



B-rain Connect

connecting nature and people

Together we build the  
climate-robust  
neighbourhoods of  
tomorrow, today



IPCC (climate change rapport)



Member states (Europe) required to expand urban green space by 5% by 2050

Mayor's Covenant 2030 = more initiatives for climate

### New **GSV Rain water 2023**

- Stricter requirements towards disconnection
- Stricter requirements for quantities to be charged
- Above-ground buffer and infiltration facilities
- Variations possible with good arguments

3<sup>000</sup>

82%

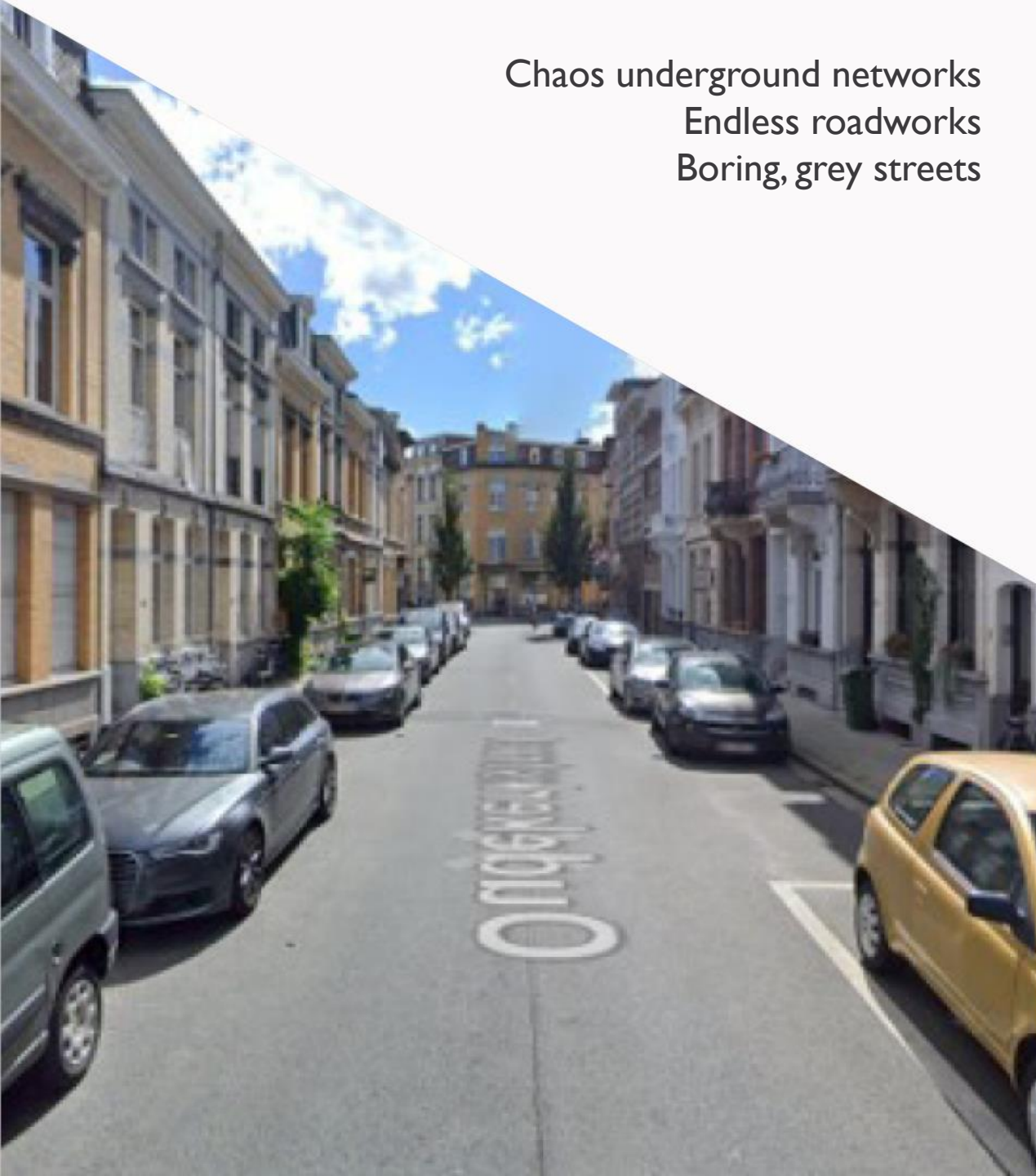
of the Belgians are concerned about climate change

