

## THE AREA

The site is located in the Atlantic biogeographical region. With the North Sea close by, it has a mild, humid climate, but summer droughts are now more prominent. The region is densely populated and the demand for water is increasing.



### Blue Horizon Limburg Demonstration site

- Urban area, 2.427 km<sup>2</sup>
- Groundwater is the main source of water for South Limburg (Mid-East region)
- Dense agglomerations alternated with rural areas
- Two river systems (Maas and Schelde)

## INVOLVED PARTNERS



KWR



## ABOUT NATALIE

NATALIE is an **European Union research project** contributing to the objectives of the **EU mission "Adaptation to Climate Change"**, aiming to empower at least 150 regions and local communities to become climate resilient by 2030.

To achieve our technical, financial, legal and social objectives, we are a consortium of **43 partners** committed for **5 years** to the common goal of accelerating the adoption of **Nature-based Solutions (NBS) across Europe**.

## 8 CASE STUDIES

18 NBS are being implemented, monitored and their performance assessed in 8 demonstration sites covering 6 different biogeographical regions of Europe. All these sites have different context and are facing different climatic challenges.

The potential of replication of these solutions will be studied in 4 "follower sites".



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## GET IN TOUCH

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# NATALIE

Accelerating and mainstreaming transformative NATURE-based solutions to enhance resilience to climate change for diverse bio-geographical European regions

## AQUIFER RECHARGE FOR WATER REUSE

### Belgium

### Sint-Truiden, South Limburg, Flanders Case study test location







# Climate change challenges

①



As droughts intensify and last longer, there are concerns about the **ability of the aquifer to recharge** effectively and to **ensure adequate drinking water supply**

②



**Over-exploitation** of the groundwater by lack of infiltration, illegal pumping and climate change causes problems for the region (e.g. **cracks in houses**)

*Our aim here is to test the potential for water transport and storage in the aquifer system, using a natural system located underground - aquifers - as a crucial step towards indirect potable reuse."*

**Dries BORLOO, De Watergroep**



## What is an aquifer?

An aquifer is an underground layer of porous rock or sediment that holds groundwater. It is a vital source of freshwater for many regions, but there are challenges such as over-exploitation, declining groundwater levels, or pollution (mainly from agricultural nutrients or pesticides).

## Is it safe to inject wastewater into the aquifer?

Wastewater is never injected directly into the aquifer, since this is a pristine layer. In this case study, raw groundwater and RO water (simulating purified reuse water) are injected into the Cretaceous layer. The potential of the Cretaceous aquifer to accept and transport such water qualities is investigated.

## Will the water extracted from the aquifer be safe enough for human use?

The idea is that the injected water will remain in the aquifer for a certain period of time before being pumped out again for reuse. The water will be conditioned to raw groundwater quality. This quality is ideal to produce drinking water after normal treatment.



## Objectives

Investigate whether recharging an aquifer with high quality water (**Aquifer Storage and Recovery**) can have potential both for:

- **Secure water supply** (the water quality benefits from contact with the aquifer,
- **Increase the resilience of groundwater** reserves to more frequent droughts by replenishment of the aquifer.
- Feasibility study for **indirect potable reuse** from wastewater