

**MSc THESES
OVERVIEW
LANDSCAPE
ARCHITECTURE
GROUP**



2018

September 2017 - August 2018

MSc THESES
OVERVIEW
LANDSCAPE
ARCHITECTURE
GROUP

see a list of all MSc theses projects online
[www.wur.eu / lar](http://www.wur.eu/lar)
> Education > MSc Theses titles

September 2016 - August 2017

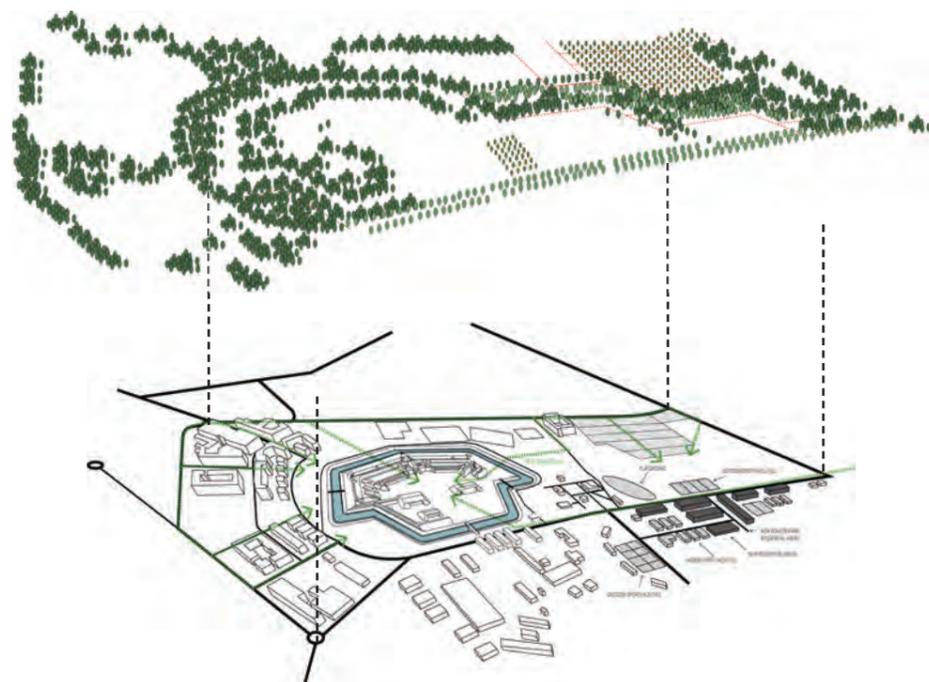
- Kamila Lejman
- Linde Elsinga
- Rosanne Vlaar
- Stijn Lanters
- Davor Dusanic
- Laslo van der Wal
- Lukasz Bakowski
- Nina de Munnik
- Jorne van de Water
- Joa van Maaren
- Nora Kooijmans
- Begona Arellano
- Oktaviana Miffatulani
- Sander Smits
- Karin Huijben
- A Warsaw Fortress, 19th Century Dissonant Heritage Derelict in a Contemporary Urban Environment. Bem's Fort, Warsaw, Poland.
- Seducing the Urban Visitor. A design study into behavior and preferences of tourists in Amsterdam.
- Water for Life. Towards sustainable protection and development of the Nhartanda valley in Tete, Mozambique.
- Campanhã Urban Park. Activating the potential of the Terrain Vague.
- Infrastructural Landscapes of a Diabolic Motorway. From a barriere to a membrane.
- Design with Fire.
- Garden of Tears.
- Revealing the Urban Climate. A design study on climate revelatory visualisations.
- Flood-resilient delta for Richmond. An exploration of the possibilities for flood adaptation in the Fraser River delta, Canada.
- Thermally Comfortable and Accessible Spaces for Elderly.
- Contributing to a Climate Ready Boston. Developing a systematic approach for adaptive design under climate uncertainty.
- Cultivating resilience towards flood safety. Local knowledge for landscape design Copiapo River valley, Atacama, Chile.
- Revert! A resilient landscape design process towards typhoon and flooding in Cam Kim Island, Hoi An, Vietnam.
- Tourism & Hydropower Landscapes. A new point of view on tourism & hydropower plant development in Skaftártunga, Iceland.
- Blind Experience of Nature. A phenomenology based research and design of a multi-sensory, natrual landscape for visually impaired, Texel, NL.



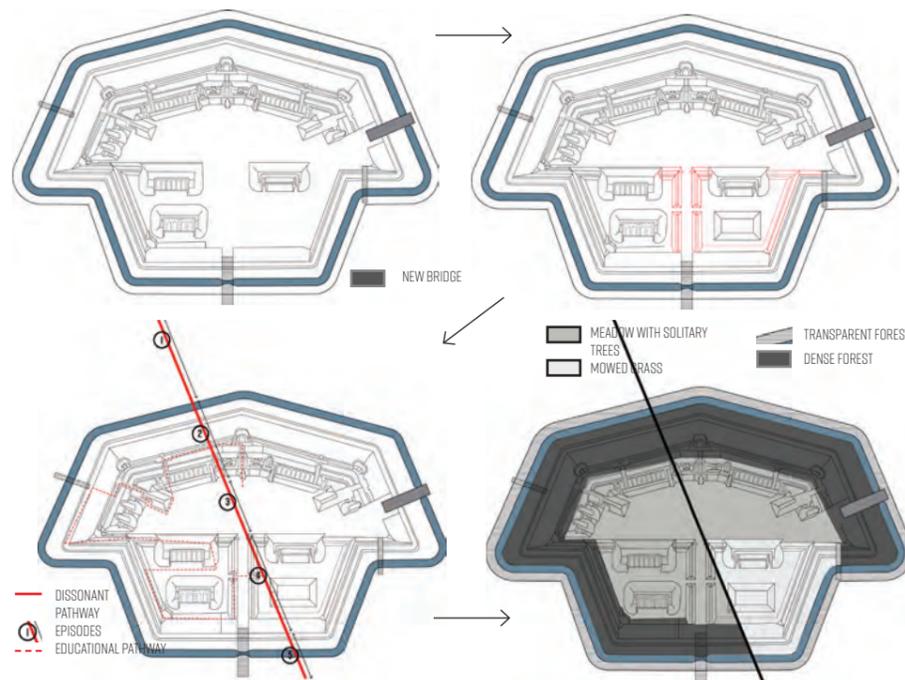
Warsaw Fortress nowadays and in the past, and the location of the Bem's Fort.



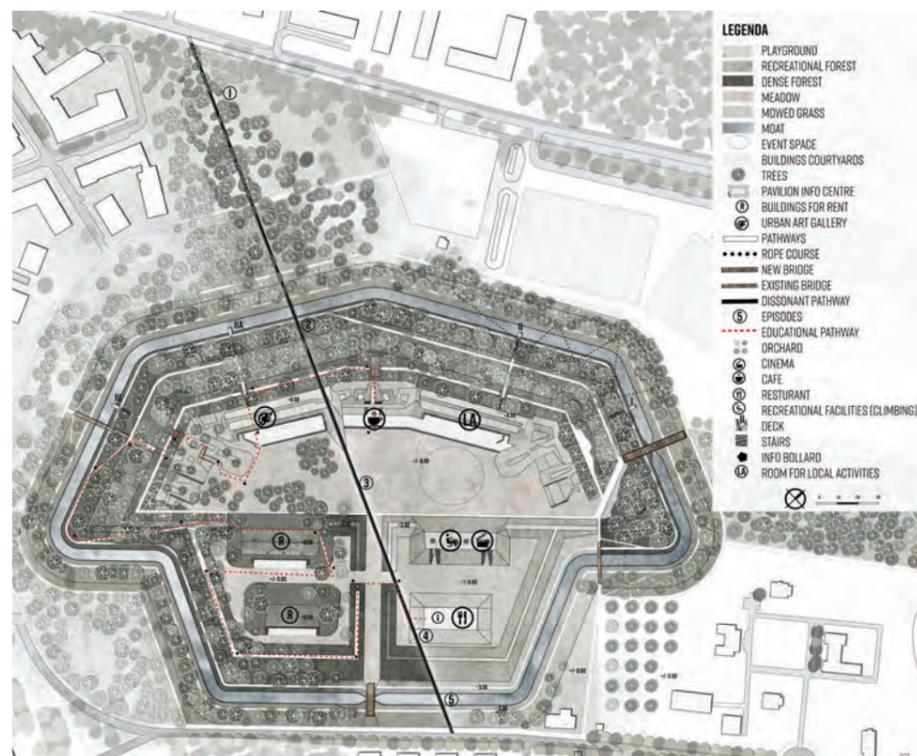
Bem's Fort nowadays, surrounded by the urban structure



Bem's Fort: removed fences, new connections and clean green structure



Interventions in the fort: new bridge (top left), restored ramparts (top right, in red), formal pathways (bottom left) green structure (bottom right)



Masterplan Bem's Fort



Section showing the northern edge of the fort with a dense vegetation

Kamila Lejman

Supervisors: Paul Roncken, Daniel Jauslin

A Warsaw Fortress, 19th century dissonant heritage derelict in a contemporary urban environment.

The case of Bem's Fort, Warsaw, Poland

Abstract

This thesis touches upon the notion of dissonant heritage on the example of the 19th century fortifications embedded in the urban structure, and its current position within the contemporary environment. In Poland, one of the largest countries in Central and Eastern Europe there are numerous fortifications that have a foreign origin. They represent intangible stories related to the country's unpleasant past. Once located in the open landscape, many of them are embedded by the urban structure, nevertheless because of their difficult heritage, they are easily lost and forgotten. The case study in this thesis is the Warsaw Fortress and the Bem's Fort, Warsaw, Poland. It was built in the 19th century by the Russian Empire, during the city's occupation. Nowadays, the majority of forts still remain vacant and are threatened by the market forces and uncontrolled spatial developments.

The aim of the thesis was to develop a design proposal that enables a historical fort to harmonize with the surroundings, and bring its intangible qualities more to the foreground. The design aims to provide a multi-layered experiences for the users, and raise awareness and popularity among the city's inhabitants. The study is framed by the dissonant heritage framework by van der Mijl (2015). The outcome of the analysis of the nature of dissonance was the main driving force for the design proposal. The design was developed on the basis of the four design aims developed during the process and encompassed new spatial and functional connections between the historical fort and surroundings. Organization of the green structure aims to expose the historical relics in the area and raise awareness about the site's past. New pathways and assigning new functions to the building attempt to create a spatial consonance, to enable visitors to interact with historical fabric and provide multi-layered dissonant, experiences. Different design interventions are taken not only in the fort itself, but also in the surroundings. Nevertheless, the main intervention encompasses creating a dissonant pathway consisting of 5 episodes. It leads through the fort, symbolizing turbulent city's history.



Section showing the edge of the fort with a transparent vegetation



Episode 1. Carefree time before occupation (path leading through playground)



Episode 4. Rigid forms representing Soviet era



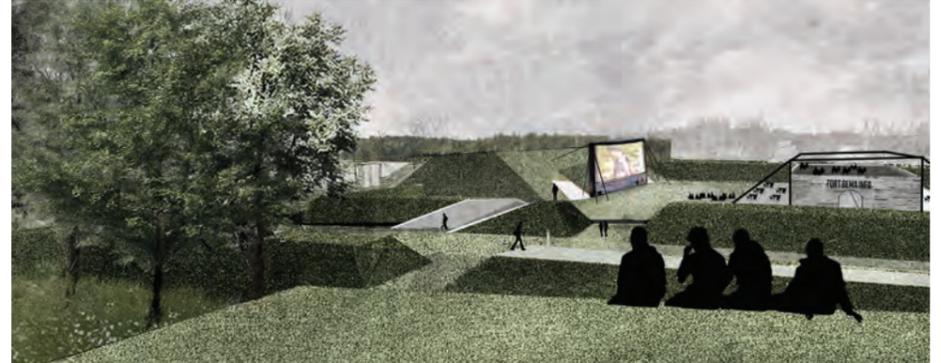
What visitors would see when going through the cut through rampart and looking up.



Episode 2, part 1. Dense vegetation, rigid structures, more hostile atmosphere



Episode 5. Present times, urban, contemporary landscape



Impression from the seasonal activities in the fort



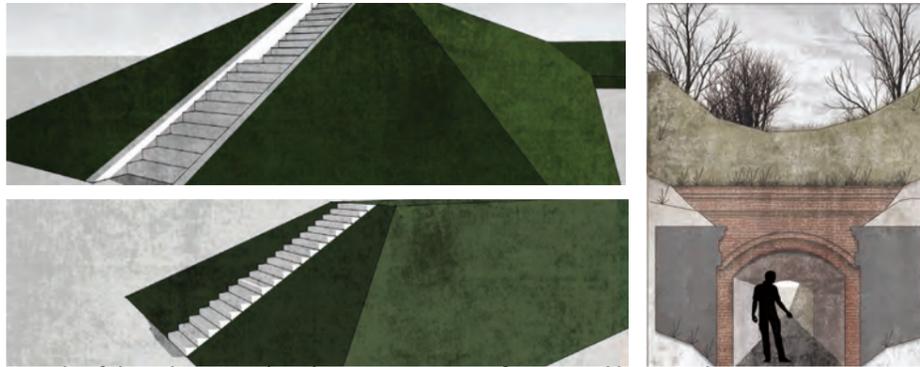
Episode 2, part 2. The most dissonant part of the pathway. Occupation times



Cut through the rampart at the dissonant pathway.



Episode 3. Carefree inter-war period



Details of the educational pathway: two types of stairs and historical passages



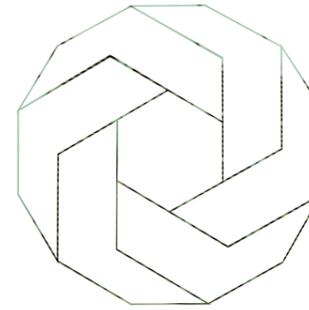
Impression from the educational pathway



The profile of the educational pathway: leading through all the different levels that are created by the historical earthworks and through the historical buildings to provide the interaction between the historical tissue and the user.

“Anything is potentially an attraction, it simply awaits someone to take the trouble to point it out to another as something noteworthy, or worth seeing”

- Dean MacCannell (1999) -



Linde Elsinga

Ingrid Duchhart

Charlotte Buys (Stedelijke Ontwikkeling/Gemeente Amsterdam)

Seducing the Urban Visitor

A design study into behavior and preferences of tourists in Amsterdam

Abstract

Amsterdam is an increasingly popular destination among tourists, it is expected that the number of tourists visiting the Dutch capital will be doubled in 2030.

This study investigates the content on photos uploaded by tourists on the platform Flickr, in order to understand the patterns preferences and common patterns in tourism behavior. It explores the potential of photo data as a tool in landscape architecture research. By systematically analyzing the content on these photos, this research acquires knowledge that is of relevance for the use and interpretation of the public urban space.

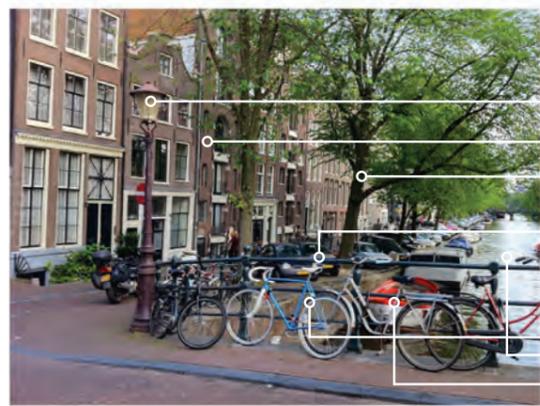
By analyzing photos based on several categories, one can conclude about the use and preferences of tourists in urban environments, which can be of help in understanding the engagement and experience of the physical surroundings they are in.

The outcomes of the visual content analysis serve as the basis for generating the design of a seductive route through the Oosterdok area in Amsterdam. An area that offers (potential) attractions but is still segregated from the adjacent central station. The design involves interventions to be added to the public urban space in order to provide easier access from the central station and better legibility throughout the whole area for tourism purposes.

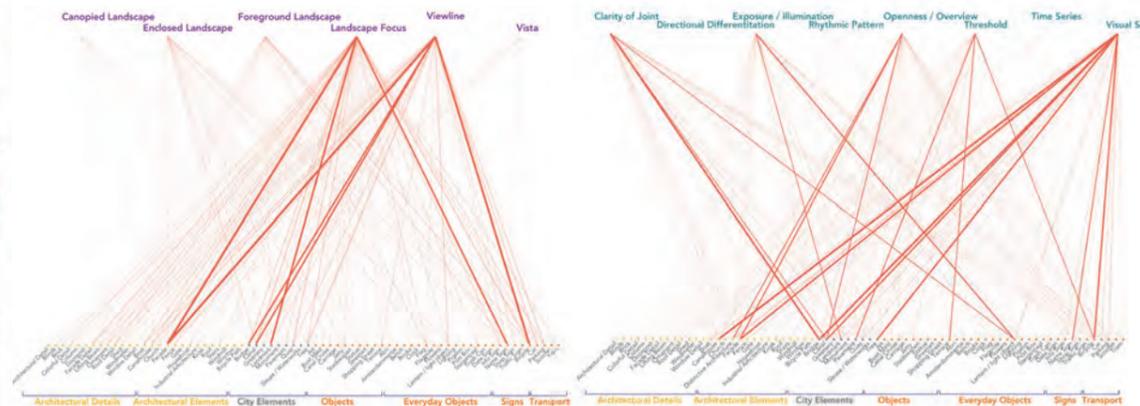
The research shows the potential of photo data in landscape studies and is a small step towards a theory on seductive routes, orientation and accessibility for tourism in complex urban areas. Through observing, analysis and interpretation this study adds up to better understanding of tourism preferences in highly urbanized areas and illustrates the relevance and accuracy of photo data for spatial purposes.



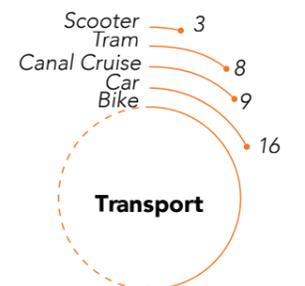
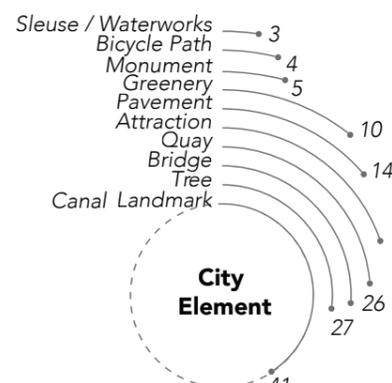
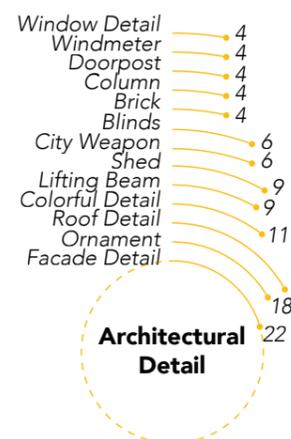
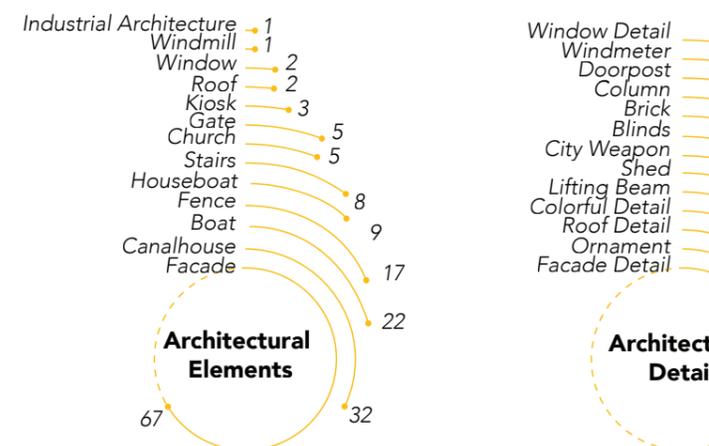
From earlier research on distributions of tourists, route density patterns, as well as the main touristic hotspots (Sander van der Drift, 2015) the design location was chosen: Oosterdok Amsterdam.



