



**Flows Revalued:** A future-oriented revaluation of the Strategy of the Two Networks

# **Content of presentation**

Part I: Project description

Part II: Conceptual building blocks

Part III: Synthesis and design

Part IV: Conclusion and reflection

# **Part I: Project description**

# THE SAN FRANCISCO PENINSULA



Figure 1: Satellite image of San Francisco Bay area, Source: Google maps, accessed 180128

## TEST-CASE



- position of highways in **lowest areas** of landscape

- developed close to thousands of homes with **disregard to public health.**

Figure 1: Satellite image of San Francisco Bay area, Source: Google maps, accessed 180128

# Future Dynamics

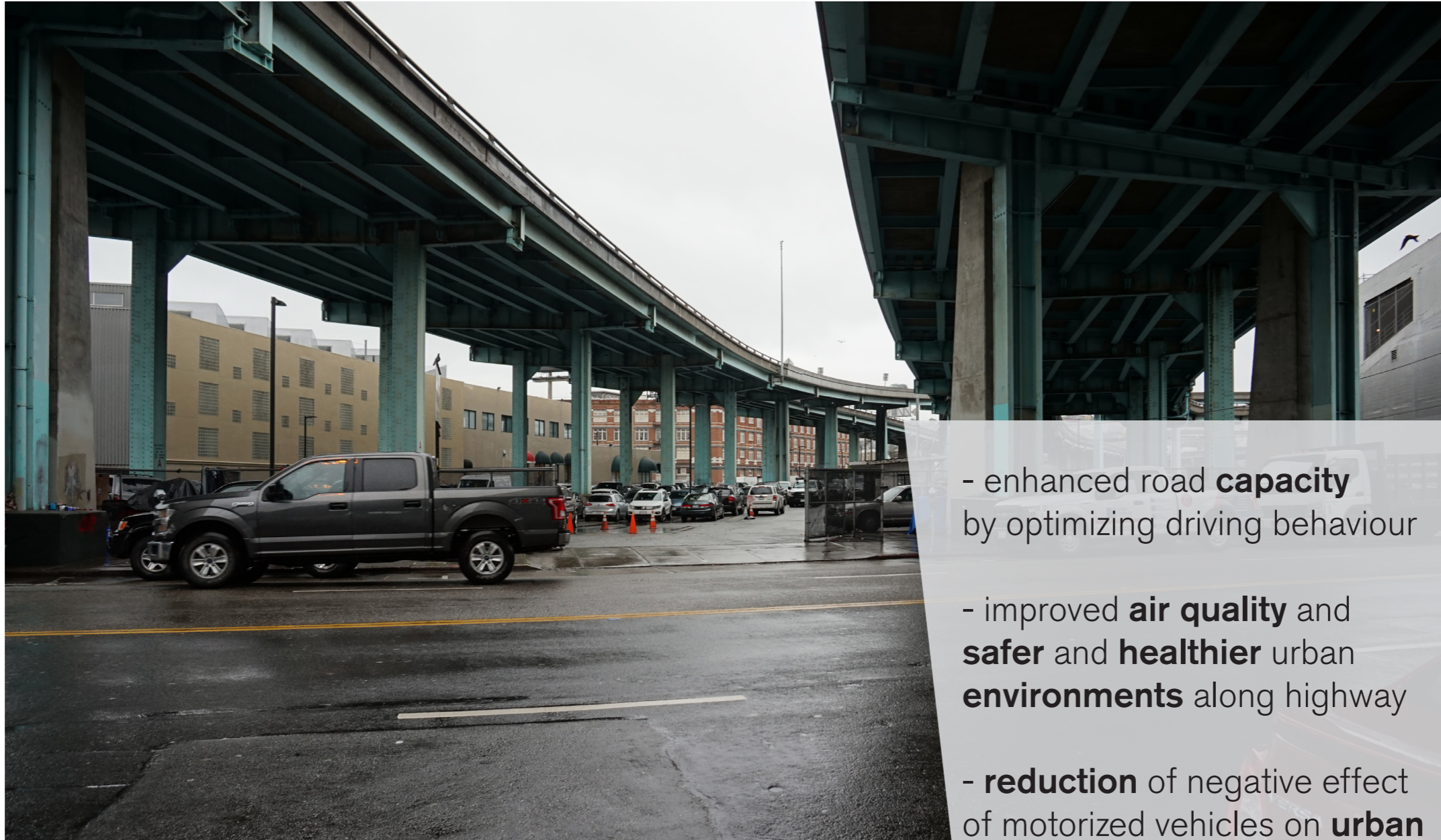
## ENVIRONMENTAL CRISIS



- **120 cm sea level rise** caused by **climate change**
- extra **90 cm level rise** caused by temporary storm surge
- increased **peak precipitation** from **extreme storms**

Figure 1: Inundation caused by peak precipitation, Source: [https://ww2.kqed.org/news/wp-content/uploads/sites/10/2014/12/SByrne-KQED-12\\_11\\_14-Winter-Storm-10-e1418317422487.jpg](https://ww2.kqed.org/news/wp-content/uploads/sites/10/2014/12/SByrne-KQED-12_11_14-Winter-Storm-10-e1418317422487.jpg), accessed 180128

## OBSOLETE MOBILITY INFRASTRUCTURES



- enhanced road **capacity** by optimizing driving behaviour
- improved **air quality** and **safer** and **healthier** urban **environments** along highway
- **reduction** of negative effect of motorized vehicles on **urban runoff**

Figure 1: Mobility infrastructure domain, Source: (Author, 2018)

## EXPLOSIVE POPULATION GROWTH



- **lack of capacity** for expansion
- **92000 new units** need to be realized by 2040
- changing demographics

Figure 1: Birds-eye view of Northeast San Francisco, Source: ([https://farm9.staticflickr.com/8855/17015344824\\_9c7ceef409\\_k.jpg](https://farm9.staticflickr.com/8855/17015344824_9c7ceef409_k.jpg), accessed 180128

## **Problem statement**

San Francisco lies in a unique natural context and possesses great capital, which is of great value for the whole Bay Area. However, this capital is under pressure of future dynamics, caused by decades of human interference without acknowledging the natural conditions of the Bay. Making San Francisco an uncertain city for people to settle in the future.

## **Project aim**

The aim of the project is to provide a method in which integrated engineering and urban planning and design will mitigate environmental crisis in a scenario of future technological innovations in mobility. Moreover, the aim is to revalue the S2N, in order to develop a conceptual framework that guides and structures this approach.

## **Main research question**

How can a revalued Strategy of the Two Networks **(1)** be utilized, in order to support urban renewal **(2)** in dealing with the environmental crisis and new modes of mobility **(3)**?

## **Sub research question 1**

What is the value of the original S2N in another context?

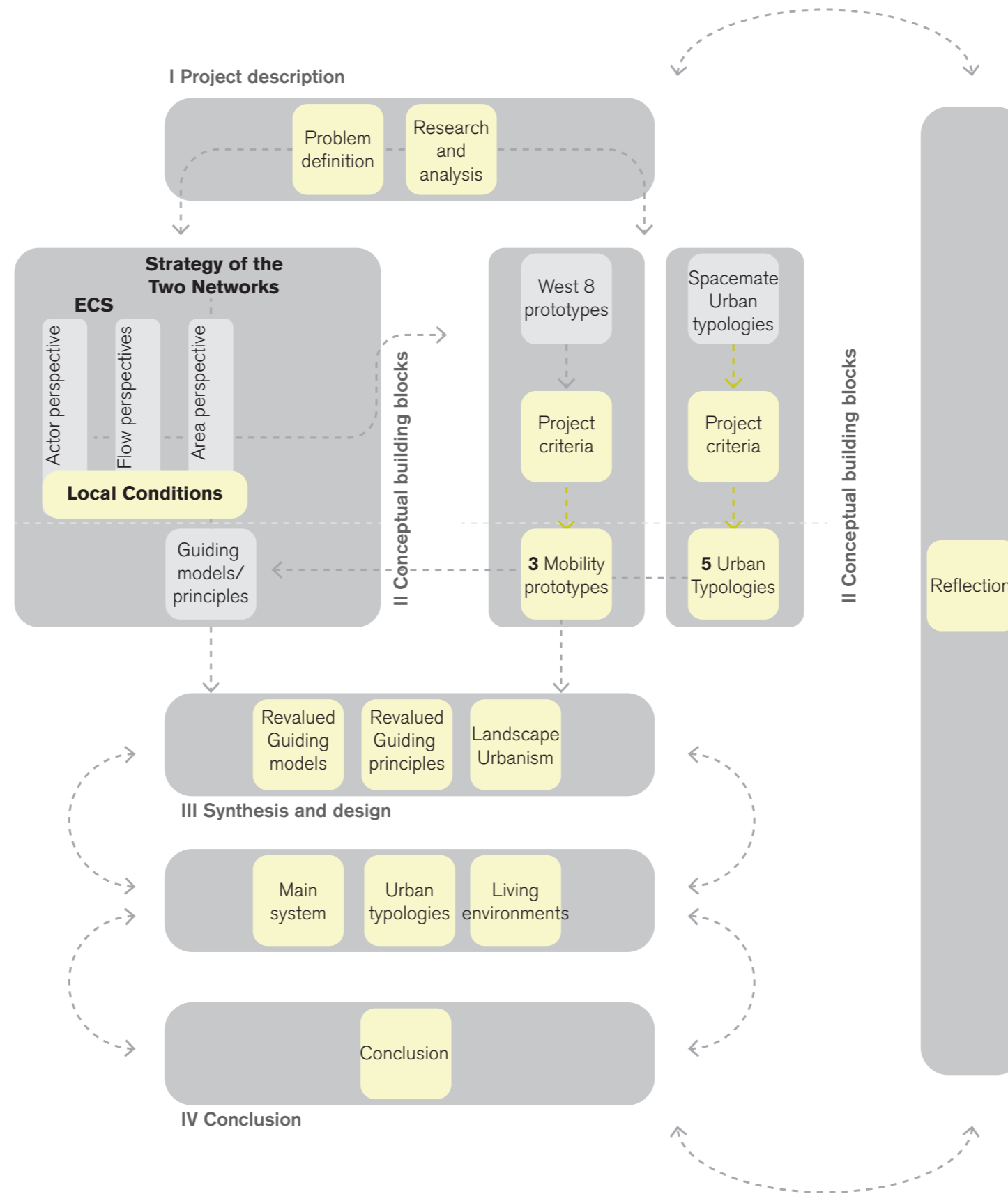
## **Sub research question 2**

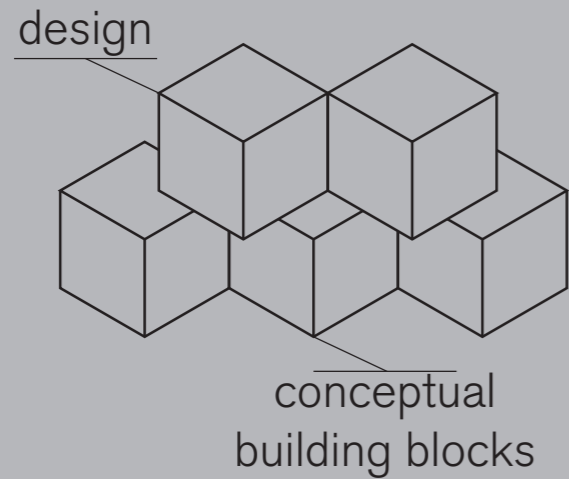
How can the synergy of flows in the urban system be utilized in a methodological approach for urban renewal?

### **Sub research question 3**

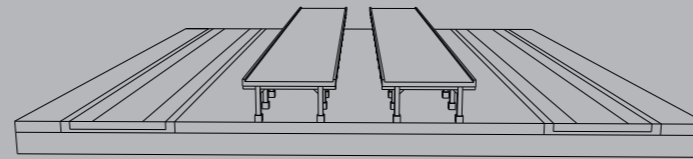
Can new modes of mobility offer spatial solutions to deal effectively with the environmental crisis?

# METHODOLOGY

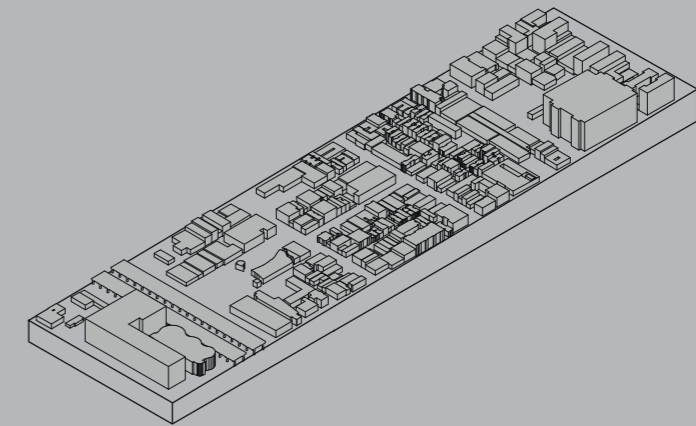




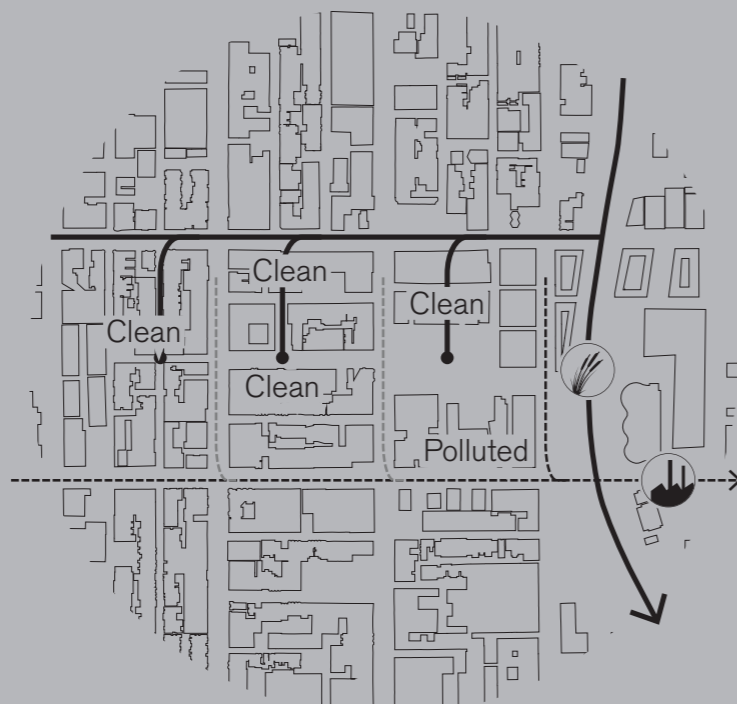
*Conceptual building blocks*



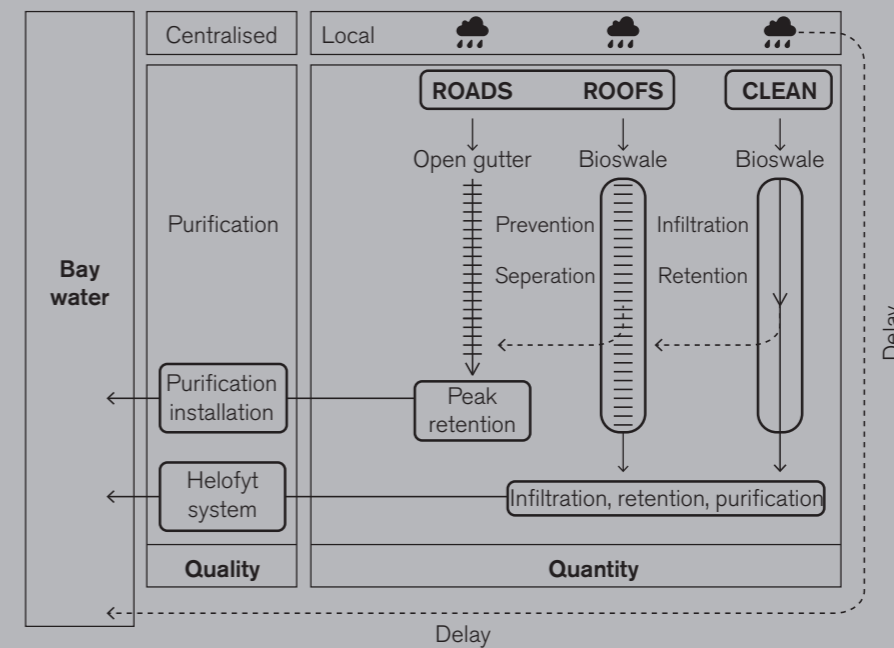
*Mobility infrastructure prototype*



*Urban typology*



*Guiding principle*



*Guiding model*

## **Part II: Conceptual building blocks**

## Strategy of the Two Networks

# STRATEGY OF THE TWO NETWORKS

## AREA PERSPECTIVE



## FLOW PERSPECTIVE



## ACTORS PERSPECTIVE



Figure 1: Eva lanxmeer, Source: <https://www.duurzaamgebouwd.nl/expertposts/20110218-op-weg-naar-een-groenblauwe-stedenbouw>, accessed 180128

