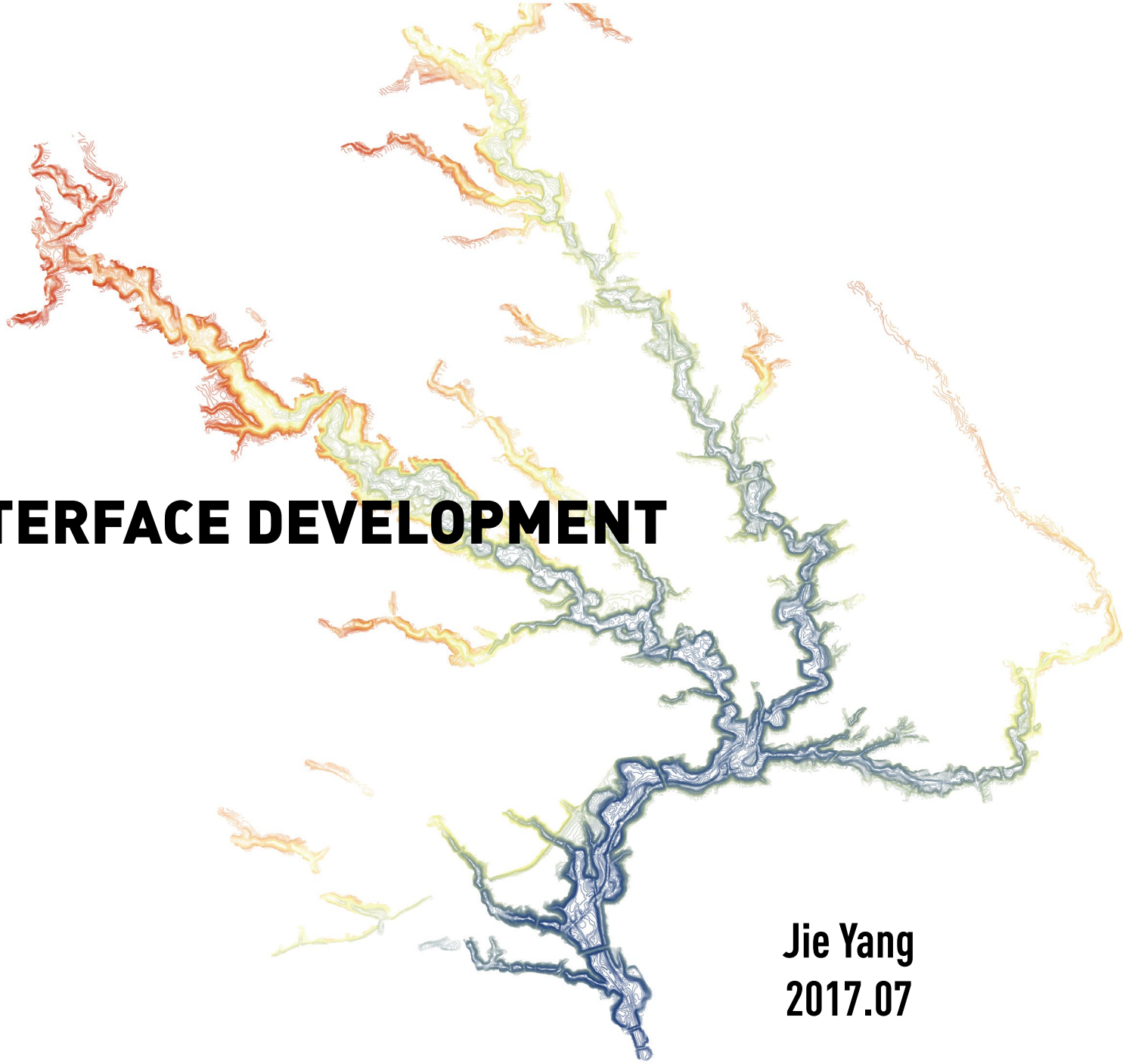
LANDSCAPE INTERFACE DEVELOPMENT



Jie Yang

2017.07

CONTENT

PART ONE
INTRODUCTION

FASCINATION

The Garden Of Earthly Delights (1503-1515) - Hieronymus Bosch

VIDEO STORY

Fig.1 Video Story: Adventure Time Tomonto Valley
https://www.youtube.com/watch?v=7IWGPCwtxO0&feature=youtu.be

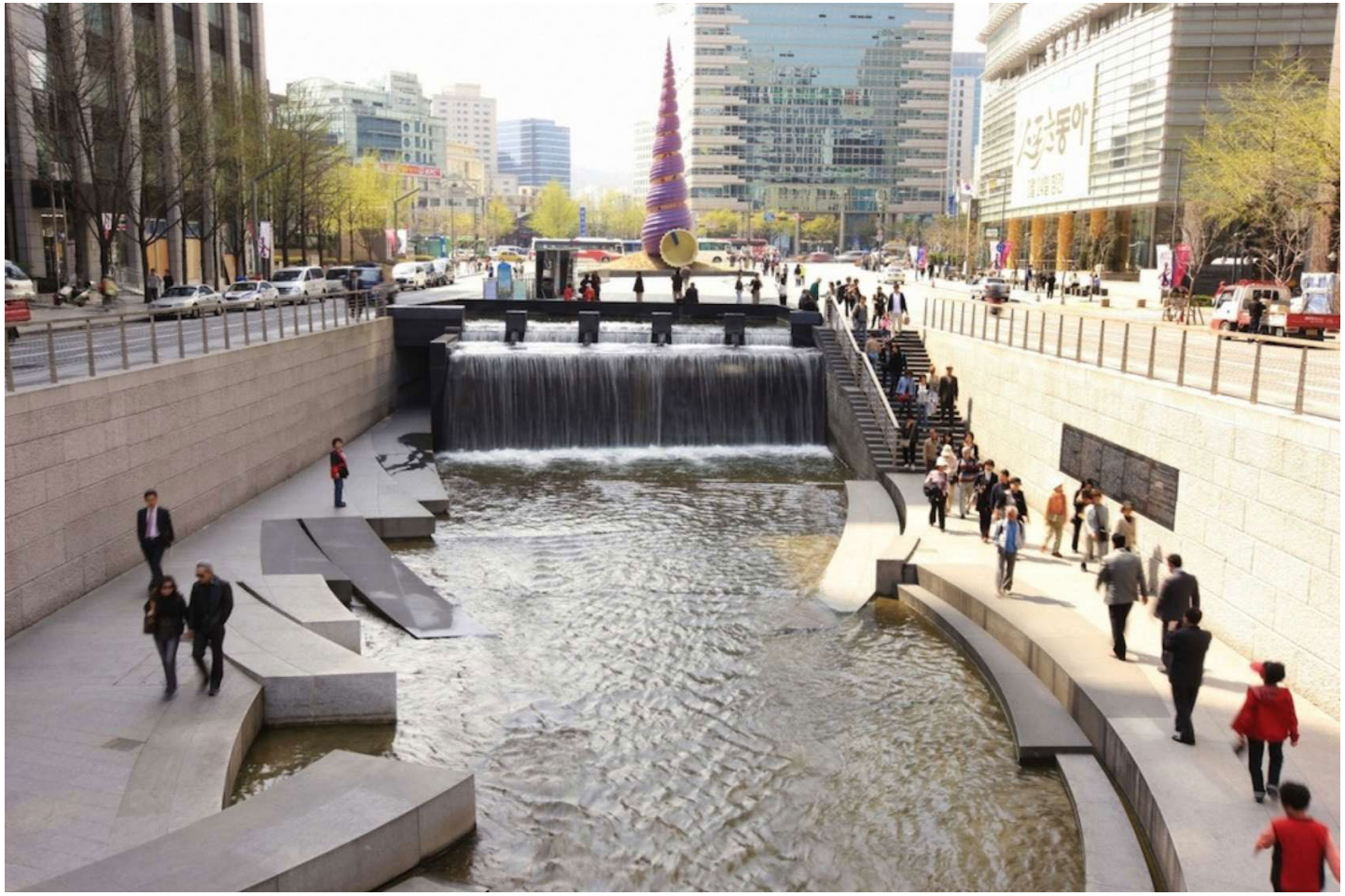
This video is a short story about my project.
In Feburary 2017, I attended the workshop "Let's Talk about Water", this workshop aims at...
As the product of the intense week, and under the help of teachers and friends, I made this short video in playing with clays, in order to talk about the storyline of my graduation project.

FASCINATION

Cheonggyecheon, South Korea

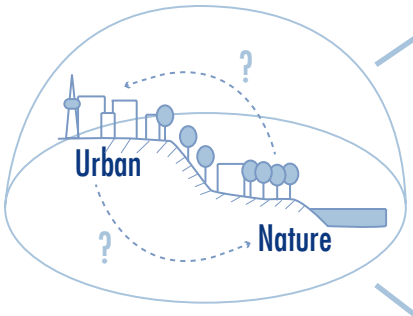
"Urban and landscape fragments contrast, blend and mix with each other. Together they form an urban conglomerate, a ravishing cacophony of built and not built-up spaces." There is no clear-cut definition but hybrids forms on interface.

FASCINATION

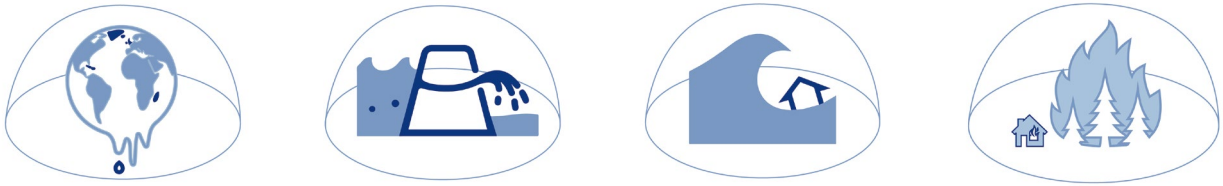


Cheonggyecheon, South Korea
After Riverside recreation

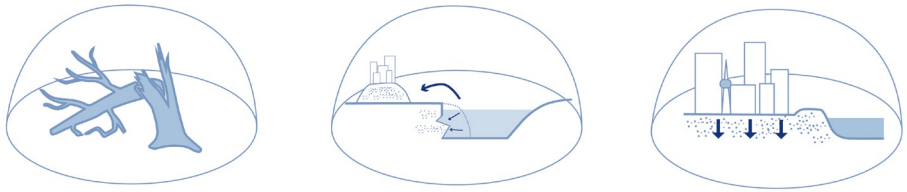
PROBLEM STATEMENT



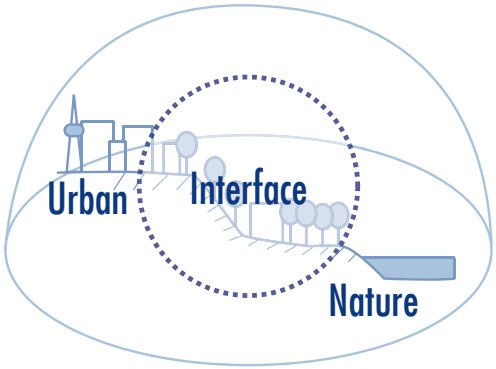
Interaction



Nature threat the living environment around.



Human interventions are the vulnerable factors for natural environments



Interface as a concept to study the interaction

INTERFACE AS AN APPROACH

What is the interface and why design on interface?

1. For this project, interface refers to the zone of transition between unoccupied land and human development. It is the confrontation of urban systems and natural systems. There are no clear boundary between nature and urban on it. It is the place where urban environment and natural environment are porous into each other and interact and conflict with each other most frequently.

2. Interface is a complementary approach to study the interaction of urban and nature.

ADAPTIVE INTERFACE

One of the most important thing of interface is the **adaptivity**. Considering the highly frequent interactions between urban and nature, interface should be a changeable structure which conveys urban dynamism and natural process.

So the concept I am going to work with is **not only interface but the adaptive interface.**

PROBLEM STATEMENT

Nijmegen, NL
New urban land

Cheonggyecheon, South Korea
Riverfront Pomenade

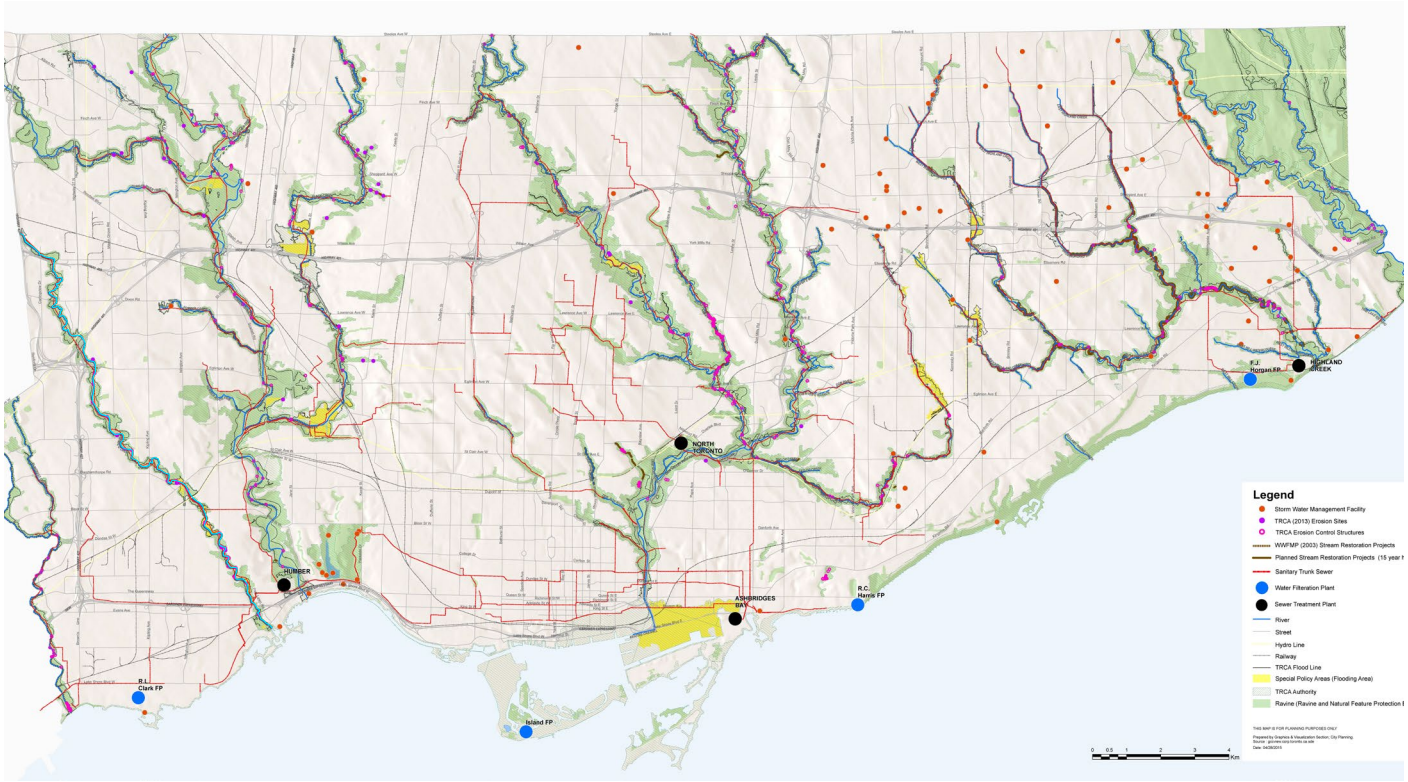
Mill Race Parl, US
Recreation Park

In which way should we develope interface and assure its adapticity?

DESIGN OBJECTIVE

Main Objective: To consider ‘adaptive interface’ as an instrument to facilitate the interaction between urban and nature through the method of research by design.

TORONTO AS CASE STUDY

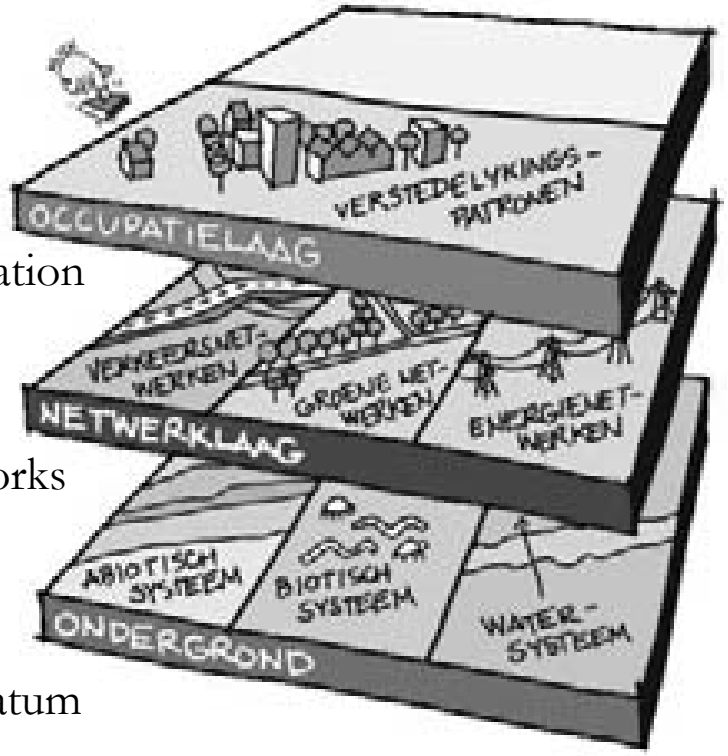


Dramatic ravine features

22% Population growth

PART TWO
METHODOLOGY FRAMEWORK

METHODOLOGY

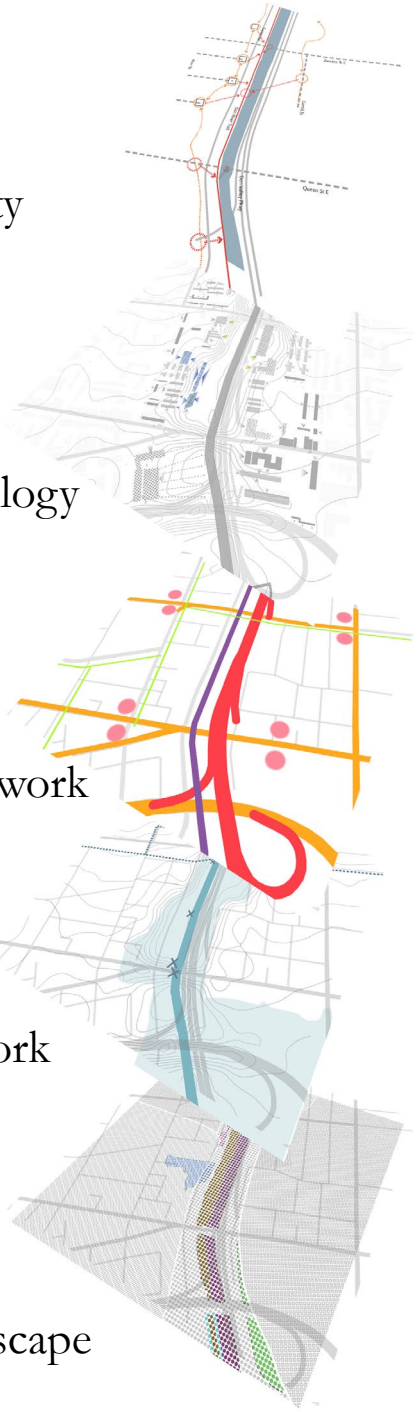


Occupation

Networks

Substratum

Urban-nature Interface			
Three Layer	**Occupation Layer** 5-50 years	**Infrastructure Layer** 50-100 years	**Nature Landscape Layer** >100 years
Dimensions	Occupation 1. Building morphology 2. Accessibility	Infrastructure 1. Transportation network 2. Water networks	Nature Landscape 1. Habitats 2. Soil Condition
Analysis	 Building morphology Accessibility	Infrastructure	 Habitat-soil



