

Towards inclusive spaces in post-industrial places

A case study of environmental gentrification in the regeneration of Randers Harbour

Asmaa Faris and Sofie Clemmensen

Green urban spaces can create seamless transitions so the meeting between the present and past and the building typologies is not perceived as conflicting but inviting and exciting.

Braae, 2015









Abstract

A growing body of literature has shown that urban greening strategies can have negative impacts on the social balance in cities. Green spaces can increase the attractiveness of an area which in return can increase housing prices, causing displacement. This process, referred to as environmental gentrification, can be linked to the regeneration of post-industrial harbour fronts, where urban greening strategies may be used to boost cities' image and competitiveness.

This thesis seeks to investigate the regeneration of a post-industrial harbour front in a Danish context through the case of Randers. Randers Municipality is planning for a 55-hectare redevelopment of the harbour areas titled 'Byen til Vandet' (in English: the City by the Water), where green and blue spaces are key components to create a more exciting and attractive city.

Our thesis works towards creating a design framework for the development of an 8-hectare area within the development boundary of Byen til Vandet. The framework is informed by a literature review seeking to understand the key themes regarding environmental gentrification and waterfront regeneration, a policy review seeking to understand the municipal development process and a wide range of empirical analysis in order to understand the case study location, including mappings, interviews with key stakeholders and an online survey among the wider community of Randers.

Throughout the thesis it becomes apparent how the character and history of a development site must be taken into account, including the local community, to create a contextually appropriate design solution. The thesis concludes by illustrating how the framework may be applied to the chosen case site to create socially inclusive urban spaces at postindustrial harbour places in an illustrative masterplan.

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Asmaa Faris

Sofie Clemmensen

Urban Architecture Institute for Architecture & Design Aalborg University

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Preface

In many cities you will find small pocket parks between buildings where it is possible to sit quietly in the shadow and read a book, or bigger parks, where one can unfold and play around. Green spaces are widely used in cities as recreational breathing spaces for health purposes and to mitigate the consequences of climate change, forming part of the sustainability agenda.

However, it is evident from e.g. the creation of the High Line Park in New York City, USA, and the Lene-Voigt-Park in Leipzig, Germany, that provision of urban green spaces can unintentionally cause the housing and rent prices to increase (Haase et al., 2017). This can create what a growing body of literature terms environmental gentrification which is a process where certain groups are excluded or displaced due to the integration of urban greening strategies that increases the attractiveness of an area, and thus the housing prices. The process of environmental gentrification happens among other places at postindustrial harbour fronts which are continuously being transformed into new, affluent urban districts in the wake of the post-industrialisation. Some researchers argue that gentrification in fact is a deliberate growthled strategy to attract new investment to a city and to boost the image to keep up with global competition.

It is an embedded paradox in greening strategies that they aim at solving some of the most urgent sustainability challenges, including social equity, whilst they at the same time create bigger social segregation in some instances.

This thesis is motivated by the urge to unfold how urban greening interventions can affect the social balance and coherence in cities, and how to carefully balance this paradox, as urban green spaces are essential for human health and environmental sustainability. The thesis seeks to investigate this in a Danish context with Randers as the case city.

During the autumn 2018, Randers Municipality announced that three architectural and engineering teams would be pregualified for a parallel commision to work on the development of a 55-hectare urban district at the centrally located harbour areas in Randers. The teams would be working on the development plan from March to June 2019. Nature and urban greening are explicit components of the development scheme, and the idea is to tie Randers closer together with the nature and the water in what the municipality terms Byen til Vandet (in English: the City by the Water). A strategy meant to boost the city's image and attractiveness.

However, it is clear that the competition program holds some major flaws. It does not contain specific guidelines for the character, scale and density for the new district even though work, analysis and planning have been made for almost two decades. Furthermore, the chosen teams were expected to be able to process a massive amount of information and make a thorough proposal for a huge area in only three months.

The case of Randers and the development of Byen til Vandet runs the risk of falling into the same pitfalls as previous growth-led urban greening waterfront regeneration projects, creating new, gentrified urban districts as disconnected islands in the city with no recognition of its context, the history of the place and the local community. As urban designers, we firmly believe that any urban development must be situated within its context and it must carefully consider a complexity of different aspects and stakeholders in its final design in order to become socially sustainable and contextually responsive.

This thesis report is divided into seven chapters, apart from the last section that includes the appendix.

The first chapter is a general introduction to the thesis and its relevance and ends by presenting the research question which this thesis will be investigating, along with the associated research objectives.

The second chapter presents the literature review which will look into contemporary peer-reviewed scholarship investigating environmental gentrification in waterfront regeneration projects and is concluded with a discussion on the topics.

The third chapter introduces Randers as the case study location chosen to unpack environmental gentrification in a Danish context in order to create a preliminary understanding of Randers' current and historical situation and the foundation for the current development plans.

The fourth chapter contains an introduction to the methodology, including the thesis structure, which includes the research phases that the thesis has gone through and an introduction to the site selection and the methods applied.

Reading guide

The fifth chapter presents the multi-scale analysis of the project site in Randers, including photomapping of identified character areas, historical analysis of the selected project site, inputs from the local community, and urban design analysis, both in a contextually and site specific scale. The chapter concludes by extracting five key aspects to inform the design framework.

The sixth chapter presents the recommended framework for how to design the chosen project site by unpacking each of the five defined design guidelines through design parameters. The principles of each design guideline and associated parameters are presented, and the chapter ends by showing an illustrative plan along with illustrative visualisations of how the development might look.

The seventh chapter concludes the thesis project and discusses the limitations of the thesis, reflects on the developed design framework, and gives recommendations for future research that would have been included in the thesis had the time frame made it possible. References and illustration list is found here.

All maps throughout the report face north unless otherwise specified.

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O1 Introduction

This chapter introduces the purpose and relevance of this thesis project to establish the research focus. The chapter begins by introducing the overall topic of the thesis and ends by presenting the defined research question along with the research objectives that have been set up to meet the aim of this thesis project.



1.1 Introduction

Urbanisation and climate change are two major issues that cities around the world are facing these years (Haase et al., 2017). It puts a lot of pressure on local government to ensure appropriate public services such as infrastructure and public facilities, along with urban green spaces, that has proven to play an important role in the health and resilience of cities (Haase et al., 2017). Since the 1970s, post-industrial waterfronts of deindustrialised cities have more frequently become the place where local governments find that they can solve the issues relating to densification and climate change adaptation simultaneously, and vacant post-industrial places are converted to new, resilient urban districts (Sairinen & Kumpulainen, 2005).

However, these developments are rarely integrated in the existing city and do not take the history of the place or the local community into account (Doucet et al., 2011). Furthermore, urban greening strategies often form part of waterfront regeneration projects as part of making the cities more resilient (Scott & Lennon, 2016). This often comes at the expense of the local community and the working-class, which traditionally inhabit the areas surrounding the harbour areas. They will potentially be displaced as the area becomes more attractive for more affluent households as a consequence of urban greening in a process termed environmental gentrification (Checker, 2011).

These issues form the background for bringing this master thesis forward which aims at unpacking environmental gentrification at post-industrial waterfronts in a Danish context. Randers has been chosen as the case site location as Randers Municipality is planning to transform a 55-hectare redevelopment of the centrally located harbour front areas into a new urban district called Byen til Vandet (in English: the City by the Water), where nature and water are key components to make the city more attractive (Randers Municipality, 2011).

The subsequent pages present the research question and associated research objectives which will guide the structure and content of this thesis project.



III. 6 The Northern Harbour in Randers, which is part of the Byen til Vandet development area.

1.2 Research question

How can former industrial harbour spaces be regenerated as part of an urban greening strategy - without the potential negative effects of environmental gentrification - to foster socially inclusive and attractive urban green spaces for everyone?

1.3 Research objectives

- 1.
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- 3.
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Review scholarship on the presence of environmental gentrification in the regeneration of post-industrial spaces in order to identify critical challenges related to urban greening as a growth-led development strategy.

Assess the implications of the current municipal plans and urban development process in the case study location of Randers harbour front.

Empirically investigate the spatial characteristics and constraints of the case study location along with understanding the local community's perception of the site.

