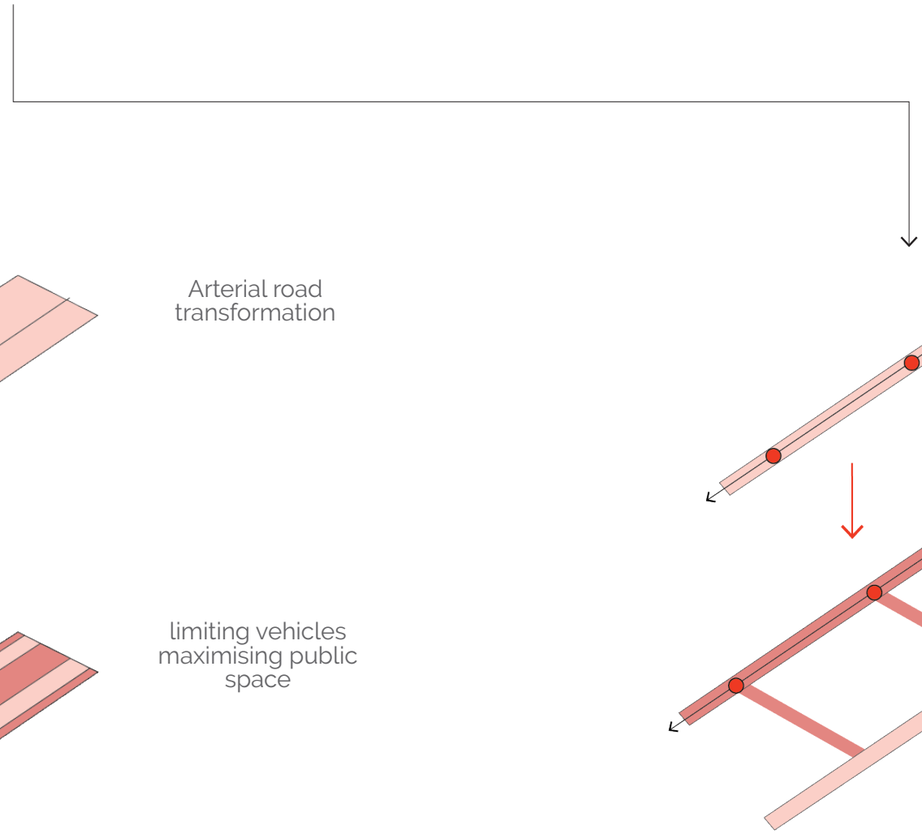


Arterial road transformation



limiting vehicles maximising public space

Location 01



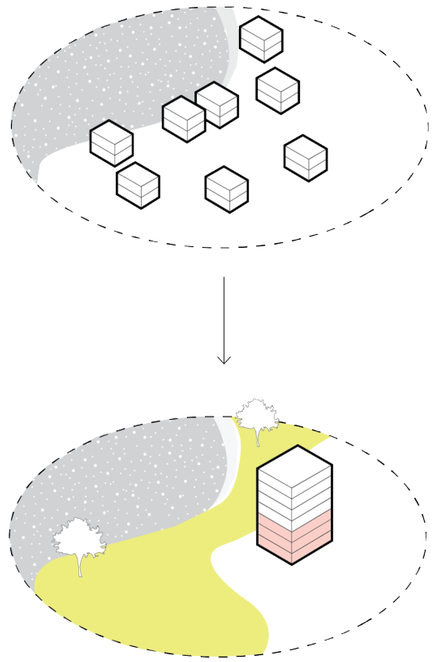
Current proposal metro line along OMR

Proposed location of metro line

Location 02

DESIGN STRATEGIES

S.D.1 RELOCATE + REBUILD ALONG RIVER BANK



EXTENT OF INTERVENTIONS

SPATIAL INTERVENTIONS

POLICY

STAKEHOLDERS

STAKEHOLDERS

Public : CMDA, TNEB,

Private : Developers

Civil society : Individuals and households,

DESCRIPTION

Buildings which are [1] mono-functional [2] lower than five floors [3] without any significant historic value present in the proposed block are slated to be demolished and accommodated in new high dense developments, with the lower floors utilised for commercial or recreational function.

This allows to replace low dense mono-functional buildings with a more mixed use building with a smaller footprint,

SPATIAL INTERVENTIONS AND POLICIES

INTERVENTIONS

> Selection of buildings to be removed.

> Stakeholder meeting to negotiate displacement and gather inputs on the new buildings.

POLICY

> Demarcation of open space to prohibit any permanent structures

> Policy defining the function and density of new building.

> Reservation of units in the new buildiing for the displaced households.

LOCATION 03

MAKING SPACE FOR GREEN-BLUE NETWORKS



EXISTING CONTEXT

FUNCTIONS AND NETWORKS

Metro line

Couum river

Poonamalee road

Suburban line

PROPOSED DESIGN

IMPLICATIONS OF CITY SCALE STRATEGY

Densification around transit nodes

Strengthen connections

Activate river edge

Metro line

Poonamalee road

1

2

3

Restoration of old lake as new green-blue corridor

PROPOSED DESIGN

IMPLICATIONS OF CITY SCALE STRATEGY

1

S.E.1
ACTIVATE WATER EDGE

S.E.2
SOCIAL SPACE X WATER STORAGE

S.E.3
WIDEN RIVER ALONG
OUTER BEND

S.E.4
CREATE SMALLER CHANNEL
FOR PERENNIAL FLOW

2

S.T.1
TRANSIT STOPS AS LOCAL CENTERS

S.T.2
HIGH DENSE MIXED USE AROUND
TRANSIT STOPS

S.T.3
MAXIMUM CONNECTIONS FROM
TRANSIT STOPS

S.T.4
HIGH OPPORTUNITY FOR
PEDESTRIAN MOVEMENT

3

S.E.1
ACTIVATE + RECLAIM
WATER EDGE

S.E.4
ACTIVATE BUFFER AREA WITH LOCAL
NEIGHBOURHOOD OR CITY SCALE
FUNCTIONS AT NODES

Strengthen connections

Metro line

Densification around transit nodes

2

Poonamalee road

Activate river edge

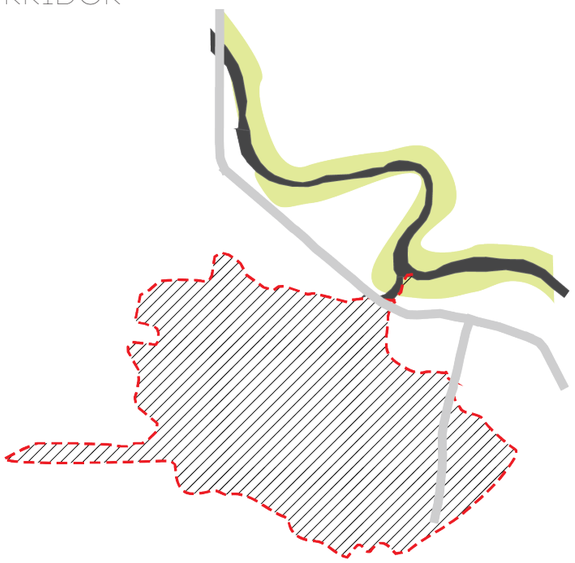
1

Restoration of old lake as new green-blue corridor

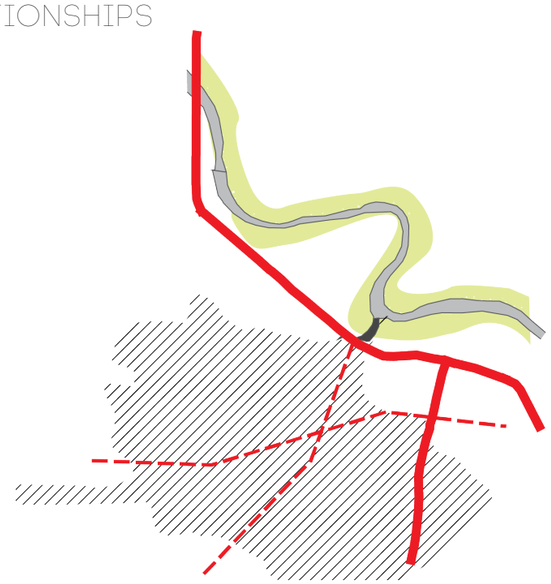
3

5.2.3 DEFINING THE DESIGN PROCESS

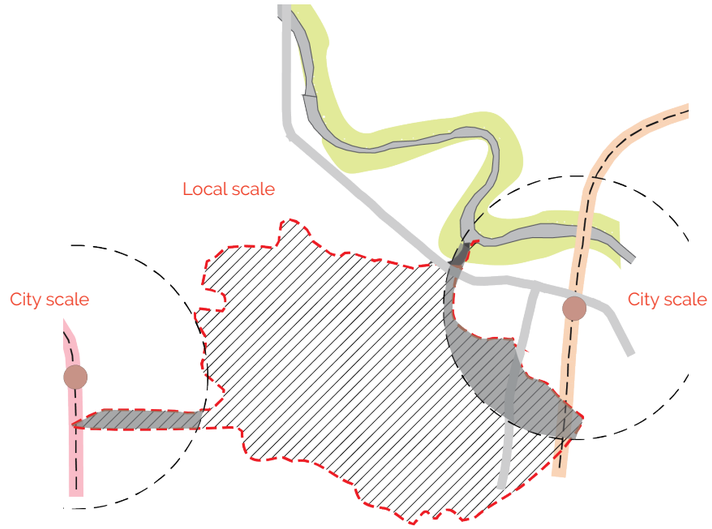
01 MAKING SPACE FOR THE GREEN BLUE CORRIDOR



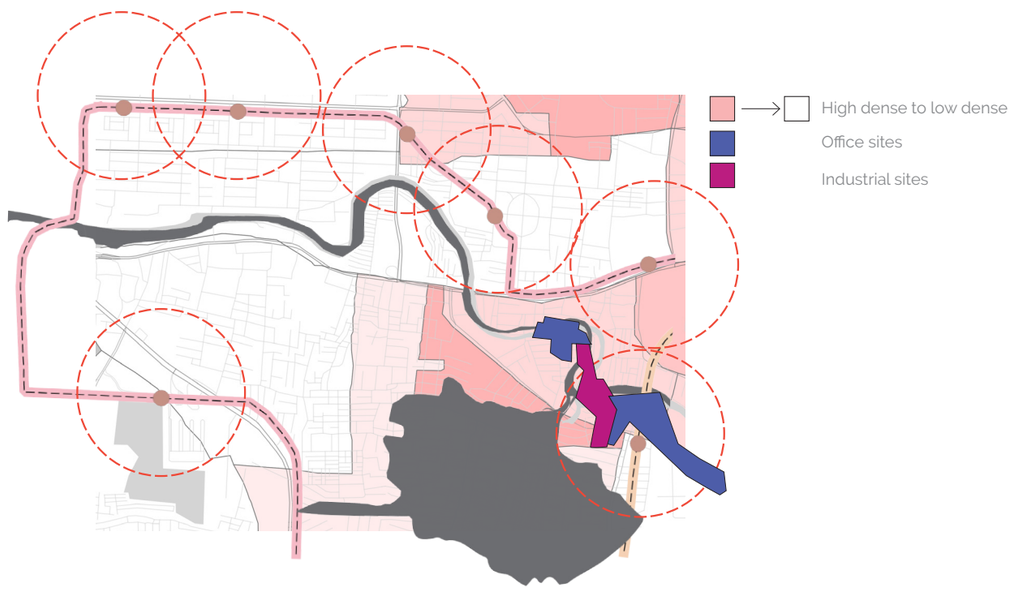
02 SPATIAL DEFINITIONS OF NETWORK RELATIONSHIPS



03 FUNCTION AND ACCESSIBILITY



04 RELOCATION OF DISPLACED HOUSING AND FUNCTIONS

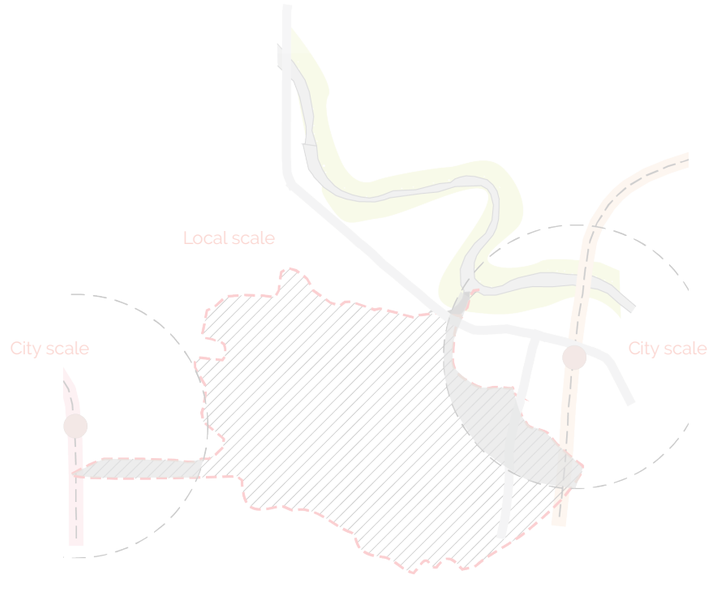


5.2.3 DEFINING THE DESIGN PROCESS

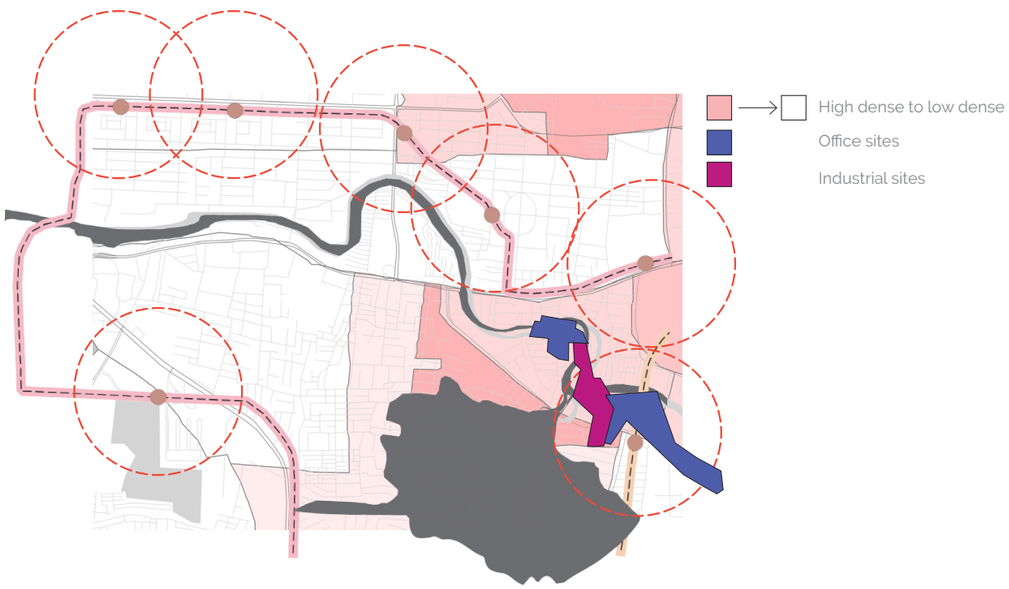
01 MAKING SPACE FOR THE GREEN BLUE CORRIDOR

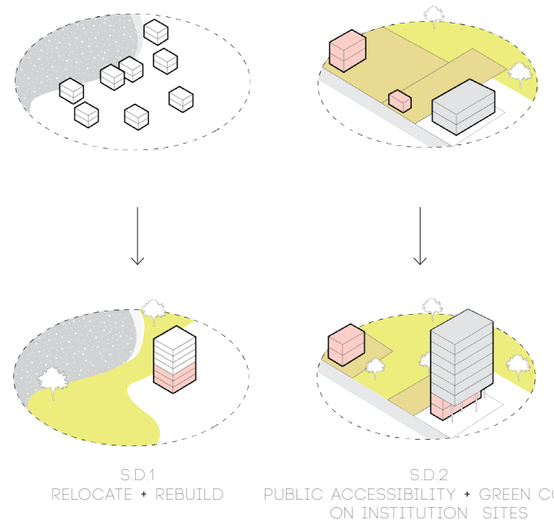
02 SPATIAL DEFINITIONS OF NETWORK RELATIONSHIPS

03 FUNCTION AND ACCESSIBILITY



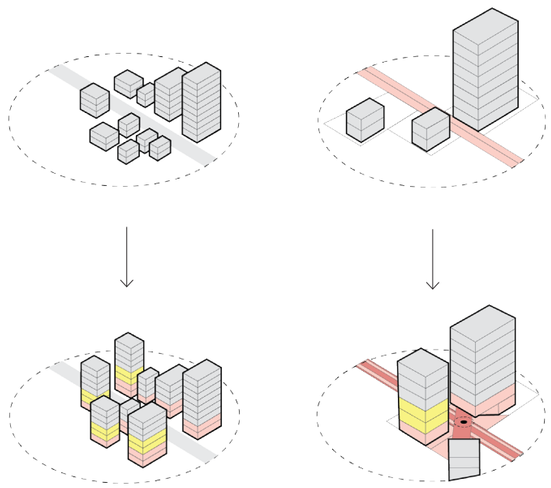
04 RELOCATION OF DISPLACED HOUSING AND FUNCTIONS





S.D.1
RELOCATE + REBUILD

S.D.2
PUBLIC ACCESSIBILITY + GREEN COVER ON INSTITUTION SITES

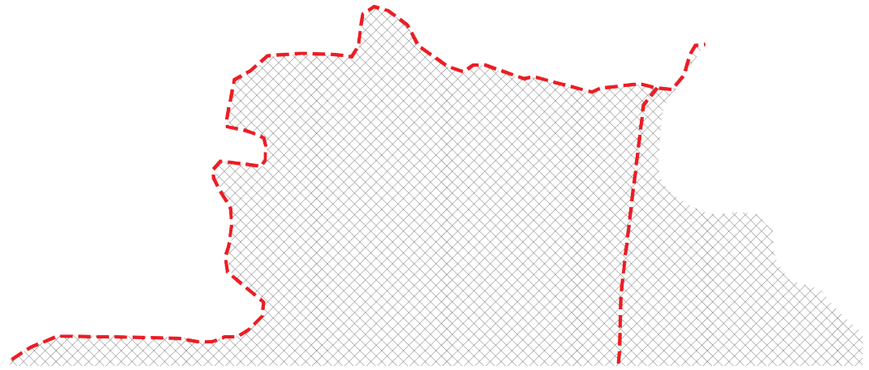


S.D.4
MIXED USE TRANSFORMATION OF OFFICE AND INDUSTRY

S.D.3
TRANSFORMATION OF METRO SQUARE

DESIGN PROCESS

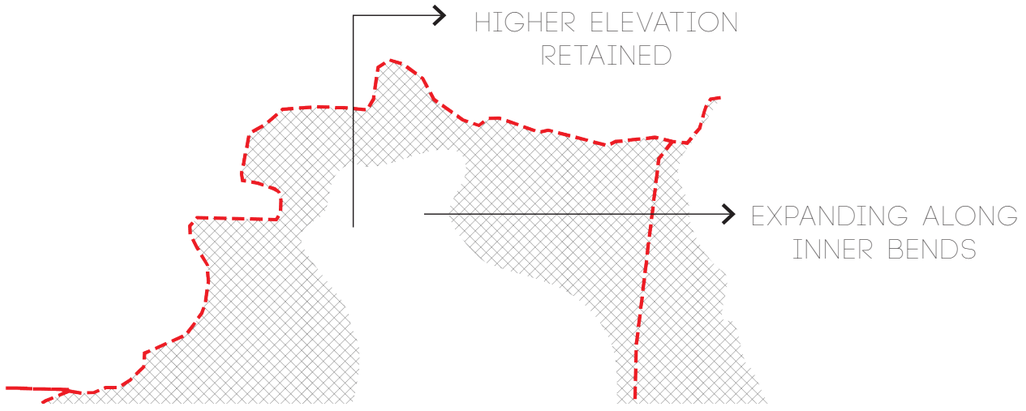
MAKING SPACE FOR THE GREEN BLUE CORRIDOR



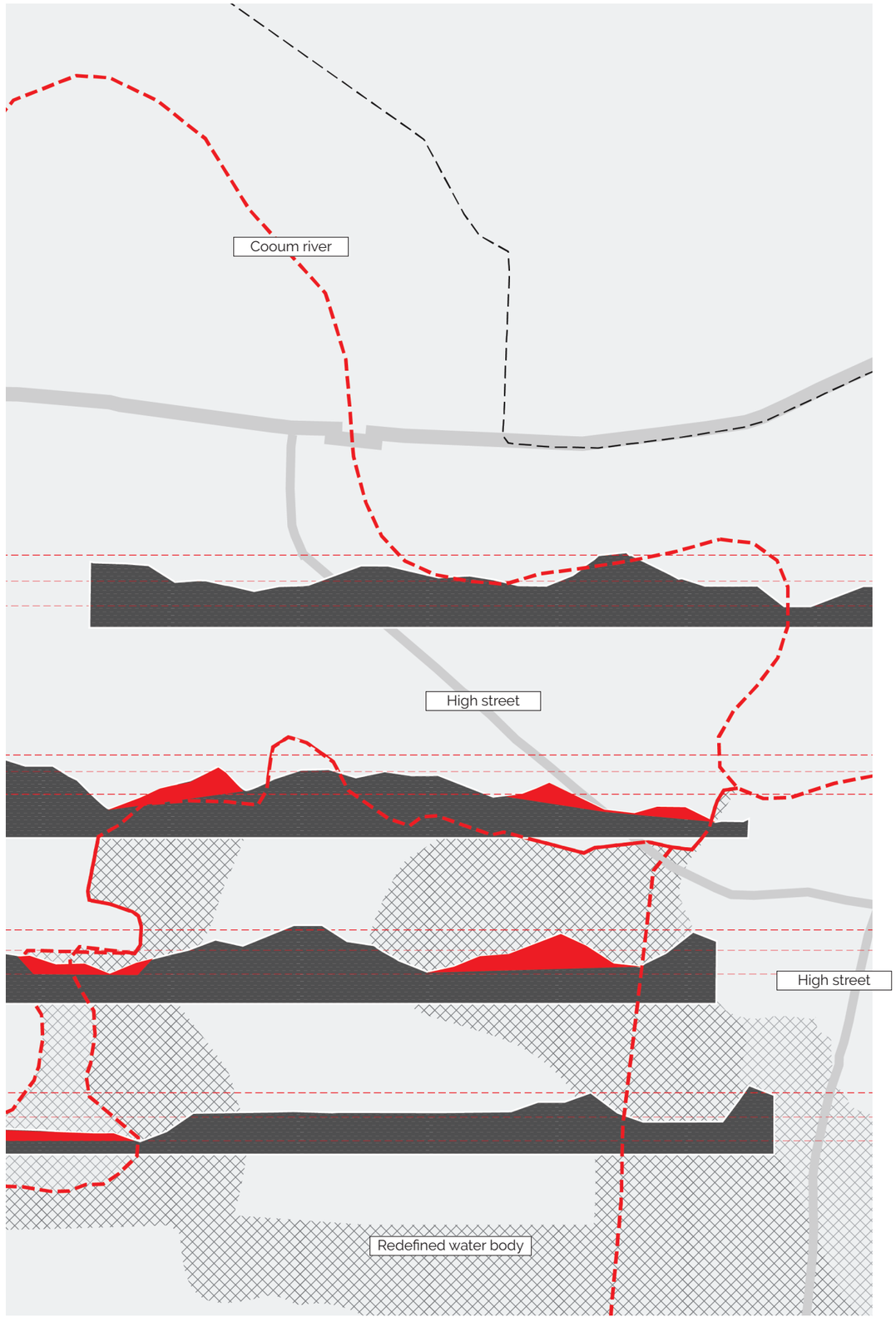
OUTLINE BASED ON HISTORIC MAPS

HIGHER ELEVATION
RETAINED

EXPANDING ALONG
INNER BENDS



NEW PROPOSED OUTLINE



DESIGN PROCESS

NETWORKS AND DENSIFICATION

0 100m

Water level during high

Water level during low flow

Transit stops

High dense mixed use around transit

Transformation - High dense mixed use active commercial lower floors - along through road and near

Low - medium dense - Mixed use residential with active ground floor functions

Transformed industrial site - High dense mixed use residential neighbourhood

College

Government offices

Government offices and school

High school

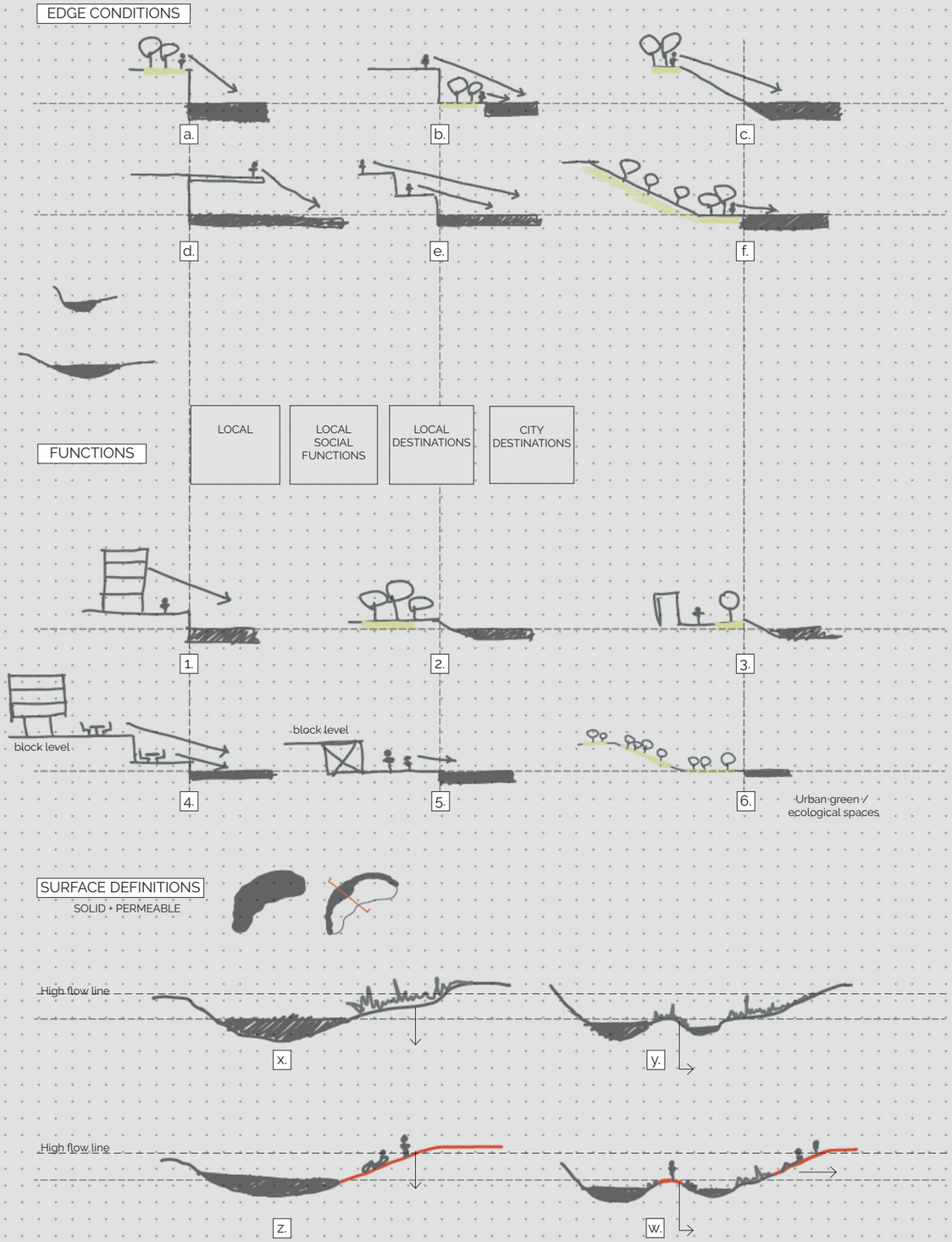
Choolaimedu high road

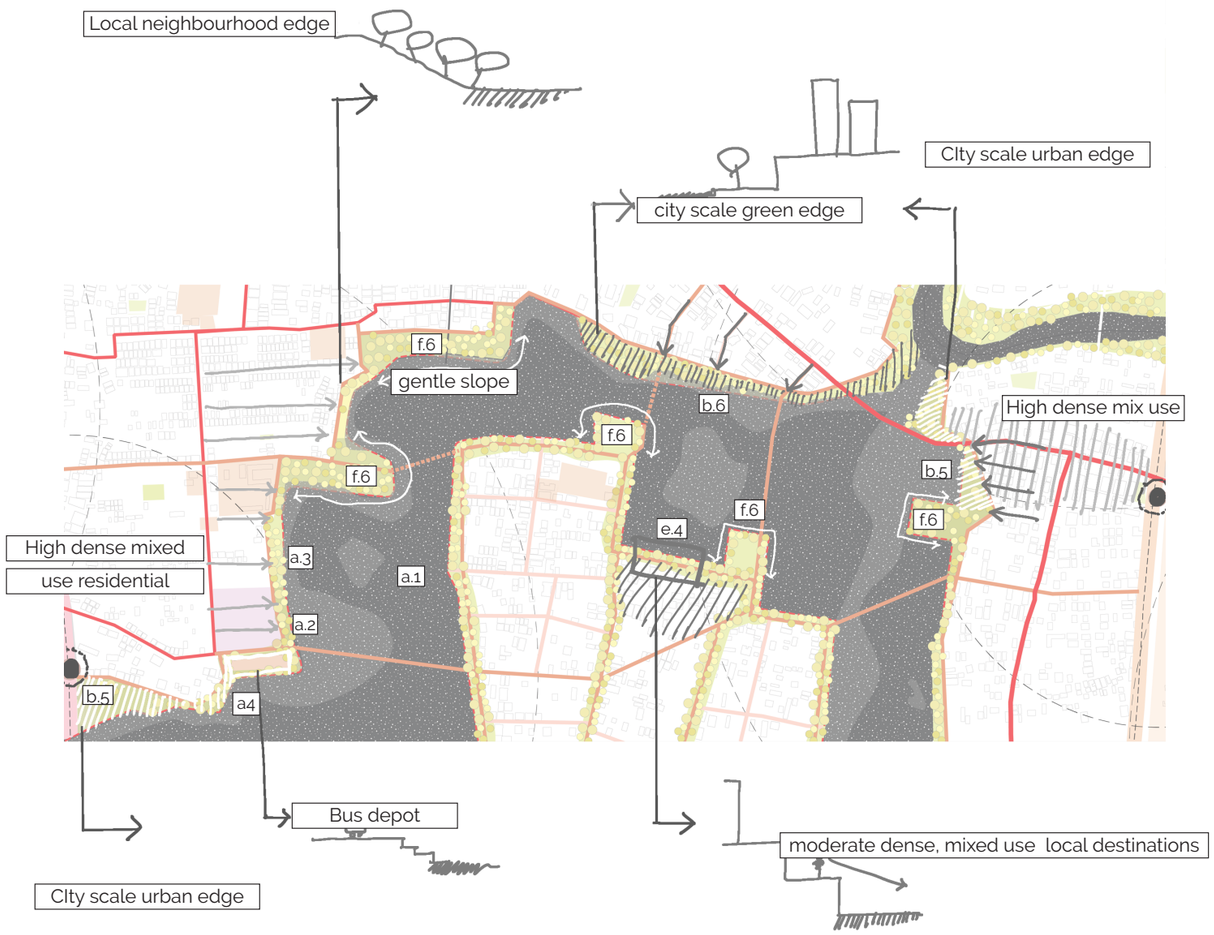
Light industry site

Bus depot

DESIGN PROCESS

EDGE CONDITIONS, FUNCTIONS AND SURFACE DEFINITIONS





SECTIONAL VIEW

CROSS SECTION CITY SCALE URBAN EDGE

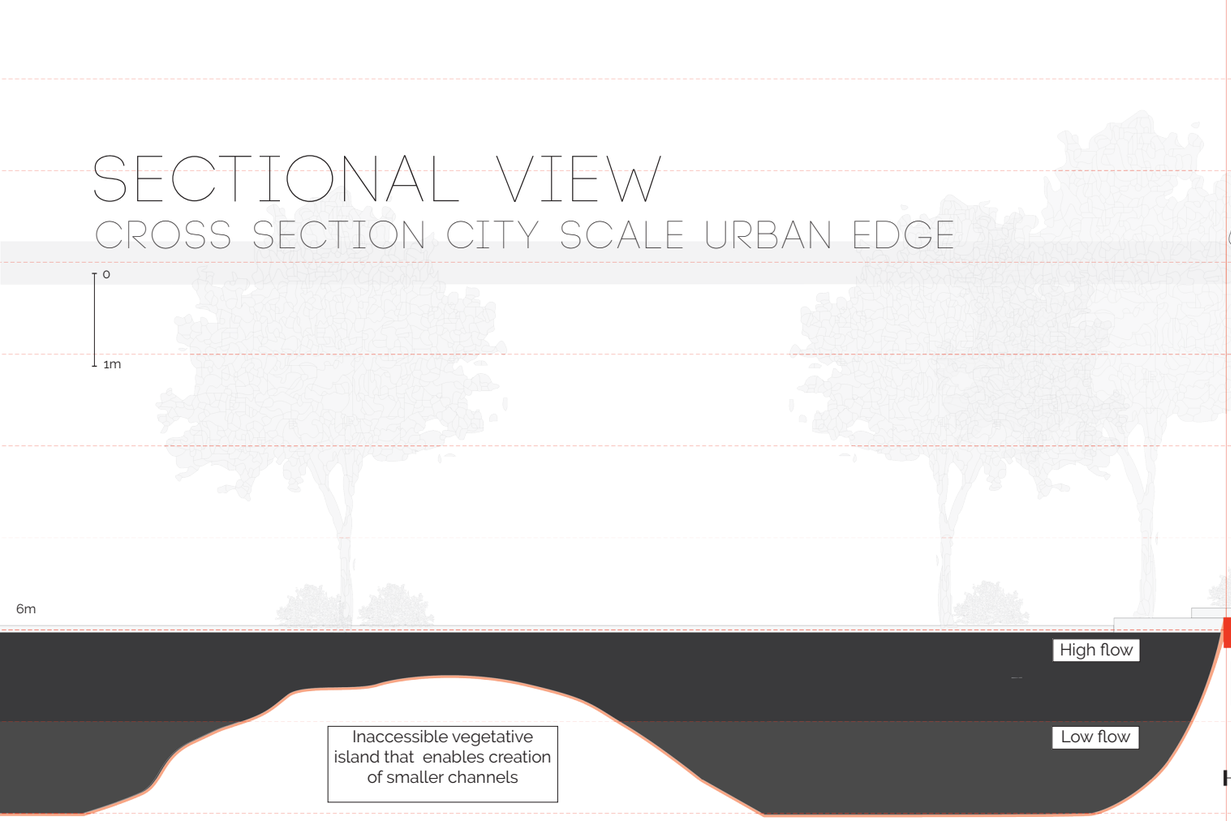
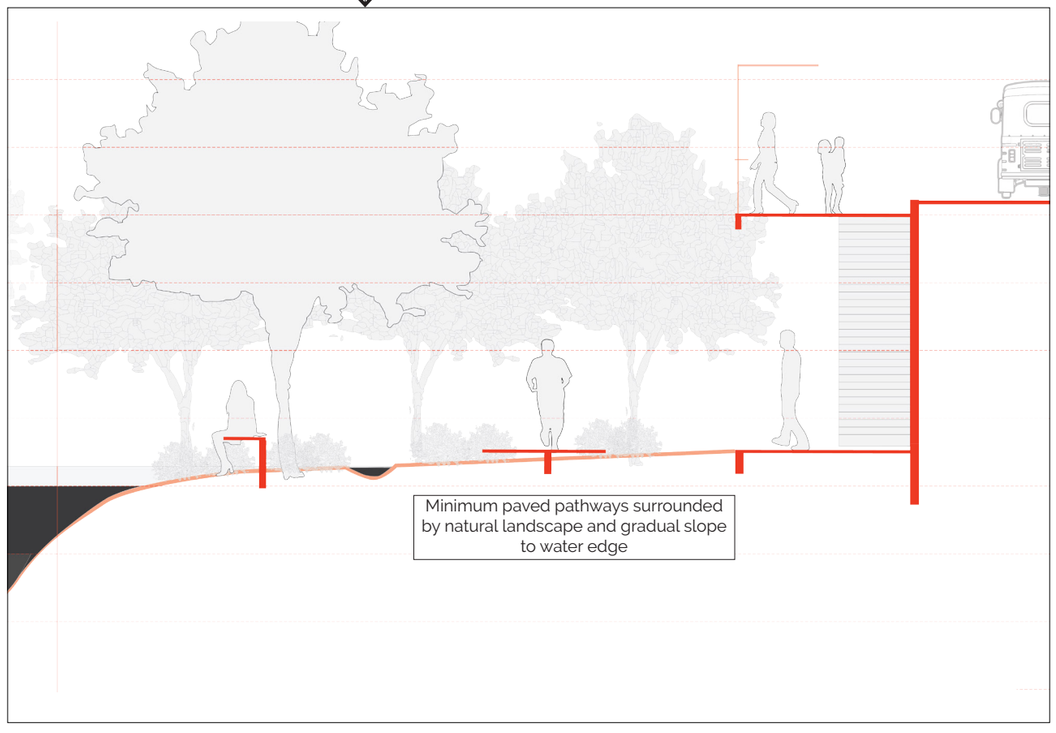


