



# How Do We Adapt Our Cities to Water?



## **How Do We Adapt Our Cities to Water?**

Edited by Danish Architecture Center

Editor: Andreas Volquartz Overgaard

Project manager: Kristina Neel Jakobsen

Layout: Clara Birgersson

Cover photo: Kuninkaantammi, © City of Helsinki

Nordic Innovation

Stensberggata 27

NO-0170 Oslo

[www.nordicinnovation.org](http://www.nordicinnovation.org)



**Nordic  
Innovation**

# Nordic Solutions, Global Reach

**This booklet showcases city solutions originating in the Nordic countries and applicable throughout the world. It gives insights into some of the ideas and solutions that enable more resilient cities.**

**From Gothenburg to Copenhagen and Oslo to Helsinki, major cities across the entire region are busy developing clever solutions to withstand the increasing threat of extreme weather. And they do it while improving the livability of cities. For everyone.**



photo: Snøhetta



# Bjølse Student Village – using water as a resource, not a problem

## 1 Challenge

In Oslo, as in so many other coastal cities, extreme weather is becoming increasingly more common. Through the impacts of climate change, future rainfall in the city is expected to increase in frequency by 10-20%, with a higher rate of precipitation per hour. These cloudbursts have severe implications when city storm water infrastructure is not able to process rainwater fast enough, resulting in flooding in urban areas with compounding impacts to the daily lives of residents and businesses alike.

This urgent condition calls for new holistic ideas – and Bjølse Student Village is the realization of adapted climate infrastructure coming to life.

## ② Solution

Bjølsten Student Village combines inner city living and green vegetation with a sophisticated climate adaptation system. The system was developed to ensure that runoff from the impermeable surface areas would not create additional pressure on the existing storm water drainage system.

### **Reducing Pressure from Water**

The main attraction of the student village is a retention basin, collecting rainwater from roofs and surrounding surfaces. The basin is designed as a channel running through the middle of the student village development – 55 meters long and 3.5 meters wide (180' ft x 11' ft). Newly planted native vegetation adds a mix of green surfaces and creates enjoyable surroundings for residents and visitors. In addition to flora, fauna have been introduced to compliment the natural surroundings including fish-species to catch mosquito larvae and ducks who have made their homes in the canal.

***The water channel acts as the social heart, the green lungs and the functional infrastructure needed to make Bjølsten Student Village livable, enjoyable and safe as a climate-adapted space.***



Photo: Snohetta

## 3 Results



### Social

The design solutions applied at Bjølsen Student Village create social outdoor spaces where residents and visitors can meet up away from the busy city outside.



### Environmental

The green and water features around the campus give the area an enjoyable feeling and an aesthetic natural character rarely found in dense urban neighborhoods – attracting both animal life and introducing important vegetation to the site.



### Economic

The system increases storm water processing and storage capacity in the community in order to accommodate the additional climate change impacts such as a 10-20% increase in heavy rainfalls. As a result, this solution has reduced the economic impacts caused by flooding – both for the individual site and for the surrounding city as a whole.





Photo: Snøhetta

#### **Agents involved**

- Snøhetta
- LMR Architecture A/S
- Ole K. Karlsen A/S
- The Foundation for Student Life in Oslo (SiO)



Picture: City of Helsinki



# Kuninkaantammi – the resilient neighborhood of the future

## ① Challenge

The City of Helsinki faces challenges similar to other coastal cities across the world: rising sea levels and dramatically increasing rainfall. As a result of these increasing climate risks, Helsinki has launched an action plan to mitigate climate damage. The new Kuninkaantammi development, set to finish by 2025, is a key site to realizing this new plan.

Kuninkaantammi is a former industrial district being redeveloped into a residential neighborhood for more than 5,000 inhabitants. The area is a pilot project for storm water management in Helsinki, setting new standards for resilient city solutions. It is a project which provide ideas, knowledge and solutions that can be tested, scaled and exported globally.

## ② Solution

At Kuninkaantammi social livability, sustainable affordable housing and storm water protection go hand in hand.

Natural storm water management methods are integrated in the urban landscape, making the area both more resilient and visually attractive. Retention pools along the streets, green roofs on the buildings and rain gardens with naturally absorbent vegetation on the individual plots cover some of the various methodologies being tested on site.

### **Responsive to Nature and People**

The most important goals of the various climate-adapted methods being tested at Kuninkaantammi are to better handle storm water processing and improve water quality on site. Retention ponds in naturalized green areas will filter impurities out of storm water and protect the surrounding natural habitats. Clean, naturally treated storm water is directed off-site to an adjacent wetland park.

The new residential district of Kuninkaantammi is responsive to its local conditions while creating a new residential district for more than 5000 inhabitants. Overall, the plan is environmentally progressive, economically viable and shares the natural beauty of Finland.





Photo: Jussi Heiskanen



Photo: Tietoa Finland

## 3 Results



### Social

The project activates local communities through a wide range of social initiatives like urban gardening for local residents. In addition to improving the visual appearance of the area from its former industrial past, this type of activity builds trust between neighbors in the area – solidifying the bonds of a strong community focused around climate adapted living.



### Environmental

Ecological measures are central to the overall climate adaptation in Kuninkaantammi. The various retention ponds in green areas filter water impurities and help safeguard surrounding natural habitats. These holistic solutions mitigate the impacts of flooding and protect the environment at the same time.



### Economic

The project's natural method of storm water management will be up to three times more cost effective to implement compared to traditional heavy infrastructure methods.

#### Agents involved

- Skanska Oy
- ICECAPITAL REAM OY
- Ark7 Architects





This booklet is made as part of the Nordic Sustainable Cities project, which is run by Nordic Innovation to showcase and export Nordic solutions to urban sustainable development challenges.

Nordic Sustainable Cities is one of six flagship projects under the Nordic prime ministers' initiative Nordic Solutions to Global Challenges, which is coordinated by the Nordic Council of Ministers.

For even more inspiration, visit  
**[www.nordiccitiesolutions.com](http://www.nordiccitiesolutions.com)**

