LIVING WITH THE LAKE

EXTENSIONS OF DOMESTIC LIVES AT THE EDGE OF GOVERDHAN SAGAR LAKE , UDAIPUR

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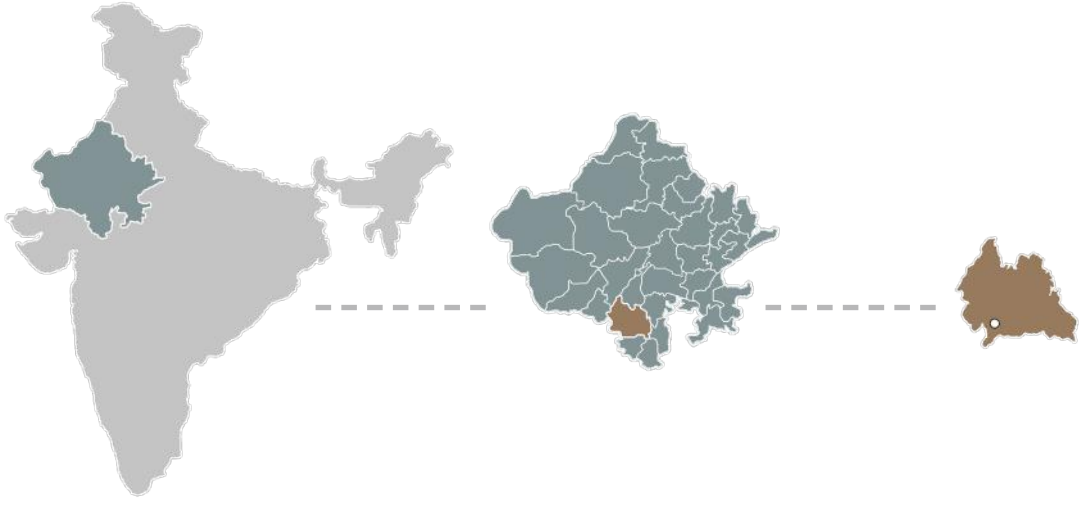
Premise

Freshwater aquatic systems such as lakes can adjust to seasonal variations in soil moisture, soil composition, and water levels influenced by rainfall patterns and other climatic fluctuations. Compared to lakes in peri-urban areas, urbanization has led to a significant metamorphosis and alteration of the natural ecology of lakes in urban areas.

Lakes play a crucial role in the broader regional ecology by serving as reservoirs that collect and manage run-off water, thus mitigating the risk of flooding.

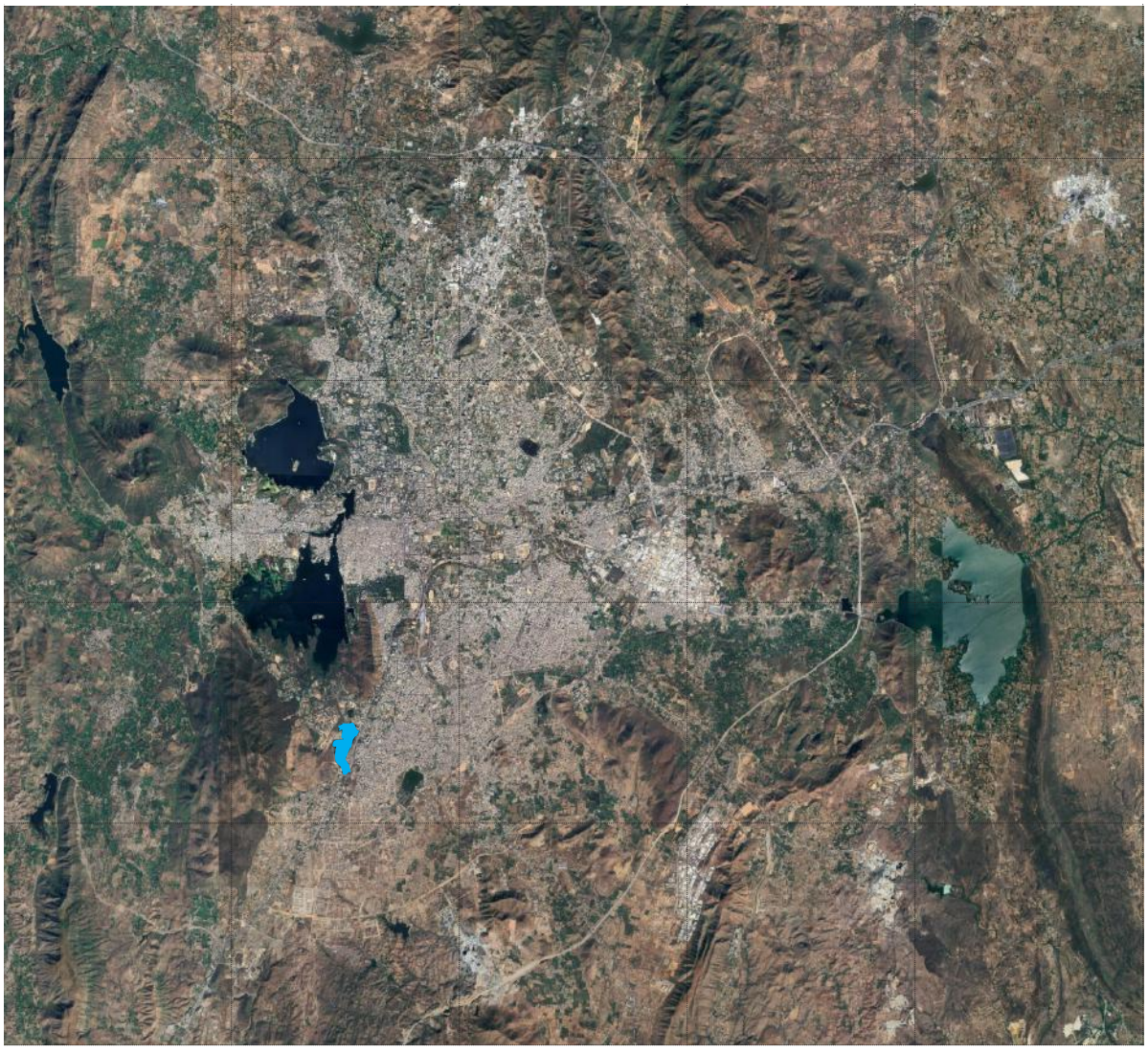


Rajasthan *Udaipur* *Goverdhan Sagar Lake*

Problem

In most examples of lake-waterfront development, the edges get concretized through constructing hard edges. Designers design these urban spaces, while ecologists and landscape designers counter the decisions made during the design process. The negotiation between land and water needs to be included in this process.

This studio questions the monotonous treatment of the edges of lakes and the ways of designing at the intersection of land and water. It also explains the importance of water networks and inflow to keep all other ecological processes associated with lakes going.



Contents

1
Landing

Between Land And Water

Govardhan Sagar Lake is one of the smaller yet significant artificial lakes in Udaipur, Rajasthan. It is located on the outskirts of Udaipur, about 4-5 km southwest of the city's center.The atmosphere near the lake is peaceful, with minimal urban noise that supports aquatic life and attracts some migratory birds during the winter season.

The difference in the spur of activity around the lake edge is evident on both the edges - urban and the natural edge. The domestic comfort of the residents , the unware luxury of a lakefront residence was my very first observation of the site.

Between Land and Water

A wall that stands sturdy for years ,
I divide the two worlds of living.
I stand witness to eb and flow on land and in water.
Windows in me that lets you see ,
a glance at a different life beyond .

These pockets let you feel closer
to the sounds and smell of waters below .
Of fish , of birds and of men clinging to me ,
One swims by me , one perches on me .

One sleeps on me overlooking the blues ,
the other dines and dumps on me .
I see women washing clothes by me ,
the blue of the lake cleaning them away.

I hide bathing women behind ,
While a drunk sways over my ledge.
Adorned with litter over me ,
Cow dung cakes become my jewels.

I am draped over with drying clothes ,
with children playing with heaps of filth that forever grow.
The views of blues , aren't they a luxury,
The rich pay hefty for them.

Here the poor get them for free,
Are we valued enough? The blues ask of me
The sedge and lilies that float by me ,
breathing alive in swamps of filth.

I see birds glide away in light ,
grounding on the islands of sediments .
I save the most of what i see,
the greens and blues beyond me .

The greys might seep in through the gaps of me ,
How much can you expect from one wall like me ?
Maybe i give myself a lot more credit ,
but its me who lives in transition.

I question the need of the existence of me,
Do i stop the greys or the let them pass ?
How do my greys merge with my blues and greens ?


HOTEL

2.
Grounding

Our study of the Goverdhan Sagar Lake comprised of the dynamic exercise called Grounding.This immersive process involved consolidating our on-site observations into a comprehensive collage of plans , vivid photographs and intricate 3D herbarium collections. Serving as our initial compass , grounding provided us with a profound understanding of the site’s intricacies , guiding us towards a deeper connection with its essence.

Grain Of
Moderately
Vegetated Land
Extension

Grain Of
Dense Slum
Housing
Fabric

Grain Of Aquatic
Vegetation At The
Water - Land Edges

Grain Of
Manicured Plots
And Dense
Shikarbadi Zone

Grain Of
Scrubland
Undergoing
Quarrying

Grain Of
Developed
Park At The
Lake Edge

REGIONAL PLAN

Documenting site conditions through plan

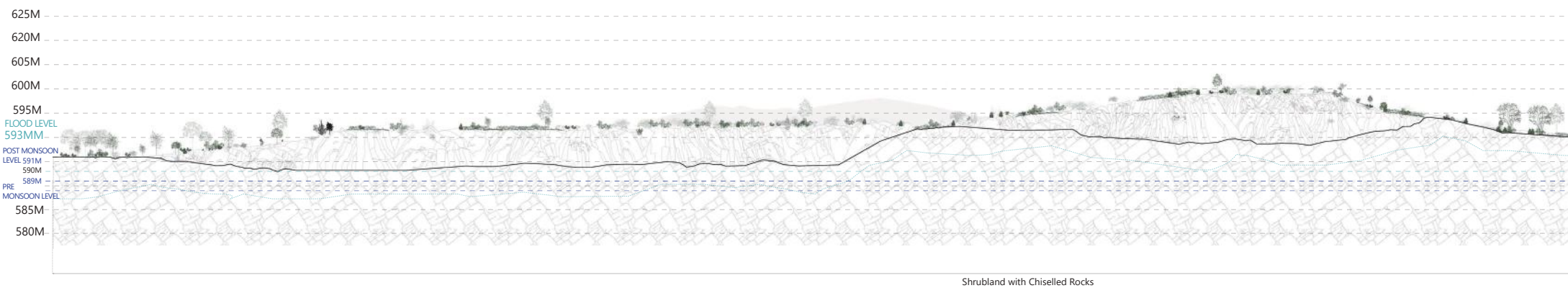
The lake is situated in the outskirts of Udaipur , 7Kms from the old city centre .Significant infrastructure is concentrated on the eastern edge of the lake. There are a total of 4 parks along the lake edge.

Vast extension of the Shikarbadi forest Area spreads along the western edge of the site, the south-western being a scrubland with extensive quarrying activity .

Primary Road - Goverdhan Villas Main Road
Secondary Road - Goverdhan Sagar Ring Road
Tertiary Road

1 PannaDhay Museum and Cruise
2 Smruti Van
3 BhomiyaJi Temple and Kund
4 Swarn Jayanti Park
5 Indira Nagar Colony
6 Digambar Jain Mandir
7 Quarried Scrubland
8 Hanuman Mandir
9 Pannadhay Park
10 Reserved Shikarbadi Zone

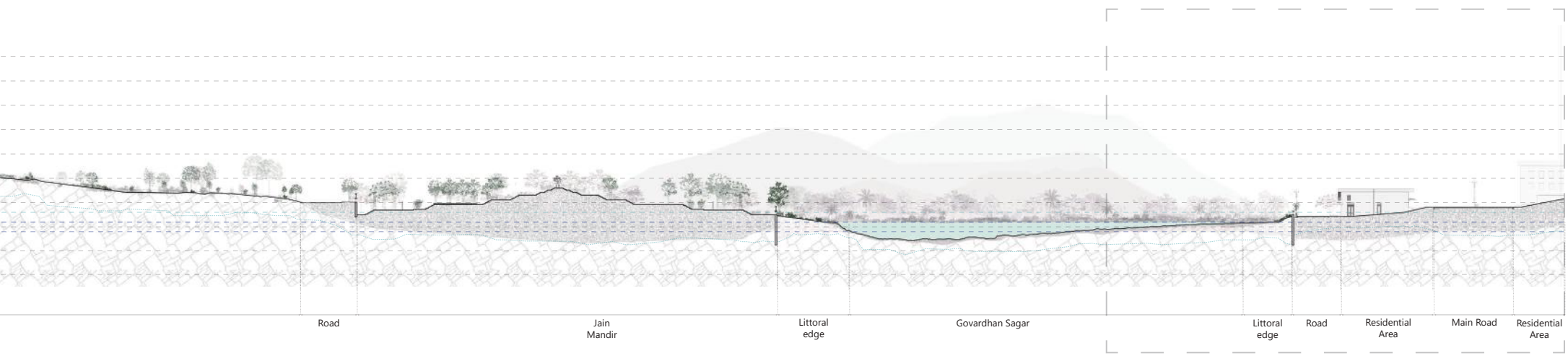
Grid at 50 x50 m



Section 01

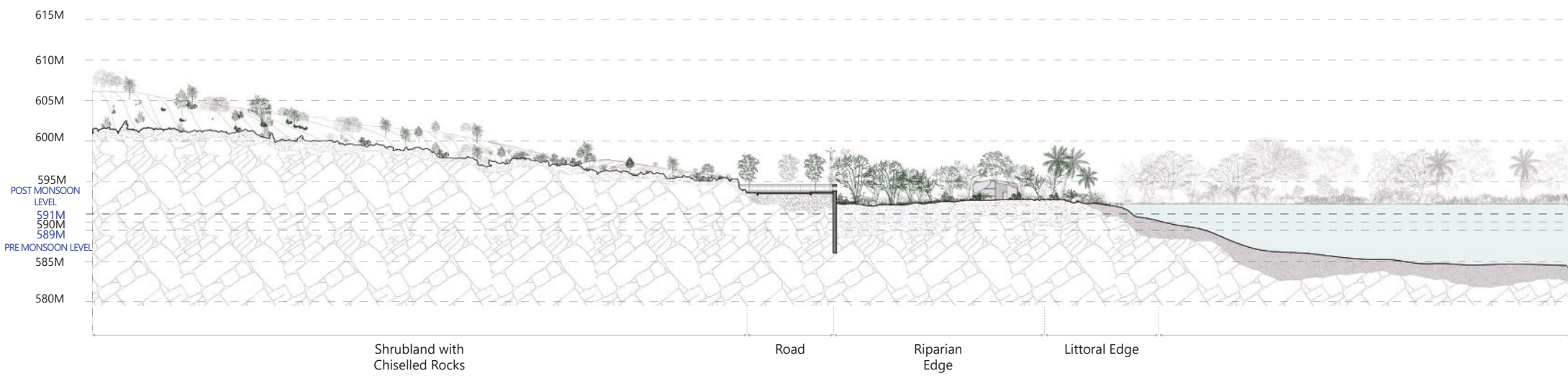
cut through Shrubland, Jain Mandir, Govardhan Sagar and Urban Edge

Key Plan



Section 01 - PART B

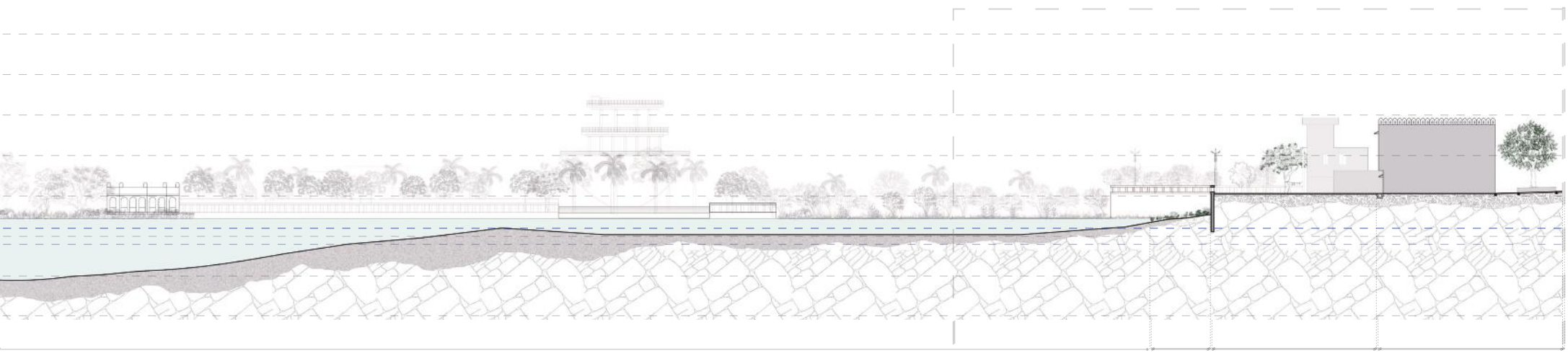
Chosen to study the urban edge at the lake

