Climate change adaptation in Copenhagen

COPENHAGEN TOGETHER

CITY OF COPENHAGEN
The Technical and Environmental Administration

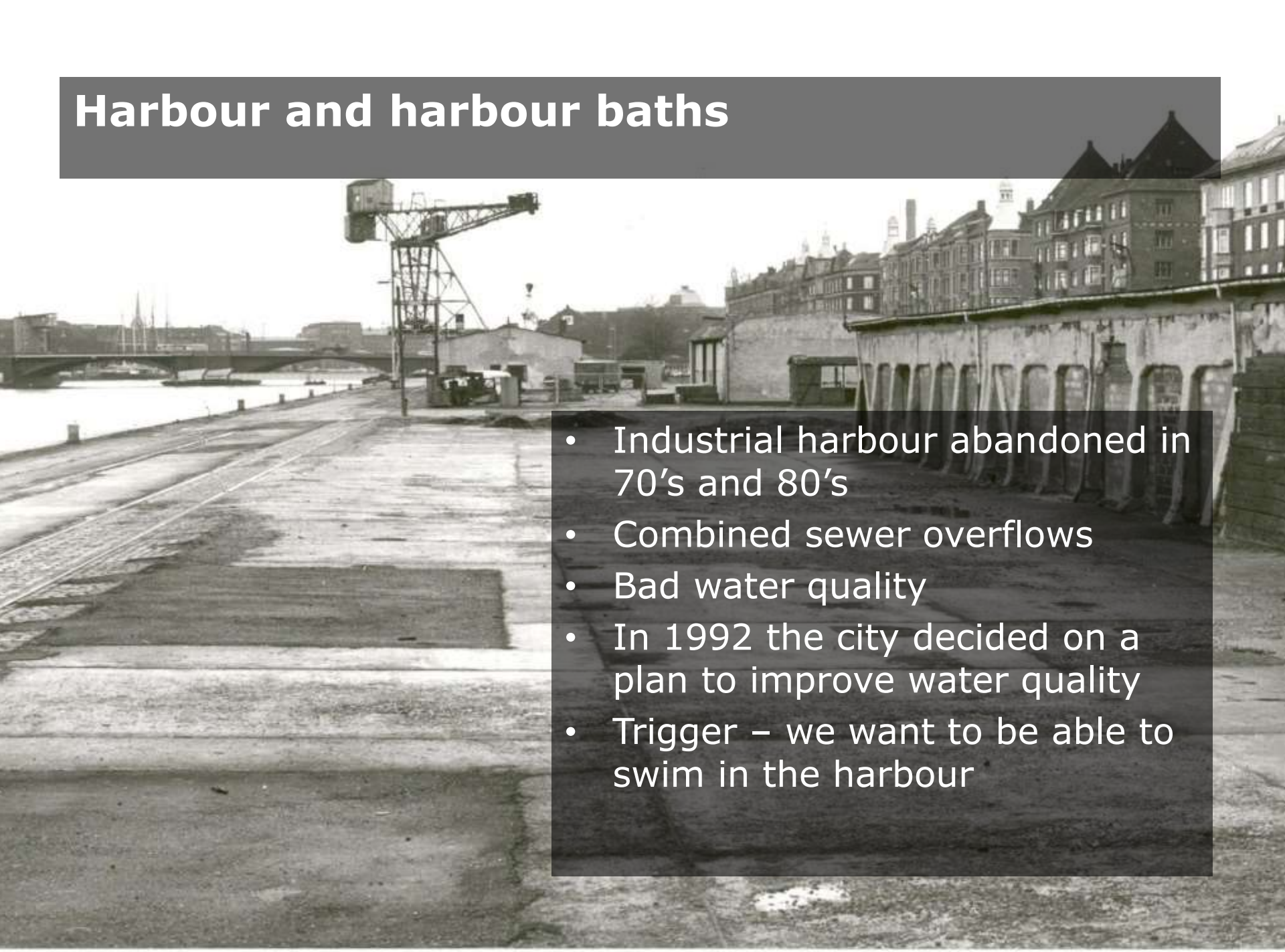
Background on Copenhagen

- 580.000 inhabitants
- 1.5 mio in Greater Copenhagen
- We expect a 20% increase in the next 10-15 years

Climate Change Adaptation in Denmark – how does it work?

