

# Urban Climate Resilience Solutions



An Orbia business.





# **Urban Climate Resilience needs a balanced 360-degree perspective.**

**Drought Prevention**

**Biodiversity Boost**

**Flood**



No city can stop a global trend. But every decision-maker, every construction project and every city has the opportunity to set the course for future-proof local climate resilience. What does it take? A balanced 360-degree perspective that meets three requirements: It takes into account what is individually necessary. It considers what is probable in the future. And it achieves the maximum possible.

## **Heat Stress Reduction**

## **Rainwater Harvesting**

## **Protection**



# At a glance: The Magic 5 of Urban Climate Resilience.

## Drought Prevention

Wavin solutions help to avoid water scarcity and to eliminate long-term risks on water supply discontinuation.

## Biodiversity Boost

Wavin solutions offer technologies that enable the required sustainable biodiversity in urban environments.

## Flood



An aerial, isometric view of a dense cityscape. The buildings are white and grey, with many featuring green roofs. The city is situated on a peninsula or near a body of water, which is visible in the upper right corner. The sky is a deep blue. A large, bright blue triangular graphic element is overlaid on the left side of the image, containing text.

## Heat Stress Reduction

Wavin solutions contribute to optimized evaporation rates and therefore help reduce the urban heat island effect.

## Rainwater Harvesting

Wavin solutions store rainwater to support various usages in buildings in a resource-saving manner and irrigate plants during dry periods.

## Protection

Wavin solutions offer a reliable and smart flood protection to enhance resilience and to avoid impact costs.



