



## Rejserapport for Teknik- og Miljøudvalgets studietur om mobilitet og cirkulær økonomi til Amsterdam den 7.-10. juni 2022

Teknik- og Miljøudvalget vedtog den 9. maj 2022 program for Teknik- og Miljøforvaltningens studietur om mobilitet og cirkulær økonomi til Amsterdam i 2022. Studieturen blev foretaget den 7.-10. juni 2022.

Teknik- og Miljøforvaltningen forelægger rejseregnskab for udvalget som sag til orientering, når alle regninger er modtaget til det endelige regnskab.

### *Tirsdag den 7. juni*

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Udvalget rejste med tog fra København til Amsterdam. Under togturen fik udvalget præsentationer om mobilitet og grøn klimatilpasning af vicedirektør Peter Højer (Mobilitet, Klimatilpasning og Byvedligehold), samt om cirkulært byggeri og stormflodssikring af vicedirektør Karsten Biering Nielsen (Plan, Analyse, Ressourcer og CO2-reduktion).

Oplæg supplerede udvalgets endags cykeltur i København den 2. maj 2022 med viden om studieturens emner.

### *Onsdag den 8. juni*

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Udvalget cyklede i Amsterdam og fik oplæg af byudviklingsguiderne *Anneke Boeken* og *Paul Vlok* fra ArchiTours.

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Cykling langs De Rode Loper

### **Mobilitet: Cykelkultur, cykelparkering og konvertering af p-pladser til rekreative funktioner**

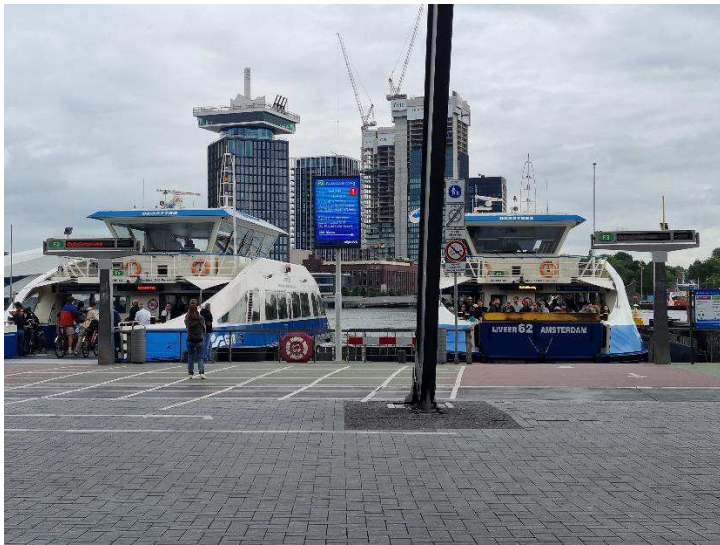
Udvalget blev i løbet af dagen introduceret til den hollandske cykelstrategi med eksempler på cykelparkering og skiltning til cykelparkering, herunder helhedsorienterede byrumsløsninger, udvidelsen af cykelstier til design af cykelstier, rundkørsler og kryds, beskyttede cykelsvingbaner i kryds, cykelgader, trafikdæmpning i gader og adgang for cykler, separation af cykel og biltrafik med begrønning – samt område med cykelparkeringsforbud *De Rode Loper*, herunder *Ferdinand Bolstraat* (som er en del af *De Rode Loper*).

Udvalget startede ved **Amsterdam Centraal**, IJpleinveer De Ruijterkade. Her blev **Car Low-programmet** introduceret af Wiard Kuné, strategisk rådgiver indenfor trafik og offentligt rum, Amsterdam Kommune (bilag 1 og 2).

Stationsområdet er Amsterdams knudepunkt for offentlig transport med 250.000 mennesker hver dag (både indbyggere og besøgende). Udvalget så infrastrukturen omkring stationen, hvor de forskellige transportformer var adskilt i etager. Fodgængere og cyklister færdedes på 'grundplan', mens busser og biler blev ledt af en bro til stationen. Gaden IJpleinveer De Ruijterkade var desuden anlagt med begrønning for at adskille cykel- og biltrafik.

Ved stationen oplevede udvalget desuden funktionen '**shared space**' ifm. færgers pendulfart, der forbinder Amsterdam station og centrum med bydelen på den anden side af floden, idet der endnu ikke er bygget broer og heller ikke bliver det på den centrale strækning. Der er på sigt planer om broer i østlig og vestlig ende af Amsterdam som supplerende forbindelsesled. På et 'shared space' færdes fodgængere primært på et område markeret med grøn belægning, cykler på et område med rød belægning og alle mødes på et område med grå belægning, hvor

fodgængere og cyklister færdes med gensidig øjenkontakt. Efterfølgende fletter fodgængere og cyklister ind på hhv. fortov og cykelsti.



*'Shared place' for cyklister og fodgængere ved Amsterdam Centraal Station mod færger, der forbinder Amsterdam med pendulfart (rød belægning for cyklister, grøn for fodgængere, grå for både cyklister og fodgængere)*

Amsterdam Centraal var første **parkeringsområde**, udvalget blev introduceret til. Der var bl.a. bygget et cykelparkeringsanlæg i etager udenfor stationsbygningen, der var ansat personale til at guide til parkeringsmuligheden sammen med tydelig og konsekvent markering med pile og små plakater på bl.a. affaldsspande af, hvor cykelparkering var mulig. Denne måde at kommunikere steder for cykelparkering fandtes i hele byen. Ved stationen blev cykler fjernet og som et af de eneste steder blev der udstedt bøder, hvis cyklerne ikke stod i de markerede cykelparkeringspladser. I resten af Amsterdam blev cykler fjernet og placeret på lager i udkanten af byen, hvor cykelejer kunne afhente cykel gratis. Hvis cyklen ikke blev afhentet efter seks uger, blev den fjernet og betragtet som mistet for ejeren.

Udvalget cyklede langs **De Rode Loper**. De Rode Loper er et projekt, der skal give gaderne et løft efter metrobyggeri. Strækningen har den samme røde farve for at markere sammenhængen på tværs af de områder, den går igennem.

Derefter var der fokus på cykelinfrastruktur, planlægning, finansiering og drift af cykelparkeringsanlæg med **Leidseplein** cykelparkeringsanlæg under jorden som eksempel. Anlægget blev præsenteret af *René Dronkers*, Amsterdam Kommune. Af præsentationen fremgik en alternativ adgangskonstruktion til cykelanlæg generelt (bilag 3).



*Cykelparkering under jorden, Leidseplein, Amsterdam, ZJA Architects, m.fl.*

På pladsen Leidseplein besøgte udvalget et underjordisk cykelparke-  
ringsanlæg, der er anlagt for at etablere én mere attraktiv plads til op-  
hold. Cykelanlægget var tilgængeligt døgnet rundt og gratis de første 24  
timer, hvorefter der blev betalt knap 2 euro pr. time. Anlægget var des-  
uden med personale. En mangel ved anlægget var, at der ikke var handi-  
captopgængelighed. Rampen til anlægget blev drøftet ift. andre løsninger  
som eksempelvis sliker, der kunne være mere tilgængelige også ved  
brug af ladcykel. I anlægget var der mulighed for opladning af elcykler.



*Trappenedgang med sliker og betalingsautomater til cykelparkering under jorden,  
Leidseplein*

Arkitektonisk afspejlede cykelanlæggets væg en karakteristisk arkitektur  
med røde mursten i forskudte lag fra eksisterende bro ved pladsen.





*Byrum over cykelparkeringskælder, Leidseplein*

Markeringen af cykelanlægget var med en grøn stander, hvor den grønne farve bl.a. gik igen i kommunikationen andre steder på fx mærkater på affaldsspande.

Selve byrummet, der var skabt efter, at cyklerne parkeres under jorden, blev umiddelbart oplevet som et bart rum uden indbydelse til ophold. Der var et område med græs, afgrænset af en stenkant man kunne sidde på, men på pladsen var ingen bænke, legeplads el.lign.

Efterfølgende cyklede udvalget videre og så områder af Amsterdam, hvor man ved at nedlægge **bilparkeringspladser** skaber sikrere trafik og mere plads ved at redesigne fortov, vej og sporvognsskinner, så der skabes plads til grønt, opholdsarealer, cyklister og fodgængere.



*Gade med forbud mod parkering, med begrønning, cykelparkering og afsætningspladser*

I forbindelse med nedlæggelse af bilparkeringspladser var parkeringskælderen 'Albert Cuyp Garage' anlagt under en af kanalerne. Der var plads til 600 biler, 77 elladestandere og 60 cykler.



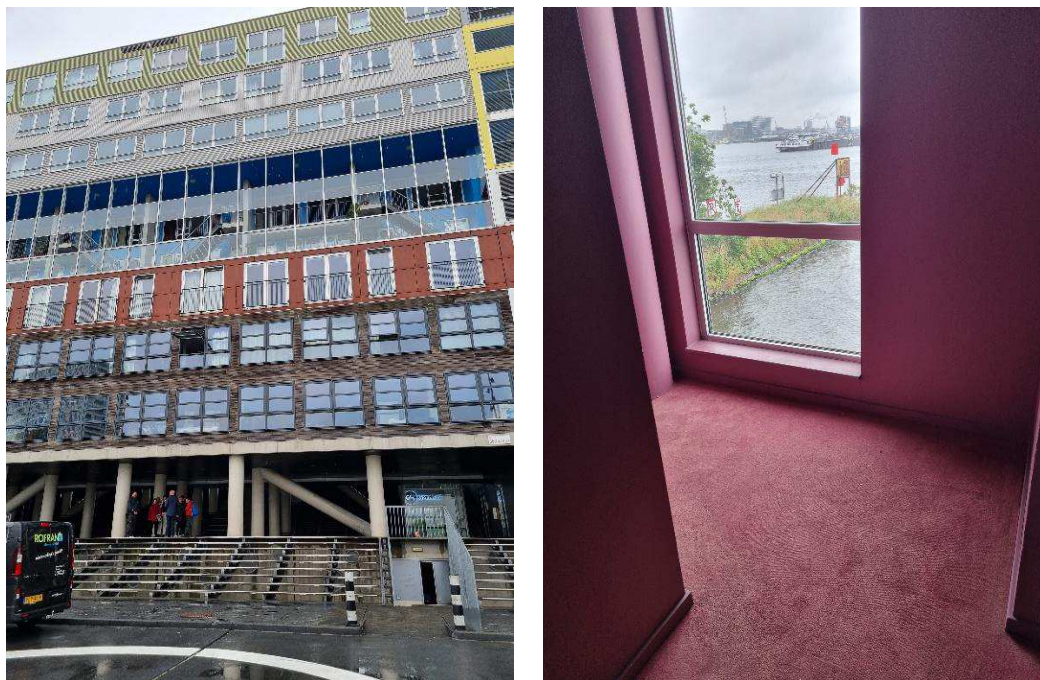
Albert Cuyp Garage, projekt og set fra gadeplan med nedgang til parkeringskælder

### Silodam, boligkompleks ved havnefronten

Udvalget blev vist rundt i den vestlige del af Amsterdam havn, Silodam (bilag 4). Dette havneområde blev udviklet omkring 2003, dels for at skabe fortætning ind mod centrum, dels for at imødekomme behovet for flere boliger. En tidligere dæmning med en silobygning er blevet transformeret til et boligområde. I tillæg har man foretaget store investeringer, bl.a. i en dæmning med en nedgravet p-plads, renovering af de gamle siloer og udvikling af også billigere almene boliger i forskellige boligtypologier.

Udvalget besøgte et mixed-use boligblok, opført af skibscontainere, placeret for enden af dæmningen. Projektet er udviklet af den anerkendte og eksperimenterende hollandske tegnestue MVRDV i 2003: 157 lejligheder (15 leje og resten ejer), erhvervslokaler, retail og fællesrum (bibliotek, fitness, grill-område mv.) er indeholdt i den 20 meter dybe og 10 meter høje bygning.





*Silodam, mixed-use projekt, dvs. med boliger, erhverv, retail og fælleslokaler*

### **Grøn klimatilpasning i Bellamybuurt-kvarteret (Amsterdam Rainproof)**

Udvalget besøgte det lavtliggende boligområde Bellamybuurt med grønne klimatilpasningsløsninger. Klimatilpasning knyttes sammen med biodiversitet i forbindelse med Amsterdams regnvandshåndtering, der er inspireret af Københavns skybrudssikringsplan. Amsterdams skybrudssikring 'Amsterdam Rainproof - every drop counts' er primært baseret på overfladeløsninger. Det munder ud i tiltag for at gøre byen mere grøn, fra grønne anlæg, legepladser og fjerne fliser på fortove til fordel for grøn beplantning, som borgere kan udføre, til mere omfattende grønne infrastrukturprojekter. I Holland har man i den forbindelse udviklet et særligt grønt tag - poldertag - der imiterer de polder, der dræner inddæmmede arealer.

Udvalget hørte i den forbindelse om en netværksorienteret tilgang af Daniel Goedbloed, Amsterdam Kommune, med input fra arkitekt og beboer Minke Wagenaar (bilag 5). Målet er at tænke i helt nye løsninger/anlæg, samtidig med at klimatilpasningsløsningerne driftes ude i lokalmiljøerne. Netværket består derved af nøglepartier fra byen, vandselskaber m.v.



Gade i Bellamybuurt-kvarteret med vandafledning, begrønning og cykelparkering,

Torsdag den 9. juni

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### **Den hollandske model for stormflodssikring**

Udvalget fik præsenteret hovedtrækkene ved den hollandske finansieringsmodel, der er mere kollektivt funderet, ved *Quiijin Lodder*, Principal Advisor Coastal Flood Risk Management Rijkswaterstaat (bilag 6). Finansiering foregår via en fond på nationalt plan (Deltafonden) og vandbestyrelser, der opkræver skatter, på regionalt plan. Fællestræk mellem Amsterdam og Danmark er, at en oversvømmelse kan ramme mange mennesker, boliger, erhverv og vital infrastruktur med store tab til følge.

I Holland var der siden 1950'erne erfaring med at bygge større dæmninger/porte til at håndtere store mængder vand og beskytte de ca. 2/3 af Holland, der ellers ville blive oversvømmet. Deres erfaring var, at det er vigtigt, at det ikke bliver for teknisk kompliceret, da der derved er større risiko for, at dæmning/porte ikke virker.

### **Generel introduktion til Amsterdam Smart City**

Udvalget fik rundvisning og indblik i organisationens arbejde af *Leonie van den Beuken*, Program Director, og *Cornelia Dinca*. Amsterdam Smart City arbejder med nye løsninger inden for byudvikling og klimatilpasning på tværs af faggrupper og institutioner – og i samråd med borgerne. Organisationen har en vidensplatform, der består af virksomheder, kommuner, regioner og beboere. Målet er at skabe forbindelser og nye kreative løsninger via de forbindelser mellem faggrupper og folk.





Elbil fra 1970'erne

Amsterdam Smart City, udstilling 'Energy Junkies'

### Oplæg om Amsterdam Net Zero 2050

Udvalget fik indblik i, hvordan Amsterdam har benyttet et borgerråd med udvalgte borgeres forslag til den fremtidige klimaplan (forelagt bystyret i februar 2022). Borgerne blev bedt om at hjælpe med at udvikle initiativer og indsatser for at bidrage til byens reduktion af CO2 udledning. På møder har borgerne drøftet og fået oplæg til inspiration. 10 ud af 26 forslag vurderer Amsterdam pt. bidrager til CO2 reduktion, mens de resterende var for omfangsrige ift. finansiering og lovgivning. Oplæg ved *Kim de Jong*, strategisk rådgiver inden for bæredygtighed i Amsterdam Kommune. (Der indgår ikke bilag til dette punkt, da der ikke er modtaget oplæg).

### Cirkulær økonomi i byggeriet: Buiksloterham og genanvendelse af byggematerialer

Udvalget så det tidligere havne- og industriområde på 100 hektar, hvor der planlægges ca. 6.500 boliger. Byudviklingsguide Gebhard Fried, Architours, præsenterede området og Amsterdam Kommunes planer for at omdanne området til byens første cirkulære bolig- og erhvervsquarter, bl.a. med egne energi- og affaldssystemer.

I området sås forskellige typer projekter, herunder også boliger opført af genbrugsmaterialer, byplan/fortætning samt rekreative arealer.



*De Ceuvel i kvarteret Buiksloterham – kreativ hub med arbejdspladser for iværksættere, kunstnere m.fl.*

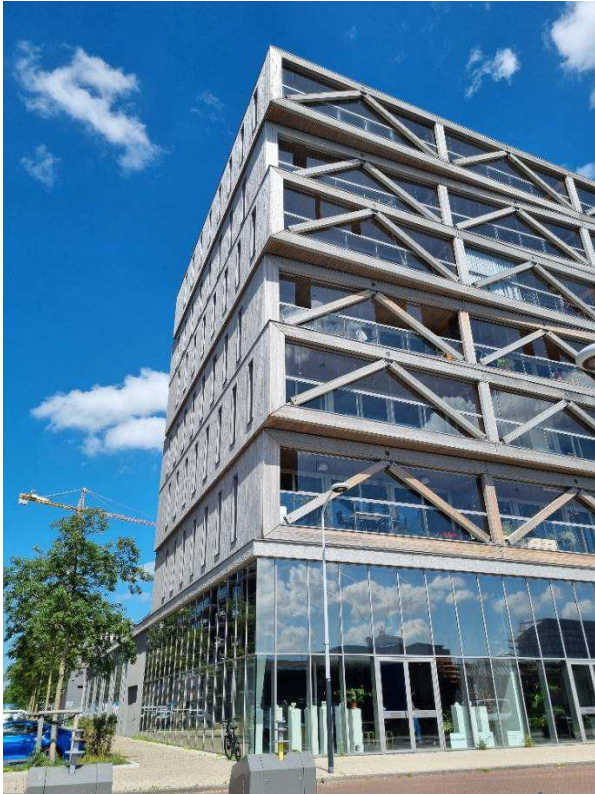
Buiksloterham fungerer som et levende laboratorium for cirkulær, smart og biobaseret by. Der er udarbejdet handlingsplan for at sikre, at mål for bydelen om bl.a. selvforsynende med energi, affaldsfrit kvarter, bygninger er cirkulære.



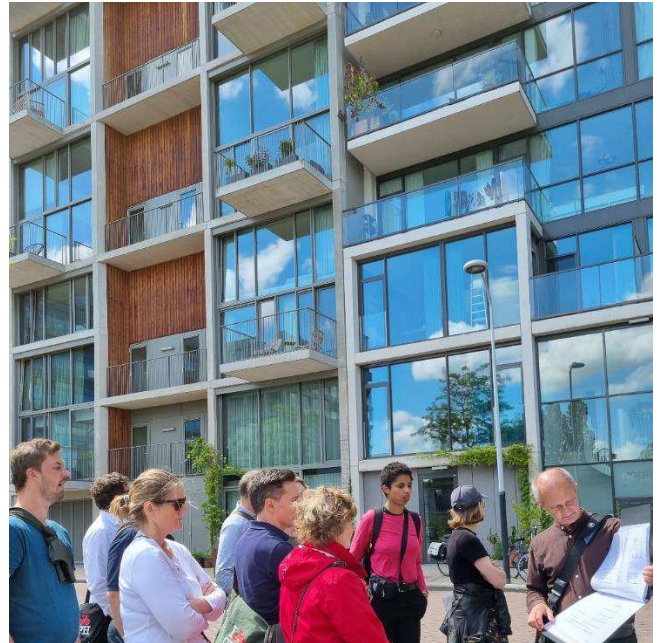
*Flydende boliger som byggefællesskab i kvarteret Buiksloterham*

De fleste boliger er opført af private byggefællesskaber, fra det højeste træbyggeri i Amsterdam til en flydende bydel bestående af 30 huse. Man samarbejder også med boligselskaber.





*Byggefællesskab med trækonstruktion*



*Byggefællesskab 'Stories' med trækonstruktion*

Udvalget besøgte en lejlighed i et boligbyggeri af træ under konstruktion 'Stories'. Projektleder fortalte om projektet med byggefællesskabet. Der er i byggeriet taget højde for, at byggeriet kan benyttes til forskellige funktioner. På nuværende tidspunkt forventes det benyttet som boliger, men det er bygget med en loftshøjde, der tillader, at det også kan benyttes til erhverv. Desuden er vægge mobile både i lejligheden, men også på tværs af lejlighederne, så størrelserne let kan tilpasses en ny funktion.



*Noorderlicht Café - bygget og indrettet med cirkulære materialer*

Udvalget afsluttede dagens program på et rekreativt areal omkring Noorderlicht Café.

### **Oplæg om, hvordan Amsterdam Kommune og interessenter har arbejdet med at skabe grundlæggende forandringer i forhold til cirkulært byggeri**

Udvalget mødtes med Imme Groet og Kees Stants, Sustainability team and leader of EU Affairs, Amsterdam Kommune. Udvalget blev præsenteret for det cirkulære program, som Amsterdam har sat i gang, samt 'The Green Deal' med brug af træ i byggerier (bilag 7).

Programpunkt om arbejdet med at skabe grundlæggende forandringer i forhold til cirkulært byggeri blev aflyst, da oplægsholder blev forhindret i at deltage.

*Fredag den 10. juni*

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Hjemrejse med hhv. tog og fly.

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## Deltagere på studietur

Der deltog otte medlemmer af Teknik- og Miljøudvalget og seks embedsmænd fra Teknik- og Miljøforvaltningen.

### Teknik- og Miljøudvalget

Teknik- og Miljøborgmester Line Barfod, Enhedslisten
Mikkel Skovgaard, Enhedslisten
Astrid Aller, Socialistisk Folkeparti
Helle Bonnesen, Det Konservative Folkeparti
Morten Melchior, Det Konservative Folkeparti
Christopher Røhl, Radikale Venstre
Christina Olumeko, Alternativet
Louise Theilade Thomsen, Venstre

### Teknik- og Miljøforvaltningen

Adm. direktør Søren Wille
Direktør Camilla Bjerre Søndergaard
Vicedirektør Karsten Biering Nielsen
Vicedirektør Peter Højer
Sekretariatschef Morten Rixen
Udvalgssekretær Britt Grunnet



Deltagere fra Teknik- og Miljøudvalget



Deltagere fra Teknik- og Miljøudvalget og Teknik- og Miljøforvaltningen

**Bilag**

Bilag 1 Oplæg om Car Low Program i Amsterdam v. Wiard Kuné (8. juni 2022)

Bilag 2 Handout om Creating Space in Amsterdam v. Wiard Kuné (8. juni 2022)

Bilag 3 Idéforslag Plan Bike Garage-Entree-Bike Parking v. René Dronkers (8. juni 2022)

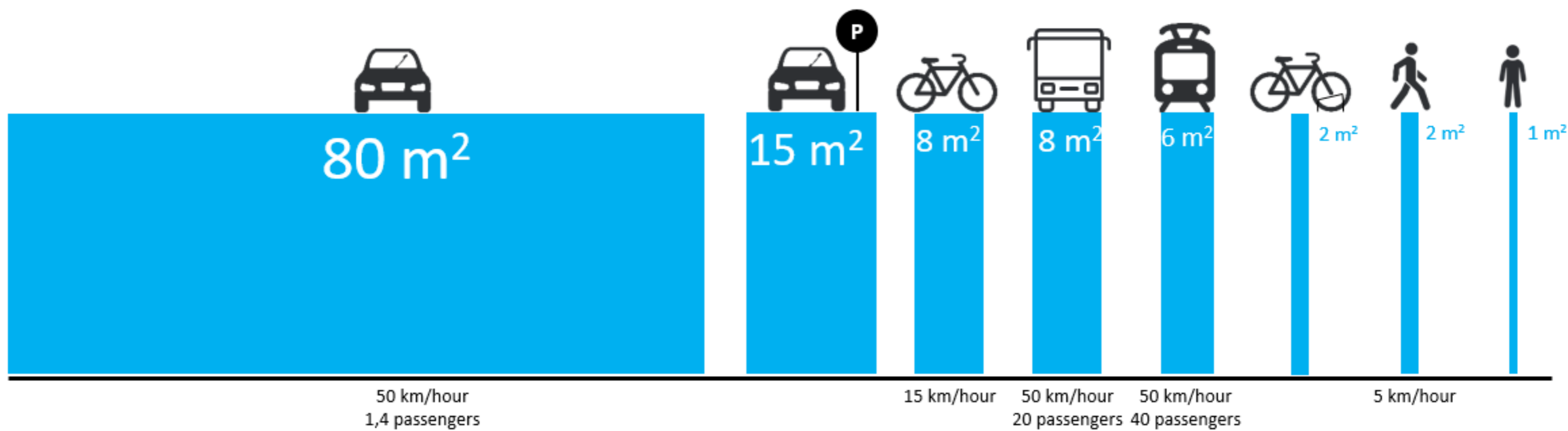
Bilag 4 Pjece om Silodam (8. juni 2022)

Bilag 5 Oplæg Amsterdam Rainproof (klimatilpasning) v. Daniel Goedbloed (9. juni 2022)

Bilag 6 Oplæg om den hollandske stormflodsmodel v. Quijijn Lodder (9. juni 2022)

Bilag 7 Oplæg om Green Deal og træ i konstruktioner v. Imme Groet (9. juni 2022)

Bilag 1 Oplæg om Car Low Program i Amsterdam v. Wiard Kuné (8. juni 2022)



Then



Now



Soon



Later



































## Creating space in Amsterdam

Agenda for a liveable & accessible city



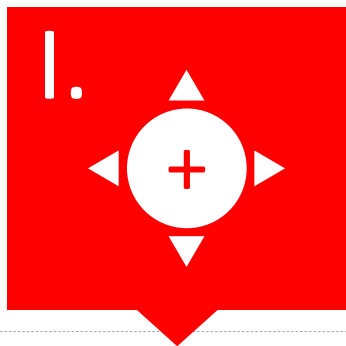




## Creating space in Amsterdam: Agenda for a liveable & accessible city

The key aim of this agenda is creating space. Space to walk, to cycle, to play and to enjoy our green spaces. So that Amsterdam can continue to be an accessible and liveable city for the next 20 years - a place where people want to live, work and relax. To achieve this, we're reducing the amount of space given to cars in our city. The Agenda for a liveable and accesible city includes targeted, practical measures for our streets and for innovative experimentation, and it identifies the main points that we still need to work on. It shows what we're doing NOW (period until 2022), SOON (period until 2025) and LATER (period until 2040), to build on what has already been achieved.