71%

indicates it affects their life

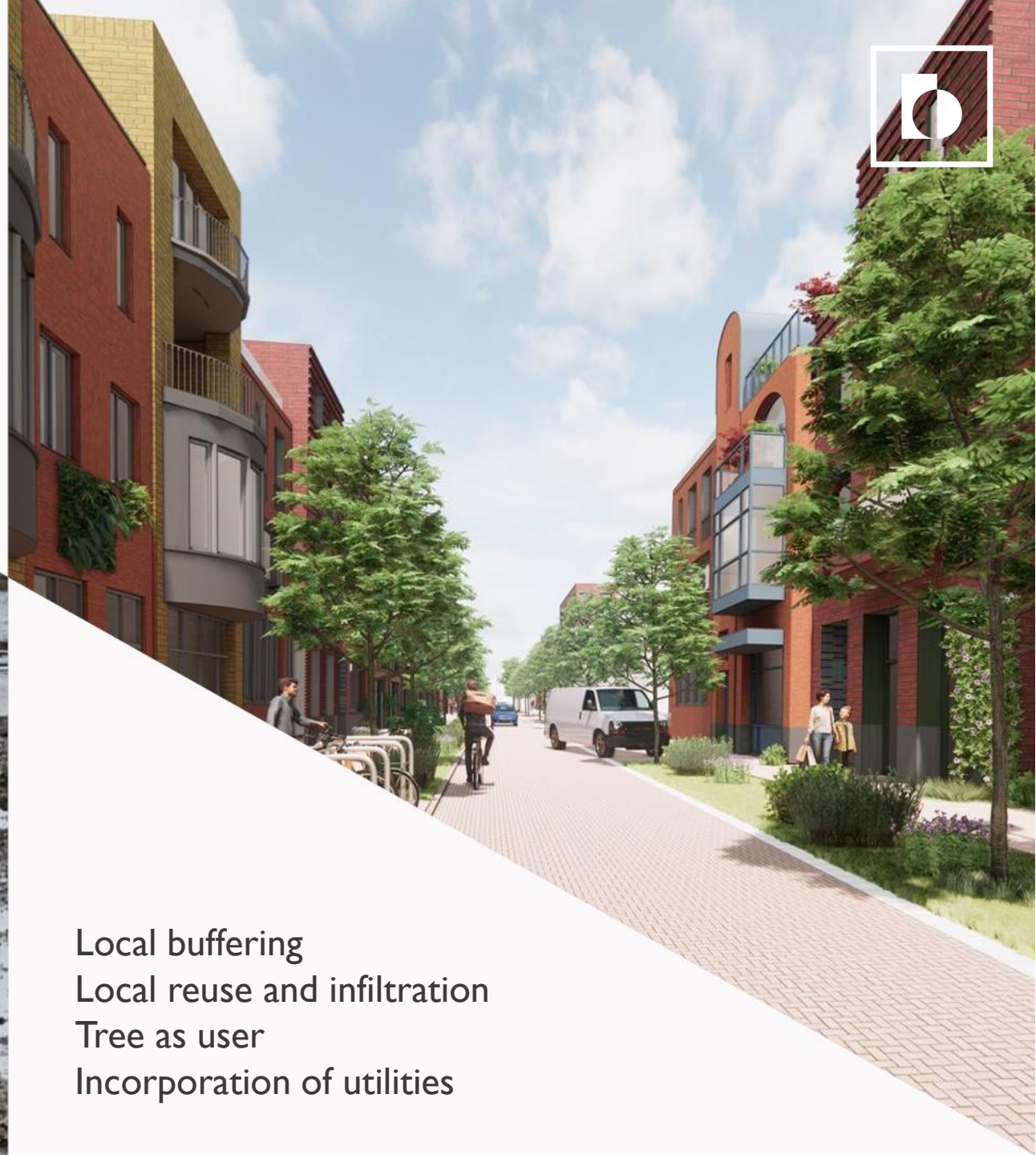
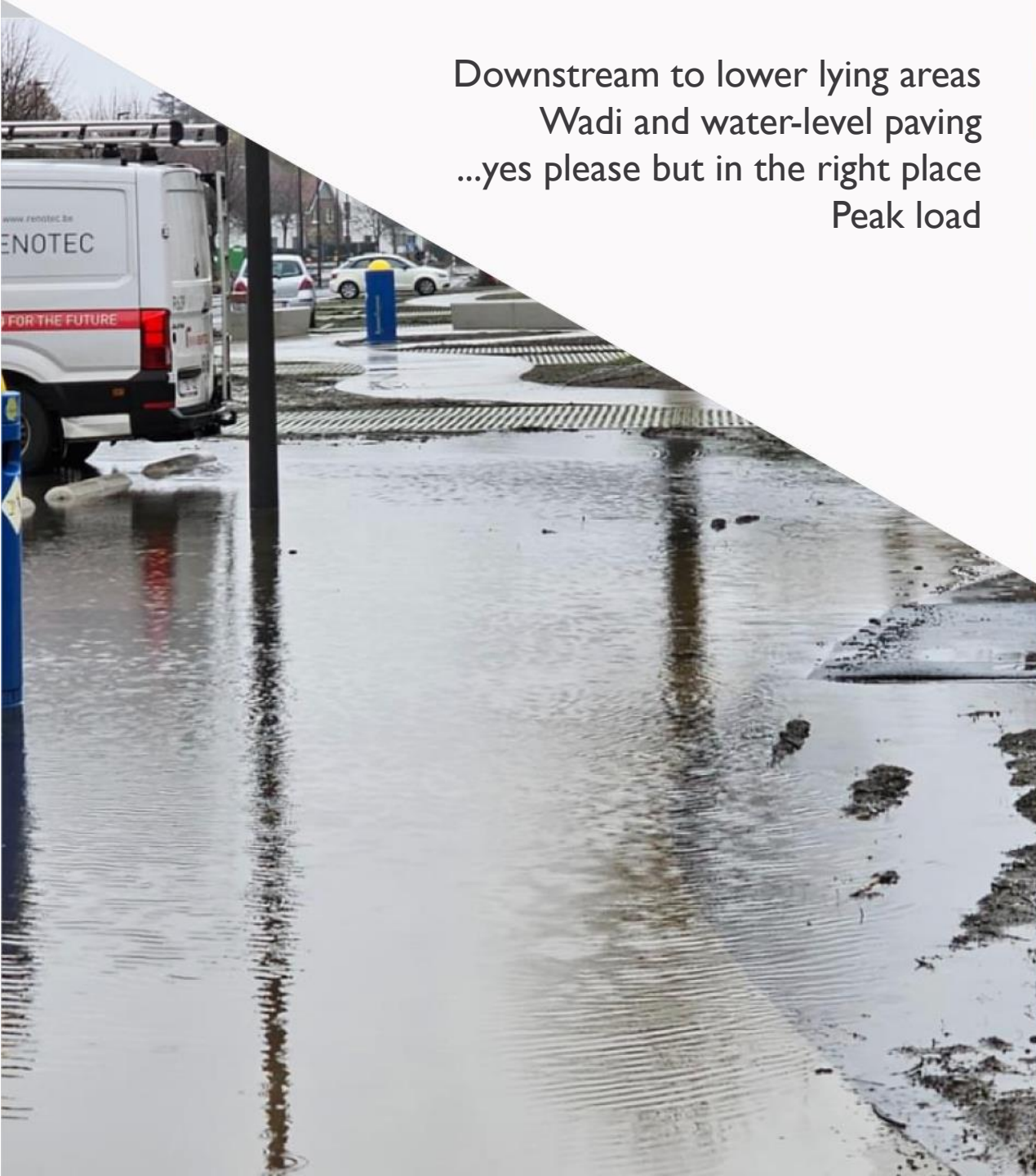