**Every drop deserves  
a chance: Water  
Circularity by Wavin.**

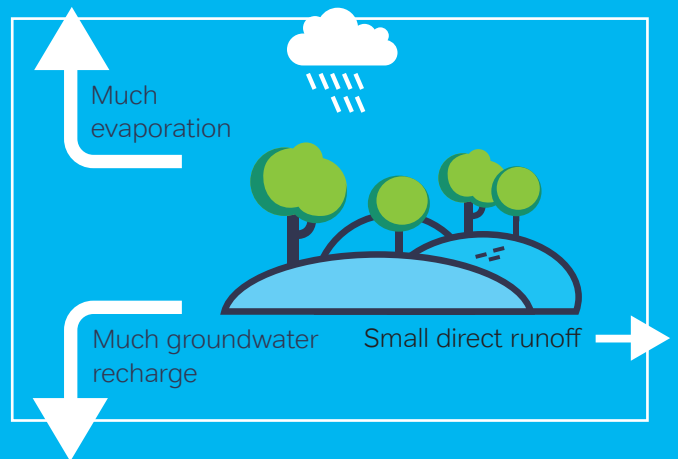




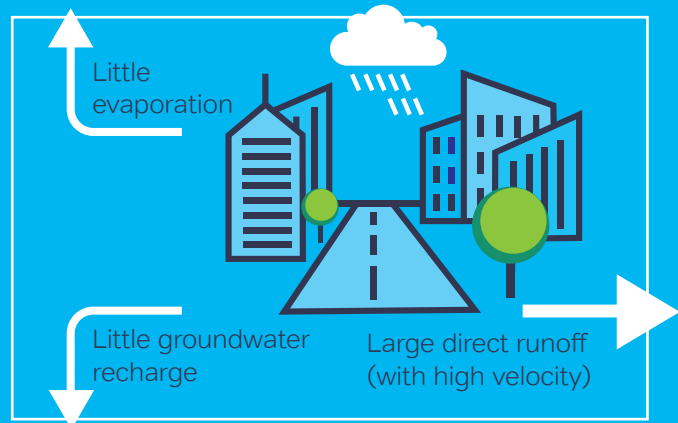


**Our approach: a holistic way of dealing with the world's most valuable resource.**

## Rural Area



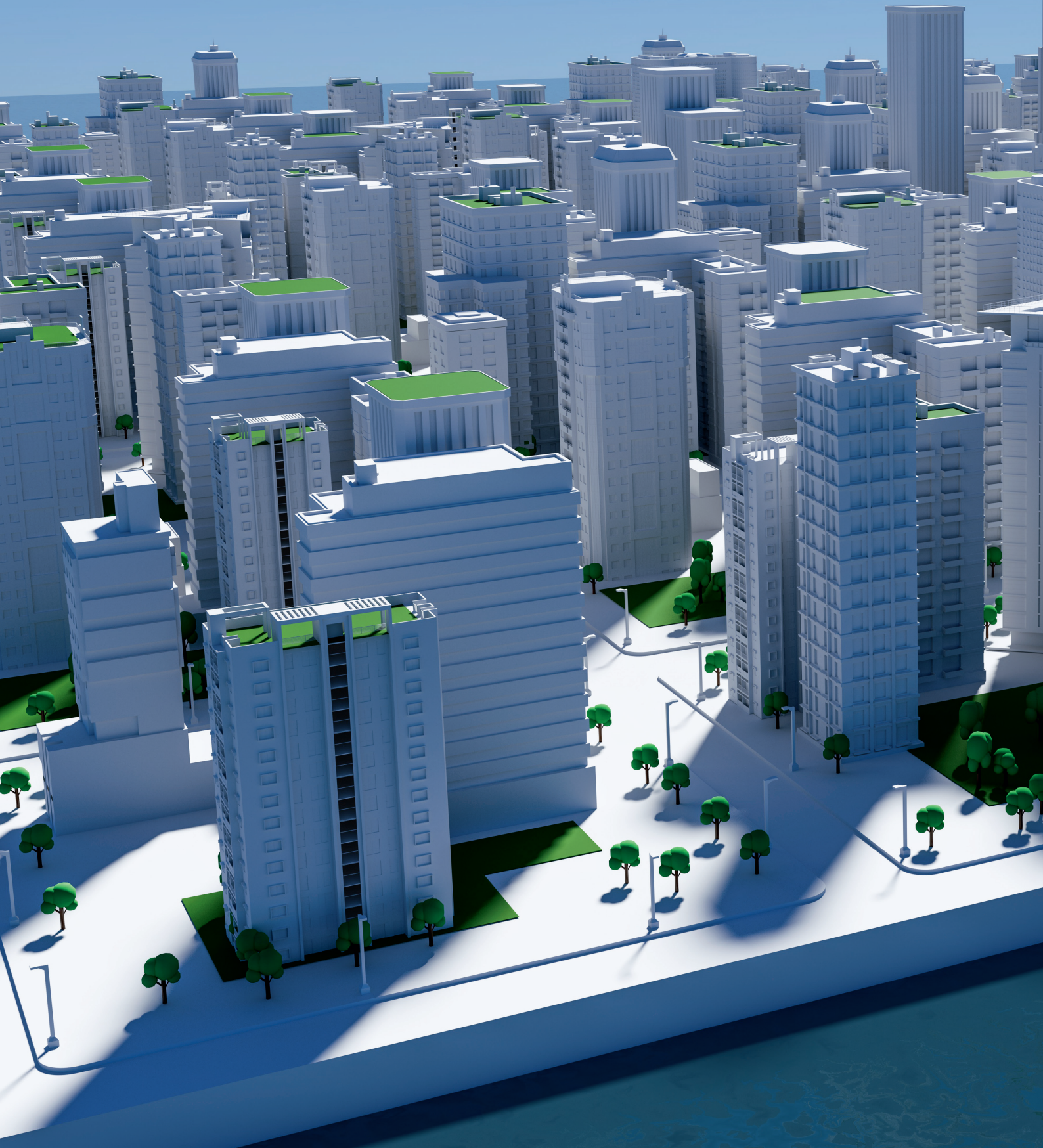
## Urban Area



Enhancing resilience to urban climate changes starts with fundamentally changing our approach to rainwater usage. How can we efficiently manage water availability by ensuring precious rain drops are harvested, rather than being lost to the sewage system? Furthermore, how can we mitigate the impact of heavy rainfall to prevent damage in city areas? Wavin's Urban Climate Resilience solutions provide answers to these questions.



Resilience begins  
at the top.





## Roofs capture rain water when there is too much. Release it as needed.

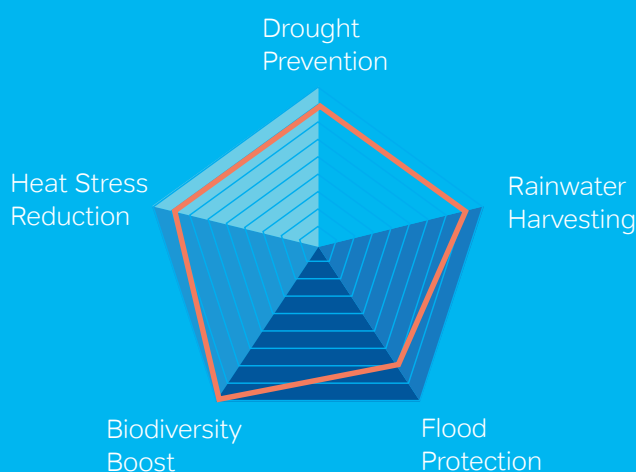
With Smart Blue-Green Roof solutions by Wavin, urban climate resilience starts right at the top. Firstly, our proven technologies enable excess rain water to be stored for later reuse. And secondly, they enable a tailored roof drainage. In this way, Wavin provides future-proof answers to two crucial questions: What happens in the event of increasingly extreme amounts of precipitation - and what happens during periods of drought, which are becoming more frequent and have serious consequences for people, health and infrastructure, especially in urban areas?