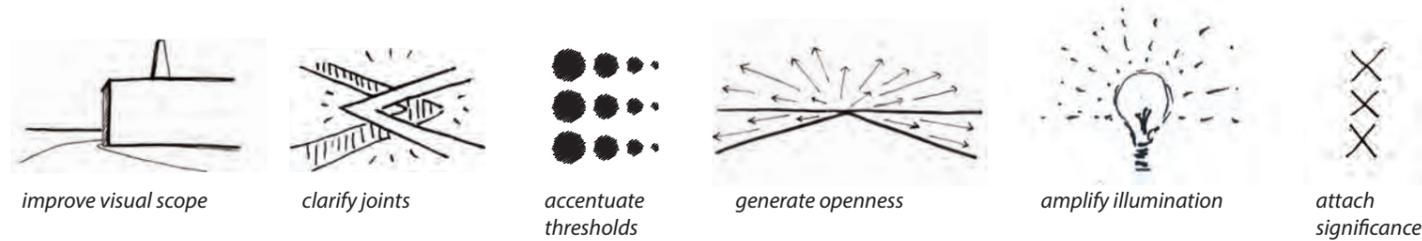
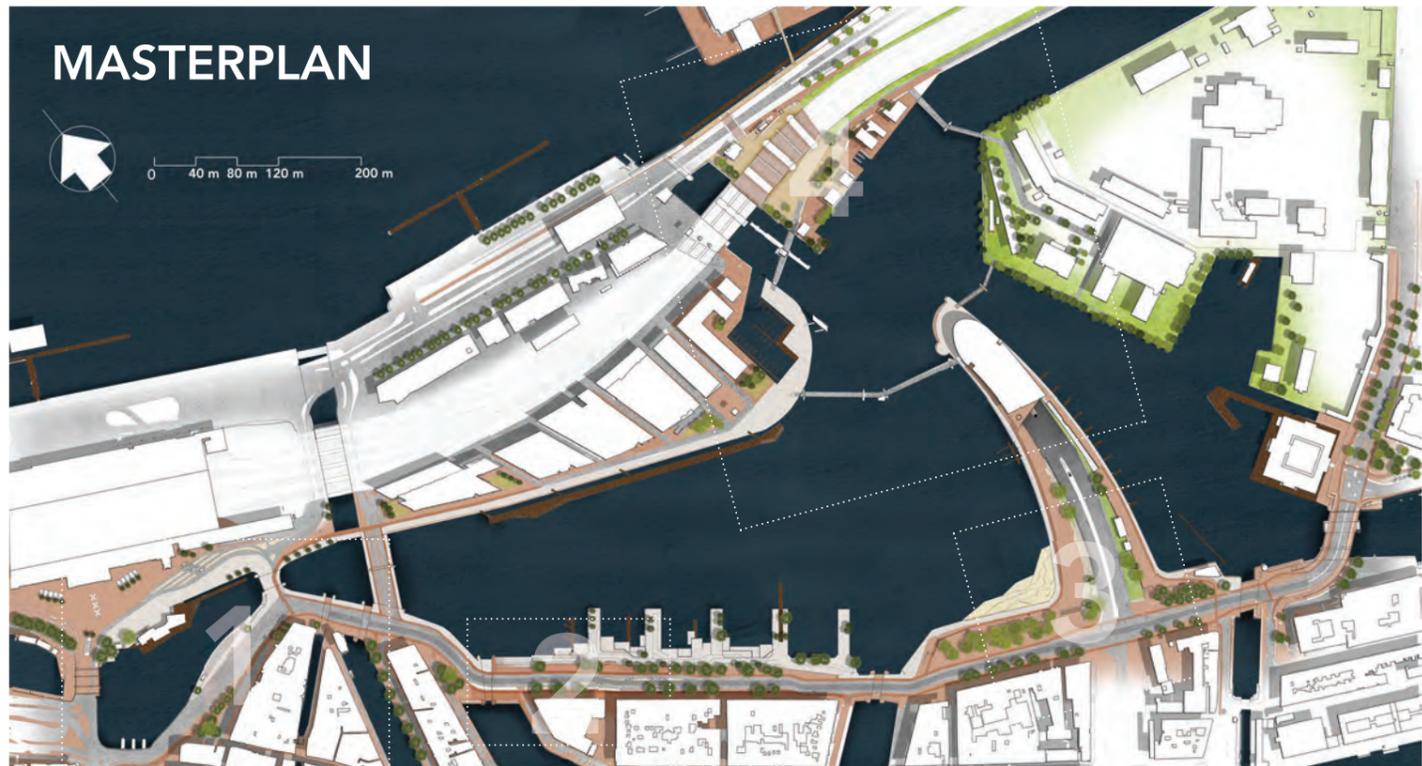
Analysis of tourism photos based on an analytical framework



Co-occurrences between different facets on the analyzed photos



Number of occurrences of objects on the analyzed photos



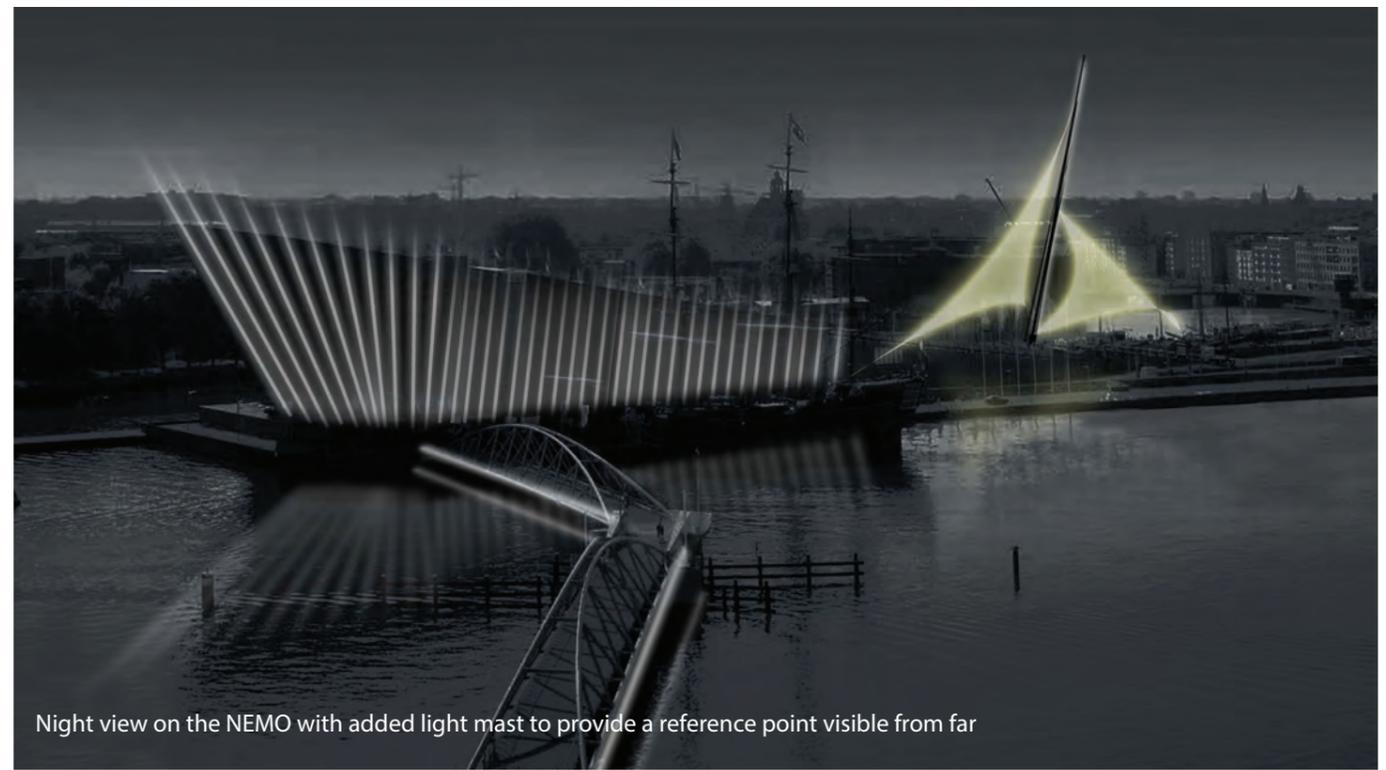
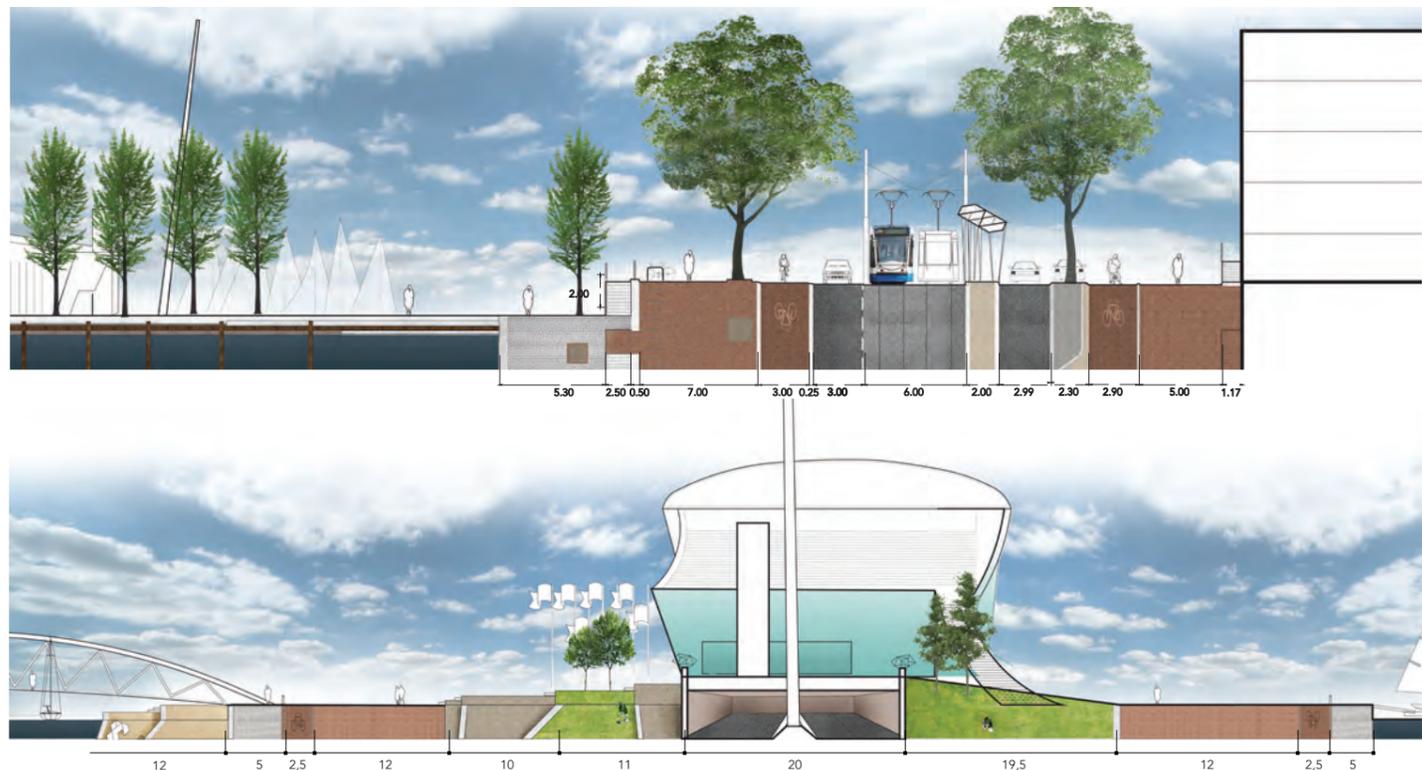
Six guidelines illustrate the different sets of interventions that can be implemented in order to seduce and to help tourists orientate through the complex urban environment.



The Oosterdok area is characterized by four different types of areas that offer potential to become a successful tourism attraction. The design reinforces these qualities through implementing common attributes derived from the content analysis as design guidelines.

The concept for the design is inspired by the analytical framework and the landscape analysis and focuses on three main points:

- Creating a seductive route - providing tourists with a typical Amsterdam experience
- Exaggerate appearance by characterizing four typical segments within the area
- Adding significant attractions / activities



Night view on the NEMO with added light mast to provide a reference point visible from far



Aerial view of the city of Tete and the Nhartanda valley (highlighted)

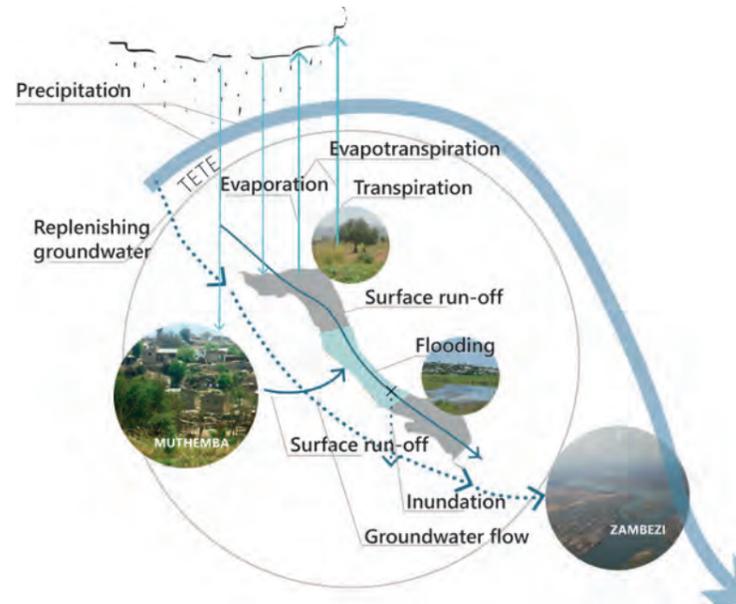


Illustration of the water cycle of Tete - Water flows & sources

Rosanne Vlaar

Name supervisors:

Dr. Ir. Ingrid Duchhart

Dr. Ir. Pieter W. Germeraad

Water for life

Towards sustainable protection and development of the Nhartanda valley in Tete, Mozambique

Abstract

Urbanisation and climate change put increasing pressure on the quantity and quality of urban resources of African countries. The city of Tete in Mozambique, is an illustration of these issues. Tete is intersected by the Zambezi river, providing fresh water sources and fertile grounds for urban agriculture. These are both centred in and dependent on the Nhartanda valley, a former river branch, now an open space in an otherwise crowded city. The quantity and quality of the groundwater of this valley is under pressure through increased urbanisation rates and lack of basic facilities. This is manifested through pollution of the groundwater and occupation of vulnerable areas.

ARA-Zambeze, water board of Tete, provided the assignment of this thesis: to develop spatial and flexible strategies to protect the Nhartanda valley in the future. An integral and pragmatic landscape approach was adopted to create a landscape framework for spatial landscape incentives, that encourage protection of the valley. Thus the design question and objective of this thesis is: How can an adaptive landscape framework be developed in the Nhartanda valley to facilitate sustainable urban agriculture, water extraction and sustainable development?

A landscape and system analysis provided me with the knowledge that environmental problems are connected to the water cycle, and located and/or originated particularly in the edges of the valley

Through the design of a design tool set, a zoning plan and four example plans, an adaptive landscape framework could be created, focusing on strengthening the edges of the valley, encouraging sustainable use and ensuring infiltration of (polluted) water far from vulnerable fresh water sources. The aim of is to paint a picture of a better future of the Nhartanda valley, to show that it is possible to strive for a greener and more sustainable valley and city.



Strategy 'Preventing pollution of infiltration area' tool set

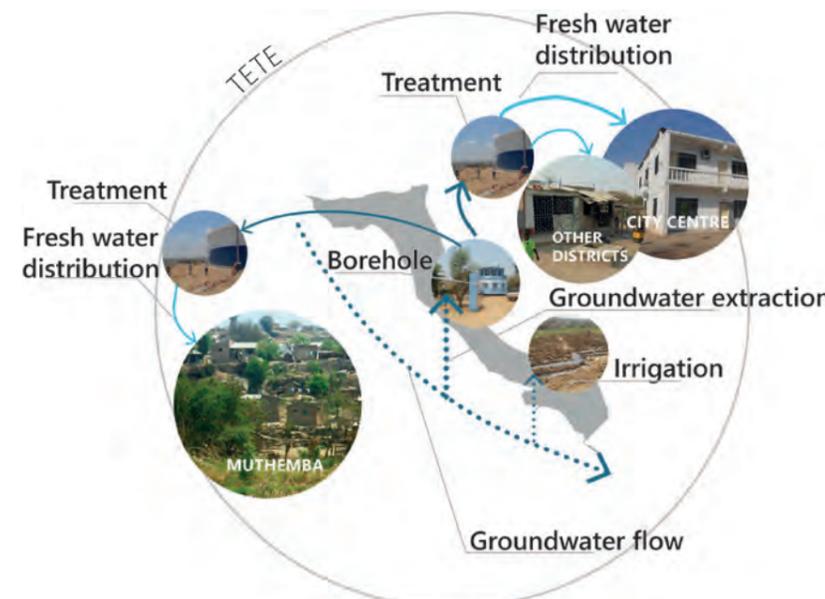


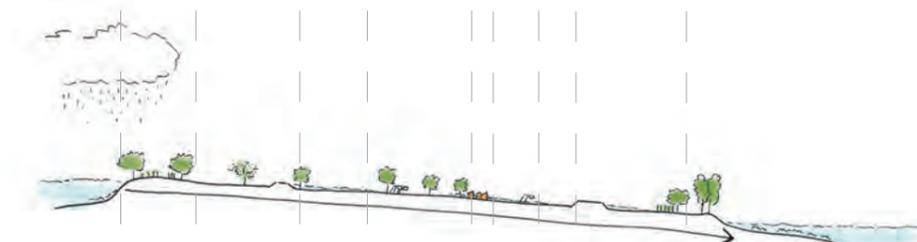
Illustration of the water cycle of Tete - Water extraction & use



Final zoning plan for the Nhartanda valley



Illustration of the water cycle of Tete - Water discharge



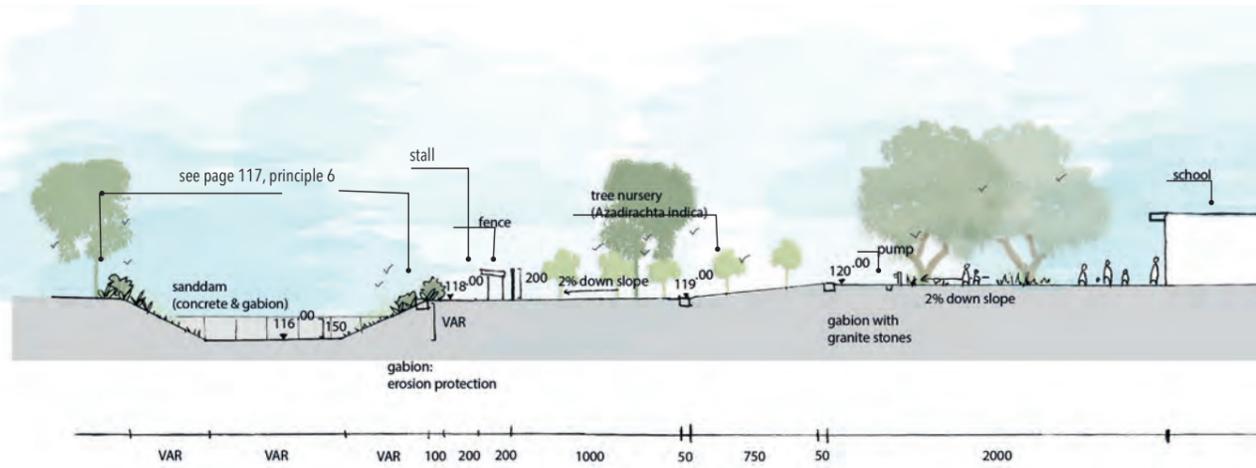
Landscape units of the Nhartanda valley in the rainy season - longitudinal section



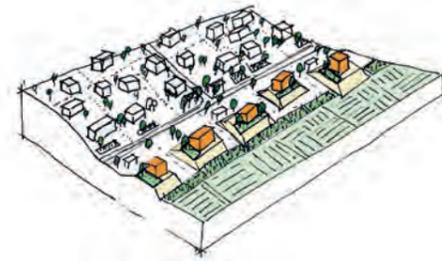
Map of example plan B: 'Sanddam & leaching field'



Map of example plan C: 'City's edge'



Section - Sanddam in stream, tree nursery and school area design



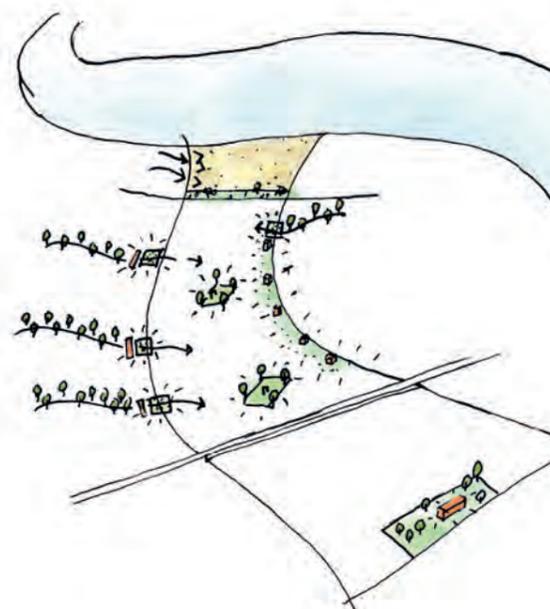
Aerial view of plots along the edge of the valley



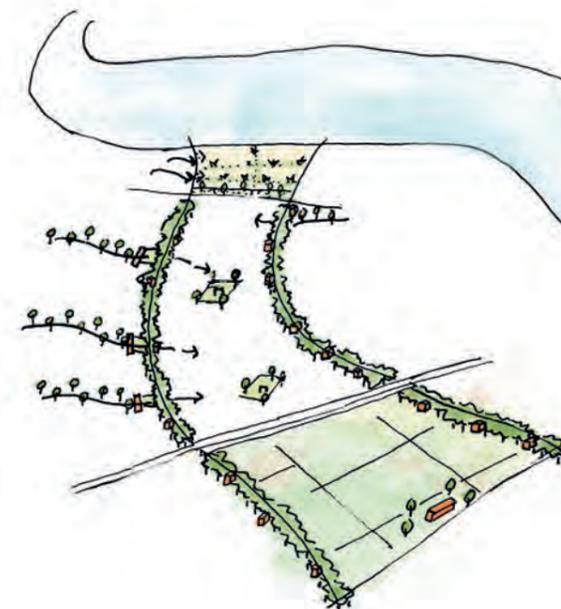
Visualisation of the edge of the city before and after intervention: agriculture as boundary



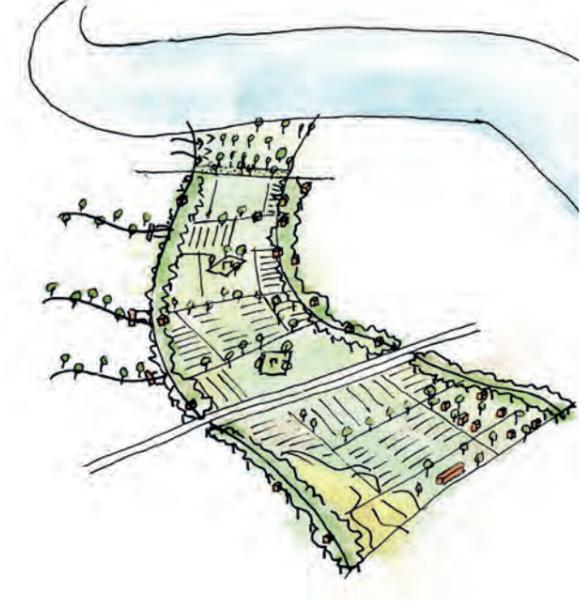
Visualisation of school area design



Landscape framework in 2020



Landscape framework in 2025



Landscape framework in 2040



Stijn Lanthers

Name supervisor: Marlies Brinkhuijsen

Campanhã Urban Park

activating the potential of the terrain vague
Porto, Portugal

Abstract

Attempts of the city of Porto, Portugal to recover from industrial decline placed a great importance on the revitalization of prime city districts, which resulted in the loss of significance to local communities and an unequal distribution of public space. This thesis considers terrain vague landscapes as opportunity for future urban public space, to accommodate various social groups, and to give presence to multiple local actors.

