



HYDROROCK[®]
future of sustainable water management

**Retrofitting a Hydrorock
Natural Aquifer buffering,
infiltration and irrigation
system**



Tree pits In urban locations

System design brief

13 Havenstraat is a street in the old harbour city of Schiedam, Netherlands, that was recently renovated. The existing old rain water sewage system was failing and damaged which resulted in flooding of the area during continuous or short bursts of heavy rain.

Local authorities needed an innovative solution in which the existing sewage system could become obsolete, flooding would be solved, and a greener appearance with trees and scrubs would improve the streets image. The area is commercial, surrounded by either car parks, buildings or roads.

The local Council required a scheme to deal with both issues and the proposed Hydrorock Natural Aquifer SuDS system was adopted. Each subsystem was required to buffer and infiltrate/irrigate the rainfall on a 75m² section of road and to buffer and infiltrate 30mm rainfall within one hour. Giving a volume to buffer of 2.25m³ in an hour per tree pit.



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Why the Hydrorock Natural Aquifer SuDS System?

The Hydrorock SuDS system provided the council with a very cost-effective solution which is capable of effectively dealing with a large rain event, without any need to connect to a sewerage system. Instead the Hydrorock system created tree pits, where the water is stored and utilised to irrigate trees and shrubs.

Previously the only solution was to drain the area and take the water into the overburdened sewers. Hydrorock provided the council with the only solution to buffer the rainwater and irrigate trees in a completely green way. Like many which are environmentally-conscious these days, the council was strongly against placing large volumes of plastics in the ground, due to contamination of the nearby sea with micro plastics.

The Hydrorock solution filtered run off from the road, and the Aquifer Blocks chemically bound some pollutants, cleaning the water before it finally infiltrated into the soil.



Installation and spec

The project could be undertaken with minimal disruption with sections of the road being dealt with at a time. The trees were located between the existing parking spaces and the system was installed around these trees, underneath the spaces to avoid root disturbance. The installation process is relatively simple and even enabled the the pavers to be reused.

Because the area was not subject to heavy vehicular traffic, standard-density blocks were able to be used, which have a lower cost per litre than the high-density blocks. These were placed with 300mm of over burden, allowing a loading of 3000Kg per m².

For each sub array, three BD 340 blocks were used at a depth of 1300mm, arranged to the side of the tree under the parking spaces and one directly in front of the tree. The blocks were connected to ensure fast filling of the sub array.

Not only did the system causes minimal disruption but it is also maintenance free.



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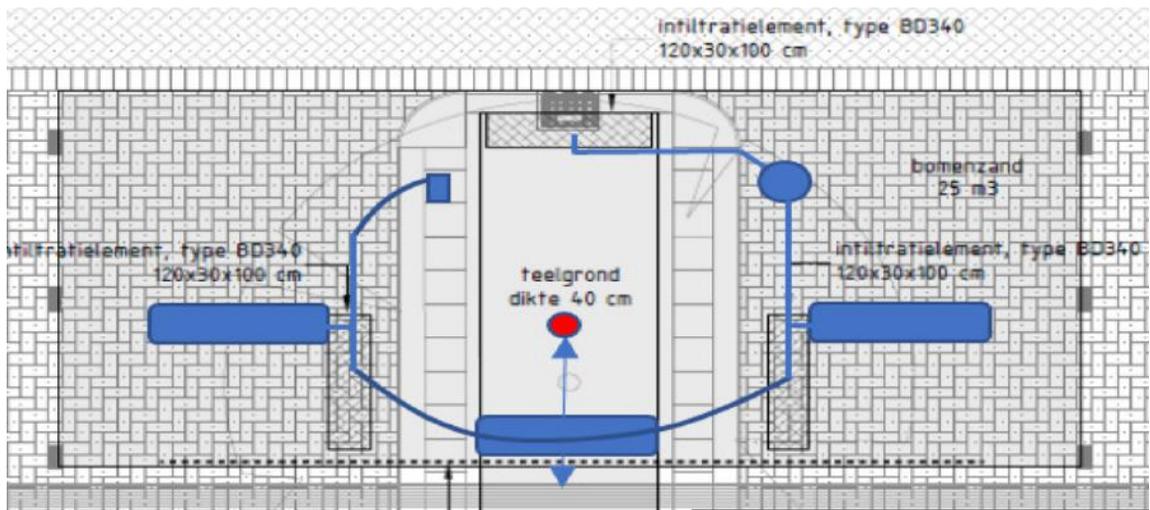
Hydrorock Natural Aquifer SuDS in action – how do they work?

The three blocks gave a static capacity for the sub system of 1.02m³ and dynamic capacity (static capacity plus water infiltrated in an hour) of double this due to the good permeability of the soil.