## Blue-Green roofs mean: Heat down and biodiversity up.

The combination of water retention and plants offers two major advantages. Plants boost biodiversity. With a Blue-Green roof, the plants can always take the right amount of water at the right time, since the water is located exactly where the roots need it. Most importantly, the system reduces temperatures, which has a positive effect on both ambient and building.

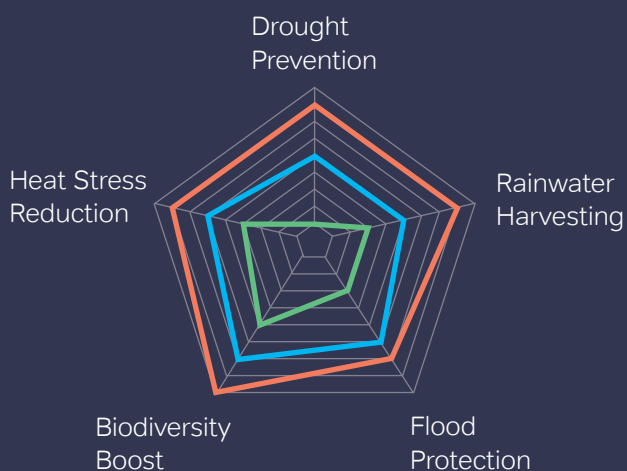
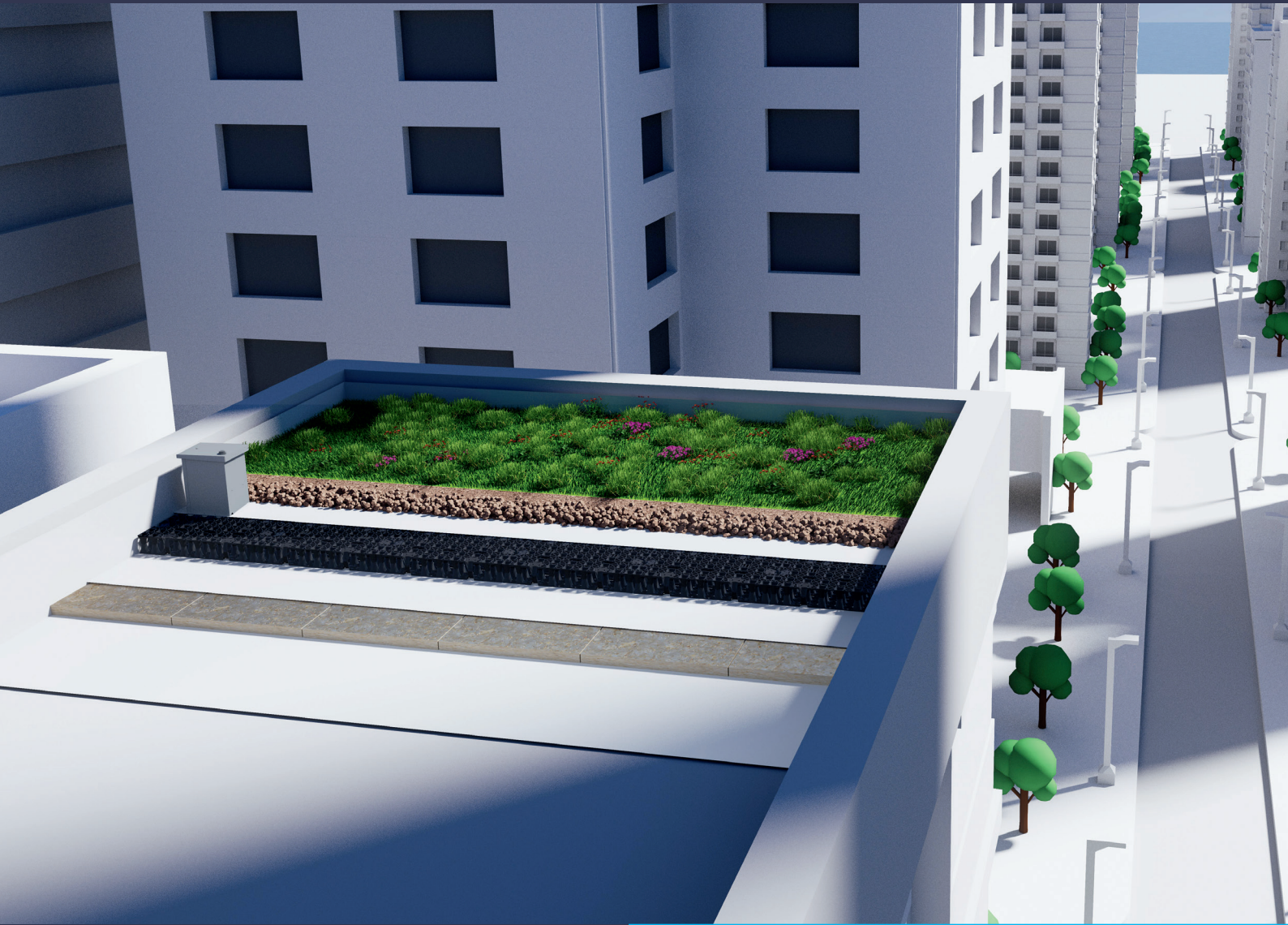
## The Wavin PolderRoof.

