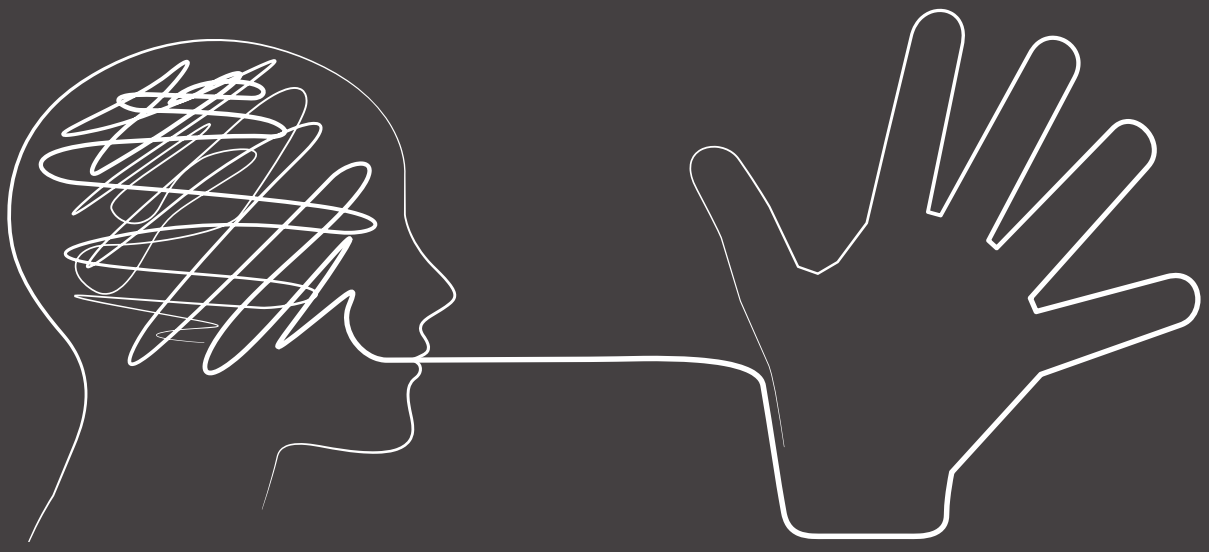
PROCESSES
IN
SITU

by Louise Færch Gjerulff and Oana Paraschiv

Research
Volume



Master thesis • Spring 2016 • MA4-URB4 • Urban Design • Institute of Architecture and Design • Aalborg University

INDEX

Project title
Processes in situ

Authors
Louise Færch Gjerulff and Oana-Maria Paraschiv

Research Volume
Processes in situ

Design Volume
Helsingør: A design case of emphasising processes in an urban context

Project period
February 1st - June 21st

Submission date
May 25th

Supervisor
Shelley Smith

Technical supervisor
Thomas Ruby Bentzen

Number of copies
5

Number of pages
131

Appendix
21

Master thesis • Spring 2016 • MA4-URB4 • Urban Design • Institute of Architecture and Design • Aalborg University

READING GUIDE

Welcome to the master thesis; Processes in situ. Before reading, we recommend starting with the reading guide to receive an overview of the written structure.
The project is presented in two volumes *Processes in situ* (Research Volume) and *Helsingør: A design case of emphasising processes in an urban context* (Design Volume). In the process we have addressed the duality between academia and practice as two entities that joined, enriches the complexity of urban design. Each volume is represented through presentation, visualisation and text.

The research volume of Processes in situ is the point of departure to comprehend the complete narrative of the project. Following the chapters: Introduction, methodology, theory, Processes in situ, design guide and outro.

Introduction addresses the motivation and background of the project, announcing the theme of our research field. From introduction we move on to methodology, stating the method that is used in composing the master thesis.

Here, Integrated Design Process (IDP) is an umbrella term for our methodology. It is adjusted to contain both an academic and practicing point of view. Furthermore, we revisit the urban design tool of scale and use it as a method that creates a sense of dimension. By zooming in and out in our project from an abstract idea to a site specific case.
Afterwards, the theoretical discussion is approached, elevating the background and development of natural processes in the urban realm. Each piece touches a different aspect and is written in an essay format that involves an on-going discussion.

Subconclusion of the theoretical discussion is leading to the concept Processes in situ, found in the chapter with the same name. This introduces terms used to describe the concept and how it is further elevated into a designing method. The chapter of the design guide is a method intended for urban designers and other professionals related to the field. The guide is a way of making a common point of departure for professionals, derived from Processes in situ. Parallel with each step of the guide the Design Volume is read. The design is a case where we are testing our method, which is composing the design process and product of this project.

Finally in the outro we will conclude and reflect upon the target of the project's process and result. Everything is reflected back on vision and objectives and how we answer to these.

Enjoy the journey of stepping into a world of processes.

Oana-Maria Paraschiv and Louise Færch Gjerulff

ABSTRACT

In the matter of time, the world is moving and so are the conditions. Stepping into the duality of our natural and urban environments, the dimension of time is translated through processes. Processes are perceived as "space happenings over time" [Waldheim, 2006], which are shaped as a fluid substance of our existence. Being in a continuous evolution, our cities are influenced by social (performers) and environmental (climate and the grown environment) dynamics, as continuous actions of processes in situ.
Perceiving our environments, as living systems, is introducing the mind-set of thinking in flux. With the purpose of completing their existence, this attitude is endowing their capacity of tracing (analysing) and in the same time solving (designing) the raised challenges of the present (existing problems). Stepping further as thinking in flux, is about thinking of happenings and how this are affecting the situational aspect of everyday life. In this regards, the project is proposing a new gateway for future, by exploring the existing world of processes. As a journey into the world of processes, the aim is to explore the ability of our contemporary urban structures to embrace changes over time.

ABOUT PROCESS

Dear human, are you going out?
Yes.
Will you meet with others?
Yes.
Will you return?
Yes.
Then it's a process.

Dear plant seed, will you grow?
Yes.
Will you grow taller than me?
Yes.
Will you give me shadow when it's hot?
Yes.
Then it's a process.

Dear weather, will you blow me away?
Yes.
Will you make me wet?
Yes.
Will you make me dry?
Yes.
Will you turn summer into winter?
Yes.
Then it's a process.

Dear future me, would you prosper without them?
No...

Ill. 1 Talking with nature

TABLE OF CONTENTS

INTRODUCTION

The introduction is presenting the motivation for this master thesis. It announces the problem statement and project objectives in relation to present urban challenges. This chapter is framing the point of departure through the research statement.

PRELUDE

Approaching processes in urban design

"There are many kinds of nature. The one we're talking about is a system of processes. A collection of heterogeneous components that develop, adapt to each other, and strive for balance. It is in constant transformation.
Nature's system is self-regulating. It is dynamic, flexible and can adapt to change. The same is true for people, for societies. When our society is dynamic, the planning of our cities must reflect this. Otherwise cities will quickly fail. They will hinder society's continued metabolism and ability to embrace change.
These dynamics call for urban planning that can constantly be adjusted."

Stig L. Anderson [About Nature, 22 May 2016]

Due to the statement that urban planning needs to accommodate constant adjustments over time, urban designers of today are inspired by the natural world to uncover solutions to urban problems. This means that the contemporary city is changing. Inventive ideas are thriving for revisining past city structures; an urban renaissance. The natural world is offering what the city is lacking, which is self-regulation and the ability to adapt.

In order to cope with changes over time, humans need neither to be stronger or more intelligent. Instead they need focus on adapting. Being able to adapt, as mentioned by Anderson, is a way of enable self-regulation. Therefore, if the cities can adapt with change, the change might not be addressed as a problem, but an opportunity to experience in a new way.

When Charles Darwin published his work Origin of Species in 1859, he made a stir and changed the way we viewed nature. He presented the idea of evolution, fact that turned around the way people thought of the natural world and human race composition [Darwin, 2009:89-94].

The notion of nature in change was approached again after the 1960s. Before, ecologist had based their work from the principle of equilibrium paradigm states that *nature is in balance*. After the 60s this was reversed into *nature is not in balance*, in order to address new scientific evidence of human influence of nature [Mcdonnell, 2011:5-13].
Caused by change in the environment terms emerged, like: climate change, global warming etc. These terms has been made to explain this global turn.

In this research we believe natural processes to be a strong inspiration and an even stronger resource for urban and landscape design. The natural impact we view as our challenges might also be the answer to how we solve urban problems and hereby optimise our cities. This idea will be investigated through research and design to uncover potentials while thinking in terms of process.

RESEARCH QUESTION

How can we guide future urban development to accommodate the current socio-environmental changes, so that today's solutions do not become tomorrow's problems?

MOTIVATION

Our motivation is derived from the need to rethink and change our urban environment. Therefore we are addressing the notion of process, as a tool to optimise the adaptability of our urban fabric.

VISION

Our vision is to introduce a new concept that can contribute to the discussion of using natural processes to create solutions for urban challenges. This concept aspiration is to give a mindset that can be translated globally into different contexts.
Furthermore we wish to test the concept in a Danish context to emphasis its flexibility in creating resilient urban spaces.

OBJECTIVES

1. Researching the field of perceiving and use of processes in urban design

2. Composing a concept that emphasis the synergy between different processes

3. Proposing how urban designers could implement the notion of processes in practice

4. Making a design case which is testing the ability of integrating processes in urban design

5. Adjust the existing situation through processes in order to illustrate a new standpoint for further design

DUALITY BETWEEN MIND-SET AND PRACTICE

Reflection

"In the beginning, technology (which is about 'doing') was more important than science (which is about 'knowing'). You need to know what to do, and how to do it, before you can successfully grow your crops, make your clothes, or cook your food. You don't need to know why some berries are poisonous, or some plants edible, to learn how to avoid the one and grow the other. You don't have to have a reason why the sun rises each morning and sets each evening, for these things to happen, each and every day. But human beings are not only able to learn things about the world around them, they are also curious, and that curiosity lies at the heart of science."

William Bynum [Bynum, 2013: 2]

This project intends to unfold the threads which links doing with knowing.
People have been making cities before they named the profession. In the same way old resources and technologies are rediscovered.
When reviewing the urban setting there are two main approaches to follow, the academic and the practice. The domain of academic and practice is constantly supporting each other with new information from different perspectives. Academia is about knowing where practice is about doing. It is possible to do without knowing, but then how do we improve our skills from past experience gained in pratice and who is going to observe patterns and tendencies of each era in urban history? Presently reviewing the past will help moving towards the future.
Academia and practice are complimenting each other. They do not have the same task or goal but the overall output is stronger because of both. Therefore, this project intends to emphasis the connection between doing and knowing whilest working with natural processes.

This will be addressed by researching philosophies, technics and methods in urban design.

Ill. 2 Translating mindset to practice in urban design.


COMBINE HOW WE THINK IT WITH HOW WE DO IT.

METHODOLOGY

This chapter will decribe the methodology which has composed this project. The Integrated Design Process has functioned as an umbrella method which has been divided into the duality of academia and practice. To bridge the link between them, the method of scale has been introduced to address how they can work together, by composing the narrative of a guide for designing with processes.

THE INTEGRATED DESIGN PROCESS AND SCALE

This project is structured in two entities: the Research Volume and Design Volume. This is done in order to bridge the idea of duality between knowing and doing (academia and practice).

Henceforth, the method of Integrated Design Process (IDP) [Knudstrup, 2005] has been applied and adjusted to highlight the idea of duality.
IDP is a method that focuses on integration and optimisation of information and design process in the professional field of architects and engineers. By using this method, the project aims to embrace the design of an urban space in order to enhance the use of natural processes in urban design through: function, aesthetics and technical features.
This method is composed by five phases: Idea/target, analysis, sketching, synthesis and presentation. In order to apply the method for this project a six phase has been added: research (ill. 3). These phases will structure this thesis and be used in design and moreover, in development of a method used to improve urban design with natural processes.

First phase, the idea and target of the project is approached. This is shaped by the research question stated prior to this project.

In the second phase of research the theoretical field of the research question is advanced through reading material based on professionals either working with theory or in practice. Through the theory, the project is demarcated further in order to manage the focus area onwards in the process.

Through analysis (third phase) the qualitative method has been used through meetings and interviews with the municipality, service system and involved landscape architect. Furthermore, the method of mapping and tracing is immersed to draw up the site specifics of: urban character, proximity, infrastructure, attractions, weather conditions, flooding, rainwater path and topography.

Official plans have been advanced (Byrumsplan, Mobilitetsplan, Klimatilpasningsplan and Local plan) in order to illustrate the objectives of the municipality. These will be considered in the design proposal.

The analysis is conditioning the next phases of sketching and synthesis of the design. The conclusion of the analysis will frame the objectives and design parameters of the project.

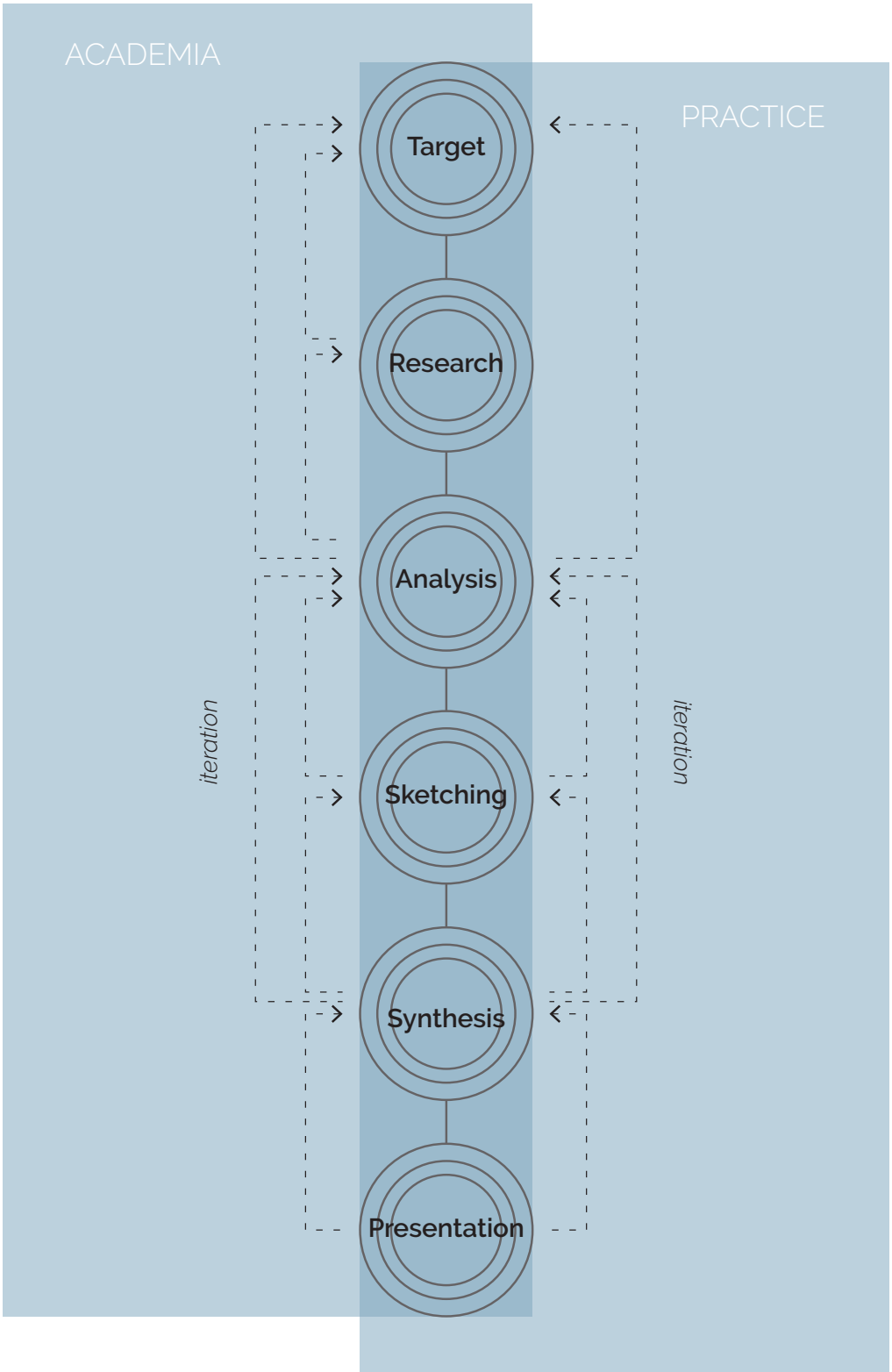
There are used different techniques in the phase of sketching: drawing, diagrams and 3D modelling where the parameters are managed separately. Overlapped by the phase of synthesis, these techniques are applied in an ongoing iteration to the project, which finally is clarified in the presentation.

In the presentation the project is narrated through: pictures, text, diagrams, plans, sections, visualisation and 3D. The holistic outcome of the design is described, so that the concept, analysis and objectives are illustrating the process and steps of the design. These are composed by the hydrological solutions, tools of wayfinding and hierarchy of mobility.

Besides the design, a concept and designing guide has been developed. Using the background of the research to shape the concept, the guide becomes the mediator between concept and design. In order to transform the concept of this project into a designing guide, the architectural tool of scale was applied as a method. The method of scale provides two dimensions: the physical (where information is filtered according to the detail of the scale) and time (zooming in and out in our urban history tracing past experience).

The design case was applied in the physical dimension of scale while the research and concept have provided the scale in time. Scale as a method has the ability of merging the overall picture with small detail in designing. Therefore, the guide is composed as a synthesis of every piece in the project.

INTEGRATED DESIGN PROCESS



Ill. 3 Method diagram

THEORY

The proposition of the theoretical chapter is based on an essay format that frames the discussion of processes in urban design from different perspectives. First, a historical review of urbanism is presented. Followed by *Is nature in balance?* which raises the position of human versus nature, creating a link between past and present. Hereafter, the composition highlight three pieces that addresses: climate, grown and performers as processes. This is gathered in the discussion of the *Contemporary city* introducing *Thinking in Flux* as an attitude towards future urban design.

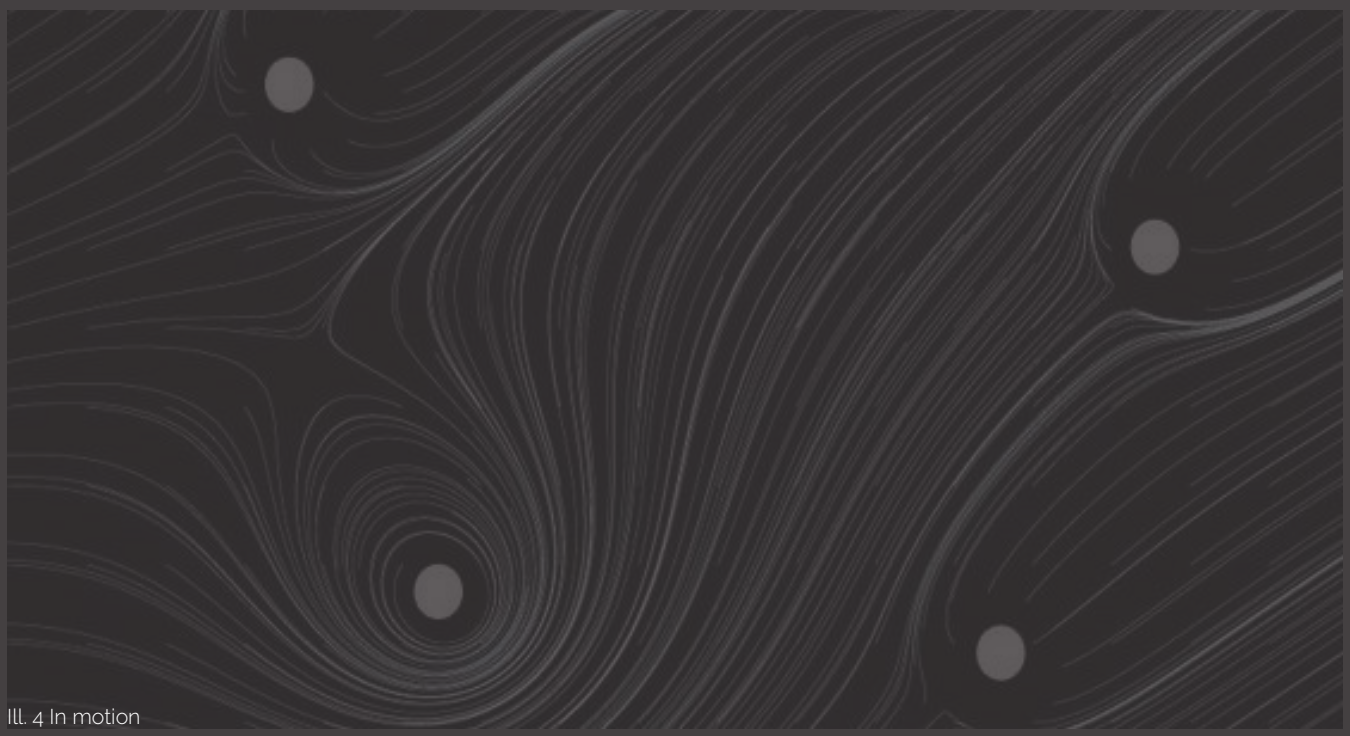
INTRO

Introducing the theoretical discussion

This theoretical discussion is meant to be painted as a colorful composition, highlighted by different professional attitudes and shaped by researching the world of processes. Being a composition of attitudes, this chapter is meant to build a consistent research foundation of working with processes. Framed by the matter of scales, time and space, the theoretical debate is directed towards discussing and reflecting upon contemporary mindset and future objectives for our cities. Therefore, the theory is an expression of the challenges that the cities of today are facing constantly and the cities of tomorrow will be built on top of.

The theoretical framework is defined by the theme of "processes". Stepping into the wolrd of processes, the narrative is starting by exploring the historical background of our natural and urban environments. Furthermore, the different natural and social processes are introduced as key factors/motions into the urban system, being a continuous source of energy. By challenging the existing theories, each narrative is a form of reinterpreting and reflecting upon the specific perspectives. Taking their ideas further as an overall synergetic composition, the project is proposing to create a strong foundation for the future. By improving from their experiences, thrived by their approaches of working with processes, the aim is to reflect upon a new paradigm in urbanism, a movement for our future cities. Introducing this way of thinking in processes, as a specific mindset of reading the existing discourses, is affording a perspective of what have been demostrated. These perspectives are given by important specialists in theory as well as in practice, such as James Corner, Stig L.Anderson, Ole.B Jensen, Jan Gehl, Anuradha Mathur & Dilip Da Cunha, Anne Whiston Spirn, Lawrence Halprin etc.

Therefore, the theoretical chapter is aiming to enlighten the potentials of each theory by bridging the gap between them. In order to link their perspective the method of scale is used. Zooming out, a new level of perception is created and is meant to include the synergy between these different theories. Thus, the purpose of this research is to contribute theoretically and practically in stating for a way of interpreting and designing urban spaces.



Ill. 4 In motion

FROM OLD URBANISM TO NEW URBANISM

We have to observe the present, reflect on the past and built for the future

In the context of urban evolution, the point of departure in framing the call for a new urban design paradigm is conceived by understanding the evolution of our cities and their contemporary effects. This article is grounding the historical evolution of urbanism in time, in order to understand the past and reflect about its present effects. The purpose of this historical debate is to build a consistent background as a point of departure for a new paradigm in urbanism.
Knowing about the past is an important designing tool that affords the opportunity to adjust and correlate our present needs without harming the life quality of the next generations. In the process of tracing the urban evolution, the weave of urbanisation represented the main source power that determined different urban movements. Characterised by their time contextualisation, the urban movements emerged from the society's needs of that period, but also as an overview of the past optimisation and evolution. Therefore, the urban evolution is framed by the chronological timeline of different urban movements: ancient cities, old urbanism, industrialisation, modernism, new urbanism, landscape urbanism, eco-urbanism, sustainability, restorative urbanism, processual urbanism.

The evolution of cities started since the ancient times, when as an effect of urban growth the human settings started to extend in complex urban systems. From villages to cities, the human settings were transformed from individualisation to collectivity by assuming the same common sense of public spaces. Through the transition from agriculture to trade, the accent was focused on the interaction between people and businesses.

During the middle ages, the cities were perceived more as administrative territories, with an expended grade of functionalism. In this extend, the first approach of urbanism was introduced through Old Urbanism or Traditional Urbanism. This was a way of privileging the socio-economic diversity, being limited by the measure of walkable distances.

A considerable change in the urban structure was produced by the industrialisation. This movement led to massive urbanisation. As a result, the old urbanism's ideals of living together were converted into the new concept of suburbia, by the extensive urban spread. Being in a continuous expansion and due to the heavy industry, this period was assigned as a declining transition of the urban life quality.

As a reaction to the existing uninviting urban developments, the modernism was introduced and its effect was reflected by the urbanism's turn towards the aesthetics and physicality of the built environment. This period was defined by the general perception of urban/green spaces as pieces of art, untouchable, meant to be admired instead of being experienced. This attitude, called functionalism, advocate a simplification of urban activities into clear categories, strict separated by their function.

In regards with the ecological approach, the discourse about nature and cities in the same urban context appeared when the movement of New Urbanism was introduced. Promoting environmentally friendly habitats by creating walkable neighborhoods and diversifying the urban activities, this movement was meant to introduce the third dimension, of nature, into the socio-economical synergy.

Due to the beneficial effects of introducing this new dimension, the Landscape Urbanism was approached, as a "practical antidote to the corrosive environmental and social qualities of the modern city" [Corner, 2006: 25]. More than that, creating aesthetical and representational spaces as they were seen in the past, this movement was about the capacity of functioning and its importance in rehabilitating the urban tissue. Focusing more on creating controlled landscape inside the cities, the movement of Eco-urbanism came as a way of considering our cities as part of the eco-system. Being a concept

that is proposing to increase the importance of connecting people with their environment, eco-urbanism was a key movement for creating inclusive societies, more sensitive in balancing the built and natural environment.

Focusing on moving the perspective of our future cities one step forward in order to increase the quality of life in time, the direction of study is moving beyond the sustainability to prosperity. Sustainability represents a solid foundation that was built in the last few years as an improvement over the declining acts provoked by the industrialisation. Shaped by the main three pillars economy, sociology and ecology, the urban sustainability is a concept that is focusing on searching the problems in order to find the solutions.

In this regards, the restorative urbanism, came as a necessity for a broader perspective. This new direction is announced by changing the sustainability's exclusive approach (social, economic and environmental friendly) into a more inclusive one, by adding two important aspects of urban developments: the specifics of the context (identity and character) and the dynamics of the systems over time. Including into the restorative discussion these two layers of context and time brings the urbanism to another level. Considering the matter of time, designing urban spaces means more than searching for inspiration into the specifics of the existing situation, is about being conscious of the past for designing responsible for the future.

Therefore, the restorative urbanism is raised from the necessity of translating the sustainability's attitude of searching for problems, to the optimistic attitude of finding the solutions in the existing potentials that it offers. Being in charge with the transition between making improvements on the past to focusing on the opportunities for the future, the restorative concept is pursuing a long term approach of building upon existing strengths of a place.

Moreover, the restorative concept is meant to "set a generative and dynamic self-adjusting feedback mechanism into motion" [Ellin, 2012:278] by converting the greatest problems into the greatest solutions. Based on the DNA of the places, the restorative practice is enhancing what is underperforming and is bringing the missed elements of the current situation.