Synthesise data collected to develop a design framework for a chosen site, used to demonstrate an illustrative masterplan on how to develop a socially inclusive and contextually appropriate area at the harbour front.

02 Literature review

This chapter presents contemporary literature covering the phenomenon of environmental gentrification and waterfront regeneration. The chapter begins by defining key terms within gentrification before introducing environmental gentrification. Onwards, the literature review situates environmental gentrification within waterfront regeneration in order to illuminate how urban greening strategies in waterfront regeneration can endanger the social balance and coherence in cities. Finally, the literature is discussed in order to draw out key learnings and pitfalls from previous experiences with waterfront regeneration and environmental gentrification.



2.1 Introduction to selected themes

With increasing global urbanisation and 55,3 % of the world's population living in urban settlements as of 2018 (United Nations, 2018), cities all over the world face huge challenges in terms of creating space for the new urban dwellers whilst maintaining themselves as sustainable and liveable places (Haase et al., 2017).

Urban green spaces are put under a lot of pressure as they are the scene for the changes. Urban green spaces are being converted to accommodate newbuild developments and new infrastructure (Haase et al., 2017), and at the same time they must handle the threat posed by the climate changes (Kabisch et al., 2016). Thus, it has become ever more important to acknowledge the multifunctionality of urban green spaces, as they can help maintain a healthy environment, mitigate the consequences of climate changes, and create liveable, inclusive and healthy spaces for people in cities (Haase et al., 2017; Biernacka & Kronenberg, 2018).

Due to these global changes and challenges, urban greening, nature-based solutions and green infrastructure have become a part of many development strategies and schemes (Haase et al., 2017). The incentive to use urban greening and green infrastructure seems to be rooted in the sustainability debate.

However, little is known about the effects of urban greening and greening strategies on social aspects

(Kabisch et al., 2016; Anguelovski et al., 2018a). For the past decade, a new body of literature has emerged which has attempted to sort out the social implications of green-led urban developments; a process which has been defined as 'environmental gentrification' (Anguelovski et al, 2018a; Anguelovski et al., 2018b).

The two following sections unpack the phenomenon of environmental gentrification with the first section giving an introduction of gentrification and new-build gentrification as urban phenomena in a table summarising how gentrification has evolved and changed over time in what Davidson and Lees (2005) describe as different waves of gentrification. The second section introduces environmental gentrification as a phenomenon derived from urban gentrification and unpacks the processes of environmental gentrification. In the end, the chapter situates environmental gentrification within the regeneration of post-industrial waterfront spaces and discusses possible solutions to avoid environmental gentrification.

The aim of this chapter is to cover the potential impacts of urban greening strategies and growth-led development in waterfront regeneration on the social balance in cities. This is done to identify key issues in urban development projects that contains these aspects, as for example Randers' development project Byen til Vandet, which will be presented in chapter 3.

Definitions of key terms

Green infrastructure

Green infrastructure is defined as an interconnected network of natural and semi-natural green spaces that help preserve natural ecosystems and biodiversity, whilst at the same time provide benefits for human health and wellbeing. Green infrastructure is characterised by multi-functionality and connectivity, and acts as a strategic planning approach (Jerome et al., 2017; Haase et al., 2017). In cities, green infrastructures may include any kind of vegetation, such as parks, public green spaces, private and communal gardens, roof gardens and forests. Blue spaces and marine areas are considered as green infrastructures as well (Haase et al., 2017).

Urban greening and green-led development

The terms 'urban greening' and 'green-led development' are used throughout this thesis simultaneously to describe the same mechanism; that local governments increasingly are implementing green infrastructure and nature-based solutions in urban strategies and development schemes as part of the sustainability agenda to make cities more liveable and resilient to climate changes. However, there are growing concerns that urban greening not only support the sustainability agenda, but tactically form part of a private-led, growth-oriented agenda (Scott & Lennon, 2016).

Nature-based solutions

Nature-based solutions are, aligned with green infrastructure, an approach to address multiple issues simultaneously. Nature-based solutions can be characterised as a way of using processes copied from nature to tackle challenges such as climate changes and to promote maintenance, enhancement, and restoration of biodiversity and ecosystems (Kabisch et al., 2016; Scott & Lennon, 2016). On the urban scale nature-based solutions can include climate adaptation and mitigation interventions, drainage management, habitat provision, ecological connectivity, recreational space and health and well-being (Scott & Lennon, 2016).

Gentrification

Gentrification traditionally refers to the process in which working-class neighbourhoods are subject to a material rehabilitating and upgrading, which transforms homes into expensive residences, leading to displacement of working-class residents in favour of lower and upper middle class (Davidson & Lees, 2005). The original definition, coined by Ruth Glass (1964) refers to the upgrading of housing units, which results in a fundamental economic and sociocultural shift in the neighbourhood (García & Rúa, 2018).

2.2 New-build gentrification

There are various definitions of gentrification, and scholars within this research field disagree on the exact wordings. However, most scholars acknowledge that the core dynamics of gentrification are those defined by Ruth Glass in the book *London: Aspects of Change* in 1964.

Ruth Glass' definition (1964) focuses explicitly on the rehabilitating and upgrading of existing buildings by individual gentrifiers, such as middle-class homebuyers, landlords and professional developers, which causes a displacement of working-class residents in the favor of more affluent residents (Davidson & Lees, 2005). This represents the traditional definition of gentrification.

The gentrification concept has since then evolved to become a much wider phenomenon, with the various waves of gentrification summarised in figure 1. The literature now acknowledges that the process can take multiple forms, including new-build developments, involve a wide range of actors, and that it forms part of a larger class remake of the city (Davidson & Lees, 2005).

Moreover, state-led gentrification has become more evident, as national or local governments take on the role as developer and actively seek to promote and support gentrification as an overt strategy to revitalise neighbourhoods, often in collaboration with private developers and investors (Doucet et al., 2011; Davidson & Lees, 2005). It is argued, that the role of the local governments has been turned upside down since the 1980s as gentrification originally was regarded a problem that needed to be solved to create more socially coherent cities, whereas nowadays gentrification has become a solution in urban policy to attract investments. In this way, the focus in many local governments has shifted from wealth distribution to wealth creation (Doucet et al., 2011; Listerborn, 2017). Including new-build gentrification as an additional type of gentrification (Davidson & Lees, 2005) challenges supporters of Glass' traditional definition of gentrification, who rejects that newbuild developments are part of the gentrification phenomenon. The critiques argue that new-build developments do not imply any direct displacement as they are often built on brownfield land (Doucet et al., 2011, Davidson & Lees, 2005), and believe that it is wrong to refer to price exclusion (higher housing costs in new-build areas) as a form of indirect displacement (Doucet et al., 2011). Hence, the critiques argue that new-build developments cannot be categorised as gentrification.

On the other side, the argument for including newbuild developments in the definition of gentrification is that new-build projects attract investments to newbuild areas, hence moving the flow of capital from other places in the existing city (Doucet et al., 2011). Furthermore, it is argued that there is an indirect displacement through sociocultural means. An example is the development of the Docklands, London, where existing residents feared that they would be replaced by the new-build properties, and that they would be affected by the change in housing tenure and culture (Doucet et al., 2011, Davidson & Lees, 2005). Another indirect displacement is a form of 'exclusionary displacement' (Haase et al., 2017, p.44), where certain groups are unable to access property because the neighbourhood has been gentrified (Davidson & Lees, 2005) or because the new-build area have a private atmosphere (Attia & Ibrahim, 2018; Scott & Lennon, 2016). Finally, the urban landscapes of new-build areas are very often like one another, as they are created by architects and developers after the same formula. This also means that the people that aspire to live in new-build developments tend to be alike with middleincome and upper-income backgrounds (Doucet et al., 2011). These new-build gentrified areas, disregarding the actual context in which they are situated thus seem

	Period	Actors involved	Key aspects
Traditional gentrification	1960s - 1980s	Individual gentrifiers	Historical working-class neighbourhoods being upgraded. Rehabilitation and upgrading of existing housing units. Displacement of residents.
Gentrification evolves	1990s	Individual gentrifiers	Based on previous definitions of gentrification + New-build structures such as offices. + Gentrification as part of a large class remake. + Gentrification as a wider urban strategy for urban development.
New-build gentrification	1990s - present	Individual gentrifiers + the state + local government	Based on previous definitions of gentrification. + Local governments act as developers. + Shift in focus from gentrification in the city to the suburbs.
Environmental gentrification	2000s- present	Individual gentrifiers + the state + local government	Based on previous definitions of gentrification. + An extra dimension in terms of urban greening.
Fig. 1. Table successive states development of the stift state of the			

to run the risk to become copies of other development project; alien to the local community.

