

**spotlight**

**Zwolle**

## Climate Adaptation in Zwolle Region 2019-2020

21 Inspiring building blocks for a climate adaptive Delta of the Future

[www.regiozwolle.info/klimaat](http://www.regiozwolle.info/klimaat)



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### Colophon

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#### Text and image editing

Climate adaptation task force of Zwolle Municipality in collaboration with Edith Camerik, edithcamerik.nl, and the communications department.

#### Photography

Cloudshots, Edith Camerik, OCNE, 50TintenGroenAssendorp, Urban Farmer Christiaan Kuipers, Annemiek Wiegman, Dirk Pieter Halbesma, and others.

#### Design

Elianne Schotanus, studioems.nl.

#### Disclaimer

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Hans Wijnen, member of the Drents Overijsselse Delta water management authority, and alderman Ed Anker are talking to the press at the festive unveiling of the 1st mobile climate escape room.



## Foreword



It is with pride and pleasure that I present this book to the reader! On behalf of the municipality and Zwolle Region, I would like to say something about the vital collaboration in this delta area of the IJssel and the Vecht. The region is known for its numerous networks, such as the IJssel-Vechtdelta program, RIVUS, and the network of Climate Campus. You can read about this collaboration in the various projects and initiatives that are featured in this booklet. It makes this delta area a place where the future is being crafted today and where we demonstrate how we can adapt to climate change and our intention of becoming the best in this respect. Not only is this fun and challenging but also smart because anyone who adapts and has to come up with new solutions will discover that there are opportunities to become an economically powerful delta as well. And above all, a delta area where residents are aware of and proud of their history of living with water.

This delta area is a true living lab for climate adaptation, and our strength lies precisely in the implementation. Something I've been passionate about for years! Here we are working on the new delta works in the Netherlands; the large ones are already world-famous. However, this is not enough to survive.

We need new delta works, in all shapes and sizes and on multiple levels. Up to the capillaries of the city. From rain barrels and green roofs to the new bicycle parking (the size of a football pitch) at the station, which can also serve as an emergency storage vessel if the skies truly open up. The new delta works require everyone's input, not only from governments and public institutions but also from residents and private companies. This booklet shows that we are already well on our way. It makes you feel like participating, doesn't it?

**Ed Anker**  
Alderman of the municipality of Zwolle, member of Zwolle Region



Rainwater flows into the city from the waterways in the east.

In future water levels will be higher. This is taken into account in construction projects and road reconstruction. These are examples of 'new Delta Works' in the city.

During storms, all the water from the IJsselmeer lake pushes towards Zwolle.

The rainwater from Salland is discharged through the city center to the IJsselmeer.

# Public projects



The rainwater no longer feeds into the sewer system but goes directly into the subsurface via smart solutions, such as infiltration crates and water-permeable surfaces.



Rainwater from the roofs is collected in underground crates, forming a buffer around the Climate Tree. In times of drought the tree's roots absorb the water.



Green shrubs and trees provide shade and cooling on hot days and are great for insects and birds.



There is a lot of greenery and soil. As a result, rainwater is runs off more quickly.

## Climate street Bernisse, Kleine Alm

This project focuses on climate-proof street design. As a result of this project, the Bernisse and Kleine Alm have been transformed into a climate-proof residential street. It is a best practice for climate-proof living in an urban environment.

**Impact**  
The new design of the Bernisse and partly of the Alm is a positive development for the residents, children, animals, climate, and environment. The layout promotes interaction between residents and stimulates children to play there. Measures have been taken to limit water nuisance and heat stress. They have become climate-proof residential streets. The materials used for development are sustainable. The benches and play equipment are made of wood. The paving consists of baked bricks. They last longer and require less maintenance.

**Contributing parties**  
Residents, housing corporation SWZ, the Drents Overijsselse Delta water board, Wavin, Municipality of Zwolle. The municipality of Zwolle has financed the redevelopment of this Climate Street. Residents of the owner-occupied houses contributed to the renovation of their driveway. Waterboard Drents Overijssel Delta provided a subsidy for the disconnection of the sewer. Housing corporation SWZ funded the renovation of the driveways of the rental homes.

**Concrete measures**  
The Bernisse and Kleine Alm were given a facelift. The residential environment, driveways, and streets were outdated, hardscaped, and unable to cope with climate change. Several measures have been taken to change this. The rainwater no longer feeds into the sewers but goes directly into the subsurface, by applying smart solutions, such as infiltration crates and water-permeable surfaces. Furthermore, there is a lot of green and soil and less stone. As a result, rainwater also discharges faster. Green shrubs and trees provide shade and cooling on hot days and are good for insects and birds. Unique in this street is the Climate Tree which is watered with rainwater from the roofs.

**Location**  
The Bernisse and Kleine Alm are located in the Aa-landen district.

**Realization**  
The transformation into climate-proof residential streets started on 11 February 2019 and was completed in the summer of 2019. But the participation process started in October 2016 and lasted to April 2020.

**More information**  
For more information, scan the QR code and go to the website of Zwolle.



**Contacts**  
Monique Wiegers, district manager Aa-landen, municipality of Zwolle.





The houses and streets of Breezicht are situated high on elevated mounds. As a result, the houses and buildings can easily drain their rainwater to the water features.

Breezicht was built sustainably, with water and green spaces as the starting points.

Not only is the neighborhood climate-proof, it even provides space for excess rainwater from other parts of Stadshagen.

## Water resilient residential area Breezicht – Stadshagen

In this new housing estate, the houses will be built on elevated mounds with plenty of space for water and greenery around them.

**Project and impact**  
This project is a best practice for a climate-proof housing project in which living with water is the starting point. The project is also interesting for knowledge sharing because of its innovative character and thus contributes to residents' awareness of how to live with water.

**Contributing parties**  
The initiative lies with the municipality of Zwolle. It has collaborated with the Drents Overijsselse Delta water board, housing corporations SWZ and Deltawonen, and developers VanWonen, Loostad, and Bouwinvest.

**Concrete measures**  
The robust blue-green zone is the eye-catcher of Breezicht. It is built sustainably with water and greenery as a starting point. Not only does this make the neighborhood climate-proof, it even provides space for excess rainwater from other parts of Stadshagen. The houses and streets are high up on mounds. As a result, the houses and buildings can easily drain off their rainwater to the water features. The water level can naturally fluctuate, sometimes higher, sometimes lower. This allows a wet, ecological zone to develop.

**Location**  
Laan der Molens in Zwolle and surrounding area.

**Realization**  
The blue-green zone of Breezicht will be realized at the beginning of 2021. The residential area of the Tippe in Stadshagen will then follow but on a smaller scale. Here, too, much attention will be paid to water and green spaces.

**Aim**  
Breezicht has been constructed as a water resilient neighborhood according to the green-blue principles of the Zwolle adaptation strategy.

**More information**  
For more information, scan the QR code and go to the website of Zwolle.

How does such a climate resilient residential area work? Scan the QR code for the explanation video about Breezicht.

**Contacts**  
Freddy ten Kate and Heleen Post, project manager Breezicht. Gerjan Timmerman, urban planner.





During intensive rain and downpours, the clean rainwater can run off to lower greenery where it can slowly sink into the soil; this prevents water nuisance and damage to homes.

There is a water barrier along the entire planning area.

Green roofs catch rainwater, retain it and contribute to a green, pleasant working and living environment.

In the event of calamities and emergencies, excess water can flow to Park Weezenlanden.

## Weezenlanden-Noord: lush green living

This project consists of approximately 500 houses. It offers solutions for climate resilient construction and living in a green urban setting by incorporating water integrally into the design of the buildings and public space.

### Project and impact

This project is a best practice for climate-proof housing in an urban environment. The project is also interesting for knowledge sharing because of the innovative character. The strategy is to collect the rainwater, infiltrate it, and reuse it in that same area.

### Contributing parties

Development consortium Nijhuis-Explorius (OCNE) is, after winning the tender issued by Openbaar Belang, responsible for the design and realization of the storage areas and the public space. Together with the Drents Overijsselse Delta water board and the Public Interest Board, the municipality has drawn up an ambition document for the area with respect to climate adaptation: Water-safe and climate-proof development of Weezenlanden-Noord. OCNE has incorporated these ambitions in an urban development plan.

