

# The climate-adaptive parking solution



aquaParker®

# aquaParker®

aquaParker is a climate-adaptive parking solution for creating water storage and supporting ground infiltration at existing and new parking spaces. The concept was developed to help tackle the growing problems caused by climate change. Particularly in urban areas, the extent to which streets, paths and parking spaces are paved is increasingly resulting in flooding and heat stress. aquaParker is a water-buffering parking solution that collects the water during extreme rainfall and 'parks' it temporarily, allowing the water to infiltrate the soil beneath the parking space. The open structure of the concrete slab ensures proper water infiltration and accommodates plants. This contributes to a better air quality and increased biodiversity, while also helping prevent heat stress.

## aquaParker: the climate-adaptive parking solution

The unique design of aquaParker addresses various climate-related problems:



### Flooding

With large parts of urban landscapes being paved, the permeability of the soil is decreasing. Rain has less and less space to infiltrate the soil, leading to flooding, especially during bursts of heavy rainfall. Thanks to the open structure of the concrete slab, aquaParker allows the rainwater to easily infiltrate the soil. And in contrast to water drained via sewers, water which infiltrates the soil is filtered by passing through that soil.



### Drought

Our climate is increasingly characterised by long periods of extreme drought. The water absorption capacity of the soil is reduced when it becomes too dry. And when the rain does eventually come, water is no longer absorbed by the soil but drains directly into the sewer instead. aquaParker temporarily stores and buffers water from rainfall that would otherwise be drained from parking spaces via the sewers.



### Heat stress

Heat stress occurs when people and animals suffer negative effects from heat. It is especially prevalent in urban areas, partly due to the larger amount of paving. Unlike plants, paving stones retain heat so temperature differences between the city and countryside can increase significantly in summer. aquaParker offers an opportunity to sow plants and minimise heat radiation.



### Air quality

As climate change makes summers drier there are more fine particles in the air. Agriculture, aviation and daily human behaviour are further increasing the percentage of harmful substances in the atmosphere. Adding green to the streets improves air quality as plants remove fine particles, CO<sub>2</sub> and nitrogen oxide.



### Biodiversity

Planting more green increases biodiversity and has a positive effect on people and animals. By accommodating plants aquaParker contributes to a better biodiversity.



In contrast to paths and roads, there are rarely cables or pipelines located beneath parking spaces. This makes it fairly easy to create temporary storage for water beneath existing spaces in a relatively short amount of time.

### **How it works**

The aquaParker concept consists of three layers.

#### **1. Parking slab and plants**

The top layer consists of a stable concrete slab that provides a solid base on which to park vehicles. The size of the slab is aligned to standard concrete paving slabs in the Netherlands, namely 158 x 400 cm. They have a thickness of 20 cm and contain holes which allow water to quickly penetrate into the subsoil. This also allows for the parking space to be planted with various types of greenery. Slabs are enclosed by normal paving stones to ensure vehicles can easily access and exit the parking space. Various options are available for planting, each with a unique look & feel. All plant options are resistant to drought, extreme precipitation and gritting salt, and can be driven over. A careful selection of plants, mainly comprising herbs, means the greenery requires zero maintenance.

#### **2. Substrate**

Substrate is placed under the concrete slab. This substrate has a good water permeability function while also providing a good breeding ground for plants. In addition to its permeable properties, the substrate purifies rainwater before it infiltrates the soil.

#### **3. Water-buffering sub-package**

The sub-package provides the water buffering capacity which makes aquaParker unique. The aquaParker concept is based on 2 cubic metres of water per parking space (20 mm static storage per 100 m<sup>2</sup> of paved surface), and can consist of rock wool, plastic crates, gravel, (tree) granulate or coarse rock.