Altogether, the traditional gentrification phenomenon has changed over time to become a much wider phenomenon. Now, it now addresses the complexity of urban development and regeneration and acknowledges that gentrification not only affect the individual household, but in fact causes a much larger class remake of the city; containing multiple actors and can take multiple forms, including new-build developments. Furthermore, gentrification form "part of a wider urban strategy for urban redevelopment" (Doucet et al., 2011: 1438) to attract investments, in contrast to earlier when gentrification was a problem that local governments wanted to solve (Doucet et al., 2011). Widening up the understanding of gentrification allows for an understanding of the city as a whole and the impact on the social balance (Rérat et al., 2010).

Fig. 1: Table summarising the development of gentrification over time

- Up until now, the gentrification phenomenon has been concerned with how the built form alters the balance in the city in rehabilitation of existing buildings or in newbuilt developments. But little attention has been given to the significance of what is between the buildings; the urban green spaces (Haase et al., 2017).
- Urban greening forms part of many urban strategies as part of addressing the climate changes and creating healthier cities. This links to the following section of the literature review concerning the process of environmental gentrification, which is argued to be a form of gentrification derived from new-build gentrification. The section starts by introducing the emergence of environmental gentrification, and moves on to define the concept, followed by an investigation of how it has become infiltrated in a growth-led urban agenda.



2.3 Environmental gentrification

With the increasing threat from climate changes, nature-based solutions (NBS) and green infrastructure (GI), are being used as part of a climate change adaptation strategy to mitigate the negative effects of climate changes, such as air pollution, heat waves, floods and various diseases (Haase et al., 2017; Kabisch et al., 2016; Scott & Lennon, 2016). As Kabisch et al. (2016) state:

"Nature-based solutions promoting green and blue urban areas have significant potential to decrease the vulnerability and enhance the resilience of cities in light of climatic change. They can thereby help to mitigate climate change-induced impacts and serve as proactive adaptation options for municipalities." (Kabisch et al., 2016).

NBS and GI thus constitute themselves as solutions to the environmental and health challenges in cities and situate themselves within the sustainability agenda through the incorporation of urban greening in urban development strategies.

Moreover, the increasing battle for urban space due to the ongoing global urbanisation pose a challenge to the availability of urban green spaces, as they are being converted for housing and transportation purposes (Haase et al., 2017). This implies a need to rethink and incorporate multifunctionality in the urban green spaces, so that they can serve multiple purposes (Haase et al., 2017). Hence, scholars argue that NBS and GI, besides from having an ecological value, help creating more socially cohesive cities, as "GI and NBS often claim to address social issues such as social cohesion, socio-spatial inequalities and an unequal distribution of goods and burdens in/across cities." (Haase et al., 2017: 42).

Integrating NBS and IG as public green spaces, parks, community gardens, private gardens, and roof gardens in cities undoubtedly contributes positively to the urban environment in terms of creating recreational space, improving quality of life; mitigating the consequences of climate change and enhancing human health (Kabisch et al., 2016). However, it is more uncertain whether these improvements benefit all citizens and there are aspects behind these greenled development schemes which have not been fully investigated.

For the past decade, a growing concern amongst researchers has appeared in the literature regarding urban greening strategies and the potential negative implications on social dynamics in cities, through a process referred to as environmental gentrification (Anguelovski et al., 2018a). Environmental gentrification includes the same mechanisms as the previously described forms of gentrification, but adds an extra gentrifying factor: urban greening. Urban greening strategies and green-led developments have been described as "drivers of displacement" (Anguelovski et al., 2017: 459) aligned with traditional gentrification of the built environment. The following section will present the definition of environmental gentrification, which this thesis will be based on, and continues to discuss how environmental gentrification forms part of a growth-led agenda in urban policy.

III. 8 High Line (constructed 2009) in New York; an example of a well functioning urban green space but with the consequence of environmental gentrification (Haase et al., 2017)

Defining environmental gentrification

There is no one accepted definition of environmental gentrification (Checker, 2011; Rupprecht & Byrne, 2017), instead multiple variations and interpretations exist as international scholarly interest has increased. The concept has also been given different names, the most commonly used being ecological gentrification (Haase et al., 2017) and green gentrification (Anguelovski et al, 2018a).

According to Rupprecht and Byrne (2017) the processes of environmental gentrification can be captured as follows:

"Environmental-gentrification occurs when the conversion of brownfields to greenspace, provision of new greenspace, or redevelopment of existing greenspace drives-up property values, because a location becomes more attractive to investors and/ or more desirable for residents" (Rupprecht & Byrne, 2017: 2)

Hence, the core of the environmental gentrification concept is when urban greening makes an area more attractive to more affluent households, which causes an increase in land and housing prices, and as a result excludes certain groups from an area as they can no longer afford to live there or no longer feel any attachment to the place as it has changed fundamentally. This thesis' understanding of environmental gentrification is aligned with the definition proposed by Checker (2011) as well:

"Environmental gentrification describes the convergence of urban redevelopment, ecologically-minded initiatives and environmental justice activism in an era of advanced capitalism. Operating under the seemingly a-political rubric of sustainability, environmental gentrification builds on the material and discursive successes of the urban environmental justice movement and appropriates them to serve high-end redevelopment that displaces low income residents." (Checker, 2011: 212).

Aligned with Rupprecht and Byrne (2017) Checker's definition highlights how low income groups are displaced and excluded from benefitting from the implementation of urban greening for the benefit of more affluent residents. What Checker's (2011) definition also stresses, is how environmental gentrification forms part of a process embedded in the capitalist society, where greening strategies are used to mask and justify the real intentions, which is to attract more affluent households. These processes will be further explored in the following, as it is argued, that this process is part of a growth-led urban strategy.



III. 9 Musikkens Hus (built in 2013) in Aalborg; a cultural flagship project with a top-down development character (Galland & Hansen, 2012)

A growth-led environmental gentrification agenda

As Checker (2011) highlights in the definition of environmental gentrification in the previous section it is observed that green-led developments have been specifically targeted more affluent households. In accordance to this, the literature on environmental gentrification suggests, that this process forms part of a market driven, growth-led agenda (Scott & Lennon, 2016; Anguelovski et al., 2018a; Haase et al., 2017; Doucet et al., 2011). Haase et al. (2017) supports this viewpoint by stating the following:

"... we observe an increasing use of greening strategies that are officially adopted as ingredients of urban renewal, upgrading and revitalization projects but are in reality first and foremost market-driven endeavours primarily catering for higher income residents" (Haase et al., 2017: 42-43).

Environemental gentrification becomes a way to attract investment, and as a consequence green-led developments fail or in some cases deliberately ignore taking the derived social consequences into account (Doucet et al., 2011). There may be a variety of explanations, some of them being city branding, urban competitiveness (Anguelovski et al., 2018a; Doucet et al., 2011) and improving the city's image (Doucet et al., 2011), which have become more and more present as cities change and must redefine themselves in a globalised, competitive world. Thus, it is argued that urban greening forms part of a growth-led urban strategy where "... cities promote themselves as exciting and dynamic places to live, invest, and play..." (Doucet et al., 2011: 1441). The idea of trickle-down can also be an explanation, in which it is argued that rehabilitation of an area will attract investments and jobs, which will be distributed to the entire city (Listerborn, 2017).

These explanations and incentives behind environmental gentrification are closely linked to certain types of urban development. The next section will situate environmental gentrification within the context of post-industrial waterfront regeneration to unfold how environmental gentrification work in tandem within waterfront regeneration.