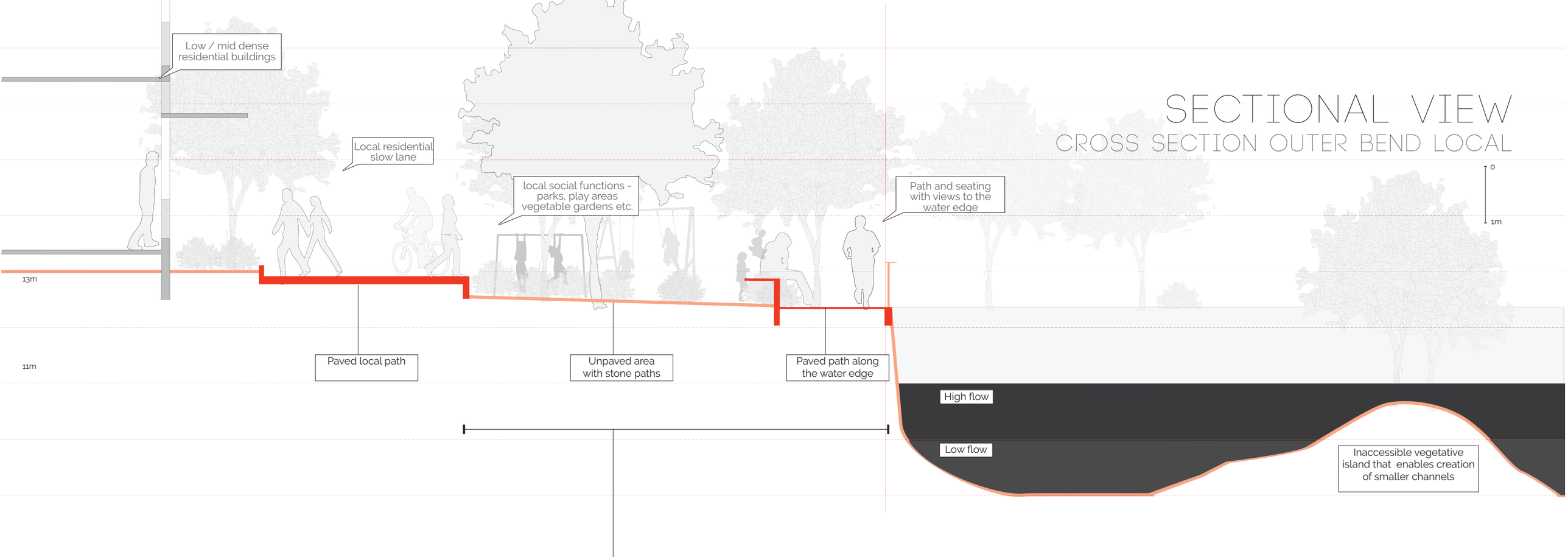


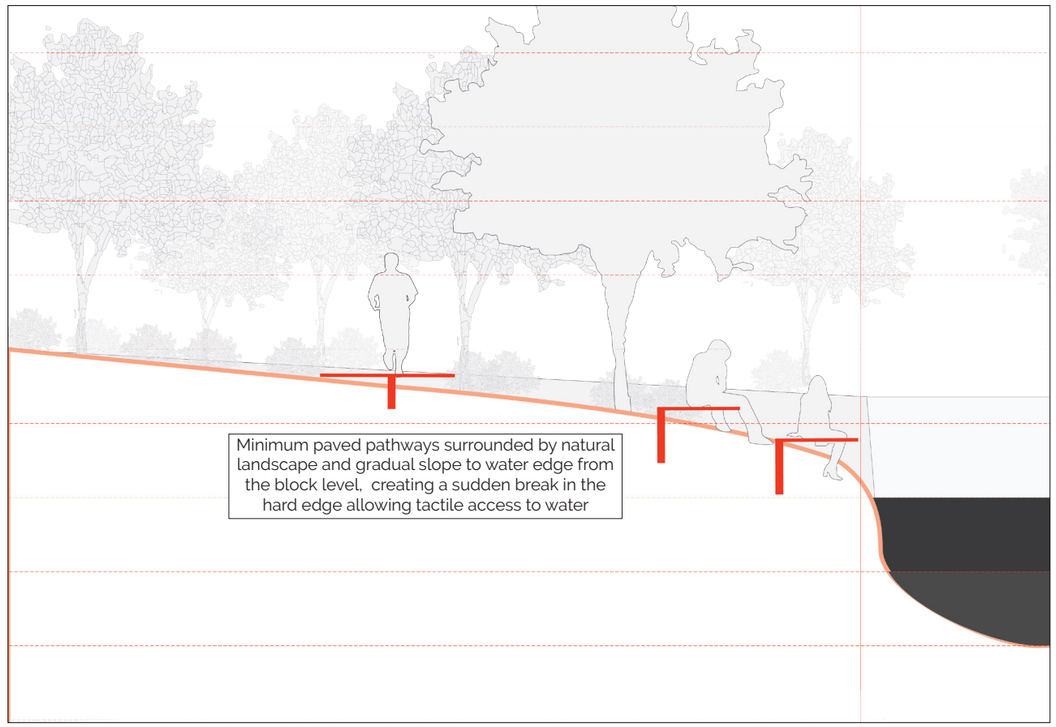
Fig. 37 Cross section - city scale urban edge
Fig. 38 Cross section - city scale green edge



SECTIONAL VIEW

CROSS SECTION OUTER BEND LOCAL





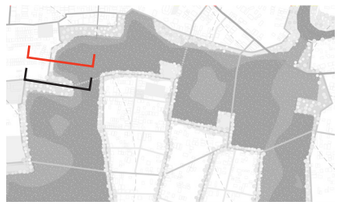
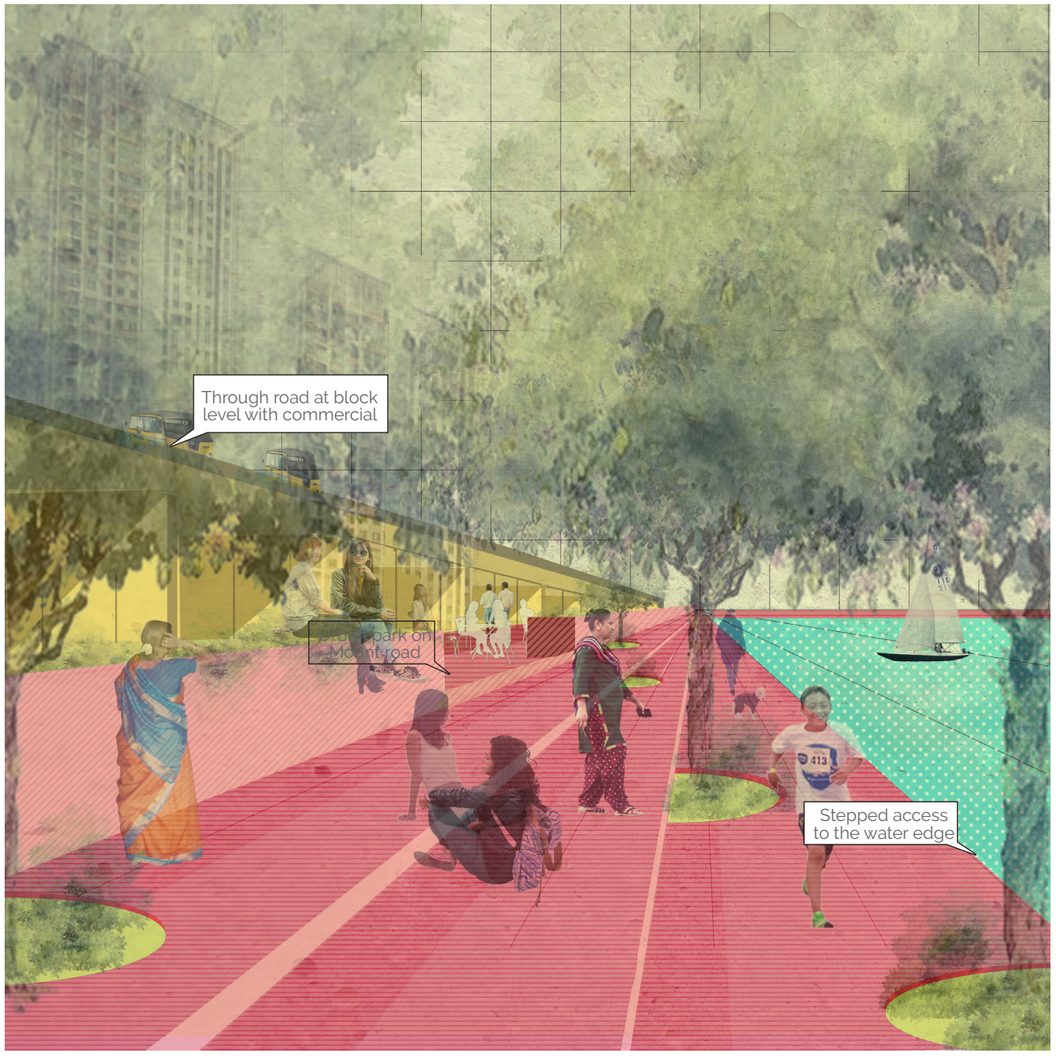


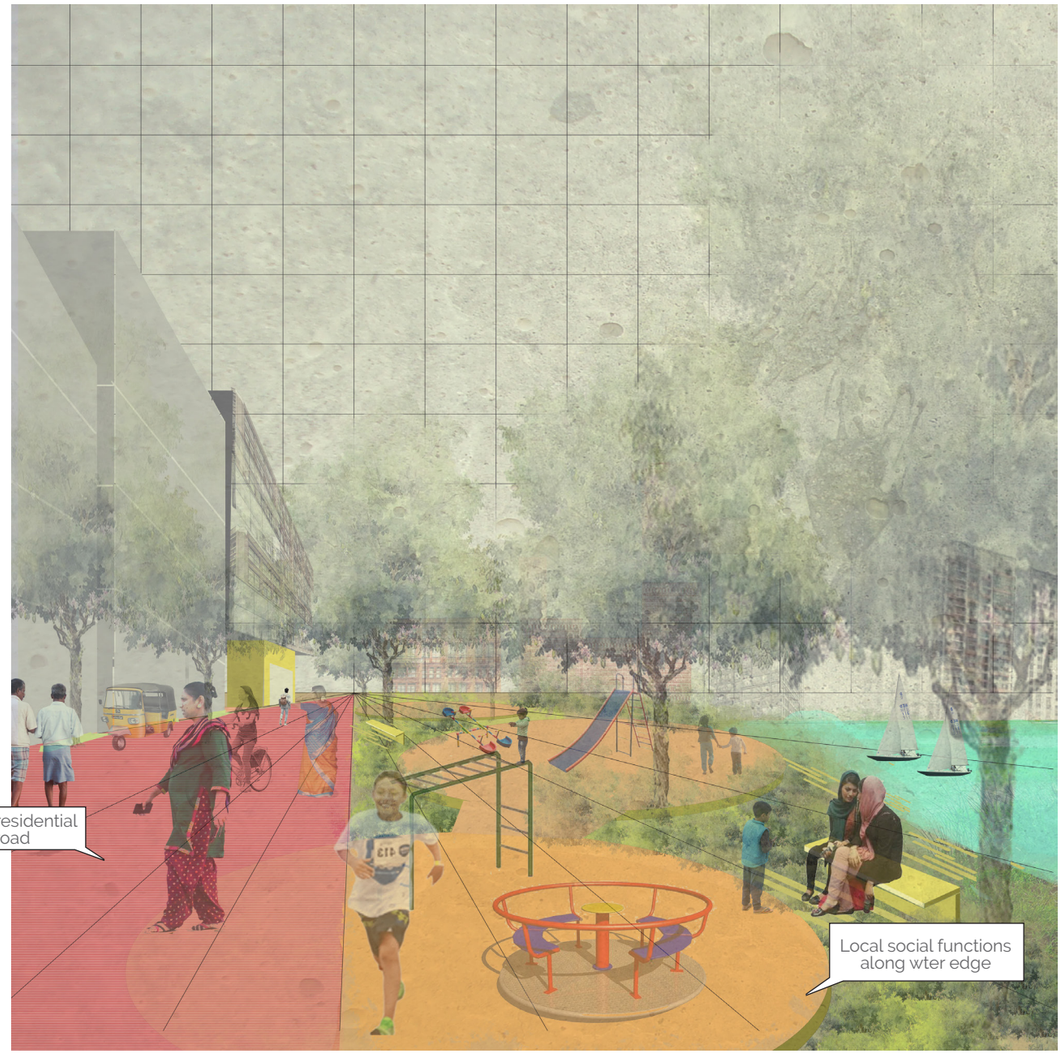
Fig. 39 Cross section - neighbourhood scale social edge
Fig. 40 Cross section - neighourhood scale green edge

PERSPECTIVE VIEWS



CITY SCALE URBAN WATER EDGE ACCESSIBLE FROM TRANSIT STOP

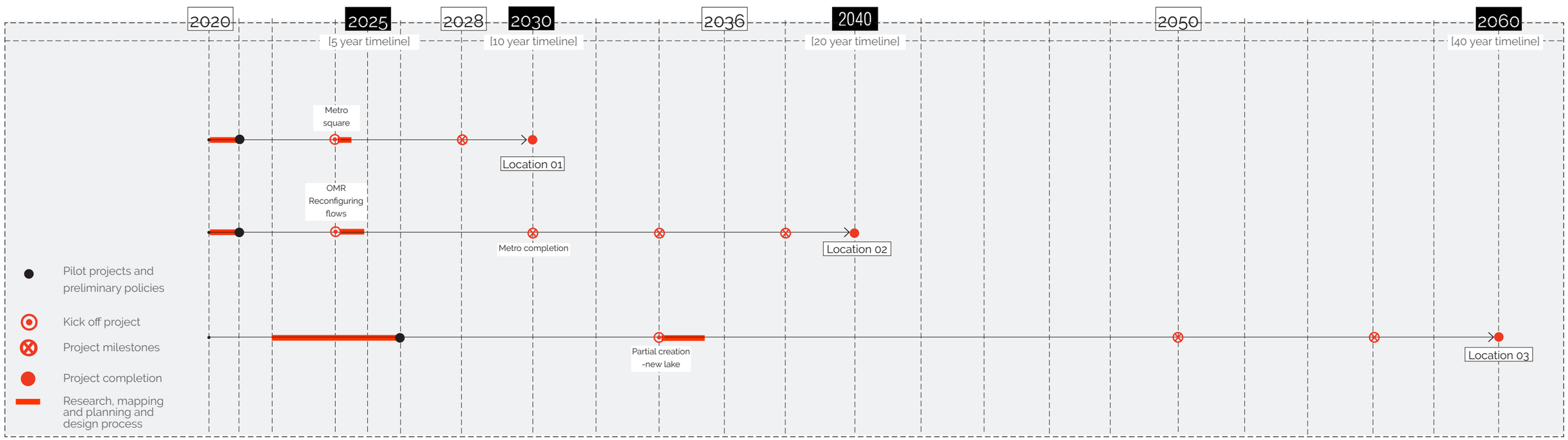
Fig. 41 Perspective view 01



LOCAL NEIGHBOURHOOD WATER EDGE WITH SOCIAL FUNCTIONS

Fig. 42 Perspective view 02

PROJECT PHASING



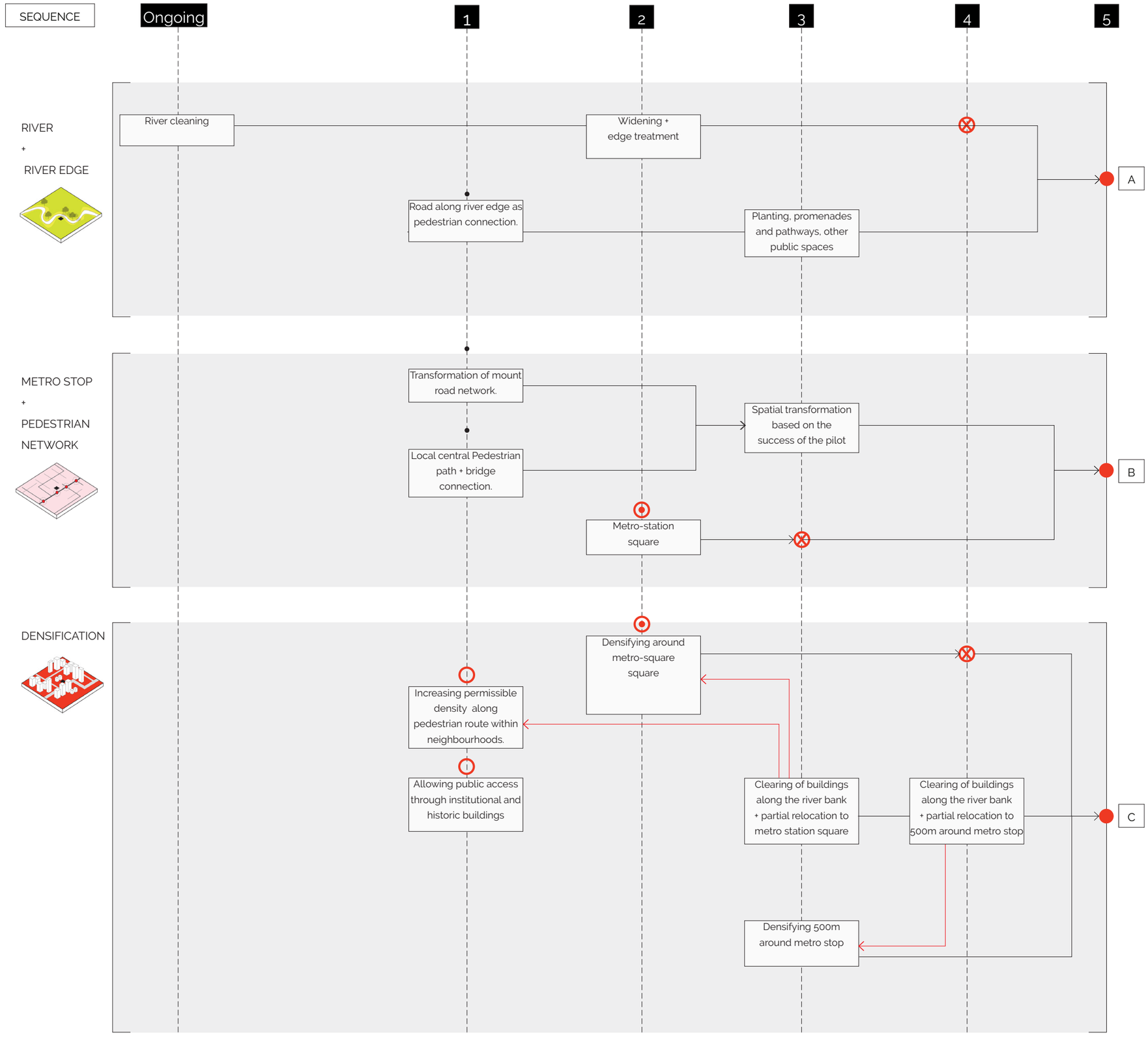
PROJECT PHASING

LOCATION 01 : SEQUENCE OF IMPLEMENTATION

Two major factors are considered in the phasing process -

01 Execution

02 Acceptance



- Pilot projects
- Policy changes
- Kick off project
- Project milestones
- Project completion

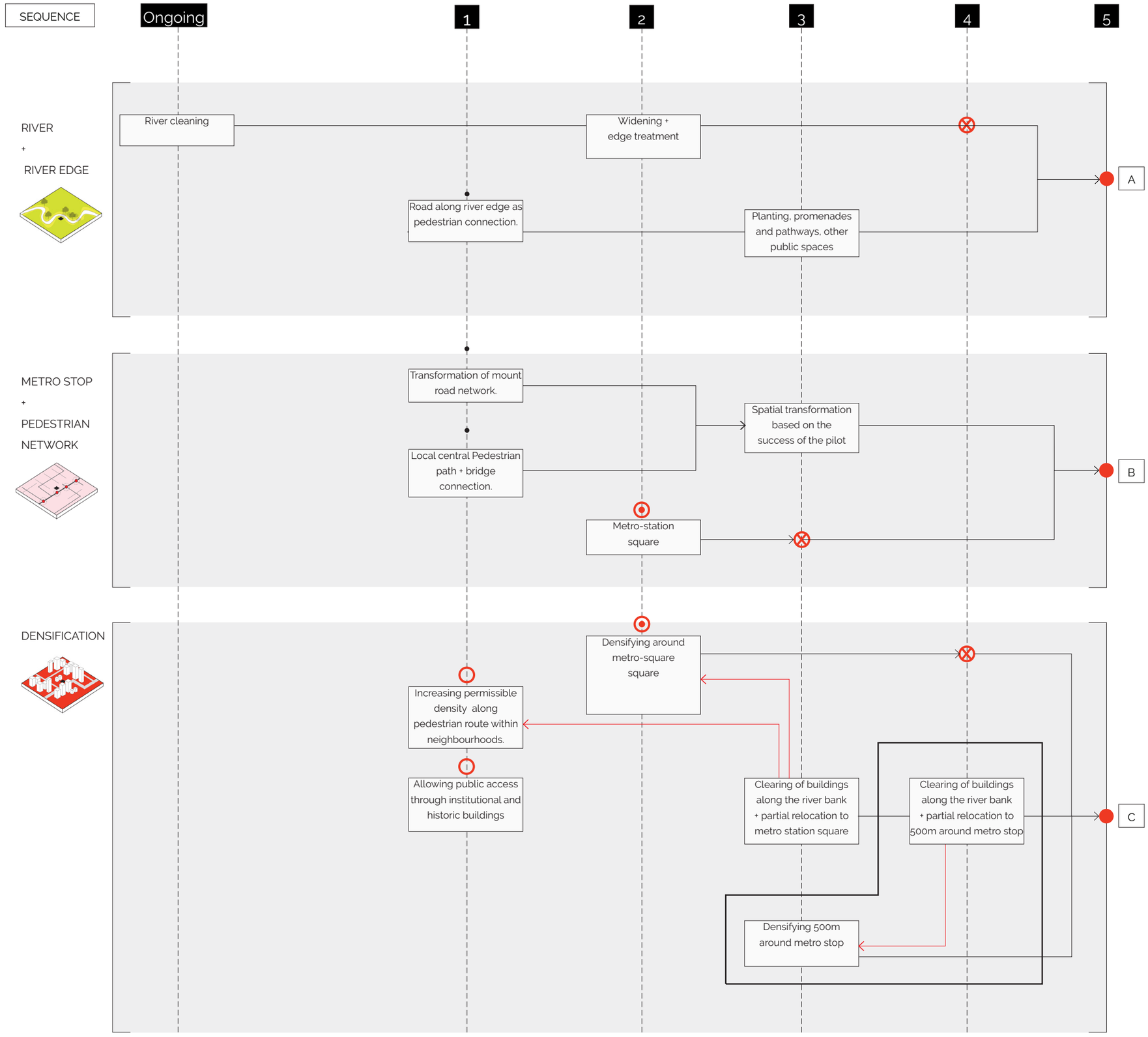
PROJECT PHASING

LOCATION 01 : SEQUENCE OF IMPLEMENTATION

Two major factors are considered in the phasing process -

<u>01 Execution</u>

<u>02 Acceptance</u>



- Pilot projects
- Policy changes
- Kick off project
- Project milestones
- Project completion

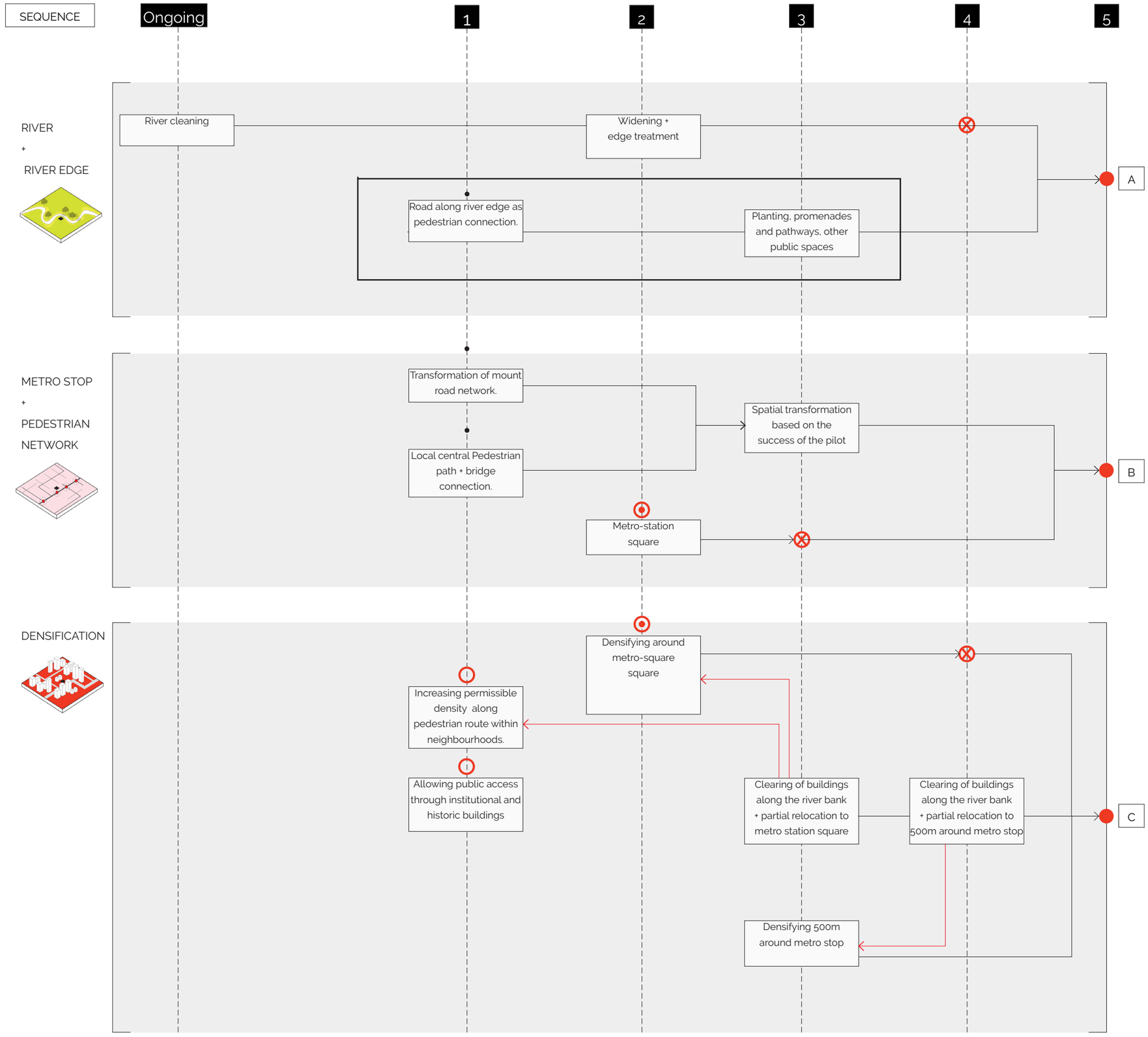
PROJECT PHASING

LOCATION 01 : SEQUENCE OF IMPLEMENTATION

Two major factors are considered in the phasing process -

01 Execution

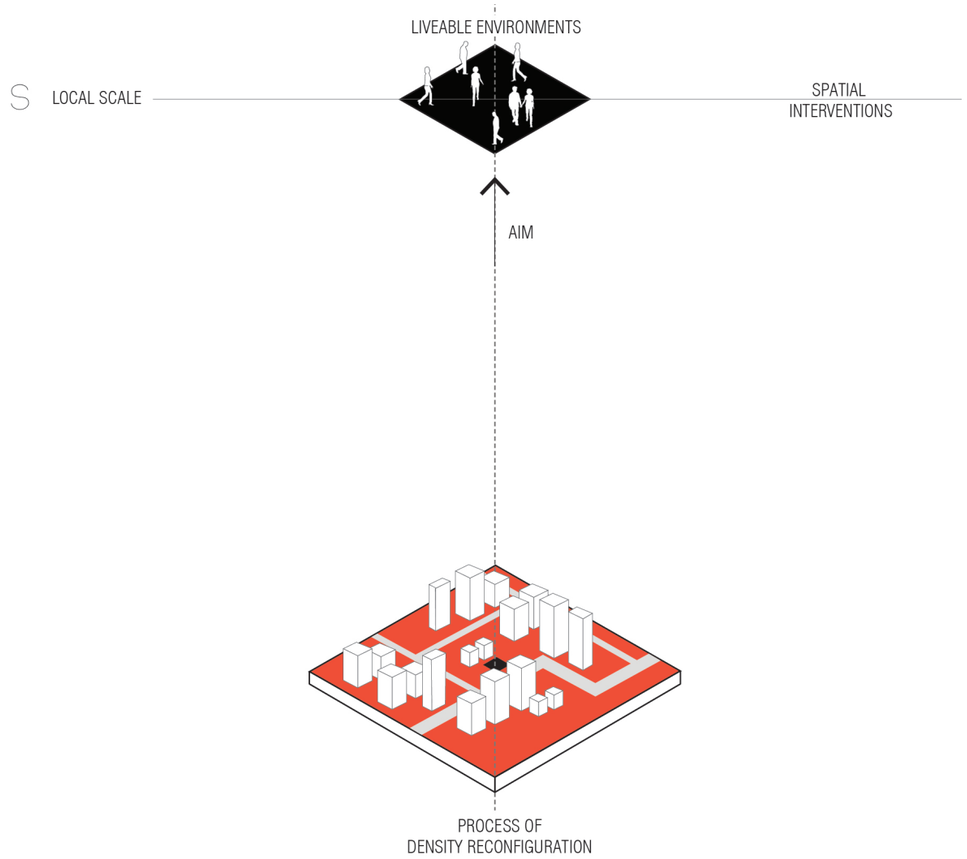
02 Acceptance



- Pilot projects
- Policy changes
- Kick off project
- Project milestones
- Project completion

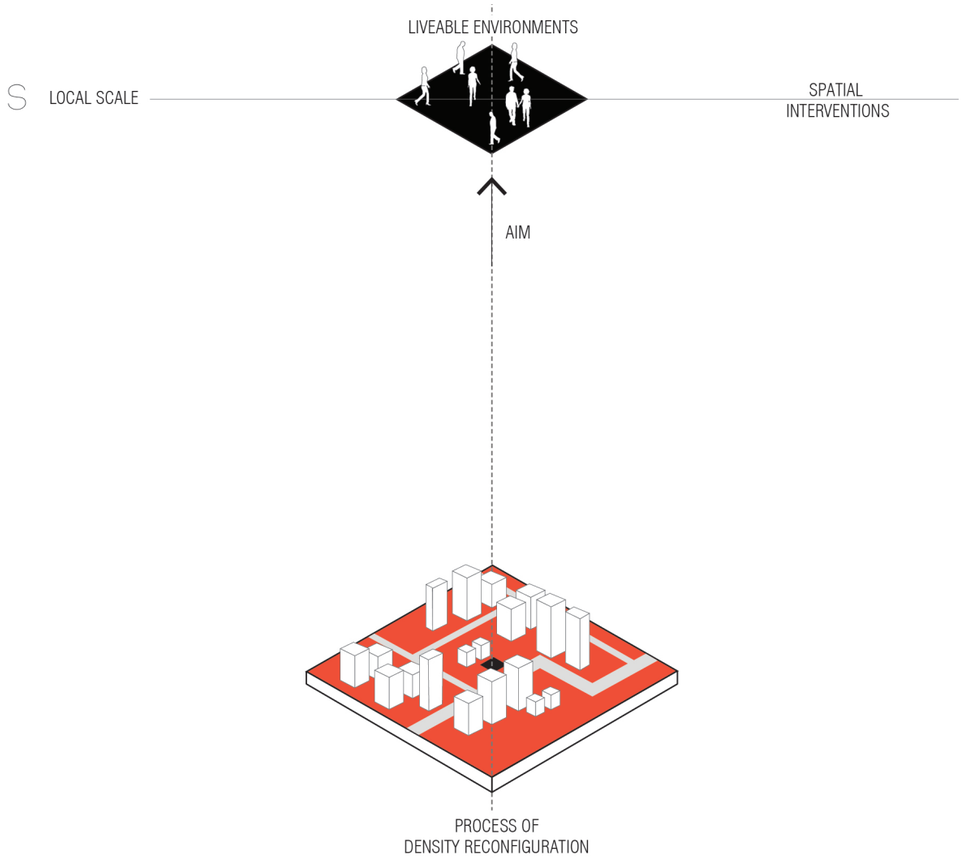
DESIGN CONCLUSIONS

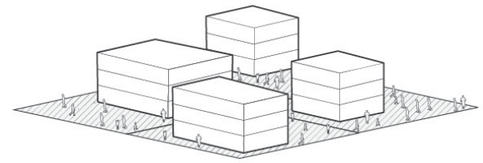
GOAL OF DENSIFICATION



DESIGN CONCLUSIONS

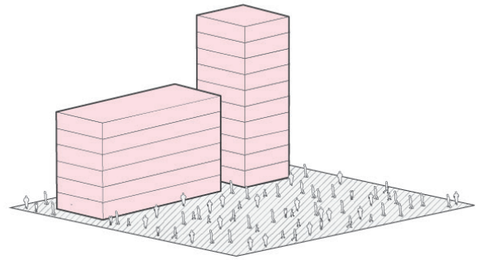
DENSIFICATION PROCESS



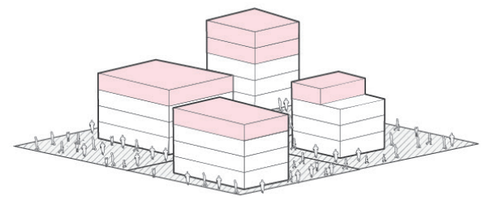


DENSIFICATION PROCESS

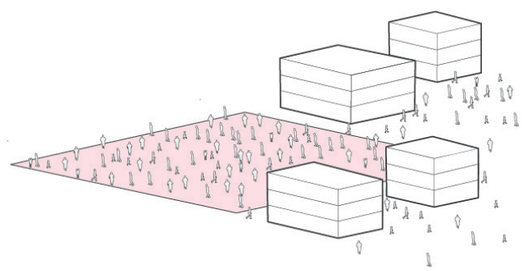
REBUILD



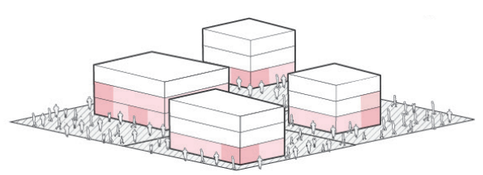
INFILL



RELOCATE

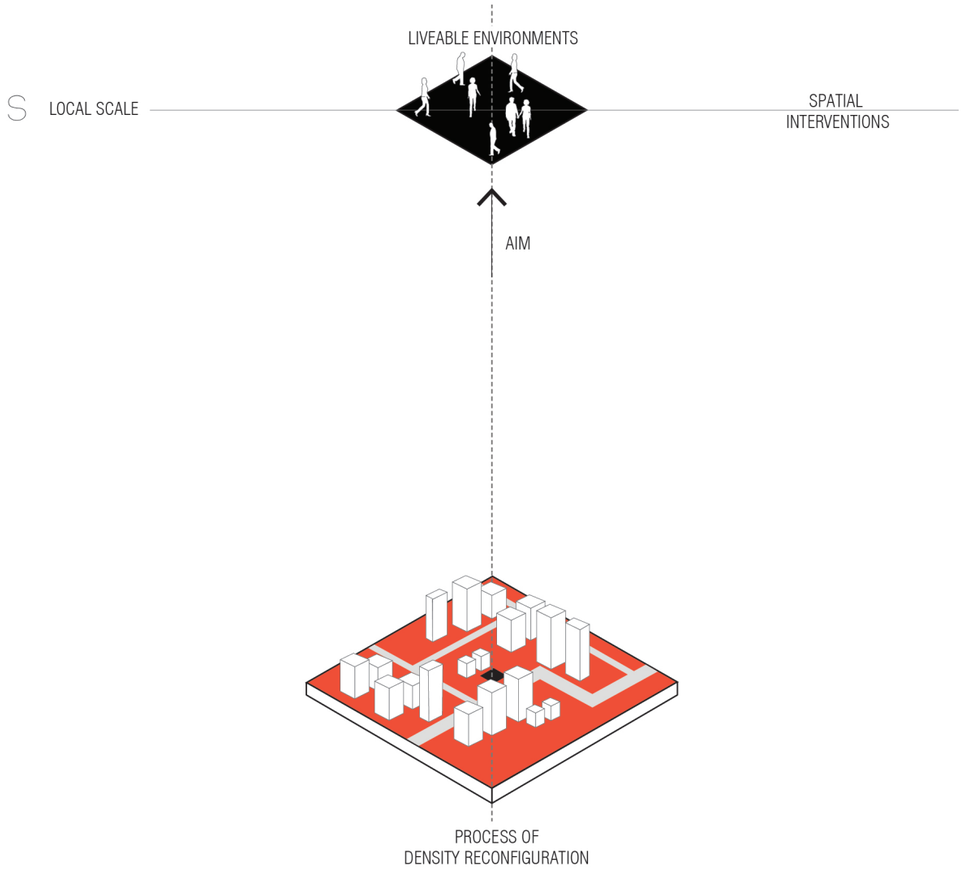


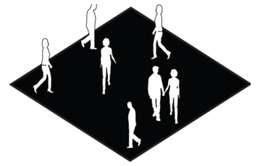
TRANSFORM



DESIGN CONCLUSIONS

CONTEXTUALISING LIVEABILITY





CONTEXTUALISING LIVEABILITY

AVAILABILITY

OPEN SPACE
PER PERSON

PUBLIC SPACE
PER PERSON

ACCESSIBILITY

SPATAL ACCESS

NO TIME IN THE DAY TO
USE PUBLIC SPACE

TOO MUCH TRAVEL TIME
IN THE DAY, NO LEISURE
TIME.

