WELCOME TO THE FIELD TRIP

21 OCTOBER 2024

THE PATH OF WATER
IN THE REGION OF OIRSCHOT / EINDHOVEN
NETHERLANDS

Kloostersland

Low Tech Campus

Interreg
Co-funded by the European Union
North-West Europe
Rural Roadwater Rescue

Rural Roadwater Rescue (RRR)

Towards a transnational strategy extending the role of roads to support rural water systems.

Working with research institutes and local stakeholders in the Netherlands, Belgium, Germany and France, RRR facilitates the exchange of experience and the development of practical solutions. It will comprise an integrated, multi-stakeholders and cross-sectoral methodology for collecting, storing, cleaning and distributing rainwater through transformation of existing roads/highways. It will be inspired by two use cases (Belgium: Heverlee, Netherlands: InnovA58 nearby Oirschot/Kloosters) to be comprehensible.

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Use case climate adaptive waterhub (CAWH)

The Dutch Ministry of Infrastructure and Water Management can use highway A58 and the Wilhelminakanaal to support water and soil management, collaborating with partners at all levels of governance including the local community. Cooperative Kloostersland is a use case.

Runoff water from the A58 could be captured and treated for use during water shortages.

The local community is a key partner, along with water management organizations and government bodies.

Dear friends,

Some years ago I wondered why highways contribute so little to local communities. Highways are designed to make long distance travelling possible and safe, but in many places disrupt social and ecological routes. Even shops and petrol stations at resting areas are most of all not accessible for local residents.

I got convinced that it must be possible to design and operate safe highways and also contribute to local communities needs and demands.

The start of InnovA58 – a collaboration between Rijkswaterstaat and road engineering companies to develop innovative road solutions – in the area where my family lives for generations, felt like an obligation to proceed. And that is how we – supported by InnovA58 – came up with the idea of Climate Adaptive Waterhubs (CAWH). As a first step to connect highways with local communities, by making rainwater from highways available for local use.

With the support of EU Interreg North West Europe in 2023, CAWH became a joint goal of 6 partner organizations of 4 countries brought together in the project Rural_Roadwater_Rescue (RRR).

We were granted the opportunity to visit each other, to collect and exchange data and experiences and to build a strategy for developing CAWH.

To put the strategy into practice we proposed EU Interreg North West Europe STEREO ROADS as follow up to start in 2025 a four year journey of 14 partner organizations of 6 countries.

And now I welcome you in the area Kloostersland/Low Tech Campus where we took the first steps to develop a Climate Adaptive Waterhub. I am proud to show you the area where I live and work and invite you to end the fieldtrip at my home. You will meet local residents and representatives of organizations involved.

I like to offer you this booklet. It not only serves as a tour guide and memory. It is also an introduction to the different stakeholders at Kloostersland/Low Tech Campus. Their bond with the area, the problems they face, the expectations they have for the future and the contribution they are willing to make to the Climate Adaptive Waterhub.

I hope this fieldtrip will strengthen our bond and will inspire you for the coming year of Rural_Roadwater_Rescue and STEREO ROADS in the near future.

