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Task 6.6 Buddy System Activities -WEBINAR #7

Rainparks - Landscape for rainwater management

Andrea Balestrini – LAND Research Lab

March 24th, 2021

LAND
LANDSCAPE ARCHITECTURE NATURE DEVELOPMENT

LAND
RESEARCH LAB

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No. 730052 | **Topic: SCC-2-2016-2017: Smart Cities and Communities Nature based solutions**

Krupp Park, Essen (LAND)

Why do we work with nature?

Landscape projects can actively contribute to reach SDGs

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New challenges require new approaches

Viareggio (Toscany), July 2014 © Alessandro Santini

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NBS in the EU Adaptation Strategy

The frequency of climate and weather extremes is increasing. Besides, **economic losses** from extreme weather already average **over €12 billion per year in the EU**.

The need of new EU Adaptation Strategy

EU Climate Adaption has already given importance to **nature-based solutions**, however, there is a need to expand adaptation actions for climate change.

On Feb 24th, the European Commission published its new Adaption Strategy to tackle climate change, by reducing environmental disasters and increasing resilience of ecosystems.

https://ec.europa.eu/commission/presscorner/detail/en/qanda_21_664

The central role of NBS in EU Adaptation Strategy

In particular, the Article 2.2.4 is dedicated to the use of **Nature-based Solutions as a large-scale tool for a new Green Deal**.

NBS are particularly recommended

- to improve agriculture
- habitat conservation,
- **the conscious use of water**

for these issues the EU will provide a new fund, InvestEU, to finance the best NBS.

→ At least 20 billion euros will be invested every year.

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Green – Blue Infrastructures

Parks need interventions for both their adaptation to climate change and their new opportunities.

The green-blue infrastructures contribute

- Increasing the green capital of the city
- Improving urban drainage and rainwater management
- Increasing the quality of life and wellbeing
- reducing the risk of natural disasters

It has been proven[1] that

- Runoff reduction through bioswales can reach 50% and
- The removal of suspended solids can reach by 30-80%
- With the use of infiltration basins, the reduction of metals can reach by 80-100%.

1-SUDS in Scotland- The Monitoring Programme of the Scottish Universities SUDS Monitoring Group; Sniffer, 2004

Learning from

Cloudburst Management Plan

2012, Copenhagen - Denmark

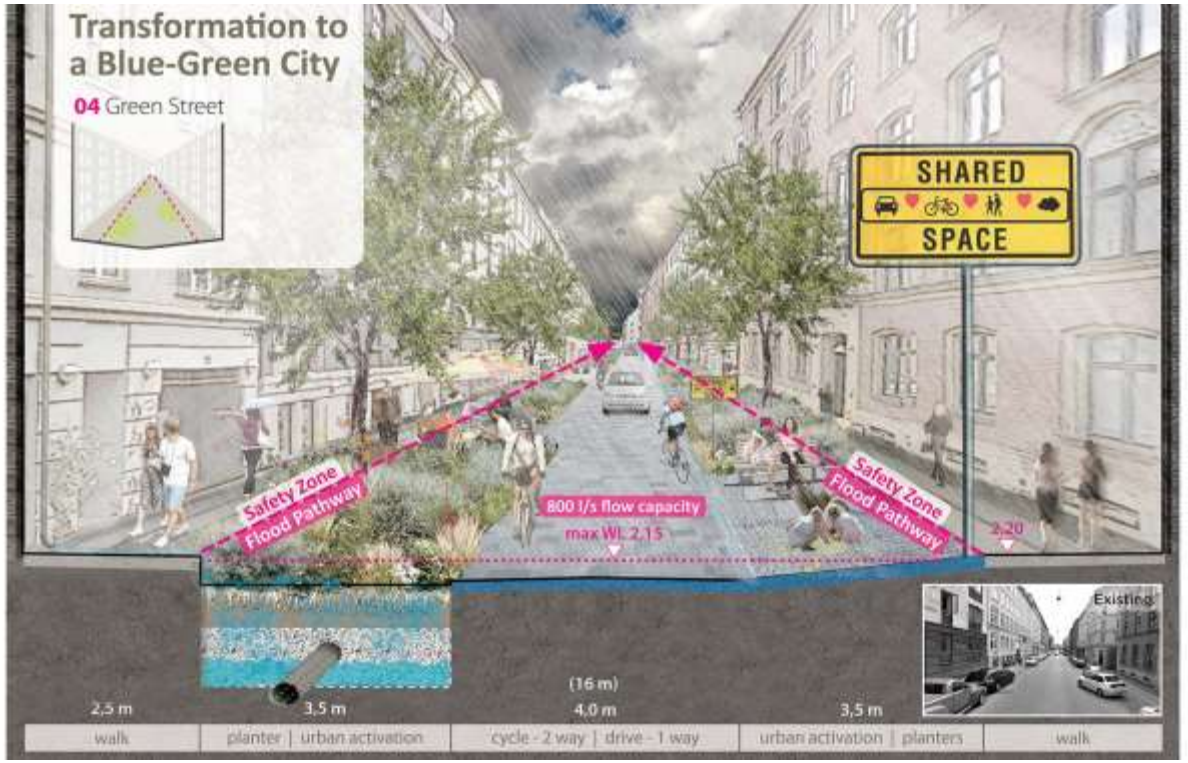
Prevent damages, boost interventions

The City of Copenhagen developed
"**Cloudburst Management Plan**" in 2012,
that highlighting priorities and recommended measures for climate adaptation.

Two types of interventions have been applied;
Retention basins for storing very large volumes of water.
Green roads of retention and infiltration to filter, drain and direct rainwater.