The main purpose of this thesis is to explore the potentials of terrain vague landscapes as urban parks, that balance the needs of local communities and a wider public. Learning from practice and translating research findings into design guidelines formed the base for a research-based design. Its focus was on the former thermal power plant of Central Termo Eléctrica do Freixo in the peripheral parish of Campanhã, which is characterized by highly complex and fragmented urban environment, and severe socio-economic vulnerability.

A conjunction of the analysis, theoretical background and design guidelines constituted the basis for the conceptual design of Campanhã Urban Park, which aims to reduce existing urban asymmetries. Hence, the thesis contributes to the current discourse on the value and definition of the terrain vague in sustainable urban regeneration.



deactivated industrial units on the banks of the river Douro



post-industrial thermal power plant in Campanhã



urban exploring the 'terrain vague'

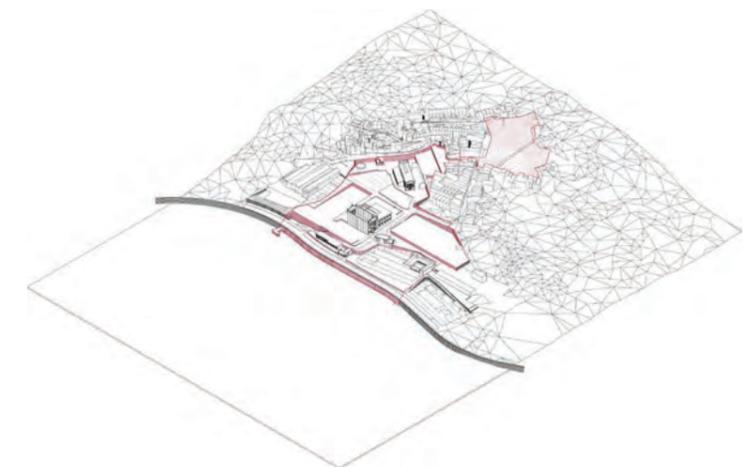
top: (post) industrial poles of Porto: right pole is located in Campanhã, a peripheral, marginalized parish



dense residential tissue, with the hidden collective spaces of the ilhas, surrounding the interstices of Campanhã.



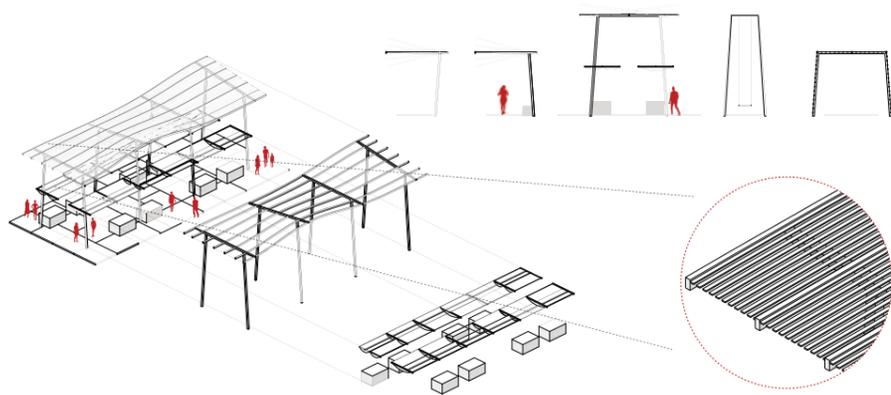
activated terrain vague site by means of robust framework and flexible program, embracing local identities and economies



current topography forming barriers in the continuity of the urban fabric



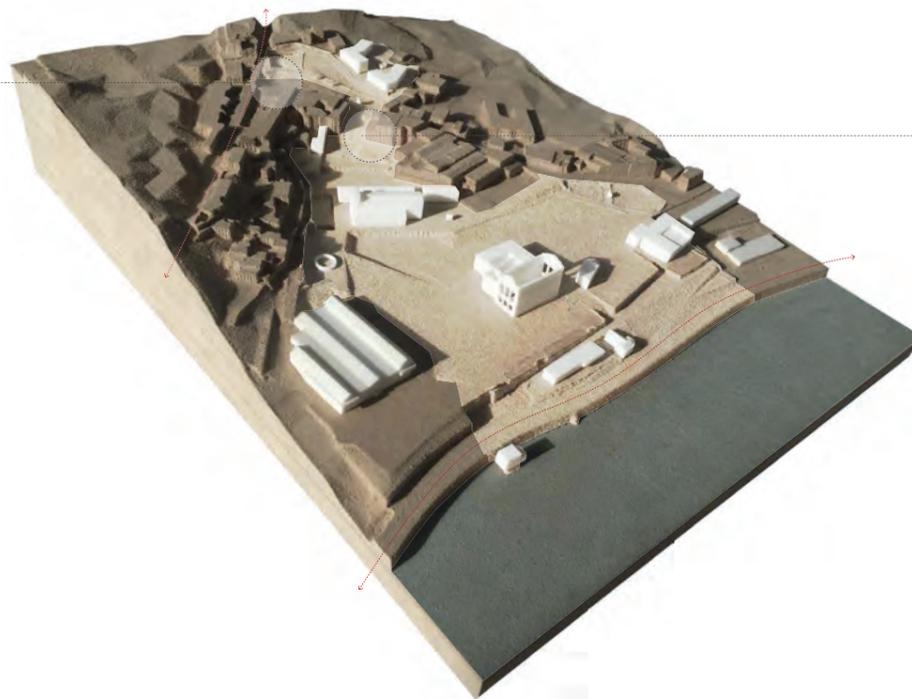
embedding in regional structures by reusing abandoned train tracks and soft mobility networks



'cold greenhouse' constructions applied in the design



the jacaranda market square: the illuminated square in dusk where people stroll along the market stalls of the Vandoma vintage market.



CNC milled model of the proposed interventions



the central lawn with view towards the redeveloped ruins of Central Termo Eléctrica do Freixo



connections over Rua do Freixo



welcoming 'living room' entrance, seen from Rua do Freixo

Davor Dušanić

supervisor: dr.ir. Marlies Brinkhuijsen

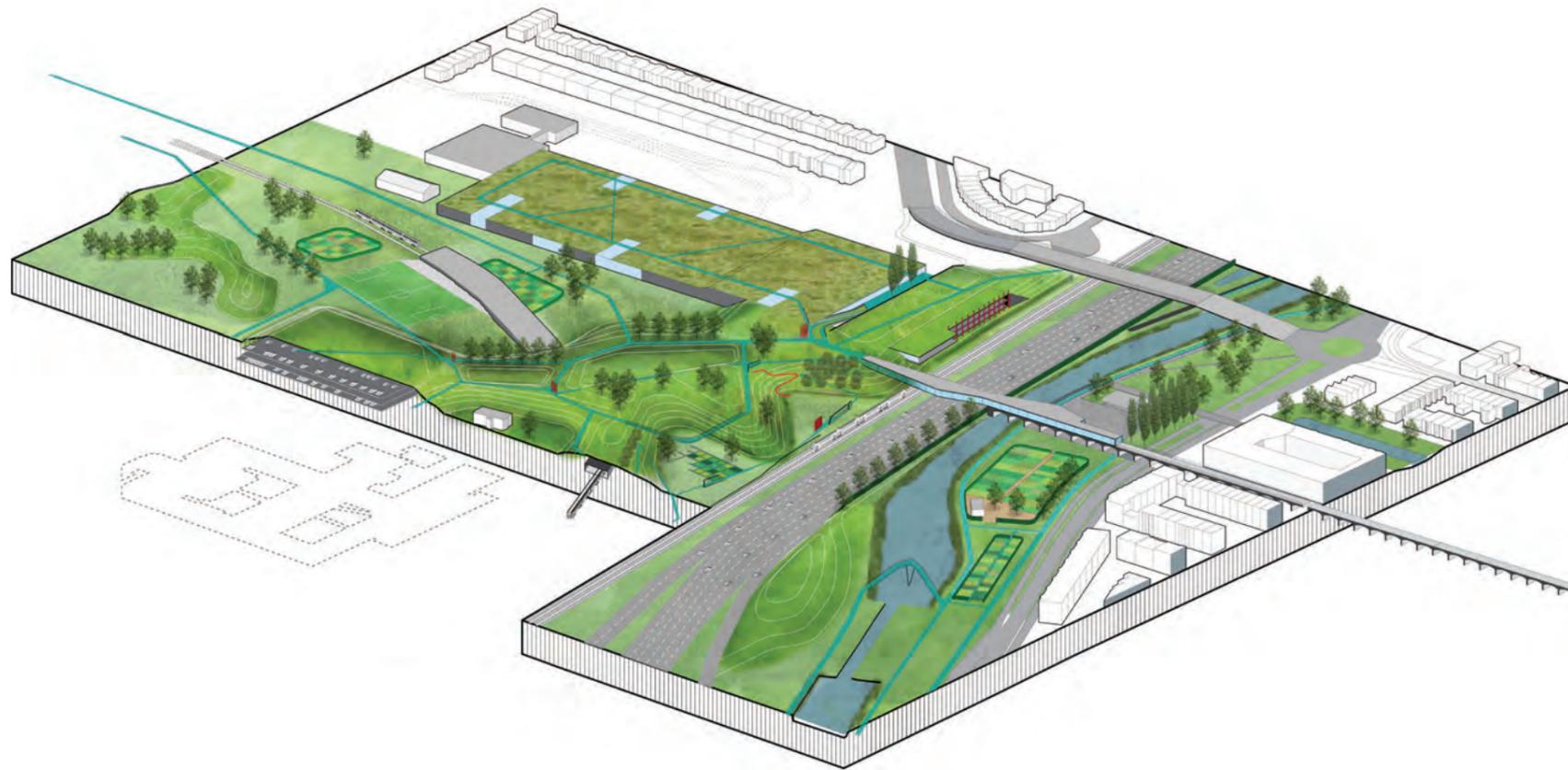
Infrastructural landscape of a diabolic motorway.

From a barrier to a membrane.

Rotterdam, Netherlands

Abstract

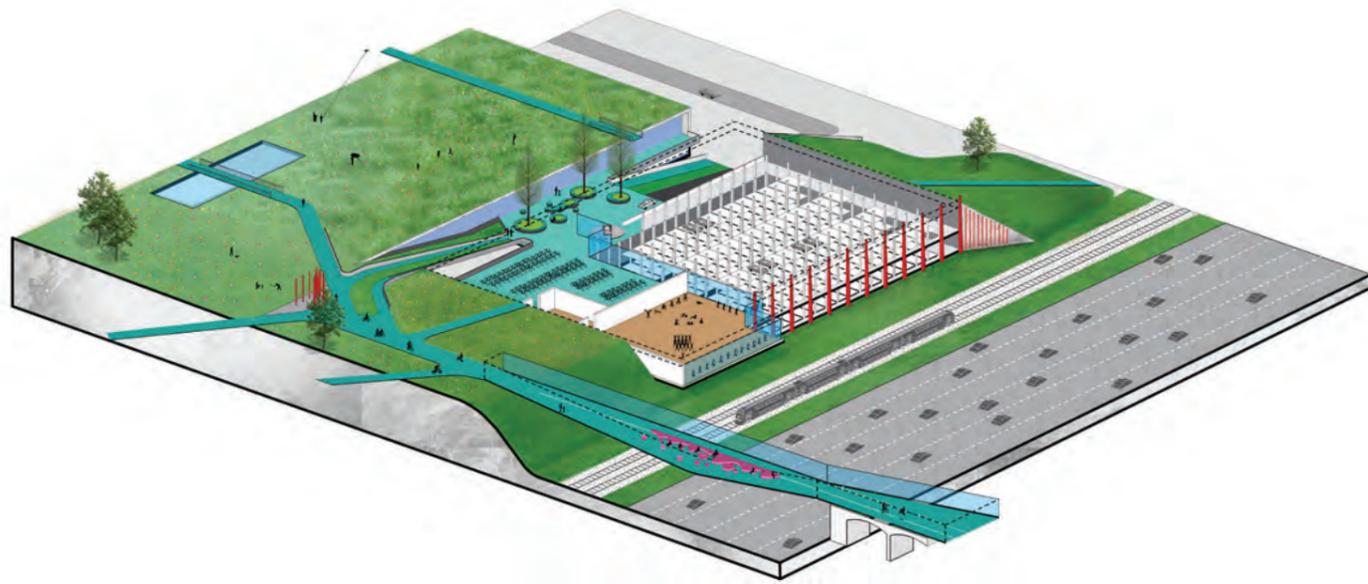
A diabolic motorway is the type of the motorway that runs through a city without any aesthetic response to the local environment. It represents an urban barrier and produces ambiguously programmed, inaccessible spaces. In order to address the multiple problem in the relationship between a city and a motorway, a new paradigm is needed that addresses the integration between a city and a motorway. Within this thesis, a diabolic motorway is considered as an opportunity and something to be dealt with rather than burying it underground. The exploration on the integration is done within the concept of landscape infrastructure, which argues for the transformation of monofunctional infrastructure to multifunctional entities. The current concept remains very broad and needs concrete elaborations to become more understandable. Therefore the reference study on existing projects is used to extract design strategies and tools which make possible to use the concept in a design for the motorway-city integration. Case study area of this thesis is Rotterdam's motorway A20, one of iconic Dutch diabolic motorways. The design is informed by the analysis on the infrastructural landscape of the Rotterdam ring which delivers a list of spatial typologies of different infrastructural spaces. Two different typologies were chosen as sites for the city-motorway integration design. Analysis of Rotterdam and the A20 adjacent neighborhoods revealed that the infrastructural landscape of A20 has the opportunity to provide new green public space and facilitate connections between the dense inner city and its recreational outskirts. The final designs produced some new design strategies and tools that give the direction on how to transform an infrastructural landscape of the diabolic motorway to a hybrid infrastructural landscape



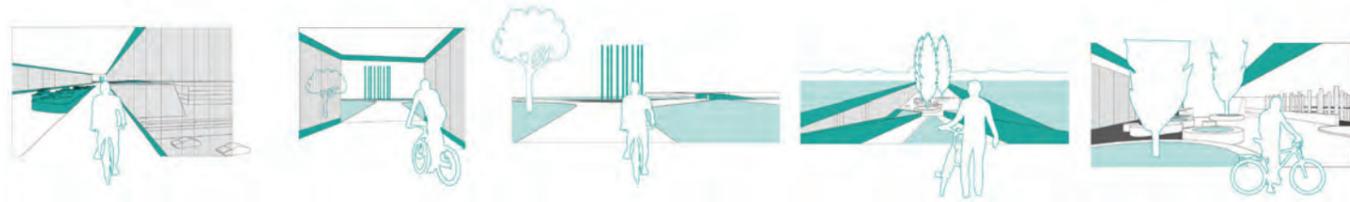
Axonometric view on the new Noordrand Fringe Park where a connection with the city is made through the extended passage of the Hofpleinlijn. Currently abandoned site between the two neighborhoods and the hospital are proposed to be transformed to a dynamic hybrid park, which combines several functions and activities.



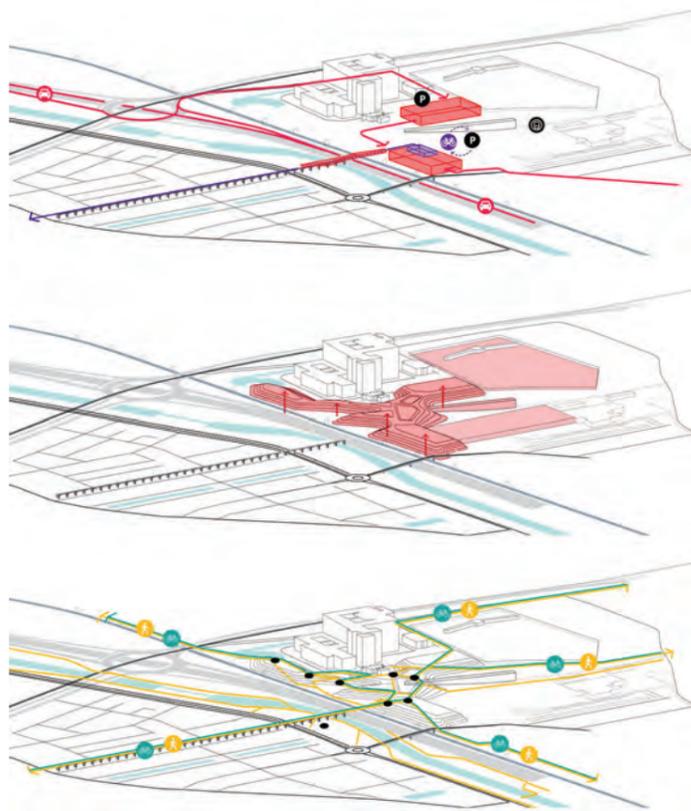
The view from the passage towards the undulating park landscape. The passage is set to be a playful connection with protuberances where a visitor can stop and observe a complex infrastructural landscape.



HofGap: multifunctional hub that combines functions of a passage, parking, and leisure activities into the intertwined landscape - building entity, corresponding to local and regional flows.



Sequence of moving from the city to HofGap is a clear and guiding connection.



Structure of the Noordrand Fringe park is a combination of logistical and leisure functions.



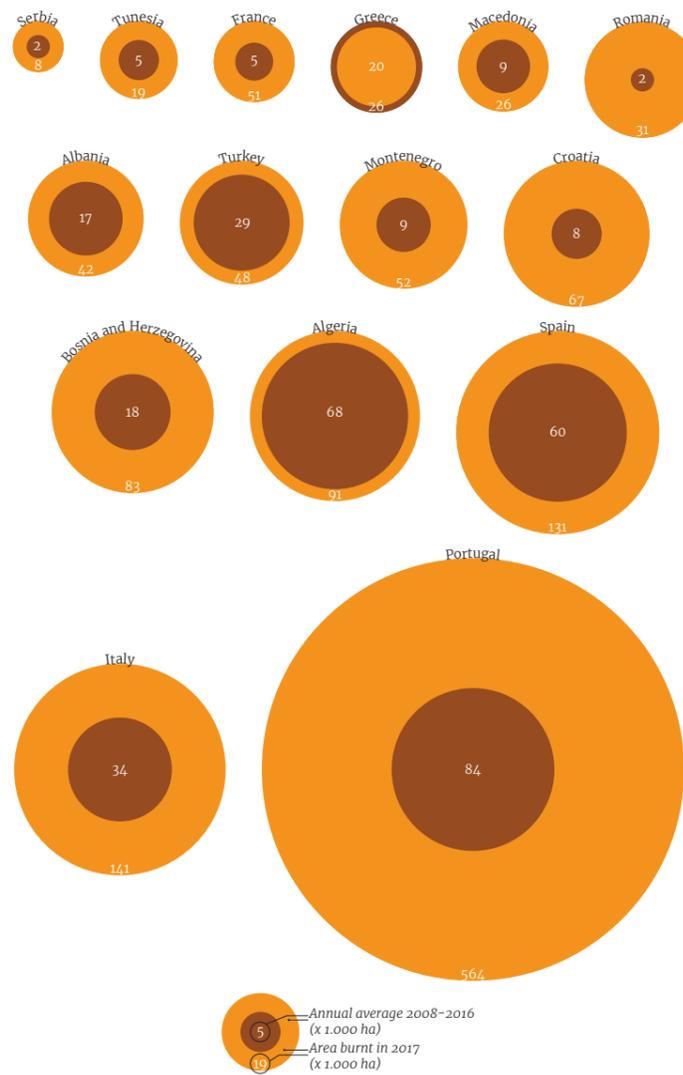
View from the middle platform of HofGap reveals several infrastructures and the process of work, while the park landscape monumentally enters the platform.