### Concrete measures

The urban plan has been adopted. The project is currently being further elaborated. A lot of attention is being paid to water and greenery. Water will be collected on the roofs

of the buildings and parking garages to provide water for greenery in case of drought. Together with the wadis in the public space, it forms a single water management system. In future, the Almelo canal will have to deal with more water due to climate change. As a result, the water level may rise. With the new housing development, water barriers will be made robust and higher to cope with higher water levels caused by the changing climate. In the event of calamities and emergencies, it will be possible to discharge excess water to Park Weezenlanden. New greenery will be added to reduce heat stress.

### Location

Schuurmanstraat and Wiegelinckstraat and Buserstraat.

### Realization

Construction starts in 2022. The entire plan is expected to be realized around 2030.

### Aim

Replacement of obsolete corporation housing with approximately 500 new homes in a green, climate robust environment.

### More information



For more information, scan the QR code and go to the website of Weezenlanden-Noord.

**Contacts**  
 Alfred Tibben (director) and Niek Broeze (concept developer) on behalf of Nijhuis-Explorius, and Hans Last (area manager) on behalf of housing corporation Openbaar Belang.



## A Wadi roundabout

At this Wadi roundabout, rainwater from the road is discharged to the lower wadi in the center of the traffic roundabout.

### Project type and impact

The challenge in this project has been to provide traffic solutions that are sustainable and climate-proof. It is an example of climate resilient urban design and contributes to climate adaptation awareness. This starts with the public sector playing an exemplary role in embracing opportunities for climate resilient solutions in public spaces.

### Contributing parties

Municipality of Zwolle, Climate Adaptation taskforce, and made possible by the program IJssel-Vechtdelta.

### Concrete measures

Usually, a roundabout is constructed in such a way that the center is higher than the sides. The rainwater then flows down the side and disappears through the gully to the sewerage system. However, this roundabout is constructed in such a way that the center is lower than the sides. Therefore the rainwater flows to the center, where it ends up in the wadi and infiltrates into the subsurface.

### Location

Roundabout Rembrandtlaan-Minervalaan.

### Aim

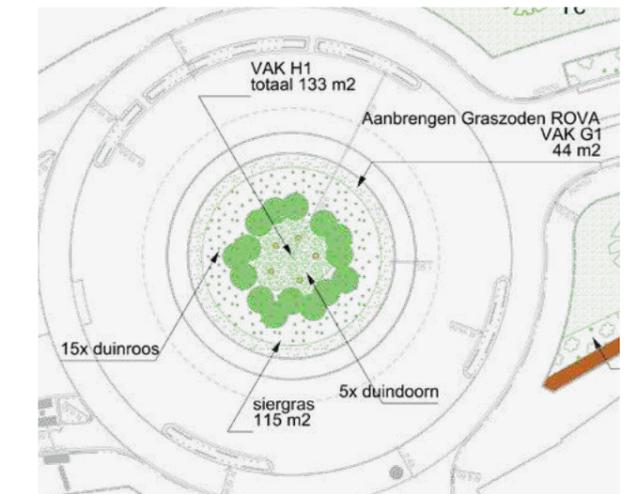
The challenge was to create a climate-proof traffic management measure. We did this by disconnecting the hardened surface of the roundabout from the sewerage system. A great opportunity to make adjustments to the public space according to Zwolle's Adaptation Strategy, thereby making a part of the city less vulnerable to climate change.

### Follow up

If new roundabouts have to be constructed, this approach is the obvious choice provided that circumstances allow for this traffic management measure.

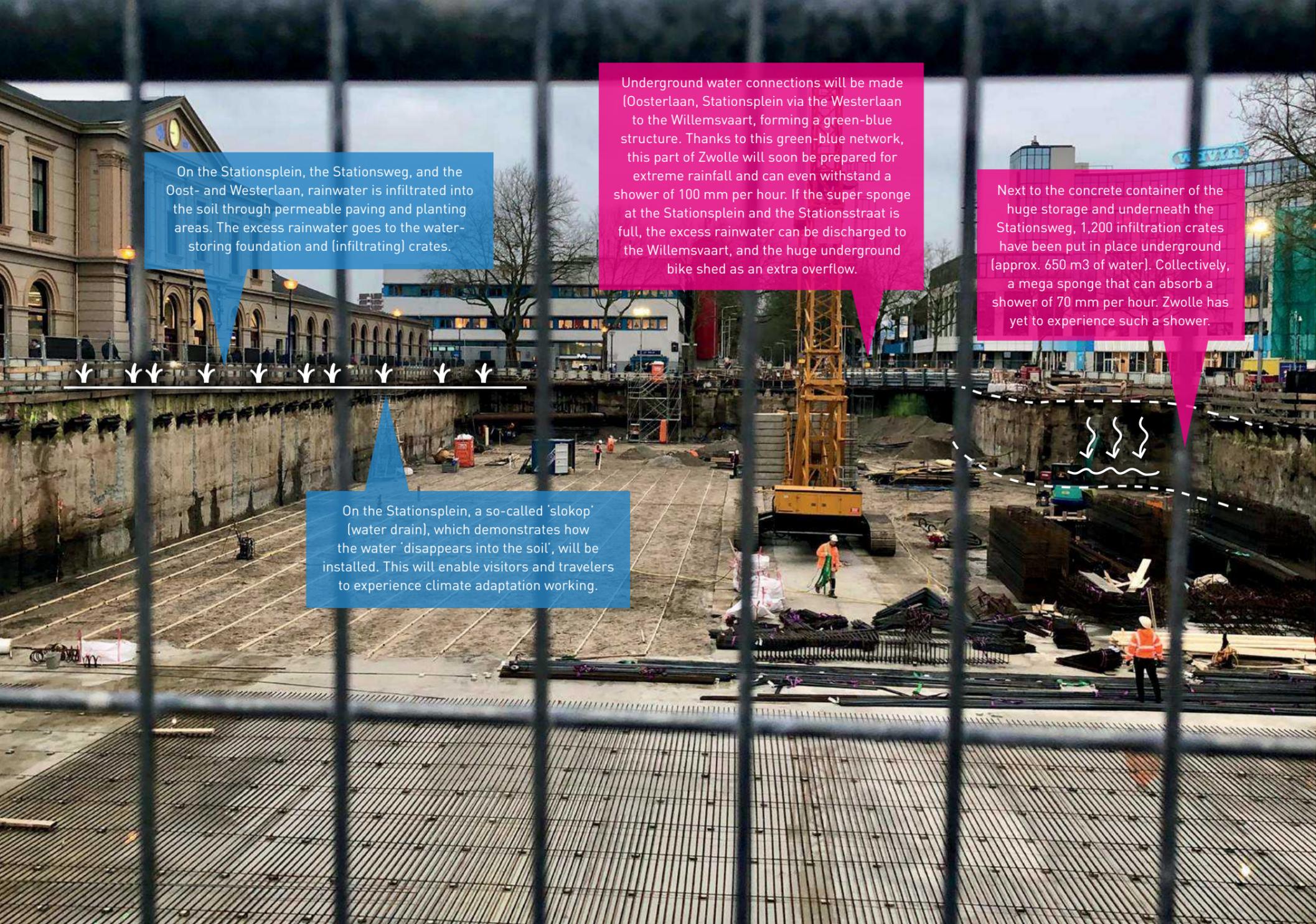
### Contacts

Ted Heuver and Berry Askamp, municipality of Zwolle.



This roundabout is built in such a way that the center is lower. The rainwater flows to the center, where it ends up in the wadi and disappears into the subsurface.

The Sea Buckthorn is a plant that also grows in the dunes and can handle extreme conditions (dry and wet).



On the Stationsplein, the Stationsweg, and the Oost- and Westerlaan, rainwater is infiltrated into the soil through permeable paving and planting areas. The excess rainwater goes to the water-storing foundation and (infiltrating) crates.

Underground water connections will be made (Oosterlaan, Stationsplein via the Westerlaan to the Willemsvaart, forming a green-blue structure. Thanks to this green-blue network, this part of Zwolle will soon be prepared for extreme rainfall and can even withstand a shower of 100 mm per hour. If the super sponge at the Stationsplein and the Stationsstraat is full, the excess rainwater can be discharged to the Willemsvaart, and the huge underground bike shed as an extra overflow.