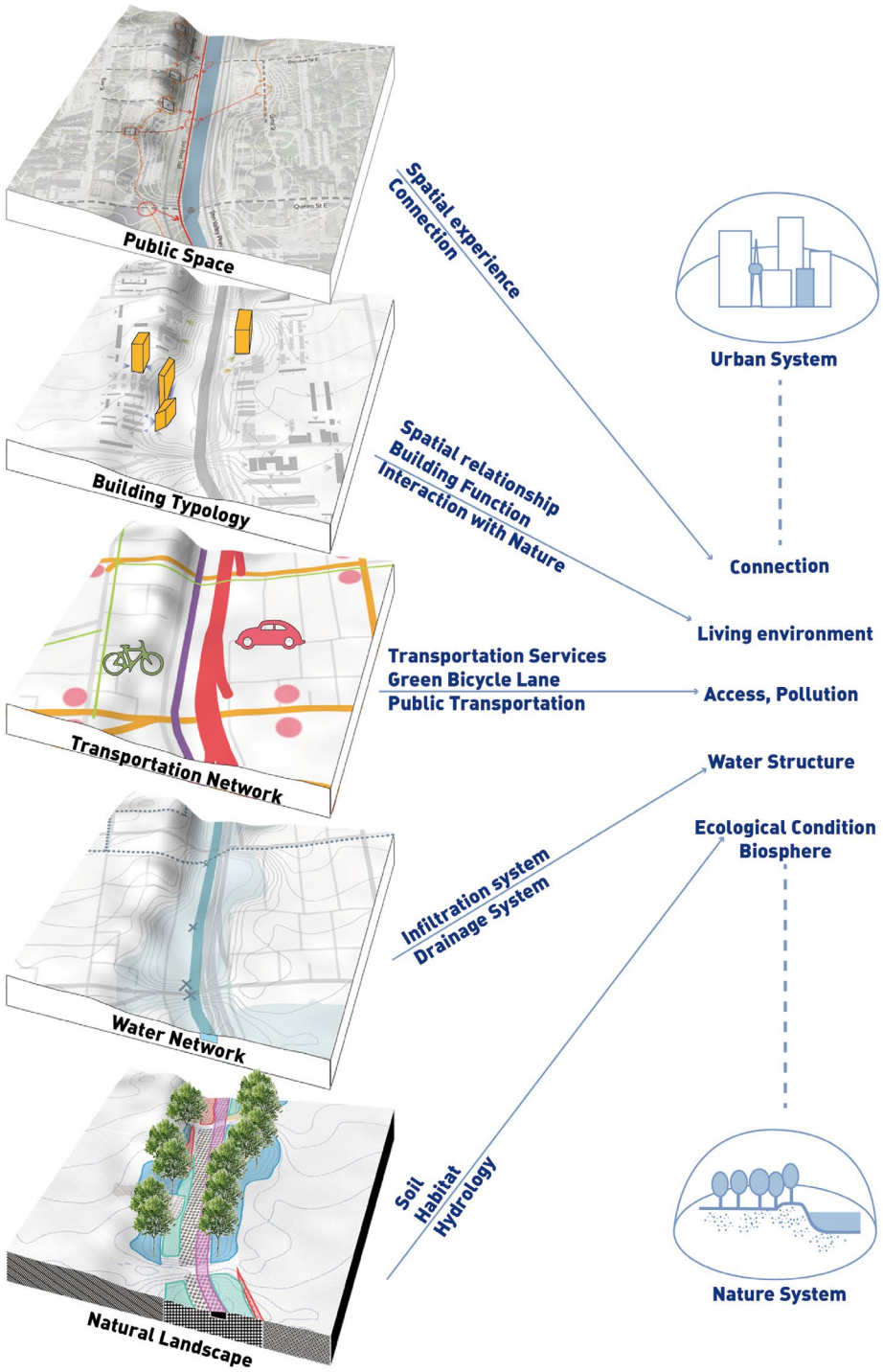
Accessibility

Building Typology

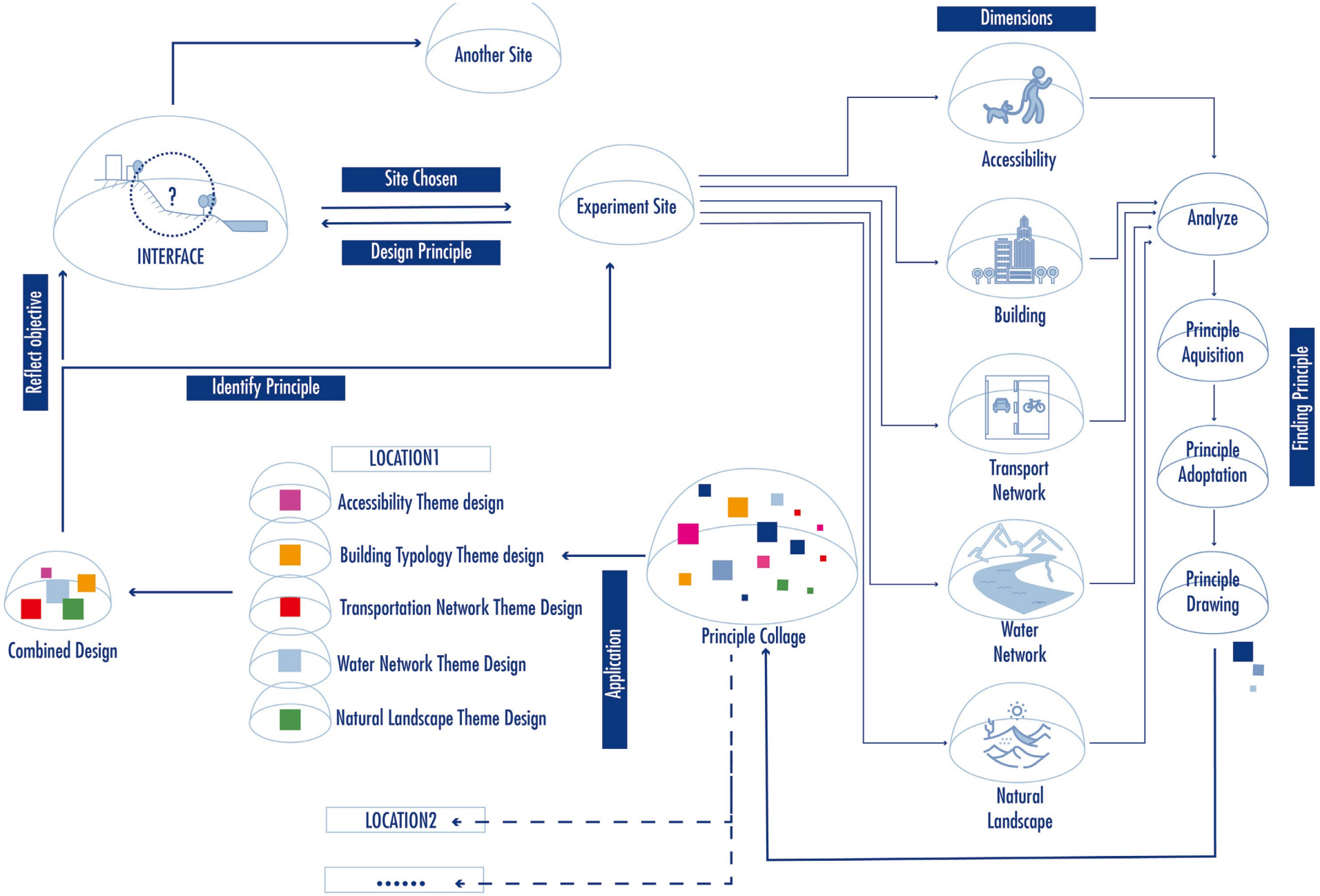
Transport Network

Water Network

Natural Landscape

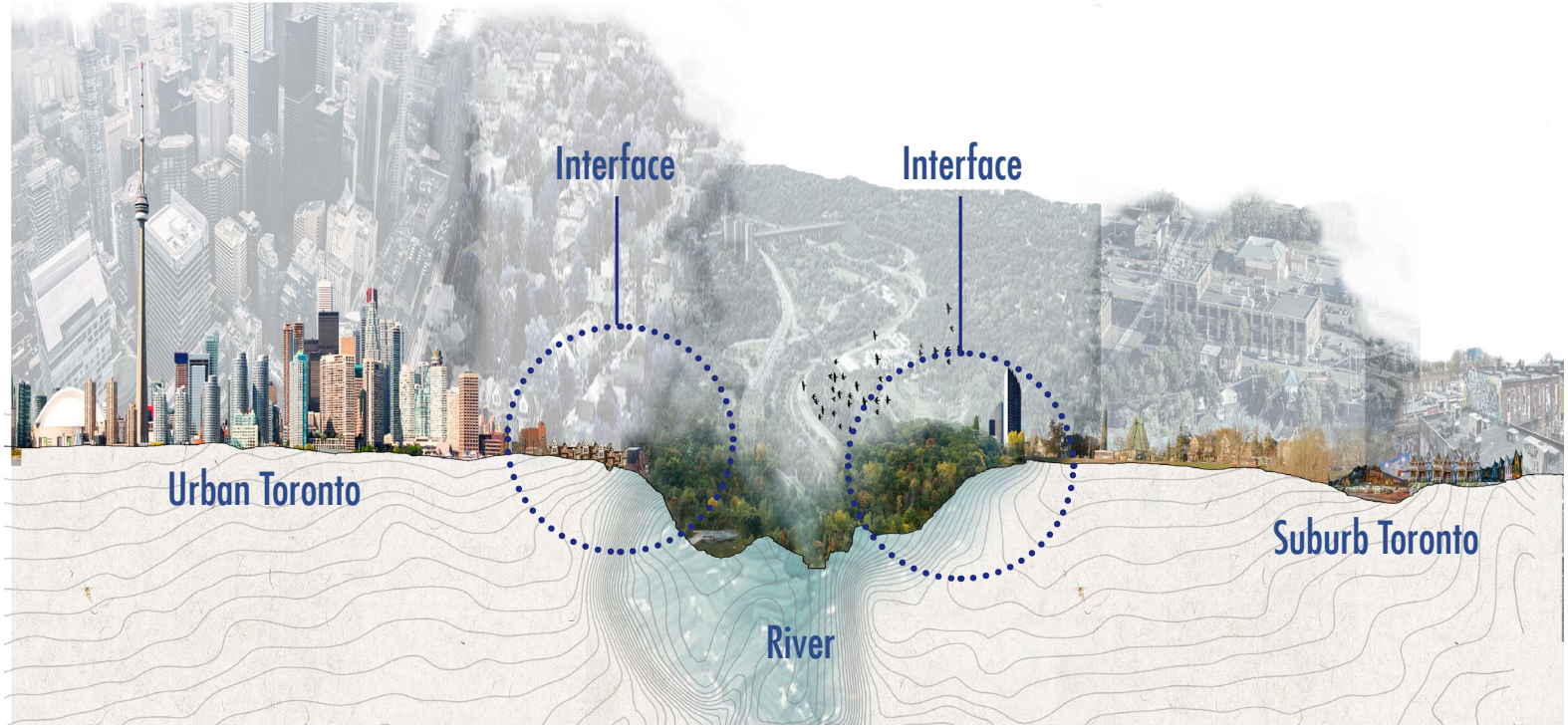

Public Space
Building Typology
Transportation Network
Water Network
Natural Landscape
Spatial experience
Connection
Spatial relationship
Building Function
Interaction with Nature
Transportation Services
Green Bicycle Lane
Public Transportation
Infiltration system
Drainage System
Soil
Habitat
Hydrology
Urban System
Connection
Living environment
Access, Pollution
Water Structure
Ecological Condition
Biosphere
Nature System

METHODOLOGY FRAMEWORK



PART THREE
UNDERSTANDING SITE

TORONTO INTERFACE



1. Substratum, as it is the lowest dynamic layer which provides natural conditions on interface.

2. Infrastructure networks, its transformation and development goes faster than the natural conditions.

3. Land use and urban settlement enjoys the highest dynamism, and it determines how people use the interface in a short time.

Slow Development

Fast Development

TORONTO INTERFACE

Substratum

Natural Landscape

Soil conditions

Habitats

Infrastructure Network

Water body

Water structure

Water Network

Underground Tube

Transportation service

Transportation Network

Occupation

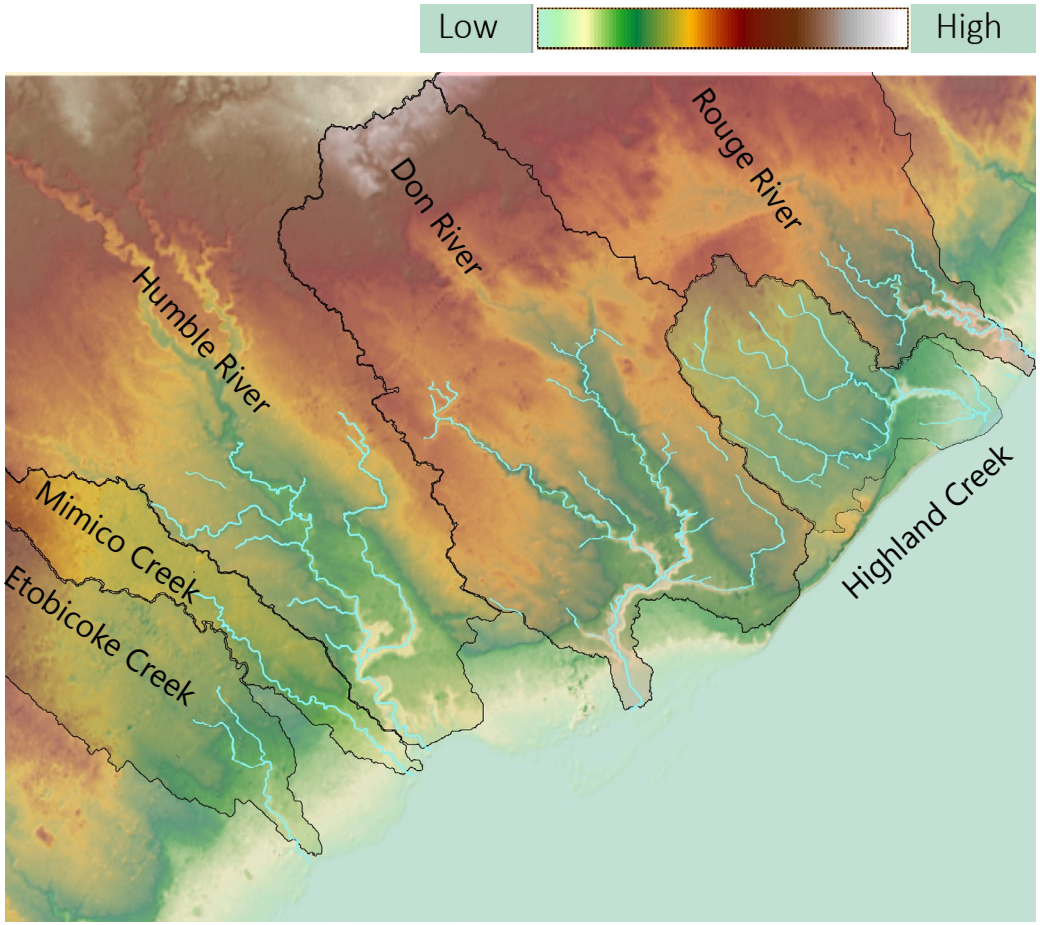
Spatial Relationship

Building Typology

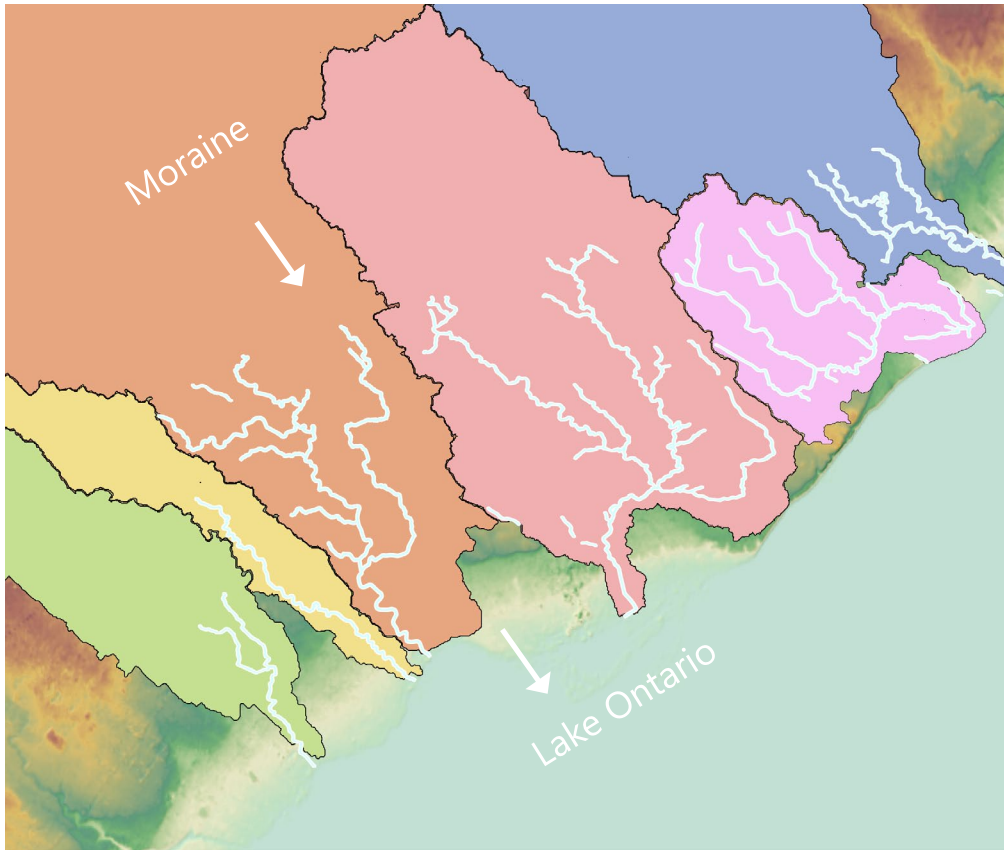
Spatial Experience

Accessibility

TORONTO INTERFACE



Typography and Watershed

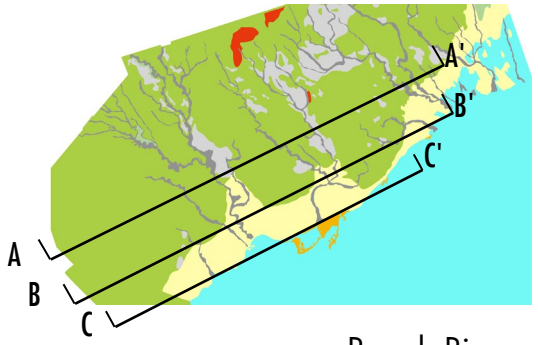


The largest ravines are home to the rivers running south from the Moraine to Lake Ontario. These rivers and creeks flow through high land (North) to waterfront area (South). And the river basin formed the lowland in city area.

Toronto's ravine systems, with its river, dramatic geography and forest defines the landscape.