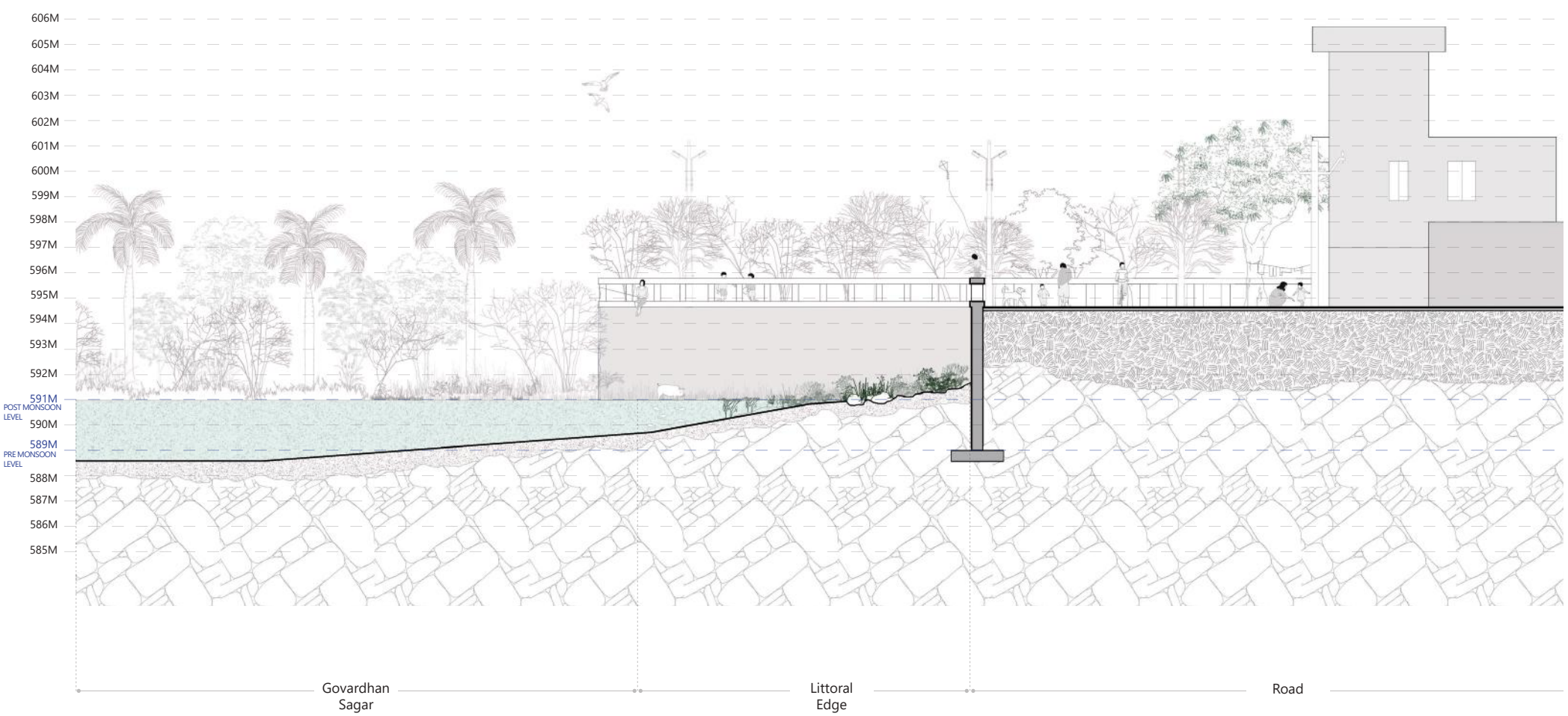


Section 02

cut through Area around Hanuman Temple , Govardhan Sagar and Urban Edge

Key Plan



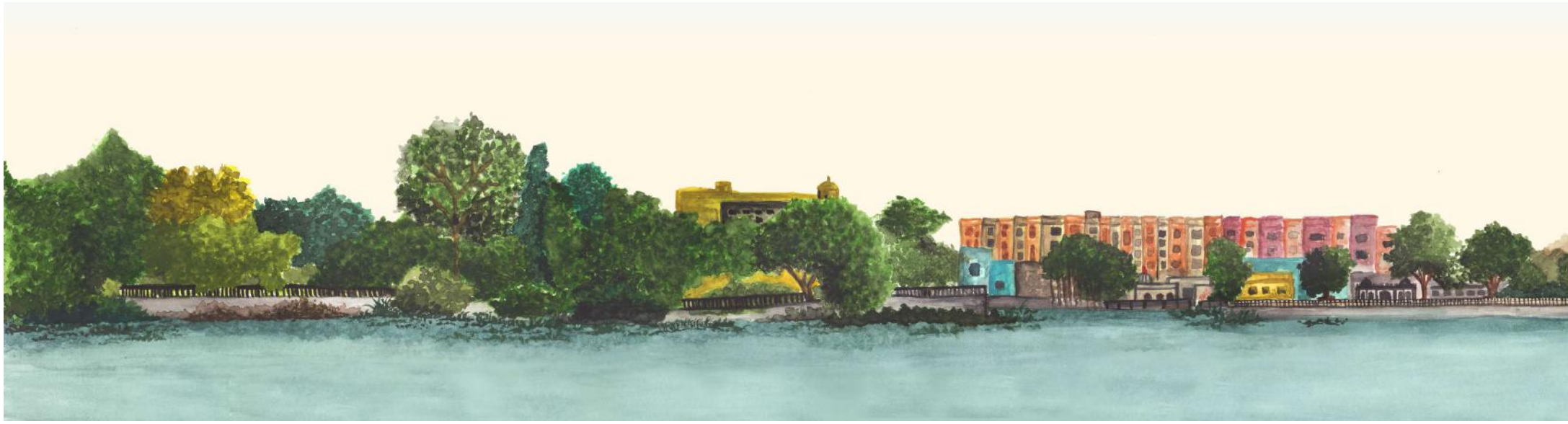


Section 02 - PART B

Chosen to study the urban edge at the lake

SITE ELEVATIONS

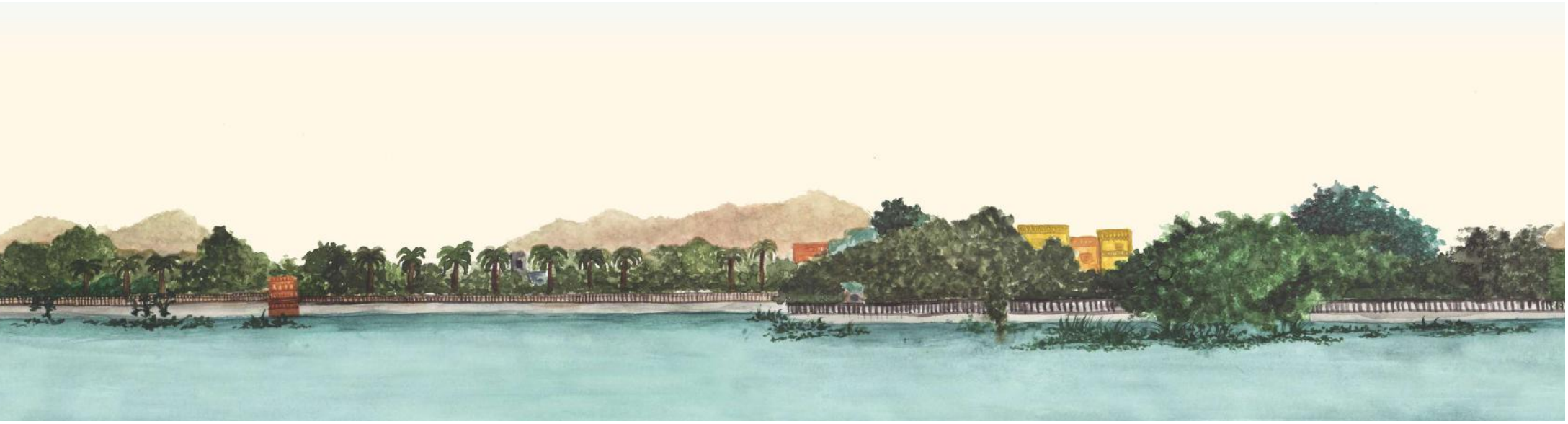
East Elevation

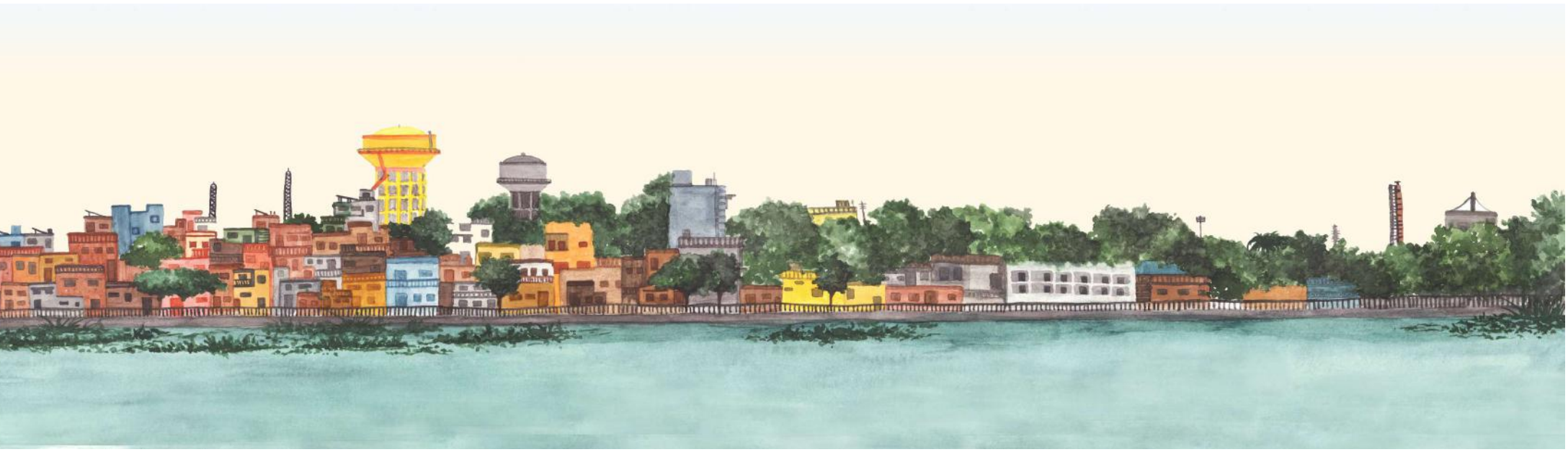


East Elevation - A *Chosen to study the urban edge at the lake*

East Elevation - B *Chosen to study the urban edge at the lake*

Key Plan



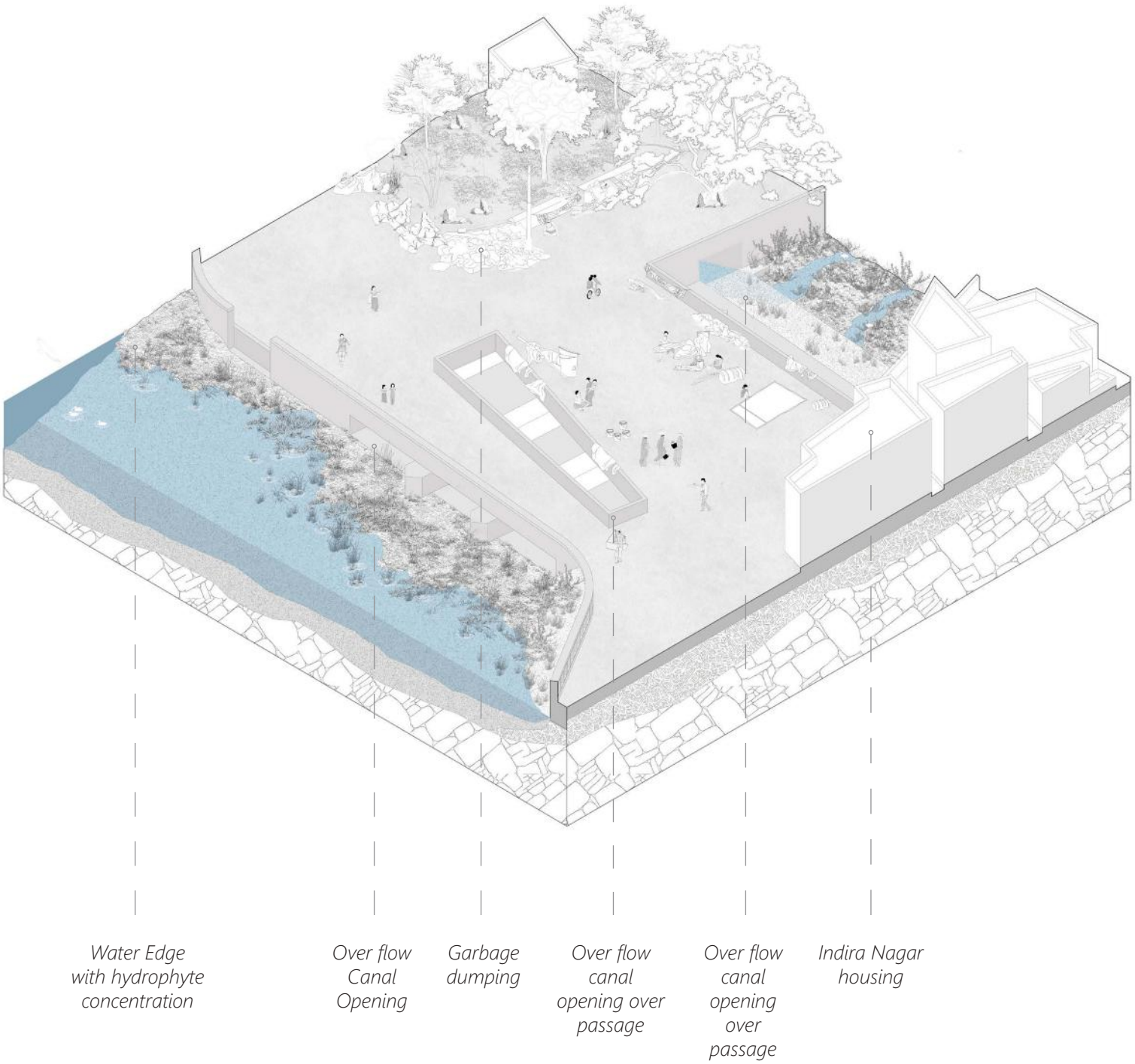


QUADRANT 8

Overflow Canal

This point was chosen for its role as an outflow channel during monsoons, helping manage the lake's rising water levels. Apart from the monsoon, when it is functional, it becomes a dumping ground, leading to degardation of the canal, almost becoming a polluted Nala. The area's high urban activity contributes to the deterioration of the lake and canal's edges.

The wider road, created by the canal, provides space for various human activities, being utilised as an outdoor extended space by the people where they carry out activities such as cooking, washing and drying clothes and even resting.

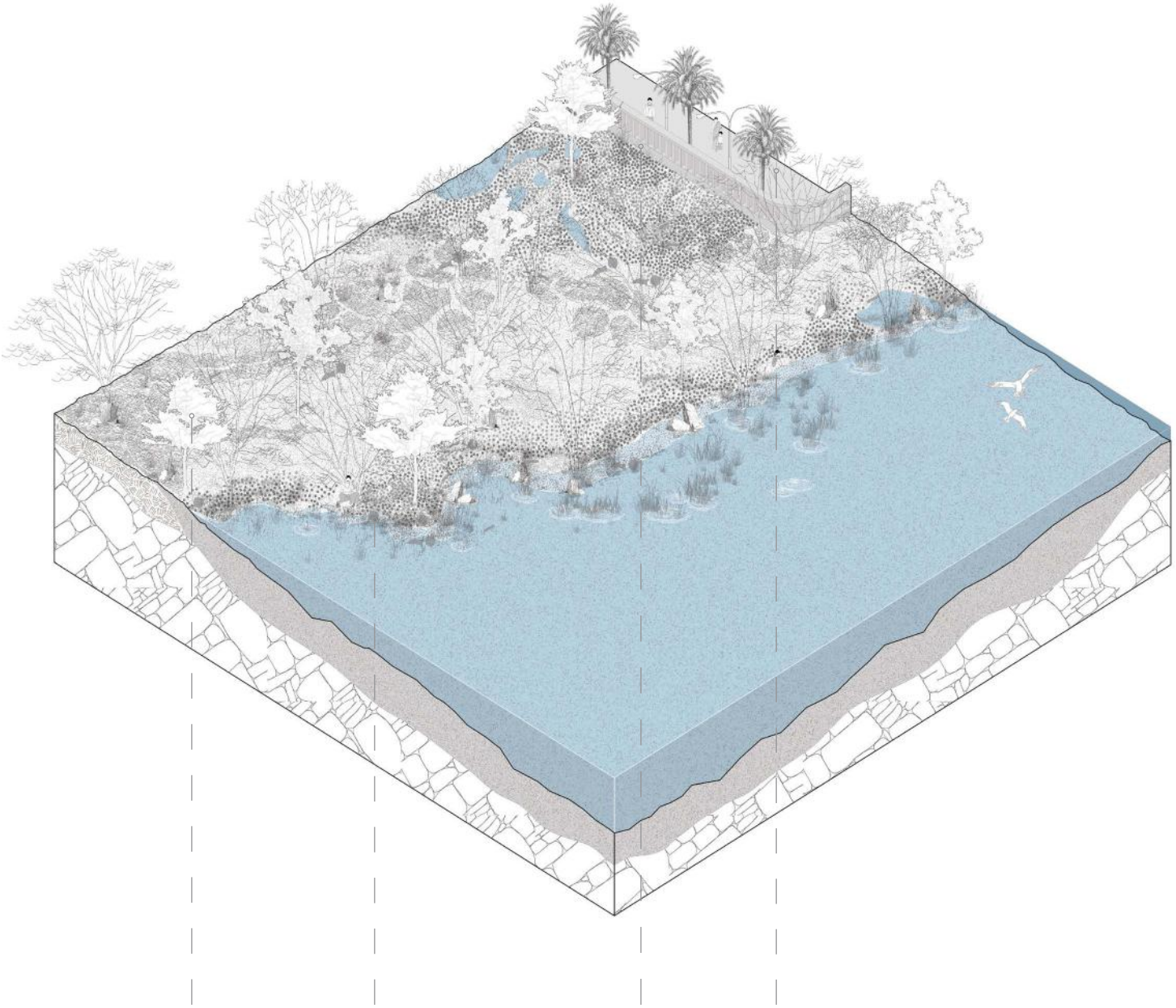


QUADRANT 9

Island connected to Urban Edge

The island was chosen to study its extensive human activity and the interaction between the urban setting and the lake's fragile ecosystem. It was frequently used as a defecation site, resulting in poor maintenance and environmental degradation.

Unlike other areas, its edges were dominated by rocky outcrops and solid formations. Few birds were observed along these vulnerable peripheries, emphasizing the ecological impact of human presence.



3.
Finding

Fragmented Access To Water

The lake body being a vast playground for various activities becomes the most obvious and prominent focal point on the site. The way the frames of water are being fragmented by different elements like vegetation , walls , built components , etc affect the emotions and hence activities of the users.
The study is a link between visual fragments , emotions they induce and the actionsby users .

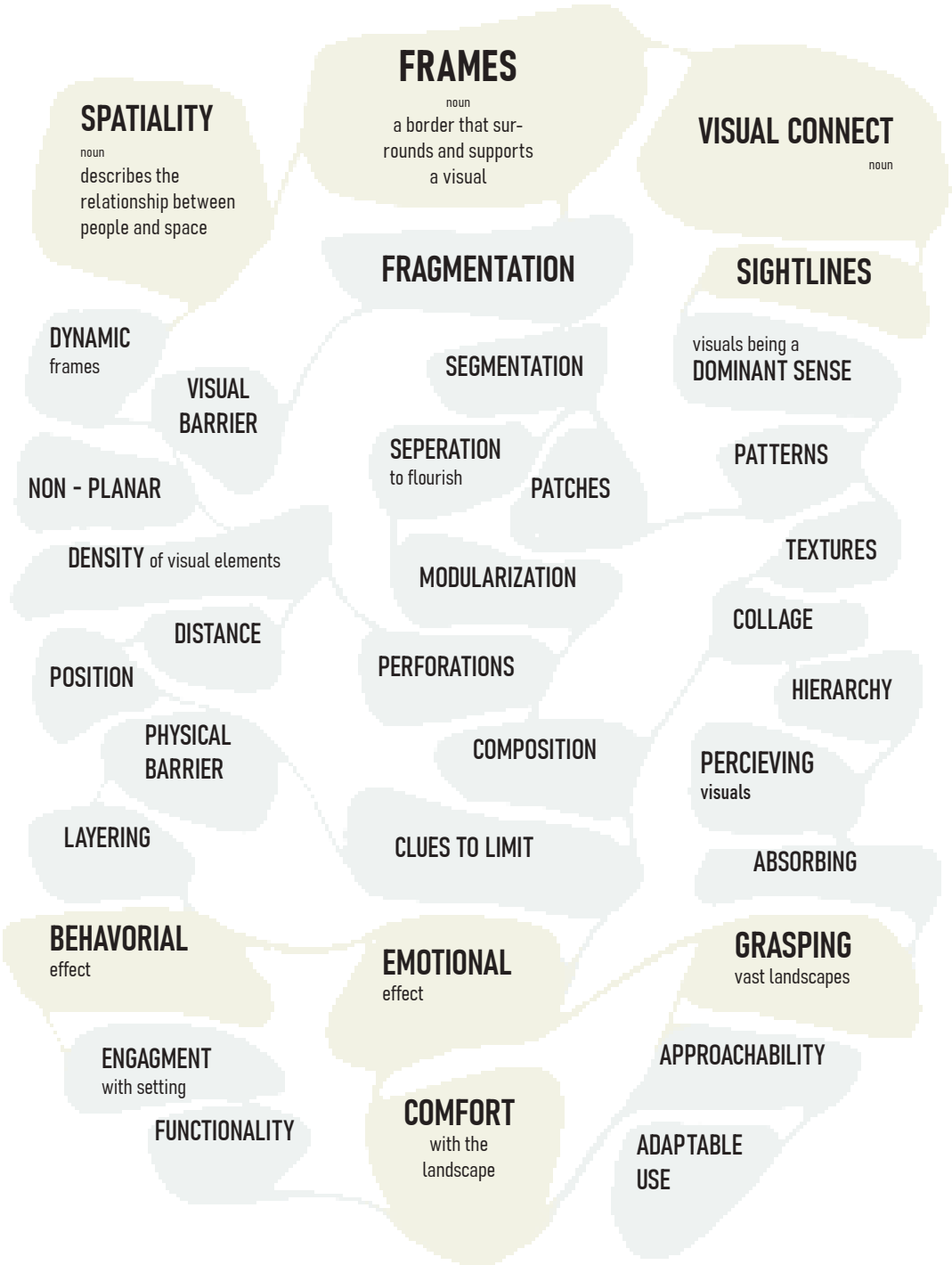
Where fragmentation is considered to be a negative connotation when it pertains to ecologies . However , in settings where urban encroachment is a primary factor, fragmentation is required .