# The climate-adaptive parking solution



Roman chamomile



Mother-of-thyme



Acaena



Sedum



Mouse-ear-hawkweed



Silverweed

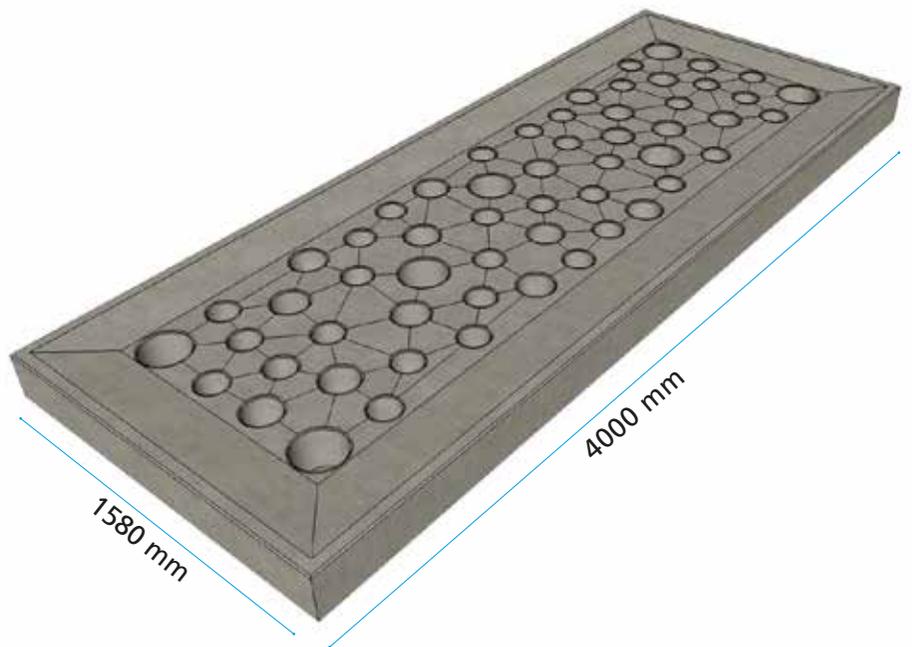
The way in which the permeable holes in the slab are filled is a key aspect of the aquaParker concept, largely determining the look & feel of the space. The starting point is that the plants have to be able to resist both large volumes of water and drought. In addition, they must be strong and low-maintenance. Thankfully this leaves plenty of options, including cultivated plants identifiable by the shape of their leaves, flower colour and height. They can even be combined for an extra special result.

Examples of suitable plants include Roman chamomile, mother-of-thyme, acaena, sedum and brass buttons. For a more natural look, aquaParker can also be planted with herbs that grow in the wild. And it is always a surprise which plants will grow where. Plants may include mouse-ear-hawkweed, silverweed, white clover or English cinquefoil.

It is also possible to not plant at all and fill the holes with shells, pebbles or rubble.

## 100% recyclable | produced with recycled cement | fibre reinforced

The aquaParker concept comes as standard with a playful motif featuring round holes. In addition to this model, many client or project-specific options are also available. For example, when placed in a neighbourhood with streets named after stars, we could create aquaParker with holes in the shape of stars to match. In addition, the concrete slab is available in various colours. You could, for instance, choose green for parking spaces reserved for electric vehicles. We can also add letters to the concrete, such as the name of the municipality or neighbourhood. Custom solutions are available!



## Better growth conditions for trees

Placing aquaParker near trees can help minimise soil compaction. Using the right soil compound beneath the slab will help retain rainwater and prevent drought underground, improving the living conditions of trees and greenery and creating a more pleasant outdoor climate.



## A climate-adaptive parking space in just three hours



Removing the paving in the parking spaces.

Removing the existing gullies.



Digging a trench for water storage (custom).



Placing water-storing package and finishing sides with drainage sand.



Placing (15 cm) of water-permeable granulate/soil.

Finishing sand trench.



Placing aquaParker.



Restoring street around aquaParker (drains).

Placing emergency inlet to ensure direct connection to the water-storing package in case of heavy precipitation intensity.

Filling the holes in aquaParker with soil granulate.



Sowing or planting (custom).

aquaParker®

is developed by:



sales:

Morssinkhof Infra

Haaksbergerstraat 39, 7555 HB Hengelo, The Netherlands | +31 74 242 60 00 | info@morssinkhof-groep.nl