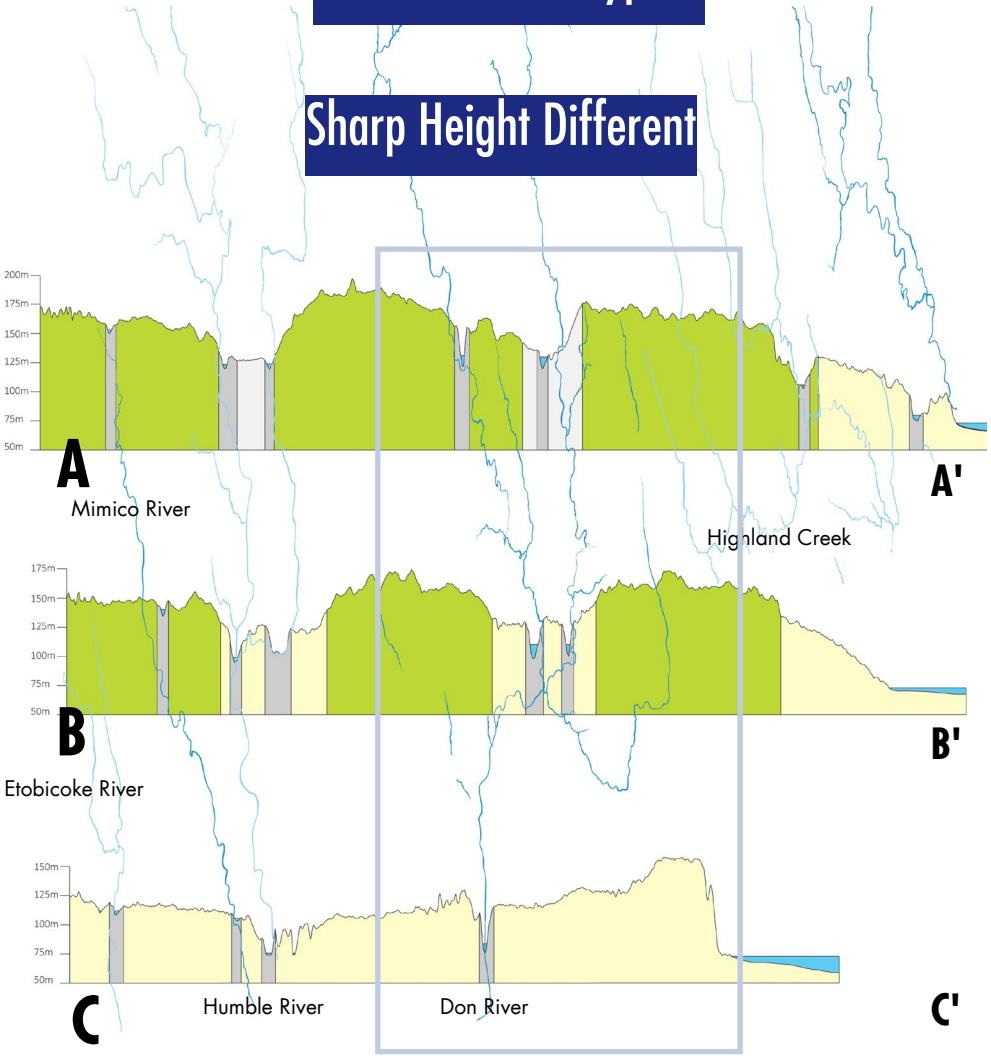
TORONTO INTERFACE

Ravine Valley Position

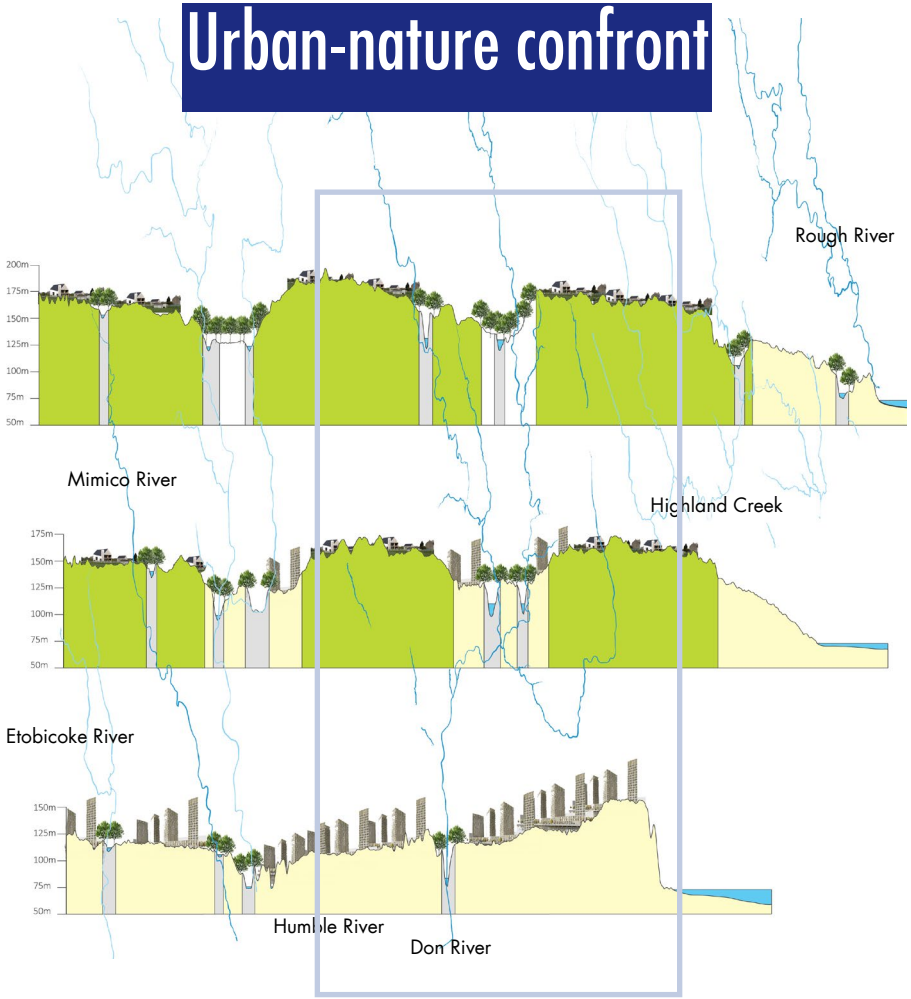


Different Soil type

Sharp Height Different

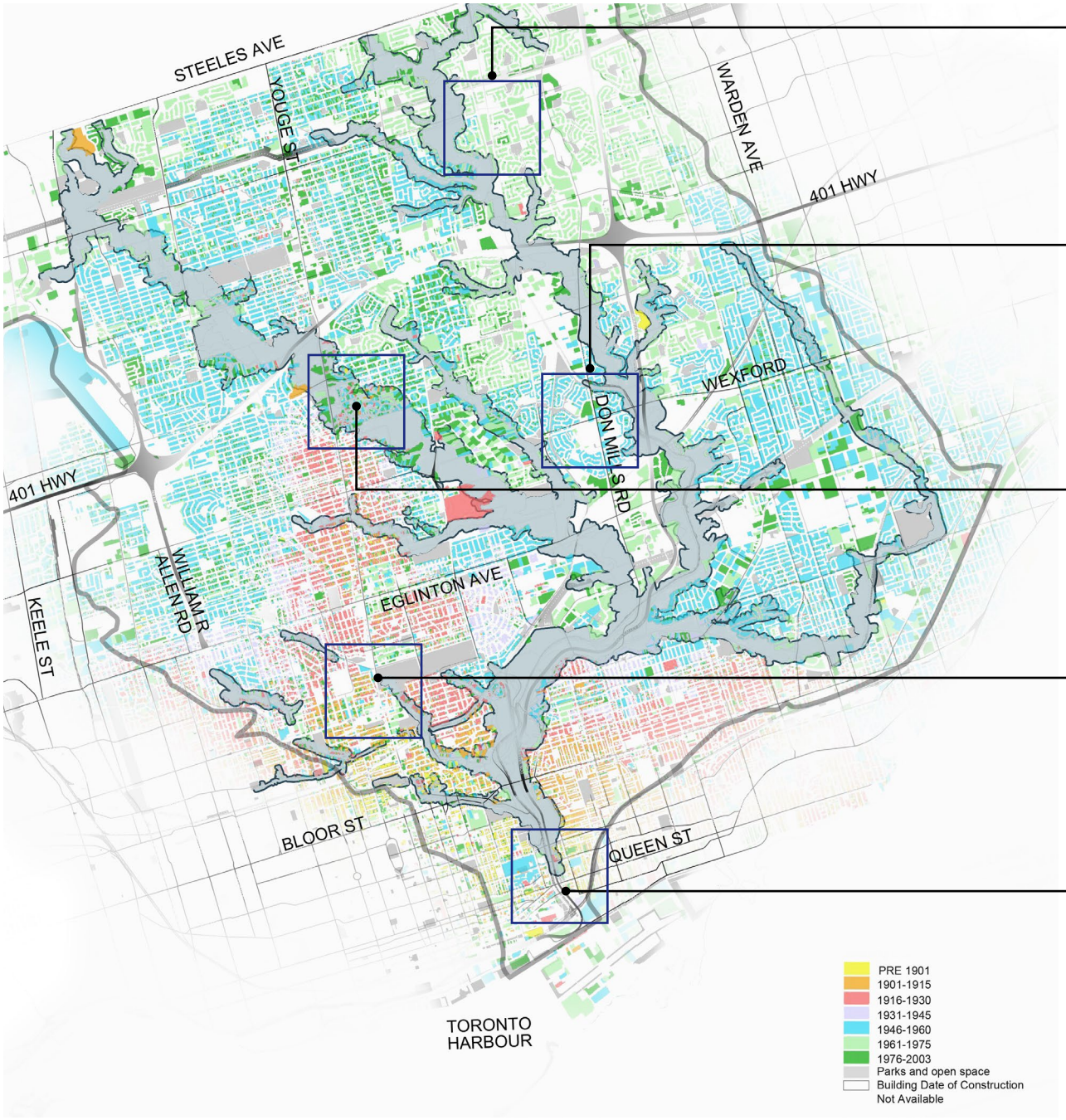


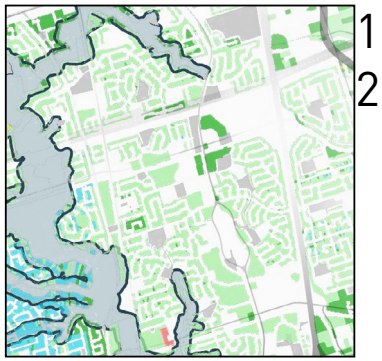
Urban-nature confront

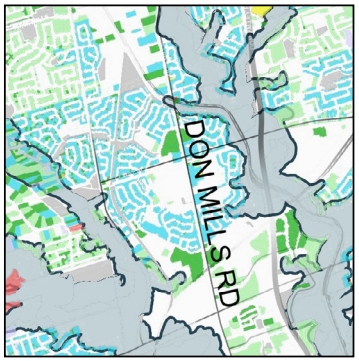


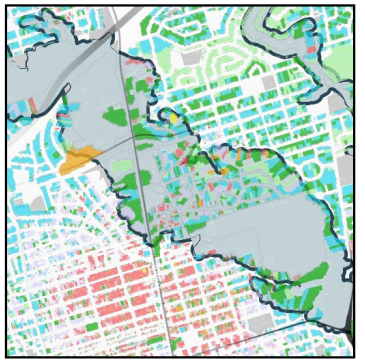
HISTORICAL DEVELOPMENT OF WATERSHED

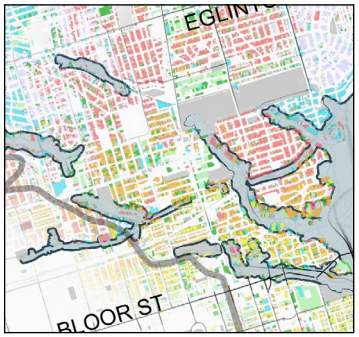
1. grow independent
2. grow dependent

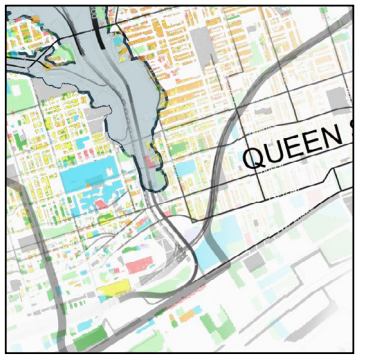




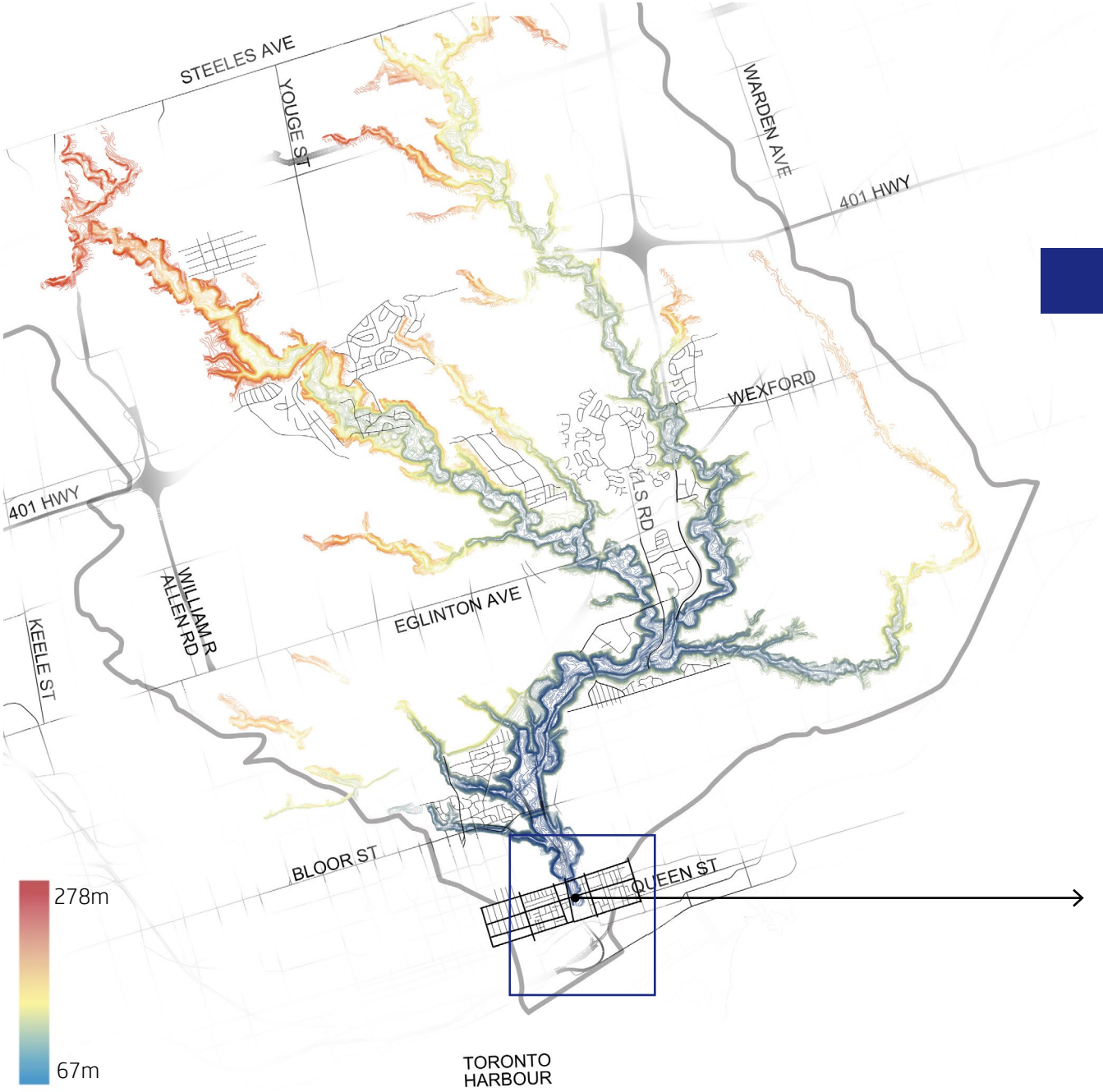


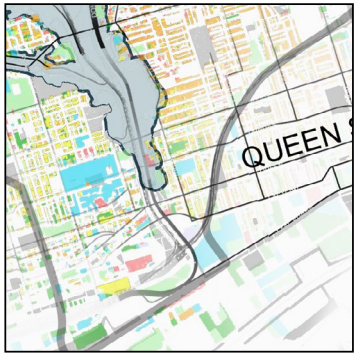




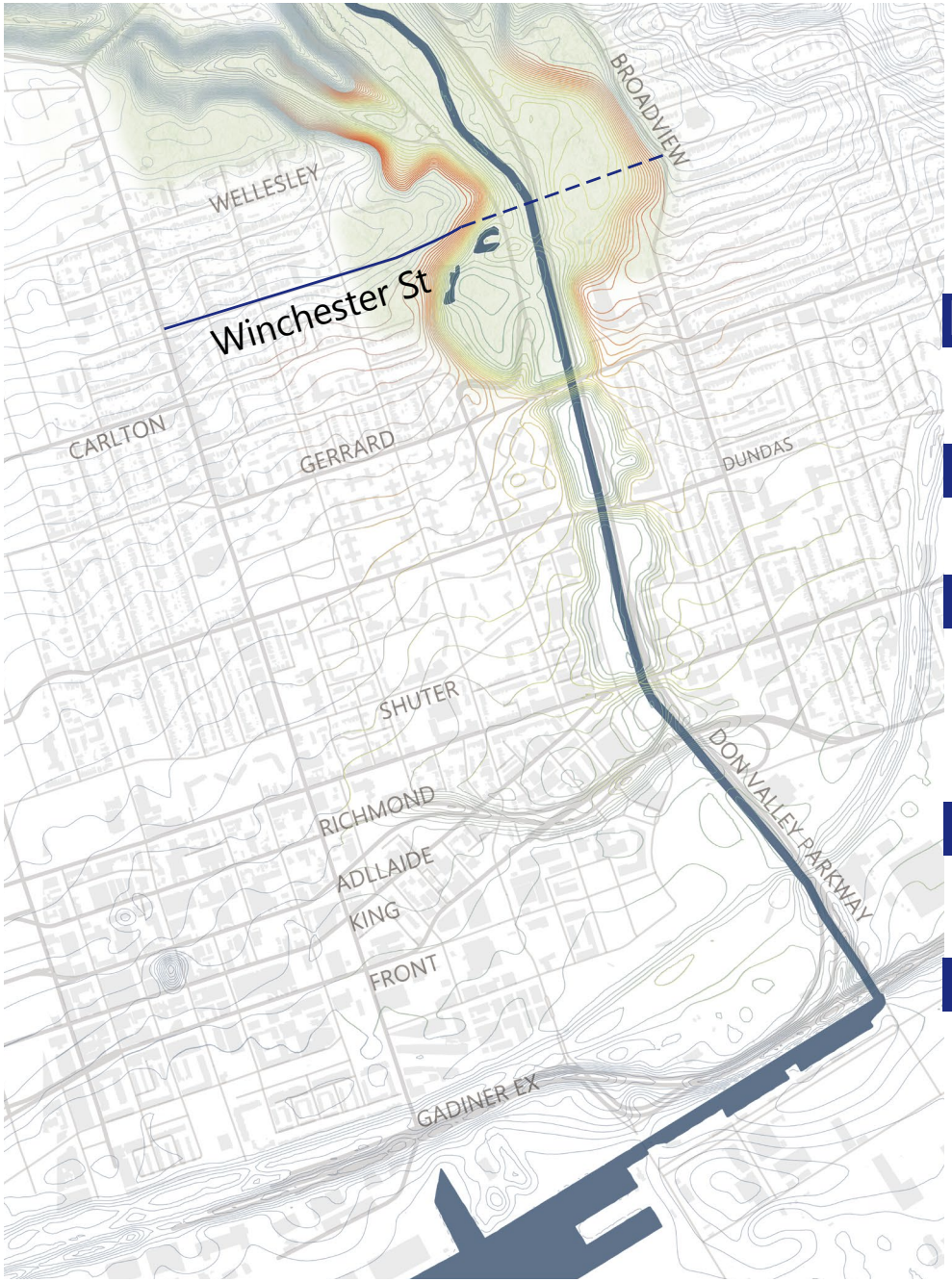


Dependent development





EXPERIMENT SITE: Lower Don River



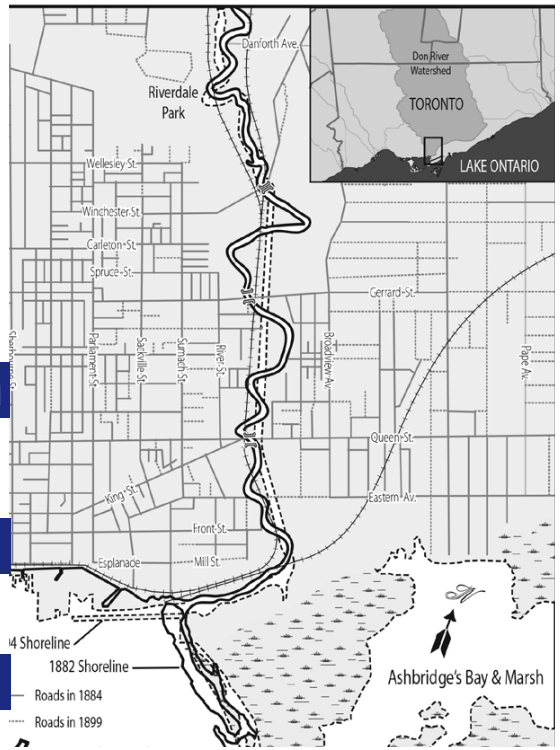
Reshape Geomorphology condition

Industrial land

Pollution

Infrastructure Corridor

Left-over

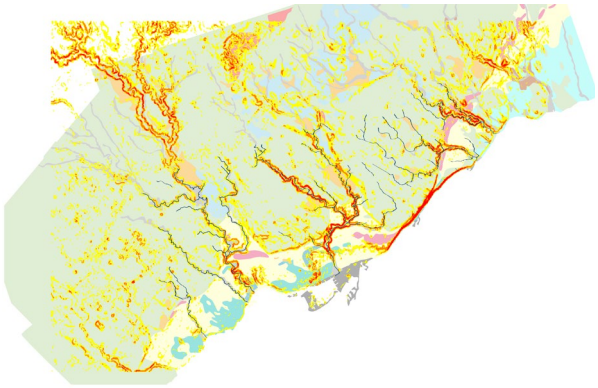


The Lower Don River before and after straightening, 1882 and 1894

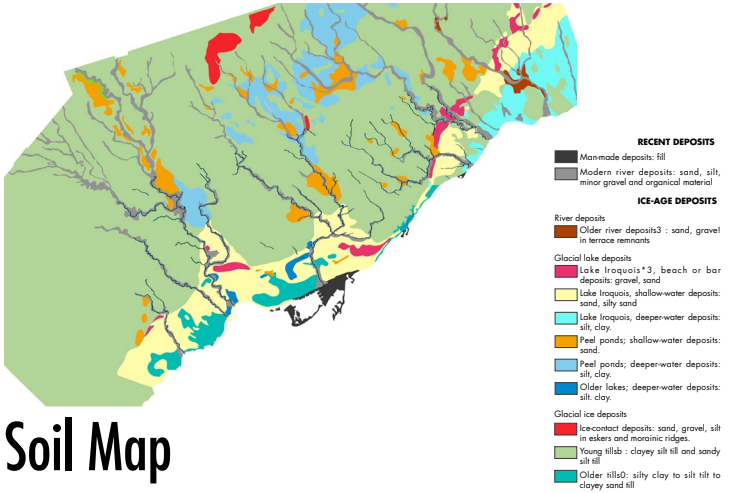
PART FOUR
FINDING PRINCIPLES

NATURAL LANDSCAPE

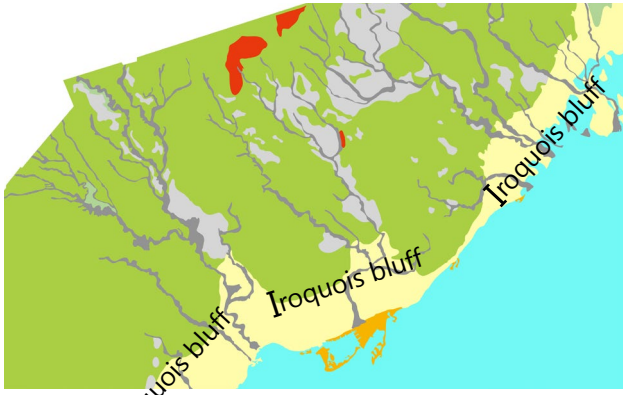
Analysis



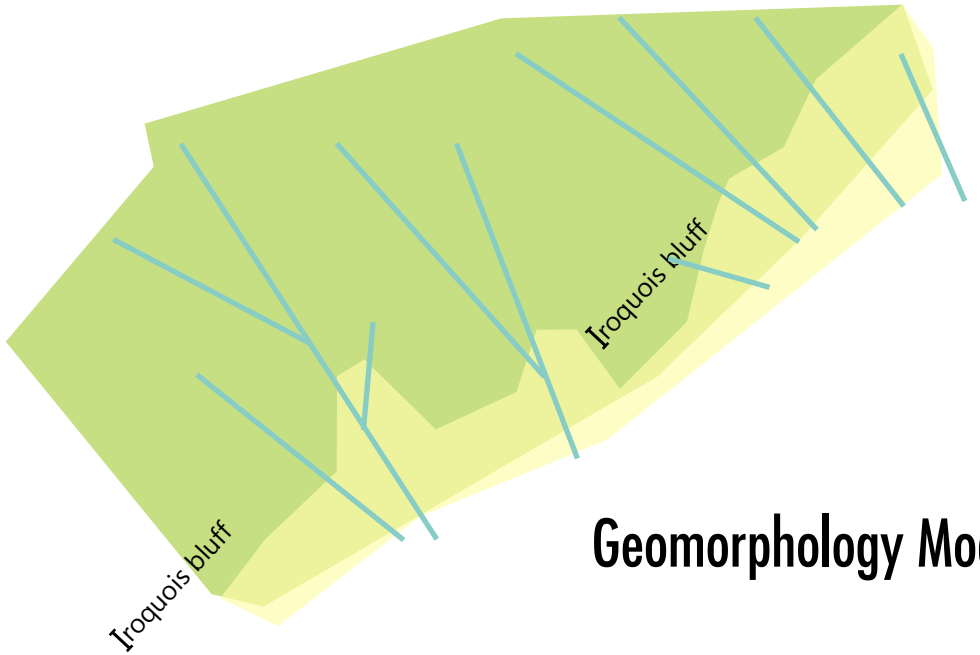
Extreme Slope



Soil Map



Geomorphology Structure

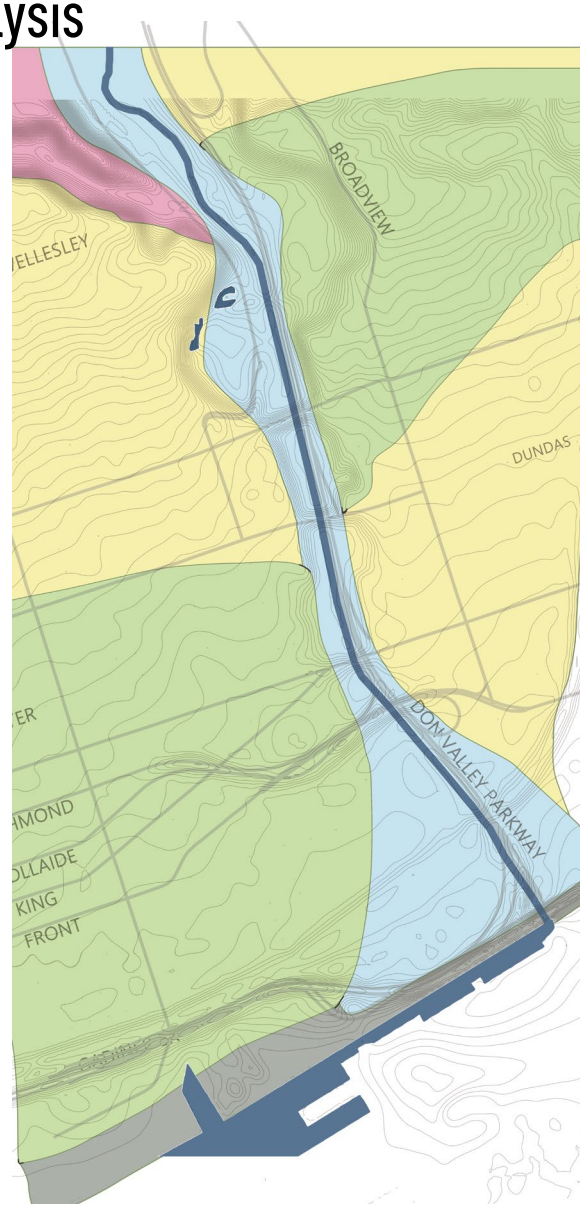


Geomorphology Model

Large river ravine landscape is disserting these two sloping plains - north of the Iroquois bluff in undulating till plain, south of the Iroquois bluff has more dynamic height difference.