WALKABILITY

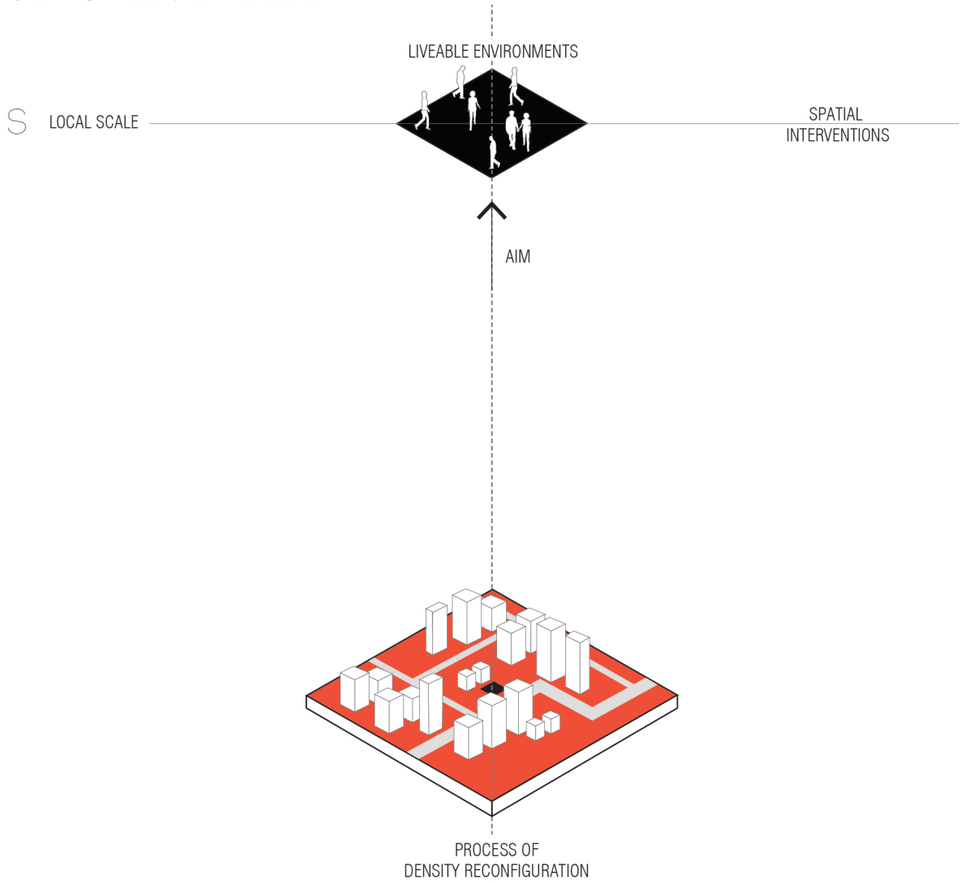
SHADE

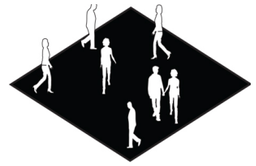
LACK OF VEHICLE
COLLISION

ACCESS TO MIXED USE
DIVERSE FUNCTIONS

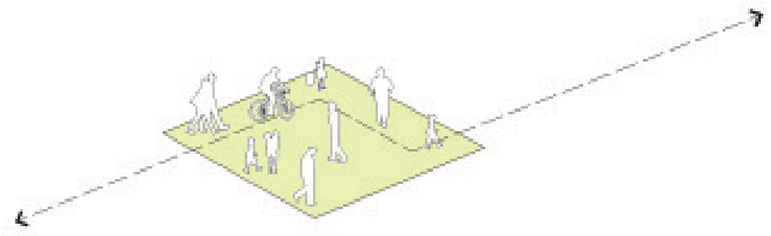
DESIGN CONCLUSIONS

CONTEXTUALISING LIVEABILITY



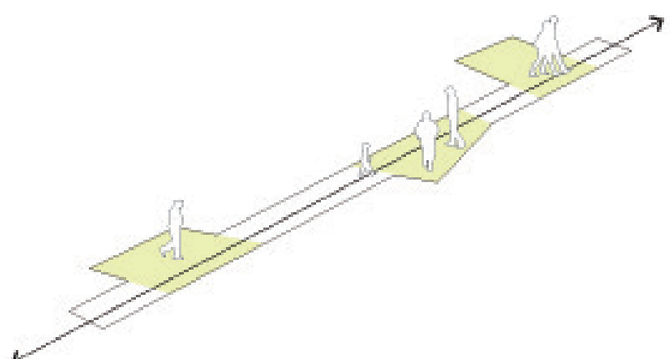


CONTEXTUALISING LIVEABILITY



Small spaces as a part of
everyday mobility

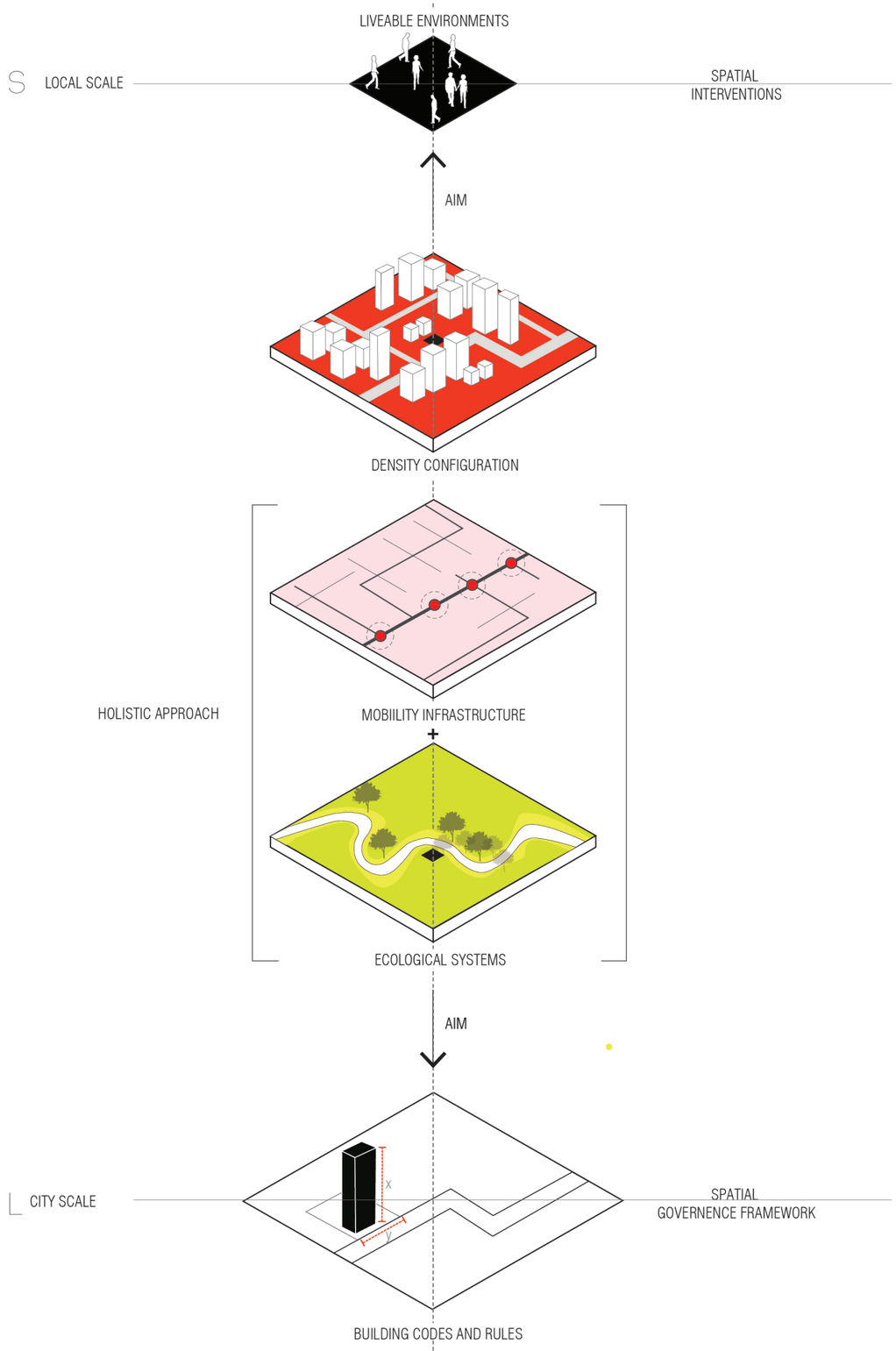
Pedestrianised streets



Public space as an extention
of streets

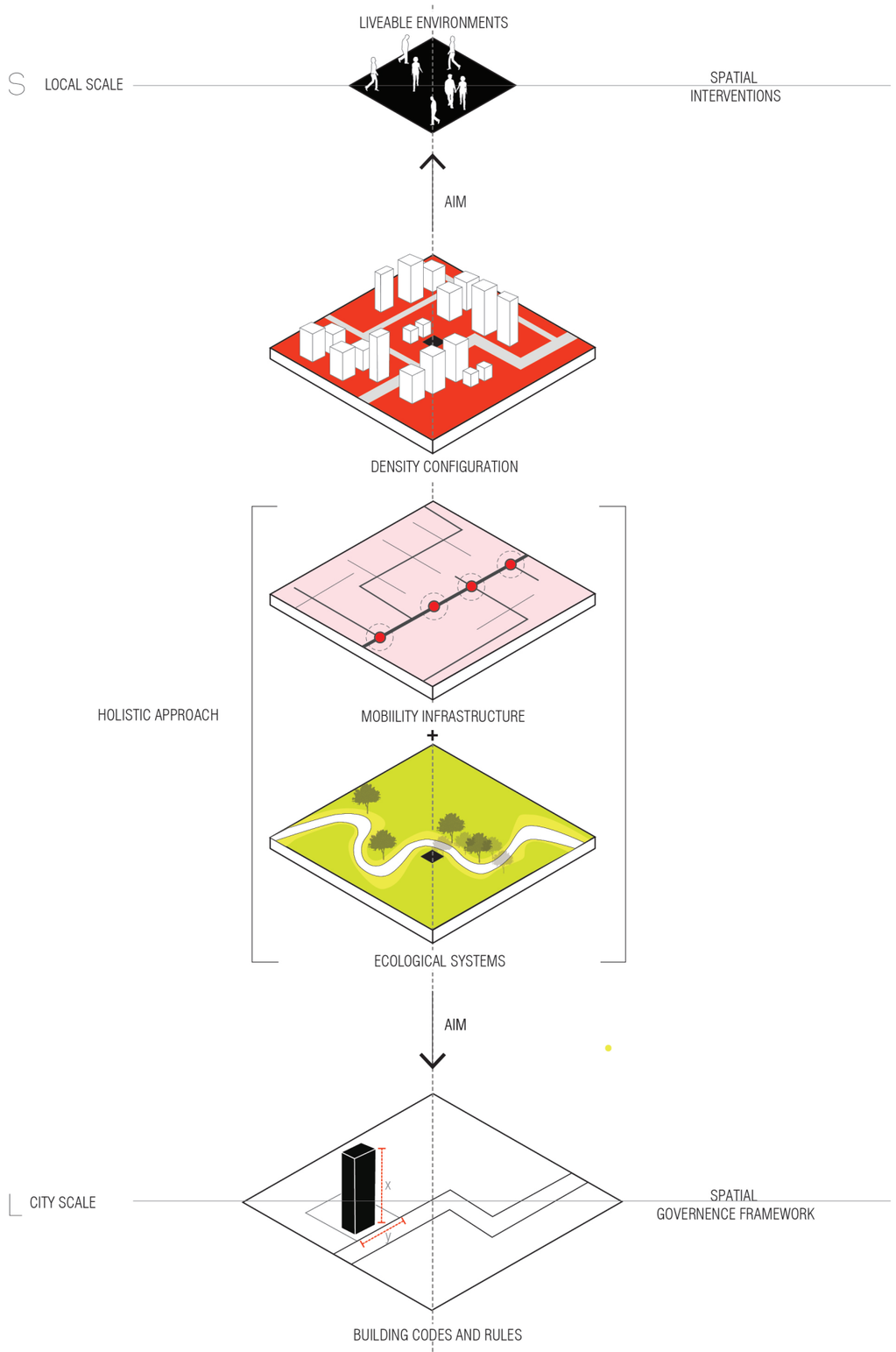
DESIGN CONCLUSIONS

INTEGRATED FRAMEWORK

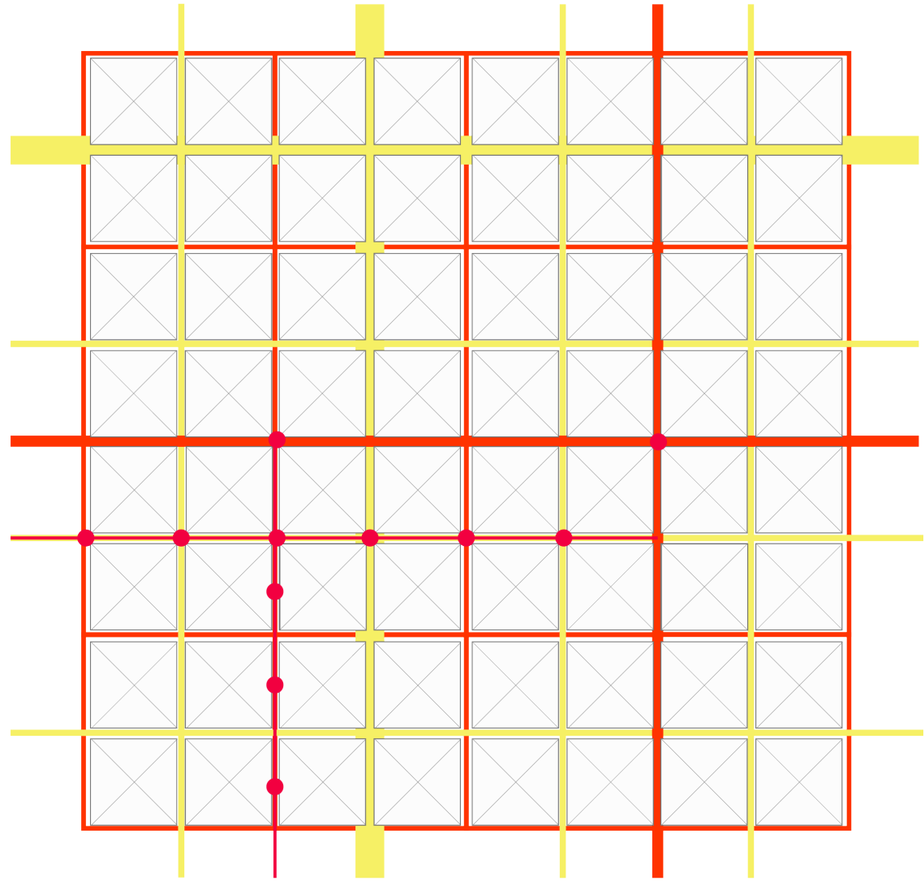


DESIGN CONCLUSIONS

INTEGRATED FRAMEWORK

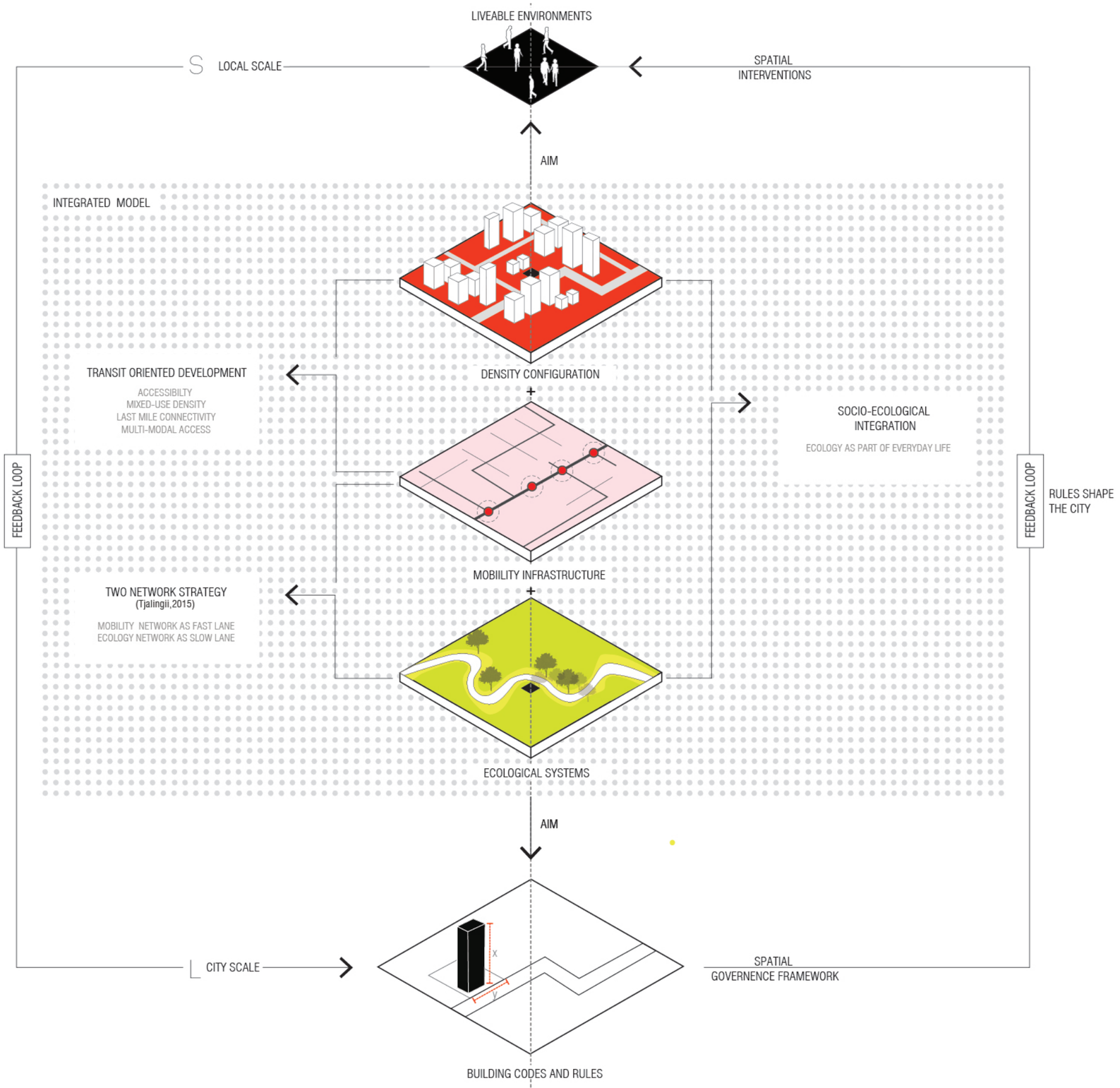


SUPER GRIDS AT THE CITY SCALE



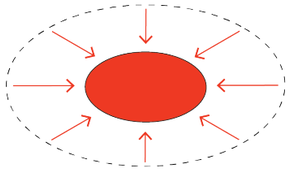
DESIGN CONCLUSIONS

TRANS-SCALAR APPROACH

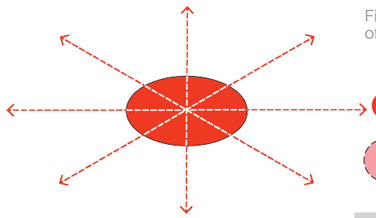


DESIGN IMPACT - LOCATION 01

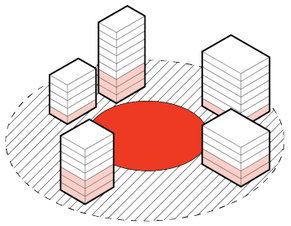
TRANSFERABILITY POTENTIAL



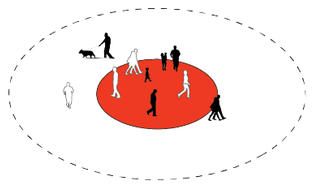
S.T.1
TRANSIT STOPS AS
LOCAL CENTERS



S.T.3
MAXIMUM CONNECTIONS
FROM TRANSIT STOPS

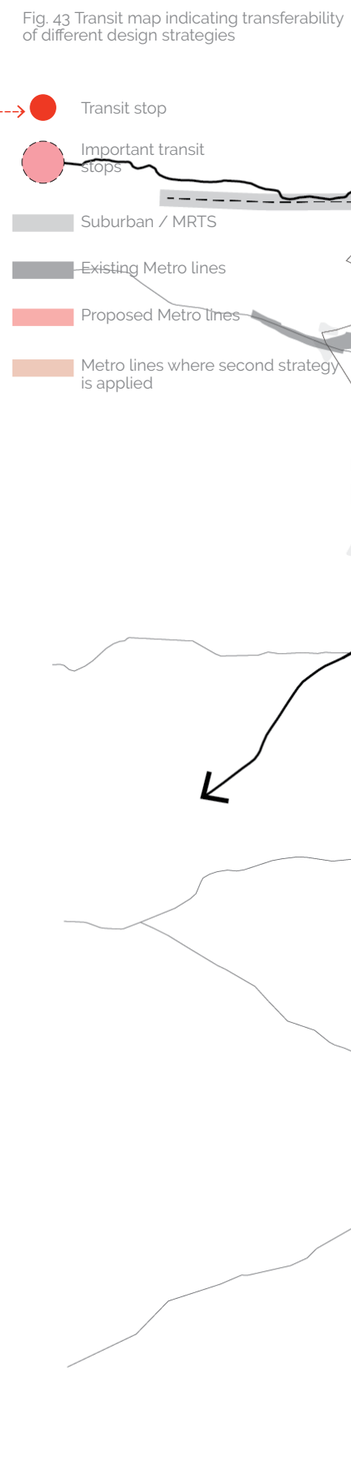


S.T.2
HIGH DENSE MIXED USE
AROUND TRANSIT STOPS



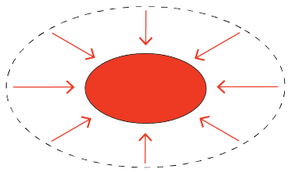
S.T.4
HIGH OPPURTUNITY FOR
PEDESTRIAN MOVEMENT

Fig. 43 Transit map indicating transferability of different design strategies



DESIGN IMPACT - LOCATION 01

TRANSFERABILITY POTENTIAL



S.T.1
TRANSIT STOPS AS
LOCAL CENTERS

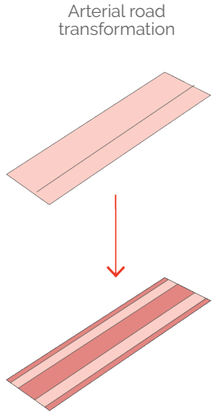


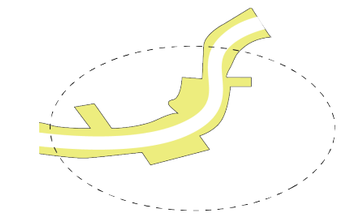
Fig. 44 Road network indicating transferability of different design strategies

Transit line along arterial road

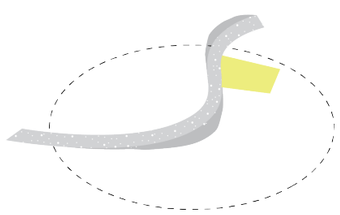
Only arterial roads

DESIGN IMPACT - LOCA

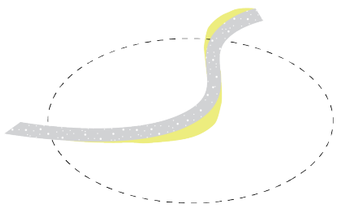
TRANSFERABILITY POTENTIAL



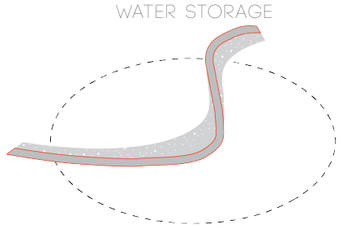
S.E.1
ACTIVATE WATER EDGE



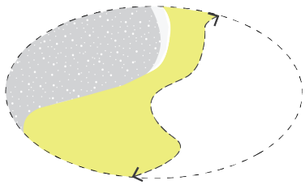
S.E.2
SOCIAL SPACE X
WATER STORAGE



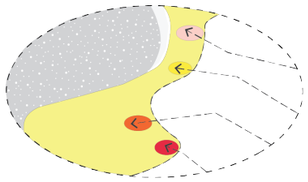
S.E.3
WIDEN RIVER ALONG
OUTER BEND



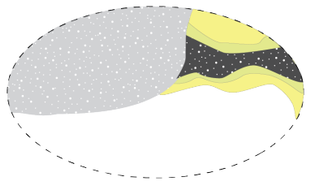
S.E.4
CREATE SMALLER CHANNEL
FOR PERINNIAL FLOW



S.E.1
ACTIVATE + RECLAIM
WATER EDGE



S.E.6
ACTIVATE BUFFER AREA
WITH LOCAL NEIGHBOURHOOD
FUNCTIONS AT NODES



S.E.2
SOCIAL SPACE X
WATER STORAGE

Fig. 45 Map of ecological system indicating transferability of different design strategies

River edge

Marshes/ lakes

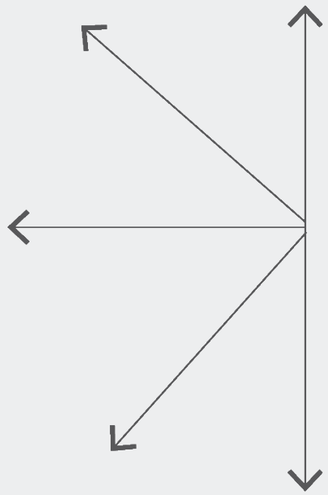
Marshes/ lakes in close proximity to Transit stop

River edges in close proximity to Transit stop

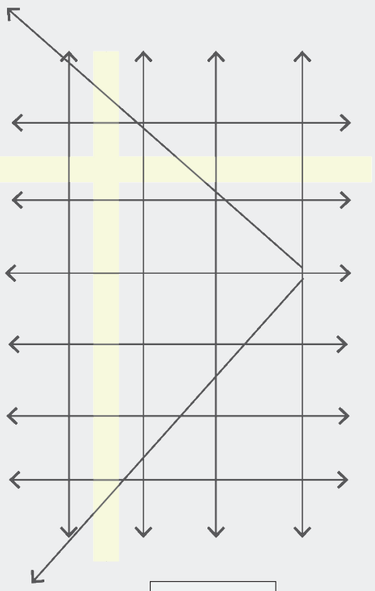
0 2km

DESIGN IMPACT - LOCATION 02

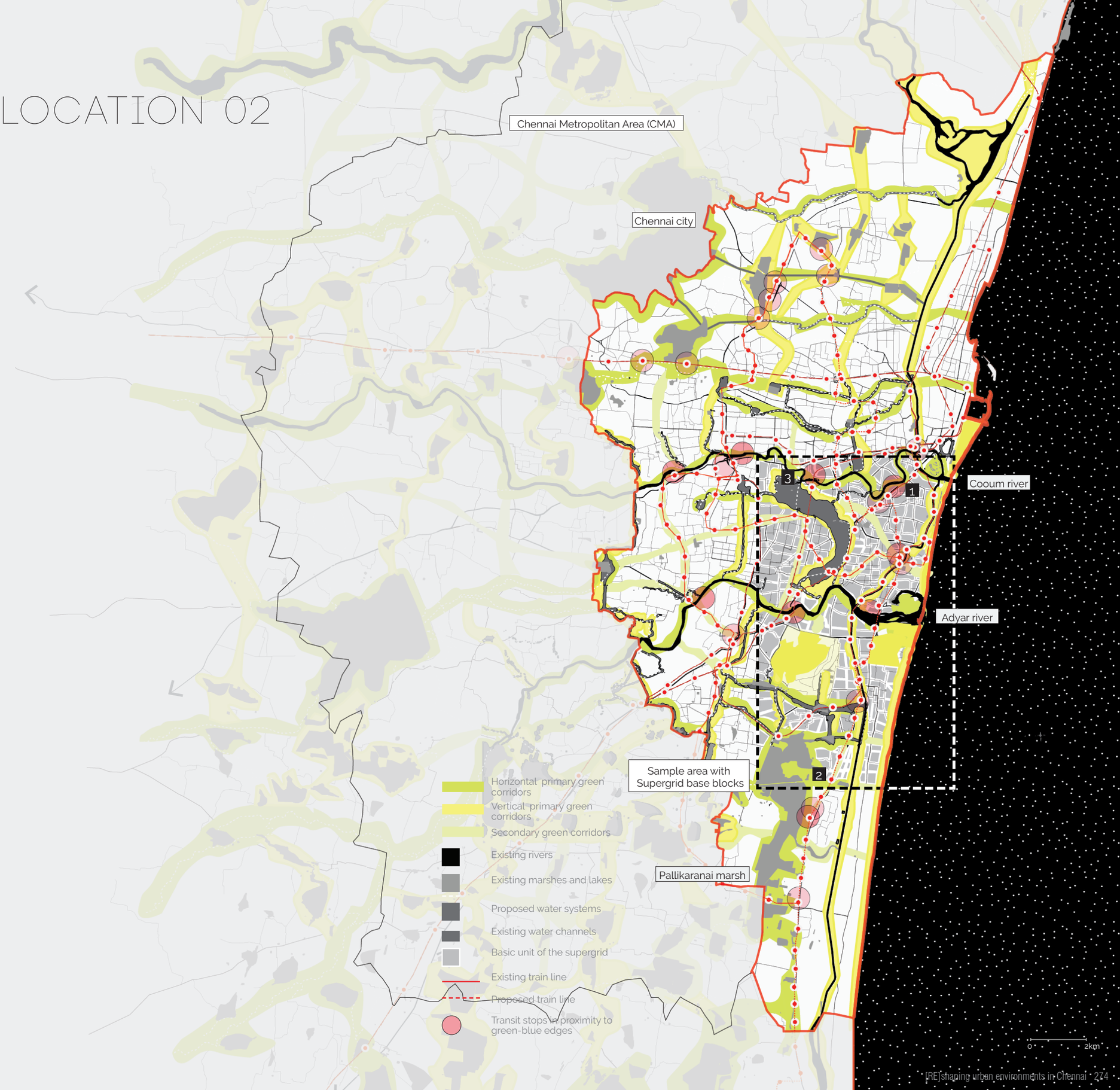
TRANSFERABILITY POTENTIAL



Existing



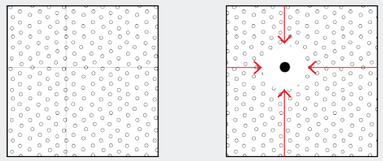
Proposed



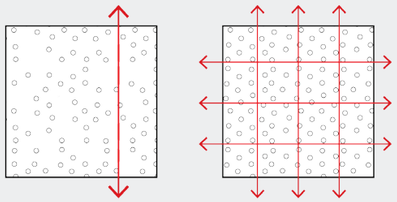
DESIGN IMPACT - LOCATION 02

TRANSFERABILITY POTENTIAL

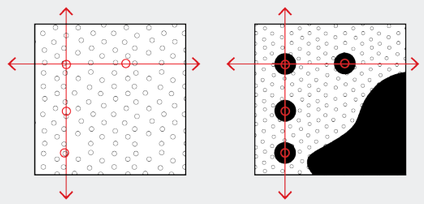
LOCATION 01
INNER CITY

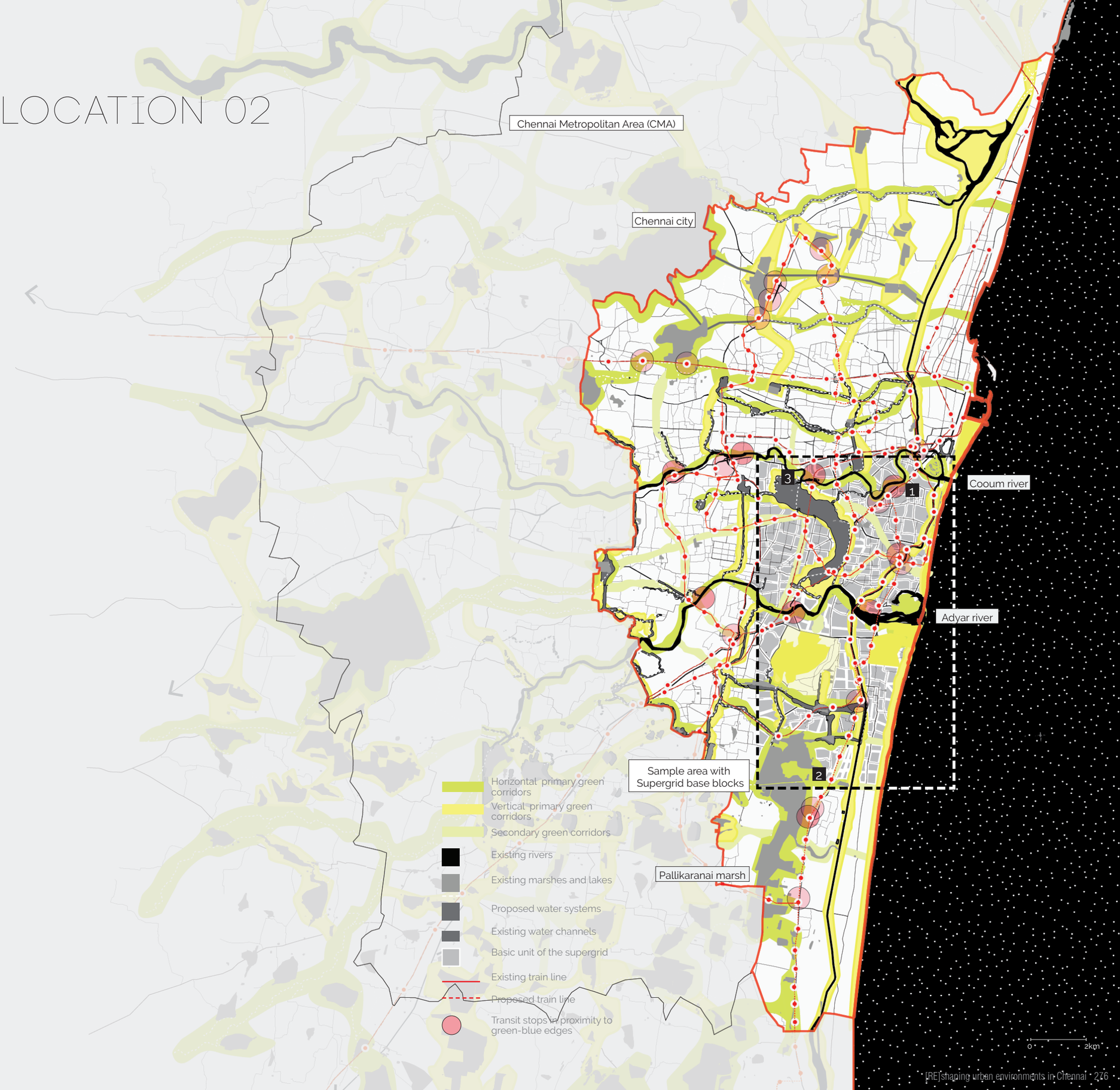


LOCATION 02
PERIPHERAL CORRIDORS



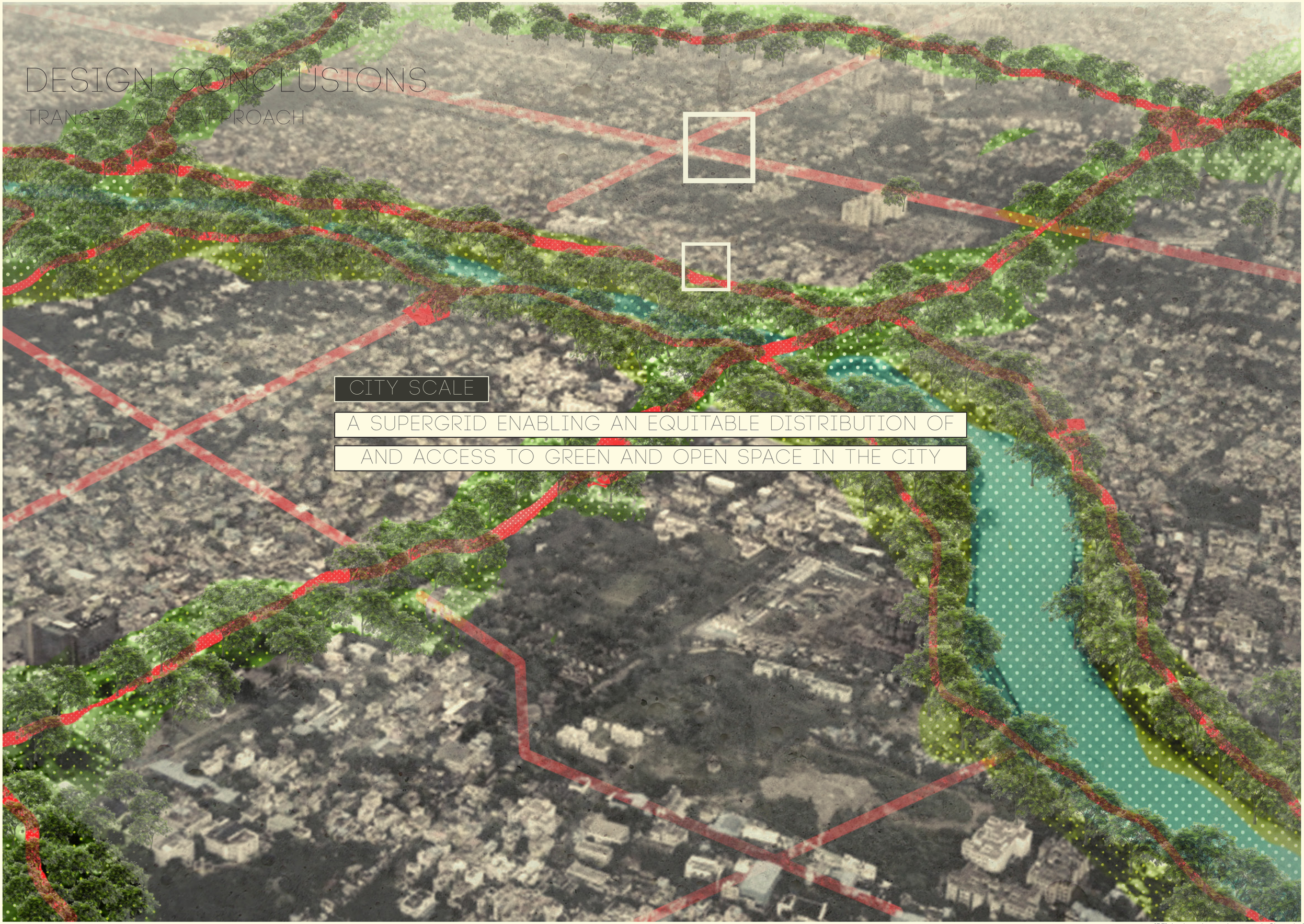
LOCATION 03
TRANSITION AREA





DESIGN CONCLUSIONS

TRANS-SCALAR APPROACH



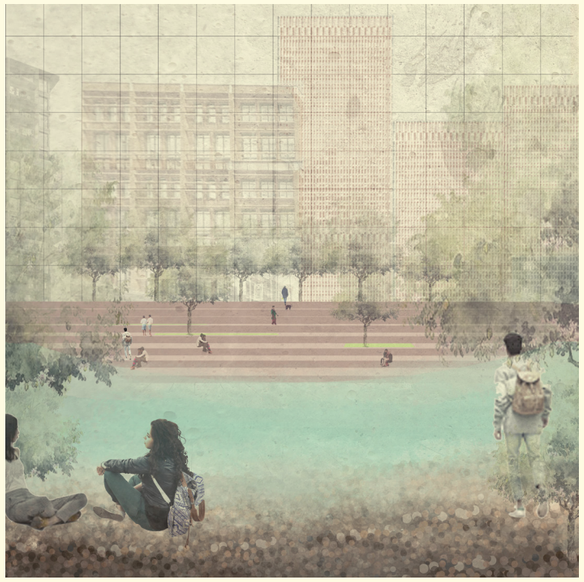
CITY SCALE

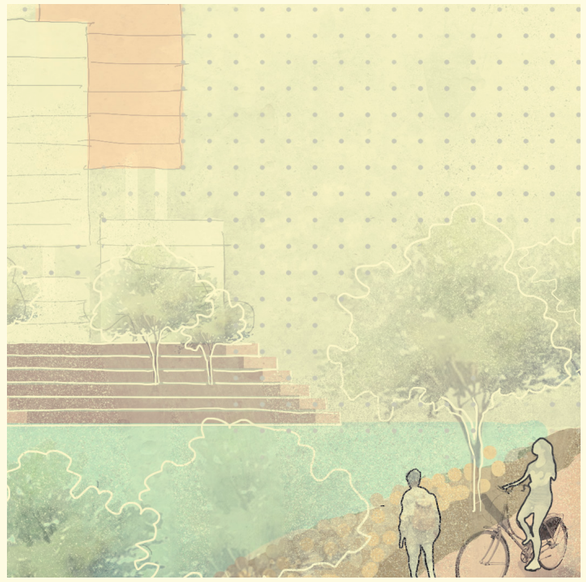
A SUPERGRID ENABLING AN EQUITABLE DISTRIBUTION OF AND ACCESS TO GREEN AND OPEN SPACE IN THE CITY