"Restorative urbanism builds communities by cultivating relationships through a process that engages and builds mutually supportive networks for people"

[Ellin, 2012:278]

Therefore, stating for the future by considering the sustainability movement and taking as point of departure the potential dynamics of the urban context, in the last few years the new urban paradigm of processual urbanism was enhanced. The whole idea of urbanism as a process is a fairly new way of approaching the design aspect of a city. The direct result of this way of thinking is that we, as urban designers, have to stage a project in order to build the future, unforeseen evolutions, by having both a short-term and a long-term approach. But these should not be treated as individual elements. The short-term should work inside the system created by the long-term, and the long-term should lead to the future short-terms and be able to modify itself accordingly.

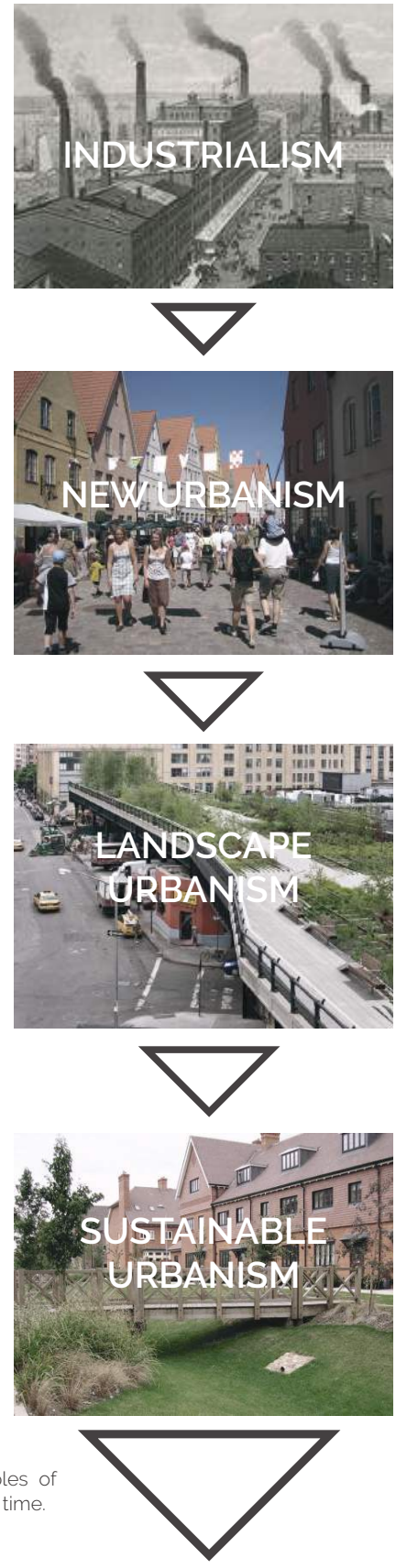
"Processes can be perceived as space happenings over time". This is why processes pose such a great potential to design, as the art of space-making cannot ignore the context it is connected to [...] whether biological, ur-

ban or social. Activating such a wide range of processes that do not spring from the world of architecture necessitates an interdisciplinary, a sort of expert knowledge in technical and biological know-how which landscape urbanism calls for."

[Waldheim, 2006]

Approaching this type of development is a process of revitalisation by activating the underutilised resources in order to attract new ones. This means that it is a way of investigating the past and reading the present in order to bring vitality into the existing urban settings. Moreover, it is a type of integrated urbanism that is bringing together people and activities through increasing the public spaces quality and interactions. Created as a complex new urbanism paradigm is using the natural processes as tools for introducing constant motion into the present urban systems. Therefore, this concept evokes a greater self-determination and empowerment by connecting people with their environment. This fact is generating synergies and convergences in space and time for allowing the process to continue.

Acknowledging that the world is in a continuous transition and transformation, this descriptive article is meant to induce a new urbanism paradigm. Being sewed with the benefits raised by the evolution in time and space, the urbanism' turn is directed towards resilience, self-adjustment over time. As a result, is framing the need of enhancing the walkability and flexibility of our public spaces (old urbanism) in the contemporary context of saturation and urbanisation. Finding the answer in elevating the current opportunities, this is meant to give a vital source of continuity to the future of our cities. Considering this new paradigm, the project is meant to build the first steps in introducing it as a resilient method of optimising the present situation of our cities.



Ill. 5-8 Examples of urbanism over time.

IS NATURE IN BALANCE?

A story of nature and humans

This theoretical discussion immerse into what is nature and moreover, what is nature in relation to humans? This is a discussion on how nature has been viewed from past to present. It is touched by events in our shared history and questioning how nature is translated into landscape urbanism of today.

Nature is...

"The phenomena of the physical world collectively, including plants, animals, the landscape, and other features and products of the earth, as opposed to humans or human creations."

["Nature - Definition Of Nature In English From The Oxford Dictionary", 22 May 2016]

Taking from the Oxford Dictionary, nature is defined as a term of the physical world, yet opposing humans and things made by humans. The same is to be said from ["The Definition Of Nature", 22 May 2016] where nature is: *the material world, especially as surrounding human kind and existing independently of human activities.* Both definitions state that nature is the opposite of humans and their activity.
Therefore man against nature derives when the two entities are in conflict. Fighting for the advantage of prevailing upon the other.

Nature is one name for an entire universe of life. It is difficult to frame, control and define. Nature is fluid, it is a system of processes inhabiting underneath and above the earth. Every time we plant one seed, nature will let others follow. Being in the presence of nature is being in the presence of many. No matter what human intends to do, nature will provide the unexpected because that is nature.

In a historical point of view our religion has affected our mind-set towards nature. From a period where religion was teaching what science is teaching us today, Science was not supposed to contradict the belief of the religion. Therefore, it was naturally known that nature was something God had created and every living and natural piece was made and placed on earth by him. Meaning nature was created as people saw it. Or so they thought.

In 1859, Charles Darwin changed this way of thinking. In his book Origin of Species, he argues and teaches people about evolution through natural and artificial selection. His work is not based on philosophical thinking, but many years of observing the transformation that is followed from generation to generation. His research started when he was travelling to the Galapagos Islands and let him to breed pigeons back home in England, where he could observe and study the adaptation and evolvement of the species first hand.

Evolution was a scientific turning point. Replacing the mind-set of nature being as it has always been, to suggest that it is changing and adapting. Darwin is unfolding an important process of nature – resilience. The statement of survival of the most adaptable to change is being used in regards to nature but currently also in a social context. Even though humans are not considered nature, they fit in and adjust to community and common expectations.
Presently in the contemporary field of science has emerged, the so called - urban ecology, . When Mark J. Mcdonnell writes about the history of Urban Ecology he is intertwining pieces of the story before it was even known as urban ecology. The motivation for the book *Urban Ecology* is to take the global phenomenon of urbanisation and ensure that further expansion of cities proceeds sustainable. Being a necessity in regards with the fact that human activities are generating an important environmental impact [Niemelä, 2011].
Mcdonnell writes about the term *'equilibrium paradigm'* used by ecologist. The paradigm proposes the idea that *nature is in balance*. This paradigm has had

a vital impact on the development within ecology. Humans have not been viewed as biological beings that are influencing the ecosystem. Due to this, many students and practitioners have treated humans as external to ecological systems [Mcdonnell, 2011:5-13]. A void has been created between human and nature. This is about to be changed. Over the past 30 years scientific evidence implicates the equilibrium paradigm as inconsistent.

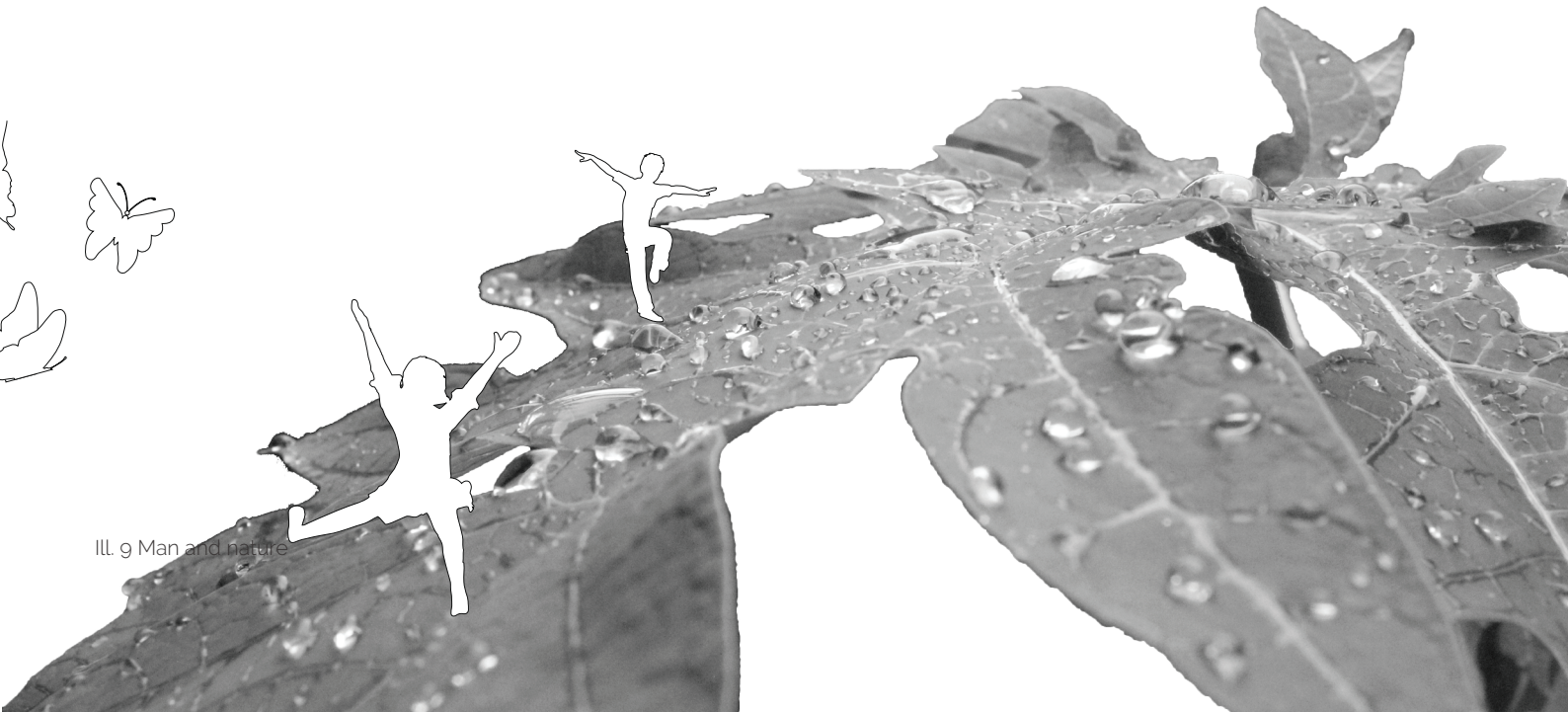
From the old paradigm a new have emerged the 'non-equilibrium paradigm' – *nature is not in balance*.

"This new paradigm views ecological systems as driven by process rather than end-point and as open systems potentially regulated by external forces [..]. With regard to the emergence of the subdicipline of urban ecology, this new 'non-equilibrium paradigm' explicitly allows for the inclusion of humans as components of eco-systems studied by ecologist [..]."

[Mcdonnell, 2011: 7]

In the late 1950s and early 1960s the effect that human had on ecosystems was more acknowledged. The increasing world population was evident to this. 1900s represented approximately 1,4 billions while today we are passing 6,5 billions [Mcdonnell, 2011: 5-13].
Acknowledgement of the human impact on nature arrived approximately a hundred years later after we learned about evolution from Darwin. Although three quarters of a century later, the present definition of nature referring to the Oxford Dictionary, is still excluding human and human activity. It is speculative to think how much and how little we have moved from this standpoint.

These continuous arguments telling us humans and nature need to be interwoven, are calling not only for ears to listen but also for speech and hand to take action. Hans Fink is saying that nature has so various ways of being understood that we need to define nature before using the term [Fink, 22.05.2016]. In this discussion, nature is an overall phenomenon. Within, nature is hosting human and other living creatures that moves around, the growing environment that is rising beneath our feet or sheltering us from above, till the climate where water and winds meet, hot becomes cold and everything is in flux.



Ill. 9 Man and nature

CHANGING THE SEASONS

New conditions

Stepping into the world of changes enlightened by the urban evolution and the non-equilibrium paradigm, this article is leading to the idea of being in a constant transformation and either our conditions. Deep settled in the historical facts, the discussion is framed around the changes over time. As changing the season and its materialisation in the physical settings, the climate is the base support and conditioner of our presence. This story about climate is elevated through the conditioning features of our environments and is following the narratives of working with climate not against it.

Following the narrative, this discussion will be endorsed into the field of climate change. With focus on climate adaptation, the importance of bridging the state of our urban environments with this paradigm is raised. Framing the terms of climate change and adaptation, the definition stated by Susannah Fisher is introduced:

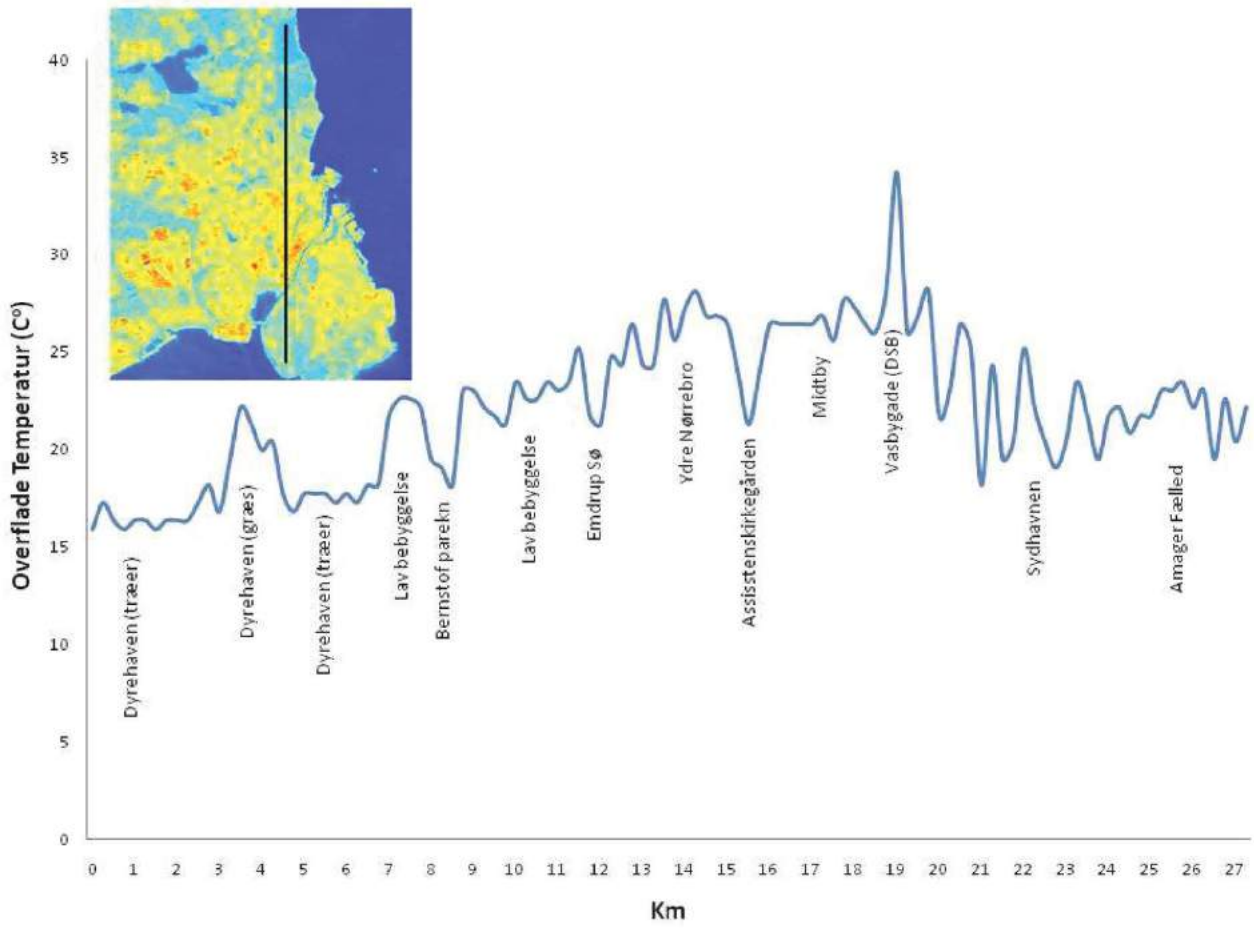
"There are two main policy responses to climate change: mitigation and adaptation. Mitigation addresses the root causes, by reducing greenhouse gas emissions, while adaptation seeks to lower the risks posed by the consequences of climatic changes. Both approaches will be necessary, because even if emissions are dramatically decreased in the next decade, adaptation will still be needed to deal with the global changes that have already been set in motion."

[Fisher, 2012]

Zooming out, climate is everything that is surrounding us. It is about abstraction and physicality. It is perceived as weather as well as the state of our oceans and land. It is conditioning and supporting our lives and environments. This being said, climate is presented as a vital and permanent actor of our existence.
Supporting the idea that Santamouris states in his book, climate is "an ensemble average of climate state, together with some measures of its variability over a specific period of time" [Santamouris and Asimakopoulos, 2001]. Based on this, it is defined through the micro-climatic conditions that are surrounding us and which in the last past years were influenced by us. So, the current state is framed by the fact that, us, as performers, we have been acting against out natural environment for many years and now the environment is reacting.

From social to natural effects, the climatic system is composed of positive and negative feedback mechanisms which are reflecting "the ability of the Earth's atmosphere system to check and balance any forces influencing the system, in order that it can readjust to a new equilibrium" [Calthorpe, 2010]. In the continuous search for a new equilibrium, a certainty is clear regarding the fact that "any change in one of the subsystems of the climate system can affect the behavior of the others, resulting in effects that may amplify or reduce the original change." [Calthorpe, 2010] – the unknown factor generated with time.
Deep anchored in space, but still fuzzy and fickle in a time span, the climatic conditions are endowing our natural and urban environments with the unpredictable, the unknown factor as endorsement or qualitative conditioner status of the future existence.
Talking in terms of processes, we are going to unfold the climate adaptation by rolling around the transpor-

tation process of water (precipitation, evaporation, clouds etc.) and by describing the temperature fluctuations over time .This interpretation of the climate adaptation came as a need of defining it from the urban design perspective, in order to use these natural processes for adjusting our urban environments. The climates' processes are, in this way, key factors in the cities' development because they are meant to condition and support the urban life. In this regards, the climate changed a lot in the last years as a visible effect (heat islands, global warming, flooding problems, abnormal natural changes) of urbanization and our unconscious way of developing our society [P. Calthorpe, 2010].



Ill. 10 This illustration shows a case study of heat patterns in Copenhagen and surrounding area. There is approximately 15 degrees difference between the park and the city centre.

EFFECTS:

TEMPERATURE In terms of climate modification over time, one of the most current discussion is taking as point of departure the global warming. Provoked as a long term effect in time and due to the human's harmful actions against the nature, global warming is accentuating the increasing values in the temperature variations during a certain time point.
Moreover, when talking about temperature is very important to take into account the study area which is generating a specific mesoclimate. Due to this, human activities are an active part of the examination process, affecting in a direct way the climate conditions. Therefore, starting with cities as main generators of the climatic issues, diverse areas are perceived as source of pollution and heat, fact that reflects the first aspect of the climate that needs attention. The effect generated by these specific climate conditions is about the changes in temperature. The thermal structure of the atmosphere above these urban areas is affected by the so called *urban heat island* effect. The process is about the absorption of the heat during the day by the buildings, roads and other constructions and the re-emission of it during the night fact that is generating big temperature differences.

Regarding the generated effects, the pollution has an important place by being the process of reflecting the solar radiations. As result, the conditions of the microclimate are considerable changed. Consequently, this leads to decreasing the amount of solar energy that is reaching the surface, relative humidity, wind speed and visibility and not the last is increasing the values of temperature, precipitation, cloudiness and fog frequency.
Therefore, as a climatic characteristic and effect, temperature is a conditioning feature, that characterizes the weather and in the same times the space, our natural or urban environments. In correlation with social processes, temperature is all about describing the climatic condition that is supporting the movement of life and activities, from indoor to outdoor and vice versa.

WATER Considering the climate as a conditional system is bringing into discussion the water as its focal point. Through the process of evaporation and raining the water is transported into nature, from being part of the atmosphere, in being found into the ground (consumer - infiltration) or containers (oceans, lakes, rivers).

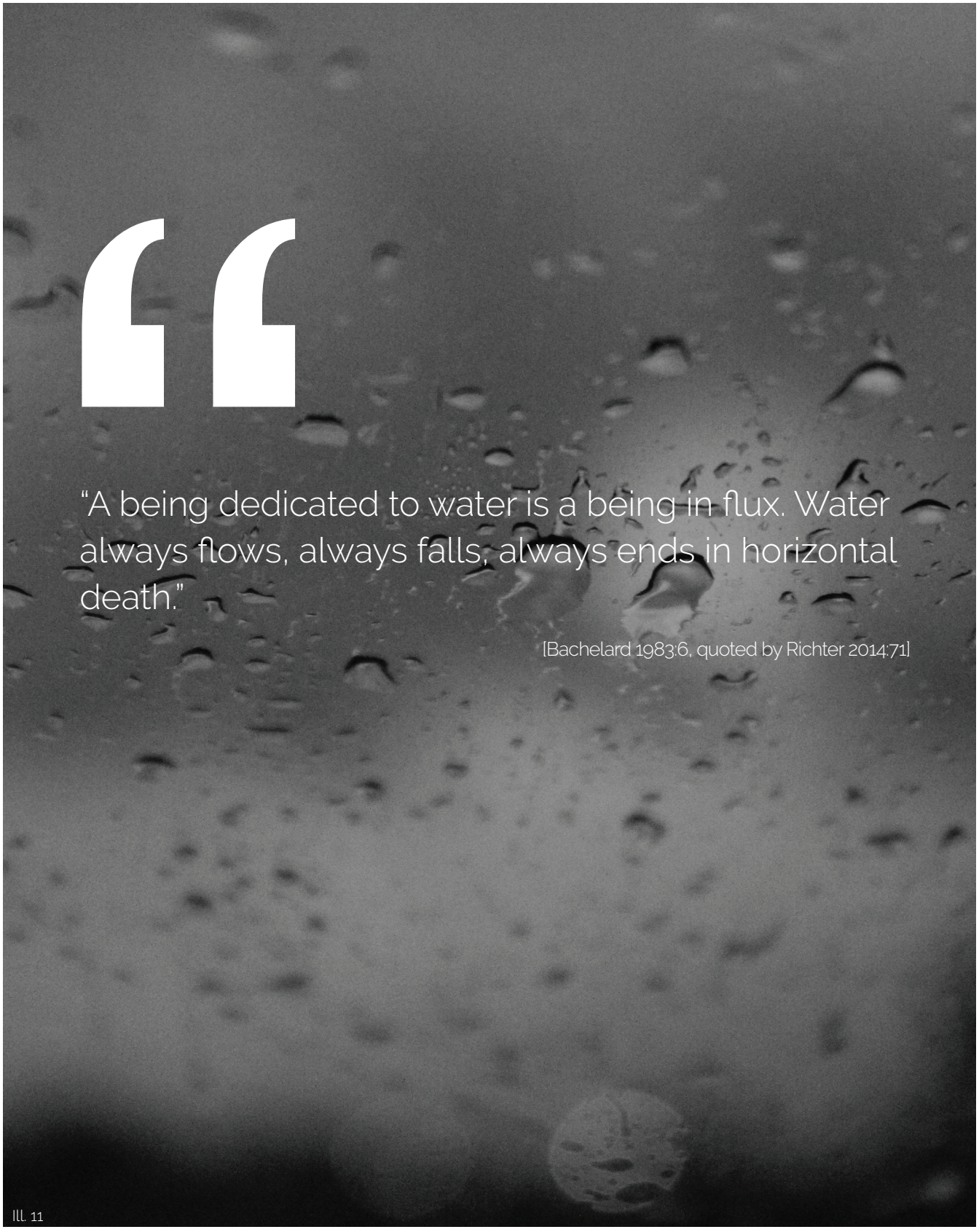
What is water?
Water means flow. Water is a process itself. It represents dynamics and flexibility. Is reflected as a powerful natural feature that is everywhere and which needs to be accommodated somewhere. Therefore, as being a natural force, a part of our geographical and political dynamics, water is meant to flow around and in its way water has the power to submerge boundaries between places and disciplines. .

"Water creates a paradox, water is a paradox. There is too much water and there is often too little water. Water purifies, water needs to be purified…Water disorients and reorients. Water is an agent of transformation, of fluctuations and inversions…Water in the everyday dry domain can disrupt normality, and produce new social and political realities."

[Calthorpe, 2010]

Considering Italo Calvino's approach about the meaning of water, this natural feature in its flowing process, thrives for changes and creates different realities. In terms of location, Anuradha Mathur & Dilip Da Cunha are elevating the water through two different approaches of being somewhere or everywhere:

"Water is everywhere before being somewhere: water that is in rain before it is in rivers, soaks before it flows,



“A being dedicated to water is a being in flux. Water always flows, always falls, always ends in horizontal death.”

[Bachelard 1983:6, quoted by Richter 2014:71]

Ill. 11

spreads before it gathers, blurs before it clarifies; water that is ephemeral, transient, uncertain, interstitial, chaotic, omnipresent."

[Mathur and Cunha, 2014]

Considering this statement, the water that is somewhere, is the water that is framed and held in a place by containers, meanwhile the water that is everywhere is the water that flushes and complements the settings.

Water as somewhere

"Water 'somewhere', is the water confined with lines and directed by the given shores, the water kept between borders."

[Mathur and Cunha, 2014]

In the river landscape, is about water 'somewhere', water that flows from A to B, from point source to destination. It is designed sharp and precise, directing the flows, but also affording lines that can be crossed with floods, creating dramatically changes.

Water as everywhere

"A rain terrain is not only about seeing nature different, but seeing a different nature."

[Mathur and Cunha, 2014]

Living in the water terrain is a totally different situation. Rain does not flow, but instead overflows, after being held where it falls, until it exceeds the capacity of that particular holding. The holding process is repeating without giving the possibility to be controlled as it can be done in the river landscape. This particular type of water is giving overflows that move not just in a complex way, but also in complex times. Moreover, these overflows are characterized by multiplicity that rain initiates by falling everywhere. With a reflective approach on the Gaston's Bachelard's statement: "A being dedicated to water is a being in flux. Water always flows, always falls, always ends in horizontal death" [Bachelard 1983:6, quoted by Richter 2014:71], into the water terrain, the rain doesn't have time to flow, but instead it inhabits territories as a layered depth. This process is more like "a stain on a blotting paper, than few drops of juice in a glass".

Therefore, the water takes part of the climatic changes by its process of going from a state to another, from liquid to gaze and solid, based on the cold and warm air variations from the atmosphere. Being part of these changes, the water processes are disrupted. The effects are illustrated by the raising values of the ocean level, by the intensity and frequency of the storms, fact that is increasing also the flooding probability.

"Water shouldn't be a visitor, but rather a resident."

[Mathur and Cunha, 2014]

In the rain terrain, the floods are not probable events, but possible ones in a place where rain is everywhere, rather a host than a guest.
Therefore, the climate can be considered a conditioner of our existence by transforming our environments into living systems. As consequence, the attitude about the development of our city needs to be tilted towards a more resilient approach that can reflect a better climatic quality in future. Approaching the tactility of our urban environments, using the optical characteristics of materials combined with different types of surfaces and introducing nature into cities can stand for considering natural processes as efficient generator forces for creating more resilient urban spaces.

Ill. 12-14 Pictures illustrates how the embodiment of the city is changed through different weather conditions.