Next to the concrete container of the huge storage and underneath the Stationsweg, 1,200 infiltration crates have been put in place underground (approx. 650 m<sup>3</sup> of water). Collectively, a mega sponge that can absorb a shower of 70 mm per hour. Zwolle has yet to experience such a shower.

On the Stationsplein, a so-called 'slokop' (water drain), which demonstrates how the water 'disappears into the soil', will be installed. This will enable visitors and travelers to experience climate adaptation working.

## Underground bike storage at Stationsplein and Stationsweg

### Objective

The underground bike storage is part of the climate revitalization of the Stationsplein.

### Project and impact

This project is a solution for Climate-proof building and working, climate-proof designing of the public space, and contributing to climate adaptation awareness.

### Contributing parties

Municipality of Zwolle, Province of Overijssel, ProRail and NS. This project was made possible by the IJssel-Vechtdelta program.

### Concrete measures

In addition to retaining water through infiltration into the soil, infiltration crates will be constructed, and foundation layers will be laid beside the concrete container of the bike storage. This will increase the water storage capacity in the railway zone. In very extreme situations (a shower like the one in Copenhagen in 2011, 150 mm of rain in 2 hours), an emergency overflow to the underground bike storage is possible.

### To be finished

In 2020.

### Aim

During the redevelopment of the Stationsplein, there was a need to expand parking facilities for cyclists. It was a great opportunity to take climate change into account in the project and adapt according to the Zwolle Adaptation Strategy. In fact, this project means the completion of a component of the Green-blue network within the city. It will make this part of the city less vulnerable to consequences of climate change: rainfall, heat, drought.

### Targeted outcome

A climate-resilient Stationsplein with spatial quality that, together with the redeveloped Stationsweg, connects the historic inner city with the Spoorzone.

### Follow up

The municipality of Zwolle is also working on a climate-adaptive Oosterlaan and Westerlaan, both adjacent to the Stationsplein, and on a climate-adaptive Spoorzone.

### More information



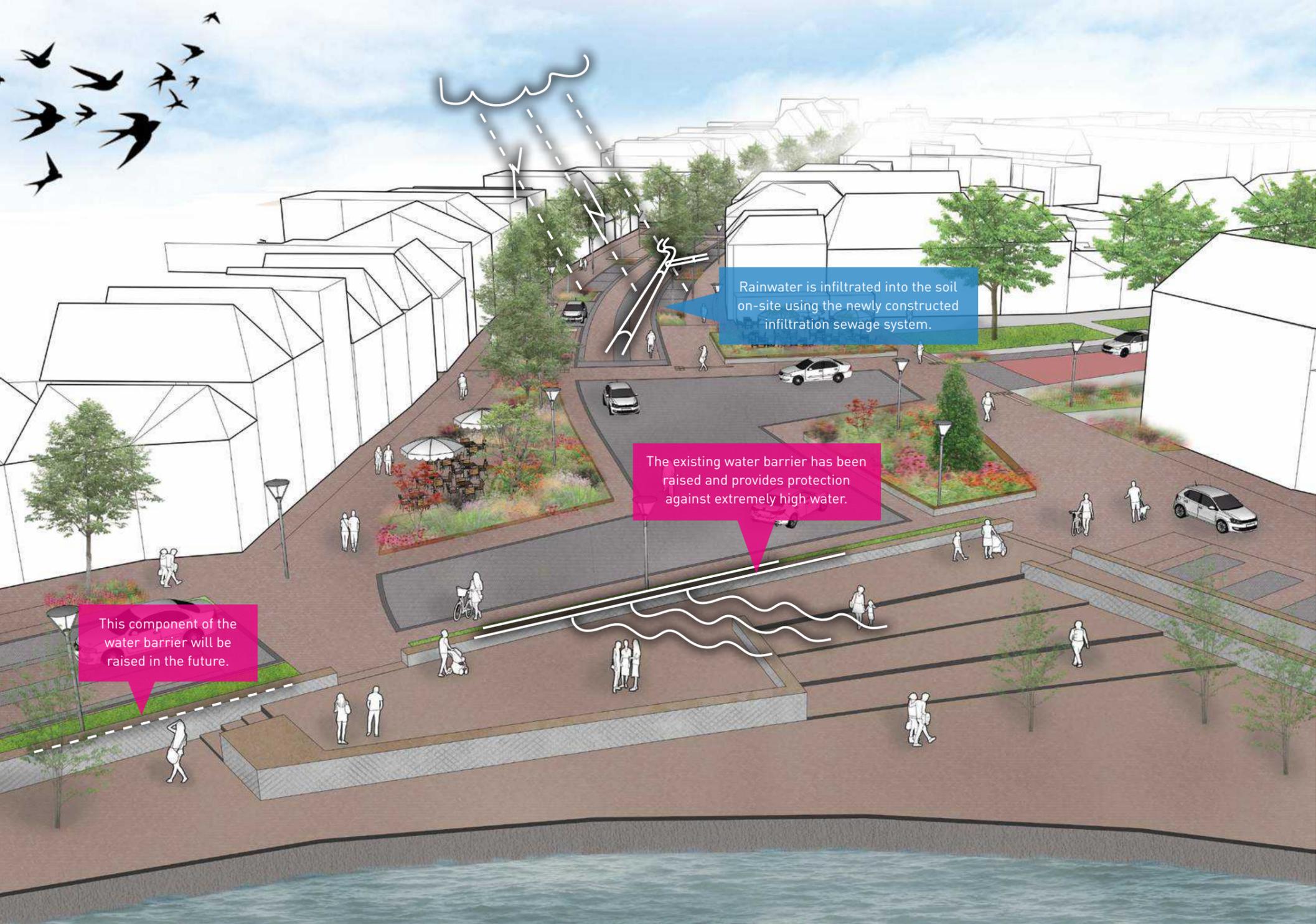
For more information about this project, scan the QR code and go to the website of the Spoorzone.

### Contacts

Niels Munnik, project manager Railway Zone, Ronnie Walraven, climate adaptation and sewerage consultant, and Gerrit Pieter Roetert Steenbruggen, Climate adaptation taskforce.



This is one of the 1,200 infiltration crates that have been put in place alongside the concrete container of the bike storage on the Stationsplein to the Stationsweg.



## Diezerbrink climate resilient shopping area

### Reason and purpose

With this project, we are making this shopping area more attractive for the future and are using it to make this part of the city water-safe at the same time.

### Type of project

Climate-proof redevelopment of this shopping area.

### Contributing parties

Municipality of Zwolle in cooperation with the Drents Overijsselse Delta water board.

### Concrete measures

In the design, characteristic area features from the past have been brought back. Also, more trees are planted, which increases the sponge effect. The retaining wall with a new height of +2.60 meters NAP has been returned to protect the area behind it from high water. Rainwater drains have also been disconnected from the sewage system, and we are laying infiltration sewers throughout the area. Rainwater, therefore, remains in the area and infiltrates the soil on site. The removed material is reused as much as possible, such as bricks for the parking spaces and parts of the roadway and sidewalk tiles for the retaining wall. All this will be combined with a promenade along the water for pedestrians.

### Location

Diezerkade, Brink, Thomas à Kempisstraat, and Blekerswegje.

### Realization

The first phase of the Diezerbrink redevelopment was realized in November 2020.

### Intended result

After the redevelopment, the area is more resistant to the effects of climate change, and we have created a pleasant shopping area.

### Follow up

During the redevelopment of the Diezerkade, the new flood defense will be further realized. The continuation of the Diezerkade will be executed in phase 3. No dates are yet available for this.

### Contacts

Hanneke Valkeman, district manager Dieze and Theo Wolters, project manager of the municipality of Zwolle.



## Diezerhoven climate resilient residential streets

### Reason and purpose

The reason for the redevelopment of the Van Ummenstraat and the Regelandisstraat was the district renovation of Dieze-Oost, which started 19 years ago in 2001. In phases, houses/apartment blocks were renovated or demolished and replaced by new buildings. In recent years, the Binnenhofjes (row apartments between the Radewijnstraat and Geert Grootestraat) were demolished and replaced by ground-level houses. This prompted the redevelopment of the residential streets Van Ummenstraat and Regelandisstraat and to make them water-safe at the same time.

### Contributing parties

Housing corporation SWZ and Municipality of Zwolle.