DESIGN CONCLUSIONS

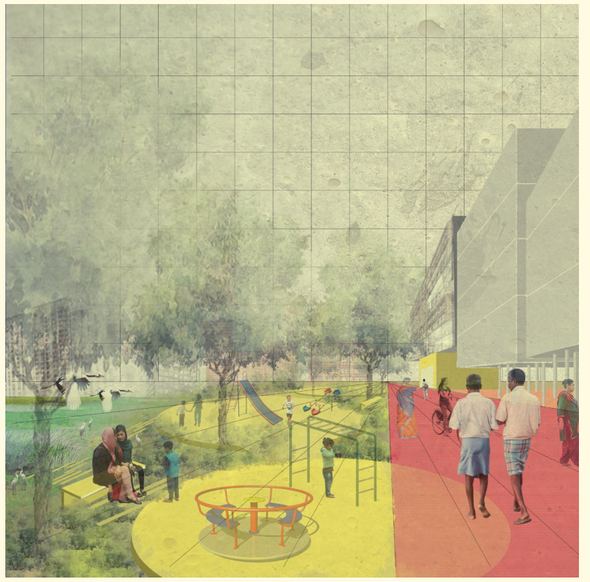
TRANS-SCALAR APPROACH

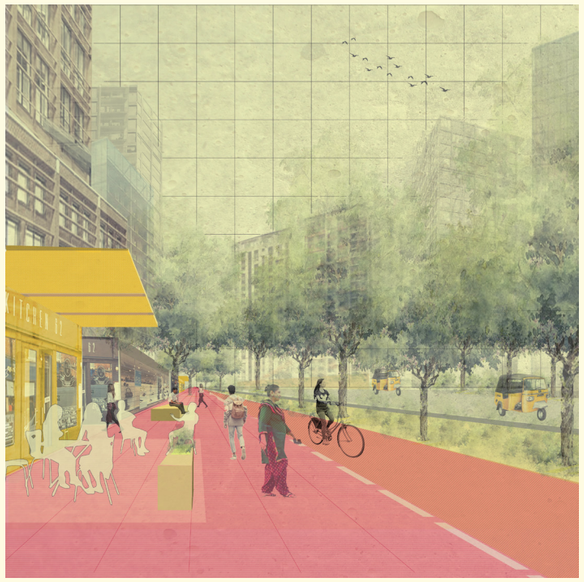










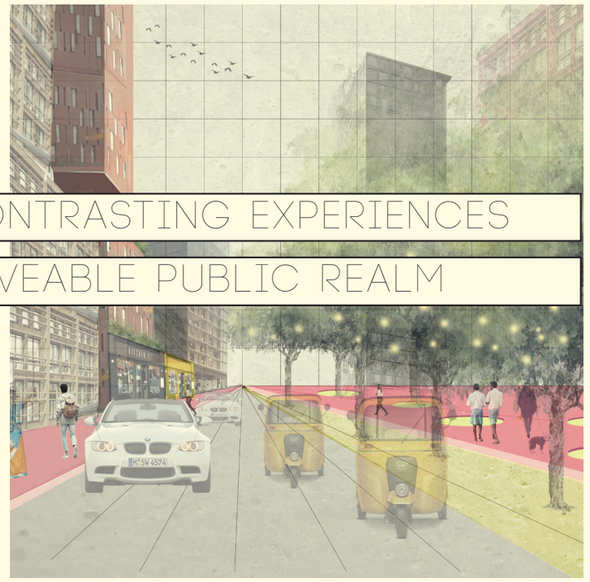


HUMAN SCALE

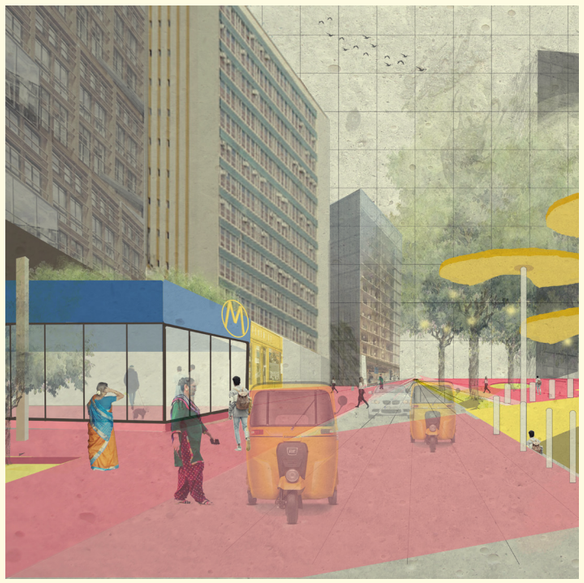
ENABLING DIVERSE AND CONTRASTING EXPERIENCES

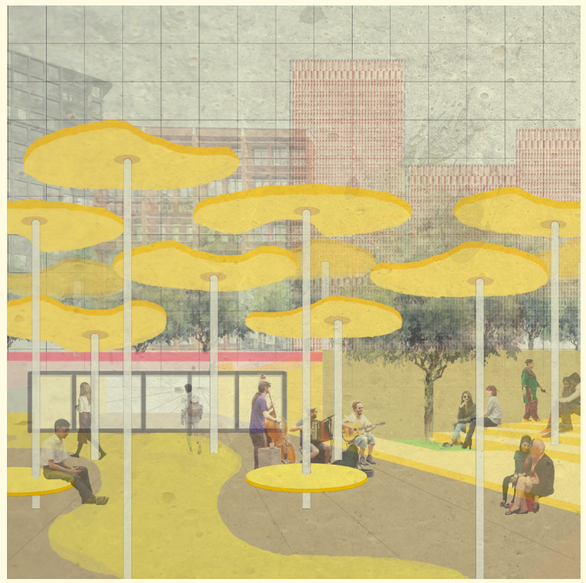
CONTRIBUTING TO A LIVEABLE PUBLIC REALM

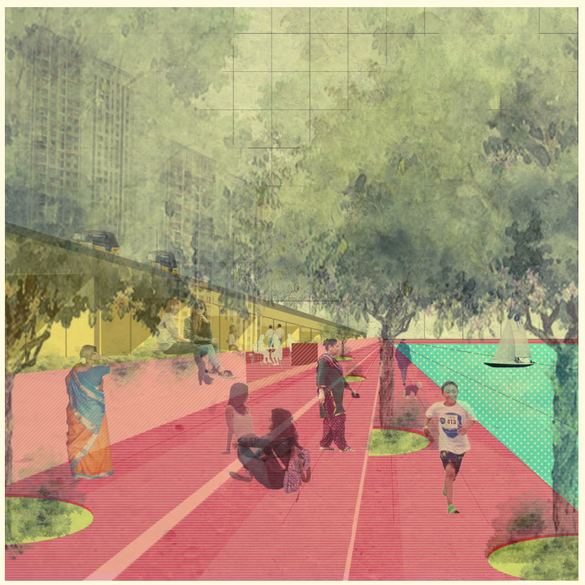


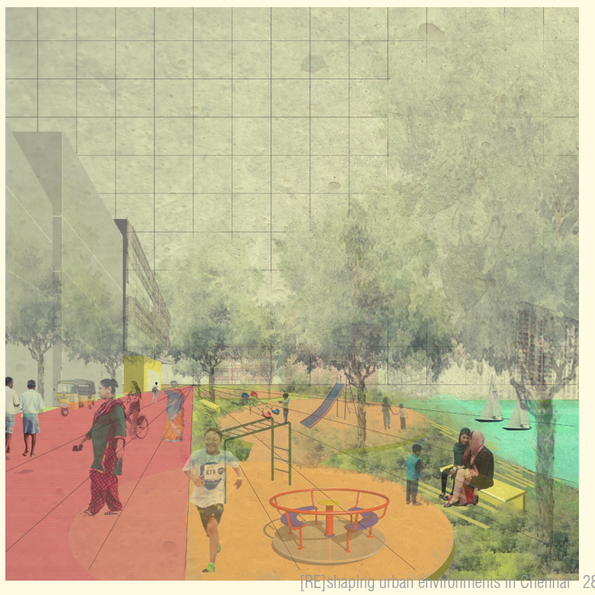






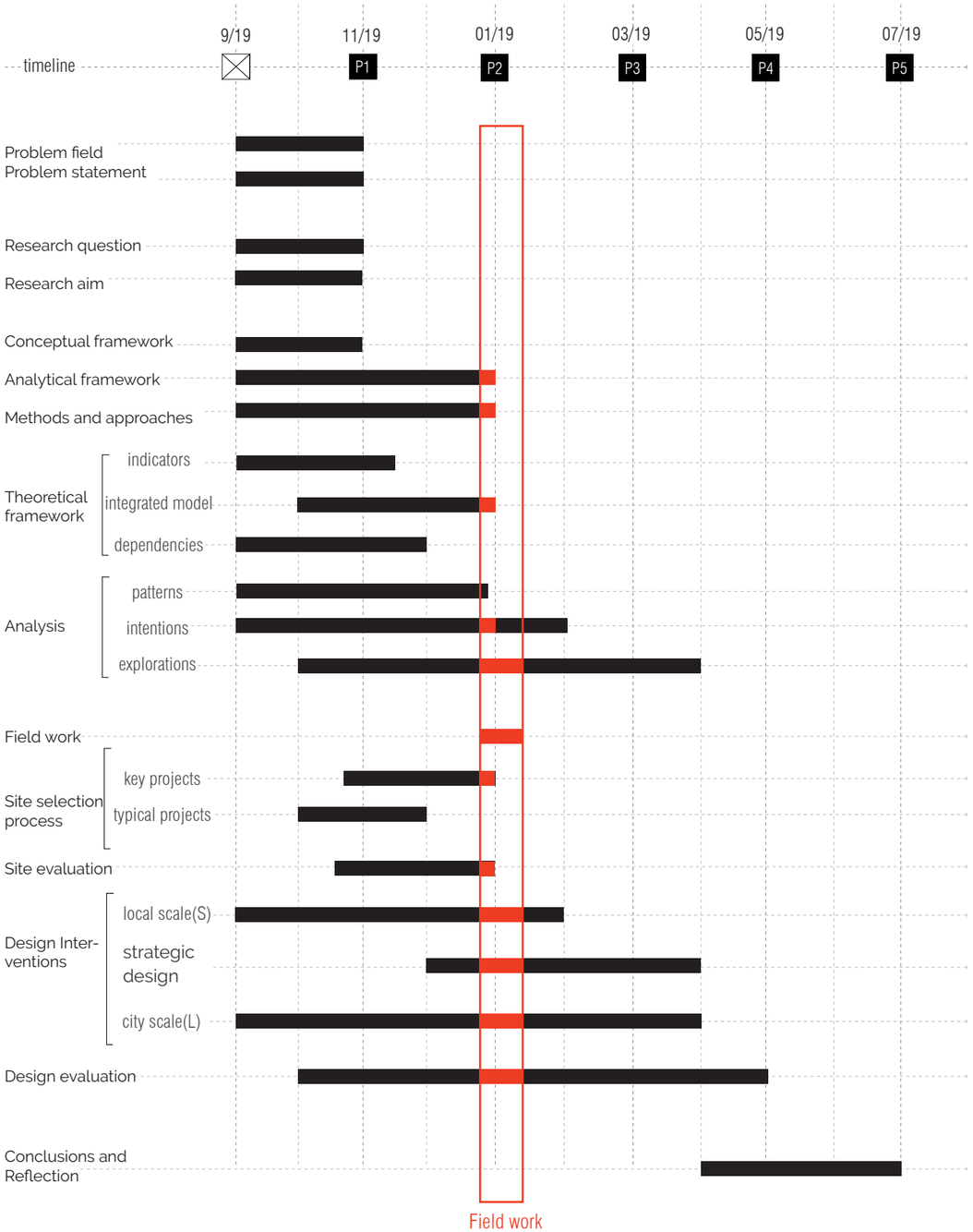






THANK YOU

TENTATIVE PROJECT TIME-LINE



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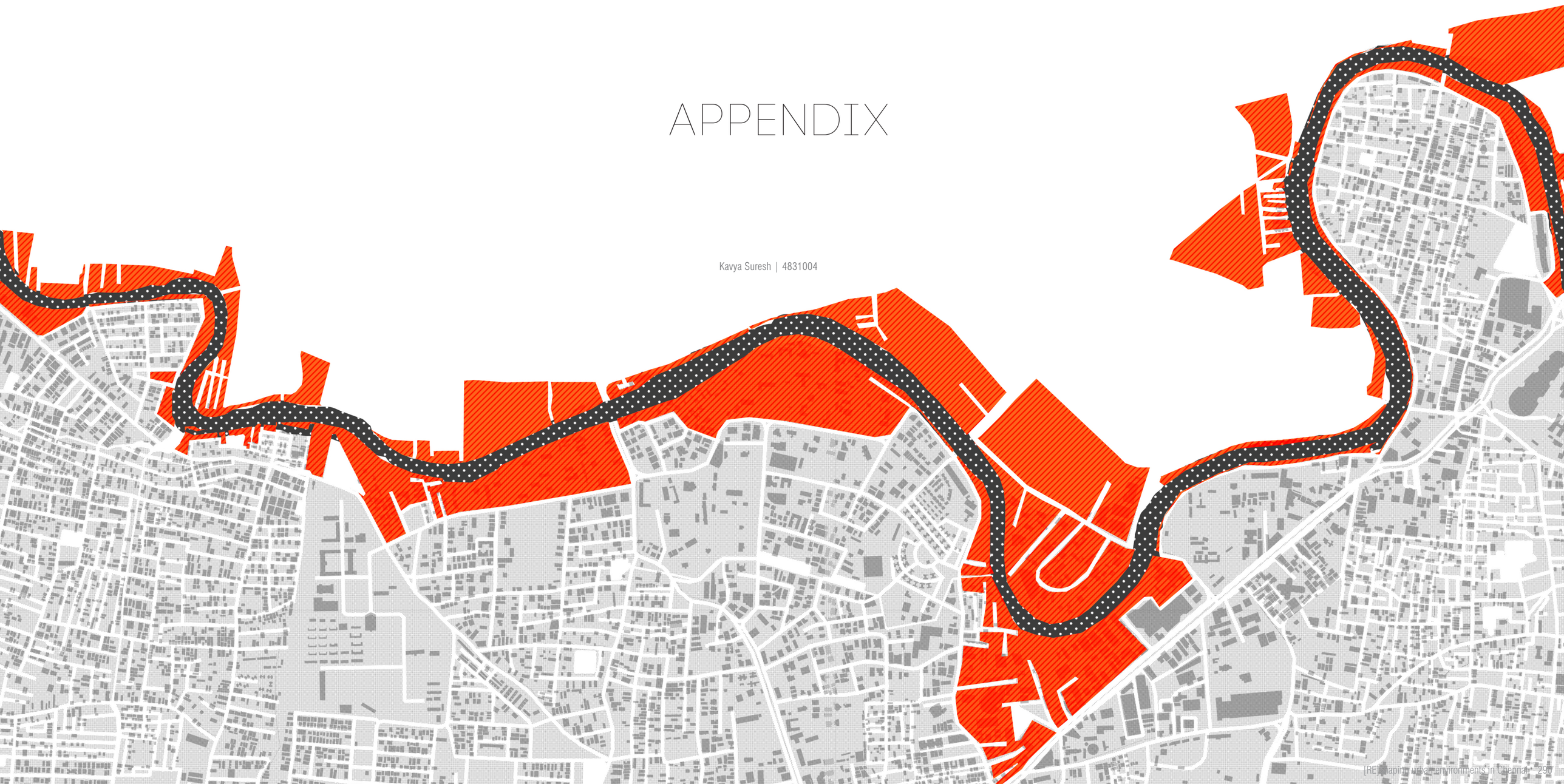
APPENDIX

Kavya Suresh | 4831004



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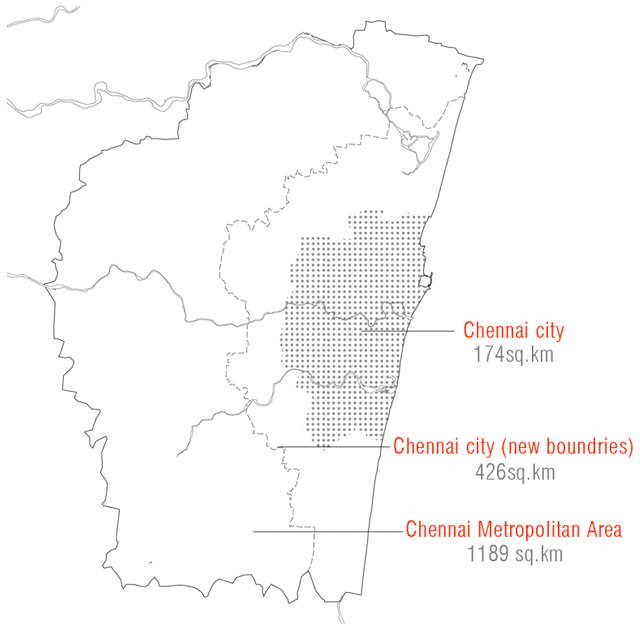
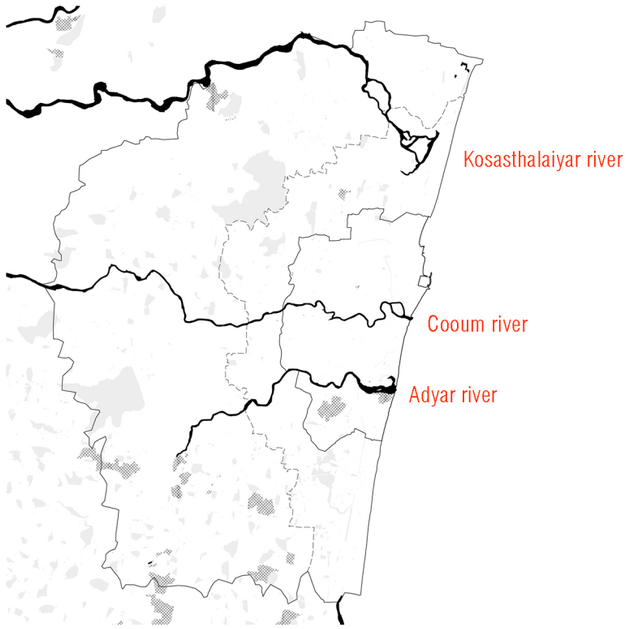


administrative boundries



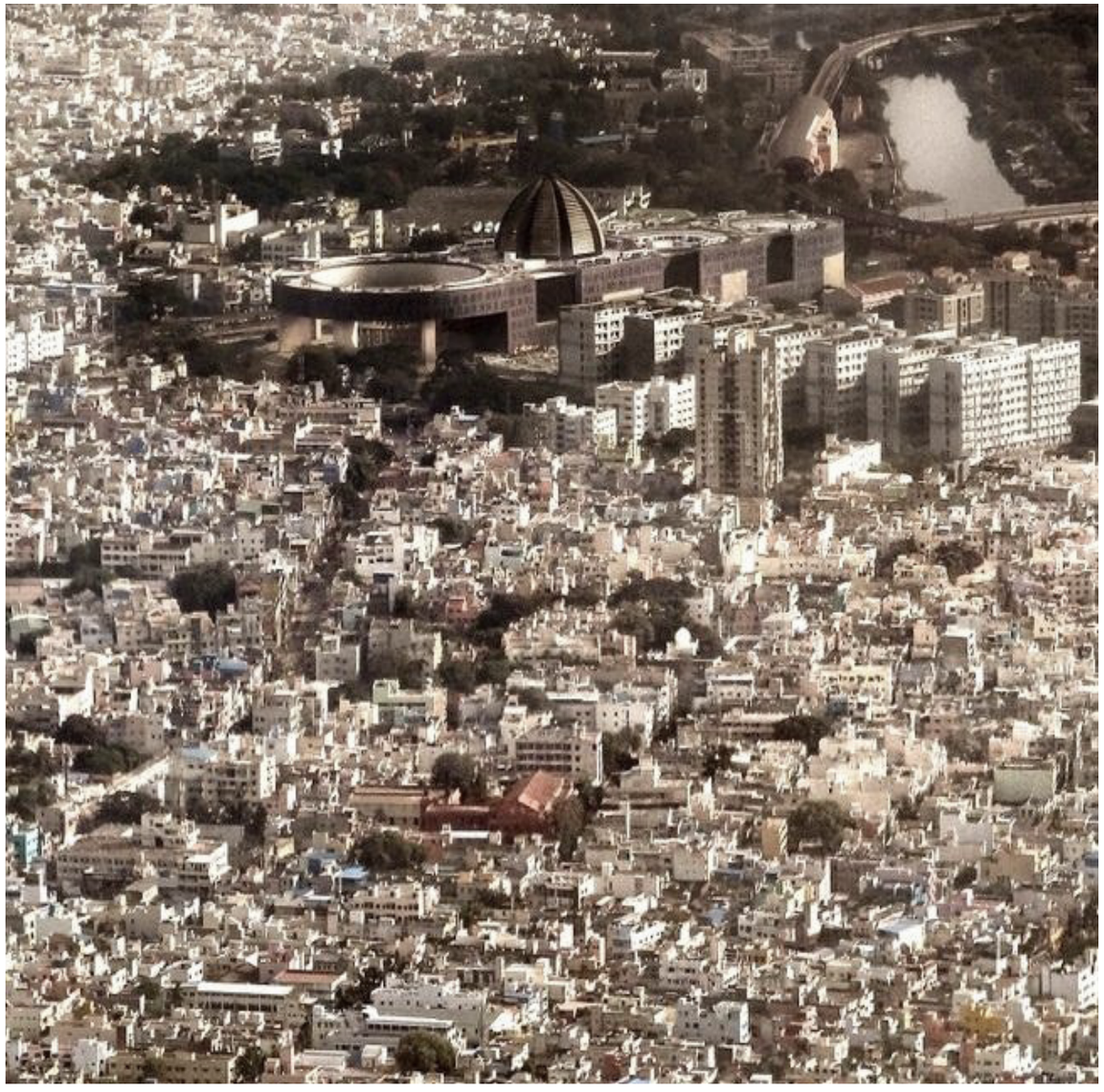
natural environment



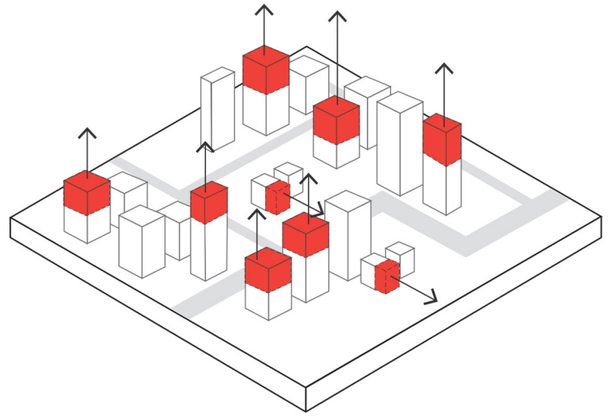
infrastructure

0 10 20

PROBLEM STATEMENT
IMPLICATION OF DENSIFICATION

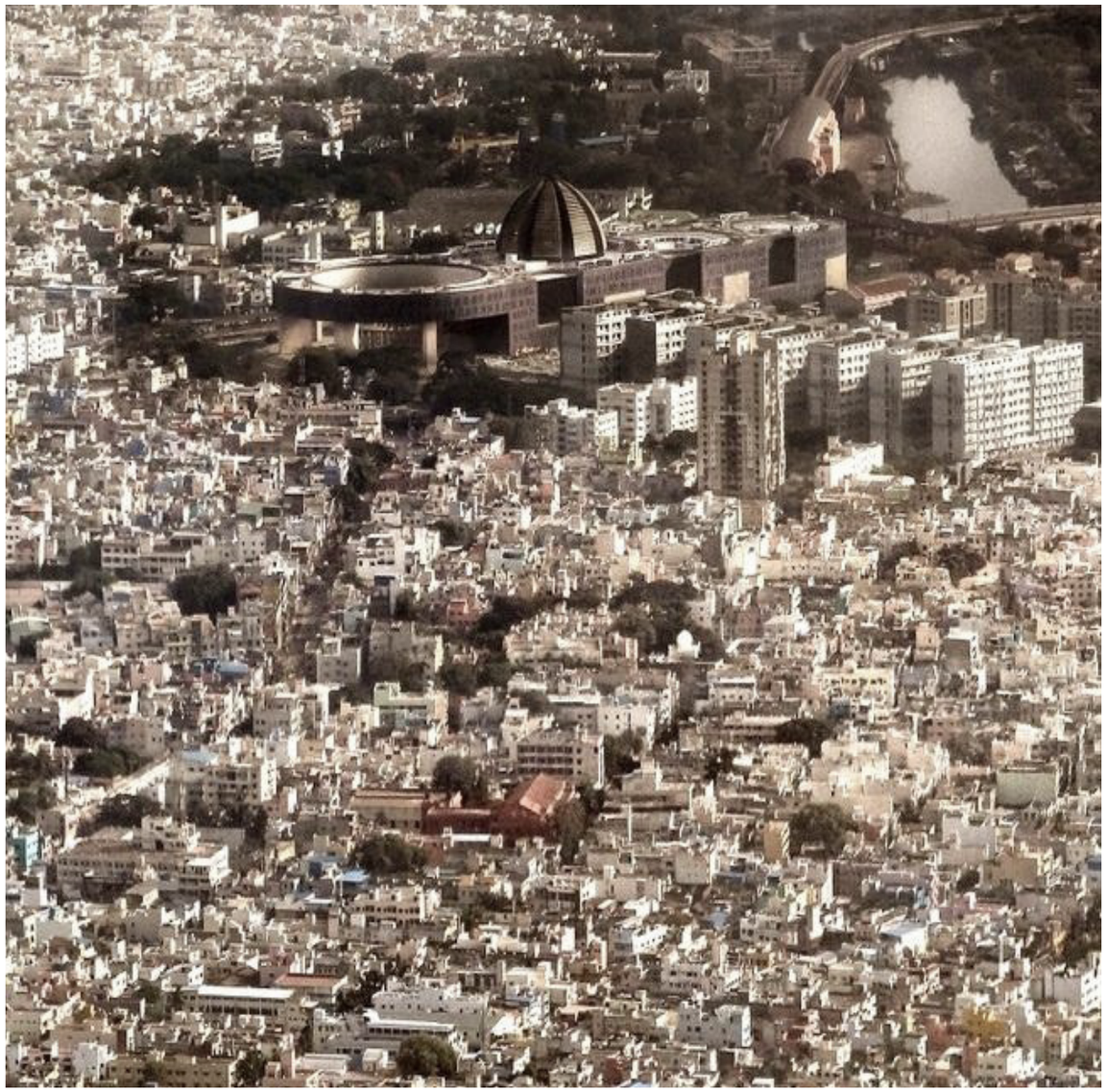


CENTRAL CHENNAI



HOW DENSE IS CHENNAI NOW?

PROBLEM STATEMENT
IMPLICATION OF DENSIFICATION

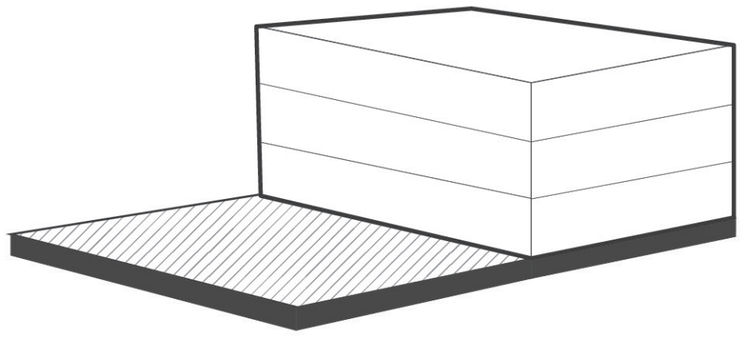


CENTRAL CHENNAI

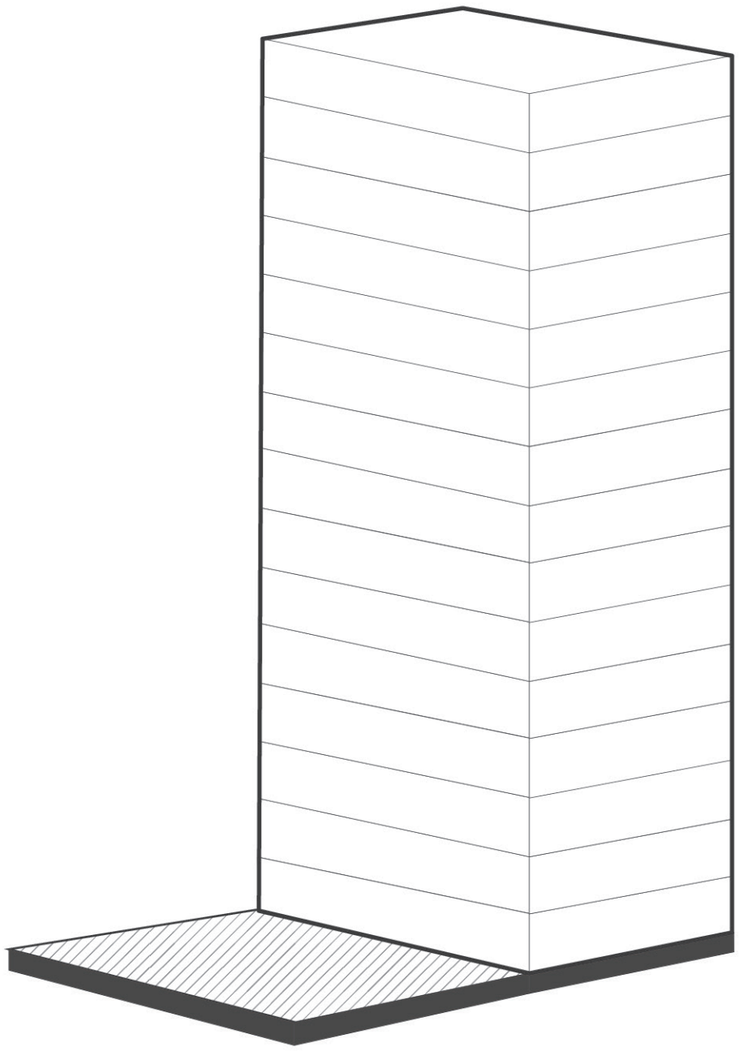


MANHATTAN

PROBLEM STATEMENT
IMPLICATION OF DENSIFICATION



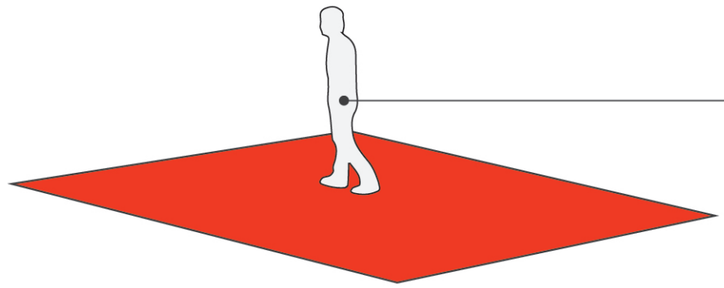
CHENNAI
FSI 1.5



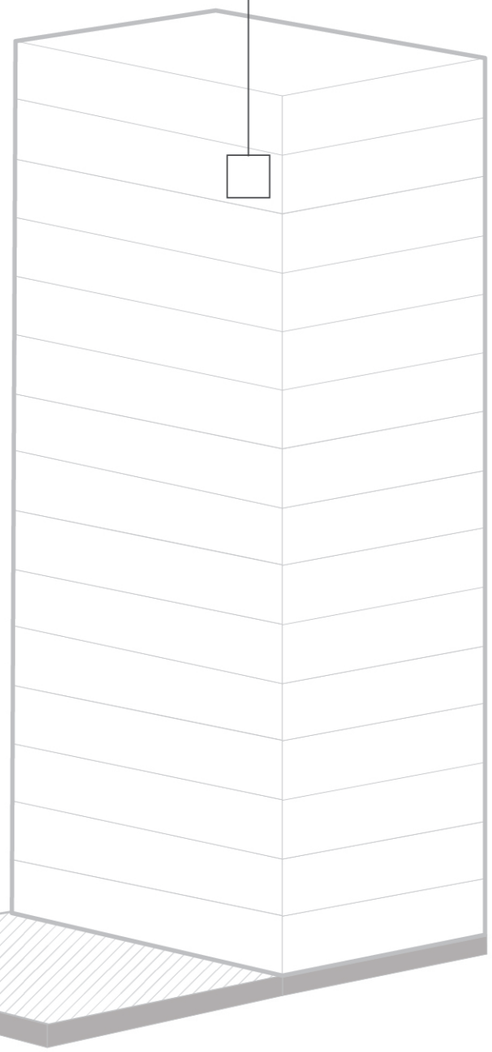
MANHATTAN
FSI 15

Fig. 46 Source : (Patel, 2014)