Experience of light

Experience of cold

Experience of rain

THE BUILT AND THE GROWN

Managing nature in the city

In a historical perspective nature has been something that human prefers to control and especially in an urban context. This article will present how city and nature is merging in urban design.

The correlation between human and nature is often based on what nature can do for humans rather than what humans can do for nature. Humans need to make sacrifices to keep nature as an unedited element in our world. Otherwise, humans will be driven to make everything into a zoo or botanical garden where nature cannot spraw [Fink, 22 May 2016]. There is the order of humans and then there is the order of nature. They are not the same. They act in contrast to each other, from straight lines and geometrical shapes to spreading greenery, unknown variation of species and their inhabitants.
Nature has been framed. It is framed; framed by fields of grain or the square plant bed in a public square. Evidence is to be found all around us.

Stig L. Anderson introduces the idea of Process Urbanism ["Process Urbanism | The City As Artificial Ecosystem", 22.05.2016], which works actively with nature as a component in urban landscapes. The idea aspired from the cities need to be more resilient and is an approach in urban and landscape design.

The case of Fredericia C is an example of how difficult it was for SLA to sell the idea of having nature as a wild feature in our cities. The constructers had to redo their work several times because it was too neat. In the end the workers would film it and make the architect approve the result. They were afraid that is was too sloppy that they might loose their position for doing a terrible job. But what needs to be elevated is that the city is a very strict structure and wild landscape inside that structure provides new and unique experiences [Strudsholm, 2016].

SLA presented the idea of the built and grown environment as two features that cannot be merged but together is completing the composition of urban spaces. Meaning they are complementary sizes and entities with different languages.

"The grown environment is a separated system based on processes derived from nature. The built environment is a structure, which humans has developed and constructed. They cannot be joined or worked with in the same way. They are opponents and a duo of completing architecture."

Stig L. Anderson [Keiding, 2014: 24], Authors translation

There is a need to consider both urban structure and nature to make holistic design. Landscape and nature must no longer be thought of as a secondary thing to architecture, in order to optimise the city. The entrepreneurs have to be convinced that investment of outdoor spaces will enhance their projects, both through function and branding [Keiding, 2014: 24]. The ideas behind Process Urbanism have several times proved in practice how much there is to gain from urban and landscape architecture. [Det groede og det byggede] Process Urbanism aims to improve the aesthetics by invoking the senses, giving identity and character to urban spaces. These principles will make people stop and remember the experience instead of just being somewhere between A and B [Kruse, 2014]. All this is based on the processes of nature as the point of departure for every design.

Ill. 15-17 These photos are showing different situations with landscape. The first being very strict and controlled. The second, being where nature is uncontrolled and flourishing in its decay. Third, being the canvas of an artist (Gertrude Jekyll), where the composition of colors are shaping the experience.

Landscape as strict forms

Landscape as uncontrolled

Landscape as painting with colors

"In those dialogues that engage both culture and nature lies the basis for a new theory of urban design. This theory, which builds on a rich history of antecedents, as well as recent work in philosophy, art, and science, embodies an aesthetic that recognizes both natural and cultural processes and reveals the rhythms and the patterns created by their discourse."

[Spirn, 1988: 108]

Anne Spirn is introducing another applicant of processes – the cultural processes. Cultural processes, being the behaviour and interaction of people in urban spaces. Jan Gehl and Ole B. Jensen address this notion through their research. Process Urbanism on the other hand creates links between people and nature, through aesthetics of space. Using plants and surface materials to evoke our memories, to embody the spaces. The spaces should have tactility and affect our senses [Kruse, 2014].

Stig L. Anderson accommodates climate changes in designing with nature.

"As we see it, it is not nature that needs to adapt but us who must alter. It is from that perspective that we design. The base must be nature and we are the habitants and not the other way around."

Stig L. Anderson [Kruse, 2014] Authors translation

It is humans who need to adapt to changes of conditions, not nature. Anderson proclaims that nature is the one thing that we cannot control. Therefore urban development has to change character and additionally attitude in future development.

"It is not about constantly being alarmed but about achieving the best from the given resources of the earth. Limitation is implied in climate adaption. Climate optimisation is much more preferable."

Rasmus Astrup [Kruse, 2014] Authors translation

There is no need to make distance to climate changes as a reason of fear. Instead the changes should be embraced in design and be a component of how the city is used and which aesthetics and experiences it accommodates.

The growing environment is balancing the actions of humans when untied from human control. It should be introduced in the city, not only as aesthetic or function but the combination of both. Using the growing environment to optimise our cities with natural solutions to solve man-made problems.

Ill. 18 Central Park in New York is the lungs of the city. It stands in great contrast to the grid system of the streets, providing a feeling of being outside the city.

CITIES FOR PEOPLE AND BEYOND

A community playground

Taking over the time moment and pedantic characteristics of the urban evolution, this chapter is offering a synergetic approach about cities and people, with spaces perceived as: complex community playgrounds, places that are meant to be perceived and experienced. In this discourse, based on perceiving social processes as "*rhythms and patterns*" [Spirn, 1988: 108], the urban performers are the ones that are thriving and maintaining the urban pulse, the continuity to our future cities. Moreover, it is about the paradigm of *"cities sensed in motion"* [Lynch 1960:107] and how the people's actions and interactions are staging the mobilities in situ [Jensen, 2013], as *"spaces between buildings"* [Gehl, 1987], from below and above, through embodiment and planning.
Embodying the Jan Gehl's and Ole B. Jensen's approaches about the great importance of designing cities for people, the emphasis is on how are they perceiving these social processes as analytical and designing tools. Considering that both are supporting the conclusion detached from our urban evolution regarding the importance of walkability and embodiment of urban spaces, these attitudes are complementing each other.

First of all, studying Jan Gehl's approach, the focus is more addressed towards researching the everyday life social situations and how are these sensed by the inhabitants. Introducing this attitude is elevating the speech, by opening up the discussion about the diverse palette of outdoor activities (necessary, optional and social) and the complex social processes as space happenings (spaces for walking and places for staying). Moreover, in order to support in time the urban flexibility, Jan Gehl's approach for life between buildings was introduced. This different, but complementary attitude is reflecting an extended definition and character of outdoor activities influenced by the physical environment. It is about the urban pulse, which can be supported in time by shaping the people's movements and interactions in the composition of urban activities.

"Life between buildings is an entire spectrum of activities which combine to make communal spaces in cities and residential areas meaningful and attractive."

[Gehl, 1987: 16]

In this sense, the physical setting is meant to embrace the urban activities, fact that reflects the connection between people and their environment. Perceived as a decisional factor in influencing them to a varying degree and in many different ways, this embodiment is offering the sense of place and more than that, adaptability. Being an important condition, the static built environment is framing different types of activities, which are in some regards supported or enhanced by it.

"Even though, the conditions of physical environment do not have a direct influence on the social contact intensity, the possibility for meeting, seeing and hearing people can be enhanced by increasing the quality of our urban environments."

[Gehl, 1987: 15]

The types of activities are defined by their importance and degree of influencing the urban environment or being influenced by it: the necessary activities – as movement from A to B, optional – as specific activities developed only under favorable exterior conditions and social activities – defined through interactions and actions. In terms of urban environments, the biggest

Ill. 19-21 Social processes viewed from various perspectives. Seing the overall flow *from above*, to movement *from below* and social interaction between actors.

City viewed from above

City viewed from below

City of social interaction

influence degree is expressed by the social activities which are defined though the quality of public spaces to act as "centripetal places" [Jensen, 2013] – attractors - for affording slowly experiential reach pass, acting and supporting the optional activities, by entertaining the social activities.
Thinking about both necessary /functional activities and optional/recreational ones is bringing a new dimension into the discussion. As an experiential and intense weave of energy, is activating by feeding constantly urban spaces with the so called – urban pulse.

"To see and hear each other, to meet, is in itself a form of contact, a social activity. The actual meeting, merely being present, is furthermore the seed for other, more comprehensive forms of social activity."

[Gehl, 1987: 15]

On the other hand, Ole B. Jensen is focusing his attention on staging mobilities. Perceived as a socio-spatio-temporal process, it is meant to direct the design of mobile lifescapes *"from above"* and to entertain mobile engagements (social interactions and embodiment) *"from below"*. Considering the social behaviour, of moving, cities are experienced and explored. Through Jensen's approach, the *"mobility's turn"* paradigm is supporting and enhancing this way of perceiving and understanding our physical environment. Seeing it as a theoretical and designing solution for connecting people with their urban or natural settlements, the cities can become more responsive. In this extend, it is about people performing mobilities, interacting and acting with each other. It is about their power of influencing and reacting to the exiting settings' physicality, understood as "complex relationship to the fluid and fixed, flow and stasis, friction and movement" [Jensen, 2013].
Moreover, we are influencing our environment through our actions and the physical settings are influencing our movement and way of reacting, by their affordances. In the matter of scale, the citylife can be thought from above and from below. From above, is defined as scenography, in the sense of creating 'scenes', a designing manuscript that is guiding and accommodating the different types of mobilities inside a specific context. Meanwhile, staging from below is expressed through the 'choreography' between different actors, or actors and their environment - social interactions or embodiment. Therefore, considering the versatility of these two scales, the urban spaces can be approached as playgrounds for designing with social situations, from the perspective of movement.

In this regards, the public spaces are 'mobile situations' perceived "as a dynamic and process-orientated event in time-space", fact that is illustrating the importance of introducing the "mobility's turn" as supporting factor of the processual mindset.
With other words, Jensen's perspective is about analysing the experiences on the way, as effects of the mobilities in situ, meanwhile Gehl's attitude is meant to enhance these urban happenings, as supporters of the urban pulse, the life between buildings.

In consideration to defining more precise the social situations that are accommodated by our cities, these approaches are complementing each other and together as a synergetic effect are activating and introducing fluidity in the everyday urban routine. This type of social situation is framed as an active system of networks and meeting points. Activity patterns are acting as nets in the urban context, offering possibility for existence, high quality of public spaces and better physical framework that is generating the outdoor activities' tendency to grow in number, duration and scope. On the other hand, the mobility trails are meant to bring on the way activities and resources as people and materials in different spots of the city, acting as activating forces for meeting place (squares, plazas, parks etc).

CONTEMPORARY CITIES

Aesthetic and function as the present themes of urban design

Urbanisation is happening all around us. Climate is changing. People populous the cities and therefore need the urban space to socialise in. Nature is being re-evaluated. What is happening in landscape urbanism? This chapter will introduce weaknesses and strengths of the contemporary city.

"The debate is not only concerned with bringing landscape into cities but also with the expansion of cities into surrounding landscape – the source of the pastoral ideal, characterized by vast agrarian fields, wooded hillsides, and natural preserves."

[Corner, 2006: 25]

Designing from the experience of many generations of: city planners, urban designers and landscape architects, we need to rethink the urban setting in the way we introduce landscape into the cities core and the way we expand our cities into the landscape.

There is an increasing demand for our urban spaces to be resilient for conditions derived from change in society and climate. Otherwise urban spaces that are unable to adapt or be maintained will challenge our cities further.

The contemporary city is expected to work with: mobility (hard infrastructure and pedestrian life), water treatment (dividing the rainwater and wastewater in the sewer system and increase the capacity), culture (urban activities and cultural awareness), technology (using internet to distribute real time data), climate (reducing CO2 and make the city more energy efficient), and decline and expansion (global urbanisation).

"..(F)uture urbanisms must derive less from an understanding of form and more from an understanding of process – how things work in space and time."

[Corner, 2006: 29]

James Corner refers to the contemporary tendency of the city, by viewing it as a process versus a fixed environment. This notion is followed by many urbanist, amongst other: Anne Spirn, Stig L. Anderson, Charles Waldheim and Chris Reed. Corner also writes that the designation terra firma (firm: something unchanging and fixed) should give way for terra fluxus (fluxus: in continuous movement). [Corner, 2006]

"But the city is more than a text, and more than an artistic or technological artifact. It is a place where natural forces pulse and millions of people live-thinking, feeling, dreaming, doing. An aesthetic of urban design must therefore be rooted in the normal processes of nature and of living."

[Spirn, 1988: 108]

Anne Spirn, supports the idea of investigating the term of processes as the force that drives cities. Additional to natural processes she writes "...in the normal processes of nature and living, meaning people and nature alike". Moreover, she is pointing out another discourse that has been discussed enthusiastically, the term of aesthetics. Aesthetics in the city has in the eyes of many urbanist been neglected. From the industrialism until today urban designers have aimed to optimise the city. In order to achieve this, the ancient urban structure has been resumed in terms of walkability, that is a contrast to increasing urbanisation and sizable cities. This urbanism's turn offers a different embodiment where aesthetics returns in the form of sensing the space people move in.

Ill. 22 SLAs strategy of dualiy for Vinge. Working with two plans, one called the physical state plan and the built plan.

Our senses are *the eyes of the skin* as Pallasmaa presents it. He introduces haptic architecture, which is architecture that invokes all senses: smell, taste, touch, sound and visual.
Haptic architecture is a critical response to the modernist architects who creates urban spaces with an understanding of visual aesthetic from a distance but lack the human scale, the tactility of the city and its context [Pallasmaa, 2012]. The city disappears in a forest of buildings.

"This leads in turn to the third theme of landscape urbanism, which is the operation or working method. How does one conceptualize urban geographies that function across a range of scales and implicate a host of players? Moreover, beyond issues of representation, how does one actually operate or put into effect the work of the urbanist, given the exigencies of contemporary development? There is no shortage of critical utopias, but so few of them have made it past the drawing board. It is both tragic and ironic that as designers we are all ultimately interested in the density of building but that most who actually accomplish this can only do so through the typically unimaginative and uncritical techniques of design as a service profession. On the other hand, the visionaries, it would seem, are as always provocative and interesting, but their utopias continually evade the problem of an operative strategy."

[Corner, 2006: 31-32]

Corner mentions four themes for future urbanist: processes over time, the staging of surfaces, the operational or working method, and the imaginary.

He criticises contemporary urbanist in lacking method and strategy for realising the ideal of having processes entering urban development.

Stig L. Anderson is currently trying to put method and strategy into his philosophies of nature, urbanism and aesthetic. Public urban spaces are not only a space between A and B. It is where we meet, where we socialise and where we sense the city and activate it by our presence.

"Public spaces in the city must surely be more than mere token compensation or vessels for this generic activity called 'recreation'."

[Corner, 2006: 32]

Corner believes that landscape design of today is lacking function; landscape has become an ornamental artefact in the city, which has been shaped so it only resembles nature.
This makes it interesting to observe the void between present urban designers that either is compelled by function or aesthetics. Though as a reflection, both might be missing.

Even though Anderson from SLA promotes aesthetics there is also a lot of function to be found in their projects.

For example the project of Vinge is a new city outside of Copenhagen. Here, the landscape designer is creating an operational strategy for expansion of cities, which is built on the idea of duality between the built and the grown. Vinge is made out of two plans: the physical state plan and the built plan. The landscape is constructed before the buildings. [TOPOS, 2015]

In order to review SLAs great ideas the weakness lies within being a practice. Their design is very specific on landscape being wilder inside the city, which means for anyone else to use these ideas of complementing duality and Process Urbanism there is either or a lack of translating the method and a restriction towards form. Some of the forms in the projects are not only representing a way of doing landscape but also telling what it should look like. That is both positive and negative. The ideas are innovative in contemporary design but they could at the same time also be viewed as a style. And like most styles, seasons will change and replace it with something else.
The style is a great brand for the firm but it is not providing a tool for other professionals. To make the method stronger it should be able to give freedom to creativity. Be flexible so that others might adapt and transform it into their practice.

Process Urbanism, Urban Ecology, Restorative Urbanism etc. is all a potential proposition to what is going to step in after sustainability. Corner believes we lack the method and operational strategy to get the idea of processes out and into the projects. Some have already succeeded but there is not a common ground to depart from that practitioners share.

THINKING 'N' FLUX

An approach from knowing to doing

By weaving together the urban aspects that withstand or were changed during the urban evolution and overlaying the power of processes as "space happenings" [Thoren, 2007: 70-71] over time, this project is meant to shift the perception from stability to flexibility from thinking in rules to thinking in flux. This attitude is composed and supported as a conclusion of the theoretical chapter. Moreover, is built as a synergetic approach, meant to express an overview of ones of the most relevant statements that are guiding different fields as: mobility, sociology, ecology, landscape architecture, urbanism etc.

Thinking in flux is a manifesto process that aims to introduce a new perception of urban interventions. Claiming for this idea, our cities need to be responsible optimised in order to accommodate natural and social processes, as quality of enabling them to be adaptable over time.

Thinking in flux is a different way of approaching and exposing the bridging between natural and urban cycles. Perceiving the urban spaces in the context of natural and social processes, the urban and nature are meant to complement each other through function and experience over time. Through introducing this duality, the urban rigidity is meant to be adjusted by the versatility and renewability of natural processes. Adopting the attitude of optimising the existing urban settings with natural processes and considering James Corner's statement "Highlight the space and the city will react" [Corner, 2006], the city is meant to react and become more adjustable through constant adapting and correlating its features to the upcoming changes.

Taking as point of departure this new attitude of thinking in processes, the urban spaces are seen as idea, representation and physical matter that provides a dynamic mean of cultural expression or a grounding mechanism that offers flexibility amidst perpetual change. Pursuing this approach, a new direction of envisioning our further urban developments is raised. Shifting the angle of perception from the problem searching process, to the process of finding the possibilities to be enhanced, the accent will be focused on designing for prosperity rather than designing for comfort.

"That flowing imagination which founded the city in the first place can be re-found. It is planted in our midst always ready to flower – if we begin, not with the 'problem' of what needs to be changed, or moved, or built, or demolished, but begin with what already is here, still stands and signs of its soul, still holds the sparks of the mind that initiated it".

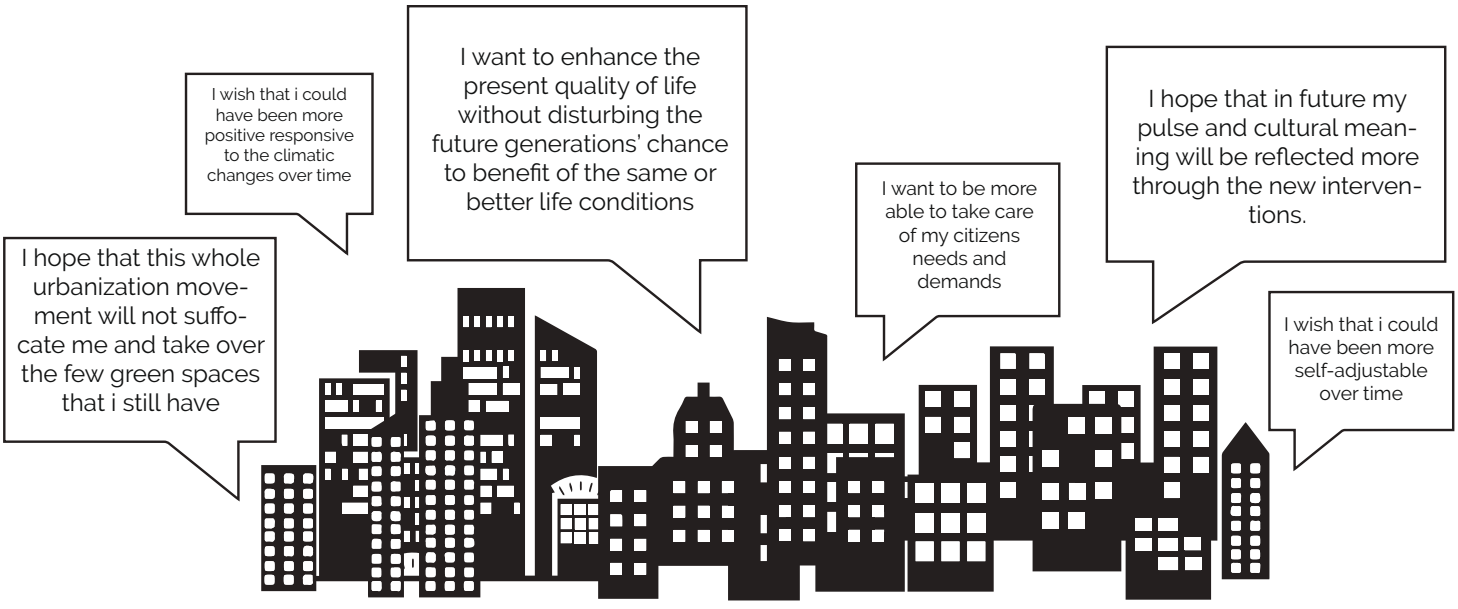
[Hillman, quoted by Ellin, 2012: 276]

Based on this quote, the project is pursuing the idea that the answers of our contemporary urban problems can be found in these constant challenges, Through "transmutation", the natural processes are transformed into new physical manifestations that invites for participation through an *"experiential equivalency"*. Making the natural processes more palpable, is aiming to introduce them as *"inherent rightness"* of natural form-making. To shape the urban spaces, these natural processes are introduced to enhance their ability to cope more efficient to the constant changes over time. Furthermore, making these processes to resonate in urban environments, would trigger dynamic response without dictating or scripting what that response might be.

This approach is directing our project towards a new interpretation of our urban environments. It is about not perceiving anymore our urban spaces as playgrounds for problems, fixed in master plans, but more

as spatio-temporal processual events that could be structured to stimulate heightened human creativity and socialisation.
Stepping forward towards engaging the design into a continuous rhythm over time, it is followed by the idea of recognizing "the transformed potential of the natural environment as the authentic quality of movement – the natural rhythms as source of creativity." [Hirsch 2014: 41-49]

Ill. 23 Graphic: Breaking the frame


I hope that this whole urbanization movement will not suffocate me and take over the few green spaces that i still have
I wish that i could have been more positive responsive to the climatic changes over time
I want to enhance the present quality of life without disturbing the future generations' chance to benefit of the same or better life conditions
I want to be more able to take care of my citizens needs and demands
I hope that in future my pulse and cultural meaning will be reflected more through the new interventions.
I wish that i could have been more self-adjustable over time

POSTLUDE

Where do we go from here?

The purpose of this chapter is to the sum of the theoretical discussion, framed by contemporary theorists with one common endeavour: to think the city as a system of processes. By enhancing the craft of working withprocesses the objective is to gain resilient cities which can adapt with changing tides.

Presented theories, ideas and philosophies originate from different places geographically to apply a wider perspective for the discussion. The discussion aims to characterise both representatives from an academic field and a professional field to link the present mindset with physical events in urban design. This has given a range of sources from theoretical and cross-disciplinary books to interviews in various articles.

As a result, a new movement is initiated. It is the movement of processes and thinking in flux. The ideas are shaped by ideal and criticism of our present cities. This is done by James Coner, Anne Spirn, Stig L. Anderson, Anuradha Mathur, Jan Gehl amongst others.

There is a great presentation of strong and potent ideas where everyone has their field of expertise, amongst them; landscape, natural processes, mobilities, human scale, water in terrain, aesthetics and functionality. Together they clarify the unfolded potential of landscape urbanism and frame the scope of this project concerning Processes in Situ. Where these might be seen as individuals, each uncovers their spectrum of a common goal. There is a call for concept and method, which challenges and supports this aspirating movement.

It needs to embrace processes that we find in our environment, either a metropolitan or a village. The processes derives from nature, defining nature as an inclusive term that involves natural processes and phenomenon in our atmosphere and on the earth, together with social processes that are mapped by the patterns of humans (and animals alike).

Ill. 24 The city speaks!

PROCESSES IN SITU

This chapter is introducing the concept of *Processes in situ*, a concept that was developed through this project. Following the narrative, this chapter is presenting the terms and framework for the entire project.

CLIMATE, GROWN AND PERFORMERS

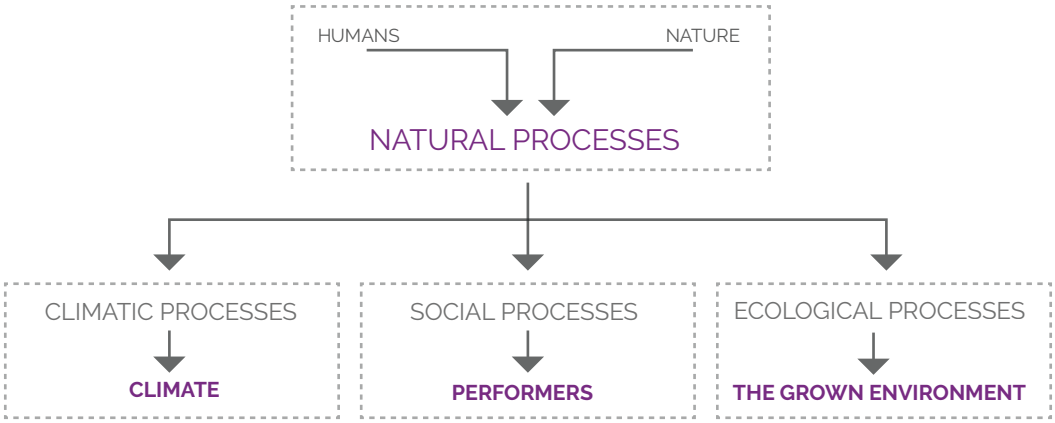
Into a world of processes

This chapter is meant to compose the definition of the concept processes in situ, as a result of the thinking in flux attitude that derived from the theoretical chapter. Thinking about daily happenings and how are these affecting the situational aspect of everyday life, the project is proposing a new gateway for future urban design by exploring the existing world of processes.

Processes, as Waldheim is stating, are "space happenings over time". But what is giving them continuity and ability to coexist in the future is their individual motion. In the motion of going forward, the processes are defined as a series of operations: actions, changes or functions, performed in a specific space and time. Therefore, the definition of natural processes is about the produced actions performed by nature.

Adopting the idea that nature is not in balance (non-equilibrium paradigm), the definition of natural processes is calling for a more detailed and inclusive explanation. Considering that nature is fluid, a system of processes that is in flux, the natural processes are the actions performed not only by nature, but also by humans.
Stepping forward into the world of natural processes, the challenge that was raised in this project was intended to uncover their components. Answering to this research challenge and taking into consideration that humans are part of nature, the natural processes are branching out into: social, climatic and ecological processes.

The social, climatic and ecological processes are advancing in a more specific scale. Taking the scale dimension in the context of space and time, their movement represents a constant and inevitable source of energy. Moreover, considering the idea of motion, these processes are transposed into the following terms: performers, the grown and climate. Based on this, performers are the ones that are activating and defining the space through their horizontal motion. Whereas the grown is defined through a vertical motion, having the power of balancing our environment. While climate is emphasising both the horizontal and vertical motion, bringing a wider dimension, as everything that is surrounding us.
The intention of the trilogy of processes is to be projected into a context (in situ). This link is composing the concept of processes in situ.
Subtracting the trilogy (climate, performers and grown) from natural processes, we need to describe the abilities that it is taking them apart as different terms within the general notion.
These abilities are referred back to the idea of motion:



Ill. 25 Concept development
Ill. 26 City in the hands of man

CLIMATE Climate is defined as weather, meaning the transportation and location of water (water cycle). This process is activated by the sun, generating the water cycle by increasing the temperature. When temperature is rising, water is evaporated (vertical motion). Hot and cold temperatures are creating circulation of wind that is transporting it (horizontal motion). When intensified in the clouds, the water is released into precipitation (vertical motion). The precipitation is returning it in a horizontal plane, characterised by different locations where it either infiltrates into the ground or flows back into the ocean, rivers and lakes. This process is feeding the others and is hereby stated as the process that is surrounding us. It is vital, being a source and conditioner of life (see diagram of climate process). This process is repeating in flux and is having a long-term effect.