Stan Kerkhofs

Welcome to Oirschot

Construction of the Wilhelminakanaal, 1920

A58 Highway, 1970

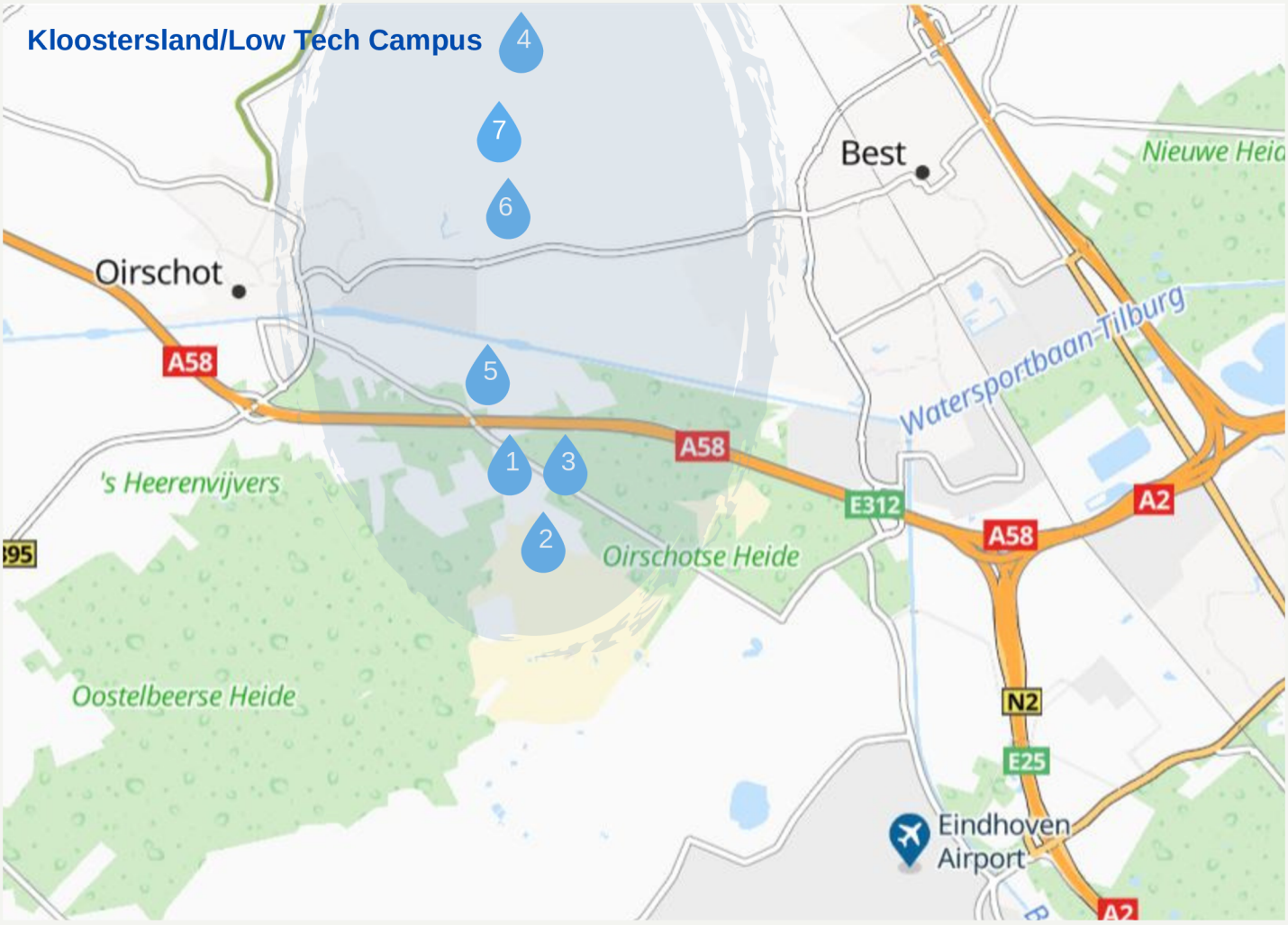
More heavy rain showers

More often longer periods of draught

Heavy rain showers regularly cause inconvenience on roads, A1 highway, Netherlands, summer of 2024

Our field trip

7 hotspots to visit
10 stories to tell



1 **Hoeve Nieuw Zwanenburg**

2 **Maneuver terrain**
Ministry of Defence

3 **Living Lab InnovA58 / Kloosters**
Ministry of Infrastructure and
Water management

4 **Brabants Landschap**

5 **Wilhelminakanaal**
Province of Northern Brabant
Local authority Oirschot
Water board De Dommel

6 **Anthonius Kapel, Oirschot**
local resident and cooperative Kloostersland

7 **Hoeve Van de Pallande**
local farmer

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HOEVE NIEUW ZWANENBURG

Hans Eenhoorn, Paul Meijer

This old farm nearby Living Lab InnovA58/Kloosters is the working place for the future, a collaborative space where a collective works together on a shared social mission: growing and developing bio-based building materials for use in civil engineering and infrastructure projects. This is done with full respect for the soil, water and air.

Hoeve Nieuw Zwanenburg, where fibre crops are planted and harvested

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Maneuver terrain

Ministry of Defence

JEAN-PIERRE SCHOUWENAARS

Location in the area of the project

The southern part of the area (largely owned the Ministry of Defence) lies on a sand ridge with few or no waterways owned by the water authority.

Expected contribution of road water to local water needs

We can create a basin on the maneuver terrain to enable military exercises, to deposit abundancy and without interfering with local water needs.

Location and design aspects for a local climate adaptive water hub (CAWH)

A possible location lies in the centre of the maneuver terrain suitable to exercise water obstacles, connected to the barracks. Construction should not have impact on local water needs.

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Living Lab InnovA58/Kloosters

Rijkswaterstaat

Ministry of Infrastructure and Water Management

ROB VALK

Rijkswaterstaat oversees various responsibilities, including the management of the A58 motorway and the Kloosters rest area, which features a petrol station and a charging station. This area is part of InnovA58, a unique testing ground for sustainable innovations.

Themes: asphalt, road marking, road furniture, biodiversity, energy, water, zero emission, circularity.