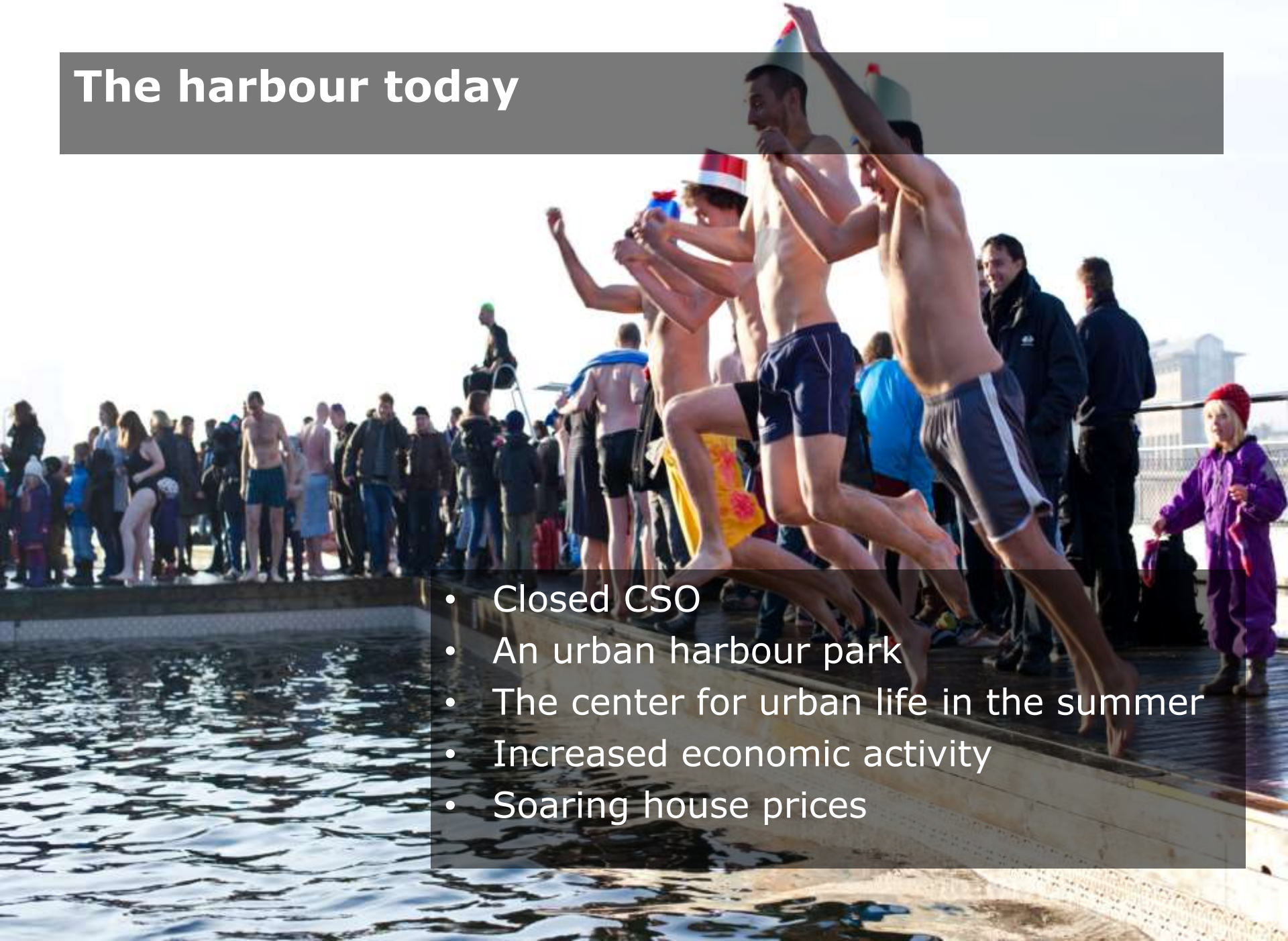
- Private landowners – responsible for their own property
- Storm water management – responsibility of local governments
- Storm water management – handling is carried out by the utilities (publicly owned private companies)
- Storm water management paid through water taxes