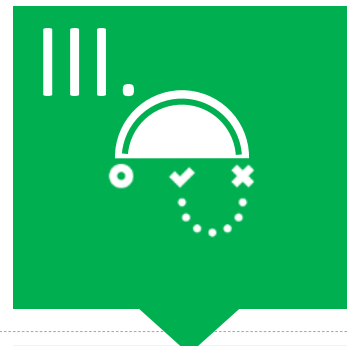
**Goals of the agenda**

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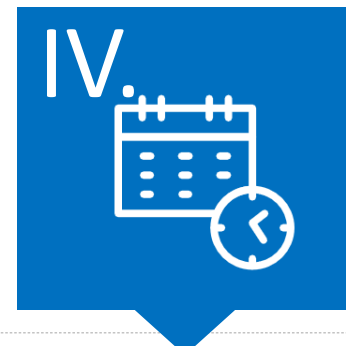
**Trends and developments**

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**On the road to a liveable and accessible city**

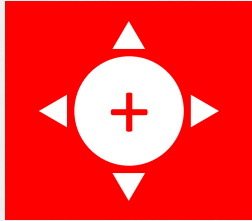
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**Implementing The agenda**

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# I. Goals



# 5 goals for a liveable and accessible city and region

1. More space for functions associated with passing the time



2. More space for amenities



3. More space for alternatives to the car



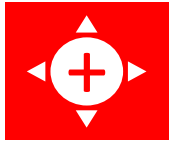
4. Cleaner air, less noise nuisance and greater road safety



5. Inclusive city







**Goal 1: More space to enjoy spending time in the city**  
Spatial reallocation benefits the quality of public space by adding more green space or play facilities.

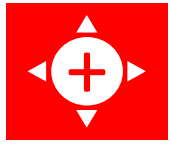


**BEFORE**



**AFTER**





## Goal 2: More space for facilities

The space that has been created can then be used for facilities such as waste containers, bicycle stands or loading and unloading areas.



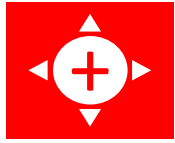
Foto: Thomas Schlijper

**BEFORE**



**AFTER**





**Goal 3: More space for clean and active forms of transport**

**We're creating more space for cyclists, pedestrians and public transport.**



**BEFORE**



**AFTER**





**Goal 4: Cleaner air, less noise pollution, better traffic safety**  
The measures in this Agenda are helping to reduce car traffic, making our air cleaner and our roads more efficient.



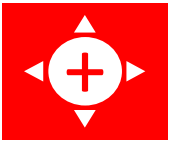
**BEFORE**



**AFTER**

Foto's: Thomas Schlijper



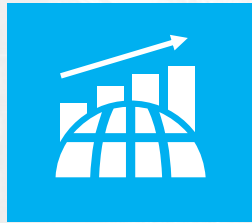


**Goal 5: An inclusive city for young and old, high income and low income**

**Everyone can travel from A to B comfortably and affordably.**







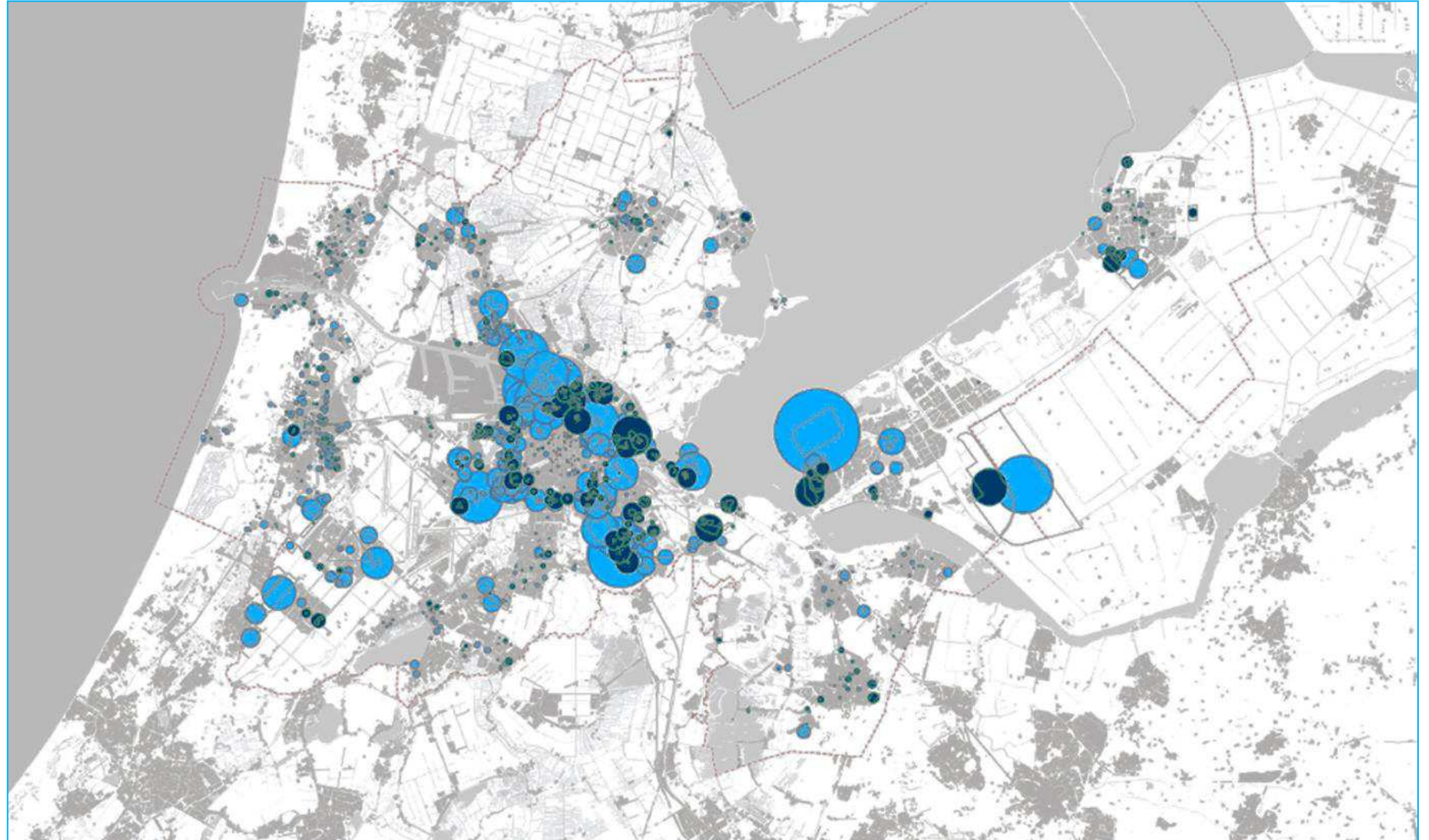
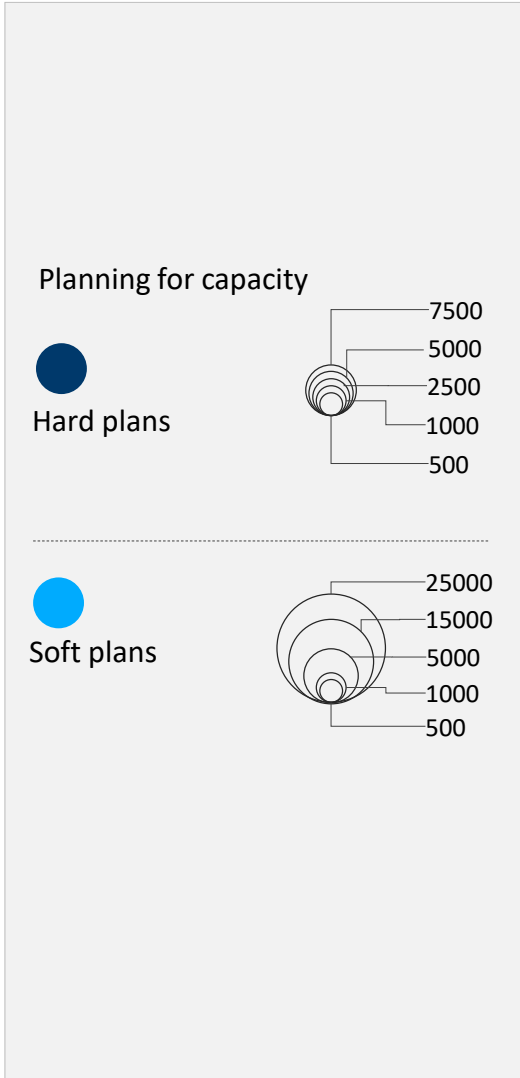
## II. Trends and developments





# The region is facing a major growth challenge: >290,000 extra homes by 2040

If no action is taken, the number of car journeys will also grow, reducing quality of life and accessibility

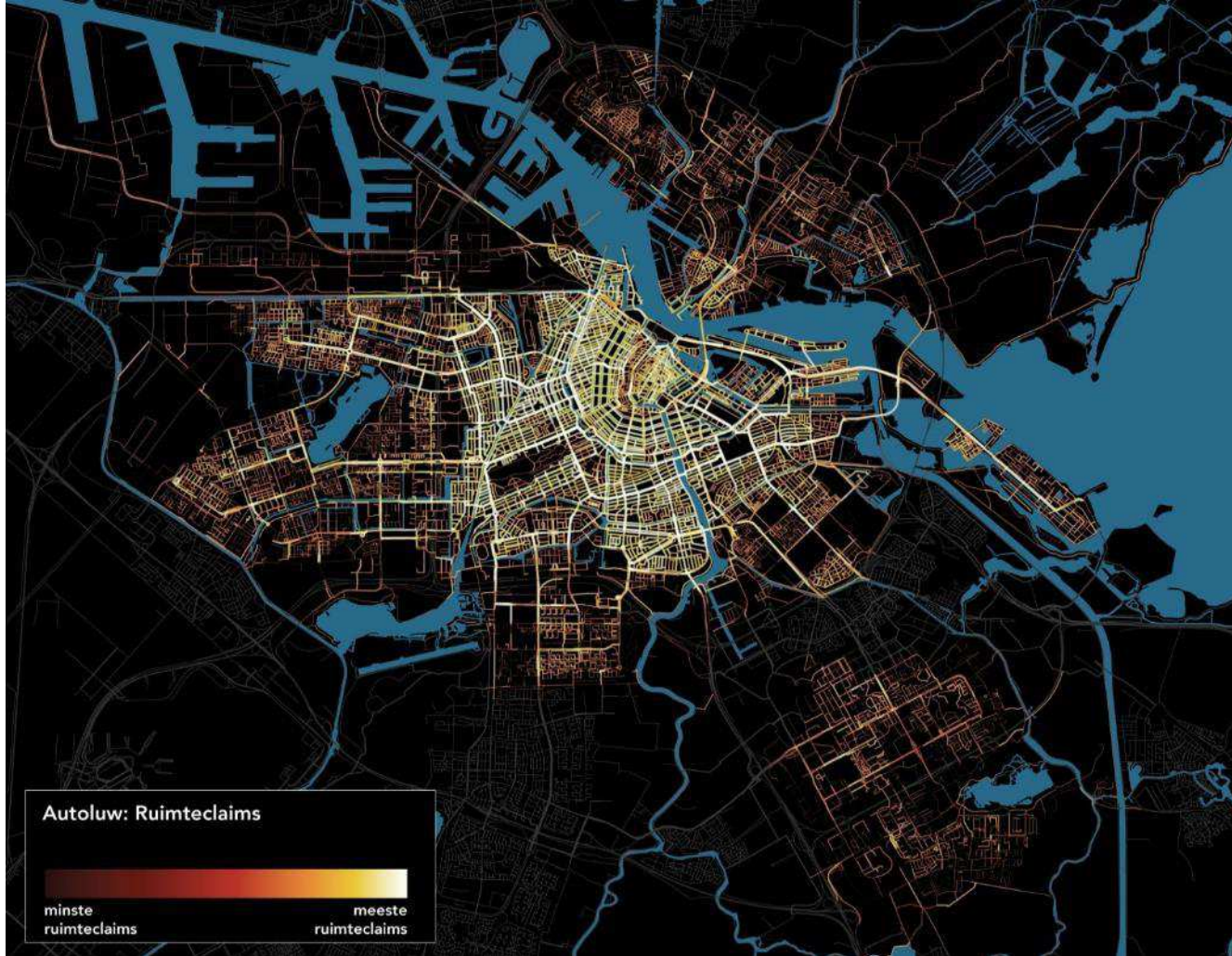






## The demand for space is enormous

It is highest inside the A10 ring road, to the south of the river, the IJ



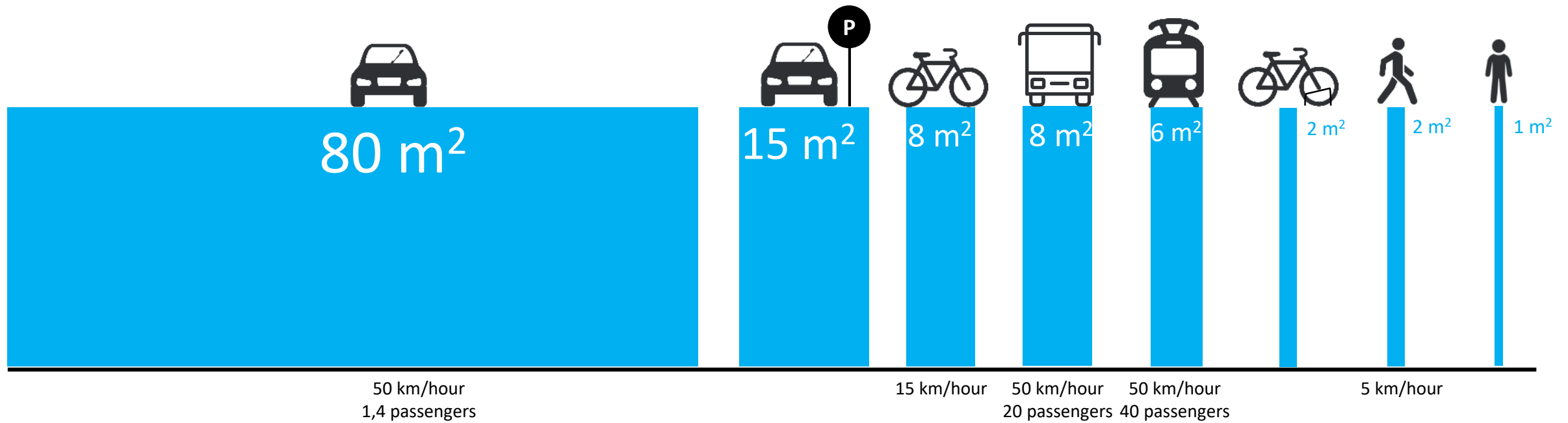
The map shows the pressure on our public space and the urgent need to minimize car usage. We looked at the demand for space from: pedestrians, cyclists, parked bicycles, traffic flow for public transport, accessible bus/tram stops, traffic flow for cars, facilities (such as waste containers), play areas, narrow canals, spatial quality, trees and rain-proofing measures.





# Cars require the largest amount of space per user

That is why we want to reduce the footprint of cars in our city (in terms of space, emissions and noise)



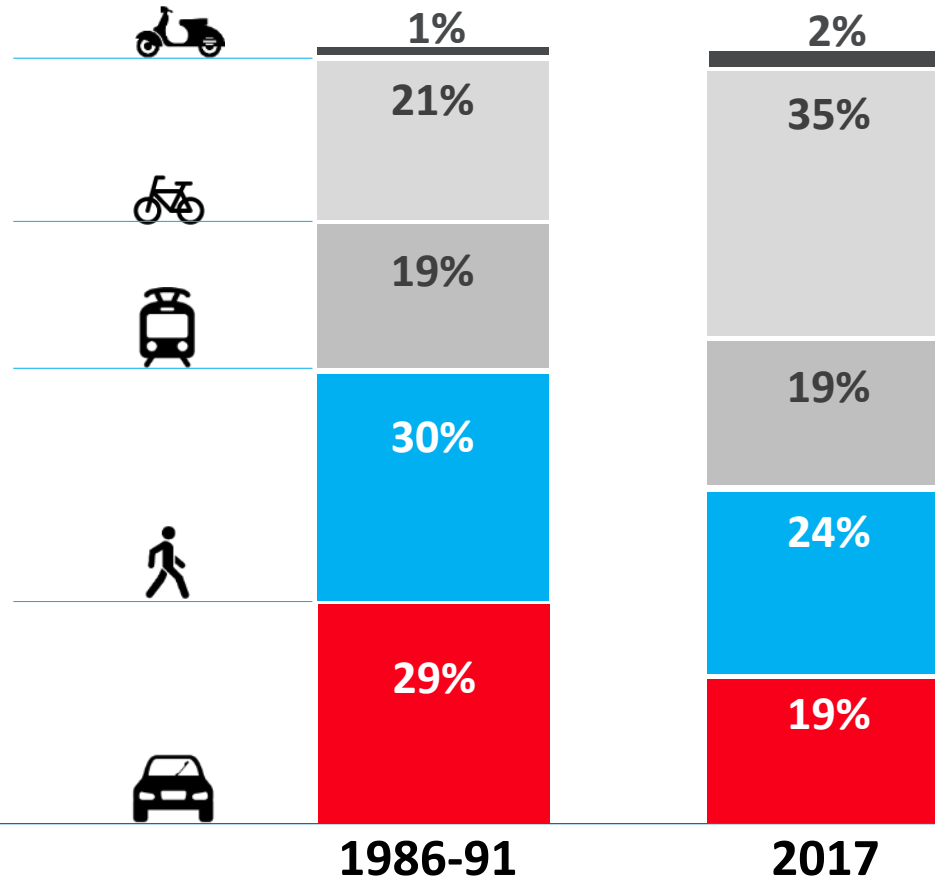




# Amsterdam is a cycling city, and car use has been declining since 1986

Residents mainly use their bikes to get around the city

Trips made by residents of Amsterdam from, to and within the city







# Trips made to and from Amsterdam are often made by car

That is why a regional approach is important

Trips to and from  
outside Amsterdam  
(2017)



Residents(%)



Car
  PT
  Bike
  Moped
  Walking
  Other

Visitors (%)



Car
  PT
  Bike
  Moped
  Walking
  Other



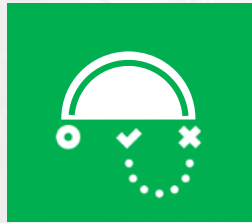


# Logistics networks ensure that our city continues to function

Every day, 25,000 delivery vehicles and 6,000 trucks inside the A10 ring road. Of all road traffic, 15% is logistics







### III. On the road to a liveable and accessible city





# Step by step, we're creating more space

We are doing what is possible *today*, beginning work on what we will be doing *soon*, and preparing for what we want *later*

We're introducing slower traffic in various streets NOW, to make space for recreation (such as along the Amstel and Weteringcircuit). Some changes will take more time, because we first need to take measures to reduce car ownership and usage. With the free space that is created, ever more locations around the city will SOON become pleasant residential areas (such as Van Woustraat and Nieuwezijds Voorburgwal). The ambition is that LATER, clean and active modes of transport will dominate mobility in the region. Then we will have the space to redesign our main roads (such as part of Stadhouderskade, in this example).

**NOW (period until 2022)**



**SOON (period until 2025)**



**LATER (period until 2040)**

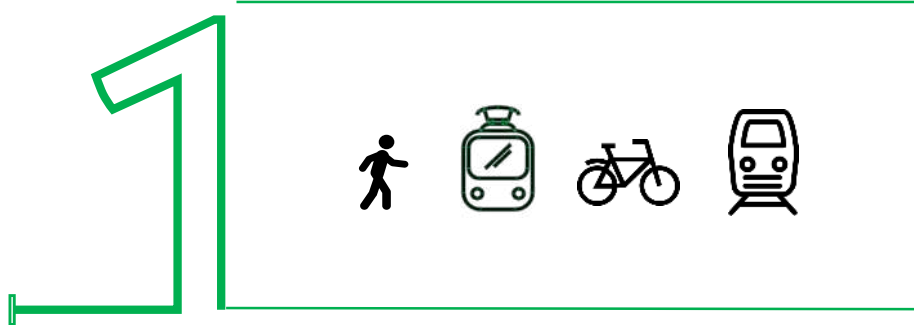




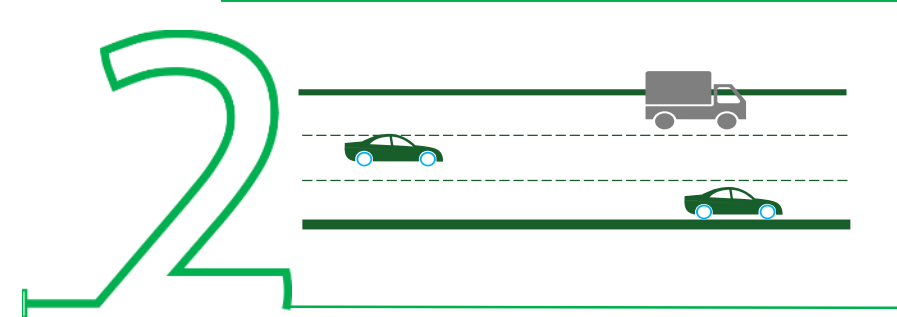


# Step by step to a liveable and accessible city

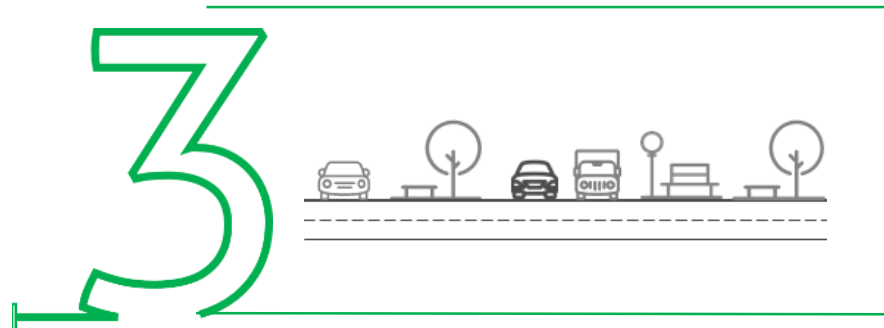
## MORE CLEAN AND ACTIVE MODES



## MAKING SPACE BY REDUCING CAR TRIPS



## MORE SPACE DUE TO FEWER PARKED CARS



## PLEASANT PUBLIC SPACES







# Step by step to a liveable and accessible city

## **MORE CLEAN AND ACTIVE FORMS OF TRANSPORT**

1

There are more and more neighbourhood initiatives to improve the living environment. Employers are also offering alternatives to car use more often. We will support these types of developments throughout the city. We are making the transition to different modes of transport easier by investing in wider pavements and cycle lanes, and good and affordable public transport across the city and region

## **CREATING SPACE BY REDUCING CAR TRIPS**

2

We are working towards a city where large, contiguous areas are given over to pedestrians, cyclists and public transport, where traffic is better distributed throughout the day, and where urban logistics are cleaner, lighter and more efficient.

## **CREATING SPACE BY REDUCING PARKING**

3

We are taking measures to reduce the demand for parking space. This will enable us to remove parking spaces and create more room. We are avoiding any major parking issues by providing alternative parking locations for car owners.

## **PLEASANT PUBLIC SPACES**

4

We are applying different design principles to different areas of Amsterdam. Each area has its own distinctive character, and therefore merits its own approach.





# 1. More clean and active forms of transport (1/2)

investing in more public transport, space for pedestrians and bicycles and shared mobility

NOW (period until 2022)

SOON (period until 2025)

LATER (period until 2040)



- Increased frequencies
- Accessible bus/tram stops
- Night metro pilot
- Encouraging small local public transport initiatives

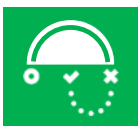


- Improved traffic flow for trams and buses
- Adding new public transport lines
- More and more timetable-free services
- Improved regional (bus) connections



- New metro connections
- Scaling up: public transport across the city and regions





# 1. More clean and active forms of transport (2/2)

Investing in more public transport, space for pedestrians and bicycles and shared mobility

NOW (period until 2022)

SOON (period until 2025)

LATER (period until 2040)



- › Shared bicycles at metro stations
- › Expand comfortable bicycle infrastructure
- › Tackle top 15 pedestrian bottlenecks



- › Expand regional bicycle network
- › Start of construction of second cycle path ring along Frederik Hendrikstraat - Ceintuurbaan



- › High-quality bicycle infrastructure network
- › Large, contiguous residential areas





## 2. Creating space by reducing car trips

We are working on the streets where this is already possible. In other streets, we are implementing circulation measures.

NOW (period until 2022)



- › 30 km/h limit in residential streets, more bicycle and public transport in quieter city streets
- › Research limited access zones for traffic
- › Behavioural measures, including the approach of employers

SOON (period until 2025)



- › Circulation measures in more city streets to reduce car traffic
- › Expand intelligent access to keep traffic out of residential areas

LATER (period until 2040)



- › Interventions to reduce car traffic on main routes
- › Large, contiguous residential areas





### 3. Fewer stationary cars in the city, step by step

NOW (period until 2022)



- › Expand and increase usage of P+R
- › More shared mobility
- › Neighbourhood budgets for green measures
- › Reduce number of parking permits

SOON (period until 2025)



- › Up to 10,000 fewer parking spaces
- › Expansion of P+R Noord and addition of new locations
- › Clear and extensive regional P+R facilities

LATER (period until 2040)



- › City streets without parked cars
- › Residential areas without parked cars
- › Canals without parked cars
- › City centre without parked cars



4. Pleasant public spaces  
Locally oriented design principles



**City centre**  
Creating space for cyclists and pedestrians, places to live and meet



**City streets**  
Create space for the dynamics of urban life



**Canal District**  
More space to appreciate the beauty of the canals



**Mixed residential areas**  
Free up space to guarantee the quality of life



**Working areas**  
Space for cars, opportunities for bicycles and public transport.



**Main routes**  
Providing space for traffic flow



**Local regeneration area  
The New City**  
Space for urban living

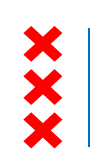






## IV. Transition already In progress





## Implementing the Agenda

We are carrying out pilots, projects and research as part of the programme  
Programmatic Implementation of Car-Free Measures (PUMA)

The Agenda marks the start of an ambitious programme. We are setting up pilots, projects and research as part of the current Programmatic Implementation of Car-Free Measures (PUMA), or we are integrating them into the line organization or other ongoing thematic programmes, such as the Long-Term Bicycle Plan and the Taxi Programme.

In parallel to our preparations for the agenda, we have begun to introduce a number of measures announced in the coalition agreement. For example, parking fees for visitors have been increased and we have begun to remove street parking spaces.