PERFORMERS The performers are the ones acting in space having the ability of being mobile by choice (horizontal motion). People, animals and insects represent the term performer by acting individual or collective in space and time. They inhabit and consume. Being able of moving from place to place they are staging and activating spaces by short-term presence. Their process is to attract and release energy by meeting and interacting in the overall system.

GROWN The grown is considered an overall term for plants. Every plant is an actor in the process of photosynthesis. And this process is counteracting and balancing their environments in relation to climate and performers. When raining the plants are feed with water, when it hereafter evaporates, cooling the surroundings. In relation to performers the plants counteract, by decomposing the waste left by them and recycle CO_2 into oxygen.

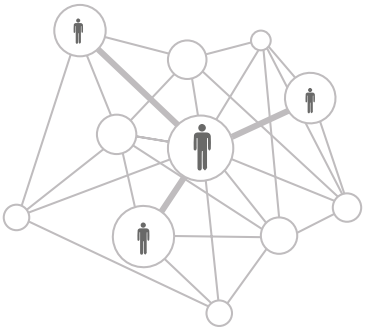
The trilogy is exploring the benefits and opportunities of climate, performers and the grown for conditioning, balancing and activating our setting.

In the matter of time, the concept of processes in situ is elevated. The dimension of time is enhancing the effects of them taken together or individual. In regards with zooming in or out, the time is providing specificity or overview. Furthermore, is meant to place them not only in a physical situ, but also in a moment in time.

This being said, the synergy between them is meant to uncover the aspects that are supporting the current situation and most important that is generating the circumstances for the future.

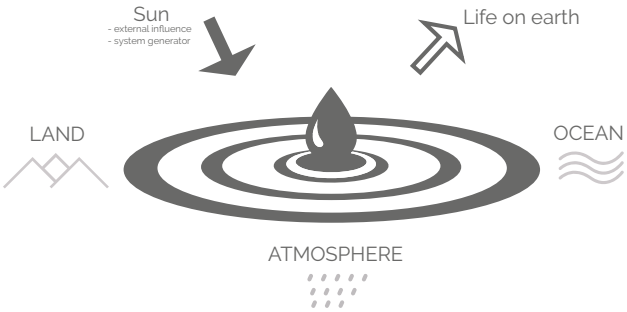
Ill. 27-29 Processes diagrams of each term

PERFORMERS



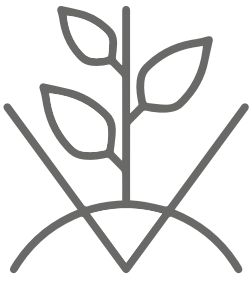
" activating and sensing the space"

CLIMATE



" transport and location of water "

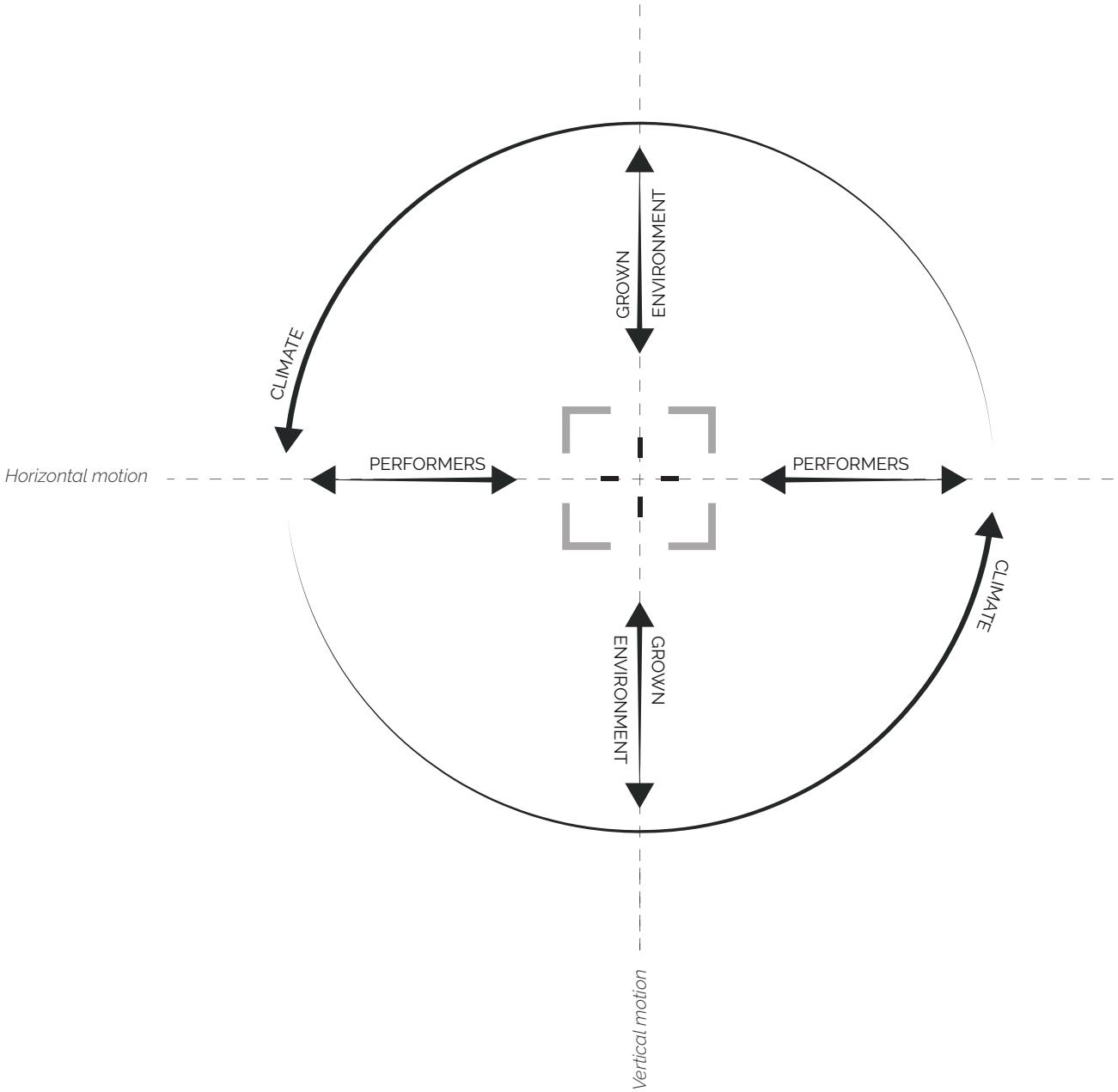
GROWN



" balancing and conteracting"

CONCEPT

Processes in situ



Ill. 30 Concept diagram: Processes in situ

Processes in situ is an inclusive concept for urban and landscape design, which is defined as the synergy between the `processes of Climate, Grown and Performers projected in a chosen context.

GUIDE TO PROCESSES IN SITU

The output of the concept is turned into a method (design guide) which is presented in this chapter. This method is used in the case of Helsingør and therefore the design volume should be read apace with the guide.

DESIGN GUIDE

A designing method for urban designers

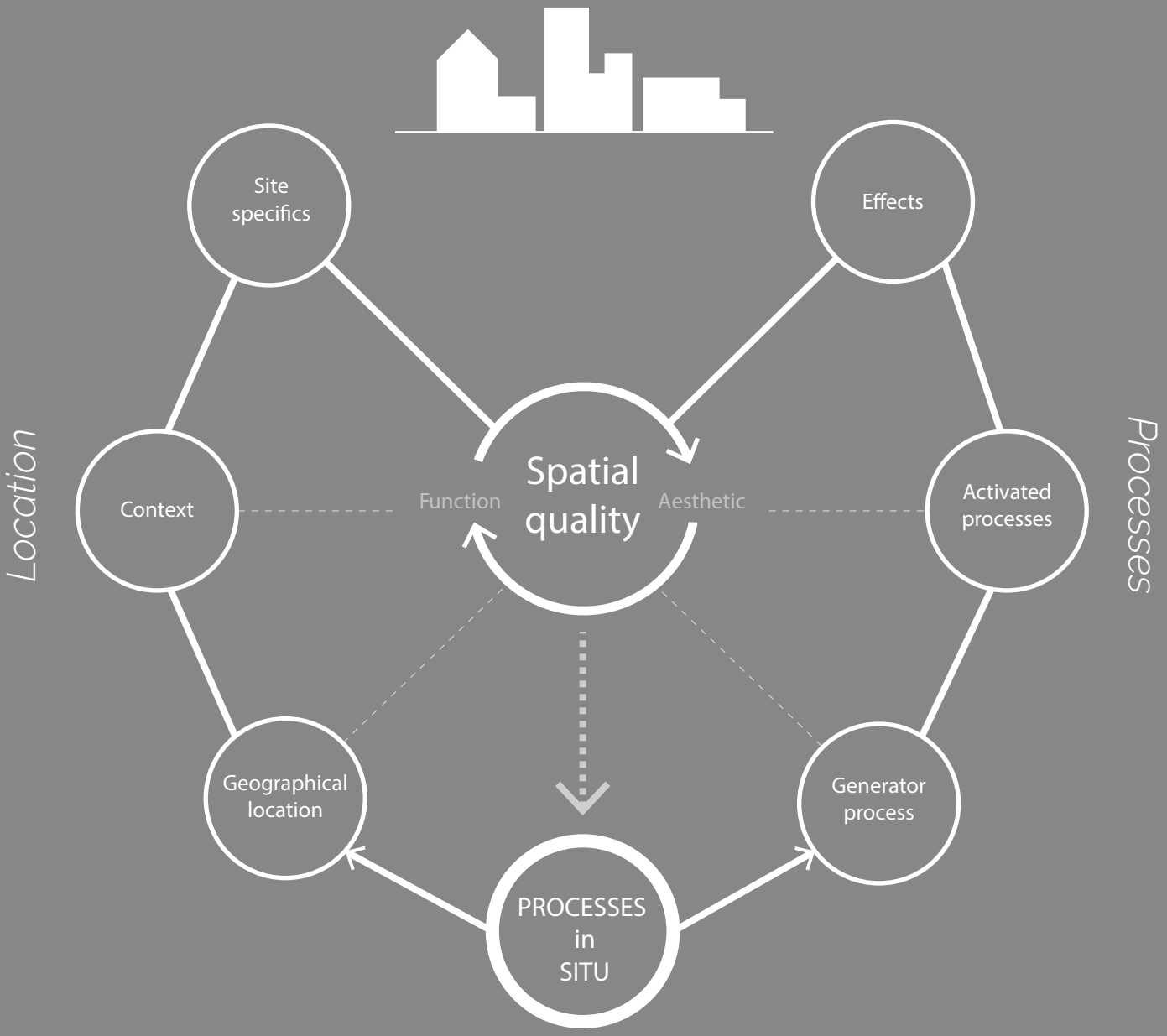
The design guide is a tool for urban designers that wish to work with processes in urban environments. The scope of this project is to work with processes as an ambition to make more resilient cities. A resilient urban space is defined as a space that is self-regulating over time. Self-regulation are viewed as changes in: climate, society or growing environments, in regards to processes. The guide is therefore composed based on the concept of *processes in situ*. Independently it is a mediator between the mind-set and practice of the concept. As a concept we explore what the processes are leading to and how we work with them in an urban context.
The purpose of the guide is to elevate various directions in design through processes. It is not a strict recipe that will impact the practice of urban design in terms of framing their imagination, on the contrary will thrive it. It is a flexible tool to be interpreted and integrated by the designer into a chosen context. By using the guide, the designer is guided through steps, which can be iterated in the process of a project.

The guide for processes in situ contains 6 steps (ill. 31). The steps are categorised by two notions: location and processes. Combined, this is processes in situ.

Each step is a variable of possibilities that together compose a unique story for each context.
All the steps are interacting with the notion of spatial quality. This is defined as the function and aesthetic that is emphasised in a urban design project. For an urban space to be successful it must create balance between function and aesthetics. Referred in the theory chapter, James Corner adresses that landscape design should not only be for display, it should also have a function. Fro another perspective Stig L. Anderson encourages to work more with aesthetics because function is already present.
Aesthetics is elevated because we need spaces that moves us and make us revisit our senses. Here, nature is used as a common narrative to embrace aesthetics in urban environments. This guide state that it is important to react on both within urban design.

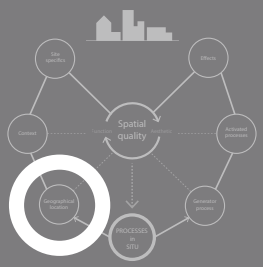
Every step of the guide will be described in the next pages. To make the guide, we used our design case in Helsingør to test each step. Therefore, the following descriptions will go between a general understanding of the step and an exemplification of how it was used in Helsingør.

Ill. 31 Structure of design guide. Processes in situ


Location
Processes
Site specifics
Effects
Context
Function
Spatial quality
Aesthetic
Activated processes
Geographical location
Generator process
PROCESSES in SITU

STEP 1

Geographical location



Ill. 32 Geographical step of the design guide
Ill. 33 Chosen suggestions for Helsingør

Design relation to geographical location

First step of the guide is referring to the geographical location. This notion is often underestimated in practice because the designers naturally know how to work in their national field. But from an outside perspective this step has a vital influence when working with processes. Look at the rain patterns as an example; in Denmark our rainstorms are very intensive through the summer period, whereas in the winter there is less precipitation and stronger wind that is raising the water levels along the coastline. This situation changes the perspective when viewing different location on earth. The rain has periods that is peaking in different months creating various patterns [Appendix A].
Combining rainwater patterns with temperature and seasons will unfold situations which can not be generalised into other geographical locations. The same is the case of vegetation. When looking at the vegetation belts the temperate belt is making it possible to grow different plants than in the tropical and vice versa. Furthermore there is the occupant defined as: people, animals and insects. They occupy spaces and in an urban context the focus will be on the human dweller. People inhabits the city, where they change social patterns and traditions according to their national relation. Geographical insight is therefore essential when working with process. Being aware of the processes rhythm and pulse elevates their influences on the context. This is a key element of the project.

Rainwater

Greenery in Denmark

Mobility culture

Helsingør

In the case of Helsingør we were looking into a Danish context. Denmark is a located in northern Europe and has very changeable seasons: going from snow in the winter to high temperature in the summer. It is a place where people are going out whenever the sun is showing but also a place with lots of cloudy days and rain.
Every season affords different situations. This also means that it is very changeable, depending on how much the urban spaces are used between hot and sun, cold and windy.

In Denmark: urban life, climate and mobility is highly prioritised when it comes to urban design. For this project we went into mobility, climate adaption (water treatment) and urban greenery.

Mobility and climate adaption was chosen from our own interest in working with processes but it was also accommodating the focus areas of the municipality. As a third we chose urban vegetation as an element. Presently it is not an urban public element. It is something you will experience in private courtyards of the citizens. We found it necessary to bring something different into the public urban spaces. The greenery would be a contrast to the paved setting, but at the same time softening touch in relation to the beautiful historical buildings.

STEP 2

Context

Ill. 34 Contextual step of the design guide
Ill. 35 Chosen suggestions for Helsingør

The narrative of the context

Moving on from the geographical location, next step is zooming into the context. Here the questions is raised: Which urban structure is the project related to? Which topographical shape is considered ? And at last, is the context of the project in relation with an non-urban component?

These three questions are transfering the project into preliminary analysis of the site. This step is presenting direct suggestions of what to be aware of. For example taking the first question referring to the urban structure; there is a natural difference between houses in the countryside, suburb and city centre. Relation being; the larger the urban structure the lesser greenery. Urban structure are in general facing an overload of various service systems because of urbanisation and climate change. This is followed by the phenomenon of *urban heat island* that is an effect where the city obtain and raise high temperature, which have bad influence on people and infrastructure. For suburbs, the challenges are to strengthen the community, create safe neighbourhoods and enhancing the infrastructural connections.

Last, the countryside is facing decay from one point of view and to another, risking disappearing by the expansion of larger cities. The city in relation to an non-urban component creates different structures when expanding. Furthermore, the topography is close related to the weather. The rainwater runoff is either going into the city or away from the city.

City centre

Valley

Ocean

Helsingør

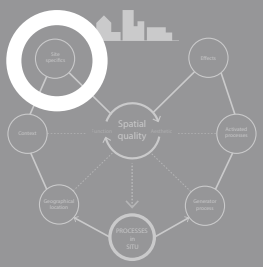
Helsingør is a harbour city and it is one out of three active connections to Sweden. This project is focusing on the city centre to address the challenges found in the juncture of multiple urban layers. Moreover, the city centre is unique because of all its preserved historical buildings (read: Design Volume). This is pushing the concept of processes in situ to think of how design with processes can be integrated in a historical context.

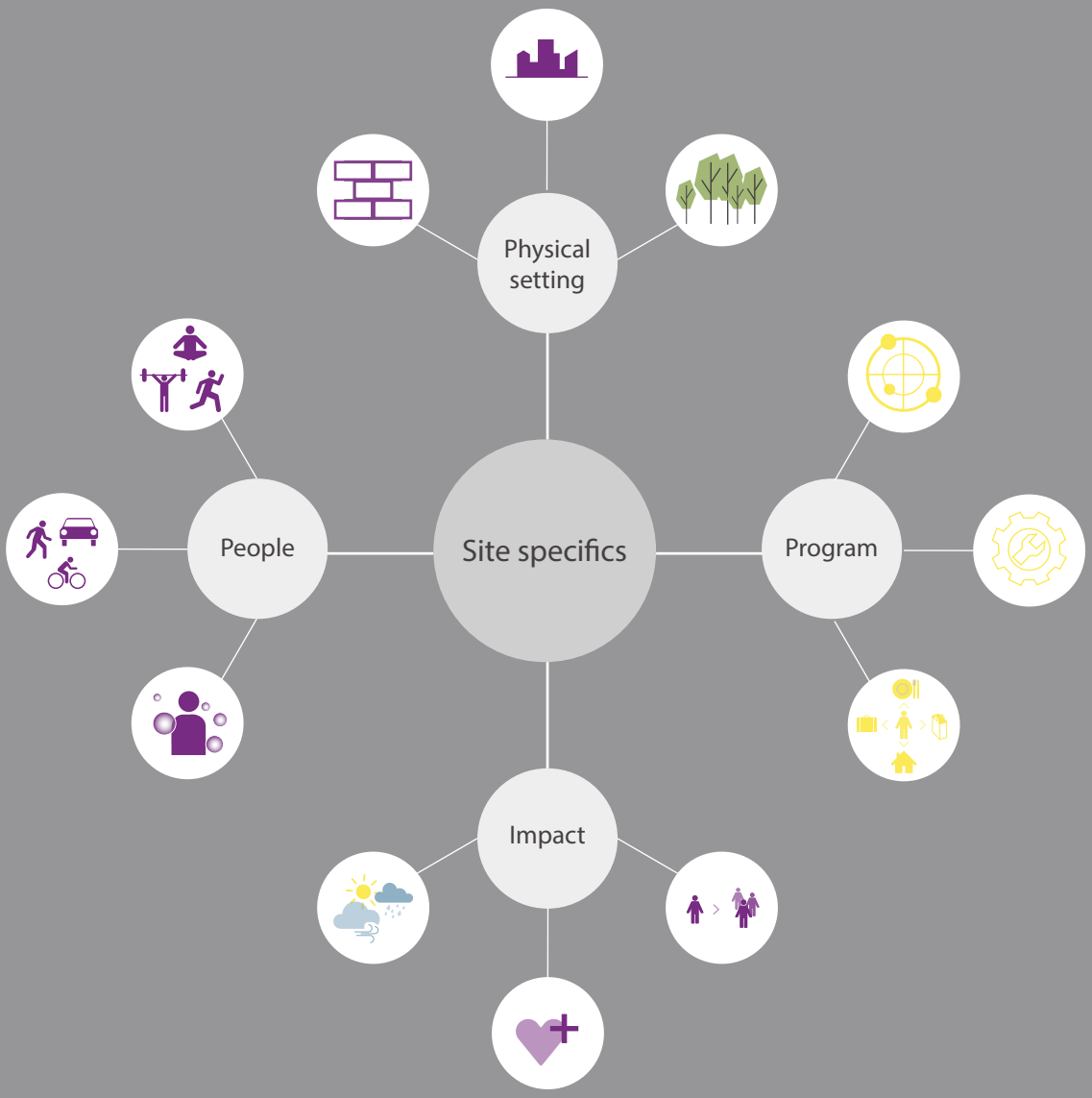
The periphery of Helsingør is lifted by the topography while the city centre is lowered down in closer connection to the harbour. This tells us to view the flow path of the rainwater and likewise flooding areas (see analysis in design volume). Water follows gravity and seeks down.

The city is centred towards the harbour and is expanding out into the country. This gives a great potential for leading the water through and around the city centre and into the harbour. Hereby separating the rainwater from the sewer systems to avoid overload of the system during the heavy rain is neccesary.

STEP 3

Site specifics





Ill. 36 Site specific analysis of the design guide
Ill. 37 Chosen suggestions for Helsingør

Unfolding the site

Now that the geographical and contextual features have been explored it is time to zoom into more specific site analysis.
The analysis is always a personal form of interpretation from the urban designers point of view and it is usually here the focus points are established in the process. With the guide some of these focus points have already been initiated. Working with processes in situ, the guide must be a point of departure if the processes is going to be an integrated part of the design. Additionally with other analysis concerning: urban character, wayfinding, atmosphere, proximity and etc.. These mappings are made depending of the objectives of the concerned project.

Mobility

Urban character

Proximity

Weather impact

Helsingør

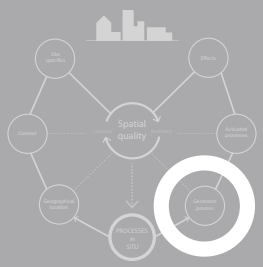
From the previous steps we now know to map the flow path, ocean levels and flooding because they are likely to have an impact from the contextual point of view. During the process we presented our analysis and conclusions for the municipality of Helsingør. On this visit we were set in contact with Helsingør Forsyning, which had an agenda for rainwater treatment.

As a result rainwater became our main parameter. The entire service level for treatment of water has to be raised by 30 % (see appendix). It is alongside with the municipality's plan for climate adaption, mobility plan and development of public urban spaces. There is therefore a great potential for introducing cooperation between Helsingør Municipality and Helsingør Forsyning to join some finances for different projects. Hereby, it would only be necessary to create a construction site for each project ones. This is cheaper, less disturbing for the citizens and also decreasing the amount of released CO2, versus if there had been two separate projects.

Having these meetings are accommodating a practicing perspective to the objectives and process. The project achieved more substance from these meetings.

STEP 4

Generator process



Ill. 38 Generator process of the design guide
Ill. 39 Chosen suggestions for Helsingør

Choosing the leading feature

The 4th step called generator process is where the theme of the project is addressed. Going into the urban layers through analysis and mapping we find that the urban layers are entwined. This means that from the point of processes in situ, it is not realistic to address a site where one of the three terms in the concept are non-present. Climate will always surround us. Plants will grow where it finds the conditions right. Whereas people and animals will move in the given environment provided by climate and plants.

In relation to working with processes as an urban designer the case of Helsingør has shown us that one process has to be made the primary factor (the generator). Otherwise it becomes difficult to demarcate the projects purpose.

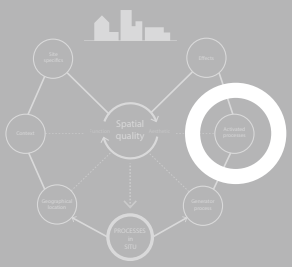
Water everywhere < Water > Water somewhere

Helsingør

In the design process of Helsingør this step was accommodated because every process was opening up for different directions. For our case we chose to work with rainwater as our primary parameter because it was a larger threat to the site. Furthermore, the current state of development in Helsingør is addressing the issue of rainwater treatment. In the next years a new solution has to proposed and implemented. Therefore, it was logical in our project to address the discussion of what that solution might be.
When designing with rainwater there needs to be an arrival and a departure for the rainwater in the city. The arrival is when it rains and the departure is when it infiltrates or is let out into the ocean. The last option is not preferable, because during heavy rain the water needs to be detained. Otherwise, every waste and particle on the street is flowing with the water, disturbing the ecosystem in the ocean.
As a process, rainwater has the potential of creating engaging urban spaces when incorporated in the surface. It has many beneficial affects that merge other processes together which will be advanced in the next step.

STEP 5

Activated processes



Ill. 40 Activated processes of the design guide
Ill. 41 Chosen suggestions for Helsingør

Integrating urban layers

Promoting the generator process raise the question: What happens with the other processes that was observed at the site?
As mentioned in the previous step, it is not possible to exclude the existence of the processes. Even though one is picked out as the main design feature the others still need to be implemented. The method is not functioning if only one process is incorporated.

These are the secondary parameters in design that is called *activated processes*. This means that previous analysis and conclusion from site specifics (see step 3) has to be revisited to unfold how the other processes interact with the generator. Activated processes are defined as networking with the generator. Keeping in mind that each process has a different purpose but aims to still be joined in one design narrative.

Mobility

Experience

Embodiment

Microclimate

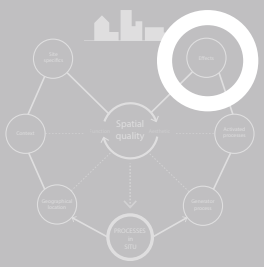
Helsingør

From the analysis we concluded that the paved surfaces of the public urban spaces are excluding the possibility of infiltration. Therefore, we wish to implement a network of vertical greenery in the strategy so rainwater infiltrates locally. These green streets are going to obtain water that will evaporate under high temperatures. The evaporation from the plants decreases the temperature in extreme cases and keeps a good microclimate and emphasis the users embodiment in the city.
Additionally we include the mobility as the third layer. In the network of the city we propose a stronger hierarchy between access points for cars versus pedestrians.

From analysis we conclude that it is the dense combination of narrow streets, cars, parking, bikes and pedestrian that are creating the disconnection between the harbour and the city centre. These in-between spaces need to accommodate wayfinding and a smoother transition from harbour to city centre. Here we propose to use Cathedral Square as the mediator. It is a square that completes the network. It should therefore introduce a new urban experience for the citizens and afford a meeting point. This idea act with the main discourse of rainwater. It led us to guide the rainwater towards this square and hereby using the path of the water as a wayfinding tool.

STEP 6

Effects - balancing towards synergy



Ill. 42 Adjustable effects
Ill. 43 Involevd effects for Helsingør

Integrating urban layers

The last step of the guide is an iteration of returned effects of the design. In urban design we, as designers, can only aim for the effects and through experience know how to emphasis them. Still, the effects are variables that are adjusting with the proposed design. It is a step that bounces between causes and effects in continuous transformation. For example, it can be assumed that the noise changes if the cause of the noise is adjusted.
At the same time, there is also an unknown factor in design. That is if the users are embodying the space differently then intended and creates something new. This is the unknown factor for which both academics and practitioners discovers new possibilities within the field of urban design.

Walkability

Sound

Pollution

Embodiment

Micro climate

Temperature

Helsingør

For the case of Helsingør we reviewed the processes we had been working with. Some of the effects that we assumed to achieve were deliberate while others followed. It was the intention to make a pedestrian oriented environment, but by excluding the cars from passing through. Additional effects were adjusted: sound, pollution, safety and spatiality.
The spatiality emphasises the experience and embodiment of an urban space. It would be interesting to observe how the performers will embody the pedestrian network and how that contributes to the experience. With the aim to use the pedestrian zone for vertical greenery to infiltrate rainwater other parameters were changed. Here amongst the microclimate, the green microclimate impacts the temperature. It would be interesting to observe the parameters before and after implementation of new urban spaces to see what unknown changes can be uncovered.

