
ZOHO
CLIMATE PROOF
DISTRICT
A WORK IN PROGRESS

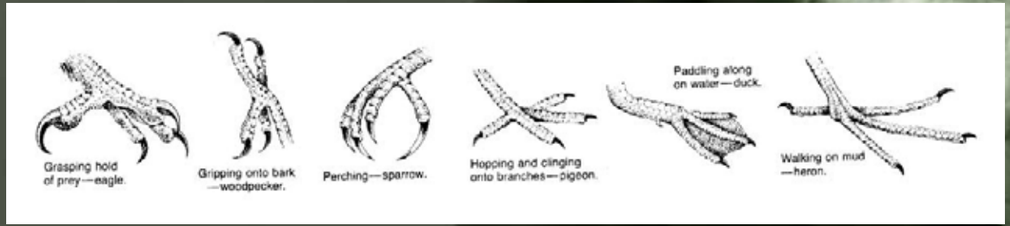
INTRODUCTION

This book tells the story about climate adaptation in the ZOHO-district in Rotterdam. This exciting part of the city is bustling with activity and has a great urban mix of populations. A myriad of initiatives becomes more and more visible in the public realm of ZOHO. Meanwhile the city council of Rotterdam has established its climate change adaptation strategy. The goal is to integrate climate proofing into the physical structures of the city. Where else to do this but in ZOHO? This area in transition needs a drastic improvement of its public space; people in ZOHO are involved and open to change; existing sewerage is being renewed and the first real showcase of climate adaptation, conceived with public involvement, has already been realized here: the water square Benthemplein.

This book is the result of almost four years of progress in climate proofing the city districts of 'Zomerhofkwartier' and 'Agniesebuurt', together called ZOHO. The story of ZOHO moves from policy making via ideas and plans to physical realizations in collaboration with many stakeholders. More and more it is becoming clear that climate adaptation is team work and the result is a more healthy, pleasant and beautiful city. We start with the Rotterdam climate adaptation strategy and show why ZOHO is such a suitable quarter as a pilot area for climateproofing the city. Next we will dive deeper into the process and show the events and actions that have been determinative for the success of ZOHO so far. Finally we will explain and illustrate the works and projects that are in progress and those that already have been realized. There is already much to be seen, but even more to accomplish in ZOHO.

Biological adaptation

In the field of biology, adaptations are those changes to the structure or behaviour of an organism that improve its chances for survival or for successfully raising offspring. Hence the survival of the fittest is not about being the strongest, but about being able to fit in with the circumstances that affect you. The ability to adapt is a vital aspect of the evolution of species.



WHAT IS CLIMATE ADAPTATION?

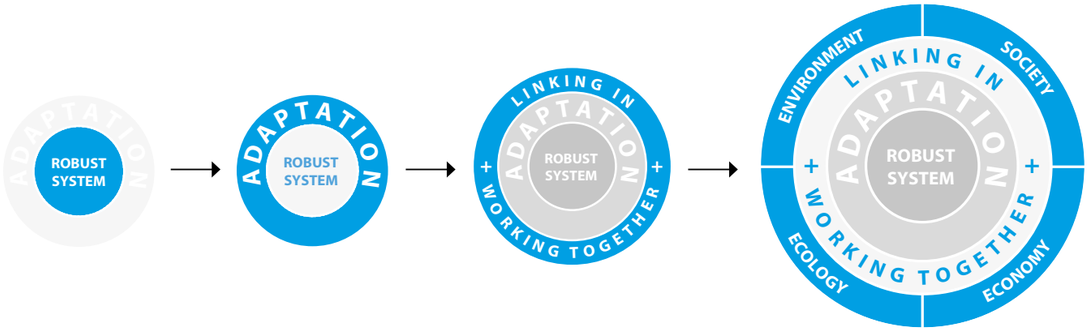
Climate adaptation is the process whereby society reduces its vulnerability to climate change by taking precautionary measures to change or alter its behaviour and/or its physical structures to be able to deal with the effects of climate change. Moreover this society seeks for ways to profit from the opportunities provided by a changing climate, for the benefit of all living things.

Rotterdam Adaptation Strategy

In 2008, the City of Rotterdam ratified the Rotterdam Climate Proof (RCP) programme. The aim of this programme - which is part of the Rotterdam Climate Initiative - is to start working towards a climate proof city and to create the maximum possible economic spin-off in the process of trying to achieve this. One of the results of this is the Rotterdam Climate Change Adaptation Strategy (RAS in short).

This adaptation strategy provides the framework and starting point for a future climateproof development of Rotterdam. The RAS ensures that in the future, topics such as water safety and heat stress are included in the basis of (spatial) developments right from the start. This policy document has been officially approved and established in October 2013.

CLIMATE ADAPTATION IS AN OFFICIAL ROTTERDAM POLICY



We bring the basic principles of the Rotterdam Climate Adaptation Strategy into practice

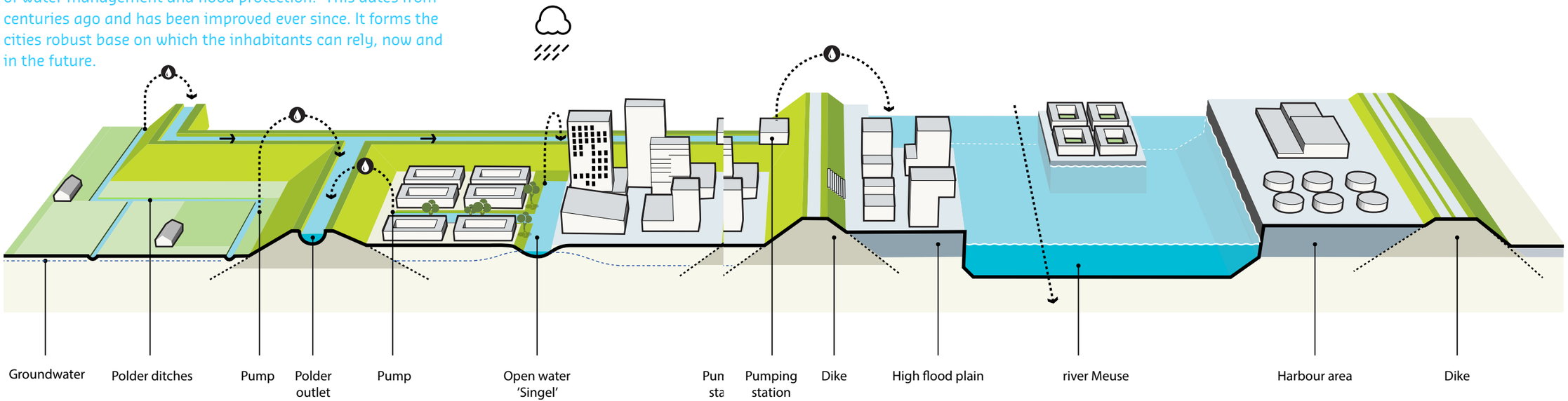
The effects of climate change that are currently causing stress...

...in the city of Rotterdam and will be of further threat in the near future.

ROBUST SYSTEM

Rotterdam robust system

The city of Rotterdam has a sophisticated and refined system of water management and flood protection. This dates from centuries ago and has been improved ever since. It forms the cities robust base on which the inhabitants can rely, now and in the future.



Scheme showing the robust system of water management and flood protection in Rotterdam

ADAPTATION

ROBUST SYSTEM

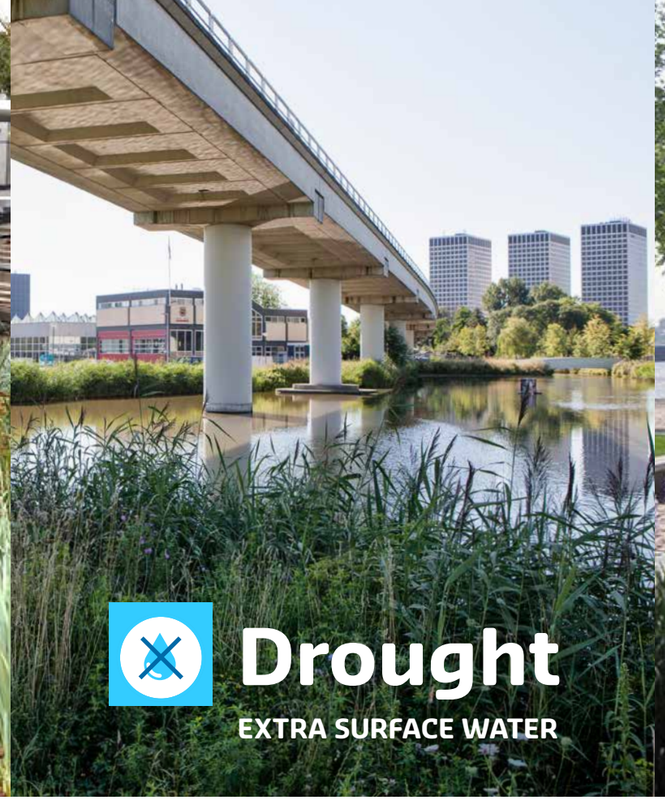
Rotterdam adaptive measures

Flood

MULTIFUNCTIONAL DIKE

Rain

WATERSQUARE



Drought

EXTRA SURFACE WATER

Heat

GREENING THE CITY

In addition to the robust system, adaptive measures are being implemented all over the city.

They form showcases of how a climate resilient city can be of benefit for all inhabitants to enjoy.

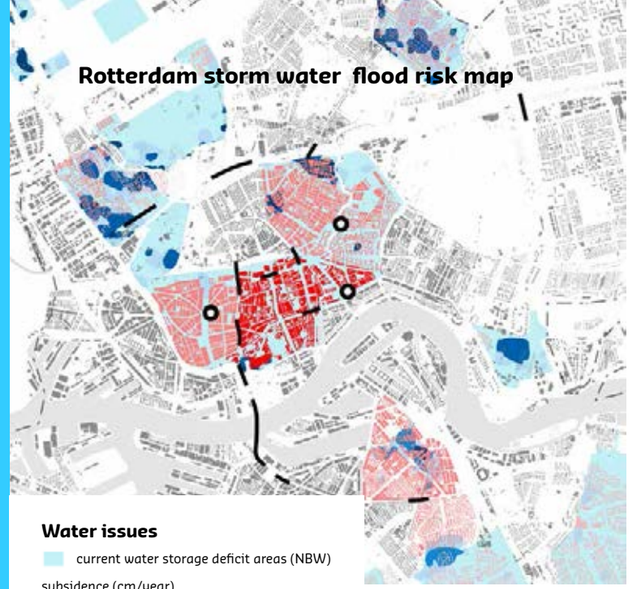
CLIMATE-PROOF ZOHO

ZOHO is the perfect pilot location for the implementation of the Rotterdam Adaptation Strategy on a district scale. First, because it has the typical climate problems of a 19th century neighbourhood combined with that of modernist structures of the city centre. Second, because the watersquare is already there; a showcase for climate adaptation which can be elaborated upon. And finally there are many stakeholders involved and willing to turn climate measures into added values for the district.

The challenges the ZOHO district is facing are threefold: increasing excessive rain events, longer periods of drought and more intense periods of heat stress. Each of them bearing their own characteristics.

Increase buffer capacity

Heavy rain events are a serious problem in the city of Rotterdam and especially in the city centre and in prewar districts. This applies to the entire ZOHO district. With the realization of the water square, a substantial part of the overall temporary peak storage has been taken care of. On a more local scale though, many places in this district have very little infiltration capacity and open water is situated too far away to be of immediate relief for buffering peak rain events. The existing mixed sewerage system also has limited capacity. This system currently is being replaced in large parts of the district by an improved split sewerage system. This will create the opportunity to combine precise adjustments in public space with new underground works. Decreasing the large amount of impervious surfaces is a generic ambition that can be elaborated further in ZOHO. Overall we aim for a more complete water management system that stimulates a rich diversity in public, semi-public and private spaces at the same time.



Water issues

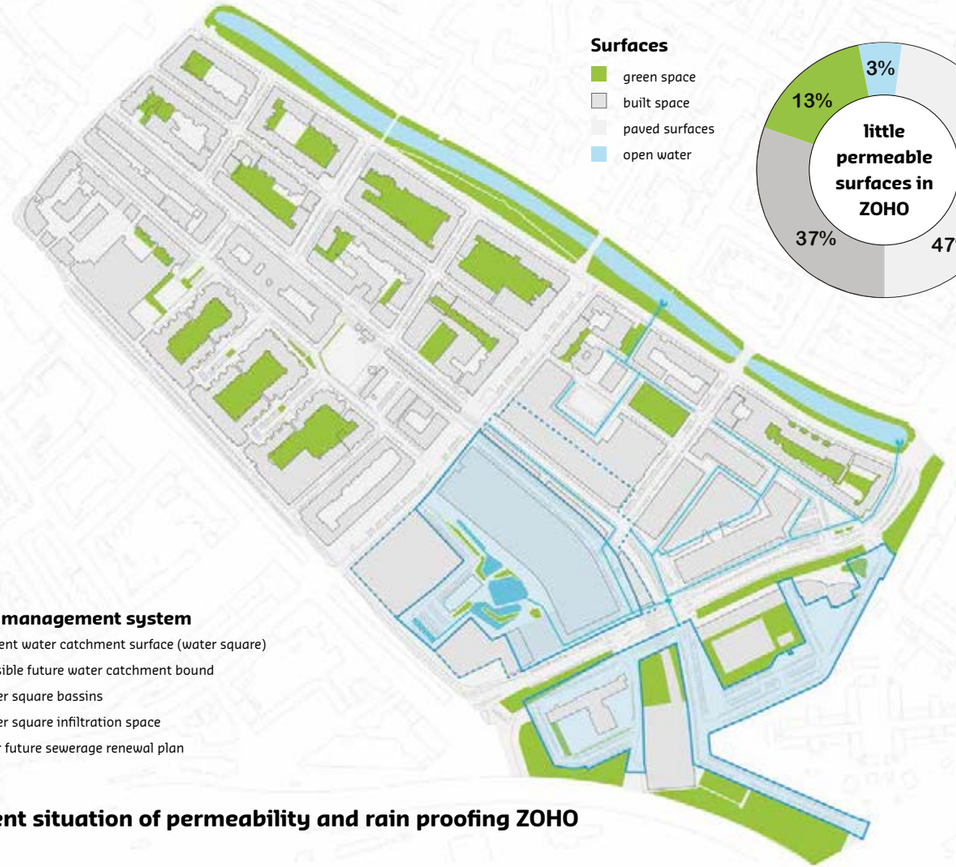
- current water storage deficit areas (NBW)

subsidence (cm/year)

- -0.1 - 0.5
- 0.5 - 0.1
- > 1

Bottlenecks and vulnerable areas

- bottleneck sewers
- bottleneck flooding due to groundwater
- city centre with considerable pressure on the open spaces
- urban areas with little open space
- urban area with much open space
- low-lying vital infrastructures



Present situation of permeability and rain proofing ZOHO

Decrease effects of drought

In between the extreme rain events, longer periods of drought occur. This happens in summer and in winter time and causes a serious threat to the wooden foundations of 19th century buildings along Noordsingel and in the Agniese district. These wooden poles have to be permanently under water. When exposed to air for long periods of time, they will start to rot and lose their constructive function causing serious threats for the future safety of the inhabitants of the buildings that rely on these foundations. Also many species of trees and plants will suffer from longer periods of drought and lower ground water levels. Keeping rain water that falls within the area and preventing it to be pumped out or drained away is one immediate measure that can be taken to keep ground water levels at pace and decrease the immediate effects of longer periods of drought.

Ground water levels; average high

Ground water levels; average low

Fighting heat stress

Most cities have a lot of hard surfaces in between buildings that have the tendency to heat up fast when the sun shines and temperatures rise. Because the heat is captured in these spaces, a cumulative effect occurs, causing health problems for vulnerable groups like elderly and sick people and productivity loss in the working population. The presence of shady places, sheltered water, soft surfaces and trees have proven to be effective remedies. Furthermore it is important to prevent the use of air conditioning in buildings, because these tend to heat up public spaces substantially during hot days, causing even more heat stress to the city.

Cooling effect due to shadow of buildings

Cooling effect of trees and green structures

Softening the surface, decreasing car dominance

One immediate measure that can be taken in order to effectively decrease the negative effects of all three previously mentioned climate challenges, is to replace hard impervious spaces for more soft and green spaces. We call this 'depaving'. This will increase the infiltration capacity and make a positive contribution to keeping ground water levels at pace, cooling public space and increasing storm water buffering capacity. The possibility to depave the area is an important key to success. Especially in the southern part of the ZOHO-district an abundance of underused hard surfaces can be found. Space for parking cars dominates the public realm while repeated counts show that less than 50% of the parking places on average is being occupied. Changing car parking into pedestrian parks will be a leading principle for climate proofing the district.

A

61.8%

101PP

	Monday 11.11	Tuesday 11.05 11.19	Wednesday 11.20	Sunday 11.24
11-12 AM		78% 142PP		
03-05 PM	79% 110PP	64% 92PP		28% 51PP
07-08 PM			60% 110PP	

B

47.8%

245PP

	Monday 11.11	Tuesday 11.05 11.19	Wednesday 11.20	Sunday 11.24
11-12 AM		50% 265PP		
03-05 PM	49% 250PP	50% 252PP		38% 200PP
07-08 PM			52% 260PP	

C

9.6%

9PP

	Monday 11.11	Tuesday 11.05 11.19	Wednesday 11.20	Sunday 11.24
11-12 AM		16% 15PP		
03-05 PM	8% 8PP	15% 14PP		7% 7PP
07-08 PM			2% 2PP	

D

62.5%

81PP

	Monday 11.11	Tuesday 11.05 11.19	Wednesday 11.20	Sunday 11.24
11-12 AM		49% 65PP		
03-05 PM	74% 98PP			60% 78PP
07-08 PM			67% 84PP	

Average overall occupation of parking spaces

48.4%

420PP

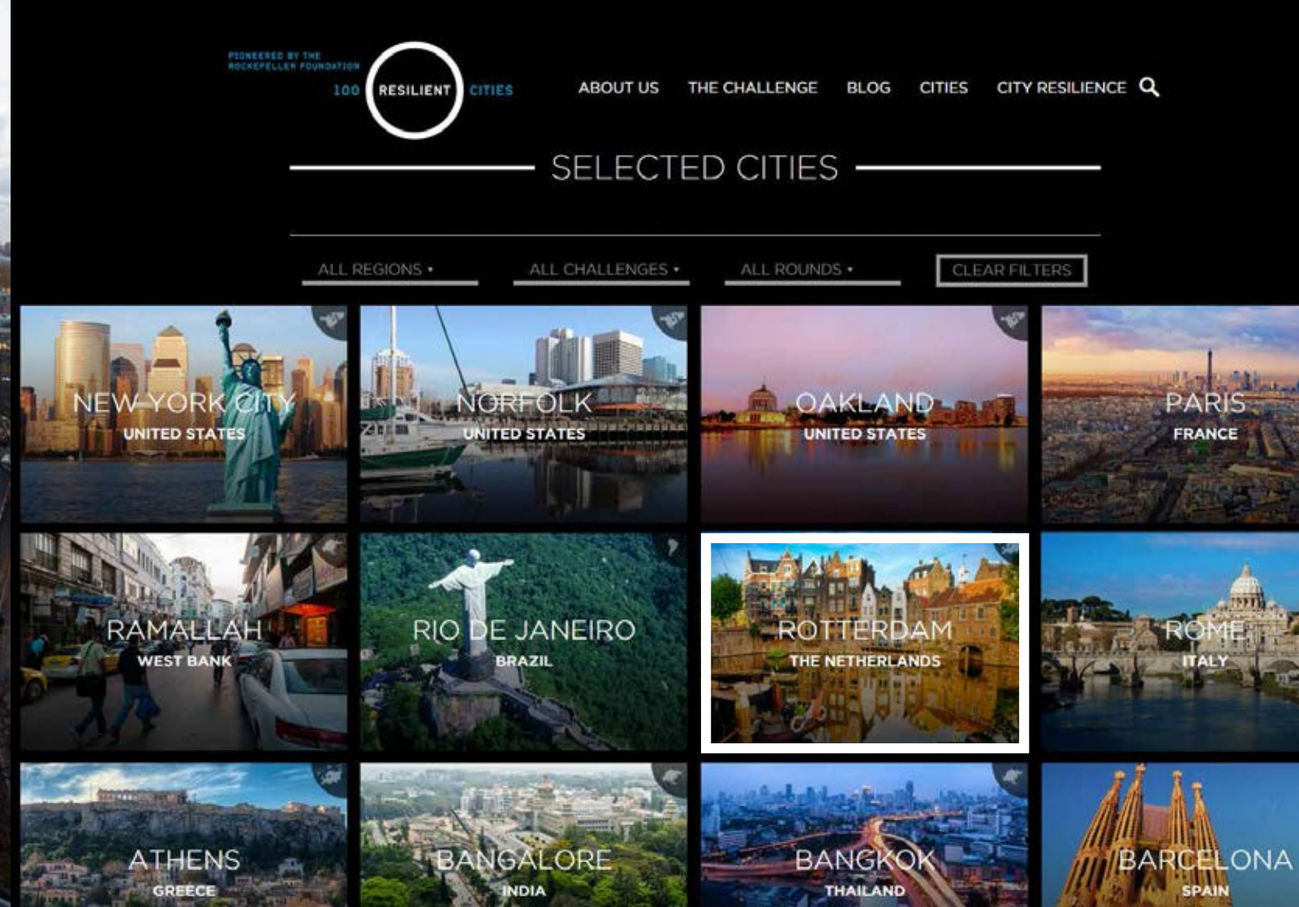
Overview of all parking spaces and their occupation rates

With the water square we already have a showcase

The water square offers a substantial amount of temporary storm water buffer to ZOHO and by keeping local water on the site simultaneously fights drought as well. This truly innovative climate concept is the first large scale built showcase of its kind and attracts attention from all over the world. Rotterdam is not just a front runner in climate policies, it is also the place where the built proof is realized. By becoming partner in the prestigious 100 Resilient Cities network the city of Rotterdam sets the goal to continue this ambition.

photo: Ossip van Duivenbode

ARNOUD MOLENAAR
CITY OF ROTTERDAM; CHIEF RESILIENCY OFFICER, 100 RC NETWORK BY ROCKEFELLER FOUNDATION



A great place to experiment with slow urbanism

One of the main drivers for the changing use of public space is the slow urbanism movement in ZOHO. A new way of city making takes place here, with a focus on re-programming the existing urban fabric and a bottom up approach to planning. Instead of workers coming by car disappearing into anonymous office buildings, the place is being populated by a diverse group of urban users that mainly come by bike and inhabit the urban space as lingering pedestrians. There is a lot of creative energy in the area with great potential to experiment on all different levels. Currently, almost every week there is something to do in or around the Yellow building.