View from one of the motorway side 'valleys' of the Fringe Park. Noise barriers are transformed to sound installations, roadside vegetation is organized to features.



Scale comparison between the city of Rotterdam (the Netherlands) on the right and the Pedrógão Grande fire in June 2017 (Portugal) on the left.



Average annual area burnt by wildfires for countries in the EFFIS-system compared to the area burnt in 2017.

Laszlo van der Wal

Ir. Paul Roncken & dr. Cathelijne Stoof (SGL-group, Wageningen University)

Design with Fire

On the role of landscape architecture in the transition to living with fire.

Mafra & Seia, Portugal

Abstract

In Mediterranean Europe, land abandonment and fire suppression have given rise to increasingly bigger wildfires, generating large (im)material losses and environmental impact. Contrary to popular belief, fire is not necessarily a negative phenomenon in Mediterranean ecosystems. Fire as an ecological agent is known to produce positive effects, as many species have developed adaptations to fire. Increasingly, fire is used -intentionally- as a tool to attain management objectives, ranging from fuel control to improving ecological values. However, as of yet, fire science is a strongly technocratic field, in which there is little research on the link between these physical fires, the environmental benefits they are able to produce (ecosystem services) and the emotions and experiences produced by these fires.

To enhance our understanding of fire as both a physical and mental phenomenon and thus help the transition towards co-existence with fire, this study compares two forms of fire -wildfires and prescribed fires- on their respective biophysical effects, the ecosystem services they produce and the emotional response they generate. The results indicate that high fire severity -such as in wildfires- diminishes ecosystem service produced, while prescribed fires -lower in severity- can promote ecosystem services. Secondly, the lack of control in wildfires is associated with strong negative emotions, while the control in prescribed fires generate more moderately positive emotional responses.

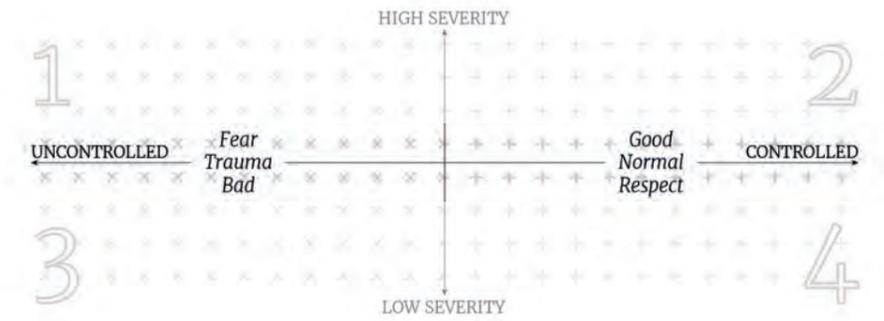
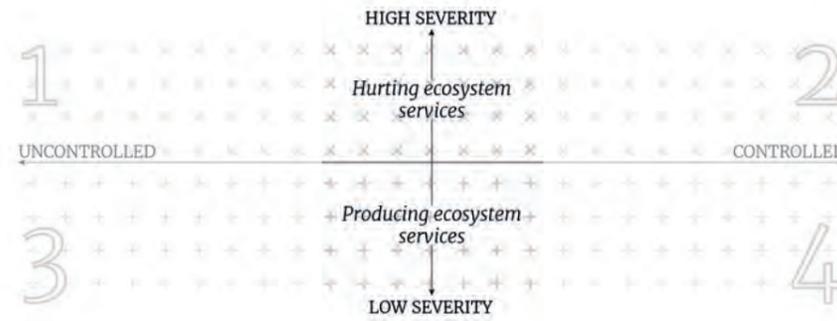
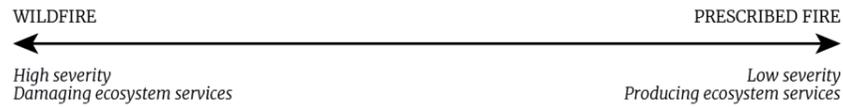
This study proposes a conceptual framework, using the two previously mentioned dimensions -fire severity and fire control- as a means to increase the potential forms of fire being discussed to four "fire archetypes". In order to facilitate this discussion two design products are developed; (1) a card game, meant to bridge the gap between the technical and emotional aspects of fire and (2) a proposal for a fire landscape park, illustrating how the fire archetypes from the conceptual framework might be implemented.



The difference between a high severity fire (left) -where much organic material is burnt due to low moisture levels- and a low severity fire (right) where less organic matter is burnt as more moisture is present in the landscape and soil.



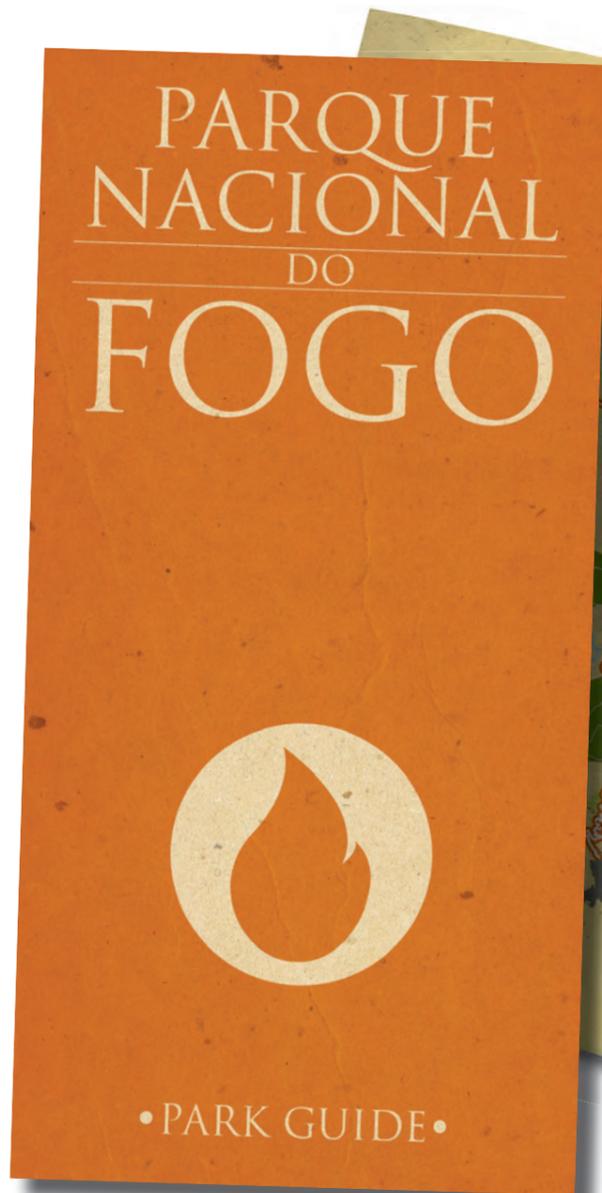
The differences between high severity (left) and low severity fires (right) are also clearly visible in the landscape. In a high severity fire, only the stems of trees are left standing. In a low severity fire, shrubs quickly regenerate.



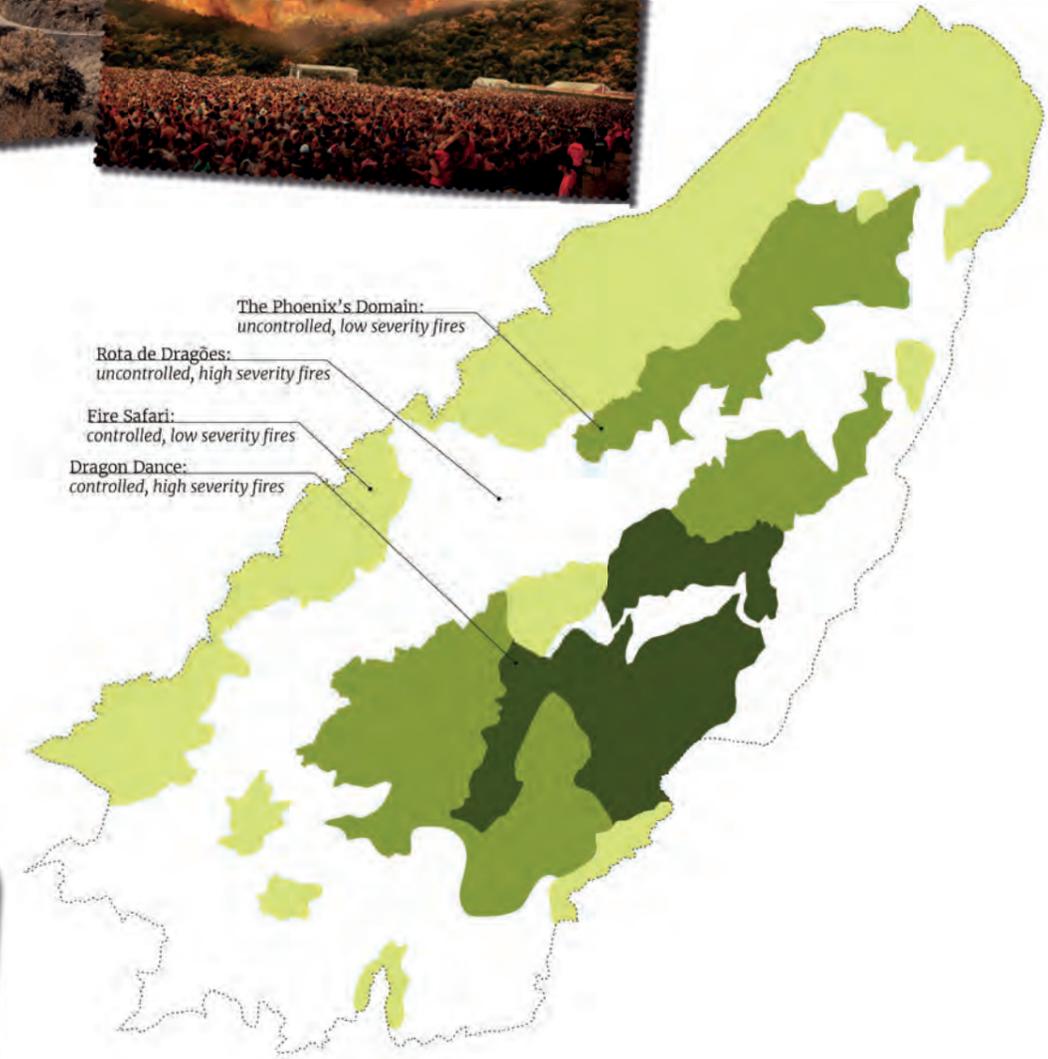
The results show a dualistic view of fire; wildfires -high in severity, damaging to the environment and negatively perceived- compared to prescribed fires -low in severity, generally beneficial to the environment and associated with more moderate or positive emotions. This duality is however not able to cover all possible forms of fire, which might be due to the different connotations of the terms wild and prescribed. Because, when compared to nature, wild nature can also serve a clear prescribed purpose. This illustrates that the terms do not exclude each other.

A conceptual model with two axes is proposed. The vertical axis represents physical fire -fire severity- and it's beneficial effects on the environment.

The horizontal axis shows the mental fire -the degree of control over the fire- and the emotional responses associated. Together, the two axis form four fire archetypes, which are taken as a basis for a fire park.



In the Phoenix domain, fires can burn as they like, but with a low severity.



Scale 1:30.000

The propose National Fire Park, where visitors can experience all fire archetypes.

The proposed zoning plan for the park, with each of the four fire archetypes delegated to a zone.

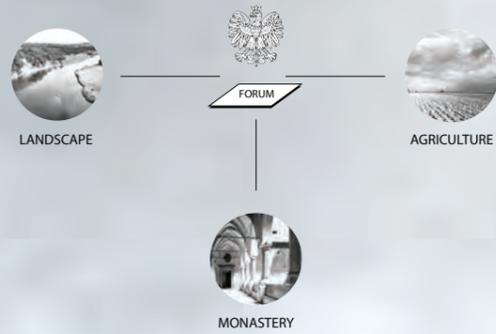


WHO ARE YOU POLE?



CATHOLICISM PEASANTRY / RURAL MENTALITY TRAUMA

Fundamental characteristics of Polish identity



Concept of the Forum



Building the forum for Poles: Imaginary of the design process



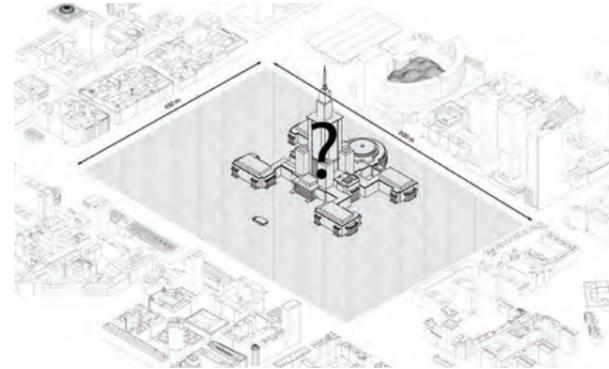
SUFFERING
DEATH
TRAUMA

Touch the trauma of Poland by adding a 'mirror of the society'

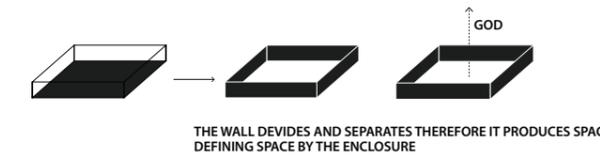
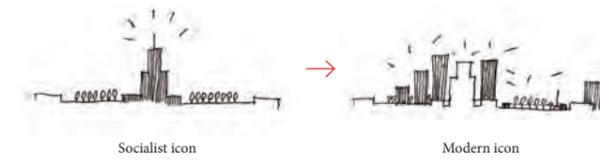
From the film recesses, as if from the abyss of Hell, there started to emerge people who had died long time ago and memories of events that, as in a dream, had no explanation, no beginning, no end, no cause or effect. They would emerge and keep returning stubbornly, as if waiting for my permission to let them enter. I gave them my consent. I understood their nature. I understood where they were coming from. The imprints impressed deeply in the memorial past.

Tadeusz Kantor

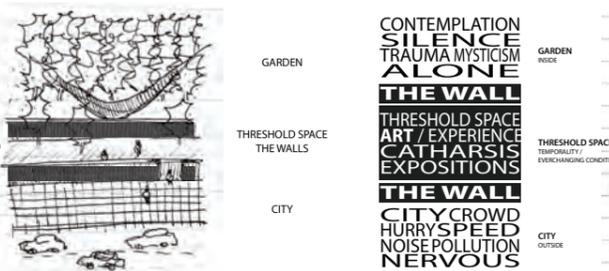
Excerpt from 'Imprints', Silent Night (Cricotage), 1990



Impotent void at the Warsaw's core. Volume of the soviet Palace of Culture and Science seen as a negative of an empty square. Perfect place for a Polish forum.

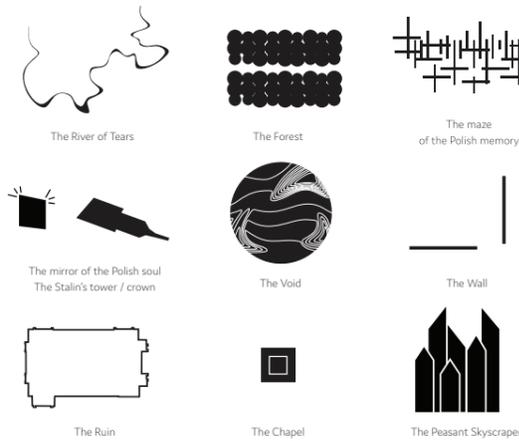


Enclosure enhance spirituality and importance of the place. A new paradise in the city.



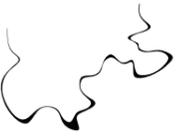
Enclosure changes the perception of space. Changing the condition from real (city) to surreal (garden).

DESIGN ELEMENTS



The elements of a design derives directly from the Polish identity (landscape, history and culture). They become archetypes for a design by bringing Polish legacy.

Łukasz K. Bąkowski
Adriaan Geuze, Daniel Jauslin

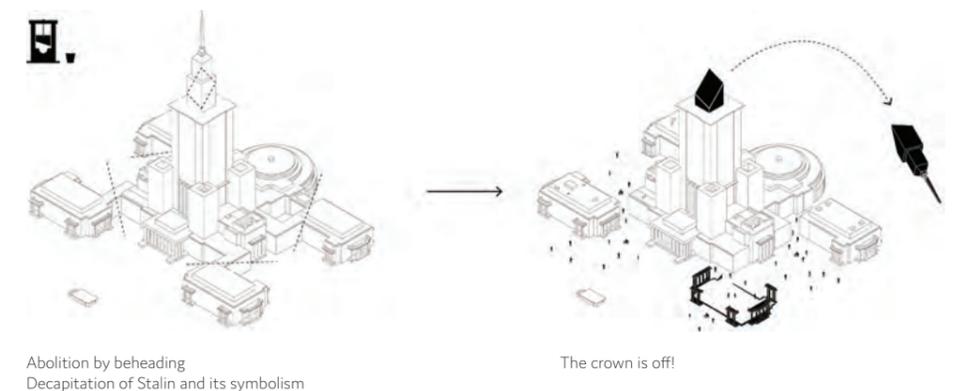


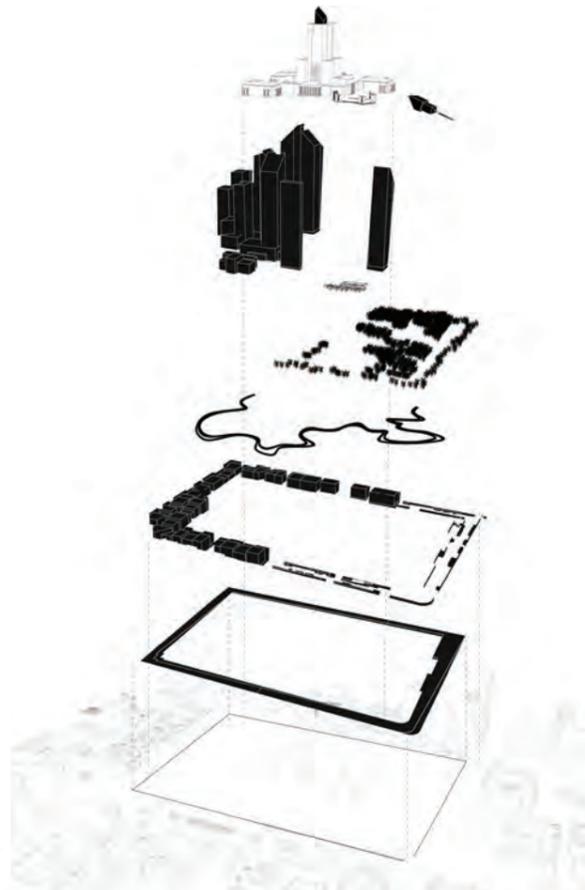
THE GARDEN OF TEARS

A Design Research For Polish National Forum: In Looking For Polish Identity an architectural claim of today's generation. Warsaw, Poland

The Garden of Tears presents an architectural claim of the nowadays troubled society. 21C is a century of contradiction, coexistence of contrasts, past and present, connection and disconnection to tradition, in Warsaw reaching an apogee. Today's Polish society is in stress about its identity. It desperately trying to reinvent it again, especially at the time of creeping homogenization and cultural globalisation within the current debate about understanding of the Polish national identity. The catalogue of failure in Polish history produced generations of martyrs and exiles, a fascination of death and fatality in Polish mentality. Understanding, that death and trauma defines Polish identity influenced the cult of the nation seen via the dead. Therefore, the answer of what constitutes a nowadays Polish nation is reflected in the design of the **Forum for Polish sorrows, traumas and complexes, a mirror of the contemporary Polish society.** The design creates an image where fantasy and reality intertwines, an image of what we see, imagine and remember.

The aim of the Forum for the Polish capital in a form of an urban park in the post-soviet city core of Warsaw is to better give emotions, directions and understanding of this traumatic period seen as a Polish identity. The Warsaw's Forum reveals layers of history to overcome and deal with the traumatic experiences and complexes. The park works as a mirror of the Polish society, using national symbols as a form of remembrance and a self-reflection. It evokes Polish national characteristics which becomes anchors for a design, including an evocation to Polish landscape such as illusions of forest, river, agriculture, and strong affiliation to Catholicism. Forum therefore, is seen as a contemporary monastery, a hortus conclusus. The idea of the nation is represented in an abstract way with a lot of room for spectator's imagination. Some parts of trauma can be seen as ironic, some bitter, and some as provocation, such as a contradiction of the rural values and church against modernity. All of those unusual components works together and highlight a true and honest representation of Polish nation to become a powerful landmark of nowadays troubled Polish society.