EVALUATION

Using the guide

Each step of the guide has led to frame the design of the urban spaces further.
From the wide scale of geographical location to site specifics, the achievement has been to elevate processes at the chosen location. In the design phase of selecting a generator, which align the other processes, provides various effects that can be reflected and modified on the site. Considering all together this can be composed in a strategy that gives an overview of all interacting layer. As a result it is now possible to go more into detail with the design.
Considering the shape, materials, aesthetics, function, interior and scale. As mentioned in the introduction, this is not a guide that will provide a final result of the design in a visual sense. It is a guide, if used, can help managing the urban layers, uncover hidden potential and make synergy of the composition. From this point the visual appearance of the proposed design can take multiple directions in terms of style and contemporary tendencies.
The guide must be in a meta level, in order to not be strict before flexible and furthermore must involve the creativity of the individual urban designer. The skills and mind of the individual urban designer is vital to embrace and not compromise individuality. Otherwise, urban spaces might be one reproduction of the other.

Urban design is to provide solutions for cities just as much as it needs to challenge the existing structures.

The design case of Helsingør is testing the durability of the guide. This test reapplied knowledge to the guide by demarcating when the guide was useable and when not. As a result, it was discovered that to use the entire guide, it is not durable to only consider a space, but a network of spaces or a site with its surrounding network. Because processes are travellers it must be considered how they arrive and depart the site.
Henceforth the guide has actively been used for analysis and for composing the strategy in Helsingør.

Please go to the Design Volume to read the case of Helsingør.

Ill. 44 Illustration directing to the Design Volume

Design Volume

HELSINGØR

A DESIGN CASE OF EMPHASISING PROCESSES IN AN URBAN CONTEXT

by Louise Færch Gjerulff and Oana Paraschiv

Design
Volume

Master thesis • Spring 2016 • MA4-URB4 • Urban Design • Institute of Architecture and Design • Aalborg University

OUTRO

This chapter is a sum up of the project by concluding and reflecting on: project scope, objectives, design process and the outcome, designing a method (design guide) and having a design proposal (Helsingør city centre).

CONCLUSION

The vision of the project has been fulfilled in term of introducing a concept, which can be applied to the practice of urban design. The concept is folding together different aspects of natural processes, which in situ (contextual relation) preforms between the relation of location and processes. It serves as a common ground for urban designers as a tool to manage the complexity of urban layers.

From the theoretical background of this project, professionals are acknowledged for their skills, where this concept will elevate synergy between their fields of expertise. From the objectives of this project, the concept has succeed in providing an overview of processes impact on cities. Furthermore, the design guide has achieved to highlight the steps taking in design. This was tested in the case of Helsingør, where the aim was to make a proposal for strategy and design of the city centre, incorporating: rainwater treatment, mobility and greenery. The process of merging the parameters in the strategy were made more coherent from the base of the design guide. Here the strategy arrived at its proposal by accommodating synergy between the parameters.
Henceforth the design itself was shaped from the technical aspect of hydrology where pipes/channels was integrated in the urban environment together with the mobile actors. The chosen path of the water is enhancing wayfinding between harbour and city centre. Using Cathedral Square as the mediator, where a new urban space has taken shape. Making it into a pedestrian area has made Cathedral Square more accessible. Moreover, the proposed design is affording treatment and cleansing of rainwater, that also emphasis an urban space where the citizens can meet and socialise. Compared with other public squares in Helsingør it provides a more intimate atmosphere for relaxation and leisure.
The weather will make Helsingør to a city with changeable features in the public spaces. This is visible in the street environment where rainwater is collected, to the ponds on Cathedral Square, which will change appearance from dry to wet. In the ponds there is a variation of plant that will reflect the seasons and clean the water before infiltrating.

In a historical perspective the design is reflecting the contemporary style of urban design that is recognised by its organic shape and topographical features. This design is emphasising the spatiality of the human scale by framing smaller spaces on the square. Being in the context of a church this is accommodating a space for smaller gatherings and intimate conversation.

Taking point of view from the applied design guide, the design is successfully reaching its goal to make a holistic strategy that will improve the resilience of Helsingør city centre. Based on the aims from Helsingør Forsyning, the goal was to increase the service of treating rainwater by 30% using a return period of 5-10 years. This proposal is meeting their requirements by treating 40% of the rainwater in the detailed zone A, using a return period of 10 years. Therefore the solution of treating rainwater on the surface can be recommended for other cases in Helsingør.

The guide has proven useful as a tool and can be interpreted to a international scale because its flexibility that is not constraint by a Danish context.

REFLECTION

For this project, the reflection should be seen as more of a future perspective towards the versatile ability of the product (Design Guide of working with processes in situ) to be used in different scales and environments, as duality of time and space, academia and practice (zooming out or in). Is a reflection of what type of character and effects can be obtained through thinking and designing with the concept of processes in situ.
Being governed by the idea of how the processes can be perceived in the academic and practical fields, the reflective attitude is accentuating the importance of the context (theory or practice) and how can, its specifics, beneficial remodel the product.

The idea of challenging the classical process of a master thesis by addressing this duality between academia and practice was implemented through splitting the classical booklet in two volumes (Research and Practice Volume). This gesture was based on the willing of composing a complex result, where the research process (Research Volume) result is complementing the design, being composed as a guide for it.

Placing processes in the academic field, was a matter of analysing and debating through a research study, the different attitudes stated by professionals from a vast scheme of domains: mobility, sociology, ecology, urban design and landscape design. Reflecting upon theory is comprised in the introduction of the thinking in flux attitude. This is stating for rethinking the scale and specificity of the theoretical approaches in a meta-level, a common ground, an overview, a synergetic composition of different domains and approaches. The debate is pointing out: how this way of thinking was used as a background of building the concept of processes in situ. Therefore, the discussion reaches the peak, when the research conclusions are shaped into a designing guide, as a working tool for designing with processes in urban environments.

Composed in steps, the guide is meant to create a structure for the design, as an overview of the conditions that are in a meta-level. The discussion can be rounded on the necessity of composing such a tool. The benefits are raised through this project and are tested through the case study of Helsingør. In terms of adopting it in practice, this designing tool is a generator of conditions and aspects from a general level (geographical and contextual level). Composed as inputs, these two steps are meant to help the designer to contextualise the project, challenging the process and design to become constant responsive.

One of the project's weaknesses is illustrated between this strategic level and the proper design, due to the fact that this kind of approach needs at least two testing cases for a proper conclusion. On the other hand, the flexibility in introducing this concept as a designing tool is starting with this next step – third step – site specifics. Choosing a site is meant to frame the environment that can accommodate the designer's imagination in introducing processes as solutions of the existing problems. As designers, we think of creating resilient urban spaces by searching the answers outside our area of action. In this regards, the project is proposing to direct the discussion towards the opportunities raised by using the existing resources, challenges or either problems to transform them into valuable urban spaces.

LITTERATURE LIST

[About Nature, 22 May 2016]
issuu.com/sla_architects/docs/about_nature_complete_crop?e=1000304/9844051

[Bachelard 1983:6, quoted by Richter 2014:71]
Richter, S. The hidrological moment. Gaston Bachelard, Water and Dreams: An Essay on the Imagination of Matter 1983 p.6 In: A. Mathur and D. Da Cunha, ed., Design in the terrain of water, 1st ed. Pennsylvania: University of Pennsylvania, School of Design, 2014 p.71.

[Bynum, 2013]
Bynum, W. F. A Little History Of Science. Padstow, Cornwall: Yale University Press, 2013. Print.

[Calthorpe, 2010]
Calthorpe, P. (2010). Urbanism in the age of climate change. Washington, DC: Island Press.

[Corner, 2006]
Corner, J.. Terra Fluxus. In: Charles Waldheim, ed., The landscape urbanism reader, 1st ed. New York: Princeton Architectural Press, 2006.

[Darwin, 2009]
Darwin, Charles (translated by Jørn Madsen). Arternes Oprindelse. Gylling: Narayana Press, 2009. Print.

[Ellin, 2012]
Ellin, N. (2012). Restorative urbanism: from sustainability to prosperity. In: T. Haas, ed.,Sustainable Urbanism and beyond: Rethinking Cities for the Future, 1st ed. New York: Rizzoli International Publications, Inc., 2012. pp.276-281.

[Fink, 22 May 2016]
Fink, Hans. Et Mangfoldigt Naturbegreb. Web. 22 May 2016.

[Fisher, 2012]
Fisher, Susannah. "What Is Climate Change Adaptation?". The Guardian 2012. Web. 22 May 2016.

[Gehl, 1987]
Gehl, J.. Life between buildings. Washington, DC: Island Press, 1987.

[Hillman, quoted by Ellin, 2012: 276]
Ellin, N. (2012). Restorative urbanism: from sustainability to prosperity. In: T. Haas, ed.,Sustainable Urbanism and beyond: Rethinking Cities for the Future, 1st ed. New York: Rizzoli International Publications, Inc., 2012. pp.276-281.

[Hirsch 2014]
Hirsch, A. (2014). Imaging Change. In: A. Mathur and D. da cunha, ed., Design in the Terrain of Water, 1st ed. Pennsylvania: Applied Research + Design, University of Pennsylvania, School of Design, pp.41-49.

[Jensen, 2013]
Jensen, O. Staging mobilities. New York: Routledge, 2013.

[Keiding, 2014]
Keiding, Martin. "Det Groede Og Det Byggede". Arkitekten 9 (2014): 24. Web. 22 May 2016.

[Knudstrup, 2005]
Knudstrup, Mary-Ann. Vbn.aau.dk. N.p., 2005. Web. 22 May 2016.

[Kruse, 2014]

Kruse, Marie Wiuff. "Da Naturen Kom Til Byen". Børsen 2014. Web. 22 May 2016.

[Lynch, 1960]
Lynch, K. The image of the city, 1960. In: O. Jensen, ed., Staging Mobilities (non-layout version), 1st ed. London: Routledge International Library of Sociology, 2013 p.37.

[Mathur and Cunha, 2014]
Mathur, A. and Cunha, D. (2014). Design in the terrain of water.

[Mcdonnell, 2011]
Mcdonnell, Mark J. "The History Of Urban Ecology". Urban Ecology. Jari Niemelä. 1st ed. New York: Oxford University Press, 2011. pp. 5-13. Print.

["Nature - Definition Of Nature In English From The Oxford Dictionary", 22 May 2016]
"Nature - Definition Of Nature In English From The Oxford Dictionary".Oxforddictionaries.com. Web. 22 May 2016.

[Niemelä, 2011]
Niemelä, Jari. Urban Ecology. New York: Oxford University Press, 2011. Print.

[Pallasmaa, 2012]
Pallasmaa, Juhani. The Eyes Of The Skin. Padstow: 3rd ed.TJ International, 2012. Print.

["Process Urbanism | The City As Artificial Ecosystem", 22.05.2016]
"Process Urbanism | The City As Artificial Ecosystem". Processurbanism.com. Web. 22 May 2016.

[Richter, 2014]
Richter, S. The hidrological moment. In: A. Mathur and D. Da Cunha, ed., Design in the terrain of water, 1st ed. Pennsylvania: University of Pennsylvania, School of Design, 2014 p.71.

[Santamouris and Asimakopoulos, 2001]
Santamouris, M. and Asimakopoulos, D. (2001). Energy and climate in the urban built environment. London: James X James.

[Spirn, 1988]
Spirn, Anne. "The Poetics Of City And Nature". The Landscape Journal 7.2 (1988): 108. Print.

[Spirn, 1998]
Spirn, A. The language of landscape. New Haven, Conn.: Yale University Press, 1998.

[Strudsholm, 2016]
Strudsholm, Jesper. "Naturlig Vildskab". Weekendavisen 2016: Web. 22.05.2016

["The Definition Of Nature", 22 May 2016]
"The Definition Of Nature". Dictionary.com. Web. 22 May 2016.

[Thoren, 2007]
Thoren, R. (2007). The Landscape Urbanism Reader - Edited by Charles Waldheim. Journal of Architectural Education, 61(2), pp.70-71.

[TOPOS, 2015]
"Resilient Cities And Landscapes". TOPOS 90 (2015): n. pag. Web. 22 May 2016.

[Waldheim, 2006]
Waldheim, Charles. "On Landscape, Ecology and other modifiers to Urbanism". The landscape urbanism reader. Charles Waldheim. New York: Princeton Architectural Press, 2006.

ILLUSTRATION LIST

Ill. 2 livedoor.blogimg.jp/iphonech/imgs/5/9/597201e3-s.jpg [Online] [22 May 2016]

Ill. 4 dk.pinterest.com/pin/373446994080094689/ [Online] [22 May 2016]

Ill. 5 dk.pinterest.com/pin/286400857532107096/ [Online] [22 May 2016]

Ill. 6 www.pleydellsmithyman.co.uk/assets/image-handler/content/540x330/crop/projects/upton/PICT0532.jpg?format=jpg [Online] [22 May 2016]

Ill. 7 www.dezeen.com/2009/06/15/the-high-line-by-james-corner-field-operations-and-diller-scofidio-renfro/ [Online] [22 May 2016]

Ill. 8 ottawabikeguy.blogspot.dk/2011/03/can-you-build-new-old-town.html [Online] [22 May 2016]

Ill. 10 curis.ku.dk/ws/files/34391374/UHI_i_K_benhavn_25_august_2010_GRAS_LIFE_1.pdf [Online] [22 May 2016]

Ill. 12 Candidnewyork.tumblr.com. (2016). Candidnewyork. Available at httpcandidnewyork.tumblr.com [Online] [22 May 2016]

Ill. 13 Seaward, P. (2016). [online] Available at httpPinterest. (2016). Pete Seaward - New York snow street. Available at httpsro.pinterest.com pin134474738846089 [Online] [22 May 2016]

Ill.14 Leiter, S. (2016). A set of photographs by Saul Leiter (1923-2013). Pinterest. Available at httpsro.pinterest.compin400116748124777934 [Online] [22 May 2016]

Ill. 15 en.wikipedia.org/wiki/Landscape_design [Online] [22 May 2016]

Ill. 16 dk.pinterest.com/pin/338192253244826020/ [Online] [22 May 2016]

Ill. 17 www.cassone-art.com/magazine/article/2013/06/the-adventurous-imaginative-and-subversive-gertrude-jekyll/?psrc=around-the-galleries [Online] [22 May 2016]

Ill. 18 40.media.tumblr.com/5f101d4a339c8fd13555b931a38e3522/tumblr_nty7ycWnVN1riijaro1_1280.jpg [Online] [22 May 2016]

Ill. 19 Jomang, A. (2016). Japan Scenery [HK]. i.ntere.st. Available at httpi.ntere.sta149448469p [Online] [22 May 2016]

Ill. 20 imgfave.com/search/agueda [Online] [22 May 2016]

Ill. 21 Pinterest. (2016). Under My Umbrella, Ella Ella, Eh Eh Eh. Available at httpsro.pinterest.compin9295717979169019 [Online] [22 May 2016]

Ill. 22 sla.dk/files/8814/2866/3176/Topos_2015_90_p_22-29.pdf [Online] [22 May 2016]

Ill. 26 acdn.architizer.com/thumbnails-PRODUCTION/ef/9a/ef9a43480d93ecde2a04b0e6a0acd0eb.jpg [Online] [22 May 2016]

Illustration not mentioned is created and composed by Louise Færch Gjerulff and Oana-Maria Paraschiv

APPENDIX

Appendix A: *Rainwater patterns*

Appendix B: *Climate adaption in Helsingør*

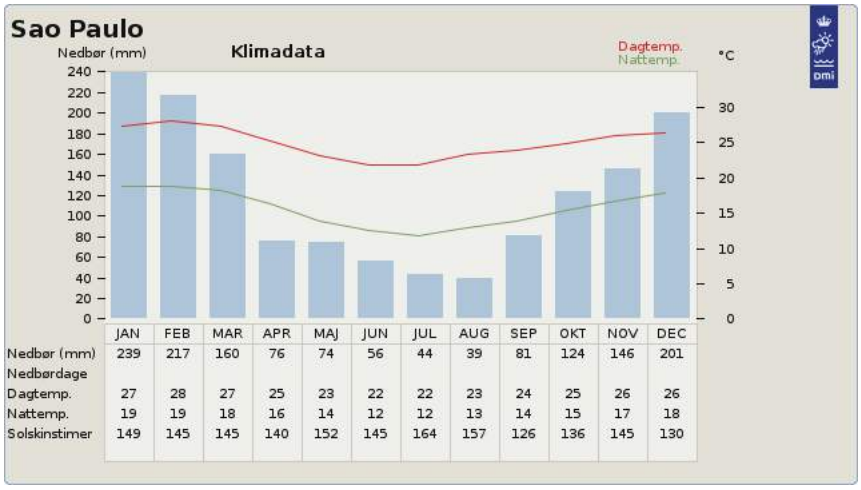
Appendix C: *Water scenarios*

Appendix D: *Pavement studies*

Appendix E: *Walkable Helsingør*

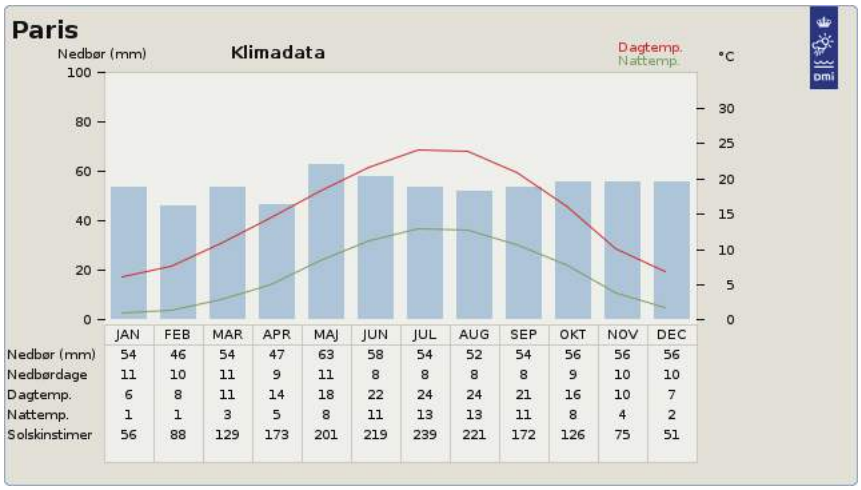
APPENDIX A

Rainwater patterns



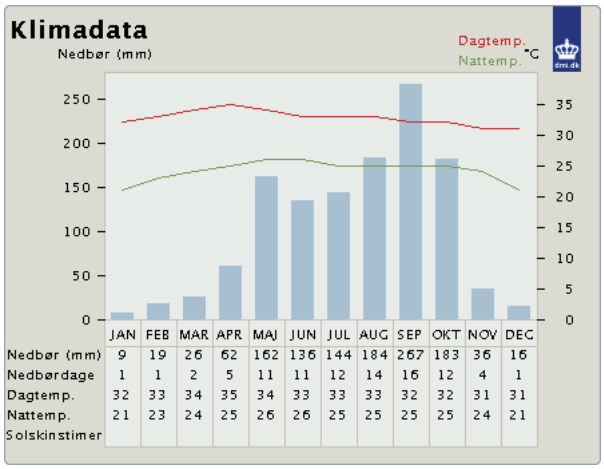
	JAN	FEB	MAR	APR	MAJ	JUN	JUL	AUG	SEP	OKT	NOV	DEC
Nedbør (mm)	239	217	160	76	74	56	44	39	81	124	146	201
Nedbørdage												
Dagtemp.	27	28	27	25	23	22	22	23	24	25	26	26
Nattemp.	19	19	18	16	14	12	12	13	14	15	17	18
Solskinstimer	149	145	145	140	152	145	164	157	126	136	145	130

Rain patterns of Sao Paulo in Brasil



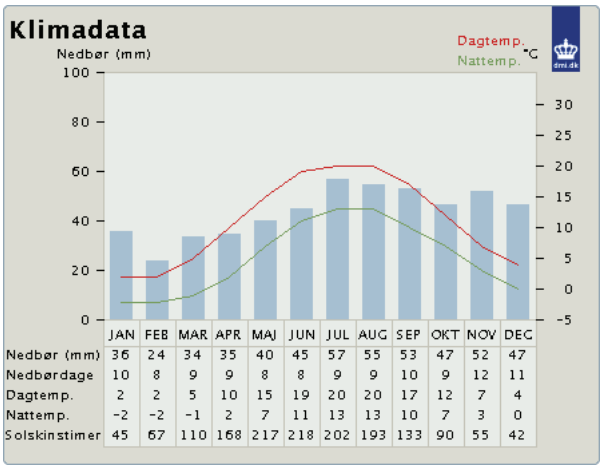
	JAN	FEB	MAR	APR	MAJ	JUN	JUL	AUG	SEP	OKT	NOV	DEC
Nedbør (mm)	54	46	54	47	63	58	54	52	54	56	56	56
Nedbørdage	11	10	11	9	11	8	8	8	8	9	10	10
Dagtemp.	6	8	11	14	18	22	24	24	21	16	10	7
Nattemp.	1	1	3	5	8	11	13	13	11	8	4	2
Solskinstimer	56	88	129	173	201	219	239	221	172	126	75	51

Rain patterns of Paris in France



	JAN	FEB	MAR	APR	MAJ	JUN	JUL	AUG	SEP	OKT	NOV	DEC
Nedbør (mm)	9	19	26	62	162	136	144	184	267	183	36	16
Nedbørdage	1	1	2	5	11	11	12	14	16	12	4	1
Dagtemp.	32	33	34	35	34	33	33	33	32	32	31	31
Nattemp.	21	23	24	25	26	26	25	25	25	25	24	21
Solskinstimer												

Rain patterns of Bangkok in China



	JAN	FEB	MAR	APR	MAJ	JUN	JUL	AUG	SEP	OKT	NOV	DEC
Nedbør (mm)	36	24	34	35	40	45	57	55	53	47	52	47
Nedbørdage	10	8	9	9	8	8	9	9	10	9	12	11
Dagtemp.	2	2	5	10	15	19	20	20	17	12	7	4
Nattemp.	-2	-2	-1	2	7	11	13	13	10	7	3	0
Solskinstimer	45	67	110	168	217	218	202	193	133	90	55	42

Rain patterns of Copenhagen in Denmark

Source: dmi.dk

APPENDIX B

Climate adaption in Helsingør

1. Introduction

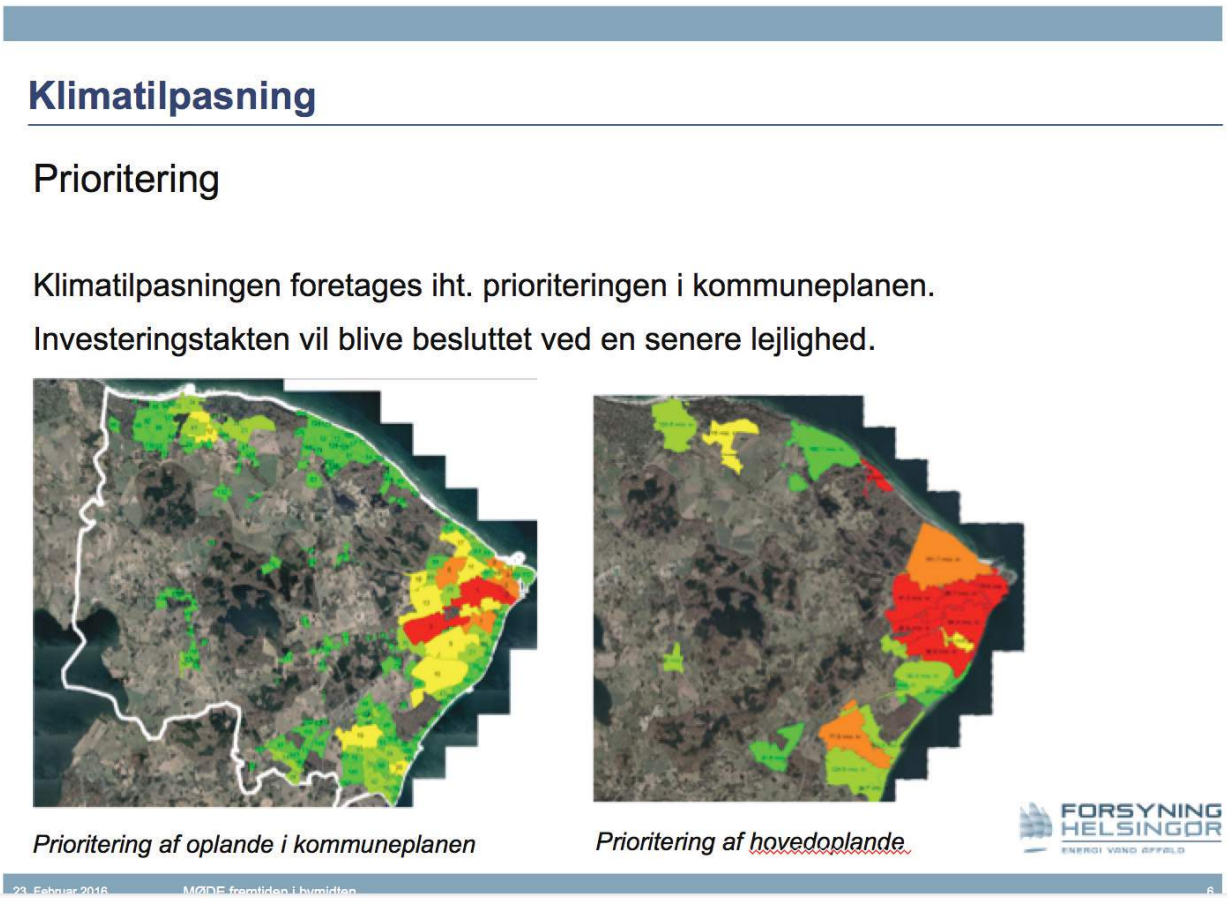
Introduction of the plans for managing rain water in Helsingør. Reference: Helsingør Kommune and Helsingør Forsyning.

Problematic with flooding. Overload of sewers create flooding. It is the rain water which is causing overload and when mixed with waste water it is highly polluted. This is due to the joined system of rain- and waste water.

The aim for Helsingør Forsyning is to increase the service by 30%. This project will be looking into alternative suggestions to how to reach their goal. Considering the work with urban infrastructure and activities done by Helsingør Municipality, both could scope a more holistic planning and gain more from joined solutions.

Helsingør Forsyning is recommended to use between 5-10 year return period for the new system.

The zones shown in the map 1 below are displaying the city center and hinterland in color, indicating their priority. The city center is amongst the first project to be started. Though it is priority 2 its relation to the other zones makes it priority 1. See map 2.



3. External water volume

The city center of Helsingør is only one of several zones in the city and hinterland. Therefore the influence of the other zones must be considered. It is proposed that each zone treat rain water locally. If not, the suggestion for Helsingør city center will not be sufficient to avoid flooding with waste water.
This project will be an example of how to work with the water in a flexible strategy. Furthermore various techniques and references will contribute to illustrate how a project like this can proceed.

On site the city center is the lowest point where water naturally will gather if not collected in the sewers. Since the site characterized by historical architecture and very narrow streets, the site will only manage the water locally gathered within the project boundary.

Should it not be possible to make detention ponds further up in the hinterland, then it is suggested to let the water runoff stay in the surface.

The joined streets, Trækbanen and I L Tvedes Vej, will be adjusted to function as storm-water paths. To lead the rain water around the city center.

Figure 2. Runoff rain water will be let around the city by Trækbanen and I L Tvedes Vej.