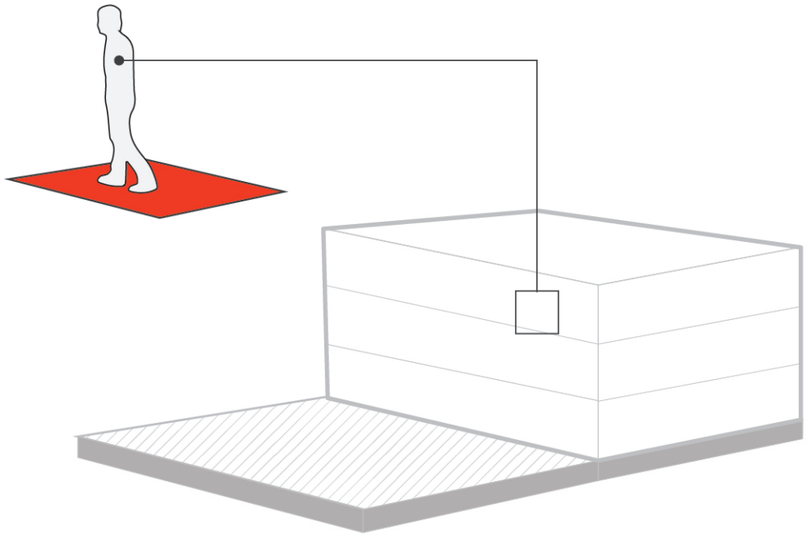
PROBLEM STATEMENT
IMPLICATION OF DENSIFICATION



55 SQ.M PER PERON
BUILT AREA



5 SQ.M PER PERON
BUILT AREA

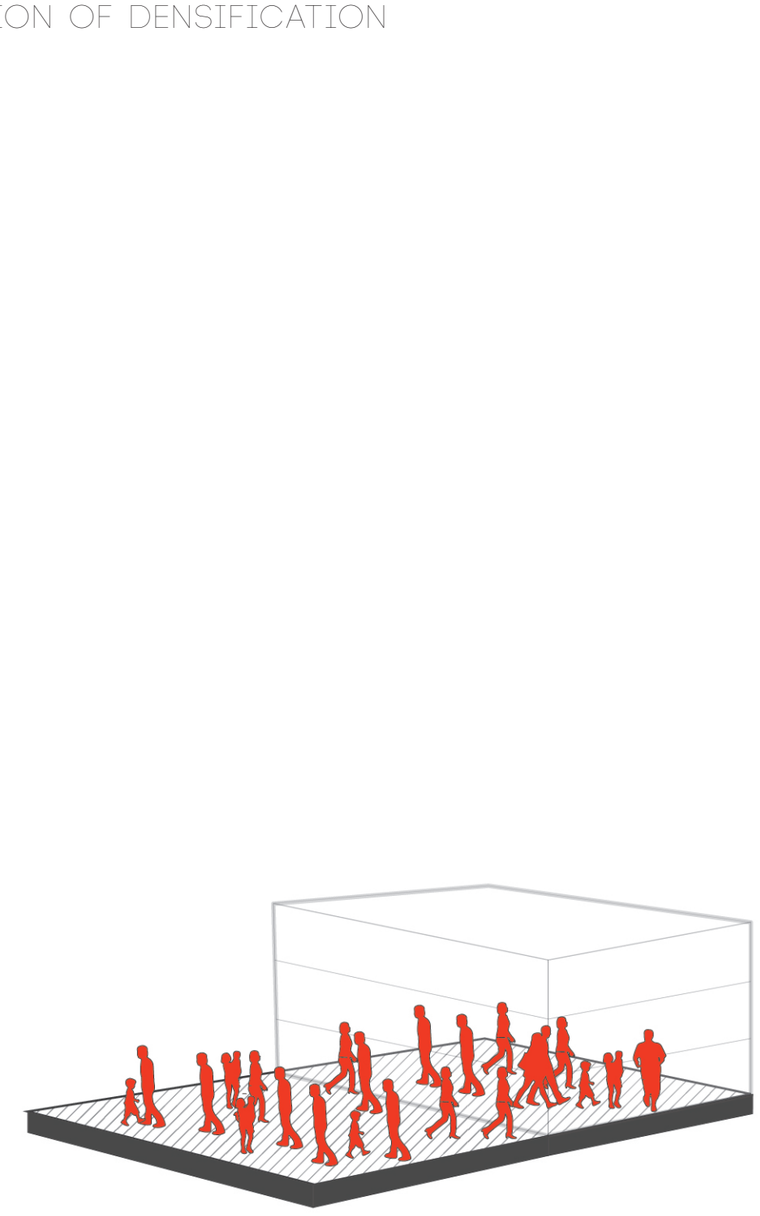


CHENNAI
FSI 1.5

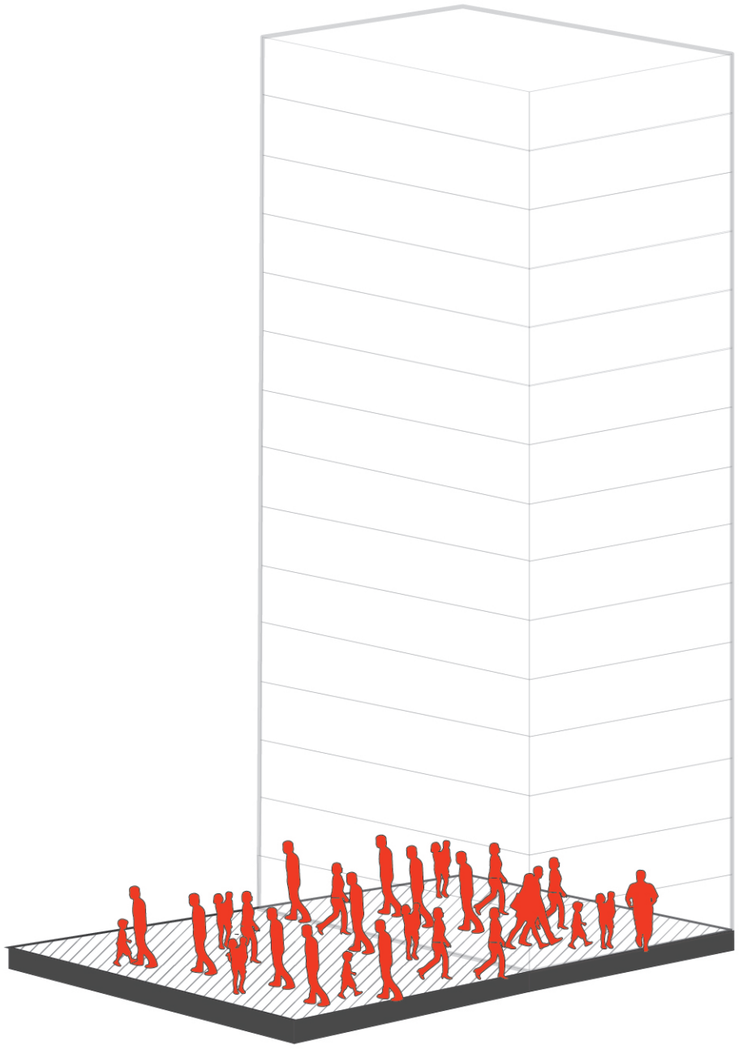
MANHATTAN
FSI 15

Fig. 47 Source : (Patel, 2014)

PROBLEM STATEMENT
IMPLICATION OF DENSIFICATION



CHENNAI
FSI 1.5
2667 PEOPLE / HECTARE



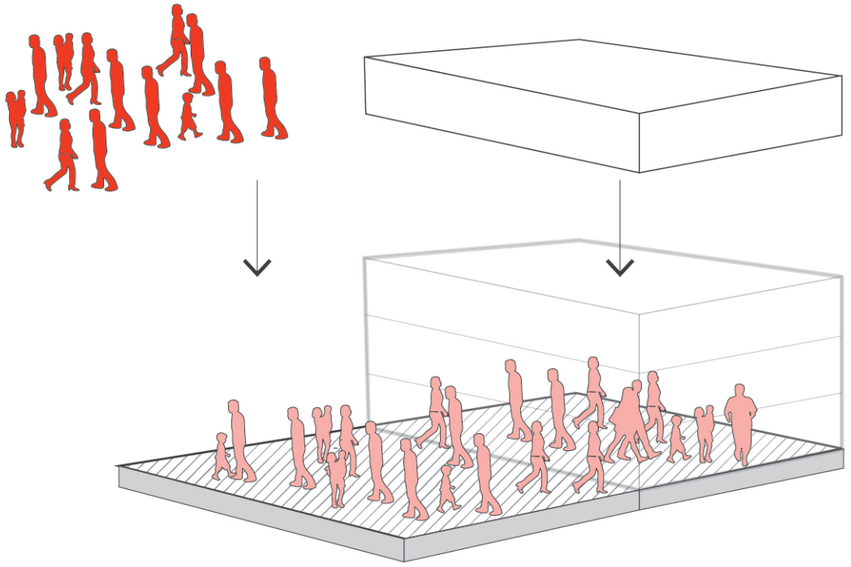
MANHATTEN
FSI 15
2727 PEOPLE / HECTARE

Fig. 48 Source : (Patel, 2014)

PROBLEM STATEMENT
IMPLICATION OF DENSIFICATION

+ 1000 PEOPLE / HECTARE

30% INCREASE IN BUILT DENSITY



CHENNAI
FSI 1.5
2667 PEOPLE / HECTARE

PROBLEM STATEMENT
STAKEHOLDER CONFLICTS

ACTORS ---------- Chennai Metropolitan

⟶ Extention of city extents ------- ACTIONS
Increase of permissble FSI and other
Changes to building code

BUILDING AND
DEVELOPMENT POLICY

STAKEHOLDERS

ECOLOGICAL SYSTEMS

RIVER RESTORATION

Metrowater
Greater Chennai Corporation; Public Works Department
Commissionerate of Municipal Administration
Directorate of Town Panchayats; Tamil Nadu Slum Clearance Board
Department of Rural Development

MOBILITY SYSTEMS

METRORAIL, SUBURBAN RAIL,

Chennai Unified Metropolitan Transport Authority (CUMTA)
Chennai Metro Rail Limited (CMRL)
Indian railways
State Transport Authority
Greater Chennai Corpration
Chennai Metropolitan Transport Corporation (MTC)
Highway Department, Government of Tamil Nadu
Chennai Bus Rapid Transit System

ACTORS

Restoration of Coum river, Adyar river and Buckingham canal ---------- ACTIONS ---------- Developement of Bus Rapid Transit System
Implementation of metro rail

Separate government authorities that deal with these individual issues without much communication between them leads to policy implementation that is independant from one another, lacking a holistic approach.

PROBLEM STATEMENT

A NEED FOR AN INTEGRATED APPROACH

Chennai has a major issue of vehicular congestion and a lack of public space in the city. Further, the existing ecological networks within the city have been neglected and polluted. All these aspects contribute to an unhealthy environment that does not foster wellbeing in the cities' residents. In this situation, densification of the city has the potential to exacerbate this problem, unless an integrated approach is adopted.

Fig. 49 Pallikaranai marsh lands. Source : Vasistan Photography

METHODS AND OUTCOMES

How to facilitate the spatial transformation of the urban fabric of Chennai to enable liveable environments for all people, in different contexts of the city, through a reorganisation of the building density using a holistic approach that takes into account mobility infrastructure and ecologicat systems?

METHODS → OUTCOMES → AIMS

01 What are the driving forces that have shaped the fabric in different parts of the city? How are these parts different/similar in terms of their physical and social composition?

Historic study / Literature review - A study focussing on the evolution of the city through time and its shaping factors.
Morphological Trans-scalar mapping- Identifying patterns that occur in the city as a result of social and physical forces through time

A catalogue/typology of patterns - recurring and distinct - in the city across scales, with an understanding of its characteristic physical and social composition - A base for testing design concepts.

02 What does the concept of liveability mean in the socio-cultural context of Chennai city?

Literature review + on-site interviews - literature studies that focus on qualitative approaches to determine people's perceptions of what constitutes a livable environment, tested against onsite observations and interviews to contextualise livebility.

A set of indicators that assess the livablity in the context of Chennai - spatial quality input for design interventions.

03 What is the current density and spatial organisation in the city? How will the change in building rules affect the fabric of the city? Where will the impact of this transformation be the most prominent?

Literature review - Relationship between building rules and the spatial form of the city.
Policy analysis - Relationship between building rules and the spatial form of the city in Chennai.
Stakeholder interviews - Expert opinions on transformation of the city with the change in building rules. [City Scale]

Potentials, challenges and locations [Local scale] of interest due to transformation.
Critical position of existing building rules based on literature study.

04 What is the relationship between building density, population density social infrastructure and liveability?

Literature review - Focus on spatial relationships + learnings from SRQ 1.

Perception study - On site perception study to understand impact of built morphology and social infrastructre on liveability. [Local Scale]

A set of design principles that facilitate liveabilty in high dense environments.
Potentials, challenges and locations [Local scale] of interest due to transformation.
Spatial relationship - density, open space and infrastructure.

05 What are the development plans for the mobility and ecological network in the city ? What are the synergies and conflicts between these plans and the densification of the city?

Policy analysis - Proposed development plans
GIS Mapping - Mapping the transformation of the city with new developments.
Stakeholder interviews - Experts - Intentions / visions for developments. Citizens - Needs in the public realm

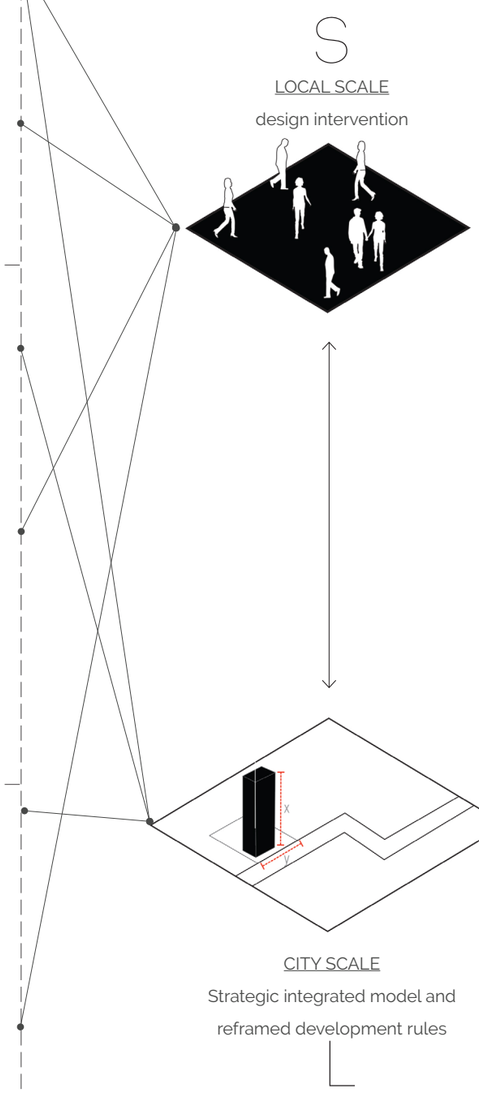
Potentials and challenges of new developments
Strategic model to integrate mobility and ecological networks and density configuration of the city (input from SRQ2, SRQ3 and SRQ4

06 How to increase the of use of public transport and pedestrian movement in the city?

Literature review + onsite interviews - literature studies that focus on qualitative approaches to determine people's perception towards -
- convenience of public transport use and pedestrian movement.
- ecological systems as a part of everyday life.
Case studies - Mobility and ecological network models in cities, TOD implementation in Indian cities, regeneration of waterfronts.

A set of indicators and design principles that
- Activate the ecological system and integrate it with everyday social space.
- Increase the use of public transport.

07 How to integrate the neglected ecological network with the city structure, in order to regenerate these spaces and improve the quality of public life?



Theoretical methods
Literature

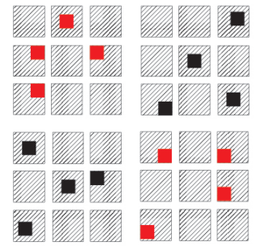
Analytical methods
Documentary analysis
Policy review
Historical documentation
Mapping and
GIS Mapping
Morphological
Comparative Case study

Research by design
Field work
On-site Interviews
Spatial analysis
Photo documentation
Expert interviews

Fig. 50 vvvv

DESIGN GOALS AND STRATEGIES

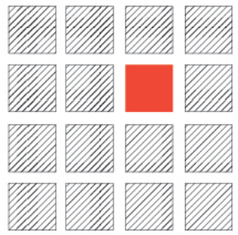
DESIGN AS A
RESEARCH PROCESS

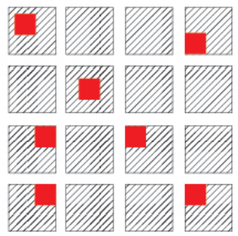


DESIGN INTERVENTIONS

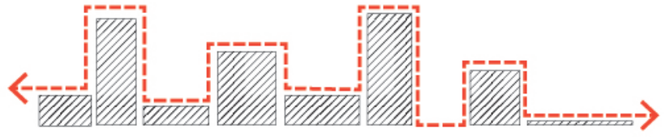
KEY INTERVENTIONS

TRANSFERABILITY

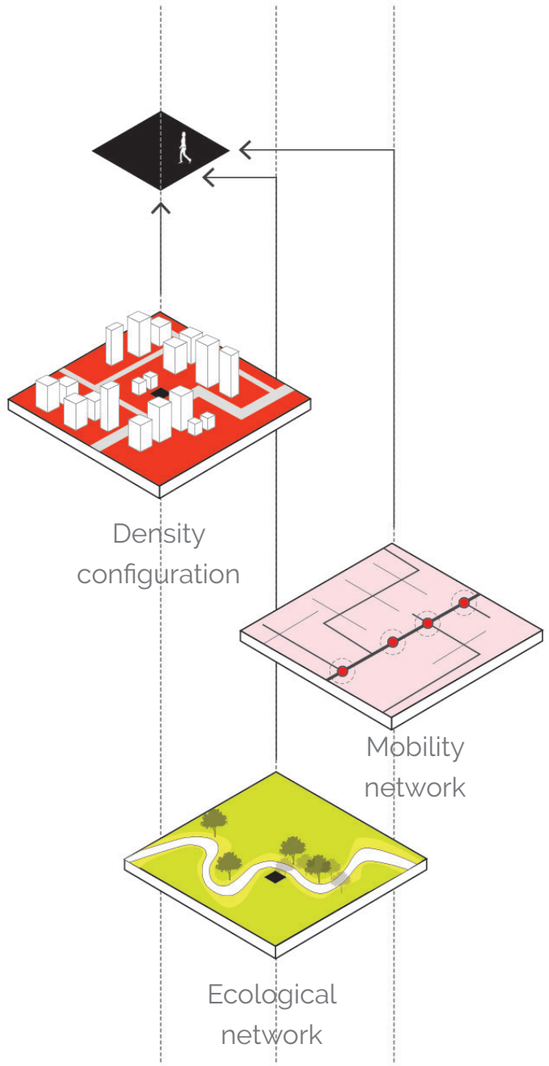


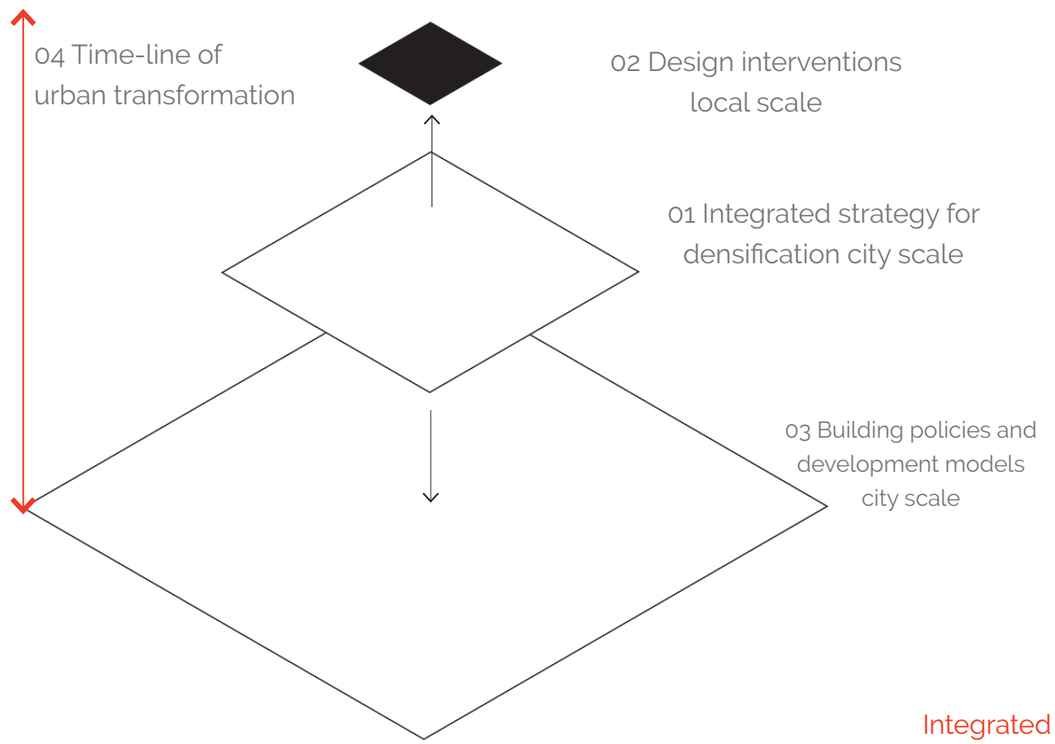


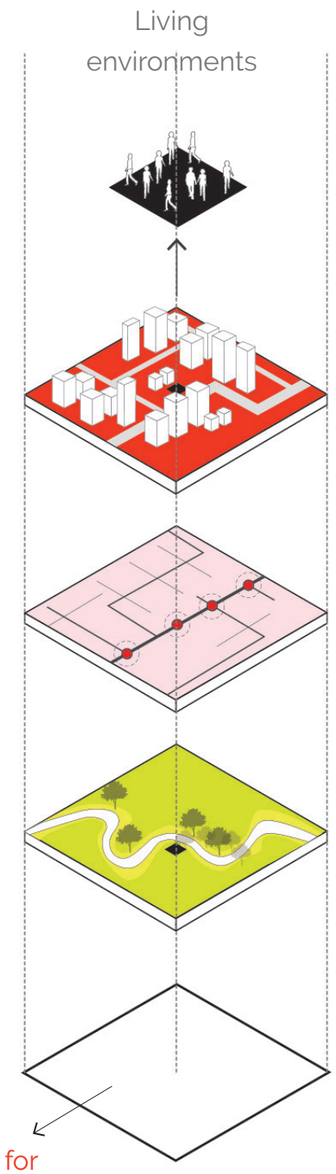
DESIGN INFORMED BUILDING
POLICY AND DEVELOPMENT
MODELS



INTENDED OUTCOMES







EXISTING SITUATION

Integrated strategy for densification

PROPOSED SITUATION

ANALYTICAL FRAMEWORK

THEORETICAL UNDERPINNING

Normative theoretical outcomes

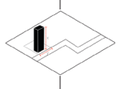
Transit oriented development

Liveability in an Indian context

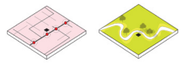
Socio-ecological integration



Building rules and spatial patterns in the city



The two-network strategy



a.integrated approach

Strategic model that integrates ecological network, mobility network and density configuration

b.indicators

01 Livability in the indian context

02 Increased use of public transport and pedestrian movement

03 Activating ecological networks as part of social life

c.dependencies

Development rules x spatial patterns in the city

Building density x population density x open space x infrastructure

[S] Streets and daily patterns

[M] City blocks

[L] City structure

implication of new developments on existing

Densification of the city

New layers of Mobility

Making room for the rivers

synergies and conflicts

new transformation

Y Mobility network

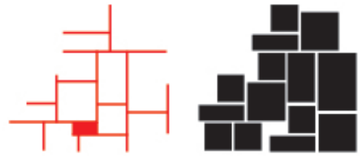
Z Ecology network

W Indicators of liveability

ANALYTICAL FRAMEWORK

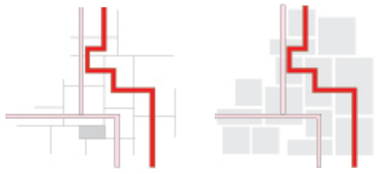
01 PATTERNS

characteristic physical and social composition



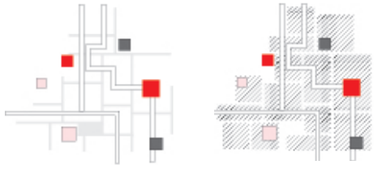
02 INTENTIONS

spatial impact across scales.



03 PERCEPTIONS

Using perception studies to understand local interpretation of public life and liveability.



ANALYTICAL FRAMEWORK

FIELD WORK

01. SITE VISIT AND OBSERVATIONS

02. SITE INTERVIEWS OF LOCAL RESIDENTS

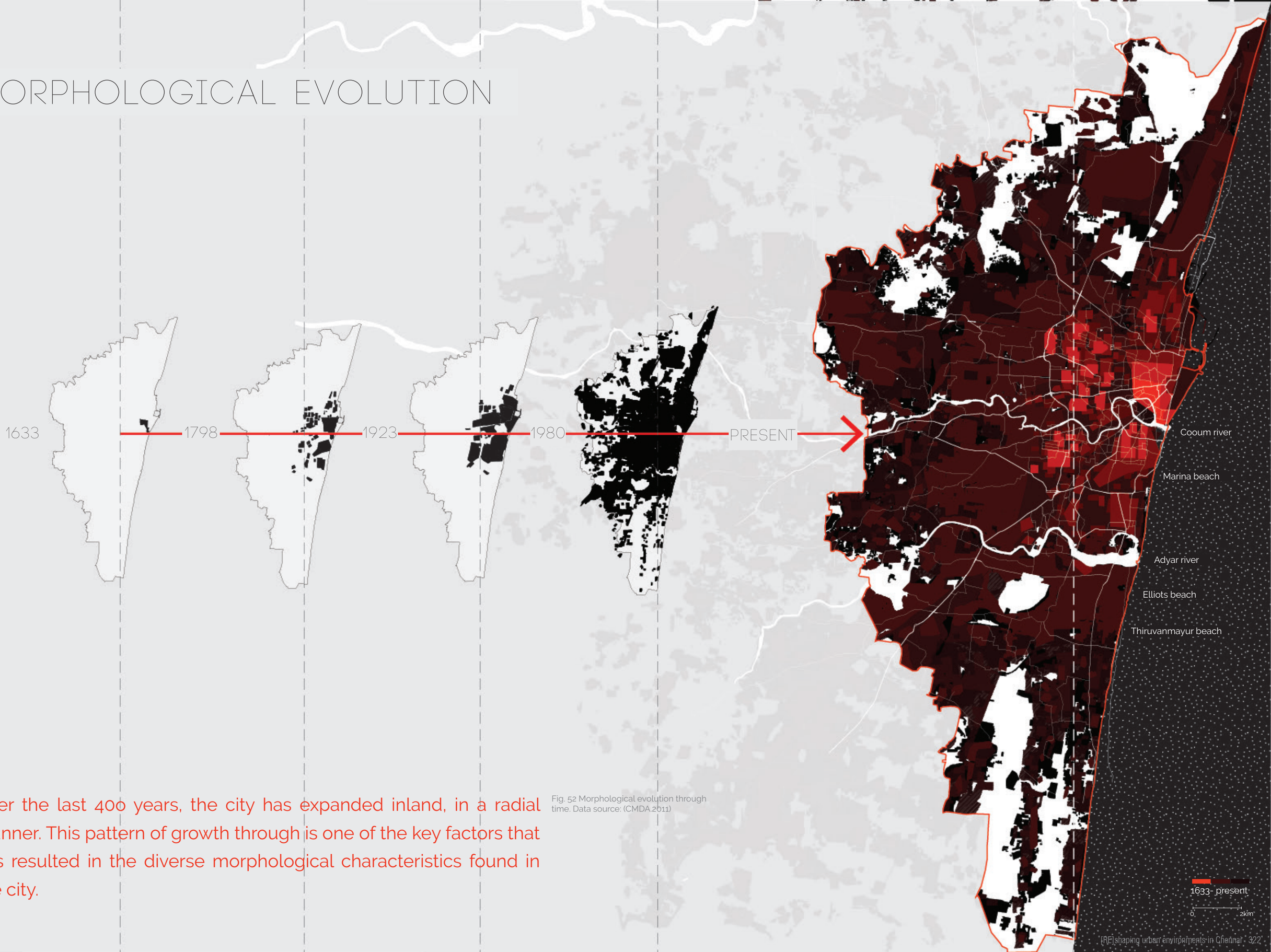
03. EXPERT INTERVIEWS

04. ACADEMIA INTERVIEWS



Fig. 51 Image from field work conducted along OMR, Chennai. Source : Author

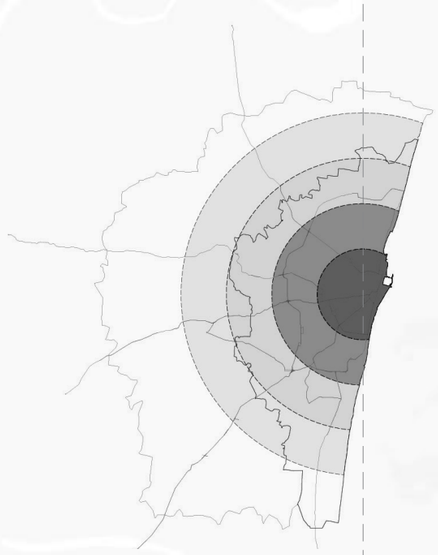
MORPHOLOGICAL EVOLUTION



Over the last 400 years, the city has expanded inland, in a radial manner. This pattern of growth through is one of the key factors that has resulted in the diverse morphological characteristics found in the city.

Fig. 52 Morphological evolution through time. Data source: (CMDA 2011)

URBANISATION AND POPULATION GROWTH PATTERNS



FUNCTIONAL ZONING PATTERN ALONG MAJOR INFRASTRUCTURE CORRIDORS



BUILT ENVIRONMENT MORPHOLOGY

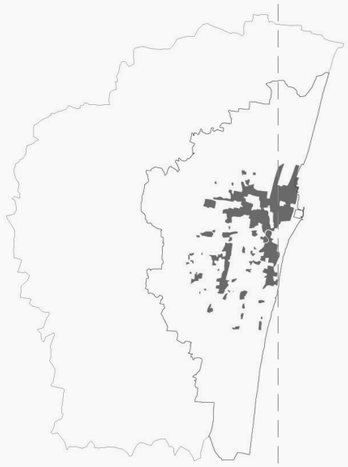
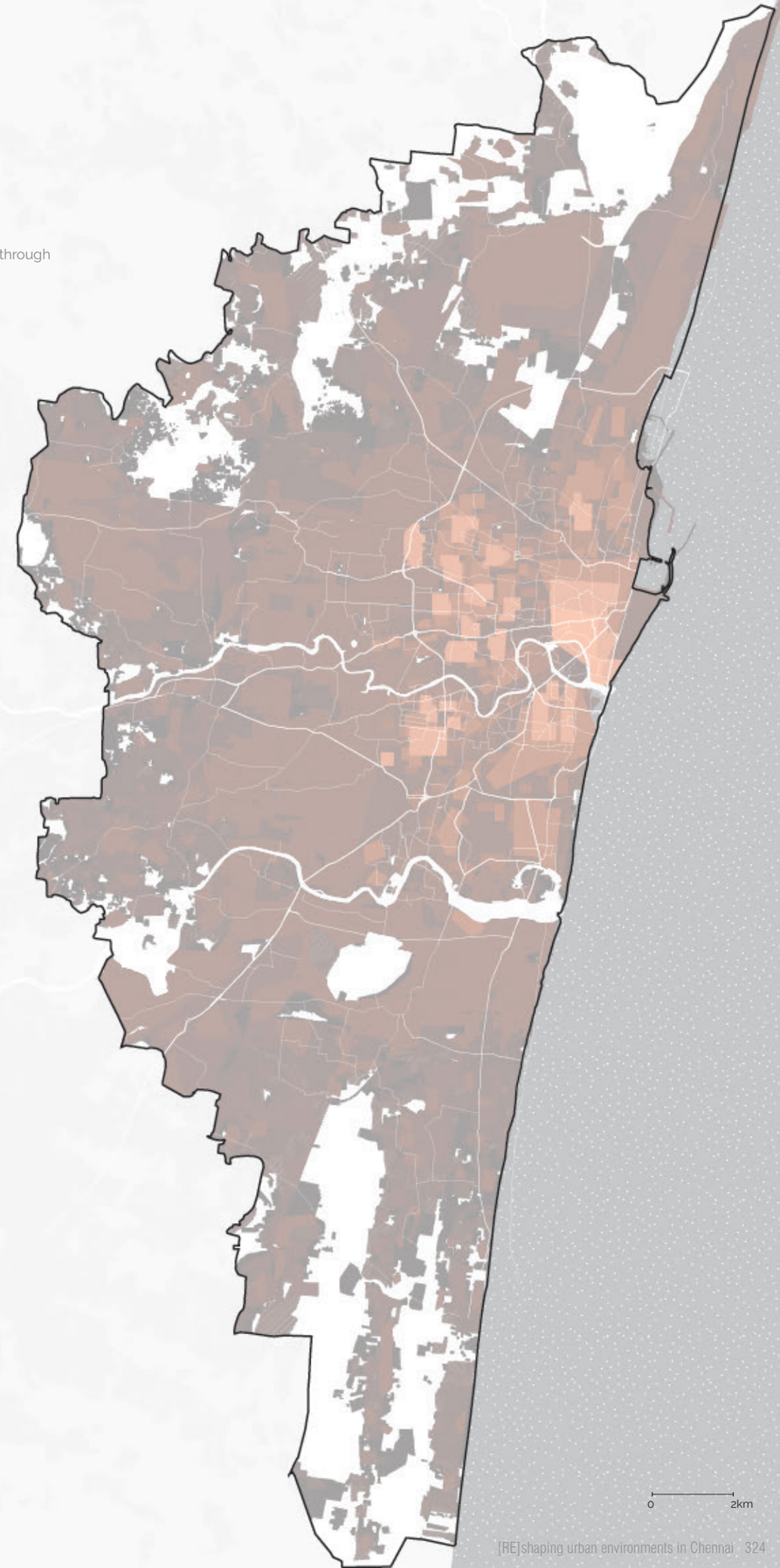


Fig. 53 Morphological evolution through time. Data source: (CMDA.2011)



URBANISATION AND POPULATION GROWTH PATTERNS

Fig. 54 Growth patterns, Chennai city. Data Source: (Dowall & Monkkonen, 2007)

Chennai is a city that is consistently densifying at its core and sprawling along its periphery, simultaneously. This gives rise to a city with three regions of distinctly identifiable characteristics.

1

(5km radius from the centre)
Population has doubled without new developments - reduced space per person high denisty of people - denisty not due to tall buildings but congestion.

5km has reached its saturation point (Dowall & Monkkonen, 2007)

As the oldest part of the city, all the major government buildings and other buildings of high historic and architecture value are found here.

2

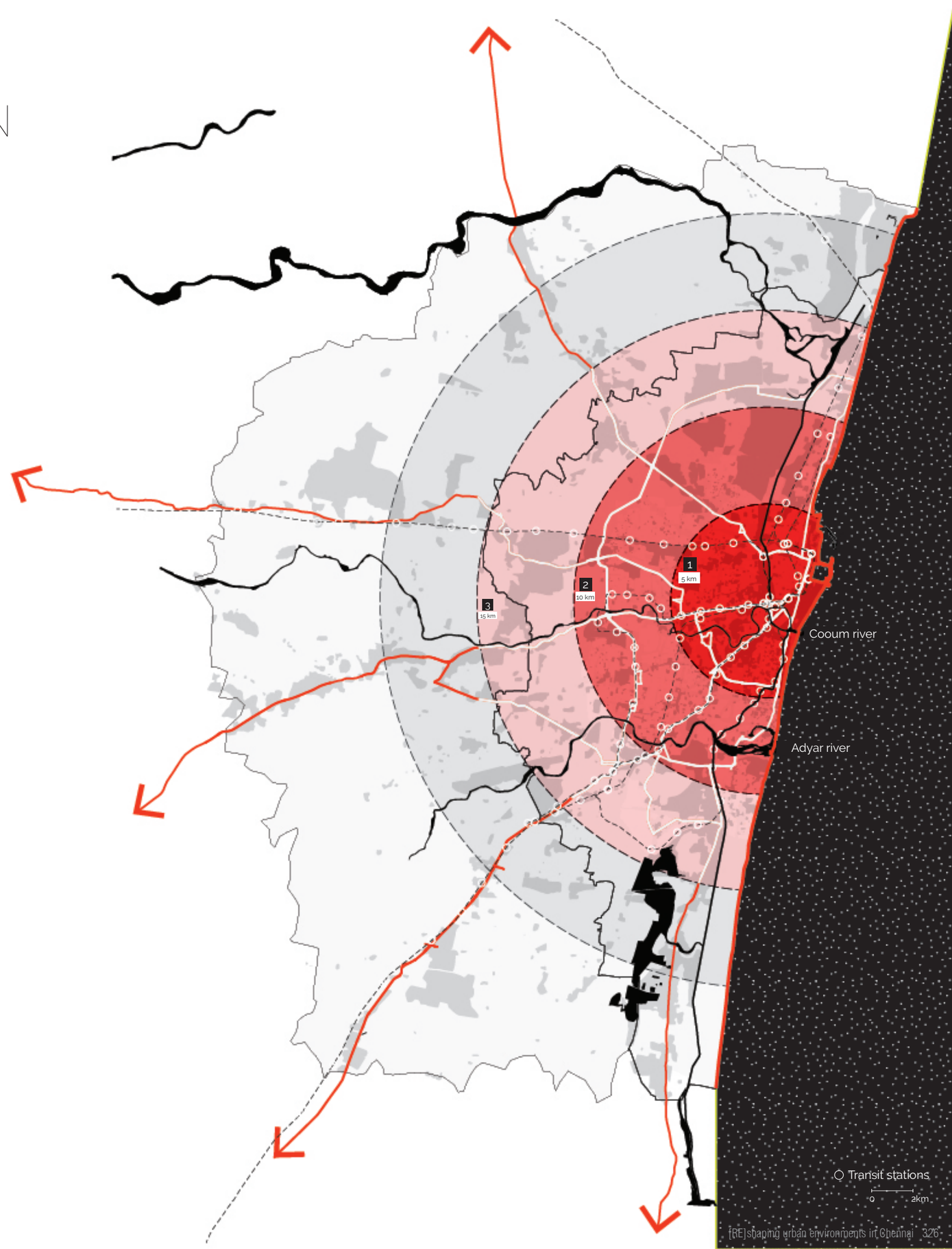
(5km to 10 km radius from the centre)
planned neighbourhoods in the 60's
Highest real estate value and rents in this part of the city - uniform grids, planned parks and garden houses.
Reaching its saturation point in terms of population density.