The decapitated Palace of Culture and Science and the chopped off tower

The Peasant Skyscrapers

The maze of the Polish memory

The Forest

The River of Tears

The Cultural Edge variety of cultural events (music, dance, performance, painting, theatre, market)

Coherent, undisturbed cyclical movement at the Edge (a contemporary monastery) - entering a new world

Existing situation



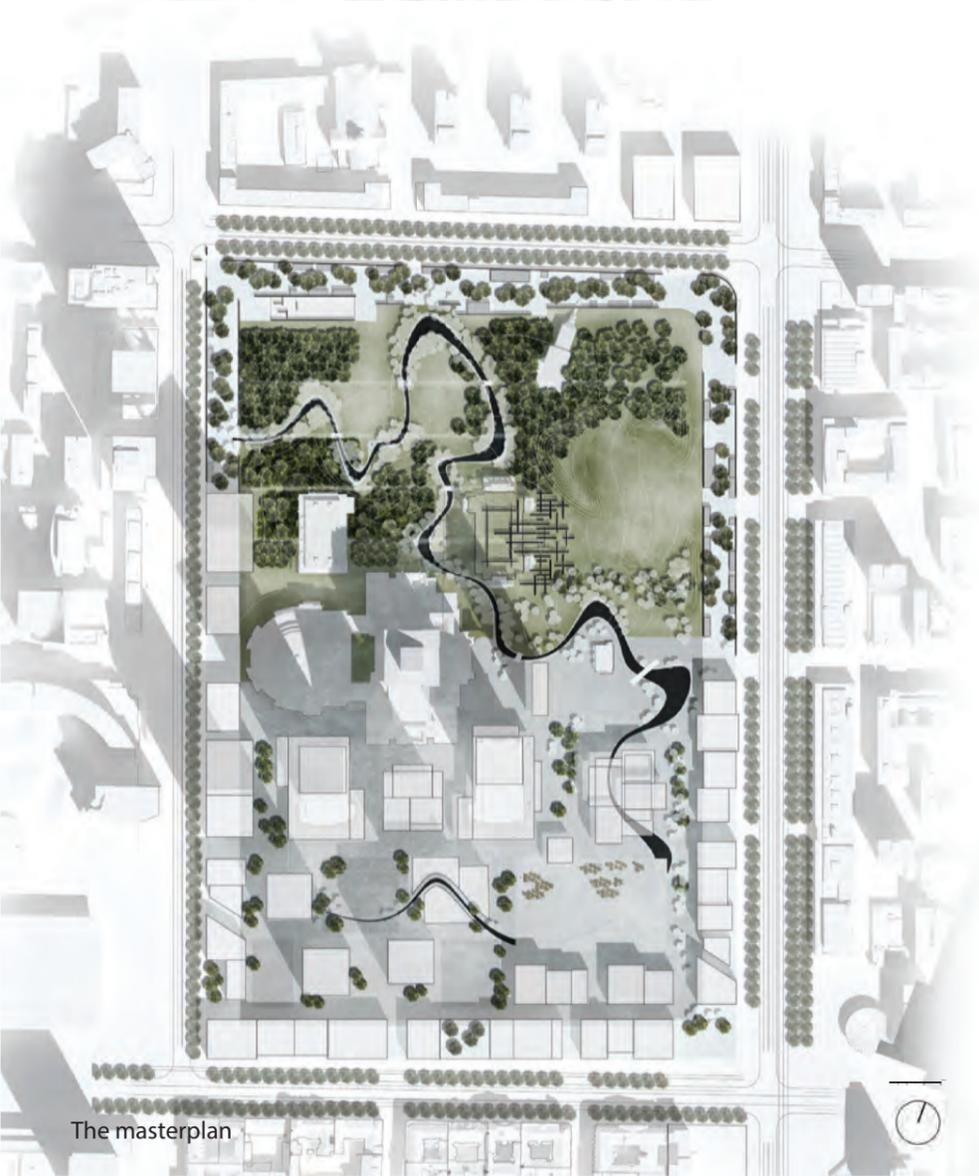
The kiss: culture meets trauma, the River of Tears kisses the Cultural Edge. The romantic poem by Adam Mickiewicz.



Maquette presenting the void, the forgotten Stalin tower in the Forest and the maze of the Polish memory.



The mirror the Polish soul, the Stalin's chopped off tower.



The masterplan



The river of tears



The maze of the Polish memory

The Garden of Tears



Nina de Munnik
 Supervisor: dr. dipl. ing. Sanda Lenzholzer

Revealing the Urban Climate
 A design study on climate revelatory visualisations

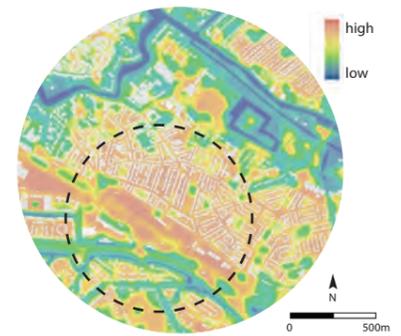
Abstract

Climate change intensifies problems in the Dutch urban climate, such as more heat waves and intensive rain showers. Next to a spatial challenge, it is a social challenge to achieve climate adaptation. Inhabitants do not recognize the occurring problems, due to several perceptual barriers (e.g. high complexity of the problem, low visibility, lack of immediacy of the impacts). The newly defined concept 'climate revelatory visualisations' carries the potential to tackle the perceptual barriers. This research examined what type of visualisations can reveal the occurring urban climate problems and their adaptive solutions best, in order to raise urban climate awareness. The visualisations are embedded in the context of a dense historic labourer's neighbourhood (Assendorp, Zwolle), since common urban heat problems such as heat stress on hot summer days and water accumulation during peak rainfall occur here. The visualisations are generated in a research-through-designing process, and tested on the criteria engagement, clarity, connectivity and trust by the local community. The quantitative and qualitative test results informed the revisions of the visualisations and provided insight in the awareness level of the community.

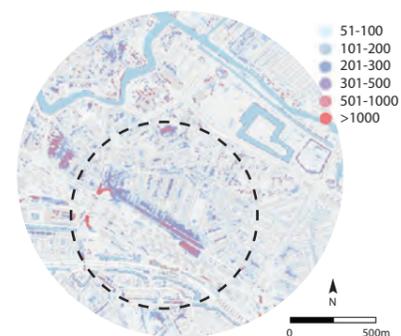


Research context:
 Assendorp, Zwolle

Assendorp is a typical example of a dense historical labourer's neighbourhood (dhl), which are built from 1880 to 1910 in many Dutch cities.



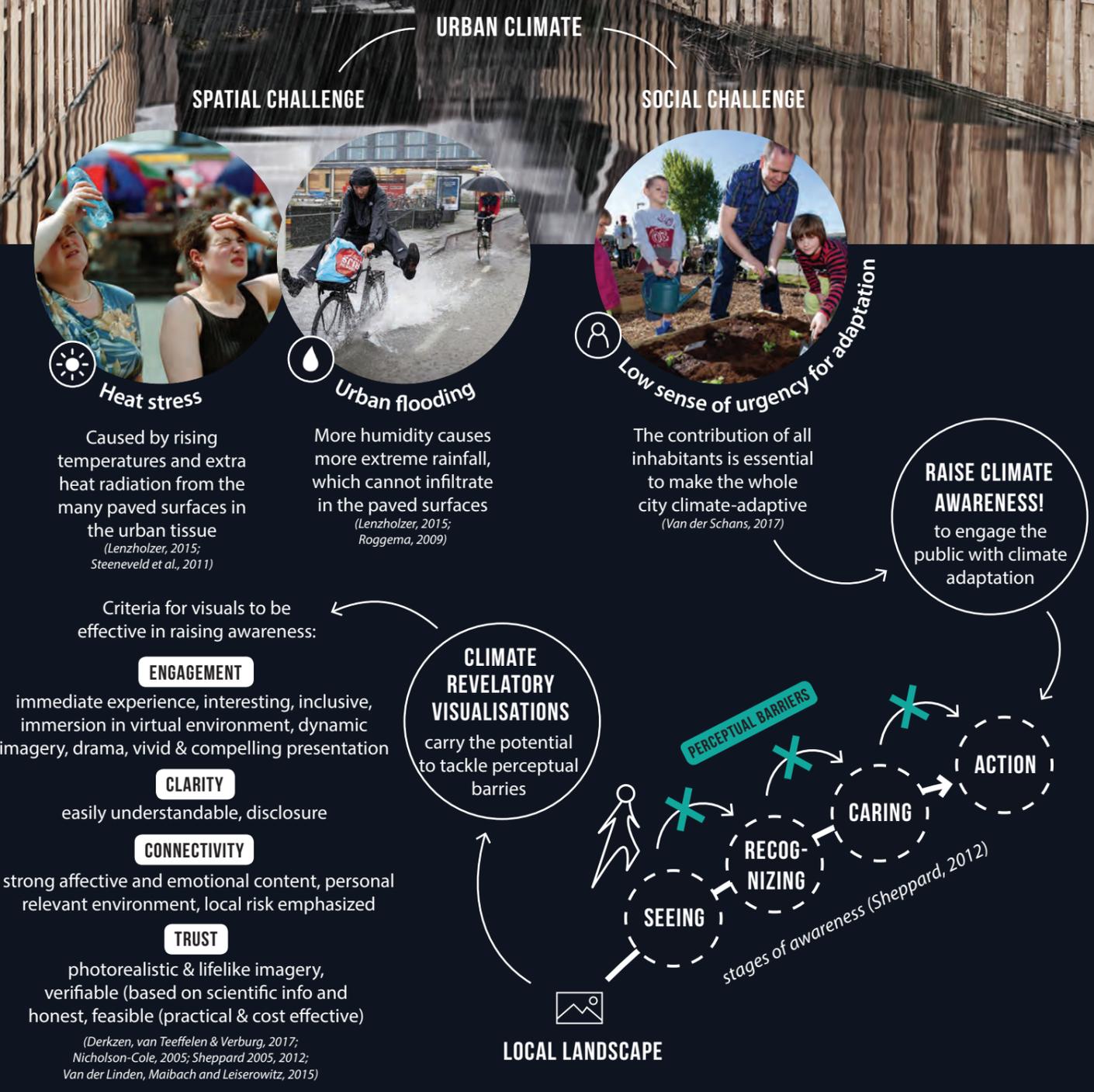
Air temperature (Tauw, 2013)



Potential water accumulation in mm (Tauw, 2013)

The urban climate problems in Assendorp consists of heat stress and water accumulation. The many paved surfaces in Assendorp absorb and radiate heat during hot summer days and cause a delayed infiltration during extreme rain showers.

The research findings show that the climate risks and adaptation measures can be effectively presented in photorealistic and animated imagery, supported by graphic information. The climate revelatory visualisations should contain appealing content in which climate adaptation is positively framed and presented in the personal relevant environment of the target audience. Visualisations revealing the risks of the climate problems, have a warning function; convincing the audience of the urge for adaptation. While visualisations revealing adaptation measures, have a motivating function by promoting a feasible climate adaptive future of their direct environment. The combination of these ingredients in climate revelatory visualisations can tackle multiple perceptual barriers, and therewith trigger significant steps in the awareness level amongst inhabitants according to Sheppard's Awareness-to-Action framework.



Tested design hypotheses



Climate adaptation
Reveal the adaptation options next to showing the risks, in order to motivate people with the positive effects
(Bishop & Lange, 2005; Moser, 2014; Sheppard, 2012)

Personal environment
Respond to the feeling of responsibility by revealing the local risks in a personal relevant environment
(Sheppard, 2005, 2012; Van der Linden, Maibach and Leiserowitz, 2015)

Non-visible information
Tool to explain 'invisible' effects and provide information on the benefits of climate adaptation
(Derksen, van Teeffelen and Verburg, 2017; Sheppard, 2012)

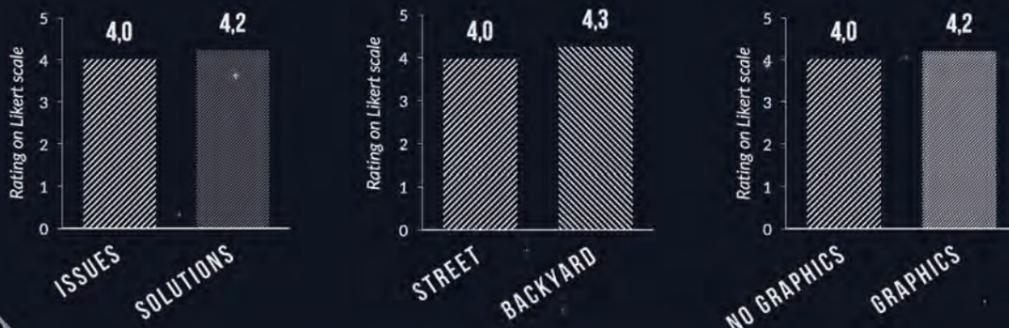
Animated imagery
Powerful and efficient tool to reveal the dynamic climate processes
(Bishop & Lange, 2005; Nicholson-Cole, 2005; Sheppard, 2012)



Test bed: street



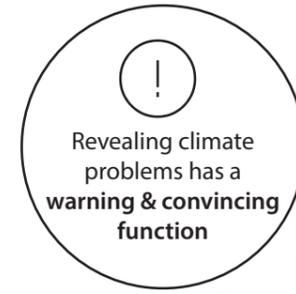
Test bed: backyard



The visuals revealing the solutions, in a backyard context and with graphics were rated as most effective on the four criteria by the local community

"I need to imagine it, so this is very helpful"
"Powerful through simplicity"
3,8 / 5

The test results show a positive impact of the visuals on the climate awareness of inhabitants



Revealing climate problems has a **warning & convincing function**

+ engagement
drama is added by revealing the effects of an extreme weather event: a heat wave



+ engagement
dynamic imagery show the climatic process during day and night: heat is absorbed by paved surfaces during the day and causes heat radiation at night.

trust +
a high level of realism is ensured with lifelike imagery

clarity +
illustrations in the form of an animated digital white marker make the climate processes comprehensible



+ connectivity
a personal relevant environment is chosen to emphasize the local risk

+ clarity
text accompanies the explanation of illustrations

+ trust
a thermometer and the degrees Celsius indicating the rapid rise of air temperature and limited cooling at night & make the visuals verifiable

Explanation of the incorporated criteria and hypotheses in the problem visuals

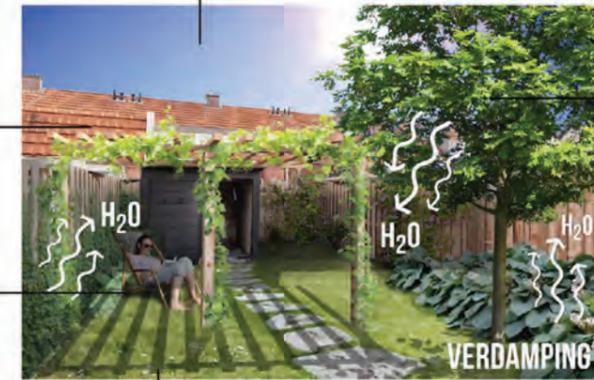
+ engagement
appealing design makes climate adaptation interesting



+ clarity
the illustrations highlight what is new and changed, and how these changes contribute to a better urban climate

trust +
the solutions shown are feasible and not too advanced for laymen to implement themselves

connectivity +
the human scale is added with a person, what makes the visual relatable



+ engagement & trust
more reality is provided by making the shadows animated, corresponding with the course of the sun

+ trust
the thermometer and degrees Celsius indicate the effect of the solutions on the air temperature: less rapid increase and lower temperatures at night

Explanation of the incorporated criteria and hypotheses in the solution visuals

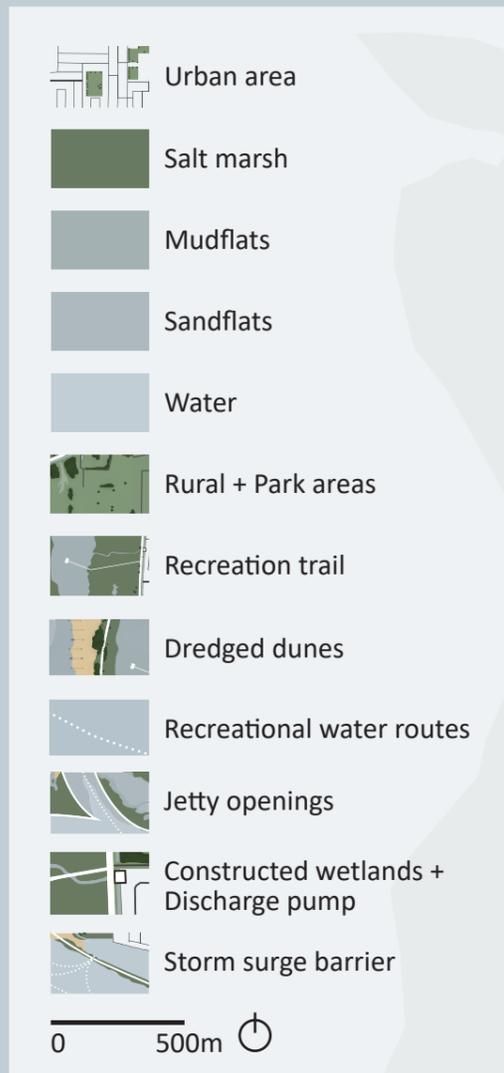


Revealing climate solutions has a **motivating & encouraging function**



The 16 animated climate revelatory visualisations are accessible via the link or QR-code

<http://bit.ly/2C5GZ6B>



Jorne van de Water

Name supervisors: Dr. Ir. Ingrid Duchhart (LAR), Dr. Ir. Rudi van Etteger MA (LAR), Prof. Dr. Ir. Adri van den Brink (LAR) & Dr. Ir. Pieter W. Germeraad (landscape architect)

Flood-resilient delta for Richmond

An exploration of the possibilities for flood adaptation in the Fraser River delta, Canada

Abstract

As a consequence of population growth, projections are made that the Fraser delta, Canada, will experience higher flood risks due to sea level rising and higher river discharge fluctuations. The delta's current flood defense system will not be able to withstand the predicted changes, thus adaptations are required. Currently, the municipalities in the delta use a traditional hazard-based approach to deal with flood risk. However, this approach does not take the current landscape system into consideration, leading to short-term and small scale solutions. This research explores whether the Dutch approach of using the landscape system towards flood management could be applicable to a Canadian landscape. From the results of analyzing the Fraser delta's landscape and related Dutch flood adaptation projects, a landscape strategy for flood adaptation was formed. To see what impact the proposed landscape interventions of the landscape strategy had, several zoom-ins were made for typical sub-areas of the delta. The knowledge generated from the zoom-ins, formed the input for a large scale landscape structure plan, illustrating how the Fraser delta's landscape system can be used as a means of enhancing flood resilience. The research illustrates how the Dutch 'landscape system' approach on flood management could be used as an alternative approach to improving flood safety of the Fraser delta. The main findings were that the Fraser delta's landscape system can be used to enhance flood resilience. However, it would require major changes in the current approach of the municipalities. The municipalities should approach the flood safety assignment through a range of different scales, in which the delta is seen as one system in which different parts are connected and influence each other.