Total investment is 1.5 billion €

Copenhagen has experienced four cloudburst events in the years between 2008-2014. The largest, in 2011, caused damage costs **more than 800 mill. €.** [1]



1-The City of Copenhagen, Cloudburst Management Pays Off, 2014

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Learning from

Climate Adaptation Kokkedal

2017, Kokkedal - Denmark

Typology	Climate Adaption, water sensitive design
Client	Fredensborg Municipality, Realdania, Lokale & Anlægsfonden AB Hørsholm Kokkedal
Team	Schønherr, Rambøll (engineer)
Size	69 ha
Cost	€ 16 MM

Concept

'The way of water is the way of citizens', 35 sub-projects

Main Focus

- create a catalog of solutions for the climate protection and the water management
- connect fragmented urban places by creating new and attractive meeting places

Key Benefits

- creating link between nature and school's teaching activities
- finding climate solutions by linking with social activities
- improving of the quality of life preventing possible serious damages in major rain events

https://schonherr.dk/projekter/kokkedal-den-blaagroenne-haveby/

Learning from

Climate Adaptation Kokkedal

2017, Kokkedal - Denmark

8. august kl. 09:00, 2019

8. august kl. 18:31, 2019

9. august kl. 08:20, 2019

https://schonherr.dk/projekter/kokkedal-den-blaagroenne-haveby/

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Learning from

Martin Luther King Park

2014, Paris , France

Typology	Urban park, water sensitive design, Climate Adaption
Client	City of Paris, DEVE of Paris
Team	Jacqueline Osty (landscape architect), Jérôme Saint-Chély (I.phase), Daniela Correia & Fanny Sire (II.phase)
Size	10 ha. Park (4.3 hectares I. Phase - 5.7 hectares II. Phase), 45 ha Total
Cost	€ 45,7 mill. (€ 14.9 mill. I. Phase - €30.8 mill. II. Phase)

Concept

'four seasons', sensibility for seasonal changes

Main Focus

- design an urban park for connecting existing neighborhoods with green areas
- provide a sustainable water and energy management

Key Benefits

- reducing the cost of maintenance
- Improving the biodiversity

https://landezine.com/index.php/2015/02/martin-luther-king-park-by-atelier-jacqueline-osty-associes/

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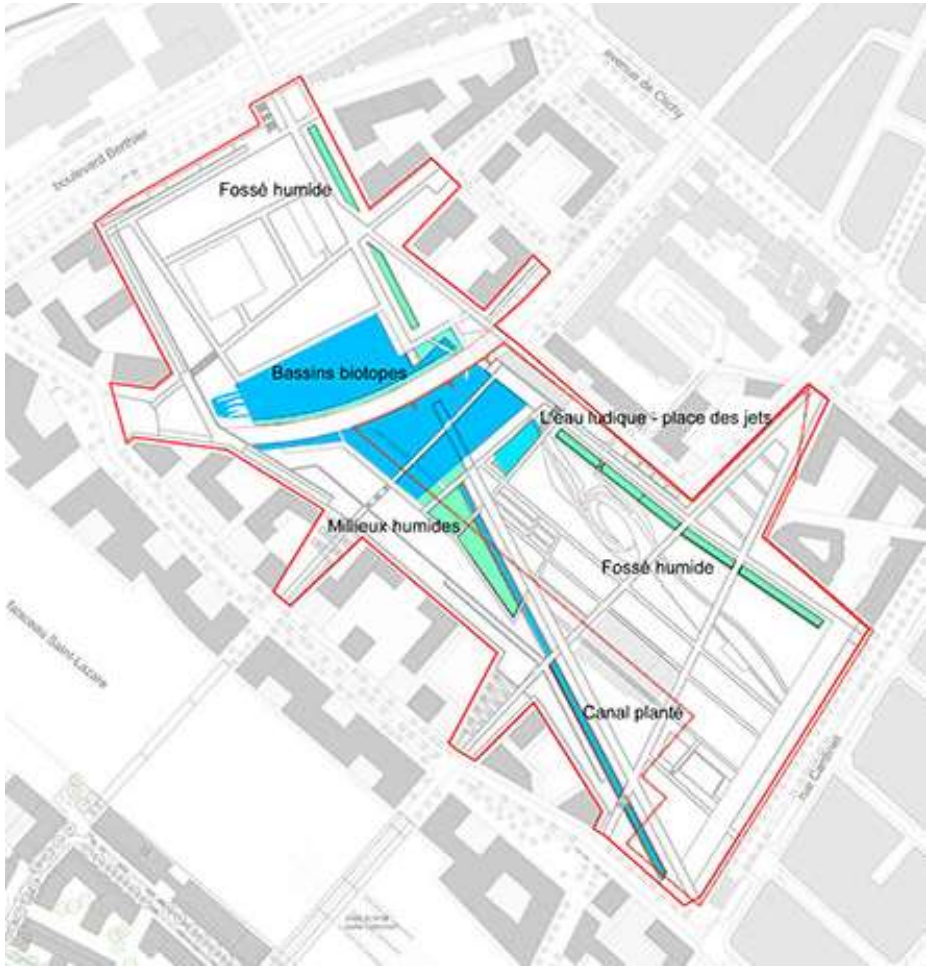
Learning from

Martin Luther King Park

2014, Paris , France



https://landezine.com/index.php/2015/02/martin-luther-king-park-by-atelier-jacqueline-osty-associes/

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Learning from

Park Killesberg

2013, Stuttgart , Germany

Typology	Urban Park, water sensitive design
Client	State Capital City Stuttgart
Team	Rainer Schmidt GmbH, Pfrommer+Roeder (associate)
Size	10 ha
Cost	€ 7.5 mill.

Concept

'new green topography', former industrial site

Main Focus

- provide sustainable rainwater management system
- extend the green space in the neighborhood
- integrate the ecology for bringing economic benefits into the area

Key Benefits

- creating new opportunities
- improving the flora & fauna

http://landezine.com/index.php/2015/11/park-killesberg-development-towards-an-urban-environment/