Wavin PolderRoof transforms flat roofs in existing or new buildings into intelligent and controlled water reservoirs with integrated irrigation function. Consisting of a attenuation layer, sensors for water levels and weather conditions, and a platform with access to weather forecasts and with hyperlocal rain data reconciliation, the system decides how best to deal with rainwater.





# The holistic approach to urban roof design: the Wavin PolderRoof.



Most buildings in our cities are built with flat roofs. Transforming this unused space can have a massive impact on Urban Climate Resilience. By combining a green layer of vegetation at the top with an intelligent water storage feature below, smart blue-green roofs are the perfect foundation to provide high quality outdoor space and to enable a sustainable and climate-resilient future.

- Green roof
- Passive retention roof
- Active retention roof

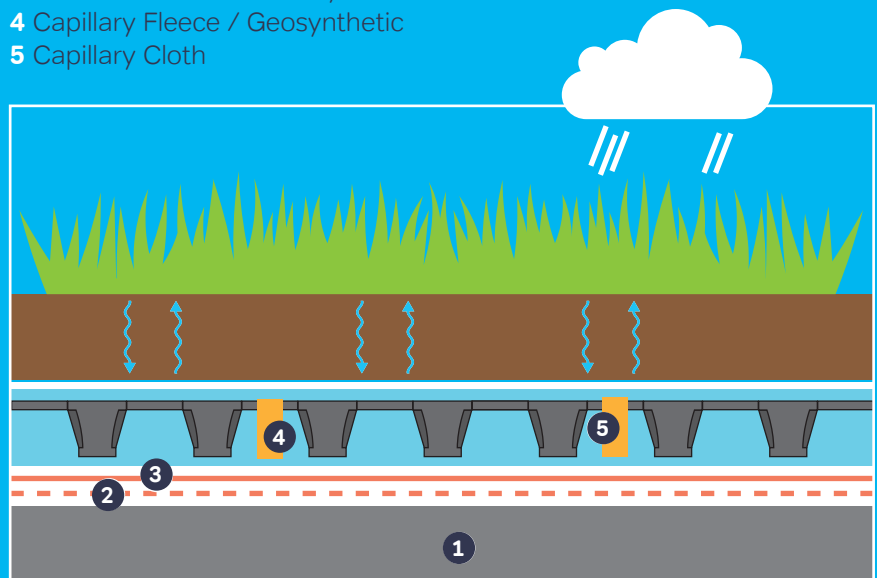




## An innovative buffer zone based on real-time data.

Created as a buffer zone for water, the Wavin PolderRoof enables the prediction and collection of real-time data on weather conditions, water levels and the temperatures. During a rain event, rainwater can be harvested and relocated afterwards. The main benefit of Wavin PolderRoof is its impact on ambient temperature. It enhances comfort inside a building and improves the efficiency of solar panels.