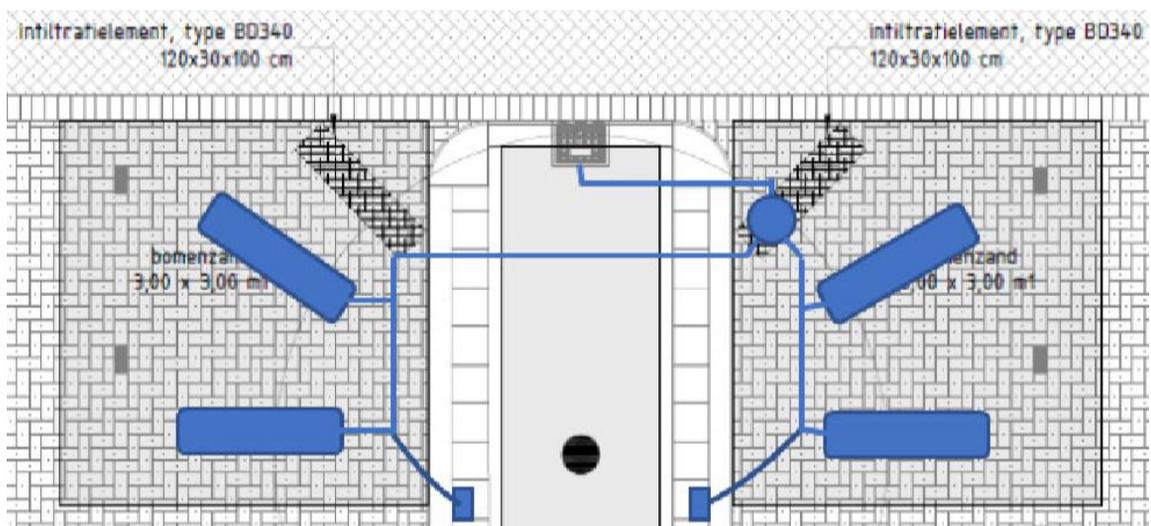
The water enters the array via grates on the road and passes through a Hydrorock filter which collects leaves, dirt etc. Once the water has been filtered, it then enters into the blocks. The final block in the chain is connected to a surface vent to allow the air to escape as the blocks fill.

It was possible to use the low density blocks rather than the high-density blocks in this instance as they were used individually with much of the weight of cars being carried by the surrounding soil. The below diagrams show how the layout of the tree pits.

Sub Array Layout



For some tree pits, a four-module array was used increasing the capacity by a third

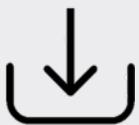
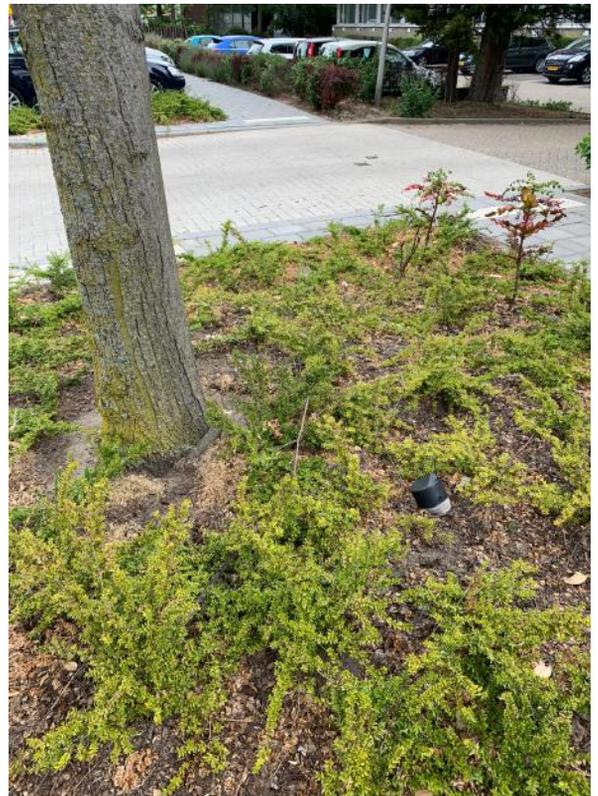


Cost per tree pit

The blocks and breather vent with all connectors cost a total of £562. Regarding the cost of the installation, each tree pit was installed in one day and required two men and a mini digger to do so.

The solution has been so successful that the council has placed an order for another 78 trees to be equipped with the same Hydrorock solution.

The following pictures we taken a year after installation, showing new vegetation growth and the breather pipe



System overview

If you would like more information regarding the Hydrorock Natural Aquifer SuDS System, please [visit our downloads area](#) for all technical information.

If you have any questions regarding this case study, any projects that you wish to discuss or any other questions about the Hydrorock Natural Aquifer SuDS System, please get in touch using the details below.



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