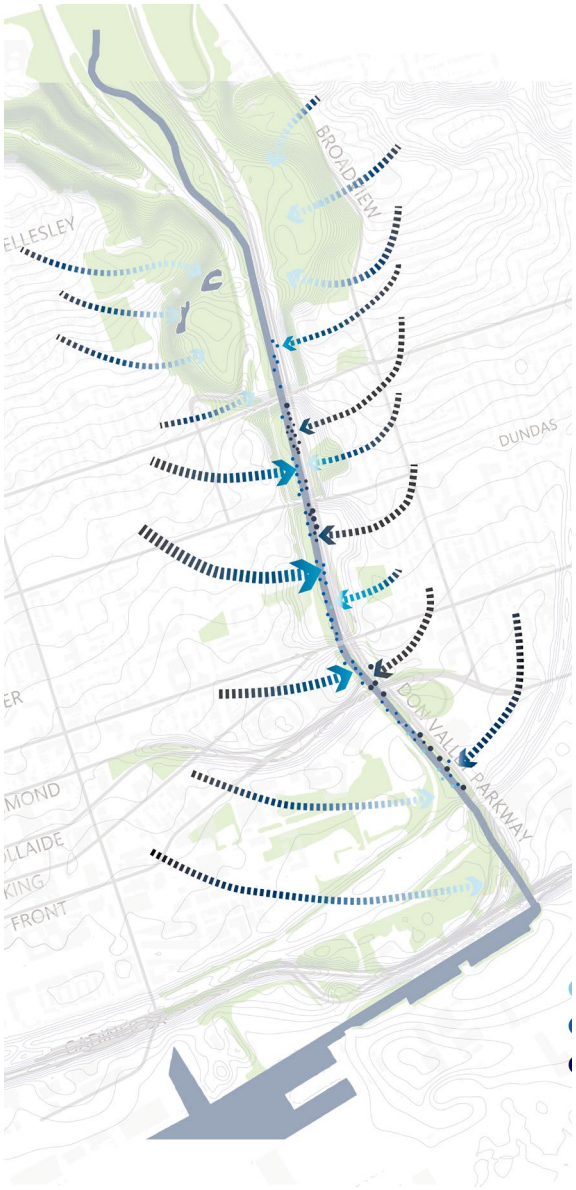
NATURAL LANDSCAPE

Analysis



Soil Distribution

Habitat Distribution



Rainwater Runoff

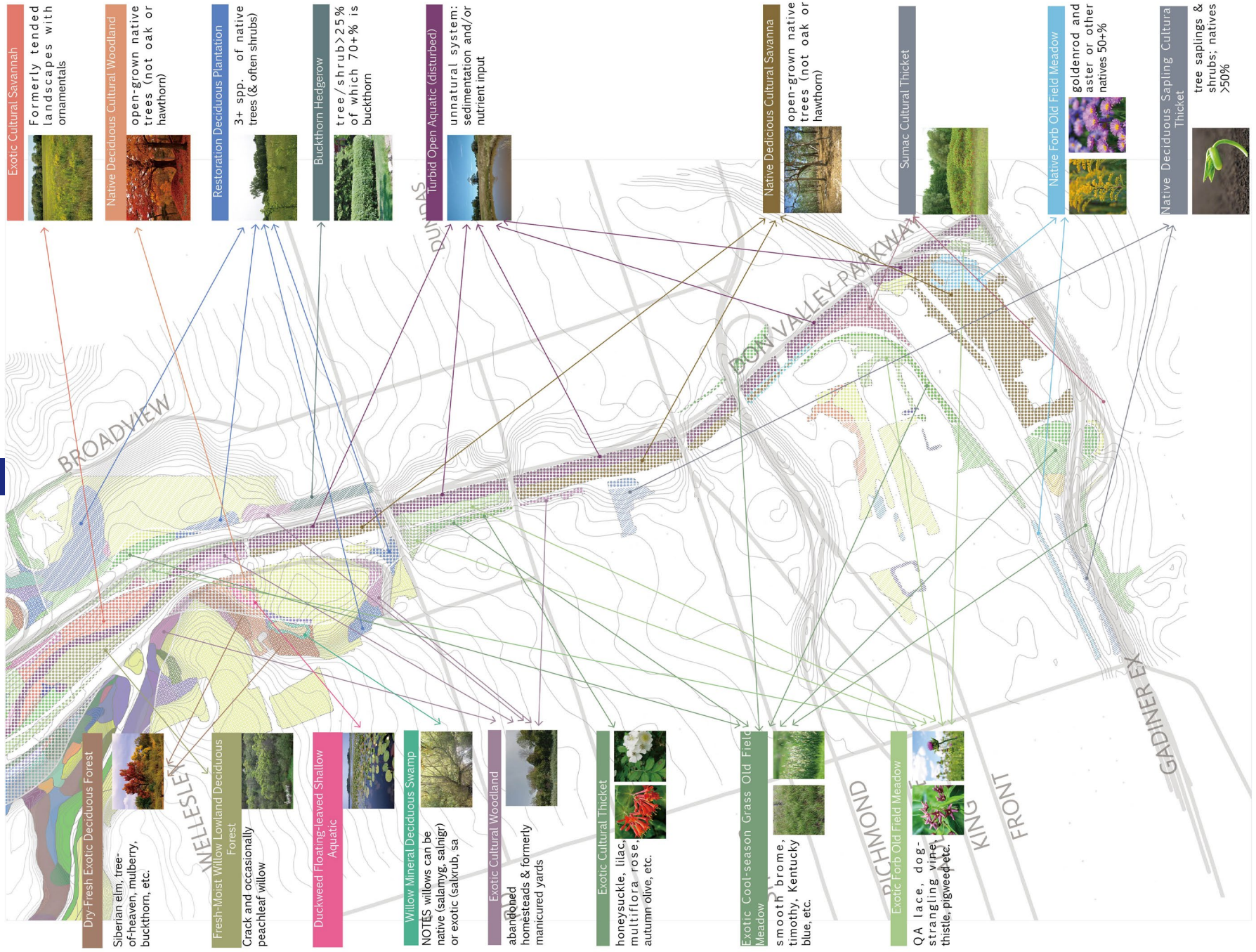
NATURAL LANDSCAPE

Analysis

Habitat

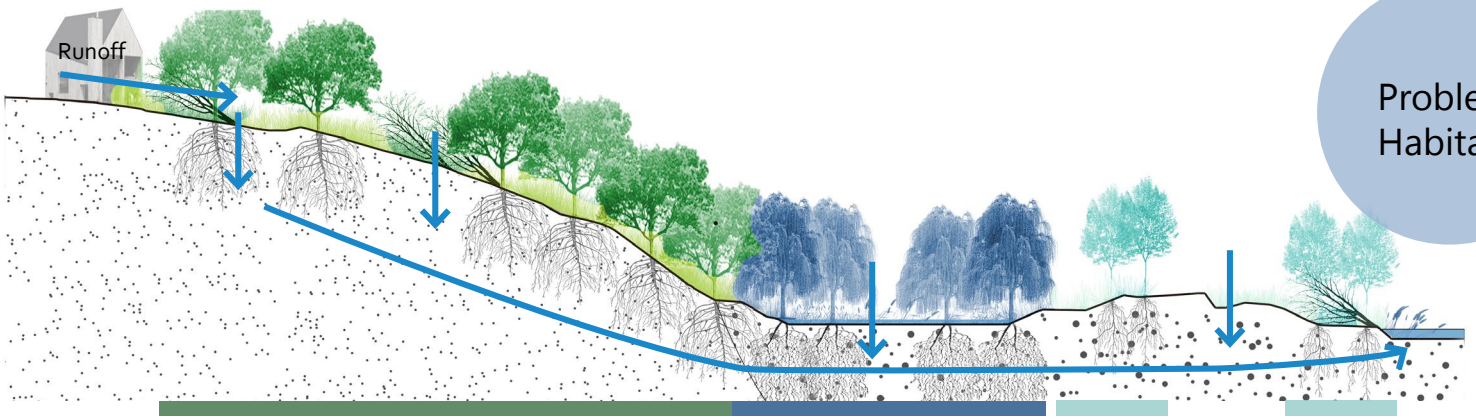
Soil

Geomorphology



NATURAL LANDSCAPE

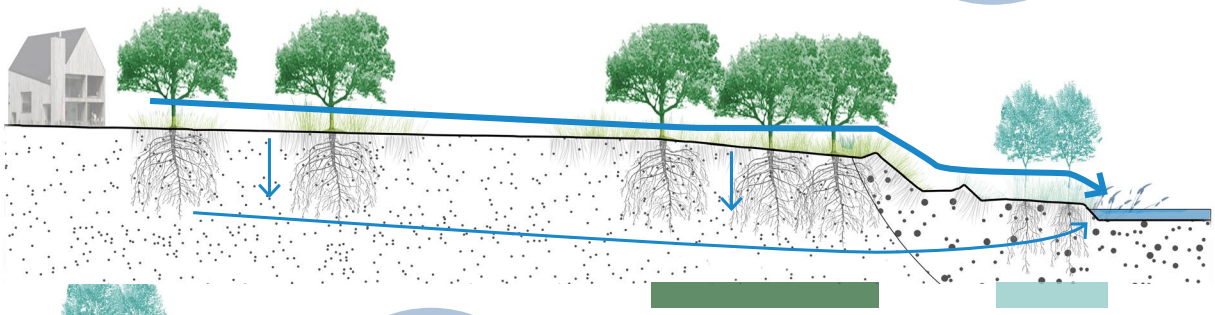
Problem Statement

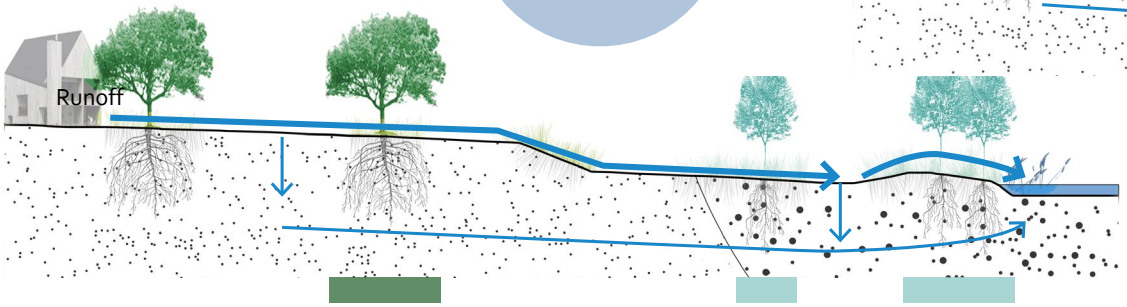


Problem Habitat

Low Wetland Feature

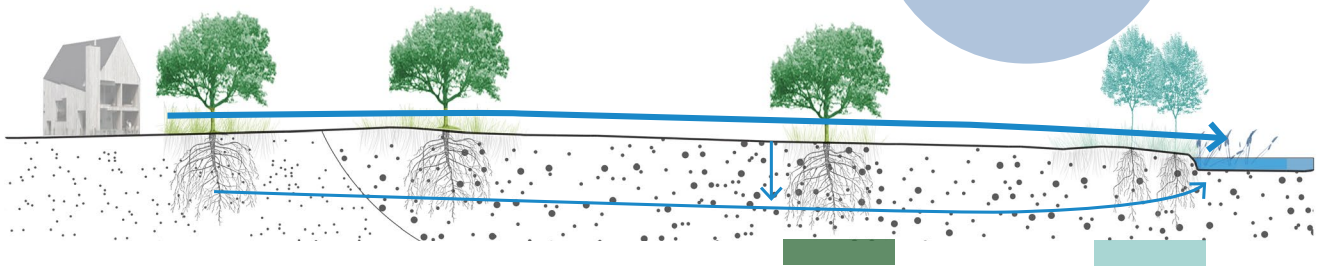
Storm water overflow



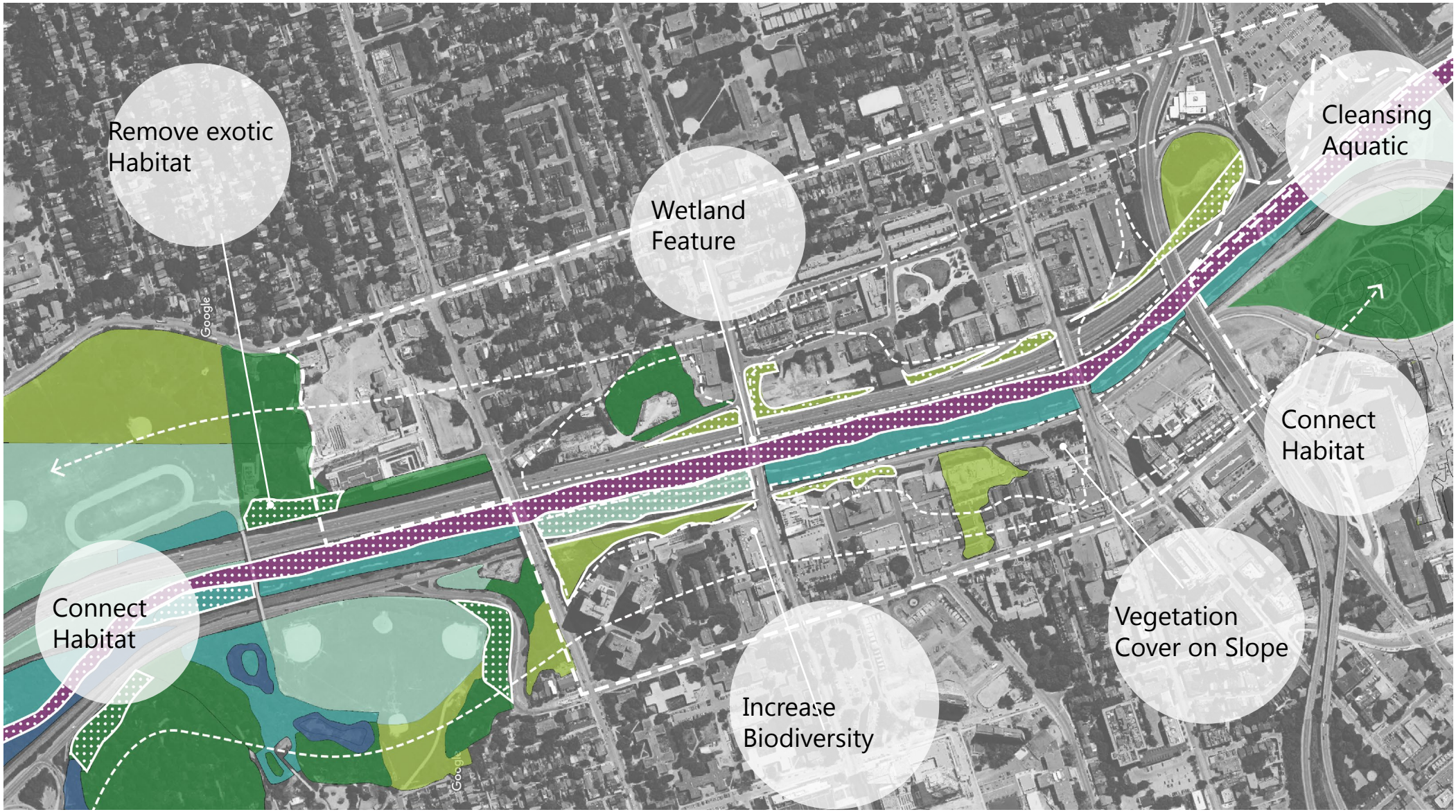


Polluted Aquatic

Low Biodiversity



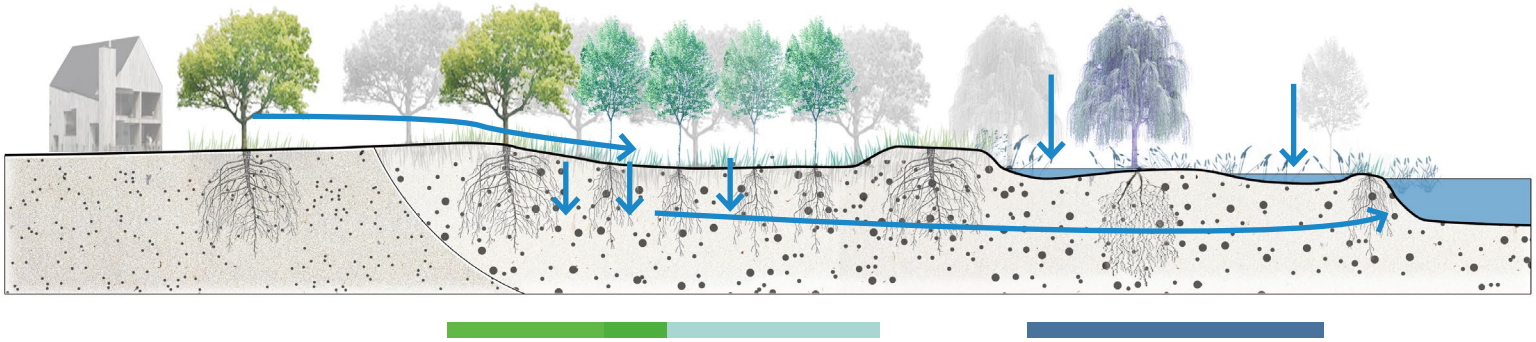
NATURAL LANDSCAPE
Problem Statement

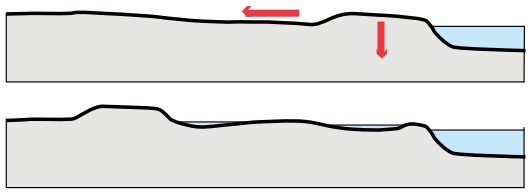


NATURAL LANDSCAPE

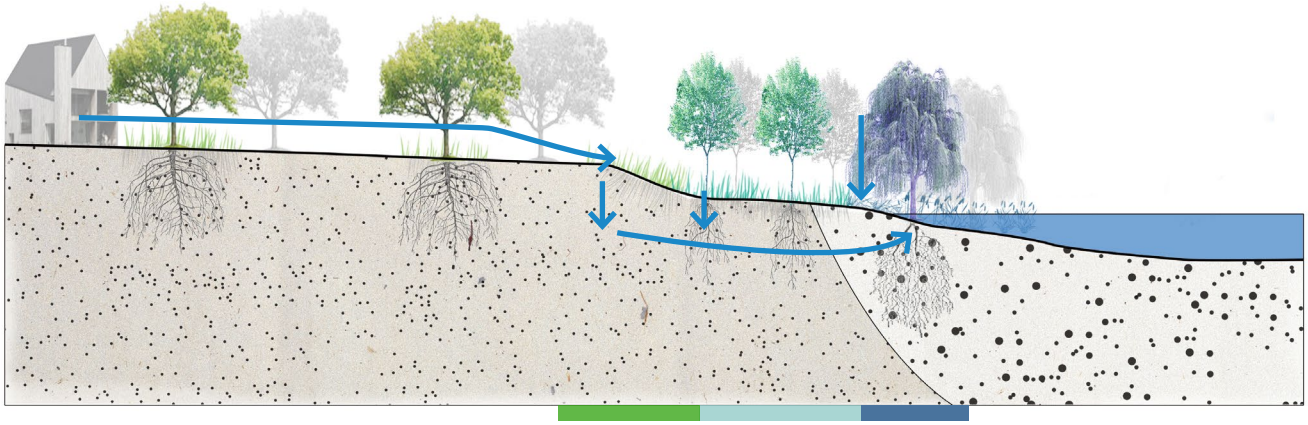
Adapt Principle

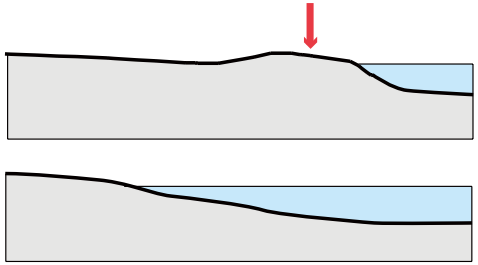
0 10 20 50 100



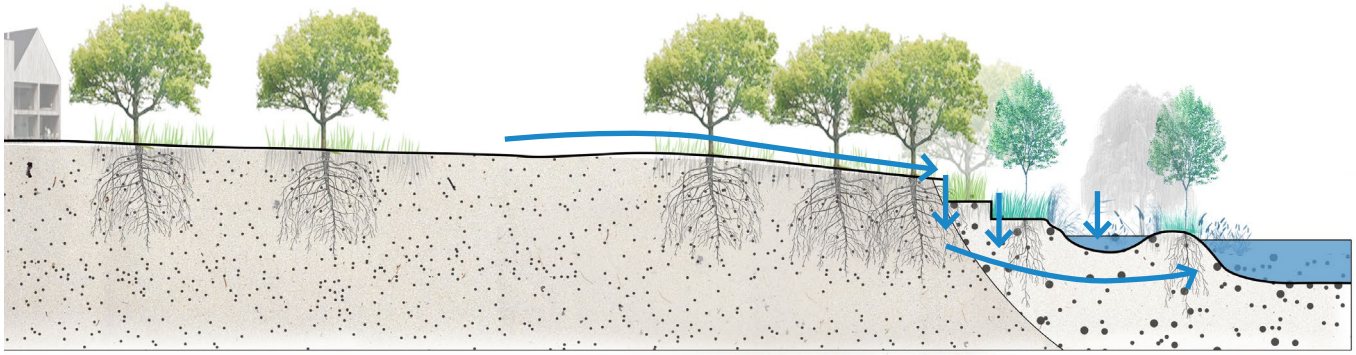


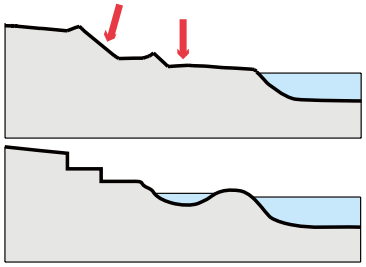
Levee Setback





Space for River

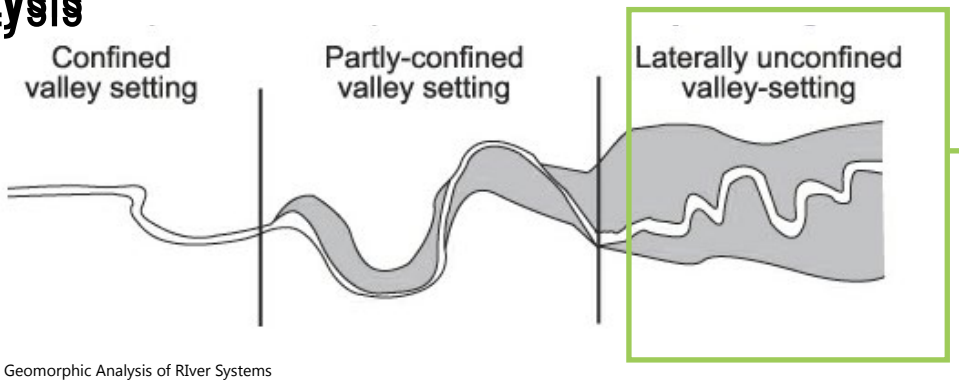




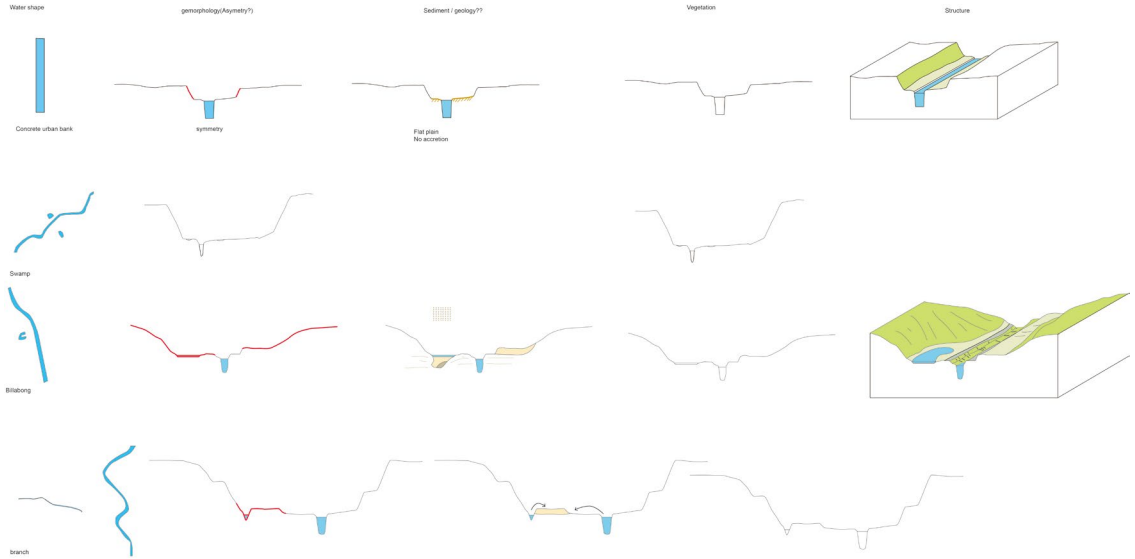
Vegetation Terrace

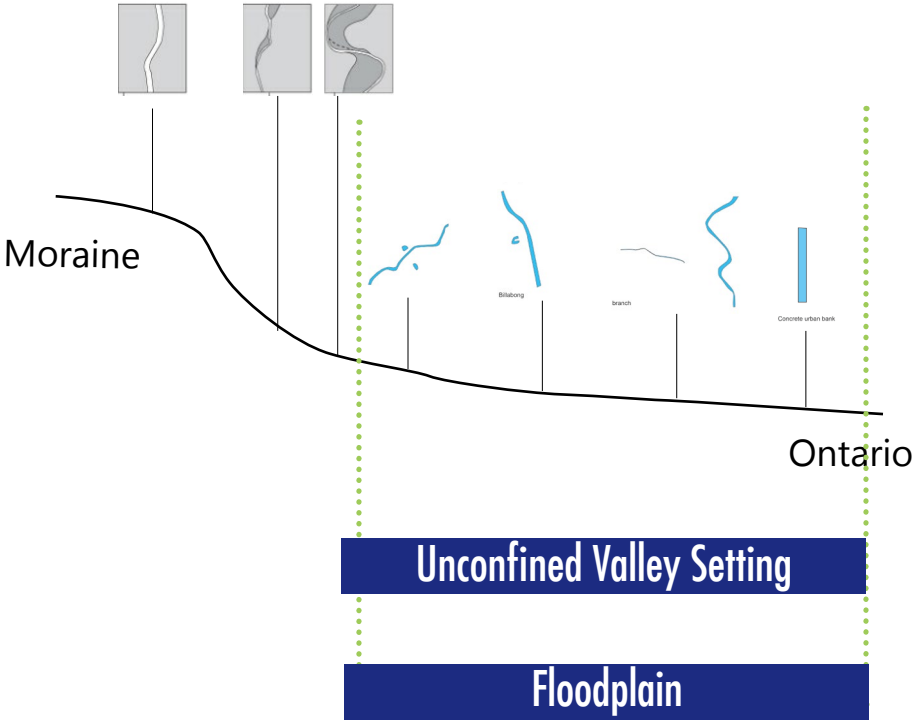
WATER NETWORK

Analysis



source: Geomorphic Analysis of RIver Systems

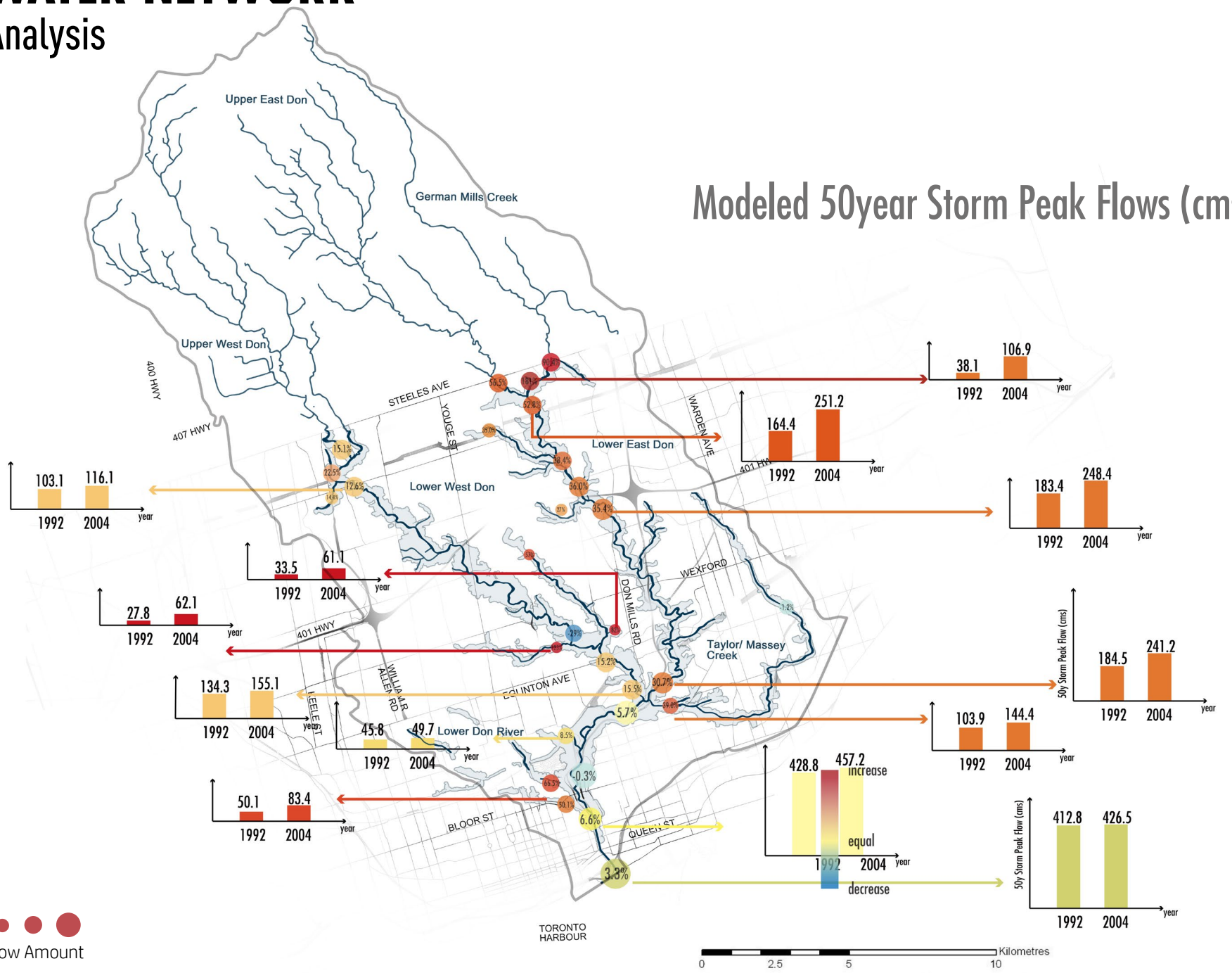




Analysing the typology of geomorphology units of River Don to understand the natural river system.