2.4 Environmental gentrification and waterfront regeneration

Blue spaces form part of the environmental gentrification phenomenon as well as green spaces (Biernacka & Kronenberg, 2018). One of the battle fields in terms of environmental gentrification is the waterfront of cities around the world, where blue spaces offer a great asset for urban development (Attia & Ibrahim, 2018). The first examples of waterfront regeneration, occurring in the 1960s, set the precedent for future waves of waterfront regenerations in harbour cities, with each new wave building up on the previous experiences of other harbour front revitalisation projects (Galland & Hansen, 2012). The following section seeks to unpack the previous experiences with waterfront regeneration, and to emphasise the learnings that need to be considered in contemporary waterfront regeneration. The section ends by discussing the way forward and approaches to mitigate the effects of environmental gentrification to create socially inclusive spaces.

The deindustrialisation process in Western cities since the 1970s (Galland & Hansen, 2012) has freed up space for redevelopment and regeneration of derelict post-industrial spaces. With urbanisation and the need for climate change adaptation, the urban waterfronts have become pivotal in urban development schemes. (Attia & Ibrahim, 2018). A tendency within more recent waterfront regeneration is the implementation of flagship megaprojects, such as the Guggenheim Museum in Bilbao which by some is viewed upon as a success and a contributing factor in creating new jobs, boosting the image and economy of a city (Raevskikh, 2018; Grodach, 2009). Whilst these social effects are lacking clear cut evidence, many cities around the world are still looking towards Bilbao with a desire to attract the "Bilbao effect" (Raevskikh, 2018) to boost municipal revenues with waterfront regeneration in the same way (Grodach, 2009). While the Guggenheim Museum seems to have proven a success in Bilbao, scholars have highlighted that this type of project cannot simply be replicated elsewhere due to local differences. Grodach (2009) points towards an understanding in which culture-led flagship regeneration does not bring along success per se. Instead, success depends on culture-led flagship regeneration that relates to its context and the region in which it is situated, and the pre-existing networks become important. This way of approaching development from a contextual perspective applies to other forms of waterfront regeneration as well (Grodach, 2009).

Waterfront regeneration can take multiple forms with Attia and Ibrahim (2018) identifying an approach for waterfronts as a platform for ecologically sensitive and sustainable development. The approach is becoming increasingly more important in urban development as climate changes will result in rising sea levels, storm surges and severe rain, forcing coastal and harbour cities worldwide to act to mitigate the consequences. The increasing urbanisation further means that local governments strive to find unbuild space or brownfields available for densification, making the derelict waterfronts of many post-industrial cities the main target for urban densification as industries move out (Sairinen & Kumpulainen, 2005).

With the fading of the former industrial identity of the deindustrialised cities, an urge to reinvent the identity of these post-industrial waterfronts has emerged (Galland & Hansen, 2012), but there is an imminent risk that this urge overshadows what was and what already is - both in terms of physical structures and the local community's attachment to that space (Stern & Hall, 2018). Stern and Hall talk about a "post-industrial process of forgetting" (High, 2013: 150 in Stern & Hall, 2018:85), where the industrial history and the testimony of the work that has been done at waterfronts is swept away by modern urban redevelopment; disconnecting the city from its industrial past and losing its sense of place (Stern & Hall, 2018). History and local community giving way for uncontextualized urban high-profile development is one of the significant dangers of waterfront regeneration and the growth-led agenda which dictates much planning, and which potentially will lead to environmental gentrification. These aspects are essential to include when transforming waterfronts or any other urban redevelopment for that matter.

With the issues relating to environmental gentrification and waterfront regeneration unpacked, the following section introduces two case studies, each of them highlighting important aspects to consider, followed by a discussion of the potential solutions and approaches to address environmental gentrification in general.



Case study: Newtown Creek Nature Walk, Green point, Brooklyn, USA

The Newtown Creek Nature Walk in Greenpoint, Brooklyn, is an example of a place where a "just green enough" strategy has been implemented as a strategy to redefine what nature is, preserve industrial heritage, and avoid environmental gentrification and the creation of a new exclusive neighbourhood due to environmental clean-up.

Greenpoint has in the past been a centre for shipbuilding, and experienced during the 1950s a huge oil leak that went into the Newtown Creek contaminating the underground, which was first discovered in 1978 (Curran & Hamilton, 2018).

Gentrification has been part of Greenpoint since the 1980s despite the contamination, with increasing rent and housing turnovers as a consequence. It was in part due to gentrification that the contamination was discovered as residents and activists noticed the smell of oil coming from the dug up for new development (Curran & Hamilton, 2018).

When implementing clean-up efforts, a concern amongst a broad variety of residents was that new developments would make the area more attractive, leading to environmental gentrification. There was a remarkably cohesive community vision rooted in environmental justice to maintain industrial uses and working-class residents in the area along with environmental improvements.

One such way to achieve this vision was the Newton Creek Nature Walk on the shore of Newtown Creek. The project has been described as "the ironic nature walk" (Curran & Hamilton, 2018, p.22) as the concrete trail park is wedged between the contaminated creek and a sewage treatment plant, thus redefining the traditional perception of nature.

Despite being situated on the edge of gentrification, the Newtown Creek Nature Walk is an example of how the local community's fight for access to the waterfront and more open green space for the public has been successfully coupled with the industrial past and present of the area. (Curran & Hamilton, 2018) It is a result of a stubborn community willing to take up the fight with the city's Department of Environmental Protection, which is the plant operator. The project has avoided the creation of an exclusive waterfront to instead creating a place for the people living there.

The case of Greenpoint points towards the importance of direct democratic involvement, and it stresses how urban regeneration and the creation of green spaces should be aimed at the existing local community, the working-class population and the industrial uses, and not at new developments (Curran & Hamilton, 2018).



Case study: New Westminster, British Columbia, Canada

The case of waterfront redevelopment of New Westminster, located at the Fraser River, 25 km east of downtown Vancouver, is an example of how a post-industrial waterfront has developed in a manner which does not respect the history and local community of that particular place.

New Westminster has in the decades following the second world war had a substantial amount of local jobs related to the waterfront industries. The first industry moved away from Westminster in the beginning of 1960s, but the actual deindustrialisation of the city happened a decade later, leaving big proportions of the waterfront derelict for years (Stern & Hall, 2018).

In the period up until the OOs, it became the region's fastest growing city and began leaving its former gritty image behind. This kick-started the waterfront regeneration process, and the city council repeatedly articulated the need to connect the city with the river as one of the pivotal aims of the regeneration process. The city council financed a beautiful waterfront park, and a private developer constructed a few tall towers alongside with more public waterfront space.

Today, Westminster's waterfront is a mix of attractive, moderately priced condominium housing, retail and a variety of well-used, mostly linear parks.

However, during the planning and development process the city council focused on connecting the city with the river but it was never specified what that would imply. From what has been realised at the waterfront in Westminster it seems like the definition of 'connecting' simply implied physical access to the waterfront. The redevelopment of the New Westminster waterfront did not consider the connection to its historical context, nor did it respect the fact that the place used to be a lively work place for many industrial workers. An example is an iconic art deco style shipping terminal building from 1929, which was teared down to make space for waterfront condominiums. This is an example of a postindustrial process of forgetting (High, 2013: 150 in Stern & Hall, 2018: 85), where the industrial history and the testimony of the life and work has been swept away by urban redevelopment, although this waterfront redevelopment project is by many considered a best practice case (Stern & Hall, 2018).

While the waterfront regeneration of New Westminster's post-industrial harbour by some is perceived as a success it is in some instances a failure as it is not contextually responsive and embedded in its context as valuable industrial heritage has been erased without concern.



III. 12 Nature bordering the industrial areas in Randers

Discussing environmental gentrification and the creation of inclusive spaces

It is an inherent paradox in urban greening strategies that they are essential to provide ecosystem services, such as flood proofing and heat reduction, and increase human health and well-being, but at the same time they increase social injustice in cities. However, Ian Mell (2018), professor of Environment and Landscape at the University of Manchester, states that it may be better to create nice green spaces, even though the housing prices increase, if the alternative is to have no or low-quality green spaces:

"The best examples of GI ... all have that mixture where rehabilitating an area, which is derelict, into a public amenity, with that will come that people want to live near somewhere nice. So, if you keep it a bit crappy, then local people use it, or you make it a bit nicer, and more people use it, but then local people might be excluded. I think that's an area where there is no answer. Simply because if you don't invest, things deteriorate, and people don't use them [green spaces], then what's the point? If you do invest, people do use them, but some people get annoved. Which is the least worse option? I think from a landscape perspective if we don't invest and manage effectively, we lose. But if we do invest, then at least we have the resource and providing all those functions that we think GI should do." (Green Infrastructure, 2018)

Under the current circumstances it may not be possible to create urban green spaces without increasing housing prices as there is no economical return on investment on green spaces (Mell, 2018; Nommesen, interview, 2019). Instead, urban green space is an expense in terms of maintenance, which makes the surrounding buildings even more expensive (Mell, 2018). One way to solve this is to secure philanthropic or public funding of public green spaces and parks, but it is not so straightforward as local governments want to be able to see the benefits, and it is hard to measure the exact benefits of green spaces (Mell, 2018).