### Concrete measures

An important measure is that rainwater from the roofs is no longer drained into the sewers but infiltrated directly into the subsurface. For this purpose, so-called sand pillars have been constructed underneath the paving. A sand pillar is not a wooden pillar but a column of sand in the shape of a pillar. This column of sand connects the permeable subsoil/groundwater with the bricks that form the road. The paving has also been made permeable to water by applying so-called felts between the existing paving bricks. The rainwater can filter through between the bricks.

### Location

Van Ummenstraat and Regelandisstraat.

### Realization

The redevelopment was completed in the spring of 2020. After the construction activities, an accessible residential street for residents had been realized again.

### More information



For more information about this project and the Dieze-Oost district renewal, scan the QR code.

### Contacts

Hanneke Valkeman, district manager Dieze of the municipality of Zwolle.

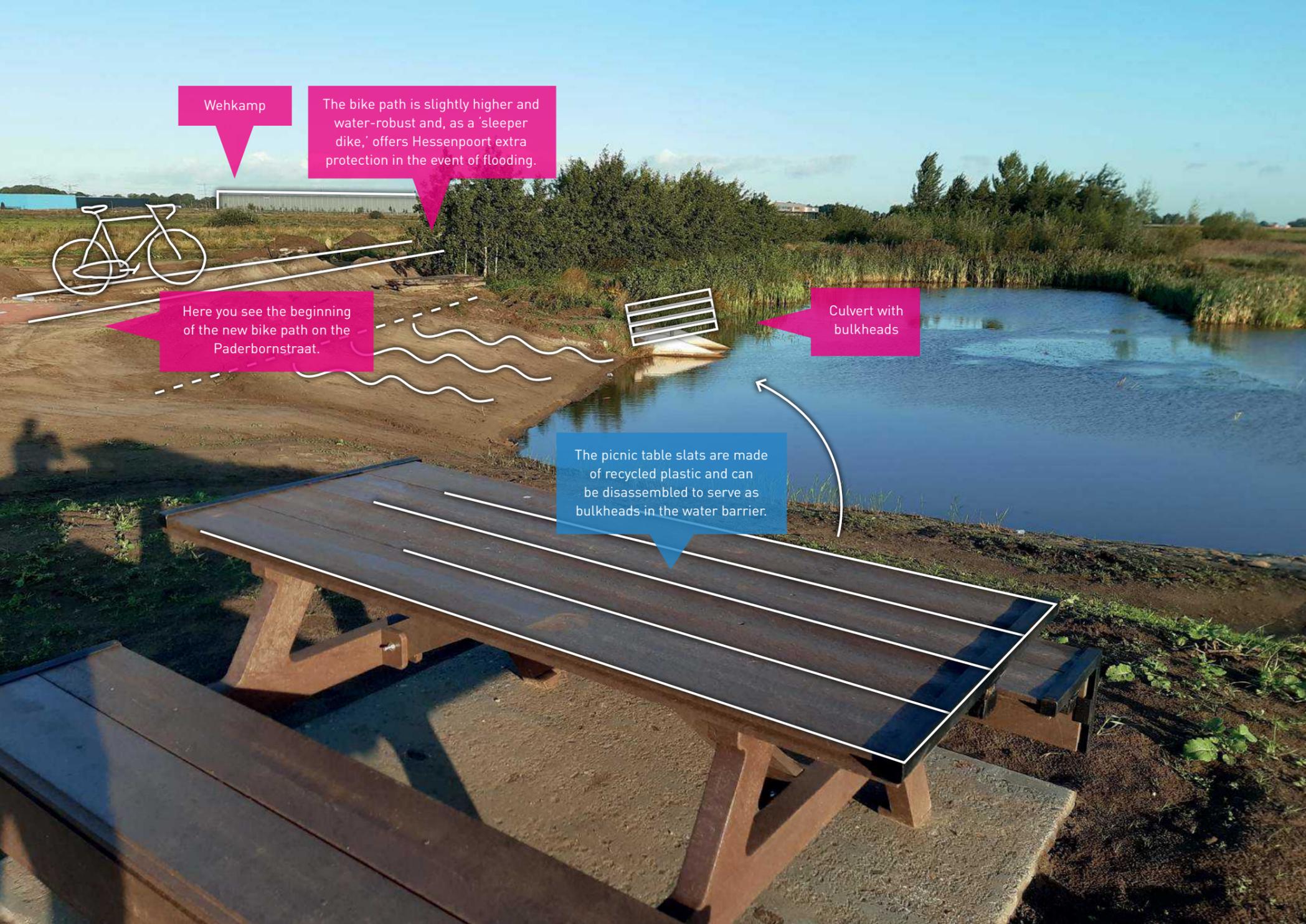


The bricklaying paving machine rolls out the paving as a kind of carpeting. The pavers place the existing bricks in the machine at standing height so that they do not have to bend as much.

In the end, there are no more sidewalk gullies. Additionally, the water from the sidewalk is infiltrated into the subsurface via the paving of the road.

Felting is applied between the paving. This creates space between the bricks, along which the water can easily flow to the surface.





Wehkamp

The bike path is slightly higher and water-robust and, as a 'sleeper dike,' offers Hessenpoort extra protection in the event of flooding.



Here you see the beginning of the new bike path on the Paderbornstraat.

The picnic table slats are made of recycled plastic and can be disassembled to serve as bulkheads in the water barrier.

Culvert with bulkheads

## Hessenpoort flood-proof bike path with circular picnic bench

### Objective

The flood-proof bike path protects Hessenpoort in the event of a flood. The picnic bench slats seal the culvert opening.

### Project and impact

This project offers an innovative solution for Climate-proof building and working, making business parks more sustainable and raising awareness about climate adaptation.

### Contributing parties

Project team Hessenpoort, and the program IJssel-Vechtdelta.

### Concrete measures

The bike path around Hessenpoort is a little higher and is water-robust. The culvert of the waterway between the polder and Hessenpoort can be closed with the slats from the picnic bench. The picnic bench was made in Zwolle from recycled plastic and is a product of the creative design industry (Cibap, vocational school for design).

### Location

Business park Hessenpoort in Zwolle.

### Realization

The project will be completed by the end of 2020.

### Aim

We wanted to cleverly combine water and space by carrying out the infrastructural works already planned (bike path) directly climate-proof and water-robust. And with an eye for the site's recreational facilities. These measures have now been combined innovatively: the picnic bench is recreational and water-retaining as its slats function as bulkheads against high water in emergencies.

### Intended result

As a result, the Hessenpoort business park has become a little more climate-proof. It is also an exemplary project; it stands for a way of climate-conscious thinking. With this, we hope to inspire other initiators and planners to think in the same way.

### Follow up

Through the Zwolle Adaptation Strategy, the municipality of Zwolle is working on propagating this new way of thinking and acting.

### More information



For more information about the bike path, the culvert, and the picnic bench, scan the QR code and go to the website of the municipality of Zwolle.

### Contacts

Andreas van Rooijen and Hans Kollenstaart of the municipality of Zwolle.

# Climate resilient business park Voorsterpoort-West

With this project, the municipality of Zwolle wants to prepare the Voorsterpoort-West business park for the effects of climate change.

**Project and impact**  
This project is a best practice for making a business park climate-proof.

**Contributing parties**  
Ronnie Walraven, climate adaptation and sewerage consultant for the municipality of Zwolle, and the park management of business park Voorsterpoort-West.

**Concrete measures**  
The rainwater is no longer drained into the sewage system but infiltrated into the subsurface. Wadi components have also been constructed where rainwater can drain to, forming a temporary water storage facility. The streets have a lowered curb for the drainage of rainwater to the wadi components.

**Location**  
Grote Voort in Zwolle.

**Realization**  
The project was realized in 2020.

**Aim and targeted outcome**  
The performed stress tests showed that business park Voorsterpoort-West was vulnerable to flooding during heavy rainfall. This was exacerbated by the fact that there are no water features nearby for storing excess rainwater. That is why the reconstruction of Voorsterpoort-West included a water-robust design of the business park.

**Follow up**  
The next step is the water-robust design of business park Voorsterpoort-Oost. A date has not been set for this.