Chaos underground networks  
Endless roadworks  
Boring, grey streets



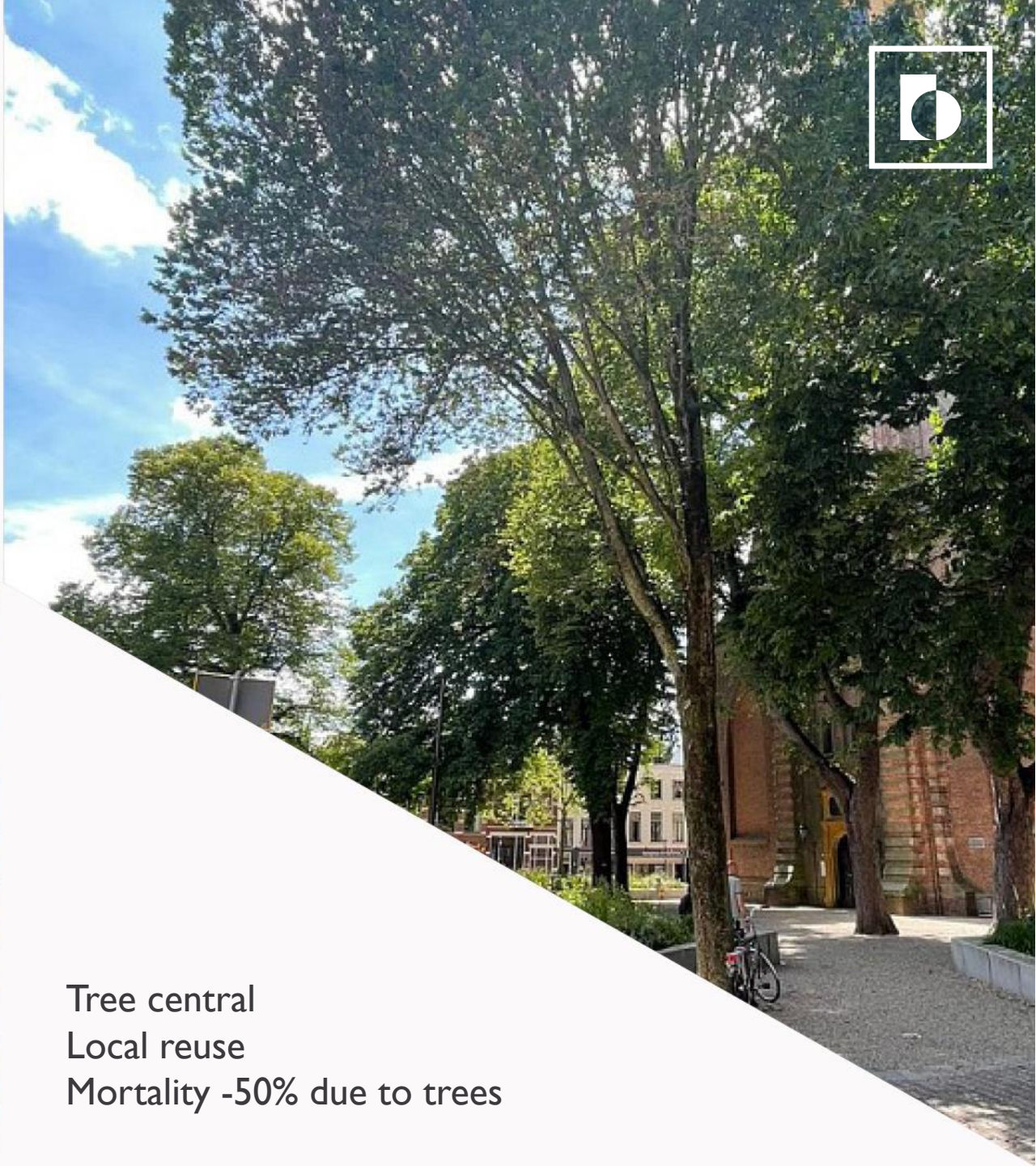
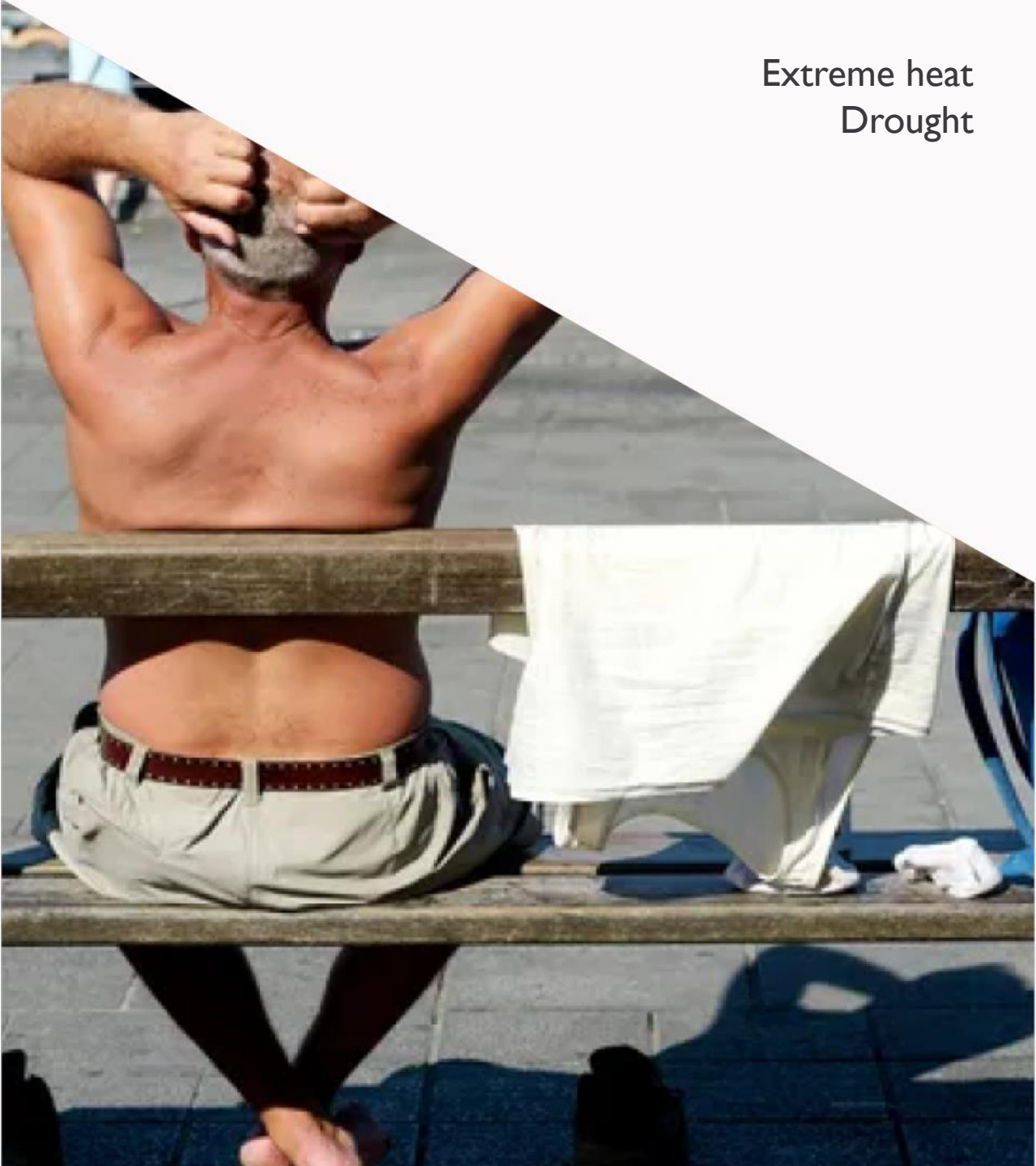
Space optimisation  
Tree central  
Modular superstructure  
Man-accessible

Downstream to lower lying areas  
Wadi and water-level paving  
...yes please but in the right place  
Peak load



Local buffering  
Local reuse and infiltration  
Tree as user  
Incorporation of utilities

Extreme heat  
Drought



Tree central  
Local reuse  
Mortality -50% due to trees

Grey squares  
No green



Experience  
Quality of life  
3-30-300

# WHAT IS CLIMATE-ROBUST?

**LADDER OF LANSINK** ⇨ *collective re-use of rainwater*

1. *avoid run-off*
2. *re-use*
3. *infiltration (locally)*
4. *buffering and delayed drainage*
5. *discharge into rainwater discharge pipe*
6. *discharge to mixed sewer*

**3-30-300** = new green standard of Flanders

The right green on the right spot + the **tree** as a **re-user**

## **INTEGRATED UTILITY LINES**

Order and cleanliness

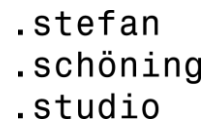
No digging damage, short repair periods, limited repair costs,...



# THE B-RAIN CONNECT NETWORK THINKING AND DOING TOGETHER | CO-CREATION

## WHO WE ARE ?

A **network of experts**, each with their own knowledge and experience. The profiles are design office, architect, research centre, utility company, contractor, manufacturer, ...





# THE B-RAIN CONNECT NETWORK



## WHAT WE DO ?

- Collect the **problems** and **questions** we encounter (design phase, when obtaining permits or on site, etc)
- **Discuss** problems in **working groups** ⇒ solutions
- **Solutions:** connecting existing 'building blocks' or developing new building blocks/ concepts

## WHY WE DO IT ?

- **Regulations** (water and green space) are always evolving and complex
- Not easy for developers, designers and licensing authorities
- The **current standards** (green standard 3-30-300 & ladder of Lansink for rainwater) appear **insufficiently known or applied**
- We will '**help**' where necessary.
- **Utility companies** play an important role in this matter and were involved throughout the process, eventually participating in a pilot project.



# THE B-RAIN CONNECT NETWORK

## HOW WE DO IT ?

- Currently working in **greenfield** situations:
  - **Comparative study** (quick scan) between a **traditional** construction of a project and with a **B-rain Connect** concept
- For **WIEKEVORST** this meant:
  - Study and design of the project
  - Development and test of building blocks ( chambers, smart lock and concrete slabs)
  - Production of prototypes
  - Construction of demo zone
  - Construction of pilot project



# THE B-RAIN CONNECT NETWORK

## HOW TO PROCEED ?

- **Raise awareness** around this **pilot** project
- **Invite** other projects **for** a comparative **quick scan**
- **Collect experiences** in Wiekevorst for next projects (monitoring, interventions, TCO, ...)
- **Develop Brownfield** situation in a similar way ( new building blocks?, ...)
- **Draw up specifications** on what can already serve as standard





The time for **talk is done,**  
**try-out**  
**research**

2024

the time for action is now

2025





# THE B-RAIN CONNECT BUILDING SYSTEM SMART BELOW GROUND, MULTIFUNCTIONAL ABOVE

innovative building blocks that we can connect  
produced locally and sustainably  
immediately deployable