3

(Beyond 10km radius from the centre)
Steady increase in population densityand percentage of total population in these regions. (Dowall & Monkkonen, 2007)

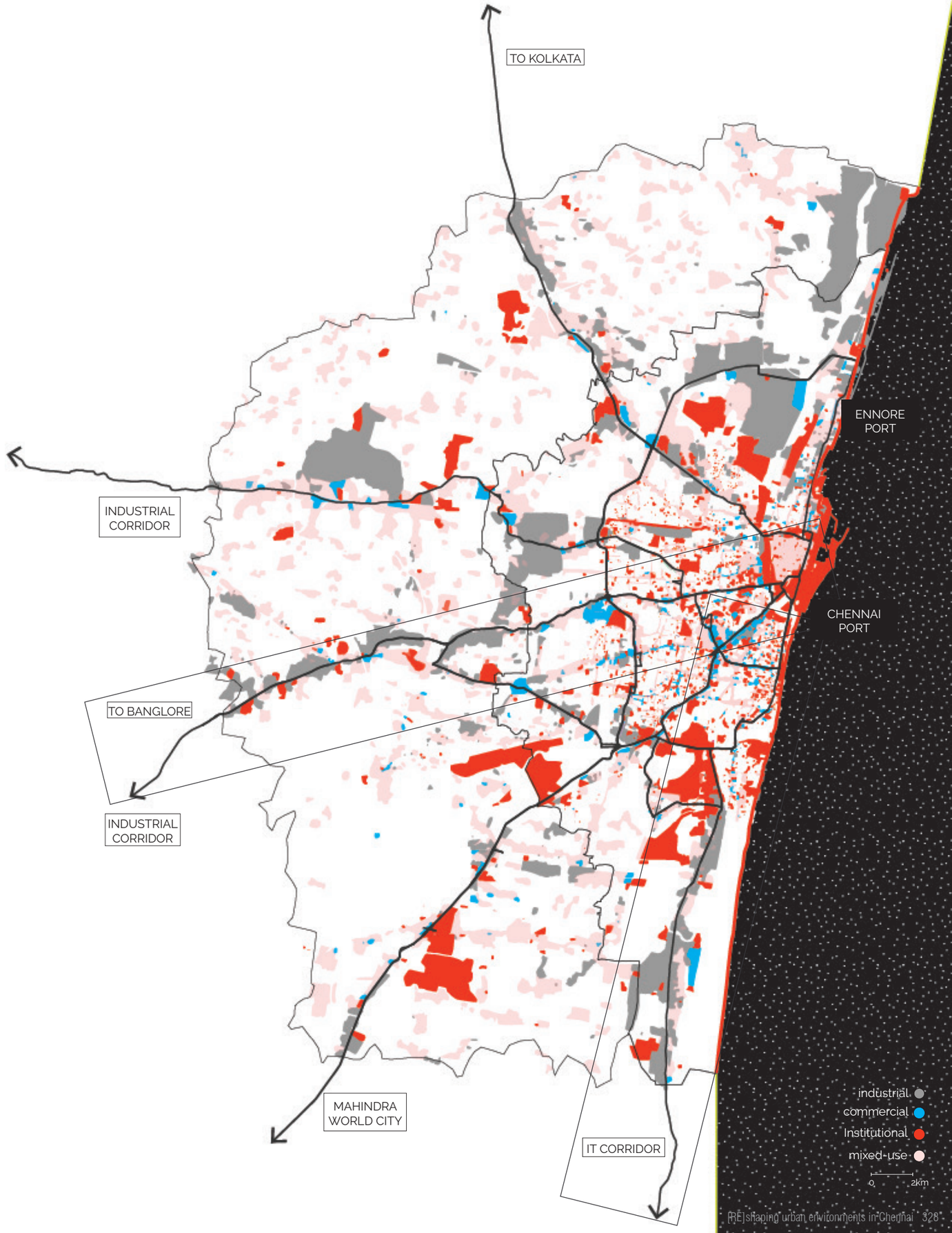
This part of the city, home to the IT sector industries, is being promoted and developed as a " Global city", with an attempt to create a westernised image of glass high rises. wide roads and luxury gated communities. (Srivathsan,2011)

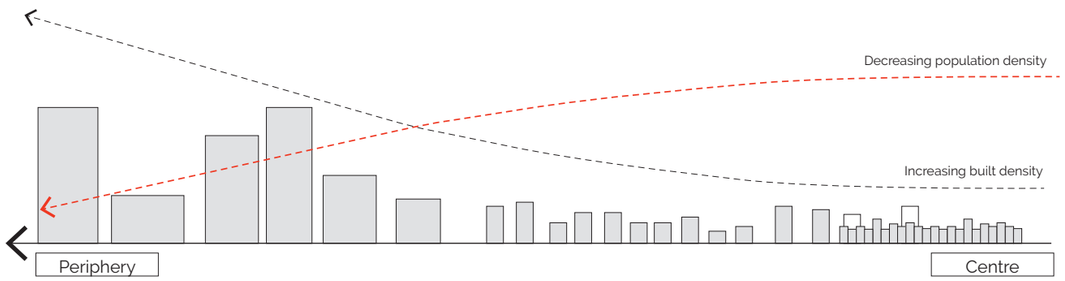
While the centre of the city carries over traces of its urban from the preindustrial era, the peripheries are being shaped today, largely by the market forces. As a result, these areas have very different set of challenges that they face.



FUNCTIONAL ZONING PATTERN ALONG MAJOR INFRASTRUCTURE

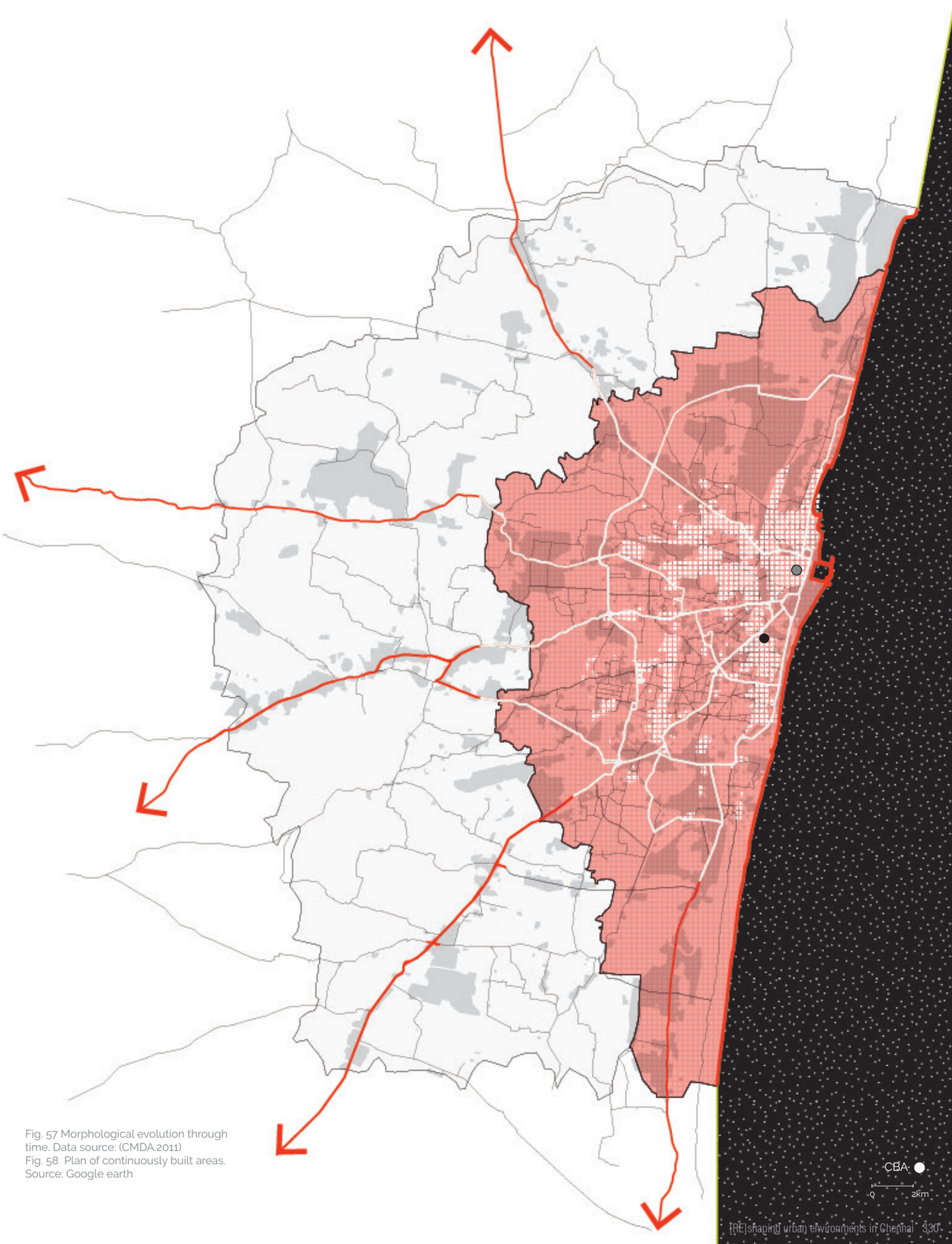
The developemt pattern of the city strongly follows the five major infrastructural corridors. These lines are zoned to have major industrial and institutional functions, at the periphery of the city. Therefore, these corridors have become highly urbanised, consisting of the major locations for employment in the city.





BUILT ENVIRONMENT TYPOLOGY

These areas consist of low rise high dense urban environments. They are charecterised by narrow streets and three to five storey buildings of very small parcel sizes. Situated in the older part of the city, there is a strong juxtapoistion of these small continuously built environmnets and large institutional buildings, often with a strong architectural heritage.



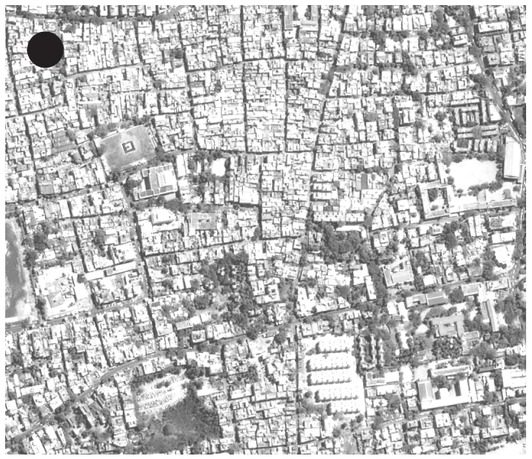
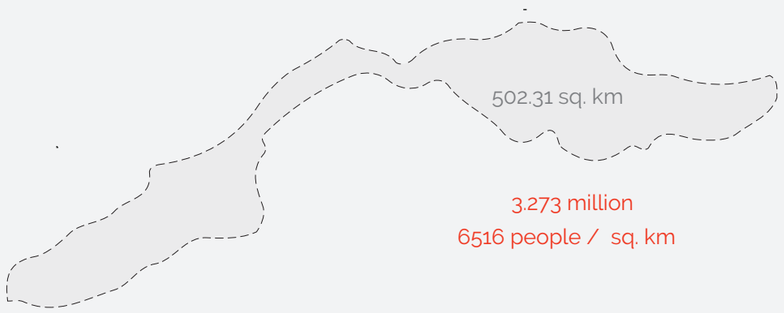




Fig. 57 Morphological evolution through time. Data source: (CMDA.2011)
Fig. 58 Plan of continuously built areas. Source: Google earth

COOUM RIVER SUB-BASIN



3.273 million
6516 people / sq. km

Cooum tank
River origin

Cooum Estuary

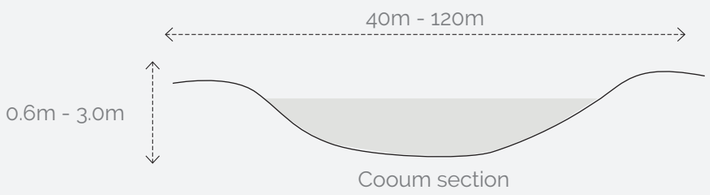
Coum river

Peri-urban / rural
54 km
0.132 million population

urban use
18 km
3.141 million

COOUM RIVER SUB-BASIN

River Section:
Low depth and width



Upstream:
Over irrigation for agriculture

Urban area:
Pollution, untreated sewage disposal, industrial waste dumping and corparation waste dumping and encroachment

Cooum tank
River origin

Cooum Estuary

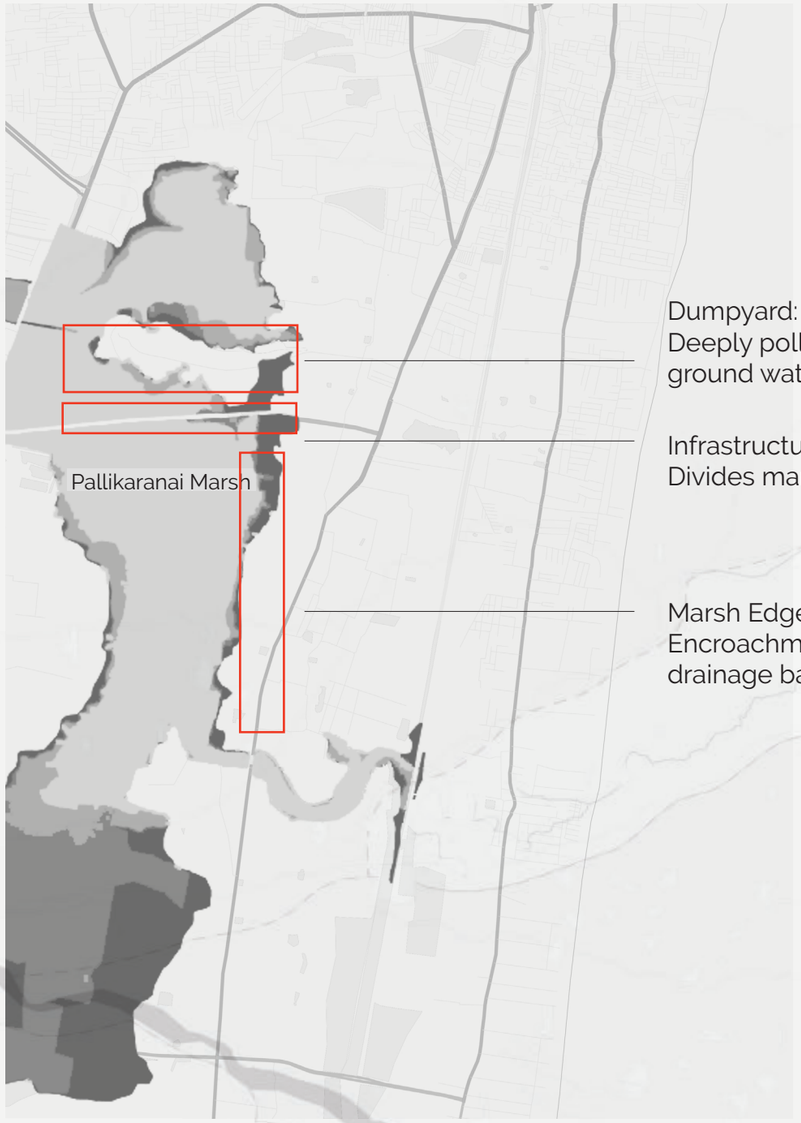
Cooum river

Estuary:
Sand bar accumalation due to Littoral drift and port construction

Peri-urban / rural
54 km
0.132 million population

urban use
18 km
3.141 million

PALLIKARANAI SUB-BASIN

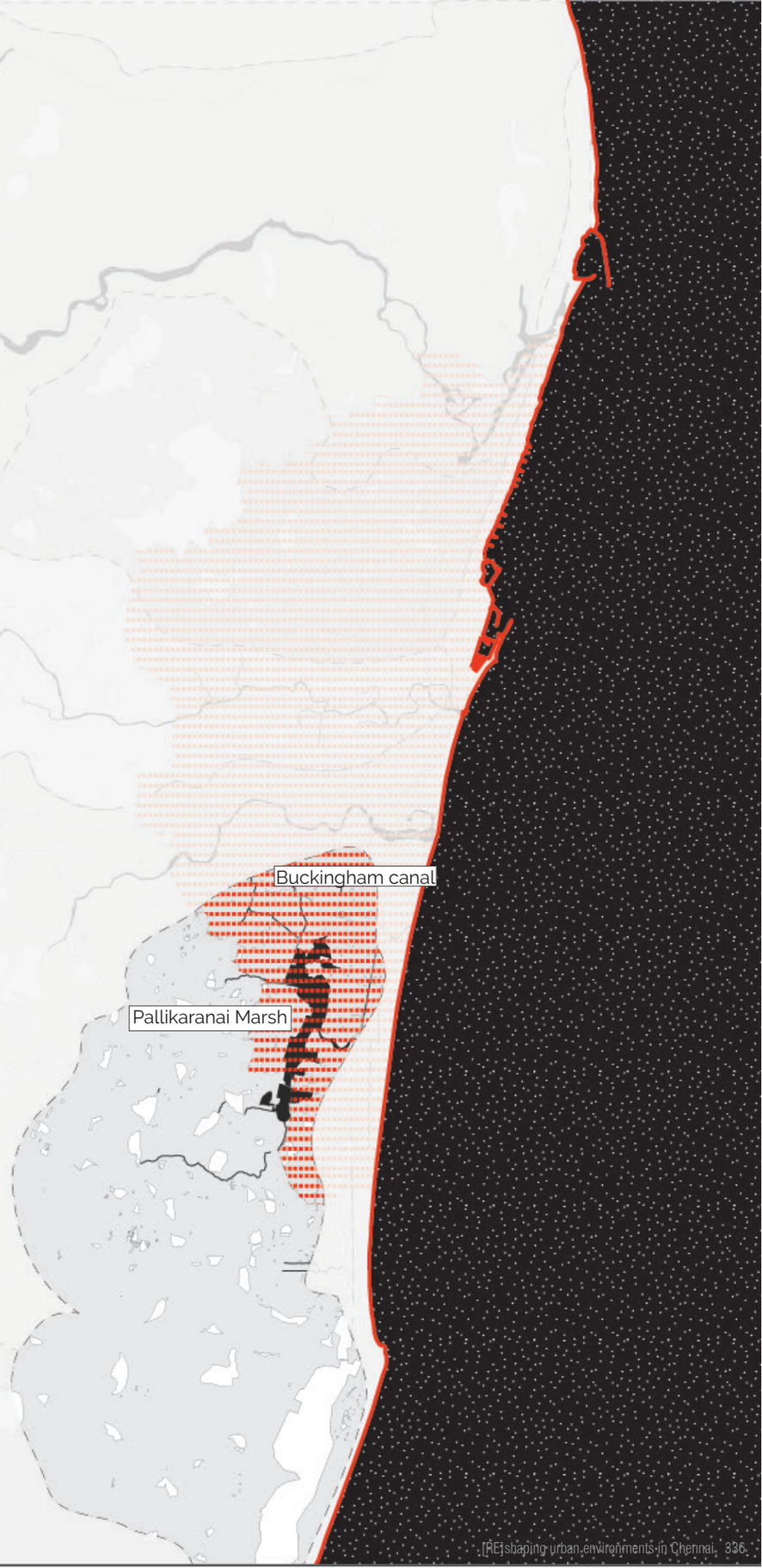


Dumpyard:
Deeply polluted
ground water and soil

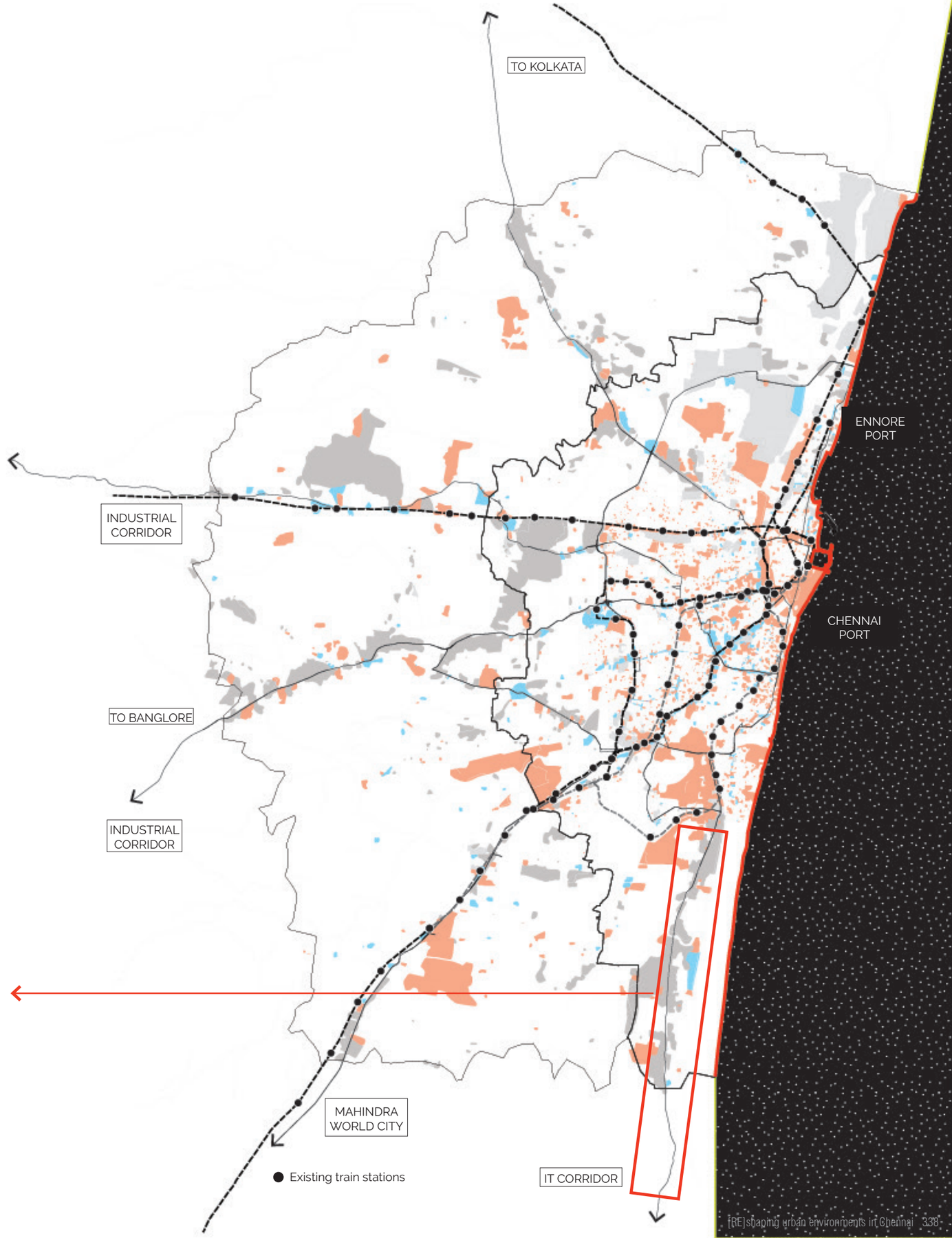
Infrastructure line:
Divides marsh into patches

Marsh Edges:
Encroachment into marsh and
drainage basins

2000 2011



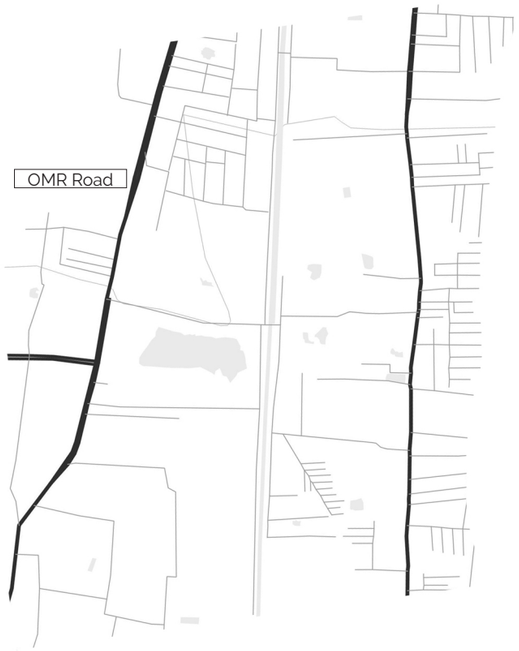
PUBLIC MOBILITY NETWORK - EXISTING

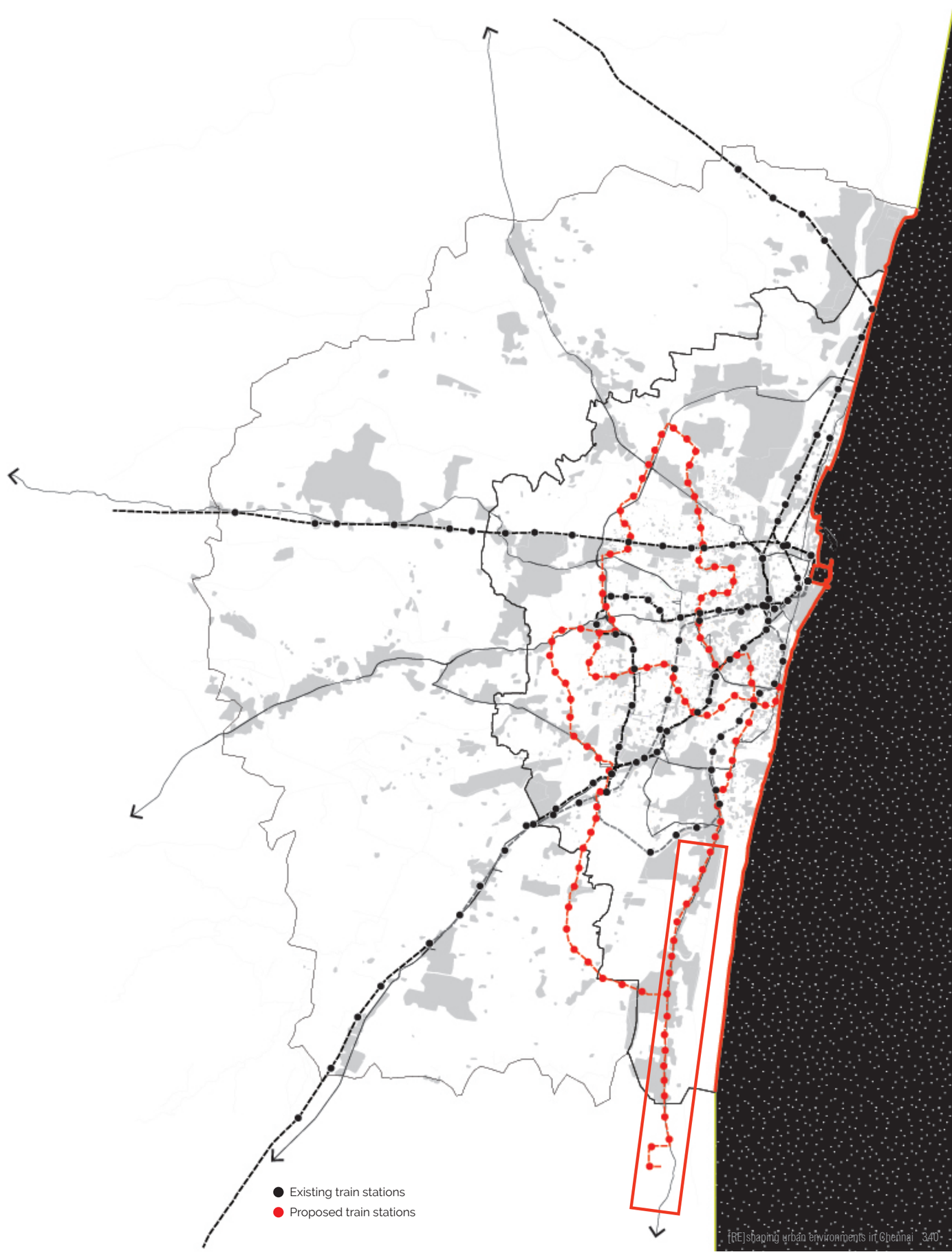


AVG TRAVEL TIME TRAVELLED - ONE WAY (IT CORRIDOR) : 21 KM

PUBLIC MOBILITY NETWORK - PROPOSED

Construction of the new metro line along the OMR road will prove a challenge in implementation due to the lack of supporting network of roads and ecological barrier on both sides.





Unlike the older suburban line, the existing metro stations do not allign with important city destinations. This is a potential to develop these city scale destinations in proximity to these stations.

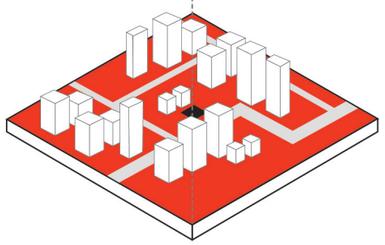


Fig. 59 Mount road metro stop. Source : Author

Metro station, Anna nagar

PRELIMINARY ANALYSIS

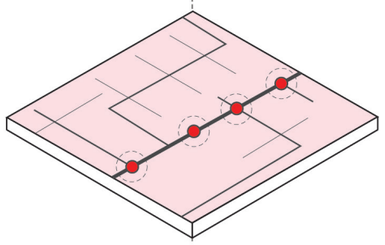
REFLECTIONS ON THE INTEGRATED STRATEGIC MODEL



DENSITY CONFIGURATION

03 The social network
Concentration and movement - determined by building typolpgy and activities

MOST FLEXIBLE
Continually changing as compared to the other two layers.

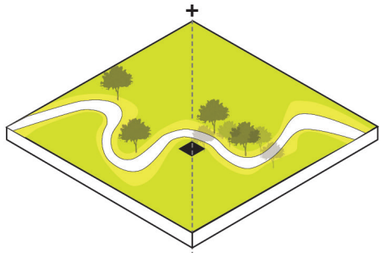


MOBIILITY INFRASTRUCTURE

02 The mobility network
COMPETITIVE

MODERATELY FLEXIBLE
Can determine the social network. Also determined by existing social layer. Must adapt to form relationships wIth ecological network.

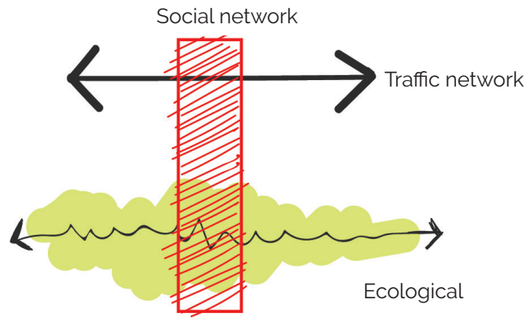
+



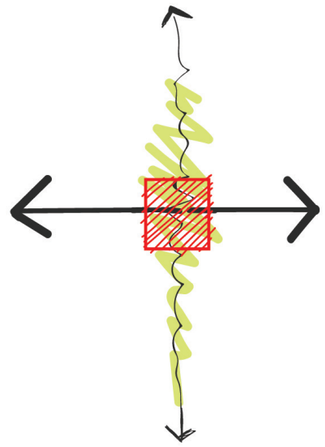
ECOLOGICAL SYSTEMS

01 The ecological network
COOPERATIVE

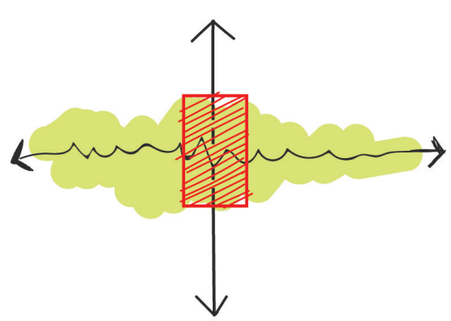
LEAST FLEXIBLE
Based on the ecological system present geographically - other layers must work



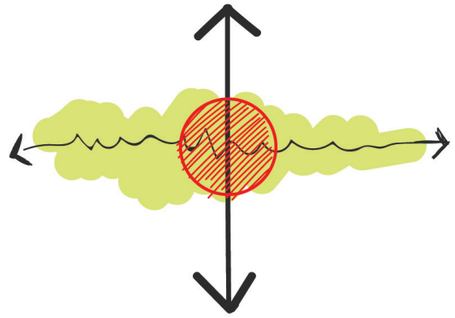
TRANSITION



PERMEATION



INTERRUPTION



INTERSECTION

Therefore, while the fast lane and slow lane can be simply defined as " competitive" and "cooperative" respectively, the relationship between them in different spatial configurations and contexts affords different qualities of environments, creation contrasts and transitions within the city.

4.2.1 EXISTING CONTEXT

LOCAL CHOICE AND SERVICE AREAS

The local choice values are very poor, especially along the Cooum river banks. The paths here requied to be connected better with the larger network to enable an active water edge.

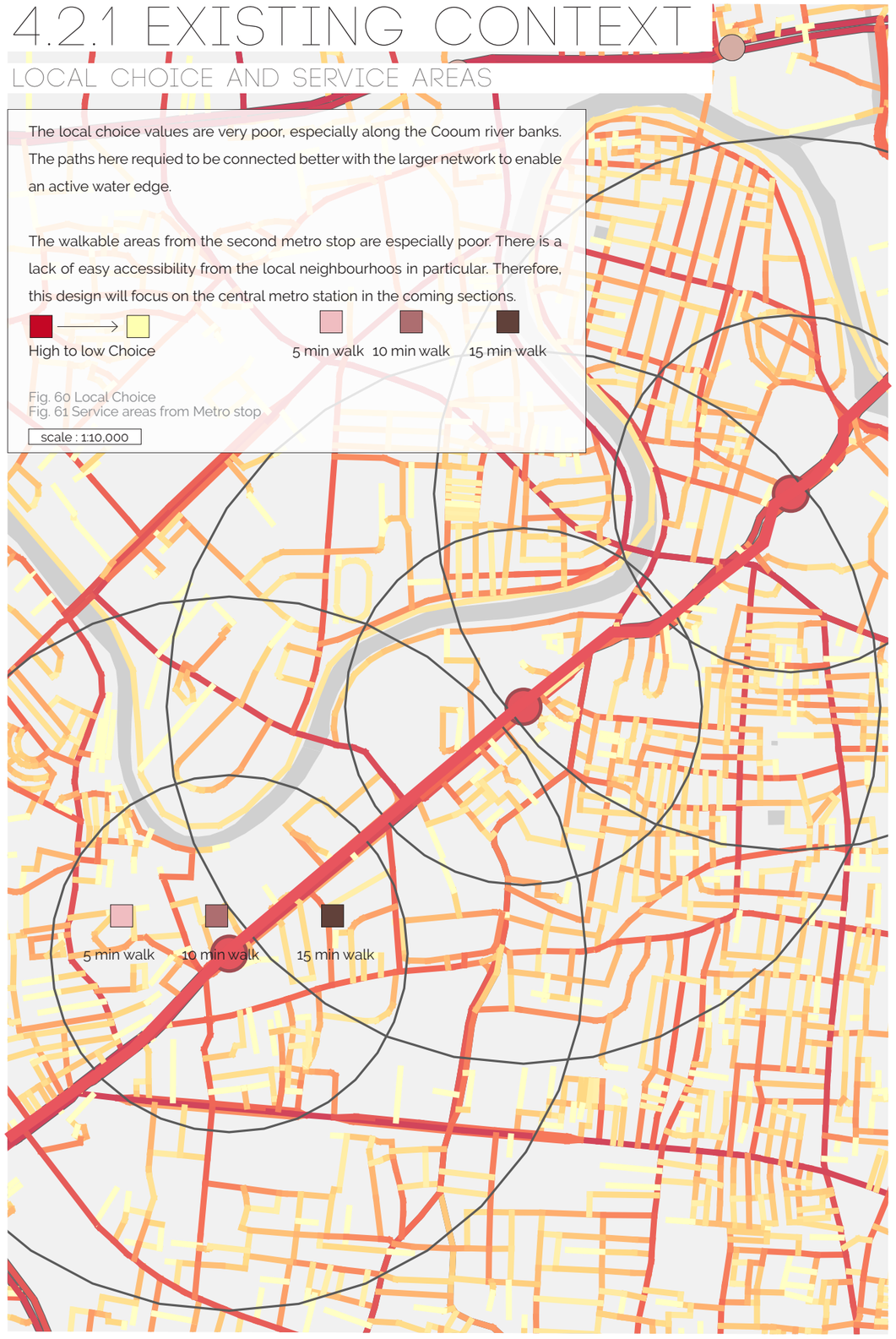
The walkable areas from the second metro stop are especially poor. There is a lack of easy accessibility from the local neighbourhoos in particular. Therefore, this design will focus on the central metro station in the coming sections.