Impression I: Flood adaptive pathway



Detailed design: Steveston



Boulevard (AA-AA')



Green parking lot (BB-BB')



Transformed shipping hangar (CC-CC')

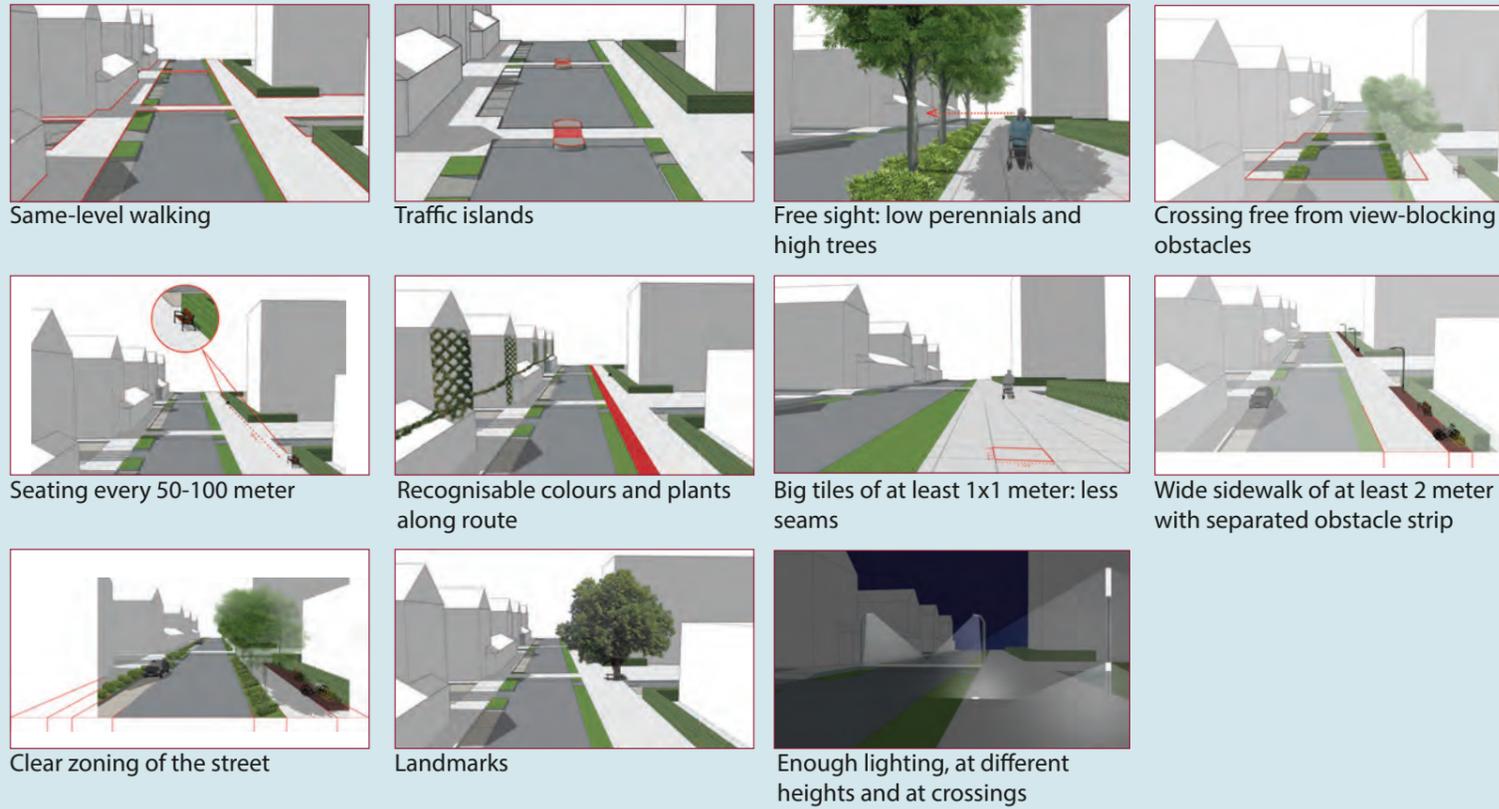


0 40m 1 N

Accessibility is needed to make neighbourhoods agein-proof. To achieve this, we need:

-  Safe infrastructure
-  Legible and clear pedestrian infrastructure
-  Pedestrian network well connected

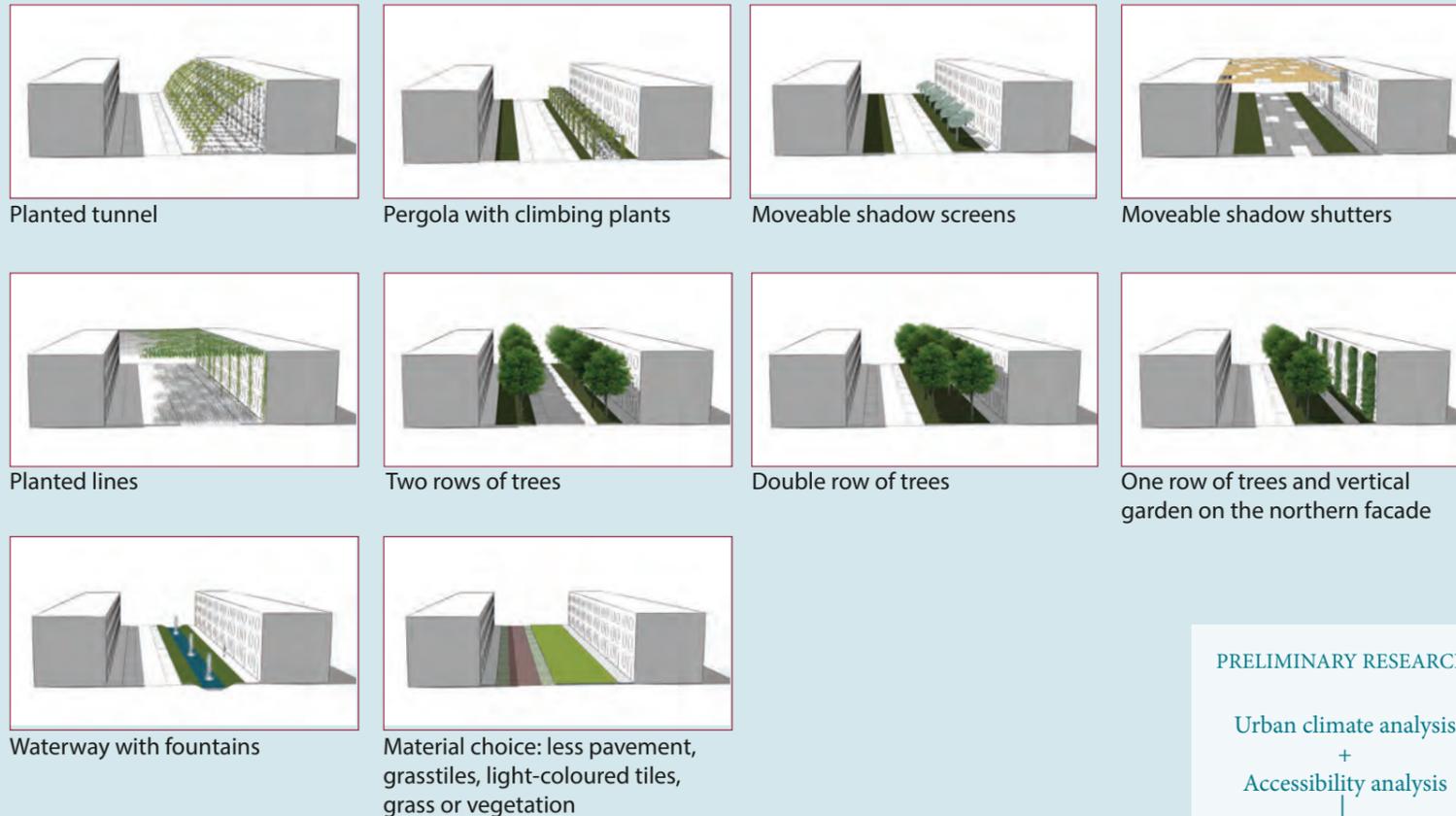
Design principles to improve accessibility for elderly



Thermal comfort means there is personal satisfaction and this can be influenced by physical factors. To achieve this, we need:

-  Shadow
-  Less heat accumulation
-  Cooling by evapotranspiration

Design principles to improve thermal comfort



Joa van Maaren

Supervisors: Sanda Lenzholzer and Carlijn Wentink (Health & Society)

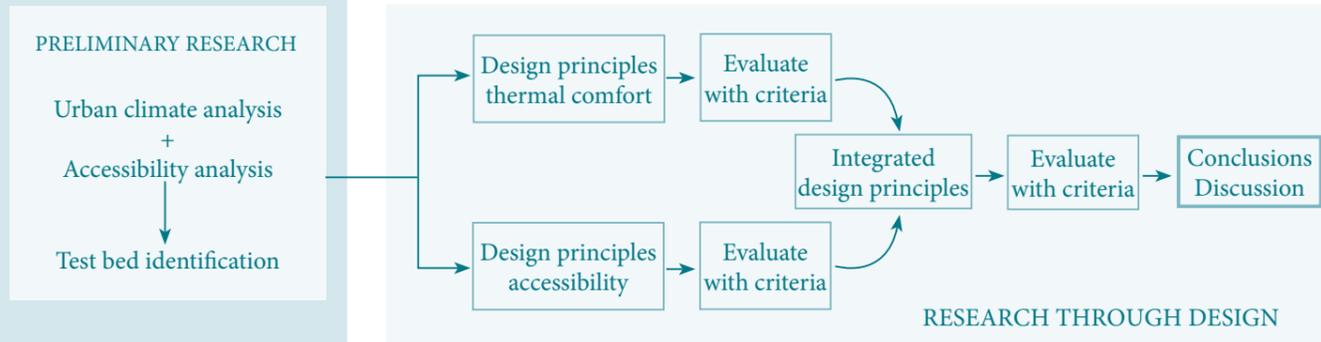
Thermally comfortable and accessible spaces for elderly

Abstract

In the coming years we will have increasing numbers of elderly in our urban environments in the Netherlands. With greater life expectancy, the ability of elderly people to function independently is becoming an increasingly important public health issue. Cities should be made more ageing-proof and suitable for elderly to continue to live at their own homes. Numerous scientific studies show that enough physical activity has a beneficial effect on the health, the self-reliance and the well-being of people, even at very high age. However, a large amount of elderly are not active enough. One of the reasons is the bad quality of the public space. Therefore it is very important to make public spaces accessible for elderly.

A big threat for public health, and especially for the vulnerable such as elderly, is the changing climate. The heat load in urban surroundings forms a health risk. Not only the mortality rates rise, but also other health problems increase. To mitigate the urban heat island effect and to be able to cope with heat stress, landscape architects can contribute with climate responsive design. Site-specific measures can create thermally comfortable spaces.

This research examined how we can make accessible and thermally comfortable residential streets for elderly. In a research through design process was tested how design principles can improve the accessibility for elderly and the thermal comfort in residential streets. These design principles are assessed on the criteria safety, connectivity, legibility, providing shadow, cooling by evaporation and evapotranspiration, and minimising heat accumulation. The best solutions were used to develop integrated design principles that are both accessible for elderly and thermally comfortable. The research findings show that different design principles can be very well combined and complement each other. To reach an accessible space for elderly, multiple design principles are needed that together form an optimal situation. This resulted in green residential streets with enough space for elderly.





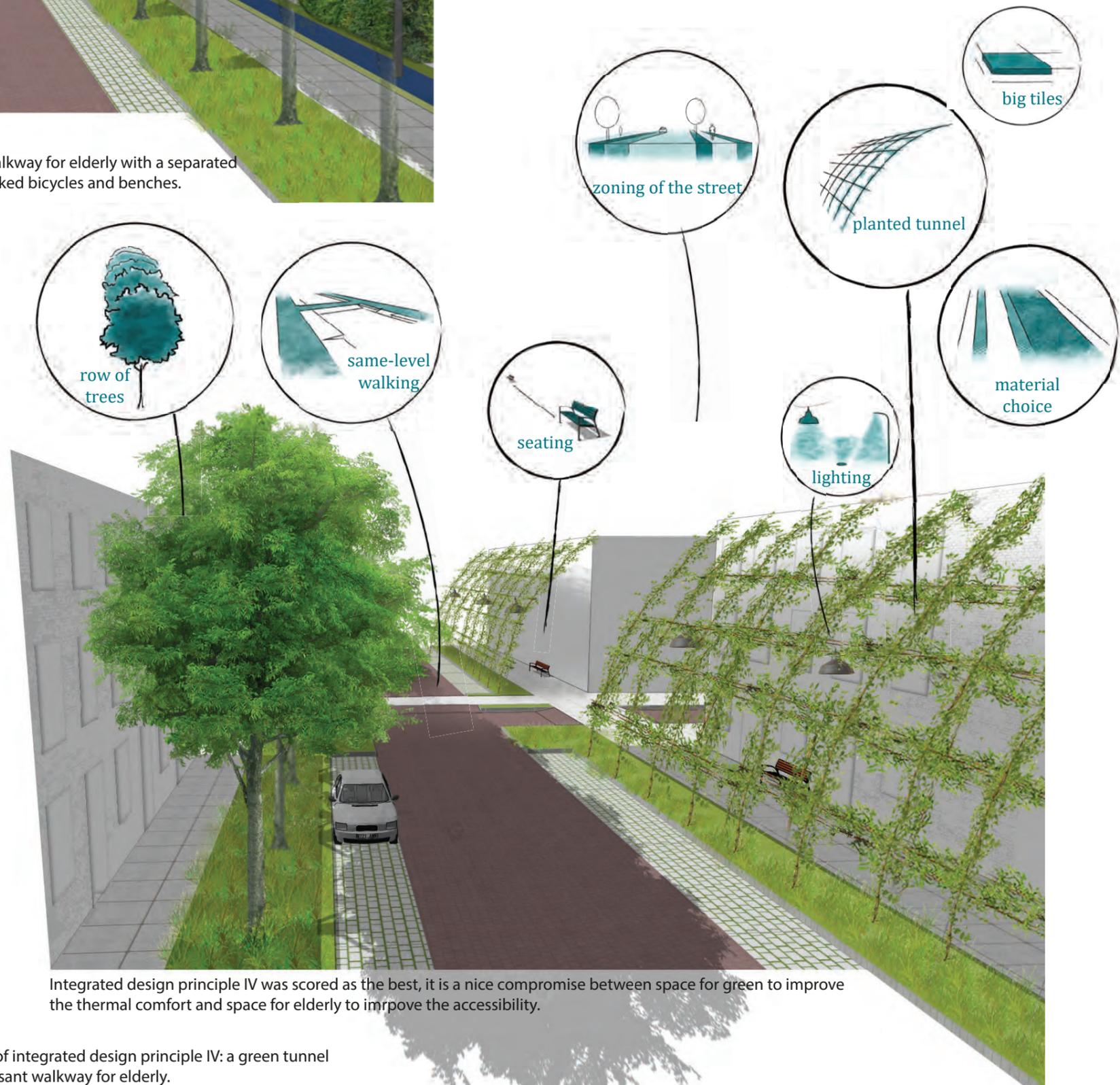
Visual of integrated design principle III: a wide sidewalk with a lot of space for elderly.



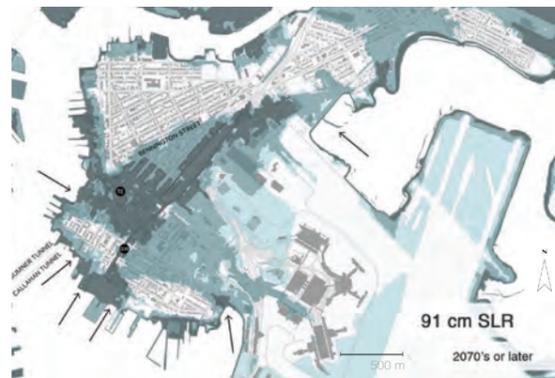
Integrated design principle III: a green walkway for elderly with a separated strip for obstacles such as lampposts, parked bicycles and benches.



Visual of integrated design principle IV: a green tunnel as pleasant walkway for elderly.

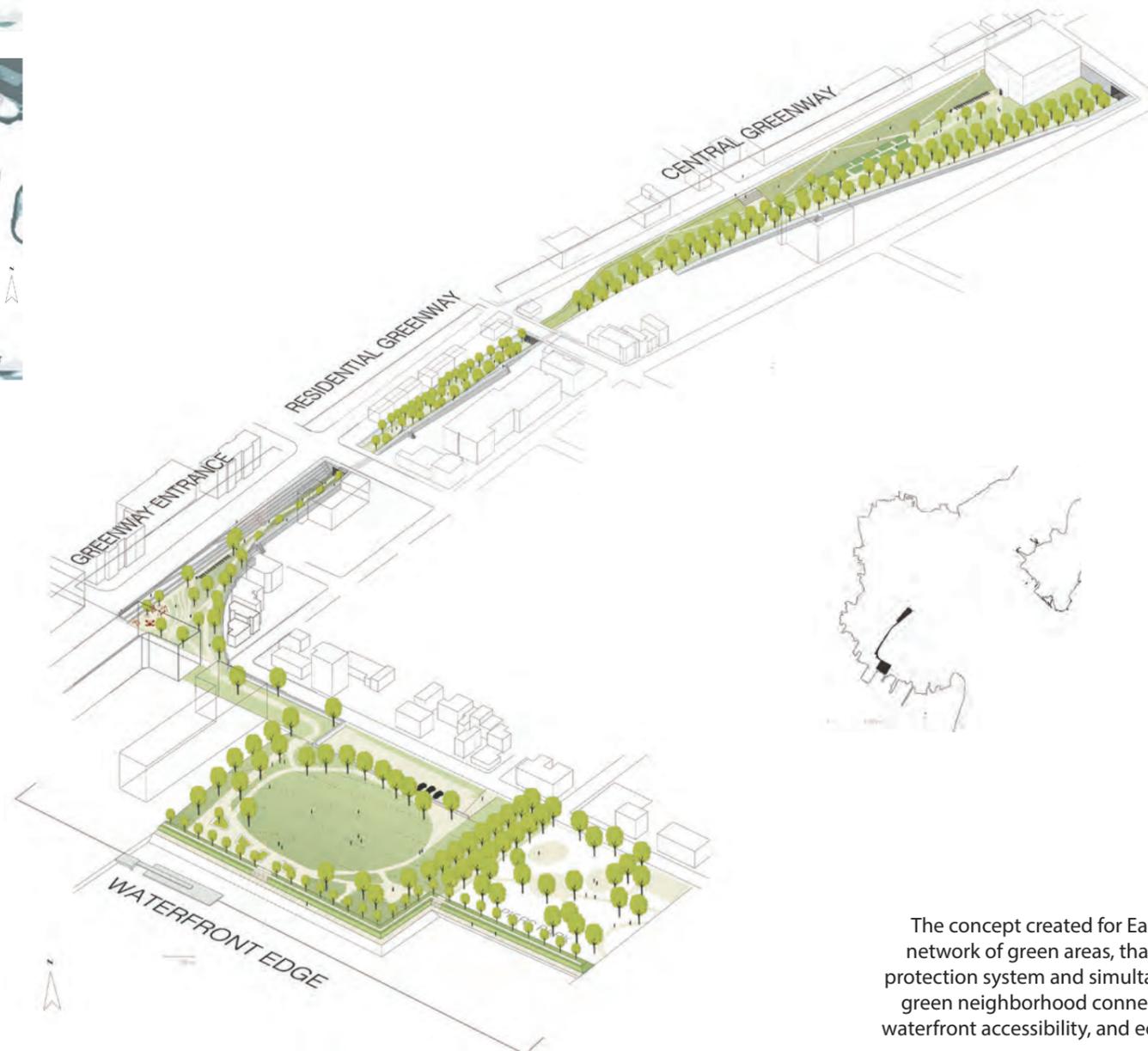
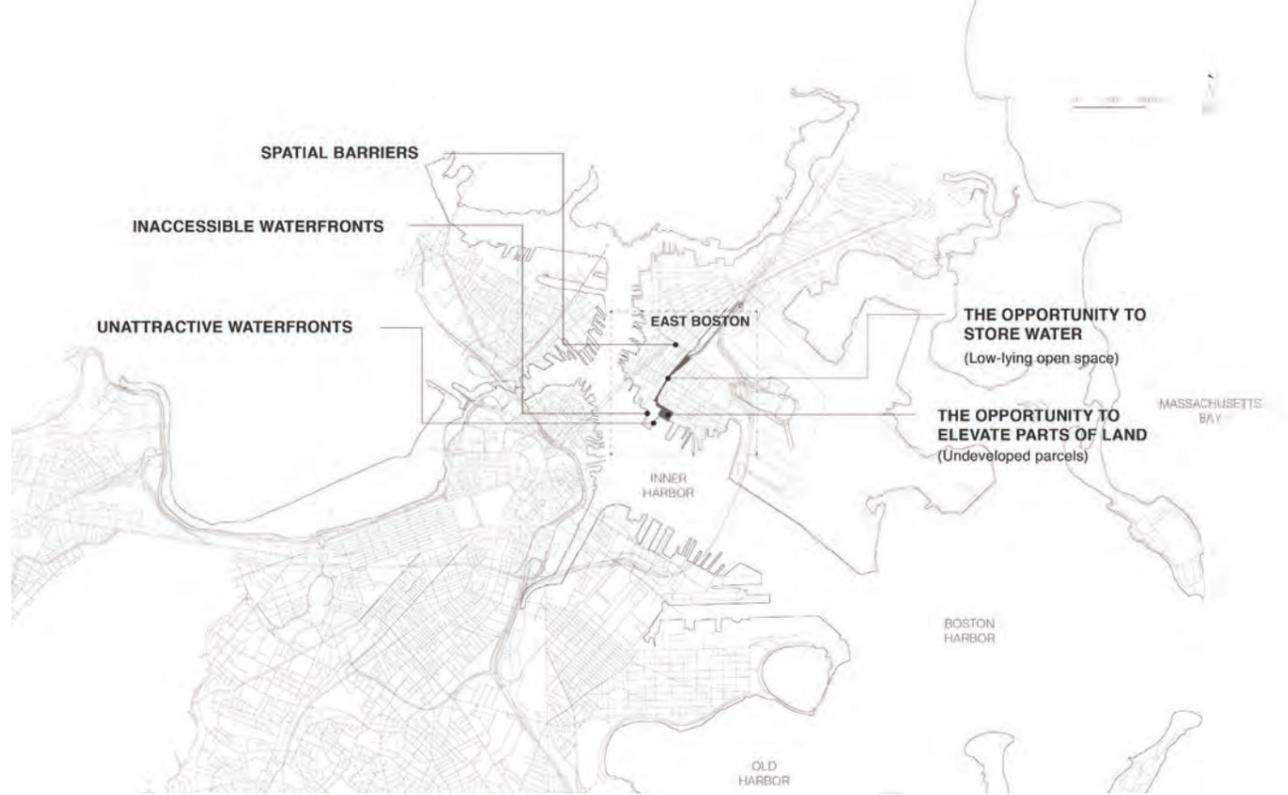


Integrated design principle IV was scored as the best, it is a nice compromise between space for green to improve the thermal comfort and space for elderly to improve the accessibility.



Flood projections for the near-term, mid-term and long-term in East Boston. The light blue colour indicates 1% annual chance storm, the darker blue colour indicates 10% annual chance storm and the darkest blue colour indicates flooding at high tide.

A design to protect and connect. The design created for East Boston consists of four parts that are part of a larger network of green areas that together form a large park system. The waterfront park will function as a natural coast defense, as it will provide a water resisting buffer. The other three connected open green spaces will be developed to funnel and store overtopped water.



The concept created for East Boston shows a network of green areas, that serves as a flood protection system and simultaneously provides green neighborhood connections, recreation, waterfront accessibility, and ecological features.