JEROEN LAVEN
STIPO; ZOHO PROGRAMMER APPOINTED BY HAVENSTEDER HOUSING CORPORATION, OPERATING FROM THE SO CALLED 'YELLOW BUILDING'

Engaged entrepreneurs can realize their ideas here

An initiative like the vegan restaurant Gare du Nord with its own little urban farm in front, forming the back drop of the pleasant outdoor terrace, has become one of the main public spaces of the area. A few blocks up in the Agniese district there is a communal garden where some of the Gare du Nord crops are being grown. The harvesting and cooking is done in the educational setting of an anonymous school building next to the emblematic train wagon. Showcase and social return are being combined here into one overall concept. Less visible, but as emblematic are 'De Viltmannen' (the Feltmen) who employ women from the neighbourhood in their small scale factory hall. Wool from regional sheep herds is being processed here into wearable gear where ancient crafts of North African women is being merged with fresh design ideas of students from the Rotterdam arts academy.

HANS KERVEZEE
GARE DU NORD & KOOK MET MIJ MEE; SOCIALLY ENGAGED ENTREPENEUR

FRANK HILBRANDS
'DE VILTMANNEN'; SOCIALLY ENGAGED ENTREPENEUR

A neglected and monotonous public space

Ambition should not stop with current success, because if you walk around the neighbourhood one has to admit that there is still a lot that can be improved. The overall impression of the real estate and especially public space is one of neglect and monotony. A stony grey pavement dominates the scene, the environment is hard and empty. While at the same time inside the buildings more and more life and diversity emerges. This internal quality that consists of the people of the district, should be invited to come outside into a welcoming public space. The many existing fully grown trees in the area are already a great quality and a good starting point for further improvement of its public space.

NILS BERNDSEN
POLITICIAN FOR D66; FORMER ELDERMAN BOROUGH 'NOORD', NOW ROTTERDAM CITY COUNCIL MEMBER

Let's work together to realize an attractive and climate proof ZOHO

Climate proofing the ZOHO district can be a catalyst for realizing attractive public space. With the ratification of the Rotterdam Adaptation Strategy we agreed to appoint ZOHO as the district to experiment with many different ways of climate proofing an urban area. This experiment is about physical interventions that deal with excessive storm water, heat stress and periods of drought on one hand and improve the quality of public space on the other hand. In this process we deliberately are seeking collaboration with stakeholders from the neighbourhood: entrepreneurs, inhabitants, activists and institutional parties all work together to realize an attractive and climate proof ZOHO district.

DIRK VAN PEIJPE
DE URBANISTEN; INITIATOR OF
CLIMATE PROOF ZOMERHOF DISTRICT

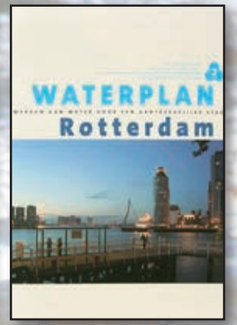
PROCESS

THE NARRATIVE ON THE PROCESS OF CLIMATEPROOFING ZOHO ACTS AS A SHINING EXAMPLE OF THE ROTTERDAM APPROACH TO CREATE A CLIMATE RESILIENT CITY.

INNOVATIONS HARDLY EVER APPEAR OUT OF NOTHING. THEY MOSTLY COVER LONG PROCESSES OF HARD LABOUR AND REQUIRE COLLABORATION BETWEEN MANY CREATIVE SPIRITS. CLIMATE PROOF ZOHO IS SUCH A PROCESS. IT ALREADY STARTED IN THE YEAR 2005 WITH THE FIRST IDEA OF THE WATER SQUARE. THIS PROCESS WILL CONTINUE FOR YEARS TO COME AS MANY NEW IDEAS WILL BE TESTED IN THE DISTRICT. MORE AND MORE ENTHUSIASTIC PEOPLE ARE JOINING IN THIS TRANSFORMATION PROCESS TO BRING IN THEIR IDEAS, SKILLS AND EXPERTISE.

IN THIS CHAPTER WE WILL REVEAL THE CRUCIAL STEPS THAT HAVE BEEN TAKEN OVER TIME AND INTRODUCE YOU TO SOME CHARACTERS THAT PLAY AN IMPORTANT ROLE IN CLIMATE PROOFING THE ZOHO DISTRICT.

2005 – ROTTERDAM WATERCITY 2035



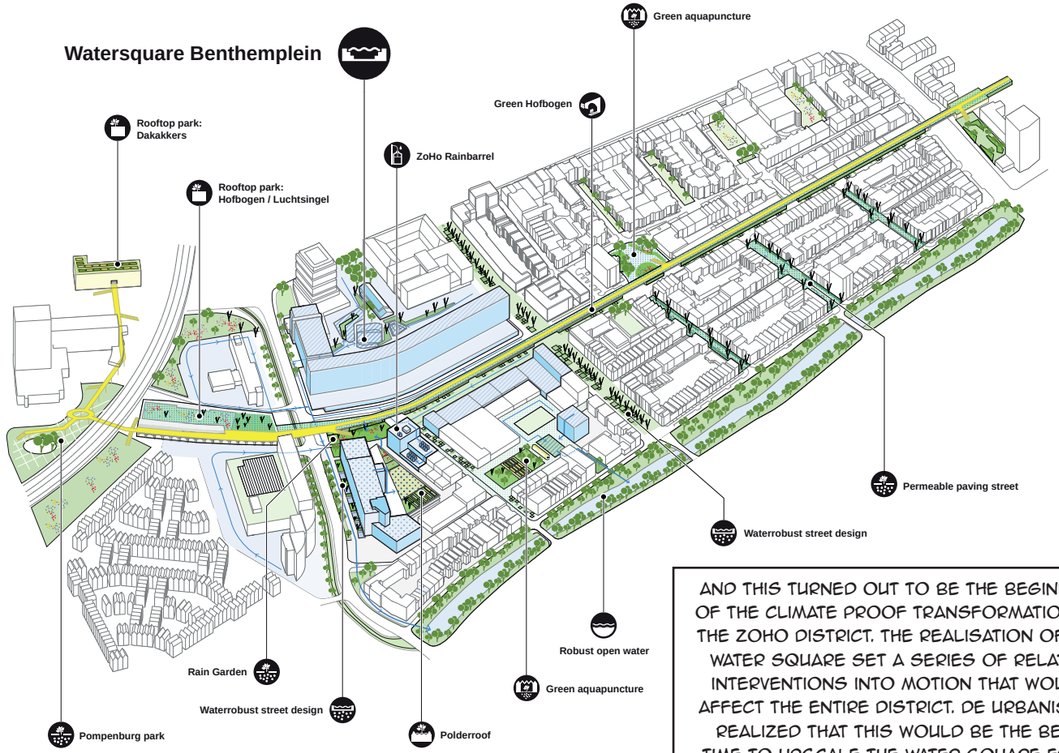
2007 – ROTTERDAM WATERPLAN 2

2014 – ROTTERDAM ADAPTATION STRATEGY

CLIMATE PROOFING ALREADY STARTED IN 2005 WITH THE CONTRIBUTION OF "ROTTERDAM WATER CITY 2035" TO THE INTERNATIONAL ARCHITECTURAL BIENNIAL ROTTERDAM. THIS GROUNDBREAKING RESEARCH BY DESIGN EXPLORED THE EXTREMES OF CLIMATE CHANGE BY SPECULATING ON OPPORTUNITIES IT COULD BRING TO THE CITY OF ROTTERDAM. MANY OF THE FINE IDEAS ALREADY LANDED IN 2007 IN THE CITIES OFFICIAL POLICY DOCUMENT THE "WATERPLAN 2". THIS VISIONARY DOCUMENT ESTABLISHED THE QUANTITATIVE WATER TASKS AS AN IMPORTANT ISSUE OF QUALITY OF LIFE IN THE CITY AND SECURED BUDGET TO EXECUTE INNOVATIONS LIKE THE WATER SQUARE. IN THE FOLLOWING YEARS THE POLICY GOALS EXPANDED FROM THE SOLE WATER TASK INTO CLIMATE ADAPTATION, WHICH WERE ESTABLISHED IN THE "ROTTERDAM ADAPTATION STRATEGY" IN 2014.

THE WATER SQUARE BROUGHT THESE POLICY AMBITIONS INTO PRACTICE AND DELIVERED ITS BUILT PROOF. ON THE BENTHEMPLEIN DE URBANISTEN TOOK THEIR CONCEPTUAL IDEA (2005) FROM A TYPOLOGICAL RESEARCH (2007) TO AN EDUCATIONAL COMIC BOOK (2010) INTO A REALIZED SHOWCASE FOR THE WORLD TO SEE (2013).

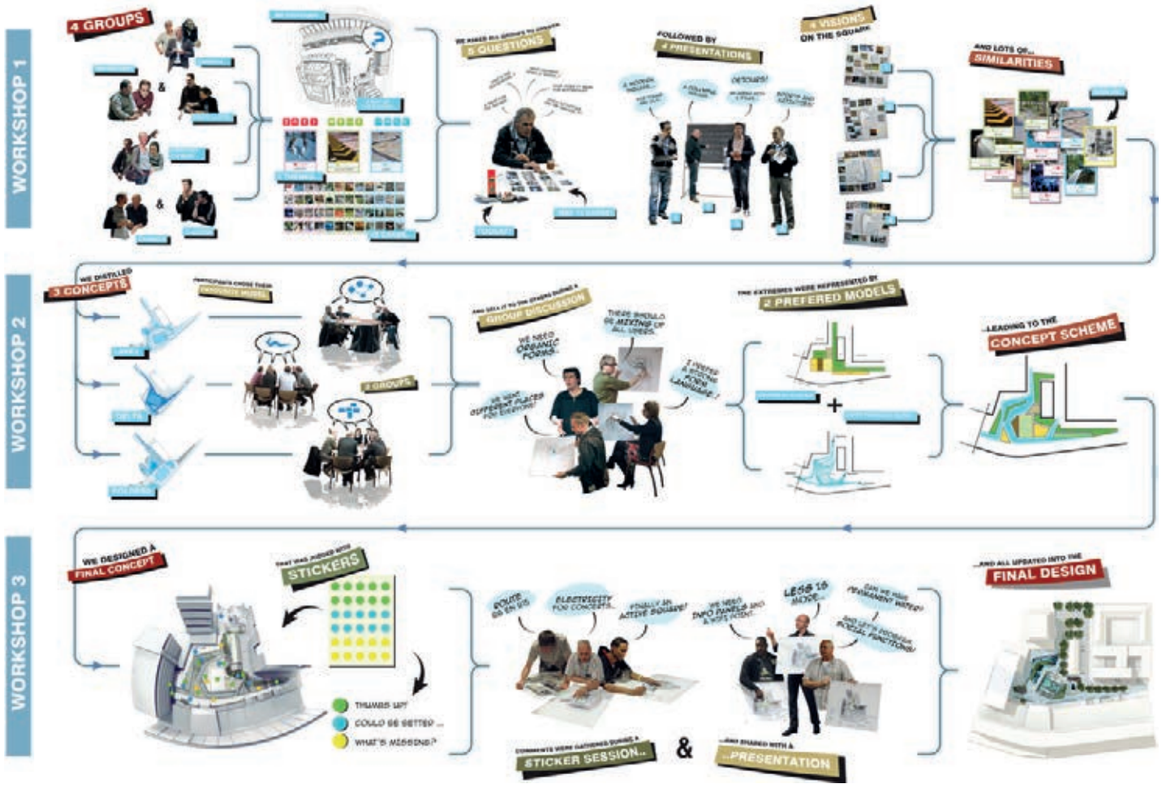
FLORIAN BOER
DE URBANISTEN; INITIATOR AND DESIGNER OF THE WATER SQUARE

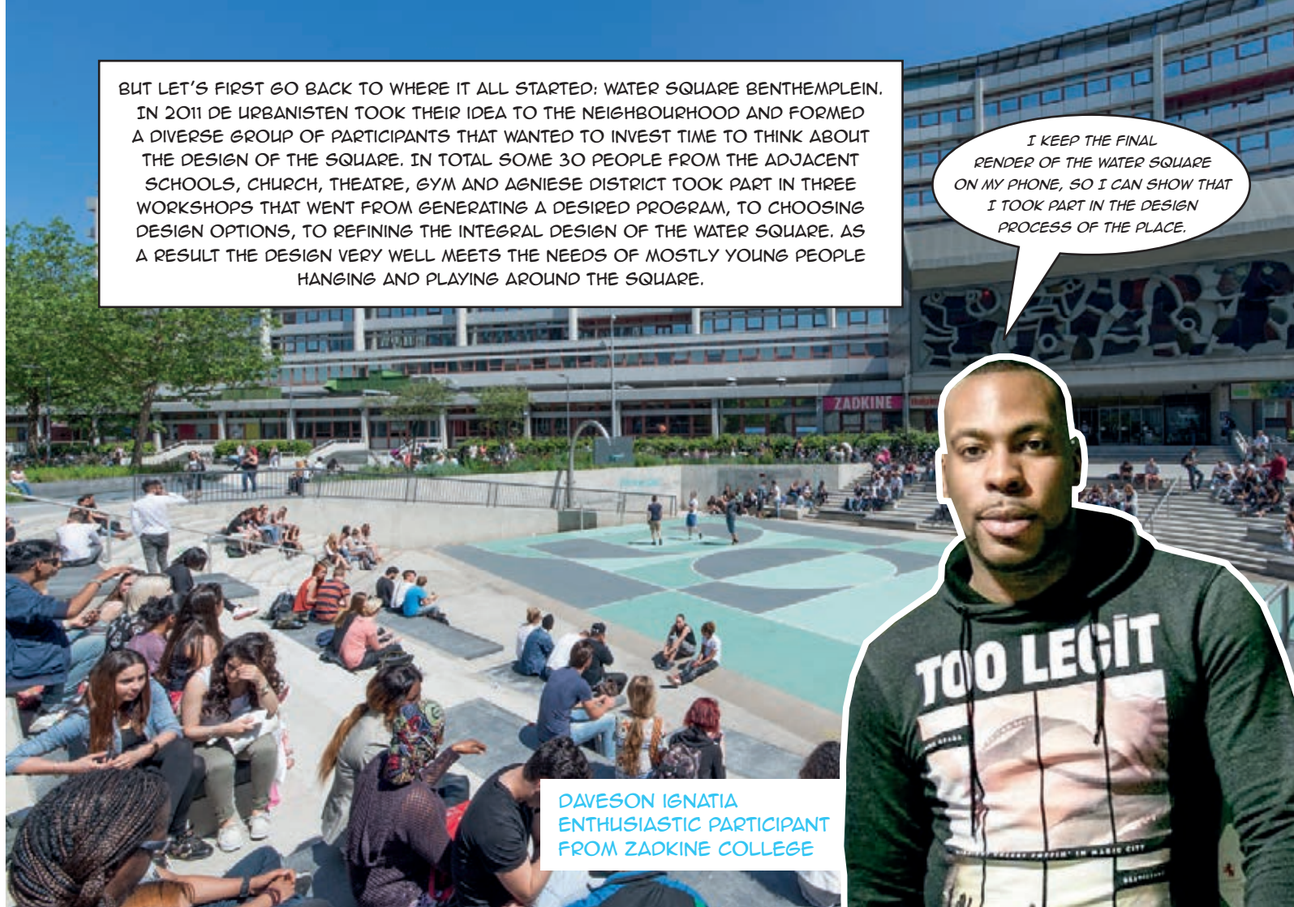


AND THIS TURNED OUT TO BE THE BEGINNING OF THE CLIMATE PROOF TRANSFORMATION OF THE ZOHO DISTRICT. THE REALISATION OF THE WATER SQUARE SET A SERIES OF RELATED INTERVENTIONS INTO MOTION THAT WOULD AFFECT THE ENTIRE DISTRICT. DE URBANISTEN REALIZED THAT THIS WOULD BE THE BEST TIME TO UPSCALE THE WATER SQUARE FROM A SINGULAR PROJECT INTO A LARGER SCALE CLIMATE ADAPTATION TRANSFORMATION.

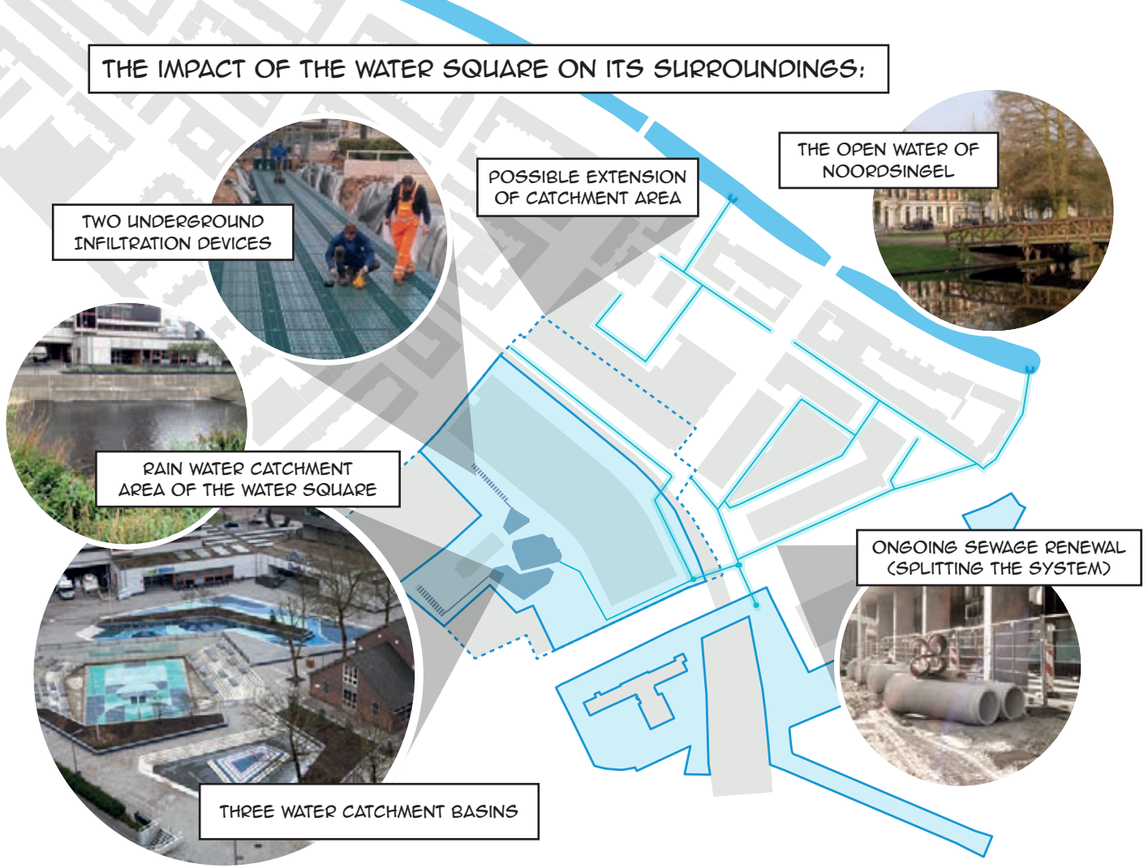
DE URBANISTEN TOOK THEIR IDEA TO THE ROTTERDAM CLIMATE OFFICE, THE CITIES ALDERMAN AND THE POLITICIANS OF BOROUGH NOORD. ALL AGREED: ZOHO DISTRICT HAS TO BECOME THE SHINING ROTTERDAM EXAMPLE OF AN INTEGRAL CLIMATE PROOF URBAN DISTRICT.

DIRK AND FLORIAN MAKE THEIR TOUR ALONG THE RESPONSIBLE CIVIL SERVANTS AND OFFICIALS FROM THE CITY OF ROTTERDAM


WORKSHOP 1
4 GROUPS
3 QUESTIONS
FOLLOWED BY
4 PRESENTATIONS
VISIONS ON THE SQUARE
AND LOTS OF...
SIMILARITIES
WORKSHOP 2
WE DISTILLED
3 CONCEPTS
4 GROUPS
GROUP DISCUSSION
WE NEED ORGANIC FORMS
2 PREFERED MODELS
...LEADING TO THE
CONCEPT SCHEME
WORKSHOP 3
WE DESIGNED A
FINAL CONCEPT
STICKERS
THUMBS UP!
COULD BE BETTER ...
WHAT'S MISSING?
STICKER SESSION...
&
...PRESENTATION
...AND ALL UPDATED INTO THE
FINAL DESIGN


BUT LET'S FIRST GO BACK TO WHERE IT ALL STARTED: WATER SQUARE BENTHEMPLEIN. IN 2011 DE URBANISTEN TOOK THEIR IDEA TO THE NEIGHBOURHOOD AND FORMED A DIVERSE GROUP OF PARTICIPANTS THAT WANTED TO INVEST TIME TO THINK ABOUT THE DESIGN OF THE SQUARE. IN TOTAL SOME 30 PEOPLE FROM THE ADJACENT SCHOOLS, CHURCH, THEATRE, GYM AND AGNIESE DISTRICT TOOK PART IN THREE WORKSHOPS THAT WENT FROM GENERATING A DESIRED PROGRAM, TO CHOOSING DESIGN OPTIONS, TO REFINING THE INTEGRAL DESIGN OF THE WATER SQUARE. AS A RESULT THE DESIGN VERY WELL MEETS THE NEEDS OF MOSTLY YOUNG PEOPLE HANGING AND PLAYING AROUND THE SQUARE.
I KEEP THE FINAL RENDER OF THE WATER SQUARE ON MY PHONE, SO I CAN SHOW THAT I TOOK PART IN THE DESIGN PROCESS OF THE PLACE.
ZADKINE
TOO LEGIT
DAVESON IGNATIA
ENTHUSIASTIC PARTICIPANT
FROM ZADKINE COLLEGE

THE IMPACT OF THE WATER SQUARE ON ITS SURROUNDINGS:



WITH THE WATER SQUARE EXERCISING A DIRECT PHYSICAL INFLUENCE ON ITS SURROUNDINGS, IT WAS TIME TO START ANTICIPATING.... WITH THE HELP OF THE ROTTERDAM MUNICIPALITY AND STIPO, DE URBANISTEN STARTED A SERIES OF WORKSHOPS TO DETERMINE POSSIBLE CLIMATE ADAPTATION PROJECTS FOR THE ZOHO DISTRICT. IN THE YELLOW BUILDING CREATIVE ENTREPRENEURS GATHERED TO SHARE THEIR IDEAS AND BRING THEM TO THE MAP...