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Learning from

Park Killesberg

2013, Stuttgart , Germany

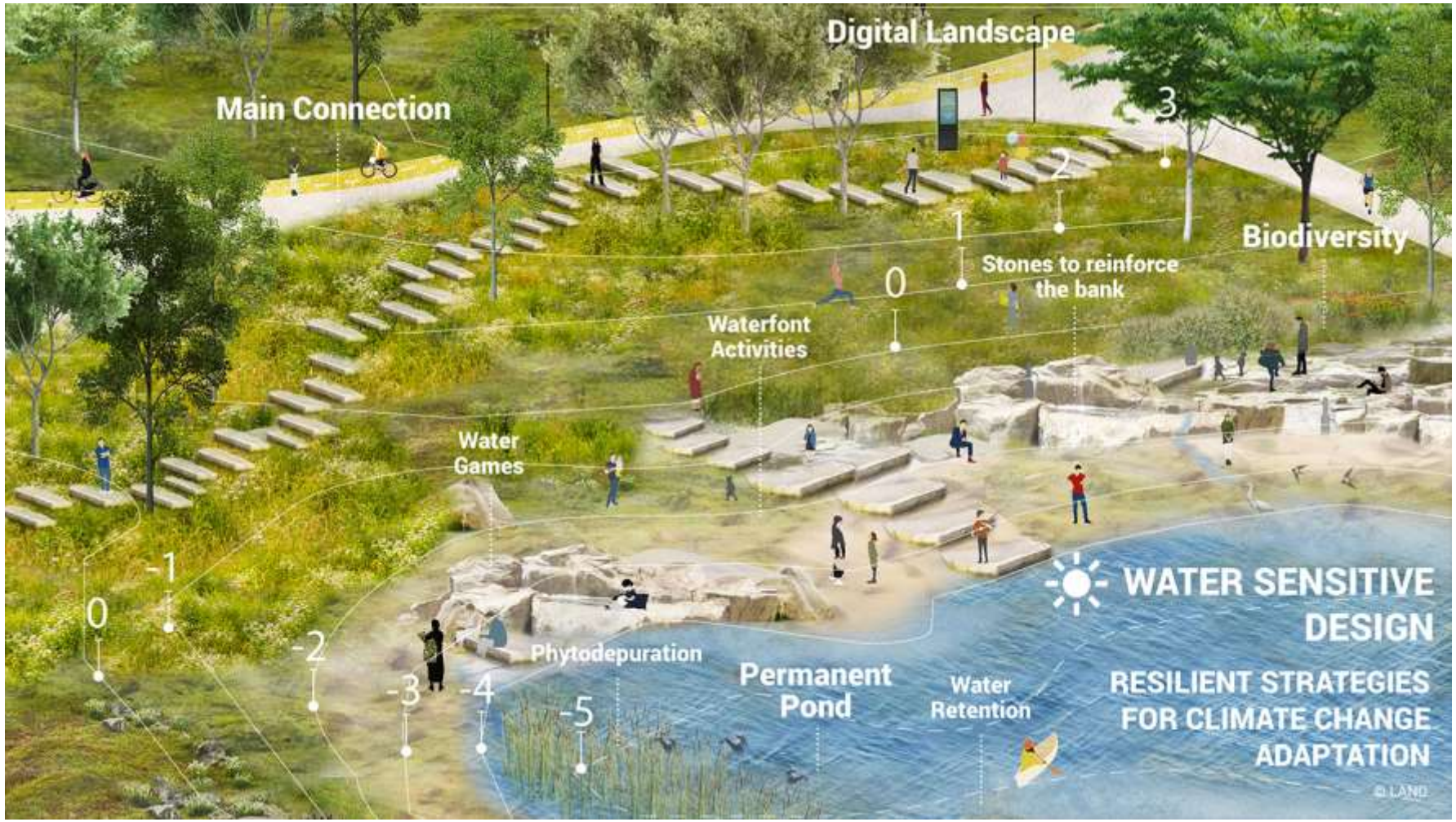
http://landezine.com/index.php/2015/11/park-killesberg-development-towards-an-urban-environment/

Adaptive Design: our approach on Water Sensitive Design

LAND Research Lab developed a strategy to tackle landscape challenges

Adaptive Design:

1. Streetscape
2. **Water Sensitive Design**
3. Urban Forestation
4. Slow Mobility
5. Digital Landscape



→ https://www.landsrl.com/adaptivedesign

Case study 1

Parco dell'acqua di Arcore

2019 -ongoing, Arcore (Monza Brianza Province) ,IT

Typology	River renaturation, Urban Park, Water Resilience, Climate Change Adaptation
Client	BrianzAcque
Team	LAND Italia, ETATEC
Size	1 ha
Cost	€ 780.000,00

Concept

Water park

Main Focus

- create a new identity by proposing new functions
- implement water management interventions for flooding

Key Benefits

- provides multifunctional uses such as play-educational and aggregation to integrate the Arcore community