**Supplement**

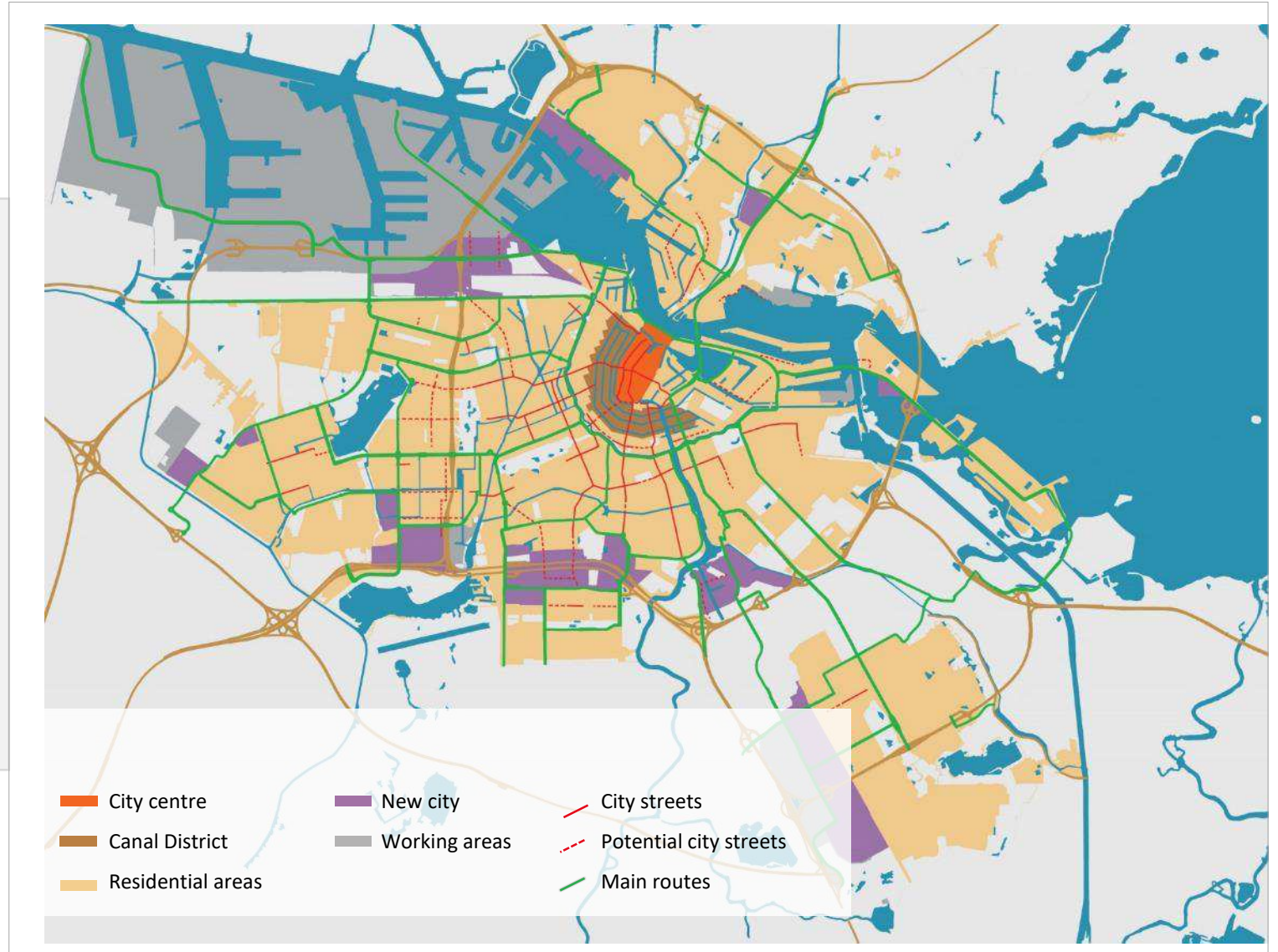


# ✘✘✘ Different design principles for different areas

✘✘✘ Each area of the city has its own distinctive character, and therefore merits its own approach.

Every area in our city is unique. Whether it is the city centre or the main routes, city streets or residential areas, or the new city or our centuries-old canal district.

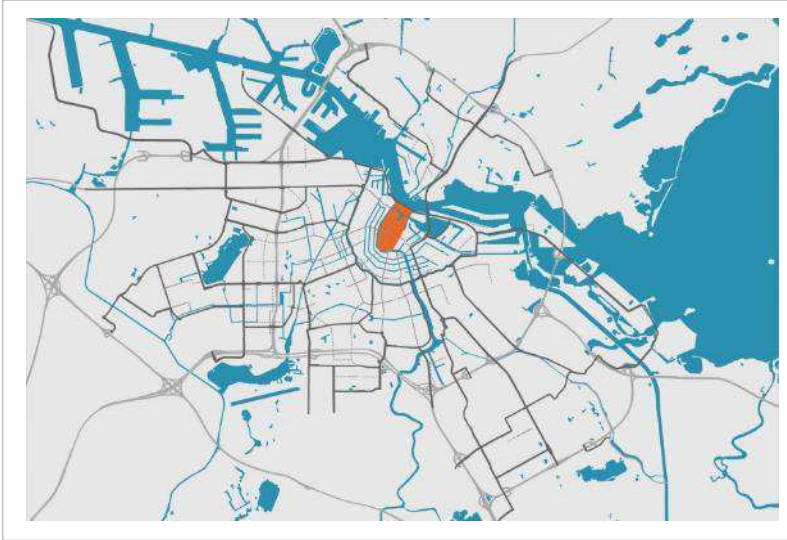
The Agenda is creating more space for a liveable and accessible city. We are implementing this differently in different areas across the city.





# City centre

Creating space for cyclists and pedestrians, space to live and meet



City centre

We want to guarantee quality of life in the city centre, increase the amount of space for pedestrians and improve its attractiveness for residents.



## DESIGN PRINCIPLES

We will phase out ground-level parking. The ambition is to make the streets free of parking wherever possible.

We are creating more space for loading/unloading and bicycle parking facilities, small electric vehicles and shared mobility.

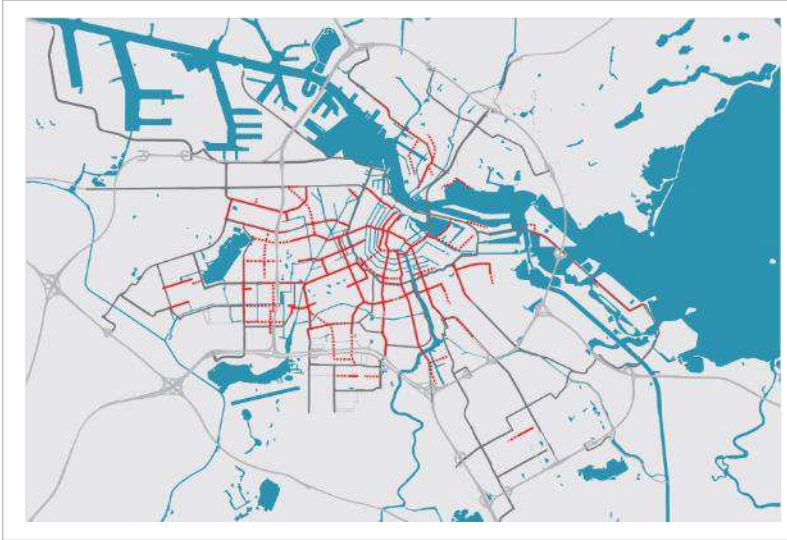
Streets and squares are being improved and rejuvenated with climate-proof solutions, high-quality materials and more greenery.





# City streets

## Creating space for the dynamics of urban life



The city streets are where all the dynamic energy of urban life comes together. Because of their robust traffic function(s), they are important links in the network.

— city street    - - - Potential city street



Before: a city street (50 km/h) with parallel parking and separated cycle paths

### DESIGN PRINCIPLES

We are making our urban streets free of parking whenever we renovate them, if that space is needed for other functions (bicycles, pedestrians, residential, etc.). We are designing that space as flexibly as possible. For example, by combining bicycle parking facilities with loading and unloading areas. Wherever possible, we are mixing traffic modalities (bicycle/car or car/tram) and reducing the maximum speed (30 km/hour).



After: a parking-free city street (30 km/h) that includes space for greenery and accommodation



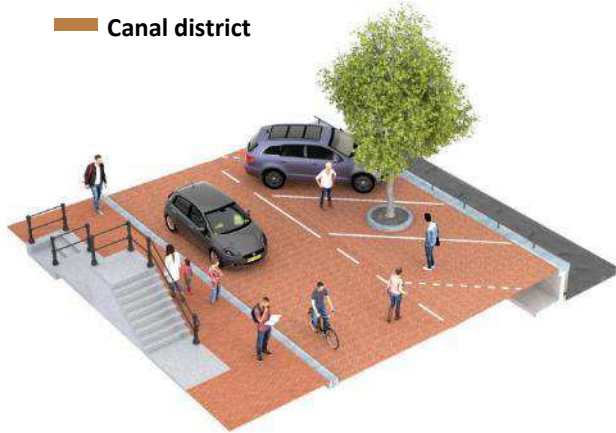
# ✘ Canal district

## ✘ More space for the beauty of the canals



Amsterdam's Canal District is a UNESCO world heritage site. So we need to take great care of it. By limiting the footprint of cars, we are improving accessibility and quality of life in this area of the city: more space for bicycle parking and wider pavements.

Canal district



Before: a canal with angled parking spaces and narrow pavements

### DESIGN PRINCIPLES

We are converting angled parking spaces into parallel parking spaces.

We are making the narrower canal sides (<7m) parking-free wherever possible during renovation work.

Through traffic no longer possible due to circulation interventions or intelligent access.

In the medium term, we will make a number of stretches along the main canals completely free of parking.

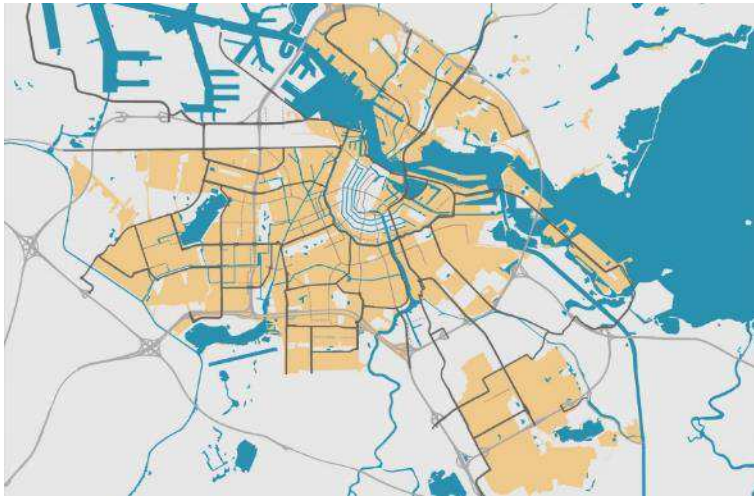


After: parallel parking spaces and wider pavements.  
Along the water, parking spaces can also make way for bicycle parking stands or trees.



# ✘✘✘ (Mixed) residential areas

Freeing up space to guarantee quality of life



The mixed residential areas are the neighbourhoods that surround the city centre, with a lot of retail and catering facilities along the existing city streets, but also increasingly in residential areas such as the Pijp, the Jordaan, the Indische Buurt and Oud-West. The interspersing of quiet and busy areas is sometimes under pressure due to the location of public functions in residential streets. .

— (mixed) residential areas



Before: a narrow street with parallel parking along both sides

## DESIGN PRINCIPLES

In the short term, we will eliminate parking spaces through temporary measures, such as adding planters or bicycle racks.

During renovation projects, we will convert some of the parking spaces into bicycle parking, green space or play areas.

The speed limit for (car) traffic in residential areas will be limited to 30 km/h.

We will create hubs for shared mobility, so that residents can switch from ownership to shared usage.

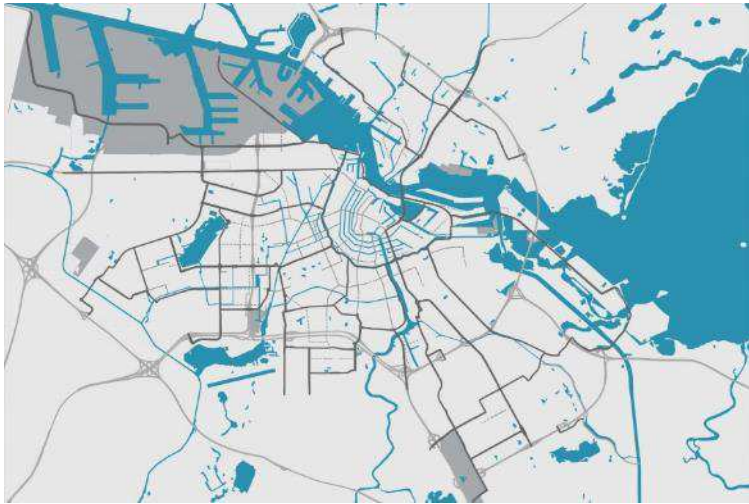


After: by removing parking along one side, there is space for green, play areas, trees, bicycle parking, etc



# ××× Working areas

## ××× Space for cars, opportunities for bicycles and public transport



■ Working areas

Amsterdam has a number of business and office areas, both inside and outside the A10 ring road. Here, it is not only the business/logistics function that is important, but also how people travel to and from work. We are building a new, car-free city, but the existing city must also continue to function.



### DESIGN PRINCIPLES

Guaranteeing the accessibility of business areas so that companies can continue to function properly.

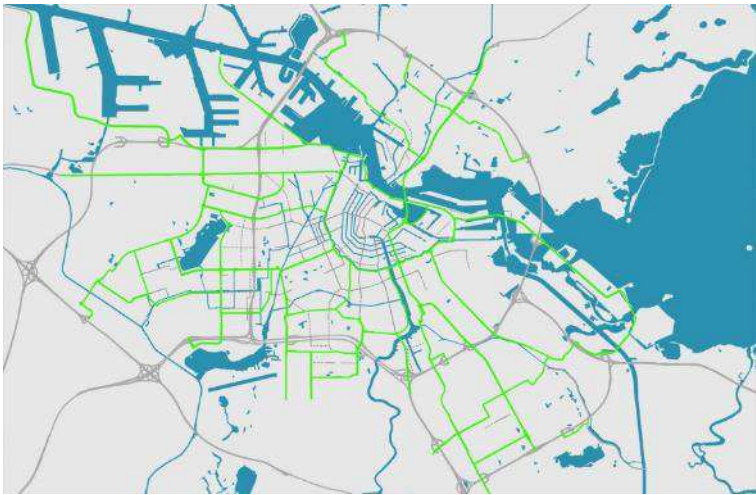
We are investing in the quality of continuous bicycle connections, so that visitors and employees can cycle more easily and conveniently. During renovation projects, we are focusing on adding green spaces to improve the quality, biodiversity and climate-resilience of working areas





# ✘✘✘ Main routes for road traffic

## Providing space for traffic flow



— Main routes for road traffic

Car-free' means more than simply keeping cars out of the city. In the first instance, we will limit through traffic from smaller roads wherever possible. This means that we will funnel the traffic more towards the city's main routes (as well as the motorways and larger roads). Here we want to ensure that traffic can flow as freely as possible. At a later stage, we will look at whether we can reduce car traffic through targeted measures or even redirecting it entirely.

### DESIGN PRINCIPLES

In the short term, we will guarantee the capacity and flow of local vehicle traffic along these main routes.

Wherever possible and where necessary, we will remove parking spaces to improve traffic flow or to make space for facilities (fast charging points, coach stops, etc.).

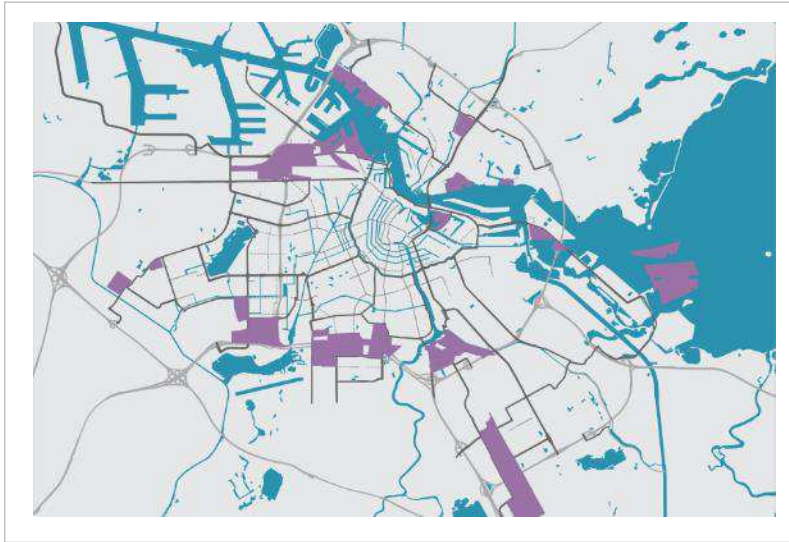
We are investigating whether the A10 could assume (some of) the functions of the main urban routes.





# Development areas

## New city



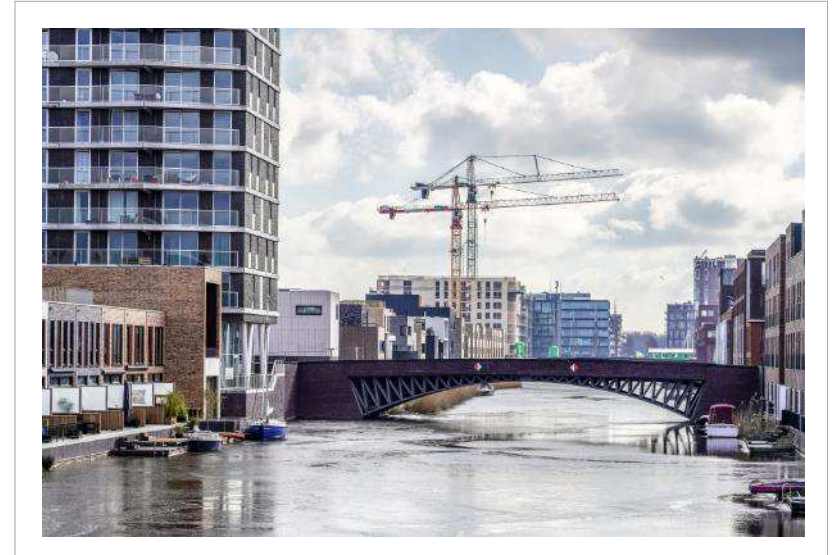
With urban development areas such as Havenstad and IJburg-2, new types of areas are being added to the city, focused on active travel. Public space offers plenty of space for walking and cycling, and there is a lot of green space and spaces for meeting, playing and recreation.

### DESIGN PRINCIPLES

We are creating public space that is green and climate-proof, focused on movement, residential and meeting places.

Parking will no longer be at ground level, but indoors or remote, so that our streets will be free of parking.

Alternatives to car ownership and car use are shared mobility, high-quality public transport, attractive bicycle routes and space for pedestrians



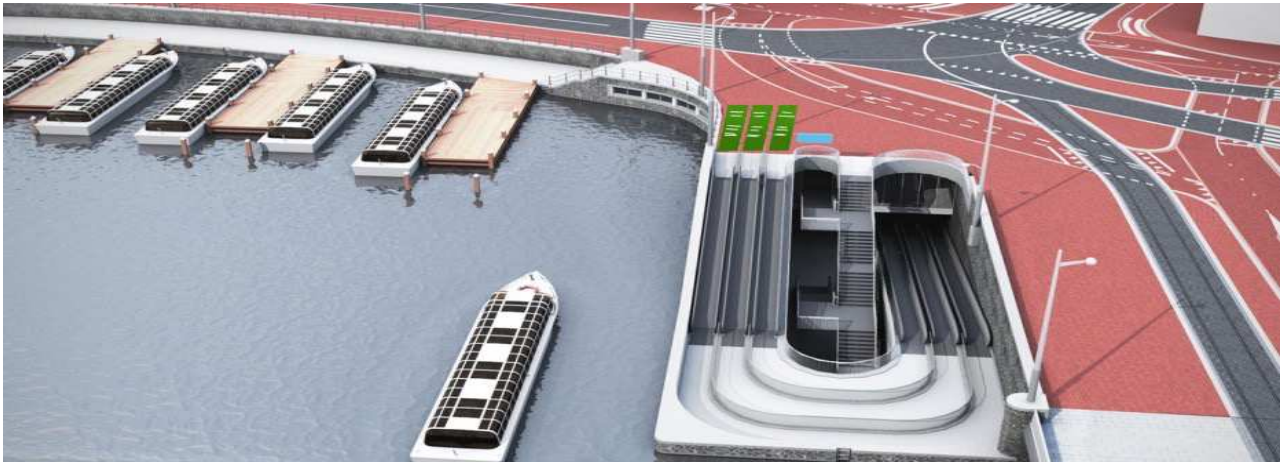


## Forslag adgang til nyt cykelskur

### Prins Hendrikkade Centraal Station 'Entree'.

8-4-2020

(Denne tekst er oversat fra hollandsk til dansk via google translate, der kan derfor forekomme enkelte sproglige fejl)



Det nye parkeringsanlæg ved Hovedbanegården åbnes i slutningen af 2021 og vil give plads til cirka 7.000 cykler. Den nye parkeringsplads er tilgængelig på cykel fra Piet Heinkade. Stalden er tilgængelig ved at gå ind i et "Tapis-Roulant" (rullende tæppe). I alt vil der være tre tapis-roulanter ved siden af hinanden for tilstrækkelig flow af antallet af cyklister.

En tapis roulant har et smart og brugervenligt udseende, men har også en vigtig ulempe.

Når det regner, er tapis-roulanterne glatte og uden tag kan de ikke fungere i tilfælde af regn. Eller kun opad. Af årsager hos Welstand er det nødvendige tag endnu ikke realiseret. Det har store konsekvenser for parkeringsanlæggets tilgængelighed og sikkerhed. At gå en tapis roulant med en cykel i hånden øger risikoen for fald. Det er næsten umuligt at bruge en stationær tapis roulant til handicappede.

#### Løsning med delvist tapis-roulant system

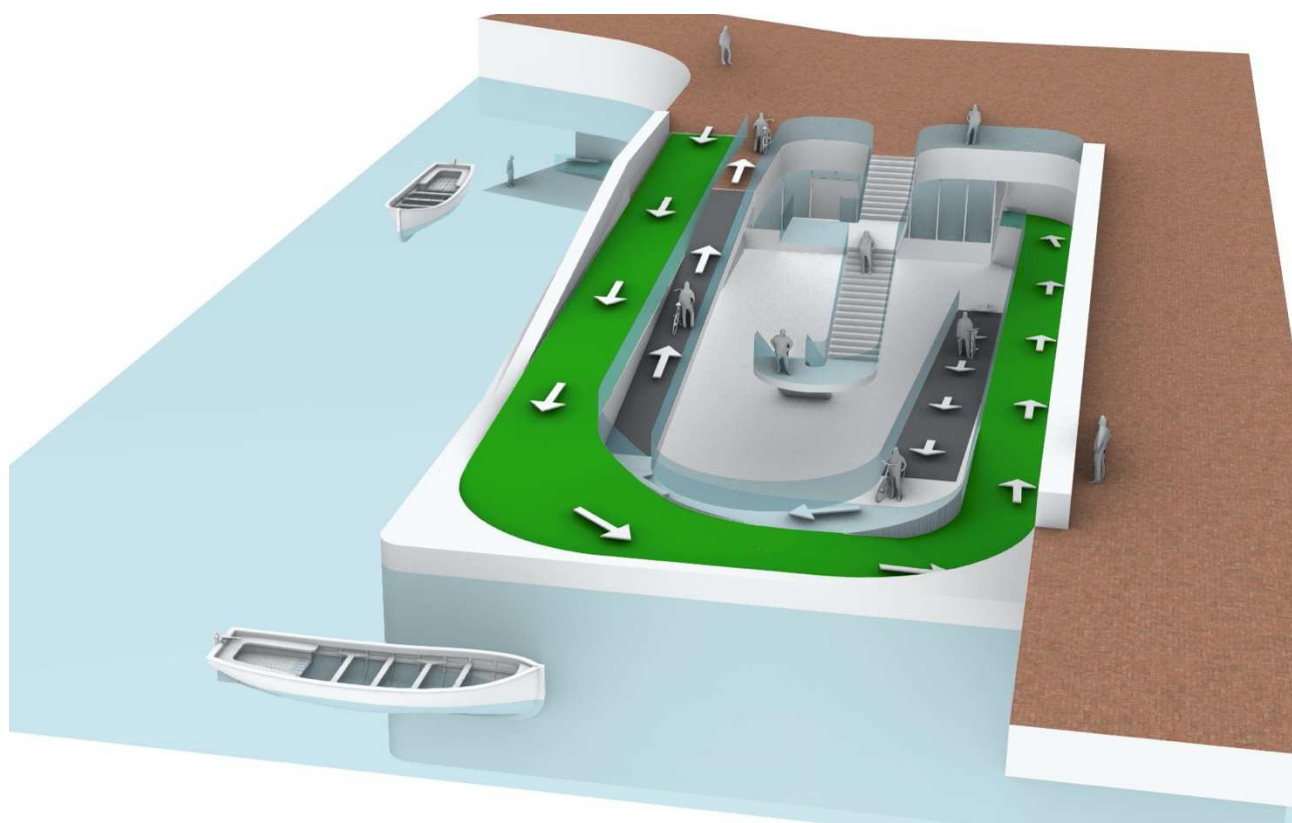
Med den begrænsede offentlige plads i Amsterdam er korrekt cykelparkering af stor betydning for en attraktiv og tilgængelig by. Inden for cykelparkeringsteamets flaskehalstilgang arbejdes der med nye succesfulde løsninger til cykelparkering ud fra et brugerperspektiv (her cyklister). Udover Amsterdam-oplevelsen holder cykelparkeringsteamet også øje med cykelparkeringsoplevelsen udefra.

Vi ser, at der er blevet realiseret en række mere brugervenlige underjordiske parkeringsfaciliteter i byerne Groningen, Nijmegen og Utrecht. Disse byer har et underjordisk parkeringsanlæg, der kan cykles ind. Det er nemt at forklare, hvorfor dette opleves som meget cykelvenligt.