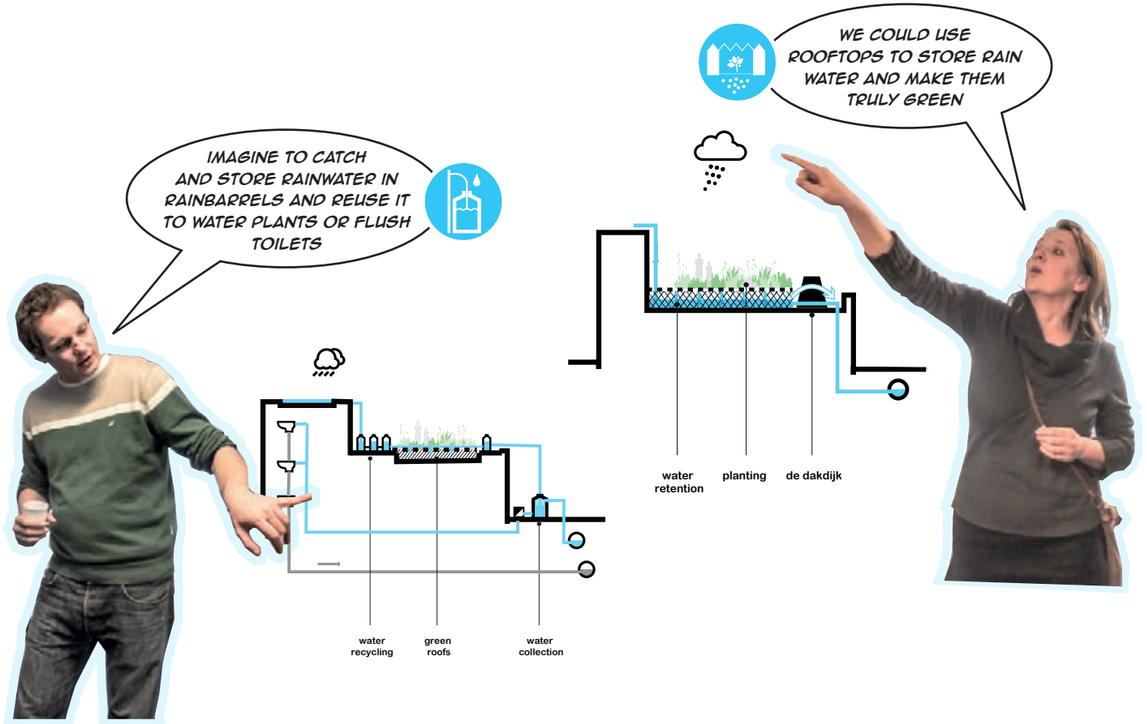
...SHARING KNOWLEDGE ON CLIMATE ADAPTATION

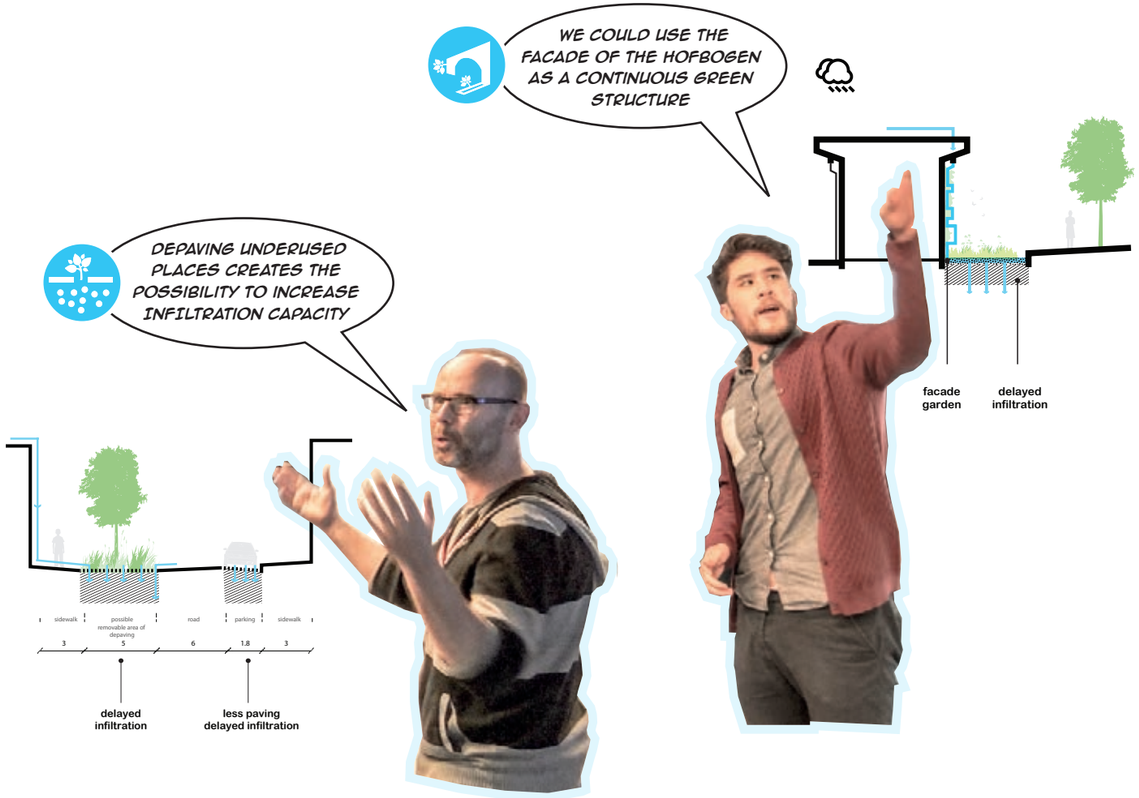
...SKETCHING ON AN INTEGRATED CLIMATE PROOF STRUCTURE FOR ZOHO

...WHO'S INVOLVED AND WHAT KIND OF VALUES ARE ADDED?

...PRESENTING STORIES, REFLECT AND DISCUSS

TOGETHER WE CAME UP WITH SOME BRIGHT IDEAS





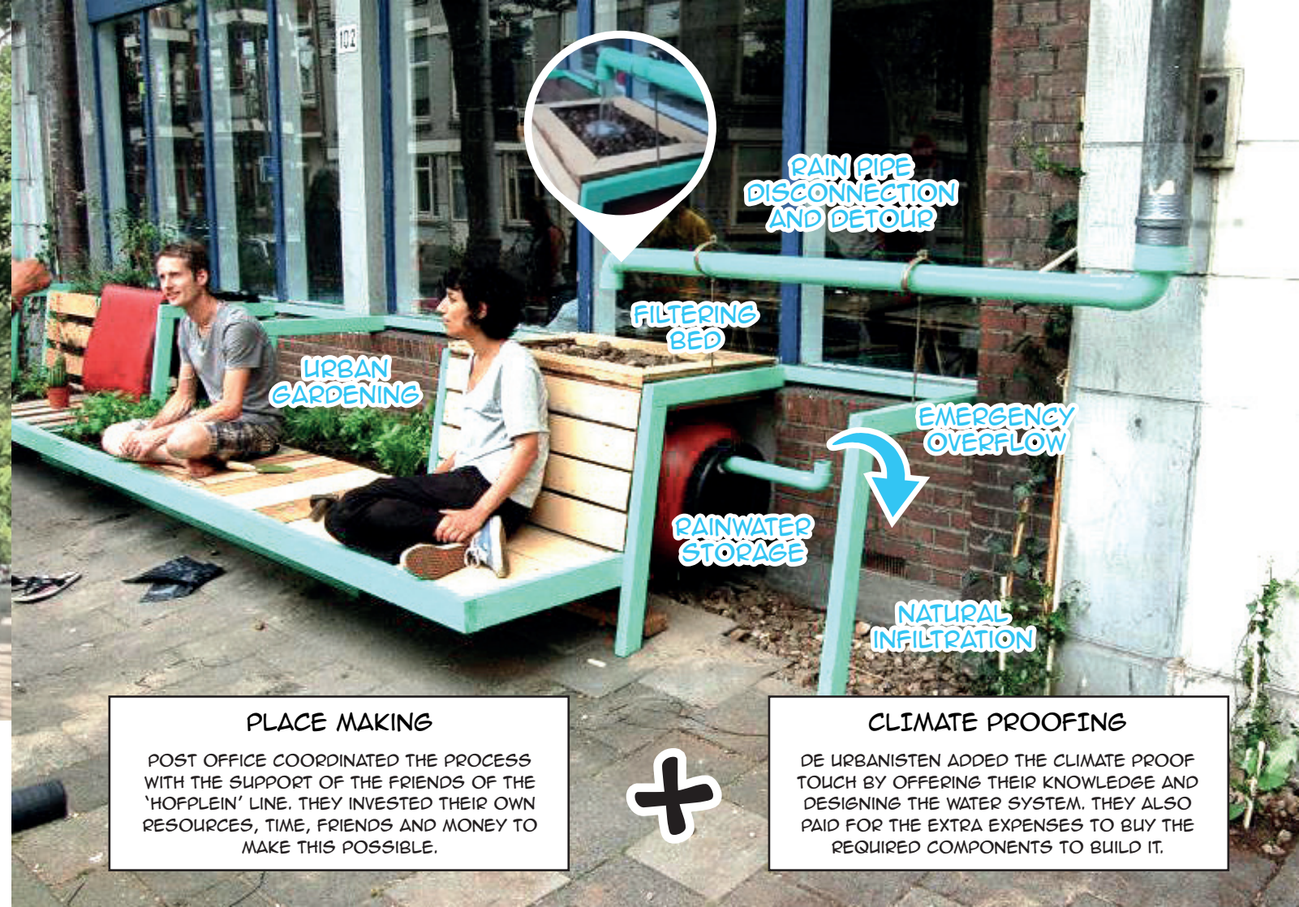
OK, GREAT IDEAS ...

... NOW WHAT?

LET'S JUST DO IT !

GREENING HOFBOGEN, TAKING THE FIRST STEPS

PANOS SAKKAS AND ALBERT TAKASHI RICHTERS ARE PART OF THE TEAM THAT MANAGES AN OPEN STUDIO LOCATED AT THE HOFBOGEN: POST OFFICE. AFTER THE ZOHO CLIMATE PROOF WORKSHOP THEY GOT SO ENTHUSIASTIC THEY TOOK THE LEAD OF THE GREEN HOFBOGEN INITIATIVE, OFFERING THEIR FRONTYARD AS A TESTING GROUND.



PLACE MAKING

POST OFFICE COORDINATED THE PROCESS WITH THE SUPPORT OF THE FRIENDS OF THE 'HOFPLEIN' LINE. THEY INVESTED THEIR OWN RESOURCES, TIME, FRIENDS AND MONEY TO MAKE THIS POSSIBLE.

+

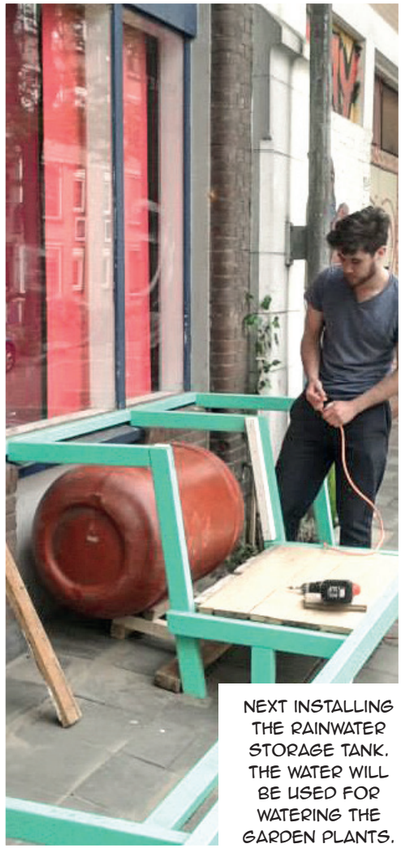
CLIMATE PROOFING

DE URBANISTEN ADDED THE CLIMATE PROOF TOUCH BY OFFERING THEIR KNOWLEDGE AND DESIGNING THE WATER SYSTEM. THEY ALSO PAID FOR THE EXTRA EXPENSES TO BUY THE REQUIRED COMPONENTS TO BUILD IT.

FIRST DEPAVING THE SIDEWALK IN FRONT OF POST OFFICE TO CREATE SPACE FOR A GARDEN AND INFILTRATION PLANTERS,

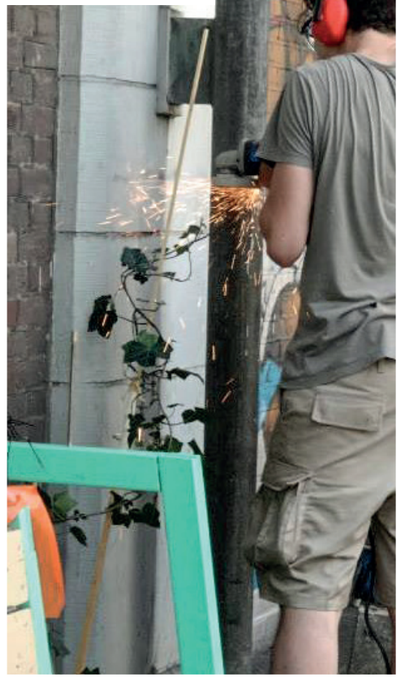
THEN BUILDING THE FRAMEWORK OF THE BENCH

AND ADDING THE GARDEN PLANTS AND THE SEATS TO THE BENCH. THE GUYS OF '7 SEASONS' HELPED TO MAKE THE RIGHT PLANT SELECTION ACCORDING TO THE PRESENT SHADOW CONDITIONS.



NEXT INSTALLING THE RAINWATER STORAGE TANK. THE WATER WILL BE USED FOR WATERING THE GARDEN PLANTS.

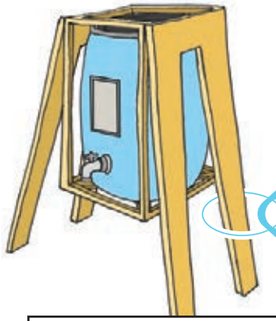
FINALLY, CUTTING THE RAIN PIPE COMING DOWN FROM THE HOFBOGEN AND CONNECTING IT TO THE WATERTANK. READY FOR USE!



AT THE OPENING PARTY GUESTS BROUGHT MORE PLANTS. IN RETURN 'FIETZERIA' -A LOCAL ENTREPENEUR- OFFERED SELF MADE PIZZAS ON SITE.

ZOHO RAINBARREL, THE SMALL ICON FOR CLIMATE PROOFING

BAS SALA IS A PRODUCT DESIGNER AND DEVELOPER WHOSE COMPANY IS LOCATED IN THE YELLOW BUILDING. IN THE WORKSHOP HE CAME UP WITH THE IDEA TO CATCH, STORE AND REUSE RAINWATER IN A CUSTOM MADE ZOHO RAINBARREL. THIS RAINBARREL SHOULD NOT JUST BE FUNCTIONAL, BUT ALSO EMBLEMATIC FOR THE CLIMATE AMBITIONS OF ZOHO MAKING IT APPLICABLE ON THE SMALLEST POSSIBLE SCALE. BAS PROPOSES TO DEVELOP A PROTOTYPE AND TO BUILT AND TEST IT ON SITE.

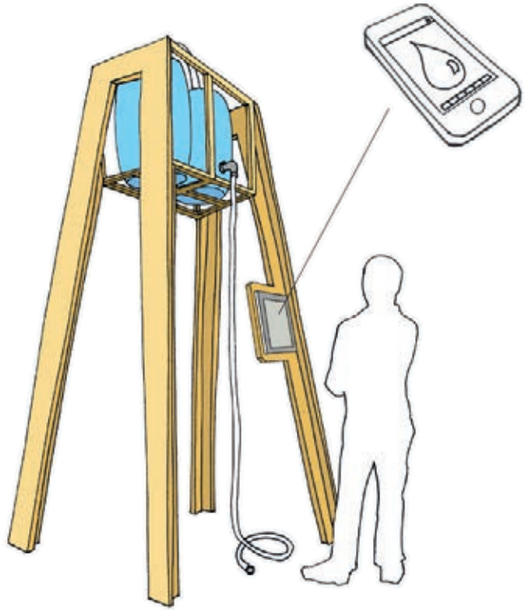


46.000 EURO

THE IDEA WAS SUPPORTED BY NETHERLANDS ENTERPRISE AGENCY (RVO) WITH A SUBSIDY TO FURTHER RESEARCH THE FEASIBILITY AND TO DEVELOP A PROTOTYPE BY BAS SALA AND RIEN HILHORST FROM SPIN DEVELOPERS.

APP BRAINDRAIN

AT THE SAME TIME THE TECHNICAL UNIVERSITY OF DELFT DEVELOPED 'BRAINDRAIN': A SMART APP THAT CAN PREDICT THE WATER STORAGE CAPACITY THAT IS NEEDED IN RELATION TO WEATHER FORECASTS.



BOTH IDEAS COMBINED FORM AN INNOVATION THAT OFFERS THE POSSIBILITY TO STORE RAIN WATER, REUSE IT AND RELEASE IT WHEN THE WEATHER FORECAST PREDICTS THAT STORAGE CAPACITY IS NEEDED. WHEN THE BRAINDRAIN APP MANAGES THE STORAGE REGIME OF THE RAINBARREL, THEN WATER MANAGEMENT BECOMES SMART ON THE SMALLEST SCALE.

DEPAVING ZOHO

REDUCING THE EXCESSIVE AMOUNT OF PAVED SURFACE IN ZOHO WAS IMMEDIATELY PUT TO PRACTICE AT THE VIJVERHOFSTRAAT. FIRST BY TAKING OUT TWO PARKING PLACES AND A CHUNK OF PAVEMENT. THEN BY REPLACING THIS WITH A SMALL RAINGARDEN, THE PROMISE FOR A GREENER FUTURE HAS BEEN MADE TANGIBLE FOR EVERYBODY. JACCO BAKKER, DISTRICT MANAGER OF THE BOROUGH OF 'NOORD' ENTHUSIASTICALLY TOOK OUT THE FIRST TILES.

CONTRACTOR VAN DIJK CONTRIBUTED THE INITIATIVE WITH FREE SOIL AND FREE LABOUR

A LOVELY PLANTING PLAN WAS PROVIDED BY DE URBANISTEN FOR FREE

DIRK DISCONNECTED THE RAINPIPE FROM THE SEWERAGE

THE MUNICIPAL NURSERY DELIVERED PLANTS... FOR FREE AS WELL

TOGETHER WITH PEOPLE FROM THE COMMUNITY WE PLANTED THE GARDEN...

RESULT: A POP-UP, ZERO BUDGET GARDEN !

THE PEOPLE OF NAS,
A SOCIAL WORK ORGANIZATION
IN THE ZOHO DISTRICT,
MAINTAIN THE GARDEN

THIS IS EDUARDO MARIN SALINAS, LANDSCAPE ARCHITECT AT DE URBANISTEN. EDUARDO MADE THE PLANTING SCHEME FOR THE GARDEN AND HE MADE A MAINTENANCE INSTRUCTION FOLDER THAT EXPLAINS HOW TO TAKE CARE OF THE GARDEN. HE EVEN GIVES INSTRUCTION CLASSES TO NAS.

AND THIS IS THE PROMISE PROVIDED... TO UPSCALE THE PLACE INTO A LARGE WELCOMING RAIN GARDEN. A PLACE TO LINGER AND ENJOY THE SCENERY. AND WHEN IT RAINS, WATER IS BEING COLLECTED AND SLOWLY INFILTRATES BACK INTO THE GROUND. THE IMPRESSION WAS PROVIDED BY DE URBANISTEN AND THE PRINTING WAS SPONSORED BY KOMPLOT, FINISHING OFF THIS INITIATIVE WITHOUT INVOLVING ANY MONEY.

+

FROM THIS POINT ON EVERYTHING BECOMES A BIT MORE OFFICIAL... THE MUNICIPALITY DECIDES TO DEDICATE SOME MONEY THEY RESERVED FOR GREENING THE CITY, TO THE FUTURE REALISATION OF THE RAIN GARDEN. THE POP-UP GARDEN HAS CONVINCED THEM OF THE POTENTIAL OF RADICALLY GREENING THE AREA. FURTHERMORE AN OFFICIAL MUNICIPAL PROJECT LEADER IS INSTALLED TO COORDINATE ALL ZOHO INITIATIVES: THIS IS BART PETERS.

AT THE SAME TIME THE STORY OF THE POP-UP RAIN GARDEN IS BEING EMBEDDED INTO THE ROTTERDAM "DELTAS IN TIMES OF CLIMATE CHANGE" 2014 CONFERENCE, TOGETHER WITH THE WATER SQUARE IT REPRESENTS A SUCCESSFUL AGENT FOR CLIMATE PROOFING CITY DISTRICTS.

POLDERROOF, THE NEXT GENERATION OF GREEN ROOFS

ONE OF THE INITIATIVES THAT IS GETTING THE MORE 'OFFICIAL MUNICIPAL TREAT' IS THE POLDERROOF. TO EXAMINE IF THE TOP FLOOR OF THE PARKING GARAGE NEXT TO THE KATSHOEK OFFICE BUILDING IS SUITABLE FOR SUBSTANTIAL WATER STORAGE, A FEASIBILITY STUDY HAS BEEN STARTED. THE CONCEPT OF A POLDERROOF SEEMS PROMISING: COMBINING WATER STORAGE, URBAN AGRICULTURE AND A MORE PUBLIC CULTURAL USE ON ONE SPACE MEETS THE MAIN PRINCIPLES OF THE ADAPTATION STRATEGY. CLIMATE PROOFING IS ALL ABOUT ADDING VALUES TO THE SOCIAL AND PHYSICAL ENVIRONMENT, BUT IS IT ALSO ECONOMICALLY FEASIBLE? TO EXAMINE THIS EXPERTS AND STAKEHOLDERS JOINED FORCES AND SHARED THEIR EXPERTISE TO DIVE INTO THE MATTER.