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Open space network

Location

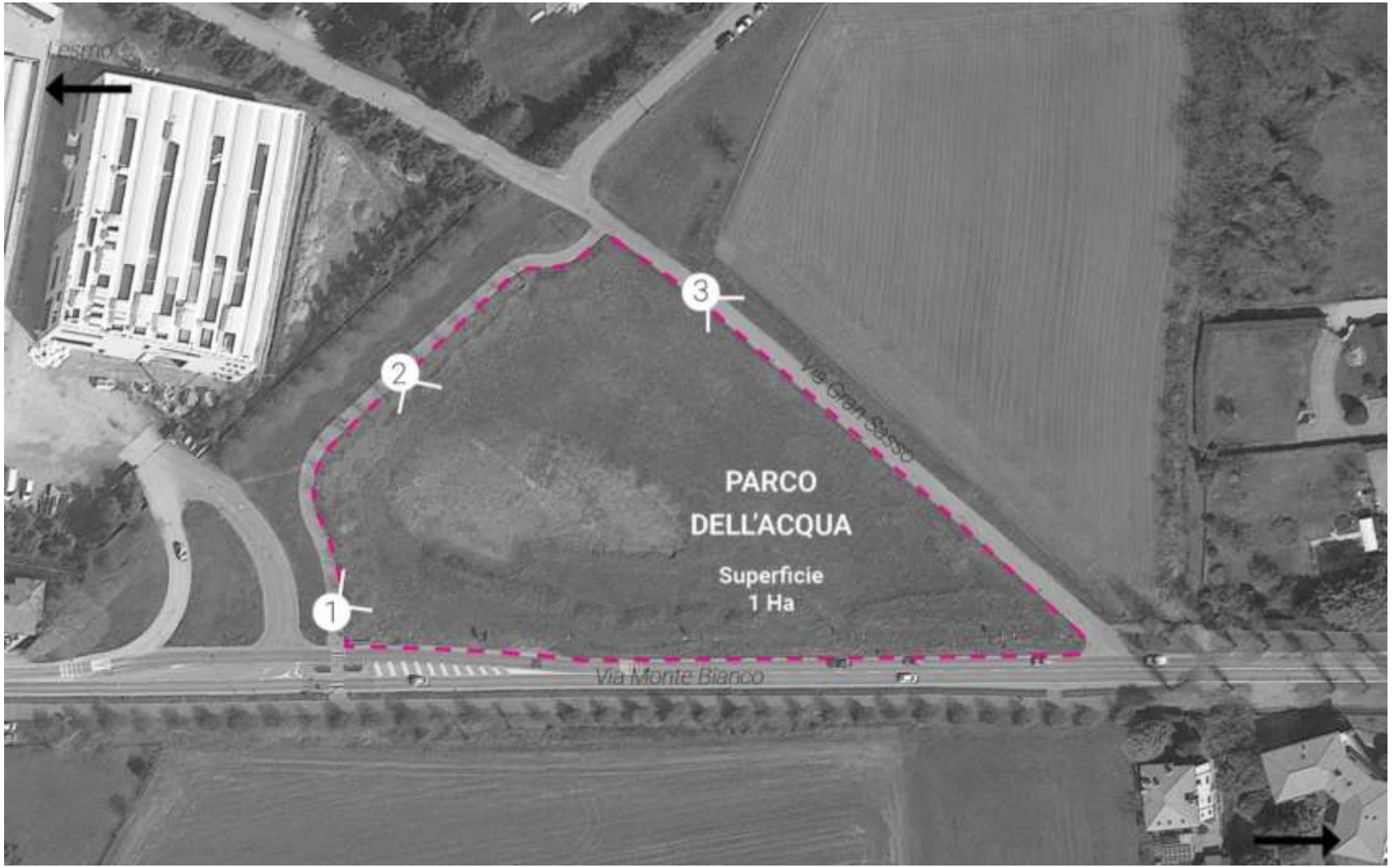
Forest Areas

Agricultural Areas

Urban Areas

Connections

Site overview



Site - 2020

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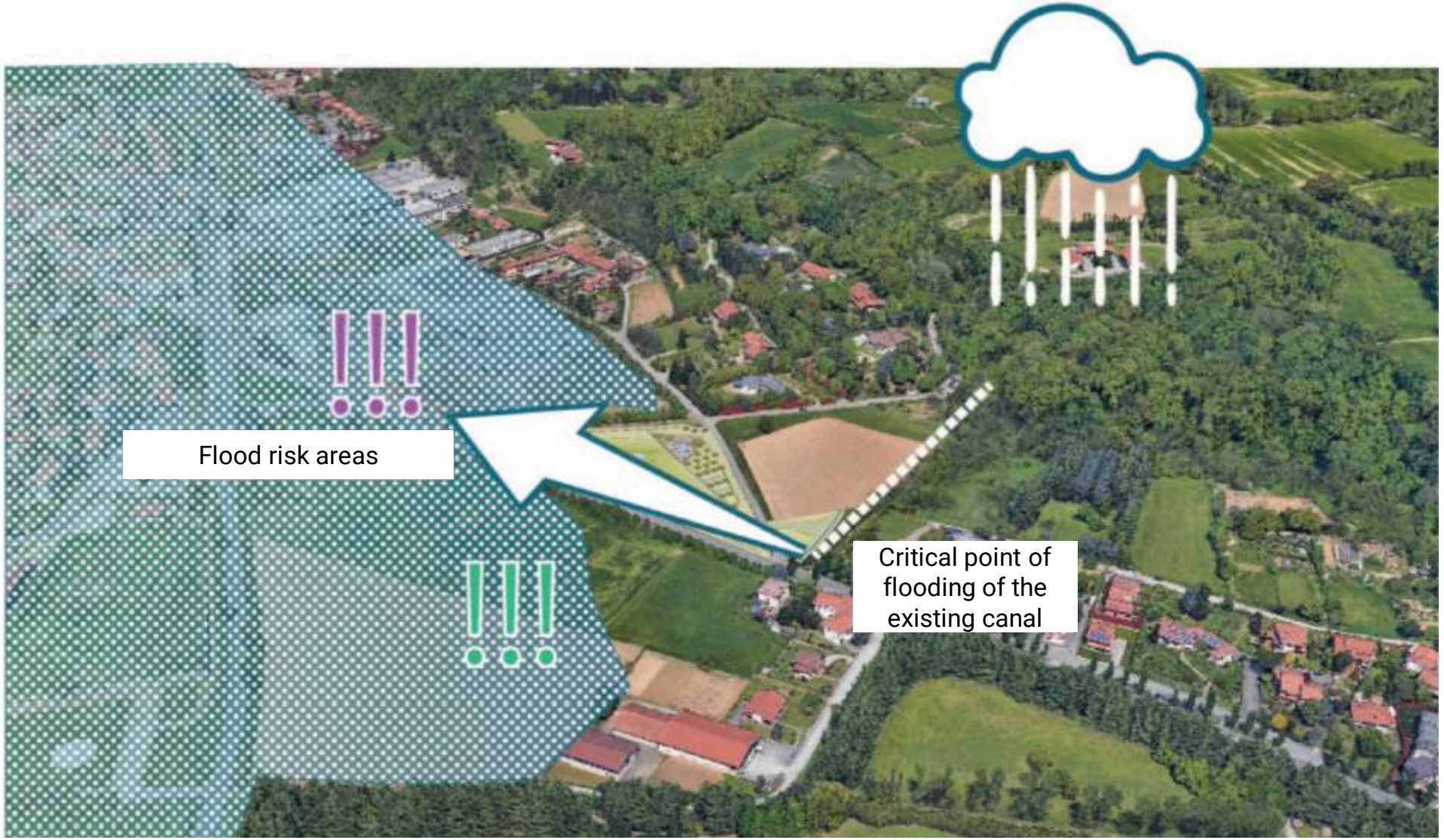
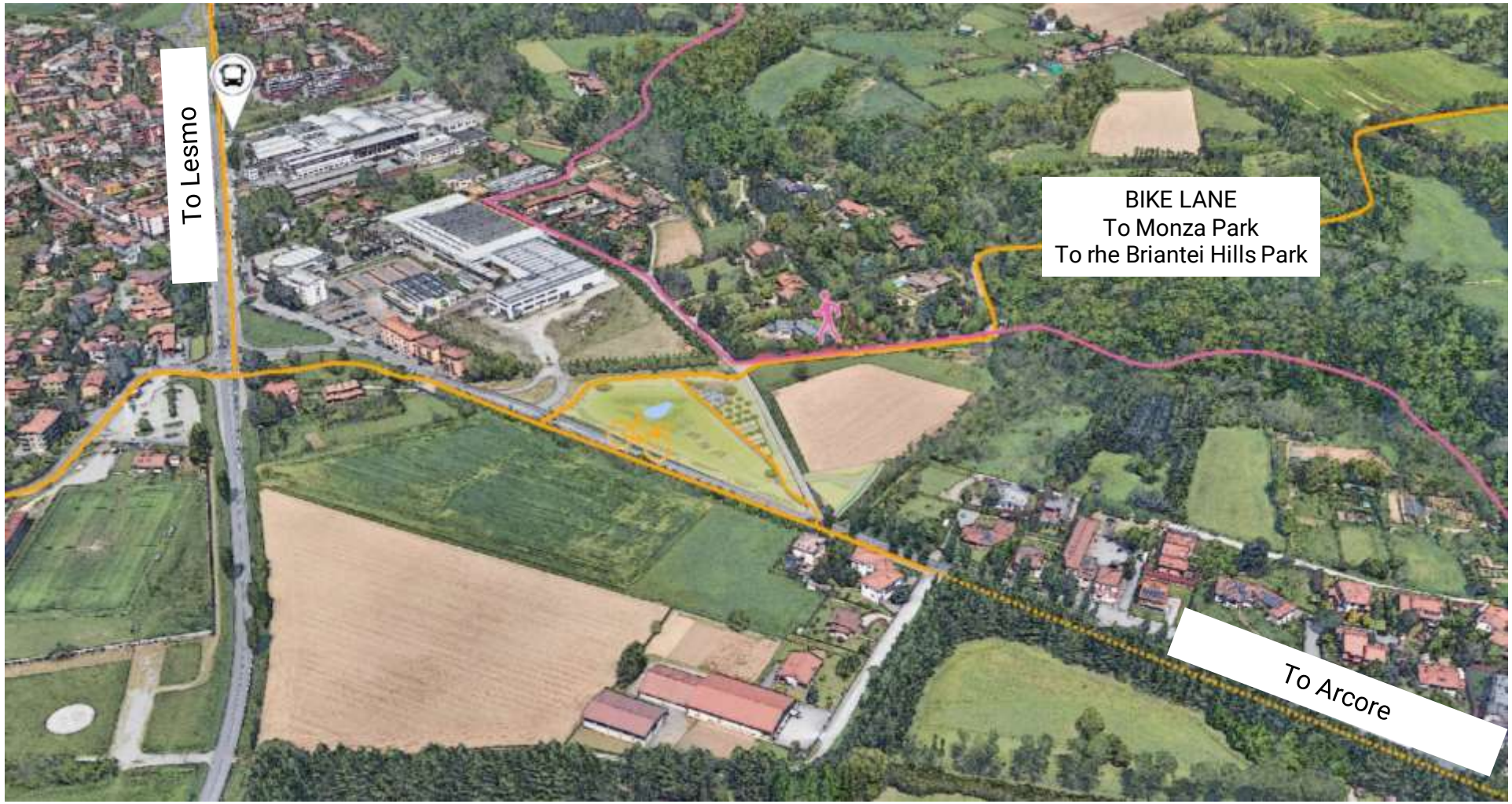
Rainwater management: challenges