# THE SMART BIKE PATH

Blue chamber  
Precast concrete slabs

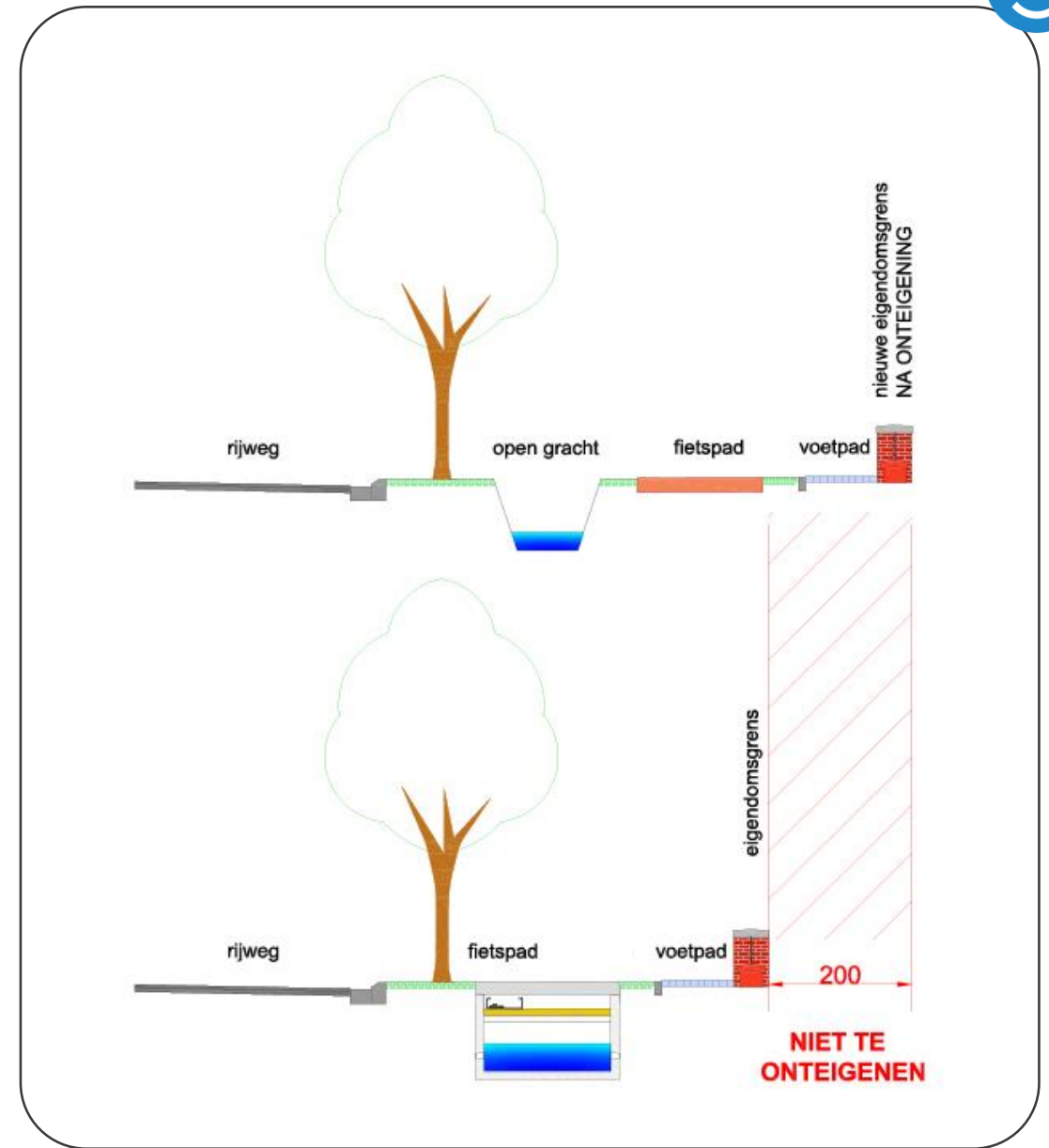


# THE SMART BIKE PATH

focus on **missing links**

optimal use of available space

avoid lengthy and costly **expropriation procedures**

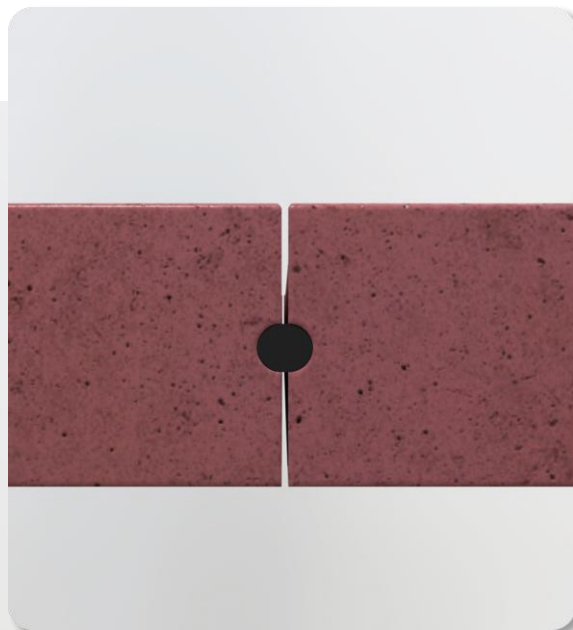
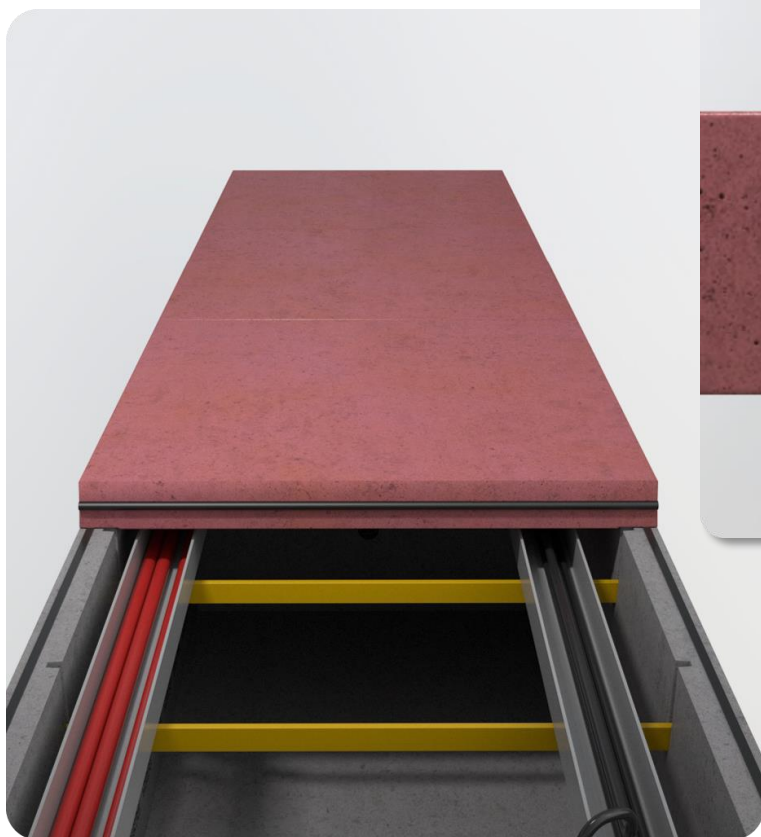