THE CONCEPT OF THE POLDERROOF

THE ROOFTOP CAN HOLD A SUBSTANTIAL AMOUNT OF RAINWATER, DUE TO THE USE OF WATER STORAGE CRATES AND A LITTLE 'DIKE' THAT CREATES A BASSIN.

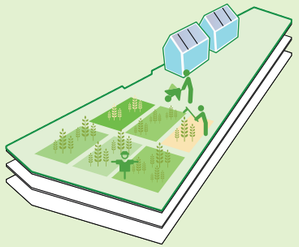
WE BUILT A POLDERROOF ON TOP OF AN OLD SCHOOL BUILDING AT THE AMSTERDAM ZUIDAS DISTRICT

IF WE NOW LOOK AGAIN AT THE ROOFTOP OF THE KATSHOEK PARKING GARAGE, IT APPEARS PRETTY UNDERUSED. THIS HUGE SPACE HARBOURS MORE POTENTIAL THAN THE LIMITED AMOUNT OF CARS THAT ARE SCATTERED AROUND HERE NOW.

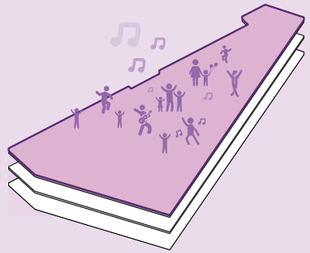
ALREADY NOW THE ROOF IS OCCASIONALLY BEING OCCUPIED BY CROWDS. ESPECIALLY IN SUMMERTIME THE ROOFTOP PROGRAMMERS OF 'DAK' BRING URBAN LIFE HERE WITH CINEMA, PARTIES AND DINNERS, TURNING THE PARKING INTO A TEMPORARY PUBLIC SPACE.

WATER STORAGE

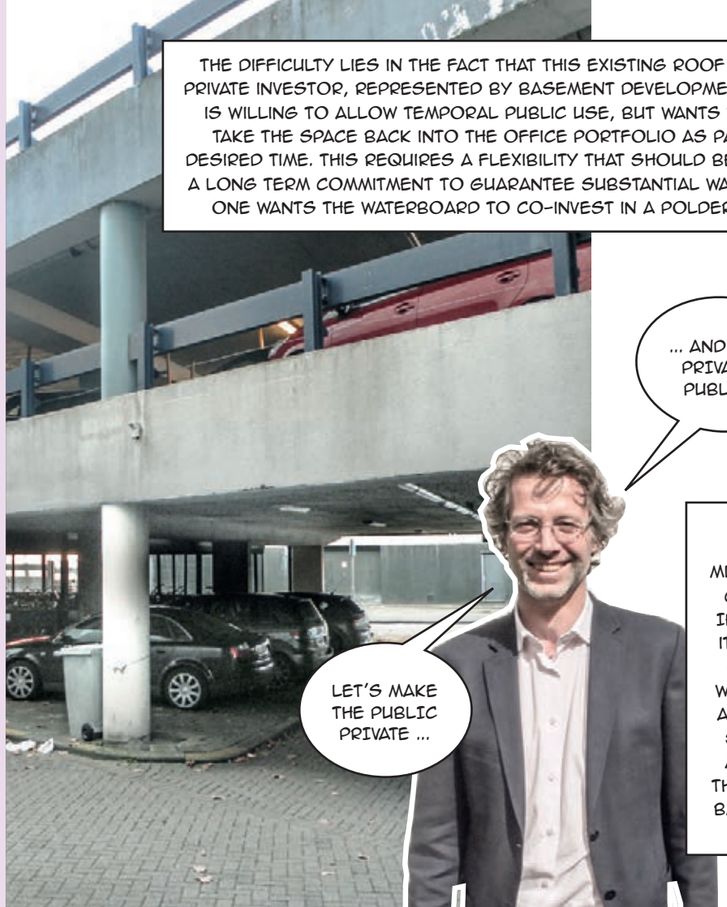
GREENING + URBAN FARMING



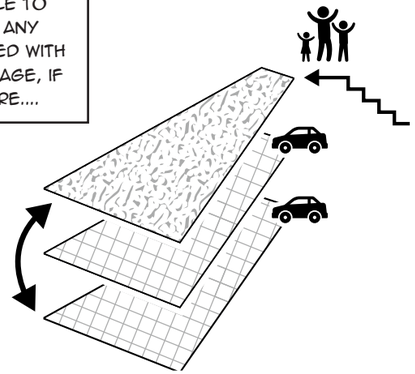
EVENT SPACE



FROM A STRUCTURAL POINT OF VIEW IT TURNS OUT THAT THE ROOF CAN HANDLE SUBSTANTIAL WATER STORAGE, OFFER EVENT SPACE AND CAN BE GREEN AT THE SAME TIME. WHEN THE PLACE IS SMARTLY ZONED, IT CAN HARBOUR ALL THESE PROGRAMS. A TEAM OF ROTTERDAM ENGINEERING BUREAU, VALORISATION PROGRAM, DE URBANISTEN, BASEMENT DEVELOPMENT AND WATERBOARD OF SCHIELAND EN KRIMPENERWAARD SHARE THIS CONCLUSION.



THE DIFFICULTY LIES IN THE FACT THAT THIS EXISTING ROOF BELONGS TO A PRIVATE INVESTOR, REPRESENTED BY BASEMENT DEVELOPMENT. THE INVESTOR IS WILLING TO ALLOW TEMPORAL PUBLIC USE, BUT WANTS TO BE ABLE TO TAKE THE SPACE BACK INTO THE OFFICE PORTFOLIO AS PARKING AT ANY DESIRED TIME. THIS REQUIRES A FLEXIBILITY THAT SHOULD BE COMBINED WITH A LONG TERM COMMITMENT TO GUARANTEE SUBSTANTIAL WATER STORAGE, IF ONE WANTS THE WATERBOARD TO CO-INVEST IN A POLDERROOF HERE....



... AND THE PRIVATE PUBLIC

LET'S MAKE THE PUBLIC PRIVATE ...

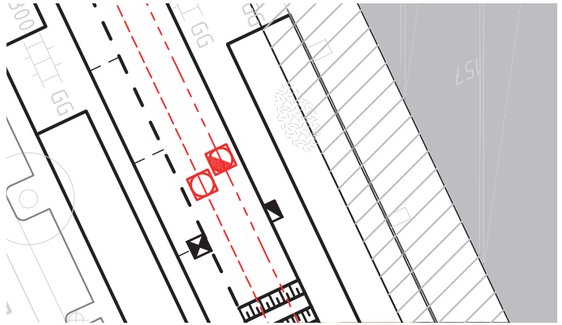
...THE TEAM DISCOVERED THOUGH, THAT THE GROUNDFLOOR OF THE PARKING BELONGS TO THE MUNICIPALITY. THIS PUBLIC GLOOMY BACK ALLEY SPACE CURRENTLY CAUSES PROBLEMS OF SOCIAL SAFETY. IF WE MANAGE TO TAKE THE KATSHOEK BUILDING AND ITS PARKING OUT OF THE SEWAGE SYSTEM BY TAKING CARE OF ITS OWN WATER STORAGE, THEN A STORM WATER SEWAGE WILL NOT BE NEEDED ANY MORE HERE AND ALSO PUBLIC ACCESS COULD BE TERMINATED. AT SUCH A MOMENT A PUBLIC-PRIVATE SWAP COULD BE ARRANGED: GROUND LEVEL WILL BE PRIVATISED AND THE ROOF WILL BECOME PUBLICLY OWNED. CURRENTLY BART IS WORKING OUT HIS FAIRLY BRILLIANT IDEA INTO AN AGREEMENT.

KATSHOEK RAIN(A)WAY GARDEN

THIS IS FIEN DEKKER, PUBLIC SPACE DESIGNER AND PRODUCT DEVELOPER. FIEN HAS INVENTED THE RAIN(A)WAY TILE. A TILE THAT COLLECTS WATER AND MAKES THE WATER SLOWLY DRAIN INTO THE GROUND. THE TILE ALSO LOOKS GOOD. SHE IS LOOKING FOR A PLACE TO TEST IT IN REAL LIFE.

DIRK READS AN ARTICLE ABOUT FIENS RAIN(A)WAY TILE AND HE LIKES HER IDEA. HE SEES AN OPPORTUNITY TO TEST OUT THE RAIN(A)WAY TILE IN FRONT OF THE 'KATSHOEK' BUILDING WHERE DE URBANISTEN PROPOSED TO DEPAVE THE SITE AND CREATE A FRONT GARDEN. DIRK CONTACTS FIEN AND BRINGS HER INTO THE ZOHO-AREA. HE ALSO BRINGS HER INTO CONTACT WITH BASEMENT DEVELOPMENT, THE MUNICIPALITY AND VP DELTA WHO FEEL LIKE SPONSORING THIS INNOVATION.

THIS OPPORTUNITY IS CREATED BY THE IMPLEMENTATION OF A SPLIT SEWAGE SYSTEM WHICH CREATES THE CHANCE TO RECONSIDER THE ORGANISATION OF PUBLIC SPACE HERE...



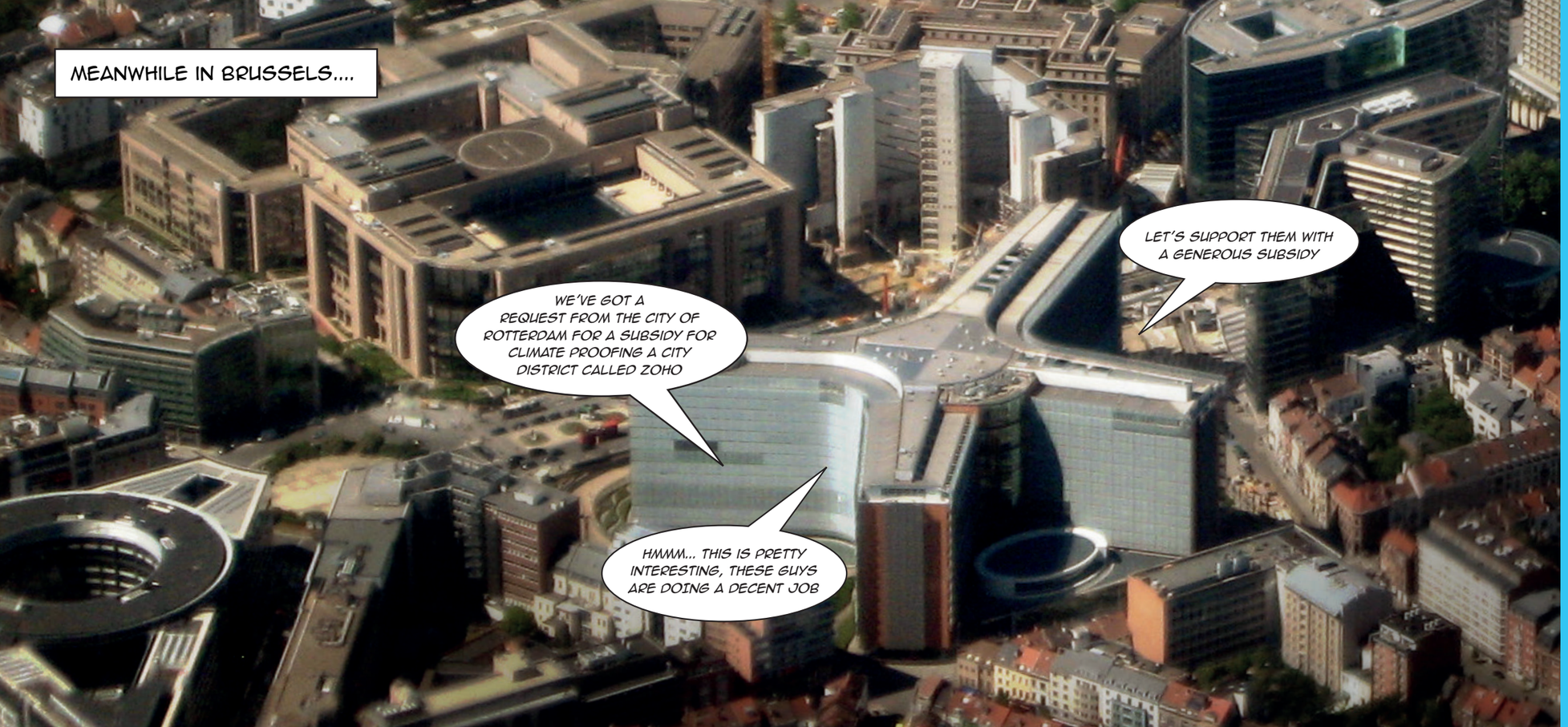
AS CONSTRUCTION WORKS ARE IN PROGRESS ...

VP DELTA DECIDES TO SUPPORT THE IDEA AND WILL FINANCE PRODUCTION OF THE RAIN(A)WAY TILES.

... FIEN DEVELOPS HER RAIN(A)WAY TILE IN COOPERATION WITH THE COMPANY THYSSEN-DEN BROK. THEY TEST DIFFERENT COLOURS AND MATERIAL COMPOSITIONS

NEXT DE URBANISTEN MAKE A DESIGN PROPOSAL FOR THE FRONT GARDEN OF KATSHOEK, IN WHICH THE RAIN(A)WAY IS INTEGRATED IN ITS COMPOSITION.

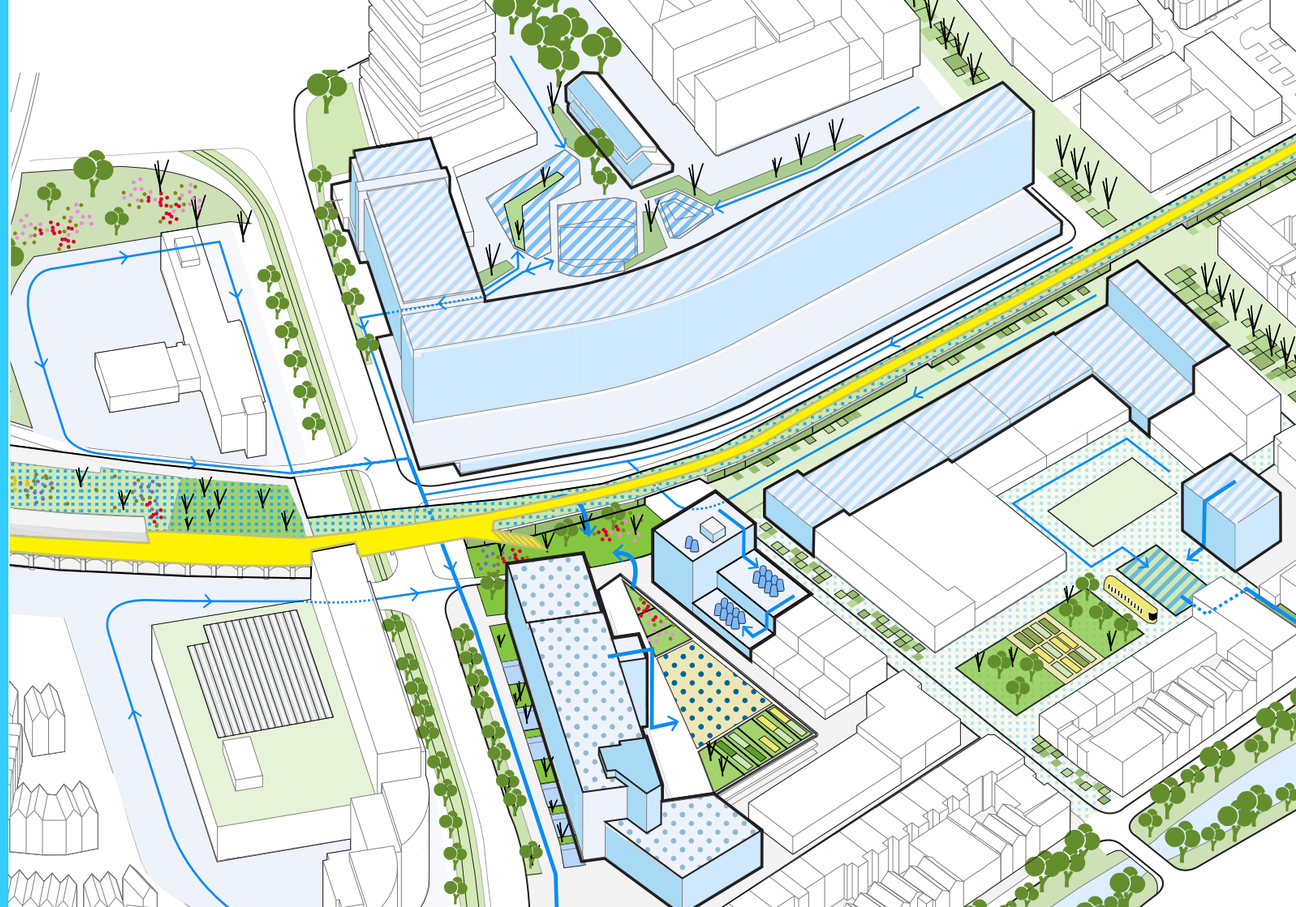
MICHON VAN DER SALM, BASEMENT DEVELOPMENT



ALL OUR YEARS' WORK OF CLIMATE PROOFING ZOHO HAS BEEN REWARDED!

THE MUNICIPALITY OF ROTTERDAM RECEIVES A LIFE+ SUBSIDY FOR REALISATION AND FURTHER DEVELOPMENT OF THE ZOHO-DISTRICT....

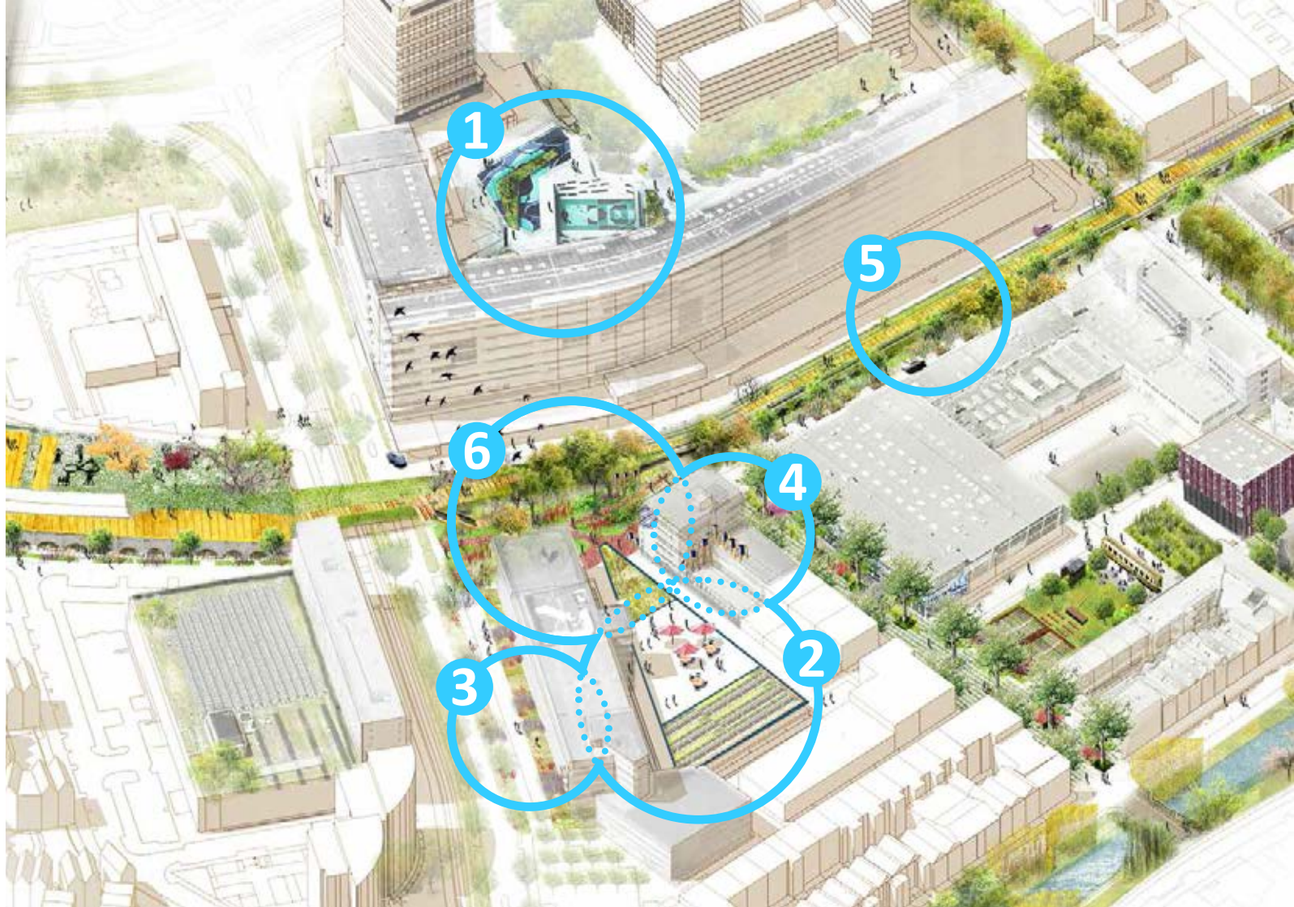
WORKS



Work in progress

Climateproofing ZOHO is not only a process, it's also a work in progress. it's time to show the results that have been accomplished so far. We distinguish six projects in the area. They vary largely in size, impact and spatial appearance. But all of them effectively aim at climate proofing the district by offering a certain amount of storm water storage, reducing heat stress and fighting drought by restoring ground water balance. All of the projects also include stakeholder involvement, for example by user participation; by multiple initiators; by using multiple financial sources; by sharing responsibilities in maintenance or a combination of the previous. Some of the works can already be visited and enjoyed or will be realized very soon. Other works still need some extra time and effort to be developed and realized. Climate proofing ZOHO is a work in progress.

