

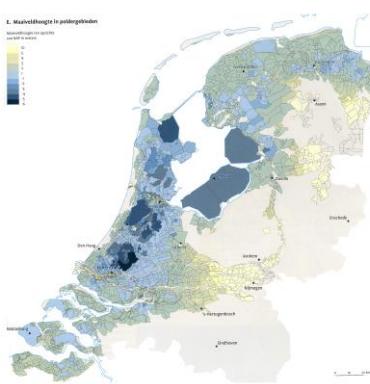
## Towards multi-layer safety

Cases Amsterdam, Rotterdam and Dordrecht

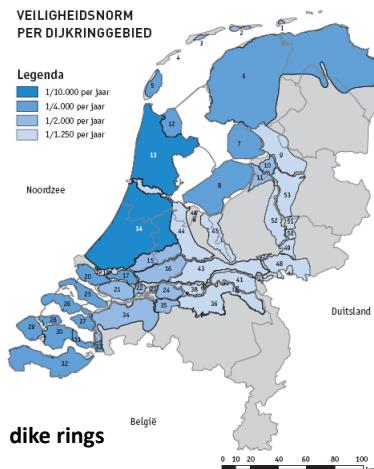


Peter van Veelen  
DITCC 2014  
Sept 25, 2014, Rotterdam

### Prevention based and publicly funded flood risk system

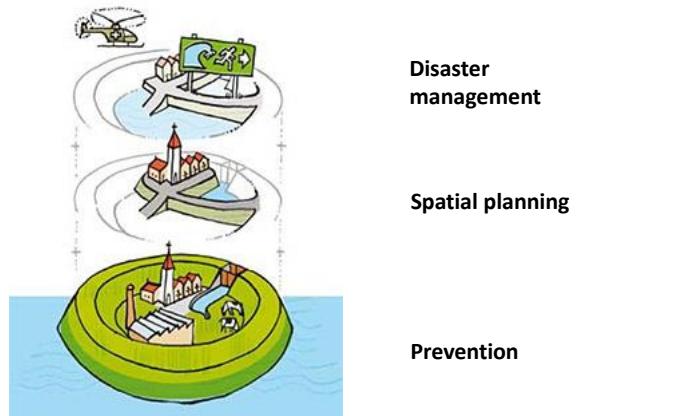


polders



dike rings

## Multi Layer Safety



Disaster  
management

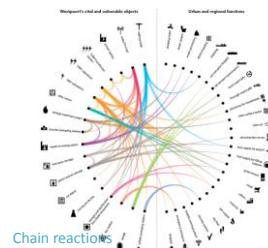
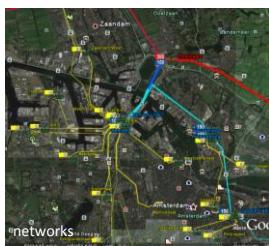
Spatial planning