Testing ground for innovations

One of the prominent projects at InnovA58 is the Rural Roadwater Rescue initiative. Defence, local farmers, nature reserves and even hockey and football clubs need water. This might be road water. Of course, this must meet requirements, but does not have to be of drinking water quality.

Recently, Rijkswaterstaat conducted a study measuring both the quantity and quality of rainwater runoff from the A58, marking the first step towards more sustainable water management solutions.

> *The local community is a key partner*

Cooperation in the area

The project organization works in the Netherlands with other governments and users in an equal manner. This form still needs to grow: how do you, as a road authority, involve other parties in the area? Not the individual agenda, but the local and regional joint agenda will be leading. This requires an open attitude. You have to organize the technical possibilities for this.

Location and collaboration to realize a CAWH

Storage north of the hghway A58 could support local area Straten (part of Oirschot) during dry periods. The CAWH would involve residents in water storage and usage reduction. Rijkswaterstaat could store and manage water in natural areas like Oirschotse Heide, working with water authorities.

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Brabants Landschap

JOCHEM SLOOTHAAK

Brabants Landschap is dedicated to the conservation of nature, landscapes, and heritage. The organiszation manages over 19,000 hectares of forests, heathlands and fens, as well as estates. Through this work, this organisation ensures that the beautiful province of North Brabant, with its diverse landscapes, remains a home to many species of wild plants and animals.

What are the local water availability challenges?

The water system has been disrupted by urbanisation and industrial farming. Thereby, climate change is leading to more extreme rainfall and droughts. This affects the soil, often causing too much or too little water. Preserving biodiversity and making the landscape more resilient are now even greater challenges.

Simply replenishing groundwater with rainwater can cause pollution. We need to manage water infiltration carefully, considering more than just economic interests.

The best location for a local CAWH

The best location for water storage would be in the municipality of Best, near the highway A2.

Our role in developing and operating the CAWH

We have the knowledge and expertise needed to support hydrological restoration. Thereby, we are a trusted partner in our extensive regional network.

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Wilhelminakanaal

TWAN TIEBOSCH , PETER RAMAKERS - PROVINCIE NOORD-BRABANT

Local water availability challenges

Recent years have shown tremendous water shortage situations in dry periods in sand-based landscapes of the Netherlands, widely spread in the south and east of our country. Groundwater levels have receded causing stress on the water-soil balance.

Our role in developing and operating the CAWH

Under Dutch governance, the Provincie Noord-Brabant is the competent authority to legislate groundwater resources (extraction and suppletion).

Measurement of groundwater levels

Miekoekse bridge, Wilhelmina canal, Oirschot

How should collaboration between stakeholders be organised?

An existing collaboration in Brabant consists of all organisations involved including farmers and drinking water supply companies.

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Groundwater levels have receded causing stress on the water-soil balance.

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Wilhelminakanaal

MARIEN SONNEVELD - WATERSCHAP DE DOMMEL

Who we are and what we do

Water authority 'De Dommel' is charged with the management of surface water in the environment. We are responsible for preventing flooding, retaining precipitation for water demands in dry periods, water quality (European Water Framework Directive) and sewage treatment.

Our ambition is to create a robust climate-resilient water system by 2050 at the latest. As we have hardly any supply of water from rivers, we are almost entirely dependent on rainwater.

Our involvement with the project

We are interested in the usability of wastewater for irrigation and the continuing flowing of streams during dry periods.

Our policy is to redevelop more natural water systems. We want to retain water where it falls, infiltrate it into the soil - especially on higher sandy soils - and delay the discharge of excess rainwater.

How to collaborate

Public parties have joined forces for an area-oriented approach to climate change and spatial planning to create customised solutions.

The bottleneck is that competencies and priorities have not been adapted to this approach. As a result, progress is slow and yet less effective, while deadlines for (legal-based) goals are fast approaching. We need better fundamental choices.

Landscape in the region of Oirschot

What we need

The transition challenges (and opportunities!) require social innovation: future thinking, scenario planning, prioritisation and new forms of cooperation. We need more community-based initiatives from citizens and businesses, possibly inspired by for example the cultural sector, and with the knowledge and experience of the local residents and organizations.

5 Wilhelminakanaal

PETER STABEL, WILCO VAN HOUT - LOCAL MUNICIPALITY OIRSCHOT

Challenges we experience in water abundancy and water shortage

The drought caused significant damage to trees and green spaces, especially in newly developed areas.

Heavy rainfall, both in large amounts and over longer periods, led to increased maintenance costs for green spaces.
The extra strain on sewers and pumping stations also resulted in higher costs for use and maintenance.