- When it is hard to keep housing prices low, it is important to secure that urban green spaces are always accessible for everyone with various public functions speaking to a variety of users and anchored in local needs (Mell, 2018; Haase et al., 2017; Sairinen & Kumpulainen, 2005).
- Biernacka and Kronenberg (2018) have identified three levels to improve the provision of urban blue and green spaces for everyone: availability, accessibility, and attractiveness. Availability refers to the banal existence of urban green and blue spaces for them to be used. Urban green and blue spaces are accessible when the visitor feels welcome and safe and can spend time there without any restrictions and concerns. Availability and accessibility are prerequisites for urban green and blue spaces to be attractive, but at the same time spaces only become attractive when they offer something extra for the user and corresponds to individual needs (Biernacka & Kronenberg, 2018). It is hardly possible to meet every need and preferences of everyone, but it is however a prerequisite for socially inclusive urban green space development to include different local groups and needs in the planning, design and implementation (Haase et al., 2017; Biernacka & Kronenberg, 2018). Furthermore, the realisation and acknowledgement amongst local governments that greening strategies in fact can have an impact on social aspects is a step in the right direction (Haase et al., 2017). Green and blue spaces are infrastructures as well influencing the lives of people, so it is necessary to investigate the physical, recreational, and cultural relationships between a community and the place (Sairinen & Kumpulainen, 2005).

2.5 Concluding the literature review

Gentrification is a phenomenon that has developed over time to become much more complex than the traditional definition coined by Ruth Grass (1964). Now, it includes a wide range of actors, including state or local governments acting as developers often in collaboration with private developers. Gentrification can also take multiple forms, for instance in the form of flagship megaprojects, and the scale of transformation considered has increased, so the gentrification not only concerns the individual housing unit but in fact take the overall social structures of the whole city into account. Moreover, new-build developments are recognised as being exposed to gentrification, as they are often implemented as exclusive areas which attract more affluent households and excludes lower income residents. These new-build developments tend to be highly uncontextualized copies of one another, which makes them alien to the local community with no alignment with local perception of place and identity. This is one of the significant dangers of new-build gentrification. In order to avoid the creation of generic non-places places in the existing city it is important to make contextual considerations to find the right balance between preservation and change.

A growing body of literature has found that gentrifying mechanisms can be found in urban greening strategies through a process referred to as environmental gentrification. Several studies have shown how the implementation of urban green and blue spaces make areas more attractive to affluent residents which in result increases housing prices and excludes and displaces lower income residents through a gentrification process. This process, along with new-build gentrification, is closely linked to waterfront regeneration. In the wake of deindustrialization waterfronts have in many cities become pivotal in urban densification politics and climate adaptation strategies where urban greening is used as a key component. Waterfront regeneration and new-build environmental gentrification work in tandem, as waterfronts are attractive locations; an asset that many local governments have utilized to attract investment, dwellers and keeping up with urban competition. It has, to some extent, become part of a growth-led market-driven agenda for urban development, where the provision of urban green and blue spaces is designated to boosts the attractiveness of urban areas, such as waterfronts, to improve city image, increase competitiveness, and attract investments and higher-income residents (Kabisch et al., 2016). This is associated with significant issues as urban greening has moved beyond being a sustainability strategy for creating resilient, healthy and socially equitable cities, to become a strategy for wealth creation. This often comes at the expense for local residents as their needs are neglected.

With the promise of creating a more attractive and exciting city local government easily forget to think twice about the development they are about to commit to. This is also evident in the way that many cities look towards cities as Bilbao and the flagship megaproject they have implemented in the form of the Guggenheim Museum, which completely redefined the city. The desire to obtain the same success as in Bilbao causes local governments to forget the context in which their own development projects are situated. 'One size fit all' does not apply in urban development, instead it is necessary to take a place's context and local community seriously.

To sum up, post-industrial waterfronts are significant in that they hold the traces of the industrial story of cities, but these are often being overruled by more speculative development projects in a process of post-industrial forgetting. This is a huge issue as cities are being transformed with few or no social and contextual considerations into generic, privatised enclaves, making them disconnected from the existing city and the local community, and losing their sense of place and identity. In a globalised world, it is important to stand firm on the things that differentiates cities, otherwise they will most likely end up looking similar and being detached from their own history.

The literature review has now provided the reader with a thorough understanding of the possible negative consequences of environmental gentrification and waterfront regeneration on social aspects in cities. This acts as a framework for understanding the possible dangers of the green-led development of a chosen case, situated in a Danish context, where urban greening is key in the development strategy. The following chapter will take the reader through an introduction of the chosen case.

37

03 Introducing Randers

This chapter is an introduction to Randers which has been chosen as the case study location for investigating environmental gentrification and waterfront regeneration in a Danish context. The chapter contains an introduction to Randers in a strategic and historical context and continues to review and discuss the plans that Randers Municipality has for a 55-hectare redevelopment of the centrally located harbour front areas. The chapter ends by discussing the current situation and how to avoid falling into the same pitfalls as prior experiences with waterfront regeneration to set up aspects that must be investigated further in the analysis in chapter 5.



HERRETØ]

III. 13 Close up of half-timbered building in Randers City

3.1 Randers in a strategic context

Randers Municipality has approximately 98.000 inhabitants, and with almost 63.000 residents Randers is the 6th largest city in Denmark (Danmarks Statistik, 2019). The municipality is located in the eastern part of Jutland as part of the Central Denmark Region with more than 70 km of coast line (Randers Municipality, n.d.).

Randers is the northernmost city of what is called the Urban Belt of Eastern Jutland (in Danish: det østjyske bybånd), which stretches from Randers in the north, through Aarhus, Horsens and Vejle, to Kolding in the south (Randers Municipality, 2016b). The urban belt is connected by highway E45; making commuting and transportation in the region seamless and situates Randers within a big, regional and flexible housing and labour market with a lot of movement across municipal borders called Business Region Aarhus. With both Aarhus, Horsens and Aalborg less than one hour away by car or public transportation, it is possible to reach more than 424.000 jobs from Randers and two airports within one hour (Randers Municipality, 2016b).

Even though Randers as one of the biggest cities in urban belt of Eastern Jutland has many job opportunities within a reasonable distance, it still falls behind many other and smaller cities in the urban belt in terms of attracting new dwellers due to the gritty image that the city has had for years (Randers Municipality, 2018b). As Randers Municipality (2016b) states, the city's size, the location and the nature qualities give the city the opportunity to become an attractive location for new dwellers aligned with - or even better than - other similar cities in the urban belt. One major part of this urban strategy is the largescale redevelopment of a 55-hectare area, located at the harbour front, called Byen til Vandet, which will be introduced later in section 3.5.

In order to understand Randers Municipality's strategy and plans behind the urban development, including Byen til Vandet, it is crucial to understand the city and its strategic, regional context. Hence, the reason why the plans for Byen til Vandet are even realisable is partly that the municipality aspires to attract dwellers from the cities in the regional network, as will be highlighted later in the policy review in section 3.5. Furthermore, the regional context also allows for an appreciation of the cities that Randers compares itself with, which is important in order to understand the work that Randers Municipality is doing in order to reinvent the identity of the city. Many other cities in Denmark such as Aalborg, Horsens and Silkeborg have had a succesful transformation of their former industrial identities and been able to rebrand themselves (Hedegaard-Høgh, 2018). But what brand does Randers have and how should the city redefine itself?