Harbour and harbour baths



- Industrial harbour abandoned in 70’s and 80’s
- Combined sewer overflows
- Bad water quality
- In 1992 the city decided on a plan to improve water quality
- Trigger – we want to be able to swim in the harbour

The harbour today



- Closed CSO
- An urban harbour park
- The center for urban life in the summer
- Increased economic activity
- Soaring house prices

The adaptation plan

- Inspired by cities like New York, London and Rotterdam
- Work started in 2009
- Plan finally approved by City Council in August 2011

Adaptation Plan - contents

- Impact of future weather in Copenhagen
- Risk assesment
- Strategies for action
- Suggestion of first actions
- An estimated implementation period of 30-50 years
- Focus on opportunities of climate change

Cloudburst over Copenhagen

04-10-2015

July 2011 – the city is vulnerable

- 150 mm rain in 2 hours
- Damages close to 1 billion euro
- Damages to critical infrastructure

The game changer

- High political attention (nationally and local)
- More speed - and to hell with uncertainties
- Change in legislation - new finance mechanisms to enable surface solutions

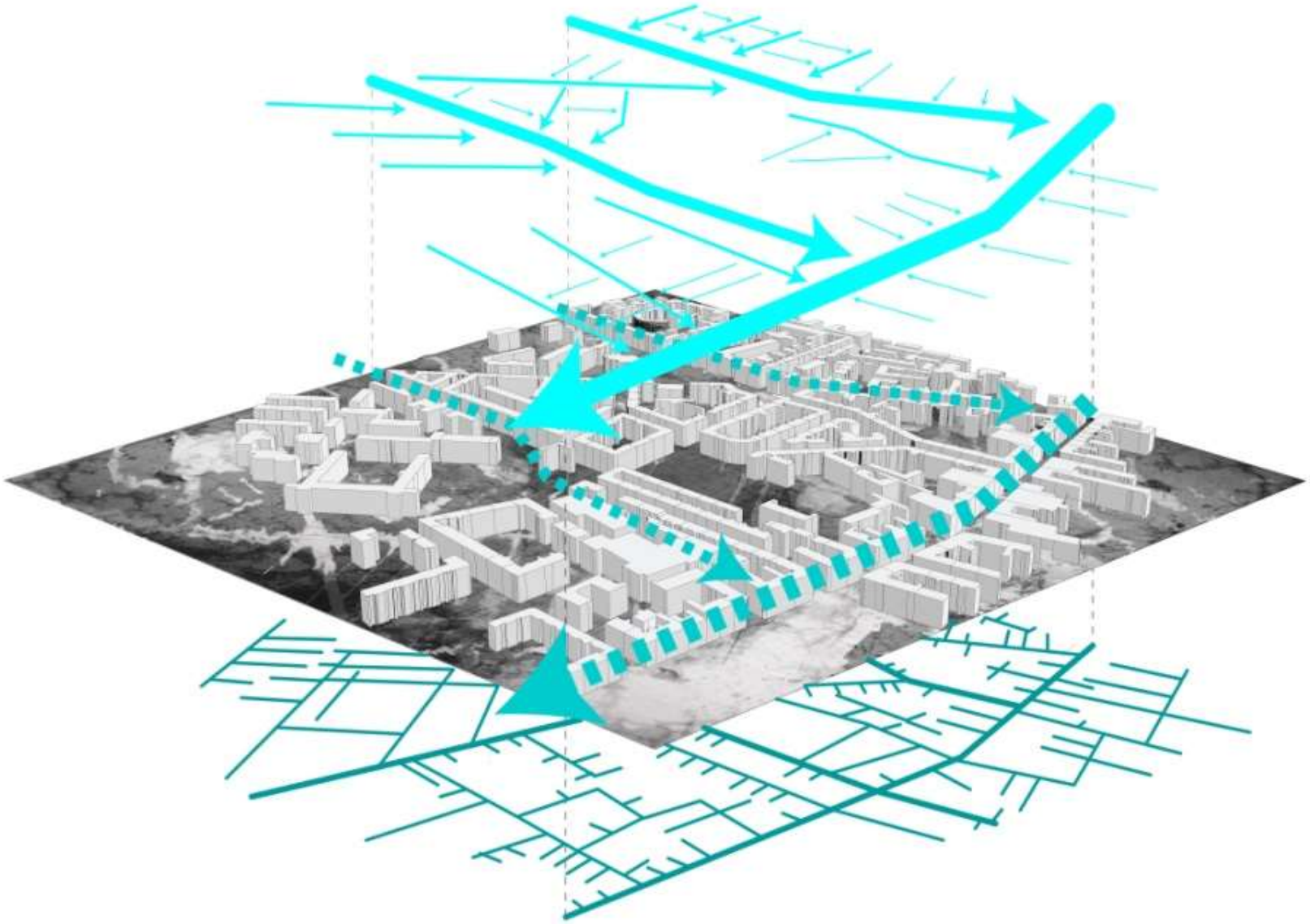
Cloudburst Management Plan

- New service level
- Protection against a 100 year event
- Cost benefit analysis
- Principles of solutions

The cloudburst management plan

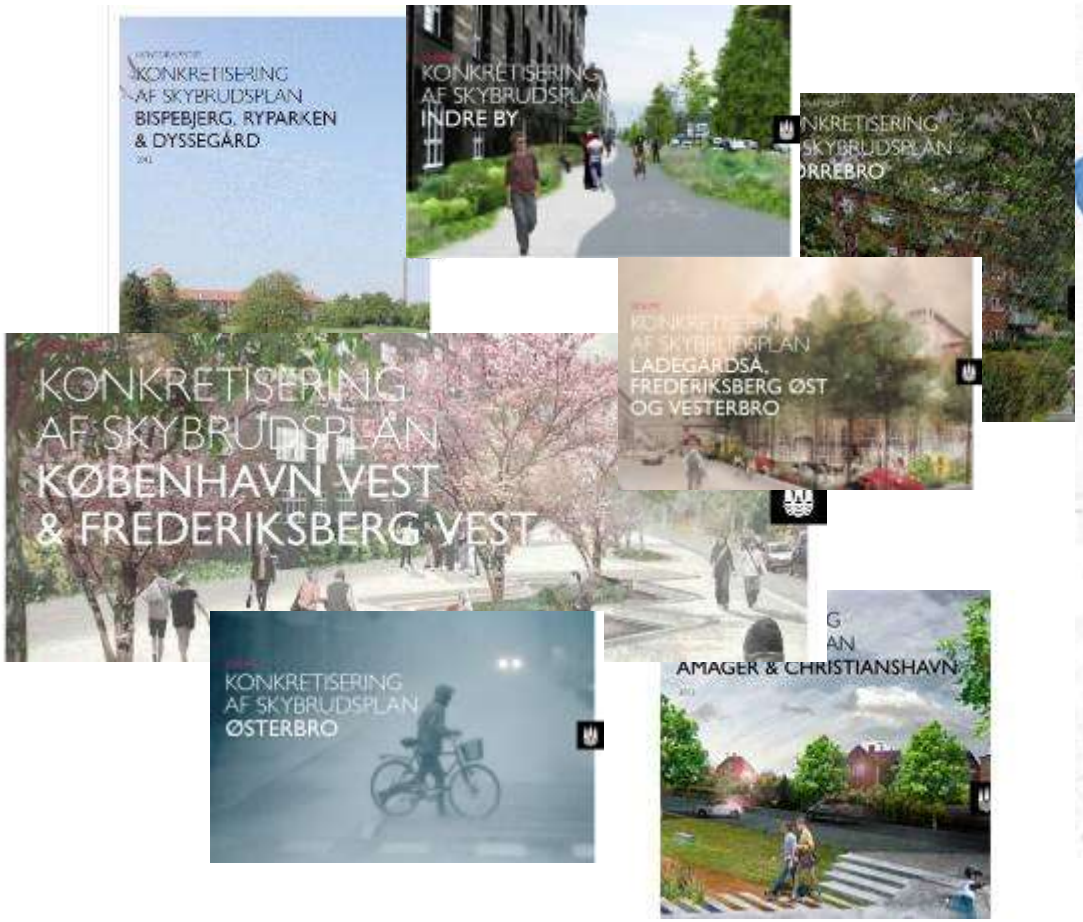
- The utility takes care of the water management on public land – and runoff from private that is connected to sewer system
- The city takes care of urban space improvement in connection with adaptation measures – and its own buildings
- Private landowners have to protect their own building and finance measures on private land