Figure 2: Buffalo bayou, Source: [http://www.landezine.com/wp-content/uploads/2015/06/Buffalo-Bayou-Promenade-by-SWA-01-William-Tatham\\_epi.jpg](http://www.landezine.com/wp-content/uploads/2015/06/Buffalo-Bayou-Promenade-by-SWA-01-William-Tatham_epi.jpg), accessed 180128

Figure 3: Actors in action, Source: <http://docplayer.nl/docs-images/63/50071458/images/15-0.jpg>, accessed 180128

# GUIDING PRINCIPLES

## PRINCIPLE AREA PERSPECTIVE



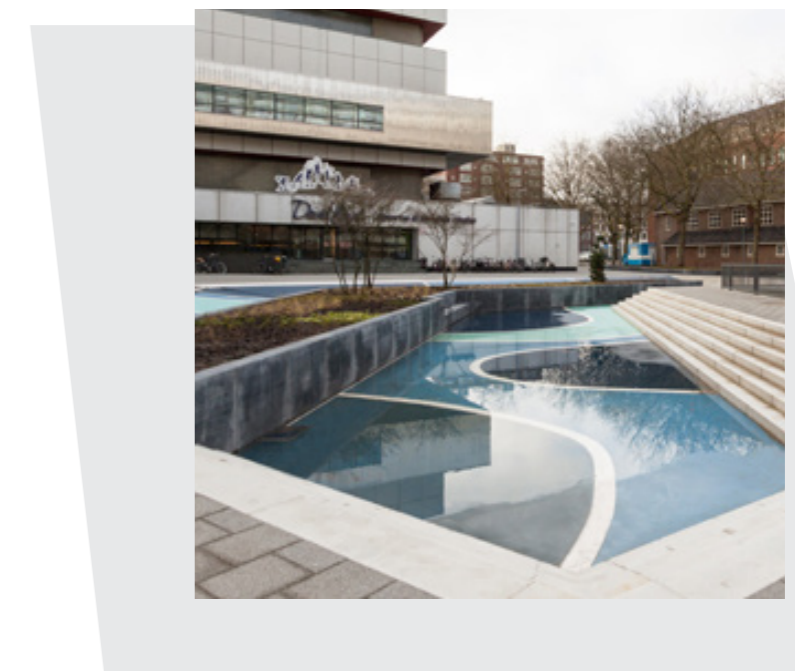
Slow-and Fast-lane principle

## PRINCIPLE FLOW PERSPECTIVE



Synergy with flows and actors principle

## PRINCIPLE ACTORS PERSPECTIVE



Making visible principle

Figure 1: Quiet living environment, Source: <https://www.tuinenstichting.nl/nieuws/publicatie-tussen-groen-en-grijs-een-verkenning-van-tuinen-en-tuinieren-in-nederland/>, accessed 180128

Figure 2: Dynamic living environment, Source: <https://www.connect.media/record-holiday-travel-predicted/>, accessed 180128

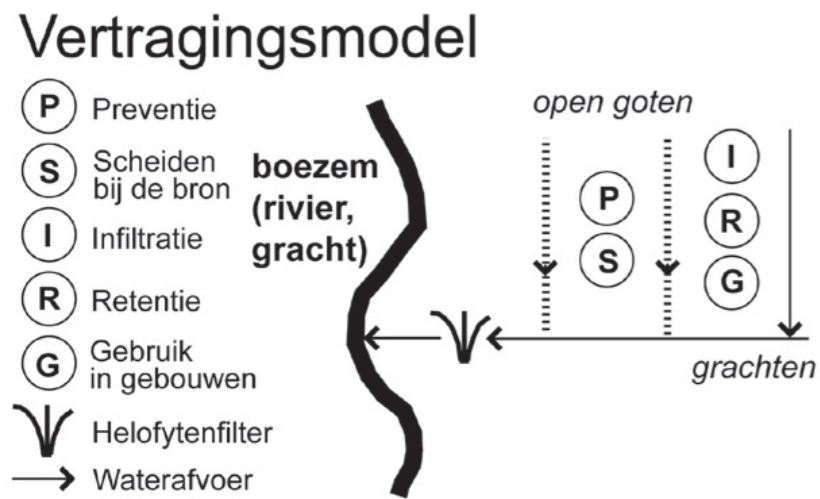
Figure 3: Water flow, Source: <http://www.aleanjourney.com/2015/09/creating-flow-is-critical-to-driving.html>, accessed 180128

Figure 4: Mobility flow, Source: <https://www.pcb.its.dot.gov/eprimer/images/imep1ppt2.jpg>, accessed 180128

Figure 5: Water square, Source: [http://www.urbanisten.nl/wp/wp-content/uploads/URBANISTEN\\_Watersquare-Bentemplein-18.jpg](http://www.urbanisten.nl/wp/wp-content/uploads/URBANISTEN_Watersquare-Bentemplein-18.jpg), accessed 180128

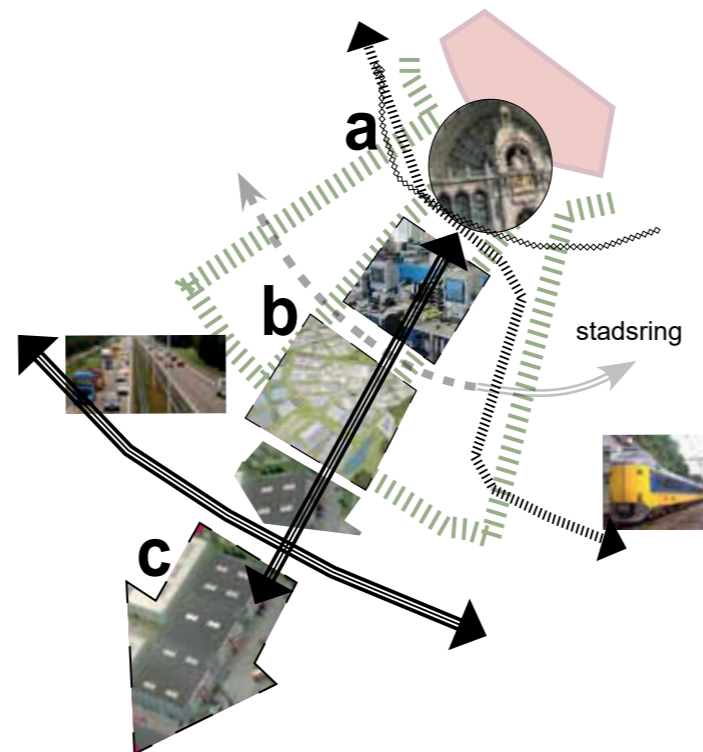
# GUIDING MODELS

## GUIDING MODEL WATER FLOW



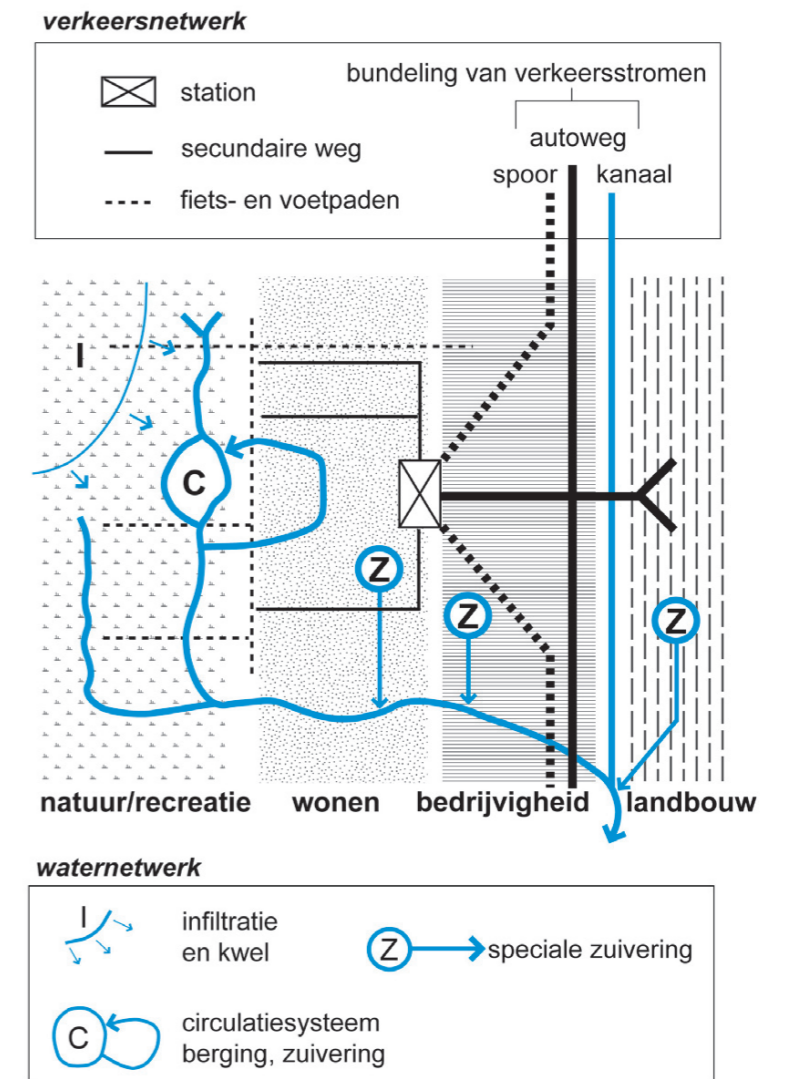
delay model

## GUIDING MODEL MOBILITY FLOW



abc-cluster model

## GUIDING MODEL AREA PERSPECTIVE



Strategy of the Two Networks model

Figure 1: Eva lanxmeer, Source: <https://www.duurzaamgebouwd.nl/expertposts/20110218-op-weg-naar-een-groenblauwe-stedenbouw>, accessed 180128

Figure 2: Buffalo bayou, Source: [http://www.landezine.com/wp-content/uploads/2015/06/Buffalo-Bayou-Promenade-by-SWA-01-William-Tatham\\_epi.jpg](http://www.landezine.com/wp-content/uploads/2015/06/Buffalo-Bayou-Promenade-by-SWA-01-William-Tatham_epi.jpg), accessed 180128

Figure 3: Actors in action, Source: <http://docplayer.nl/docs-images/63/50071458/images/15-o.jpg>, accessed 180128

## REVALUATION OF THE S2N



**DUTCH URBAN LANDSCAPE**



**SF URBAN LANDSCAPE**

Figure 1: Urban landscape Rotterdam, Source: <http://defotograaf.eu/blog/wp-content/uploads/2015/05/Rotterdam4.jpg>, accessed 180128

Figure 2: Urban landscape San Francisco, Source: [https://www.visittheusa.com/sites/default/files/styles/hero\\_m\\_1300x700/public/images/hero\\_media\\_image/2016-10/IMG\\_6962.jpg?i-tok=WCOx\\_gjG](https://www.visittheusa.com/sites/default/files/styles/hero_m_1300x700/public/images/hero_media_image/2016-10/IMG_6962.jpg?i-tok=WCOx_gjG), accessed 180128



**90's MOBILITY**

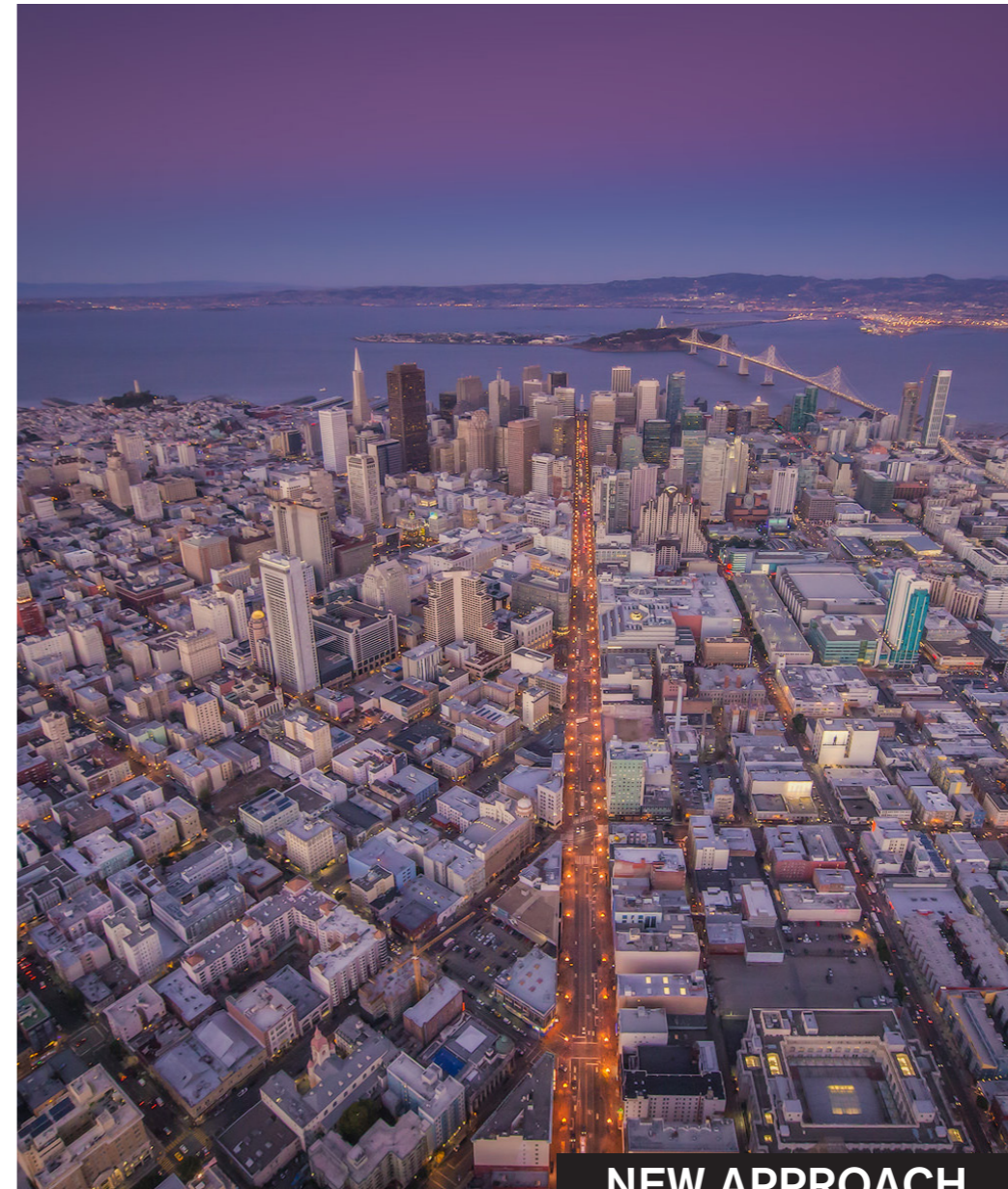


**FUTURE MOBILITY**

Figure 1: impression of 90's mobility in society, Source: [https://farm5.static.flickr.com/4106/4989354648\\_09dba761fc\\_b.jpg](https://farm5.static.flickr.com/4106/4989354648_09dba761fc_b.jpg), accessed 180128  
Figure 2: Impression of future mobility in society, Source: (<https://combined-transport.eu/autonomous-vehicle-market>, accessed 2018-01-15)