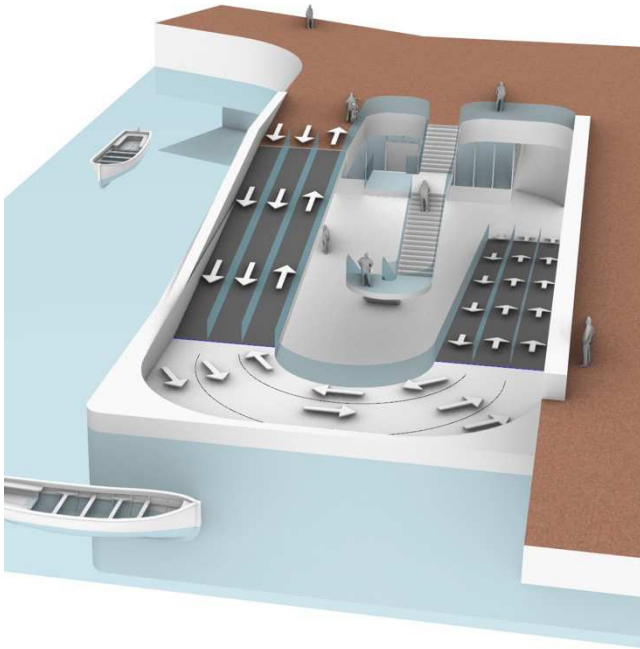
Det er kendt fra adfærdsvidenskaben, at en adfærdsændring (i dette tilfælde indendørs parkering) er lettest at opnå, når den nye, ønskede adfærd er tæt på den intuitive adfærd. Vi ser, at cyklister godt kan lide at cykle til deres endelige destination og så gerne vil parkere. Stå af så lidt som muligt og gå så lidt som muligt. Ved parkering i den underjordiske parkeringsplads 'de Entree' bedes du i god tid stå af og tage ruten ned med din cykel og parkere. Ved de nye parkeringsanlæg i førnævnte kommuner kan cyklister komme ind i skuret, af og parkere med det samme. Uden trængsel i toppen af indgangen.



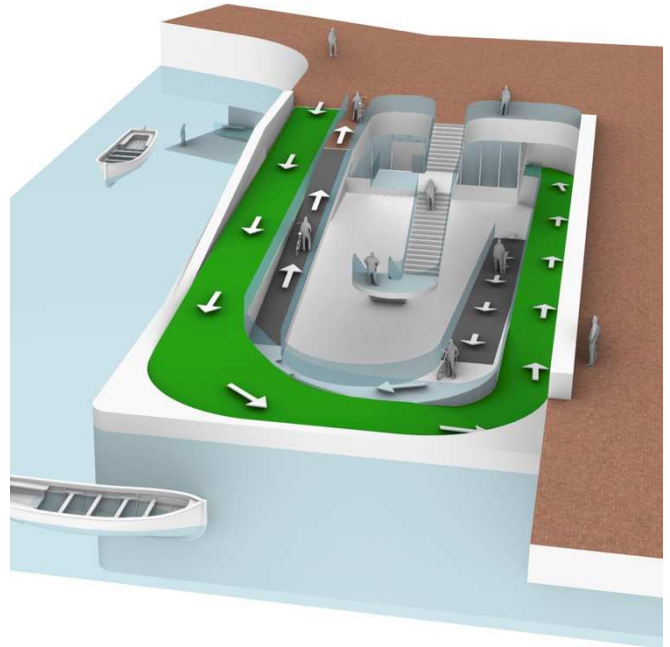
Dels på grund af problemer forårsaget af en udækket tapis roulant (glatte forhold, risikofyldt gang med cykel i hånden, teknisk jævnligt ude af brug og negativ indberetning på grund af funktionsfejl og fald), er der foretaget en hurtig scanning af mulighederne for kan cykles ind.





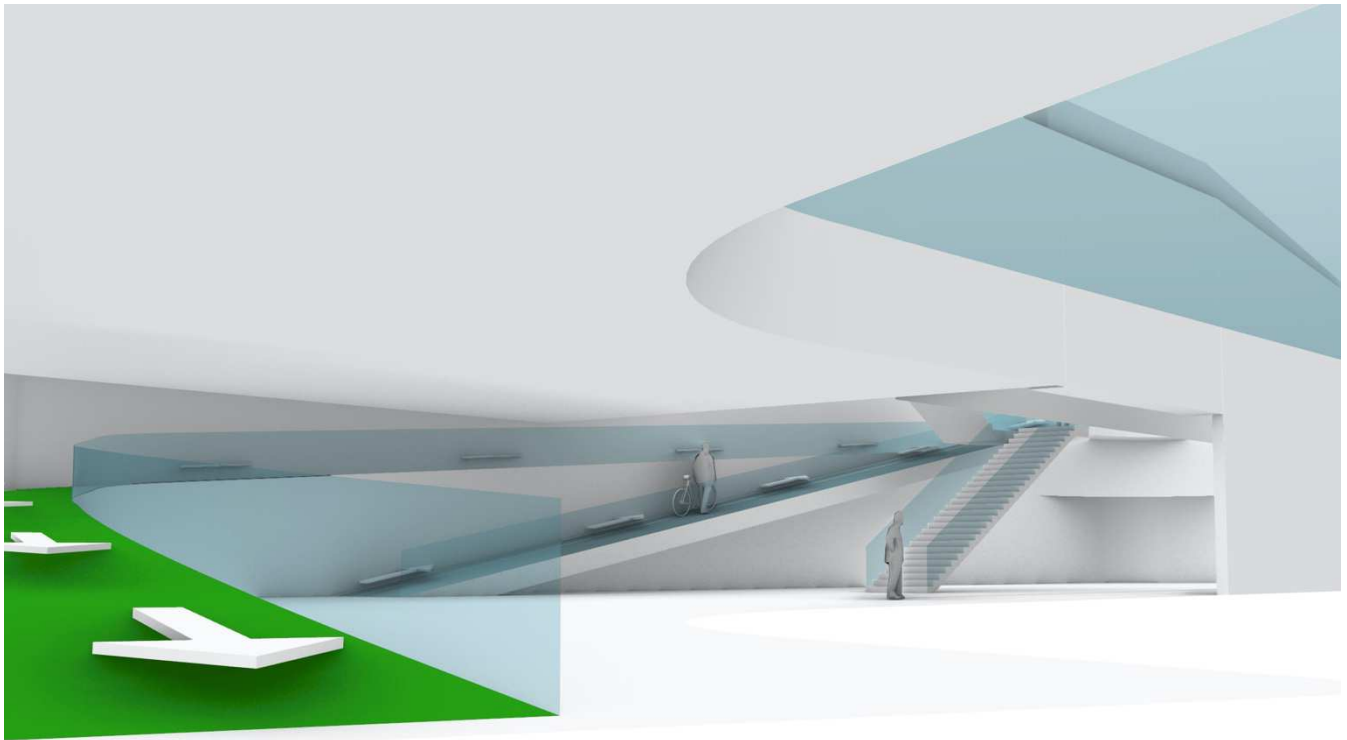


Eksisterende



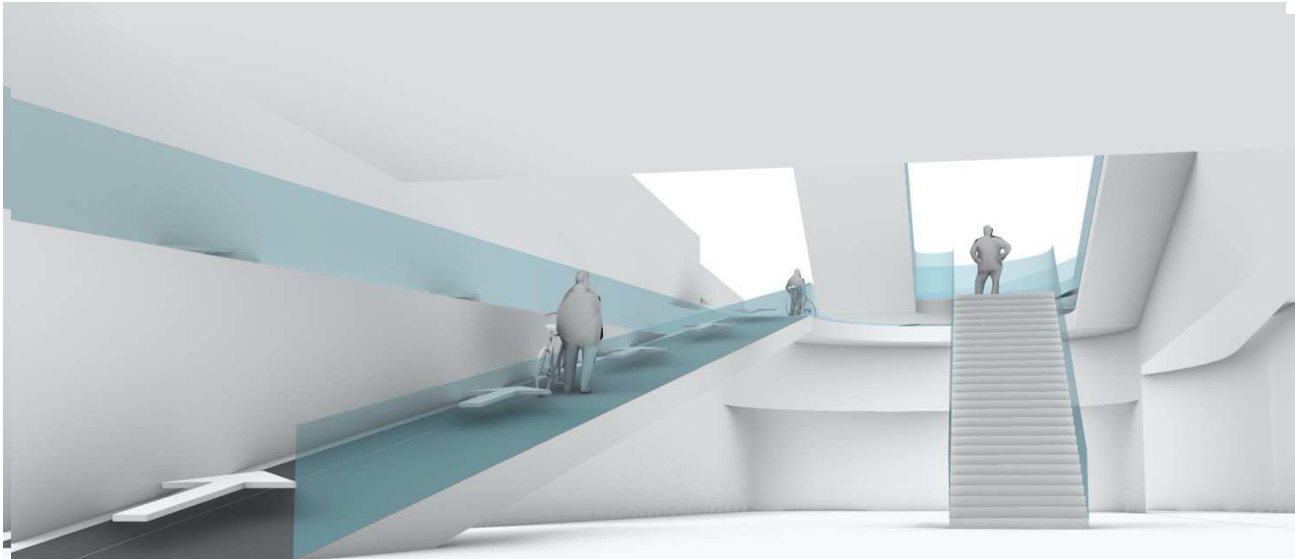
Ny

Sammen med en arkitekt er muligheden overvejet, beregnet og tegnet for at skabe en indgang indenfor det allerede færdige byggeri mål, der gør, at cyklisterne kan trille ned på cyklen.



*Nedstigningen på cykel til*

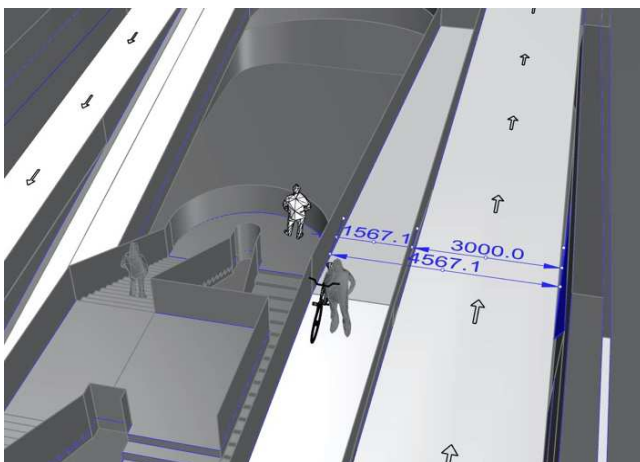




*Indgangen via tapis roulant for den udgående strøm af besøgende. Til højre er den (eksisterende) trappe, hvor publikum kan hente cyklen.*

### Nedstigning og kurver:

Den tre meter brede nedkørsel giver plads og overblik til at klare nedkørslen og bremse før svinget.



Nedstigningen og svinget kan i nogen grad sammenlignes med situationer i byen, såsom broen ved siden af cykellejligheden. Også her ender skråningen i et sving. Se vedhæftede video.

<https://vimeo.com/402911809>

### Yderligere uddybning

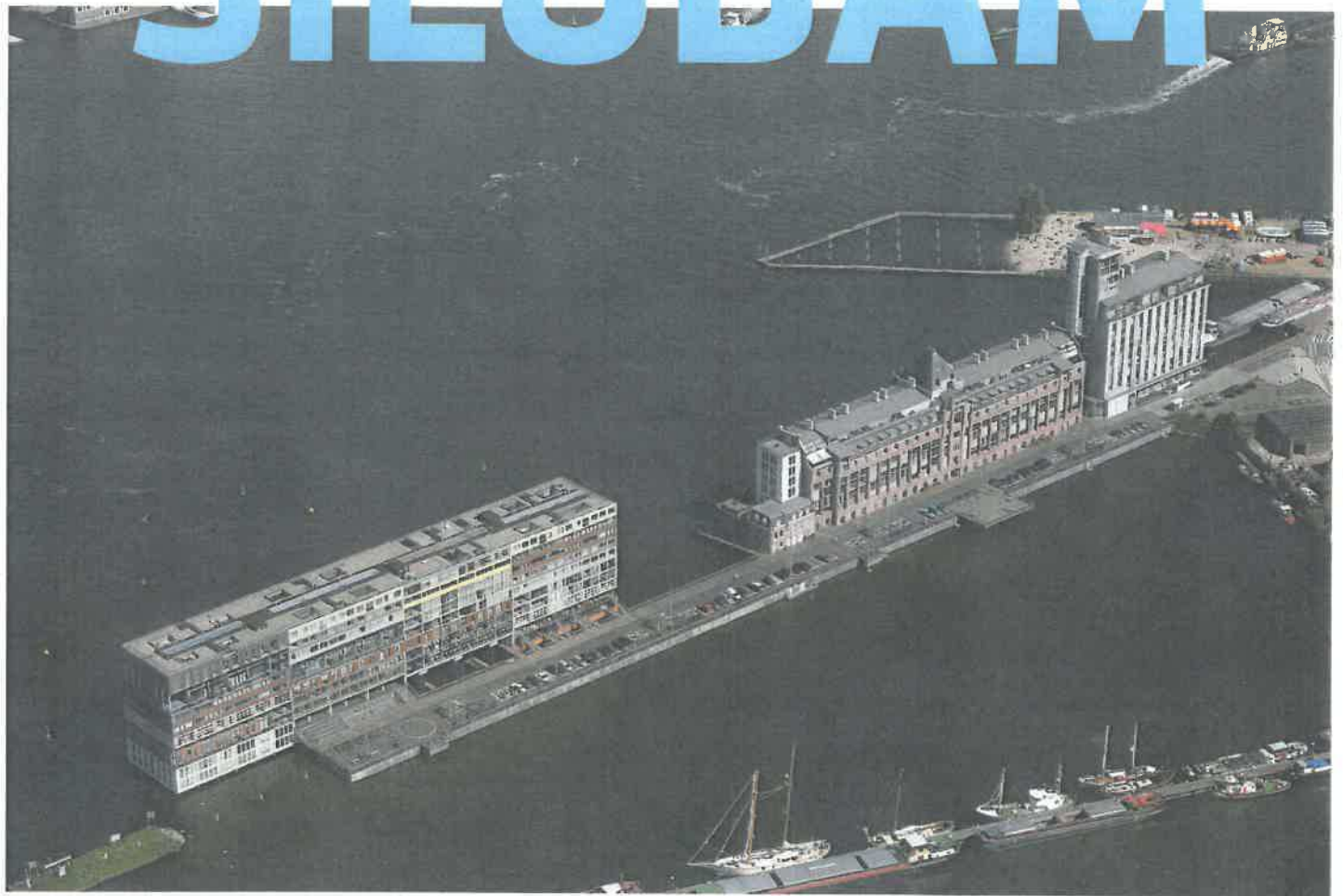
Dette cykliske design fortjener yderligere uddybning. bl.a. på en nøjagtig kurveberegning og valg af overflade. I lyset af byggeriets status vil dette skulle ske i den nærmeste fremtid.

Dette synes muligt og gennemførligt, men falder uden for cykelparkeringsholdets rammer.



Bilag 4 Pjece om Silodam (8. juni 2022)

# THE SILODAM



Peter Elenbaas, July 2006, photography

THE **SILODAM** BLOCK OF APARTMENTS IS SITUATED AT THE END OF A DAM IN THE IJ RIVER BETWEEN **AMSTERDAM**'S CITY CENTRE AND THE WESTERN HARBOUR AREA. IT STANDS NEXT TO TWO FORMER GRAIN SILOS, NOW REMODELED FOR RESIDENTIAL AND OFFICE USE.



Jan te Kieffe, photography





The designers of the Silodam block of apartments also saw the building as a silo; not so much for storing grain but rather for living. The building holds 142 privately owned apartments and 15 social rented apartments, including a commune for the elderly. A 600 m<sup>2</sup> office space extends out into the IJ river.

A high-tech, fully automated and computer-controlled parking facility is hidden below street level at the Silodam. It consists of four modules with tightly packed parking places.

## HISTORY

The oldest building on the Silodam is the brick grain silo in the middle, designed by Klinkhamer and Van Gendt. It dates from the late 19th century and was part of the Amsterdam fortifications. It never served that purpose and instead was used by the grain trade. Now, it has been converted into apartments, office spaces and artists' studios. In spite of this new use, the building is listed as an industrial monument.

The first building that meets the eye entering the Silodam is the concrete grain silo built in the middle of the twentieth century, designed by Postma. This building now also holds offices and apartments. Though many windows were put in, the building retains its industrial appearance. The remodeling of both buildings was done by father and son Van Stigt.

The Silodam block of apartments was built at the beginning of this century. With its contemporary architecture, it is different from the other two buildings in form and original function, but not in volume.



The architect of the building was Nathalie de Vries of the architects collective MVRDV. De Principaal BV and RABO Vastgoed were the development corporations for the Silodam block of apartments. De Nijs BV from Warmenhuizen was the contractor.

The sale of the properties took place by a lottery. Only one out of ten of the applicants was given the opportunity to purchase an apartment. Such great interest was not surprising, considering the location and the price which was two-thirds of the market price for similar apartments in Amsterdam.

## DESIGN AND FORM

When MVRDV was selected to build mixed housing in Amsterdam's docklands area, it started assembling information on all the factors that could play a role in the site's design and construction. From zoning laws, building regulations and technical requirements to client wishes, climatic conditions and the political and legal history of the site. The architects loaded a software program with these parameters. The program shows optimal building shapes for any given set of priorities (maximizing sunlight, views or privacy) and pushes limits to the extreme, where they can be seen, debated and, often, undone. This data scape was the basis of the design and of the negotiations with the parties involved, such as local politicians, the planning authority and possible future residents, all of whom advocated for a different distribution of the housing. With the help of the computer the Silodam took shape: 157 apartments of various sizes and forms that sit together in one 10-storey block that rises on stilts from the harbour like a docked container ship.





From the outside, the Silodam looks simple enough, like a child's giant Lego construction. The rectangular block (130 by 20 metres) consists of parts with different colours and materials; the geometry reminding of 'The Stijl'. The block is filled with a variety of dwellings arranged into 'mini-neighbourhoods', while corridors allow residents to walk from one end of the 'ship' to the other. To visitors it sometimes appears as a dazzling labyrinth.

The apartments vary as much in size (from 60 to 220 m<sup>2</sup>) as in design. In addition, owners are free to make changes to their apartments, resulting in even greater diversity. Among the types one finds maisonettes, terrace apartments and studios. Fancy names used by the architects characterize the style of the apartments, for instance, Water, Panorama, X-house and Venetian Window.

## CHARACTERISTICS

The building stands on stilts above the water. A concrete dam just below the water level prevents ships from crashing into the building.

The various apartment styles are grouped into small neighbourhoods. A neighbourhood shares façades, colour of corridors and window design. The X-houses on the 7th and 8th floors for example, have a grey façade with four windows each and an aluminum siding. The corridors of the X-apartments have walls and ceilings painted yellow while the floors are covered with a bright yellow carpet. The architects chose wood, brick, metal or composite material of different colours to identify other neighbourhoods combined with blue, green or red corridors.

- Most apartments share a middle corridor while some have an entry from an outer gallery or a private bridge leading to the street.
- The single floor business space is an extension of the main building into the IJ river, one storey above the water. A wide staircase leads to the roof of the business space, a large public terrace. It is known as 'The Tray' and the Silodam residents have decided to keep it nearly empty. At the northern end of the building, on the 7th floor, one finds a second open terrace. It is called 'The Crow's Nest' and is accessible to residents only.
- Underneath the building is a marina where visitors and residents may moor their boats. One of the residents of the Silodam is the harbourmaster.







## SURROUNDINGS

The Silodam building is a remarkable element in an environment with a mixture of historic and new buildings. Westerdoks Island, a former train-switching area between the Silodam and the city centre, is transformed into condos, restaurants, shops and offices. Various architects, including MVRDV, cooperated to realise this complex.

A new plan changes the old harbour on the north-west side into an area with 950 residential and business spaces, built on artificial islands, next to a huge tower. On the northern bank of the IJ river Shell established a new R & D laboratory. Facing the central train station on the northern bank new housing blocks and a very popular film museum were situated. The former Shell Tower and NDSM dockyard are transformed in spaces

for culture, tourism, fun and offices.

Just south of the Silodam, three islands can be found, dating back to the 17th century. The Prinsen Island and the Realen Island maintain their historic character. One finds old houses and splendid examples of warehouse-to-apartment conversions. A new building on Bickers' Island consists of a rare combination of a school, designed by Herzberger Architects, and apartments designed by HM Architects.

Further west of the Silodam is the Spaarndammer neighbourhood, with well-preserved examples of the Amsterdam School, like Michel de Klerk's 'palaces for workers'. The former post office in one of these buildings, 'Het Schip' (The Ship), now presents a permanent Amsterdam School exhibition.

## LIKE A VILLAGE

For 157 condos in a box, there is more of a sense of community than one would expect after thirteen years in a small metropolis. It helps that we are situated at the end of a dam: there is no through traffic. People meet and greet each other in the elevators, waiting for their cars at the underground garage or fetching or chaining their bicycles. Some simple benches at the end of the dam are used by families with young children and function as a place to sit, eat, drink and socialize with neighbours when the weather is good. The big windows add to social control, some observers note that it is one of the safer spots of Amsterdam.

Many inhabitants came to stay because of the quality of living. There is a very active organization of home-owners with a huge attendance at annual meetings and volunteers in committees. For example, a dozen volunteers give guided tours for many architectural tourists from all over the world. Communal events, partly financed by the guided tours, are Sinterklaas, Christmas, New Year at The Crow's Nest and the annual barbecue. Some empty spaces inside the building are being used now for free book and toy libraries. 'Village politics' can be fierce around issues like the heat in the building, the carpet in the corridors and the presence of personal things in public spaces.

## COLOPHON

**Editors:** Hein Jansen, Jan te Kiefte & Gerard Boon. **Translation:** Antonius Kramer, Chris Mason & Mike Cochran. **Pictures:** Peter Elenbaas, John M. Karemaker, Jan te Kiefte & Gerard Boon. **Design:** Ganesh Bakker. **Print:** Third edition, october 2015, printed on recycled paper. Comments and tours by appointment: [excursion@silodam.org](mailto:excursion@silodam.org)  
General information: [www.silodam.org](http://www.silodam.org)





# Amsterdam Rainproof

elke druppel telt





# Bellamybuurt - 28 juli 2014



28 juli 2014

foto Minke Wagenaar

Classificatie: Intern

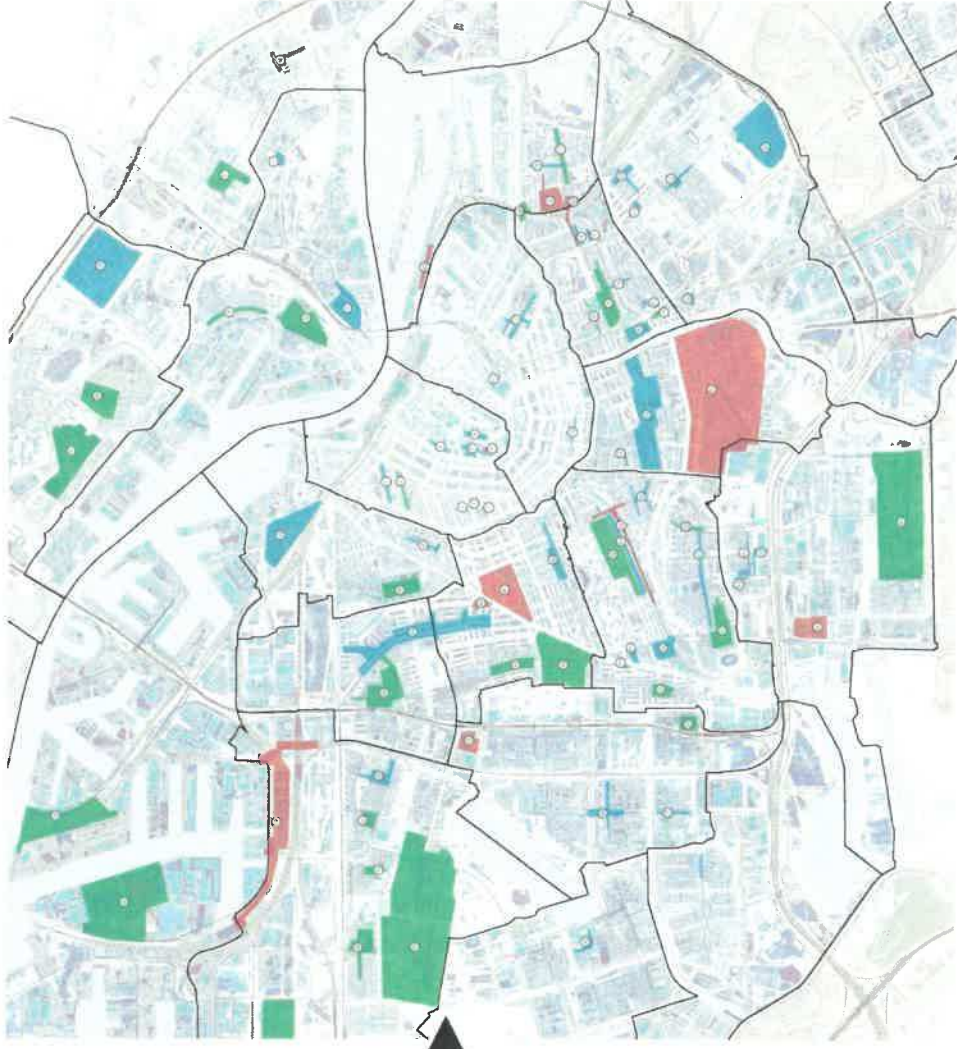


# Rainproof bottlenecks in Amsterdam

Simulation extreme rainfall



Factsheet risk analysis



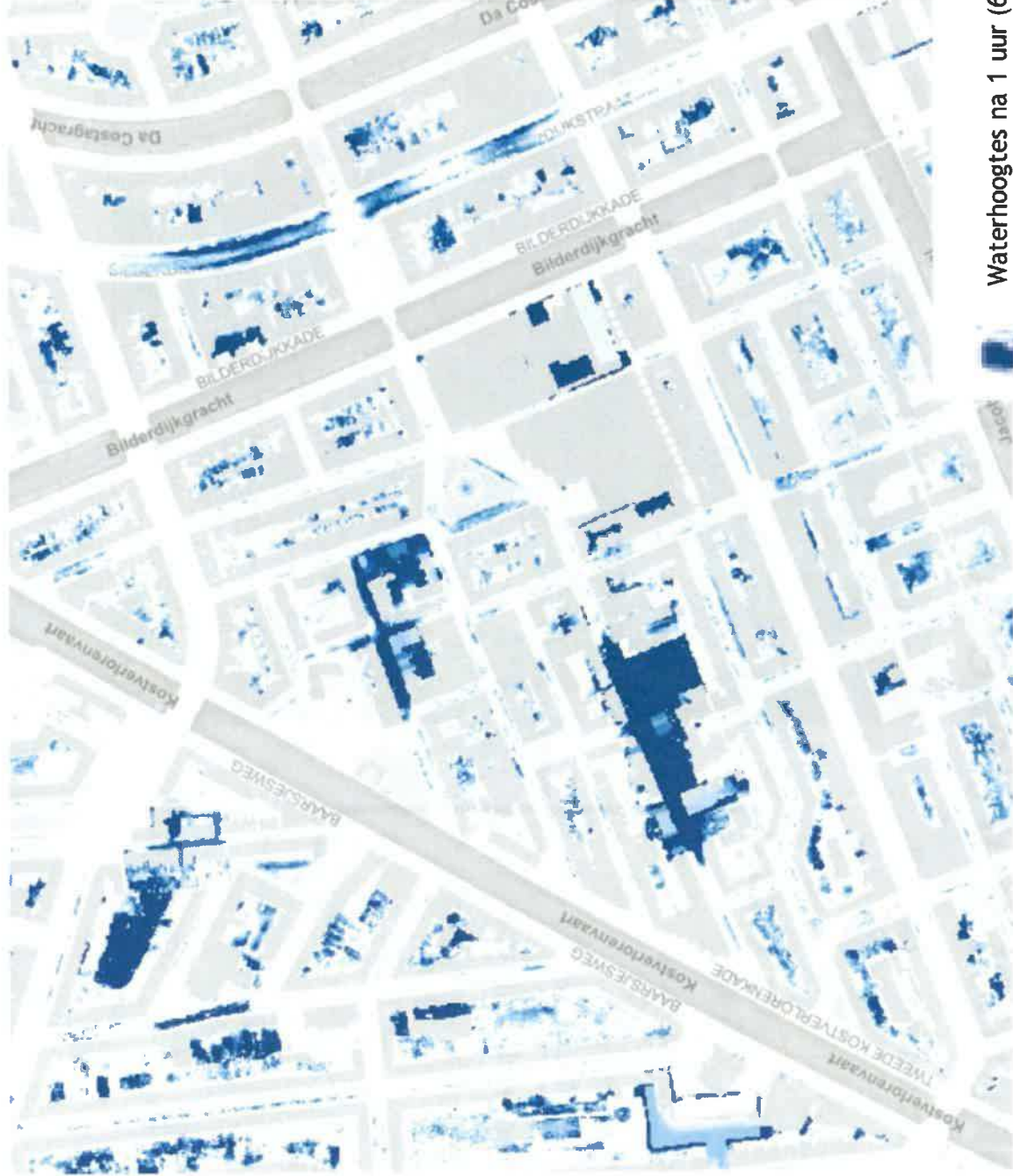
Amsterdam  
Rainproof

Classificatie: Intern





# Amsterdam Rainproof



Waterhoogtes na 1 uur (60 mm)