The following section takes a closer look at Randers and its context, in terms of demography and moving patterns, and will highlight some of the overall qualities and assets that the Municipality of Randers utilises in the strategy for the urban development of the city. Following this, a policy review seeks to highlight issues relating to the development of Byen til Vandet through a review of different policy material, analysis and current municipal plans in a longitudinal historical account dating back from when the plans for the development of Byen til Vandet were initiated. The chapter ends by discussing the current situation and commenting on how to avoid falling into the same pitfalls as prior experiences with waterfront regeneration. The aim of the chapter is to provide the reader with an understanding of the prerequisites for the urban development of the city of Randers to understand the incentives and anticipation behind the plans for Byen til Vandet, and to highlight the possible dangers of the way that the development is carried out. This base knowledge helps guiding the way that this thesis approaches the analysis presented in chapter as this chapter concludes by identifying important aspects to consider more closely in the development of Randers' harbour areas.





Kattegat 🖝

III. 14 Randers' location in Denmark 1:2.000.000



3.2 Randers - the city by the nature

The city of Randers is situated in a unique location where the freshwater of the river Gudenåen meets the salty water of Randers Fjord. The city has expanded both north and south of the water with the city centre located just north of the Randers Bridge, the only passing over the water.

The location has historically shaped the city that it is today and connected it to the outside world through trade and industry along the water (Randers Municipality 2015c). As the central parts of the city are located adjacent to the waterfront, it also means that it is located close to rich nature areas with high biodiversity and with direct access to the nature from the city through the wet meadows of Hornbæk Enge and Vorup Enge.

The proximity to the water and nature has always played an important role in the self-understanding of Randers, as well as the industrial heritage. Randers Bridge marks the judicial border between the river Gudenåen and Randers fjord (Randers Municipality 2015c) in an estuary that becomes the symbol of what Randers is as can be seen in the city's 'hymn' to Randers: "Where river becomes sea, where the fresh [water] becomes salt" (Randers Municipality, 2019a, own translation).

The unique nature created by the river Gudenåen, which is the longest river in Denmark, offers a rich

nature with diverse fauna and flora in close proximity to the city centre (Randers Municipality, 2019b). The natural deltas of the river and nature surrounding it has been changed due to the industrialisation in Randers to be able to get bigger ships into Randers Harbour (Randers Municipality, 2015c).

The time has come to reintroduce nature and bring it closer to Randers City. Randers must redefine its identity as the city is about to undergo deindustrialisation as many other harbour cities already have done, as described in the literature review in chapter 2. Nature and water become key elements in the transformation of the city's identity as will be highlighted later in the policy review in section 3.5.

The following pages present socio-demographic information alongside with moving and commuting patterns in Randers Municipality. Following this, a historical account takes the reader through Randers' past; necessary to understand the city's future which is linked to the transformation of the city's identity described in this section. Both socio-demographics and insight in Randers' history add to the preliminary and strategic understanding of Randers, and will contribute to understanding how the municipality anticipate urban development. My family and I were able to see what a great place it is when we began working in Randers. It felt very natural to move to the city, especially when you considered the housing prices when compared to living in Aarhus.

Søndergård, 2017

3.3 Demographics

This section introduces socio-demographics of Randers Municipality in terms of the population, expected growth and the moving and commuting tendencies as part of building up the narrative and preliminary understanding of Randers prior to section 3.5 in which policy documents and plans made by the municipality is reviewed. Understanding the demographics and flow patterns of Randers is part of understanding the strategy which the urban development is based on.

With its nearly 63.000 inhabitants in the city of Randers, and approximately 98.000 in the municipal region (Danmarks Statistik, 2019), Randers Municipality is ranked 6th largest in Denmark, and the city strives to maintain that position as it is challenged by other cities who experience larger growth (Randers Amtsavis 2017). With its proximity to the city of Aarhus, Randers Municipality aims to attract newcomers from the 2nd largest city in Denmark.



Fig. 2 Age distribution in Randers Municipality in 2019



Fig. 3 Population development in Randers Municipality 1980 - 2019



Fig. 4 Average income in Randers Municipality 2005 - 2017

Age distribution

The diagram shows the age distribution in Randers Municipality as of 2019. It is expected that there will be a slight growth in all age categories until 2045. However, until 2039 the proportion of young people in the age 20-29 years is expected to decrease alongside with a more rapid growth in seniors. This means that the population in Randers is generally becoming older (COWI, 2016).

Population growth

After a period of time with a declining population rate Randers Municipality experienced a massive growth in the years between 2005 and 2015. The official current prognosis estimates that Randers Municipality will reach 100.000 inhabitants in the year 2026, which means that there is a need for more dwellings. 80 % of the population growth happens in the city of Randers, thus making the city a priority in the strategy for attracting newcomers (Randers Municipality, 2017).

Average income

The average income for the whole of Randers Municipality is well below the average national income level. The same situation is present for a great number of municipalities in the region of Central Jutland, with a few exceptions, including Aarhus Municipality. The presence of the global financial crisis can be seen in the years of 2007-2008, where the growth of income stagnated up until 2010 where the economy went up again (Danmarks Statistik, 2019).

Year

Moving and commuting patterns

With 60 %, a great proportion of young people in the age of 10-29 leave Randers for the favor of bigger educational cities such as Copenhagen, Aarhus and Aalborg. Likewise, the people who chose to move to Randers are predominantly from the neighbouring municipalities. The amount of people who move to Randers Municipality is slightly higher than those leaving, see fig. 5, and 80 % of people moving to Randers Municipality move to the city of Randers (Randers Municipality, 2017).

The commuting to and from Randers has in total grown with nearly 25 % over the past 15 years (Randers Municipality, 2016b). However, four times as many people commute out of Randers than in to the city of Randers (Danmarks Statistik, 2019), which may indicate a lack of local jobs in the city. The majority of people commuting out of Randers work in the adjacent municipalities, where a great number of those are located in Aarhus. With Randers being part of the Business Region Aarhus it means that a growing number of people commute across municipalities and regions (Randers Municipality, 2015c).

Randers Municipality's goal is to attract more jobs and young families with children to the city of Randers, as the city is the main target in the strategy for attracting newcomers (Randers Municipality, 2017). This goal is reflected in the development of Byen til Vandet where proximity to nature and water are used as key drivers for attracting newcomers, as shall be seen in section 3.5. The following section gives a historical account for the city of Randers which also is part of understanding the municipal strategies.









Fig. 5 Moving patterns to and from Randers 2018

Fig. 6 Commuting out of Randers to other regions in 2018

"

The harbour is nearly 700 years old and has been one of the biggest harbours even back in time when they would sail with small barges.

Interviewee J.M.

3.4 Randers - from industry to modern city

This section presents a brief historical account for Randers, as the literature review in chapter 2 stressed how important it is to understand a city's past to create contextually responsive and locally anchored solutions for urban development in the future. This is closely linked to the following section 3.5 which is a detailed review of policy documents, plans and analysis made in connection to Randers Municipality's urban redevelopment project, a large-scale regeneration project regarding the centrally located harbourfront areas of Randers.

The city of Randers is characterised by its unique location in the Gudenå landscape, where it emerged in the meeting between the wide Gudenå River and the bottom of the narrow Randers Fjord approximately in the year 1000, where it was possible to pass the shallow water in the fjord (Randers Municipality,

2015c). In the 1200- and 1300s the city was considered one of the biggest cities in Denmark and an important merchant node with domestic and international trade through the well functioning harbour. The structure of the central city area tells many stories of the different lives that the city has had with its middle age structure clearly defined by the borders of the fortifications that used to protect the city (Byhistorie, 2000). In the beginning of the 1700s the city was famous for the production of gloves, and regained a proud identity, after the decline experienced during epidemics of plague and the wars against the Swedes (Byhistorie, 2004). In the late 1700s the mayor of Randers decided to begin the deepening of the fjord, and with that symbolically began the expansion of the existing harbour in Randers City (Randers Municipality, 2015c).

1800-1899

During the late 1800s the city began to grow south of Randers Bridge, and the growth of the harbour meant that a great number of industries were located by the harbour areas, making Randers one of the most important industrial cities in Denmark. The city still largely existed by the water, with the waterfronts consisting of large wet meadows. This began to change though with the opening of the railroad from Aarhus meaning that Randers became a transport hub between other cities. With that a new development appeared in the wet meadows and the prestigious guarters came along east of the city (Byhistorie, 2004).