ABSTRACTIONS OF TANGIBLES FROM SITE

Visual Fragmentation of the Water Surface
by Lili Pads and other hydrophytes

Visual Fragmentation of the lake view
by the Willow Trees

WORD MAP



Fragmentation , here is a terminology associated with the lake water access .
Visuals being the most dominant sensory , affect the behavorial pattern of the users of a space.

In majority of these frames of vision - visuals are followed by physical connect to the place and then the social connect or placemaking of the said space .

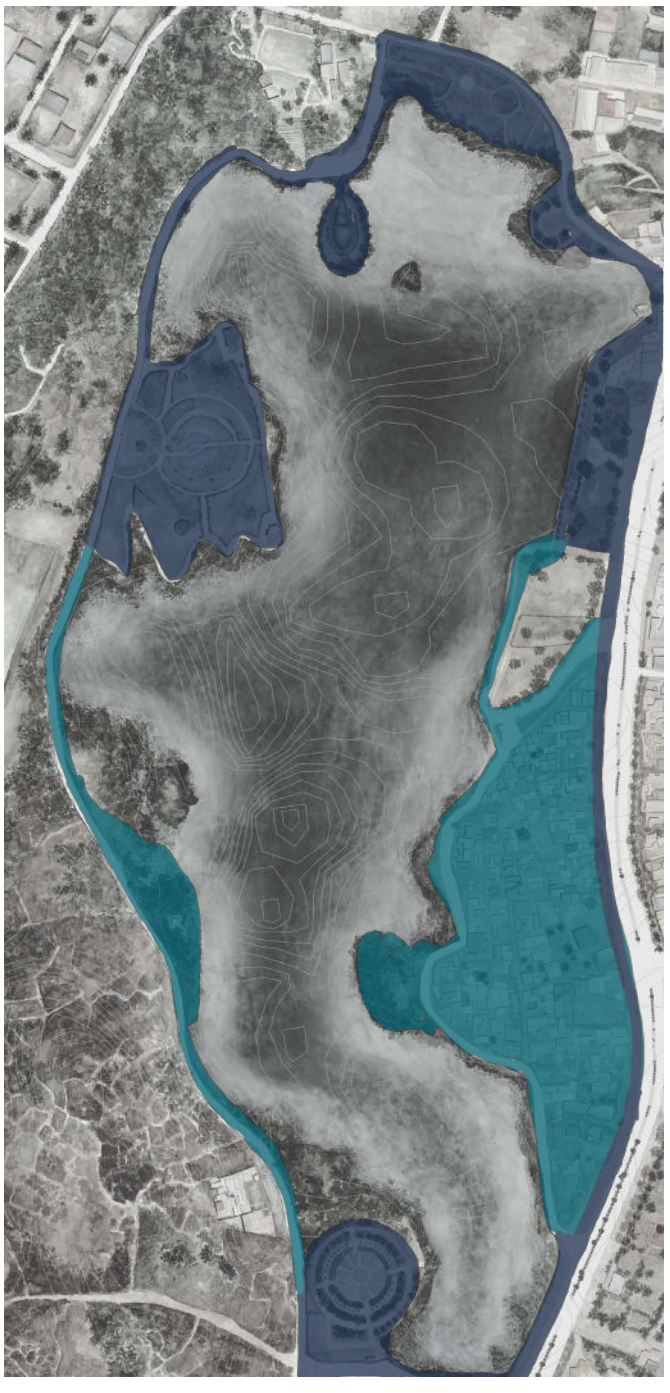
Fragmented Access To Water

Visual Fragmentation of Lake water

Hydrophytes
Compound wall
Built Elements
Trees
Distance

Physical Barrier to Lake water

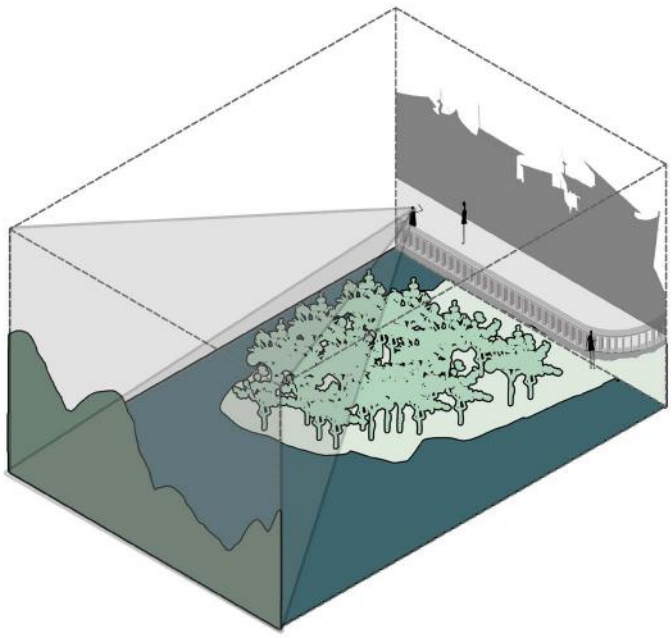
Perforated Compound Wall
Solid Parapet Wall



Social stratification /disparity at lake edges

Local Residents Concentration
Tourist Concentration

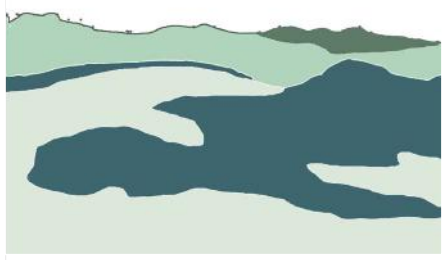
Selected Cases To Study Frames Of Vision followed by Behaviour and Space Making

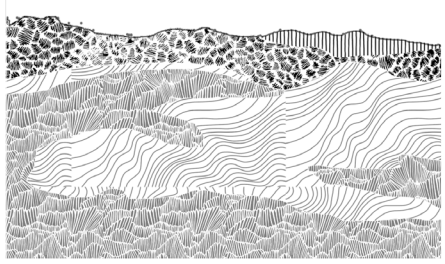


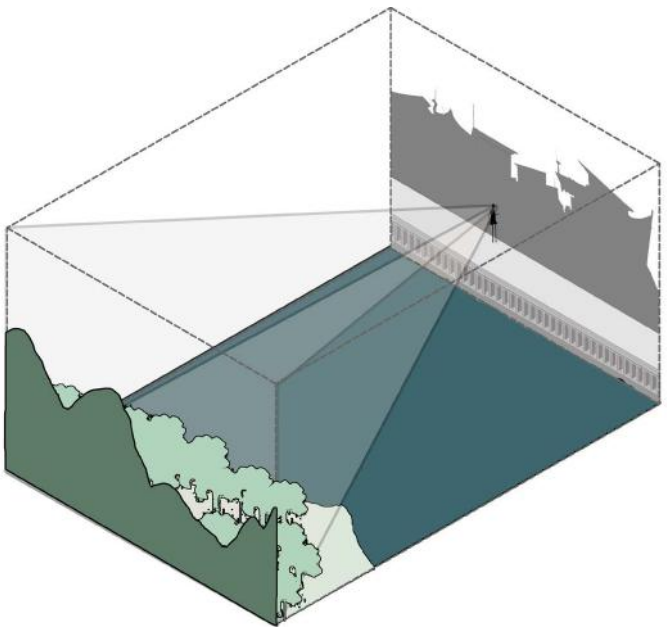
A

Fragmented by Vegetation

The slum settlement uses the protruding mass of land beyond the compound wall for excreation , through a informal access to the land .The visual access fragmented by the short trees allows them to do so .



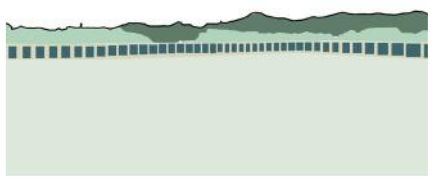


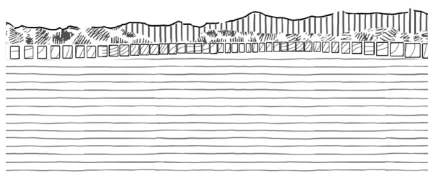


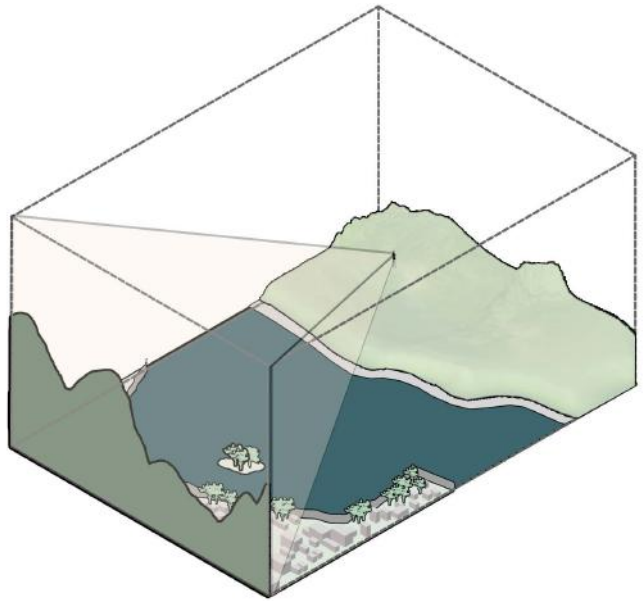
B

Fragmented by Compound Wall

The street in front of the slum settlement is practically an extension of their houses.The view to the lake , however is completely cut off in some areas due to the larger road widths .



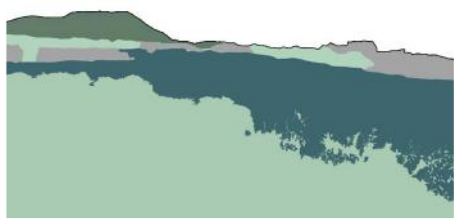


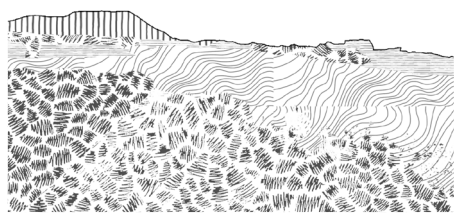


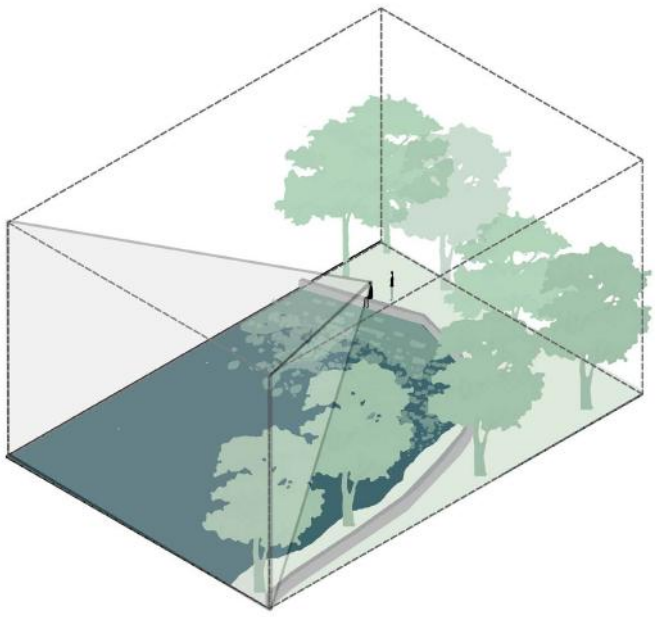
C

Widened View of the Lake

The hillock provides a clear , uninterrupted view of the lake and its peripheries .Complete extents of the lake can be observed .



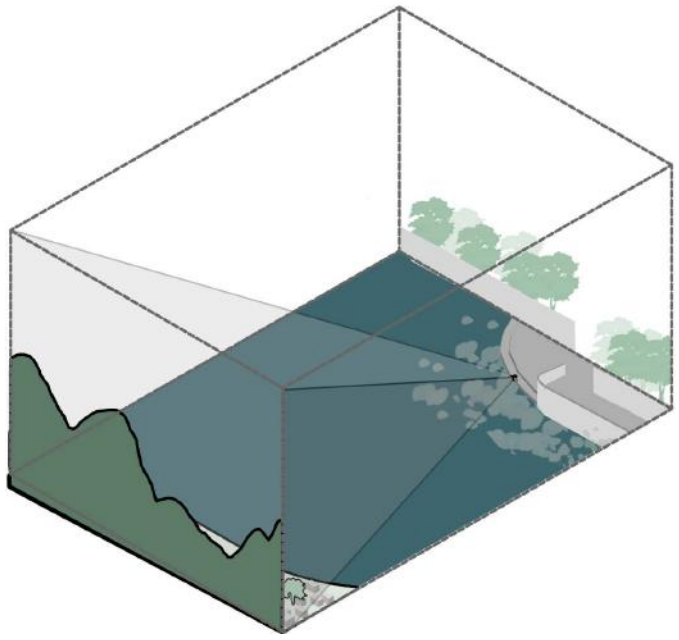




D

Fragmented and framed by Trees , Hydrophytes and grasses.

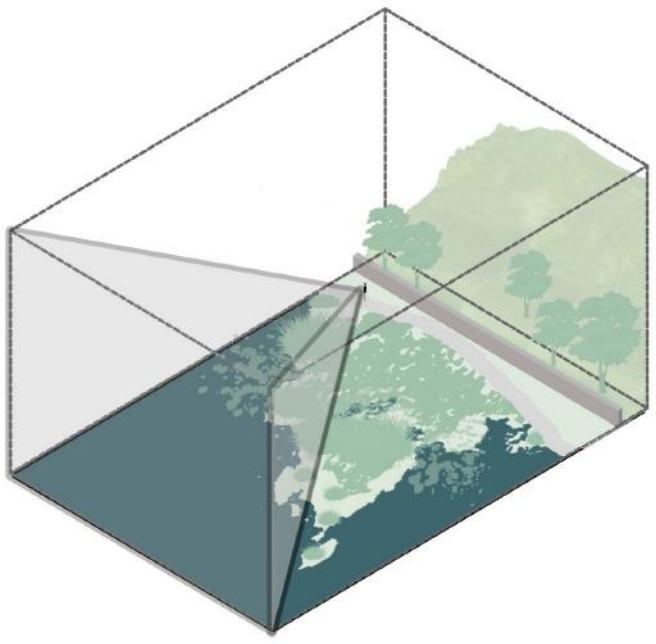
Smruti Van - a designed park has a low height compound wall with trees over ones head . One can see hydrophyte growth closely from the compound wall.Access to the water feels enhanced.



E

No fragmentation

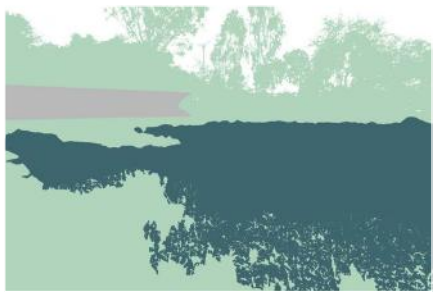
Unobstructed access and view to the Lake waters . Mostly used by the slum dwellers for daily washing chores .The water is visible dirty with Eutrophication.

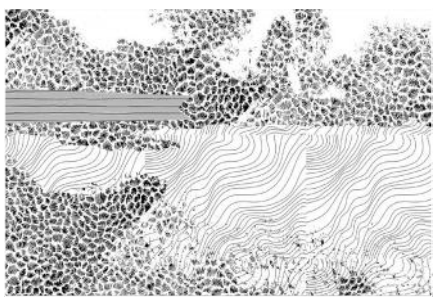


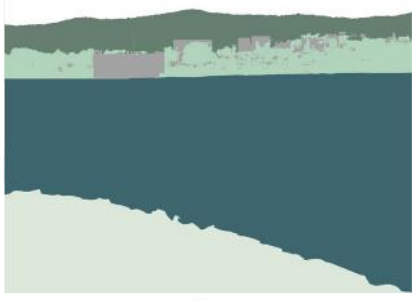
F

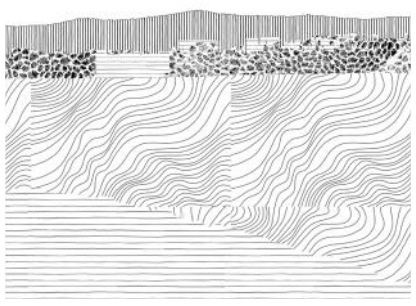
Fragmented by land patches and vegeation

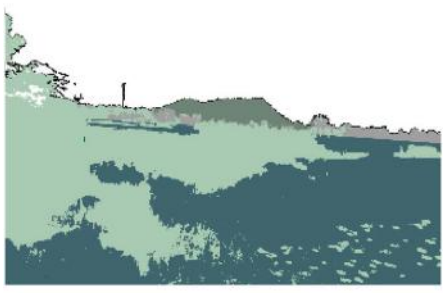
Near the informal boating dock for the fishermen , the water is fragmented by numerous patches of land and grasses growing in the water .

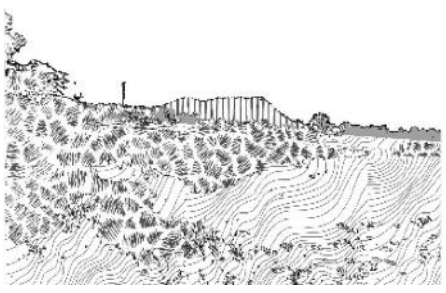












OVERWHELMING
A vantage view point because of level difference. The lake is not fragmented by any previously fragmenting elements - compound wall , vegetation ,etc.

ADMIRABLE + HABITUAL
The water surface here is fragmented by large chunks of land and patches of sedge grasses. Visitors tend to pause and admire the lush eco-system. The water here is accessible physically and the water level is at a close proximity .`

PEACEFUL + COCOONED
Smurti Van is flanked by shade giving trees , which are denser and provide framing overhead with their canopies .The elevation from water surface being lesser here , makes the water more approachable .