# THE SMART BIKE PATH – PRECAST CONCRETE SLABS

**Comfortable cycling** thanks to 2 x 2 metre slabs; smart lay-up and interlocking

**Durable and modular**







# THE SMART BIKE PATH

**No expropriation process**

**Comfortable cycling**

**Optimisation of space** (old canal becomes new canal)

**Space for utilities**

**Low-maintenance and accessible without digging**

One large buffer, filtering and **reuse** to homes

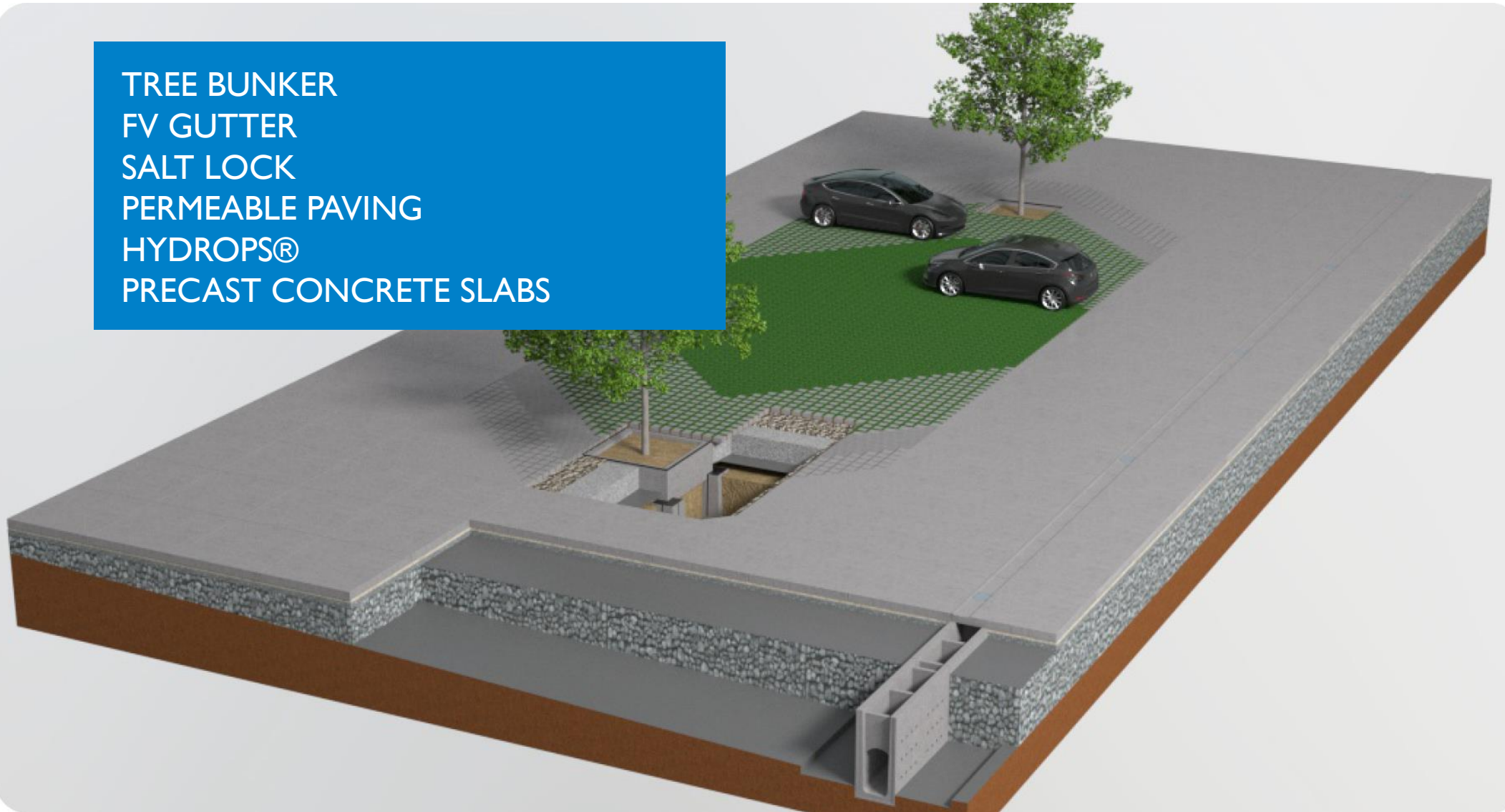
In case of calamity, **no runoff** (lower area)