Ecological Corridor

Connections



Water – Nature - Community

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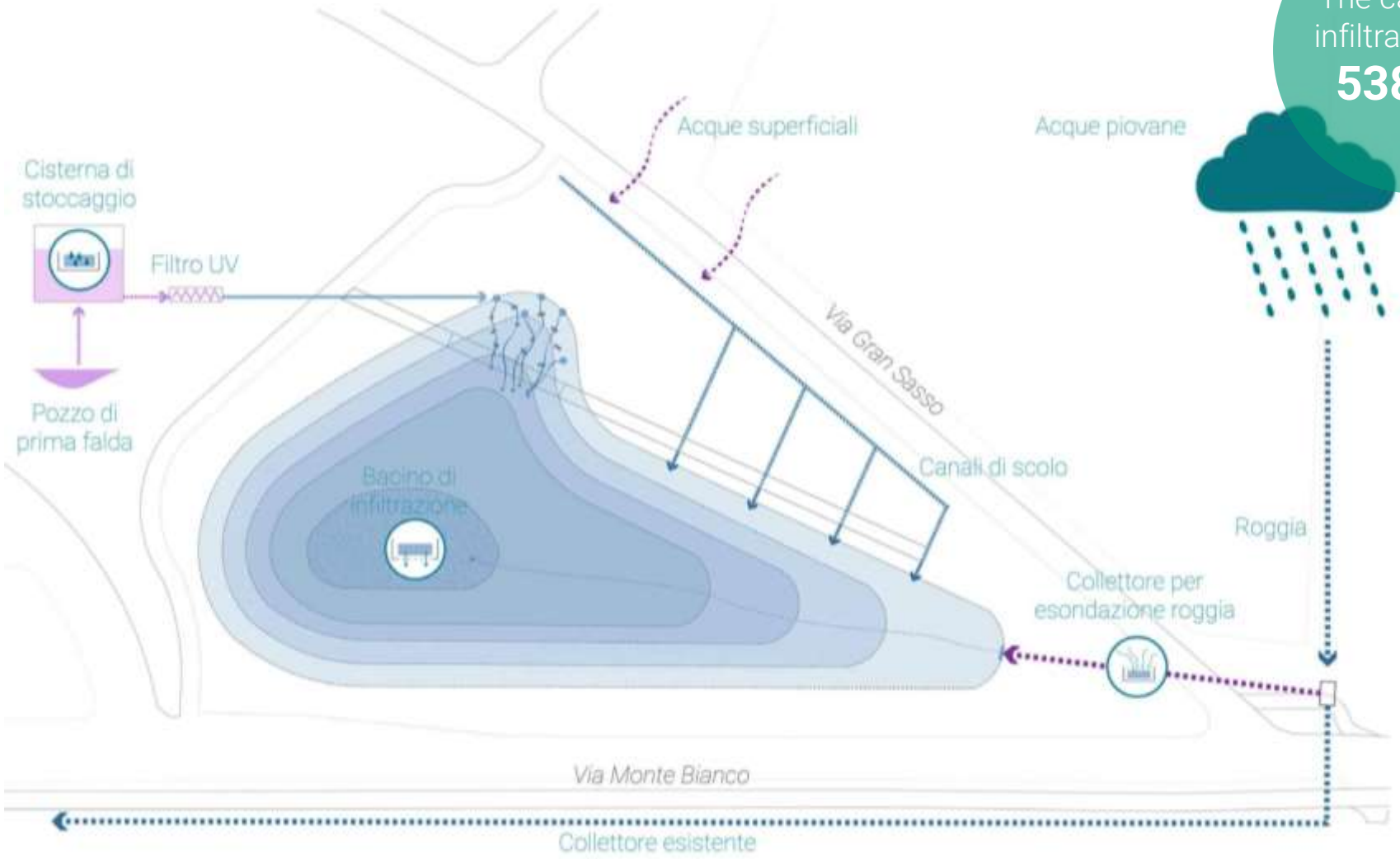
The Water system

The capacity of infiltration basin
5383 m³



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Project Scenarios

under normal conditions

in case of exceptional events

Construction Site - 2021

Construction Site - 2021

Sustainability in numbers

+ RESILIENCE

5.400 m³ capacity of infiltration basin

4.700 m³ soil replaced

27 new Trees

1.400 Shrubs

250 m² community vegetable gardens

350 m² permeable paving

+ RECREATION

170m Cycling and Pedestrian Routes

1 Playground

6 Water games

1 Picnic Area

1 Viewpoint

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Case study 2

Parco dell'acqua di Paderno Dugnano

2020 – ongoing, Paderno Dugnano (Milan Metropolitan City), IT

Typology	Water Park, Urban Park, Water Sensitive Design
Client	CAP Holding SpA
Team	LAND Italia
Size	14 ha
Cost	€ 4.5 mill. (S.I.I. CAP), € 2.7 mill. (Regione L.)