Land Mass for Excreation

SECLUSION + COMFORT
Because Visual is cut off and one feels safe and isolated - with easy access of water.

Compound wall used for daily chores

DEVOID + HABITUAL
The view to the lake being cut off because of distance , draws the residents in for a afternoon nap , evening gathering or drying on cow dung cakes and clothes on the wall

Stepped Access to Lake Water

HABITUAL + OVERLOOKED
Due to east acceess with a hard ground cover , the residents have adapted to the space for washing clothes ,utensils and bathing .

Due to a pre-occupied usage for this space , visitors refrain from accessing the edge ,inspite of a non-fragmented view to the water.

Visual *fragmentation*

Physical *barriers*

Social *stratification /disparity*

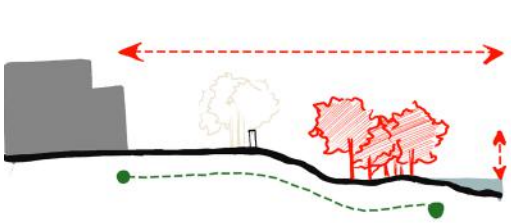
SPACE FUNCTIONALITY

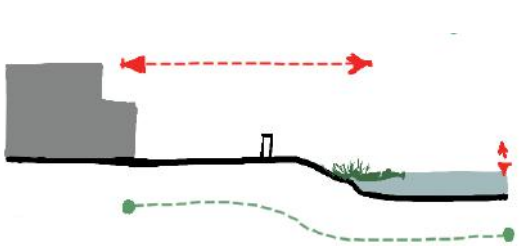
A

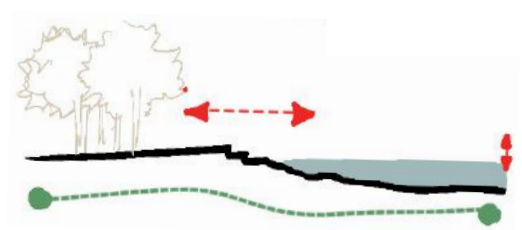
B

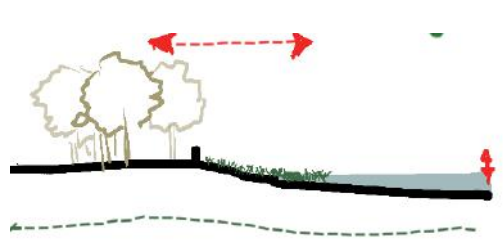
E

D









View from
Moderate height
Moderate Distance

Visual Barrier - Trees
Informal Access available.
Proximity to slums.

Hence , space claimed by locals.

SPACE FUNCTIONALITY -
HUMAN DEFECATION

View from
Lesser height
Moderate Distance

Visual Barrier - Compound Wall
Informal Access available.
Proximity to slums.

Hence , space claimed by locals.

SPACE FUNCTIONALITY -
VIEWING

View from
Lesser height
Lesser Distance

Visual Barrier - None
Access available.
Moderate Proximity to slums.

Hence , space claimed by locals.

SPACE FUNCTIONALITY -
WASHING CLOTHES
+
BATHING

View from
Lesser height
Lesser Distance

Visual Barrier - Compound Wall
No Access available.
Space functions as garden.

Negligible Locals using the space .

SPACE FUNCTIONALITY -
GARDEN

INFERENCE

The access to the lake water in all 3 ways - visual , social and physical is fragmented , with distance and height of viewing point being the most prominent factor for all .

The Indira Colony Zone
Being permanent residents have a fragmented but constant access - **visually**
has the most easy and frequent informal access to the lake - **physically ;**
is the most isolated from the tourist commotion and street heirarchy **- socially**

4.
Founding

On having an individualist perspective for the site through a lens ,we forged a vision for the lake as a whole. Stake holders and a zoning plan devising strategies for the site This enabled a wholistic approach with mulitple perspectives , followed by a chosen perception that aligns with our visions.

To demonstrate the vision , a detail design was developed for selected portion of the site .

Takeaways from FINDING & developing a Vision for Goverdhan Sagar

Reducing the social disparity existing along the periphery of the lake .

Minimizing the disconnect caused due to the road network between the context and the lake.

Revitalization the green edges of the lake and hence improving water.

Stakeholders and Perspectives
Existing and Probable

Primary Stakeholders concerned with my vision for the lake system

Stakeholder impact / relation with lake system (low to high)
- with regards to duration and neccesity for the system to go on

Water

Soil / Land

Avifauna

Terrestrial Fauna

Aquatic Fauna

Terrestrial Flora

Aquatic Flora

Conservation group - protect ecosystem

Local government - policy, funding, local zoning etc.

Local Residents *Vicinity*

Tourists *Intercity*

Royals/ Land Owners

Infrastructure Development

Local Residents Indira Nagar

Local Business Owners

Urban Designer

Recreational Groups

Tourism Operator

Temple Trust

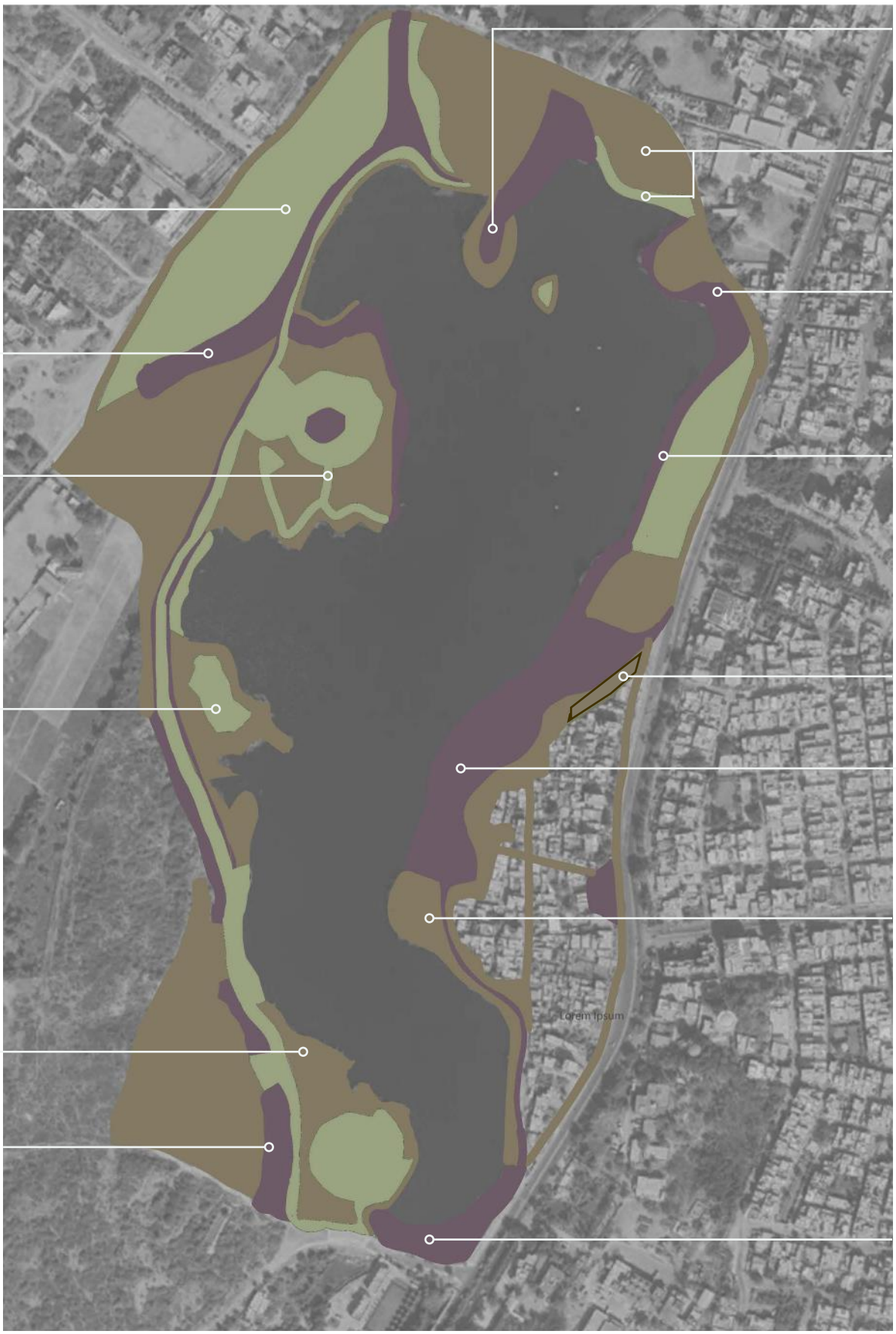
INFERENCE

The resident locals and fauna flora are the stakeholders that engage the most with the lake ecosystem.

They take and give the most and can contribute the most frequently ; have a larger impact on the system - while simultaneously building a symbiotic relation with the lake system.

The social disparity observed in the Finding centres around the activites of the Resident Locals around the Site .

Retain - Enhance - Modify Strategy Plan at Lake Scale



Retaining the Shikarbaadi Zone

Modifying the land to create ***swales*** that replenish the lake water through ***Pannadhay Park as a sponge.***

Retaining the pathways and enhancing the planting to a more ***shaded planting palette*** in the Pannadhay Park

Retaining the ***fragmented land masses for avifaunal*** habitats and enhancing the edges .

Retaining the Jain Mandir and enhancing the vegetated land around it

Modyfying the fringe of the ***scrubland*** to further protect from ***future development.***

Demolishing the Cruize Structure and revitalizing the edges with planting

Enhance the vegetation for Smriti Van and ***retain the aquatic vegetation***

Retaining the cultural hubs of the area and modifying the hard edges to softer ones

The ***stark division*** by the park walls can be ***softened*** with some vegetation .

The ***over flow canal*** currently used as dumping pit can be redeveloped

The ***Streets*** in front of the slum settlement can be designed as ***enhanced outdoors*** for the dwellers , reducing the disconnect.

The Defecation land can be ***fragmented*** away to cut human access.

The zone providing the first visual of the site can be modified - with ***shading trees and seating.***

Retain Enhance Modify

Site Selection for Envisioned Design Developent

To having the design interventions on the URBAN EDGE

To address the social disparity , focusing on having a seamless landscape in the designed park and the slum street front

To enhance and the urban approach to the lake edge and retain the designed linear park.

To better the quality of the outdoors for the residents

Observations and Vision for chosen site

Observations and Vision for chosen site

An incentive needed for the residents to not defecate on the land

Invasive vegetation growth

Infected and murky waters due to defecation

Informal access to the land

Better outdoors for residents to play , study and enjoy the available luxury

Open gutters around all house peripheries

Life flourishing under tree shades

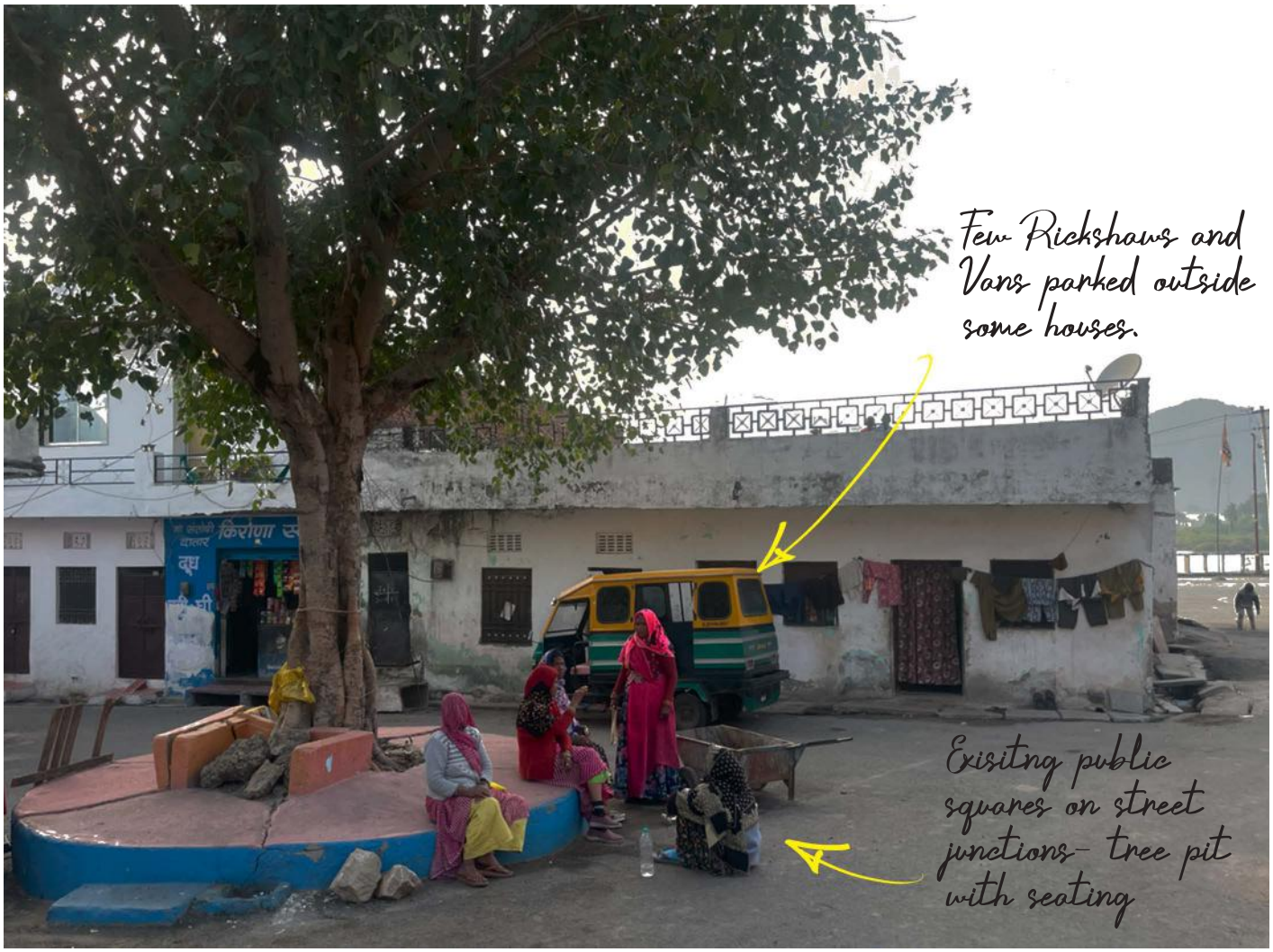
Negligible Tree shade on a 550 meter road

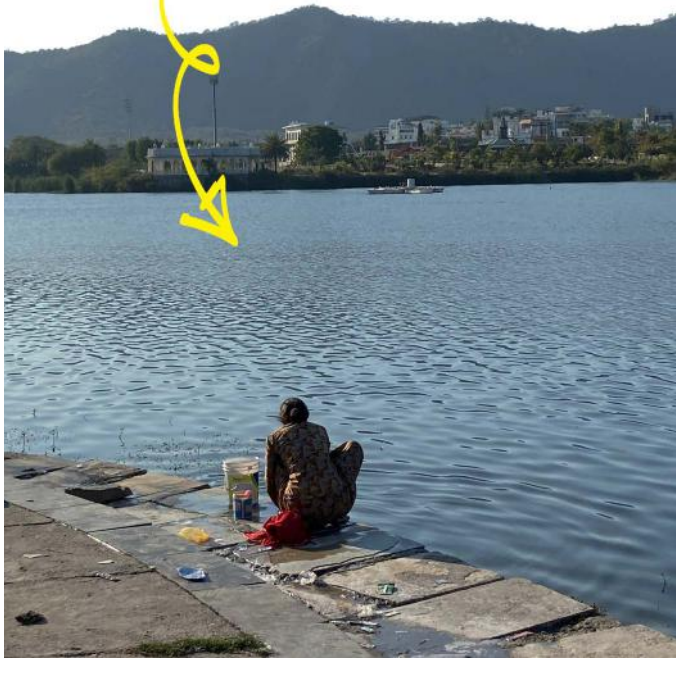
Underutilized and wide roads

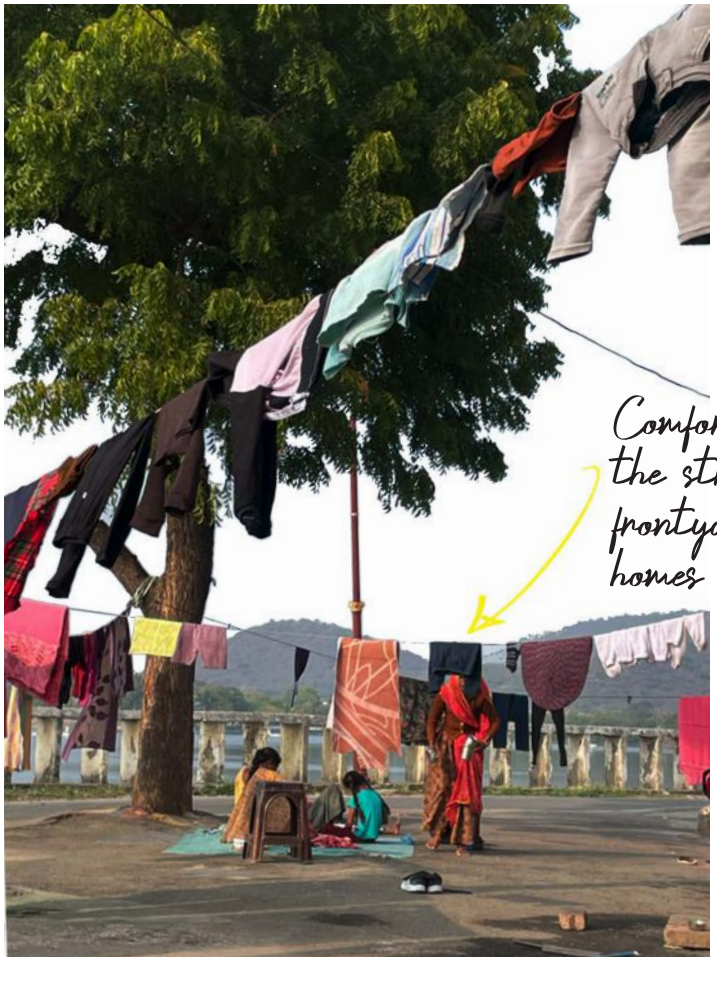
Domestic acitivies extendind on the streets

Lack of curiosity for the lake view

disconnect to the lake


Few Rickshaws and Vans parked outside some houses.
Exisitng public squares on street junctions- tree pit with seating


Access points to water being used to wash and bathe.