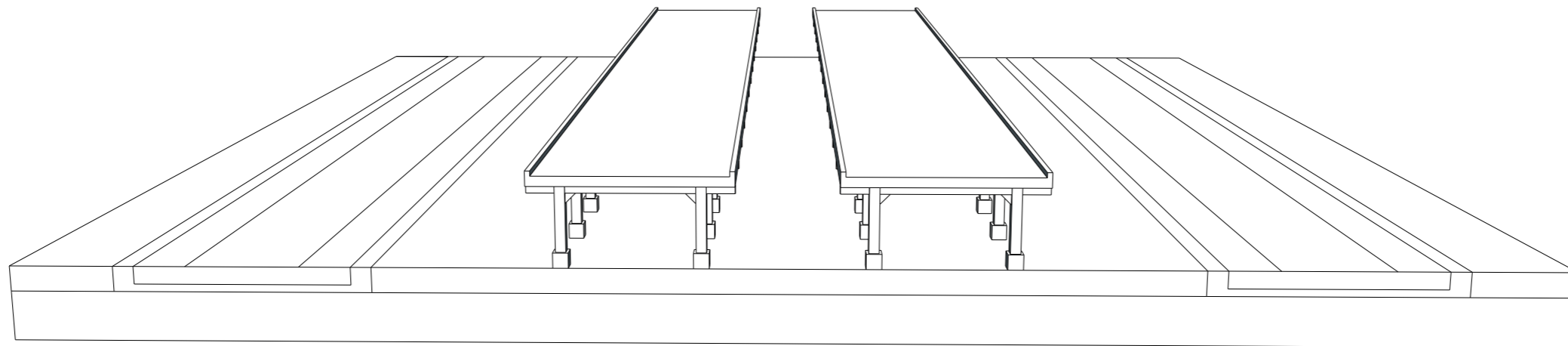
**INTEGRATED APPROACH**



**NEW APPROACH**

Figure 1: Rotterdam water and space, Source: [http://www.poggenpohl.com/imagevault/publishedmedia/56auxaeq26jsm3knbyt2/Poggenpohl\\_Project\\_-\\_New\\_Orleans\\_\\_Rotterdam\\_\\_Nethel.jpg](http://www.poggenpohl.com/imagevault/publishedmedia/56auxaeq26jsm3knbyt2/Poggenpohl_Project_-_New_Orleans__Rotterdam__Nethel.jpg), accessed 180128

Figure 2: San Francisco water and space, Source: [http://www.shainblumphoto.com/wp-content/uploads/2016/02/san\\_francisco\\_aerial\\_photography\\_07.jpg](http://www.shainblumphoto.com/wp-content/uploads/2016/02/san_francisco_aerial_photography_07.jpg), accessed 2018-01-15)



***Mobility infrastructure prototype:***

*one of the three building blocks; one prototype represents the physical appearance of a highway infrastructure.*

# ASSESSMENT AND CATEGORIZATION CRITERIA

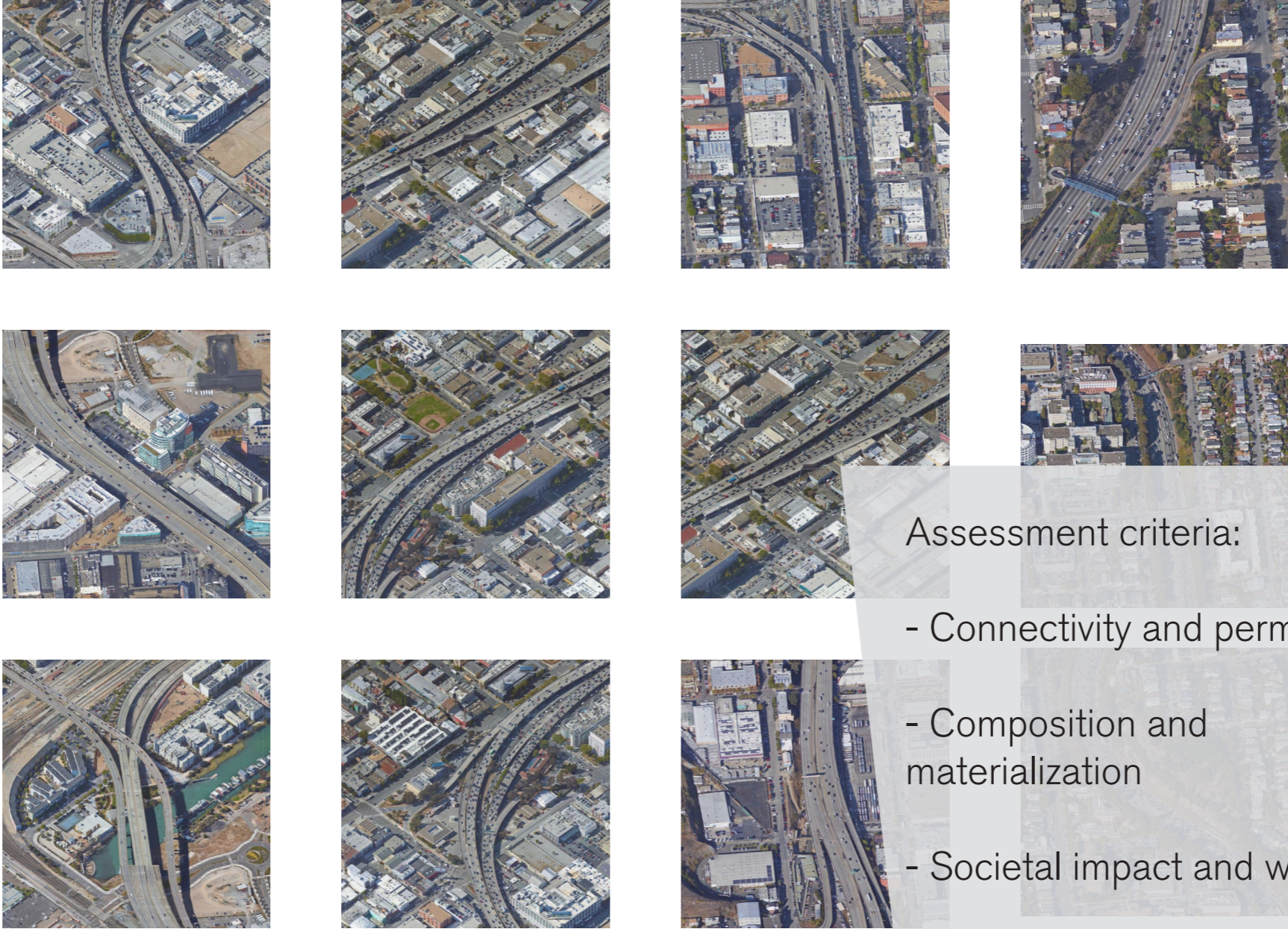
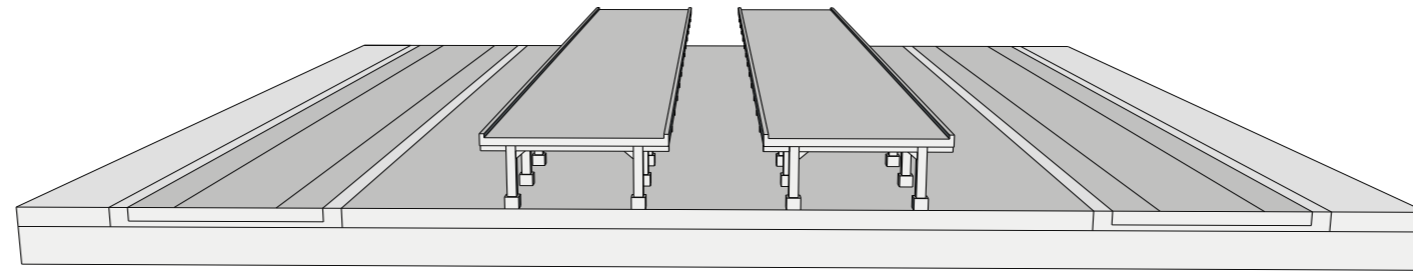
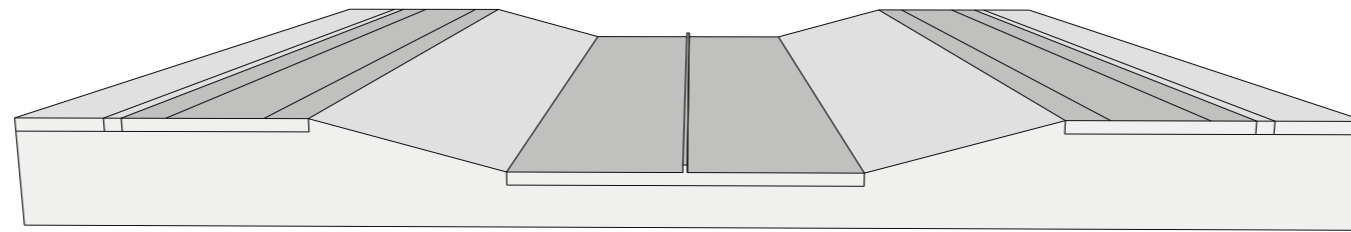


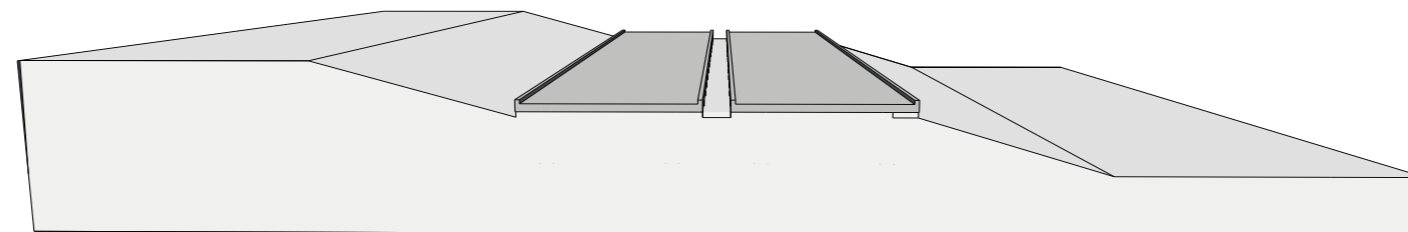
Figure 1: Spatial appearances of mobility infrastructures, Source: (Google maps, 2018)



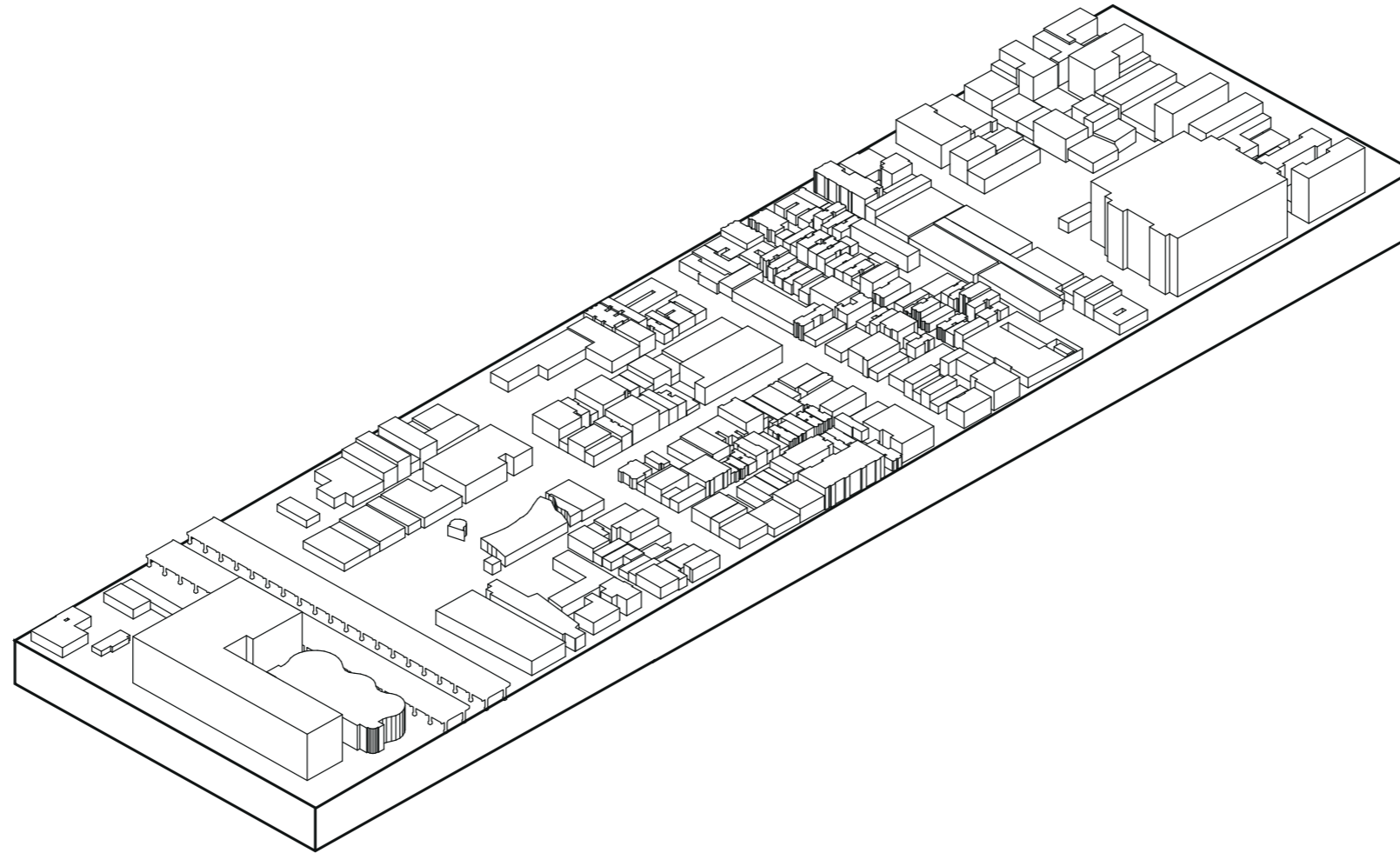
**FLYOVER PROTOTYPE**



**GUTTER PROTOTYPE**



**STAGED PROTOTYPE**



## *Urban typology:*

*one of the three building blocks; one urban typology is a representable sample of the physical environment.*

# HISTORICAL PATTERNS AND GRID

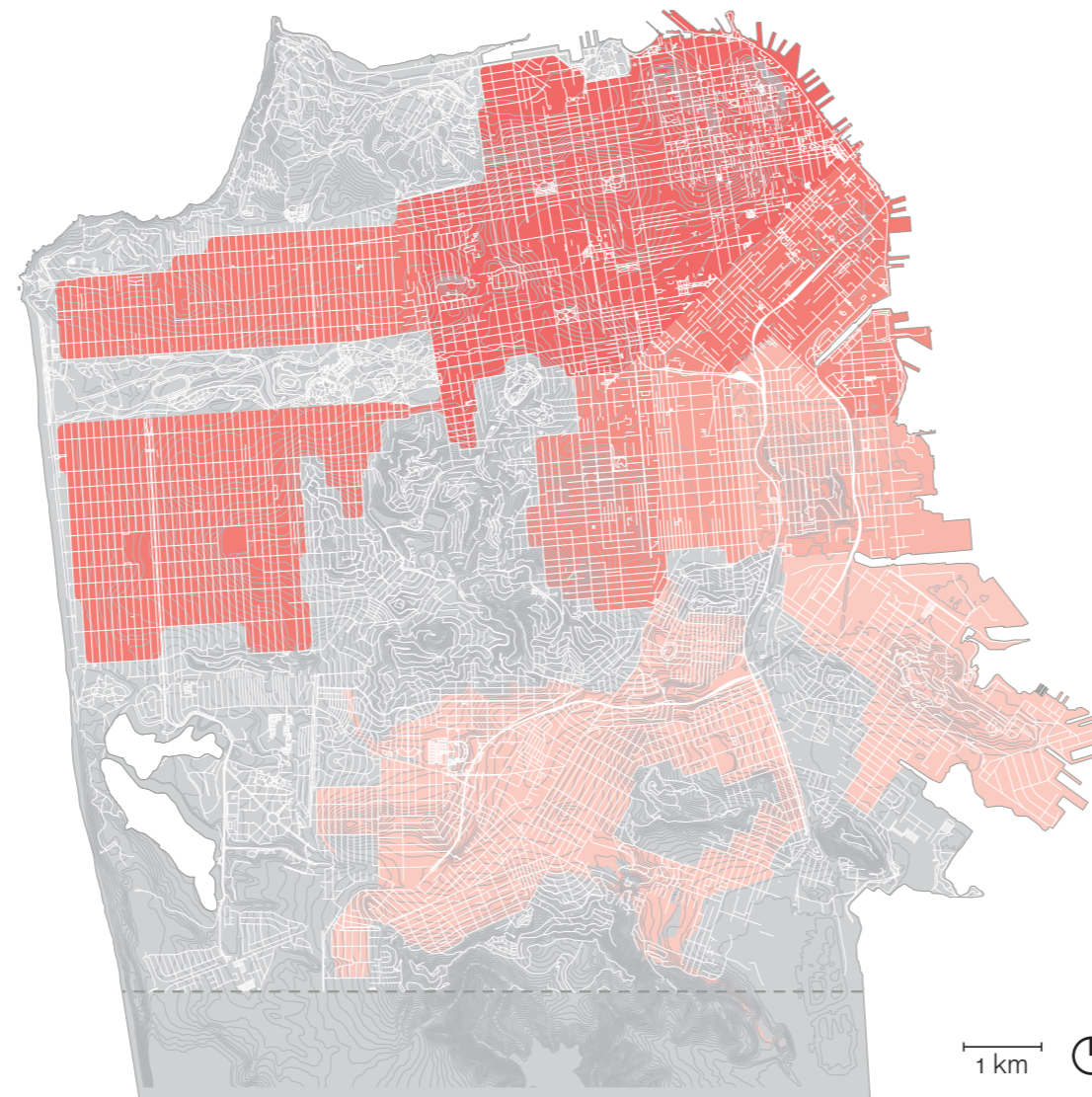


Figure 1: Grid system San Francisco, Source: (Google maps, 2018)