1900-1960

The growth of the city and the industrial development continued in the 1900s, with the expanded harbour pier along with the new urban districts. The largest companies that were established in the city, such as Scandia, meant that a great number of housing was needed to accommodate the many workers in the city (Randers Municipality, 2015c). In the 1930s Randers implemented a sanitation plan as the first city in Denmark for the slum areas of the city, creating new space for building the city's bus terminal in the 1960s. A large number of buildings were removed to make space for the still growing traffic in the city (Byhistorie, 2004).

1970-2019

In the middle of the 1980s the main occupations were trade, industry and service profession, with the service professions up until now being the major profession (Byhistorie, 2004). Nonetheless, Randers is still an inevitable trade- and industry city, with the harbour representing 6% of the total workforce in Randers (J. Morgen, interview, 2019). The Rosenørnsgade was constructed near the northern harbour and meant that the city centre got disconnected from the areas east to the city centre (Byhistorie, 2004). The construction of the highway E45 between 1970 and 1994 meant that Randers became better connected to the main infrastructure which made Randers more attractive as a city to live in (The Danish Road Directorate, 1994).



III. 16 Historical map of Randers 1840-1899



III. 17 Historical map of Randers 1904-1945



III. 18 Current aerial map of Randers in 2019

3.5 'Byen til Vandet' - a large scale waterfront redevelopment project

The previous sections have given a preliminary understanding of Randers with regards to the city's regional and strategic location, demographics, and the development of the city in a historical perspective, and hence presented the prerequisites for understanding the urban development that is going to happen at the harbour front areas in the central parts of the city of Randers.

A global tendency of waterfront regeneration was introduced in the literature review previously in chapter 2, explaining the redevelopment processes and regeneration of post-industrial harbour areas in Western countries. The same tendency is present in a Danish context, which is a country with long shorelines that historically has depended on sailing as a means of transportation of both people and goods (Culture Heritage Agency, 2008). A great number of Danish harbours have already undergone a transformation of the post-industrial places and made room for repurposed attractive and centrally located urban spaces (Culture Heritage Agency 2008).

Randers is the only city in Denmark that has a river harbour (Randers Municipality 2015a). Like many other of the country's harbour and coastal cities, the harbour front areas in Randers are planned to undergo a transformation. These ideas and the vision for transforming the harbour in Randers have existed for nearly the past 17 years. The Municipality of Randers envisions an entire reinvention of the identity of Randers, from its former industrial identity to a city by the water and near unique nature (Randers Municipality, 2002).

The subsequent pages will unpack the prerequisites and the historical progress of a large-scale 55-hectare redevelopment project at the centrally located harbour front areas in the city of Randers, which goes by the name 'Byen til Vandet' (in English: the City by the Water). It does so by reviewing the municipal policy documents and analysis made from 2006 up until today to get an understanding of the planning, process, thoughts and professional considerations behind the redevelopment project. The findings in the literature review in chapter 2 help identifying important aspects to consider during the policy review.

Furthermore, the aim is to make it clear why Randers is relevant as a case location in order to explore urban greening as an urban growth-led strategy in a process of environmental gentrification, as discussed in the literature review in chapter 2.



III. 19 The Byen til Vandet development site boundary 1:10.000

Rebranding the city

A sudden significant growth in the early 2000's changed many things for Randers Municipality after several years with a lack of population growth (Randers Municipality, 2006). The municipality had plans of rebranding and expanding the city and building new housing areas to accommodate the welcomed growth (Randers Municipality, 2006). A report made by COWI in 2006 investigated the possible relocation of Randers Harbour to free up the harbour front areas for urban development (Randers Municipality, 2006). The relocation was from the municipality's perspective an important step to address the population growth and the massive flow of traffic, generated from the harbour activities, that passed through the central parts of Randers (COWI, 2011). Similarly, the Randers Harbour organisation had a desire to expand, increase profit and ensure the harbour's existence in the future (COWI, 2011).

The transformation of Østervold, a centrally located pedestrian area, was finished in 2006, where the aim was that it should become the focal point of the city, reaching out to the historical centre of Randers and connect it with the waterfront (Randers Municipality, 2011). With that transformation in mind, Randers Municipality envisioned a revitalisation of the inner harbour that would bring the city to the water and nature and thus marked the beginning of rebranding the city through the development of the waterfront (Randers Municipality, 2011). The city council decided in March 2007 to begin working on establishing an international architecture competition that would aim at developing a comprehensive 55-hectare area along the river Gudenå running right through the middle of Randers. The City Council agreed that it was necessary to address several issues through the competition, focusing on developing the entire harbourfront when the harbour companies began relocating to establish a better connection for pedestrians in the city to the adjacent nature (Randers Municipality, 2011). To emphasise the importance of rebranding Randers through its existing nature qualities, it was decided to invest 8 million DKK in total over the next four years to re-establish watercourses, develop new forests and enhance the existing connection to the adjacent nature, and invest in a new Nature School and Education Centre to promote the existing nature typologies existing in Randers (Randers Municipality, 2006); marking the new beginning of the rebranding strategy for Randers.

I hope that Randers Municipality will use the opportunity to let the history play a role in the development, because it is an old industrial labor city with plenty of character.

Interviewee P.K.



III. 20 Aerial photo of the meeting between the city centre (1), Østervold (2), and the harbour (3).

Byen til Vandet comes to life

The process of developing a strategy for the transformation of the harbour areas of Randers was originally anticipated to begin in 2007 but the global financial crisis of 2007-2008 that hit Randers, as well as the rest of the world, hindered further progress and stalled the municipality's plans. (Randers Municipality, 2011).

The annual report for Randers Municipality (2009) showed a significant decline in the municipality's asset management with negative returns. Randers Harbour experienced a decline as well due to the financial crisis even though they had the previous year achieved a personal record in cargo volume moved through the harbour in Randers (Randers Amtsavis, 2011). Randers Harbour decided to be proactive and to ensure continued growth after the financial events of 2007-2008 and made the decision to begin the process of developing the masterplan for a significant strategic site that could help them overcome the challenges of the future such as lack of space and accessibility to the highway nearby (COWI, 2011). With Randers Harbour being the sole landowners in the harbour area it was possible for them to investigate the process of selling their properties to Randers Municipality to finance the new development (COWI, 2011), and thus develop the new masterplan for the relocation of the harbour activities east to their current location. The plans went into public hearing and did not get approved by the city council of Randers until 2014 (Trafikstyrelsen, 2014).

Randers Municipality began working on an investigation in collaboration with Realdania in the beginning of 2014, four years after the city council first had decided to work on developing a plan for the area, titled Byen til Vandet where consultant teams were selected for

pre-qualifications to assist the municipality in the development of a strategy for the 55-hectare area. The aim of the investigation was to develop a strategy and concept for the development of the site location that would secure growth, strengthen the city and transform its identity by utilising nature and proximity to water as assets, and ensure climate adaptation that would secure the central areas of Randers in the future (C.F. Møller, 2015).

In the reports created on the background of the investigations, the municipality used precedents from cities such as Aalborg and Toronto in terms of the cities' waterfront regenerations and dwelled on their prior experiences of places (Randers Municipality, 2016a) which is guite problematic since the chosen reference cases do not resemble Randers due to the differences in physical scale, geography and demography.