- 1 Roof construction & insulation
- 2 Waterproofing membrane
- 3 Protection Fleece / Geosynthetic
- 4 Capillary Fleece / Geosynthetic
- 5 Capillary Cloth





**If the roofs are green,  
the roads could be too:  
Greenification solutions  
from Wavin.**



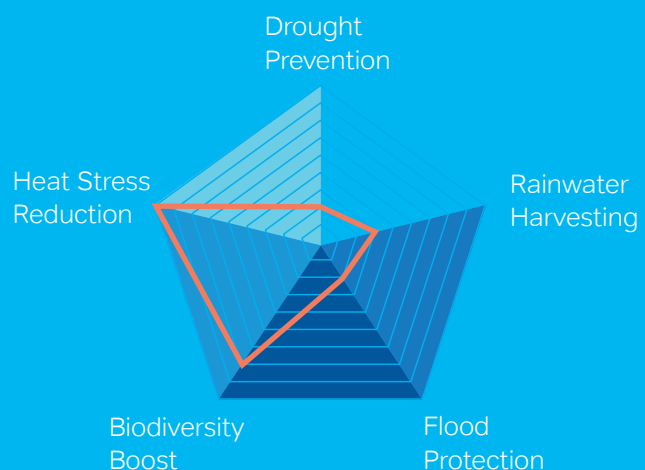
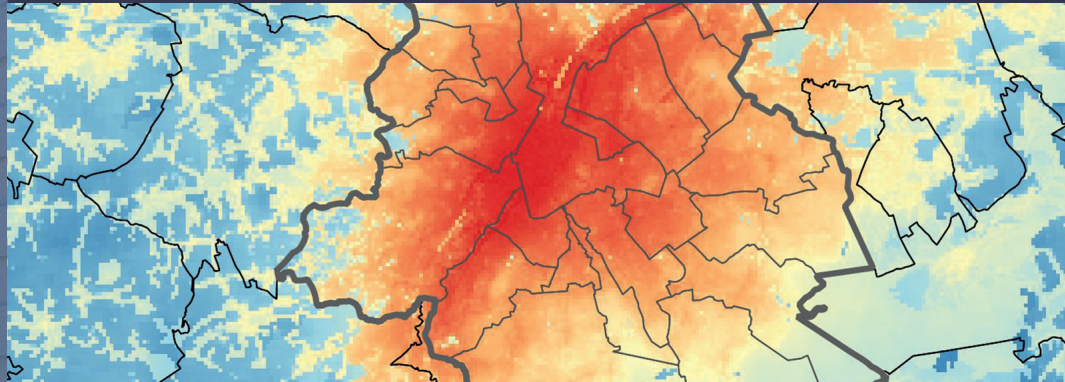


## Road drainage. Flood prevention. Greenification. We do it for you.

In cities, the proportion of green spaces and parks is generally low and soil sealing is high. This exacerbates the consequences of heatwaves and heavy rainfall events. The right answer is holistic and comprises several components: water-permeable traffic areas and surfaces that allow precipitation to seep away. Root protection systems that provide urban trees with sufficient space and oxygen for their healthy development. And infiltration trenches that first collect heavy rainfall and then gradually release it into the ground for groundwater recharge.

## Protect buildings. By avoiding urban heat islands.

Due to the Heat Island Effect, cities are up to 5°C hotter than rural areas. The consequences are massive and range from greatly increased energy consumption for cooling air conditioning systems, impaired water quality and increased emissions of air pollutants and greenhouse gases to a significant and dangerous impairment of human health.





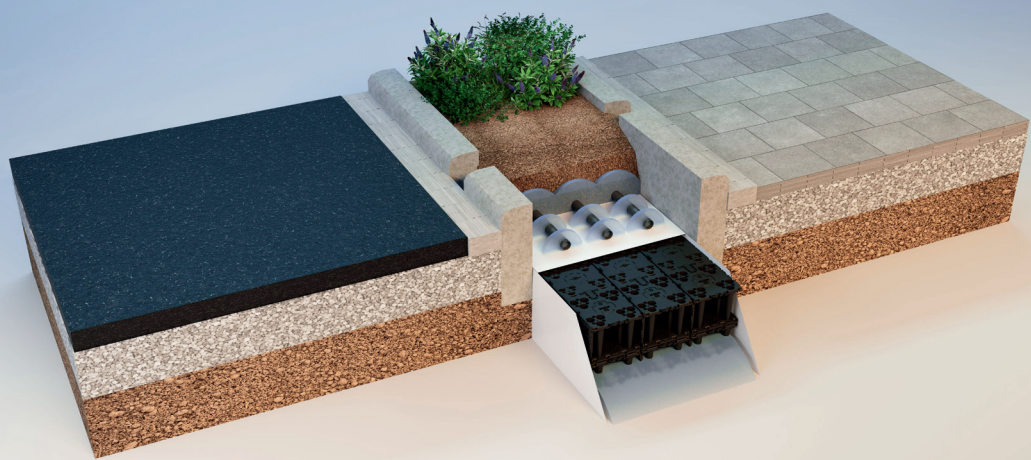
# Above greenification relies on sustainable innovations below.