Classificatie: Intern









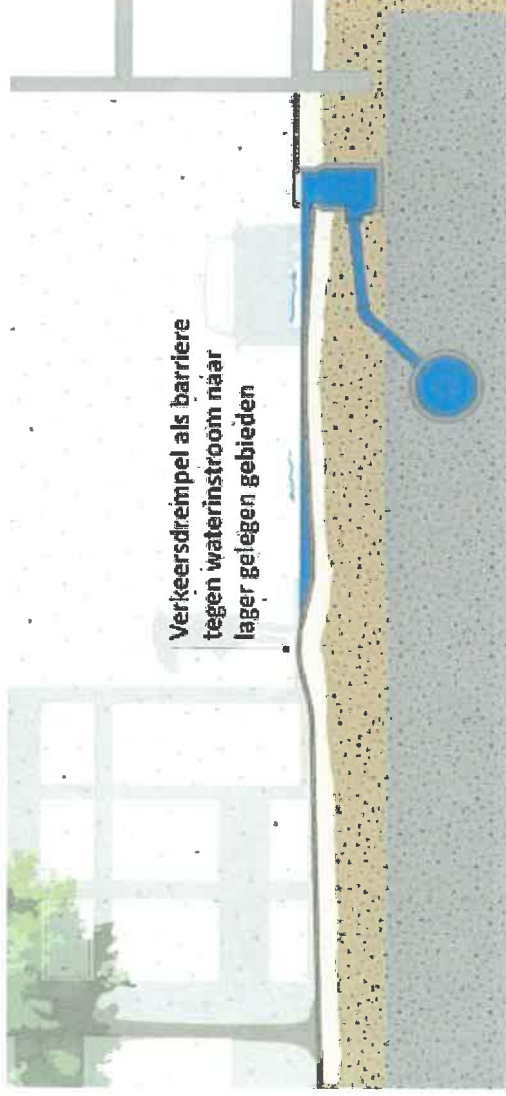




# Water spreading Streets

Tijdelijke waterberging, boven een bepaald niveau afvoeren

Drempels voor watersturing

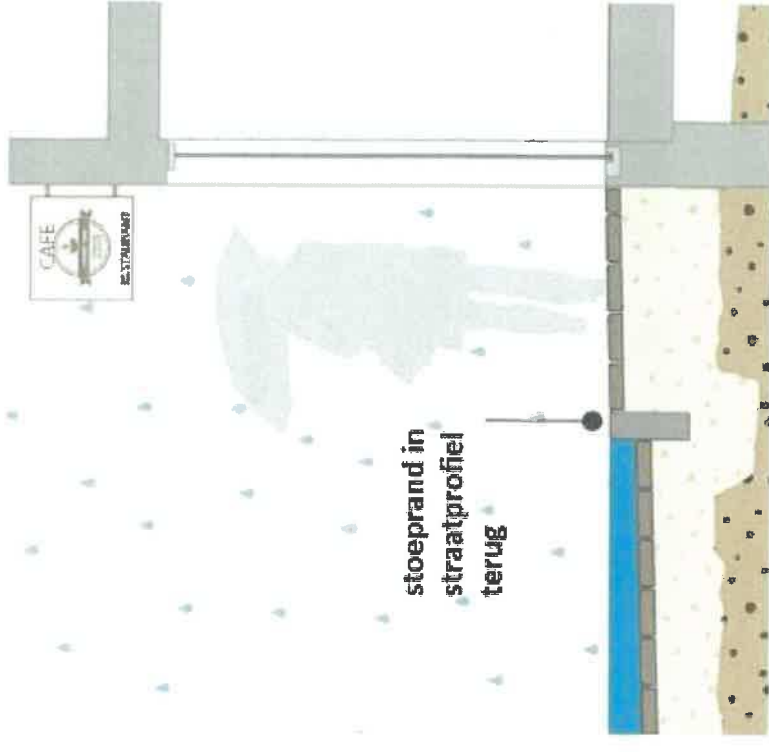


Schematische doorsnede van een strategisch geplaatste verkeersdrempel.



**Amsterdam  
Rainproof**

Herintroductie van het trottoir



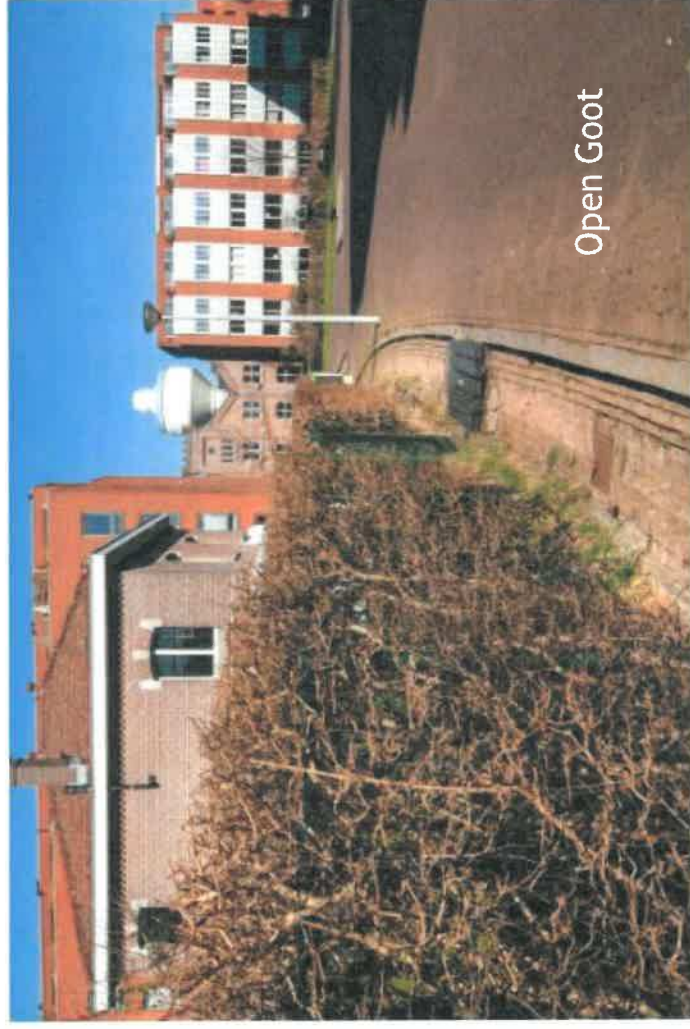
Schematische doorsnede van een teruggebracht stoeprand in het straatprofiel.

Classificatie: Intern





# Water discharging streets



Open goot op het GWL-terrein. ©Merlijn Michon



**Amsterdam  
Rainproof**

Classificatie: Intern



## Geleiding regenwater over de weg

Bij herstructurering en bij nieuwbouwwijken kan de weg zo aangelegd worden dat het regenwater naar gebieden loopt waar het minder schade veroorzaakt.

Het geleiden van water via de weg kan op twee manieren of door de weg op een oortje eggen of door verspreiden van de weg aan te brengen. Wegen kunnen ook zo ingericht worden dat ze water bufferen en zager geslagen-uwetsbare gebieden ontzien. Het is hierbij belangrijk om rekening te houden met de locatie van verkeersbussen en opritten, zodat deze de geleiding of tijdelijke berging niet tegengaan.

Let wel op dat de dubbele functie van deze verkeersbussen behoudt. Bij de publieke organisatie, zodat bij een heropbouw van de straat de verkeersbussen blijven bestaan.

overzichten

Streets

Water

Wegen

Wegen

Wegen

Wegen

Overzicht van de

1000



Schematische doorsnede van de weg voor uitvoering



Beelden met water:  
Op het schiedisch van HC  
voor zijn kunstenaar te worden met  
een speciale water opname  
van de straat. Het is een  
meer te spelen in plaatsen straten  
door de straten, dan er zijn.  
Souvereiniteit is maar wat  
meer niet, maar de straat

1000



# Water retaining streets



Water vertragende groenstrook Zuidelijke Wandelweg (Zuidas)



**Amsterdam  
Rainproof**

Werking watervertragende groenstrook Zuidelijke Wandelweg ©Dienst Zuidas  
**Classificatie: Intern**



## Holle weg

Een holle weg vergroot de bergings- en afvoercapaciteit van de straat. Gecombineerd met een trottoir en een lats verhoogt vloerpeil en/of drempel in huizen, kan dit wateroverlast voorkomen.

Holle wegen kunnen veel meer water bijgen en afvoeren dan open groen of normale bol gegolde wegen. Afhankelijk van vervul zijn vaak minder een belemmering voor het overbruggen van afvalstoffen die groter zijn dan de bij open groen, gemiddeld 50 meter, doordat de afstand tot de bebouwing vaak groter is en er dus nog meer met de weggevoerde afvalstoffen geïnteracties.

Overzicht het verkeer ook tijdens regen gebruik maakt van deze wegen. Kan dit leiden tot opstapeling van afval. Communicatie over aangegeven gebied is nodig om het gebied te voor komen die de huizen kunnen bereiken.



CONTOREN  
Aan. Street  
Noord Oudezijde Nieuwmarkt

Water  
Water  
Water  
Water  
Water

Schematische doorsnede



Waterbergende, waterdoorlatend  
De straat is gemaakt van  
een eenheden voor de voetganger  
A-voor de regen. Hierop kan  
vervoerd of ook worden toegevoerd  
toevoer van afvalstoffen.

- Regenwaterberging
- Groen voor regenwaterberging
- Groen voor regenwaterberging
- Regenwaterberging

- Regenwaterberging
- Regenwaterberging
- Regenwaterberging
- Regenwaterberging
- Regenwaterberging

- Regenwaterberging
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- Regenwaterberging
- Regenwaterberging
- Regenwaterberging









Rijkswaterstaat  
*Ministry of Infrastructure  
and Water Management*

# Flood Risk Management in the Netherlands, Key principles and Funding

June 9<sup>th</sup> 2022

Quiirijn Lodder, Rijkswaterstaat

Principal Advisor Coastal Flood Risk Management







## Rijkswaterstaat – Since 1798

***Rijkswaterstaat** is the operational **agency** of the **ministry of Infrastructure and Water Management**. Rijkswaterstaat is responsible for the design, construction, management and maintenance of the main infrastructure facilities in the Netherlands. This includes the main road network, the main waterway network and water systems.*





## Rijkswaterstaat – Since 1798

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Rijkswaterstaat works to ensure:

- Dry feet
- Sufficient clean water
- Smooth and safe traffic flows on the nation's roads and waterways
- Reliable and useful information

All with 8000 employees



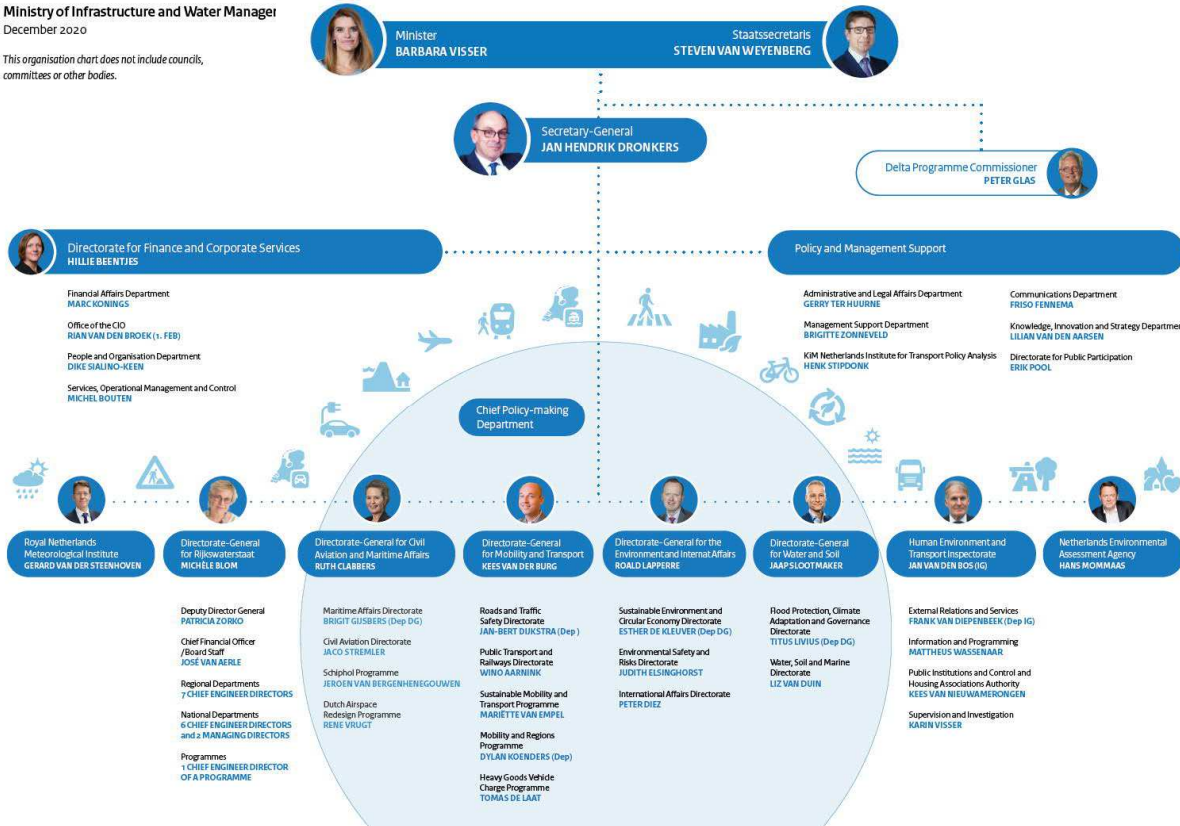


# Organisation

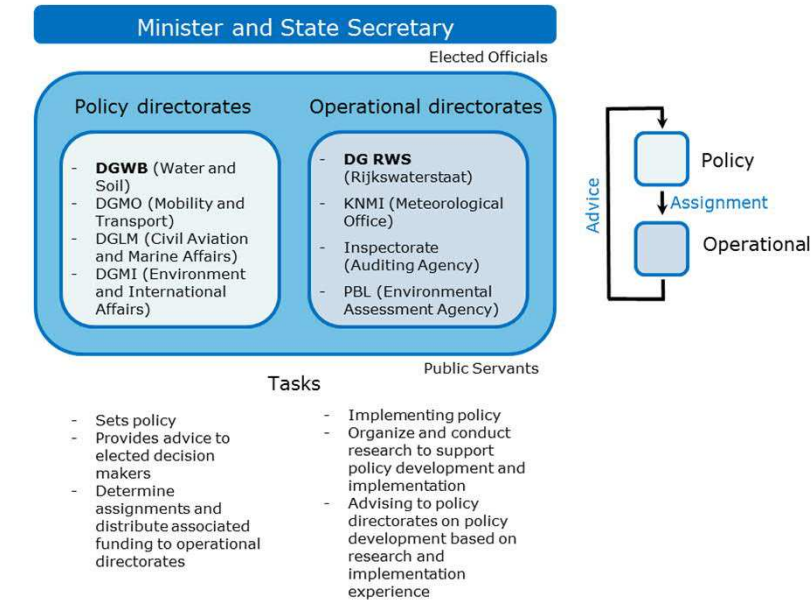


Ministry of Infrastructure and Water Management  
December 2020

This organisation chart does not include councils, committees or other bodies.



## Ministry of Infrastructure and Water Management







# The physical system in the Netherlands







# The physical system in the Netherlands







# The physical system in the Netherlands

Waddensea

Holland coast

Southwestern Delta







# The physical system in the Netherlands







# The physical system in the Netherlands







# The physical system in the N



Waddensea



Holland coast



Southwestern Delta

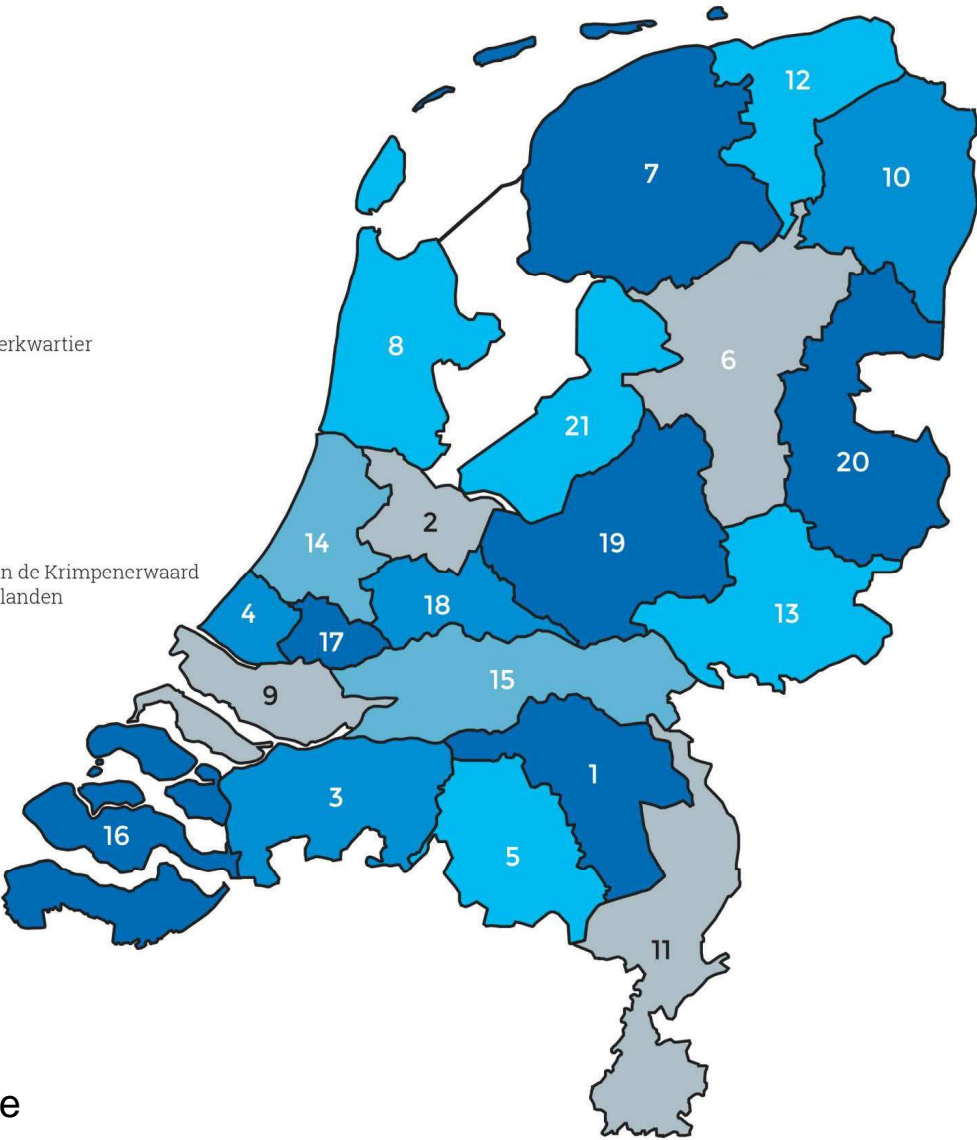




# UNIE VAN WATERSCHAPPEN

## LEGENDA

- 1. Waterschap Aa en Maas
- 2. Waterschap Amstel, Gooi en Vecht
- 3. Waterschap Brabantse Delta
- 4. Hoogheemraadschap van Delfland
- 5. Waterschap De Dommel
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- 18. Hoogheemraadschap De Stichtse Rijnlanden
- 19. Waterschap Vallei en Veluwe
- 20. Waterschap Vechtstromen
- 21. Waterschap Zuiderzeeland



## Water Governance

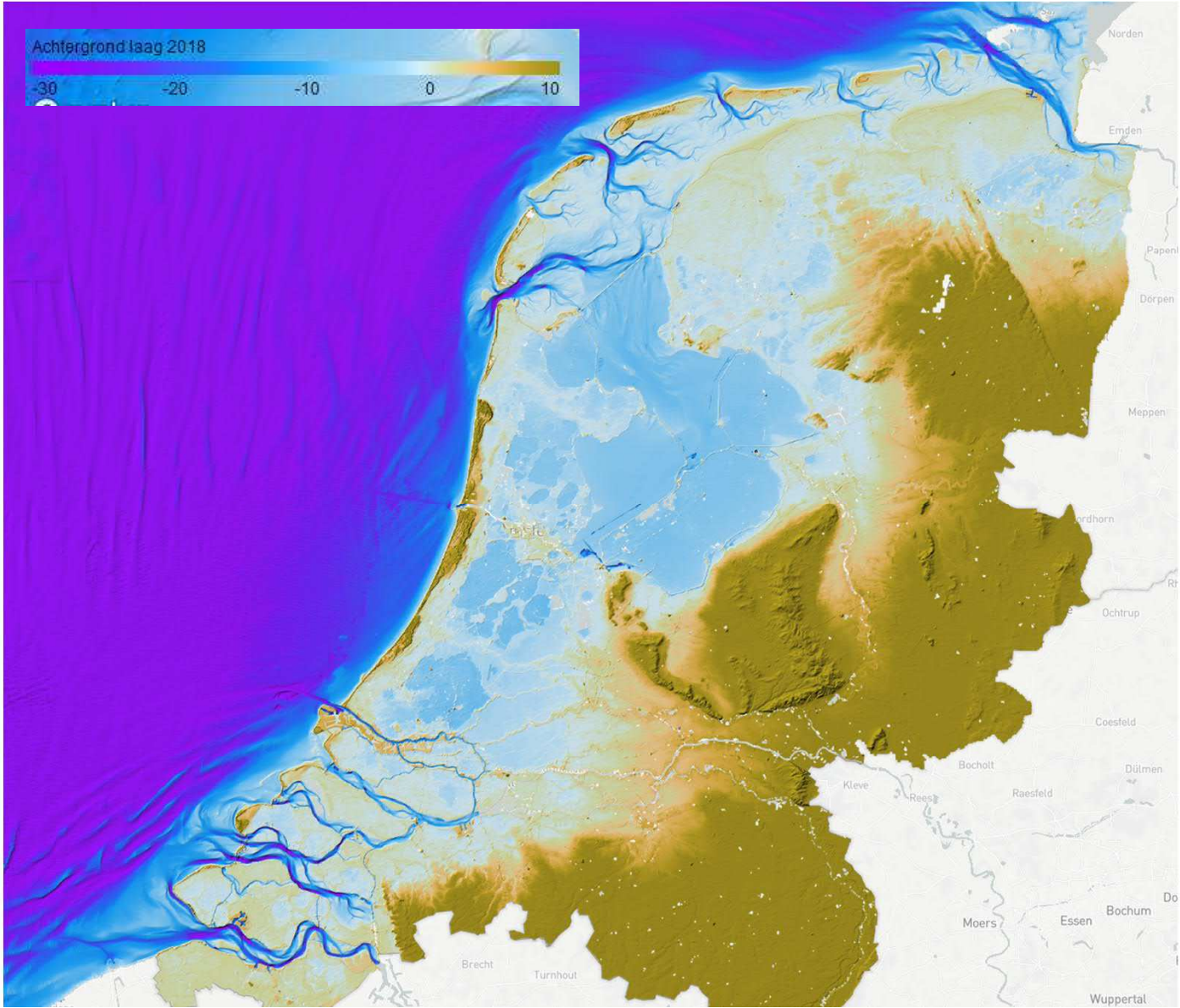
A map of the Netherlands highlighting the main water system (Hoofdwatersysteem) in light blue. The map shows the extensive network of waterways and coastal areas. Three islands are labeled: Saba, St. Eustatius, and Bonaire.