1. BENTHEMPLEIN WATER SQUARE
2. POLDER ROOF
3. KATSHOEK RAIN(A)WAY GARDEN
4. ZOHO-RAINBARREL
5. GREENING HOFBOGEN
6. ZOHO-RAINGARDEN

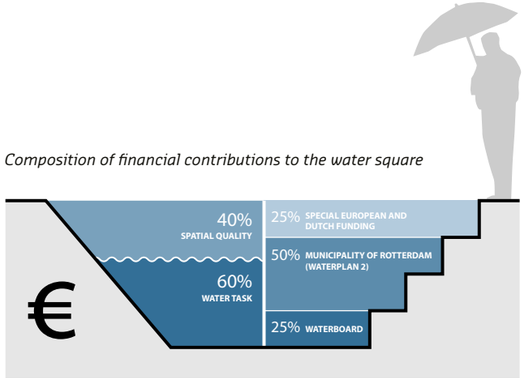


BENTHEMPLEIN WATERSQUARE

The water square combines temporal water storage with the improvement of the quality of urban public space. The water square can be understood as a twofold strategy. It makes money invested in water storage facilities visible and enjoyable. It also generates opportunities to create environmental quality and identity to central spaces in neighbourhoods. Most of the time the water square will be dry and in use as a recreational space.

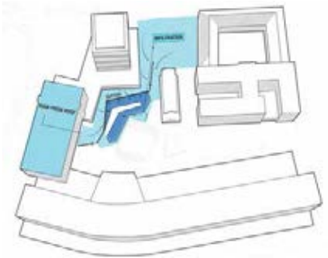
Year	2011-2014
Client	City of Rotterdam: Rotterdam Climate Initiative Waterboard Schieland & Krimpenerwaard
Design	De Urbanisten
Status	Realized
Collaborators	Rotterdam Engineering Bureau
Project management	Rotterdam Project Management Bureau
Construction supervision	Rotterdam Engineering Bureau
Construction works	Wallaard
Costs	4 million euros
Surface area	9.500 m2 (incl. street and parking) square: 5.500 m2
Storage capacity	1.800 m3
DE URBANISTEN	Initiative, concept, design, workshops, supervision

Composition of financial contributions to the water square

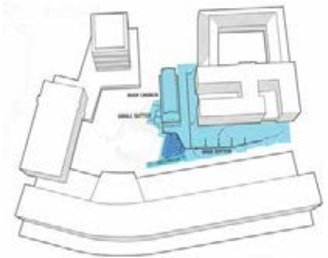


View on the central basin of the watersquare
photo pallesh + azarfane

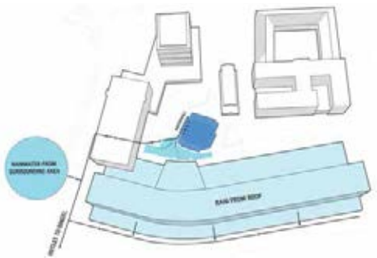
The functional set up of the water square in three storm water catchment basins



Catchment area of basin 1

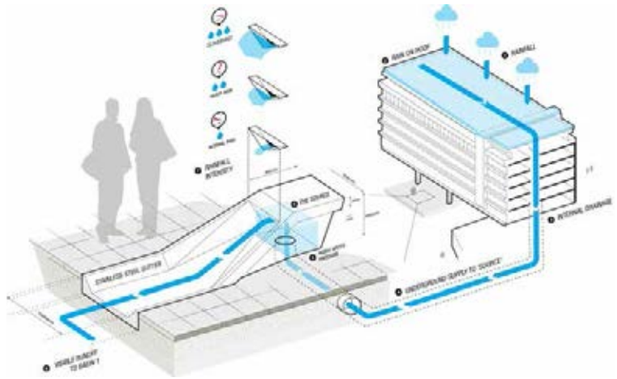


Catchment area of basin 2



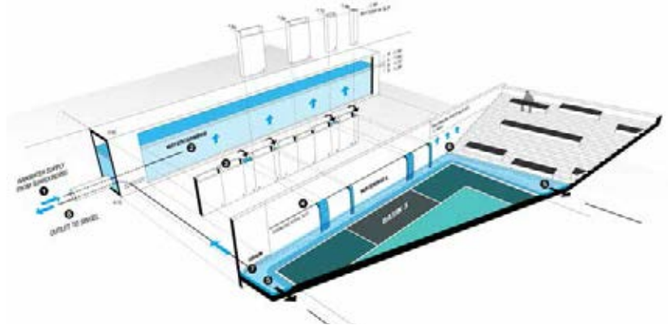
Catchment area of basin 3

Overview of the complete watersquare and its three temporal storage basins
photo pallesh + azarfane



The "rain well" releases the water from the adjacent roof into a wide stainless steel gutter

Functional storm water inlets are designed as special features



The "water wall" releases the water from further surroundings into the central basin

The central basin after a serious cloudburst in August 2014

photo: Jeroen Musch


early spring


late spring

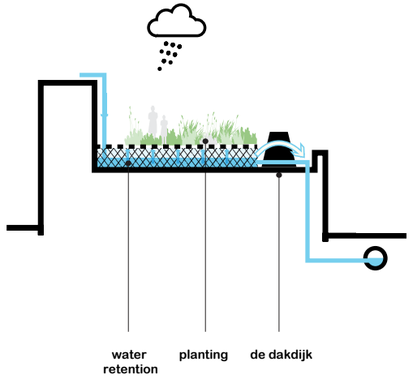

summer


autumn

POLDER ROOF

The Polderroof project proposes the transformation of the roof of the 'Katshoek' parking garage into an attractive green roof that stores and reuses rainwater from the nearby buildings in a controlled way. The Polderroof takes the rainwater out of the sewage system and into the ZOHO-raingarden to infiltrate. It also is a collective place for urban agriculture, everyday recreation and small outdoor events. By doing this, the Polderroof adds new social, economic, environmental and ecological values to the ZOHO district.

Year	2014-ongoing
Client	City of Rotterdam
Status	Feasibility study
Collaborators	Basement bv Valorisation program Deltatechnology & Water Dakdokters
Costs	412.000 euros (estimated)
Catchment area	5.570 m2
Storage capacity	365 m3
DE URBANISTEN	Initiative, research & design



Gemeente Rotterdam

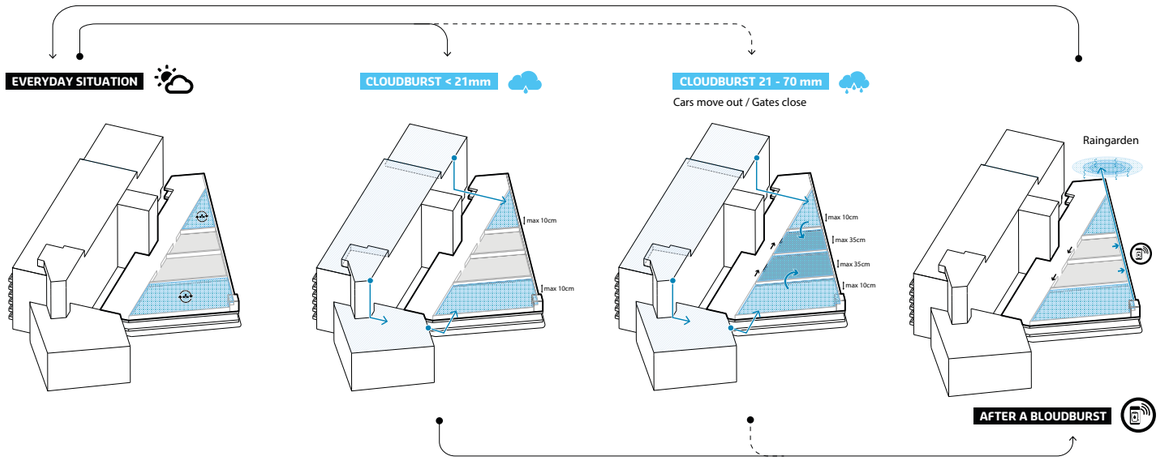
VALORISATIEPROGRAMMA DELTATECHNOLOGIE & WATER

De Dakdokters
wij maken de stad gezond

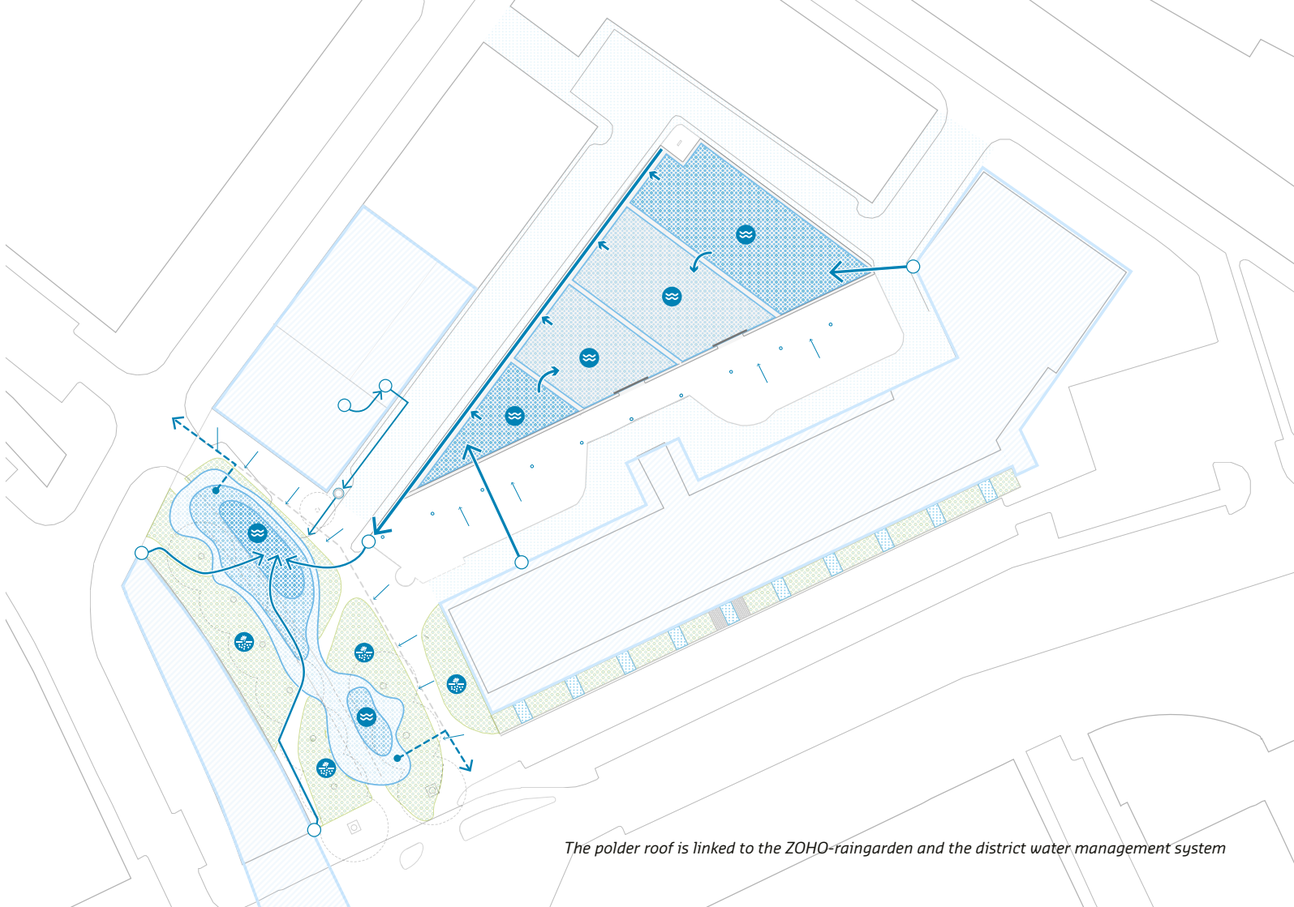
basement

DE URBANISTEN

Polderroof Plan; the roof is both an attractive community space for ZOHO and an innovative storm water storage facility.



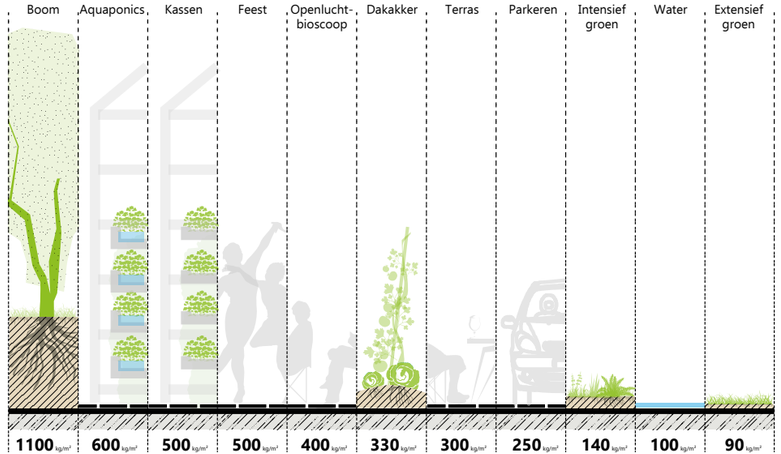
The polder roof water management sequence. It can handle stormwater storage and reuse in a controlled way by using smart applications

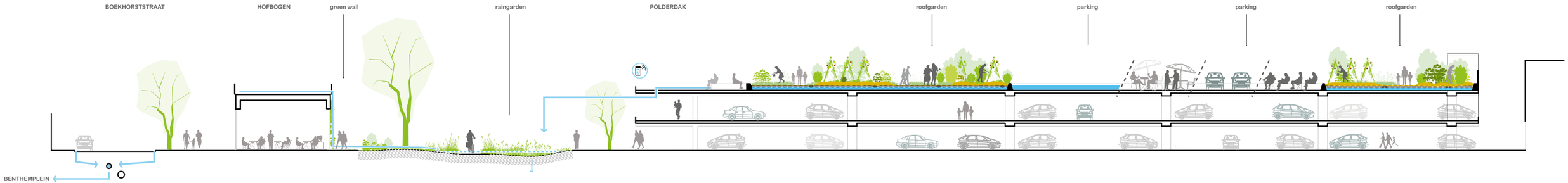


The polder roof is linked to the ZOHO-raingarden and the district water management system

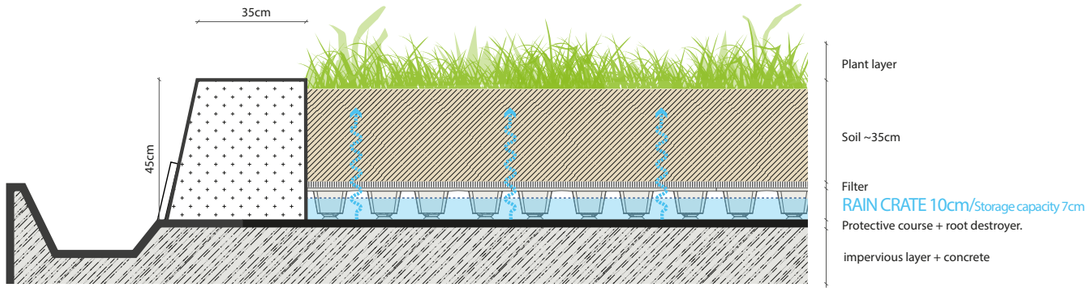
A first polder roof has been realized in Amsterdam (designed by Dakdokters)

The range of activities that can be hosted on a roof related to the necessary construction conditions

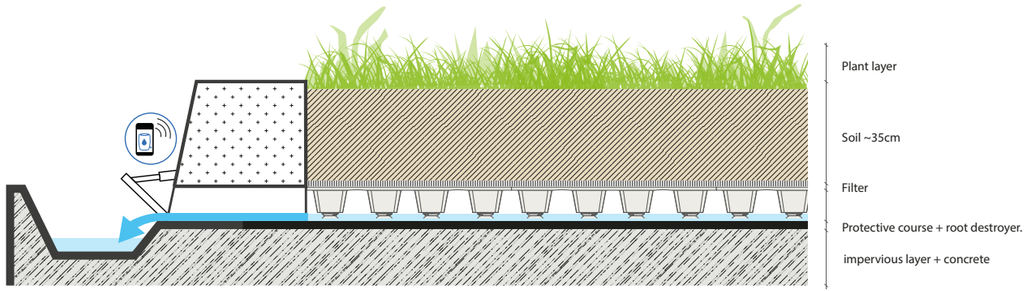




Section of the polder roof and raingarden



Stored rainwater can be used to water the roof gardens



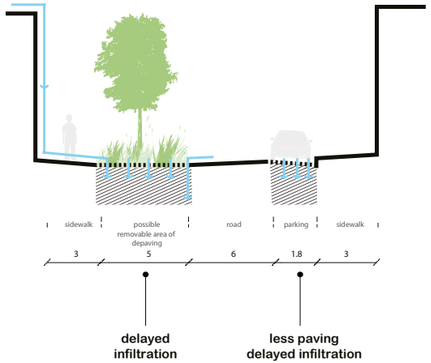
With a smart-app, the water capacity in the system can be controlled to create storage space when extreme weather events are expected

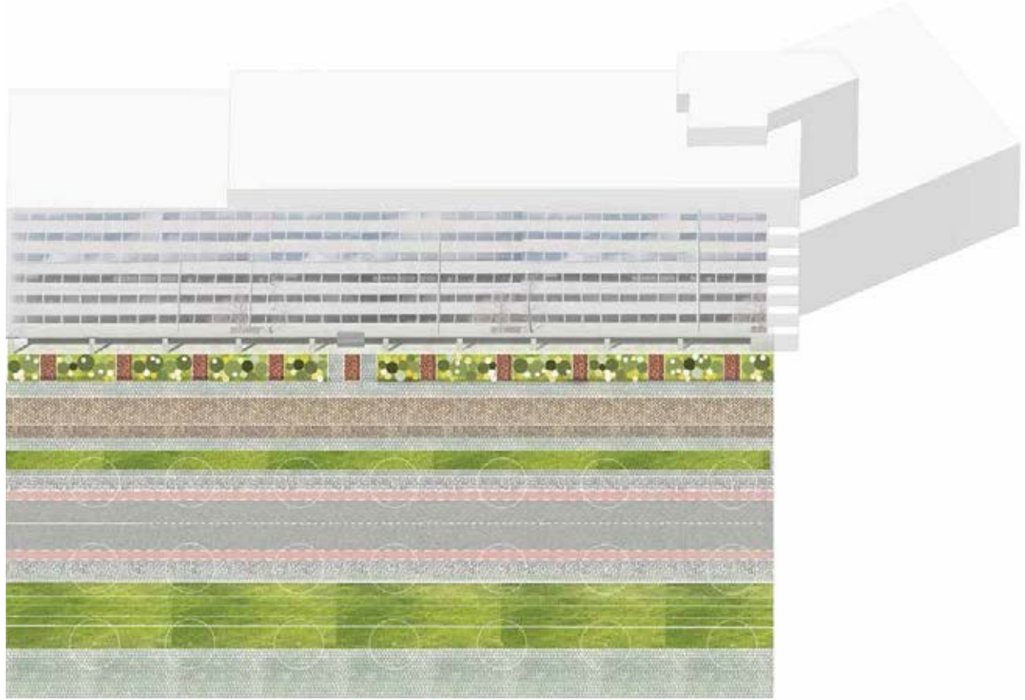
The polder roof is part of the larger district water management system. In front the smart app to control the waterlevels on the polderroof.

KATSHOEK RAIN(A)WAY GARDEN

Depaving and greening the ZOHO district takes shape in front of the 'Katshoek' building, where the Rain(a)way Garden is part of a new streetprofile in which the abundance of hard surface is being decreased. In the context of a colourful linear garden, innovative Rain(a)way tiles by designer Fien Dekker will be integrated and tested. Together they form a luxuriant frontgarden for the Katshoek building.

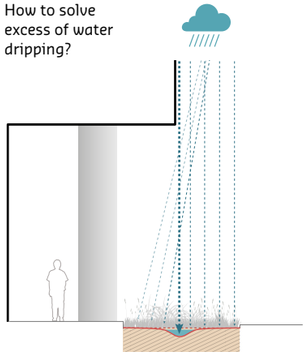
Year	2014-ongoing
Client	City of Rotterdam Basement BV Valorisation Program Delta Technology & Water Waterboard Schieland & Krimpenerwaard
Status	Final design (approved)
Collaborators	Fien Dekker (Rain(a)way tile) Binder groenprojecten Thijssen - den Brok beton Rotterdan Engineering Bureau
Surface area	400 m2
Costs	15.000 euro (excluding street reprofiling)
DE URBANISTEN	Supervision, landscape design



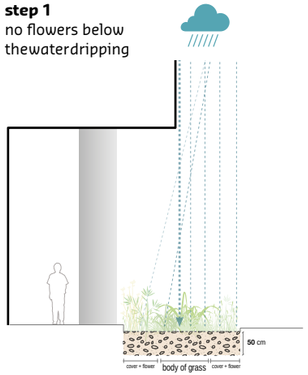


The linear setup of the Katshoek Rain(a)way Garden

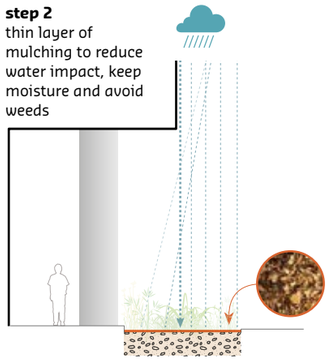
How to solve excess of water dripping?