Prevention

## Case Westpoort



## Case Westpoort

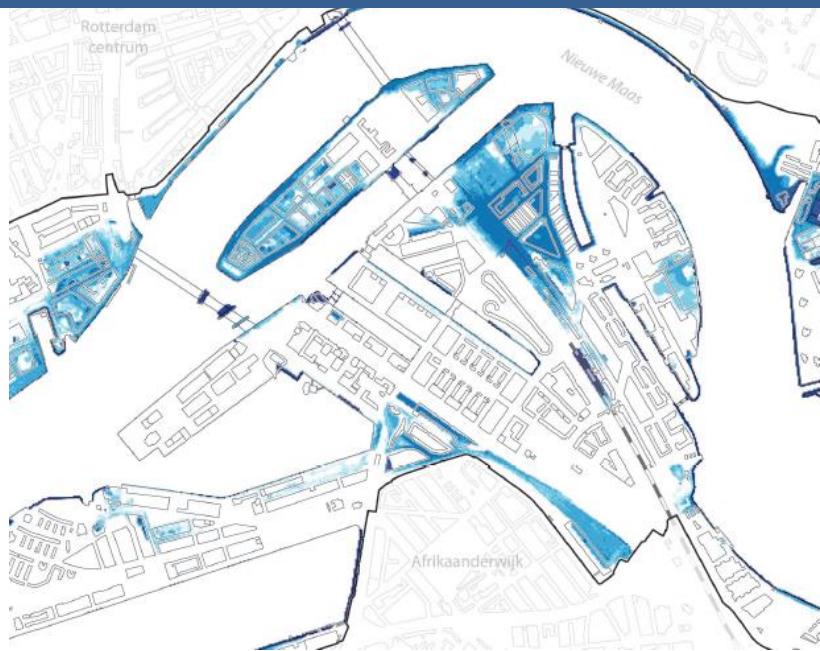
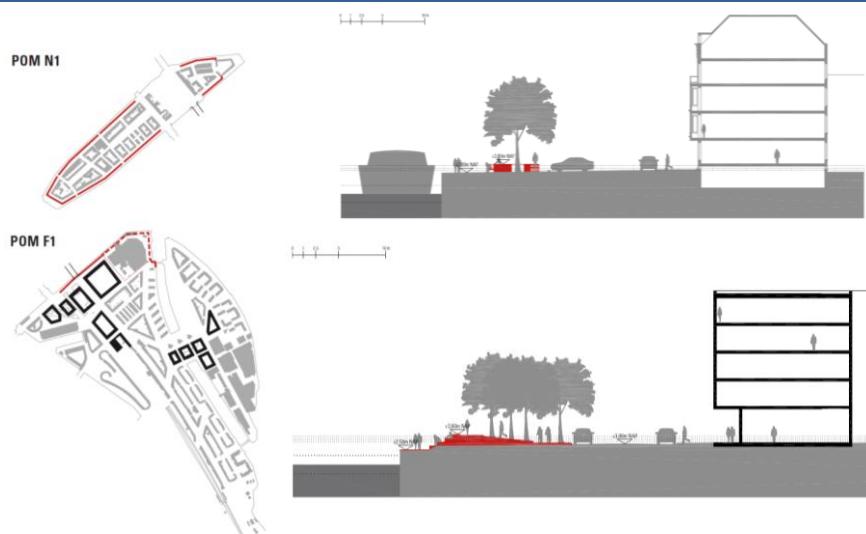


understanding  
solutions



## Adapted urban development - case Feijenoord



**Area is prone to flooding****Local flood wall most effective**

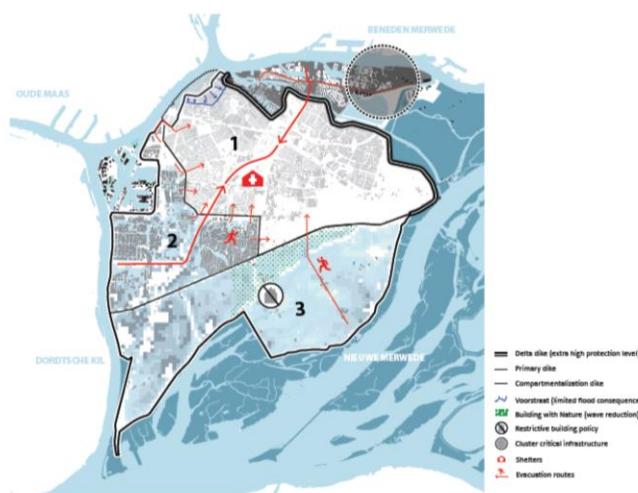
Pictures: DSA Rotterdam

## How to involve private sector?

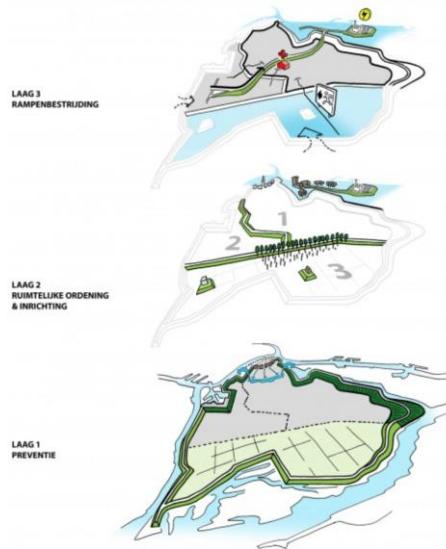


Pictures: P.C.van Veelen – TU Delft

## Self reliant island of Dordrecht



## Self-reliant island of Dordrecht



## Lessons learned and challenges

### Lessons:

**Local flood risks can be considerably reduced by smart small-scale adaptations**

**MLS approach opens up opportunities to couple flood investments with other spatial developments**

**Raising awareness on potential risks among local stakeholders is essential**

## Lessons learned and challenges

### Challenges:

#### **Who is going to pay for extra investments in flood safety?**

- Local authorities and stakeholders will probably need to invest in flood risk reduction measures.
- How to deal with free riders (benefit from extra safety without sharing the costs)?

#### **How to preserve long-term continuity of a local adaptive strategy?**

- local authorities lack regulatory powers to enforce stakeholders to invest in safety.