High to low Choice

5 min walk 10 min walk 15 min walk

Fig. 60 Local Choice
Fig. 61 Service areas from Metro stop

scale : 1:10,000



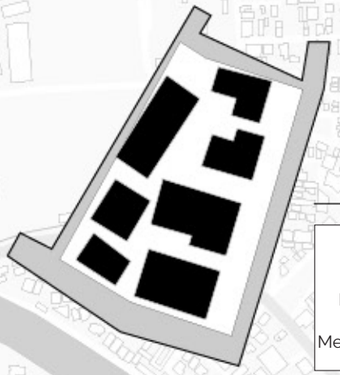
EXISTING CONTEXT

BUILT MORPHOLOGY

LOCATION 01

Mt. Road

scale : 1:10,000



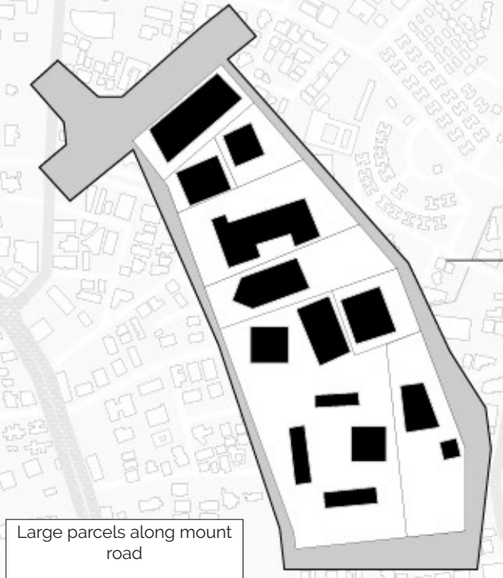
medium-large parcels

Institutional/ Mixed use

Medium rise- medium dense

Egmore





Large parcels along mount road

Commerial/ Institutional/ Industrial

High ride- low dense

Mount road

Roypettah



Continuous built area

Small parcels

Low rise- high dense

Residential/ residential with commercial in the ground floor



Triplicane

PRELIMINARY DESIGN INPUTS
DENSIFICATION POTENTIAL

Fig. 62 Design Inputs - 3 sites

Cooum river

Marina beach

LOCATION 01
Mt. Road



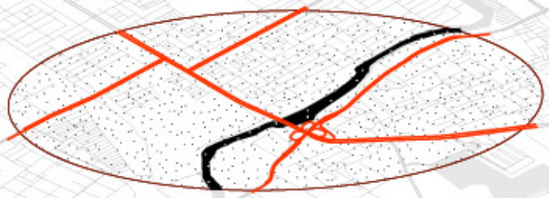
> Low incentive for developers to build here

> low rise-high dense continuous built area, small plots

Elliots beach

Thiruvanmayur beach

Buckingham canal



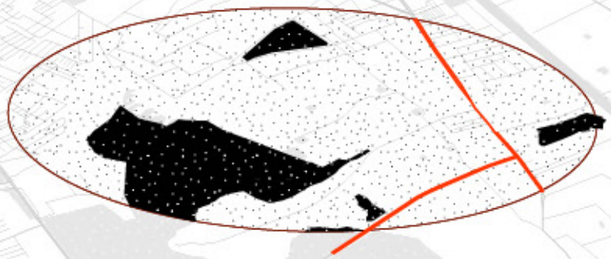
LOCATION 03
Poonamale high road

> High incentive for developers to build here

> low rise-medium dense neighbourhood

> High incentive for developers along main road, low incentive in interiors

> High rise medium dense and low rise-low dense



LOCATION 02
OMR Road

Pallikaranai marsh

PRELIMINARY DESIGN INPUTS
ECOLOGICAL SYSTEMS

Fig. 63 Design Inputs - 3 sites

Cooum river

Marina beach

LOCATION 01
Mt. Road



> River needs to be widened, allowing for floodplains and drainage canals.

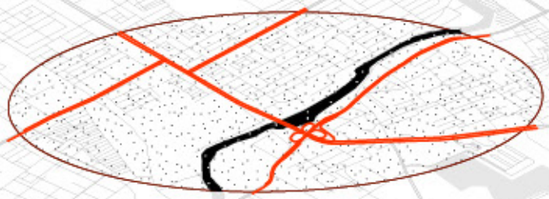
> Encroachments and settlements along river edge need to be resolved.

Elliots beach

Thiruvanmayur beach

Adyar river

Buckingham canal



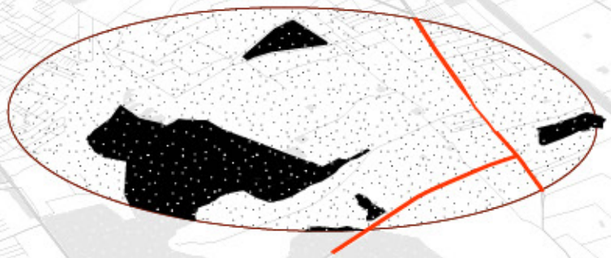
LOCATION 03
Poonamale high road

> River needs to be widened, allowing for floodplains and drainage canals.

> Encroachments and settlements along river edge need to be resolved.

> Removal of encroachments from water drains to marsh

> Removal of dump yard



LOCATION 02
OMR Road

Pallikaranai marsh

PRELIMINARY DESIGN INPUTS
TRANSIT ORIENTED DEVELOPMENT

Fig. 64 Design Inputs - 3 sites

Cooum river

Marina beach

LOCATION 01
Mt. Road



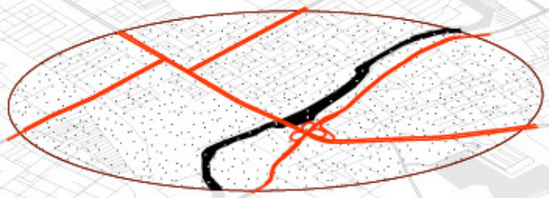
> Additional metro connection imminent

> Potential for city scale destinations

Elliots beach

Thiruvanmayur beach

Buckingham canal



LOCATION 03
Poonamale high road

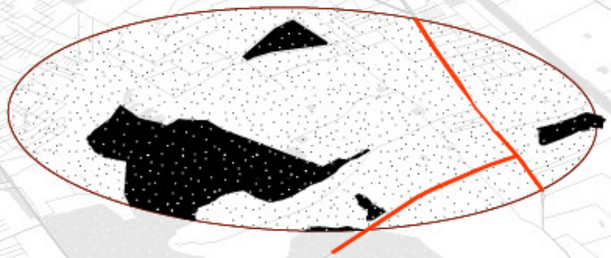
> Multi-modal tranfer point - metro rail,city bus.

> Potential for higher dense environments around metro stations.

> New metro line proposed - implementation a challenge due to spatial conditions.

> Need for higher densification around metro station, specifically in the interiors, away from the OMR. (Reducing travel time)

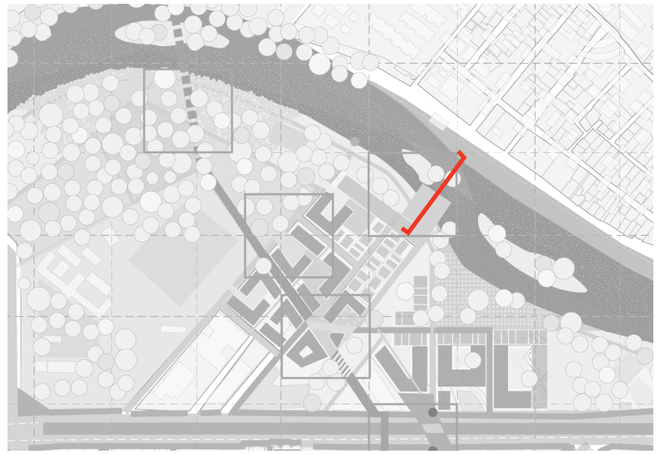
LOCATION 02
OMR Road

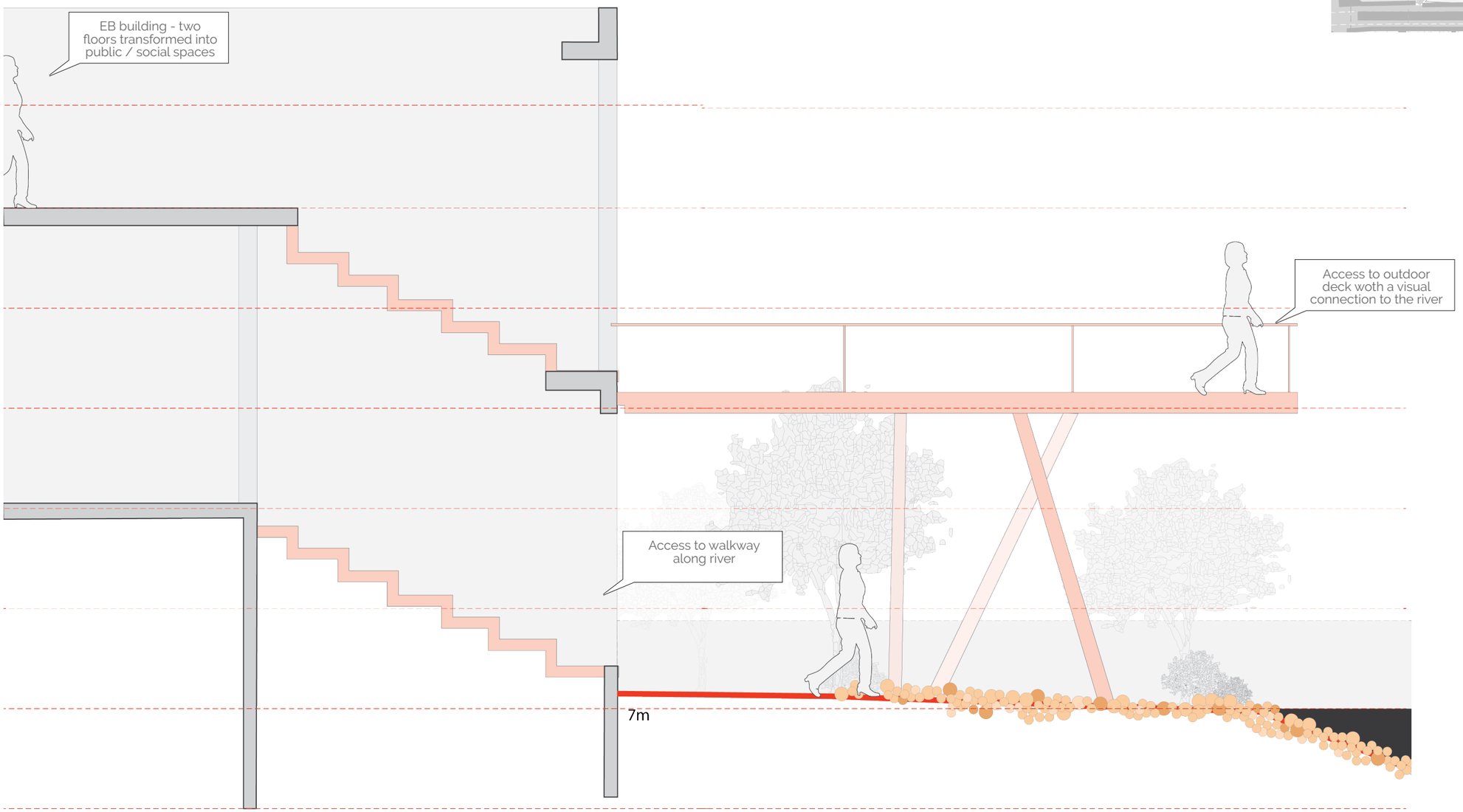


Pallikaranai marsh

SECTIONAL VIEW

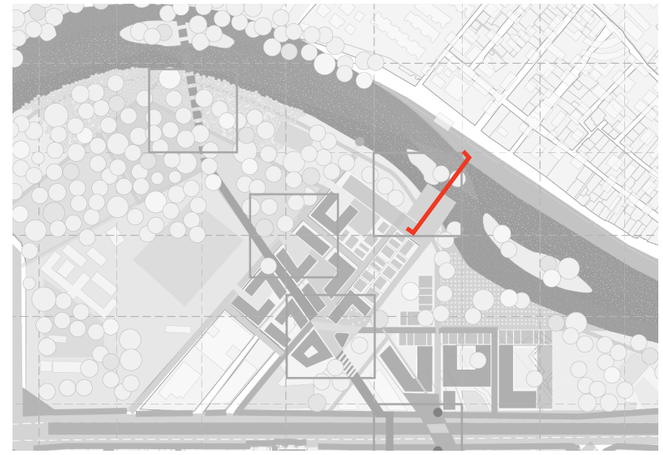
CROSS SECTION THROUGH EB BOARD BUILDING

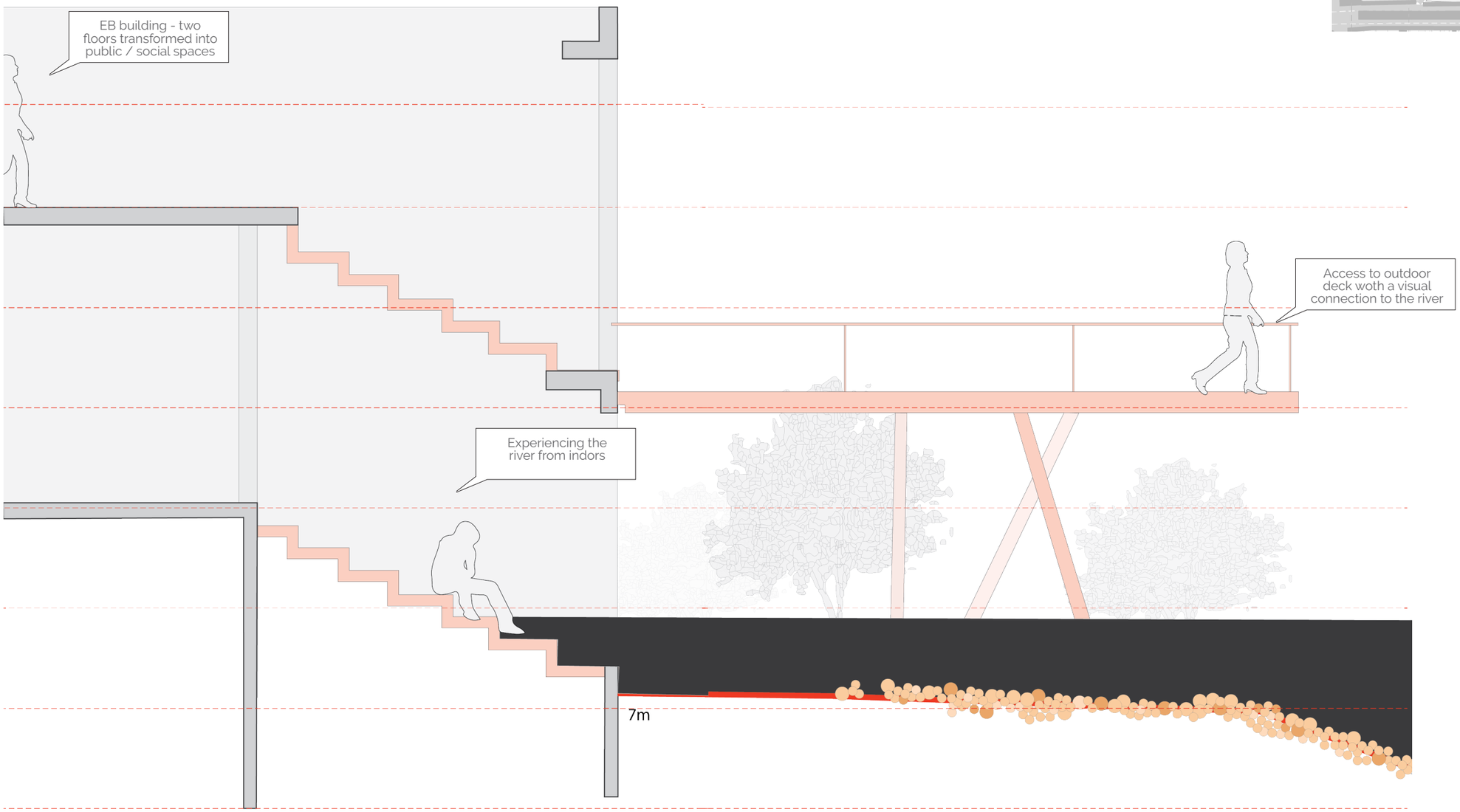




SECTIONAL VIEW

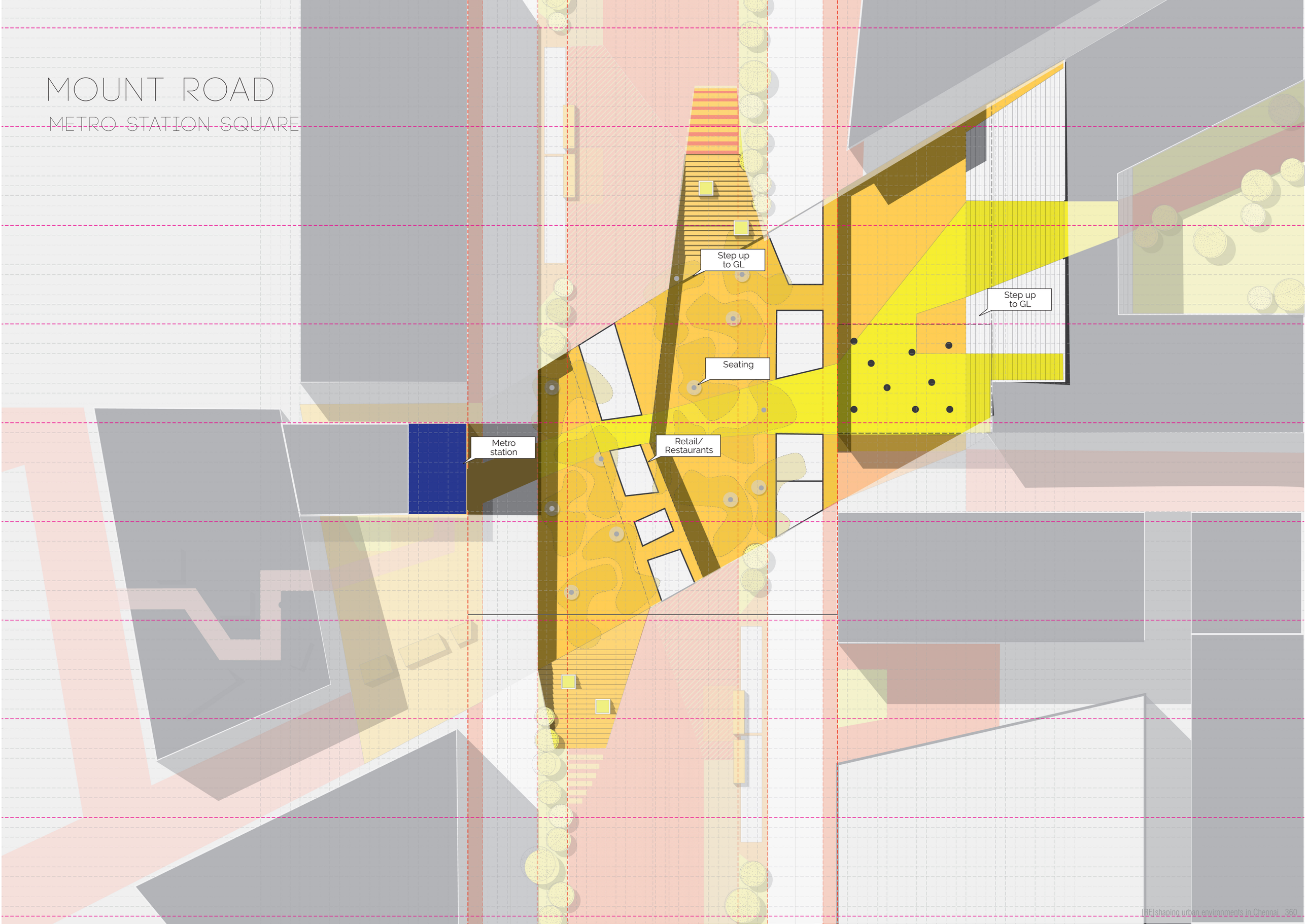
CROSS SECTION THROUGH EB BOARD BUILDING
HIGHER WATER FLOW





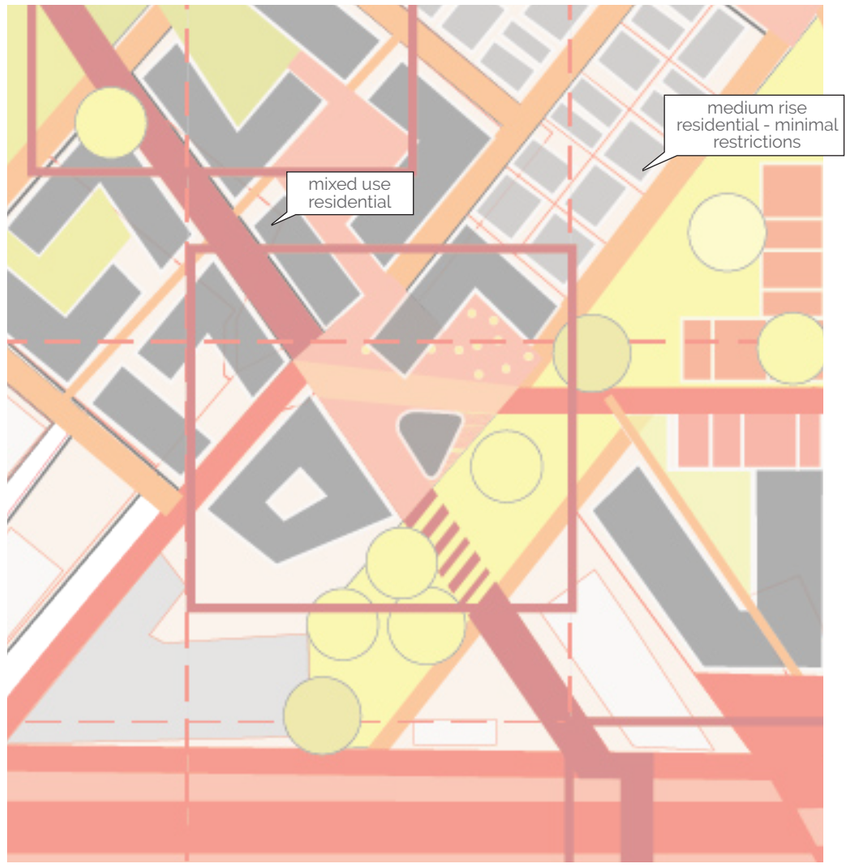
MOUNT ROAD

METRO STATION SQUARE



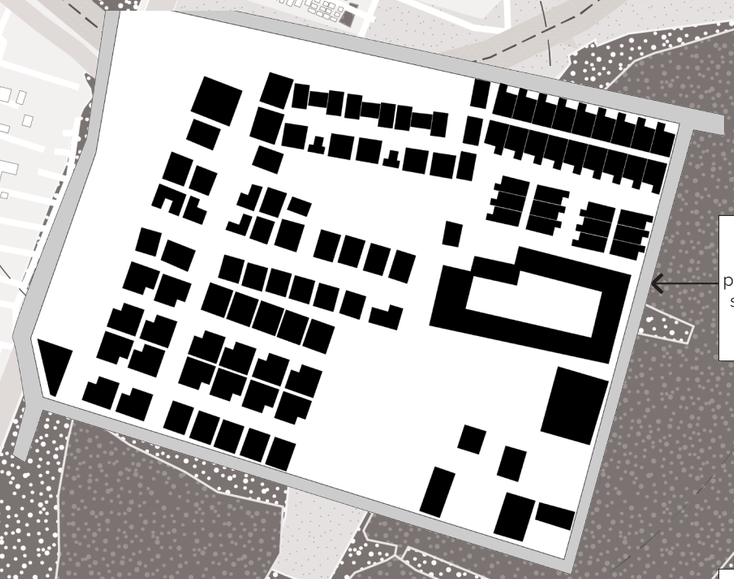
4.2.4 DESIGN PROPOSAL
VIEW OF BLOCK SQUARE



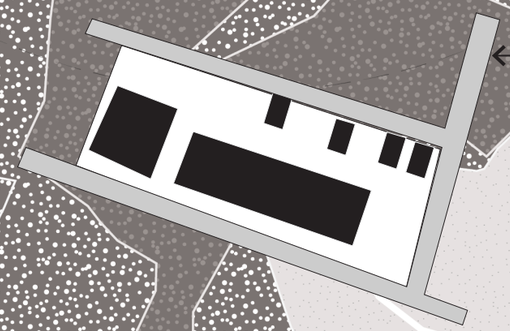


EXISTING CONTEXT

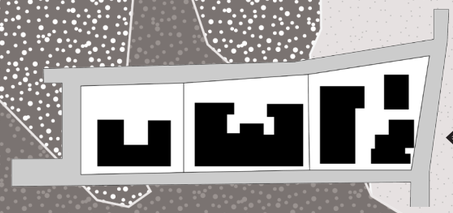
CONTRASTS IN BUILT MORPHOLOGY



Large parcels of land with private communal spaces and streets are found in plenty in this area.



Large low dense parcels and blocks of light industry and commercial dealers.



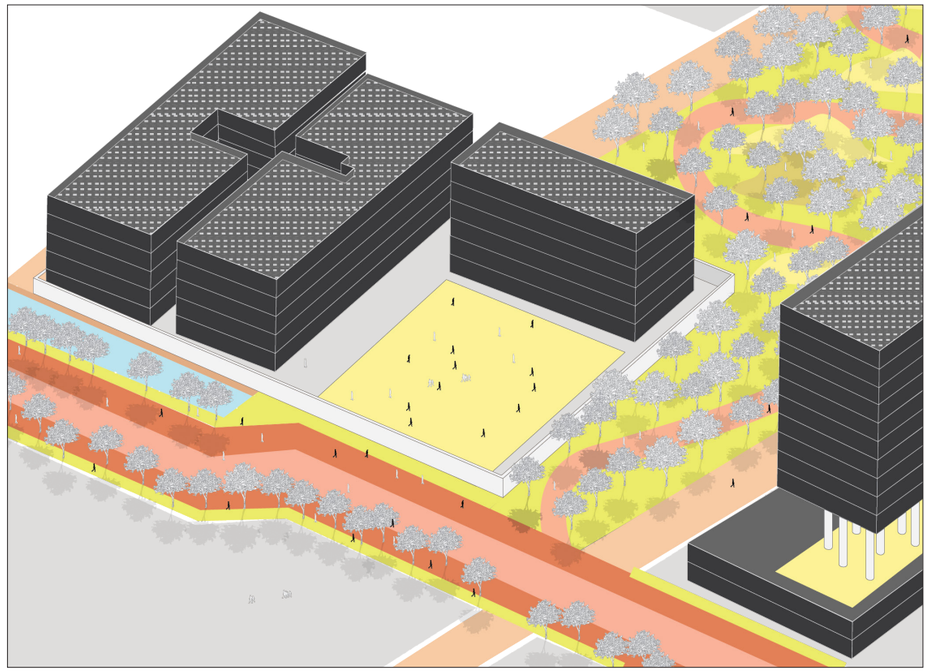
Medium/large parcels of housing development found here as a result of the job opportunities in the IT sector.

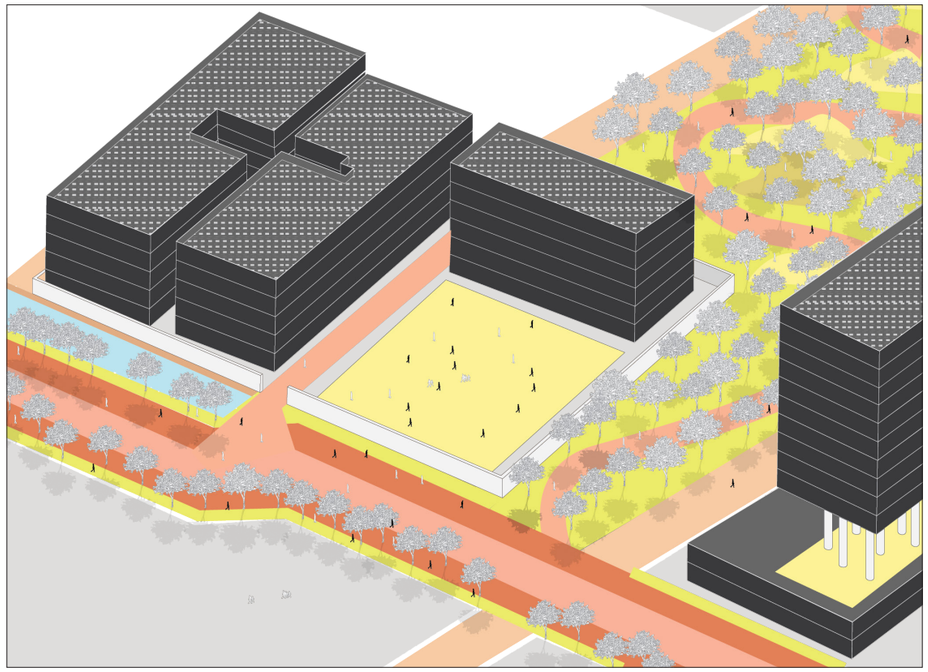


Small parcels of low income housing and slums encroaching into the Buckingham canal

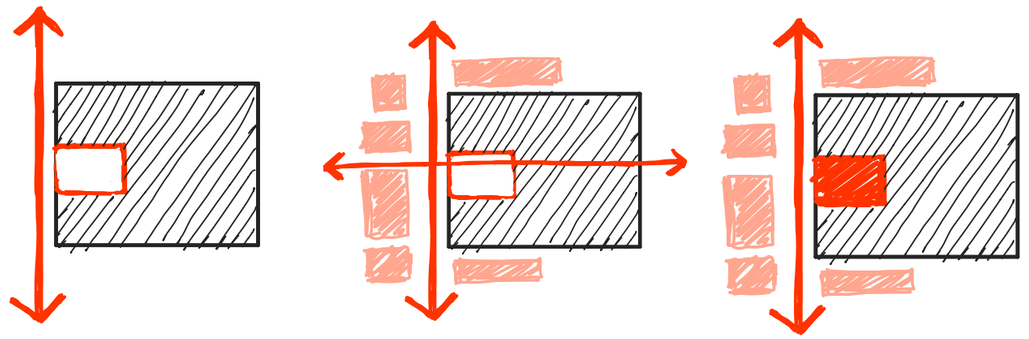
ZOOM IN 01

GATED COMMUNITIES









01 CURRENT SITUATION

02 MIXED USE DEVELOPMENT AND IMPROVED PEDESTRIAN QUALITIES.

ACCESS THROUGH GATED COMMUNITY IF POSSIBLE

03 COMPOUND WALL REMOVED AND COMMUNAL SPACE MADE PUBLIC

ZOOM IN 01

GATED COMMUNITIES

Industrial site partially redeveloped as part of the green corridor

Smaller waterbodies interconnected to allow for flowing water

Transformed central pedestrian path [Zoom in 02]

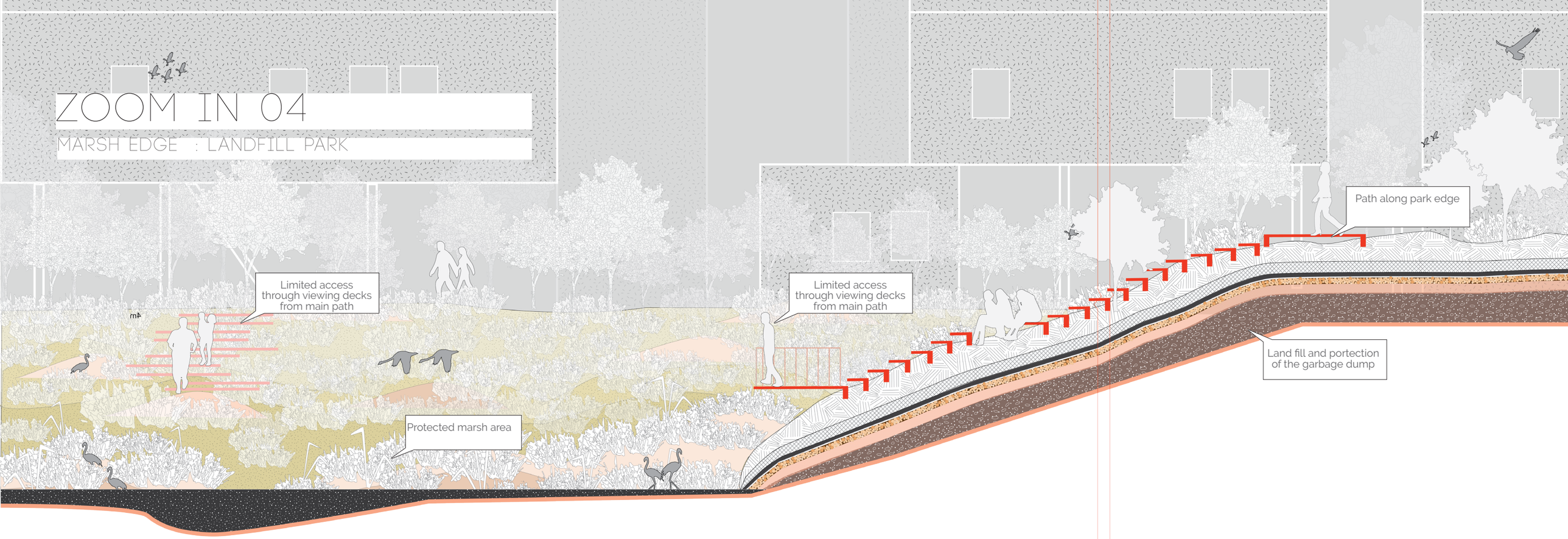
Communal space of gated community opened up.

Path thrugh park allows an alternate route of access to Mount road

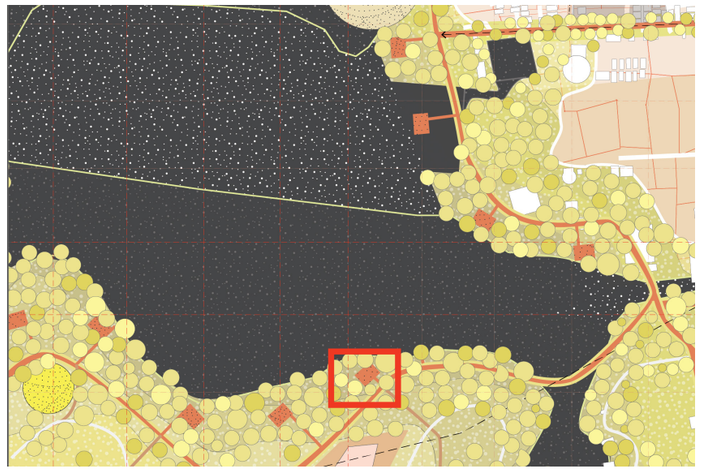
Development of new mixed use high rise buildings

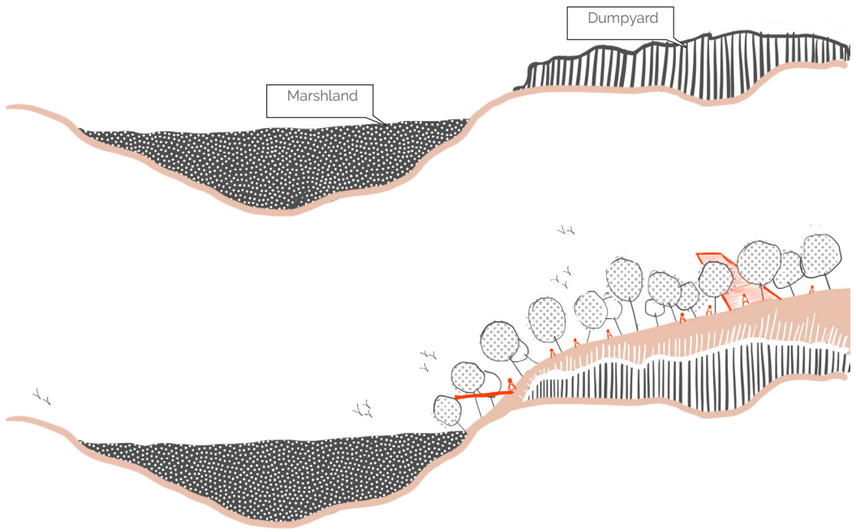
ZOOM IN 04

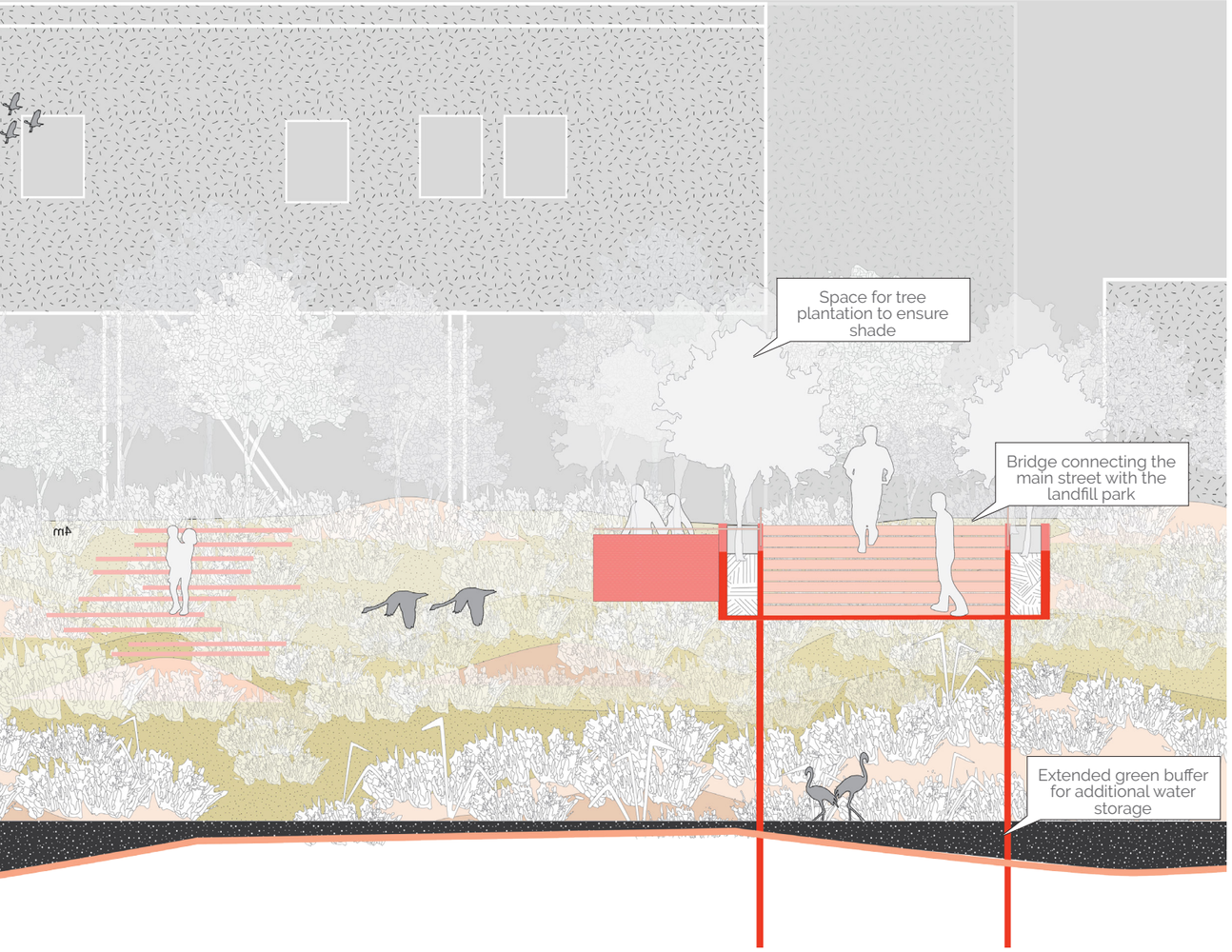
MARSH EDGE : LANDFILL PARK



The dumpyard is regenrated as a city sclae park with recreational activities, bird watching centres and learning and awareness centres. This regeneration is posible by compacting the existing waste, constructing the layers of soil, gravel, insulating layer and vegetative soil layer required. This results in the entire park being raised above its surroundings, enabling it to act as a viewing deck to the marsh arouns.