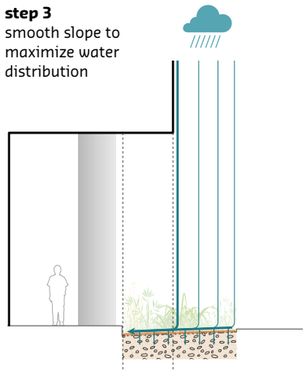
step 1
no flowers below thewaterdripping



step 2
thin layer of mulching to reduce water impact, keep moisture and avoid weeds



step 3
smooth slope to maximize water distribution



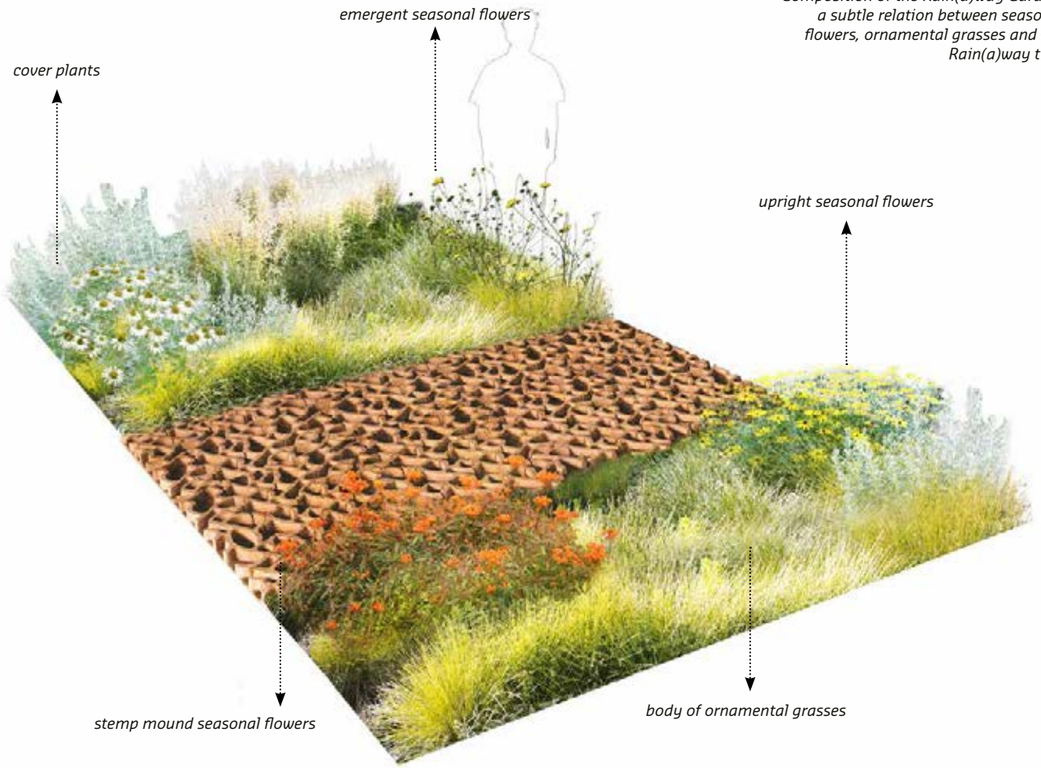
50% Ornamental grasses

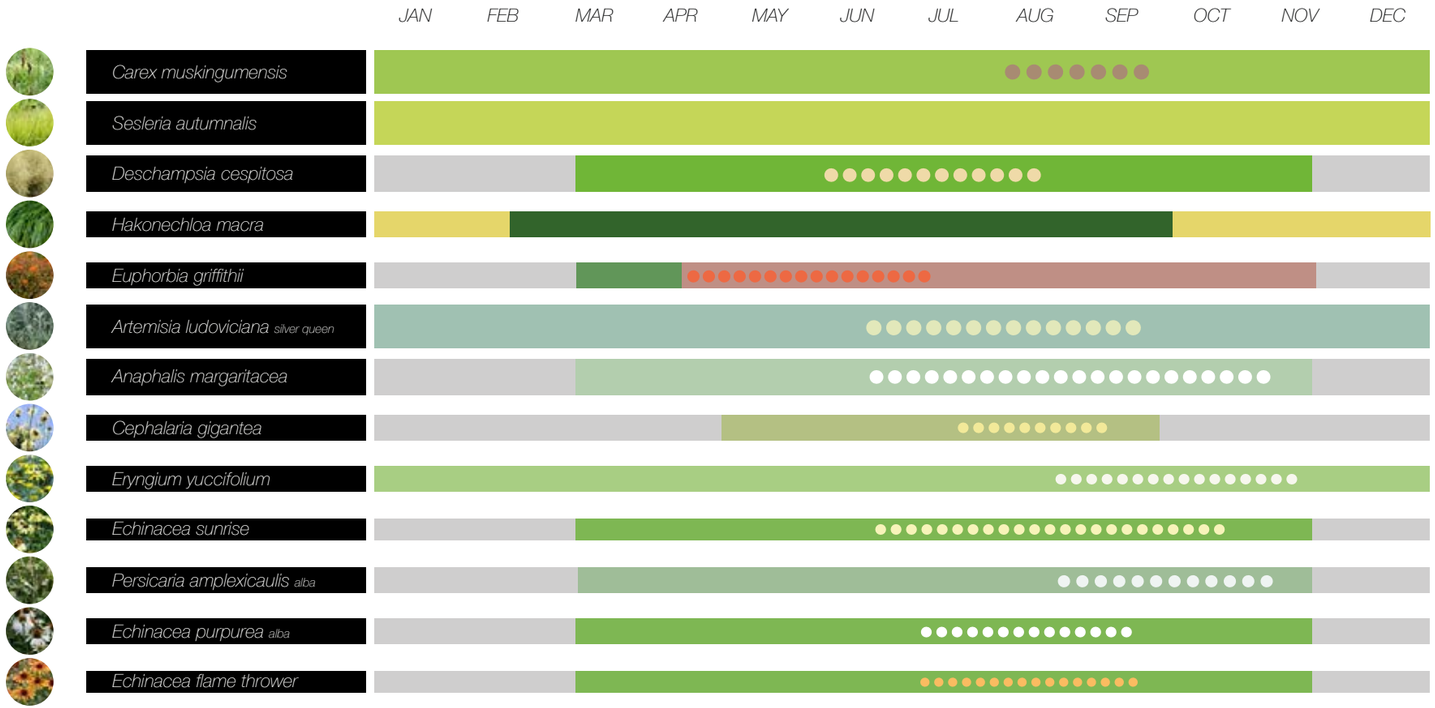
24% Flowers

26% Groundcover plants

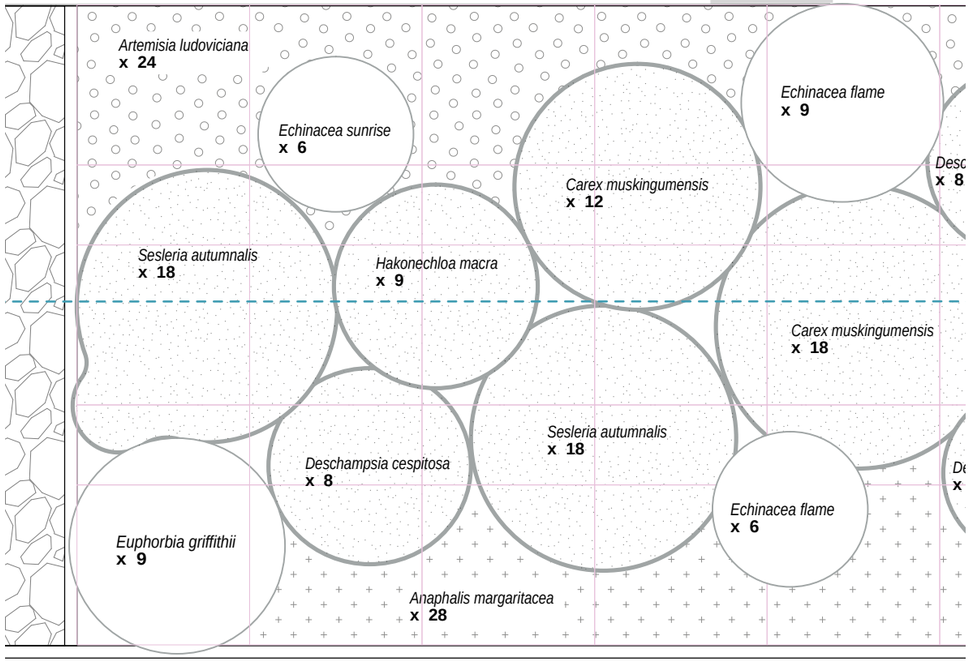
Overall planting scheme of the Rain(a)way Garden

Composition of the Rain(a)way Garden: a subtle relation between seasonal flowers, ornamental grasses and the Rain(a)way tiles





Calendar of flowering and seasonal coloring of the garden

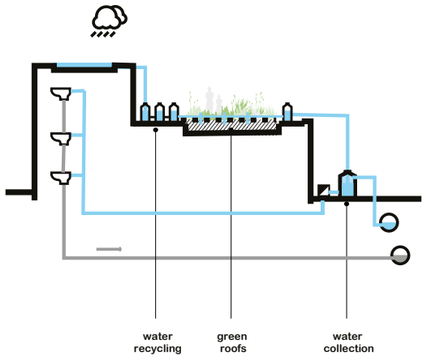


Detail of the planting scheme

ZOHO-RAINBARREL

The ZOHO-rainbarrel is a participative water storage system. It is designed to be an icon for ZOHO and a smart solution for rain water reuse and storage at the same time. The ZOHO rainbarrel will be produced in the district by local businesses. It creates awareness and a shared community feeling with the users. The system also will be used in educational programs on climate adaptation at schools. A smart control device - (B)Rainbarrel - makes it possible to control storage capacity within the system.

Year	2014-ongoing
Client	RVO
Initiative	Rien Hilhorst, Studio Bas Sala
Status	Feasibility study
Design	Studio Bas Sala TU Delft / PJ van Overloop
DE URBANISTEN	Start-up support



Rijksdienst voor Ondernemend Nederland

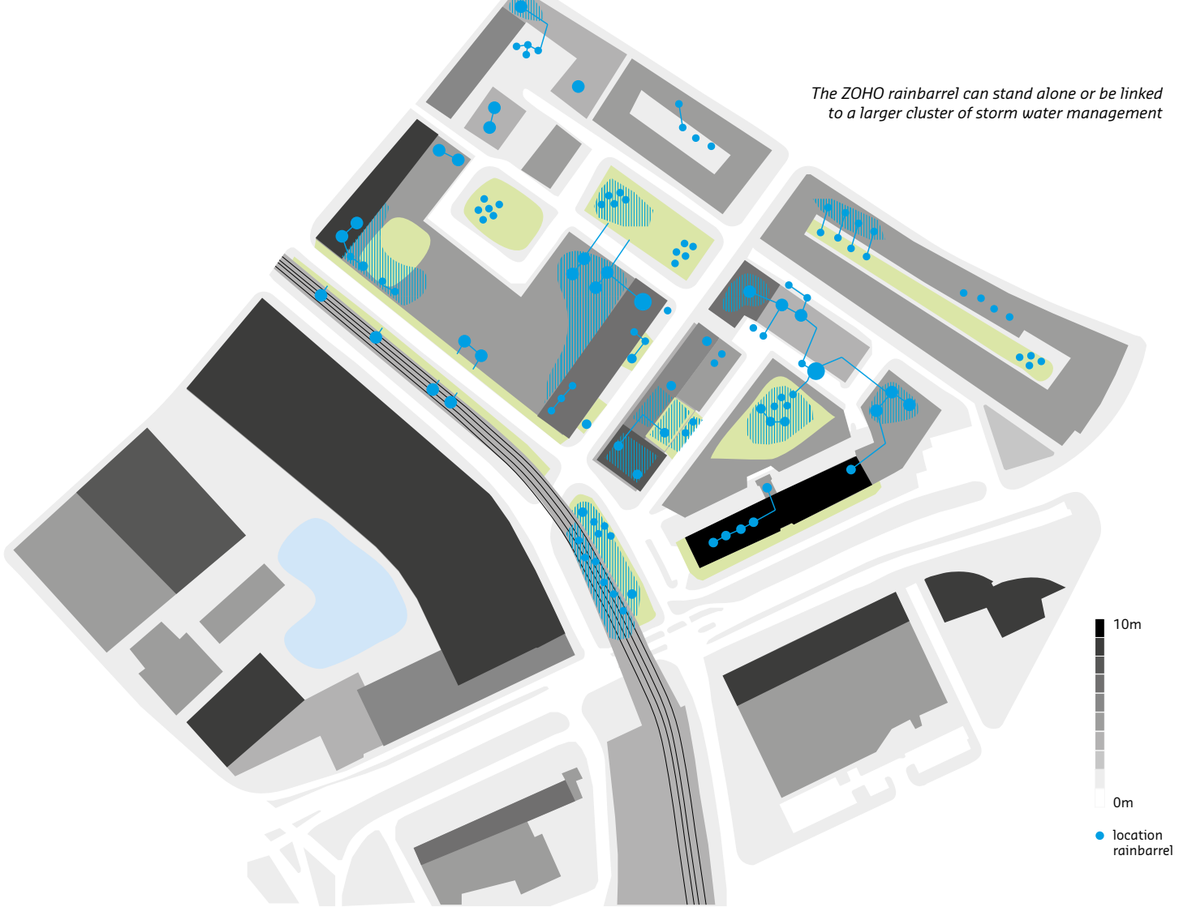
TU Delft

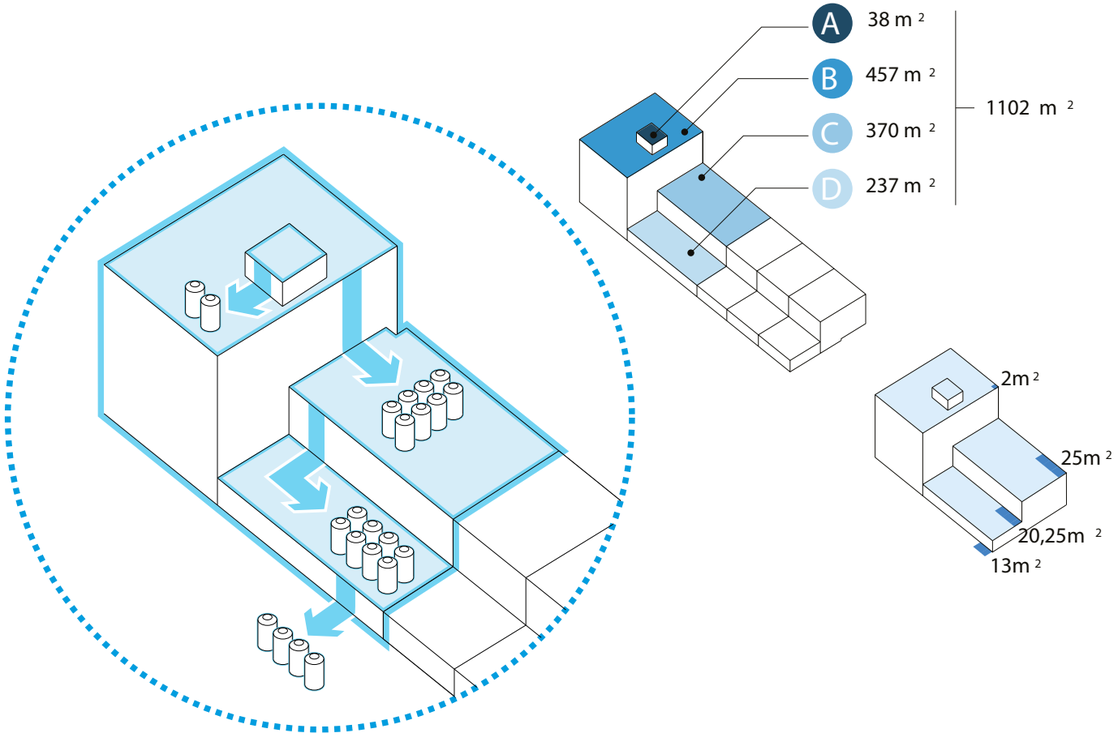
SPIN STADSONTWIKKELAARS

STUDIO BAS SALA

DE URBANISTEN

The ZOHO rainbarrel can stand alone or be linked to a larger cluster of storm water management





Calculation exercise on clustering the ZOHO-Rainbarrel on and around the Yellow Building/ het Gele Gebouw (by De Urbanisten)

How many toilets can I flush with harvested rainwater?

AVERAGE ANNUAL RAINFALL IN ROTTERDAM : 800 mm

1102 m² x 800mm ---------- **881600 litres / year**

---

x 1 = 6 litres ---------- (881600 litres / year) / 6 litres = 146900 toilets / year

1 year = 250 working days ---- (146900 toilets / year) / 250 working days = **587 toilets / day**

---

x 1 = 5 flushes / day ----- (587 toilets / day) / 5 = **117 workers**

117 people can work in the building using only harvested rainwater to flush their toilets

How many rainwater barrels do I need to catch as much rainwater as possible?

STORAGE CAPACITY WITH A CLOUDBURST OF 55 mm

1102 m² x 55mm ---------- 60610 litres

x 1 = 250 litres ---------- 60610 litres / 250 litres = 242 rainwater barrels

x 1 = 0,25 m² ---------- 242 rainwater barrels X 0,25 m² = 60,5 m ² occupied surface

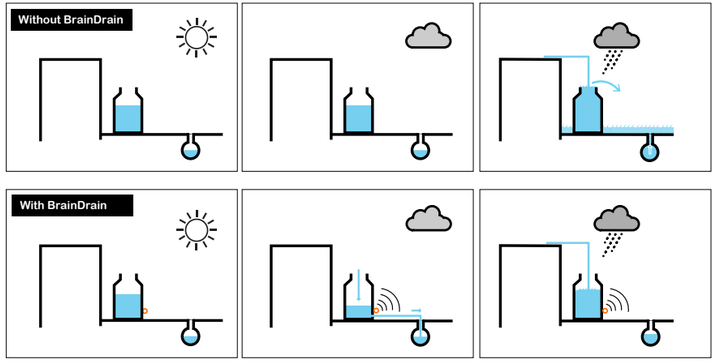
---

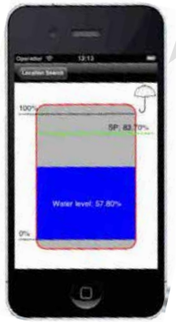
A
38m² x 55mm ---------- 2090 litres
2090 litres / 250 litres ---------- 8 rainwater barrels
8 rainwater barrels x 0,25 m² ---- 2 m ² occupied surface on rooftop B

B
457m² x 55mm ---------- 25135 litres
25135 litres / 250 litres ---------- 100 rainwater barrels
100 rainwater barrels x 0,25 m² - 25 m ² occupied surface on rooftop C

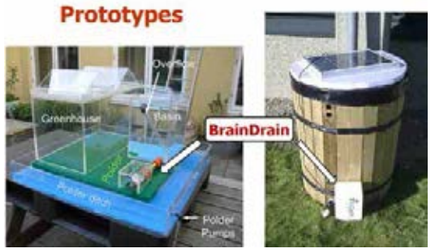
C
370m² x 55mm ---------- 20350 litres
20350 litres / 250 litres ---------- 81 rainwater barrels
81 rainwater barrels x 0,25 m² -- 20,25 m ² occupied surface on rooftop D

D
237m² x 55mm ---------- 13035 litres
13035 litres / 250 litres ---------- 53 rainwater butts
53 rainwater barrels x 0,25 m² -- 13 m ² occupied surface on street





Brain Drain is a smart app to predict the water storage capacity needs



a scale model of greenhouse and waterreservoir

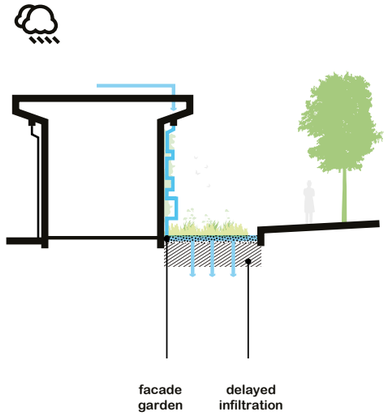
The BrainDrain on a rainbutt

Studio Bas Sala developed 3 different prototypes to fit the requirements

GREENING HOFBOGEN

Greening Hofbogen aims at climate proofing the monumental structure of the 'Hofpleinlijn'. While waiting for a long term vision, the Hofbogen are approached from a bottom up perspective, starting at street level. Analyses show, that there is a potential for a substantial greening of the facades and sidewalks. Rain water from the roof is used for irrigation purposes and local infiltration. Moreover, Greening the Hofbogen is about placemaking. Illustrative in this is the Post-Office (SCHOP) project. The intervention on their 'Hofboog' facade addresses issues like restoring urban ecosystems, edible growth, rainwater reuse and public urban furniture.