A new infrastructure



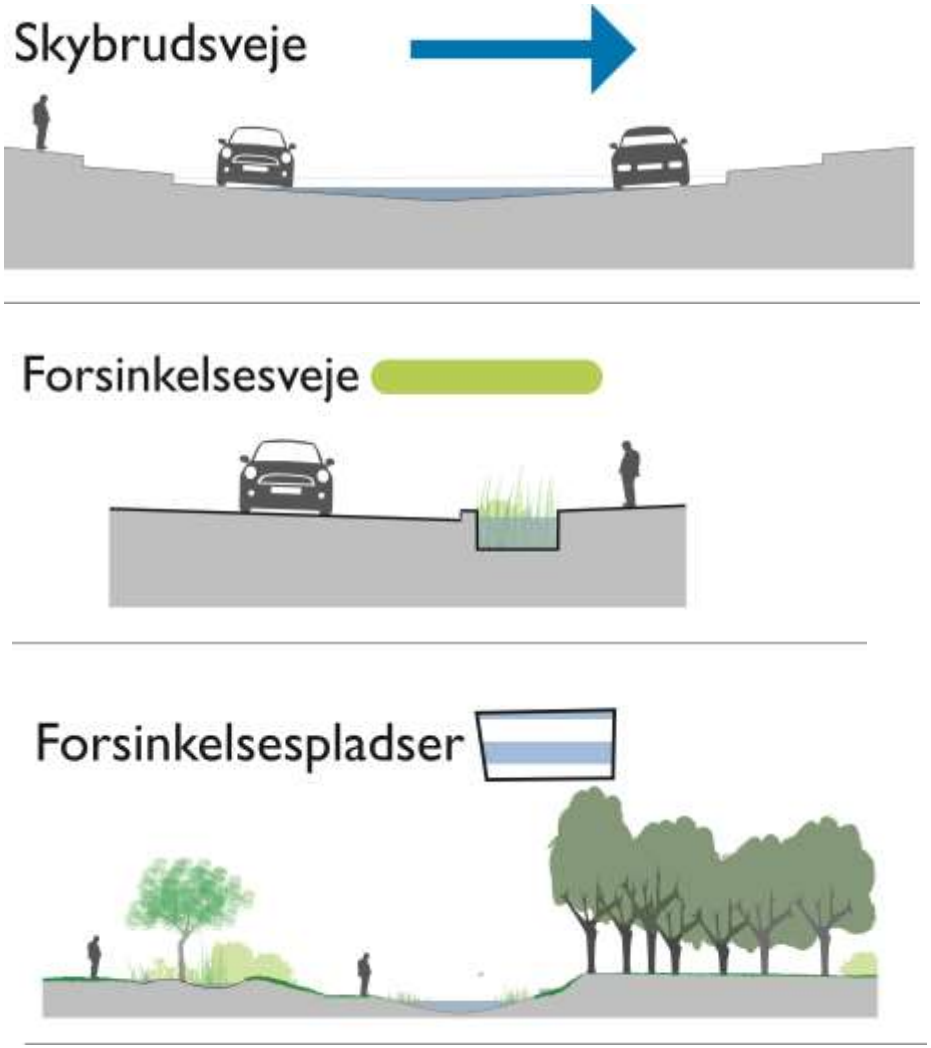
Following the natural flow of water

7 water catchments in the city



Types of solutions

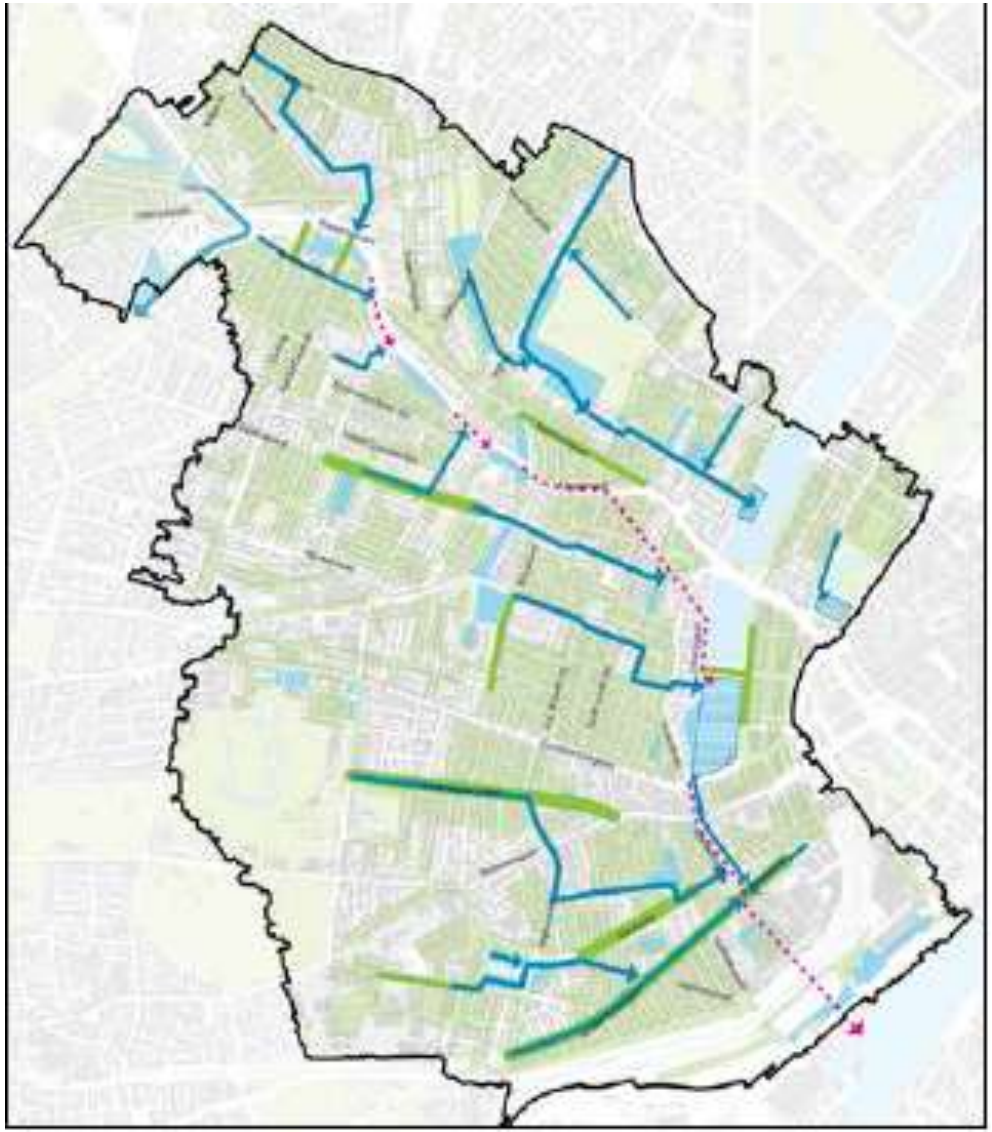
- Cloudburst boulevards – transporting water
- Retention boulevards – delaying water
- Central delays – for storing water



Examples of solutions

- Vesterbro – a district with high flood risks
- A low point in the city
- No natural run off for the water