**More information**

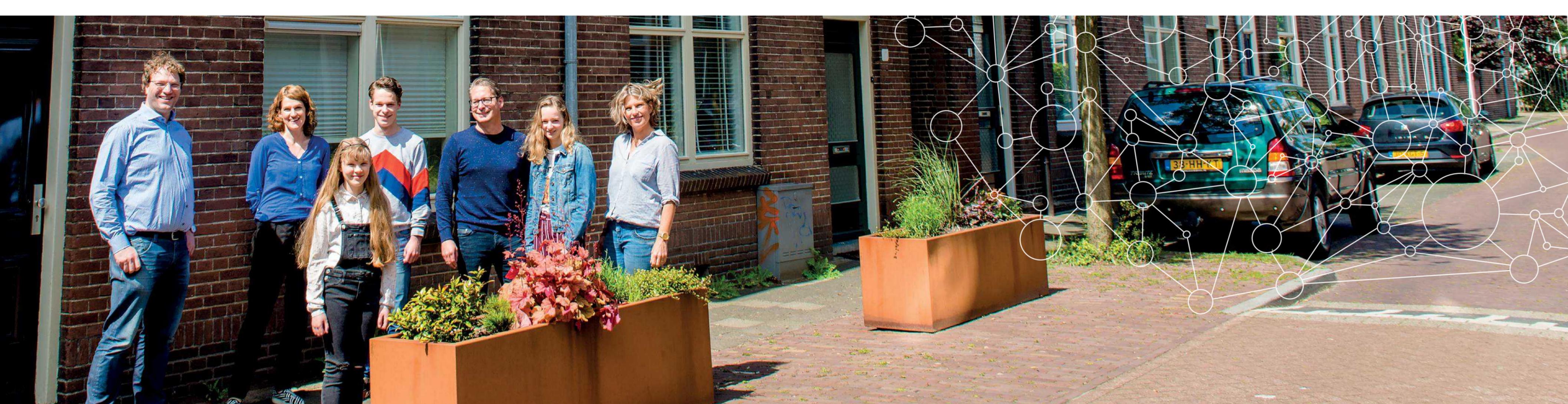


Scan the QR code for more information about this project.

**Contacts**  
Ronnie Walraven, Ted Heuver and Berry Askamp, climate adaptation and sewerage consultants, municipality of Zwolle.



Wadi along Russweg, collecting and temporarily storing excess rainwater after a heavy downpour.



**Community projects**

[www.regiozwolle.info/klimaat](http://www.regiozwolle.info/klimaat)



## A rainwater tank in the street

With the street rainwater tank pilot, the Team Klimaat Actief of Climate Campus and the municipality of Zwolle want to facilitate residents who wish to use rainwater for watering facade gardens, green areas under tree canopies, and other street greenery. This is a better alternative than using purified tap water for this purpose. Not only does it reduce the burden on the sewerage system, but it also saves energy when it comes to sewage purification. You are making a sustainable impact!

### Project and impact

This is a community project to facilitate residents who want to make their neighborhoods green and climate-proof. A visible street rainwater tank promotes climate-proof living, strengthens the neighborhood, and contributes to climate change awareness and what you can do yourself.

### Contributing parties

Residents from Assendorp, including Liset, Sabine, and Karen, among others, took the initiative to purchase a rainwater tank and installed it on the sidewalk in front of their house for the pilot. They received advice and help from the municipality's district manager Jenine Timmerman, and Adriaan Mosterman of Team Klimaat Actief (Climate Campus) also helped.

### Concrete measures

The street rainwater tank collects rainwater from the roof and stores it for watering facade gardens, adoptive greens, and areas under tree canopies. The residents responsible for the rainwater tank take it a step further. As soon as a downpour is predicted (e.g., via KNMI), they drain the rainwater tank. This way, they create space to accommodate the new rainfall. This relieves the sewerage system even more.

### Location

There are already street rainwater tanks in the Geraniumstraat, the Van Ittersumstraat, and the Groeneweg. The first one was installed in October 2019, and the other two during the course of 2020.

### Aim and targeted outcome

The reason was the wish of some residents to no longer use drinking water for gardens when watering can also be done with rainwater. The initiators hope that their example encourages more inhabitants to follow suit. It gives a good feeling to use rainwater usefully and to beautify your street with charming facade gardens. And you help a little in reducing drought damage by saving drinking water.

### Follow up

On the website of the municipality of Zwolle, you can find



information about the conditions under which a street rainwater tank is possible and the necessary steps to be followed: [www.zwolle.nl/geveltuintje](http://www.zwolle.nl/geveltuintje)

### More information



Also interested in having a rainwater tank on your street? Scan the QR code for more info.

### Contacts

Initiators Liset, Sabine and Karen worked together with district manager Jenine Timmerman, and Adriaan Mosterman of Team Klimaat Actief (Climate Campus).





## Water-storing gardens

Cleverly collect rainwater in an underground water tank in the garden to water your garden sustainably. This is how Dirk Pieter Halbesma from the Assendorp district of Zwolle opted for climate-proof living. He has enhanced his garden with water-storage, and now he always has a water supply in drier periods.

### Contributing parties

Dirk Pieter hired 50Tinten Groen Assendorp to help him with the construction of the underground storage tank.

### Concrete measures

A 1500 liter water tank has been burrowed and installed. Dirk Pieter already had a rainwater barrel and connected it to the tank, so rainwater now flows to the tank and not to the sewer. Dirk Pieter had also previously constructed a green roof, and with these measures, he is now an example of how you can create a climate-proof water-storing garden.

### Realization

The water storage tank was constructed in June 2020.

### Aim, impact, and follow-up

Dirk Pieter's wish was to do more with rainwater and thus avoid unnecessary consumption of drinking water. His water-storing garden inspired Jan Groot and Nel van Loos from Hanzeland to opt for an underground water

tank as well. They have had a 1000-liter water tank installed. Moreover, there is now more information about the costs of such a project. This can lower the threshold for other residents; they do not have to reinvent the wheel.

### Location

Assendorp and Hanzeland.

### Contacts

Dirk Pieter Halbesma, Jan Groot and Nel van Loos.





## Remote parking in Assendorp

In some neighborhoods such as Assendorp, there are many narrow streets limiting the living and playing space. So how do you make it attractive for residents to park their cars remotely? Mobility broker Arjan Broer started working on this question together with residents, the municipality of Zwolle, Climate Campus, and other parties.

### Challenge

The first challenge was to make remote parking easier and more attractive by greening the freed-up parking spaces. This also created more space for strengthening urban nature and biodiversity.

### Initiators

The Mobility broker has worked with many parties, including the residents' initiative 50 Tinten Groen Assendorp, shopkeepers, multifunctional center De Enk, Vrienden van Assendorp, Climate Campus, and many others. And the municipality of Zwolle, of course.

### Concrete measures

Parking spaces that are to be greened in the future will be constructed at a deeper level so that the water can drain away after a downpour. If necessary, they will be fitted with infiltration crates to store more rainwater. In consultation with the Municipality of Zwolle, rainwater tanks will be installed at these future green parking

spaces to provide water for the greenery on the street in drier times.

### Location

Parking spaces have been freed up for greening on the Coetsstraat and Van Ittersumstraat, and new parking spaces have been realized at the MobiPunt on the Van der Laenstraat.

### Realization

With this initiative, (groups of) residents in Assendorp are regularly challenged to try out remote parking. They then receive a temporary street planter in front of their home on the freed-up parking space. If, after six months, they like it and the neighbors agree, they can opt for permanent greening.

### Aim

The main reason is that Assendorp has many brick-paved streets. Because of this, rainwater does not drain fast enough when regular downpours occur. Another consequence of these types of streets is heat stress, especially in the hot summers of recent years. Besides this, living and playing space for children is often limited by too many cars in the streets. This, in combination with new forms of mobility, such as the e-bike, cargo bikes, car-sharing, and electric driving, ensures that the car will have a different/less prominent role in the future.

### Intended result

The aim is to realize 6 MobiPoints on the outskirts of the neighborhood, where many residents of Assendorp would want to park their cars. By the end of 2021, the goal is that at least 60 car owners will park their cars remotely on the outskirts of the district.

### More information



For more information, scan the QR code to go to the website of 50TintenGroenAssendorp.

### Contacts

Arjan Broer - Mobility broker. Jenine Timmerman - Mobility broker and district manager.