Concept

a water park along the Seveso River

Main Focus

- Water themed design in the center
- Functions for the community

Key Benefits

- the redevelopment of the banks of the river
- the recovery of open spaces by creating a network of parks

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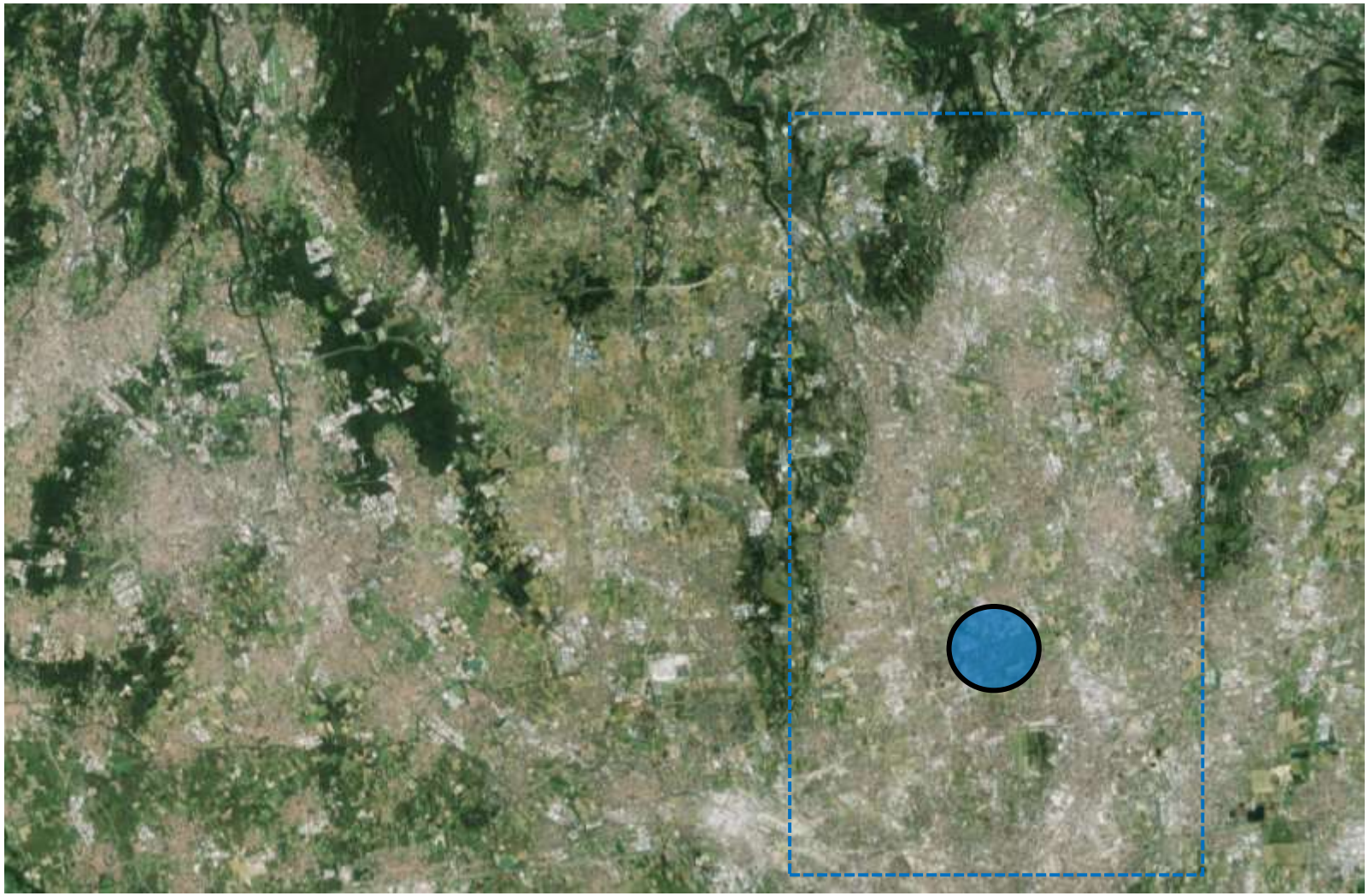
Territory - Seveso River basin