Comfort of treating the streets as frontyards of their homes

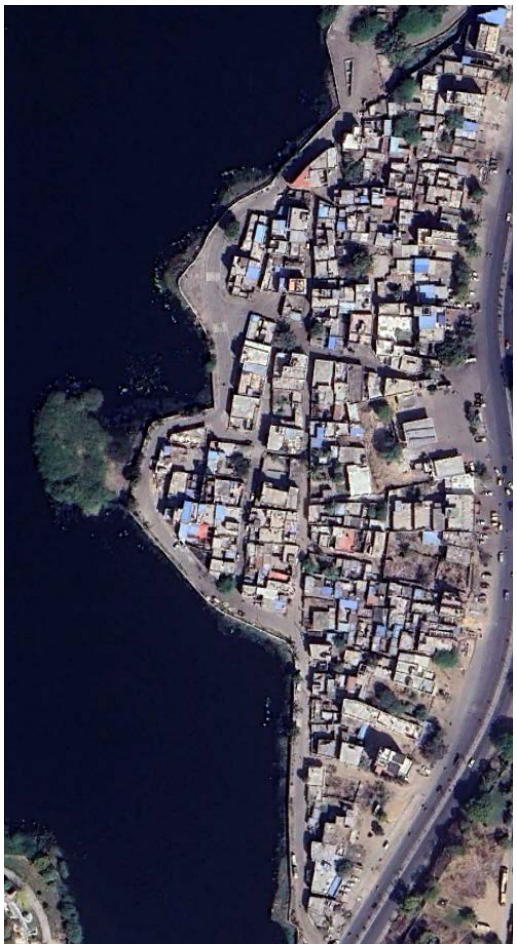
Archival Imagery

LOW INCREMENT HOUSING

Mar 2010

Feb 2015

Dec 2017



Feb 2025

This chronology of images indicate a consistent level rise in the lake water and subsequent reduction in the land extension along with growing vegetation.
The community has evidently receded back from the water edge with the compound wall cutting off connection .

INDIRA NAGAR COLONY IS NOT TO BE REDEVELOPED OR RELLOCATED AND
WILL BE RETAINED INDEFINITELY AS STATED BY THE NIGAM OF UDAIPUR

CURRENT DEFECATION LAND EXTENSION

Mar 2010

April 2015

Jan 2015

Nov 2016

Dec 2019

Oct 2019

April 2022

Feb 2025

This chronology of images indicate a consistent level rise in the lake water and subsequent reduction in the land extension along with growing vegetation. The community has evidently receded back from the water edge with the compound wall cutting off connection .

OVERFLOW CANAL

Mar 2010

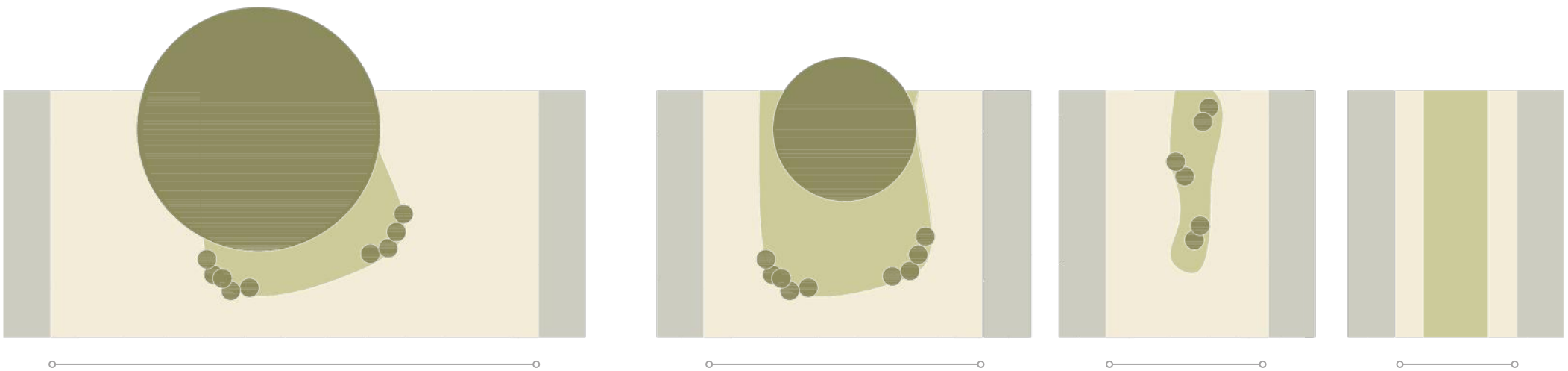
Feb 2015

Jan 2017

Feb 2025

This chronology of images indicate the development of the overflow canal with simultaneous vegetation .

Street Design at
Large(L) - Medium (M) - Small (S)



Large
6m and More

Medium
2-6 m

Small
Less than1 - 1m

Pocket Design at LMS Scale

Large

Parking

Incentive Based Programmes - eg Farming
Domestic Activities

Medium

Seating

Incentive Based Programmes
Domestic Activities

Small

Outdoor Spillovers

Programmatic Analysis And Zoning On Basis Of Occupation

Bhangaarwala Carts parked along the wall with collected waste

Attempts at farming along the edges of the wall -
Papaya , Lemon Grass ,etc

Collected Waste Dumping on the streets

Collected Waste Dumping on the streets

Street - Pocket Heirarchy

Large
Medium
Small

Programmatic Zoning

Ecological Conservation

Resident Engagement
Domestic and Leisure
Incentive Based Activities

Approx.
250 Dwellings
- 1-2 storey

A community of
Bhangaarwalas
in majority followed by Masons , drivers and few farmers

Descendents of farmers , inclination towards
Growing food .

Few Autos and Vehicles Parked on the otherwise
Vacant roads
Cutting Off Vehicular Access

Value of Resource and Land is lost

Existing Site Plan & Proposed Design Programmes

A

Street , Pocket and Node Design

SML internal streets and pockets
Lake edge Road

B

Farm Lands

Defecation land
Lake edge
L- Pockets
L - Streets

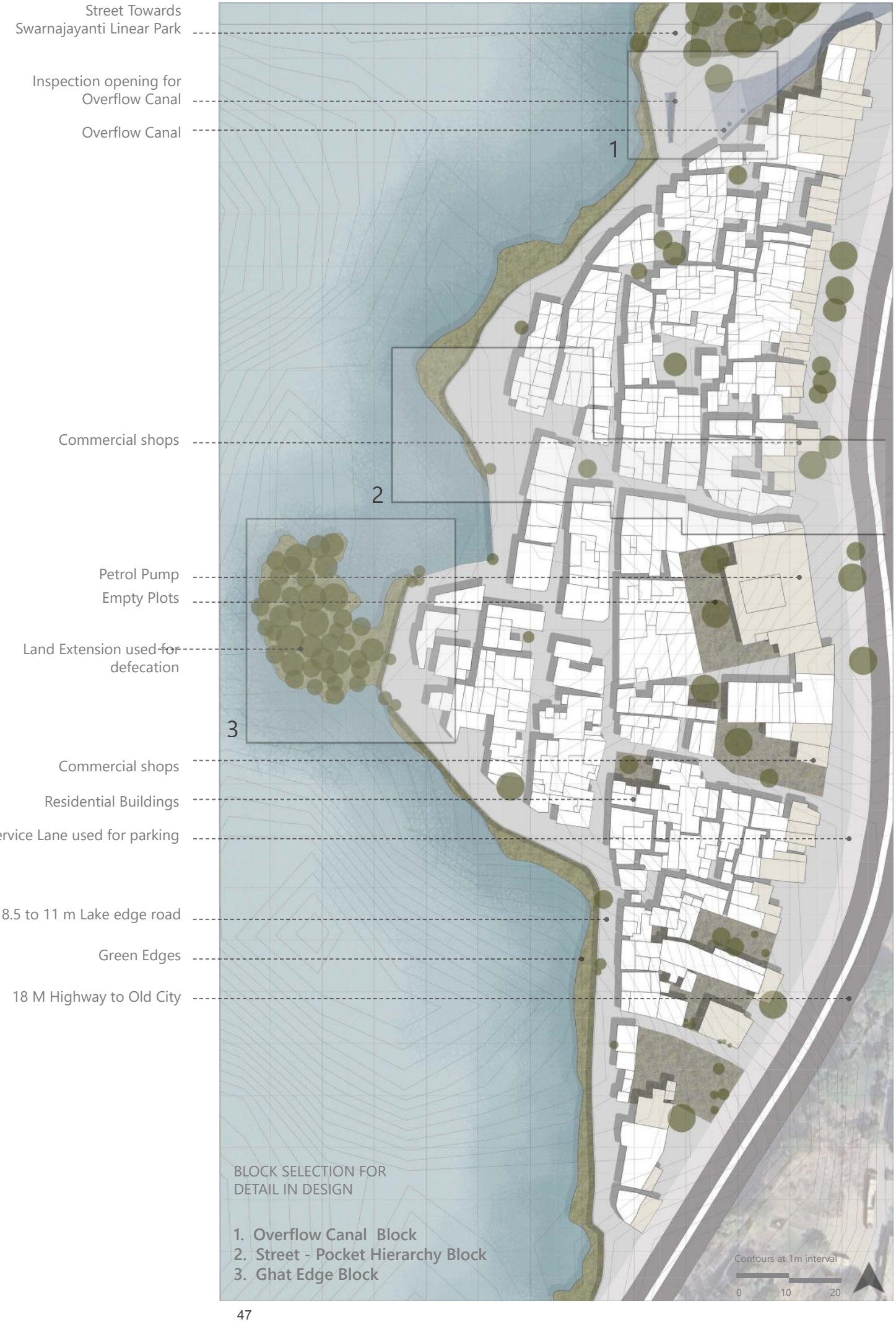
C

Overflow Canal Redevelopment

D

Ghat Edge

Lake Edge Road and Defecation Land



5.
Design Development

The design approach for the most dense urban fabric is with sensitivity for the residents' established livelihoods , while also with some radical changes to bring about discipline at the urban edge for the natural chaos on the other edge to thrive .

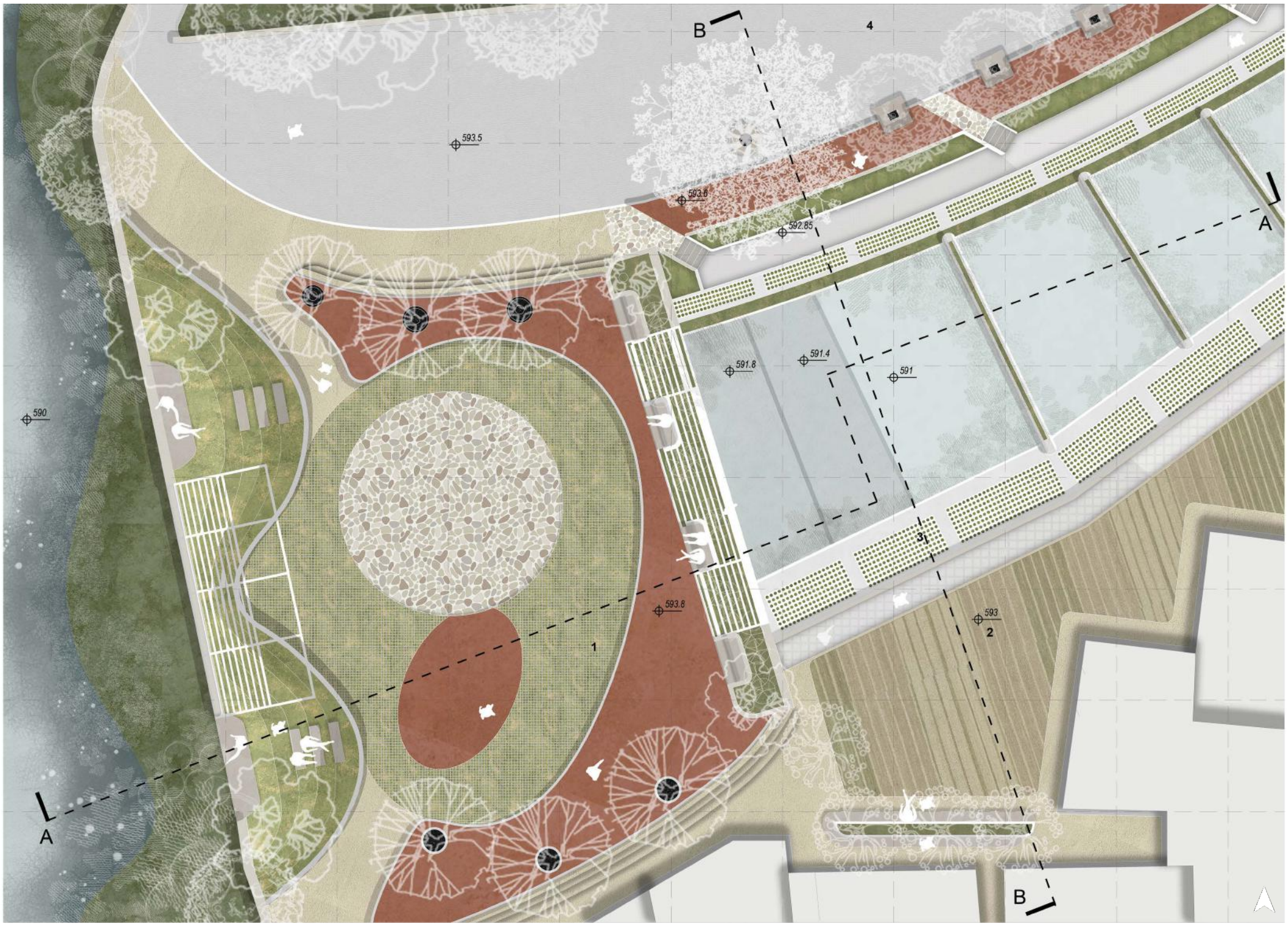
With people being at the crux of the design proposal , the intent is to conserve the lake edge through their followed practices and enhance their outdoors .

Proposed Master Plan

Tactile Play of Flooring Materials

- WATER LEVEL - MONSOON
- BRICK PAVING
- COMPACT EARTH
- PERMEABLE QUARRY DUST PAVERS
- GRAVEL COVERED TREE PIT
- FARMLANDS
- NATURAL STONE PAVING

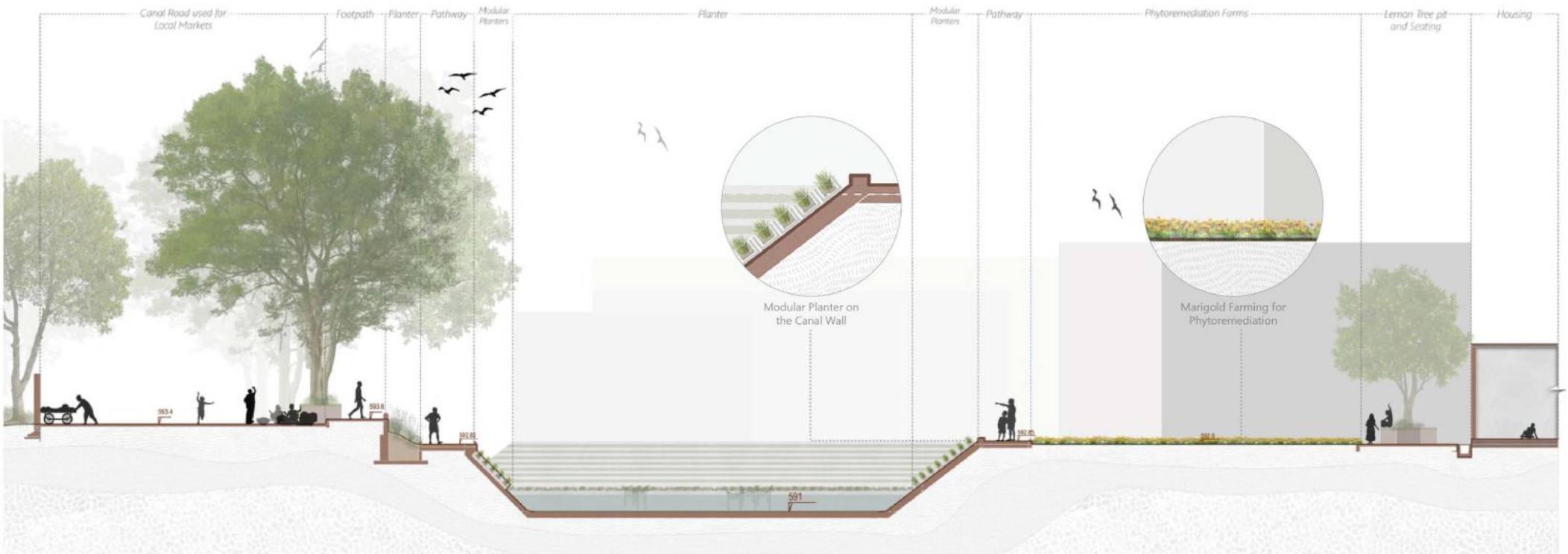
Key Plan



DETAILED ZONE 1 *CANAL REDEVELOPMENT*

0M 5M 10M

SECTION A-A *OVERFLOW CANAL EDGE*



SECTION B-B *OVERFLOW CANAL EDGE*

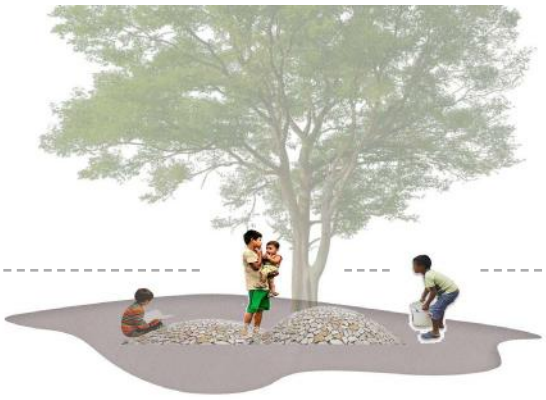
Retaining Wall of the Canal
used for Seating and Planting

Retention Members Profile
section for Plantation

The Overflow Canal to the north of the Site is proposed to redevelop the edges. The design aims to reutilize the open space around the canal ; currently used for dumping the Bhangaarwala waste.
The space can be utilized as a gathering space for culturala activities and festivals . The wide 8 m wide road can be used for weenend local markets to sell the produce grown by the community too.

These associations help the community use the space with more care
The sloping walls of the canal are to be lined with modular concrete planting blocks and the canal has retention memebers to retain water to keep the ecology of plants going.