WATER NETWORK

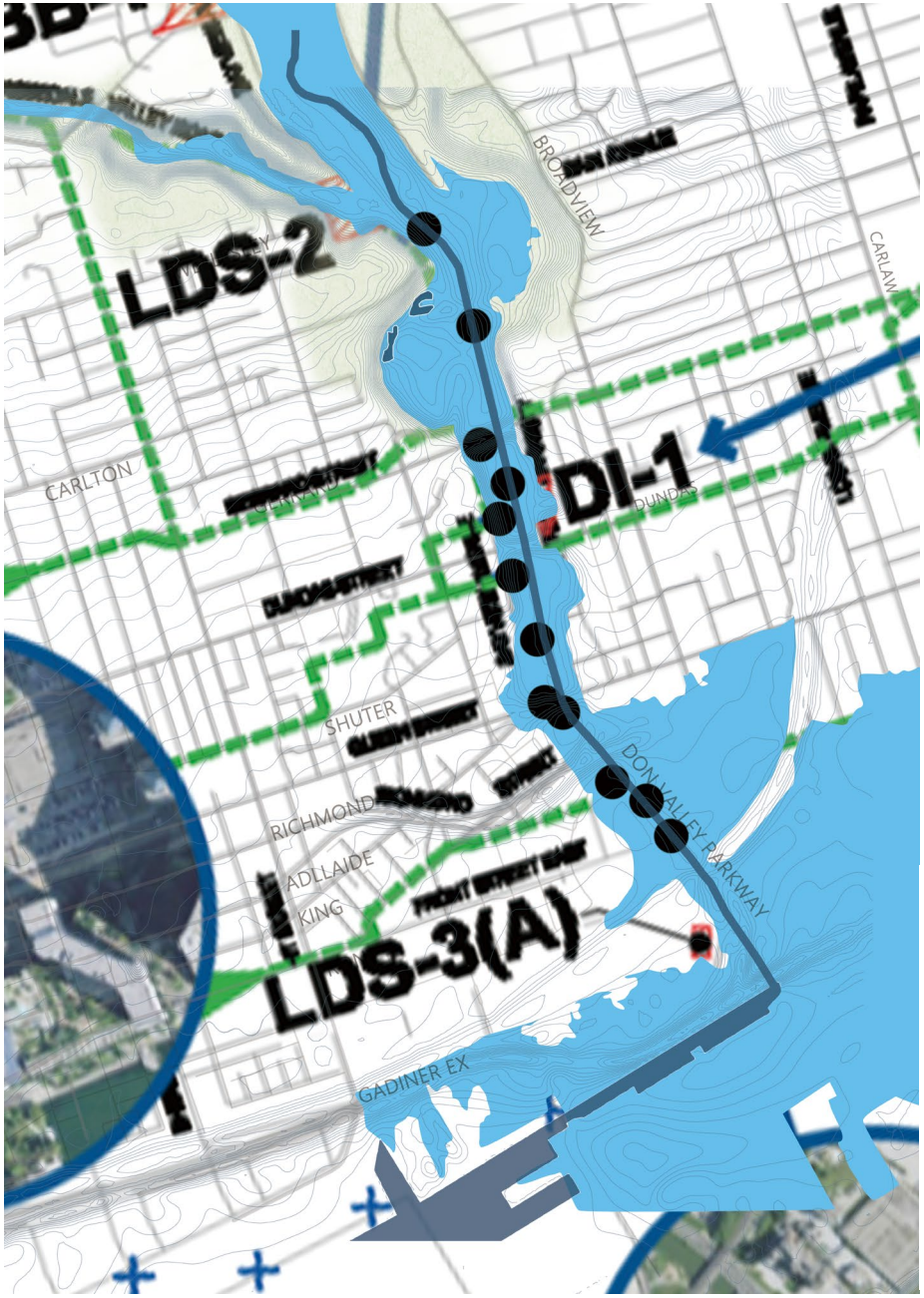
Analysis



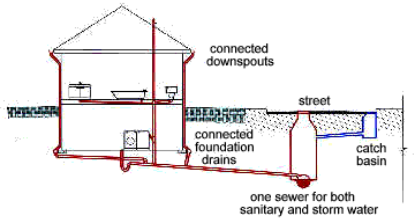
Flow Amount

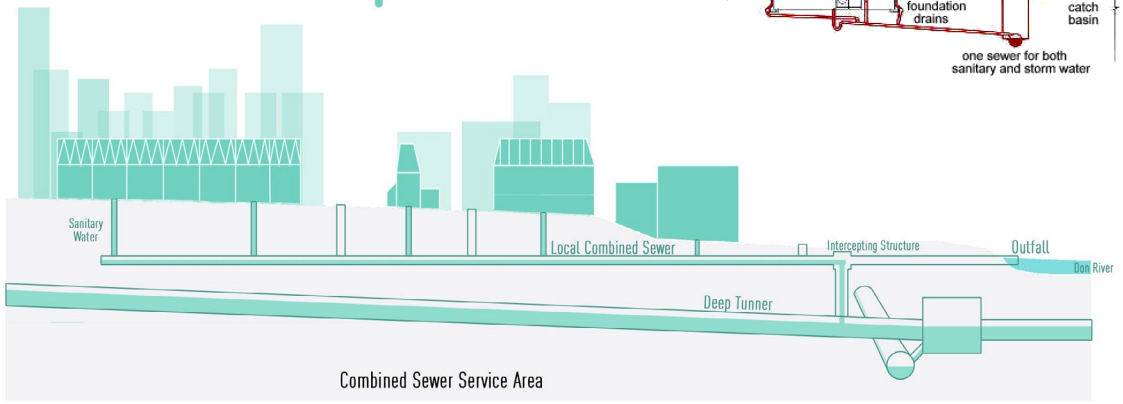
WATER NETWORK

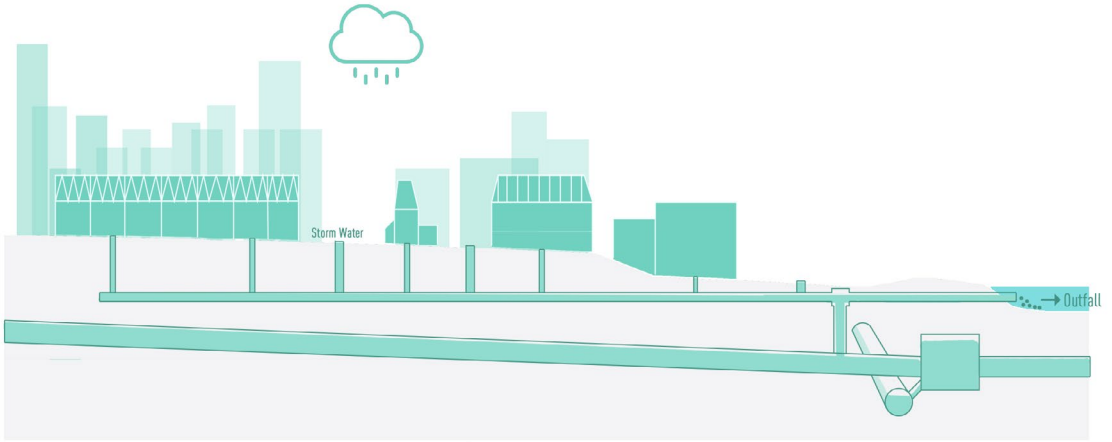
Analysis



Problem Statement



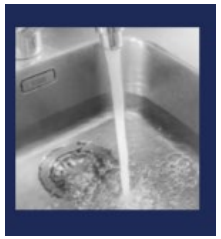




WATER NETWORK
Adapt Principles

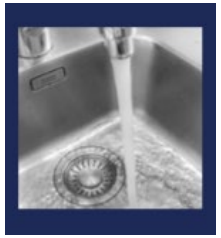
Delay

Retain

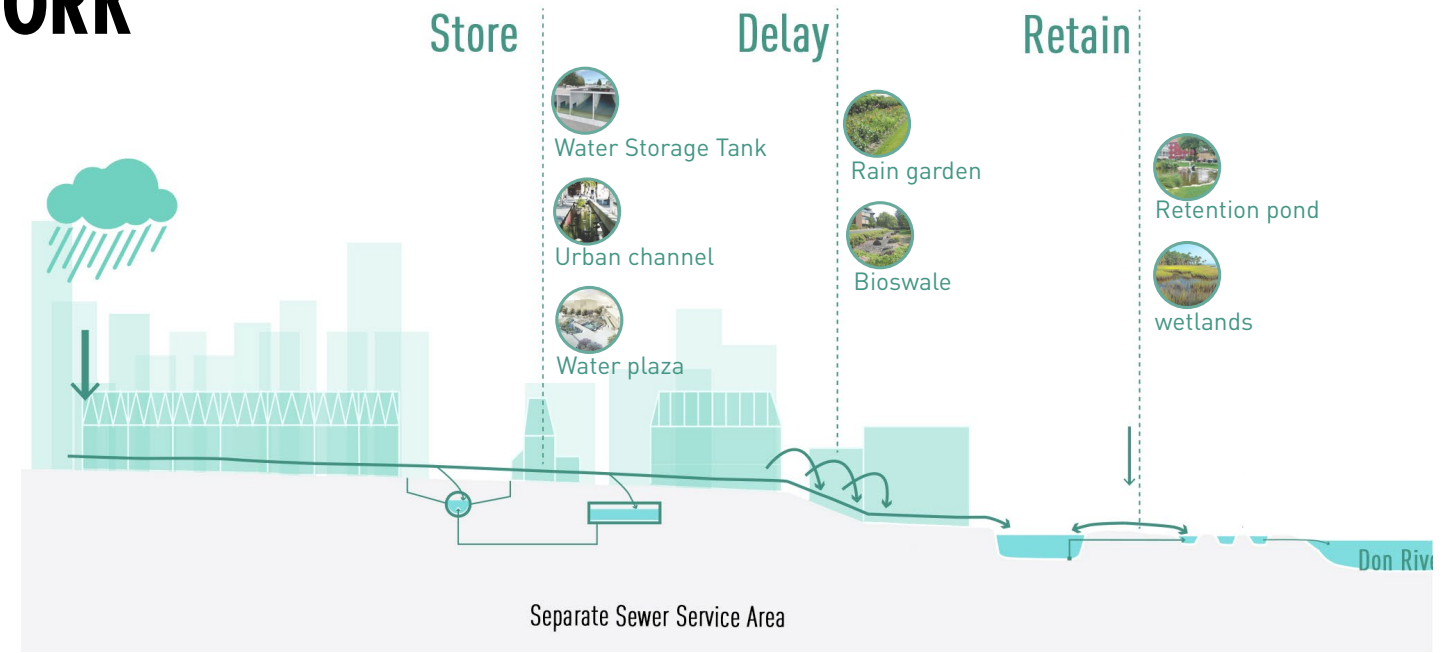


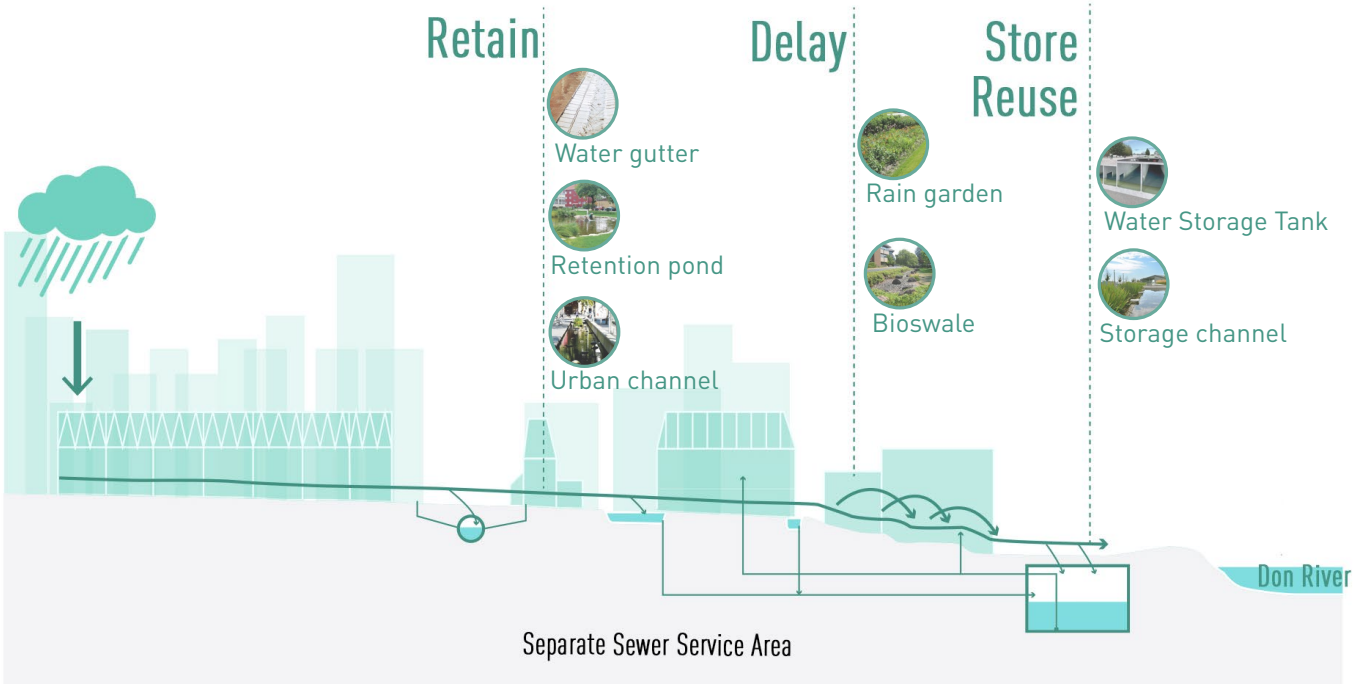
Store

Reuse



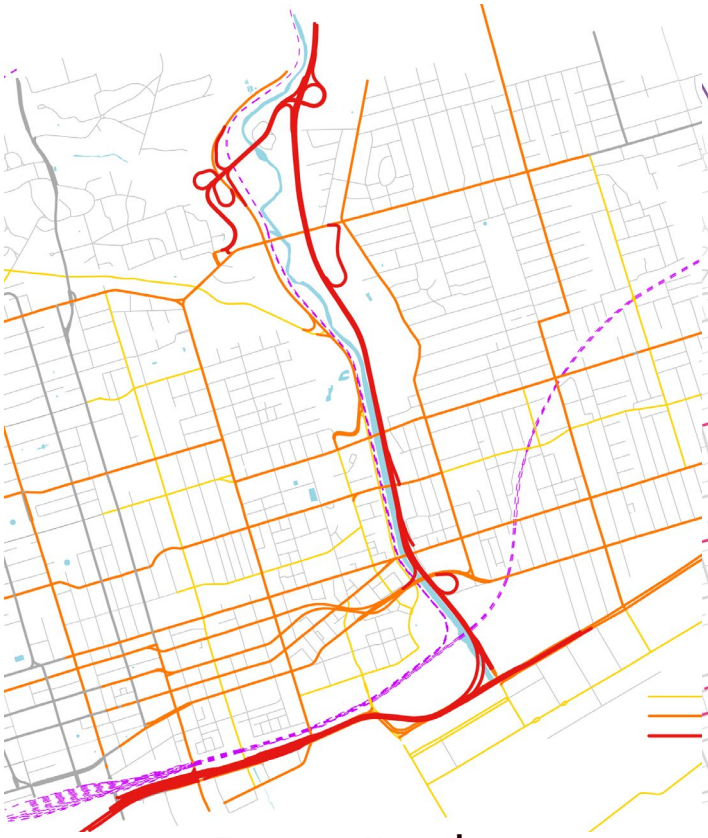
Drain





TRANSPORTATION NETWORK

Analysis



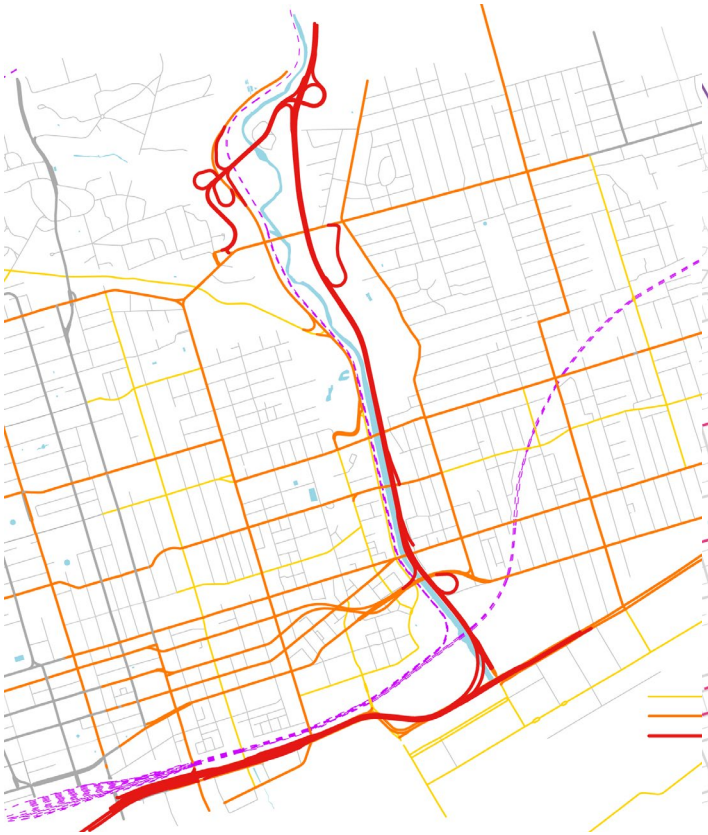
Transport Hierachy

Cycle Path

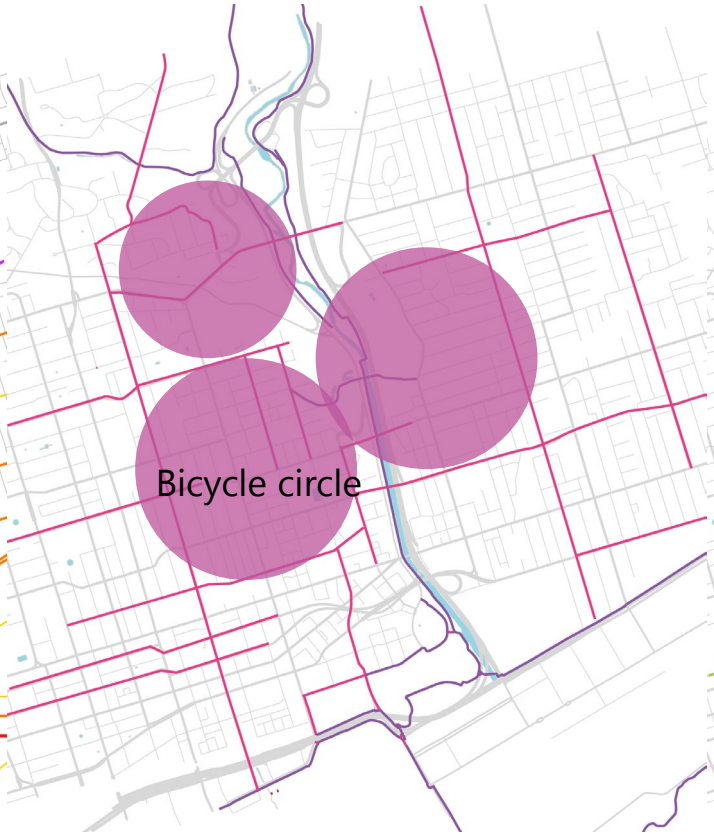
Public Transportation

TRANSPORTATION NETWORK

Problem Statement



Transport Hierachy



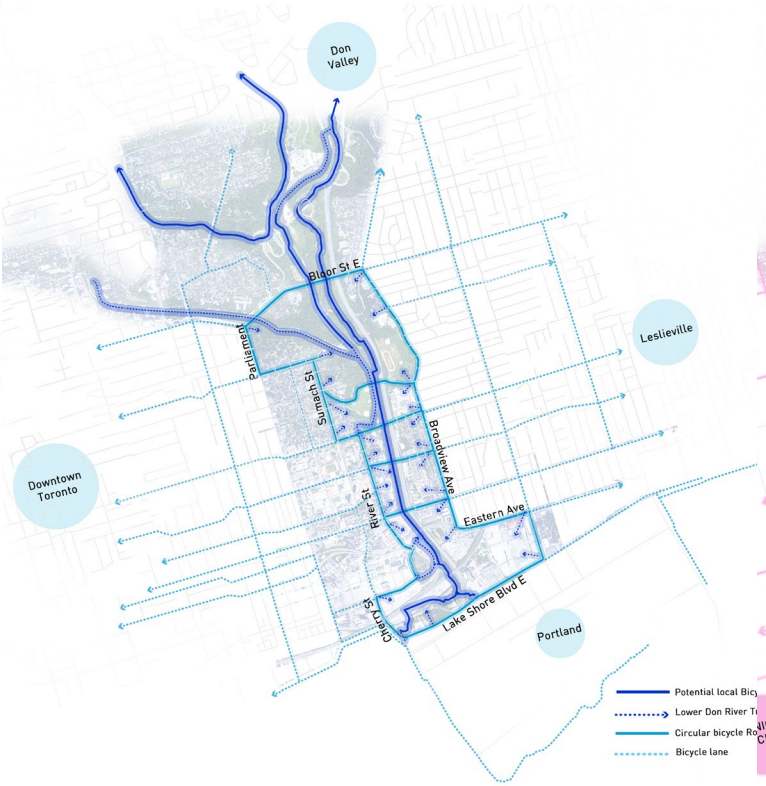
Bicycle circle path

Light traffic zone

TRANSPORTATION NETWORK

Adapt Principle

Tranportation Corridor 1

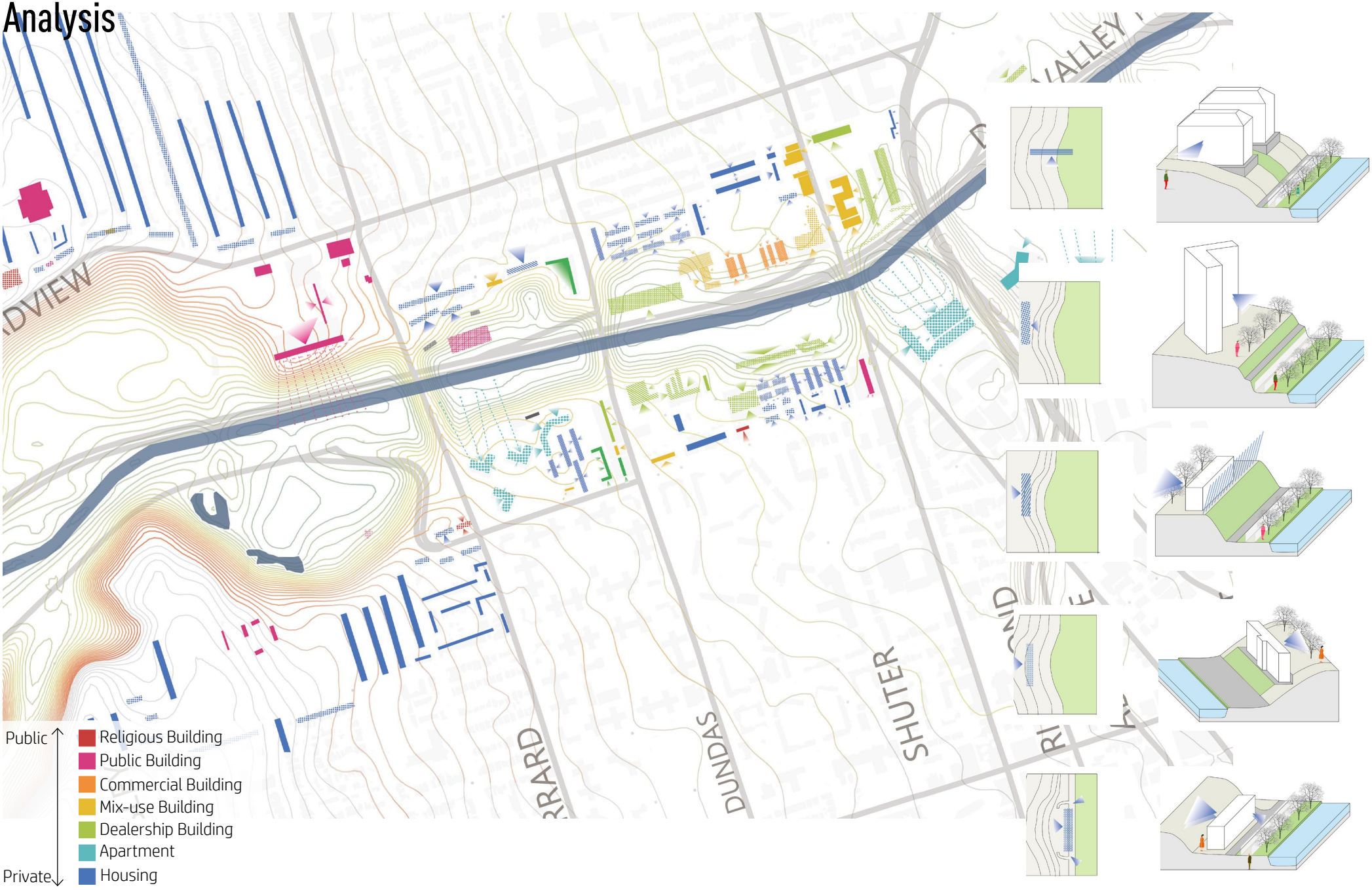


Green Bicycle infrastructure

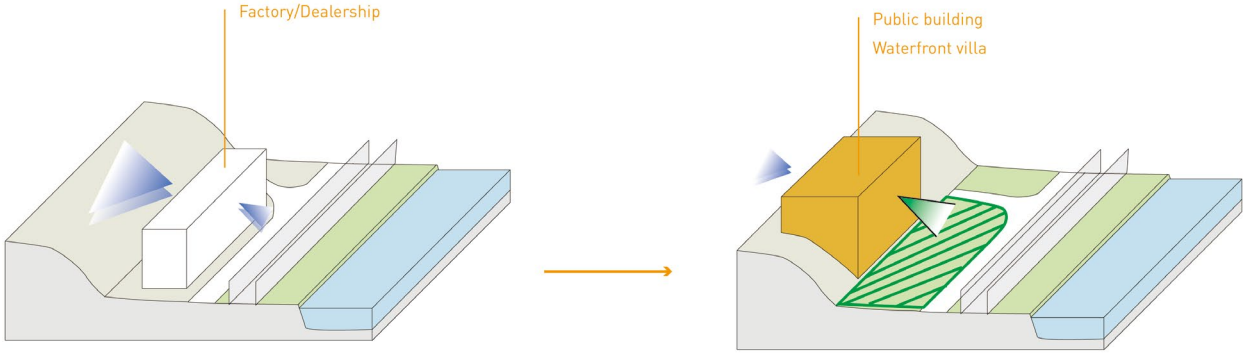
Tranportation Corridor 2

BUILDING

Analysis



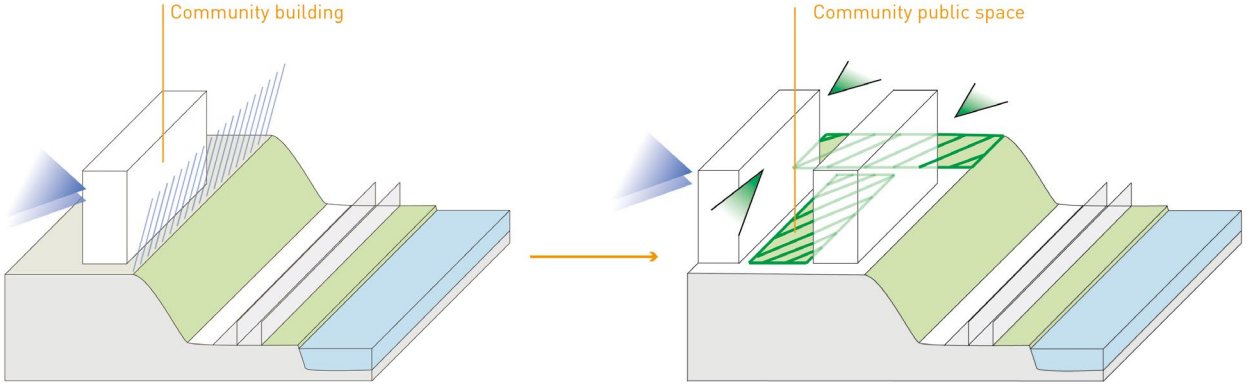
Building
Adapt Principle



Facing waterfront building

Adding public space for waterfront building

Openning up



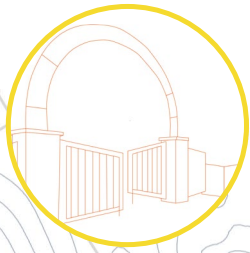