## The climate gardens of Bram, Nadia, and Frans



Three residents, Bram Borkent, Nadia el Hanaoui, and Frans Stam, from different locations in Zwolle, took the initiative to design their gardens in such a way that they can absorb more rainwater. Less water will then have to be drained off to the sewer. And the garden contributes to the fight against heat and drought. They were advised and assisted by Team Klimaat Actief of Climate Campus.

### Project and impact

This project is a best practice of climate-proof living for residents who gradually want to add green to their paved gardens as well. With their climate gardens, Bram, Nadia, and Frans want to inspire their neighbors and contribute to raising climate adaptation awareness.

### Nadia's green, low-maintenance garden

Nadia got in touch with Stadshovenier Adriaan about her paved garden in the Abel Tasmanstraat and ended up at Team Klimaat Actief. Initially, she wanted a paved, low-maintenance garden because she doesn't have green fingers and didn't want to spend a lot of money on it. Long story short, it has become a green low-maintenance garden. Because it really is possible. In the spring of 2019, Nadia's backyard was greened so that maintenance costs minimal effort and money.

### The Water Wall in Frans' garden

Frans had a bare sidewall on the side of the Konijnenveld in Zwolle Zuid. Through Team Klimaat Actief, he met Jennifer van Dijk of Amfibia Solutions and her Water Wall, a rainwater storage system of vertical PVC pipes for exterior walls. Long story short. Frans' bare sidewall is now a model site for the first Water Wall in Zwolle. It immediately triggered Frans to tackle the entire driveway and front yard and turn it into a model climate garden. Complete with a green roof, bee and butterfly garden, water route with mini-wadi, and a passers-by information sign.

### Bram's natural garden with innovative, permeable pavement.

Bram built a new house at Van 't Endehof and landscaped his garden, terrace, and driveway in the spring of 2020. He wanted to collect rainwater in different ways in his garden, and he wanted to have a natural garden. He contacted Stadshovenier Adriaan through Team Klimaat Actief, and it became an experiment in trying out different types of innovative and water permeable pavement. Bram collaborated in a video clip explaining the various methods. The garden has now been completed, and not only is it beautiful and good for biodiversity but also optimally water-storing.

### More information



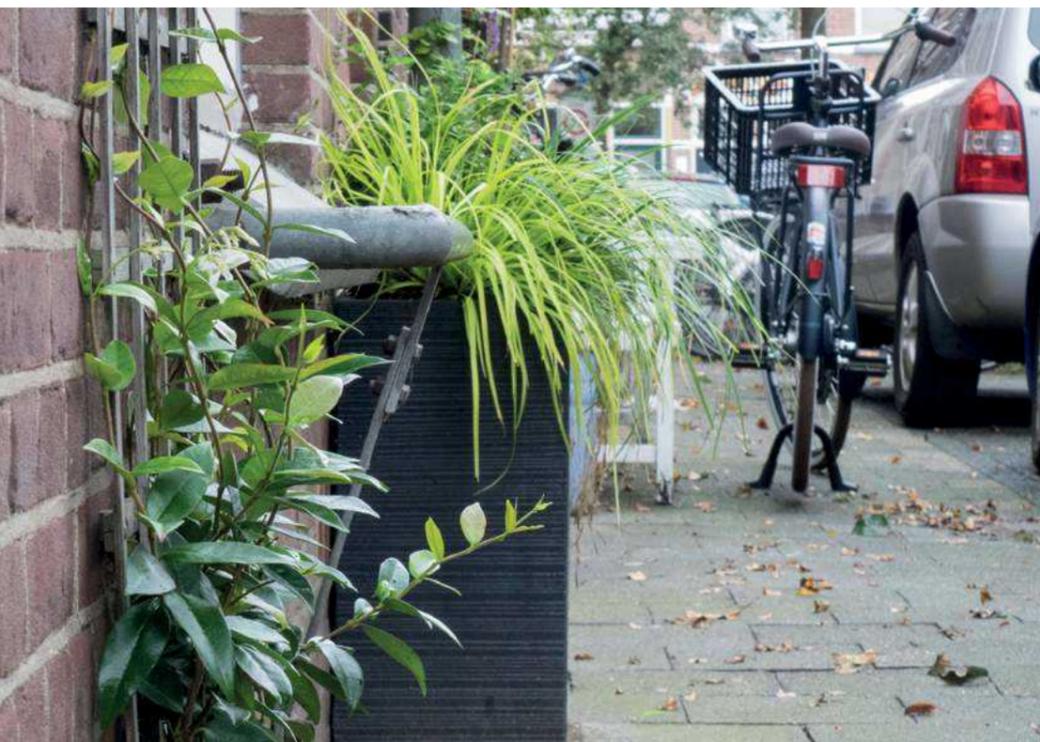
Scan the QR code for the video clips of Bram, Nadia, and Frans' climate gardens.

### More information and contact

Team Klimaat Actief is an initiative of Climate Campus to nudge residents in the Zwolle region to take the initiative to make their garden, street, and neighborhood green and thus set an example for others. Since 2019, there has also been a varied group of residents attending the demo sessions once a month. These Green Friday sessions focus on initiators from the city, who explain how they have approached their green initiative. The Green Friday sessions are organized by Team Klimaat Actief so that residents can inspire each other. For Zwolle, Team Klimaat Actief consists of Annemiek Wiegman (municipality of Zwolle) and Stadshovenier Adriaan Mosterman (Climate Campus).



For more information and if you would like to attend a Green Friday session, scan the QR code to go to the website of Climate Campus.



## Green facades and Living Pavement

Achieve as much effect as possible with vertical green by only clearing a narrow strip of space.

### Project and impact

This project is a best practice for making neighborhoods with narrow, paved streets climate-proof. The green facades contribute to raising awareness for climate resilience and empowerment of the community.

### Contributing parties

Het Tussendoortje is a residents' initiative of the Groenestraat and Blokstraat in Assendorp. With permission from district manager Jenine Timmerman (municipality of Zwolle) and advice from gardener Adriaan Mosterman (50TintenGroenAssendorp and Team Klimaat Actief), they drew up two plans for vertical facade gardens. The plan "To green Zijgevel Blokstraat 38" was enthusiastically received by the municipality and 4D (Stimuland) and could be realized with the "Premie op Actie" subsidy from the municipality of Zwolle and 4D's contribution. For the plan "Vertical facade gardens in the Blokstraat and Groenestraat" the Living Pavement was applied; innovative paving, ideal for places with little space and big enough for a climbing plant. More and more residents of Zwolle are using the Living Pavement.

### Concrete measures

ROVA adapted the paving for the greening of the large side

facade in the summer of 2020. After that, the residents could get started on the mesh panels and planting in the autumn. The sidewall is now covered with four large, rust-colored mesh wire panels of 2 by 3 meters. 22 Tuscan jasmine (*Trachelospermum jasminoides*) and 8 flower vines (*Clematis 'Hagley Hybrid'*) have been planted against these panels. These jasmines can blossom for months, and the white flowers spread a lovely scent. It is also evergreen in the winter. The flower vines blossom with large pink flowers during the months June, July, and August.

### Location

Groenestraat and Blokstraat in Zwolle.

### Aim and targeted outcome

A few years ago, with the municipality's help, the residents added greenery to the playground and parking spaces and have since been maintaining this themselves. Last year, the residents were again busy with additional initiatives, including vertical gardening. Vertical gardening was perfect for the large sidewall, for which there was no solution at the time due to the limited space. With the extra greenery, the living environment was further improved, biodiversity was stimulated and attuned to the changing climate.

### Follow up

The website of Het Tussendoortje is full of initiatives of this active group of residents from the Groenestraat and Blokstraat, which they also maintain themselves. They have developed numerous new projects to make their streets even greener and more pleasant.

### More information



For more information, scan the QR code to go to the website of Het Tussendoortje.





Deze vertaling miste, ik heb er zelf photographer neergezet. Dit klopt, toch?

Photographer: Theo Smits.

## Green roof action by Joost and Spencer

With their initiative, initiators Joost Vlot & Spencer Roozeboom want to turn as many flat roofs in Zwolle green as possible. A green roof is sustainable and insulating both in summer and winter. Moreover, green is good for the preservation of roofing felts, which will last about twice as long. In cities, heat buildup is often caused by a lack of greenery. Adding additional greenery will also reduce this.