A territory among the most urbanized in Europe

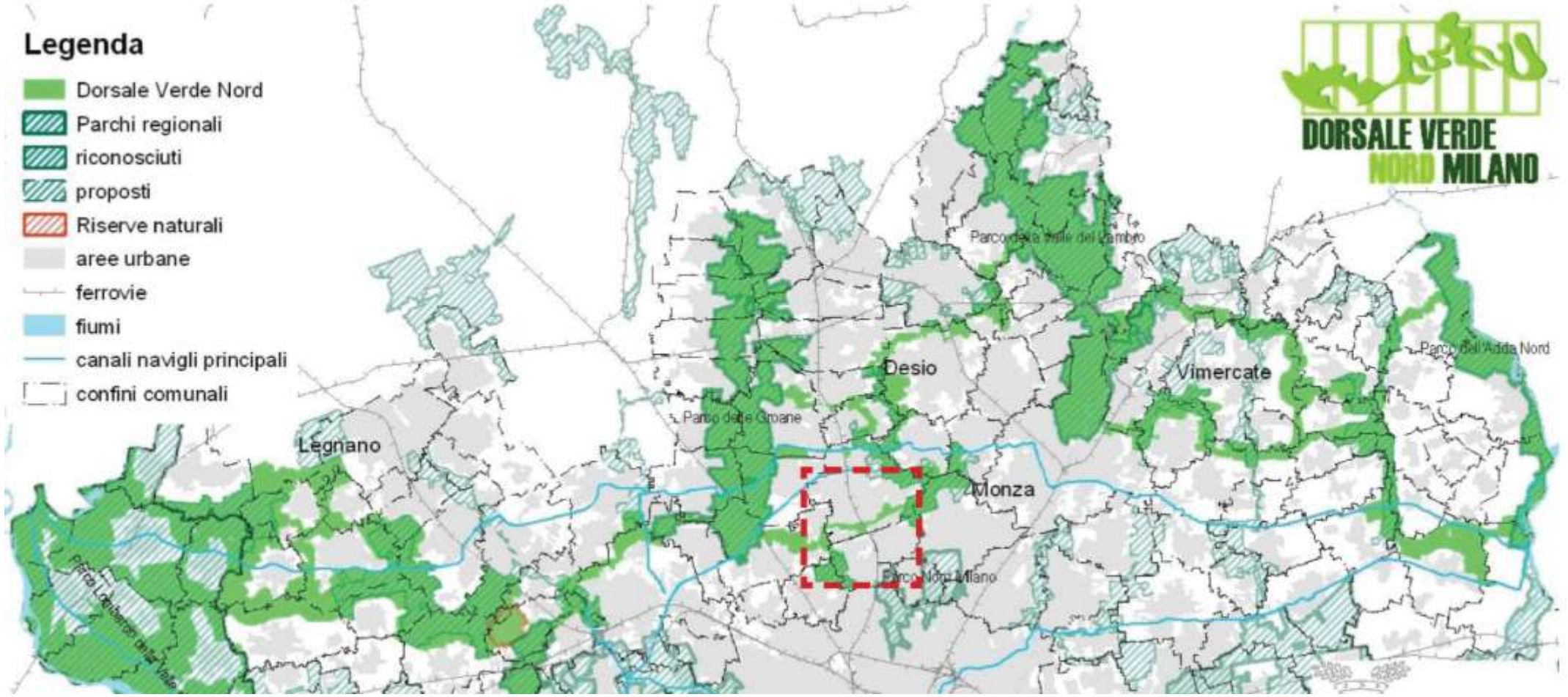
In terms of land consumption, Monza, Brianza and Milano Provinces are at the 1st and 3rd place in Italy.
(ISPRA)

Municipalities with higher population density in Lombardia:
1st Bresso
5th Cusano Milanino
21st Bovisio Masciago
24th PADERNO DUGNANO
25th Cesano Maderno

(www.tuttaitalia.it)



Scope of Intervention: reconnecting the Ecological Network



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Provincia di Milano

Territorial framework

Site - overview

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Site - 2020






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Masterplan

0-Existing embankment with arboreous row

1-Main entrances

2-Cycling route and pedestrian path

3-Viewpoint

4-Multifunctional spaces

5-Service area of the phytodepuration plant

6-Phytodepuration tanks (22*45cm)

7-Retention basin (6.000 mq)

8-Infiltration basins (12,000 sq m total)

9-Lawn areas

10-Arboreal and shrub embankments

11-Flowery lawn area with shrub vegetation

Financing:

4,5 M € S.I.I. (CAP)

2,7 M € Regione L.

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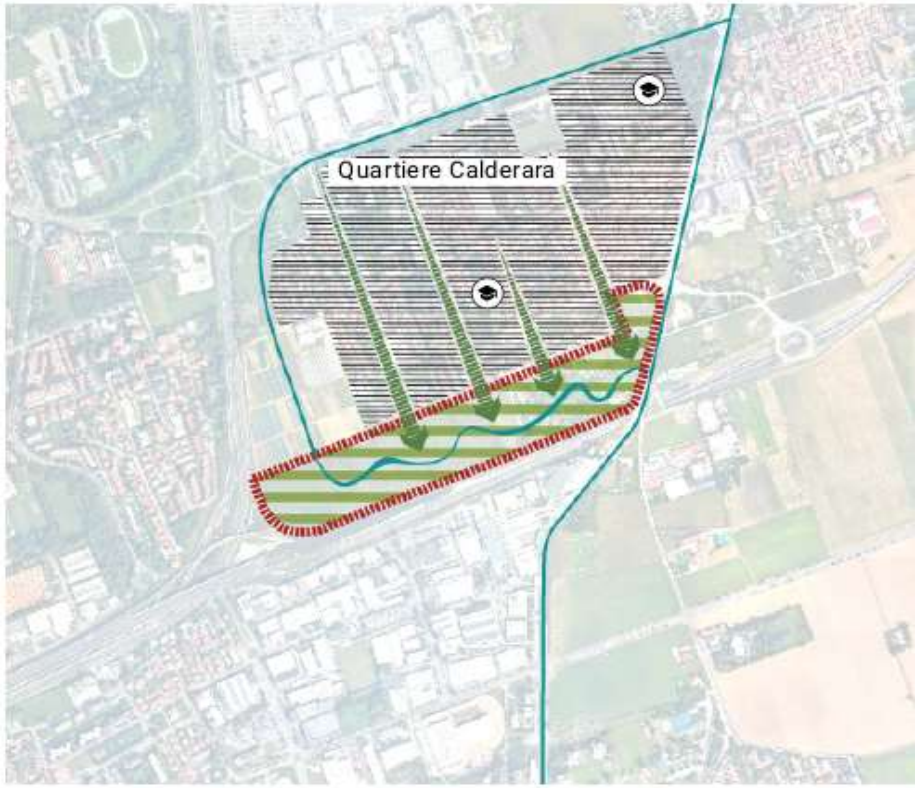
Potential