# ZONING PLAN

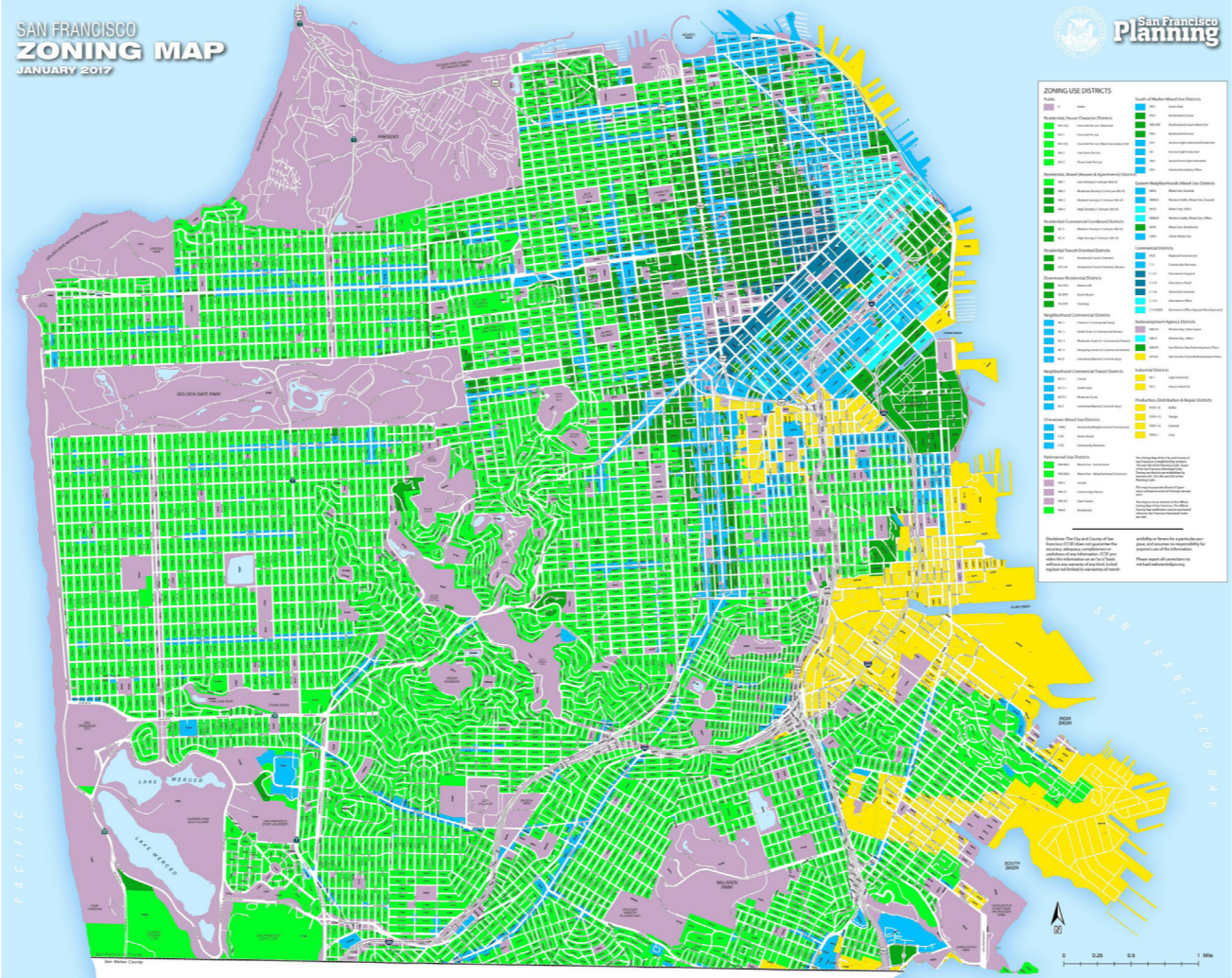
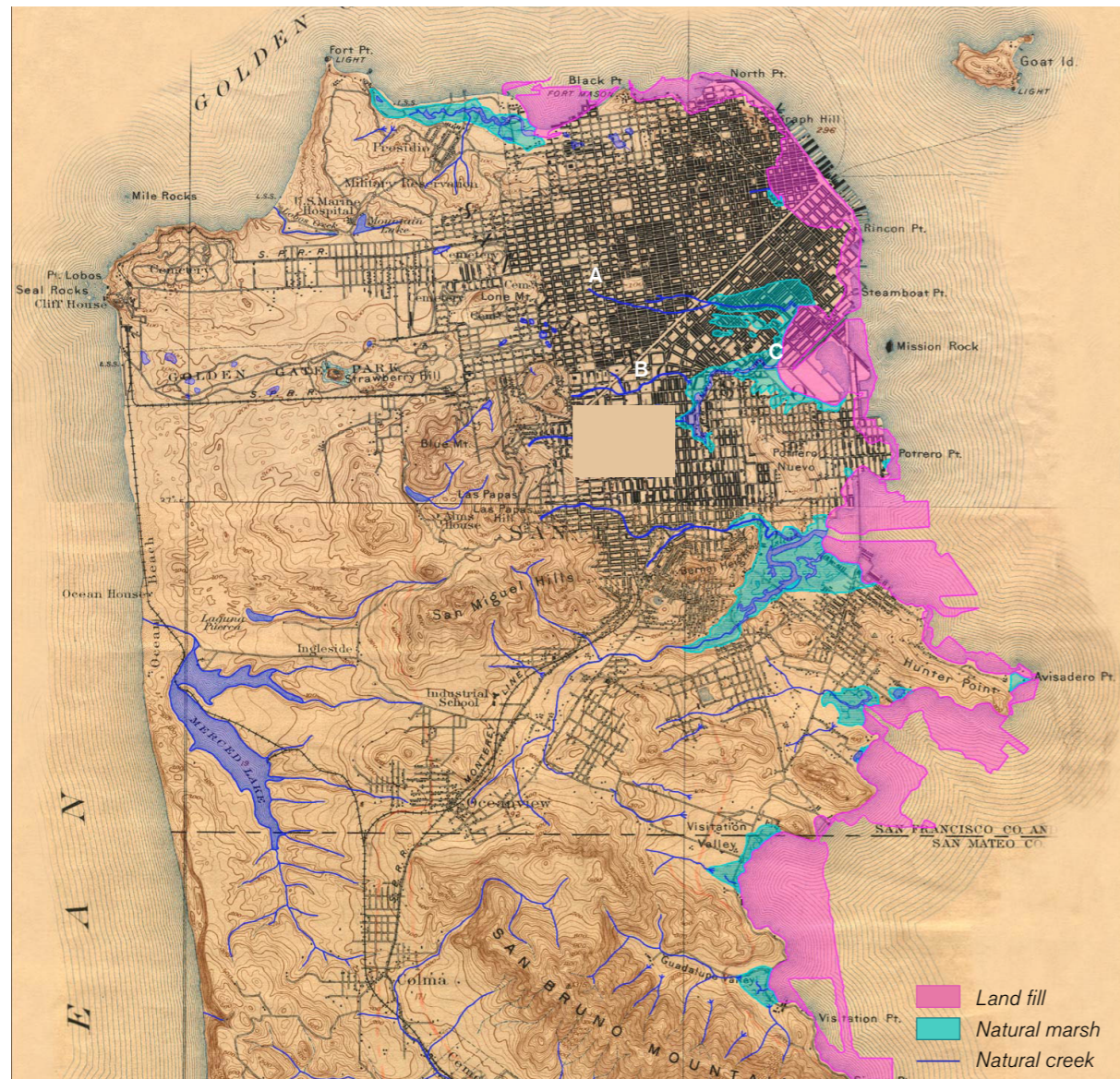
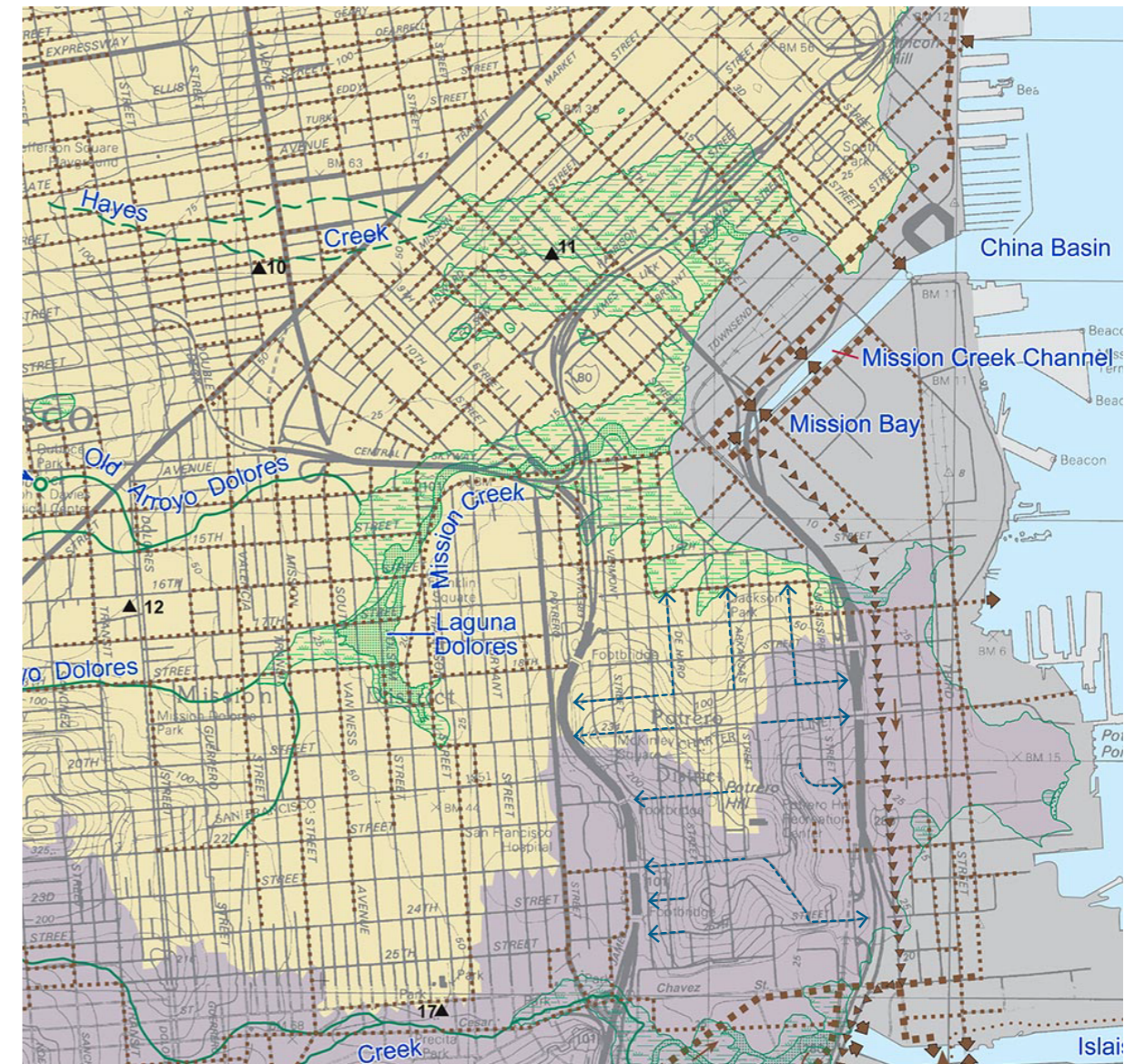


Figure 1: Zoning plan San Francisco, Source: Zoning map of San Francisco, Source: <http://sf-planning.org/zoning-maps>, accessed 180116

# NATURAL AND ARTIFICIAL HYDRLOGY



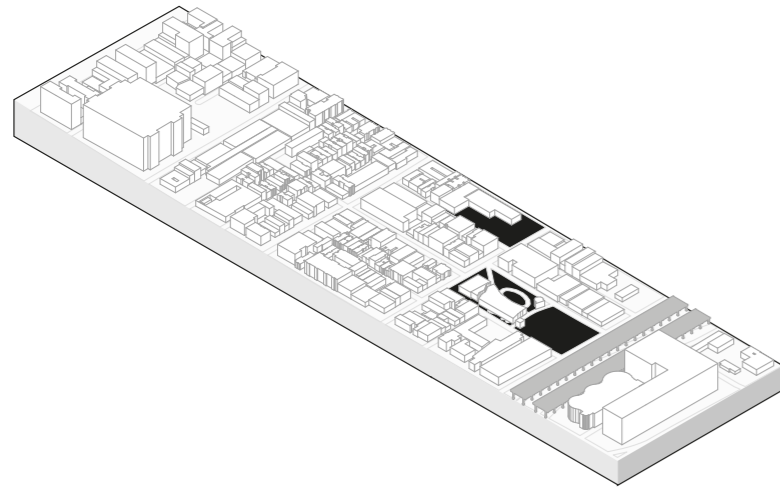
**NATURAL SYSTEM**



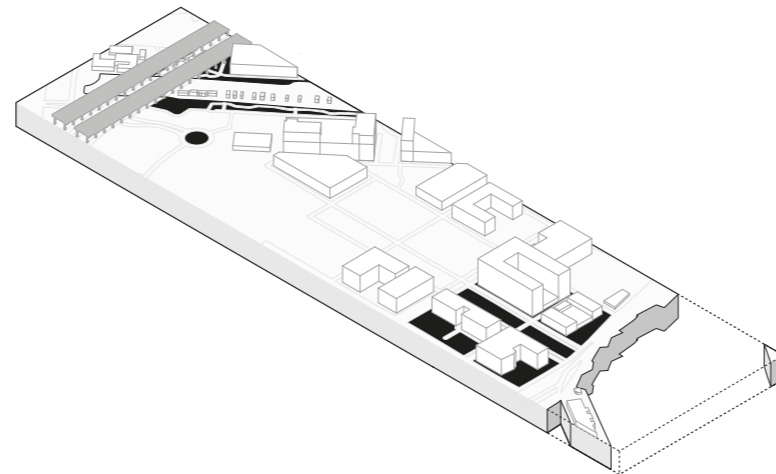
**ARTIFICIAL SYSTEM**

Figure 1: Natural landscape of San Francisco projected on a 1895 map, Source: <http://explore.museumca.org/creeks/SFTopoCreeks.html##Oakland>, accessed 180128

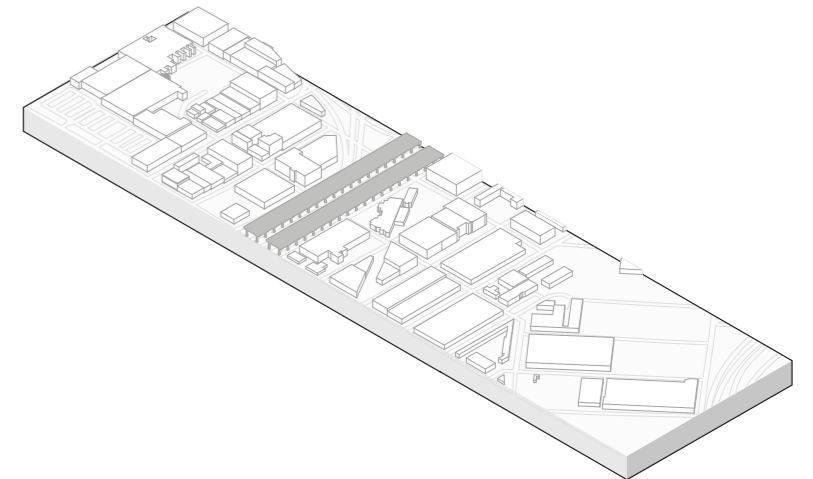
Figure 2: Mission creek watershed and artificial discharge, Source: <http://explore.museumca.org/creeks/1640-RescMission.html#>, accessed 180116