### Project and impact

With this initiative, Joost and Spencer want to contribute to climate-proof living and to raising awareness that it is pleasant to live in a greener city. There is no need for extra space as existing flat roofs are used.

### Contributing parties

In 2019, the development and frequent testing of an ecological, sustainable green roof were started. The seeds for the wildflower green roof have been carefully composed by the Assendorp garden designer, Harry Pierik. The ecological value of the composition has been carefully considered. Plants that grow naturally in our IJssel-Vechtdelta have been chosen. The realization of the green roof was made possible by the Assendorp gardener Adriaan Mosterman. Sedumworld provides an alternative for lightweight green roofs. After extensive testing, Joost and Spencer succeeded in rolling out the initiative in 2020 with a climate subsidy from the Drents Overijsselse

Delta water board. Joost works within 50 Tinten Groen Assendorp to interest as many people in Zwolle as possible in installing a green roof, and Spencer is the driving force in the neighborhood of Stadshagen. They use the Assendorp street ambassadors, zoom meetings with webinars, and social media. They collaborate with as many local parties in Zwolle as possible.

### Concrete measures

More than 800 households participate and together construct 12,000 square meters of green roofs in Zwolle.

### Location

Households from all over Zwolle participate.

### Realization

The construction of more than 11,000 square meters of green roofs was completed in 2020.

### Targeted outcome and follow-up

Every flat roof in Zwolle green! It would be nice if green roofs become as standard as double glazing. Joost and Spencer will continue as long as there is demand from the people of Zwolle.



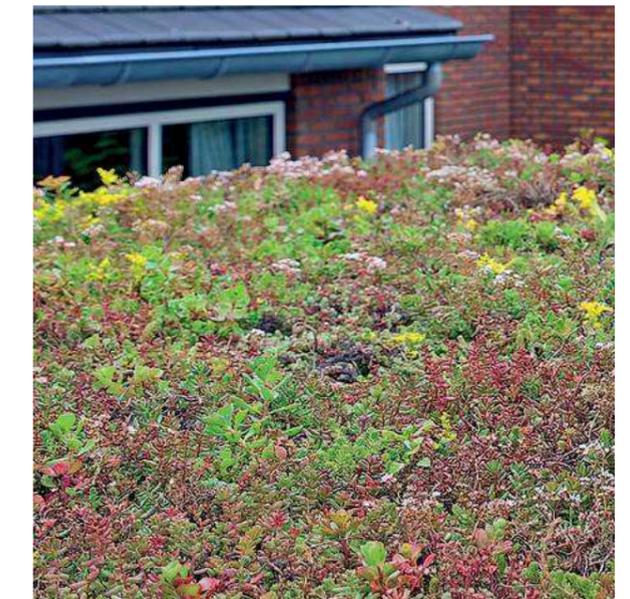
### More information



For more information, scan the QR code to go to the website of 50TintenGroen Assendorp.

### Contact

Joost Vlot - jwvlot@gmail.com





## Green underground bin gardens

With a street bin garden, the initiators hope to kill two birds with one stone: it helps prevent people from placing waste around the waste containers. In addition, the initiators want a green container garden to experience the positive effect green has on the living environment so that it stimulates people to 'de-pave' in the fight against water nuisance and heat stress.

### Project and impact

This is a best practice project in which we gain experience in stimulating residents to appreciate and contribute to a greener neighborhood.

### Contributing parties

Residents Residents Margriet, Maartje, and Liset from Verenigingstraat and Chris, Jack, and Melanie from Buxtehudestraat, have planted and adopted the greenery. The municipality of Zwolle and ROVA had the planters made and supplied garden soil. Team Klimaat Actief, the municipality of Zwolle and Climate Campus, made a one-off contribution for the greenery!

### Concrete measures

Planters have been placed and planted at the location of the underground bin. When emptying the bins, the planters are also lifted. In Buxtehudestraat, an additional U-shaped green area has been created in the fight against additional waste.

### Location

A small underground bin garden can be found at the corner of Buxtehudestraat and Palestrinalaan. The other street bin garden can be found in Verenigingsstraat at number 31.

### Aim and targeted outcome

The reason was the wish of some residents and neighborhood management to prevent the placement of waste and at the same time to add greenery around the street bins in the form of a nicely landscaped street bin garden.

### Follow up

The trial with the street bin gardens is still being evaluated. There are also green initiatives in the streets near the street bin gardens.

### More information



For more information on street bin gardens, scan the QR code and go to the website of Mijn Wijk Zwolle.

### Contacts

Initiators and residents Margriet, Maartje, and Liset (Verenigingstraat) and Chris, Jack, and Melanie (Buxtehudestraat) worked together with the municipality of Zwolle and ROVA. For planting, a one-off contribution was given by Team Klimaat Actief of the municipality of Zwolle and Climate Campus.





## The Bean Parade in public spaces

The free-to-pick fruit and vegetables at various city locations are a great way to raise awareness about our food system, biodiversity, and climate adaptation. By greening public squares like the Lubeckplein in Zwolle, the Straatboer offers animals and insects a treat, as well as passers-by.

### Project and impact

With the green start-up Straatboer, Christiaan Kuipers and his team work to raise awareness of the benefits of urban green living and how we can literally reap what we sow. This is how Christiaan introduces as many locals and companies as possible to biodiversity and sustainable, climate-proof life in a practical way. And not to mention that climate-proof farming also bolsters the strength of the community!

### Who are participating?

Stichting Straatboer is the initiator. Local residents in Hanzeland have lent a hand, along with the municipality of Zwolle, students from Windesheim Hogeschool, and the organic nursery De Kas van Kaat.

### Concrete measures

The round pavilion at the Lubeckplein has been covered with vegetation. Climbing crops have been planted and are being maintained. More water is collected, partly because the municipality granted one of four additional planters to

grow crops for the local residents. A parade of string beans and green beans has been planted in the troughs alongside an ensnaring display of sunflowers.

The vegetable crops and sunflowers prompted many enthusiastic reactions and questions. 'How can I do this in my own garden?' and 'Can I replace my tiles with vegeta(ble)tion and beautiful flowers?' are just a few of the questions that the Straatboer regularly and gladly answers. After all, raising awareness at this well-visited location is the main objective.

### Aim and location

The paved Lubeckplein in Zwolle is in dire need of cooling during hot summers. Cooling down a square like this with greenery can inspire people to do the same in their own homes.

### Targeted outcome and follow-up

The project will continue next year on the Lubeckplein with a green, vegetable-rich pavilion to inspire many more Bean Parades with local residents and passers-by. The fully green dome will also allow passers-by to experience how greenery provides a cooling refuge during heat waves. The plants will be accompanied by QR signs with more information and tips. The Straatboer will also set to work at several locations in the city, including Holtenbroek.



### More information



Scan de QR-code for more information about the Straatboer.

### Contact

Christiaan Kuipers - Christiaan@straatboer.nl





## Urban farmers within business parks

With this initiative, business parks become greener, employees can pick vegetables at their own business parks, and is a boost for biodiversity.

### Project and impact

With the green start-up Straatboer, Christiaan Kuipers and his colleagues are working on the awareness that it is pleasant to live and work in greener cities and literally reap the benefits. In this way, Christiaan allows as many residents and companies as possible to become acquainted with biodiversity and sustainable and climate-proof living and working in a practical way.

### Contributing parties

Stichting Straatboer is the initiator and works together with the foundation DOEN, Urgenda, and the participating companies. Such as FERM International, Transferro b.v., DHL, TIEM, Zenhder, and De Kas van Kaat.

### Concrete measures

At the bottom of the fencing, tomato plants, pole beans, climbing zucchinis, and pumpkins are planted. In addition to vegetables, perennials, sunflowers, and hollyhocks are also planted. Employees literally reap the benefits during lunch or after work hours. The growing crops on the fences and the participating companies set an inspiring example for the other companies in the Hessenpoort business park. It is a boost for the business

park's biodiversity. It gets office workers involved in local vegetable production and nature and it also creates enthusiasm and awareness.

### Aim and location

Christiaan's drive is the decline in biodiversity. Simultaneously, the gigantic surfaces of industrial estates offer enormous opportunities for climate adaptation and the involvement of the many working employees. This project will be put into practice at the Hessenpoort business park, and specifically targets all the companies on the Lingenstraat.