From catchment to project



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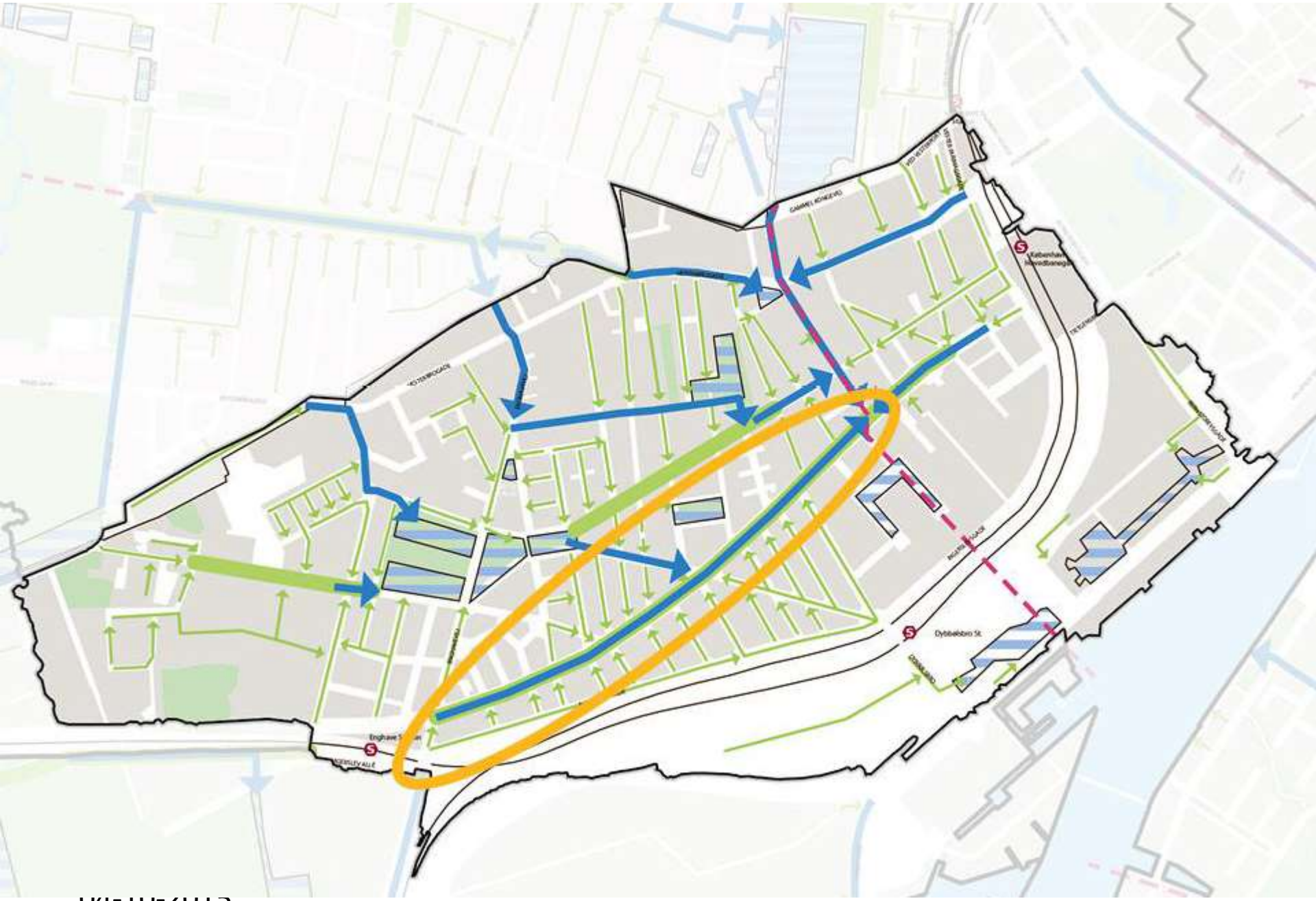