## THE SMART PARKING

TREE BUNKER  
FV GUTTER  
SALT LOCK  
PERMEABLE PAVING  
HYDROPS®  
PRECAST CONCRETE SLABS



# THE SMART PARKING – Actual design (DELHAIZE)



# THE SMART PARKING – B-rain Connect concept (DELHAIZE)



# THE SMART PARKING – PRACTICE EXAMPLE (DELHAIZE)



# THE SMART PARKING – CONCEPT (LOAD INFRA)



# THE SMART PARKING – CONCEPT (LOAD INFRA)



# THE SMART SQUARE

TREE BUNKER  
SMART LOCK  
PERMEABLE PAVING  
HYDROPS®  
PRECAST CONCRETE SLABS  
GREEN CHAMBER  
BLUE CHAMBER







# IN PRACTICE – CASE WIEKEVORST

First public rainwater network following the B-rain Connect principle





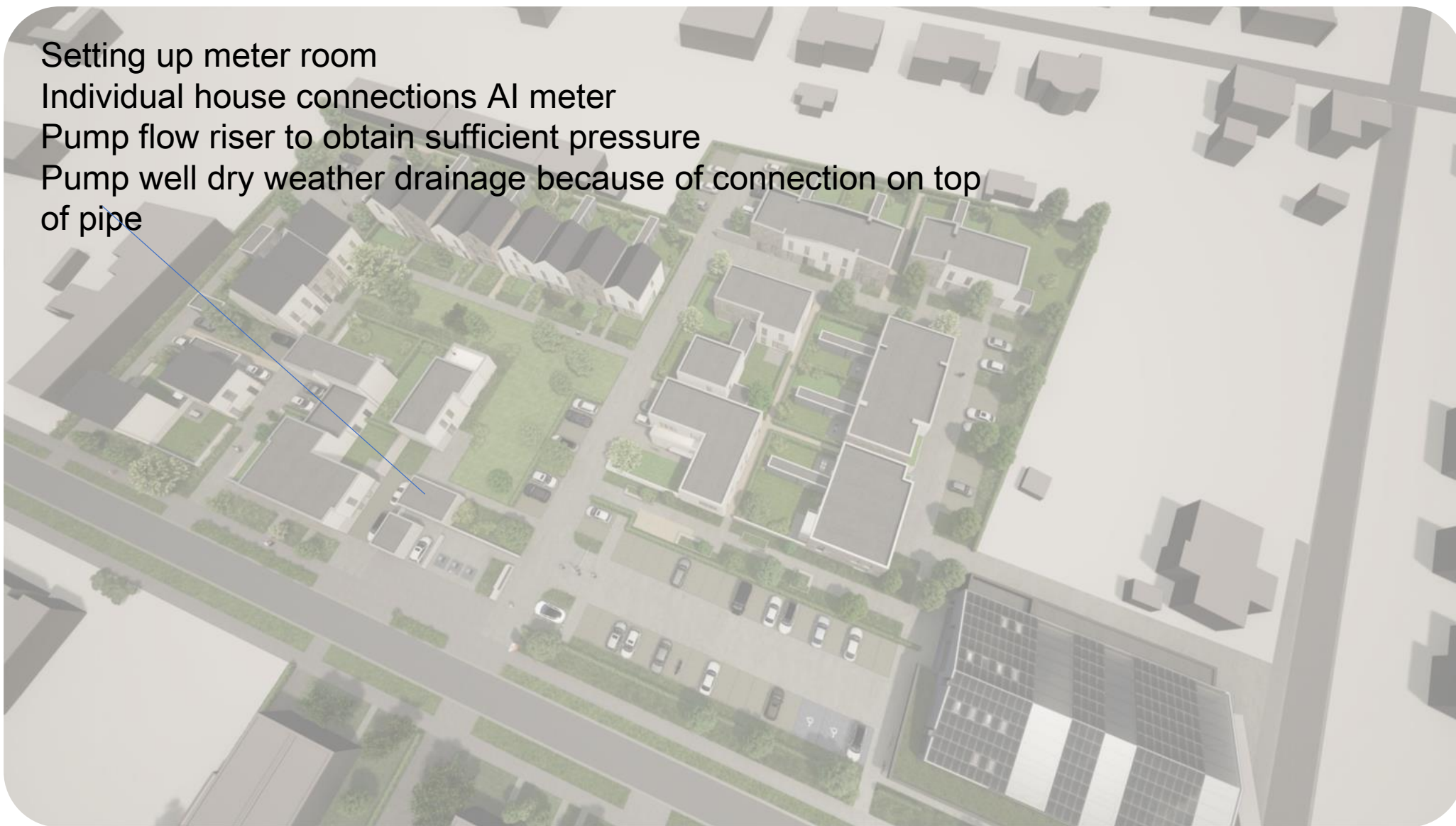
## Traditional vs B-rain Connect

Setting up meter room

Individual house connections AI meter

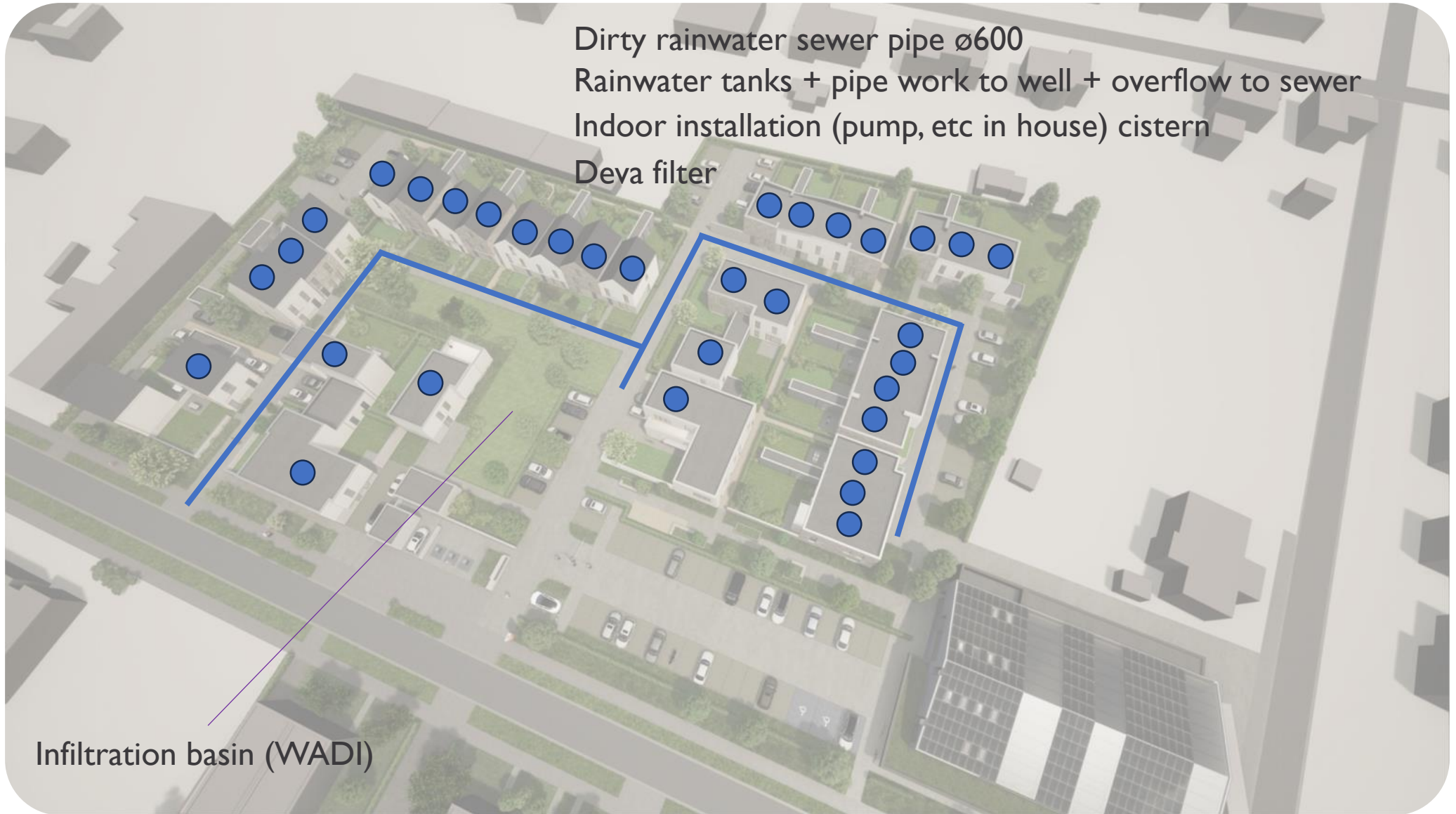
Pump flow riser to obtain sufficient pressure