Nora Kooijmans

Supervisors: Adri van den Brink, Rudi van Etteger

Contributing to a Climate Ready Boston

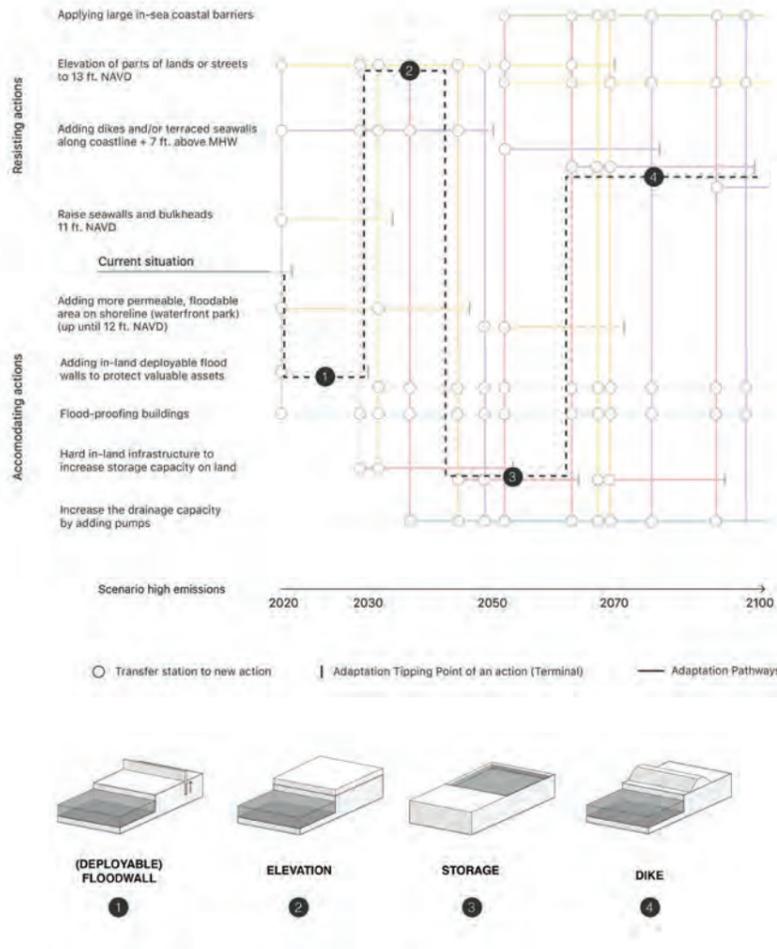
Developing a systematic approach for adaptive design under climate uncertainty (Boston, USA)

Abstract

Sea level rise is a new threat facing the coastal city of Boston. Uncertainty around how much sea levels will rise, the effects on storm intensity and frequency, and what impacts these changes will have, make spatial adaptation in coastal cities a challenge that requires new practical and adaptive approaches. However, in landscape architecture, these approaches are currently lacking.

This master thesis focuses on contributing to flood risk reduction in Boston by developing such an approach that helps create landscape architectural designs that account for significant uncertainties. The approach functions as a guide in the design process that can help landscape architects shift away from the ambition to achieve static, predefined outcomes and move towards creating adaptive designs. It was partly developed through review of existing planning approaches and draws upon the Pathways Mapping Tool that is turned into an iterative design tool that allows the designer to keep a broad view of all the possible adaptation options and it stimulates designers to look far into the future and think about long-term adaptation options.

The design for Boston is used as a case study to test the approach. The case study resulted in an adaptive design for Boston that creates on-going development and improvement of a chosen area, providing it the ability to be responsive to its dynamic environment and adaptable to maintain its functionality. This way, the design accounts for uncertainty and validates the developed approach. The results indicate that the approach could be worthy of replication or broader dissemination, helping the wider global community of coastal cities in trying to address the challenge of adapting to an uncertain future climate.



Because the future climate is uncertain, a decision making tool, that was used to create a design for East Boston that has the capacity to respond to unprecedented and unexpected future circumstances in order to maintain a safe level of protection.

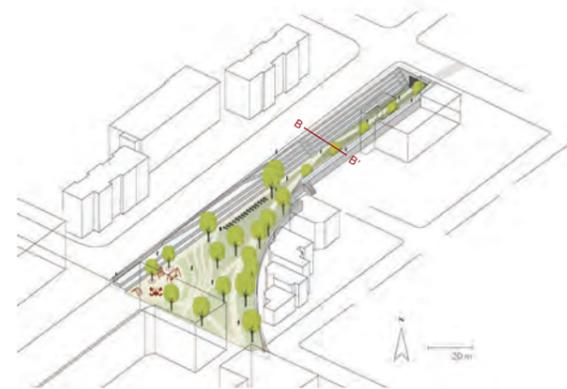
The use of the tool led to a sequence of adaptation measures over time that was used for the design.



The spatial visualization of the sequence of measures shows what the landscape could look like in every phase. The various options on the top and bottom of the pathway help to keep in mind what options there are throughout the sequence.



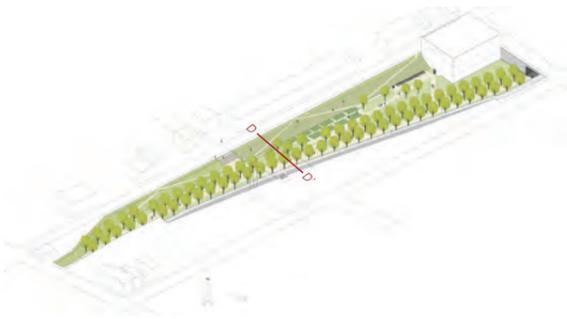
A water resisting waterfront park edge (A - A')



A water funneling greenway entrance (B - B')



A water storing residential greenway (C - C')



A water storing central greenway (D - D')

Site design plan



Begoña Arellano Jaimerena

Dr. Ir. R (Rudi) van Etteger

Cultivating resilience towards flood safety

Local knowledge for landscape design

Copiapó River valley, Atacama - Chile

Abstract

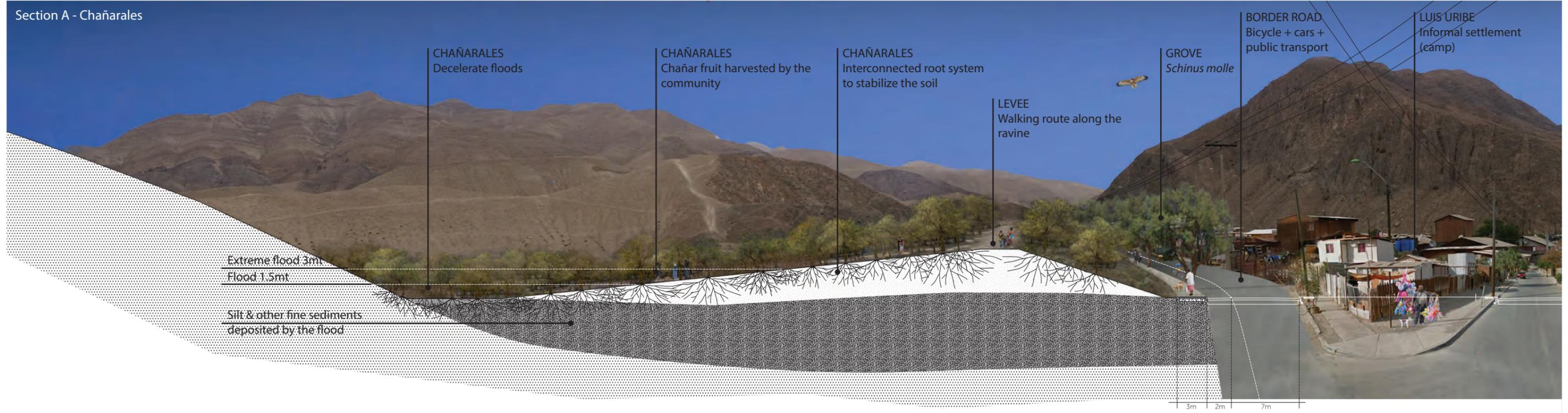
Informal settlements are present in many hazardous locations around the globe, and their inhabitants usually represent the most vulnerable segment of the population. Therefore, when a disaster occurs, they are usually the most affected. Their vulnerability can be understood in terms of a lack of community resilience, with lack or absence of resources to cope with the disaster. In addition, when the landscape is not resilient, the negative effects are even greater. Desert landscapes, like the Atacama Desert, have very low resilience, being environmentally very vulnerable, with sensitive ecosystems, where even minimal changes can cause major disruptions.

On March 2015, Atacama was affected by an unusual hydro meteorological event, causing intensive precipitation in a short period of time that prompted a flood along the Copiapó River valley. The flood uncovered existing risks that had not been adequately managed, making the inhabitants of informal settlements even more vulnerable. While a lot has been done about flood preventive design, informal settlements are often not addressed directly because of confronting political issues. It may be argued that informal settlements are illegal and they should be eradicated, however their presence responds to a societal issue of inequality that cannot be ignored. Taking into consideration the proliferation of these settlements around the world, and how its inhabitants cope and adapt to floods, it is relevant to reflect on the knowledge coming from them. This research attempts to explore the potential contributions of local knowledge from informal settlers for landscape design towards flood mitigation, recognizing the complexities of working with informality, uncertainty and the ephemeral.

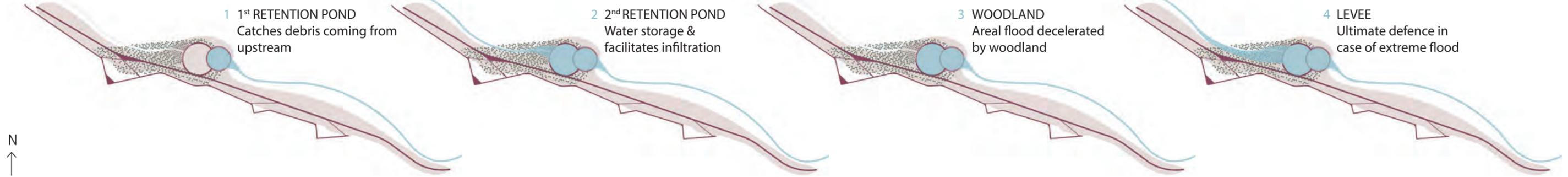
Keywords: informal settlements, floods, resilience, vulnerability



Section A - Chañarales



Flood sequence diagram - Phases for flood mitigation



Chañarales - Permanent woodland of *Geoffroea decorticans*
Fruit harvest & recreation



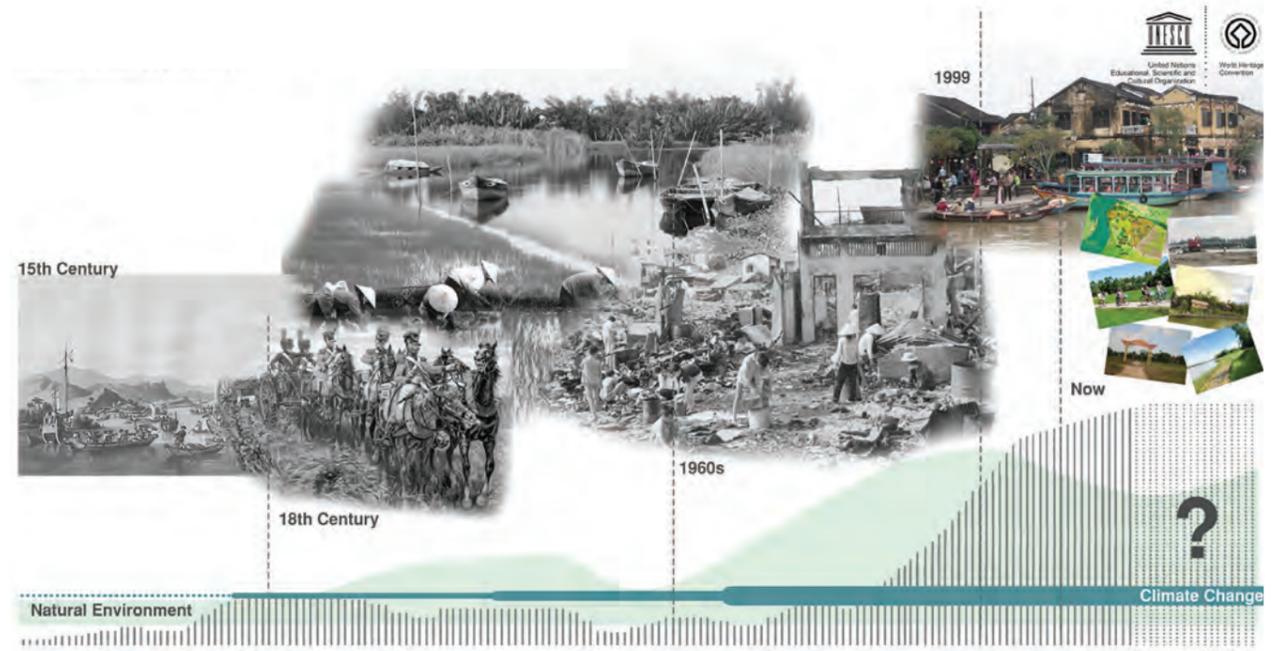
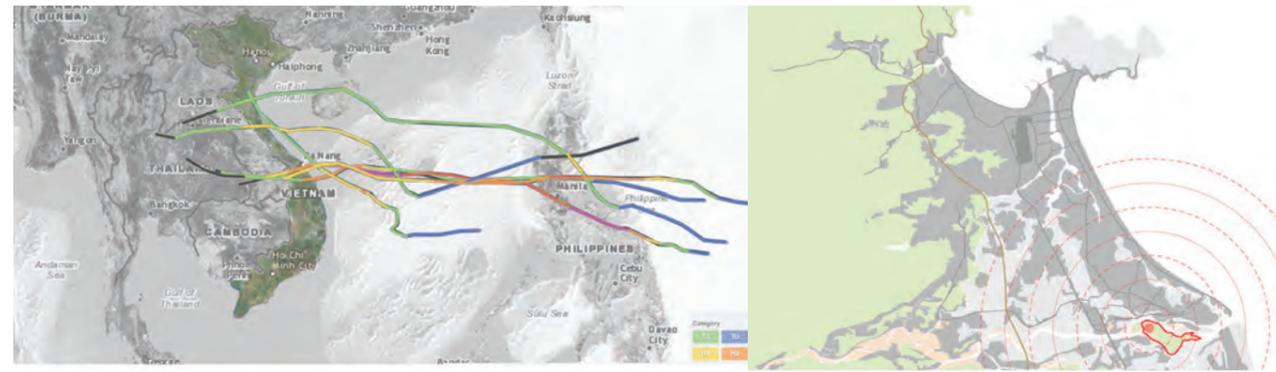
Scrubland - Native scrubs, predominantly *Skycañthus acutus* & *Atriplex deserticola*
Recreation



Espinales - Ephemeral woodland of *Acacia caven*
Recreation



Flooding Reconstruction during Typhoon Damrey



Oktaviana Miffatulani

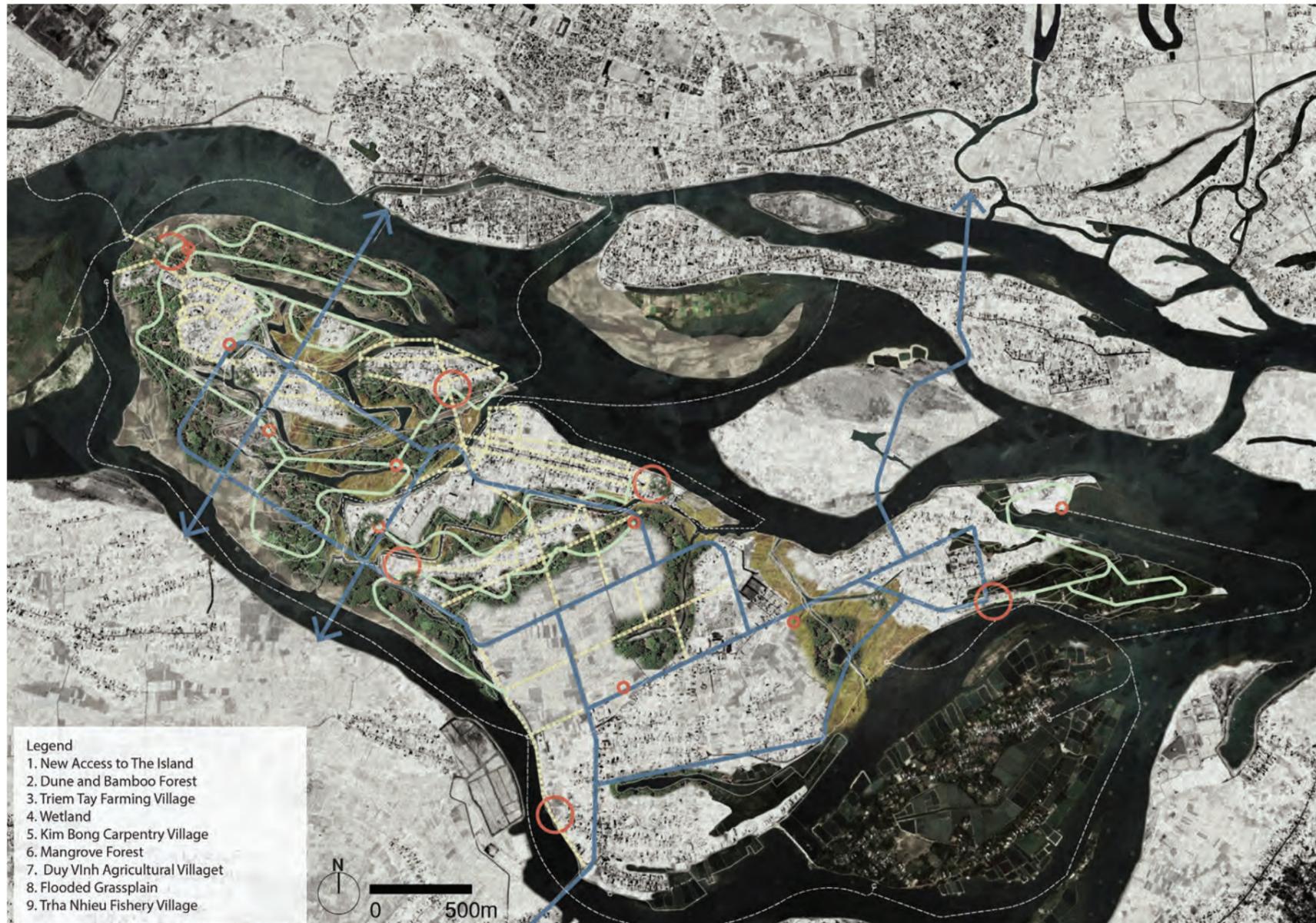
Name supervisors: dr. ir R (Rudi) van Etteger MA

Revert!

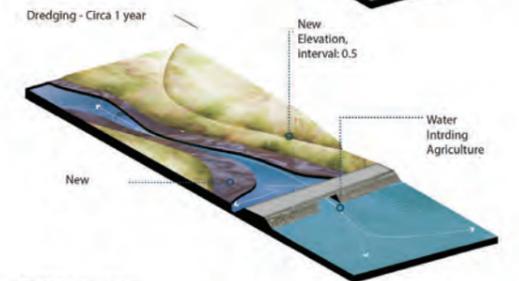
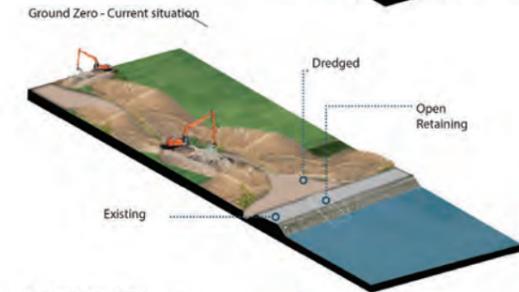
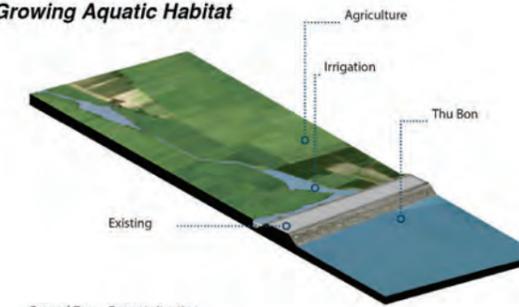
a Resilient Landscape Design Process Towards Typhoon and Flooding in Cam Kim Island, Hoi An Vietnam

Abstract

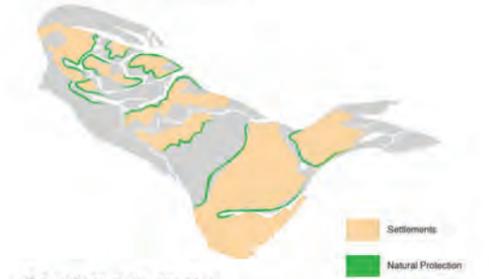
The extreme dynamics of estuary makes this specific landscape type vulnerable towards risks of natural disaster and climate change impact which is affecting human habitat. Those exposure had driven the landscape type into an unfavorable place to settle in terms of spatial planning. However, the bond between human and their habitat had been nurtured spiritually and manifested in their daily life. The research aimed to study a reciprocal relation between landscape layers, local coping mechanism, and current landscape situation to reduce the risk of typhoon and floods in Cam Kim Island, Vietnam. This study was started by finding the literature to give a better understanding in resilience landscape meaning and identified resilience principles that was possibly used in this study, which are modularity, redundancy, managing variables and feedback, and diversity. As a landscape architect, the usage of layer approach was used to identify the most important landscape characteristics of the island. Interview activity was conducted to verify landscape dynamics of the island. After finding those information based on science and local knowledge, new 14 principles were obtained. Later, those principles were cultivated into three different conceptual design and re-identified through theory of resilience to see design possibilities. At last, a new conceptual design that managed to compile and enhance resilience principles - called Revert! - was manifested into the final design that is focused on improving soft elements and created a new landscape infrastructure.