Local Scale

Calderara Neighborhood
residential areas, schools and public services



Territorial Scale

Being a potential connection between
Grugnotorto-Villoresi and Nord Milano Park

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Project Scenarios

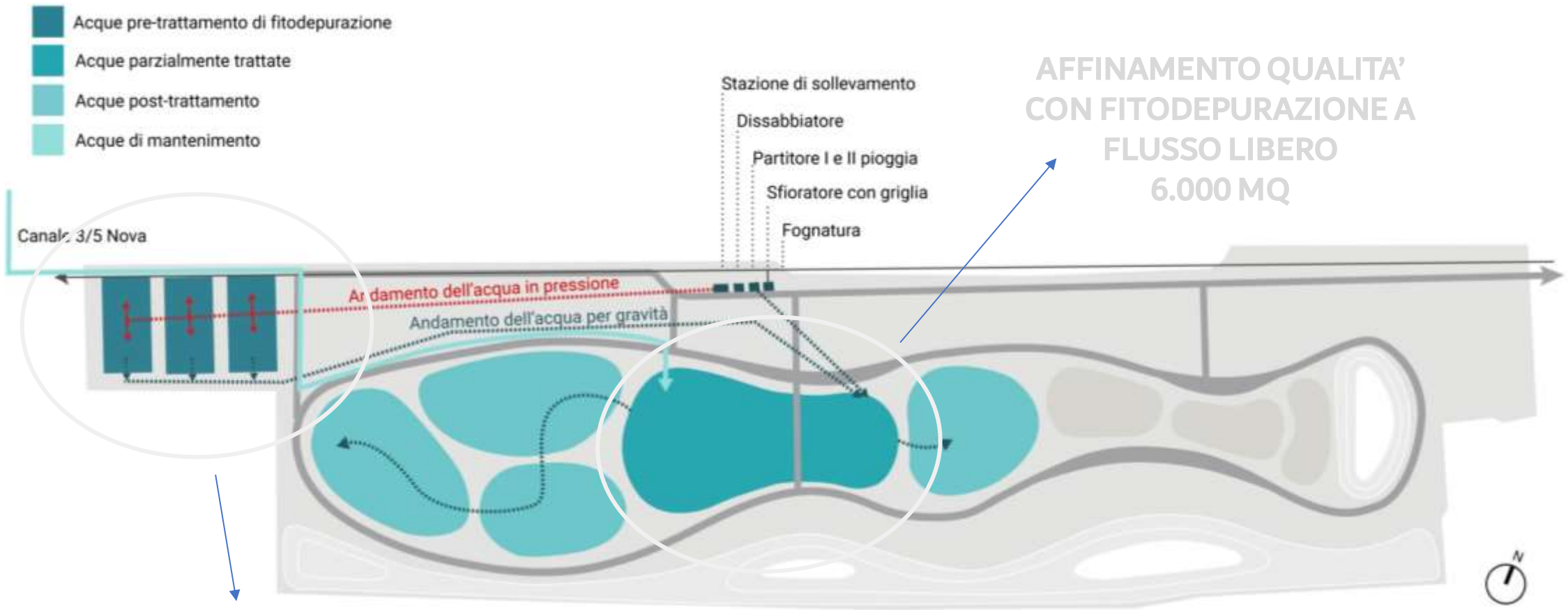
©LAND

Project Scenarios

Under normal conditions

In case of exceptional events

Hydraulic Flow Management



AFFINAMENTO QUALITA' CON FITODEPURAZIONE A FLUSSO LIBERO 6.000 MQ

TRATTAMENTO DI FITODEPURAZIONE PRIME PIOGGE COMPLETAMENTE SOTTERRANEO 3.000 MQ

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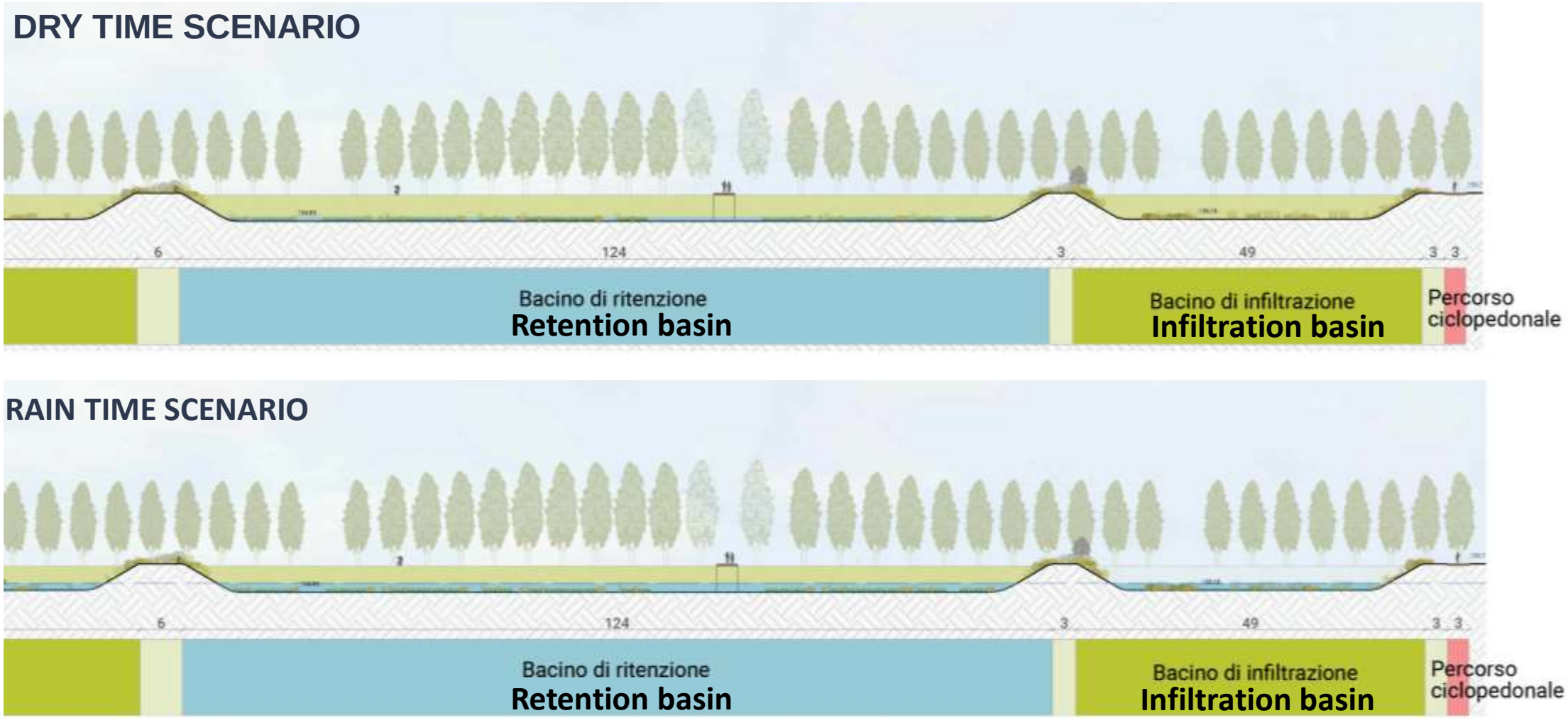
Hydraulic Flow Management



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A Landscape to Live

Project Partners

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