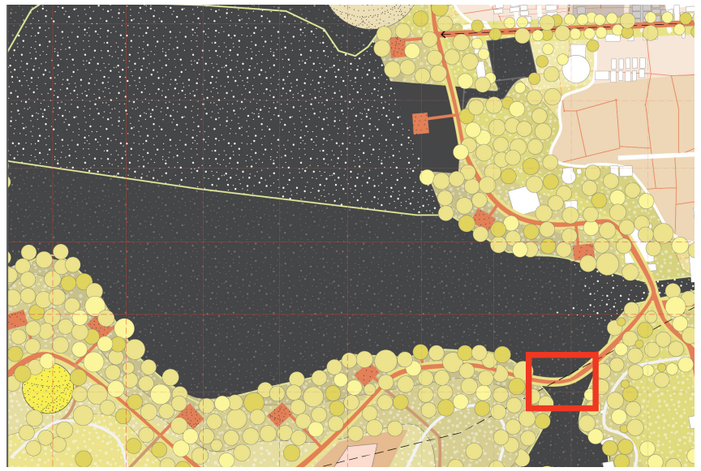






ZOOM IN 04

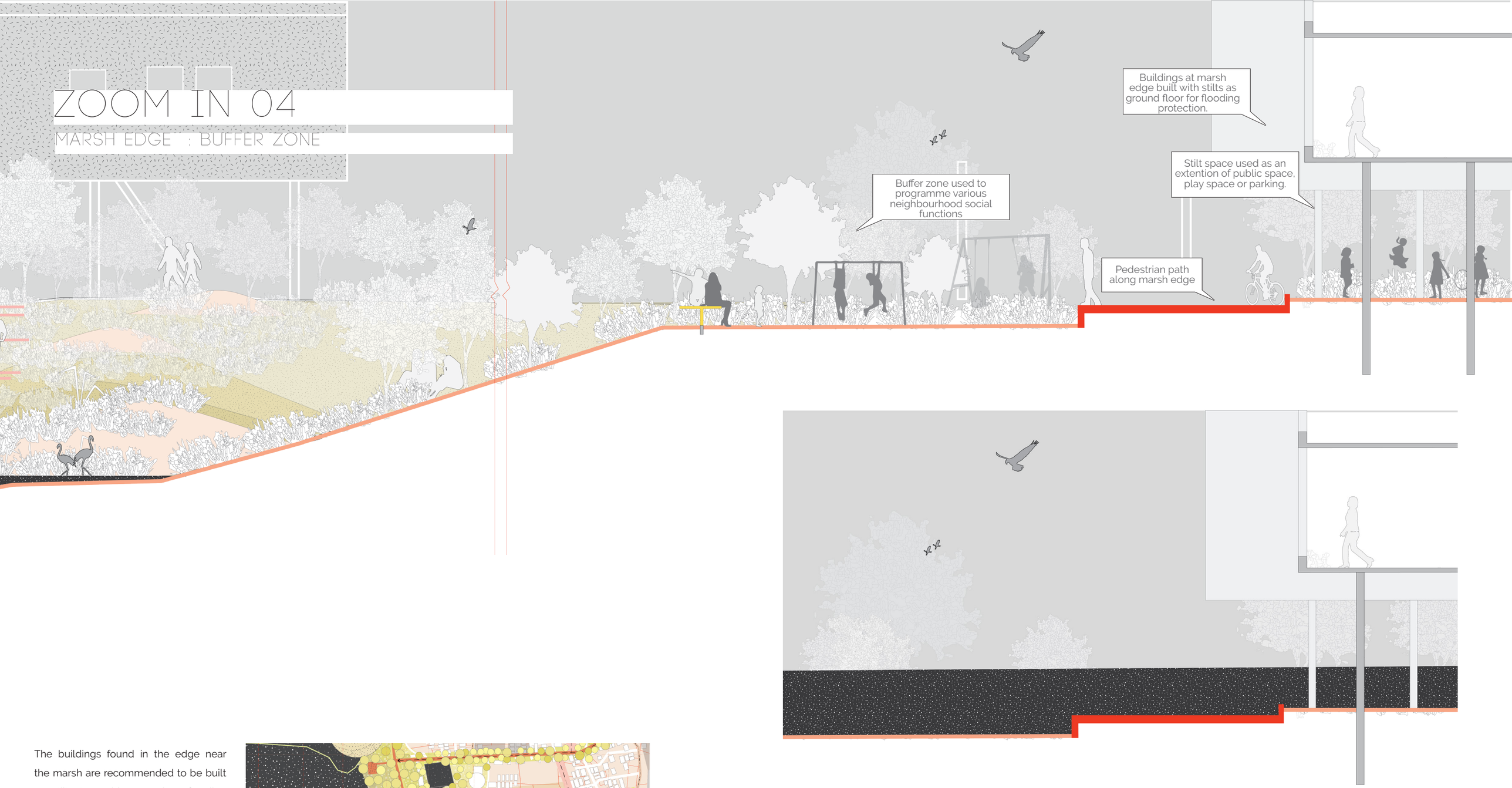
MARSH EDGE : LANDFILL PARK



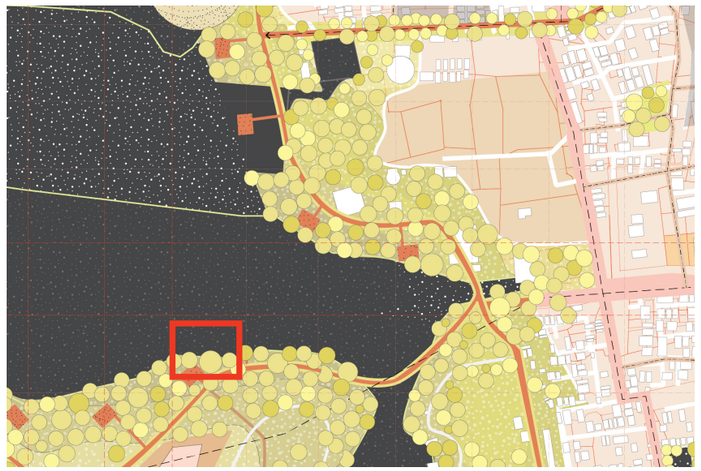
With the creation of the protected edge, the lower elevation points in the buffer serve as water retention locations in cases of high water flow. This requires a bridge to cross over from the main street to the regenerated park. The bridge is shaded with trees and consists of viewing decks.

ZOOM IN 04

MARSH EDGE : BUFFER ZONE



The buildings found in the edge near the marsh are recommended to be built on stilts to avoid any serious flooding damage. the buffer area is programmed with all the neighbourhood functions along the perpendicular nodes.





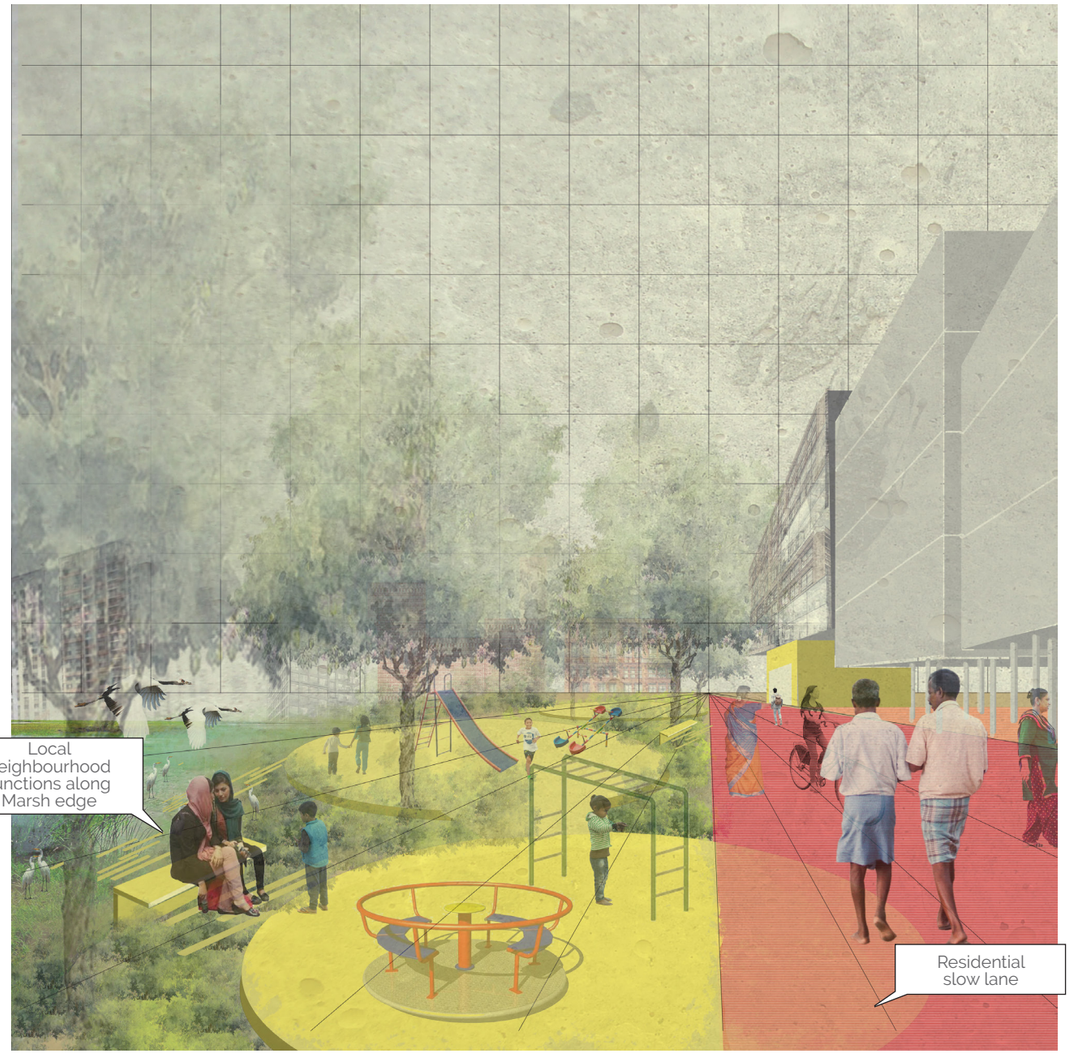


4.3.5 DESIGN PROPOSAL

PERSPECTIVE VIEWS



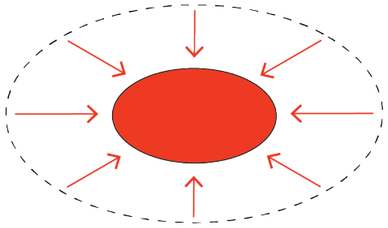
VIEW OF THE MARSH FROM NEW PARK

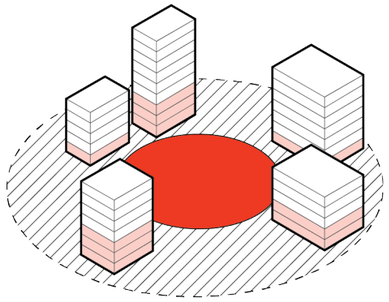


SOCIAL FUNCTIONS ALONG THE BUFFER ZONE

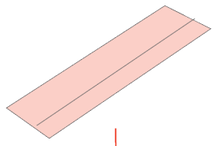
DESIGN STRATEGIES

S.T.1 TRANSIT STOPS AS LOCAL CENTERS



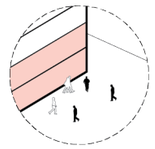


S.T.3 HIGH DENSE MIXED USE AROUND TRANSIT STOP

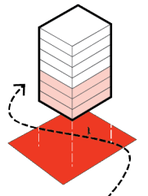


Arterial road transformation

limiting vehicles maximising public space

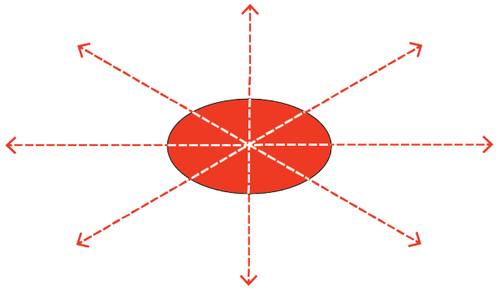


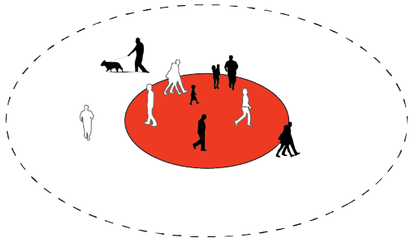
Active functions at the ground level - retail/ restaurants etc.



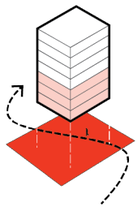
parcel accessible to public near transit point - allowing through movement

S.T.2 MAXIMUM CONNECTIONS FROM TRANSIT STOPS



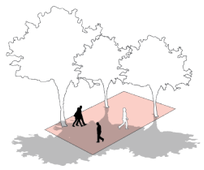


S.T.4 HIGH OPPORTUNITY FOR PEDESTRIAN MOVEMENT



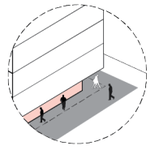
parcel accessible to public near transit

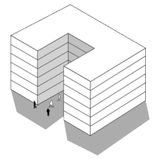
station square





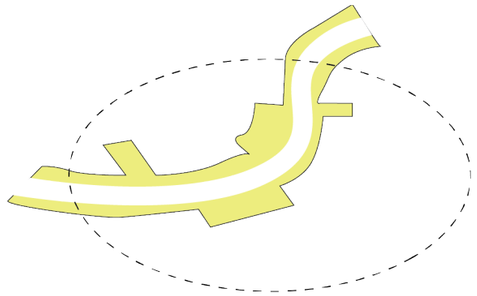
Public spaces to be shaded



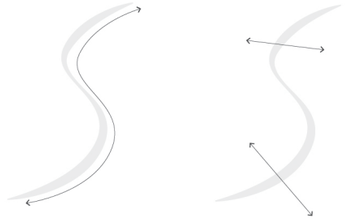


DESIGN STRATEGIES

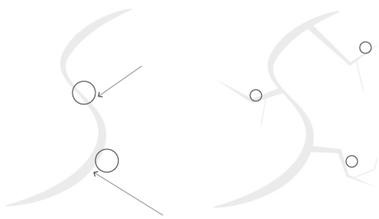
S.E.1 ACTIVATE WATER EDGE



Strengthen the edge



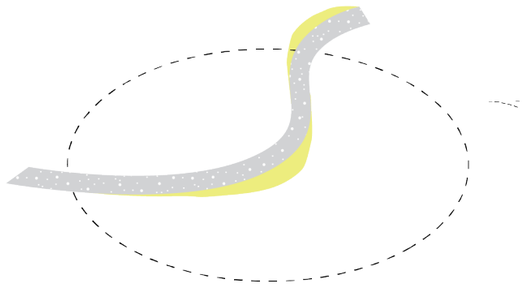
Create transitions



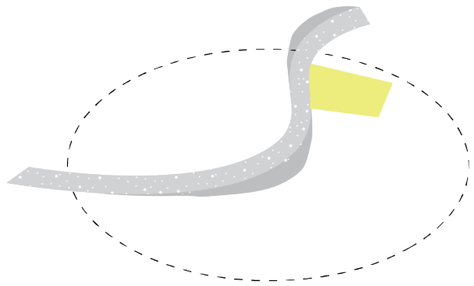
Create destinations

Allow for ordering and hierarchies

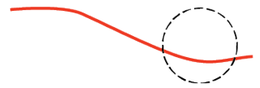
S.E.2 WIDEN RIVER ALONG THE OUTER BENDS



S.E.3 CREATE SOCIAL SPACES THAT FUNCTION AS WATER STORAGE AT THE IDEAL LOCATIONS.



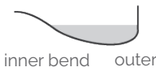
ideal locations - low lying land



ideal location - inner river bend

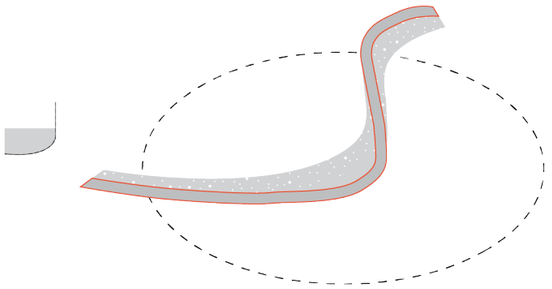


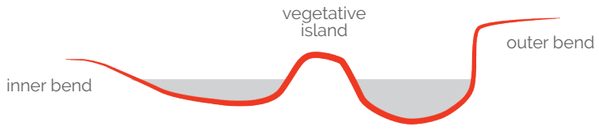
inner bend



outer bend

S.E.4 FACILITATE A SMALLER CHANNEL ALONG THE OUTER BENDS TO CARRY WATER DURING LOWER SEASONAL FLOWS





DESIGN STRATEGIES

The densification strategies are described in terms of the actions and their relation with the strategies for mobility and ecology, the level of policy change and spatial intervention required and a list of the major interventions reccomended.

SPATIAL INTERVENTIONS 01 02 03 04 05

01. No interventions required

02. Minimal interventions in terms of integrating site with public street network.

03. Moderate interventions in government owned parcels and buildings with predominantly public stakeholders.

04. Moderate to high interventions in institutional and large corpration/ developer owned parcels.

05. High interventions in parcels owned by multiple private hindividuals and small bussinesses.

POLICY 01 02 03 04 05

01. No policy changes

02. Policy amendment regarding built density and function

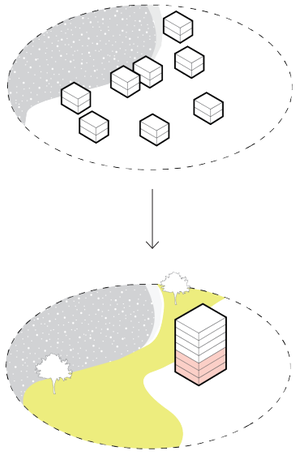
03. Policy amendment regarding built density and function and additional incentives.

04. New policies addressing additional restrictions such as spatial configuration, access to public and relation to streets.

05. Key location with specific regulation.

S.D.1 RELOCATE + REBUILD ALONG RIVER BANK

SPATIAL INTERVENTIONS ■■■■■
POLICY ■■■■■



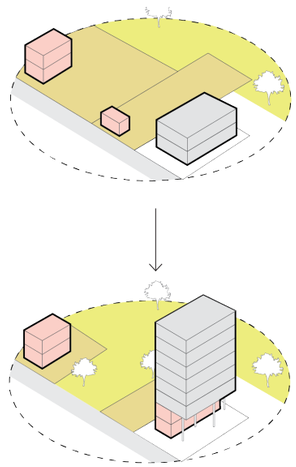
STAKEHOLDERS
Public : CMDA, TNEB,
Private : Developers
Civil society : Individuals and households,

INTERVENTIONS
> Selection of buildings to be removed.
> Stakeholder meeting to negotiate displacement and gather inputs on the new buildings.
> Provision of the required infrastructure such as new roads etc.

POLICY
> Demarcation of open space to prohibit any permanent structures
> Policy defining the function and density of new building.
> Reservation of units in the new buildiing for the displaced households.

S.D.2 PUBLIC ACCESSIBILITY + GREEN COVER ON INSTITUTIONS SITES

SPATIAL INTERVENTIONS ■■■□□
POLICY ■■■□□



STAKEHOLDERS
Public : CMDA, Government schools and colleges,
Private : Coorprate offices and banks
Civil society : small businesses.

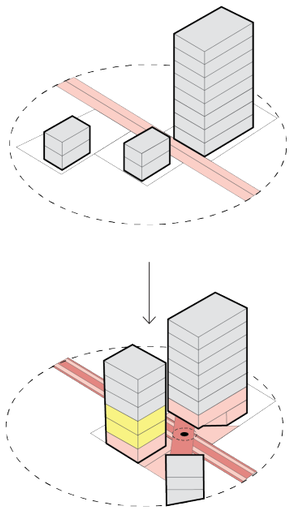
INTERVENTIONS
> Selection of buildings to opened to public and those to be displaced.
> Stakeholder meeting to negotiate public use of space in terms of boundries, timing etc.
> Provision of the required infrastructure such as new paths accessible to the public and new vegetation.

POLICY
> Policy allowing parcels of historic buildings to become publicly accessible.
> Incentives such as allowances/ maintainance costs as a benifit to making parcels accessible to public.

S.D.3 RELOCATE + REBUILD ALONG RIVER BANK

SPATIAL INTERVENTIONS ■■■■■

POLICY ■■■■■



STAKEHOLDERS

Public : CMDA

Private : Corprate offices, banks

Civil society : Households, housing associaions and small businesses.

INTERVENTIONS

> Selection of buildings to be rebuilt.

> Stakeholder meeting to negotiate building function and form.

> Spatial interventions on site accessible to public as per design proposal.

POLICY

> Demarcation of public space on site to prohibit any permanent structures/ compound walls and incentives such as allowances/ maintainance costs as a benifit.

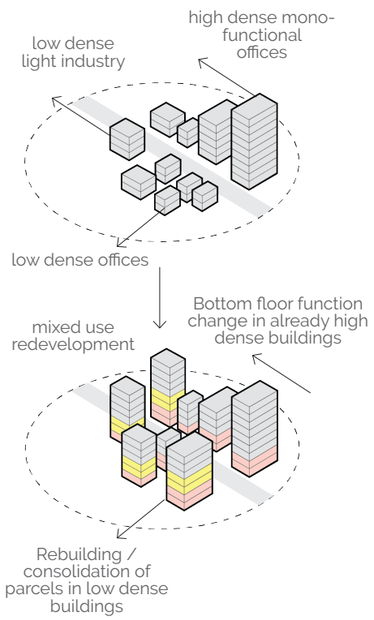
> Policy defining the functions and density of new building.

> Reservation of units in the new buildiing for the displaced households.

S.D.4 RELOCATE + REBUILD ALONG RIVER BANK

SPATIAL INTERVENTIONS ■■■■□

POLICY ■■■□□



STAKEHOLDERS

Public : CMDA

Private : Developers, Offices and industries

Civil society : Individuals and households, small businesses.

INTERVENTIONS

> Catogorisation of buildings to be rebuilt, relocated or transformed.

> Stakeholder meeting to negotiate displacement and gather inputs on the new buildings.

> Provision of the required infrastructure such as new roads etc.

POLICY

> low dense industry : relocate to a different site with incentives of TDR.

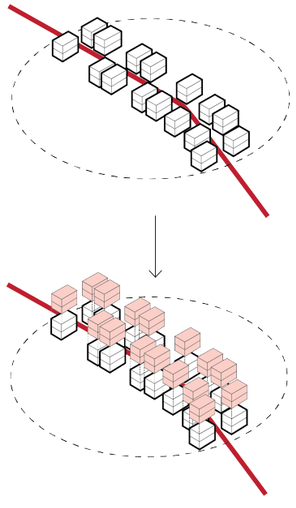
> low dense offices : rebuild as high dense mixed use commercial, residential and office.

> High dense mono-functional office: Assign lower floor(s) function as commercial or public, with public access to site and no compound wall with incentive of higher FSI.

S.D.5 RELOCATE + REBUILD ALONG RIVER BANK

SPATIAL INTERVENTIONS ■□□□□

POLICY ■■■□□



STAKEHOLDERS

Public : CMDA

Private : -

Civil society : Individuals,households, housing associaions and small businesses.

POLICY

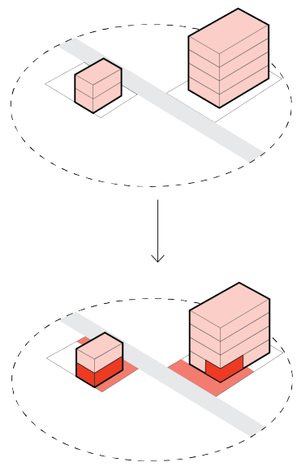
> An increase in permissible density along the central pedestrian routes within the neighbourhood.

> Additional increase in permissable density as an incentive when 1. the ground floor is allocated to local small businesses. 2. when there is no compound wall along the front facade.

S.D.6 PUBLIC ENGAGEMENT WITH HISTORIC BUILDINGS

SPATIAL INTERVENTIONS ■■□□□

POLICY ■□□□□



STAKEHOLDERS

Public : CMDA

Private : Coorprate offices and banks occupying historic buildings

Civil society : Small businesses occupying historic buildings.

INTERVENTIONS

> Coordinate with the individual building occupants to ensure a relationship between the public street, parcel of land and the commercial / recreational function.

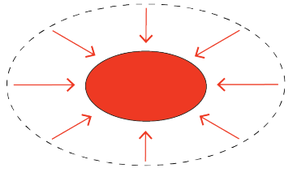
POLICY

> Policy allowing parcels of historic buildings to become publicly accessible.

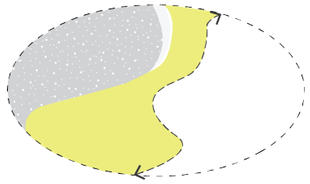
> Reserving a minimum percentage of the ground floor for recreational, commercial or public functions.

DESIGN STRATEGIES

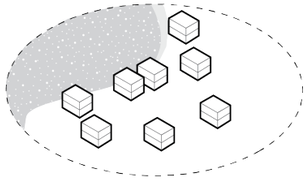
LOCATION 02

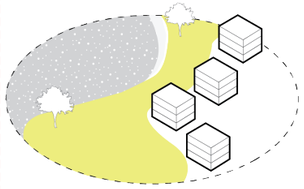


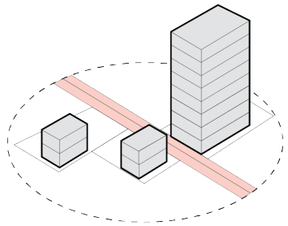
S.T.1
TRANSIT STOPS AS LOCAL CENTERS

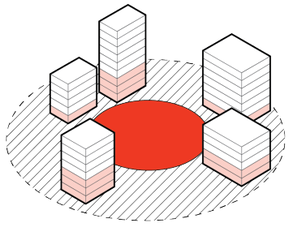


S.E.1
ACTIVATE + RECLAI,M WATER EDGE

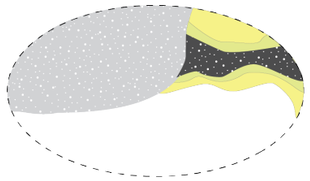




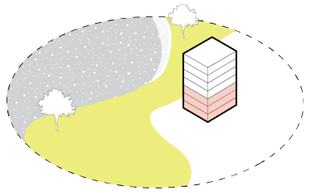




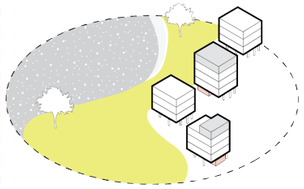
S.T.2
HIGH DENSE MIXED USE AROUND TRANSIT STOPS



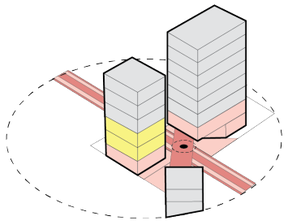
S.E.2
SOCIAL SPACE X WATER STORAGE



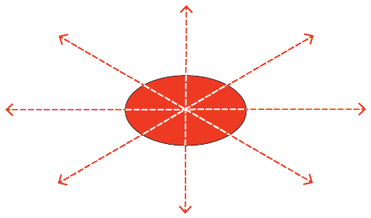
S.D.1
RELOCATE + REBUILD



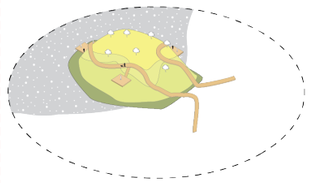
S.D.2
HOUSING TRANSFORMATION ALONG MARSH EDGE



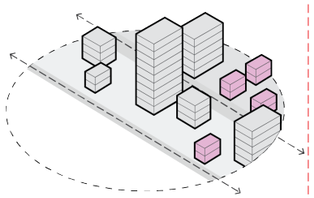
S.D3
TRANSFORMATION OF METRO SQUARE

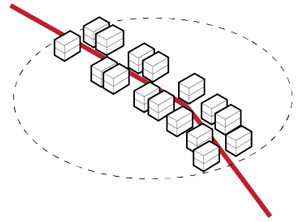


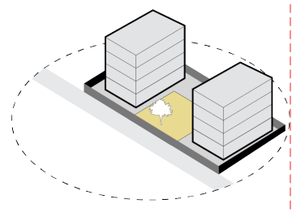
S.T.3
MAXIMUM CONNECTIONS FROM TRANSIT STOPS

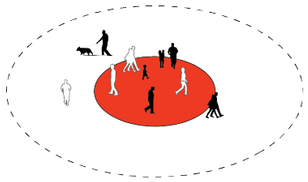


S.E.3
REGENERATE DUMPYARD AS A NEW PARK

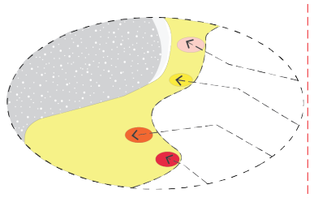




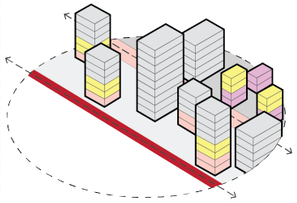




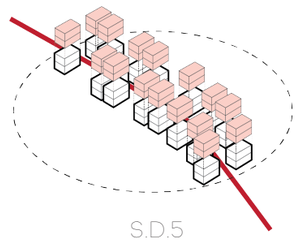
S.T.4
HIGH OPPURTUNITY FOR PEDESTRIAN MOVEMENT



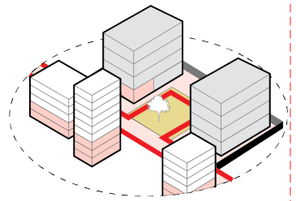
S.E.4
ACTIVATE BUFFER AREA WITH LOCAL NEIGHBOURHOOD FUNCTIONS AT NODES



S.D.4
MIXED USE TRANSFORMATION OF OFFICE AND INDUSTRY 500M FROM METRO STOP



S.D.5
INCREASE IN PERMISSIBLE DENSITY ALONG PEDESTRIAN PATH



S.D.6
TRANSFORMATION OF GATED COMMUNITY

DESIGN STRATEGIES

01 02 03 04 05

01. No interventions required

02. Minimal interventions in terms of integrating site with public street network.

03. Moderate interventions in government owned parcels and buildings with predominantly public stakeholders.

04. Moderate to high interventions in institutional and large corpration/ developer owned parcels.

05. High interventions in parcels owned by multiple private hindividuals and small businesses.

POLICY 01 02 03 04 05

01. No policy changes

02. Policy amendment regarding built density and function

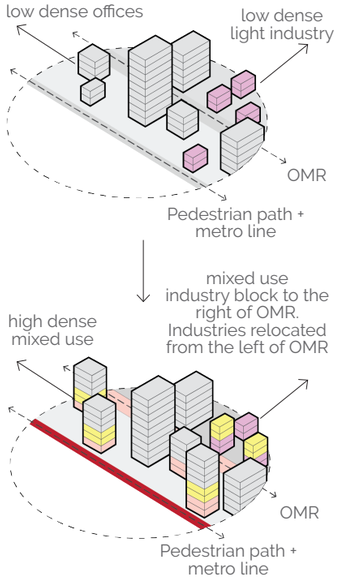
03. Policy amendment regarding built density and function and additional incentives.

04. New policies addressing additional restrictions such as spatial configuration, access to public and relation to streets.

05. Key location with specific regulation.

S.D.5 RELOCATE + REBUILD ALONG RIVER BANK

SPATIAL INTERVENTIONS ■■■■□
POLICY ■■■□□



STAKEHOLDERS

Public : CMDA

Private : - Corprate offices, industries

Civil society: Households, housing associaions and small businesses.

Private: CMDA, private home owners,

INTERVENTIONS

> Catogorisation of buildings to be rebuilt, relocated or transformed.

> Stakeholder meeting to negotiate displacement and gather inputs on the new buildings.

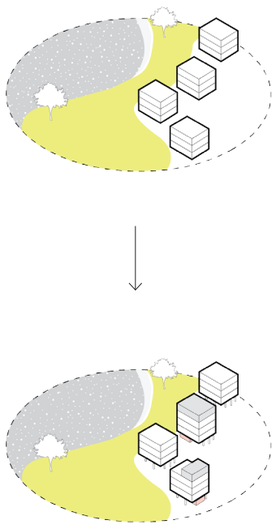
POLICY

> Low dense industry : relocate to right side of OMR with incentives of TDR/ increaased permissible density with mixed use housing and industry.

> Low dense offices : rebuild as high dense mixed use commercial, residential and office.

S.D.4 RELOCATE + REBUILD ALONG RIVER BANK

SPATIAL INTERVENTIONS ■□□□□
POLICY ■■■□□



STAKEHOLDERS

Public : CMDA

Private : Developers

Civil society : Individuals and households, small businesses.

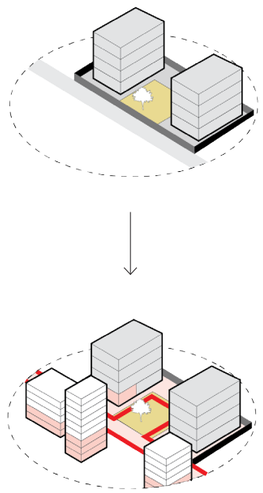
POLICY

> Incentive of higher permissible density to build ground floor on stilts, allowing for public activity parking or small scale commercial activity.

> Zoned as primary residential with medium to low density, to ensure minimum disturbances to bird species in the marsh.

S.D.6 PUBLIC TRANSFORMATION OF GATED COMMUNITY

SPATIAL INTERVENTIONS ■■■■□
POLICY ■■■□□



STAKEHOLDERS

Public : CMDA

Private : Developers

INTERVENTIONS

> Identify communities 500m from the metro stop with communal spaces suitable for public accessibilty

> Coordinate with the individual building occupants and developers to open communal spaces to public, offering incentives such as highly pedestrian and mixed use abutting road,

POLICY

> Policy allowing parcels of gated communities to become publicly accessible.

> Incentives allowinig flexibility in timings of public access, allowances or contribution to maintenance of communal spaces.

EXISTING CONTEXT







Fig. 65 Metro line in Anna nagar. Source : chennaimetrorail.org
Fig. 66 Cooum river edge
Fig. 67 Nelson Manikkam road. Source https://annanagardaily.blogspot.com/2013/02/a-vital-link-to-anna-nagar-is-set-for.html
Fig. 68 Lake view street. Source: V Ganesan. https://www.thehindu.com/features/metroplus/society/mambalams-missing-links/article6271937.ece



SECTIONAL VIEW

CROSS SECTION NEIGHBOURHOOD DESTINATIONS

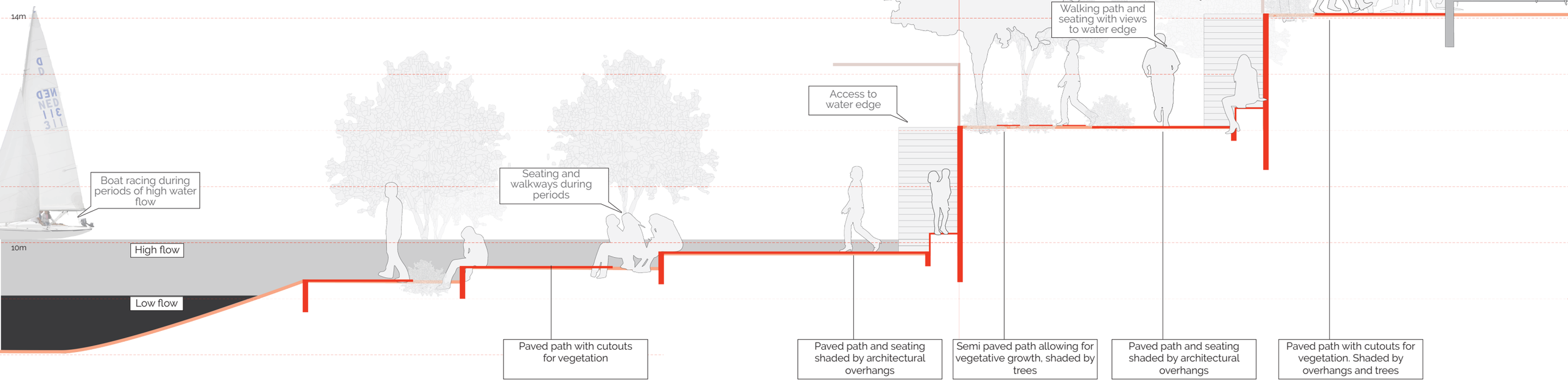




Fig. 69 Cross section - Neighbourhood scale local destination.

PROJECT PHASING

LOCATION 02 : SEQUENCE OF IMPLEMENTATION