## Technology for sustainable growth: the Wavin TreeTank.

Cities around the world are intensifying their “greenification” efforts. And although trees do play a key role in urban life, they can be vulnerable and are a significant investment. They are expensive to maintain, to grow and to stay healthy. Wavin TreeTanks create safe underground protection zones for trees – and contribute significantly to contemporary Urban Climate Resilience concepts.





## Green oasis with sustainable effects: rain gardens.

A rain garden is a clever and eco-friendly solution for managing rainwater. These gardens capture and filter rainwater and filter it through specially chosen plants, reducing urban runoff. What makes them even more effective is the addition of a blue layer—a layer of permeable material beneath the soil. This blue layer helps to limit the effects of pluvial flooding.





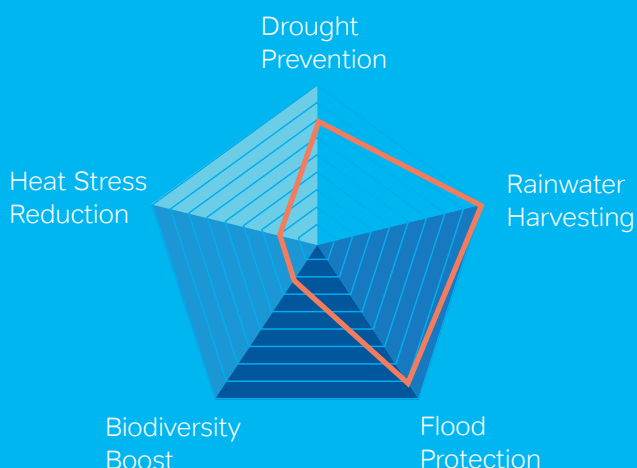
# Intelligent building architecture is one thing. Intelligent water architecture is the other.

## Each raindrop is cared for and controlled

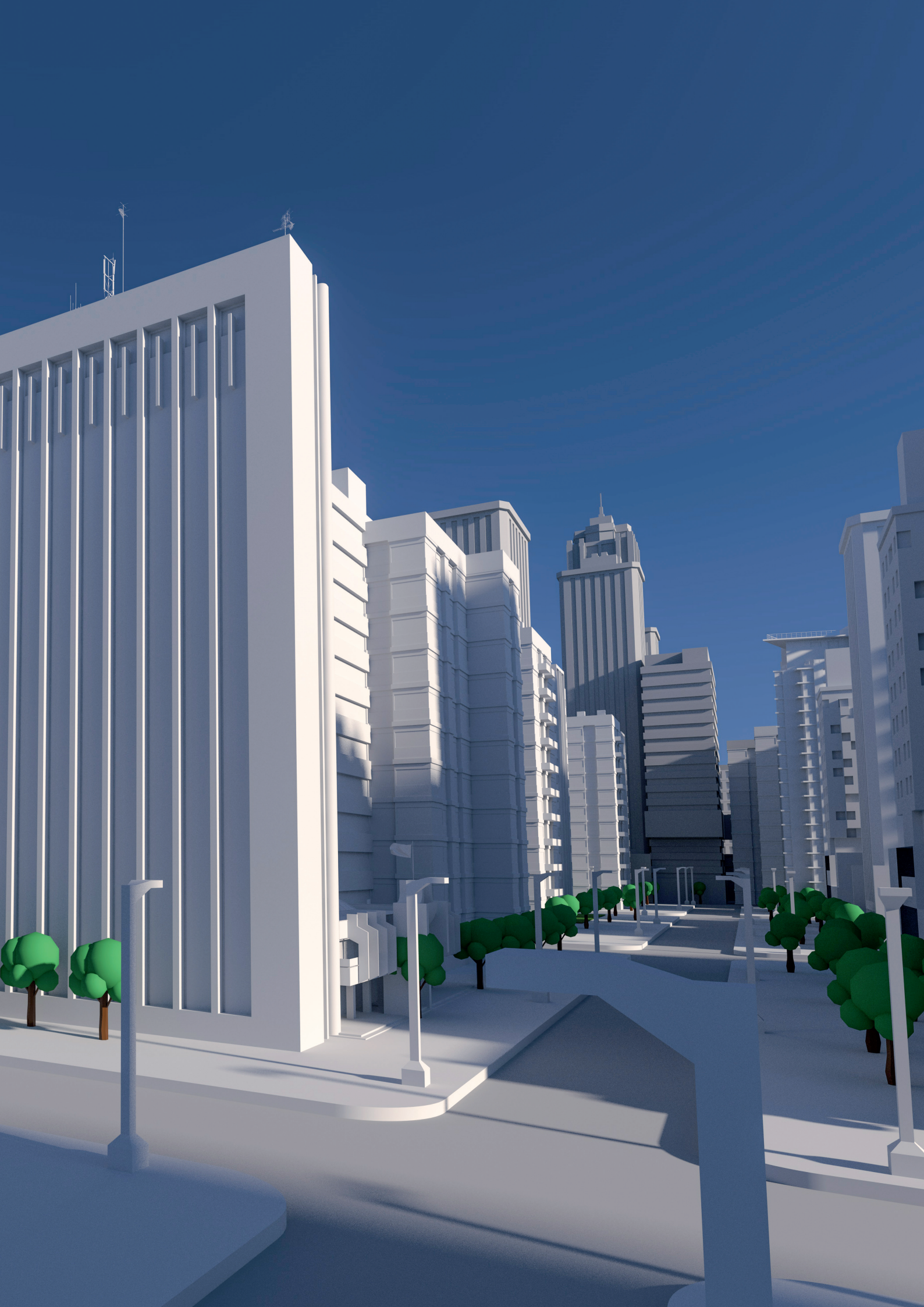
Wavin's Urban Climate Resilience concept provides reliable and smart solutions for stormwater management and climate resilient cities. To achieve this, we consequently follow the drop, above to below ground. For built-up properties, this means above all "turning every drop over twice" – as water is a resource, not waste. The result is impressively sustainable: collected and temporarily stored rainwater can be used for cleaning as well as for toilet flushing or irrigation systems.