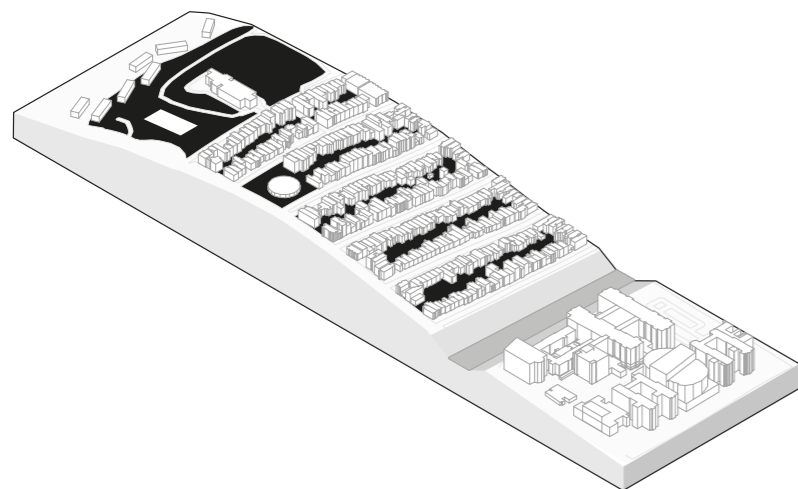
**DOWNTOWN TYPOLOGY**



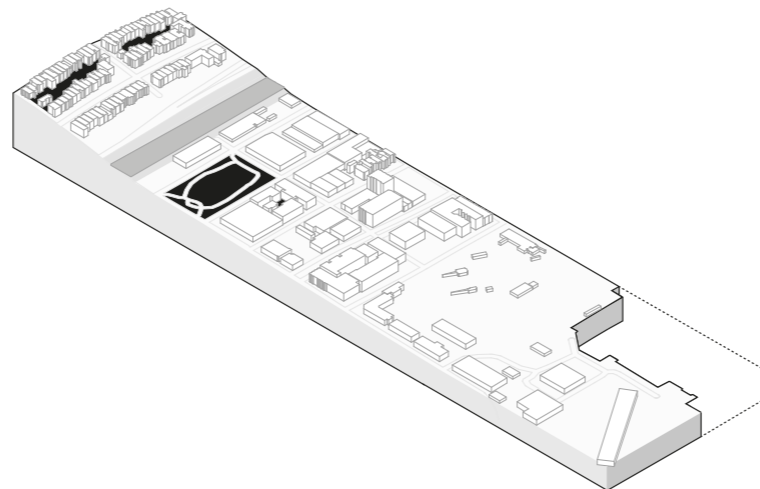
**COMMERCIAL TYPOLOGY**



**MIXED-USE TYPOLOGY**



**RESIDENTIAL TYPOLOGY**



**FORMER-INDUSTRIAL TYPOLOGY**

### **ASSESSMENT CRITERIA**

- Neighborhood
- Prototype
- Density and space
- Function
- Historic setting
- Subsurface
- Position in watercourse