Interface edge building

Inner public space for edge building

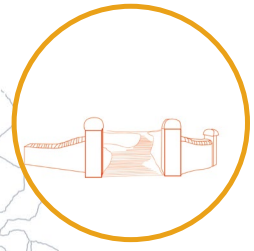
Connecting

ACCESSIBILITY
Analysis

Access Points



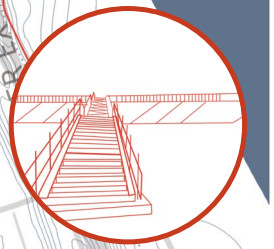
1 Private Gate



2 Open Gate

3 Road Entrance

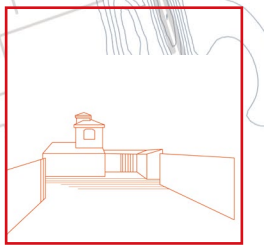
4 Nature Edges



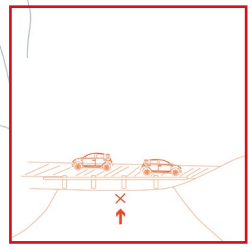
5 Stairs

6 Tunnel

Blocking Points

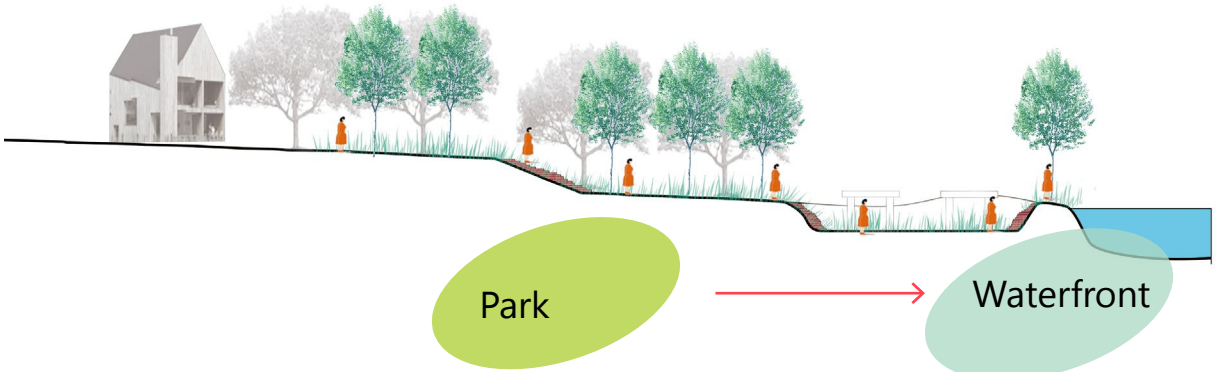


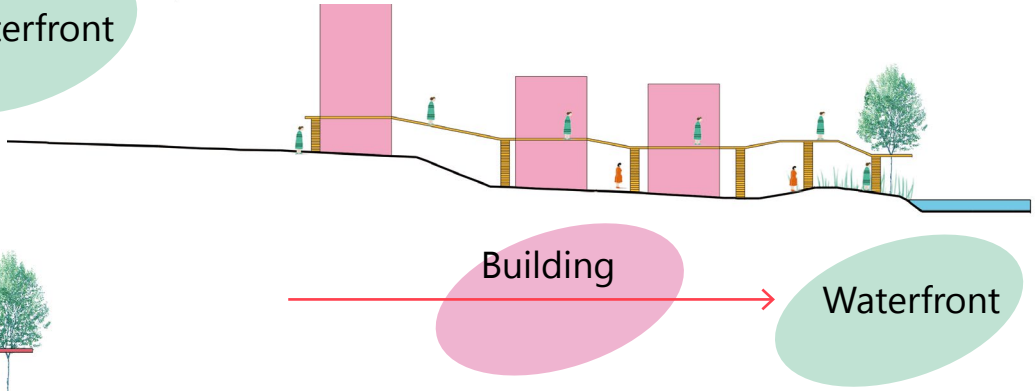
Building

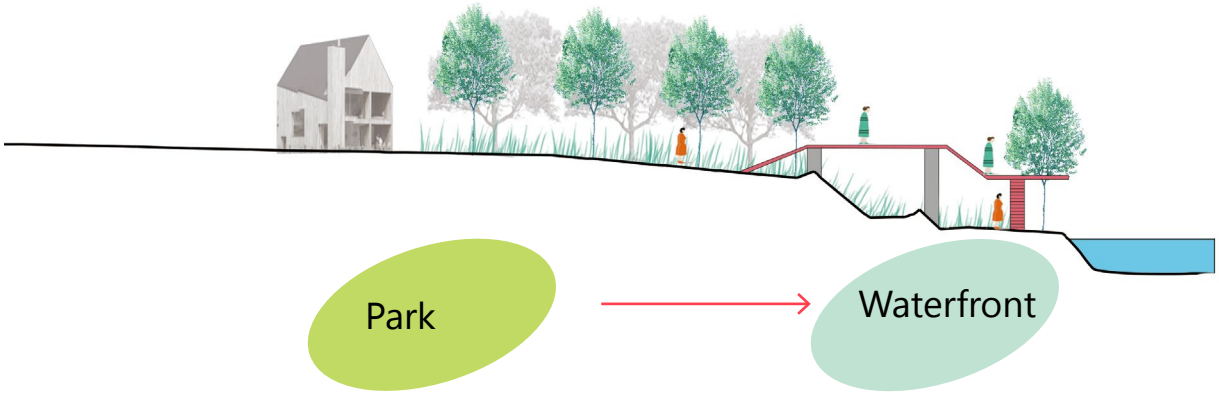


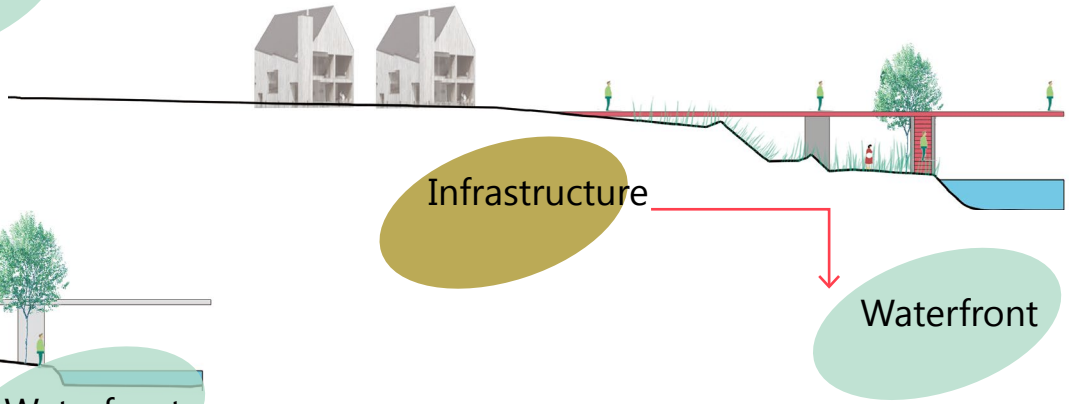
Infrastructure

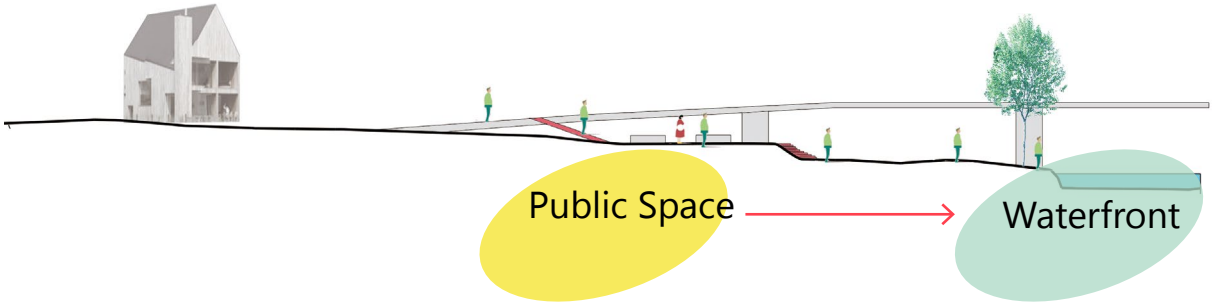
ACCESSIBILITY
Adapt Principle





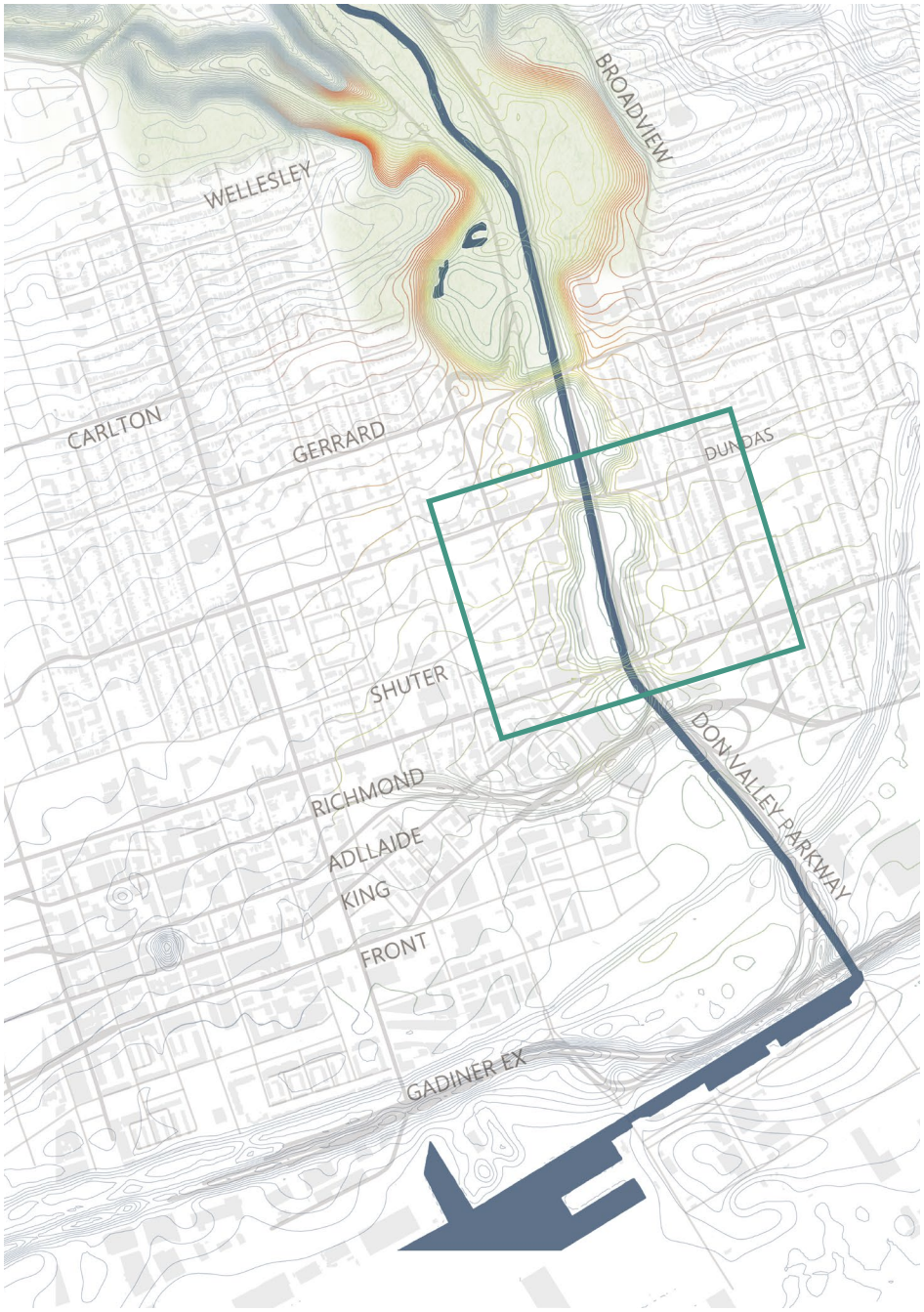


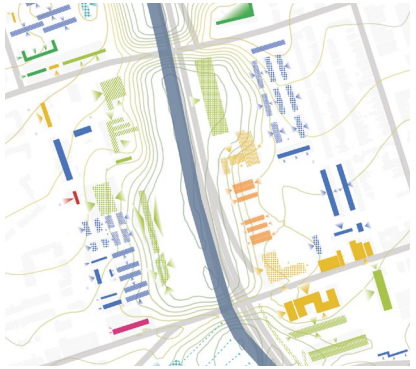


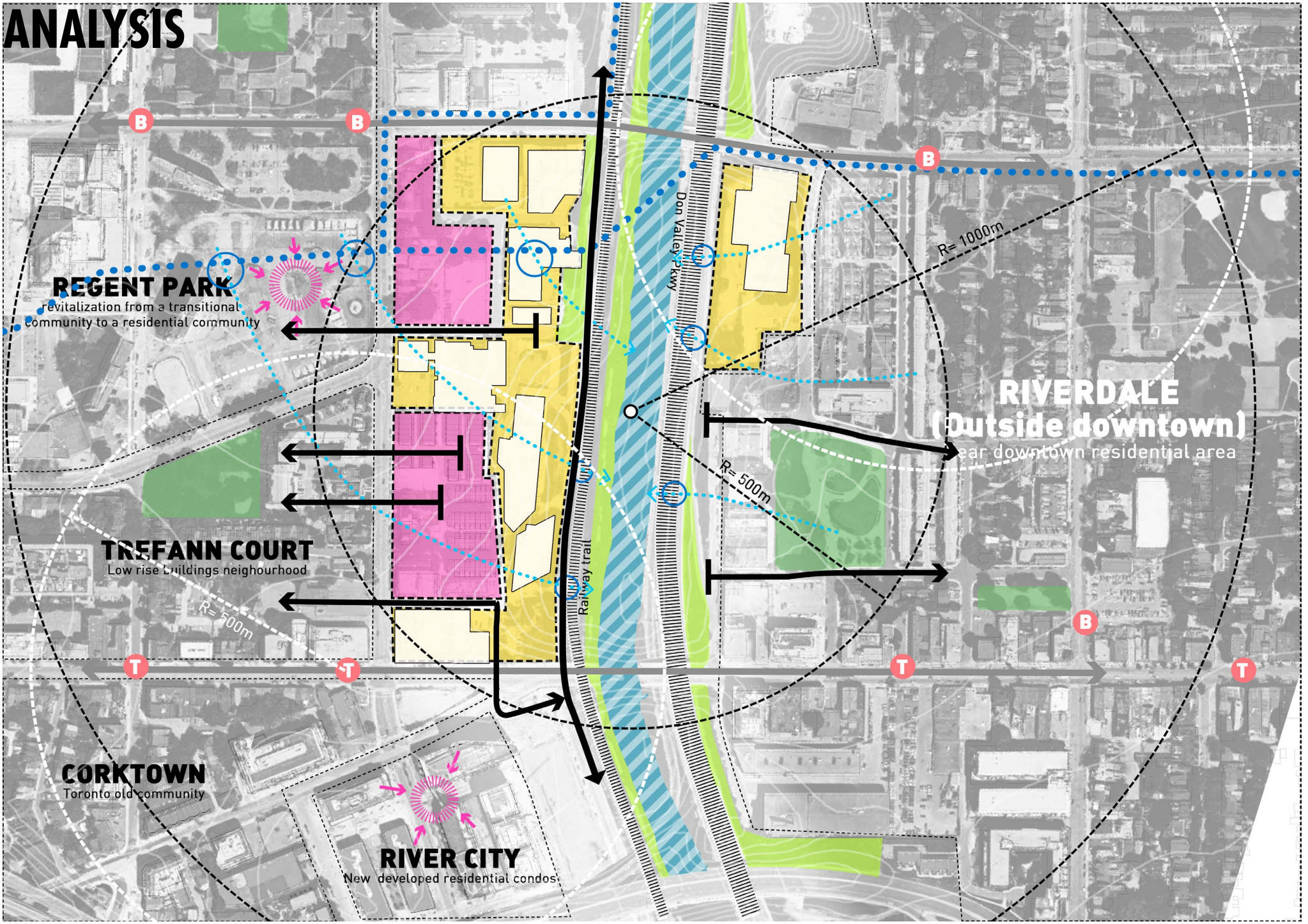


PART FIVE
DESIGN APPLICATION

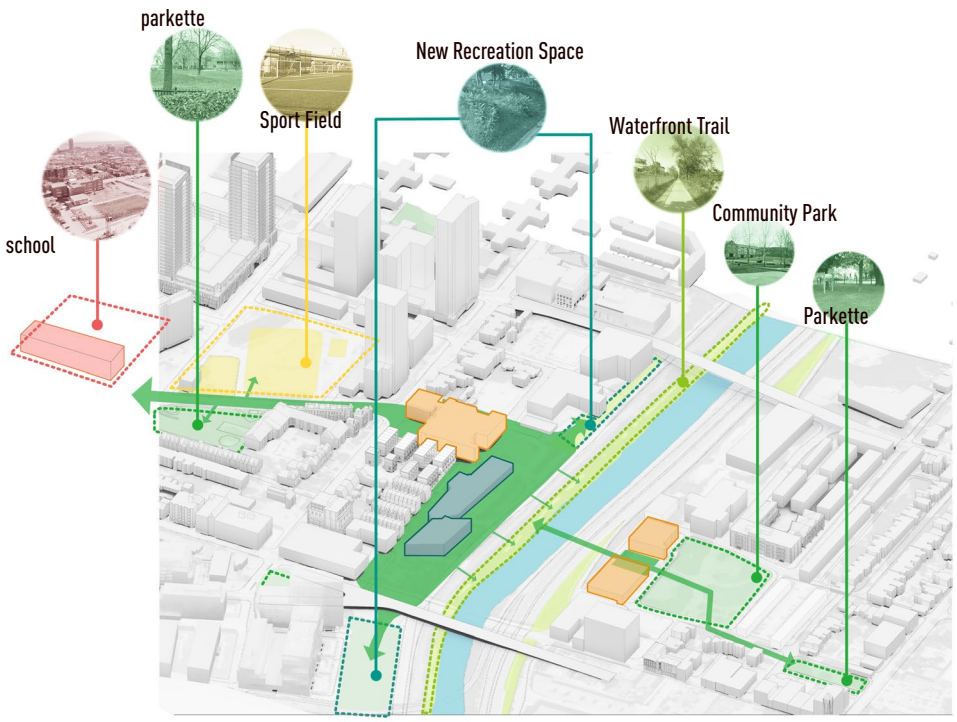
DESIGN LOCATION



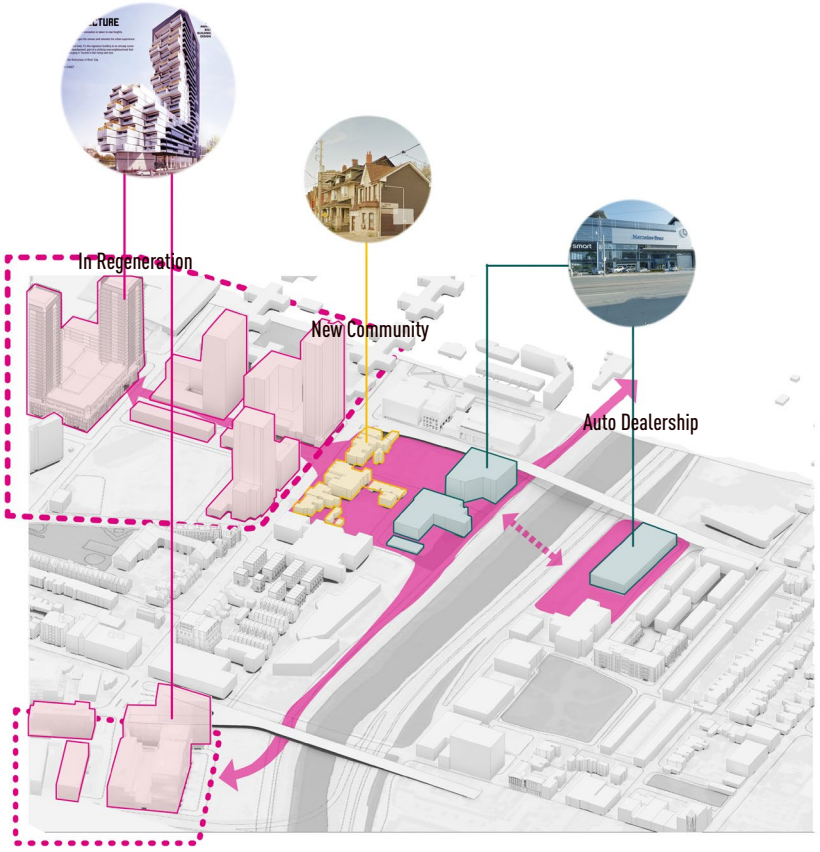



ANALYSIS
REGENT PARK
revitalization from a transitional community to a residential community
TREFANN COURT
Low rise buildings neighourhood
CORKTOWN
Toronto old community
RIVER CITY
New developed residential condos
RIVERDALE
(Outside downtown)
ear downtown residential area
Don Valley Pkwy
Railway trail
R= 1000m
R= 500m
R= 500m
B
T