## Rainwater harvesting. Infiltration. Irrigation.

Every drop of rainwater can unveil the potential of a landscape or property. Wavin's comprehensive portfolio transforms rainwater into an asset for private, commercial, and public spaces. By offering customized solutions, we ensure that each project is equipped with intelligent, eco-friendly, and perfectly matched water management systems.









# The signs of a well planned city are underground.



**1.** Wavin Certaro Sedimentation systems protect infiltration systems from blockages and contamination. To prevent this, sedimentation systems mechanically separate sediments within the rainwater using the principle of density separation.

**2.** Wavin offers proven technology to allow infiltration of the stormwater into the surrounding ground. The solutions cover the entire range from small residential complexes to large commercial applications.

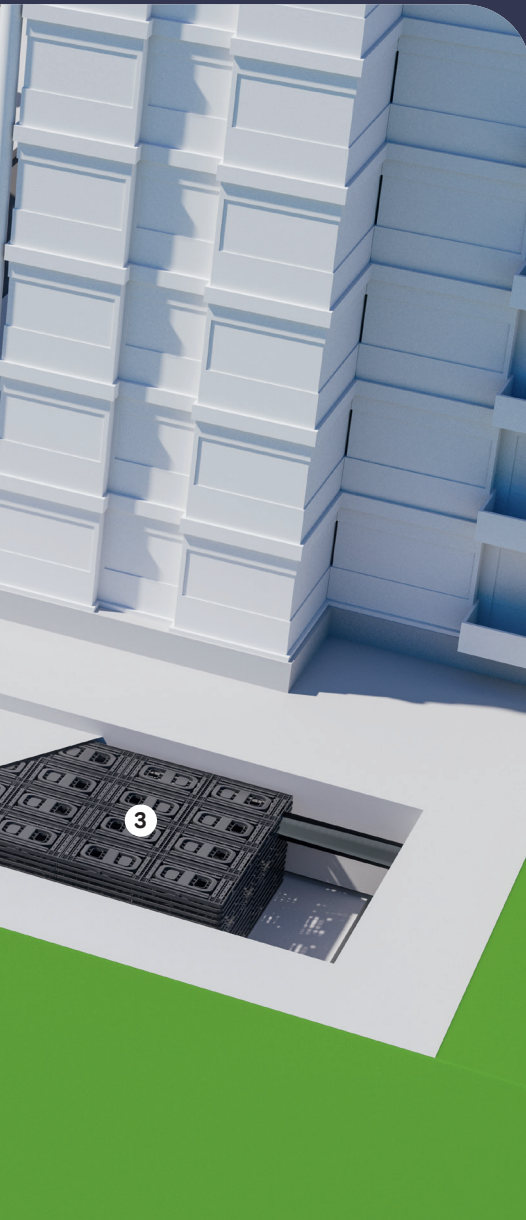
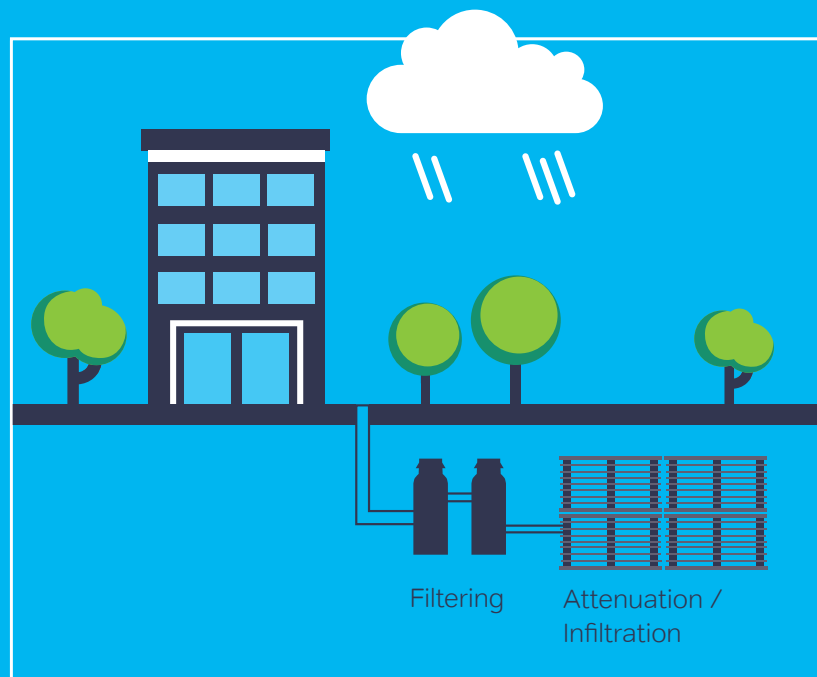
**3.** Wavin AquaCell 400 and Q-Bic Plus units are proven solutions for managing excessive rainfall and can be assembled to create an infiltration or attenuation system.