Year	2014-ongoing
Client	City of Rotterdam
Design	DE URBANISTEN Post-Office (SCHOP)
Status	Study and test-site
Collaborators	Post-Office 7 seasons Hofbogen BV
Costs test site	700 euro (material costs)
DE URBANISTEN	Research by design, support of test-site



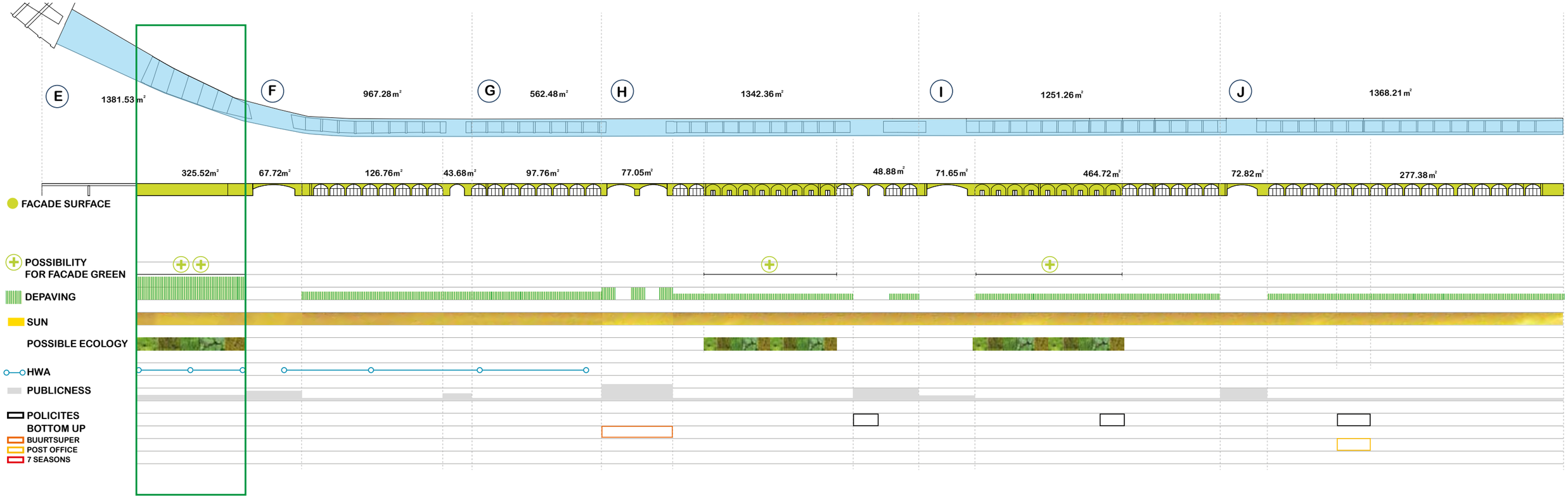
Gemeente Rotterdam

HOFBOGEN

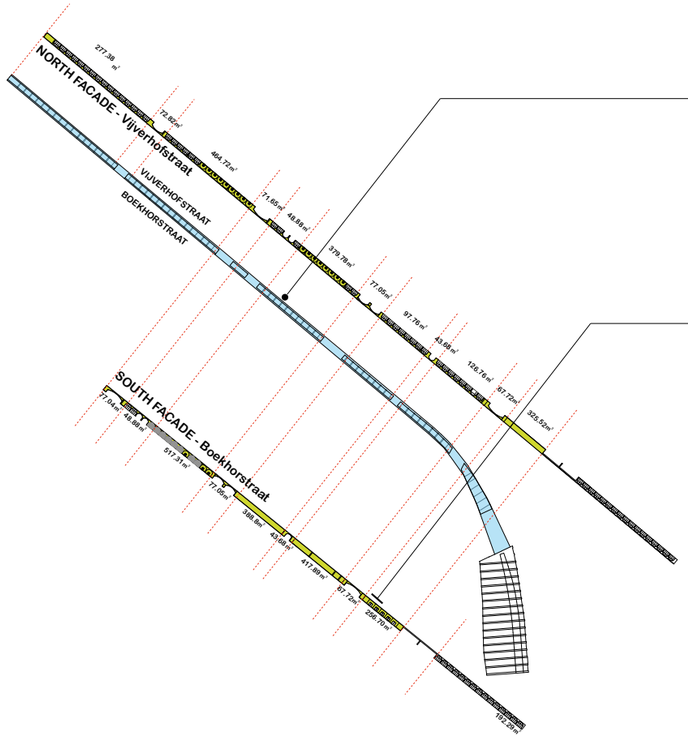
7SEASONS

DE URBANISTEN

Current situation of the 'Hofbogen'



Analysis of present conditions and future potential of the Hofbogen north facade



TOTAL ROOF SURFACE

6833.36 m²

average annual rainfall in Rotterdam : 800mm

6833 m² x 800mm ------- 5466400 liters / year

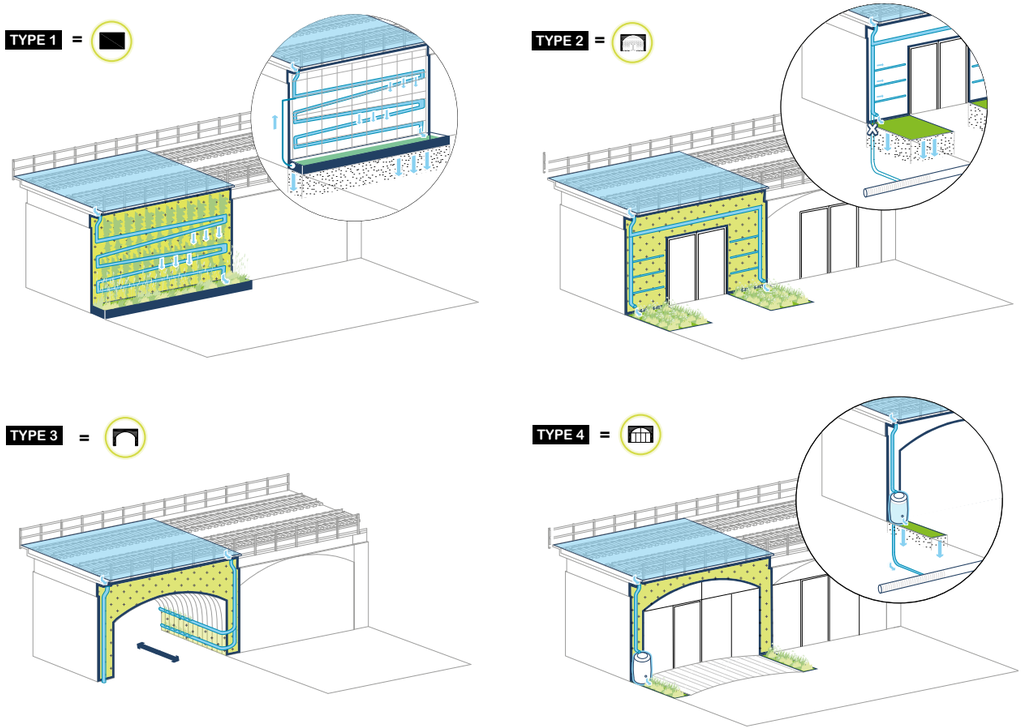
TOTAL FACADE SURFACE

3880.61 m²

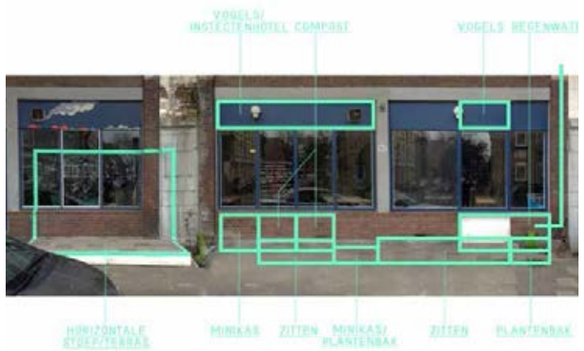
FACADE TYPOLOGY

	①	②	③	④
NORTH	325.52	357.36	795.06	729.13
SOUTH	1195.33	289.93	216.73	385.37

Hofbogen facts and most suitable sections to apply facade greening



Facade greening typologies including options for storm water reuse



The Post-Office 'SCHOP'-inititative results in a built prototype

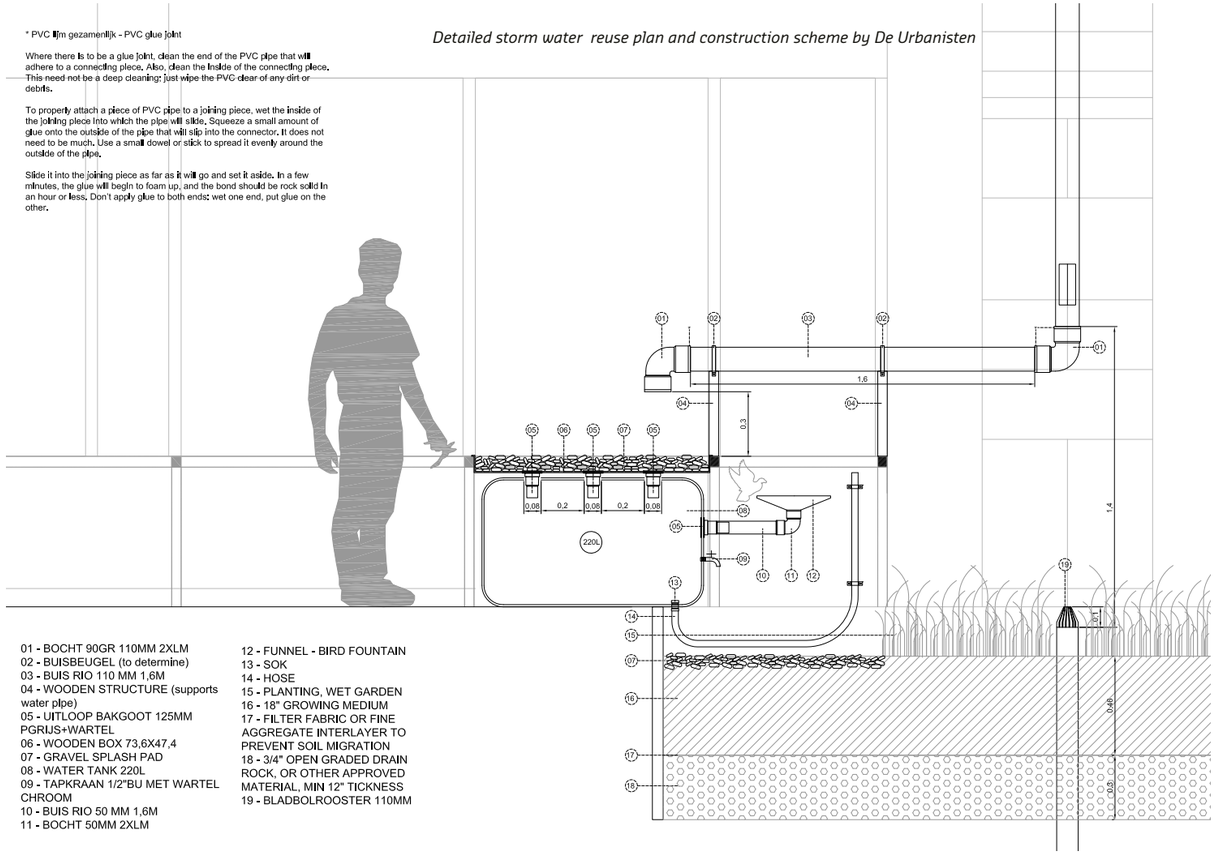
Detailed storm water reuse plan and construction scheme by De Urbanisten

* PVC lijm gezamenlijk - PVC glue joint

Where there is to be a glue joint, clean the end of the PVC pipe that will adhere to a connecting piece. Also, clean the inside of the connecting piece. This need not be a deep cleaning: just wipe the PVC clear of any dirt or debris.

To properly attach a piece of PVC pipe to a joining piece, wet the inside of the joining piece into which the pipe will slide. Squeeze a small amount of glue onto the outside of the pipe that will slip into the connector. It does not need to be much. Use a small dowel or stick to spread it evenly around the outside of the pipe.

Slide it into the joining piece as far as it will go and set it aside. In a few minutes, the glue will begin to foam up, and the bond should be rock solid in an hour or less. Don't apply glue to both ends: wet one end, put glue on the other.

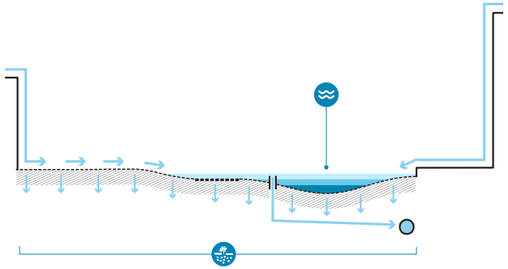


01 - BOCHT 90GR 110MM 2XLM
02 - BUISBEUGEL (to determine)
03 - BUIS RIO 110 MM 1,6M
04 - WOODEN STRUCTURE (supports water pipe)
05 - UITLOOP BAKGOOT 125MM PGRIJS+WARTEL
06 - WOODEN BOX 73,6X47,4
07 - GRAVEL SPLASH PAD
08 - WATER TANK 220L
09 - TAPKRAAN 1/2"BU MET WARTEL CHROOM
10 - BUIS RIO 50 MM 1,6M
11 - BOCHT 50MM 2XLM
12 - FUNNEL - BIRD FOUNTAIN
13 - SOK
14 - HOSE
15 - PLANTING, WET GARDEN
16 - 18" GROWING MEDIUM
17 - FILTER FABRIC OR FINE AGGREGATE INTERLAYER TO PREVENT SOIL MIGRATION
18 - 3/4" OPEN GRADED DRAIN ROCK, OR OTHER APPROVED MATERIAL, MIN 12" TICKNESS
19 - BLADBOLROOSTER 110MM

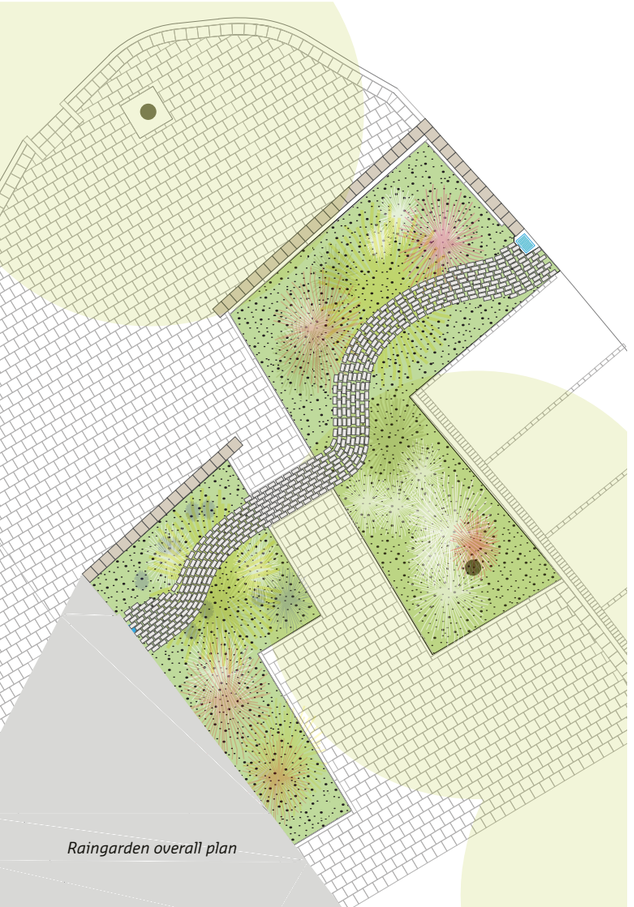
ZOHO-RAINGARDEN (1ST PHASE)

The small pop-up ZOHO raingarden illustrates the potential of climate proofing ZOHO. Two parking lots and a large part of the wide sidewalk are turned into a small but sumptuous garden in only two days. The garden is planted with a rich variety of plants that can handle the condition of dry and wet. The facade of Hofbogen is planted with creepers. Left over tiles are reused to make clear edges around the garden and for a storm water gully that meanders through the garden. The raingarden is maintained by the NAS.

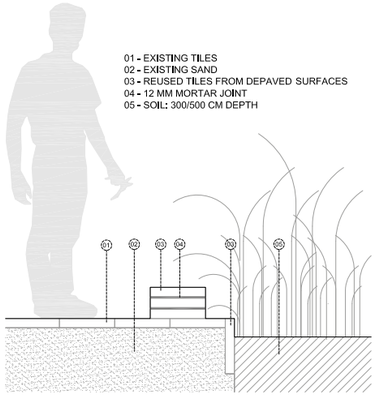
Year	2014
Client	Initiative by De Urbanisten
Design	De Urbanisten
Status	Realized
Collaborators	Van Dijk Maasland GreenSand Municipal Nursery of Rotterdam
Maintenance	NAS (Nico Adriaans Stichting)
Surface area	100 m2
Costs	0 euro
DE URBANISTEN	Initiative, landscape design, planting, construction supervision

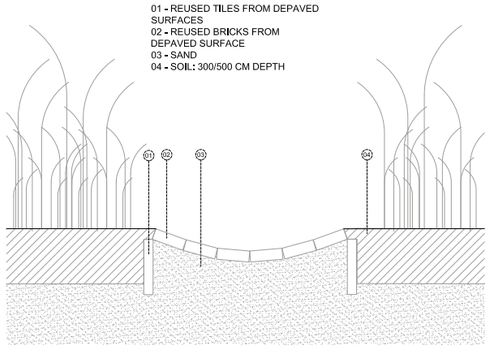


The pop-up ZOHO raingarden in summer 2014

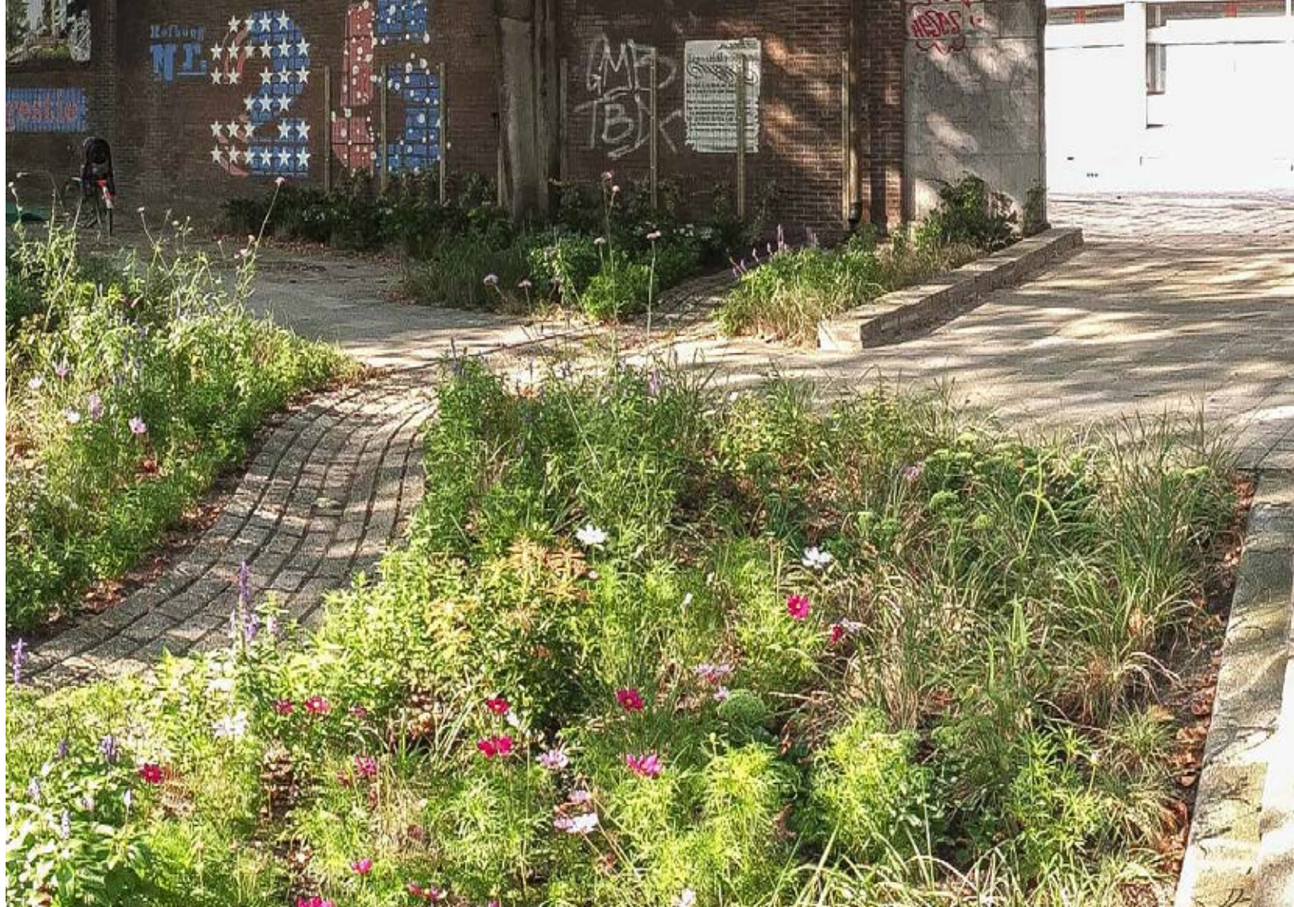


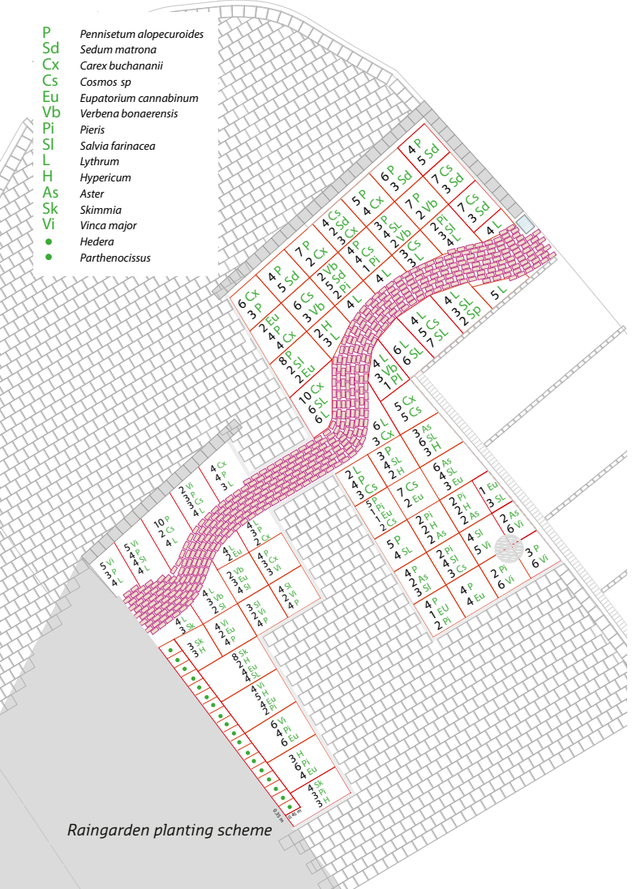
Raingarden overall plan





Raingarden construction drawings





Raingarden planting scheme

Salvia farinacea
50 cm

Sedum herbstfreude
60 cm

Cosmos bipinnatus
75 cm

Verbena bonariensis
150 cm

Vinca major
30 cm

Skimmia japonica
100 cm

Eupatorium cannabinum
100 cm

Hedera helix

Pieris japonicum
80 cm

Pennisetum alopecuroides
50 cm

Lythrum salicaria
100 cm

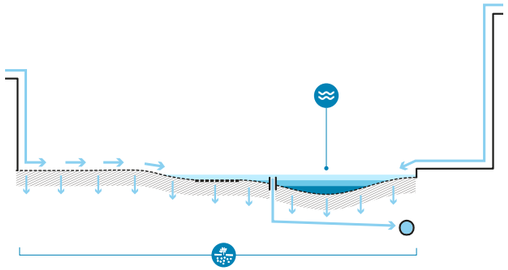
Hypericum hidcote
90 cm

Applied raingarden plant-species, adapted to their cost-free availabilty at the Municipal Nursery

ZOHO-RAINGARDEN (2ND PHASE)

The ZOHO-Raingarden turns an abundance of hard surface and underused parking spaces at the entry of the ZOHO district into a attractive welcome garden. A smart reorganisation of flows takes the cars out of the area and gives full access to cyclists and pedestrians. Moreover, the raingarden also provides ZOHO with an attractive small park to lunch, linger and enjoy. The raingarden collects rainwater from nearby buildings and public spaces (Katshoek/Hofbogen). The micro topografy of the park guides rain water to the deepest places to slowly infiltrate. A rich variety of plants is tuned into the specific dry-wet conditions.