4. Site division

Because of the natural flow of the topography, see illustration xx in the design book, the water will be divided into two zones, A and B.

Zone A: Gathers the rain water in the streets leading to the Church Square. In the square it is delayed by series of detention ponds that is cleaning and infiltrating the rain water for usual rain occurrences.

Zone B: The water is let down to the lowest point on site where a current playground can be reconstructed to multi-functional use between detention pond and urban activities.

For detailing we will focus on zone A

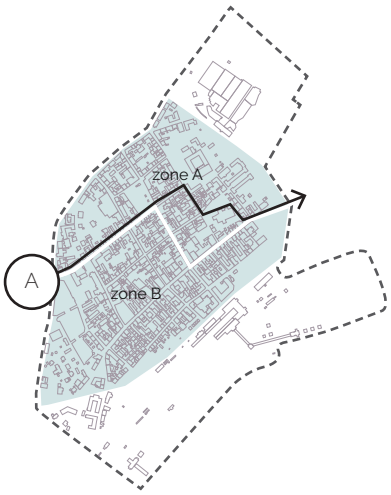


Figure 3. Outline of zone A and B.

5. Detail of zone A

The project is proposing a design which is gathering water locally into channels and pipes. The channels/ pipes are leading the water to a detention pond on the Church Square. A secondary detention pond is placed between the first and the outlet.

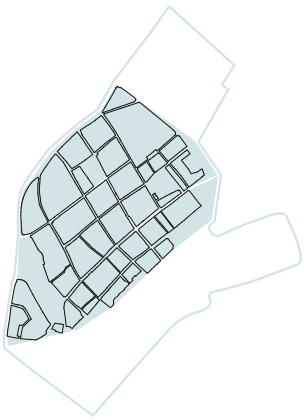
In these next pages, a calculation will be made to estimate the size of the ponds compared with the return period. Moreover there will be made an estimation of the size of the related pipes and channels. Together this will encounter for the main hydrological part of this project.

The return period will be 10 years and the calculations will be made based on the *Technical note of draining systems - design of pipes and detention facilities for rainwater*, written by Thomas Ruby Bentzen.

Prior, the zones area are calculated. On the map to the right the principle of design in zone A is drawn up. This is the scenario we will go into.
The area of zone A is 61.669 m2, see scheme below, which gives 6,1669 ha. Hectare (ha) is the preferred value in the calculations.

Zones

Zone A: 154.001 m²
Zone B: 179.662 m²

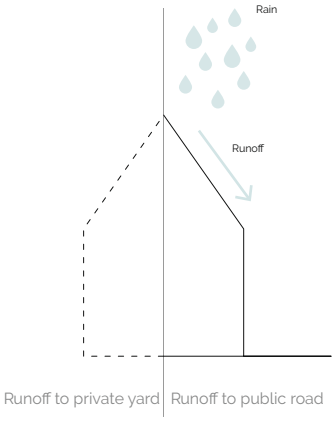


Built plots

Zone A: 104.184 m²
Zone B: 122.312 m²

Buildings

Zone A: 41.418 m²
Zone B: 86.091 m²

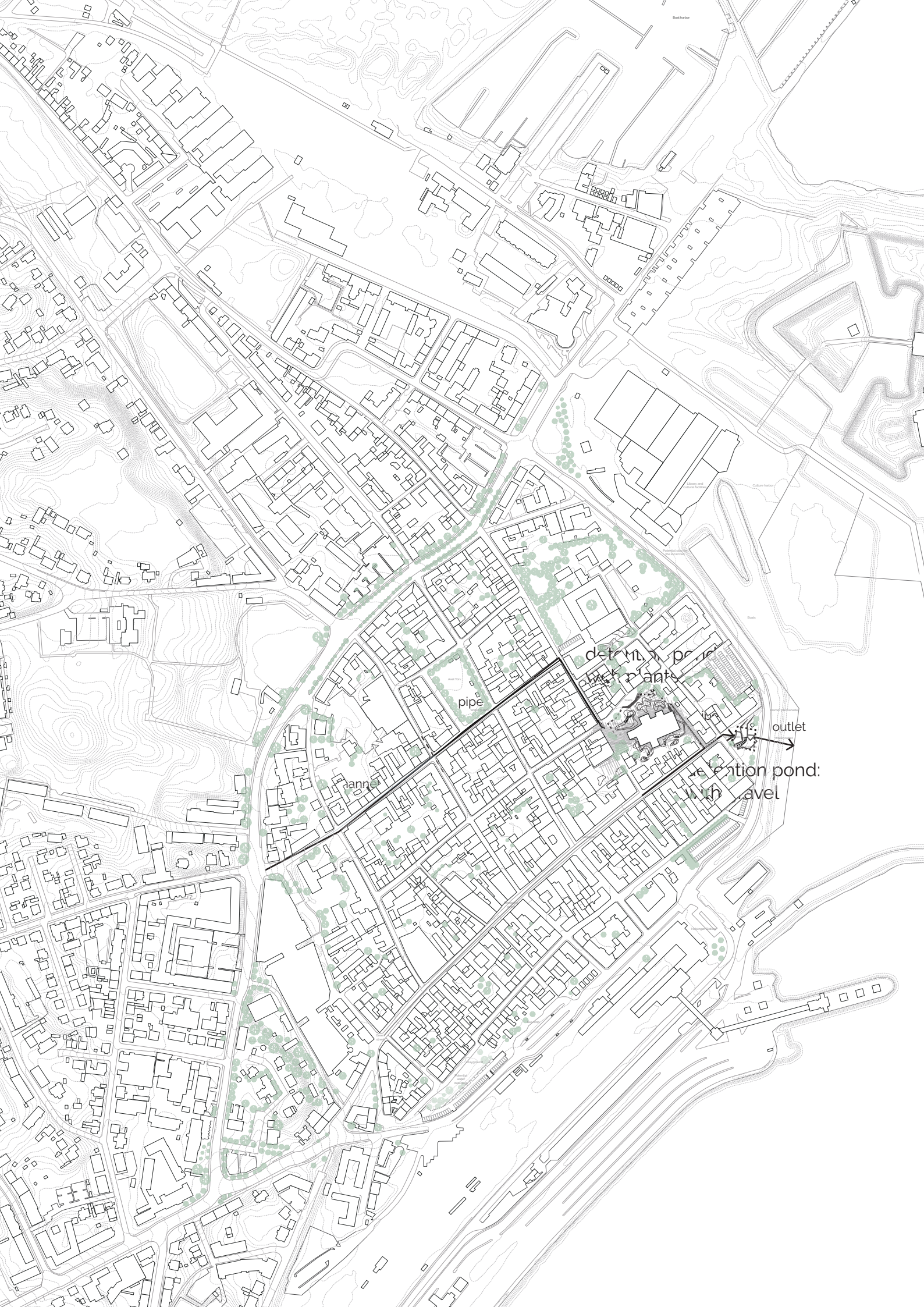


Roof runoff

Zone A: 20.709 m²
Zone B: 43.045,5 m²

This gives,

Zone A= 154.001 m² - 104.184 m² + 20.709 m² = **61.669 m²**
Zone B= 179.662 m² - 122.312 m² + 43.045,5 m² = **100.395,5 m²**


pipe
outlet

6. Detention ponds

In the figures below is a line draft of the detention ponds. On figure 4 the entire square is lowered. In the dent there is three wet ponds with gravel and plants.

The volume of those three are 312 m^3. The capacity of the entire square is 1714m^3.

Figure 5 shows three connected basins with high edges of 1m internal depth, 0,5m external. The basins can contain 284m3.

In total the capacity runs up to approximately 2000m^3.

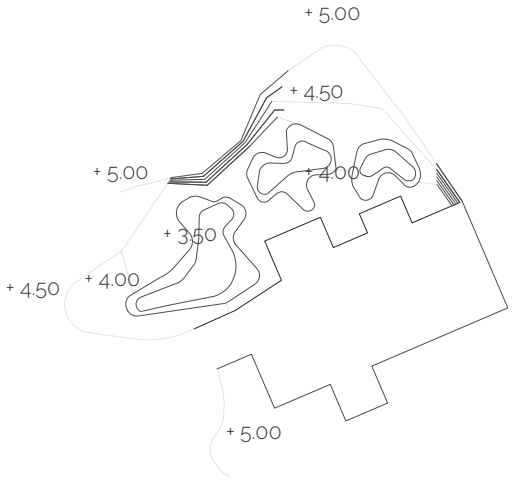


Figure 4

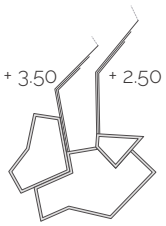


Figure 5

The volume is found by,

$Vol=(i*F_r-Q_{out})*t_r$

$i=c*t_r^{-\alpha}$ *i* is the rain intensity [l/s*ha]

$\mathbf{Vol=((c*t_r^{-\alpha})*F_r-Q_{out})*t_r}$

With a return period of 10 years,

c= 45960
t_r = 20min - 4 days, rain duration [s]
α= 0,79
$\mathbf{F_r}$ = 6,1669, catchment area [ha]
$\mathbf{Q_{out}}$ = 16, outflow [l/s]

[Bentzen]

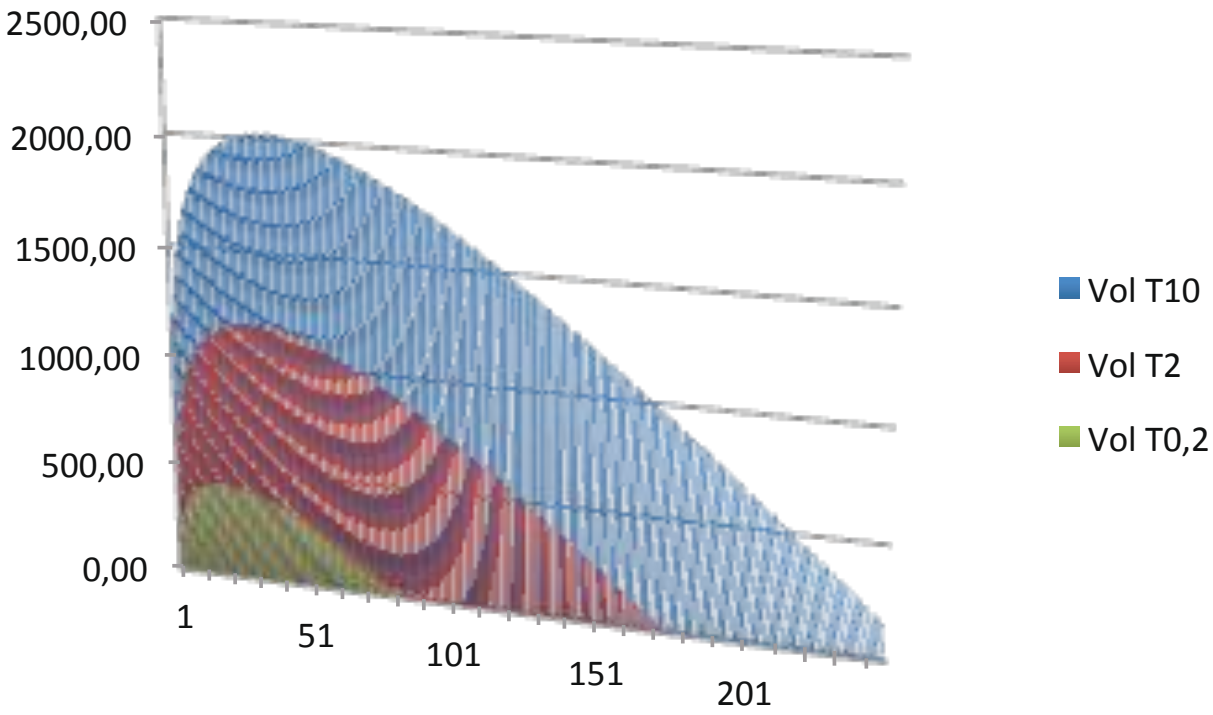


Figure 6 Curve of collected rain volume over time [s].

t_r for T10 is 37000 s
t_r for T2 is 29000 s
t_r for T0,2 is 17000 s

Vol_{max} for T10 is 2025m^3
Vol_{max} for T2 is 1175m^3
Vol_{max} for T0,2 is 427m^3

The volume of the detention ponds/basins will not overflow within a 10 year return period.

For further detail see excel file Water Calculation, sheet T10-T0,2.

7. Dimension of pipes/channels

10 year return period with 10 minutes duration has been used for dimensioning pipes and channels.
The surface is concrete, therefore the Manning number is set to 75$M^{1/3}/s$.
The runoff coefficient is set to $\varphi = 0{,}9$ because the site is in the city center where it is usually set between 0,7-1.0.

(Tech_Note)

In figure 7 the alignment is displayed with the connected catchments and their values.
Catchment 1-2 is leading the rainwater naturally by topography and is therefore on surface. Catchment 3-5 is a flat area and therefore the rainwater is placed under ground to make the necessary slope.
The diameter of pipe/channel for each catchment is found with the Manning equation,

$$Q_{full,pipeA} = A \cdot M \cdot R^{2/3} \cdot \sqrt{I_0}$$

divided with the capacity,

$$Q_{d,pipe,A} = \varphi \cdot F_{tot} \cdot i(t_f)$$

must be ≤1.

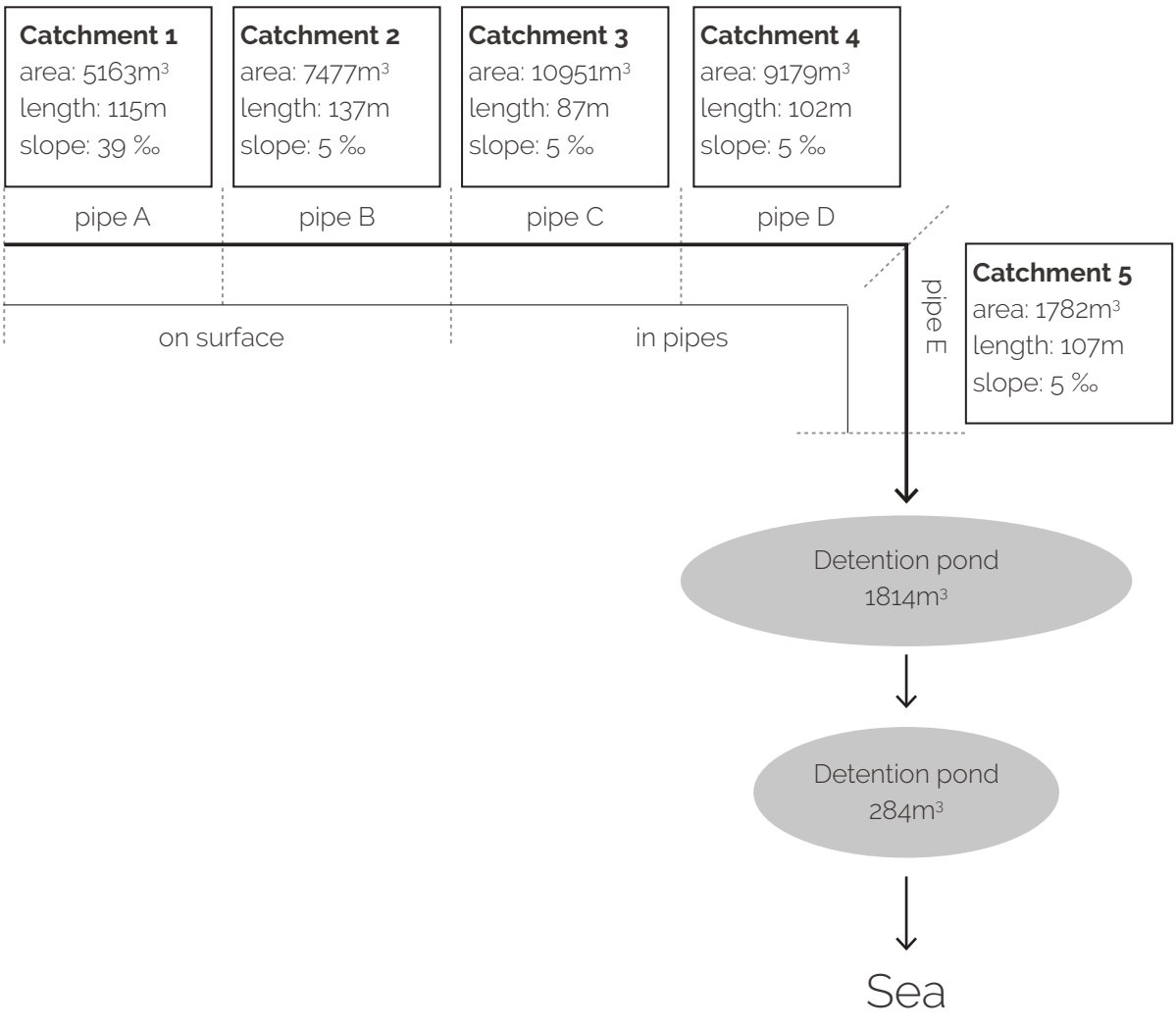


Figure 7

This means,

$$\frac{Q_{d,pipe,A}}{Q_{full,pipeA}} = \frac{\varphi \cdot F_{tot} \cdot i(t_f)}{A \cdot M \cdot R^{2/3} \cdot \sqrt{I_0}} \leq 1$$

The diameter has to found by trying different values. When pipe A is found it is important to remember that with pipe B is receiving rainwater from its catchment and pipe A and so on with C,D and E until the detention pond. The design flow and size is depended on the transportation time which is given by,

t_f= 10 min + traveling time of rainwater [s] (t_{pA})=[s]

Hereafter the found value is added on to the additional pipes. See calculation in excel Water Calculation, pipes and channels.
Figure 8 shows the necessary internal diameter for the pipes leading towards the detention ponds.

Pipe	Necessary internal diameter (mm)
A	244
B	536
C	649
D	719
E	719

Figure 8

8. Sum up

By using the alternative method for rainwater management on surface instead of leading it into the sewer with waste the need for climate adaption has been successfully met.

There will be no waste water is the streets during heavy rain for a 10 year return period (as maximum required). Furthermore by choosing this solution the system will be able to manage 40% of the rainwater in zone A. If possible, for an economic point of view it will make the city centre resilient for many years to come.

Additionally by treating the water on surface the development can be involved with some of the initiatives by the municipality. This could amongst other project be enhancing the commercial environment or the mobility plan.

References

[Bentzen] vbn.aau.dk/files/203739235/Technical_note_on_drainage_systems_design_of_pipes_and_detention_facilities_for_rainwater.pdf

The requirements for the rainwater systems was given at the meeting with Helsingør Forsyning.

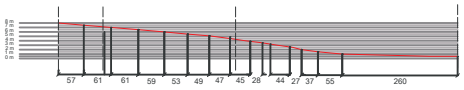
APPENDIX C

Water scenarios

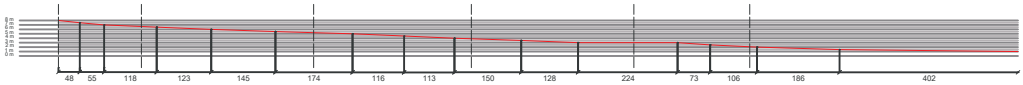
Scenario 1

- We don't change the water path
- Collecting water on playground
- Water volume close to residential area
- Very narrow streets
- Challenge preserved buildings
- Low cost
- Water potentially has to be pumped out into ocean
- Few possibilities for delaying water
- I L Tvedes Vej as stormwater road

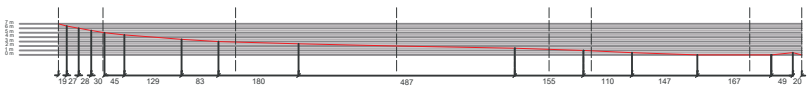
1.a



1.b



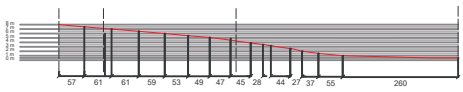
1.c



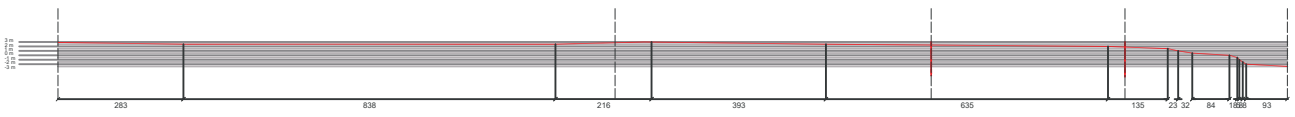
Scenario 2

- Potential delay ponds
- Water path linking to public squares (Axel Torv, Cathedral Square, Wilbroe Square)
- Direct outlet to ocean
- Very narrow streets
- Cleaning of water before outlet
- Delay pond in playground
- Blue connection from city to harbor
- Need for changing topography
- I L Tvedes Vej as stormwater road

2.a



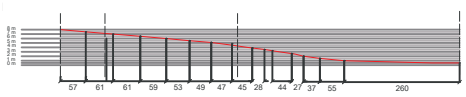
2.b



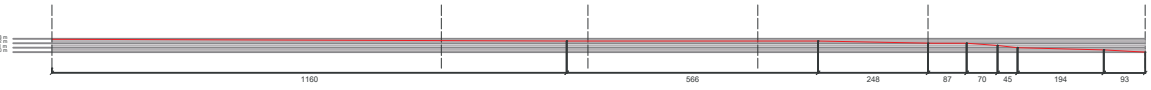
Scenario 3

- Potential delay ponds
- Water path linking to public squares (Axel Torv, Cathedral Square, parking)
- Direct outlet to ocean
- Very narrow streets
- Using variable types of roads
- Cleaning of water before outlet
- Delay pond in playground
- Blue connection from city to station
- I L Tvedes Vej as stormwater road

3.a



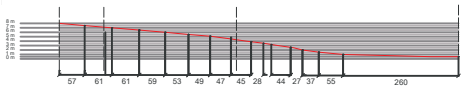
3.b



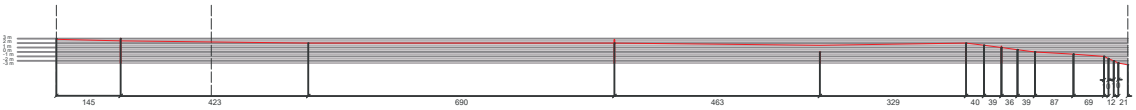
Scenario 4

- Potential delay ponds
- Water path linking to Cathedral Square (meeting point)
- Wayfinding
- Direct outlet to ocean
- Very narrow streets
- Using commercial street for blue connection
- Delay pond in playground
- Blue connection from city to harbor
- Need for changing topography
- I L Tvedes Vej as stormwater road

4.a



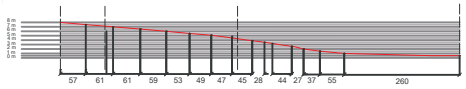
4.b



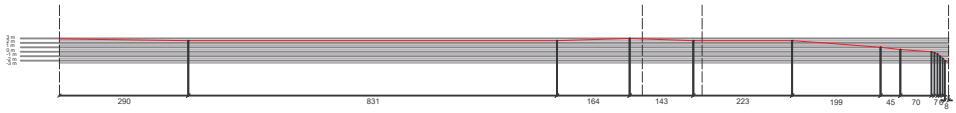
Scenario 5

- Potential delay ponds
- Water path linking to Axel Torv and monastery
- Wayfinding
- Connecting to potential train stop
- Potential to open the park for visitors and create a direct path from the cultural harbor to city center
- Direct outlet to ocean
- Very narrow streets
- Delay pond in playground
- Need for changing topography
- I L Tvedes Vej as stormwater road

5.a



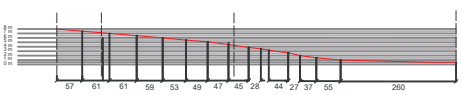
5.b



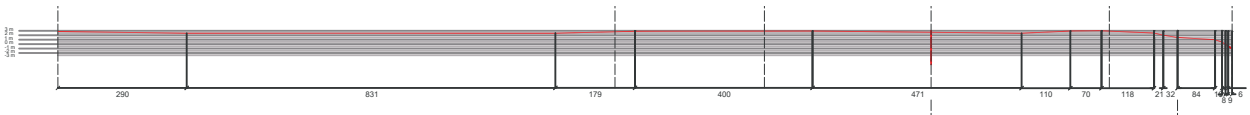
Scenario 6

- Potential delay ponds
- Water path linking to Axel Torv, Cathedral Square, Wilbroe Square and monastery
- Wayfinding
- Connecting to potential train stop
- Potential to open the park for visitors and create a direct path from the cultural harbor to city center
- Direct outlet to ocean
- Very narrow streets
- Delay pond in playground
- Need for changing topography
- I L Tvedes Vej as stormwater road

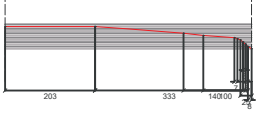
6.a



6.b



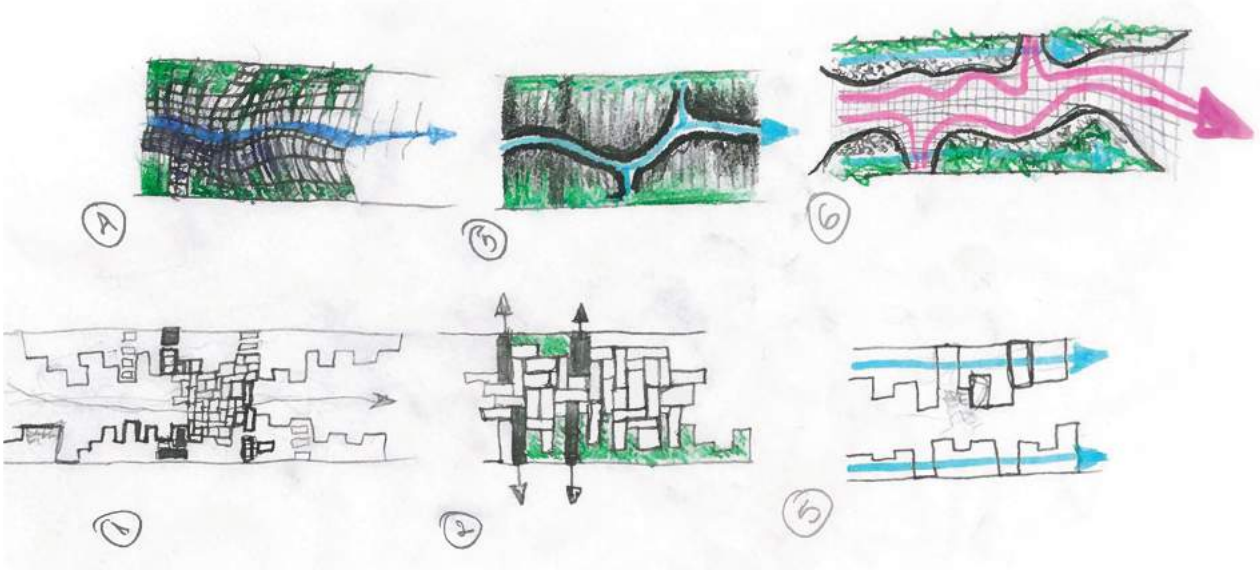
6.c



APPENDIX D

Pavement studies

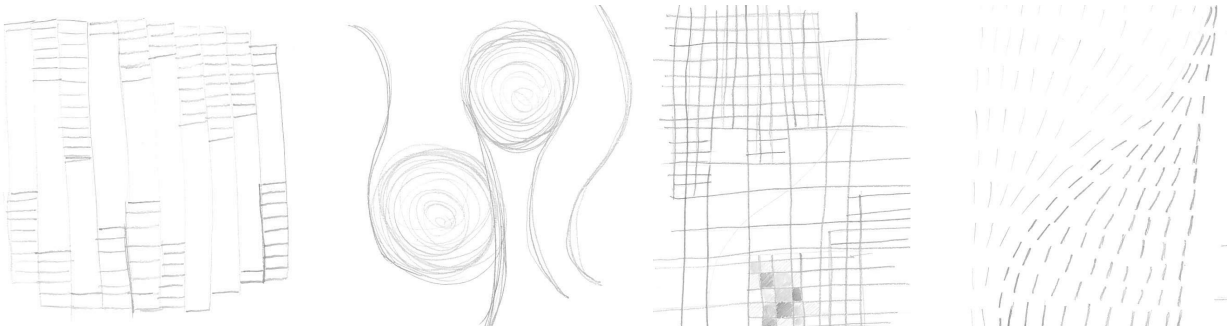
As important part of the design process, the surface strategy is focusing on several pavement studies. This studies were conceived in order to:
- enhance the spatial orientation - wayfinding;
- create a sense of place;
- enhance the potential of the site.
under the shape of
Based on this, the proposal for the surfaces strategy was framed by two different scales. By zooming out the proposed design was in regards with the character of the places, as being either streets (pedestrian streets) or squares (the detailed plan of the Cathedral Square and Axel Torv Square). Through zooming in, the level of detail was enhanced and the study was focused on the feature of tactity: low-height vegetation(permeable surfaces), semipermeable or hard surfaces.
In the following drawings there are presented exemples of pavement from the streets and the Cathedral Square.



