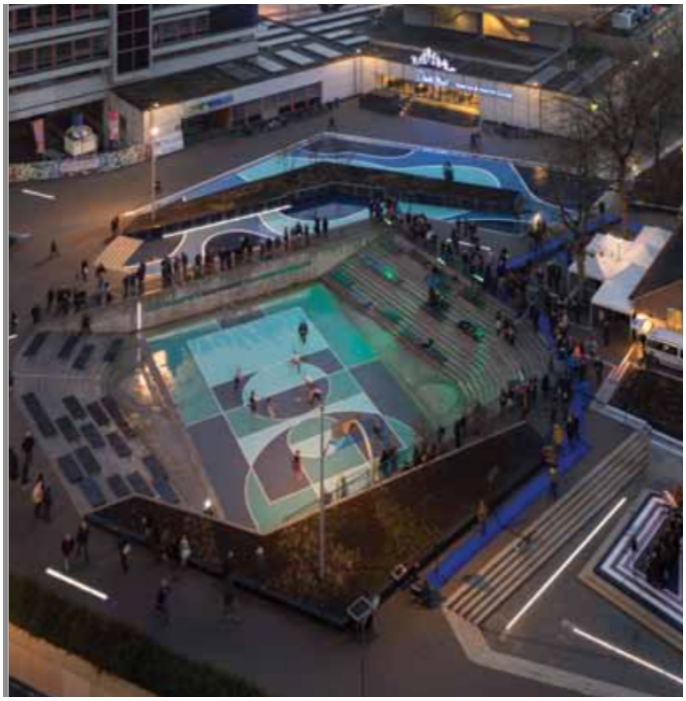
Rotterdam Water Square



Rotterdam needed to manage the potential increasing extreme rainfall events and a local community wanted to renew a dis-used open space. This space presented an opportunity to capture water from the surrounding developments.

So an innovative design of using water squares was constructed to maximise the stormwater management, and recreational opportunities, and to educate the community about stormwater management.

The image on the right shows the Water Square. The parts in blue fill up when heavy rainfall event occurs. Then water is directed to the low point of the public square via a pipe to slowly flow from the area.

Understanding your objectives

Local community members requested that a nearby public open space be renewed. In addition, using public open space to manage stormwater, is becoming increasingly important, as available land decreases.

Therefore the project had three objectives.

- Renew the disused space to encourage greater use of the area
- Add the capacity of the stormwater system

Understanding climate change interactions

This project will be affected by climate change through changes in the intensity of rainfall events and sea level rise. Under climate change, the intensity of rainfall events will exacerbate the current stormwater management risks within the city. Therefore, stormwater management assets are vital to the city, so this development had to increase the capacity of the City's stormwater management. Increasing intensity of rainfall events therefore had to be taken into account in the design.

In addition, as sea levels rise, the Dutch people's belief in the robustness of the dikes protecting their country is reducing their preparedness for climate change. Therefore, the City also needed to increase their engagement with the community on the importance of stormwater management.

The hedge – project overview

The renewal of the public open space was seen as an opportunity to include stormwater management as well. A unique design process was undertaken with local residents and the city. The results of the design after three workshops included three water basins.

Two of the basins have been designed to capture rainfall all the time, with a larger basin – the water square – designed to capture only during times of heavier rainfall. The city square is unique for it size as it can retain 1,700 m3 rain water, thereby increasing its stormwater management capacity.

The large water square is expected to be dry 90 percent of the time. Light rainfall is pumped out of the water square, which once the water pressure gets too much for the pumps, the water square fills up.

Importantly, though, all three basins are designed to be used when not wet. One is a basketball court, with others being used as part of the playground.

Meeting adaptation principles

How does the action meet the principles of:

- Reversible and flexible
- Maintains future options
- Builds in safety margins
- Reduce the decision time horizons
- Delivers benefit under multiple futures
- No regrets action - beneficial even without climate change but also assist with climate change.

The water square is an interesting adaptation action. It is not very flexible or reversible and does not maintain future options. However, it has built in safety margins, capturing more rainwater then other parks of a similar size. It also delivers benefits under multiple futures – when it is wet, and when it is not through the recreational issue while not wet.

Finally, it is also a no regrets action, as it is dealing with an issue that Rotterdam is currently experiencing – excess stormwater. The business case, however, was enhanced by the consideration of climate change.

For more information see: http://www.rotterdamclimateinitiative.nl/uk/file-climate-adaptation/projects/benthemplein-the-first-full-scale-water-square?portfolio_id=256