## **Part III: Synthesis and design**

# Design instruments

# REVALUED GUIDING PRINCIPLES

## GUIDING PRINCIPLE ACTORS



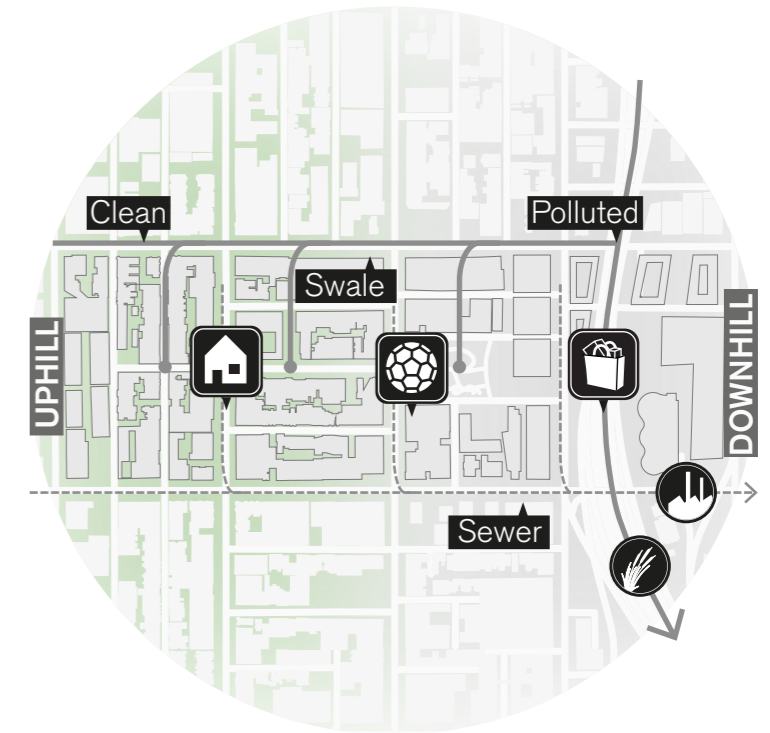
Revalued making visible principle

## GUIDING PRINCIPLE AREA



Revalued slow-and fast-lane principle

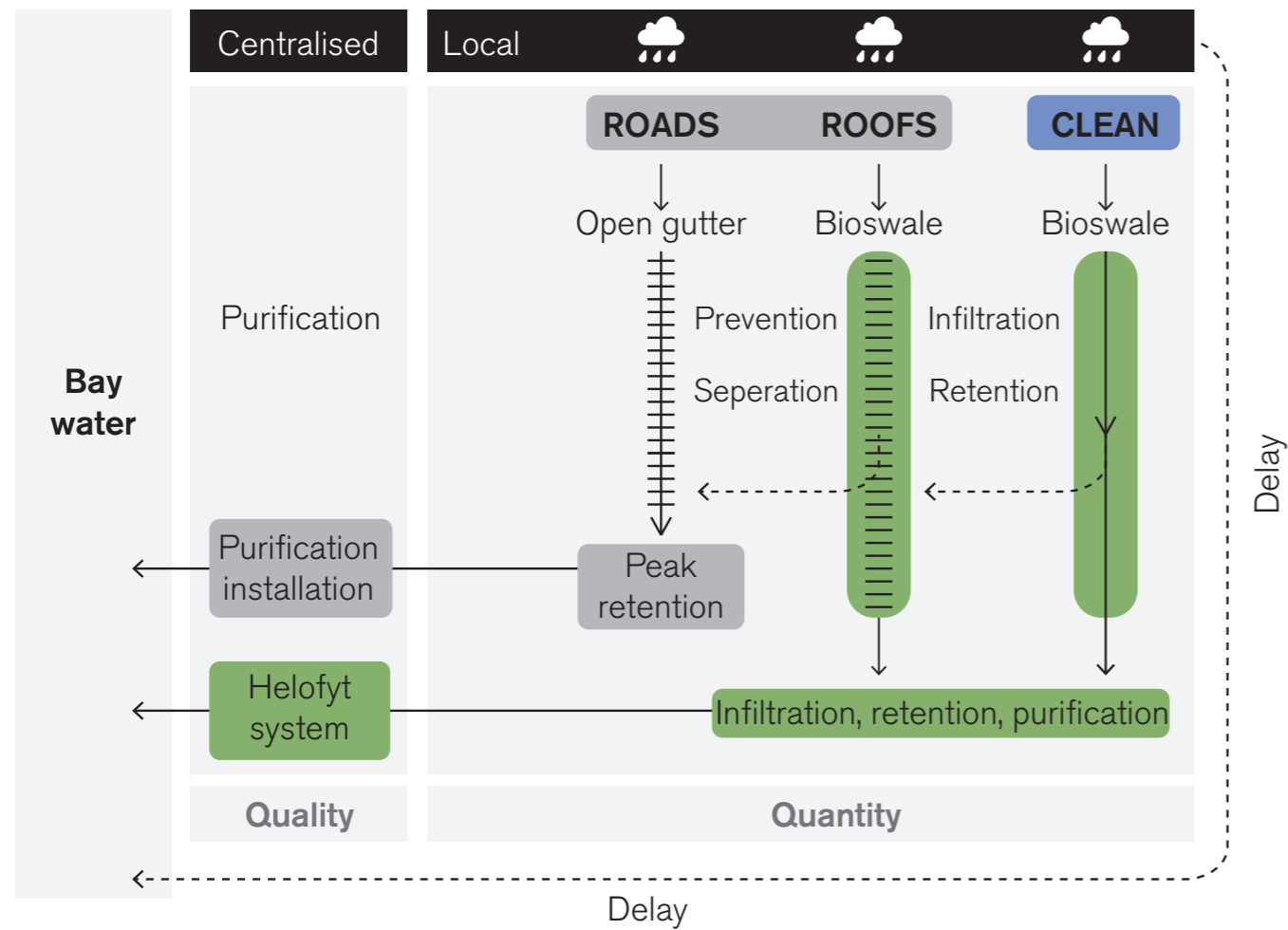
## GUIDING PRINCIPLE FLOWS



Synergy with areas and actors principle

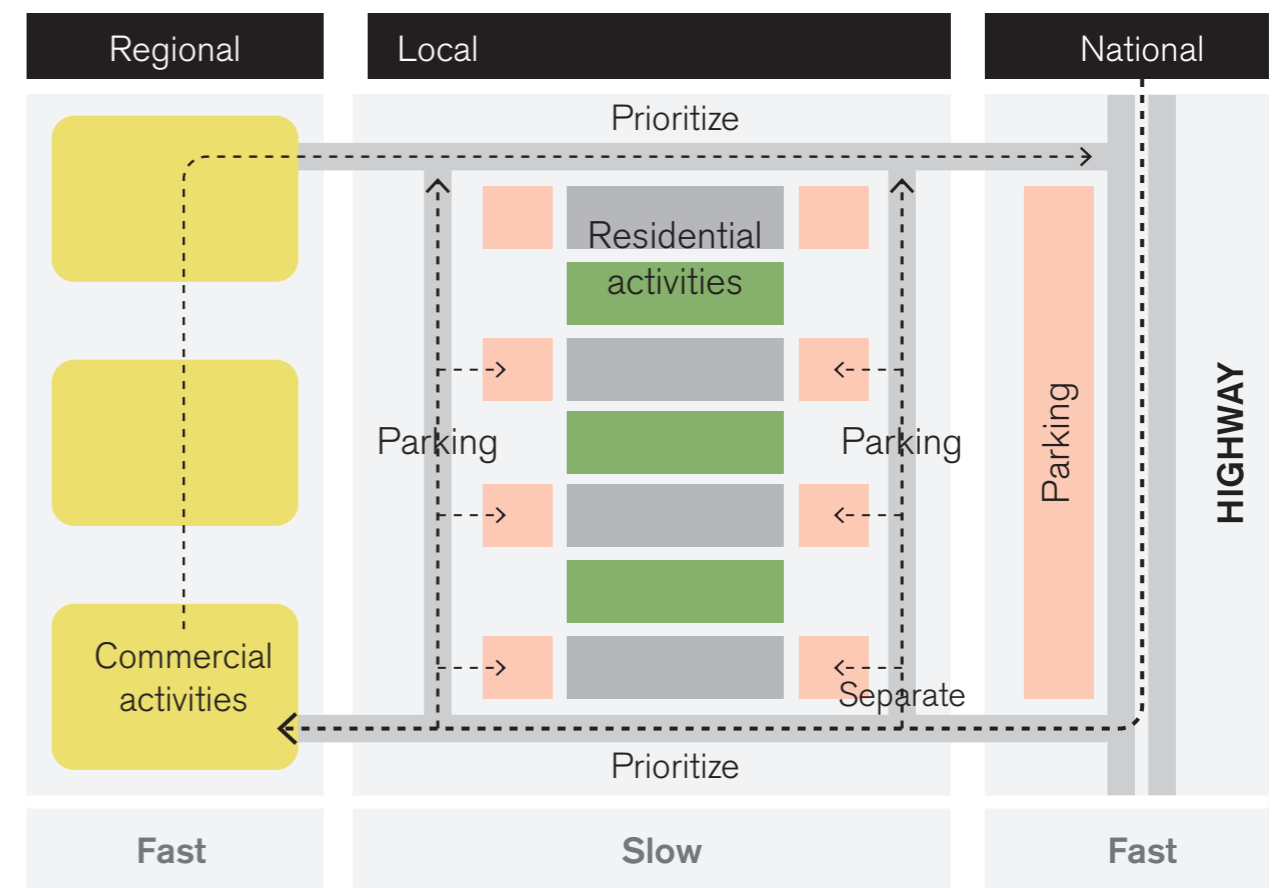
# REVALUED GUIDING MODELS

## GUIDING MODEL WATER



Overflow model

## GUIDING MODEL MOBILITY



Separation model

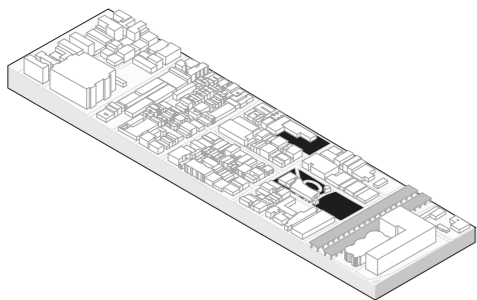
URBAN TYPOLOGY

MOBILITY PROTOTYPE

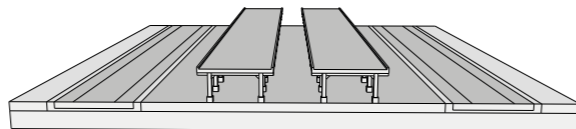
REVISED GUIDING PRINCIPLE

REVISED GUIDING MODEL

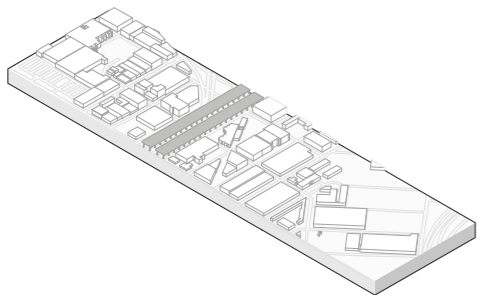
DOWNTOWN TYPOLOGY



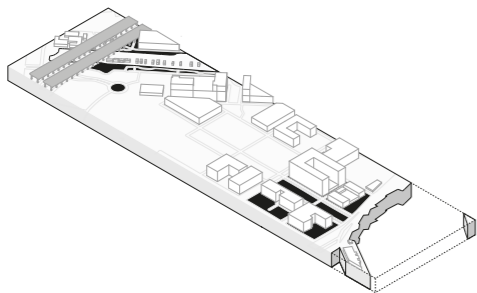
FLYOVER HIGHWAY



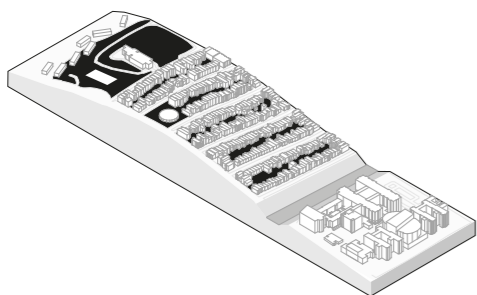
COMMERCIAL TYPOLGY



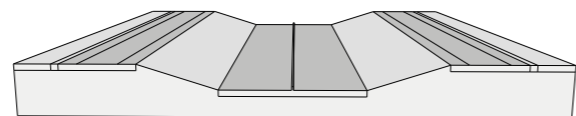
MIXED-USE TYPOLOGY



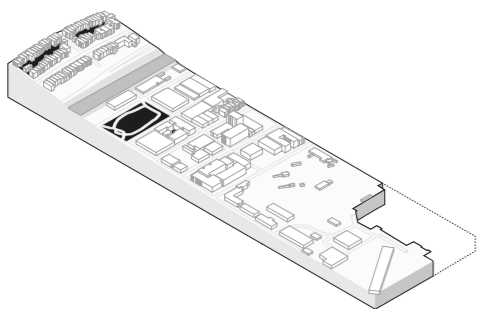
RESIDENTIAL TYPOLOGY



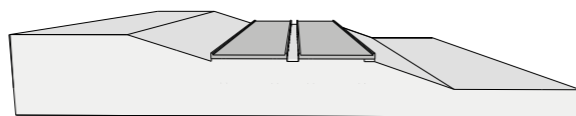
GUTTER HIGHWAY



FORMER INDUSTRIAL TYPOLGY



STAGED HIGHWAY



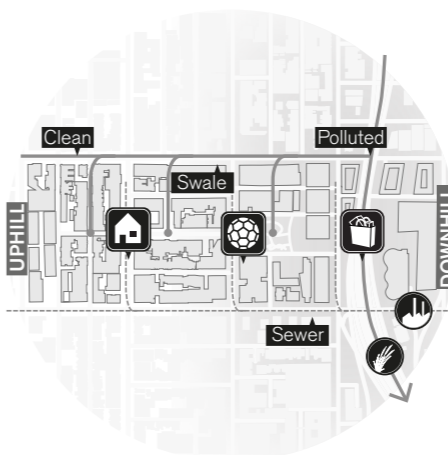
ACTOR PERSPECTIVE



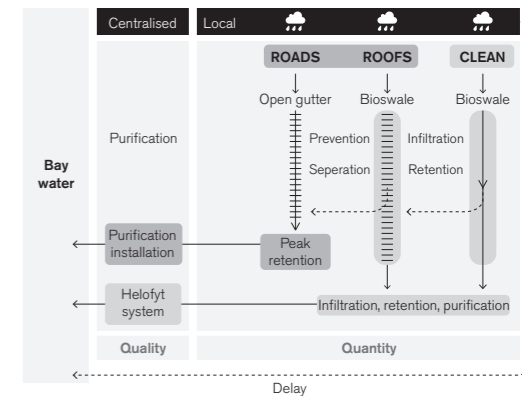
AREA PERSPECTIVE



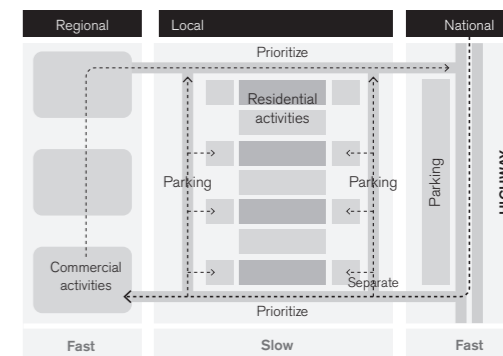
FLOW PERSPECTIVE



WATER FLOW



TRAFFIC FLOW



## DESIGN INSTRUMENTS

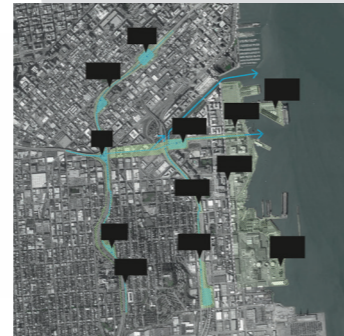


## RESTRAINTS FOR DESIGN

### NEW VISION FOR HIGHWAY

- Discharge system
- Mobility system
- Program of highway
- Techniques

## SYSTEM

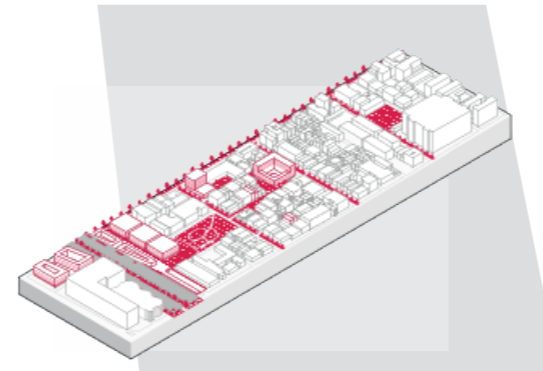


## MAIN SYSTEM

### TYOPOLOGICAL DESIGN

- General applicable design solutions
- Broader range of application
- Part of system

## URBAN TYPOLOGY



## GENERAL DESIGN SOLUTIONS

### LOCAL DESIGN

- Unique design solutions
- Materialisation
- Techniques
- Elaboration on possible living environment in a typology

## LIVING ENVIRONMENT



## UNIQUE LIVING ENVIRONMENTS

System

## FLAWS IN DISREPAIR



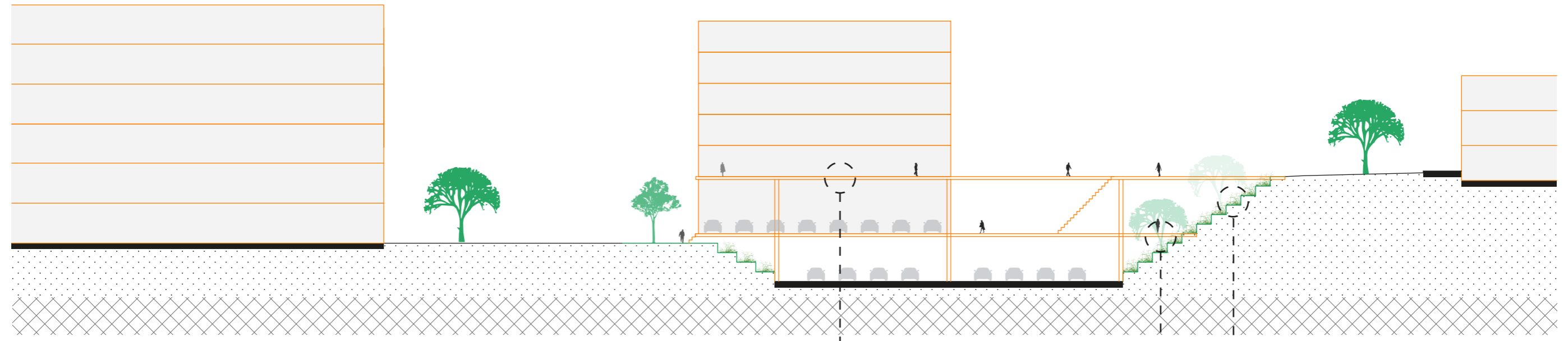
- downhill flooding
- flooding of highway
- pollution of urban runoff

Figure 1: Satellite image of San Francisco Bay area, Source: Google maps, accessed 180128