### Hoofdwatersysteem

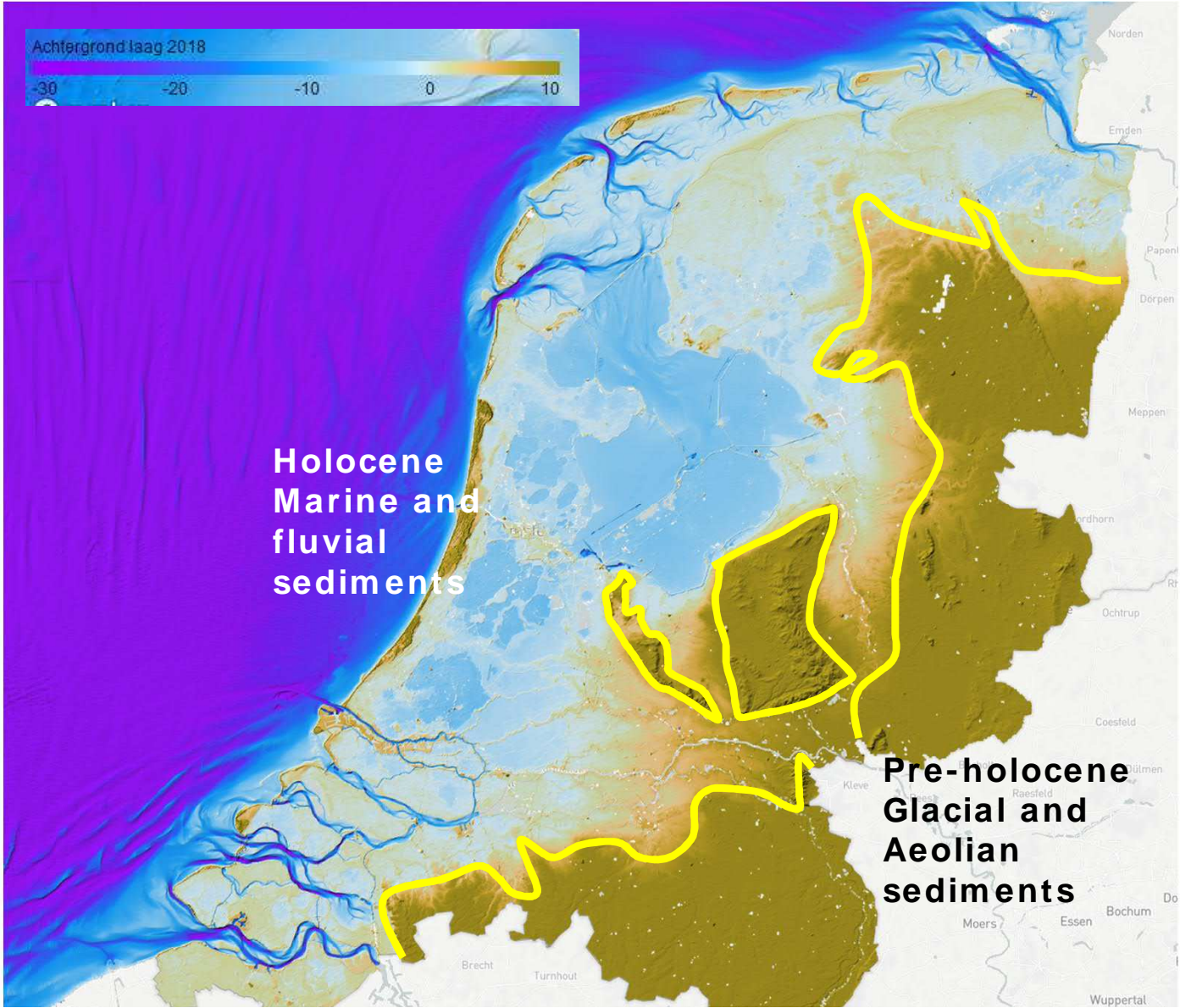
- 90.192 km<sup>2</sup> oppervlaktewater
- 45 km duinen
- 154 km dijken en dammen
- 10 stuwen
- 6 stormvloedkeringen
- Afsluitdijk en Houtribdijk

Bron: NIS













So in many places it looks like this



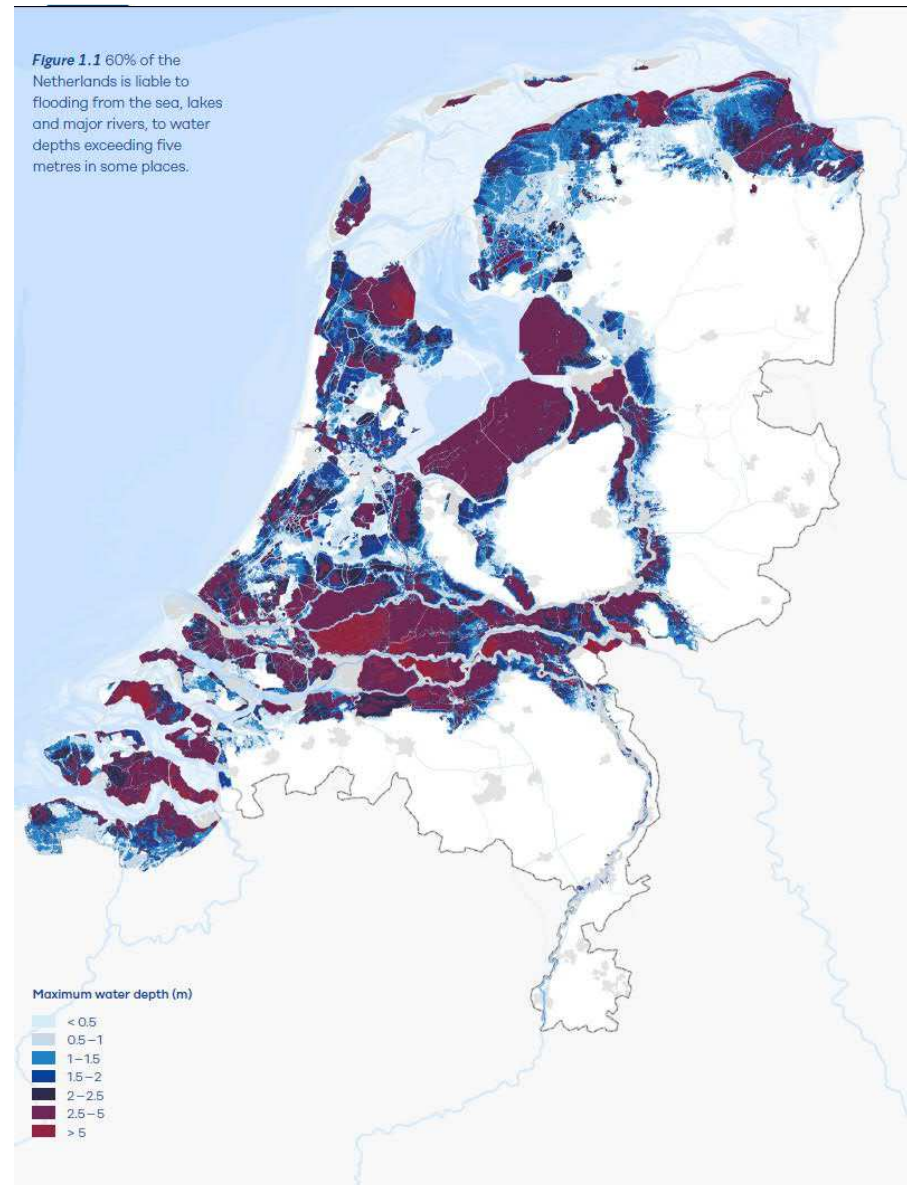






# Flood Prone Netherlands

- 26% below mean sea level
- 55% is susceptible to flooding
- 60% of our population lives in flood prone area's
- > 60 % of our economic value is earned in the lowest-parts of the country
- **Strong correlation with sediment origin...**



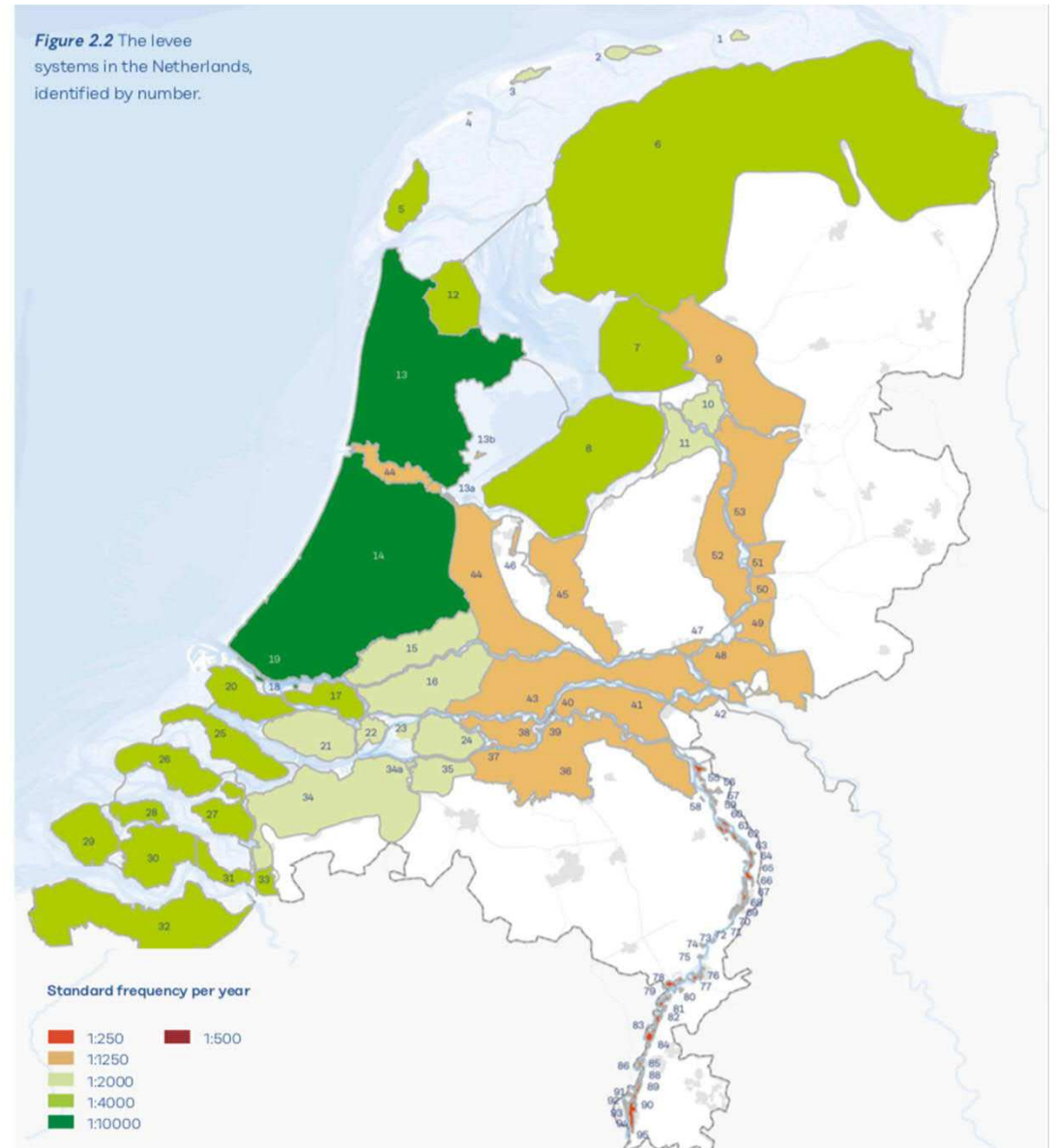


## Flood Risk Standards

Set in law. Water Act:

<https://wetten.overheid.nl/BWBR0039040/2017-01-01>

Old system





## Flood Risk Standards

Set in law. Water Act:

<https://wetten.overheid.nl/BWBR0039040/2017-01-01>

Current system





# Flood Risk Standards

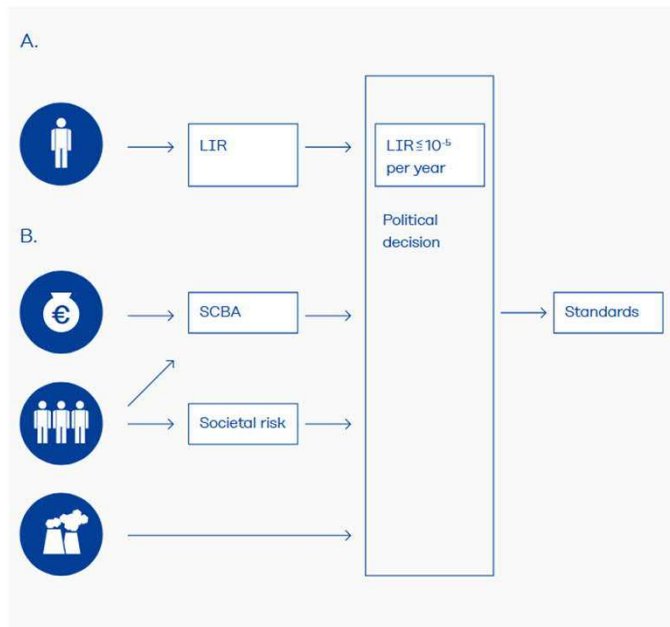


Figure 4.2 The principles underpinning the flood probability standards for primary flood defences.

- Local Individual Risk

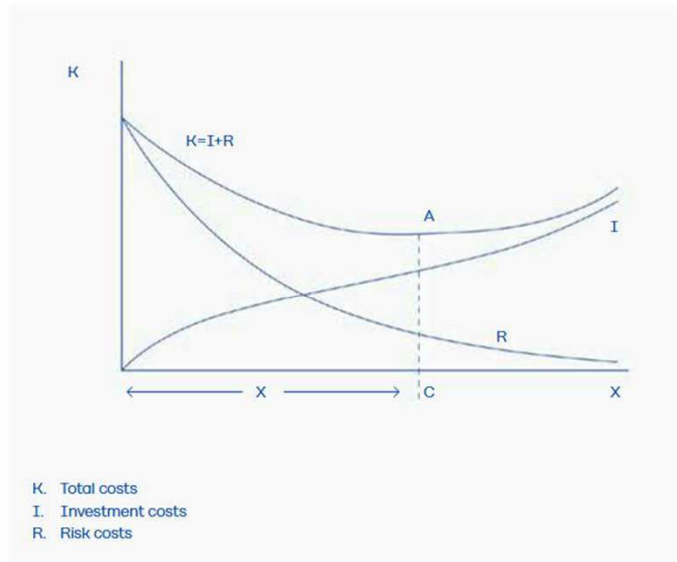
$$\text{LIR} = P \text{ flood} * \text{mortality} * (1 - \text{evacuation fraction})$$



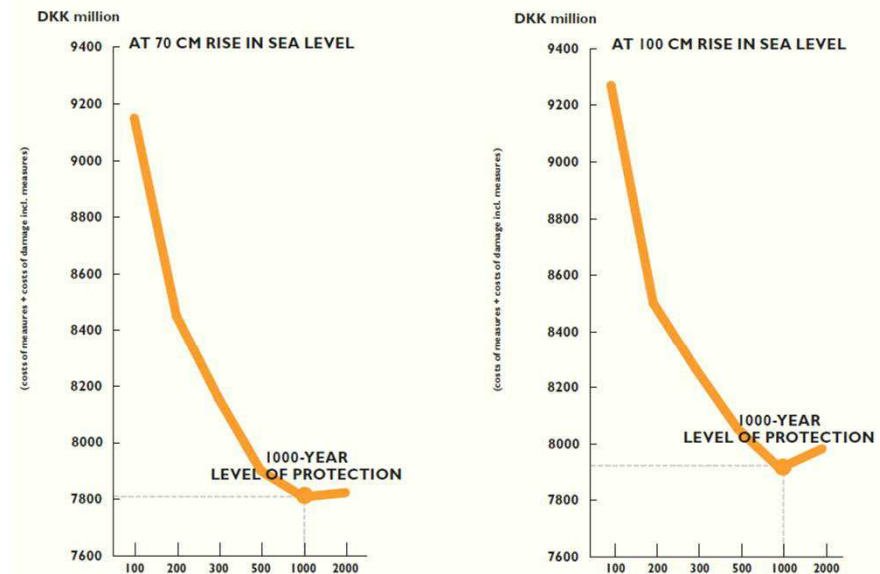


# Parallels... CHP - NL

**Figure 4.8** The basic principle of economic optimisation. The total costs (K) are equal to the investment costs (I) associated with improving reliability (here: heightening levees) plus the present value of the risk (R). The optimum lies at the point where the total costs (I+R) are lowest.



**FIGURE 8: CALCULATED ECONOMICALLY OPTIMUM LEVEL OF PROTECTION**



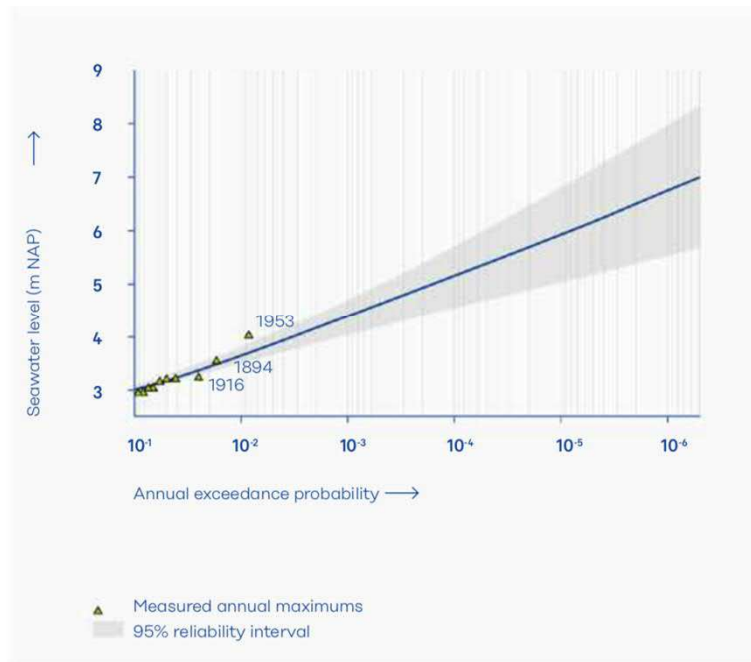
— Total costs (costs of measures + costs of damage incl. measures)

The reason why 'costs of damage incl. measures' is included is that even when protection measures are taken, damage could arise from a statistical point of view. The background to the economic results can be found, for instance on page 10 of the COWI report 'Opdateret overslag for sikring af København mod stormflod' ('Updated estimate for protection of Copenhagen against storm surges') (April 2017). Regarding uncertainties in economics, see page 20 of the present plan.

NL, Economic optimisation: investment balance risk reduction. 1 to 1 ratio.

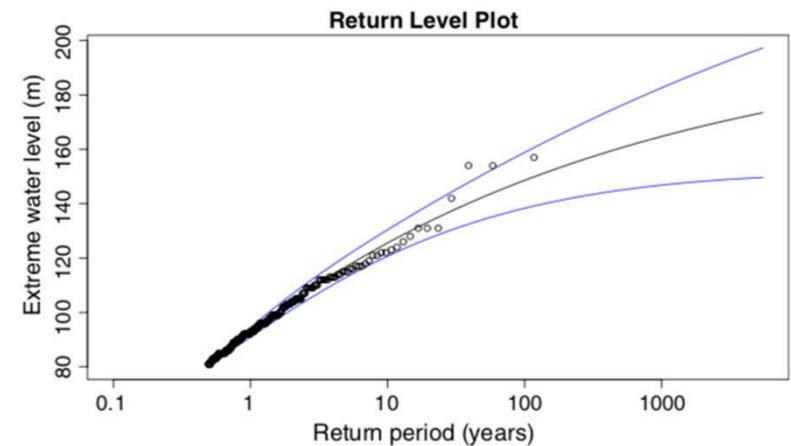


# Based on extreme waterlevel statistics



**Figure 3.1** The annual probability that a certain water level will be exceeded.

Data NL, Rijkswaterstaat



**Fig. 2** Storm surge return water level (cm) corresponding to various return-periods, up to 1,000 years. Note: the 117 years of data are reproduced with circles. The presented data was de-trended for extreme analysis

CHP, Kystdirektoratet



# Multi Layer Safety Approach

- Prevention

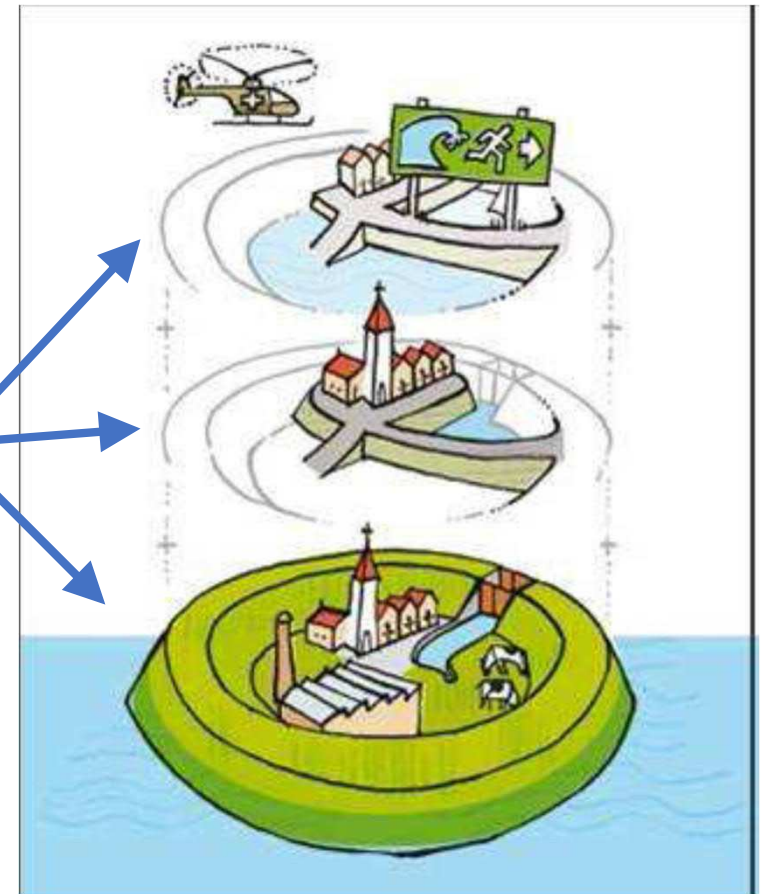
*Limit the risk of a flood disaster  
(dikes, dunes and storm surge  
barriers)*