Pump well dry weather drainage because of connection on top of pipe





# Traditional vs B-rain Connect





## Traditional vs B-rain Connect



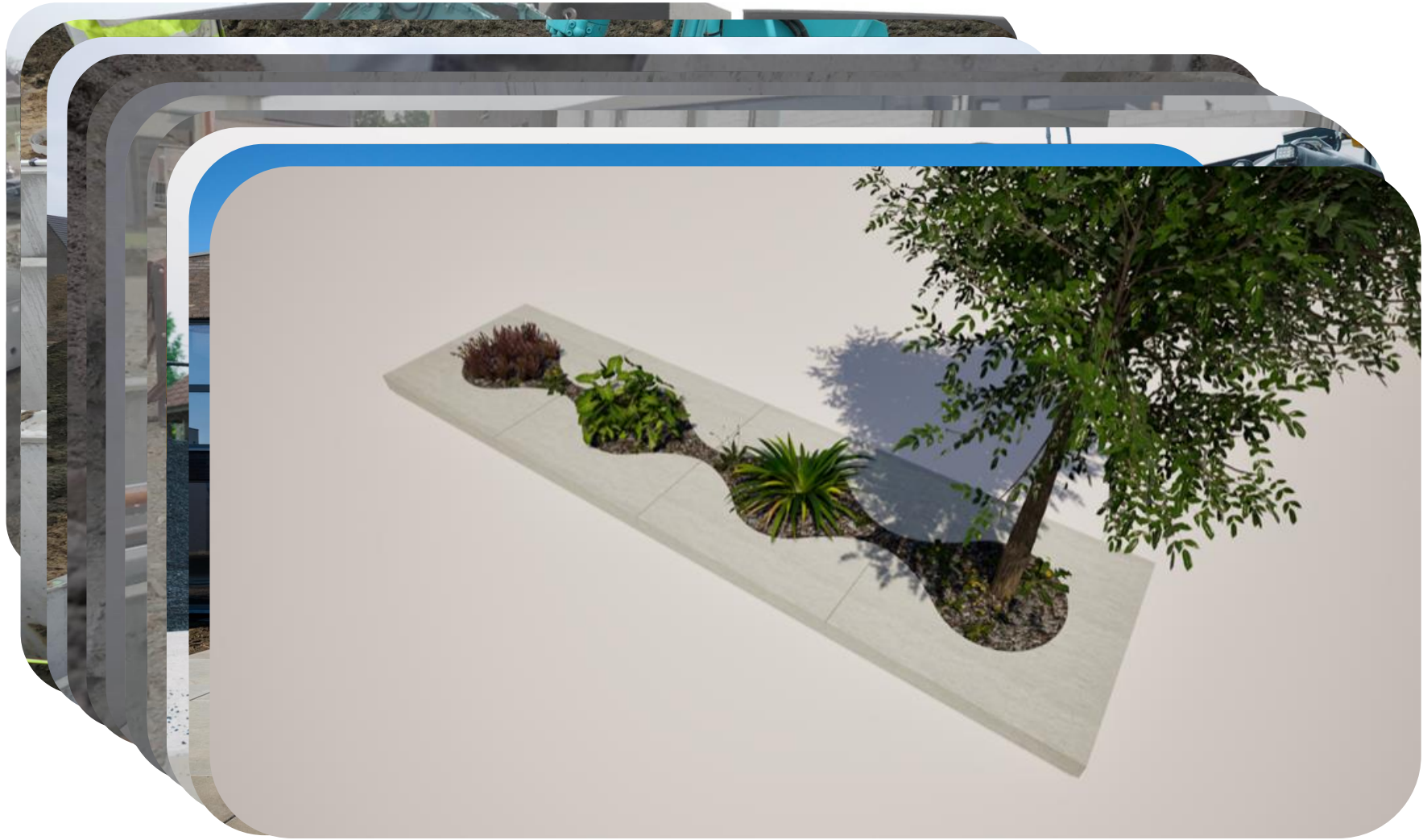
# Traditional vs B-rain Connect



Traditional way  
**€ 525.290,00**



# Traditional vs B-rain Connect



# Traditional vs B-rain Connect



B-rain Connect

**€ 399.429,00**





## Traditional vs B-rain Connect

Traditional way

€ 525.290,00

B-rain Connect

€ 399.429,00

Difference

€ 125.861,00

-24%

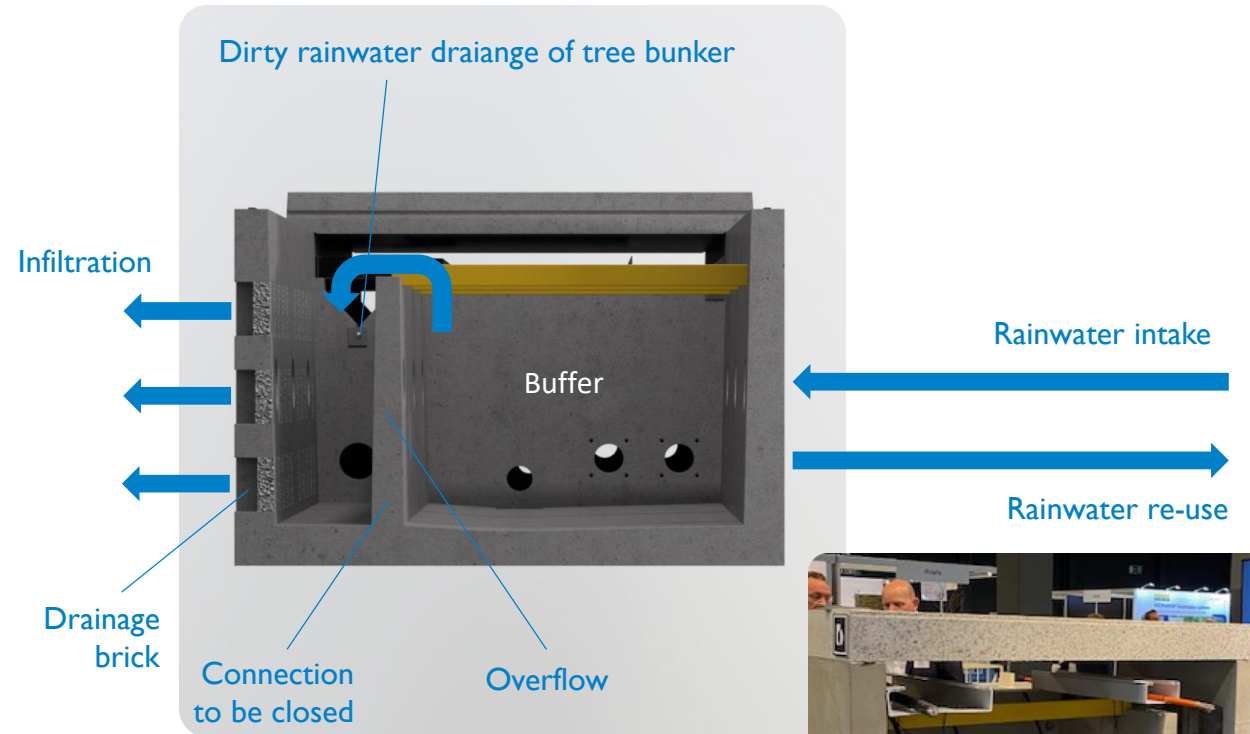
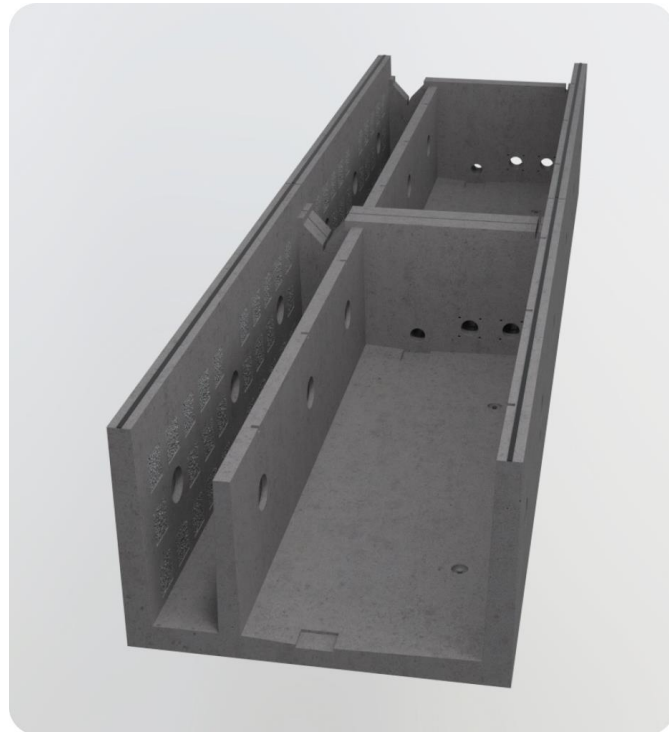






# THE SMART STREET– BLUE VEIN

**Recovery, buffering, reuse and infiltration** (variable combined)





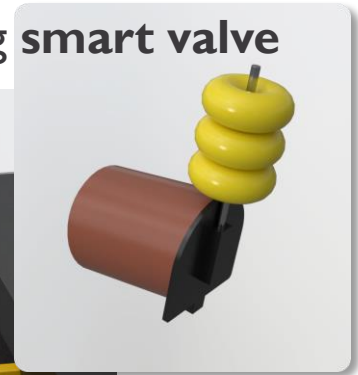
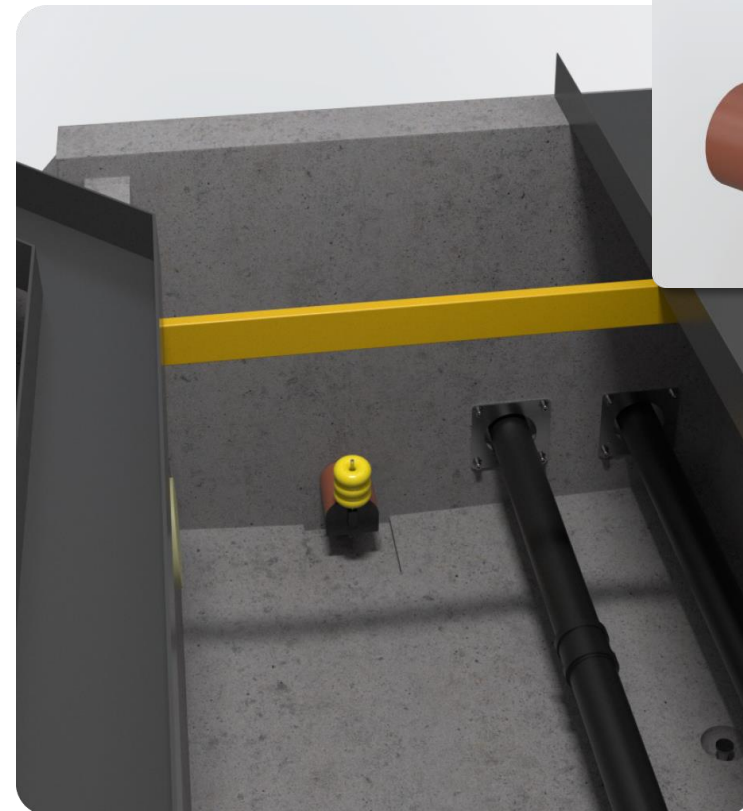
# THE SMART STREET – BLUE VEIN