TEXTURE

In terms of the tactility the surfaces are differing in regards with their functional characteristic.

D.1. HARD SURFACES
The hard surfaces are in special used for the streets, in order to direct the flows of the water towards the ocean.
D.2. SEMIPERMEABLE SURFACES
With the purpose of cleaning the rain water before being infiltrated semipermeable surfaces are used.
D.3. PERMEABLE SURFACES
In the case of the Cathedral Square, there are proposed three delaying ponds for solving the water isssue, but in the same time for cleaning the water collected, before being discharge into the ocean.



APPENDIX E

Walkable Helsingør

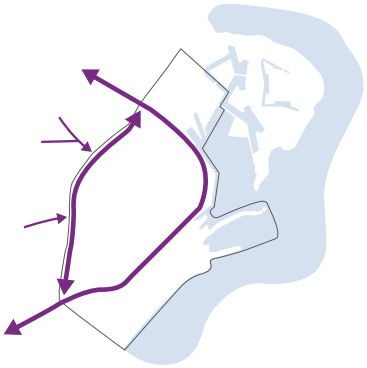
Mobility strategy

The strategy for mobility is focusing on three important aspects:
- Optimizing the city center of Helsingor by creating a network of car free streets
- Activating and elevating the urban life in the city centre's core
- Discharging the cars from the city center's core through creating three different car loops
- Creating a peripheral parking system, in order to maintain the facilities for visitors and residents

STRATEGY STEPS

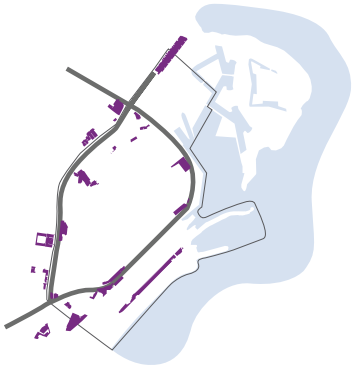
E.1. External connections

The city center of Helsingør is delimitated by heavy traffic determined by the existince of two main roads. The external connectivity is done at the level of this ring road network, generating a current good accesibility. Based on this, the first step of strategy is enhancing the importance of keeping this connectivity, being at the city's level and affording peripheral access.



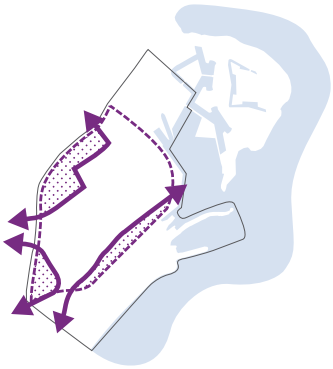
E.2. Parking loop

The ring road is strong supported by the parking system. Through step 2, the project is proposing to keep the parking spots that are along the ring road. Moreover, the parkings that are currently inside the ring road are proposed to be moved into the spots along it. In order to accommodate this surplus of parking spots, the capacity of the kept parkings is increased.



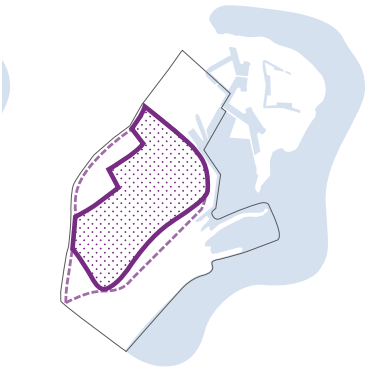
E.3. Car zones

The step 3 is illustrating the part of the strategy that is focusing on discharging the traffic from the city center, by pushing it outside the city core. By creating these three loops, the street network is enclosed and is proving the necessary access.



E.4. Pedestrian zone

Step 4 is about creating a pedestrian zone in the core of the city center. This zone is delimitated by the car loops, being in this way easy accesible for the residents. Moreover, by prioritizing the pedestrians, the walkability in this area is enhanced and in the same time the comfort in regards with their mobility.



E.5. Pedestrian network

Step 5 is concretizasing the network composition of the city centre's core. Being composed as a complex network, the pedetrian system is increasing the connectivity between the city center and harbour and in the same time is creating patterns of activities.

Abstract
In the matter of time, the world is moving and so are the conditions. Stepping into the duality of our natural and urban environments, the dimension of time is translated through processes. Processes are perceived as "space happenings over time" [Waldheim, 2006], which are shaped as a fluid substance of our existence. Being in a continuous evolution, our cities are influenced by social (performers) and environmental (climate and the grown environment) dynamics, as continuous actions of processes in situ.
Perceiving our environments, as living systems, is introducing the mind-set of thinking in flux. With the purpose of completing their existence, this attitude is endowing their capacity of tracing (analysing) and in the same time solving (designing) the raised challenges of the present (existing problems). Stepping further as thinking in flux, is about thinking of happenings and how this are affecting the situational aspect of everyday life. In this regards, the project is proposing a new gateway for future, by exploring the existing world of processes. As a journey into the world of processes, the aim is to explore the ability of our contemporary urban structures to embrace changes over time.

HELSINGØR

A DESIGN CASE OF EMPHASISING PROCESSES IN AN URBAN CONTEXT

by Louise Færch Gjerulff and Oana Paraschiv

Design
Volume

Master thesis • Spring 2016 • MA4-URB4 • Urban Design • Institute of Architecture and Design • Aalborg University

TABLE OF CONTENTS

INTRODUCTION

Purpose and framework of the project

This project is a master thesis of urban design. It is initially derived from the motivation of working with processes in an urban context. The project is divided into two volumes: Theory Volume and Design Volume. This is the Design Volume.

The design is a proposal for a new master plan for Helsingør city centre incorporating: rainwater treatment, mobility and urban vegetation.
The working method is based on our design guide (see Theory Volume), which has been developed from the concept: processes in situ.

In the process of working with Helsingør we have been fortunate to corporate with some professional people within Helsingør Municipality and Helsingør Forsyning. There have been two meetings in our process and they have provided us with a great insight that has helped making the project more related to their request in synergy with our scope for the project. Furthermore, we have had a meeting with the landscape office Schønherr. This provided us with more information of the case. They have been working on an investment plan for the municipality in parallel with our master thesis, which addresses some of the same parameters as our project. This project is foremost anything else a master thesis. Therefore there has been some steps where the objectives of the assignment have been prioritised before the plans of the municipality.

We have been very grateful for the help and insight these people has given us in regards to Helsingør and city planning. Moreover, we hope that they will find this project inspiring for their future development of the city.

Acknowledgements:

SCHØNHERR

AALBORG UNIVERSITET

HISTORICAL URBAN FABRIC

History of Helsingør

The name of Helsingør has been interpreted to derive from the location. They are the people who live at the closest distance between Sweden and Denmark across Øresund. They called it the 'neck'. The city was first known in 1230 when Valdemar, King of Denmark, mentioned it. Helsingør was a trade city and the Danes demanded taxes of the ships that had to pass through when sailing with goods to other countries.

When viewing the historical maps it uncovers that Helsingør has kept the same structure for the last 300 hundred years. This is evident when walking through the streets in the city centre. The streets are very narrow and tells the story of a time where there was no cars to pass through the city.

After the train connection was built in the 1895 and the shipyard was established a vast expansion of the city followed (see map 3). It took in the lands of some of the nearby farms to make new city areas. Today the shipyard is closed and transformed into a cultural place for events and a public library. Many of the citizens who have lived in Helsingør for generations have had a family member working there before it closed.
Presently the next step is to look into the city centre where more projects are initiated to strengthen the most preserved part of Helsingør. [Local plan 1.150, 2015]

Ill.1 Historical maps of Helsingør from 1790-1895

Ill.2 Picture of the shipyard in Helsingør 1938

Helsingør 1790

Helsingør 1870

Helsingør 1895

WELCOME TO HELSINGØR

Introduction

Helsingør is a Danish harbour city in northern Sealand. It is an old city that has expanded wide out from its historical city centre.

In relation to urban design the municipality is presently working with plans for: public urban spaces, mobility and climate.

The report on public urban spaces is an analysis made by Gehl architects, focusing on the city centre. Furthermore their report is addressing recommendations of how to enhance public spaces in Helsingør. Their conclusions state both strength and weaknesses in the existing urban sphere. To enhance Helsingør city centre they recommend to:

- Create diversity between public urban spaces and their affordances
- Release the centre for cars seeking parking inside the city
- Integration of the harbour with city centre
- Optimising the pedestrian network between city attractions

[Byrumsplan, 2011]

The second report is the Mobility Plan. This report considers political issues as well as planning. In short the objectives are to work with mobility in regard to:

- Climate (releasing less CO2 into the atmosphere)
- Health (Invite the citizens and visitors to be physical active when moving from A to B)
- Cultural life (Enhance accessibility between city attractions)
- Everyday mobility (Offer different options for mobility in relation to city demography)

[Mobilitetsplan, 2015]

Viewing the climatic plan there are two perspectives: ocean levels and flood risk caused by rainwater. This plan focus overall on Helsingør municipality. Here different zones had been laid for which is highly and less prioritised. In relation to risk of flooding it is proposed to treat the rainwater locally. What we in Danish refers to as LAR [Klimatilpasningsplan, 2013].

These plans give an overview of objectives that the municipality is working on. In this project the objectives will be taking into consideration in relation to our own site analysis. Framing the project into specific challenges we wish to address in our design process.

Ill.3 Map of Helsingør and its city centre


Helsingør
City
centre

FOCUS ON HELSINGØR CITY CENTRE

Introduction and parameters

Based on the official reports we turn from the overview of Helsingør and go into depth with the city centre. From the perspective of working with processes, it is necessary that the site challenges both the introduced concept and method (Research Volume) to test their durability in practice. The concept of processes in situ is meant to work actively with processes that move within the urban setting. Climate and mobility are notions that address processes. Moreover we wish to involve greenery as an additional feature so every aspect of the original concept is included.

Taking point of departure in mobility, climate and greenery we enter the analysis made on site. The analysis includes mapping and tracing within these themes.

Ill. 4 Diagram of Helsingør city centre as focus area
Ill. 5 Parameters for the design

The analysis will address these themes:

Rainwater in the city

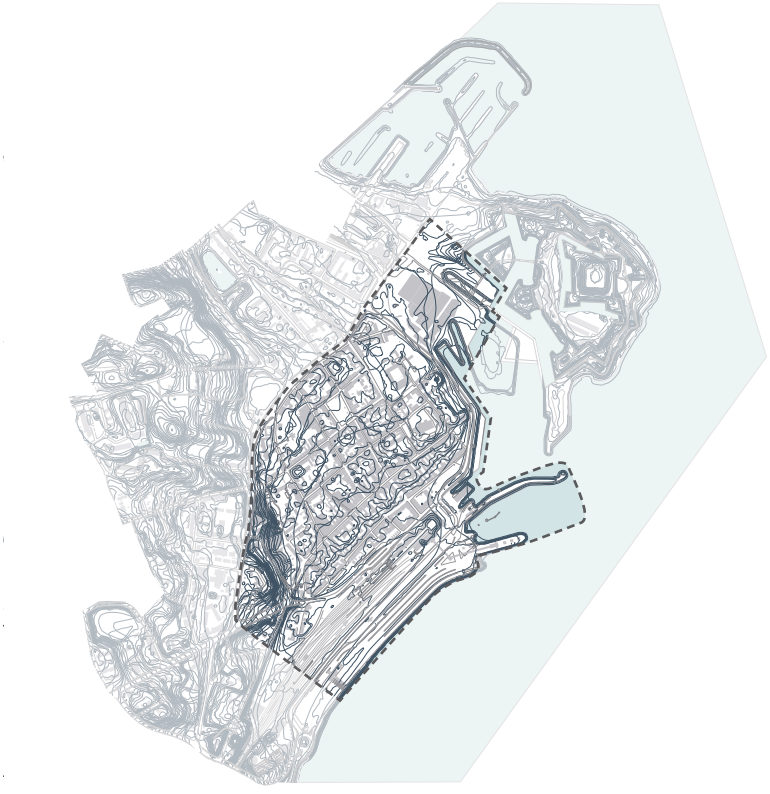
Greenery in Helsingør

Mobility culture

UP AND DOWN IN THE CITY

Topographic mapping of Helsingør city centre

The historical city centre of Helsingør is located topographically lower than the rest of the city.



Ill. 6 Diagram: Topography in Helsingør (WebGis)

FLOW PATH OF RAINWATER

Water travelling from A to B

Based on the topography this analysis shows how the rainwater is attracted to the fastest way to get to the lowest point. This concerns the rainwater that is not entering the sewers. Furthermore the diagram displays the lowest point to be inside the city centre.

Ill. 7 Diagram: Flow paths in Helsingør (WebGis)

WATER THAT REAPPEARS ON SURFACE

Local risk of flooding

In this mapping the flooding is exposed. It is gathering in a residential area next to a playground. Since the existing sewer system is joined, it then means that all the rainwater is going into the sewer but when overloaded it will reappear on surface. When it does it has been mixed with wastewater and is highly polluted.

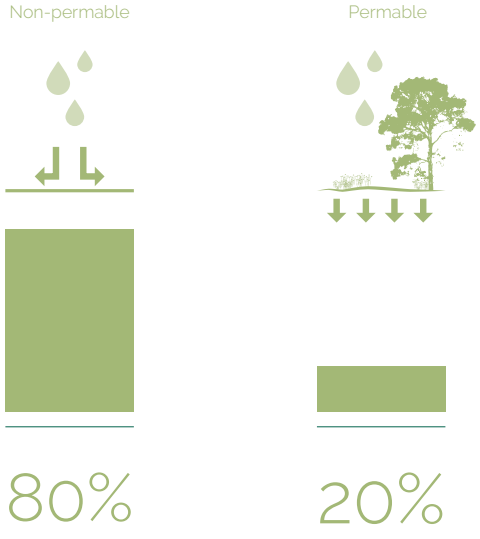
Ill. 7 Diagram: Flooding in Helsingør, 10 year occurence (WebGis)

Ill. 8 Picture showing the lowest point in Helsingør city centre

THE URBAN FLOOR

Analysis of existing hard and soft surfaces

The existing greenery is mainly located in the private yards of the residential blocks. In the public urban area there is hard exteriors and non-permeable surfaces. The character is mainly following the cobblestone which is used repeatedly in the city centre. The cobblestone is either a main material or a decorative feature in the pavement. The green element is figuring as trees placed around in closing shapes on: Axel Torv, Cathedral Square and Strandgade.



Ill. 9 Diagram: Permable and non-permable surfaces in Helsingør, (WebGis)

Ill. 10 Strandgade

Ill. 11 Cathedral Square

Ill. 12 Axel Torv

HELSINGØR ON 4 WHEELS

Car network

Looking at the balance between vehicles and pedestrians there is a sizable road that frames the city centre. Furthermore there is the local train track going north of the city, which provides two crossing actors: cars and trains. This structure is intersecting between the city centre and the harbour.

Ill. 13 Diagram: Car flow in Helsingør

Inside the city centre there is a extensive variation of semiotics like: one-way streets, pedestrian zones and parking. The semiotics is not upheld (picture top) or is sending mixed (see picture in the middle). The main factor is that the streets are very narrow. Meaning that the different actors are competing about the street space (picture below).

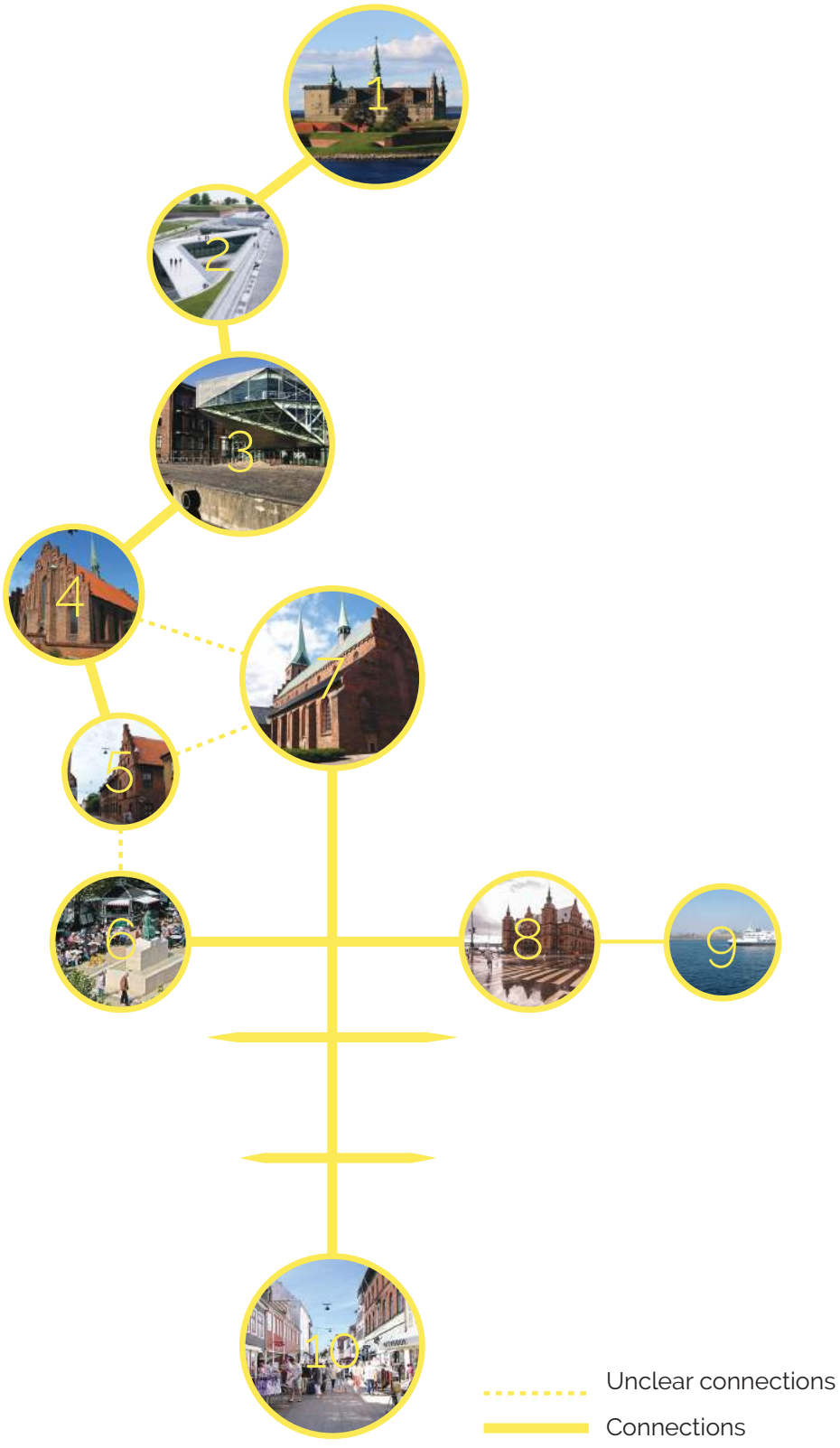
Ill. 14-16 Pictures of traffical situations in Helsingør

BETWEEN THE BUILDINGS

Pedestrian network

There are several points of attraction in Helsingør. The attractions are both appealing for the citizen and for visitors. The analysis shows which connections are clear and which are uncertain. This is taking from an external point of view for someone who is not locally known in the area.

Ill. 17 Diagram: Attractions in Helsingør

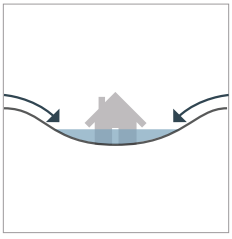


Ill. 18 Diagram: Connection between attractions

ANALYSIS SYNTESIS

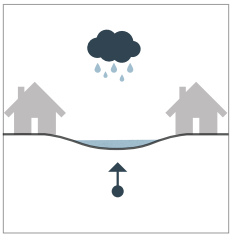
What are the problems?

TOPOGRAPHY | potential overload in the city centre



Being an harbour city, the city of Helsingør is presenting a specific feature of topography which is decreasing from the suburb towards the centre and harbour front. This is making the centre the lowest point of the city. The behaviour of rainwater runoff is compulsory directed towards the low point. This is challenging the urban structure but can be reversed to a potential by accommodating the rainwater as an integrated part of the urban environment.

COMBINED SEWER SYSTEM | wasterwater on the surface

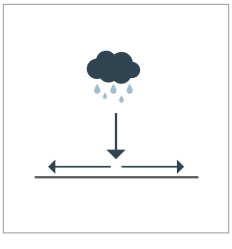


Helsingør has a joined sewer system, where rainwater and wastewater is led into the same piping. Overload of the existing system means that wastewater will reach the surface during occurence of flooding. This create a problem both because of flooding but more important, the fact that it is wastewater and not rainwater on the surface.

MOBILE UNCOMFORTABILITY | compact mobility in the city centre

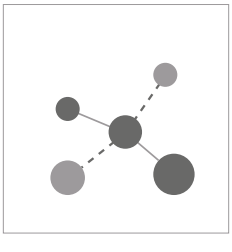
In terms of urban structure, the network is characterised through narrow streets that present a compact mobile situation, where public spaces are shared by all the urban mobile actors (cars, pedestrians, byciclists). Due to this, the existing situation is compromising the comfort of all the actors. The semiotics is giving mixed signals to the actors, which provides a need for enhancing hierachy and readability of the city.

HIGH PERCENTAGE OF HARD SURFACES |form interferes with affordance



The high percentage of impermeability of the street represents a incapability to infiltrate and treat rainwater locally. This is addressing the main problem of flooding and in the same time it is illustrating its potential of transforming the urban spaces to involve permability and climatic solutions. Approaching the existing green structures, these are characterised by form before function. Being positioned to shape the space but not to interact with it. New urban spaces must take this into consideration to accommodate space with interact with the citizen, elevating function and experience (aesthetics).

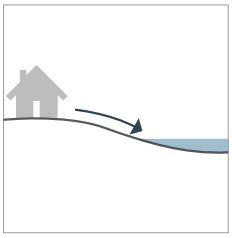
DISCONNECTIVITY and LACK OF WAYFINDING



Regarding the life in public spaces, the city centre is characterised by a series of attractors. In terms of network, the main problem is represented by the lack of connectivity between different activities that joins the harbour with the city centre. The ability for wayfinding is missing as an overall component between attractors. This should be emphasised to improve the complete experience of Helsingør city centre.

DESIGN OBJECTIVES

What are the solutions?



WATER FLOW MANAGEMENT | reshaped topography and redirected water flows

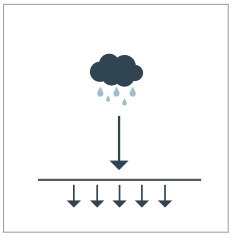
The first objective states for composing a predictable urban design solution for the current state of the water. With an existing risk of flooding, the focus of the project is projected on modelling the topography, in order to control and direct the water flows towards the ocean, as the main discharging point. As part of the water strategy, this solution is implemented at the street level. Water can be treated on the surface or underground, depending on the topographical slope that is naturally affording or not to lead the rainwater towards the ocean.

WATER TREATMENT STRATEGY ON THE SURFACE | design with water

For avoiding the risk of flooding with wastewater, the objective is to separate the rainwater from the waist one by keeping it on the surface. By separating the water system, the risk of the sewer system to be overload is decreased. Keeping the rain water on the surface is an important designing gesture. Creating a water strategy for the Church Square is meant to enhance the recreational character of the space and to create detention ponds for treating and cleaning the water before being discharged into ocean. Transforming the rain water in a designing tool is not only about creating room for the water to flow and be collected, but is also a way of reconnecting the citizens of Helsingør with their urban spaces.

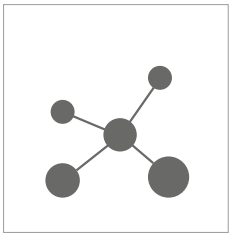
MOBILE COMFORT | walkability and priority

Analysing the potential of the existing mobility system, the solutions are focusing on adjusting the system by increasing the safety and comfort in movement from A to B. Being a historical city, the network is complex, but the dimensions are limited. Therefore, the mobility strategy is proposing the solution of prioritizing the types of mobility. Creating traffic loops that are bordering the core of the city centre is a solution for discharging the traffic from the city core by enhancing the walkability and urban comfort. In terms of accessibility, the public spaces are enhanced by being restored and able to afford a better connectivity between the harbour and city centre.



SURFACE ADAPTABILITY | functionality and embodiment

Following the purpose of creating resilient urban spaces, surfaces represent important urban layers with a high opportunity in increasing the adaptability and flexibility of urban structures in time. Based on this, the main purpose is to adapt the surfaces to the existing and presumed urban challenges in regards with the risk of flooding. As a result, the urban comfort, recreational character, accessibility and connectivity will be enhanced. Moreover, this strategy is an opportunity to restore the public spaces, as pavement or green spaces, in order to become more aesthetical recognisable and responsive to the constant changes.

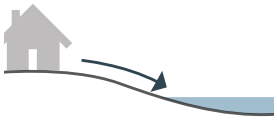


URBAN PULSE | connection and activation

Regarding the urban life, the design is proposing to spatial orientation, accessibility and connectivity by creating new networks between the existing attractors. Creating new urban patterns by dragging out the indoor activities will activate the existing urban structures and is meant to support the adaptability of the city in time. Moreover, the network is proposing an efficient and resilient way-finding system by designing with processes and by using the runoff water as the main guiding signal within the city core (connection between the harbour and city centre).

OBJECTIVE 1

Water flow management



The first objective is considering the idea of the rain water as being "water that is everywhere before being somewhere" (into the terrain of water). Regarding efficiency, the project is proposing the restoration and optimization of the streets as network system for the water to be directed towards the ocean. In the case of Helsingør, through the water management strategy [Appendix] there are proposed two different zones A and B (see the diagram). Zone A and our design focus is meant to collect all the water by the route that take place on the Sudergade, Sct Anna Gade and Stengade streets. Based on this, the focus is on the water flows management reflected through two design principles that are depending on the topographical slope's ability to afford or not a natural flow. The principles are:

- Natural slope: the water will be controlled and managed on the surface by slopping the road and using hard materials (auto circulated streets - Appendix C)
- Flat terrain: new rain water system under the shape of a grate (car free areas - see appendix)

These two principles are complementary and are used on different sections of the runoff network, depending on the specifics and requests of the place. These requests are given by the possibility or impossibility of changing the topography regarding the constraints given by the value and state of the built environment (historical buildings).