### Realization

This initiative started in 2020. In the coming years, Straatboer will build on this initiative with perennial greenery and fruit trees on the site.

### Targeted outcome and follow-up

The Hessenpoort is an example of a climate-adaptive, bio diversified, and active business park. In addition to a working environment with many pluses, it is also a pleasant place to walk around and stay. In 2021, this project will be further expanded with even more companies and larger areas.



### More information



For more information, scan the QR code and go to the website of Straatboer Christiaan Kuipers.

### Contact

Christiaan Kuipers - Christiaan@straatboer.nl





## Campaign 'Grow the sponge'

### Objective

How easy is it for residents to add greenery to their own house, garden, and street? The Climate Active Team (Team Klimaat Actief) discussed this question with HORNBAACH, Tuinland, Rawinso, and Wildkamp Zwolle. Following the conversations, the idea grew to make it easier for residents to construct a green roof and to place infiltration crates. Do-it-yourself Delta Works, as alderman Ed Anker would say. With that, the campaign Grow the sponge was born. After all, with more green roofs and infiltration crates in people's gardens, the city can work more effectively as a sponge in extreme showers.

### Project

With the Grow the Sponge campaign, green companies work together with the government, making the low-threshold supply of climate measures grow and making it easier for residents to say yes to a green roof or purchase garden infiltration crates.

### Concrete measures

Residents can now go to HORNBAACH, Tuinland, and Wildkamp in Zwolle for green roofing and increase the garden's water collection using infiltration crates. Store employees have been trained to advise on this, and clips have also been made (see [www.climate-campus.nl/deltawerkjes](http://www.climate-campus.nl/deltawerkjes)). In these clips, Adriaan Mosterman of

Team Klimaat Actief explains exactly how to build your own green roof and how to put an infiltration crate in place in the ground and connect it to a rainwater barrel or drainpipe.

### Realization

The campaign Grow the Sponge was launched in July 2020 by alderman Ed Anker at the HORNBAACH outlet in Zwolle. All green partners were there to support the campaign.

### Targeted outcome and follow-up

Climate Campus still collaborates with the green partners to promote the green roofs and infiltration crates. Presently they are exploring what other climate measures can be offered to residents and businesses in an accessible way. A follow-up is now in preparation for spring 2021. Other green companies that want to join are also welcome.

### More information



For more information, scan the QR code and go to the Climate Campus website. You can also find the video clips explaining how to install a green roof or infiltration crates in the garden.



### Contacts

Adriaan Mosterman and Annemiek Wiegman of Team Climate Active are contact points for the campaign. Go to [climate-campus.nl](http://climate-campus.nl) to make contact.







## Climate escape room Adapt or BTrapped

### Objective

Are people more likely to think more frequently about climate adaptation when they do a serious game about climate change? In Zwolle, they intend to find out. They had the first mobile escape room built on the topic of climate change and how to adapt to it. That was possible as Zwolle is participating in CATCH, a European Interreg project. CATCH or 'water sensitive Cities: the Answer To Challenges of extreme weather events.' Seven other cities around the North Sea are also participating. In addition to Enschede and Zwolle: Arvika (Sweden), Vejle (DK), Oldenburg (DE), Norwich (UK), and Herentals (BE). All are low-lying cities and vulnerable to flooding and damage.

### Contributing parties

The escape room was built by a student team of the creative vocational school Cibap and Windesheim University of Applied Sciences, at game studio 038Games. Escape room company The Great Escape from Zwolle provided advice. Trainees from the Drents Overijsselse Delta Water Board had previously worked out a concept for a climate escape room. This provided a basis for further collaboration within the Climate Campus network.

### Concrete measures

Residents from the Wipstrik and Stadshagen played the escape room between 10-12 September 2020 in the

schoolyard of elementary school the Zevensprong and the Koningin Emmaschool and were enthusiastic!

### Realization

The escape room was built between September 2019 and June 2020 and was festively unveiled at the end of June. The 8 students who created the escape room received big applause as well as did the video clip with the mayor, in which he warns the people of Zwolle.

### Aim

The municipality wants to find out whether you can make more impact with serious games than with traditional education. The European CATCH project made it possible to realize the escape room, test it, and collect the lessons learned. The next step is to publish them in 2021.

### Follow up

An offer to deploy the escape room for the Climate Campus network and municipalities in Overijssel is currently being developed in collaboration with the escape room company The Great Escape. By funding this jointly, the escape room will provide good services in the coming years and contribute to water and climate-conscious inhabitants in a climate resilient growth region. For example, the Province of Overijssel already stimulates the municipalities. In addition, a second serious game is being developed within CATCH:

the Garden Battle. This SIM-City-like game in Zwolle's digital twin city aims to let residents compete who takes the right measures to make their private gardens greener and more climate resilient. The ambition is to test and deliver the game with residents in 2021.

### More information



Scan the QR code for more info about the CATCH project and the climate escape room.



### Contacts

The CATCH team led by Renate Postma, consists of Annemiek Wiegman, Quirine van der Meer, Edith Camerik, Julia Groothuis and Jantina Dummers.



decision support tool

Edith Carne  
Somw city

**CATCH** Interreg North Sea Region CATCH

**Self-Assessment - How water sensitive is my city?**

Within the scope of the Water Sensitive City (WSC) approach (Wong and Brown, 2009), "Self-Assessment" is used to refer to a process and a tool for identifying the vulnerabilities and strengths of cities in terms of the three pillars (or actions) of the WSC and for positioning them using the city-states of the Urban Water Transition (UWT) framework.

The first three stages of the UWT framework describe the evolution of the water system to provide essential services such as secure access to potable water (Water Supply City), public health protection (Sewered City) and flood protection (Drained City). These are followed by the Waterways City, Water Cycle City and ultimately a Water Sensitive City, which describe the anticipated evolution of the urban water system to deliver higher order services such as social amenity and environmental protection, provide reliable water services under constrained resources, and ensure intergenerational equity and resilience to climate change.

The "Self-Assessment" benchmarks cities in the NSR across three pillars or actions, essential to deliver water sensitive services. The indicators have been designed to enable users to measure progress towards achieving water sensitive city goals and assist decision-makers to prioritise actions, define responsibility and foster accountability for water-related practices.



# A dashboard for the Water Sensitive City

## Objective

The EU Interreg CATCH project stands for 'water sensitive Cities: the Answer To CHallenges of extreme weather events.' The CATCH project provides knowledge sharing by seven connected international cities around the North Sea and stimulates innovation and product development.

## Project and impact

This project will build a digital dashboard/decision support system that contributes to developing a climate adaptation strategy for small to medium-sized cities in the North Sea region. The dashboard is based on the transition to the 'Water Sensitive City.' It also helps medium-sized cities around the North Sea to monitor their development towards the water-aware, climate-proof city.

## Contributing parties

Vechtstromen Water Board (lead beneficiary), Twente University, Overijssel province, Enschede municipality, Zwolle municipality, Vejle kommune (Denmark), Norfolk county council (UK), Vlaamse Milieumaatschappij (Belgium), Oldenburgisch-Ostfriesische Wasserverband (Germany), Jade Hochschule (Germany), Arvika teknik AB (Sweden), Länsstyrelsen Värmland (Sweden).

## Concrete measures

First, a digital dashboard/decision support system will be built. This is done with the following functionalities, tandemly: (1) Monitoring through self-evaluation: "How water-aware is my city?" and (2) Navigation based on the roadmap to a climate resilient, water sensitive design.

## Realization

The development of the decision support tool started in 2017. The dashboard is expected to be launched in 2021.

## Aim

NSR because they want to learn from each other how to adapt their cities to the consequences of climate change: rainfall, heat, drought. And how to even gain from it because the water sensitive city will eventually deliver services as well.

## Targeted outcome

The dashboard contributes to research into the development of climate adaptation strategies. Secondly, this project makes it possible to make this support tool widely and freely available to small and medium-sized cities. And finally, the project accelerates climate adaptation among local authorities as a community of practice.

## Follow up

Under the leadership of the Province of Overijssel, a Dutch version of the support tool is being developed in the spin-off CATCH+ project. In addition, a follow-up project is considering making the tool more region- and language-specific.

## More information



For more information, scan the QR code and view the project on the European North Sea Region CATCH website.

## Contact

Manon van de Riet, project manager Interreg CATCH at Vechtstromen lead partner water board.