**Integrated utilities**

**Man-accessible**

No digging or repair work (different shifts)

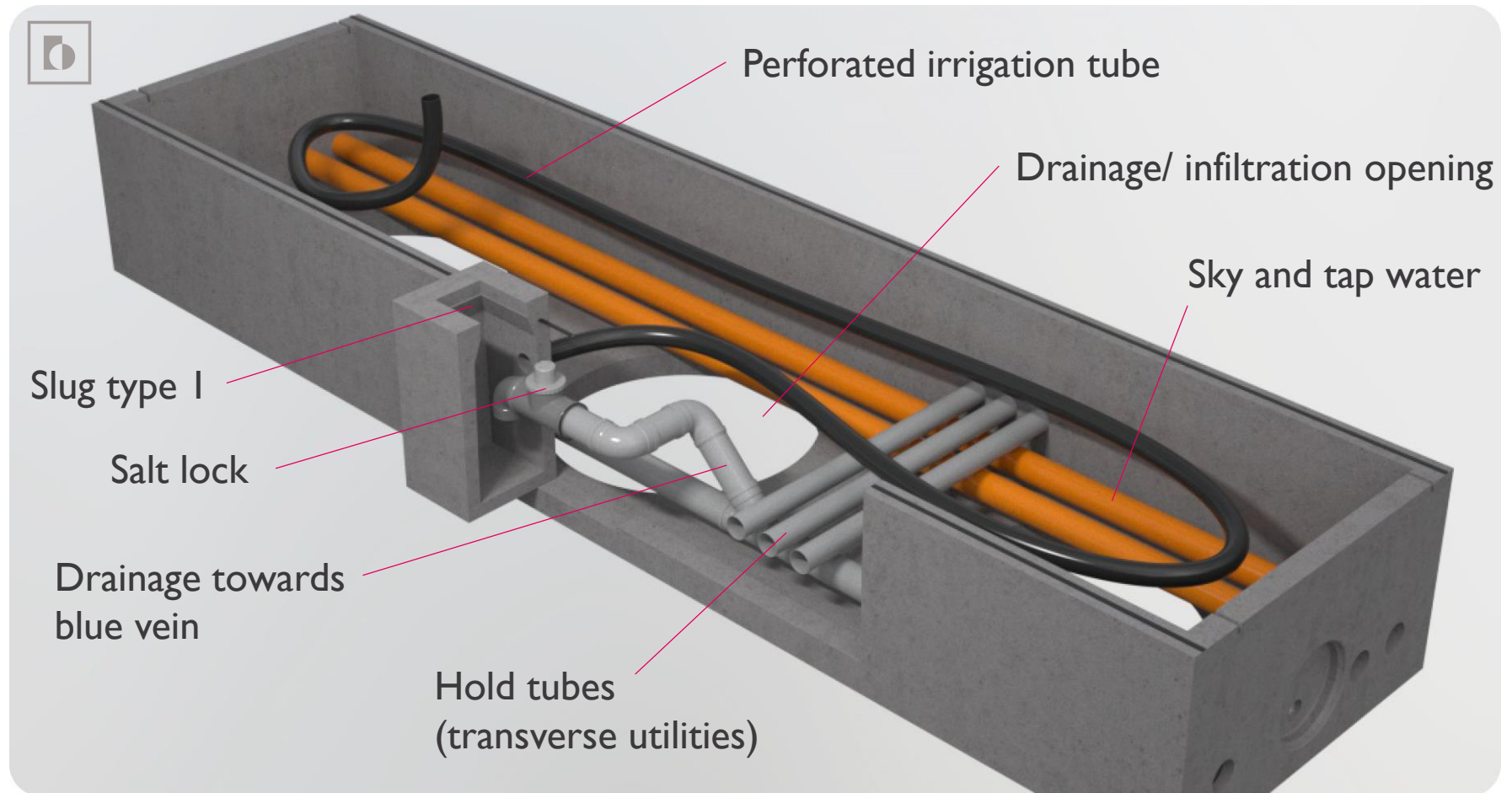
Safe and spacious working environment after draining the chamber using **smart valve**





# THE SMART STREET- GREEN ISLAND

**Tree bunker** as underground growing place



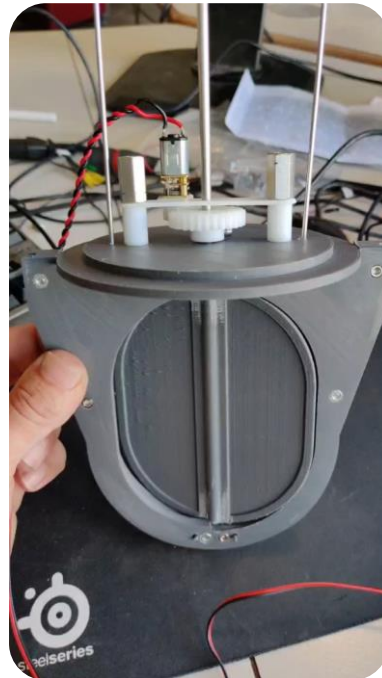


## THE SMART STREET– SALT LOCK

Salt is 'deadly' for trees

Prevents too much road salt from flowing to tree roots along with water. Tree leaves are less likely to die during dry periods.

Works **autonomously**





# The most right greenery in the right place



A wadi was initially pencilled in at Wiekevorst.

## Limitations:

- space needed
- contributes little or nothing to biodiversity
- requirements during construction not so simple
- additional costs and maintenance

**B-rain Connect** decisively chooses the **tree**



Reduce stress

Cooling

Esthetical

Health

Water(re-user)

Biodiversity

Air purification (CO<sub>2</sub>)

In a tree bunker (lack of space) or outside of it  
No damage: utility lines vs tree roots





## Characteristics of a B-rain Connect project:

**3-30-300** (Flemish green standard)

Ladder of **Lansink**

The most **right green** on the **right spot**

**Integrated utilities**

**Slabs as paving:** (always) digging vs **movable slabs**

**Financially interesting** **-25%** (cost)

Direct = placement B-rain Connect vs Classic

Indirect = social (oa flooding, flooded areas)

**Future-oriented/ TCO**

(annually recurring costs due to conventional way, less costs in terms of works, digging, damage/repair, no disruption)

### LADDER VAN LANSINK

Afstroom vermijden

(Her)gebruik regenwater

Infiltratie

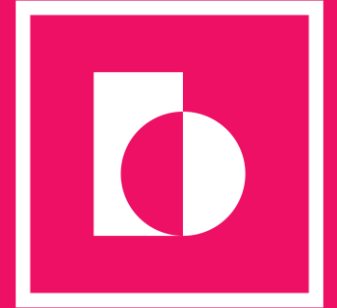
Bufferen en vertraagd afvoeren

Lozen op RWA-leiding

Lozen op gemengde riolering



## IN A B-RAIN CONNECT PROJECT



- not a drop of rainwater is lost
- greenery gets all the space it needs to grow
- we make room for biodiversity. For example, the green island above ground can be finished off with plants or ground covers
- we build to suit people
- we work smartly below ground level and multifunctionally above it
- we always opt for sustainable and circular materials