POTENTIALS OF THE SITE

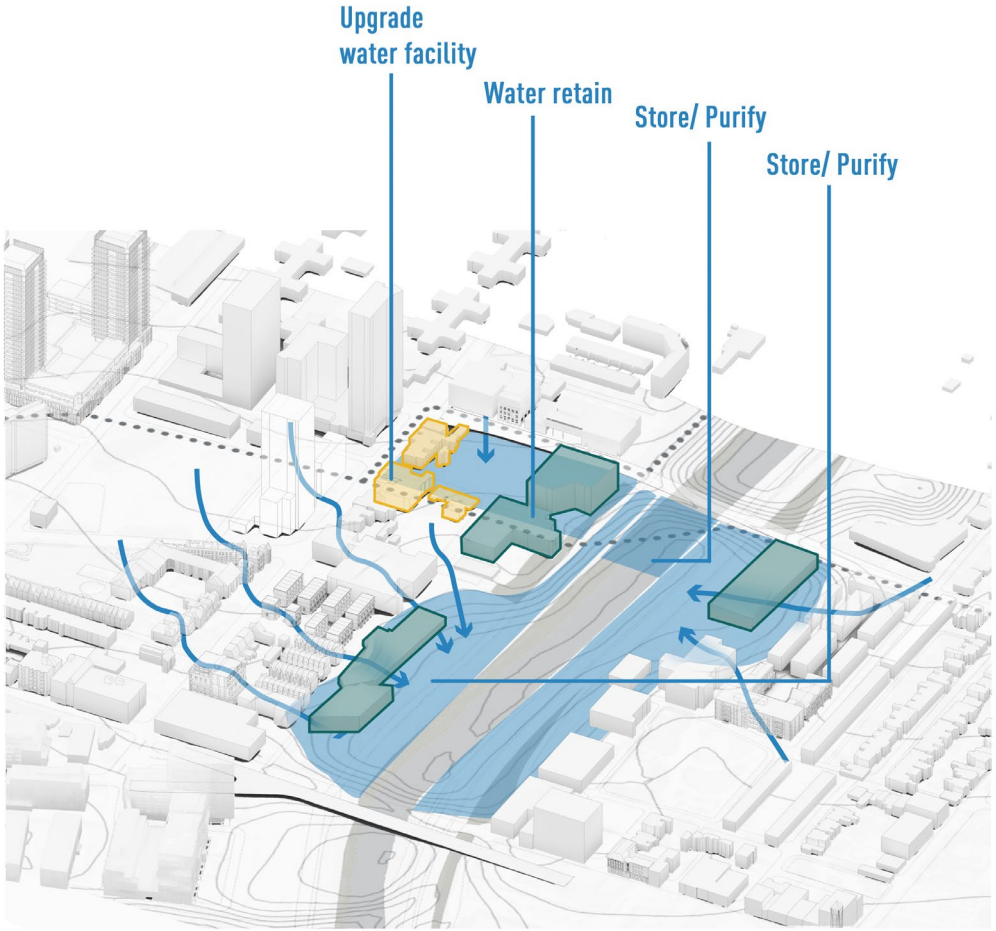


1. Recreation Hub



2. Regeneration Extension

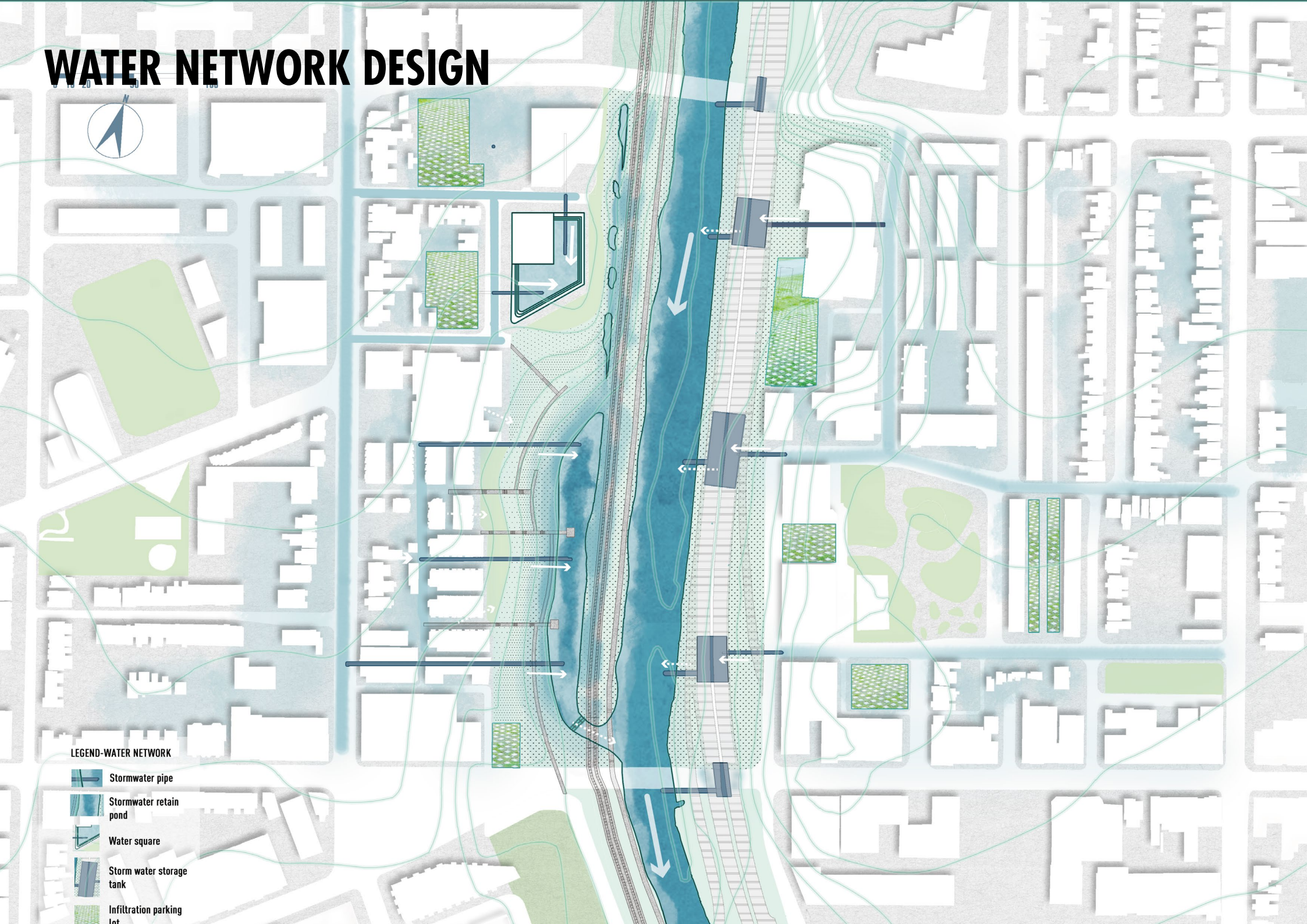
POTENTIALS OF THE SITE



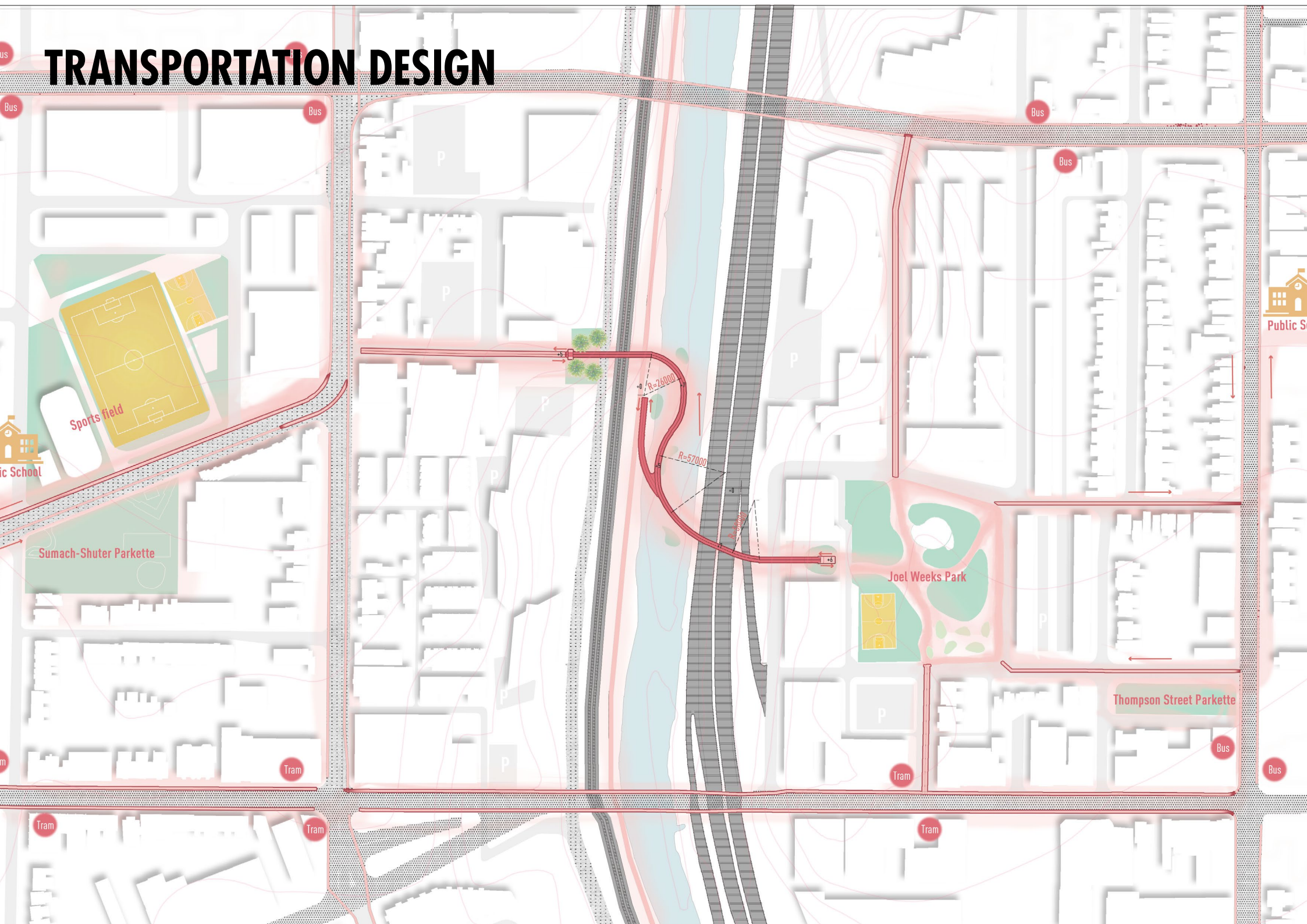
3. Water resilient community

NATURAL LANDSCAPE DESIGN

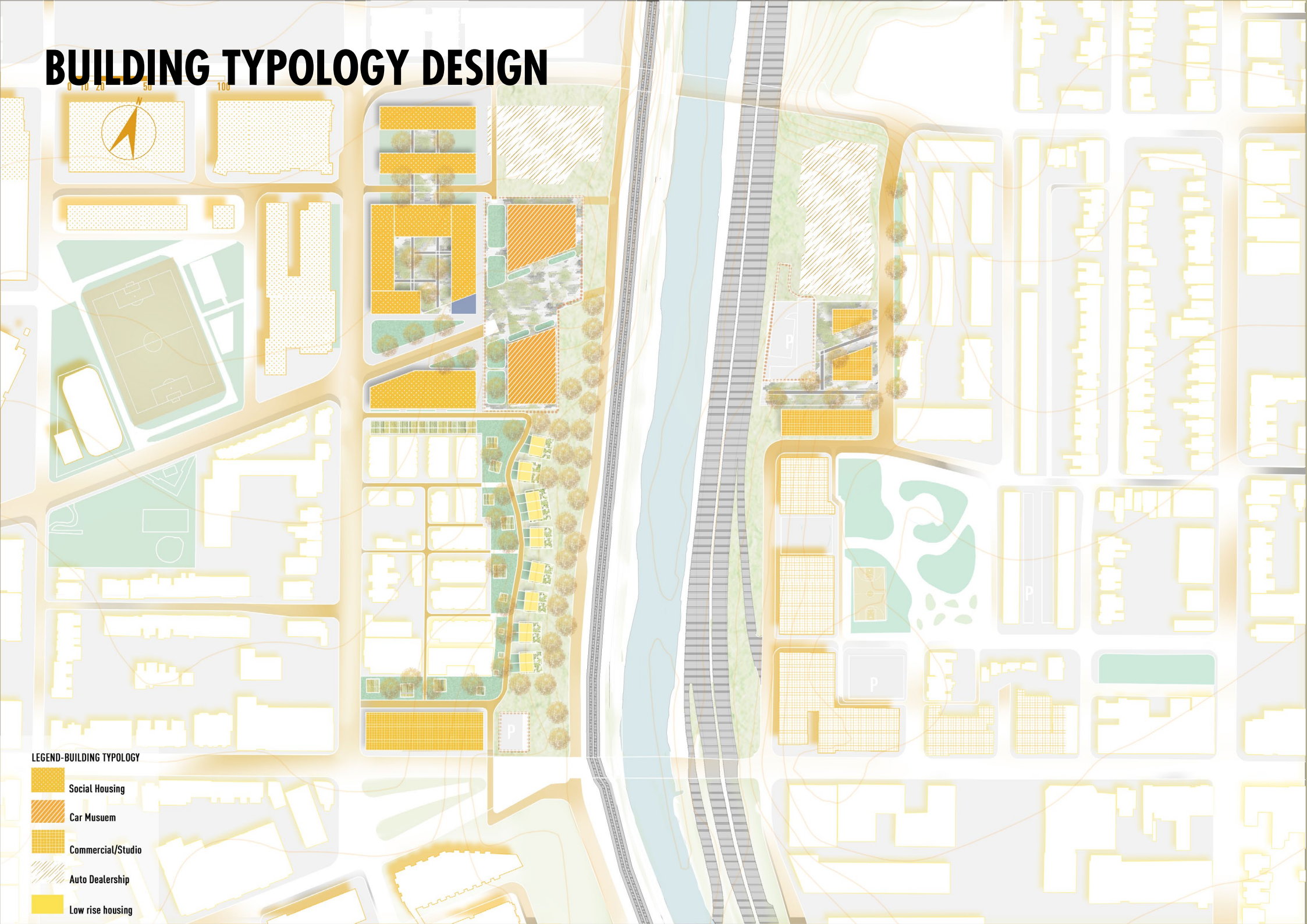
WATER NETWORK DESIGN

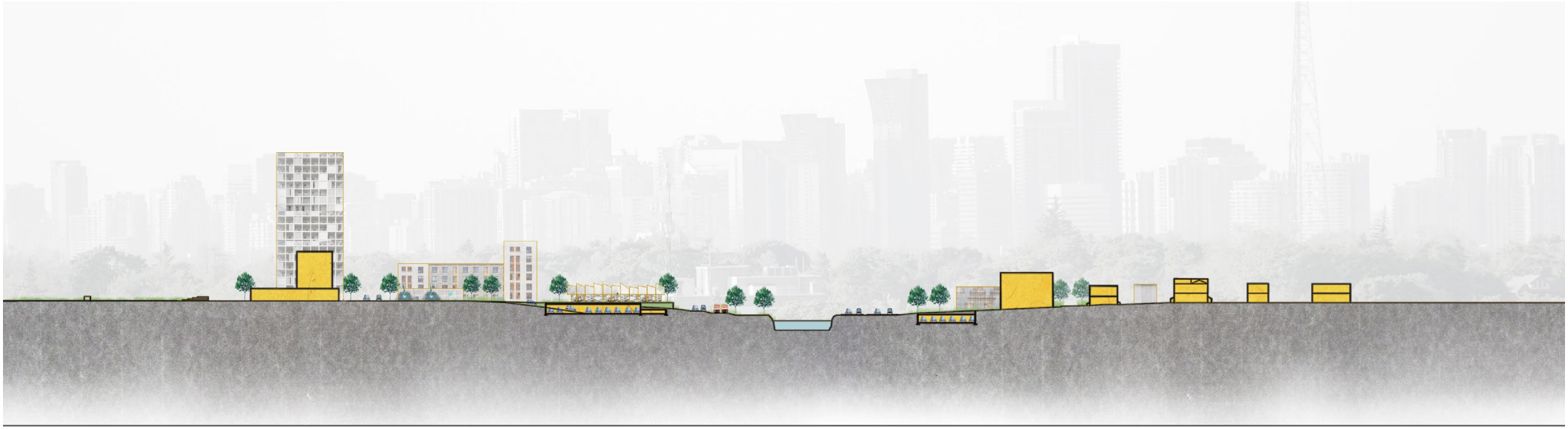


TRANSPORTATION DESIGN

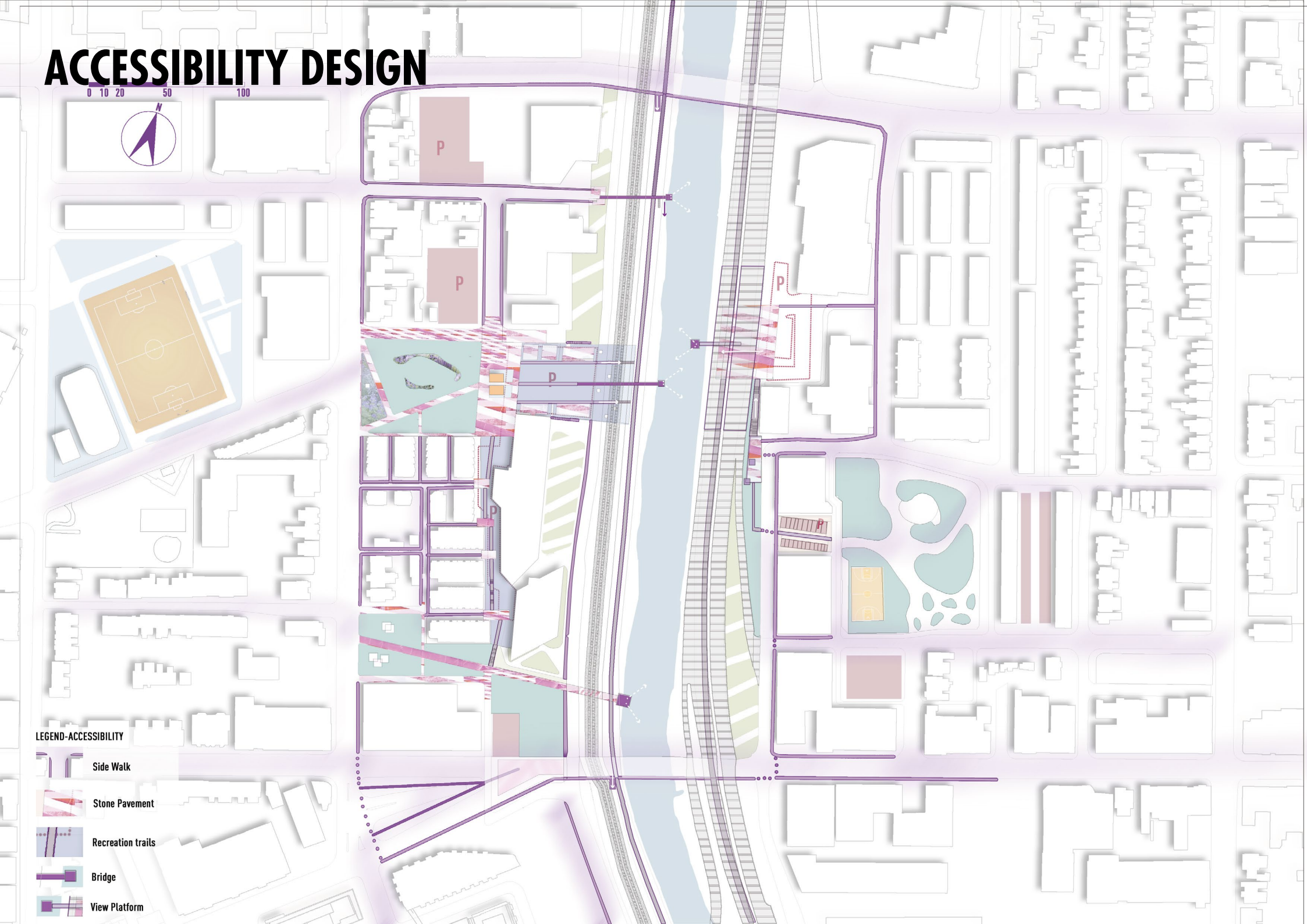


BUILDING TYPOLOGY DESIGN

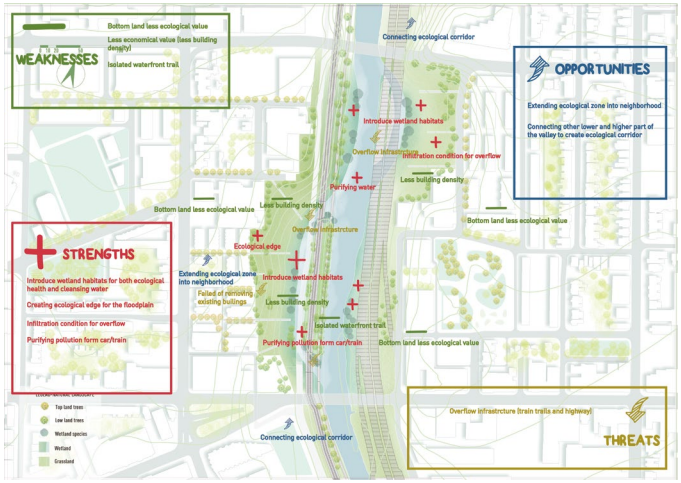


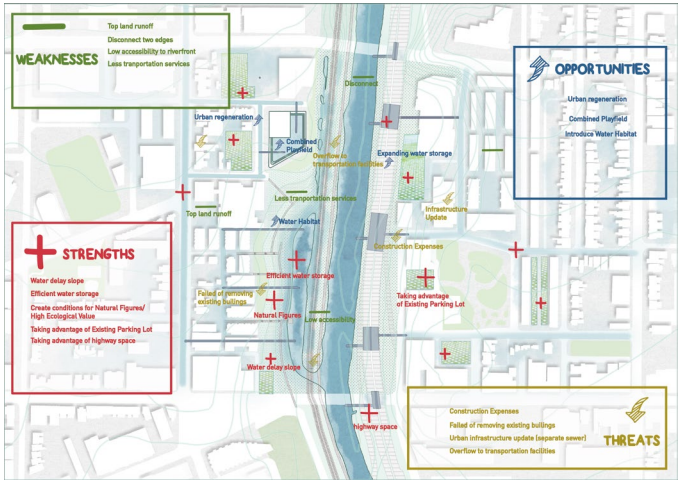


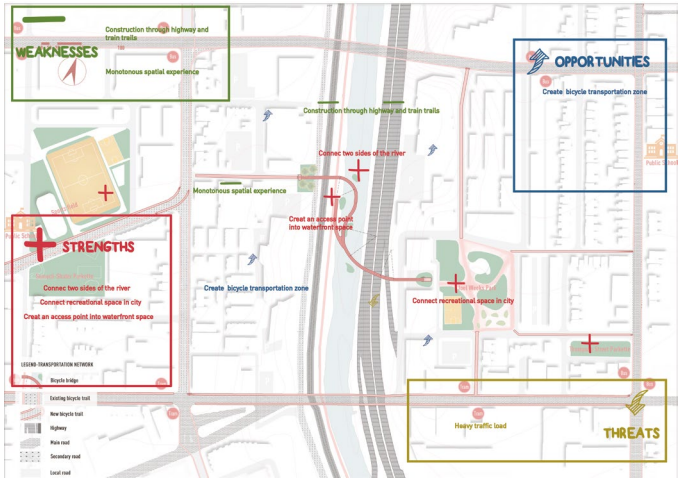
ACCESSIBILITY DESIGN

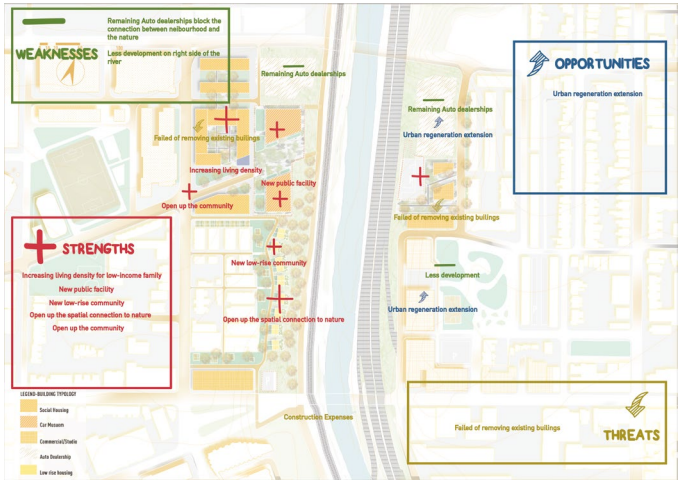


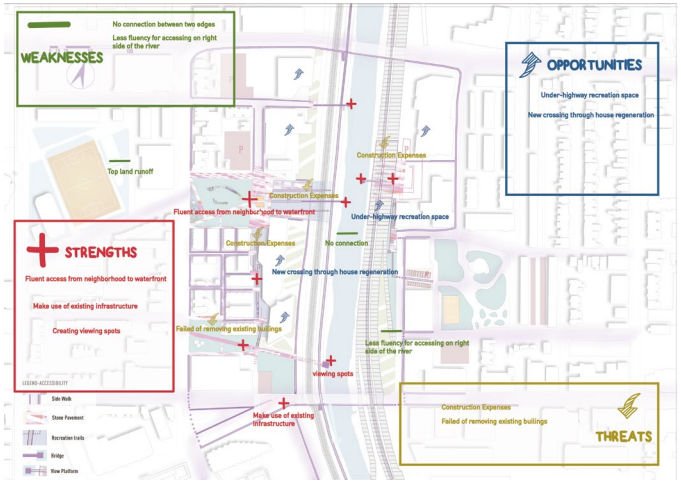
SWOT EVALUATION



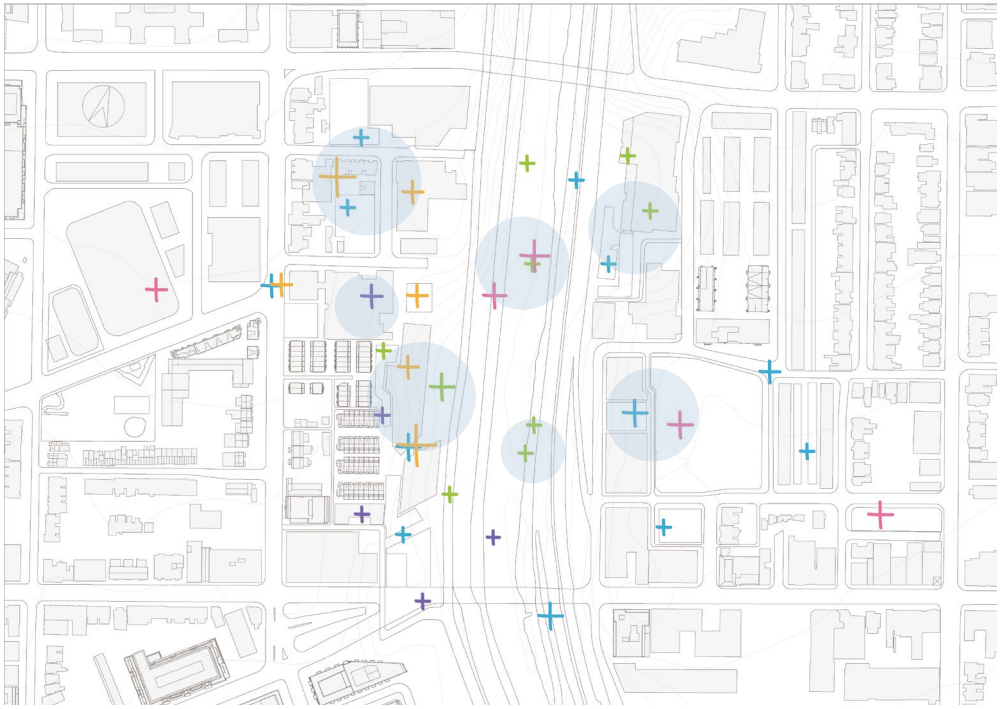








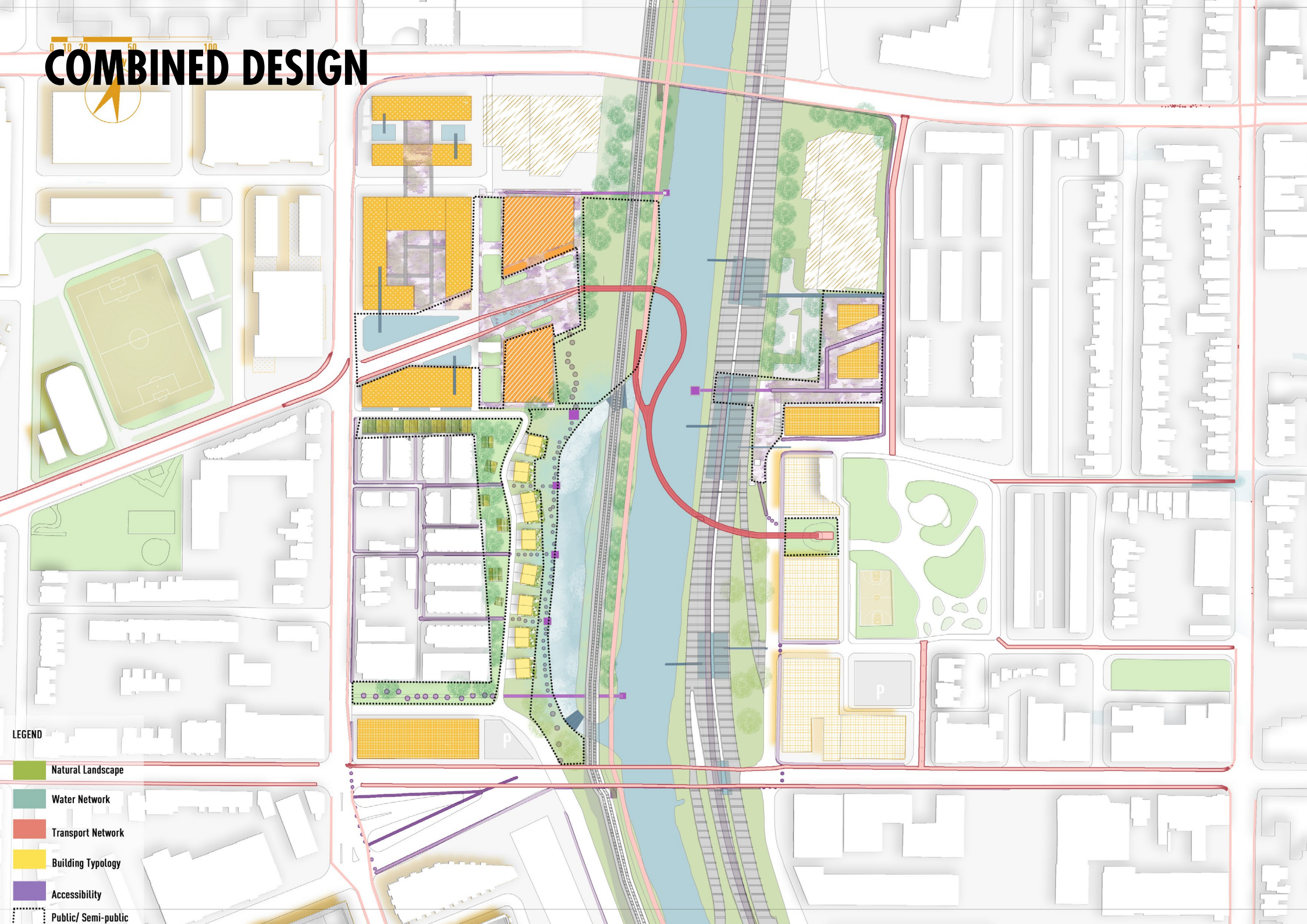
SWOT EVALUATION



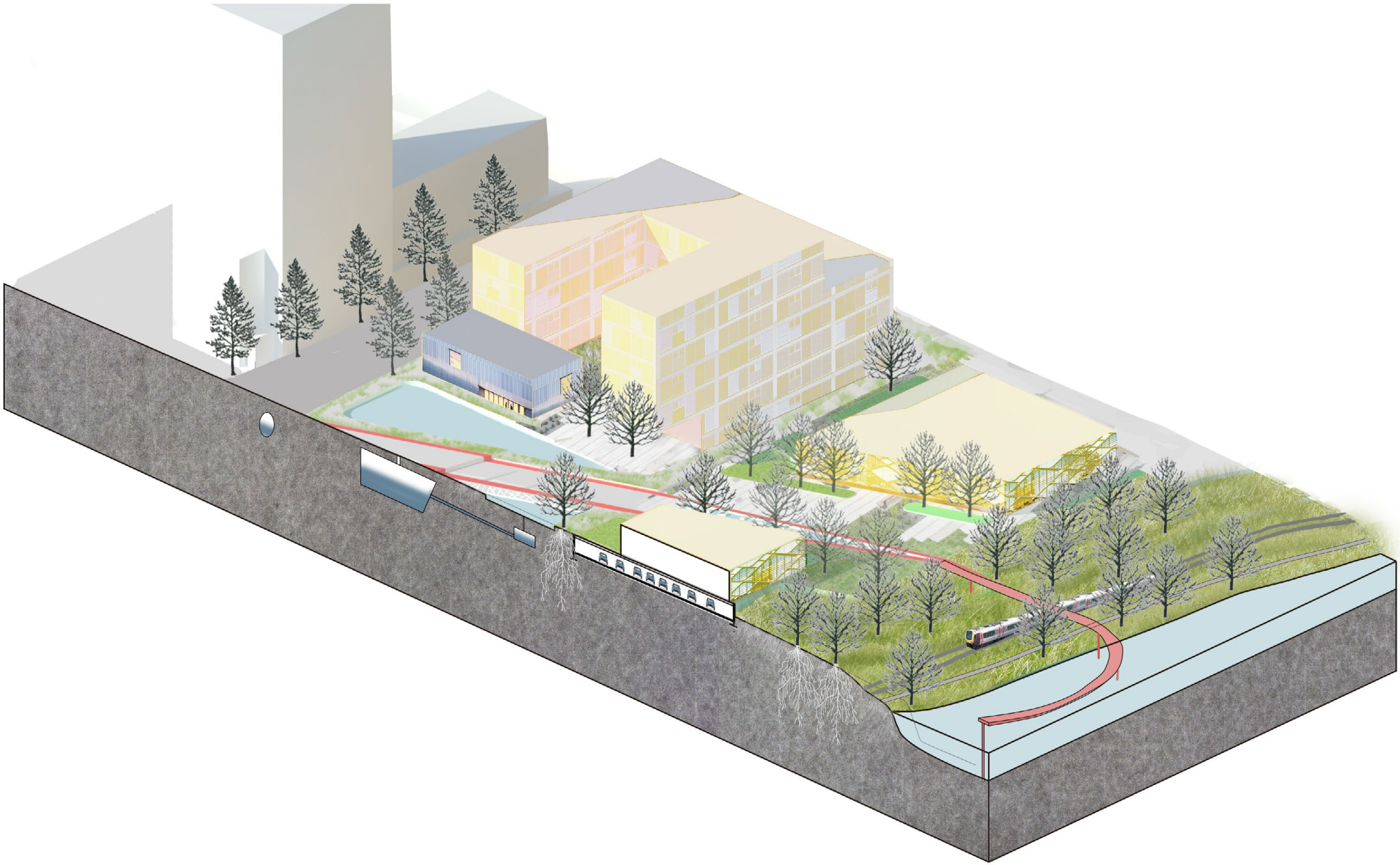
Strengths collage

opportunities collage

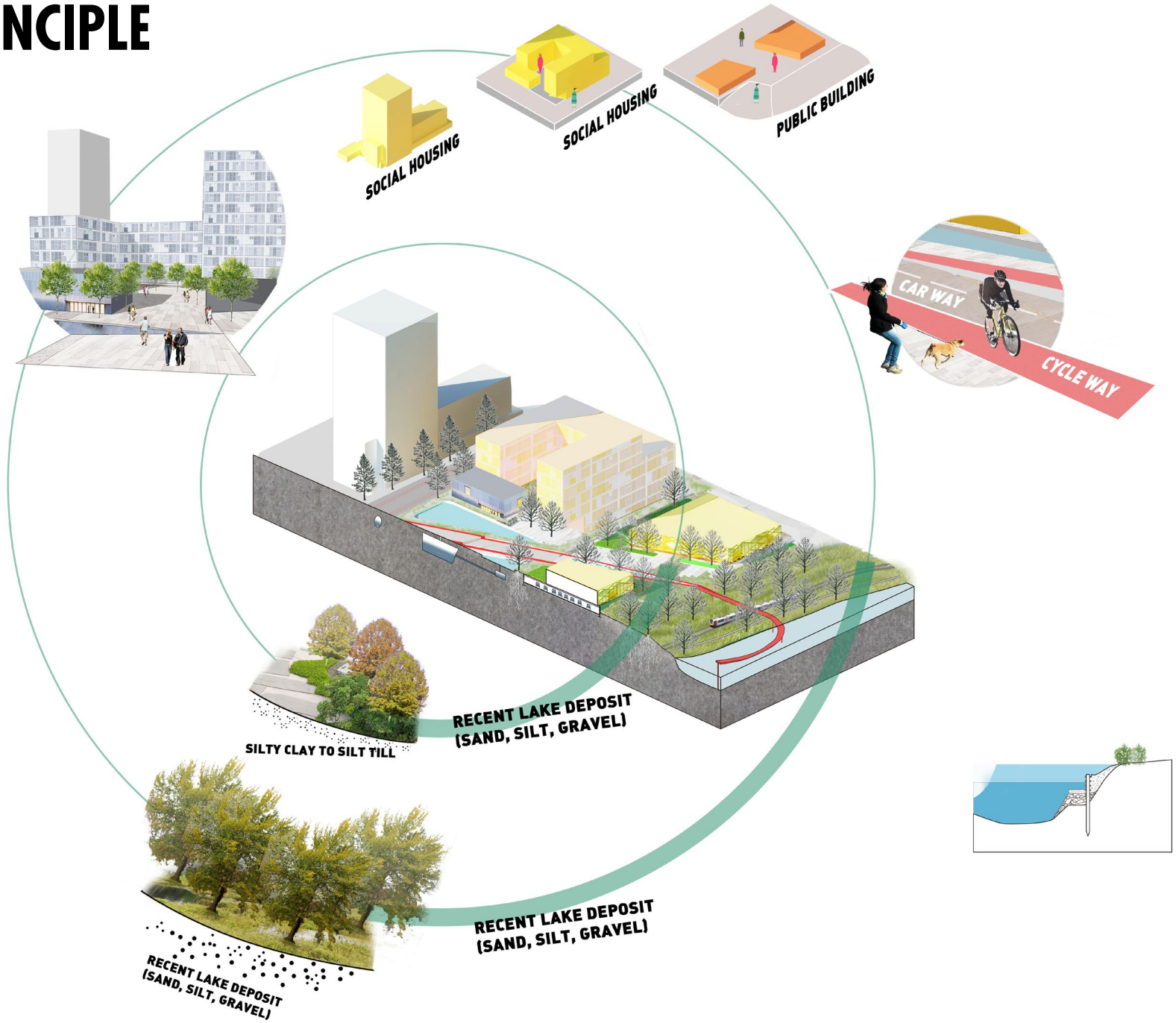
COMBINED DESIGN

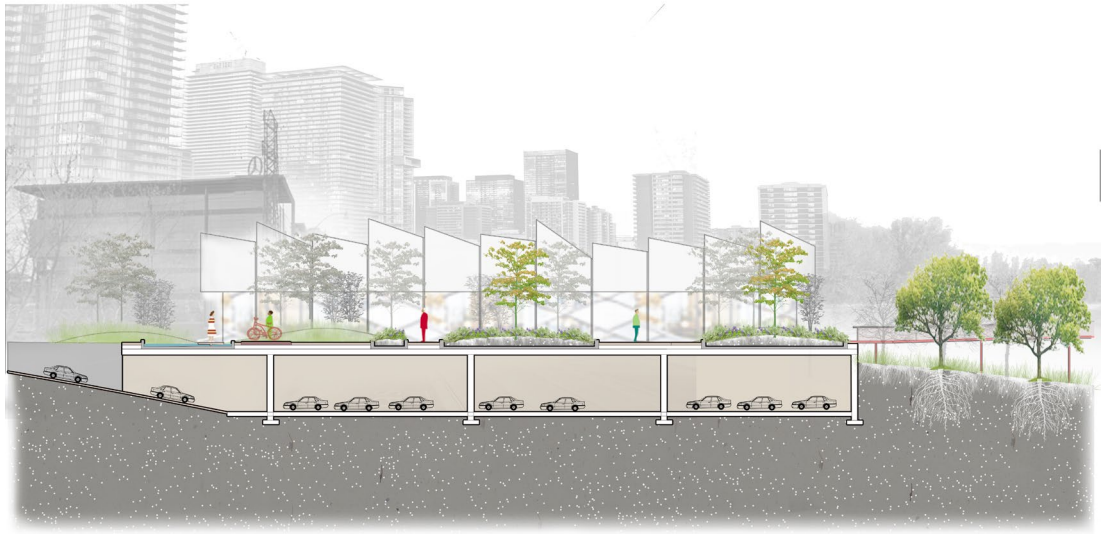


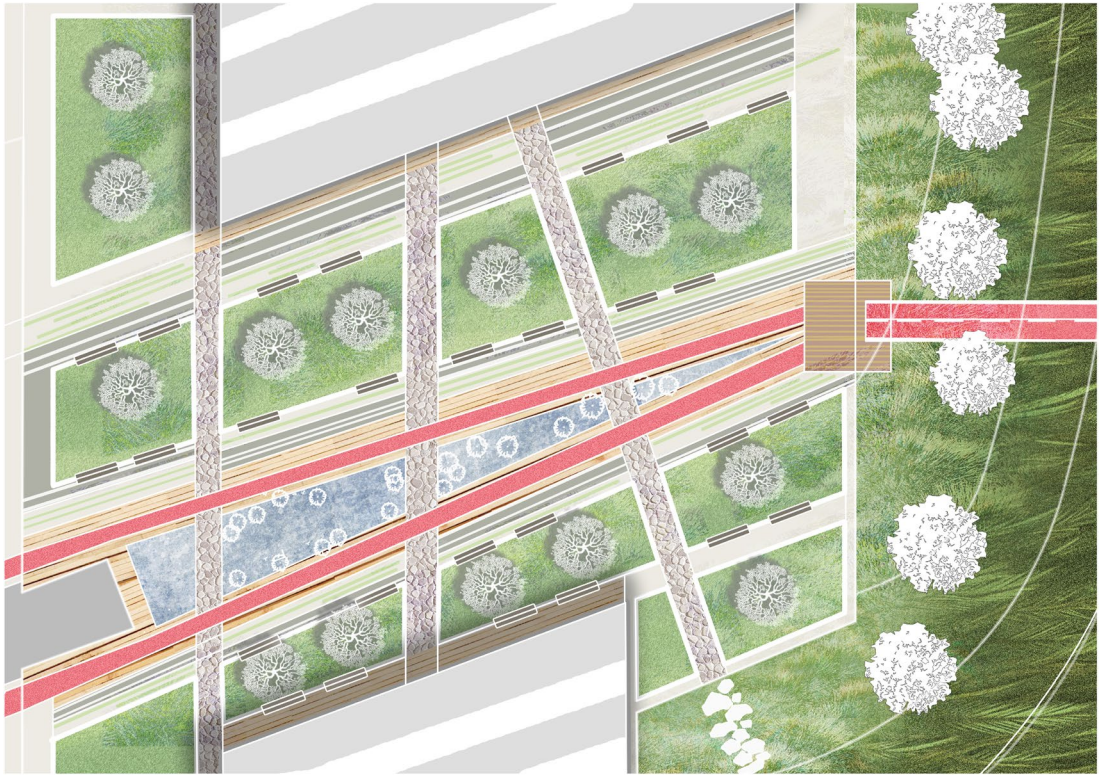
DESIGN PRINCIPLE