Community Vegetable Gardening



Playing and Studying

Domestic Activities

DETAILED ZONE 2 *DETAIL OF STREET HIERARCHY ZONE*

0M 5M 10M 15M

Community Engagement

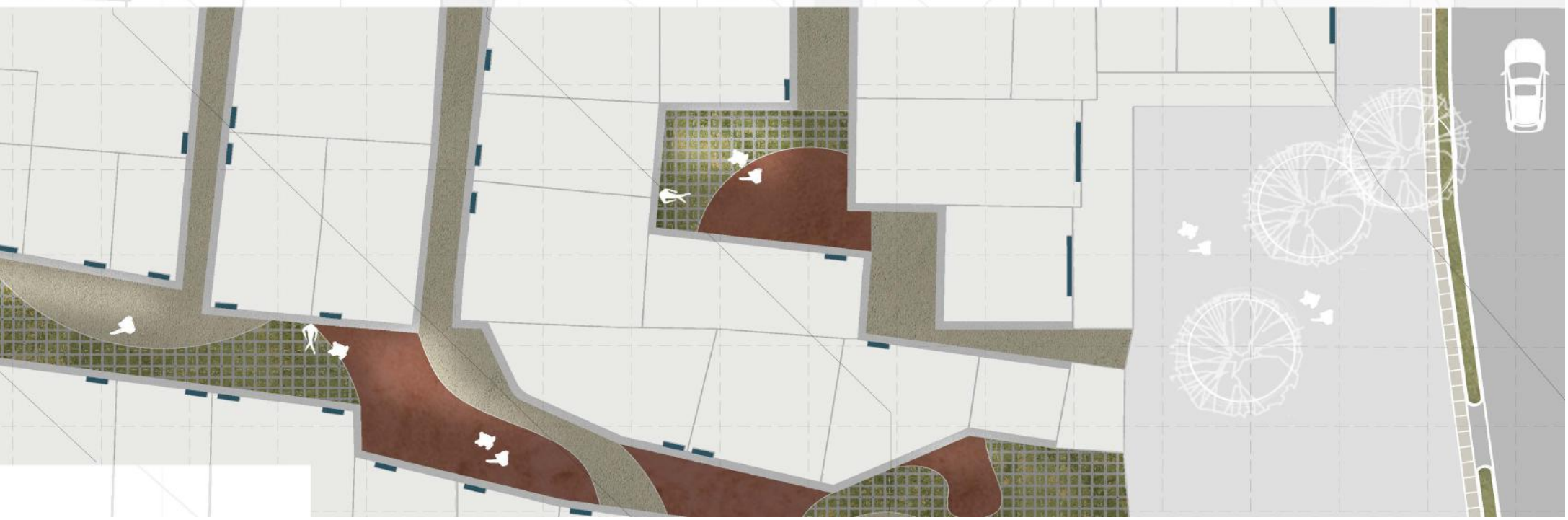
NGO Programs

Community Meals
to celebrate festivals , etc

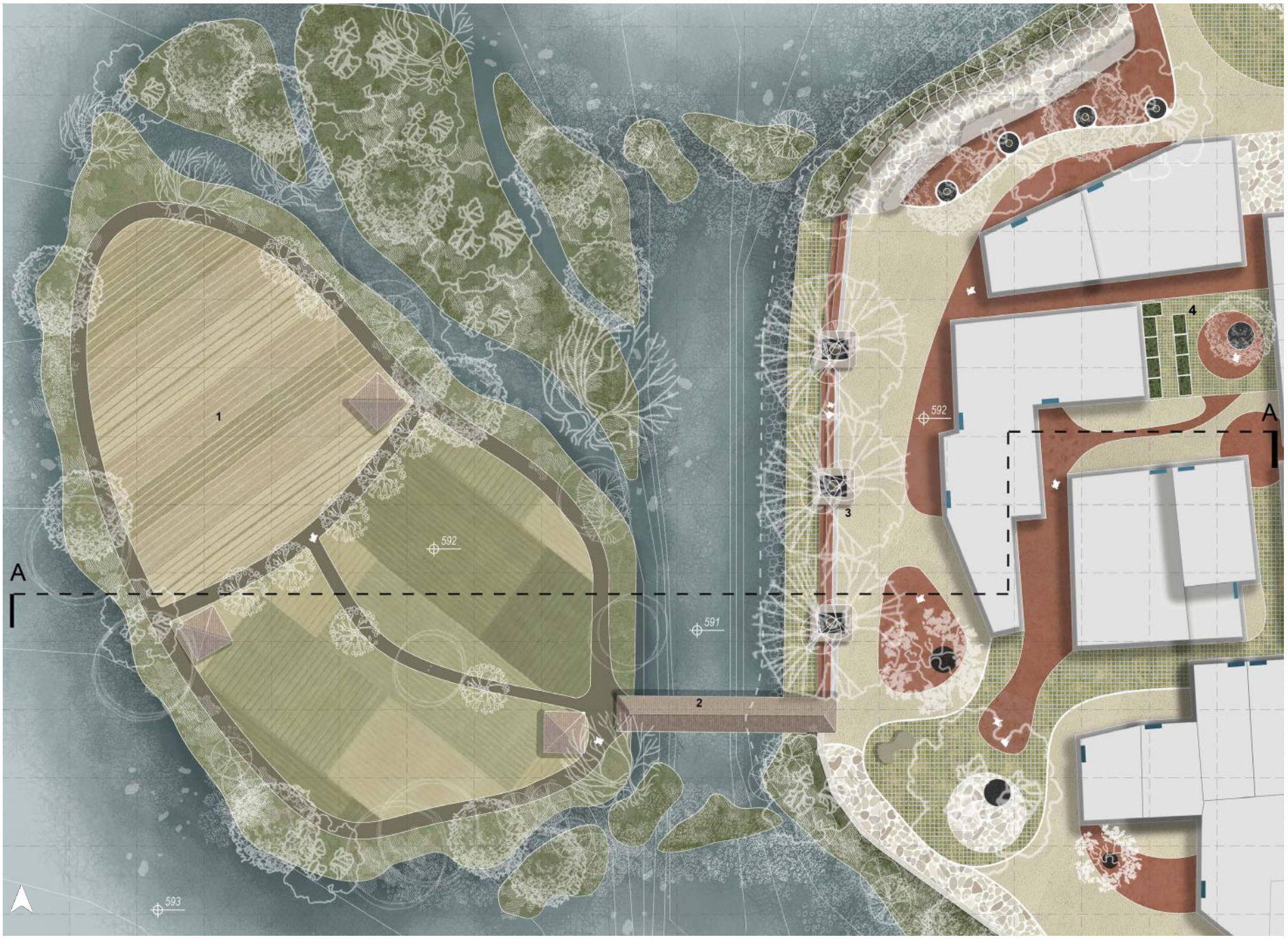
Key Plan

The approach to the edge of the lake from the main highway can be seen in this particualr detail.The pockets and nodal space available on the site can be optimized for farming that are free of shadows form the built structures .

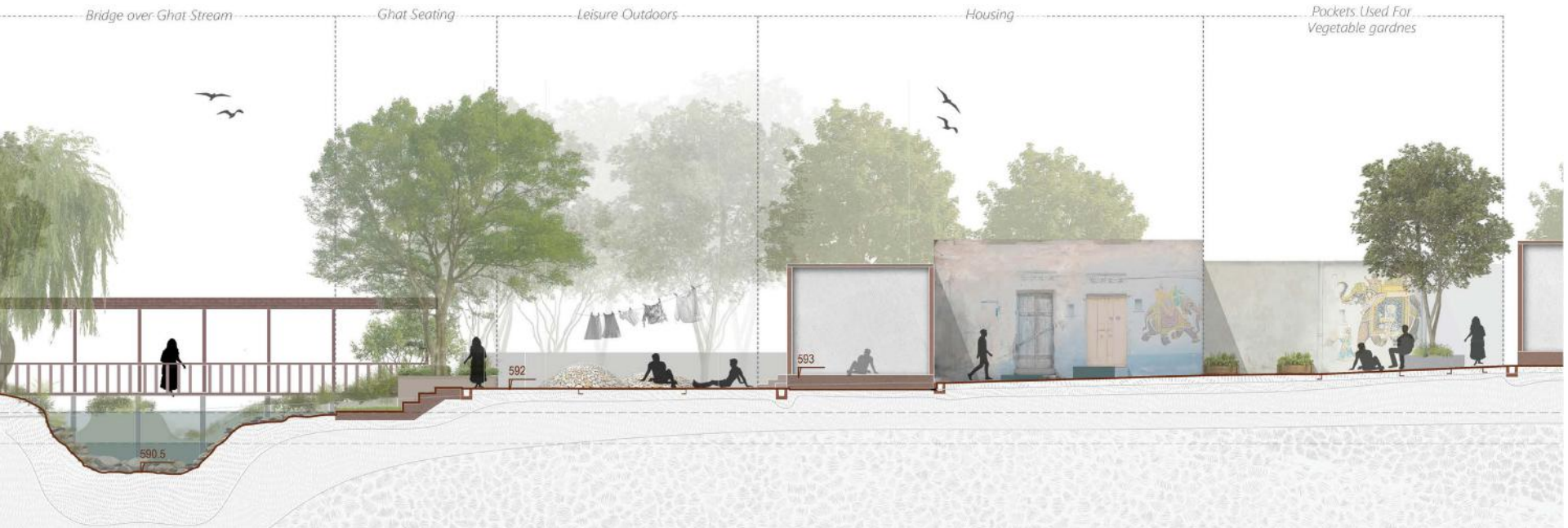
A varying spectrum of activities can spill out on the streets if designed differently . The neglible vehicular access being cut and turning the street into a frontyards for the people can help build community activities.



SECTION A-A



DETAILED ZONE 3 *GHAT EDGE*



Key Plan

The access to the defecation island is enhanced by creating a
everflowing stream creating a ghat - like space , where the residents can choose to carry out their domestic activities like washing clothes .
The defecation island being enriched with nutrients now , can be
utilized as incentive based lands for farming .

The ghat can be used for leisure seating as well enhancing the outdoor of the lake edge street. The space can also be used as a congregation area .

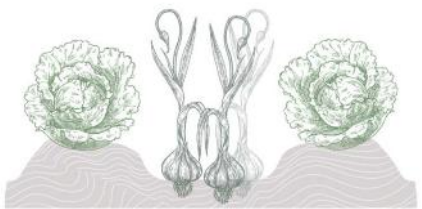
1 COMMUNITY GATHERING SPACE
2 PHYTOREMEDIATION FARMING
3 CANAL EDGE PLANTERS
4 LOCAL VEGETABLE MARKET STREET

Crop List Native to Udaipur and Prescribed By the Dept. of Agriculture

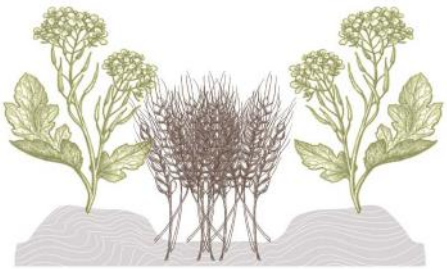
Crop	*Sowing Time*	*Growing Period*	*Harvest Time*	*Total Time Period*
1. Maize	June – July	July – Sept	Sept – Oct	June - oct
2. Soyabean	June – July	July – Sept	Sept – Oct	June - oct
3. Urad (Black Gram)	June – July	July – Sept	Mar – April	June - oct
4. Wheat	Nov – Dec	Dec – Mar	Feb – March	nov -april
5. Mustard	Oct – Nov	Nov – Feb	Mar – April	oct to march
6. Barley	Nov – Dec	Dec – Mar	Feb – March	nov -april
7. Gram (Chana)	Oct – Nov	Nov – Feb	Jan – Feb	oct to march
8. Cabbage	Sept – Oct	Oct – Jan	Jan – Feb	sept - feb
9. Cauliflower	Sept – Oct	Oct – Jan	Nov / Feb – Mar	sept - feb
10. Tomato	July – Aug / Oct	Aug – Nov / Nov – Feb	Oct – Nov	july - march
11. Brinjal	June – July	July – Oct	Sept – Oct	June - Oct
12. Okra (Bhindi)	June – July	July – Sept	Every 3–4 months	June - Oct
13. Marigold	June – July / Oct	July – Oct / Nov – Feb	Nov – Jan	June - Feb
14. Tuar	June – July	July – October	sept - oct	
15. Moong	June – July	July – October		
16. Cucumber	Feb - Mar		May - June	
17. Pumpkin	Feb - Mar		May - June	
18. Garlic	Oct – Nov	Nov - March	March - April	
19. Spinach	Aug - Oct		Oct - Nov	
20. Fenugreek	Oct - Nov	Nov - Feb	Feb - March	
21. Wheat	Nov - Dec	Dec - March	March- April	
22. Rice	June - July	July - Aug	Sept - Oct	
23. Barley	Nov- Dec	Dec - March	March - April	
24. Fennel	Oct - Nov	Nov - March	March - April	

Companion Planting Pairs For The Site

Pumpkin + Cucumber



Garlic + Cabbage



Watermelon + Gram

Watermelon + Cucumber

Brinjal + Marigold

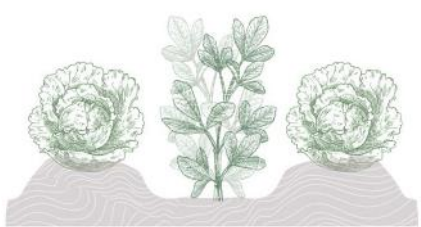
Okra + Cucumber

Urad + Moong

Mustard + Gram

Spinach + Tomato

Cauliflower + Marigold



Cabbage + Fenugreek

Maize + Soyabean

Crops grown over the site thoughout the year

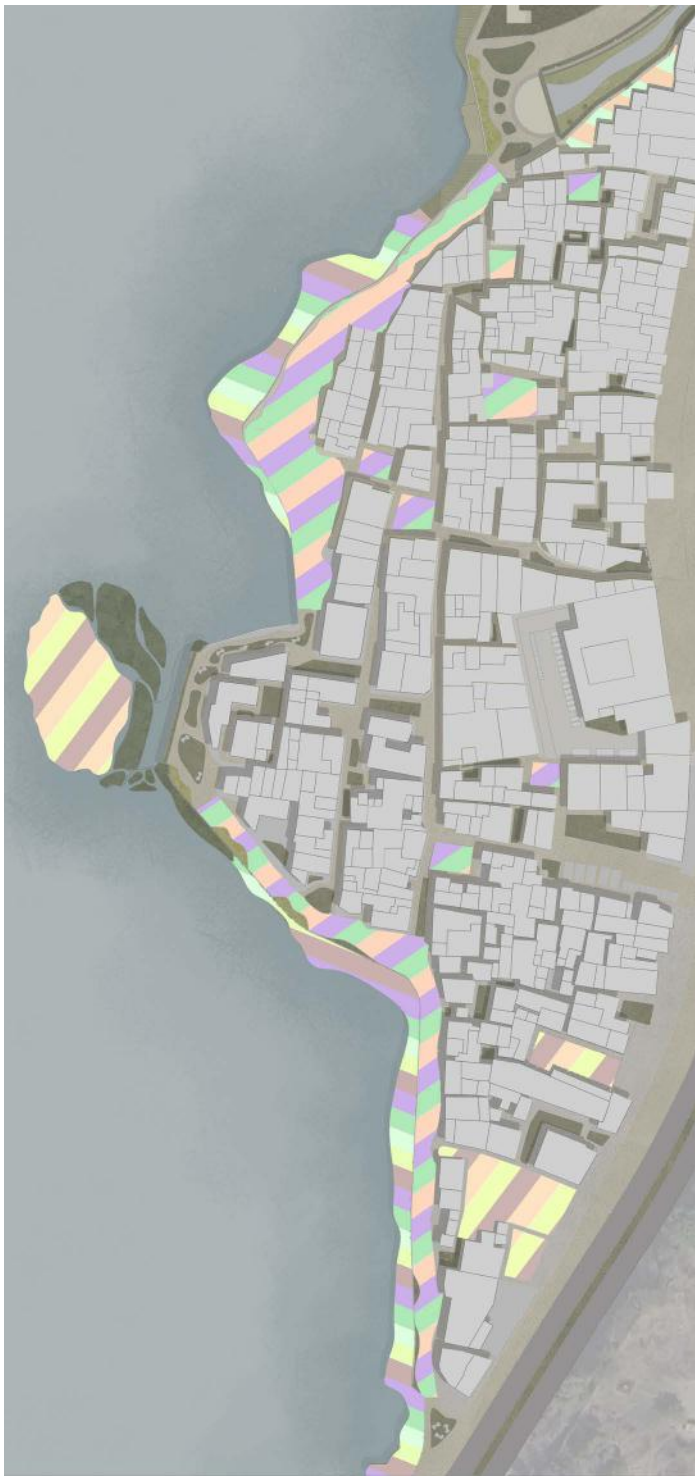
Month	*CANAL EDGE*	*L -POCKETS*	*STREETS AND M-POCKETS*	*LAKE EGDE*
1. JAN	cauliflower harvest Marigold growing	mustard Growing wheat growing Gram growing	Marigold growing cabbage growing fenugreek growing	cabbage harvest fenugreek harvest cauliflower harvest wheat growing barley growing
2. FEB	cauliflower harvest pumpkin sowing cucumber sowing Marigold grwoing	mustard harvest wheat growing Gram harvest	Marigold grwoing tomato growing cucumber sowing fenugreek harvest	mustard harvest gram harvest wheat growing barley growing
3. MAR	cuccumber sowing pumpkin sowing	wheat Harvest	cucumber sowing	wheat harvest barley harvest garlic harvest fennel harvest
4. APR	empty	empty	garlic harvest	empty
5. MAY	cuccumber harvest pumpkin harvest	empty	cuccumber harvest	empty
6. JUN	cuccumber harvest pumpkin harvest marigold sowing brinjal sowing	Urad sowing moong sowing toor sowing Miaize Sowing Soya Bean sowing	Brinjal sowing okra sowing marigold sowing tomato sowing	empty
7. JUL	Marigold grwoing brinjal growing	Urad growing moong growing toor growing Miaize growing Soya Bean growing	Brinjal growing okra growing marigold growing tomato growing	empty
8. AUG	Marigold grwoing brinjal growing	Urad growing moong growing toor growing Miaize growing Soya Bean growing	Brinjal growing okra growing spinach sowing tomato growing	empty
9. SEP	cauliflower sown Marigold growing	Urad harvest moong harvest toor harvest Miaize harvest Soya Bean harvest	okra harvest tomato growing spianch growing brinjal growing	cabbage sowing cauliflower sowing mustard sowing Gram sowing garlic sowing
10.OCT	cauliflower growing brinjal harvest Marigold growing	Mustard Sowing	brinjal harvest tomato growing marigold harvest/ growing fenugreek sowing garlic sowing	fenugreek sowing cabbage growing cauliflower growing mustard growing Gram growing garlic growing
11.NOV	Marigold growing	mustard Growing wheat Sowing Gram Sowing	garlic growing fenugreek growing tomato harvest marigold harvest/ growing	fenugreek growing cabbage growing cauliflower growing mustard growing Gram growing garlic growing
12.DEC	Marigold growing	mustard Growing wheat growing Gram growing	Marigold growing / harvest	wheat sowing barley sowing

1sqm - 1kg grain
1sqm - 4 -5 tomatoes - potatoes
1sqm - 1/2 kg moong dal

Defecation Island	990 sqm
L pocket farmland cluster	1000 sqm
bottom lake edge	1890 sqmm
upper lake edge	1330 sqm
Overflow Canal Edge	220 sqm
Street and M - Pockets	421 sqm