Flooding due to high groundwater levels caused damage mainly to historic farmhouses, which are often built at a lower elevation.

Water entered the basements of houses and also affected both agriculture and private gardens. Additionally, the usability of playgrounds decreased, and roads and cycle paths were blocked.

Floaded roads and trees

Wilhelminakanaal and highway A58, location of Oirschot

Location and design of a CAWH

The canal could potentially play a role in addressing regional challenges.
A water hub should be built as close as possible to the source and delivery points.

Additionally, the canal could be used for water storage at the industrial area ‘De Stad’, which will become relevant in the next 5 to 10 years.

The canal might also serve for water transport by discharging excess water at ‘De Stad’ and allowing the same amount to flow further downstream into a storage facility. This, along with water quality, will need to be further studied in the future.

6 Anthoniuskapel

JACCO KWAAITAAL & MARIUS MONEN - COOPERATIVE KLOOSTERSLAND

Challenges in local water availability:

*__Water abundance__ (overload) cause property damage and daily life disruptions. Communities are responding by adapting homes, using rain barrels, and diverting stormwater. Neighborhoods and industries are being redesigned for better climate resilience.

*__Water scarcity__. Droughts lead to water restrictions and impact on agriculture.

*__Communities__ increasingly adopt sustainable water practices, with progressive groups pushing for larger-scale solutions like climate-adaptive water hubs (CAWH) to balance supply and demand.

Location and design of a CAWH

Near highways, such as at the Living Lab Kloosters, efficiently collecting excess rainwater ispossible. The best site will be chosen with community input. The hub must integrate water collection, storage, and treatment to manage both excess and scarce water.

Anthonius chapel, Oirschot

> *Community involvement is key to its design and location.*

Cooperative Kloostersland's role

Cooperative Kloostersland (CK) promotes sustainability in the Kloosters area. CK will engage the community, including farmers, residents, and organizations, to balance water supply and demand throughout the year.

Stakeholder contributions

Landowners and local Small & Medium Enterprises (SMEs) will provide sites and expertise. Governments and water boards will fund the project, while water boards, businesses, and agrarians will help operate and maintain it.

Collaboration will begin informally to build relationships and shared goals. If successful, formal agreements or a new legal entity may be established.

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Anthoniuskapel

JORIS VAN ESCH - RESIDENT, LANDSCAPE ARCHITECT, INTERESTED IN LOCAL HISTORY

The problems caused by water abundancy and water shortage

I grew up in this area and saw the landscape and biodiversity change. In my own garden I see the problems of drought and (especially last year) water drainage.

The contribution of road water to the water problems

I think the CAWH has potency as a multifunctional network that can make new connections for water, nature, landscape quality and people.

The role of residents

We can share our knowledge of the area. Not 'scientific' knowledge, but the things we see, experience and feel 24 hours a day, 7 days a week.

Which other stakeholders should at least be involved in the development of the CAWH?

Farmers, new economic initiatives (like new forms of agriculture, tourism, etc.), landowners, municipality, water authority.

Working together

How the collaboration between stakeholders should be organized

It should be open and transparent. We need people who can bring opposite parties together and make them listen to each other.

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A more robust watersystem can be a solid multipurpose framework that contributes to biodiversity, landscape, and residents and visitors of our neigbourhood.

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Farm Van de Pallande

JESSICA PETERS - VAN DE PALLANDE I FRUIT AND VEGETABLES

Challenges in local water availability

We use a water collection system for irrigation, so groundwater is only needed during droughts. When it is very wet, rthere is less oxygen in the soil and slower crop growth. Reducing heavy machinery use is key, but if wet periods increase, new water management strategies will be needed.

Contribution of road water to water demand

During extreme drought, a water hub would help bring extra water to the farm. In wet conditions, it would be ideal to redirect excess water to roads or hubs for temporary storage. Road water could also be reused for plant propagation or toilet flushing, reducing the use of drinking water.

Location and design of a CAWH

Water should be delivered efficiently. The returned water must be of equal or better quality to protect the soil.

Key role for the local community

Farm Van de Pallande seen from above

Multiple hubs could be created to serve different areas, allowing us to test water use and build collaborative sub-communities.

The role we intend to fulfill to develop and/or operate a CAWH

I'm open to using my farm as a test site for the CAWH, as I already work on regenerative water management. It's important not to see the CAWH as a complete solution.

Managing water extremes also requires proper soil management and vegetation. I'm eager to teach others about these topics in an engaging and accessible way.

Stakeholders in the development of the CAWH

- Province, municipality and water board
- Large water consumers like chemical and food industries
- Major polluters
- Landowners

Notes

Thanks for visiting Kloostersland

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