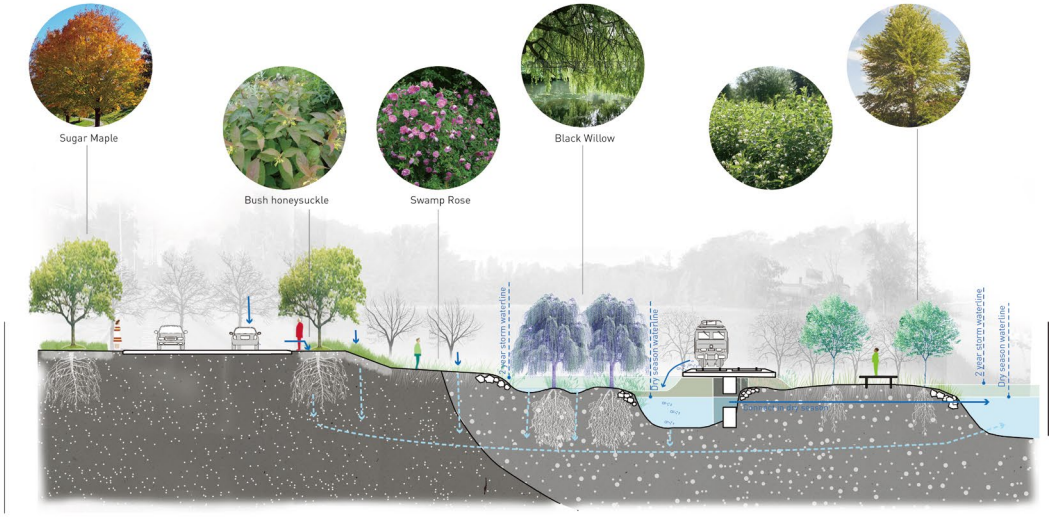


DESIGN PRINCIPLE








Sugar Maple
Bush honeysuckle
Swamp Rose
Black Willow
2 year storm waterline
Dry season waterline
2 year storm waterline
Dry season waterline

REFLECTION

1. It was a powerful structure to analyze Toronto interface through different aspects, and finding the principles for each aspects, providing the potential solutions.

2. The five-dimension-approach is also contribute to identifying design principles in the later part of my project.

3. The five-dimension-principles were justified within the certain context and new principles were generated through the designing.

4. This may lead to certain limitation of design principles, and the principles should be justified through designing repeatedly in the same site or in different sites. But within the structure of dimension-approach for developing adaptive interface, the design is open-ended which can be repeated and provide new principles for interface.

5. The method helps people to positioning themselves in making designing choices with the interaction of human and nature environment.