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Enghaveparken

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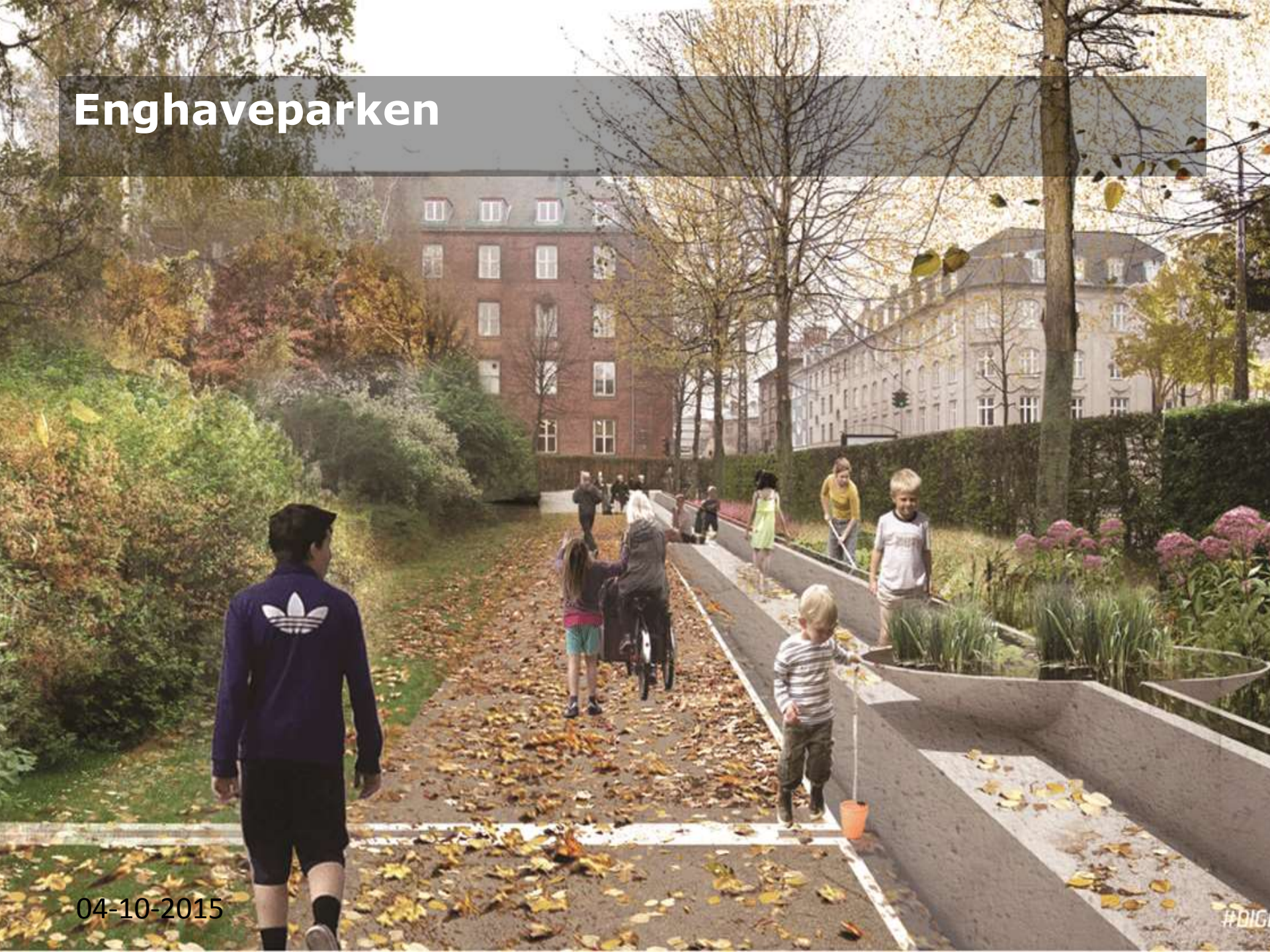

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Examples of solutions

- Sønder Boulevard as retention boulevard
- Transporting and delaying the water moving to the lower areas of Vesterbro

Example of solutions

- Skt Jørgens sø
- Lowering the water level in the lake
- A new park on the wider banks
- Park can store up to 40.000 m3 of water in case of cloudburst
- A pipe empties the lake – and also collects water from Vesterbro

The opportunities of adaptation

- Focus on urban spaces
- Green and blue urban spaces
- We are developing af concept for the integration of water in the urban space
- Green adaptation – using the synergies to create green corridors and hopefully increase biodiversity
- Synergies – saves times and money