# CONCEPT SYSTEM



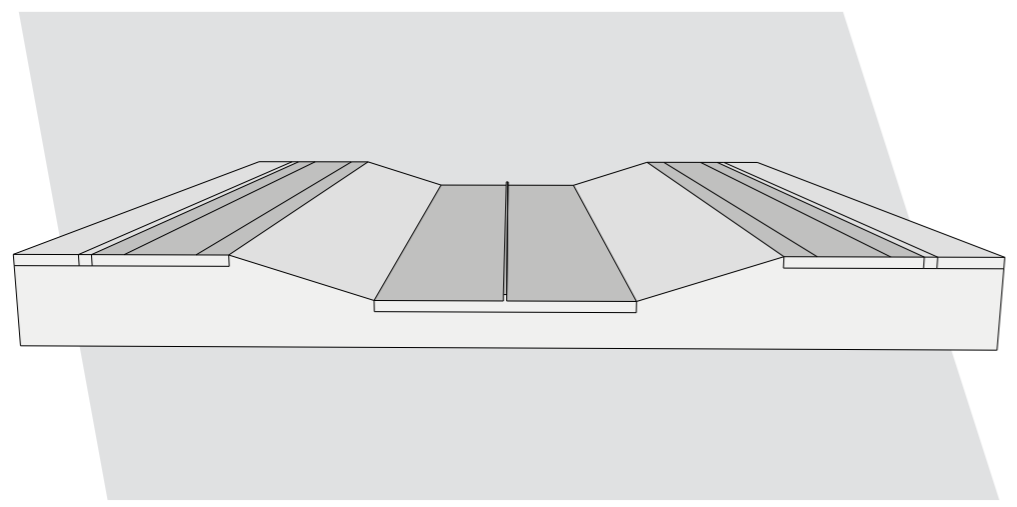
# UPHILL SOLUTION



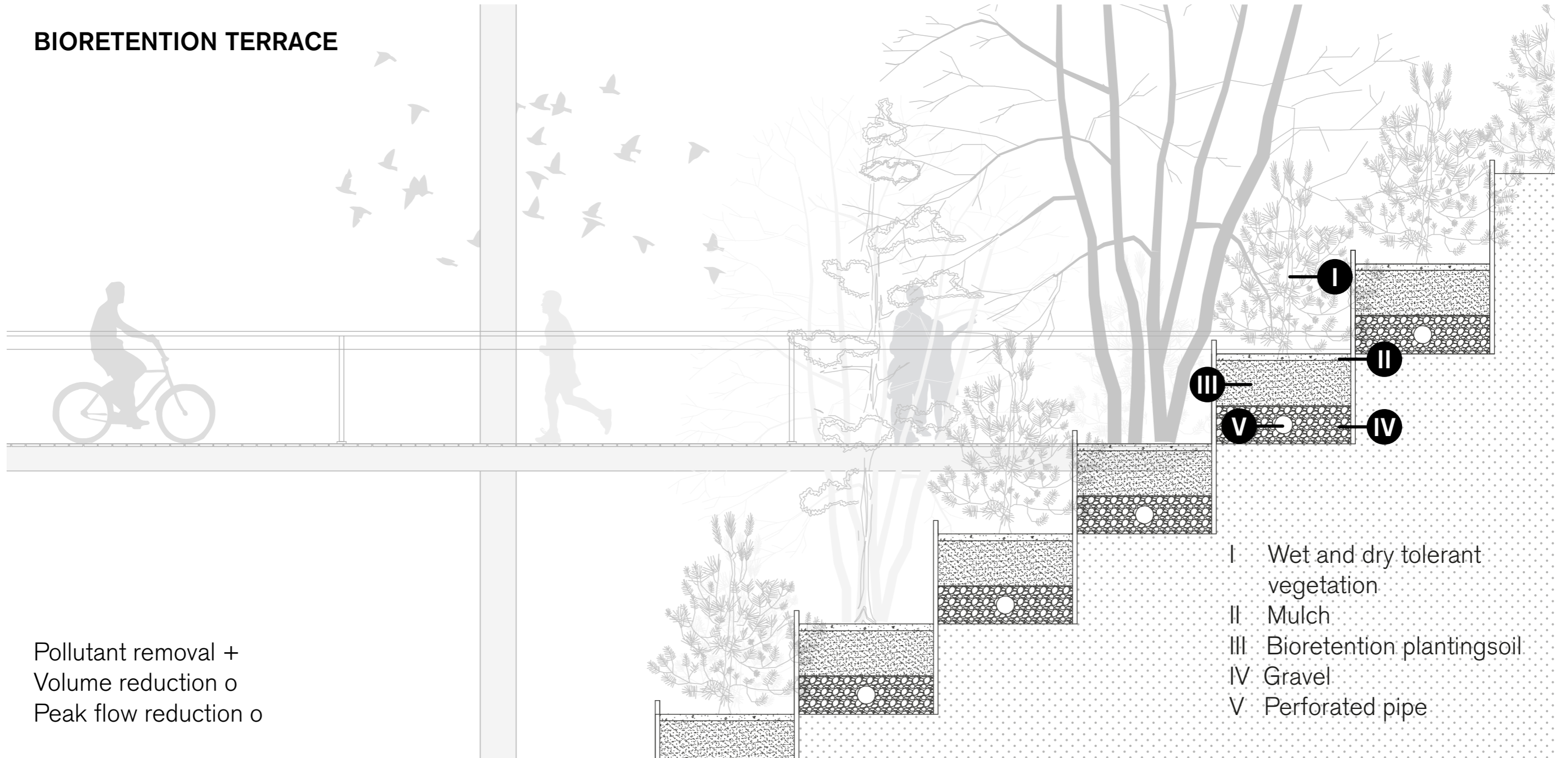
Elevated highrise  
with parking plinth

**Elevated park  
Retention terrace**

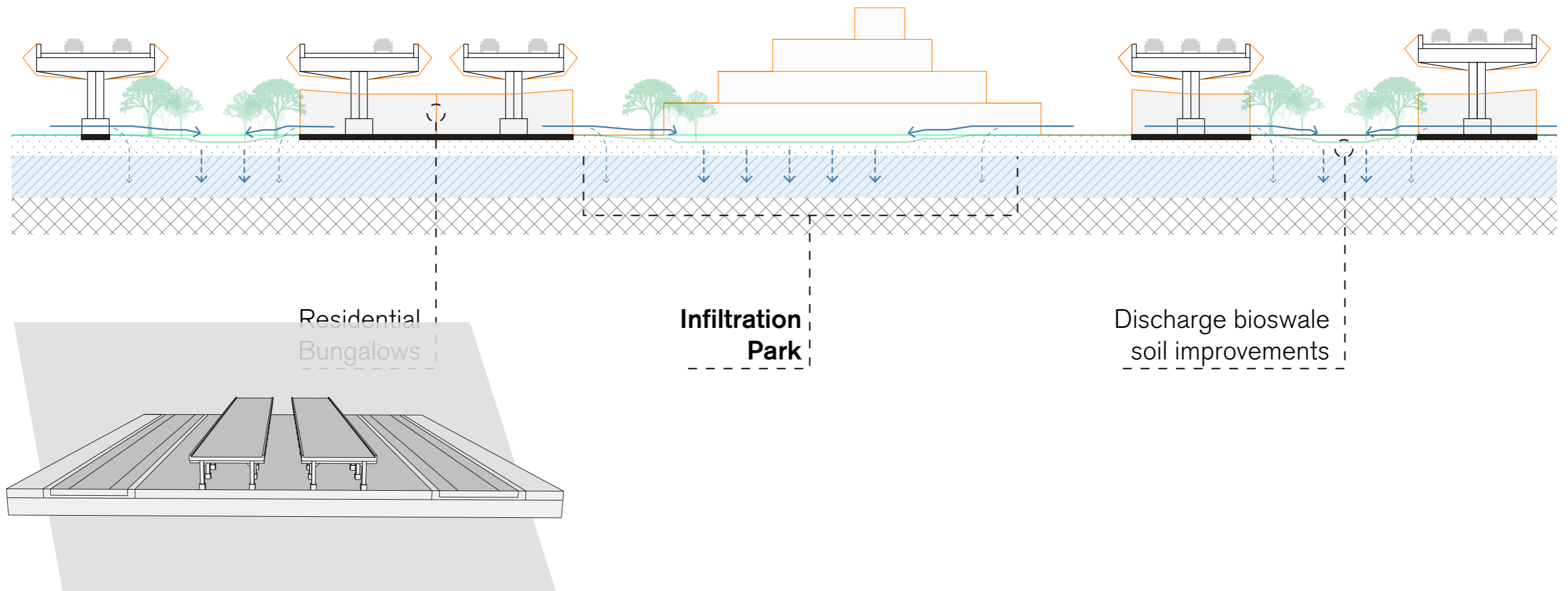
Discharge terrace  
discharge system



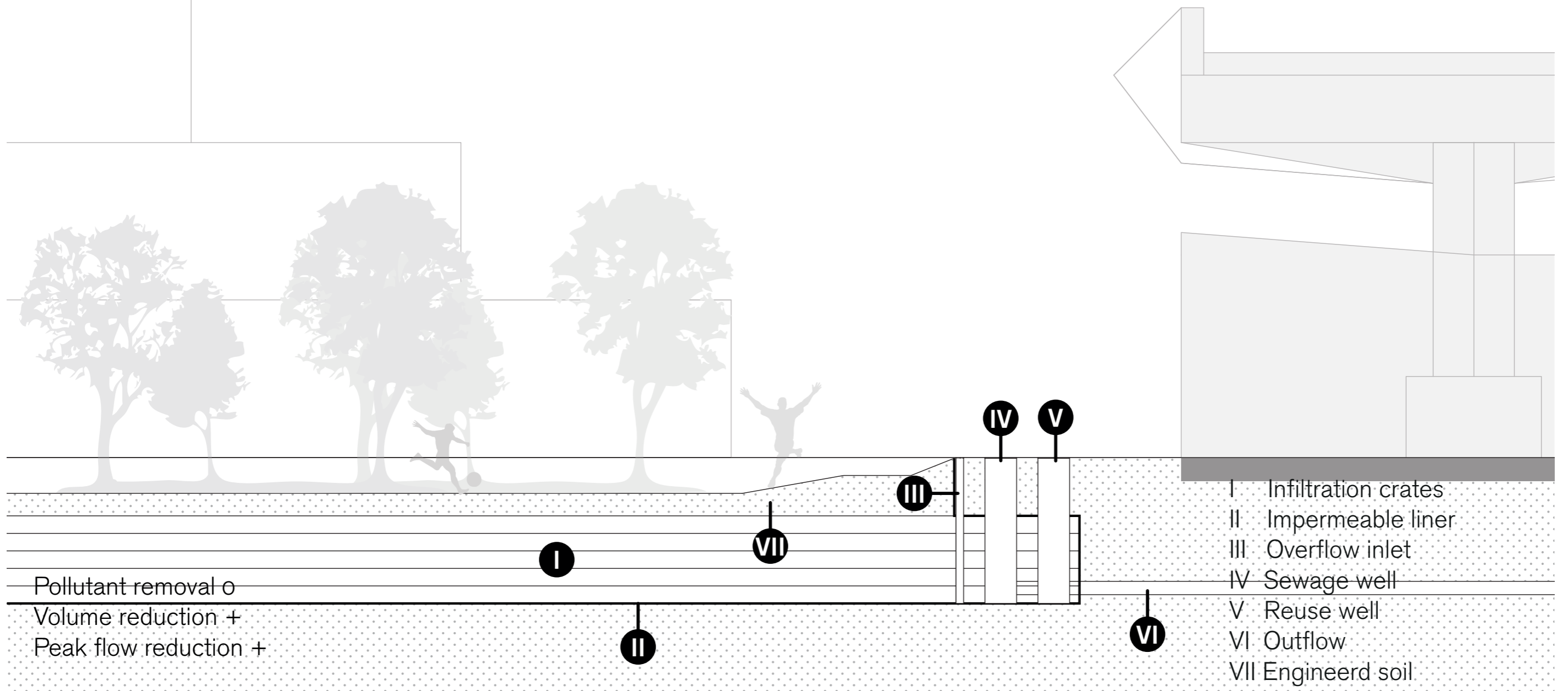
## BIORETENTION TERRACE



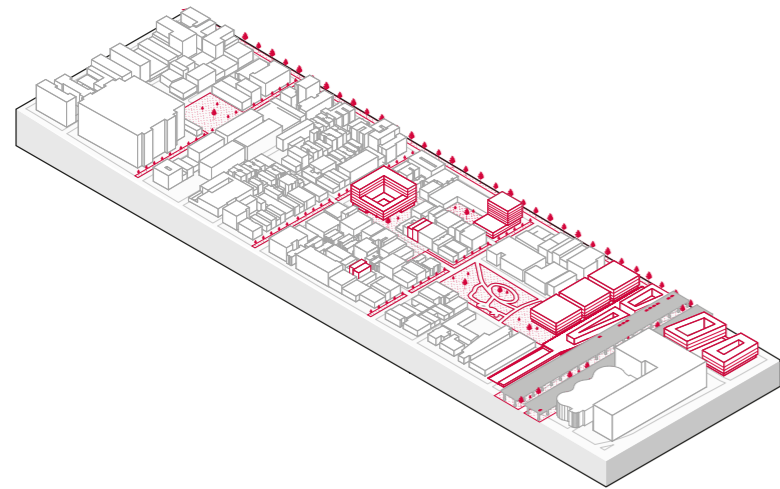
# DOWNHILL SOLUTION



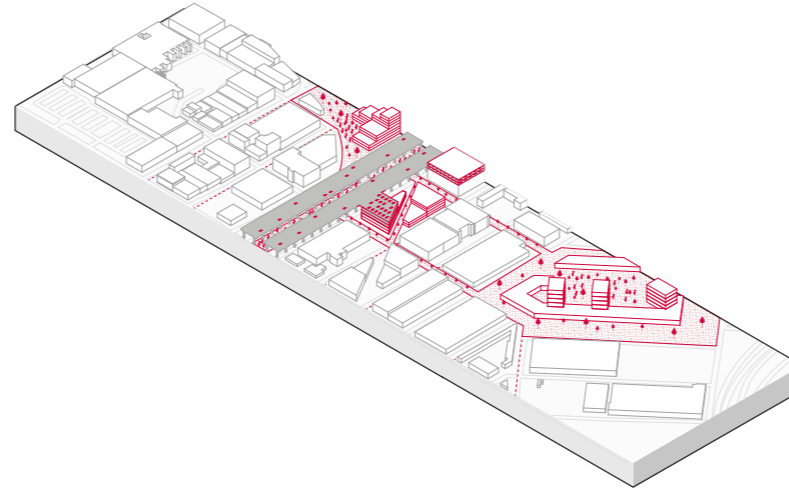
## INFILTRATION (CRATE) PARK



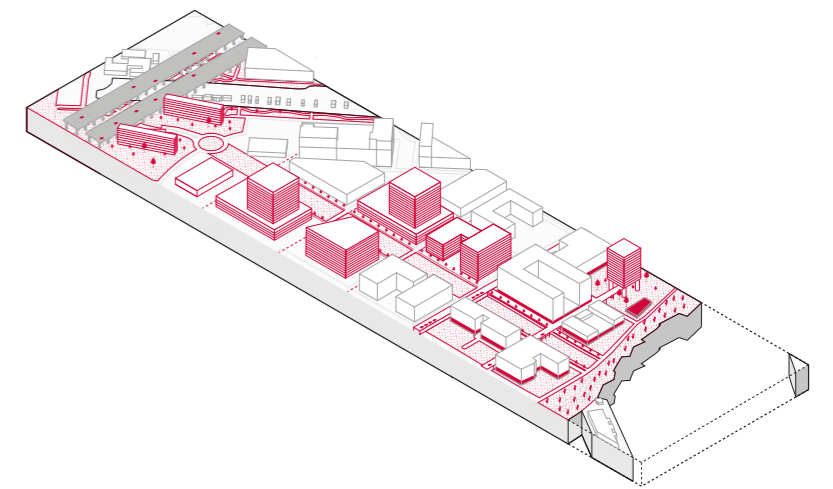
# Urban typologies



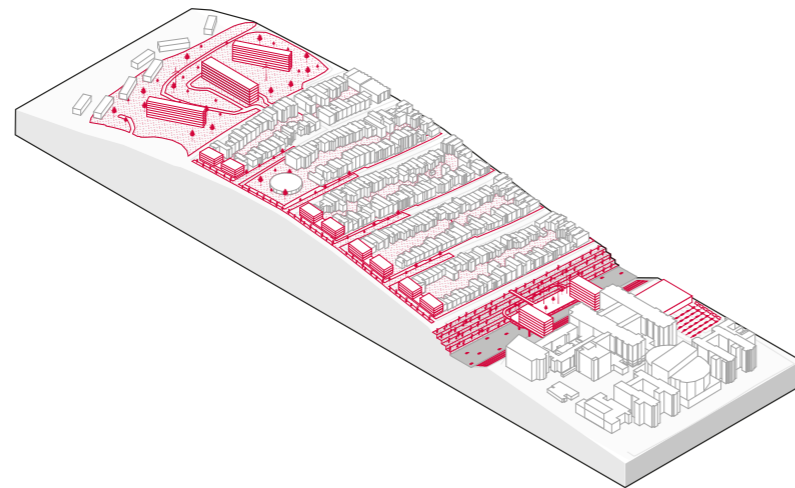
**DOWNTOWN TYPOLOGY**



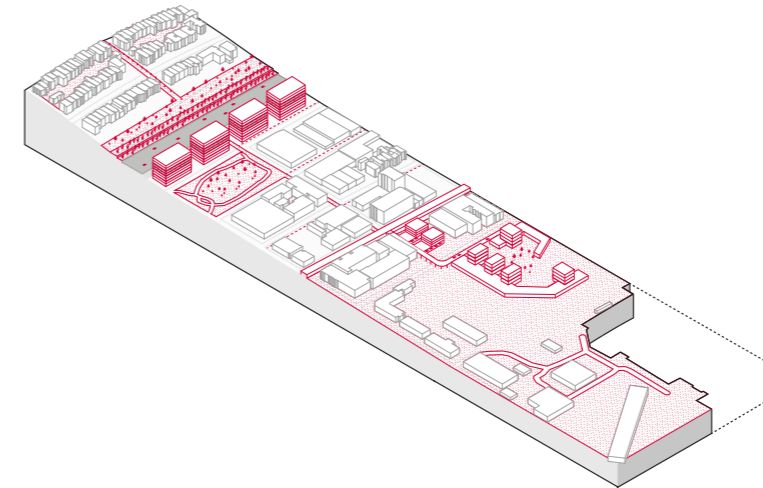
**COMMERCIAL TYPOLOGY**



**MIXED-USE TYPOLOGY**



**RESIDENTIAL TYPOLOGY**



**FORMER-INDUSTRIAL TYPOLOGY**

## New living environments



**THE GREEN COURT**



**ECO-VILLAGE**



**FLOOD-PROOF LIVING**



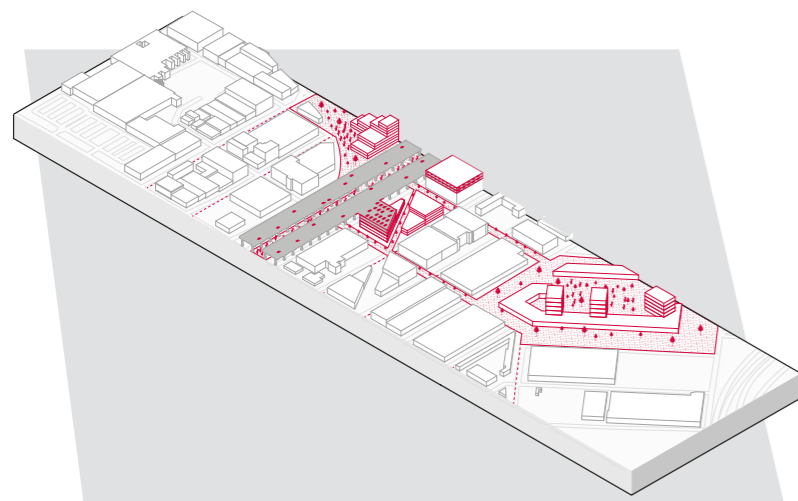
**THE NEIGHBORHOOD**



**MOBILITY HUB**



**ECO-VILLAGE**



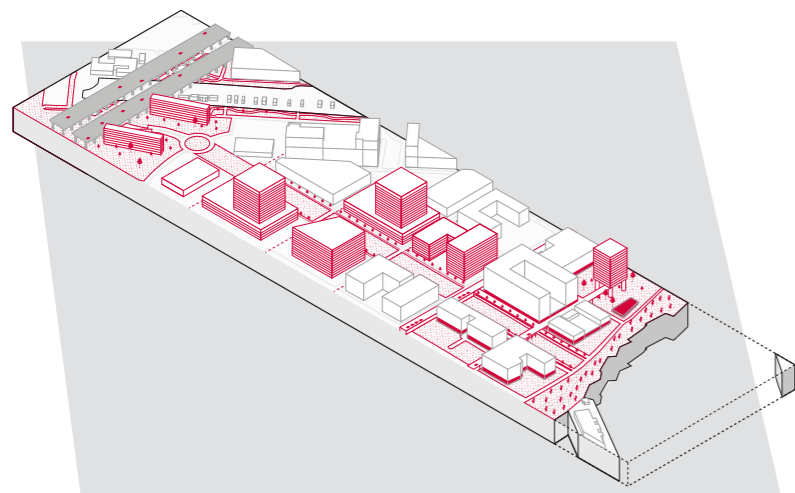
**COMMERCIAL TYPOLOGY**



**PRESENT SITUATION**



**FLOOD-PROOF LIVING**



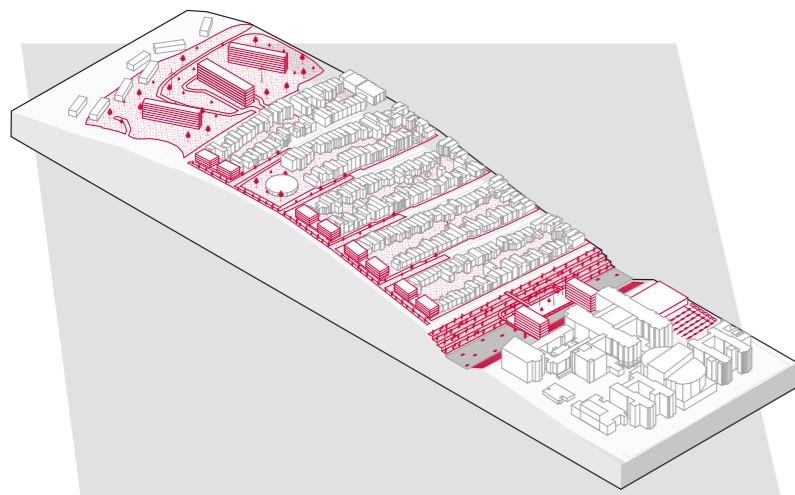
**MIXED-USE TYPOLOGY**



**PRESENT SITUATION**



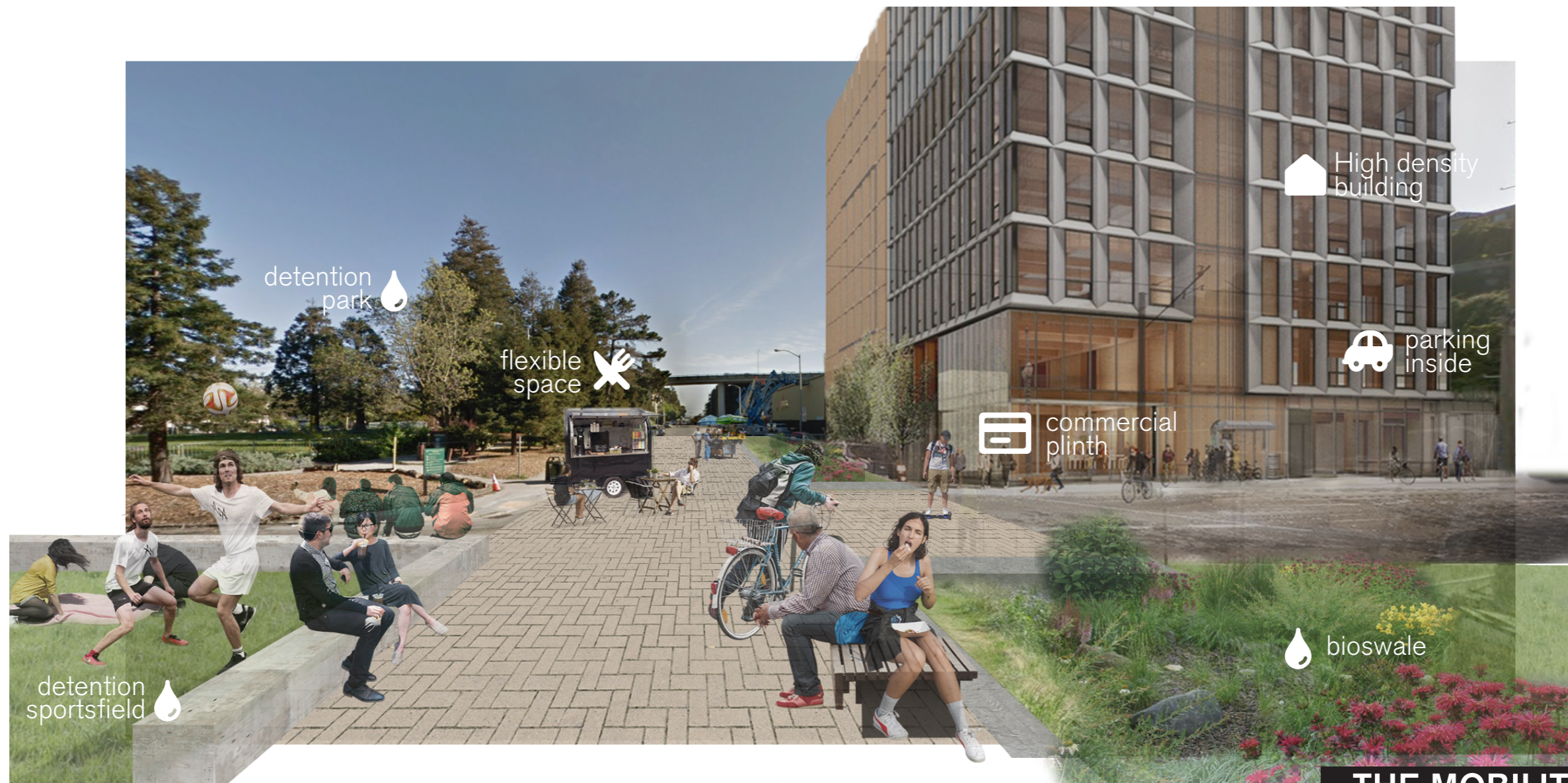
**THE NEIGHBORHOOD**



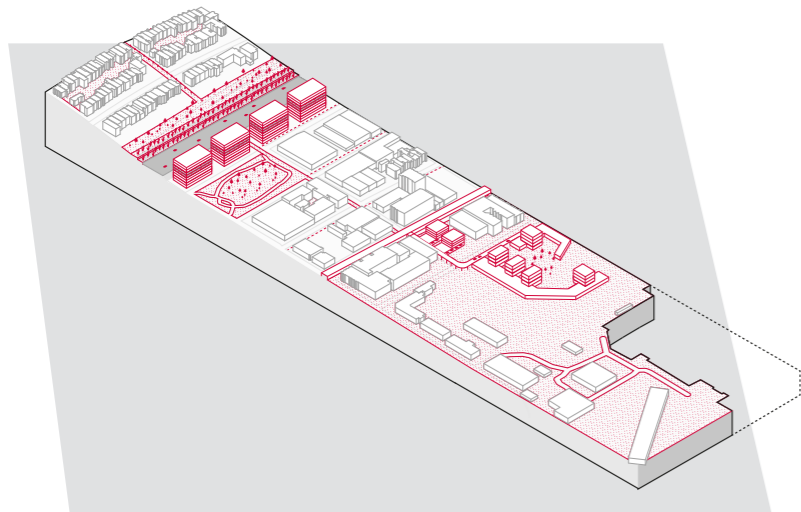
**RESIDENTIAL TYPOLOGY**



**PRESENT SITUATION**



**THE MOBILITY HUB**



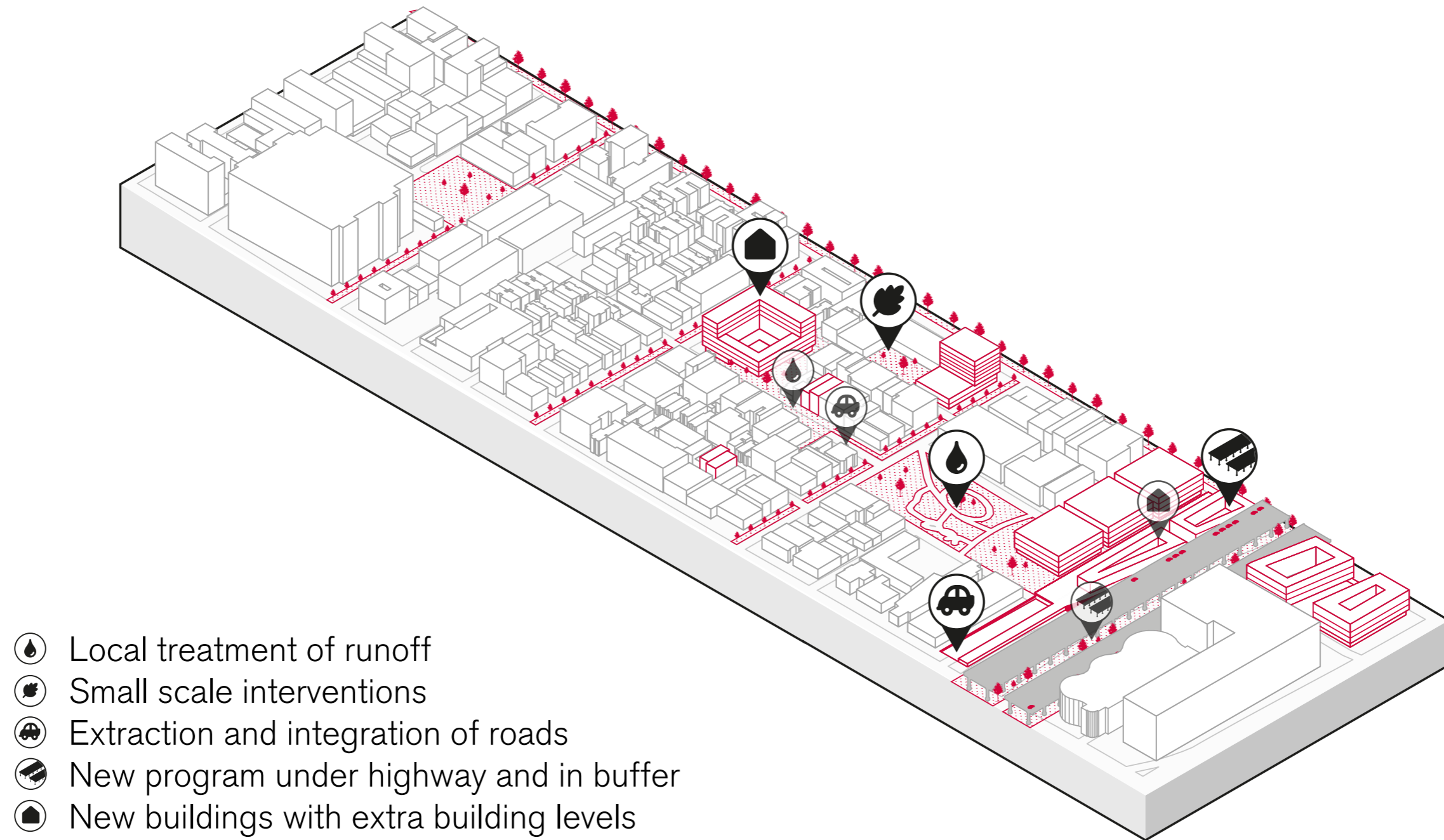
**FORMER-INDUSTRIAL TYPOLOGY**



**PRESENT SITUATION**

Slow- and fast-lane living environment

## DOWNTOWN TYPOLOGY



- Local treatment of runoff
- Small scale interventions
- Extraction and integration of roads
- New program under highway and in buffer
- New buildings with extra building levels



**SLOW LANE LIVING ENVIRONMENT**



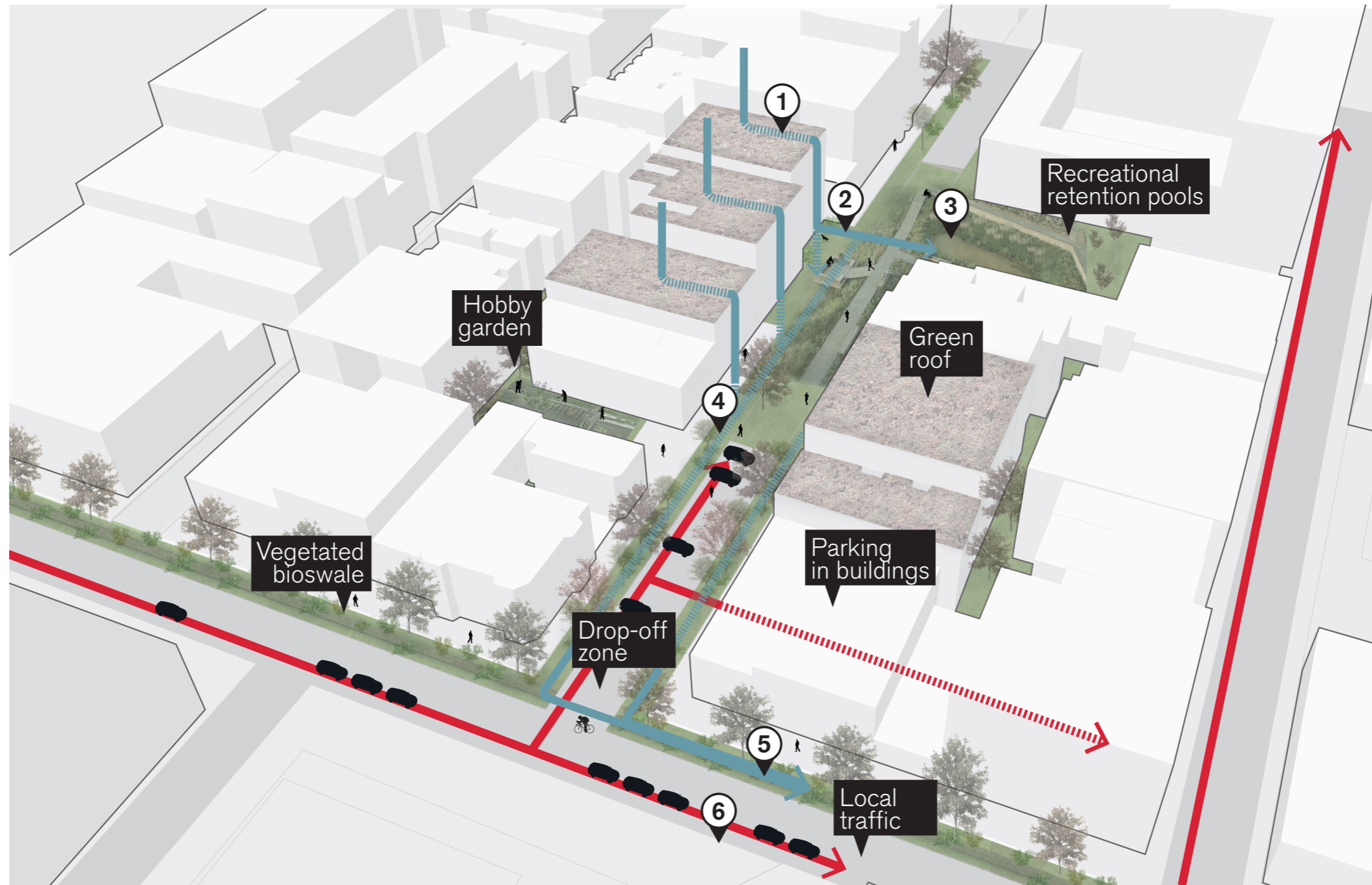
**PRESENT SITUATION**





**THE GREEN COURT WET PERIOD**

# FLOWS IN SLOW LANE



## FAST-LANE LIVING ENVIRONMENT



**PRESENT SITUATION**

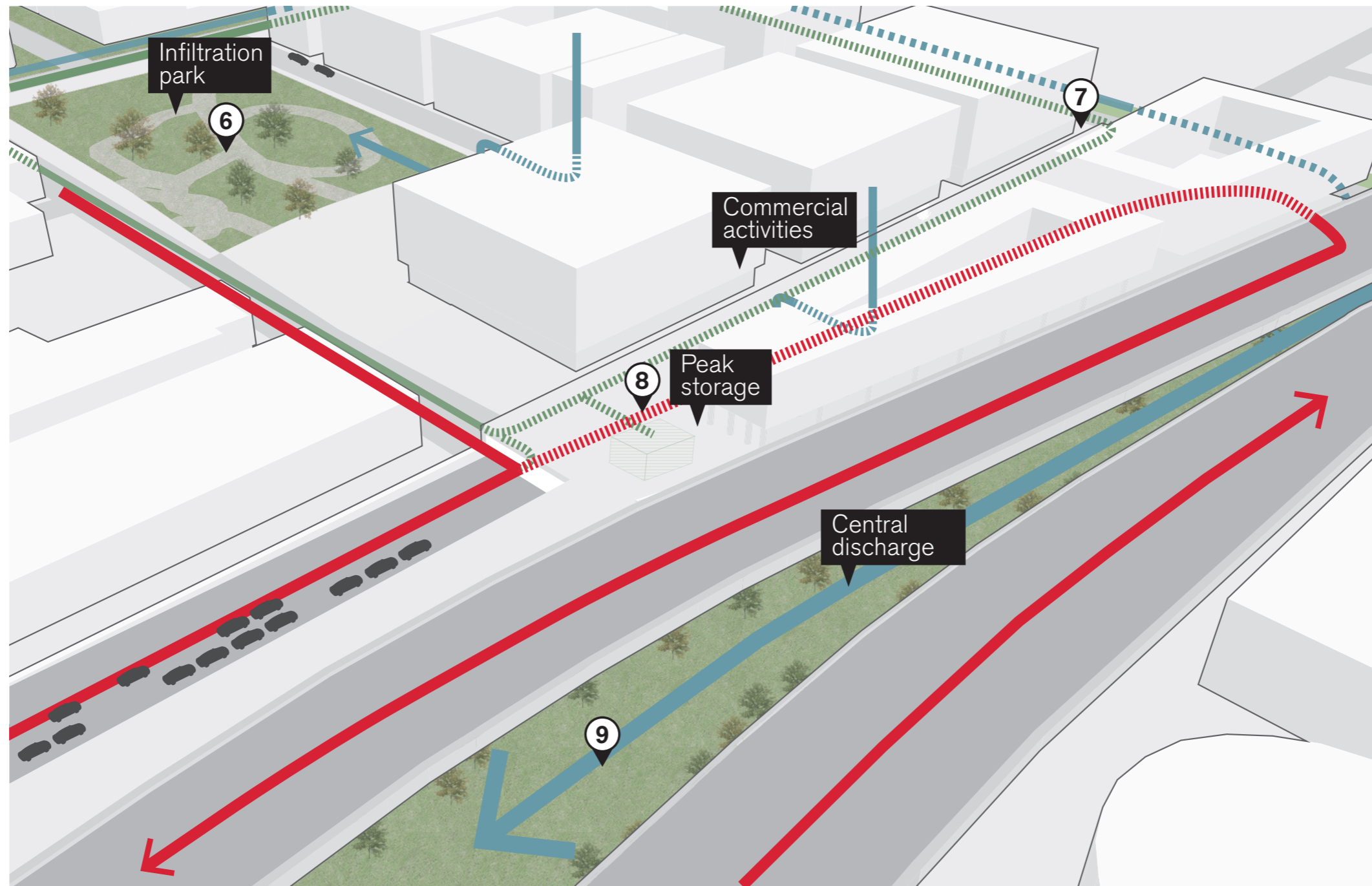


**THE BOULEVARD DRY PERIOD**



**THE BOULEVARD WET PERIOD**

# FAST LANE WATER FLOW



## **Part IV: Conclusion**

## **Sub research question 1**

What is the value of the original S2N in another context?

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What is the value of the original S2N in another context?