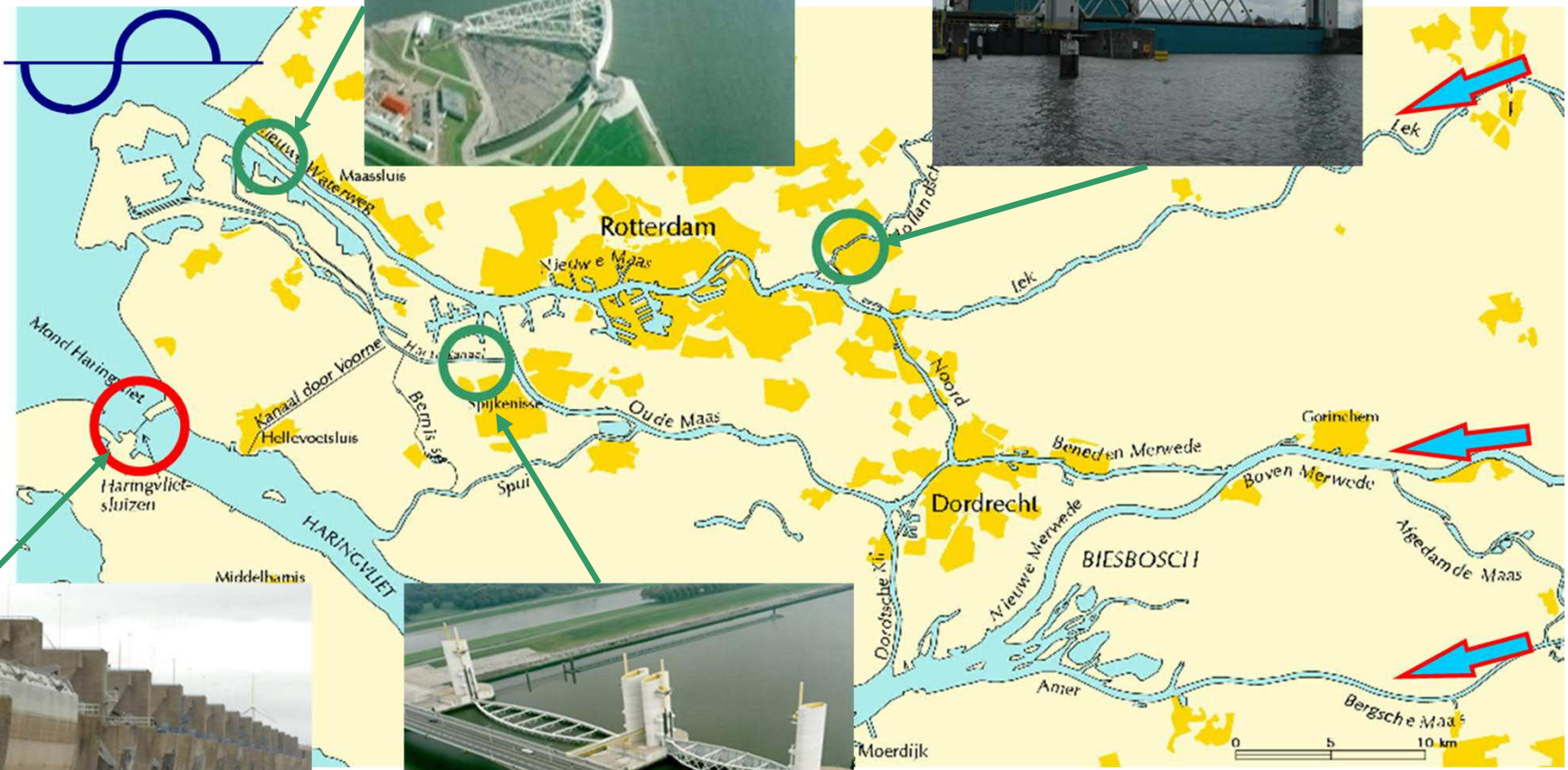
- Sustainable spatial planning

*Limiting the effects of flooding*

- Crisis management

*Reducing the consequences of a  
flood*

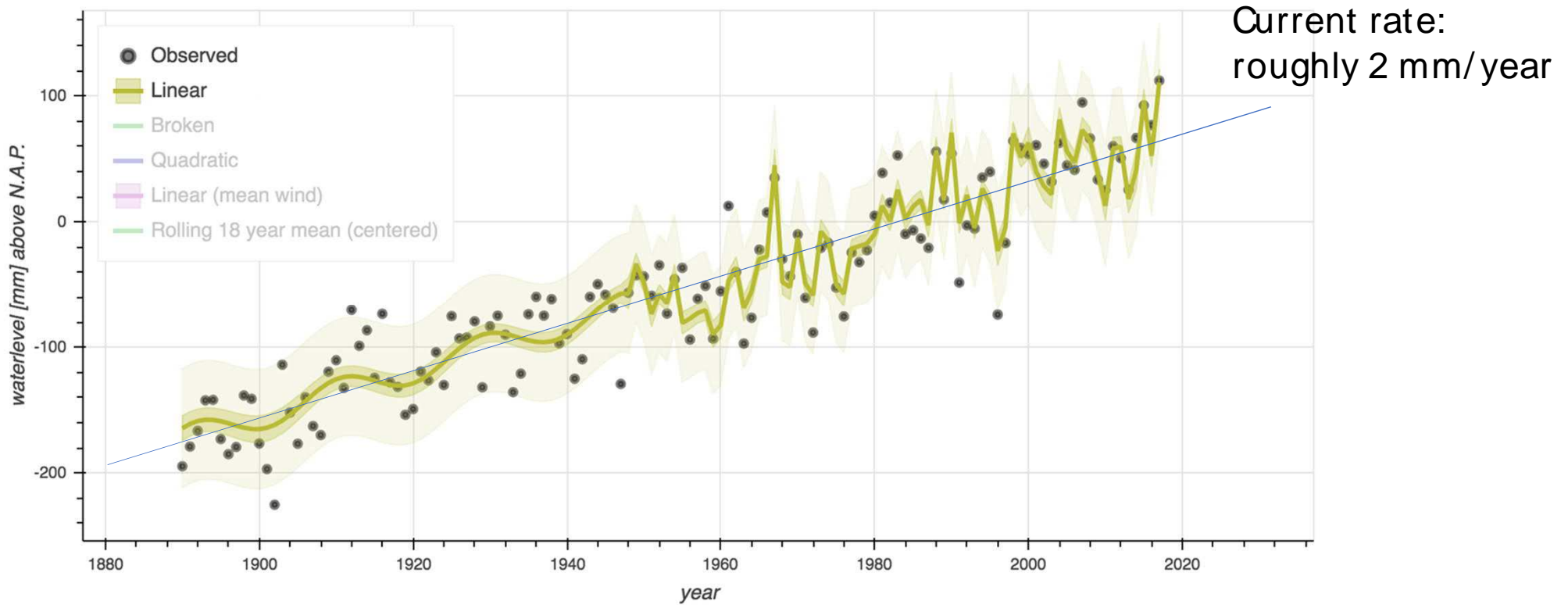




**NATIONAAL  
DELTA  
PROGRAMMA  
RIJNMOND-DRECHTSTEDEN**



# Sea level rise in the past...

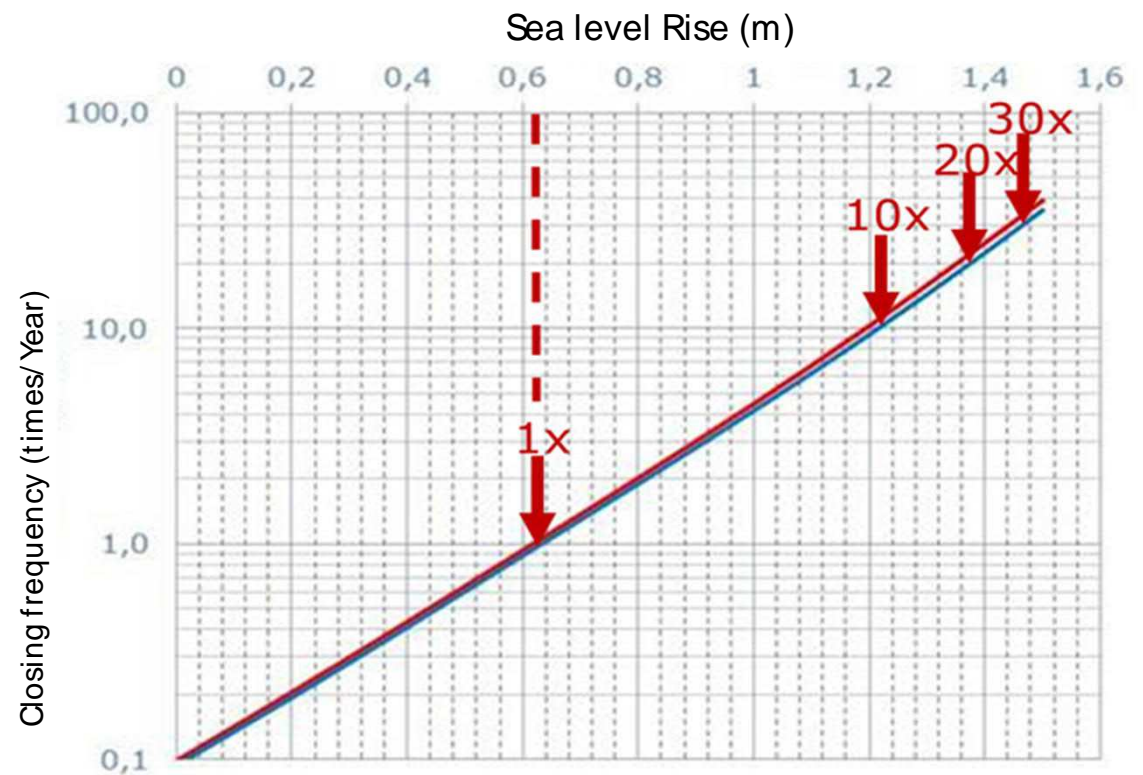






# Consequences:

## Effect of SLR on the closing frequency of the Maeslant Barrier





Flood prone area  
below storm surge  
level

Dune as flood  
defence



# The area

Beaches and dunes are inherently dynamic systems that reduce land loss and inundation risk of the hinterland while providing high amenity and environmental benefits.



The Hague, The Netherlands. <https://beeldbank.rws.nl>, Rijkswaterstaat / Joop van Houdt





## From CPH Storm Surge Plan 2017

If the storm surge plan is adopted, work should take place in a further initiative on a funding model that views the city as a whole. It may, for example, mean involving consideration of the protection of Copenhagen's public functions, so that these have a prominent input to a model for funding solutions.

A model is to be created in discussion with a number of the city's actors, neighbouring municipalities and the Danish Coastal Authority that is regarded as fair, transparent and easy to use in calculating contributions.

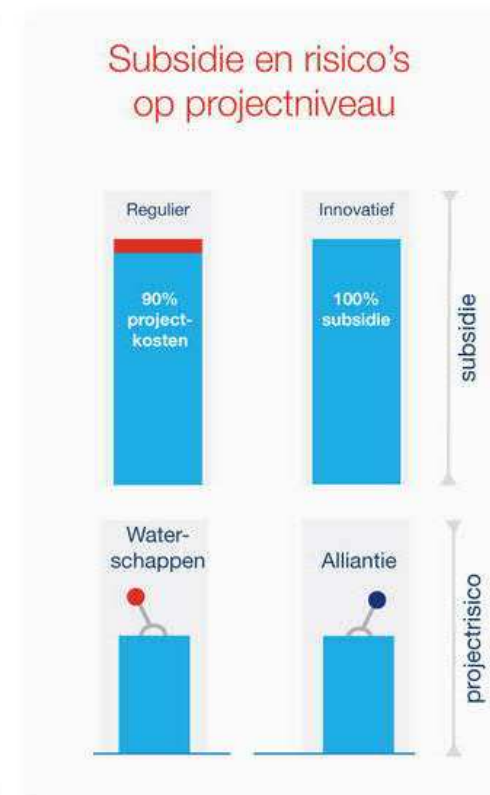
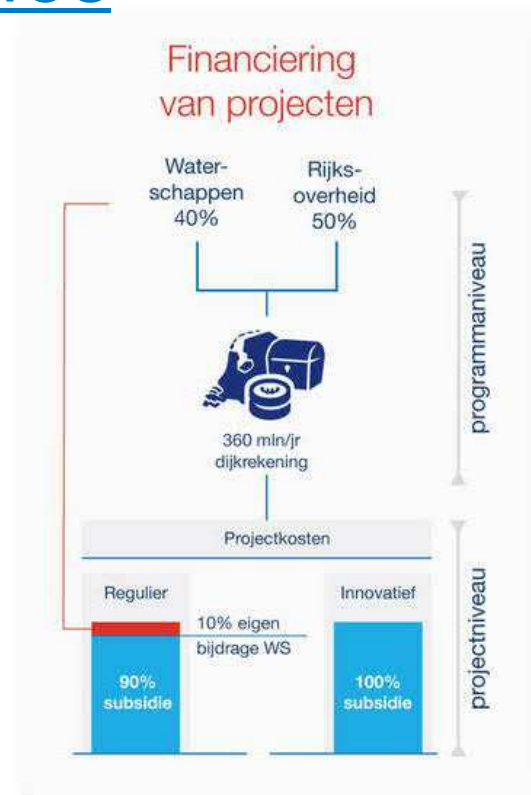




# Funding Dike updrages (reinforcement) Regional Water Authorities

Annually

- 380 mln € National Government and Regional Water authorities.
- 50% Rijkswaterstaat
- 40% All Water authorities together
- 10% receiving Water authority



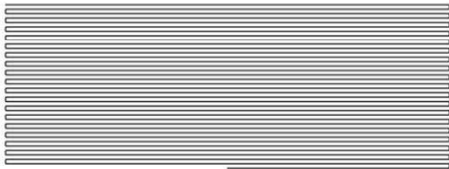




## Stand van zaken Prinsjesdag 2021

### DIJKEN, DAMMEN EN DUINEN (KM)

**Nederland**  
3.750 km



**Aangemeld (Veiligheidsportaal)**  
1.862 km



**Programma 2020-2025**  
681 km

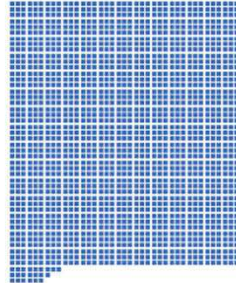


**Gerealiseerd**  
436 km



### KUNSTWERKEN (AANTAL)

1.777 stuks



397 stuks



307 stuks

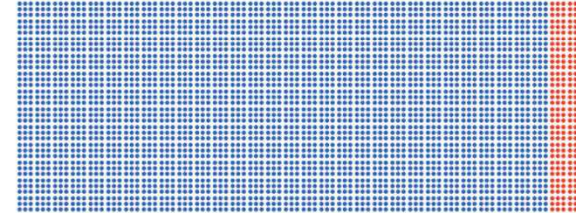


44 stuks



### BUDGETTEN (X 1.000)

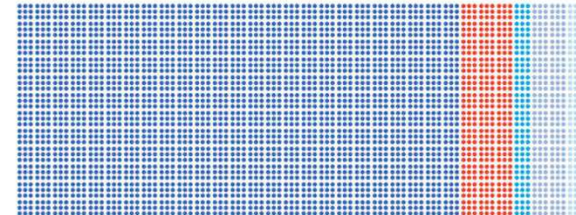
Totaal beschikbare budget: 11.034.300 euro



Subsidiebijdrage €10.334.500    Eigen bijdrage waterschap €699.800 (alleen voor HWBP-projecten)

### UITVOERINGSPAKKET

Totaal beschikbare budget: 11.034.300 euro



Waterschapsprojecten € 9.169.600    Rijksprojecten € 819.400    Innovatieprojecten € 315.700  
Reservering voor nieuwe projecten € 456.300    Overige bijkomende kosten € 272.200

Gerealiseerd €3.433.000    Nog te besteden €7.601.300

Doze cijfers gaan over het HWBP-programma 2022-2027 en het HWBP-2.

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### DIJKEN, DAMMEN EN DUINEN (KM)

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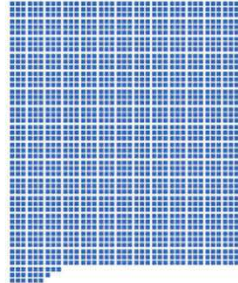


**Gerealiseerd**  
436 km



### KUNSTWERKEN (AANTAL)

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397 stuks



307 stuks

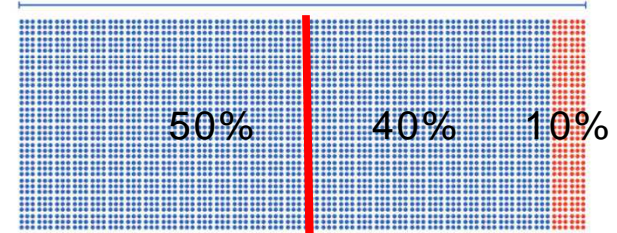


44 stuks



### BUDGETTEN (X 1.000)

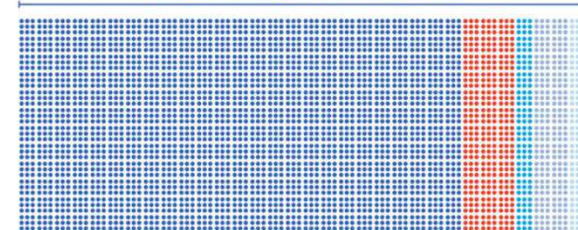
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Deze cijfers gaan over het HWBP-programma 2022-2027 en het HWBP-2.





# Rijksskeringen = Flood Defence owned by National Government (Statens Dige)

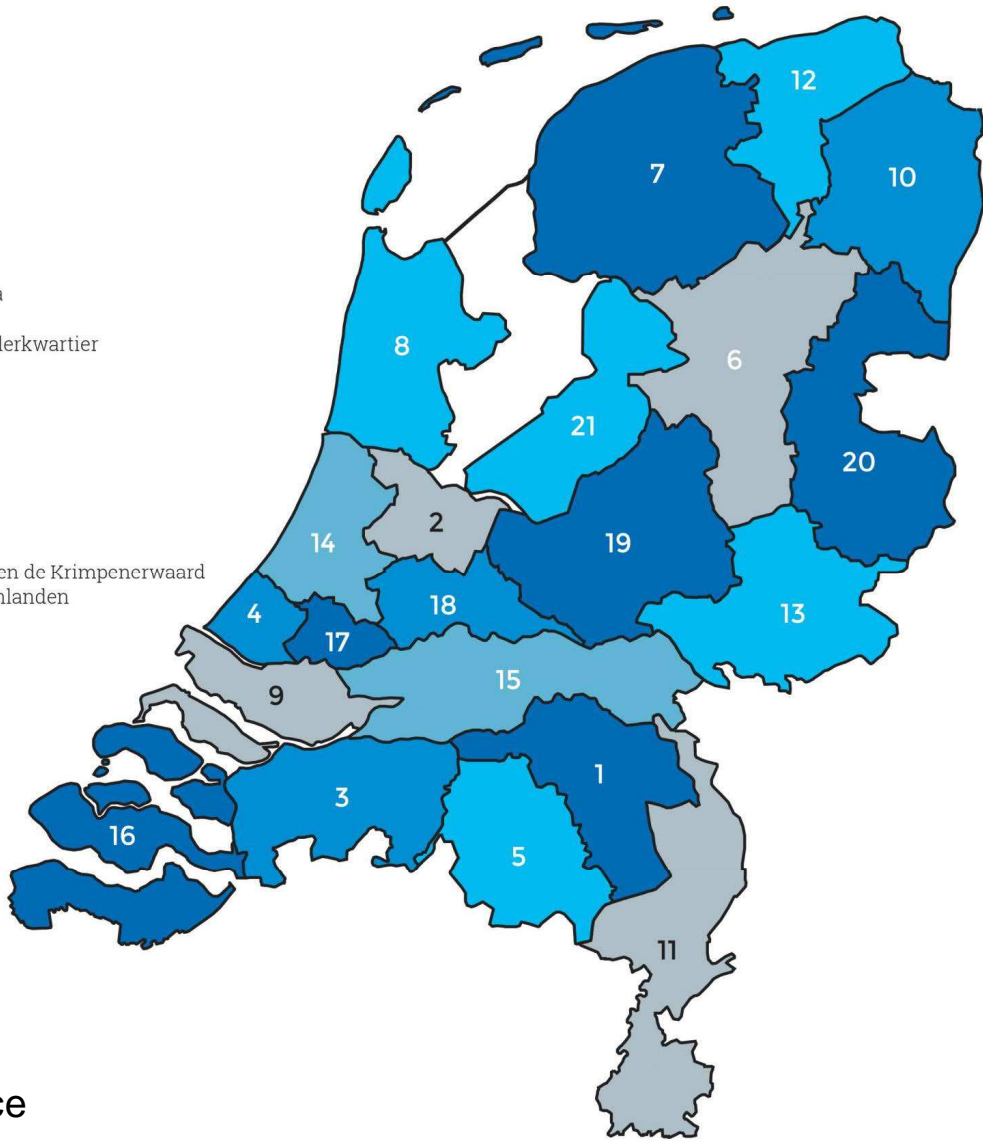
- 100% funding from national taxes
- Daily Operations and Maintenance Rijkswaterstaat around 250 M euro per year
- Not including replacements

Coast, Rivers, Lakes, Storm Surge Barriers, Flood Risk Management, Water scarcity, Water Quality.



LEGENDA

- 1. Waterschap Aa en Maas
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- 19. Waterschap Vallei en Veluwe
- 20. Waterschap Vechtstromen
- 21. Waterschap Zuiderzeeland



# Own taxes for daily maintenance of flood defence and other watermanagement

Taxes:  
- 20-60% inhabitants, depending on population density. CPH would be 50-60%  
- rest based on economic value property





## Summary

- Daily maintenance = Regional government
- Large scale upgrade = 50% national 50% regional
- Large infrastructure of national importance = 100% national

All based on taxes, no direct private investment (there is for extra's, like additional amenities)

Bottom line: Everyone pays of flood risk reduction. Roughly 0.2 percent of GDP. That is al lot of money but is not expensive.



## Contact information



### Quirijn Lodder

Principal Advisor Coastal Flood Risk Management

**Rijkswaterstaat Water, Verkeer en Leefomgeving  
Veiligheid en Watergebruik - Afdeling Hoogwaterveiligheid**

Zuiderwagenplein 2 | 8224 AD Lelystad | 4e zuid (flex)  
Postbus 24060 | 3502 MB Utrecht

T + 31 (0)6 11 53 42 20

[Quirijn.Lodder@rws.nl](mailto:Quirijn.Lodder@rws.nl)  
[www.rijkswaterstaat.nl](http://www.rijkswaterstaat.nl)

**Water. Wegen. Werken. Rijkswaterstaat.**



Q.J.Lodder@TUDelft.nl





# Green Deal Timber construction MRA 2021 - 2025

From covenant to action plan  
Timber construction MRA 2021-2025

9 June 2022  
Imme Groet

Metropolitan Region of Amsterdam

# Agenda

This presentation...

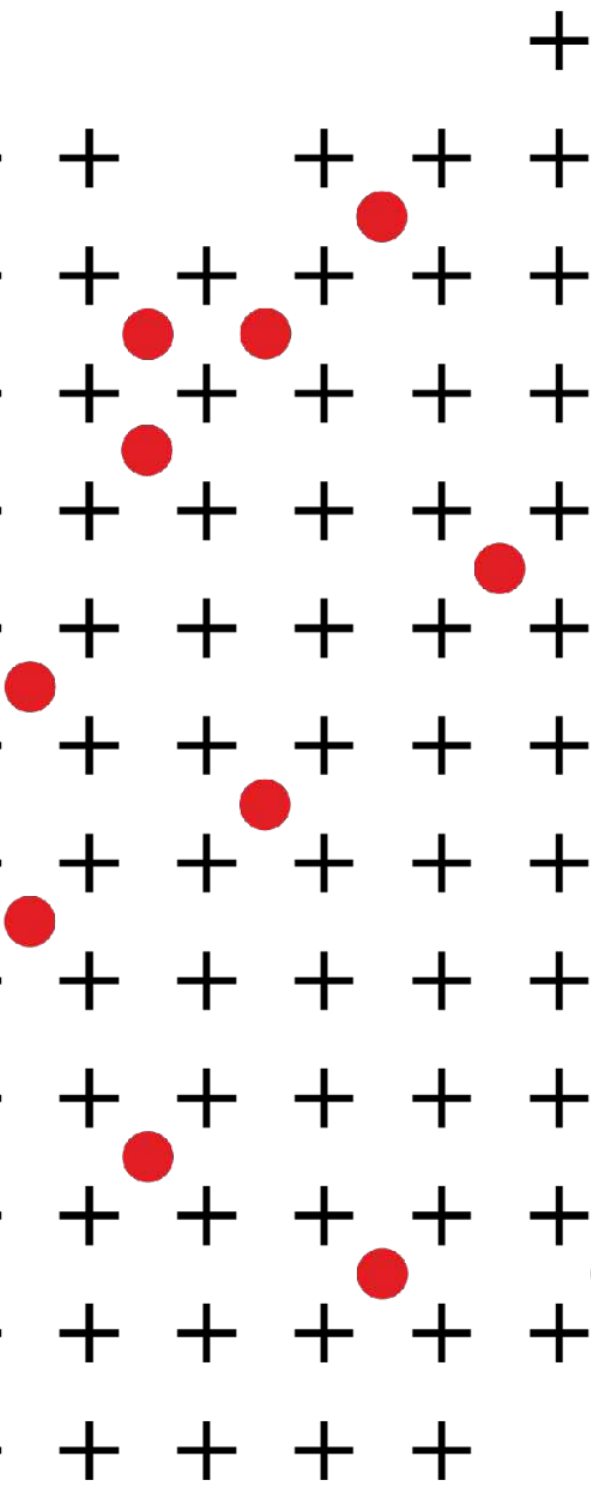
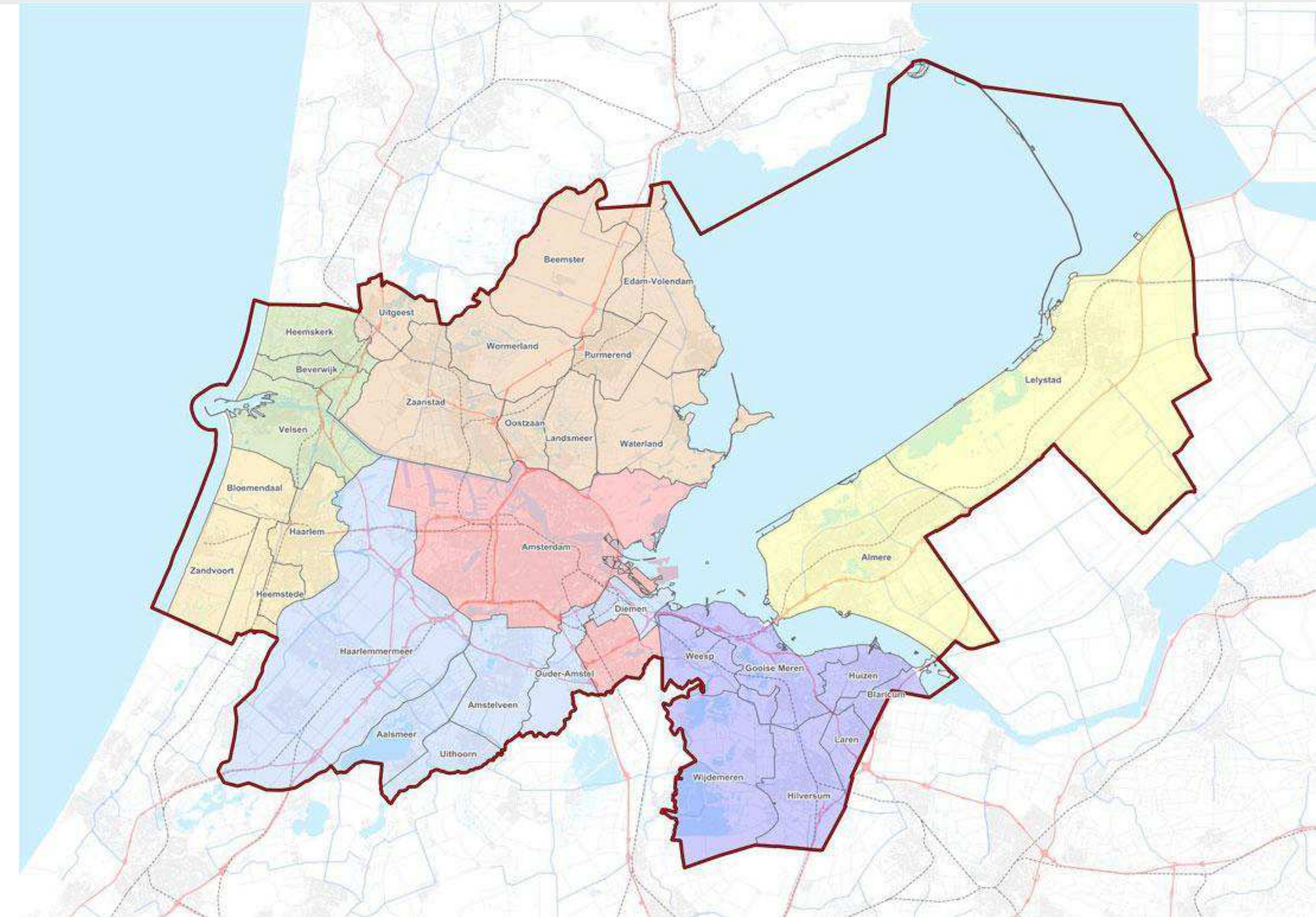
- Why this project
- The ambition
- Central themes of the covenant
- Examples
- Collaboration
- Process to come to a covenant
- Action plan
- Questions?



# The ambition

## State of the region – ‘Sustainable out of the crisis’

- Minimum 20% of the residential construction will be produced in timber from 2025 in the MRA
- 20% = current residential production, approximately 3.000 houses per year
- Residential production = new construction
- Timber = biobased construction as an overarching understanding
- From 2025 = increase the production in the coming years to the 20% in 2025
- MRA = not every municipality has to work to a 20% share timber in all the new construction of houses. Percentages can differ between municipalities.