Growing Aquatic Habitat



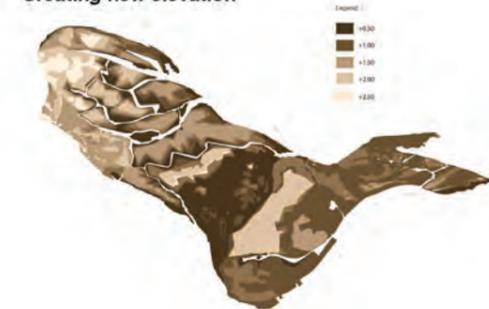
Preserve the settlement



Creating new creeks



Creating new elevation



Evacuation point



Watch tower location





Tourist target groups specific opportunities for tourism development in the Skaftártunga area. Source: Original Image

ROS Class	DEVELOPED	SEMI-PRIMITIVE	PRIMITIVE
PHYSICAL SETTING			
Accessibility	Easy	Moderately difficult	Very difficult
Naturalness	Modified natural environment with clearly visible human structures	Predominantly unmodified natural environment	Unmodified natural areas of large size
MANAGERIAL SETTING			
Regulating infrastructure & facilities	Developed site with facilities to guide a large number of visitors	Rustic primitive facilities provided for convenience and safety	Only facilities essential to protect the natural environment, but non for comfort
SOCIAL SETTING			
Number of visitors & social interaction	Acceptance of many visitors on site	Acceptance of moderate number of visitors along the roads, trails	Acceptance of only few visitor contacts

Zoning guidelines based on the Recreation Opportunity Spectrum. Adapted from source: Stankey, 1973 & Sæþórsdóttir, 2010.

Sander Smits

dr. PA Roncken

Assistant Professor Landscape Architecture

Wageningen University

TOURISM & HYDROPOWER LANDSCAPES

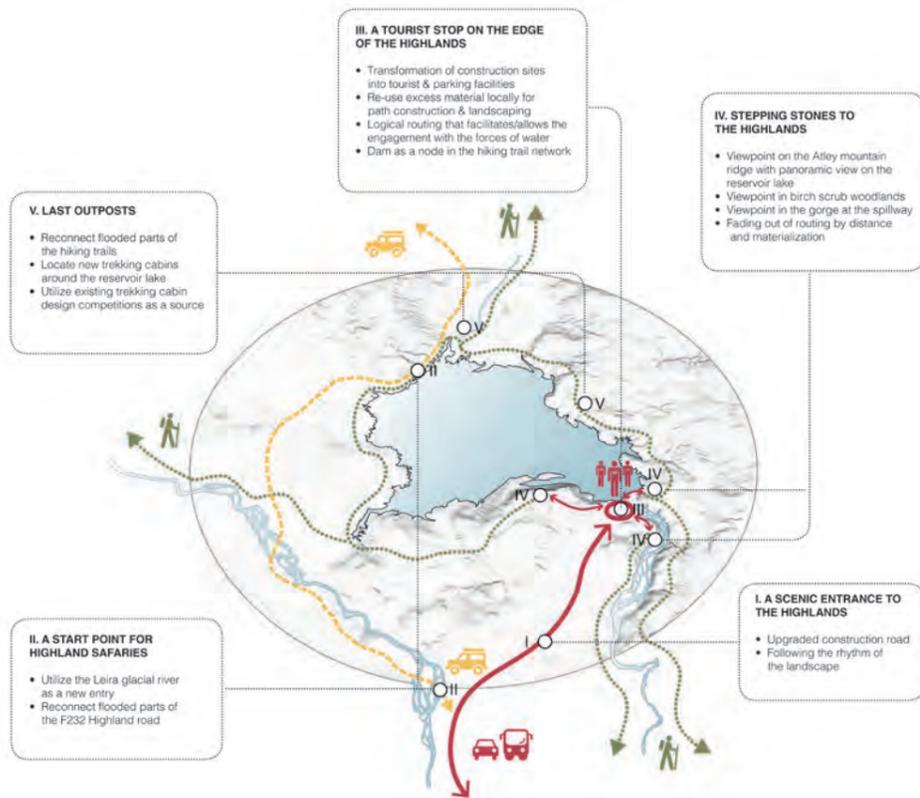
A new point of view on tourism & hydropower plant development in Skaftártunga, Iceland

Abstract

Over the past decades Iceland has become one of the world's most popular tourist destinations for nature based tourism. The main attraction are the unique Icelandic volcanic landscape sceneries. A sufficient amount of guiding tourism infrastructure is needed to prevent a degradation of the landscape. The construction of the Hólmsárvirkjun hydropower plant in the Skaftártunga area will affect the attractive landscape and open up a former remote area for tourism by an improved access road. This thesis explores in which way two seemingly opposing land uses may be combined or even reinforces each other.

Using a mixed method approach the attractiveness of the new hydropower landscape for tourism, the opportunities to use hydropower infrastructure for tourism and the working of tourism in Iceland were analysed. Based on the analysis three distinct opportunities for tourism development were defined. Each with its own tourist target group: one for mass tourism making a road trip, one for 4WD tourism and one for hikers. This led to a coherent program that was translated into a site specific design. It provides a visualization of the new hydropower landscape as a new scenic stop on the edge of the Highlands, a start point for Highland safaris and a new stepping stone in a network of hiking trails. The evaluation of the program and site specific design lead to several design guidelines indicating the opportunities for a combined development of hydropower and tourism.

The thesis proves that an experienced based associative way to evaluate a landscape and translation of the results into design guidelines, is an added value of a landscape architect in a fundamental discussion on two apparently opposed land-uses as tourism and hydropower development. It is recommended to further explore and test the described design guidelines in other proposed locations for hydropower development in Iceland.

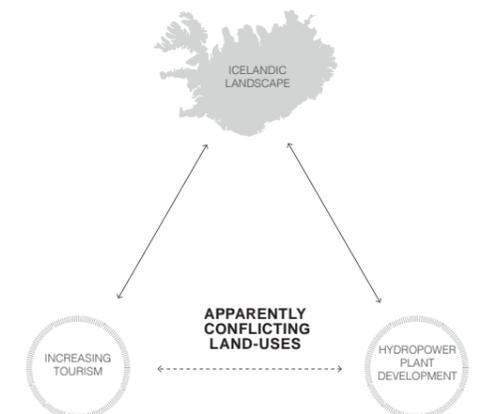


A new program to guide nature based tourism in the future hydropower landscape of Skaftártunga. Source: Original image.



Site plan of the tourist stop on the edge of the highlands. Source: Original image.

Relationship between two apparent conflicting land-uses that use the Icelandic landscape as a natural resource. Source: Original image.





(I). A Scenic entrance to the highlands through the lava fields.



(I). A Scenic entrance to the highlands through the lupine fields.



(II). A start point for Highland safaris at the Leira glacial river.



(III). A tourist stop on the edge of the Highlands with a well dimensioned parking area.



(III). Guiding infrastructure that facilitates the engagement with the forces of water .



(III). Bridge at the spillway structure providing a scenic view over the Hólmsa river gorge



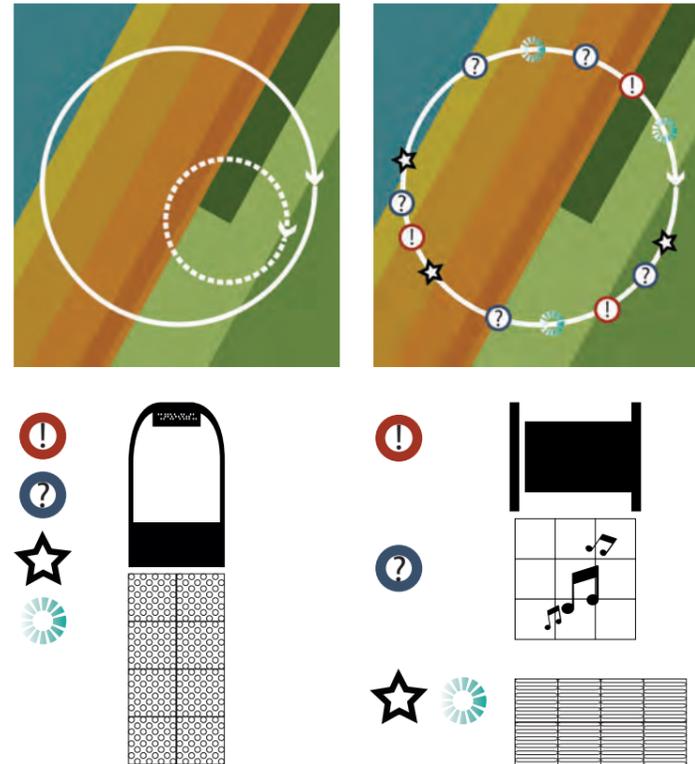
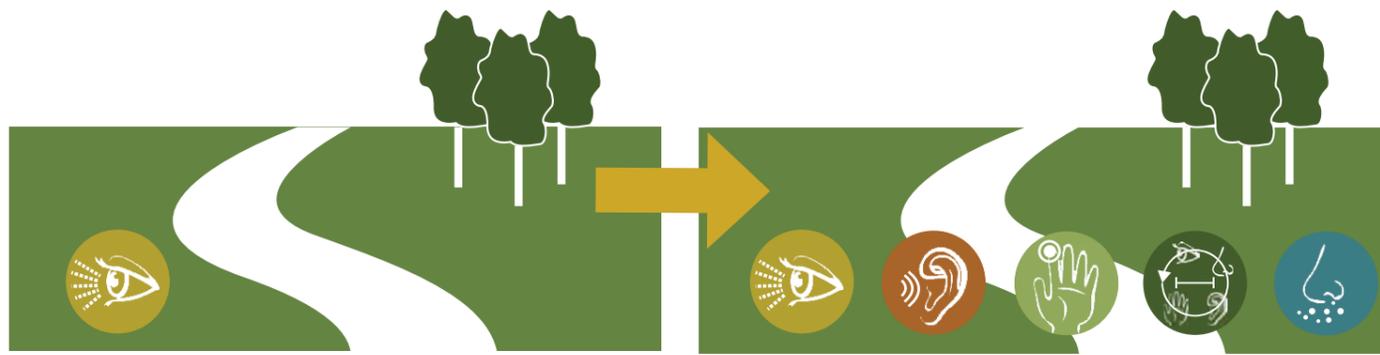
(IV). System of stepping stones towards the Highlands with stairs towards the dam.



(IV). Dam becomes a important node in the stepping stone system.



(V). A series of last outpost along the reservoir lake, connected to reconstructed trails.



< The aim of this research and design is to change the visual focus towards landscape into a multi-sensory design, so visually impaired can experience and find their way through the natural landscape.

< Contrasting the varying landscape types will improve the readability of the landscape. By adding landscape types at the current route, the experience will be enhanced. Alerting for certain situations, like danger, choices, education and resting spots will be done in a consistent way.

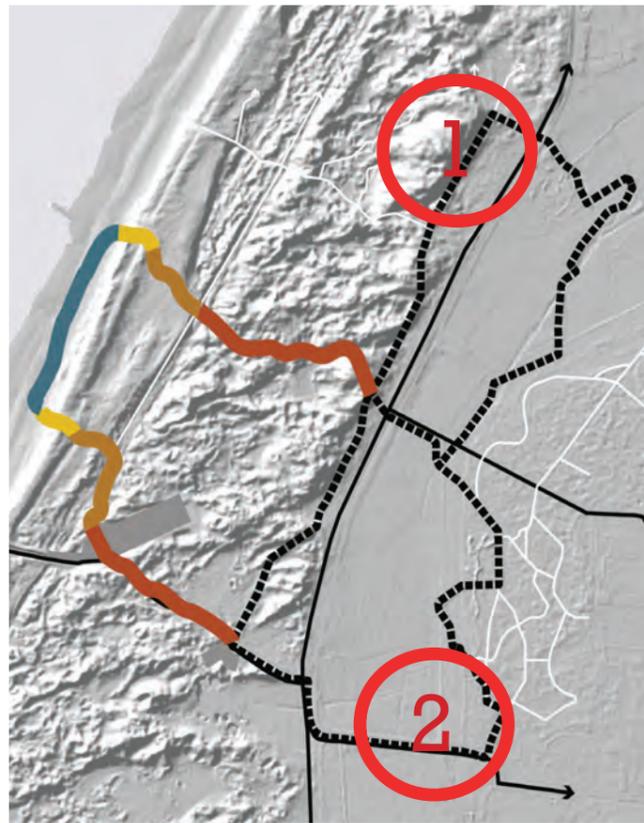
< Alerting will be done in a consistent way. At every spot that needs focus, stud tiles will be combined with tactile poles at the right side, with further instructions. Fences will be placed at dangerous spots, sound tiles at spots with choice and guiding tiles at the educational and resting spots. Resting and educational spots will be placed near the path, the meditation spots at a distance from the path.

Karin Huijben - de Graaf
 Supervisors:
 Dr. Ir. Marlies Brinkhuijsen & Ir. Rudi van Etteger MA

Blind Experience of Nature
 A phenomenology based research and design of a multi-sensory, natural landscape for visually impaired.
Research location: Route of Alloo, Texel, Netherlands

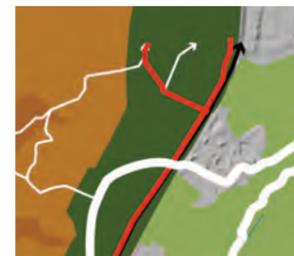
Abstract
 The visual imagination of the landscape is still emphasized. This creates problems for visually impaired. Therefore this research aims to find new insights on what visually impaired do and want to experience of the natural landscape, and how multi-sensory design can create a better experience for them. The research area is the route of Alloo, located in Texel. The methods that are used in this research are interviews with the target group (visually impaired) and manager of the research area, phenomenological walks and excursions with the target group at the research area, designing and a workshop to test the proposed design concept and principles. The participants mainly experienced the nearby environment. They enjoyed the varied landscape, but there are still some improvements and opportunities left. By creating minor changes in the existing natural landscape, many non-visual impulses will be enhanced. Which will result in a better follow-ability and experience of the natural route. The variety of the landscape should be contrasted in order to create an intense experience and recognition of the landscape types, while alerting at dangerous, choice, educational and resting spots should be done in a consistent way. Small multi-sensory interventions in the landscape will have a great impact for the experience of visually impaired, but also people that have vision.



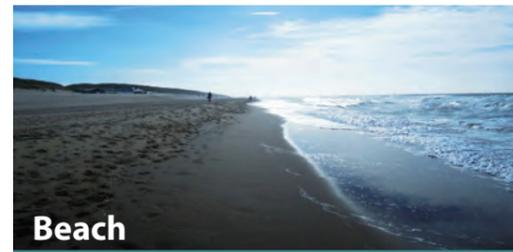


Current situation
(1) in Top (2) at the bottom

New routing
(1) in Top (2) at the bottom

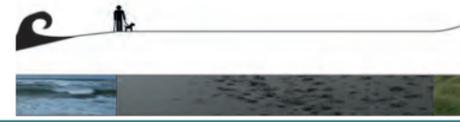


^ The current route will be extended to enhance the route with other landscape types. Two existing areas will be changed to create a safer and more natural experience. The landscape types will be contrasted by variation in the design for the path. This will create a more readable landscape and will improve the follow-ability of the route by non-visual sensory impulses.

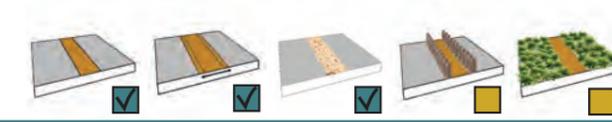


Beach

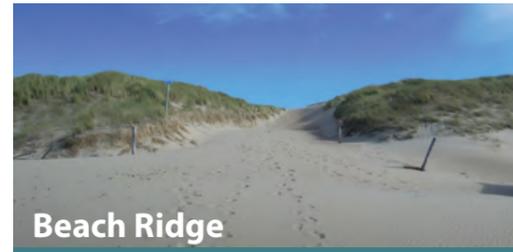
Current Situation



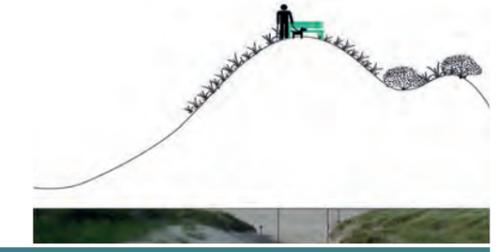
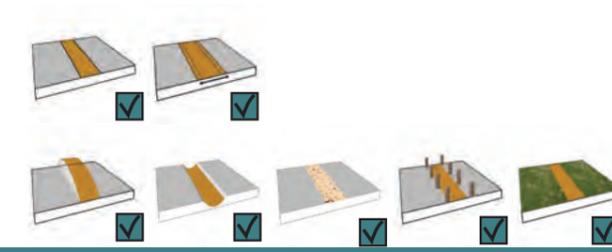
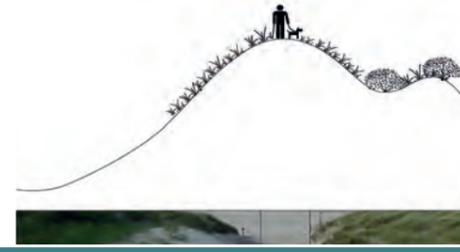
Preferred Design Options



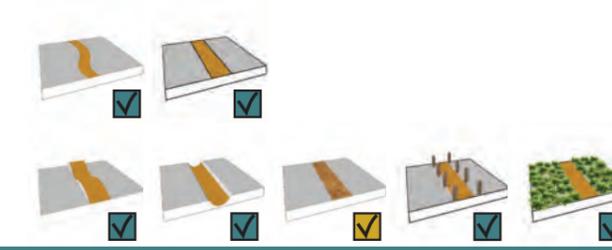
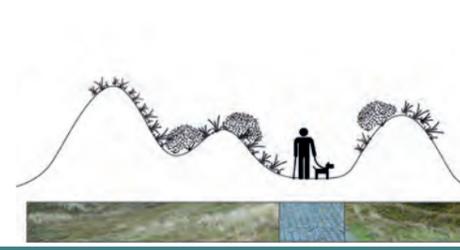
New Design



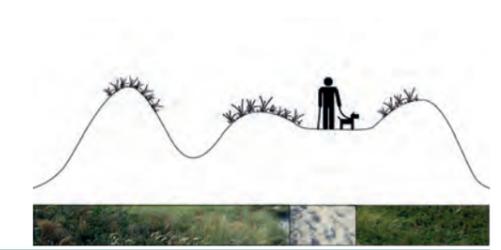
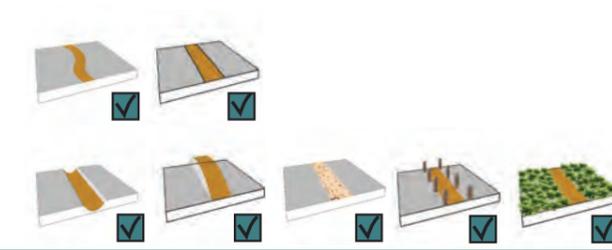
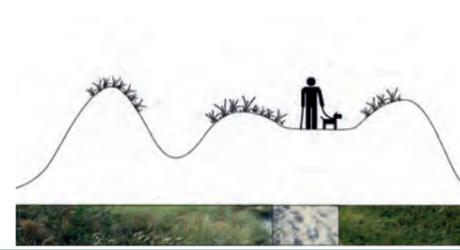
Beach Ridge



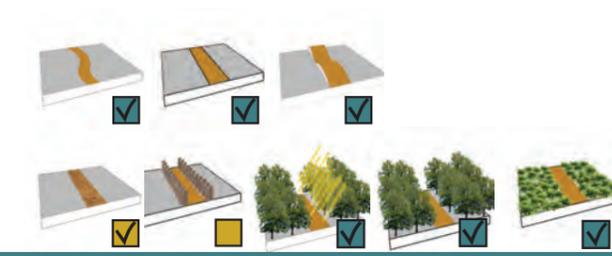
Fixed Dunes



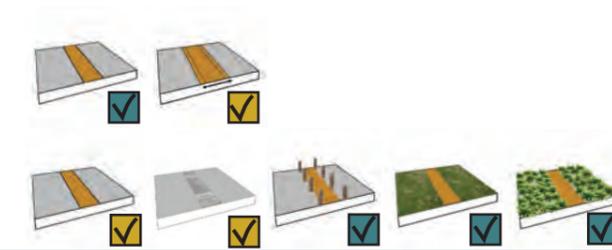
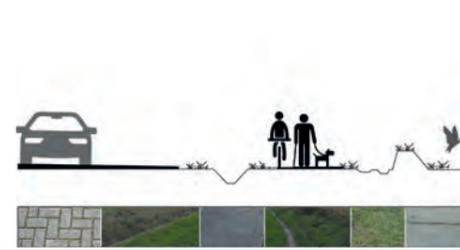
Dynamic Dunes



Dune Forest



Agriculture



Leveled Forest