1.65 ACRES in Total available for Farming

Monthly Cropping Pallette for the Site



January

March

May

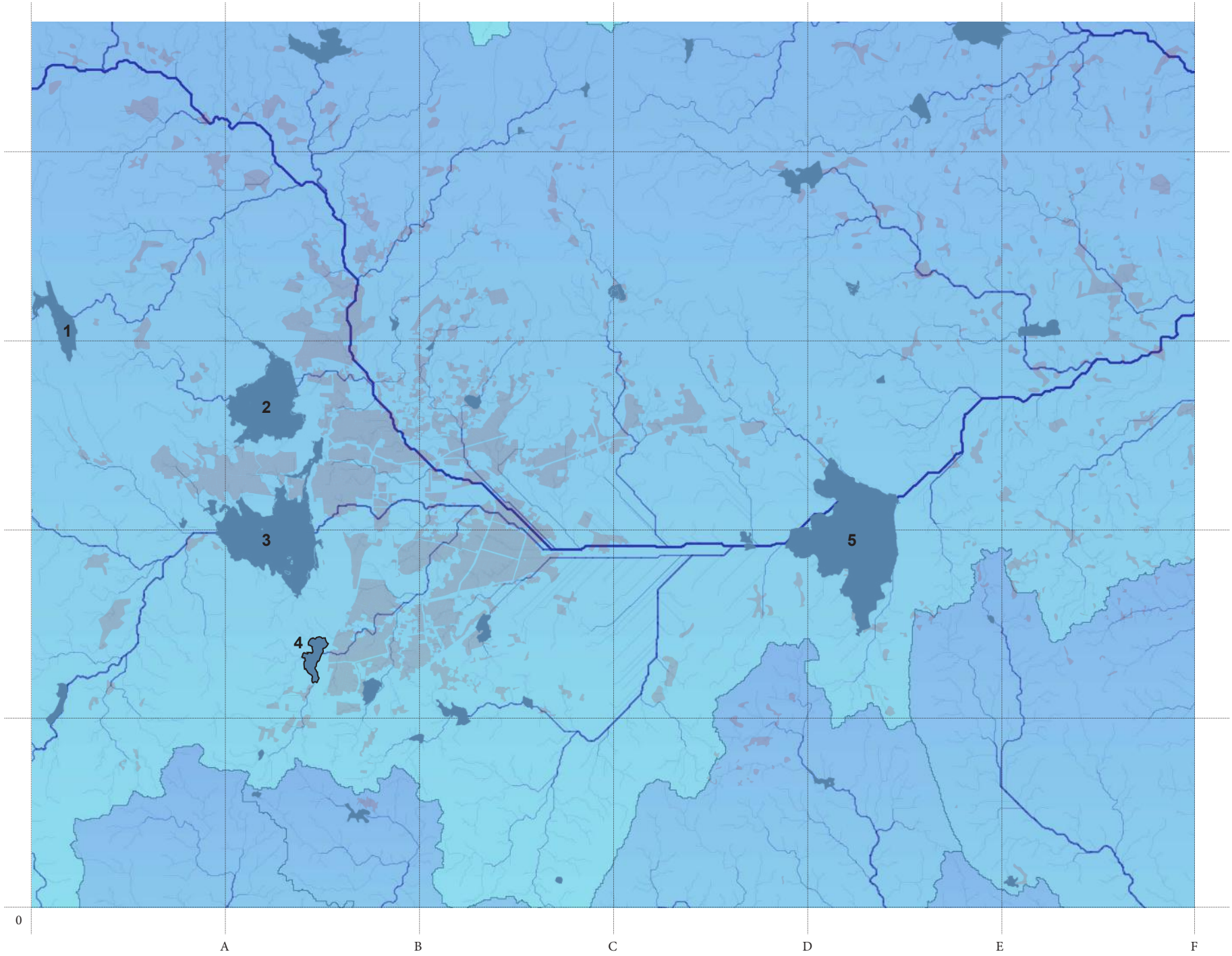
July

September

November

6.
Annexure

-Regional Study
-Case Studied
-Density Mapping
-Crop Rotation and Companion Crop List

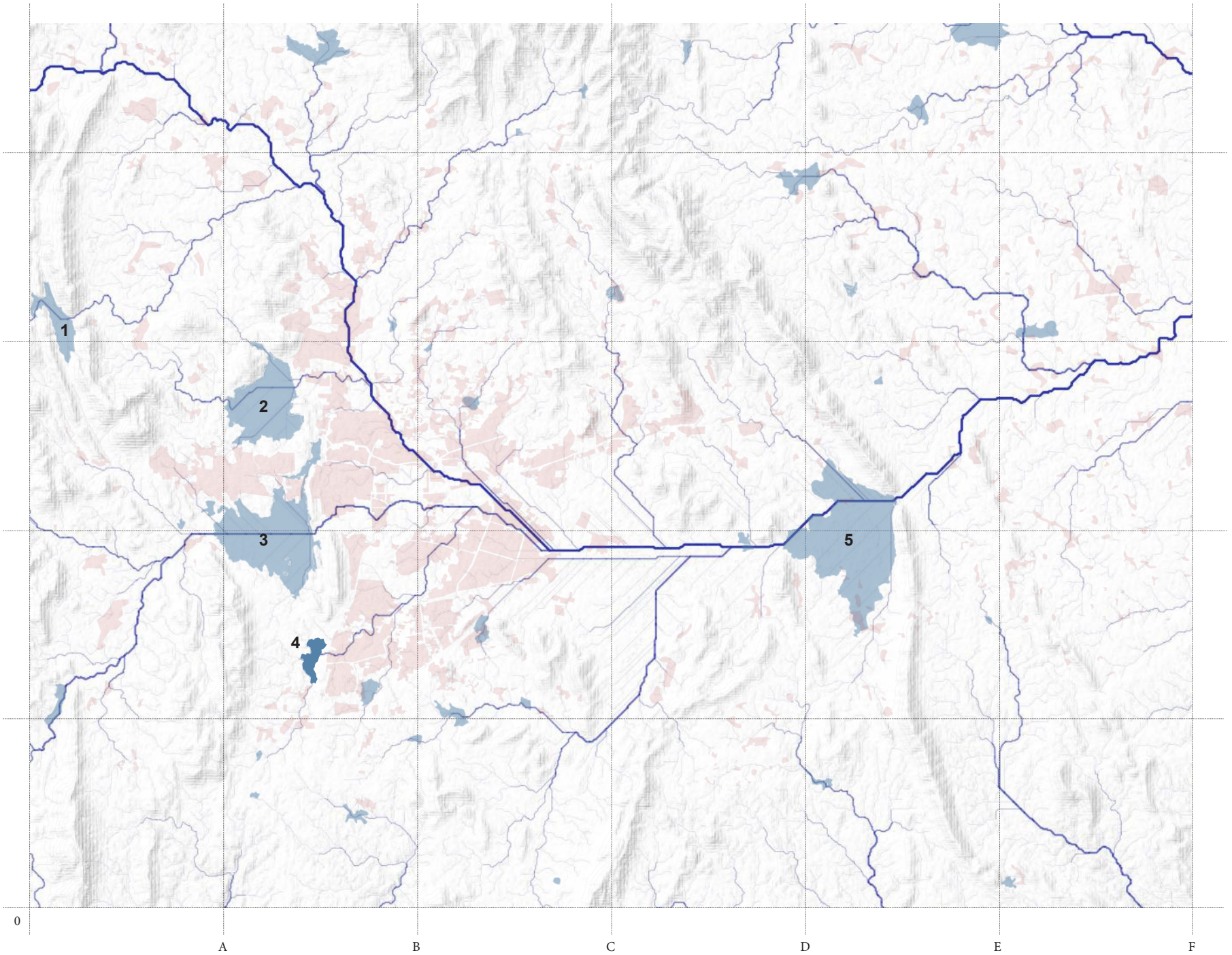


HYDROLOGY

0 2.5 5 km

INFERENCE

Goverdhan Sagar Lake is part of a cascading hydrological system, receiving water from Lake Pichola, which is fed by Fatehsagar Lake and ultimately sourced from the Aravalli ranges, with flow directed eastward toward the Ayad River.
The rocky substrate limits groundwater recharge, making surface runoff and rainfall the primary water sources, while fractured rock formations support some groundwater retention. Seasonal rainfall variations influence water availability, and monsoon waterlogging impacts soil fertility. Urban expansion has altered natural drainage, increasing sedimentation and potential water quality degradation over time.



INDEX

1. Badi Talab
2. Fatehsagar Lake
3. Pichola Lake
4. Goverdhan Sagar Lake
5. Udai Sagar Lake

Ayad River

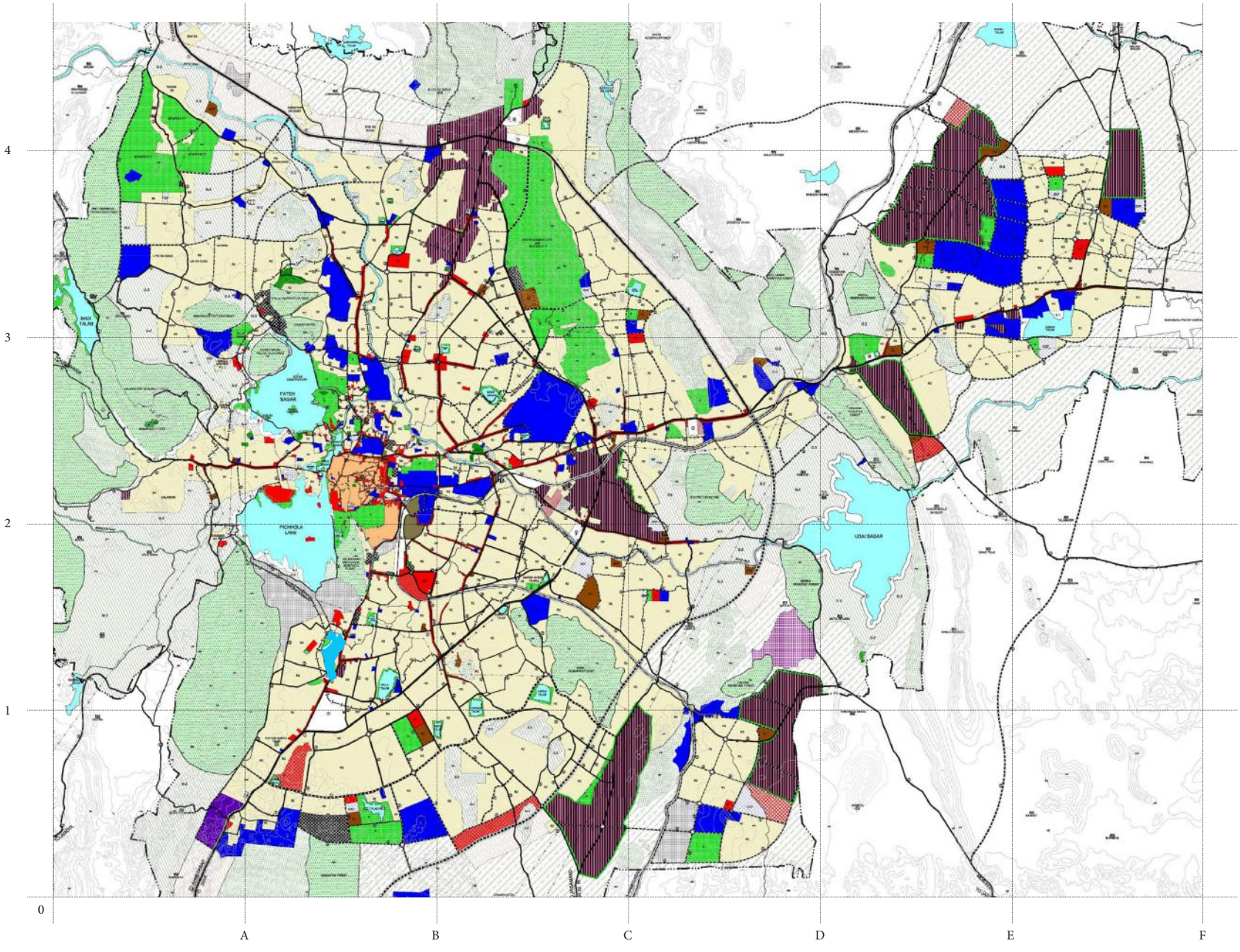
HILL SHADE City Extent , Lake connectivity and Contours

Contour Interval at 50m

0 2.5 5 km

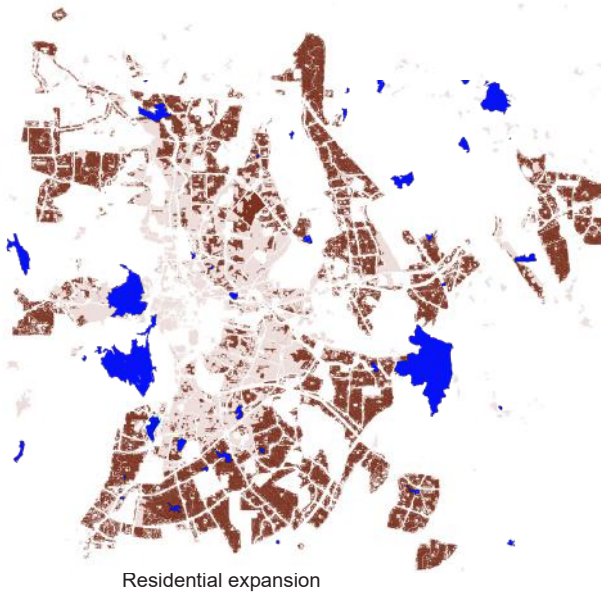
INFERENCE

The hillshade analysis of Udaipur indicates that the terrain influences urban expansion, directing growth along valleys and lower slopes where construction is feasible. This has resulted in settlements near lakes, affecting water bodies and drainage systems. The lake system connectivity is determined by elevation changes, with higher-altitude lakes such as Badi and Fatehsagar supplying lower lakes like Pichola and Udaisagar through a cascading hydrological network. The steep slopes facilitate surface runoff, enabling water flow but limiting groundwater recharge. Contour variations contribute to flood risks in low-lying eastern areas, requiring consideration of natural drainage systems in urban planning to prevent flooding and water stagnation.

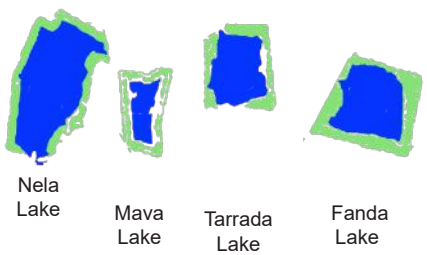


DEVELOPMENT PLAN 2031

0 2.5 5 km



Residential expansion



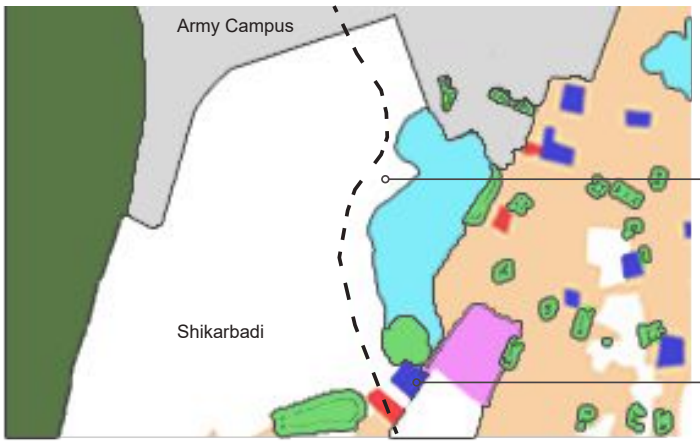
Proposed Green
(Public Parks , stadium and park) dedicated peripheral spaces at the lake edge - 2031

Exisiting Green spaces at the Lake edge - 2012

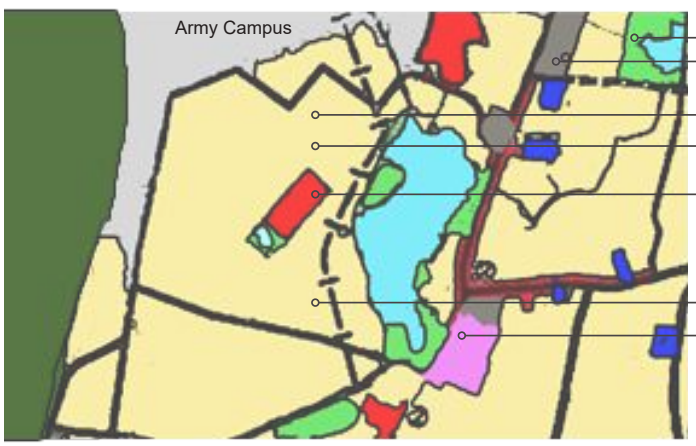
Proposed Green spaces at the lake edge - 2031

Forest Covers Reduction in Development Plan

Entertainment and Sports City Proposed 8Km from the Site

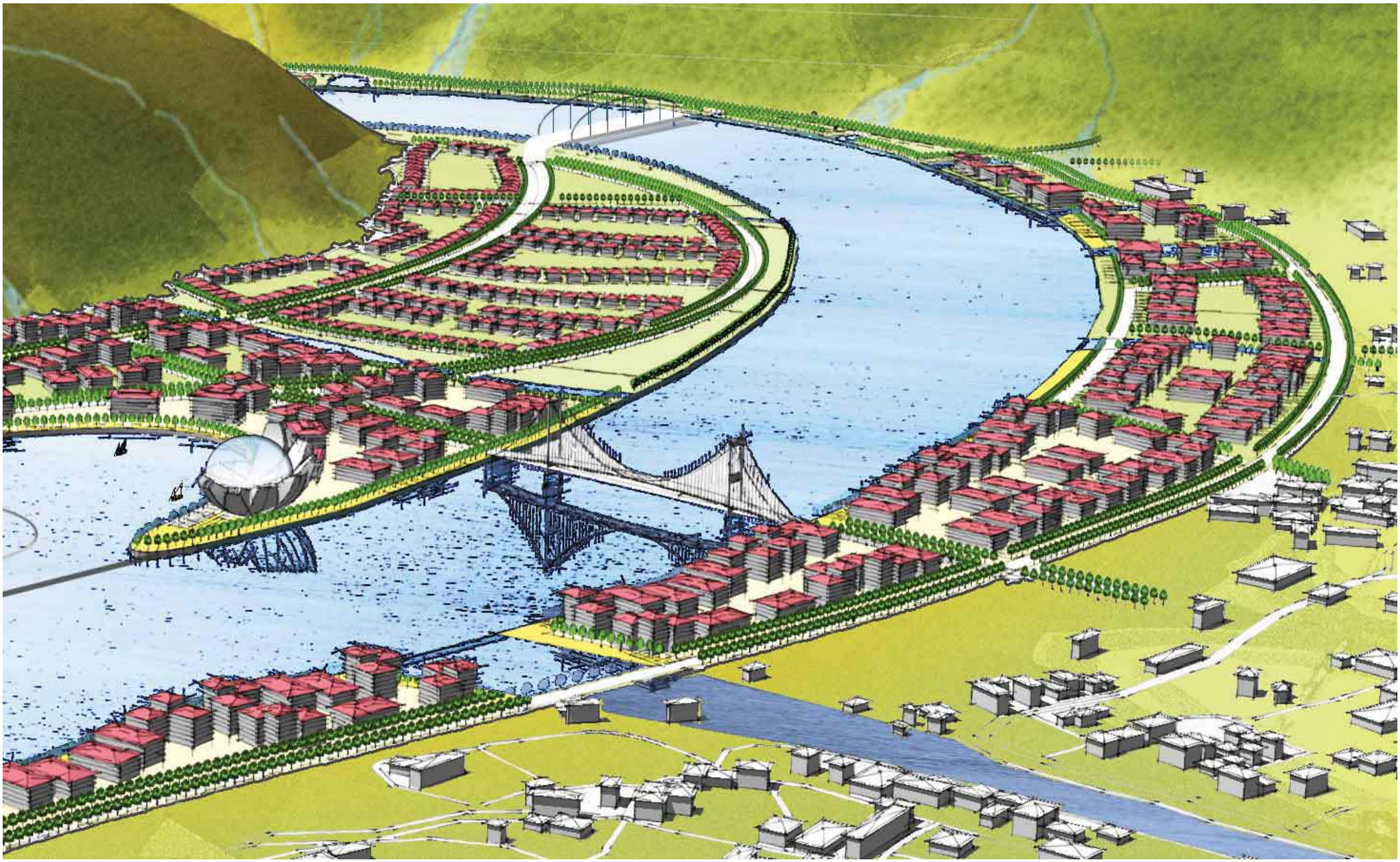


Landuse Map 2012



Proposed Development Plan 2031

Case Study



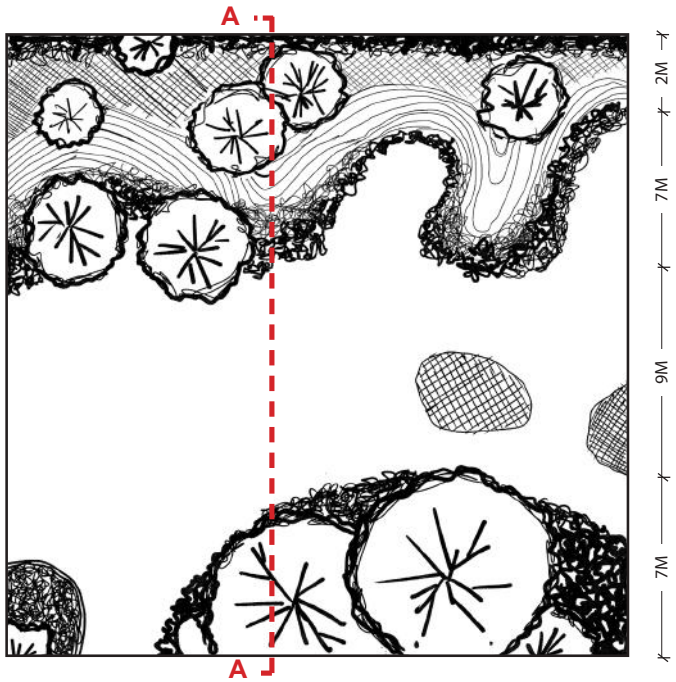
Amo chhu riverfront development,
Phuntsholing, Bhutan.