# The ambition

## Why timber

- Reduction of emissions (CO2, nitrogen, particulate matter), Paris Agreement
- Renewable resources
- Innovation in the value chain of construction
- Accelerate housing production
- Modernize of employment (sustainable economy)
- Public-private collaboration – renewe knowledge and methods

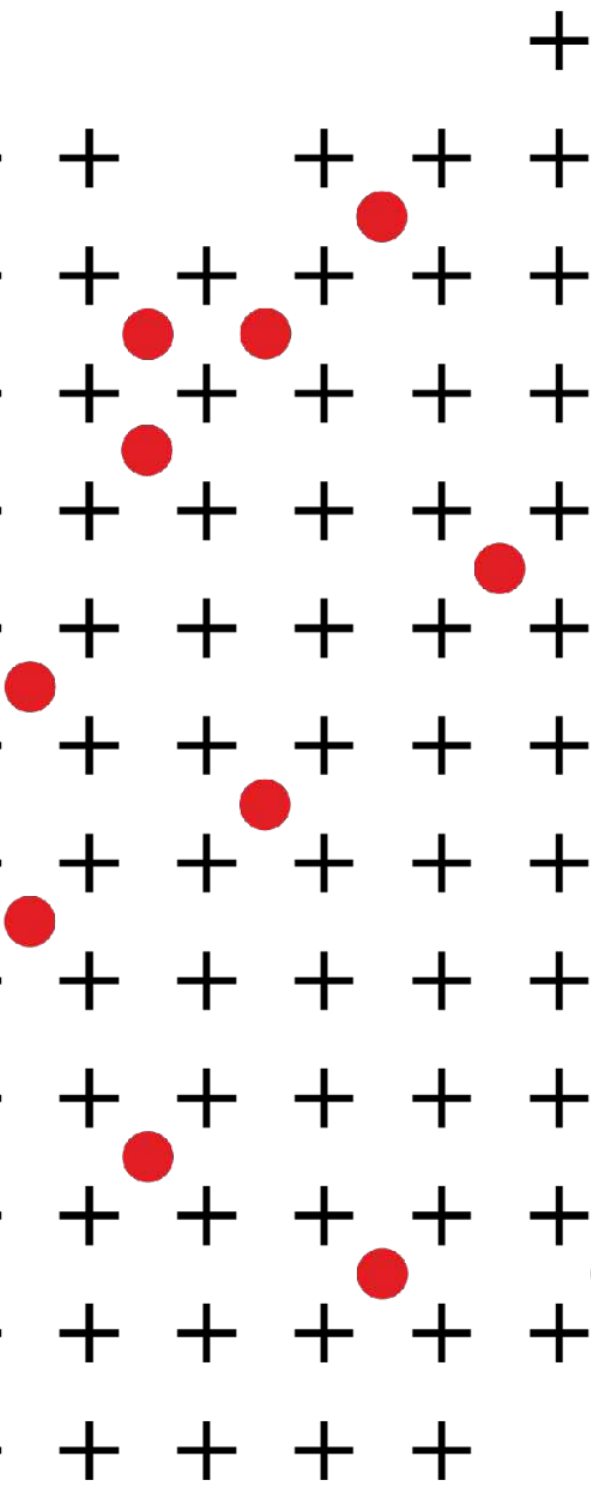




# Central themes

## Timber construction

- Definition
- Locations
- Knowledge development and sharing
- Legislation
- Costs and businesscase





# Central themes

## Definition

Each individual residential building fulfills the desirable criteria and accounts for the cumulative percentage of 20% timber construction in the MRA, if the volume of the supporting construction (ex. foundation):

- For ground-level buildings a minimum of 80% of the volume is biobased,
- For stacked buildings under 10 floors a minimum of 65% of the volume is biobased,
- For stacked buildings 10 floors and above a minimum of 50% of the volume is biobased,

The timber for the supporting construction comes by preference from Europe, the building is assembled in Europe (by preference in The Netherlands) and the timber is certified for a minimum of “70% FSC mix” and/or “70% PEFC”.



# Central themes

## Locations

Pointing out locations for realizing timber buildings is one of the main topics of the Covenant Timber Construction 2021-2025.

- On one hand to assure locations for timber buildings in the MRA.
- On the other hand to control whether the ambition of 20% from 2025 onwards will be achieved.

The private real estate parties for pointing out locations are: AM, BPD, Bouwinvest, De Nijs, De Alliantie, Dura Vermeer, Parteon and Synchronon.

The public parties are: Almere, Lelystad, Amsterdam, Zaanstad, Haarlemmermeer, Haarlem, Purmerend en Beverwijk

# Central themes

## Knowledge development and knowledge sharing

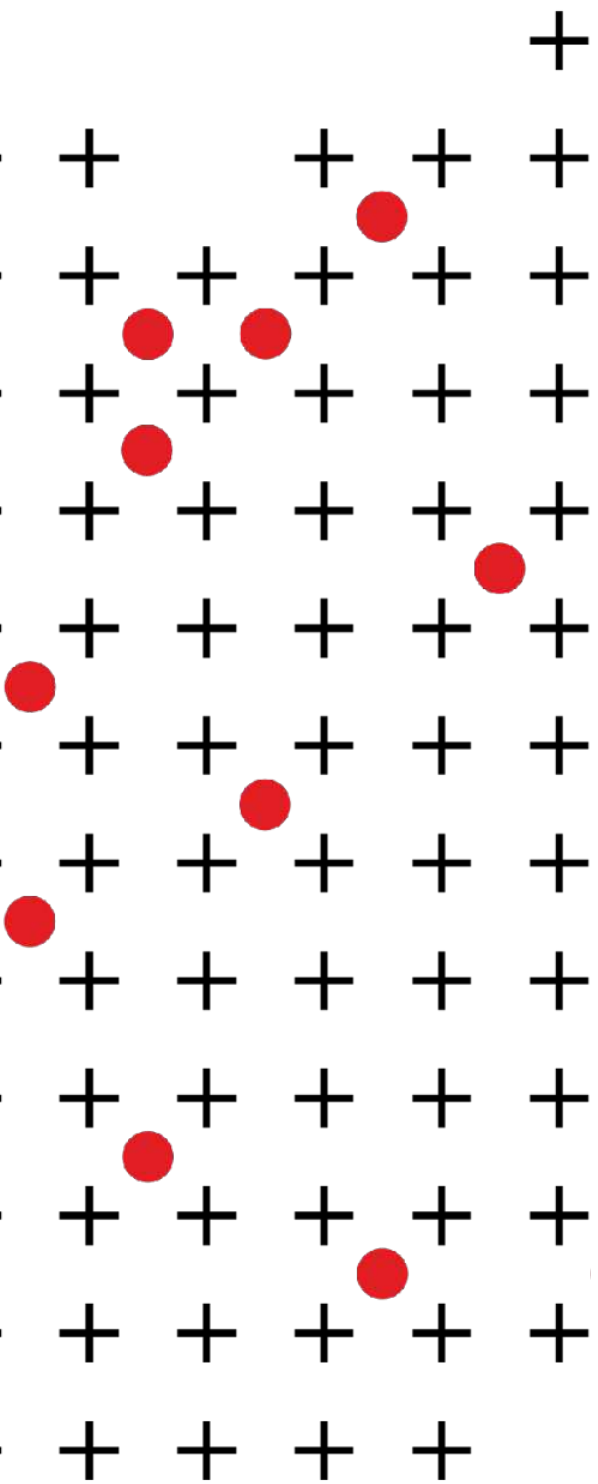
- Knowledge development: which knowledge is not present yet and requires further research:
  - Know (basic knowledge)
  - Capable (skills)
  - Will (ambitions)
  - Do (actions).
- Education: which trainings have to be developed and given;
- Knowledge sharing: which communication do we use:
  - Tekstual: such as a website, FAQ, report, guideline, research articles
  - Meetings: such as knowledge sessions, market consultations or knowledge meetings
  - Demo: such as excursion, exposition, demo building or experiments



# Central themes

## Legislation

- National legislation with impact measurement of a building.
- Local legislation when it comes to look and feel of a neighborhood, fire department safety and acoustics.
- Usage of financial or stimulation policy instruments to help a smooth implementation of timber construction
- Subsidies for experimental usage of biobased materials



# Central themes

## Costs and businesscase

The main perspective on timber construction is that this is more expensive, compared to conventional construction. However, this imagine is nuanced.

- Land costs
- Direct construction costs
- Development costs
- Sales costs
- Exploitation costs
- Exit-value

Societal value of timber construction. The physical properties of timber increase the general wellbeing of humans, help concentrate, work productivity, healthy environment, etc.























# Collaboration

## Main team

Bob van der Zande

Imme Groet



## Broader team

Lex Brans

Wouter van Twillert

Ivo Hamelynck

In collaboration with the tripple helix: knowledge institutes, public parties and private parties



# Collaboration

## Steering committee

5 aldermans (public)

5 directors (developers, housing corporations)

1 professor

## Core team

Civil servants, a variety of market parties and knowledge institutions – 20 participants

## Broader projectteam

Civil servants, a variety of market parties and knowledge institutions – 70 participants



# Process

## Meetings

Regular meetings and review of results with the different groups

## Party-specific meetings

Based on knowledge need and questions, specific meetings per group stakeholders (municipalities, investors, contractors, etc.)

## Agreements

3 types of agreements:

- On main themes
- Agreements for the future
- Agreements per type of party



# Process – example

## Municipalities

- They designate suitable locations for timber construction, for the short and the longer term. From 2022, municipalities will annually designate at least 1 location for timber construction and ensure that this location is put on the market
- They work on increasing internal expertise in timber construction at an early stage by attending information and expert sessions for relevant officials and sharing knowledge between the relevant internal units and experience within the MRA with other municipalities,
- They will positively appreciate project proposals from the market for timber construction and support them in the elaboration,





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# Actionplan MRA

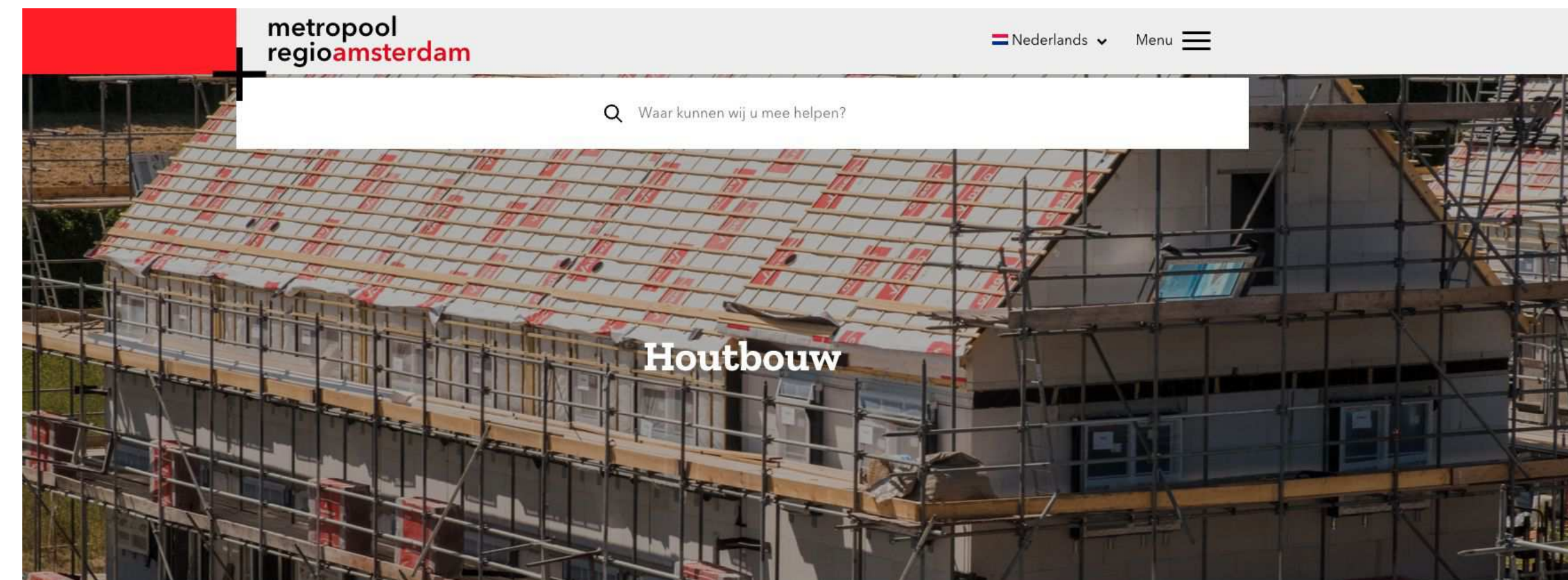
Green Deal timber construction MRA – start action plan from 2022 with five action themes:

## Costs and businesscase

- Project together with Arcadis and Alba Concepts
- 13% more expensive, with peaks to 23% for foundation costs
- Integrate other costs in the perspective
- Collect burden of proof

## Communication strategy

- Page
- Newsletter



Vanaf 2025 is 20% van de woningproductie in de Metropoolregio Amsterdam (MRA) van hout en andere biobased materialen, zodat woningen sneller en duurzamer worden gebouwd. Dat levert jaarlijks een reductie op van circa 220.000 ton CO<sub>2</sub>-uitstoot en een aanzienlijke vermindering van de uitstoot van stikstof. Houtbouwoningen die op een industriële wijze worden geproduceerd en op voldoende locaties kunnen worden gebouwd, zijn betaalbaarder, gemaakt van gezonde materialen en zorgen voor minder bouwafval. Voor de ambitie in de MRA is een convenant opgesteld.

De [Green Deal Convenant Houtbouw](#) is opgesteld in een intensieve 'triple helix'-samenwerking:



# Actionplan MRA

Green Deal timber construction MRA – start action plan from 2022 with five action themes:

## Knowledge development and sharing

- Houtbouw XL
- 7th September
- Meetings with single groups

BUILT  
BY NATURE



## PAKHUIS DE ZWIJGER

HOME AGENDA LIVECAST MAGAZINE PODCAST PROJECTEN DOSSIERS EETCAFE VERHUUR OVER ONS NL EN

Waar niet-hernieuwbare materialen zoals beton, staal en baksteen in de laatste eeuw de meest gebruikte bouwstoffen waren om steden te bouwen, worden de negatieve effecten van deze fossiele bouwmaterialen op het klimaat steeds duidelijker. Hernieuwbare, of biobased materialen, met in het bijzonder hout, bieden een totaaloplossing voor het (her)ontwikkelen van een 'future proof' gebouwde omgeving. Op welke manier kunnen biobased materialen bijdragen aan de woningbouw en klimaatopgave van ons land? Tijdens deze avond staat het gehele pand in het teken van houtbouw.

Dit programma is enkel fysiek te bezoeken in onze zaal. Het programma is wel later online terug te kijken via [dezwijger.nl/terugkijken](https://dezwijger.nl/terugkijken) of via ons YouTube-kanaal.

### DIT PROGRAMMA GAAT OVER



### DIT PROGRAMMA IS ONTWIKKELD DOOR



### IN SAMENWERKING MET



### MET IN DIT PROGRAMMA





# Actionplan MRA

Green Deal timber construction MRA – start action plan from 2022 with five action themes:

## Legislation

- Collaboration with CircuLAW
- Legal status Covenant
- Issues with allotment of land
- TO Juli
- Issues with fire, acoustics and water damage

## Wensen en eisen



### 1.2 Samenvatting richtlijnen

Het privaatrechtelijk en het publiekrechtelijk spoor worden in 5.3 en 5.4 beschreven. Hieruit leiden wij enkele belangrijke richtlijnen af voor het stellen van circulaire eisen in contracten en planregels die zien op circulariteit:

- Strengere eisen in contracten zijn alleen mogelijk op basis van gelijkwaardigheid;
- Convenanten en (green) deals borgen gelijkwaardigheid. Het is daarbij verstandig zoveel mogelijk concrete doelstellingen, prestaties en tijdspaden op te nemen, zodat deze afdwingbaar zijn;
- Met een aanbesteding kan ook bereikt worden dat gebouwen duurzamer worden dan het Bouwbesluit voorschrijft, mits op juiste wijze ingericht;
- De gemeente kan voor haar eigen gebouwen wel een duurzamer resultaat dan het Bouwbesluit willen;
- Regels in het bestemmingsplan moeten ruimtelijk relevant zijn en mogen niet in strijd zijn met het Bouwbesluit;
- Het Bouwbesluit bevat technische bouwvoorschriften over gebouwen. Het Bouwbesluit staat dus niet in de weg bij regels over de openbare ruimte en percelen. Ook regels die geen technisch bouwvoorschrift zijn, kunnen in het bestemmingsplan worden opgenomen;
- Met de Omgevingswet vervalt de eis van ruimtelijke relevantie. De regels in het omgevingsplan moeten toezien op de fysieke leefomgeving;

- Met het Bouwbesluit kunnen strengere regels over de energie- en milieuprestatie in het omgevingsplan worden opgenomen. Ook regels over duurzame daken voor gebouwen waar geen Beng-normering voor geldt is mogelijk.

Enkele andere mogelijkheden betreffende klimaatadaptatie, mobiliteit en andere onderdelen zijn aan het slot van dit hoofdstuk opgenomen.

### 1.3 Privaatrechtelijk spoor

#### Gronduitgifte

Als de gemeente grondposities heeft, dan kan zij een partij selecteren die de grond gaat ontwikkelen (aanbesteding). Ook kan zij die partij eisen meegeven en deze vastleggen in een overeenkomst. Denk bijvoorbeeld aan eisen over de ontwikkeling van de openbare ruimte, zoals de beschikbaarheid van laadpalen, percentages verhard/onverhard en materiaalkeuze van straatmeubilair.

#### Eisen gebouwen boven Bouwbesluit

De mogelijkheid om nadere eisen mee te geven voor het bouwen van gebouwen wordt beperkt door artikel 122 Woningwet. Hierin staat dat een gemeente geen privaatrechtelijke rechtshandelingen mag verrichten - met andere woorden: geen contracten mag sluiten - over onderwerpen die in het Bouwbesluit geregeld zijn. Het Bouwbesluit bevat technische bouwvoorschriften voor gebouwen zoals veiligheids-

## Wensen en eisen



en toegankelijkheidseisen, maar ook eisen over duurzaam bouwen. Daarbij geldt dat het Bouwbesluit die onderwerpen uitputtend regelt. Ook als het Bouwbesluit zelf geen bepalingen bevat over bijvoorbeeld circulair materiaalgebruik, dan nog mag de gemeente geen strengere eisen opnemen in contracten. Strengere eisen dan het Bouwbesluit zijn alleen mogelijk op basis van gelijkwaardigheid tussen partijen. De gemeente mag dus geen machtspositie hebben. Gelijkwaardigheid kan gecreëerd worden met een onderliggend convenant of green deal. In het geval van de gemeente geldt dit voor het tekenen van Convenant Houtbouw en City Deal Circulair en Conceptueel Bouwen.

Dergelijke convenanten of deals zijn vaak gestoeld op inspanningsverplichtingen of algemene ambities. Wij adviseren zoveel mogelijk te streven naar concrete doelstellingen en goed omschreven prestaties, eventueel oplopend in de tijd.

Op deze wijze is geborgd dat deze ook in concrete opgaven en ontwikkelingen kunnen worden geëist.

omdat de gelijkwaardigheid tussen partijen geborgd moet blijven. Dat zou kunnen doordat een partij de aanbesteding ook kan winnen door binnen de eisen van Bouwbesluit te blijven. Immers, dan is het de vrije keuze van de partij om strengere eisen toe te passen. Dat betekent dat selectie-eisen, gunningscriteria en contractuele voorwaarden die ruimte wel moeten bieden. Anderzijds kan een goede inrichting van deze documenten de kans aanzienlijk maken dat alleen partijen die zo duurzaam mogelijk willen bouwen, een inschrijving indienen.

Met de komst van de Omgevingswet wordt artikel 122 Woningwet vervangen door artikel 23.7 Omgevingswet. De strekking blijft gelijk en daarmee ook de analyse op dit punt.

#### Grondexploitatie

In de overeenkomst waarin de gemeente de gronduitgifte heeft opgenomen, regelt de gemeente vaak de afspraken over kosten van de grondexploitatie over de gronden in het te ontwikkelen gebied. Vooral de kosten voor het bouw- en woonrijp maken van het te



# Actionplan MRA

Green Deal timber construction MRA – start action plan from 2022 with five action themes:

## Locations

- Each half a year update
- Location monitor plan

A	B	C
Gemeente	Totaal	
Almere	103	
Amstelveen	132	
Amsterdam	1641	
Haarlem	264	
Haarlemmermeer	1003	
Lelystad	900	
Purmerend	1562	
Oosterwold	1.400	
Volendam	400	
Zaanstad	735	
<b>Totaal</b>	<b>8140</b>	
Buiten de MRA	202	

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Naam van het project	Aantal	Type woningen	Bouwconsortium	Opdrachtgever	Initiatiefnemer	Gemeente	Ontwikkelaar	Status	Voortgang	Start bouw	Oplevering	2022	2023	2024
<b>Amsterdam</b>														
Haut	52	Appartementen, meer dan 10 lagen	Team V Architectuur, Maarssen groep		Gemeente Amsterdam	V	V	Gerealiseerd			Opgeleverd: 17 maart 2022	52		
Switi	71		BPD	BPD			V	V	Gerealiseerd		begin 2023		71	
Stories	29		Olaf Gipser		Gemeente Amsterdam	V	V	Gerealiseerd			Opgeleverd april 2021	29		
Patch-22	33		Frantzen et al architecten, Lemniskade projecten		Gemeente Amsterdam	V	V	Gerealiseerd			Opgeleverd 2016	33		
Top-Up	14		Frantzen et al architecten, Lemniskade projecten		Gemeente Amsterdam	V	V	Gerealiseerd			Opgeleverd 2020	14		
De Warren	36	Appartementencomplex	Natrufied Architects		Gemeente Amsterdam	V	V	In bouw			oktober 2022		36	
De Hout	4		Workshop Architecte	VORM ontwikkelaar				In bouw			Q1 2022			
Juf Nienke	61	Appartementencomplex	SEARCH en RAU, D	Gemeente Amsterdam	Gemeente Amsterdam	V	V	In bouw			oktober 2022			
Robin Wood	165	Appartementencomplex	Marc Koehler Archite	Edwin Oostmeijer projectontwikkeling	Gemeente Amsterdam			In bouw		DO				
De Koffiefabriek	70		MeesVisser, BOOMlandscape, Lister Buildings		Gemeente Amsterdam	V	V	In bouw		In ontwikkeling				
Horizons	136		Paul de Ruiter Architects, FLUX Landscape Architecture, Balli		Gemeente Amsterdam			In bouw		Voorbereiding bouw				
Timberhouse	22		Finch Buildings, De Groot Vroomshoop					In bouw			9 mei 2022			
Bajeskwartier	100		AM, Schrodgers Capit	AM, Schrodgers Capital, AT Capital	RVB			In bouw						
Torteltuyn	44		Natrufied Architects		Gemeente Amsterdam			In bouw			mei 2024			
Mooijburg Plein	15		Natrufied Architects	DVG Groep	Gemeente Amsterdam			In bouw			november 2022			
Mooijburg Water	15		Natrufied Architects	DVG Groep	Gemeente Amsterdam			In bouw			mei 2023			
Mooijburg Park	18		Natrufied Architects	DVG Groep	Gemeente Amsterdam			In bouw			juni 2023			
De Houten Leeuw	56		Stadgenoot, Hamlet, De Nijs					In bouw						
Nelson Mandelapark	700			Nog onbekend	Gemeente Amsterdam			Verkenning		Gepland in 2025				
Strandeiland					Gemeente Amsterdam			Verkenning						
Hamerkwartier					Gemeente Amsterdam			Verkenning						
Sluisbuurt					Gemeente Amsterdam			Verkenning						
<b>Totaal</b>														
<b>Almere</b>														
Xyliino	103	Appartementencomplex met een paar grondgebonden woningen	Arons en Gelauff	Synchroon, Koopmans en De Alliantie				In bouw		DO	Q1 2023			
Pampus Hout								Verkenning						
Almere Oosterwold														



# Actionplan MRA

Green Deal timber construction MRA – start action plan from 2022 with five action themes:

## Collaboration with other initiatives

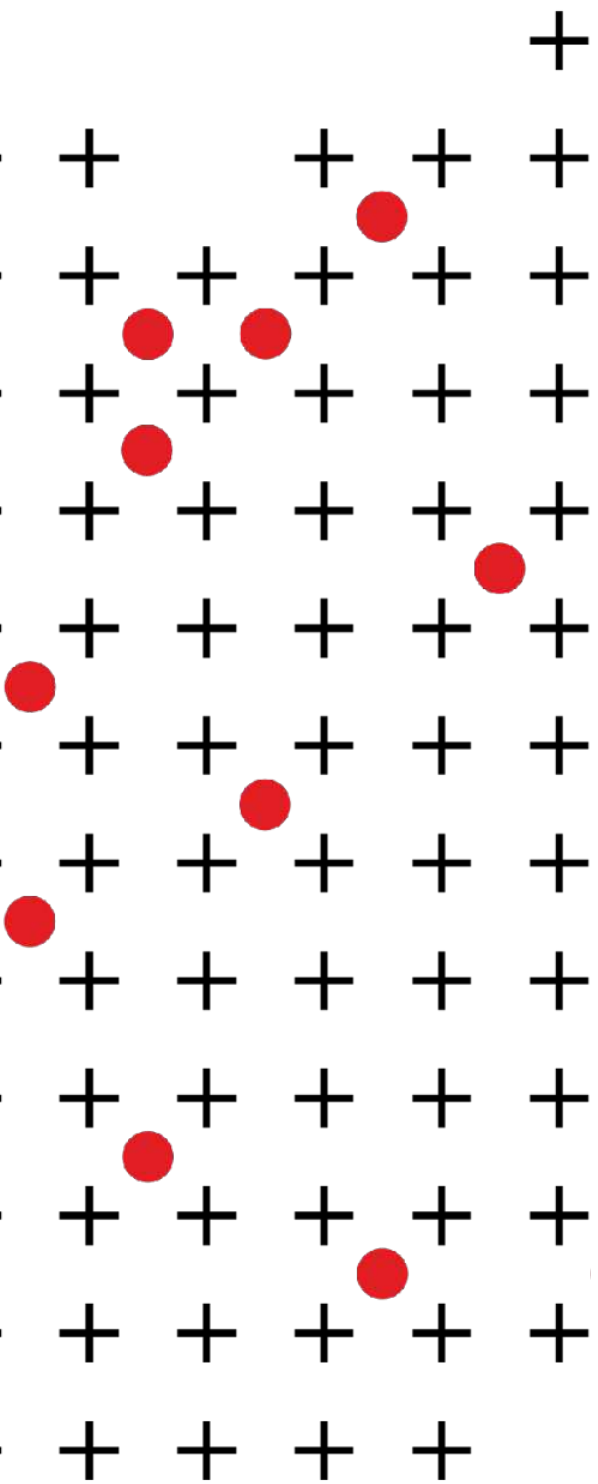
- City Deal Circular and Conceptual construction – biobased
- Buyersgroup biobased materials
- NEPROM – biobased construction
- Gideonsbende



# Questions

## Available documents

- Green Deal Houtbouw convenant
- Fabels en feiten over houtbouw – AMS Institute
- Tomorrow's Timber – Pablo van der Lugt
- Actieplan houtbouw



### Green Deal Houtbouw Duurzaam uit de crisis

Gericht op de uitvoering van de  
schaalsprong houtbouw in de  
Metropoolregio Amsterdam  
2021-2025







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