*As both a method and a strategy, the S2N is of significant value for the application in another context. As a strategy, the value of the S2N lies in the ecological framework of flows and actors that it offers to the project. As a method, the value of the S2N lies in the fact that it offers simplified design principles of complex systems.*

## **Sub research question 2**

How can the synergy of flows in the urban system be utilized in a methodological approach for urban renewal?

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How can the synergy of flows in the urban system be utilized in a methodological approach for urban renewal?

*The revalued guiding principles and models make it possible to generate and locate specific living environments in relation to the local carrying flows and actors; embedded in an ecological framework, which is shaped by Landscape Urbanism.*

### **Sub research question 3**

Can new modes of mobility offer spatial solutions to deal effectively with the environmental crisis?

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Can new modes of mobility offer spatial solutions to deal effectively with the environmental crisis?

*The alternative to the present highway system is an actual multifunctional infrastructure embedded in an ecological structured framework of slow and fast flows, enabled by the potentials of future modes of mobility on the one hand and critical consideration of the natural landscape on the other hand.*

## **Main research question**

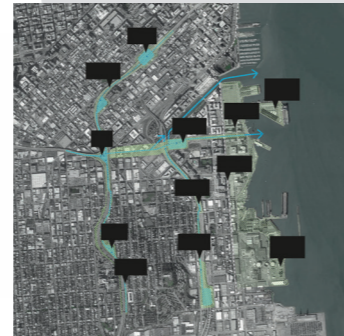
How can a revalued Strategy of the Two Networks **(1)** be utilized, in order to support urban renewal **(2)** in dealing with the environmental crisis and new modes of mobility **(3)**?

## DESIGN INSTRUMENTS



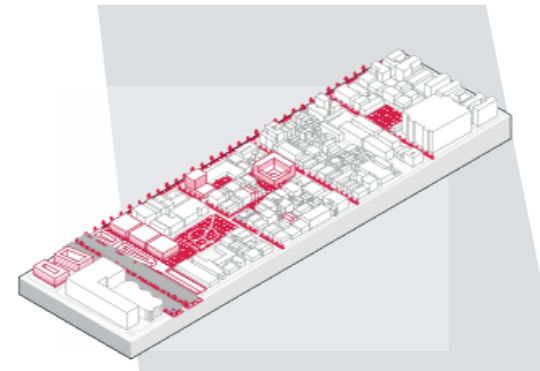
## RESTRAINTS FOR DESIGN

## SYSTEM



## MAIN SYSTEM

## URBAN TYPOLOGY



## GENERAL DESIGN SOLUTIONS

## LIVING ENVIRONMENT



## UNIQUE LIVING ENVIRONMENTS

- *As a strategy, it offers an ecological framework of flows and actors.*
- *As a method, it offers simplified design principles of complex systems throughout all plans.*
- *New modes of mobility enable better integrated design, because flows do not conflict as much any more.*
- *The alternative highway system is a multifunctional infrastructure embedded in an ecological structured framework of slow and fast flows.*
- *New living environments on the medium plan scale.*

Thank you!