TERRA50

Benthemplein
Water Square for Urban Flood Resilience

ORGANIZATION / INITIATIVE LEAD

City of Rotterdam — Developed with De Urbanisten as designer, combining water-management investment, urban design and community participation to create multifunctional climate-adaptation infrastructure.

TECHNICAL SOLUTION NAME

Benthemplein — Water Square

HIGHLIGHT TITLE

A pioneering water square that combines stormwater storage with everyday spaces for sport, play and community life.

SHORT DESCRIPTION

Benthemplein transforms stormwater infrastructure into an accessible public square. Three basins collect rainfall from surrounding streets and rooftops, temporarily storing water while reducing pressure on Rotterdam's sewer system. In dry weather, the same spaces accommodate sports, recreation and social activities, demonstrating how climate-adaptation investment can also improve everyday urban life.

EXTENDED DESCRIPTION

Intense rainfall places pressure on Rotterdam's drainage infrastructure, increasing the risk of urban flooding. Benthemplein addresses this challenge by integrating temporary water storage into a 9,000 m^2 public square, providing an alternative to underground tanks that offers recreational and social benefits.

Designed by De Urbanisten, the square contains three basins of different depths. Two shallow basins collect runoff during rainfall, while a deeper central basin receives water during more sustained or intense events. Visible stainless-steel gutters channel runoff across the plaza, making water management part of its architectural identity.

When dry, the basins become spaces for sport, play and gathering, with stepped seating overlooking the central sports area. Trees and planted areas help organise the square. Stored water subsequently infiltrates the ground or drains into the open water system, with a stated maximum drainage time of 36 hours.

Students, teachers, residents and other local users helped shape the design through workshops. Largely financed through water-management budgets and innovation funding, the project demonstrates how investment in climate infrastructure can also deliver high-quality public space. It has operated since 2013.



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DEMONSTRATED METRICS

- 9,000 m^2 public-square area
- Approximately 1,700–1,800 m^3 of stormwater storage capacity
- 3 retention basins: two shallow and one deep
- Maximum stated drainage time of 36 hours
- Approximately €4.5 million total project cost
- Operational since December 2013

REAL IMPACT

Benthemplein demonstrates how public space can temporarily accommodate stormwater while retaining an everyday recreational function. During heavy rainfall, its basins store runoff and help relieve pressure on the sewer system. Aggregate flood-damage reduction figures for the square have not been provided.

The neighbourhood gained spaces for youth activities, sport and social interaction. Its visible channels and basins also make water management understandable, connecting climate adaptation with the experience of using the square.

Its broader contribution is a transferable design and financing approach: coordinate water-management investment with public-space improvements. Replication requires locally appropriate catchment design, drainage conditions and maintenance, rather than simply reproducing the square's physical form.

IMPLEMENTATION LOCATION & DATE

Benthemplein, Rotterdam, Netherlands. The water-square concept was introduced in 2005 and incorporated into Rotterdam Waterplan 2 in 2007. Design began in 2011, and the completed square opened in December 2013.

TECH LEVEL

Low Tech

COST OF THE SOLUTION

Approximately €4.5 million, largely financed through water-management budgets and innovation subsidies. Ongoing maintenance is required for gutters, basin surfaces and planting.

MITIGATION / ADAPTATION

Adaptation

MAIN CATEGORY

Primary: Infraestructure & Building
Secondary: Energy & Environment; Living & Inclusion

BASE INFORMATION SOURCES

- De Urbanisten — Benthemplein
- Landezine — Water Square Benthemplein
- Water Environment Federation — First full-scale water square opens in Rotterdam
- Project information supplied for the Terra50 profile

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