Ill. 19 Diagram: Water management

OBJECTIVE 2

Water treatment strategy

Creating a water treatment strategy, the design is focusing on the "water being somewhere" and is using the surface and grown environment as the main designing tools. Considering that water needs to be directed, but more important cleaned before being discharged into the ocean, the strategy is proposing to create water ponds that have a special function in delaying and cleaning the water. The design principles behind this idea are:

- Reshaping the topography regarding the amount of water that is needed to be accommodated, in order to avoid the flooding of the historical buildings
- Using specific species of plants for depollution
- Using gravel and permeable materials to filtrate the water in order to clean it
- Implement different elevated platforms on the way of the water, in order to clean it gradually.

These principles are implemented in the Helsingør Cathedral Sqaure and in the square with the steps that is along Havnegade [Appendix B].

Ill. 20 Diagram: Rainwater path, focus area

OBJECTIVE 3

Increasing the mobile comfort

Based on the fact that the existing mobile system is constrained by the dimensions characteristic for the historical character of the city, a call for improving the priority in different sections is addressed. The strategy is based on creating separated networks for the different mobile users, based on their needs in terms of accessibility and proximity (see appendix). Due to the fact that the core of the city centre is predominant governed by very narrow streets the design principles are based on:

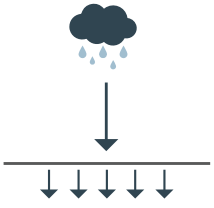
- Creating a motorized traffic loop that is meant to border the city centre core, affording in this way a high level of accessibility and in the same time being responsible of discharging the traffic from this area,
- Discharging the traffic from the city centre core by transforming it in walkable streets, destinated to be used as activity patterns and pedestrian connection between the harbour and city centre,
- Proposing a parking strategy that is following the motorized loop and is accessible for both residents and visitors.

Proposing this design for mobility is perceived as a solution of the existing saturated system and in the same time is complemented by the new dimension of water on the streets, reason of increasing the experiential, orientation and embodiment level of mobile performers (Appendix E).

Ill. 21 Diagram: Hierachy of mobility

OBJECTIVE 4

Surface adaptability and embodiment



In order to optimize the existing situation in the idea of transforming urban spaces into more resilient structures, the surfaces play an important role. Being seen as part of the urban spaces foundation, this layer affords the possibility of being adjustable in regards with the activities or types of mobility that are accommodating. Moreover, the green surfaces are meant to support vertical greenery on the residential streets, for the purpose of cooling and refreshing the air. The surface strategy is reflecting the following principles:

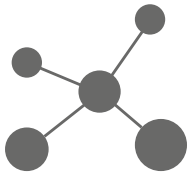
- Adopting hard surfaces for leading the water from uphill to the ocean
- Implementing semipermeable surfaces for cleaning the water
- Implementing permeable surfaces for diminishing the risk of flooding
- Improving the functionality of surfaces by inserting different types of pavement that can state for a better wayfinding and perception of the space.
- Moving or planting new species of plants (vertical grow) in order to answer to the different urban challenges and support the design through their function, before their aesthetic quality.

The surface strategy is meant to increase the accessibility and connection of citizens with their environment, by embodying it or use its processes to adjust the urban spaces (Appendix D).

Ill. 22 Diagram: Green structure

OBJECTIVE 5

Enhancing the urban pulse

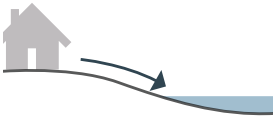


This objective is directed on increasing the life quality. By improving the urban connectivity and activating the surroundings through optimization, the spaces between buildings become more alive and adaptable. The design principles are:

- Increasing the connectivity through wayfinding
- Creating new urban spaces that can act as centripetal spaces (attractors) for the indoor activities
- Enhancing through design solutions the space flexibility in order to maintain a constant urban pulse (water level in detention ponds)
- Creating different intensities for maintaining a constant pulse, through optimizing the variation of urban programing.

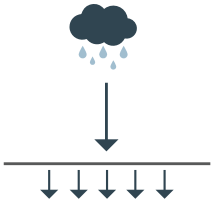
Being an aspect of the urban life the strategy is to optimize the existent situation by bringing movement and activities. Using the qualities of processes the urban spaces are used as stage of changes, accommodating situations and continuity in time.

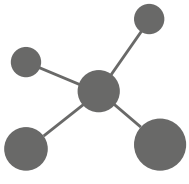
Ill. 23 Diagram: Proposed attractions network



=

Master plan proposal for Helsingør city centre





Ill. 24 Objectives of the guide leads to the proposed master plan


Library and culture house
Potential train stop
Harbour Prom
Axel Torv
BB
AA
Cathedral Square
Wilhelm Square
Sudergade
Stengade
Helsingor Station
Potential rainwater detention

The characteristic and historical streets of Helsingør is inviting the pedestrians to interact. Thoroughfare inside the core of Helsingør has been decreased to only be accessible for citizens living there. Therefore it is now possible for shop owners and cafés to arrange pleasing areas to entertain citizens and guests. Furthermore there is room for engaging new activities in the urban realm. Here, the Cathedral Square is functioning as a mediator between the activities on the harbour front and the commercial environment inside the city.

In this new environment a system of rainwater treatment has been integrated. The rainwater is collected in the streets either on the surface or underground channels that leads the water towards the Cathedral Square in the northern part of the city and to the playground in the southern part. As a result the urban scenery is changing together with the weather. The water becomes interactive with the urban pulse and is unfolding variation of experiences.

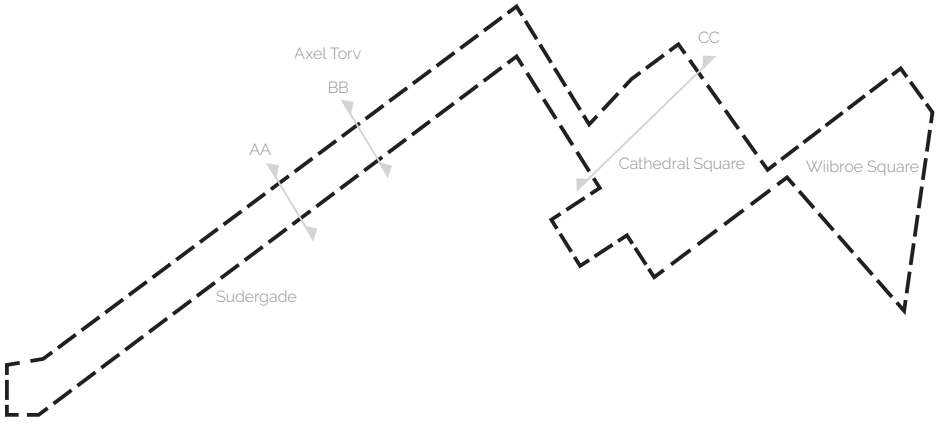
Ill. 25 Master plan

HELSINGØR CITY CENTRE
MASTERPLAN 1: 5000

PATH OF THE WATER

Where people walk and water flows

Water falls everywhere before it gathers somewhere. In the northern area Sudergade is the main core where the water runoff is gathering. From the rooftops to the streets it flows down on top of the urban floor. The cars are directed around Axel Torv and from this intersection the water flow into the underground channel passing through the square. This channel is leading to Cathedral Square where the water returns to the surface to engage with the urban life. Hereafter it is detained to infiltrate naturally. In case of heavy rain it will fill up and lead on into the harbour.

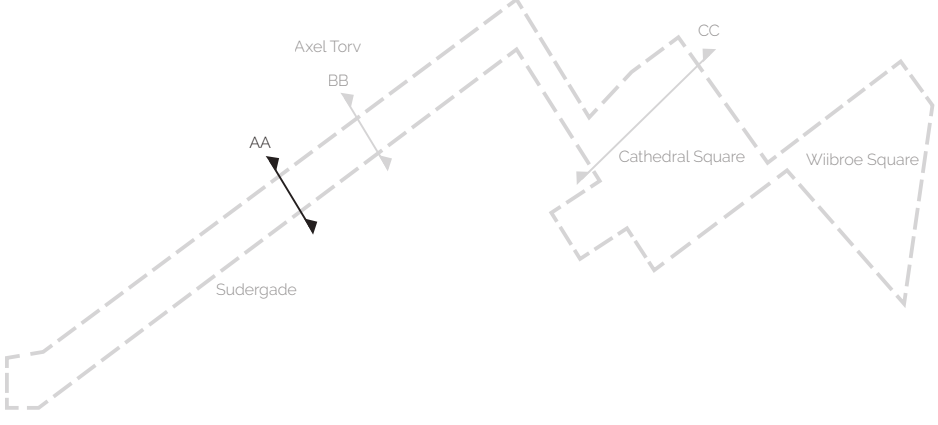


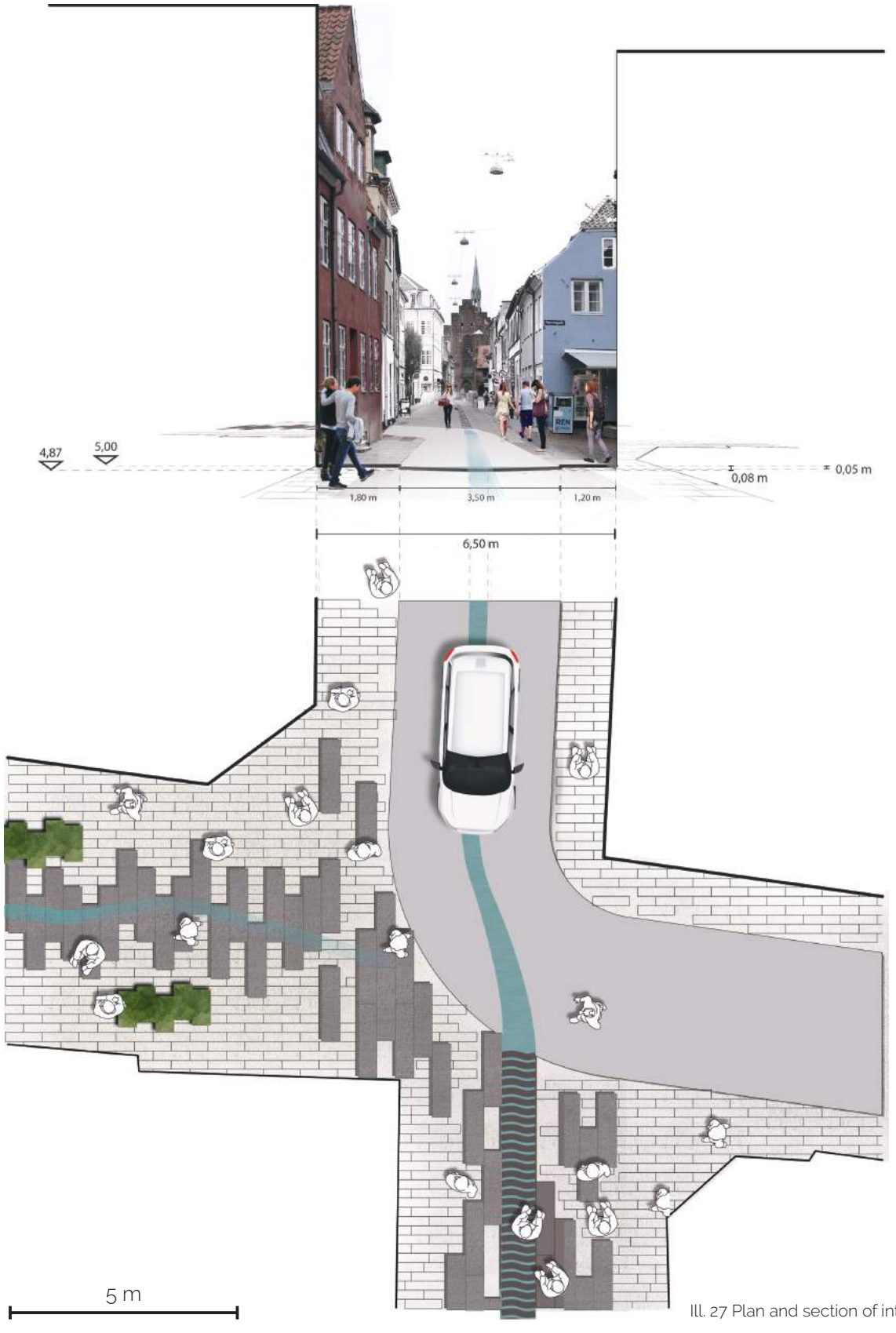
Ill. 26 Axometric diagram of the design focus area

THE INTERSECTION

Water collected on the surface

In Sudergade the rainwater is gathering in the middle of the street until Axel Torv. Here the cars are guided around the square and back into the traffic loop that is surrounding the city centre. The pedestrian area is opening up henceforth giving more space for the commercial activities to flourish. Strait ahead in the background is the tower of the monastery. As a instrument for wayfinding it is leading the user towards the harbour.



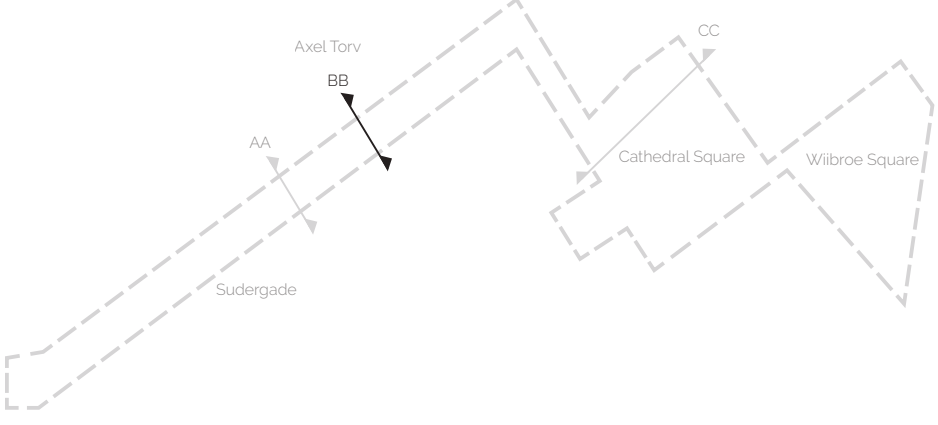


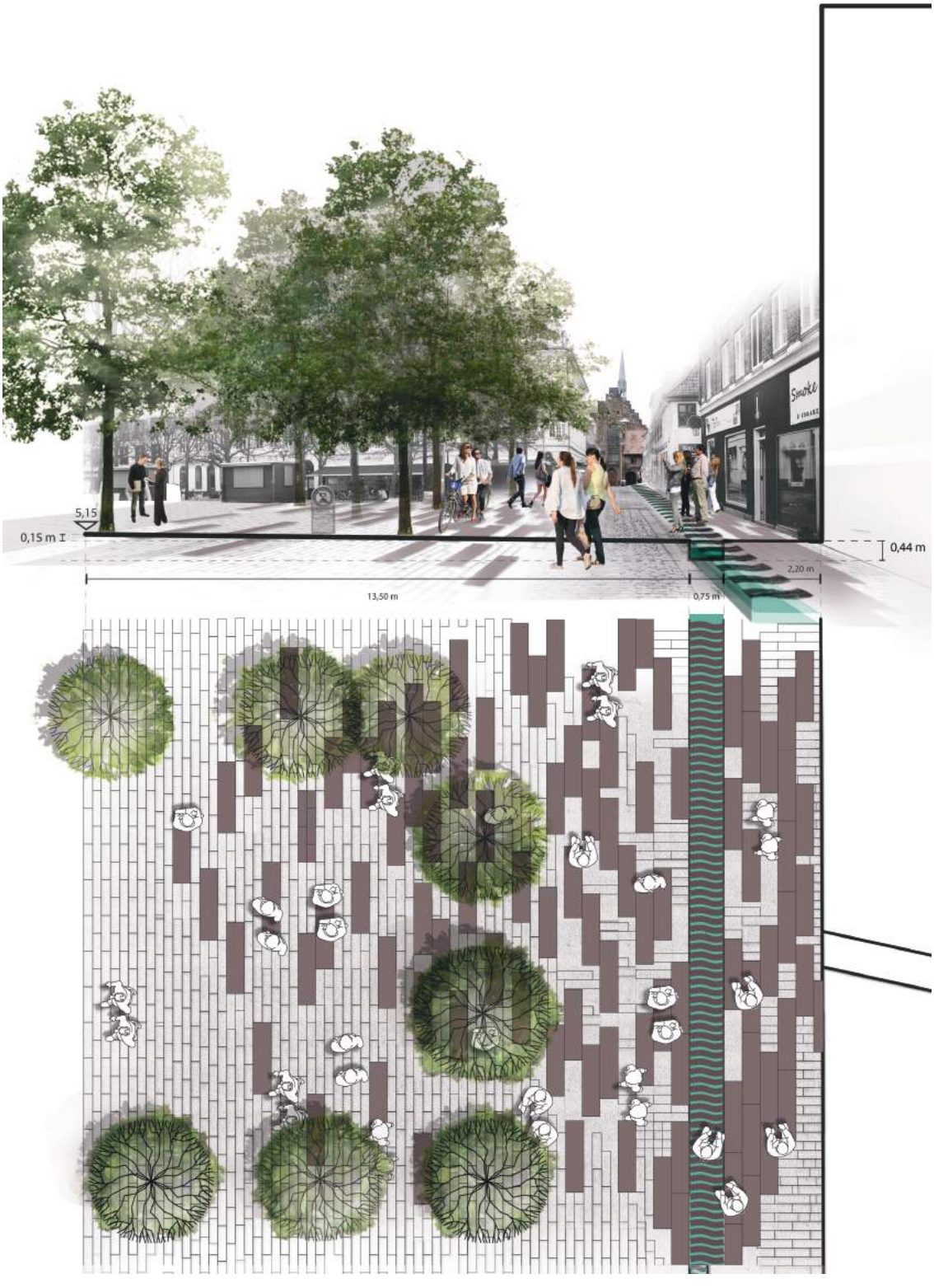
Ill. 27 Plan and section of intersection

AXEL TORV

Water collected in channels

Axel Torv is now the first junction point for the network of urban meeting places. It is an open square with multiple restaurants. From Sudersgade the flow of people passes on to the connecting streets down towards the station or moving forward to the harbour. On the surface the pavement is highlighting the path where the rainwater is collected into an underground channel covered by a grate. By following the grate you are led down to the monastery and Helsingør Museum.



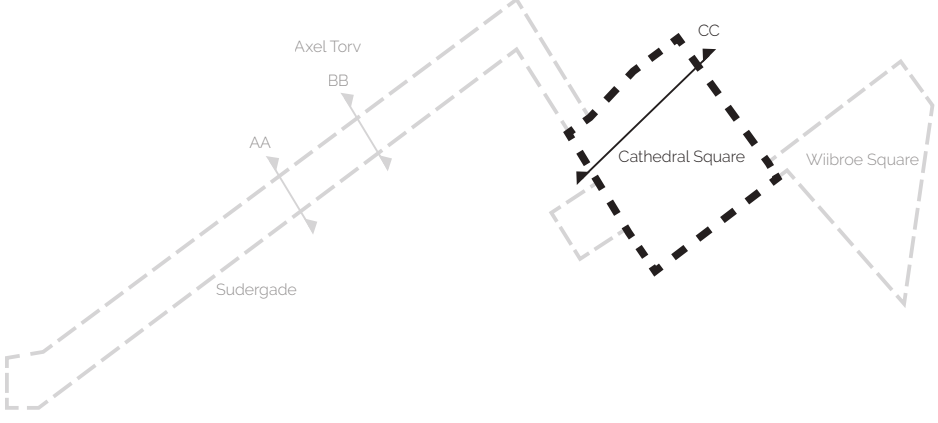


Ill. 28 Plan and section of Axel Torv

CATHEDRAL SQUARE

Water in an urban landscape

Cathedral Square is the link between the harbour and the city centre. Each corner is leading to the other meeting areas in the network. Below to the left is the main shopping street. To the right is the harbour promenade. Top left is toward Axel Torv. On the right is the way to the library, maritime museum and Kronborg.
The square is a place to socialise and be a part of urban activities. This is the outlet of the underground channel. When it rains the water is collected in ponds on the lowered square.
On the other side of the church is a landscape of green hills. Little pocket spaces have been made for conversations for people attending the church or for people passing by.



Ill. 29 Detail plan of Cathedral Square

It is summer at Cathedral Square and people are invited to socialise and interact on the new square. Some are sitting in the grass in intimate groups, while others are strolling around the ponds. People arrive from every street passing the square between the harbour and city centre of Helsingør.

Ill. 30 Cathedral Square

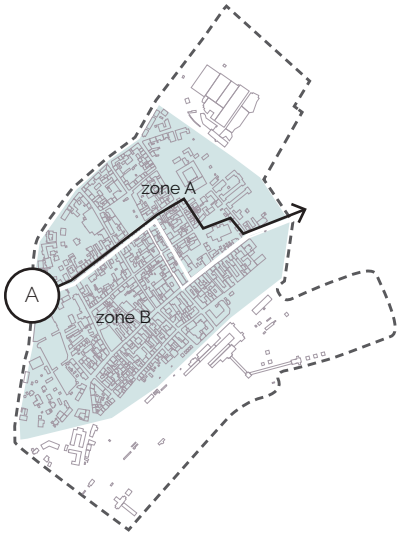
CLIMATE ADAPTION

Hydrological solution for Helsingør

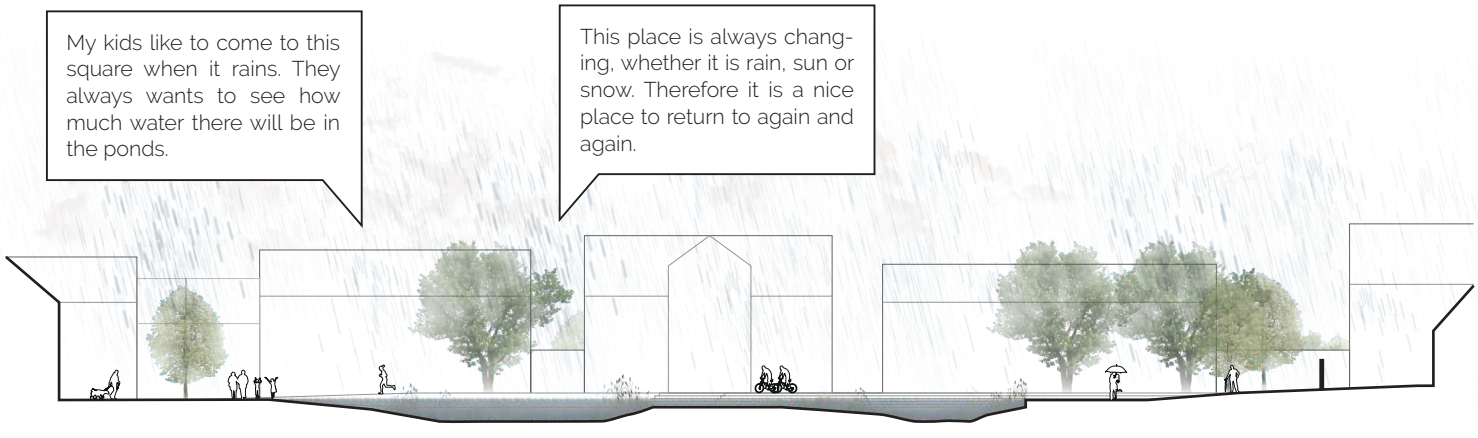
The design is accommodating the request of having rainwater treated seperate from the sewer system. Requirements of Helsingør Forsyning involve a return period between 5-10 years.

As a result of calculating the water treatment of the design (zone A) there is 40% of the rainwater treated by the proposed design, with a return period of 10 year.

This proposal is only managing the rainwater locally indside the city centre. It is proposed to use similar solutions in other areas in Helsingør to make a complete rainwater system where rainwater and wastewater is treated seperately. This will raise the service level and prevent flooding with wastewater in Helsingør.
See Appendix B and calculation scheme for more information.



Ill. 31 Outline of zone A and B



Ill. 32 Section of Cathedral Square during normal weather 1:500
Ill 33 Section of Cathedral Square in case of heavy rain 1:500

In heavy rain the Cathedral Square is changing appearance. People is attracted to the outline of the square, to observe how the square is filled up with rainwater, arriving from the northern part of the city centre. Usually it is only the ponds that are filled up, but now the capacity of square is proving itself to collect the water and keep the rest of the city centre free of flooding.

Ill. 34 Cathedral Square

DESIGN PROPOSAL FOR HELSINGØR

Outcome of the project

The purpose of this project is following the main design idea of perceiving natural processes as solutions for our cities' contemporary challenges. By taking the city center of Helsingør as our site, the aim was to prioritize the risks/problems raised by the existing conditions in order to be used as opportunities for adjusting the urban structure and for elevating the life quality.
Based on analysis and taking the time accuracy as parameter, the main problem is generated by the possible risk of flooding. In order to design for solving this issue, an inclusive approach of social, climatic and environmental processes as thriving forces was used. Approaching the risk of flooding from the perspective of this trilogy, the mobility, as system of networks and meeting points as well as the grown environment, as surfaces and plants, are enhanced by being adjusted to the current needs.
In terms of water, the stated objectives composed a complex strategy of water management and treatment as a gesture of awareness regarding the possible risk of flooding and pollution. The goal was to accommodate this problem of flooding into the existing structure, by adopting a management plan of the water flows through changing the surfaces, and a treatment strategy for consciously collecting it in delaying ponds. The results are generated as solution of this challenge, but more important are enhancing the public spaces by supporting the recreation facilities introduced by the water treatment on the surface as well as cooling and depolluting these spaces.

This project is meant also to consider the public spaces as unitary complex of several functions. Therefore, by using our concept of "processes in situ" the achievements are not only addressed to the main theme of solving the water issues, but are also fixing adjacent problems, in order to complete the design and to offer integrated solutions as background for further urban developments.

REFERECENCES

[Byrumsplan, 2011]
www.helsingor.dk/media/257855/Byrumsplan-for-Helsingoer-Bykerne.pdf, [Online] [16 Marts 2016]

[Klimatilpasningsplan, 2013]
Klimatilpasningsplan 2013-2017 for Helsingør Kommune; Center for Kultur, Plan og Erhverv og Center for Teknik og Miljø, Forsyning Helsingør, https://polweb.helsingor.dk/Historiske%20udvalg/Ejendoms-%20og%20Milj%C3%B8udvalget%20(%C3%85ben)/2013/19-12-2013/Referat%20(%C3%85ben)/19-12-2013%20-%20Bilag%2006.01%20Forslag%20til%20Klimatilpasninsplan%20for%20Helsing%C3%B8r%20Kommune%20%E2%80%A6.pdf [Online] [23 February 2016]

[Local plan 1.150, 2015]
soap.plansystem.dk/pdfarchive/20_3090221_1450795771840.pdf, [Online] [22 February 2016]

[Mobilitetsplan, 2015]
www.helsingor.dk/media/2920360/mobilitetsplan-2015-2020.pdf, [Online] [23 February 2016]

ILLUSTRATIONS

Ill. 1	soap.plansystem.dk/pdfarchive/20_3090221_1450795771840.pdf, [Online] [22 February 2016]
Ill. 2	upload.wikimedia.org/wikipedia/commons/6/66/Elsinore_Shipyard_1938.jpg [Online] [22 May 2016]
Ill. 3-34	made by Louise Færch Gjerulff and Oana-Maria Paraschiv