Modular Planter blocks on the canal slope with the pathway constructed with a material that keeps it floating when there is rise in the water level - so the ecology under the pathway is retained .

Parimal garden

Condition A

Grain plan (25m x 25m)



Image

Inference - Spatial

Density

Sky porosity

Ground porosity

Tranquility

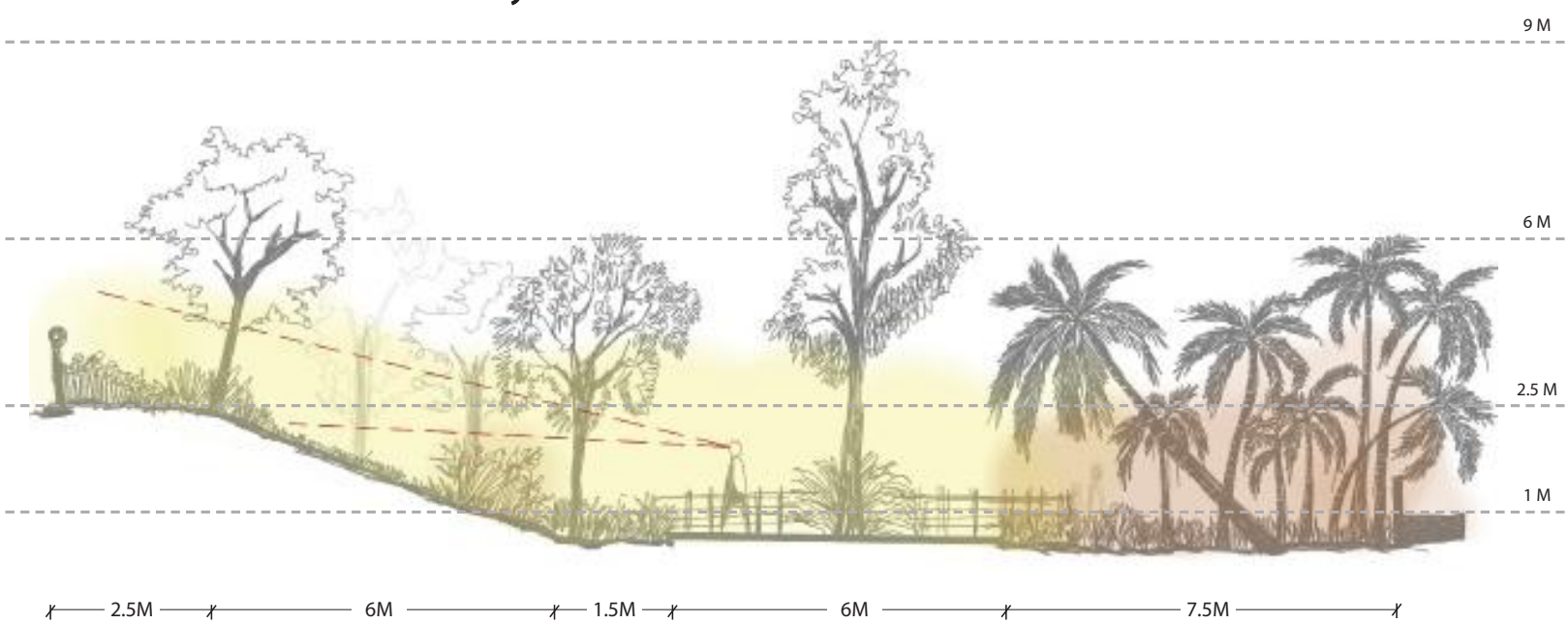
Privacy

Inference - Qualitative

Scale	Intimate	**Small**	Large	Vast
Enclosed	Tight	Enclosed	**Open**	Exposed
Diversity	Uniform	Simple	**Diverse**	Complex
Texture	Smooth	**Textured**	Rough	Very Rough
Form	Vertical	**Slopping**	Rolling	Horizontal
Line	Straight	Angular	**Curved**	Zig-Zag
Colour	**Monochrome**	Muted	Colorful	Garish
Balance	**Harmonious**	Balanced	Discordant	Chaotic
Movement	Dead	**Still**	Calm	**Busy**
Pattern	Random	**Organized**	Regular	Formal
Unity	Unified	Interrupted	**Fragmented**	Chaotic
Security	**Comfortable**	Safe	Unsettling	Threatening
Stimulus	Monotonous	**Bland**	Interested	Inspiring
Tranquility	Inaccessible	Remote	**Vacant**	Peaceful
Pleasure	Offensive	Unpleasant	**Pleasant**	Attractive
Visual	Sweeping	Spreading	Dispersed	**Channeled**

Schematic section

Schematic section analysis

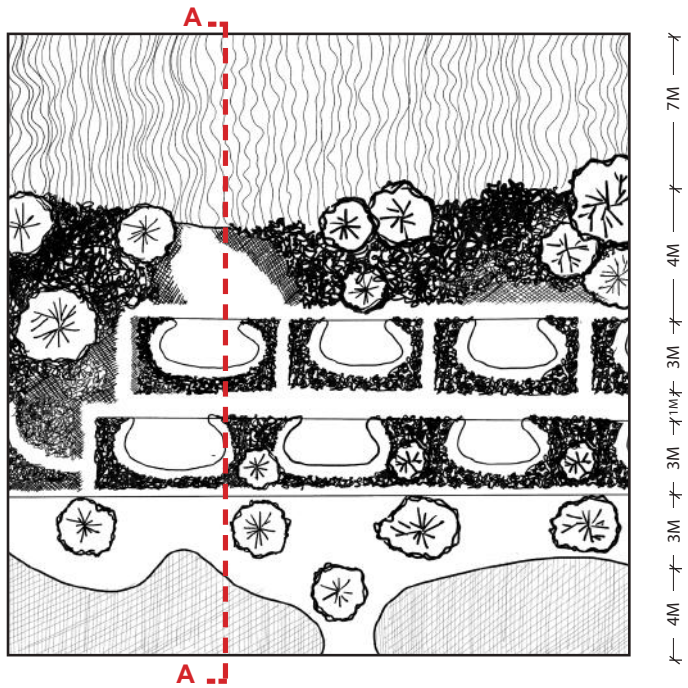


ANGLE OF VISION
DENSE IN VERTICALITY
SPARSE IN VERTICALITY

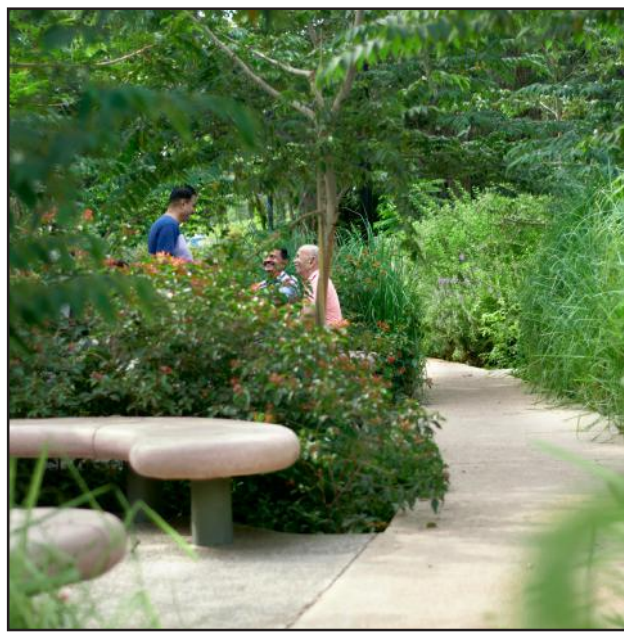
Parimal garden

Condition B

Grain plan (25m x 25m)



Image



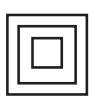
Inference - Spatial

Density

Sky porosity

Ground porosity

Tranquility



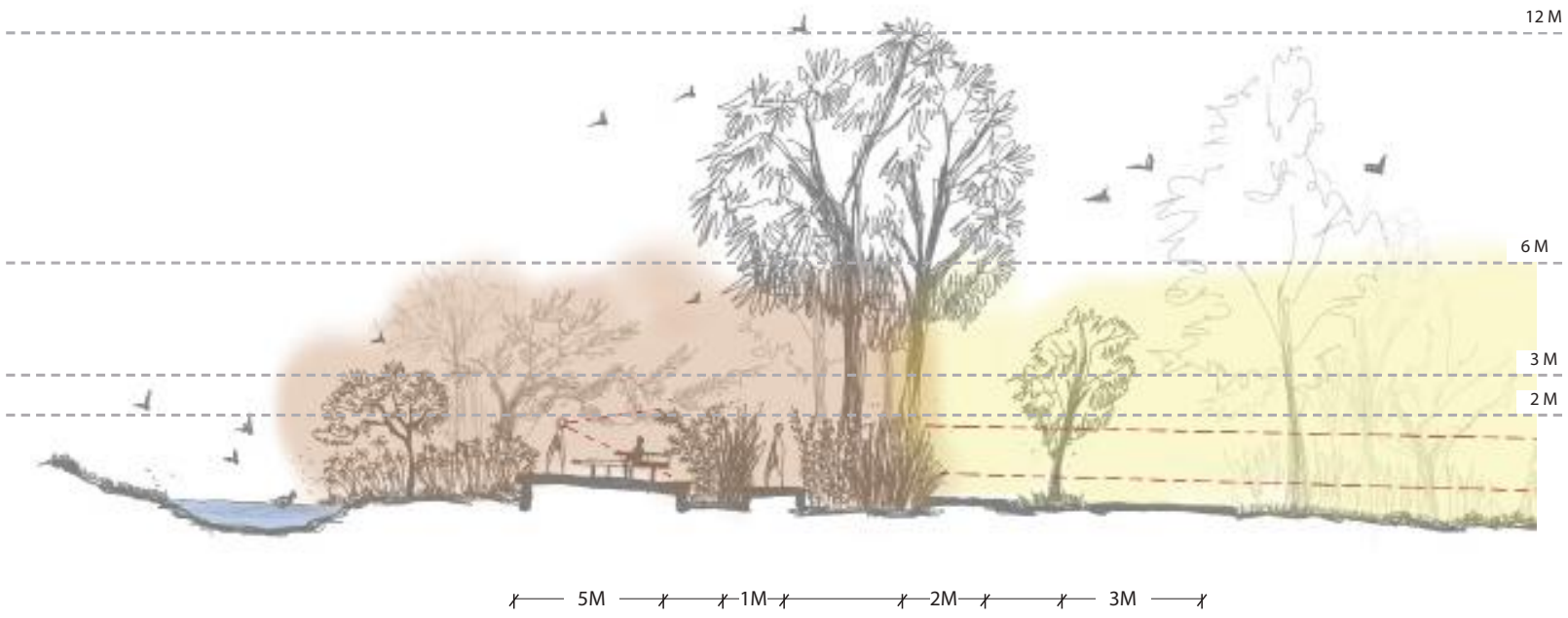
Privacy

Inference - Qualitative

Scale	**Intimate**	Small	Large	Vast
Enclosed	Tight	**Enclosed**	Open	Exposed
Diversity	Uniform	Simple	Diverse	**Complex**
Texture	Smooth	**Textured**	Rough	Very Rough
Form	**Vertical**	Slopping	Rolling	Horizontal
Line	Straight	**Angular**	Curved	**Zig-Zag**
Colour	**Monochrome**	Muted	Colorful	Garish
Balance	Harmonious	Balanced	**Discordant**	Chaotic
Movement	Dead	Still	**Calm**	Busy
Pattern	Random	**Organized**	Regular	Formal
Unity	**Unified**	Interrupted	Fragmented	Chaotic
Security	**Comfortable**	Safe	Unsettling	Threatening
Stimulus	**Monotonous**	Bland	Interested	Inspiring
Tranquility	Inaccessible	Remote	Vacant	**Peaceful**
Pleasure	Offensive	Unpleasant	**Pleasant**	Attractive
Visual	Sweeping	Spreading	Dispersed	**Channeled**

Schematic section

Schematic section analysis

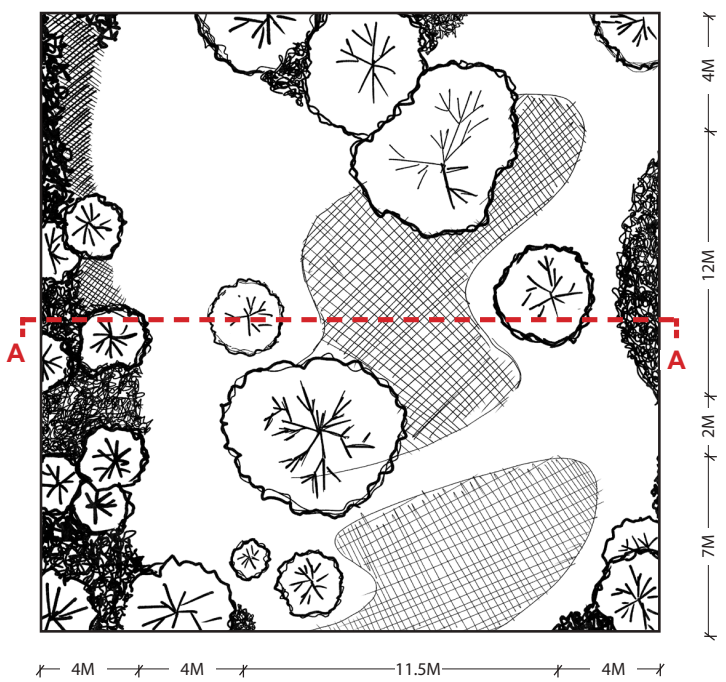


ANGLE OF VISION
DENSE IN VERTICALITY
SPARSE IN VERTICALITY

Parimal garden

Condition C

Grain plan (25m x 25m)



Image

Inference - Spatial

Density

Sky porosity

Ground porosity

Tranquility

Privacy

Inference - Qualitative

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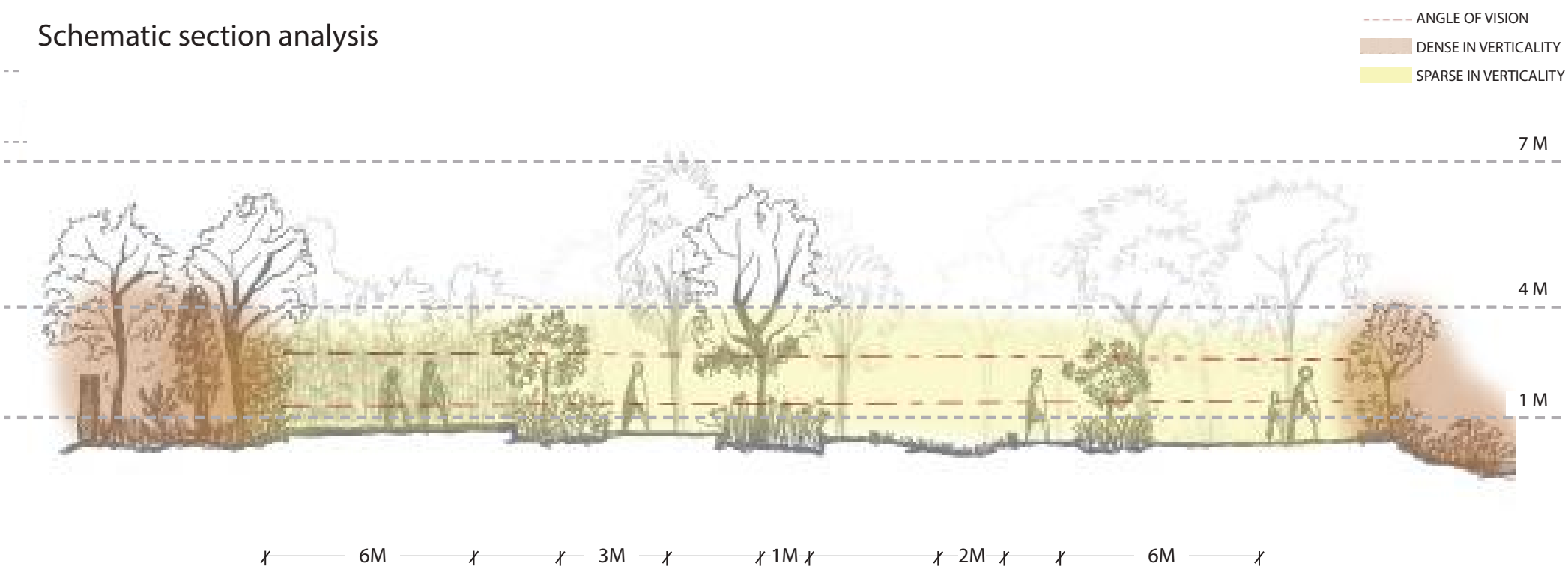
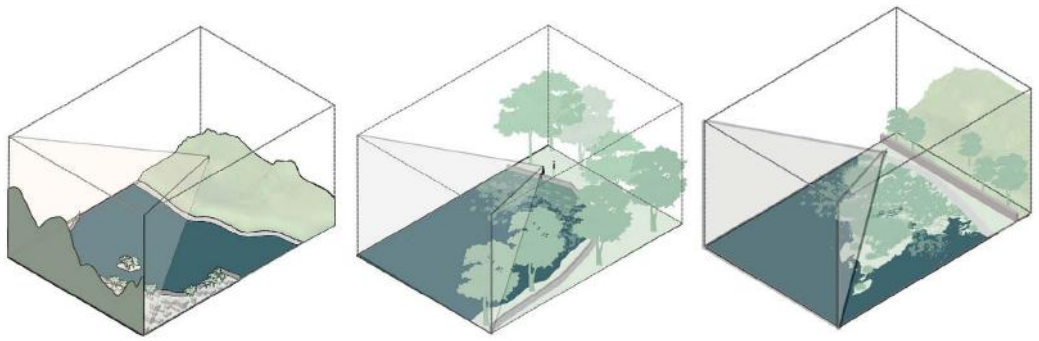
Schematic section

Schematic section analysis





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Masters In Landscape Architecture,
Faculty of Architecture
SPRING 2025

URBAN WATERFRONTS
Landscape Design Proposal for Goverdhan Sagar Lake , Udaipur

CEPT UNIVERSITY

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PLA 24269