## The foundation of Urban Climate Resilience: attenuation and infiltration.

A combination of climate change and urbanisation is putting pressure on existing surface water infrastructure and increasing the risk of flooding. In today's world, cities need to be prepared as flood damage can be devastating. Plus, the financial cost for restoration is huge. Wavin offers solutions for attenuation and infiltration that take flood protection to the next level – and contribute to the best possible preparations for extreme rain events.





# Establish the urban water cycle: with the right digital solutions.





Precipitation forecast



Web-based dashboard with real time and historical sensor data



Cloud Platform

## Digitally networked: Water Circularity.

The natural water cycle is a self-contained system. The consequences of civilization and urbanization are having an impact on the natural water cycle that nature cannot solve on its own without harming us. Wavin therefore uses digital solutions to close the cycle again. In plain language, this means that there can be no functioning Water Circularity without comprehensive digital support.

## Digitally advanced: from monitoring to servicing.

To ensure that everything from the Wavin PolderRoof on the building to the infiltration tank under the street works together optimally and reaches its full potential to maximize urban climate resilience, Wavin integrates tailor-made digital solutions. These range from ongoing monitoring of current weather forecasts and actual conditions to alarm functions, maintenance and servicing.

## Real-time data for real-time reactions.

The Wavin UCR System combines all components into an integrated, digitally networked solution that enables optimum efficiency, conserves resources in the best possible way and can protect any urban environment from serious climate impacts. The comparison with current weather data enables real-time reactions:

- ▶ Proactive weather-based control of the blue roof layer
- ▶ Weather-dependent water supply for green roofs
- ▶ Fill level monitoring in tanks and shafts
- ▶ Proactive weather-dependent control of the tank fill level
- ▶ Rainwater collection and needs-based water distribution



# Secure the urban future now: with an all-in-one solution for water resilience.



## Collection

Tegra Road Gully



QuickStream

## Transportation

Twin Wall



## Filtering

Certaro Sedimentation



Certaro HDS Pro





## **Infiltration/ Attenuation**

AquaCell 400



Q-Bic Plus

## **Smart Blue-Green Roofs**

PolderRoof



PolderValve

## **Hybrid greenification solutions**

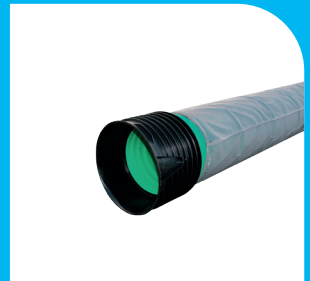
TreeTank



Rain Garden

## **Infiltration & Drain. Transport**

IT Sewer





# Make your city climate-proof. Contact us.



Building &  
Infrastructure



Orbia's Building & Infrastructure business Wavin is advancing life around the world by building healthy, sustainable environments. Orbia Wavin is a water-focused innovator delivering solutions for safer drinking water supply, sanitation, and urban water resilience. The company also invests in indoor climate solutions.

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