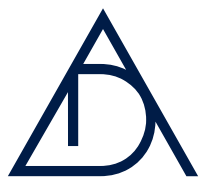




ACTIVE GROUNDWATER LEVEL MANAGEMENT



DAREIUS

Innovation by Nature

ACTIVE GROUNDWATER LEVEL MANAGEMENT

AGAPE, the Dutch acronym for 'Active Groundwater Level Management', is part of RESCIDO, the Toolbox in which we have collected our designers' multiple solutions to complex urban water problems. The combined implementation of these solutions can make cities more resilient and thus more sustainable.

WHY AGAPE?

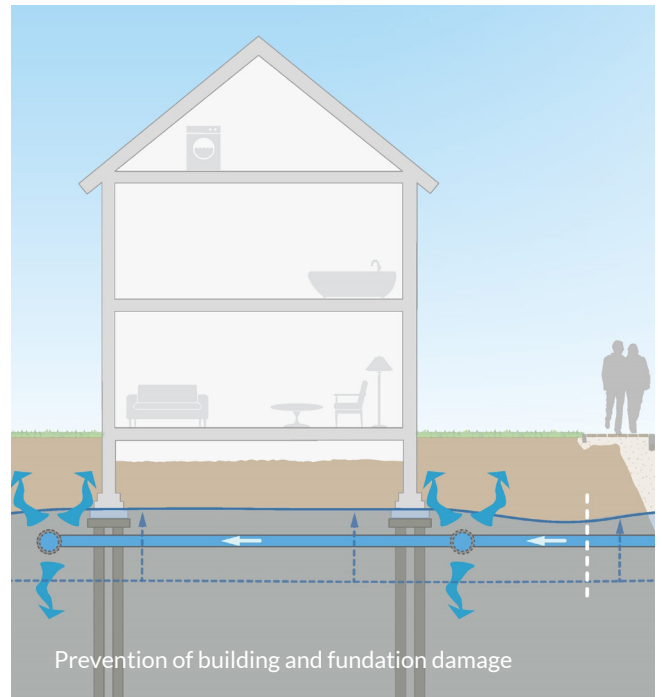
Urban areas increasingly have to deal with serious flooding or with water shortages, because the relationship between the supply and demand of water is becoming more and more unpredictable. The supply-demand imbalances are a product of increasingly heavy downpours as well as increasingly lengthy drought periods. This dynamic is causing mounting damage to civil infrastructure and degradation of urban green spaces. Moreover, groundwater flooding and low groundwater levels are now causing serious deterioration to buildings. If our policy and approach are not adjusted, this could lead over time to billions of euros in damages to buildings and infrastructure. The problem is all the more complex



because the imbalance requires precise groundwater responses. But in the current groundwater dynamic in urban environments, achieving an infiltration-drainage balance is an objective that is ever more distant. The imbalance is the consequence of the uncontrolled infiltration and drainage of water. An inexpensive solution, but one with far-reaching consequences in a complex system. AGAPE is accordingly designed to maximise the onsite prevention of both groundwater flooding and low groundwater levels, and the possible resulting land subsidence, and damage to foundations and green spaces.

HOW DOES AGAPE WORK?

AGAPE can be used to address different problems at several scale levels. The same basic principle applies to all the scale variants. A drainage-infiltration pipe below the groundwater level infiltrates water when the level is too low and drains groundwater away when the level is too high. Depending on the specific situation, the groundwater level management can be conducted with or without active control.



The simplest, uncontrolled variant makes use of an open connection with a surface water level. In this way the system ensures that variations in the groundwater level in relation to the surface water level are attenuated. If the groundwater level is not the one desired, the infiltration or drainage of water using a pump can be carried out more efficiently. In this case the system can be developed using a Digital Twin approach, so that the user can conduct the monitoring and control digitally.

WHAT AGAPE OFFERS

The tool provides a very effective means of extending the lifespan and improving the quality of fragile buildings, infrastructure and urban green spaces. It also prevents instability (caused by high groundwater levels) and land subsidence (caused by low groundwater levels). This is relevant for example in situations where climate change causes wide fluctuations in the levels and frequency of precipitation. In dry periods water can be made available locally for use in green spaces, regardless of the storage capacity of the subsurface or a reliance on the transport of water over great distances to meet irrigation needs. The dimensioning is of course often of central importance. In many cases the measure needs to be locally integrated, which means that the support and enthusiasm of residents becomes a precondition for its success. Through the application of AGAPE, we will work together with you in seeking an effective solution to your challenge.

DO YOU HAVE AN ACTIVE GROUNDWATER LEVEL MANAGEMENT IDEA?

Do you have your own idea about how AGAPE can be implemented in your specific situation? Are you wondering about how you could get such a complex project underway? We would be happy to share our experiences with you.

More about Dareius and what we can do for you?

CONTACT US:

+31 6 82 92 14 88
info@dareius.com
www.dareius.com

Podium 9
3826 PA Amersfoort
The Netherlands

Follow us on:



DAREIUS

Innovation by Nature