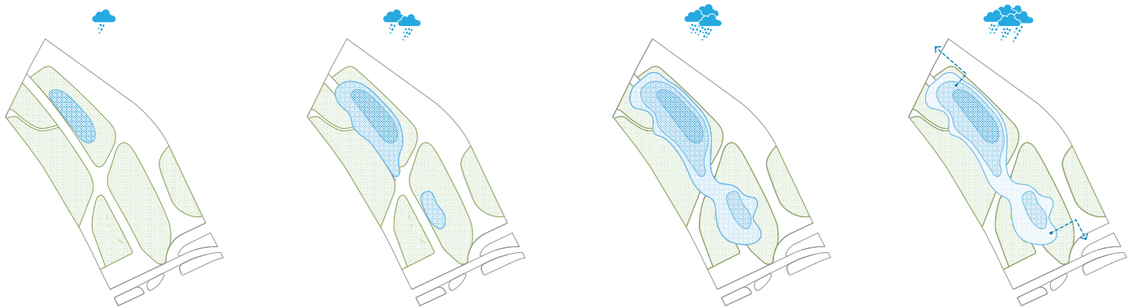
Year	2014-ongoing
Client	City of Rotterdam
Design	De Urbanisten
Status	Approved plan
Maintenance	NAS
Surface area	2.590 m2
Costs	200.000 - 250.000 euro (estimated)
DE URBANISTEN	Initiative, urban and landscape design, supervision



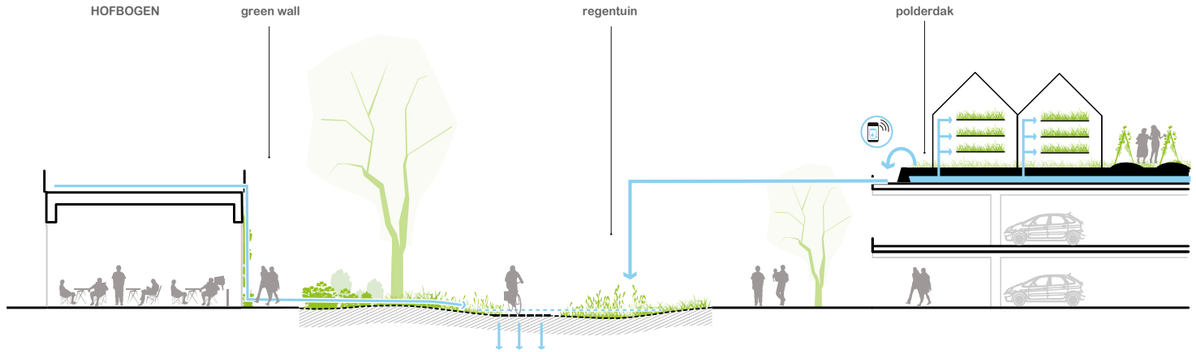
Gemeente Rotterdam DE URBANISTEN

Impression of the ZOHO Raingarden during a cloudburst

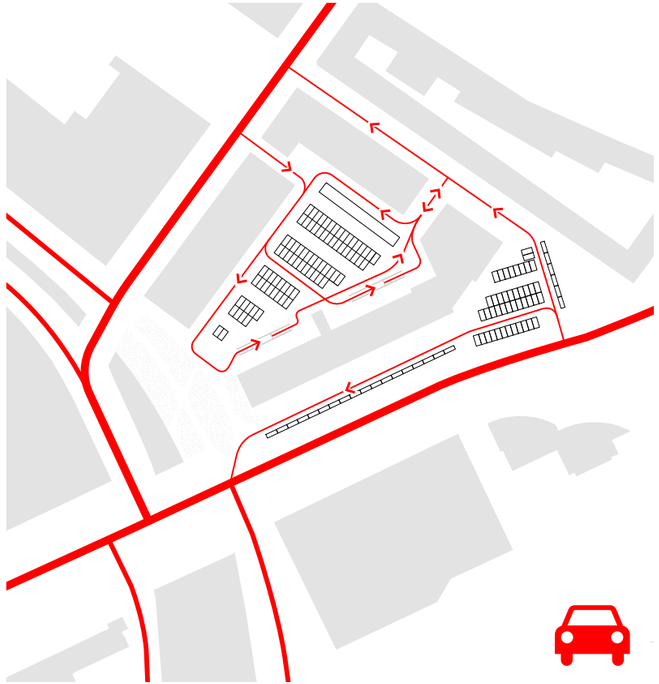
Raingarden watermanagement scheme concerning temporary water storage, infiltration spaces and water flows



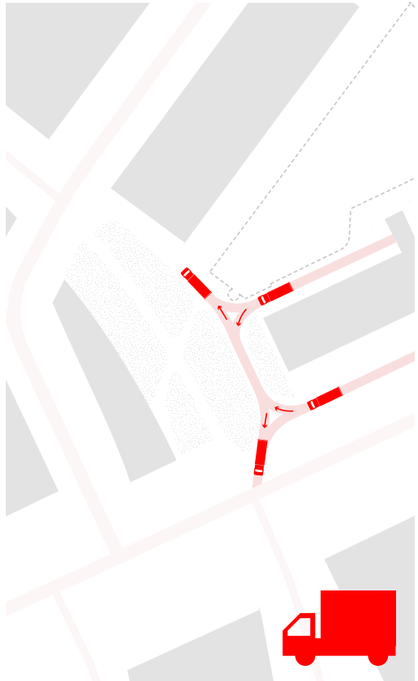
Raingarden flooding sequence



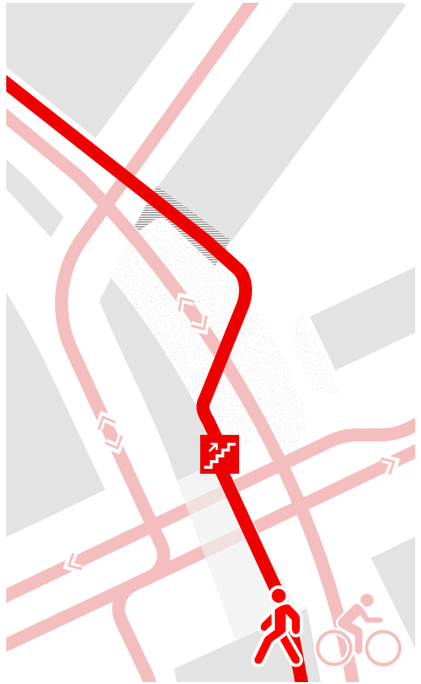
Section of the Raingarden adjacent to the polderroof



Proposal for reorganisation of traffic circulation to take car movement out of the Raingarden



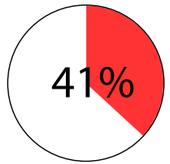
The proposal for the Raingarden integrates the possibility for trucks to load and unload at the Katshoek building



Main routes for pedestrians and bycycle traffic. Coming from the 'Luchtsingel' the Raingarden can become a welcoming touch down into the ZOHO district.

Research date	
2013. 11. 05	tuesday 3 ~ 5 pm
2013. 11. 11	monday 3 ~ 5 pm
2013. 11. 19	tuesday 11 ~ 12 am
2013. 11. 20	wednesday 7 ~ 8 pm
2013. 11. 24	sunday 3 ~ 4 pm

Average occupancy



Analysing the intensity of use of parking places. The parking lots where we project the Raingarden, are hardly being used. In front of the Katshoek building enough overflow car parking space can be found to relocate the few more intensively used places.

The Raingarden in springtime, plan and impression

The Raingarden in a cloudburst situation, plan and impression

Differences in sun exposure and water influence generate flora and fauna biodiversity in the Raingarden

wet plants


brown frog


dragonfly


wild bee

grass

welcome flower garden


butterfly

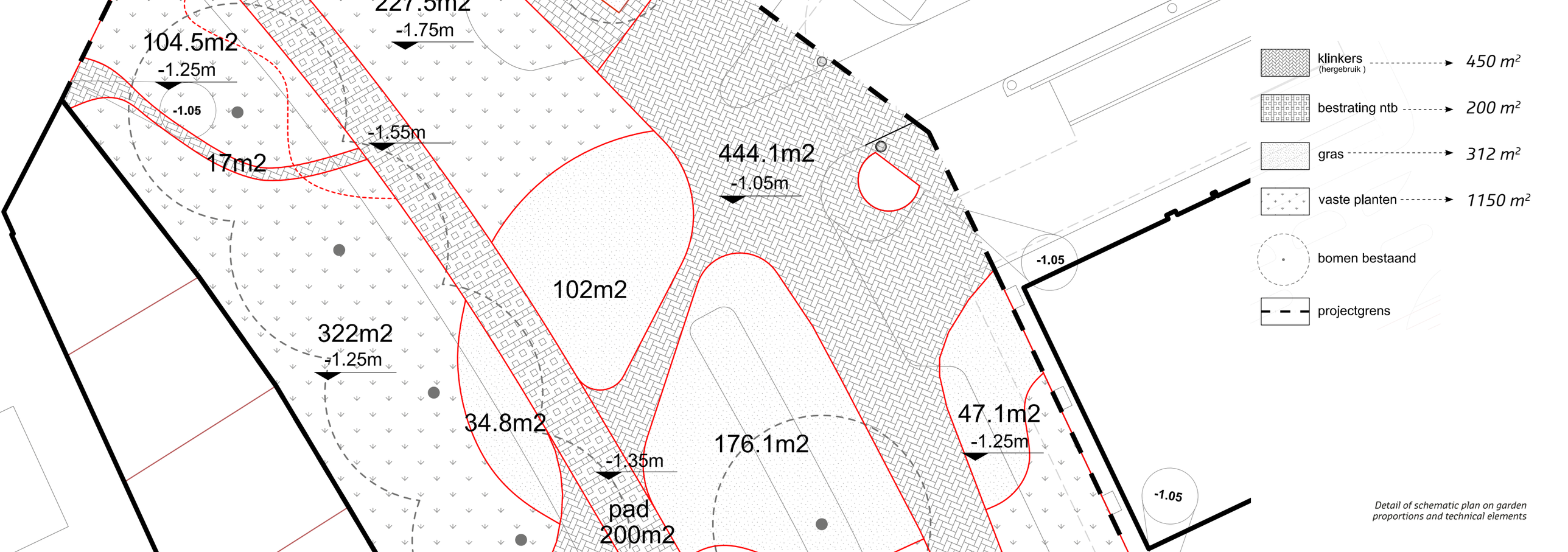

bumblebee

shadow-climber garden


swift


mavis


pipistrelle



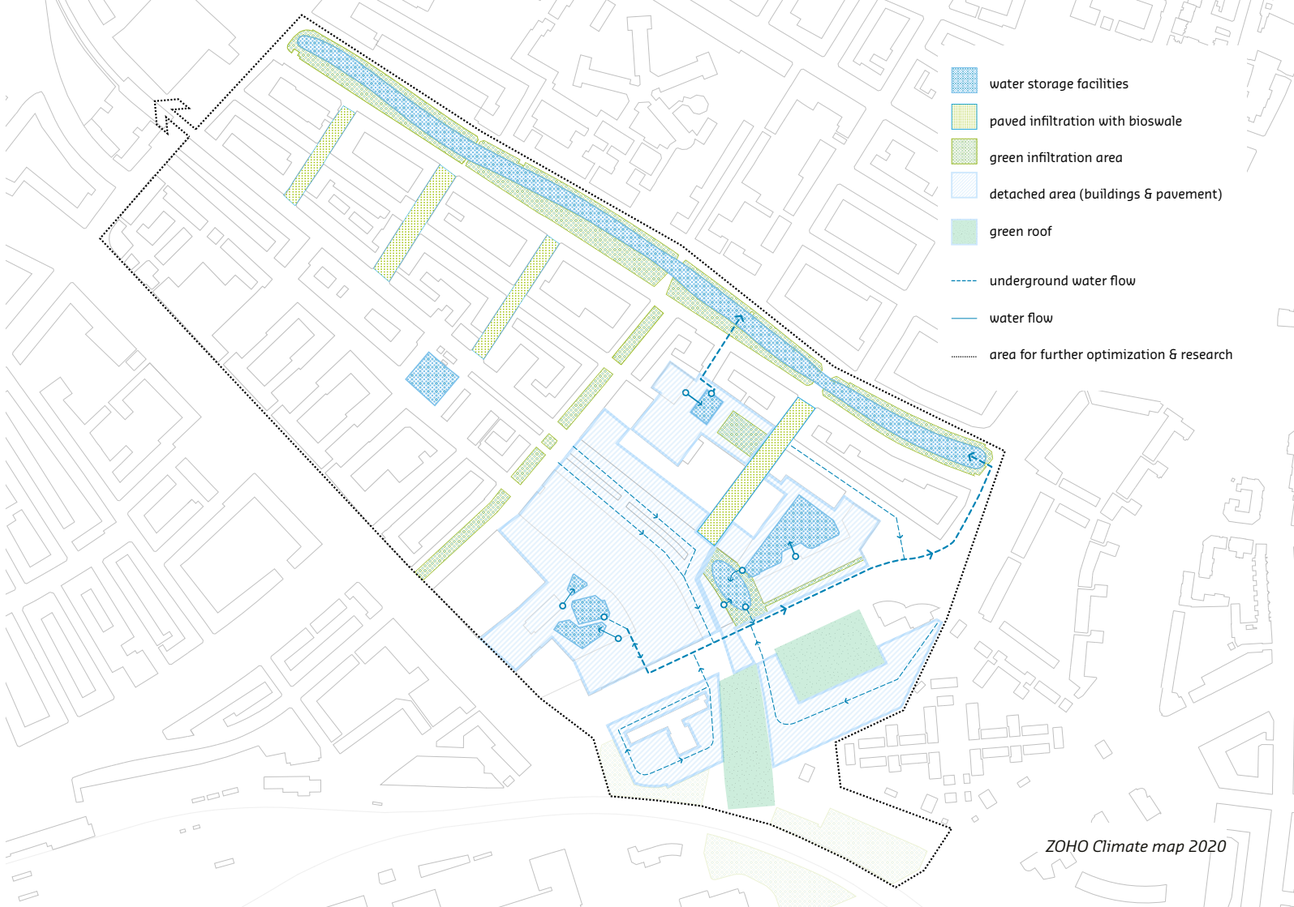
Detail of schematic plan on garden proportions and technical elements

FRAMEWORK

Climate proof ZOHO is about shaping a resilient structure for the future of the district and not just a random set of projects. The reason that the current emphasis lies on the southern half of ZOHO has to do with pragmatic as well as conceptual reasons. It is here where a sewerage renewal takes place and where creative energy emerges. We deliberately amplify this positive energy to make sure that a vast basis is laid down in the district. From a spatial point of view the southern half is where climate proofing will have most effect, since there is a lot to improve. To create a new structure of public places can reposition ZOHO in the fabric of the city. New pedestrian routes can be made and connected to the 'Luchtsingel' that is taking shape. Car dominance can be limited and clarified in ZOHO. Currently there is an abundance of hard surface fit for cars with little hierarchy. By a selective greening of hard spaces, the main car structures will be more distinct and readable. We propose to emphasize the functional structure of ZOHO, more than its formal structure. This can also be expressed in defining block envelopes, that provide a framework for possible future transformation.

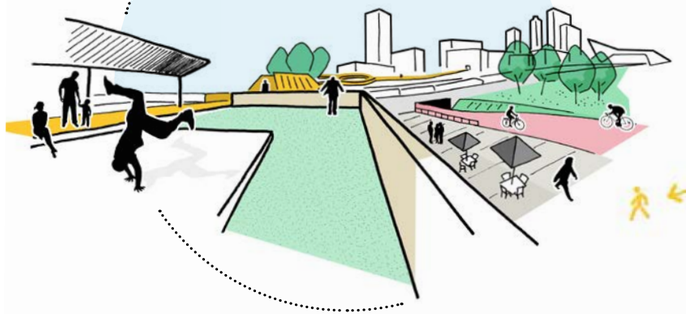
Urban envelope map:
Definition of urban block entities, open spaces and vital connections

Public space map:
Hierarchy of linear structuring spaces in relation to open spaces for lingering



ZOHO Climate map 2020

HOFPLEIN STATION & MINI MALL
a vibrant place full of 'city life'



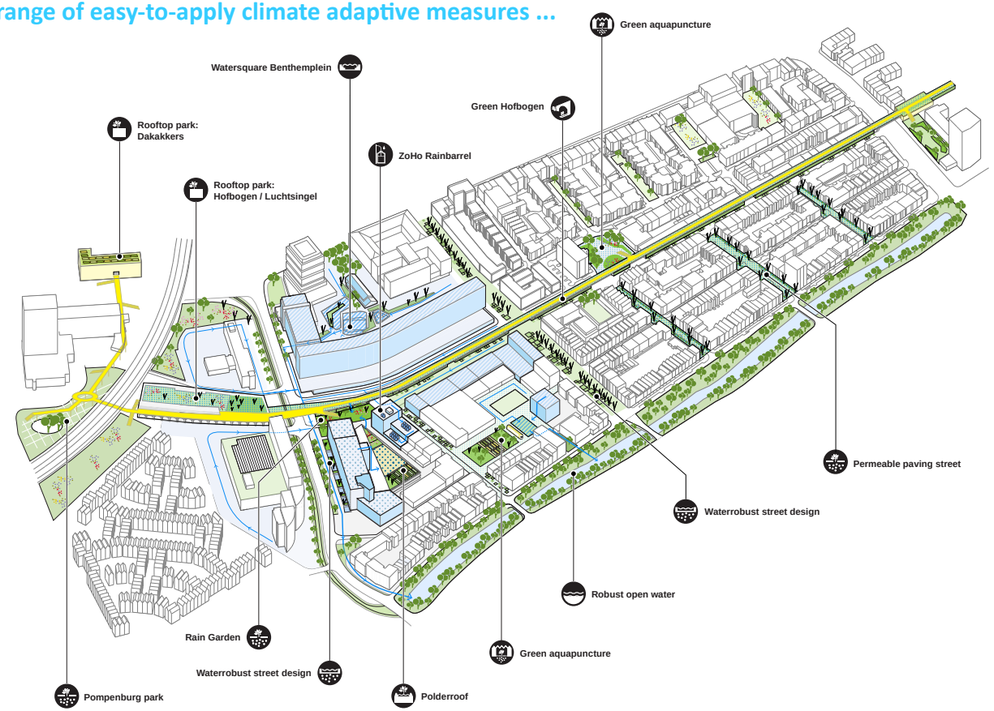
RAINGARDEN
a welcome garden for the ZOHO-district

ZOHO-POCKET PARK
a meeting place for the neighbourhood

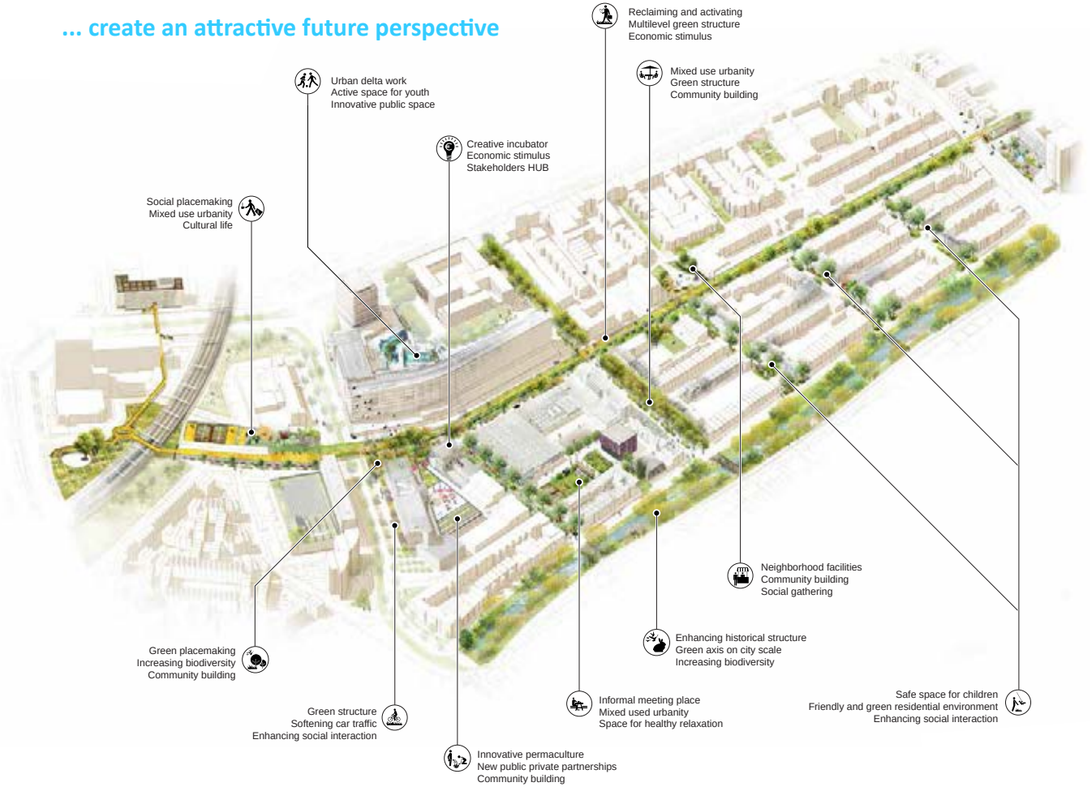
A diverse sequence of future public places for ZOHO form a logical structure

ZOHO Climate perspective 2020

A wide range of easy-to-apply climate adaptive measures ...



... create an attractive future perspective



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Auke Wissing

Making ZOHO into an attractive and climateproof district is only possible with the help of dedicated people and organisations. We especially like to thank:

ACO / AIR / Basement bv / Binder Groenprojecten / Buurtsuper / Codum / Doepel Strijkers Architects / De Dakdokters / Erasmus University, IHS / Fien Dekker Ontwerp / Foodcurators / Gare du Nord, Hans Kervezee / Greensand / Havensteder / Het Een en Ander (Yasemin Sengil) / Hofbogen bv / Waterboard of Schieland and Krimpenerwaard / Ik Ben ZoHo / Komplot / Nico Adriaans Stichting (NAS) / Participants Workshops Watersquare Benthemplein / Post-Office / Roodkapje / Rooftop Solutions Amsterdam / Rotterdam Municipality: Borough of Noord, Planning Department, Engineering Bureau, Maintenance Department, Rotterdam Climate Initiative / Seven Seasons / Stipo / Spin developers / Studio Bas Sala / Superuse Studio / Technical University Delft / Valorisation program Delta technology & Water / Van Dijk Maasland / Van Schagen Architects / Viltmannen / Wallaard / Willem de Kooning Academy / ZOHO-reset / ZUS

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Gemeente Rotterdam

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