The consultant team which was chosen for the further development assignment aided the municipality in their investigation, which resulted in a variety of strategies, each focusing on highlighting and emphasising the potentials and qualities of Randers (Randers Municipality, 2015a). A great number of mappings, research and planning led to a total of seven different development scenarios proposing different locations for road infrastructure and climate adaptation, where three of the scenarios were chosen for further process. Alongside with this process, a great amount of energy was put into ensuring citizen involvement in the development of the Byen til Vandet development project, where people through various platforms could make their opinion heard (Randers Municipality, 2015b). Throughout the whole process, Randers Municipality continued to work on



investigating the best possible outcome to solve the issues of congested infrastructure and inaccessibility to the nature adjacent to the city centre of Randers through a great amount of research and consultations (Randers Municipality, 2016a). The investigations kept going on up until 2017 where the great amount of knowledge and information collected through the years seemingly began coming together as the city council agreed on one of the developed scenarios for the development of the project area. The scenario meant that the location of a new bridge crossing the river Gudenå by using the eastern part of the harbour pier had been decided (Randers Municipality, 2018). The central idea for each of the scenarios was to help ease the pressure on the existing Randers Bridge by rethinking the road infrastructure system, resulting in a far better accessibility to the waterfront and ease of transportation in general in Randers. However, years of research done to arrive at the best possible scenario for connecting Randers to the water seemed

Third phase 2036-2040

🕂 In planning

and location of the new bridge 1:20.000

unproductive and a huge waste of resources as the city council decided to go for the least expensive scenario (Randers Municipality, 2018). The issue with the chosen scenario was that it was rated as least recommended in a report conducted, which summarised each of the three selected scenarios (Randers Municipality 2015a). The report was part of the debate discussing the appropriate scenario for Randers rating them in accordance to a range of factors such as their ability of connecting the city to the nature, the quality of the urban spaces made possible, the climate adaptation potential and traffic solutions (Randers Municipality 2015a). The two other scenarios would have connected the city far better on each side of the city (Randers Municipality, 2015a), but an interview with a municipal planner and architect confirmed that finances played a bigger role in the end (S. Nommesen, interview, 2019). It paints a picture that the municipality is not willing to invest in a long-term solution despite all their good intentions and efforts.

If you want to create a waterfront for the city and not just for the selected few, then you have to create a harbour that opens up to the city. There should surely be housing and restaurants, but it is vital to also include the green spaces. And there is no money in that, which is the issue. Interviewee J.M.

¹¹ It is important with an awareness of making the available housing attractive for others than those with high income, so that we don't end up with yet another sleepy neighbourhood solely for the wealthy seniors.

Online survey

A growth-led development

An increased competitiveness between Randers and the surrounding cities along the East Jutland highway for newcomers makes the attractiveness and livability of Randers to a great priority in the development and branding of the city (Randers Municipality, 2016a). An increase in newcomers would mean higher incomes that would serve the entire municipality. It would mean better possibility of securing Randers' position as sixth largest city in Denmark by being able to finance the urban development that would in return make the city more attractive to move to, creating a growth-based development. In this sense, the urban development of the city becomes an investment. For the Municipality of Randers, the development of the Byen til Vandet could serve as part of the branding strategy. By improving the infrastructure and introducing nature and urban greening as part of the climate adaptation strategies the municipality believes that it would supplement the development of the city and make it seem like the ideal

place to move to from the surrounding municipalities. The aim is to create a clear identity for Randers as the city by the water and nature and thus rebrand themselves to position the city better in the regional network (Randers Municipality, 2016a).

In a development project as extensive as the Byen til Vandet development project in Randers that so fundamentally aims at reinventing the very core of the city's identity, it is a high priority to include the local community and get their perceptions and attitudes towards the plans out in the open in order for the project to become successful. The following page presents knowledge acquired from an online survey, and it reflects the attitude among the local community in the city of Randers towards the development plans for Byen til Vandet, and what they hope the development brings along and what they fear it can imply.

Local attitude towards the development of Byen til Vandet

> 11 % think it's a bad idea

> think it's a good idea

think that the development will help create a more attractive and

exciting city to live in



think that the development can help bring the nature into the city centre An online survey with 276 respondents has been conducted among locals in Randers in order to get to know the public opinion of and wishes for the development of Byen til Vandet. This is a brief overview of key findings in the survey. Generally the local community is happy about the development, hoping that it will act as a lever for Randers in terms of creating a more exciting, liveable and attractive city with more nature in the central areas.

However, there are slightl concerns that the development will cause the housing prices in the future city district to be way over standard prices in Randers; preventing some groups from settling down there. Furthermore there is a concern that new and expensive housing along the harbour front will create a sense of privatised public realm which must be avoided as the harbour and water are perceived as great assets by the local people as well.



fear that the development will cause an increase in affluent households and housing prices





fear that the development will create a privatised atmosphere along the harbour front

Current status

A Byen til Vandet parallel commission was after years of planning and consultations put out into offer late January 2019 where architectural and engineering consultant teams could apply to participate and propose their idea on how the development area could look like in the future. Three interdisciplinary teams were pre-qualified and selected in March 2019 for the parallel commision to work on the development plan for the 55-hectare area containing the waterfront areas of Randers (Randers Municipality, 2019). The three teams will have until the end of June 2019 to develop and present their design proposal and strategy, meaning that it was decided that giving each of the teams approximately three months to process 17 years of investigations, analysis, strategic masterplanning and planning applications was enough time to boil it down to a physical design proposal for the vision developed by the municipality. During the interview with a municipal representative from Randers Municipality, it was argued that three months is the typical time frame in Denmark to develop such projects, and it is also the guidelines that Realdania uses for such projects. That is why the municipality has followed this procedure (S Nommesen, interview, 2019). The chairman of the Randers Sailing Club summarised it well, when he during an interview said:

You cannot and should not stop progress. But if you want to maintain that the area should be cosy and enjoyable for the city, then I believe you make a great mistake by actually removing the environment of the existing place.

Interviewee 0.U.C.

No other major concrete decisions that could have helped guide the development of the Byen til Vandet project was made prior to the parallel commission being announced, besides the location of the new bridge east to the city centre, despite an incredibly well documented understanding of the present-day reality of the location and to some extent its context. The Municipality left crucial decisions about character, densities and programs hanging as issues for the consultancies to sort out which is a huge issue for the development of the Byen til Vandet project. The risk that the municipality now runs is that the development of the harbour front of Randers will be done without taking the existing place as is into account despite their intentions and investigations. With that, a loss of the rich characters and sense of place that define each of the areas affected by the Byen til Vandet development plans will inevitably follow.

This chapter has provided the reader with an understanding of the city of Randers as the chosen case study location. Moreover, a review of Randers Municipality's plans for a 55-hectare redevelopment of the centrally located harbour front areas, referred to as Byen til Vandet (in English: the city by the Water), has been used to unpack the theoretical discussion of environmental gentrification and waterfront regeneration in a Danish context.

By scrutinising Randers in a historical and current perspective, it is possible to achieve a preliminary understanding of the case study location and the potentials and issues that the city is dealing with. The industrial history of the city, which for many years has been part of the city's identity and pride, is bound to be redefined with the coming redevelopment of the harbour. It is important that the history is considered in the urban development, as important heritage and local identity will disappear if it is completely replaced with new development as discussed in the literature review (see chapter 2).

It is also evident that the population in Randers is expected to get older, more people commute out of Randers than in to the city, and young people move to bigger cities. These tendencies are addressed by Randers Municipality through a growth-led urban strategy in the development of Byen til Vandet which aims at attracting dwellers and labour from the regional network. Part of this strategy is to redefine the identity of the city from being an industrial city to an attractive city by the water and nature, making the redevelopment Randers Municipality's way of

3.6 Synthesising the introduction to Randers

rebranding itself to position itself better in the regional network.

The local community seems generally to be positive towards the plans for Byen til Vandet, however there are slight concerns that the area will cause an increase in more affluent households and create a private atmosphere at the harbour front, making these inputs important in the development of the place.

At the moment, a parallel commision takes place, in which three consultant teams compete to propose an illustrative masterplan for the entire development area, but the foundation for the competing teams to develop a proper contextualised proposal is questionable. In order to create a contextually appropriate masterplan for the Byen til Vandet area, sensitive to its surroundings and the local community, there is a need to create a solid design framework that contains guidelines with specific direction for the development; informed by thorough multi-scaled analysis to make an appropriate proposal for the particular place. The area must be broken down to smaller bits. The design framework presented in chapter 6 aims at addressing this through a set of guidelines aiming at steering the development of a smaller 8-hectare area by pointing towards key aspects which must be considered when developing the site.

The following chapter will unpack the methodology and selected methods used to understand the progression of this thesis and how the previous two chapters link to the analysis and the design framework in the forthcoming chapter 5 and 6.

04 Methodology

This chapter presents the different research phases that this thesis project has gone through and explains the methodological approach used in each of the phases. The chapter further unpacks the selected methods used to meet the objectives set for the research question.



4.1 Introducing the methodology

This chapter presents the methodological approach and selected methods used throughout this thesis project to explore the research question presented in chapter 1:

How can former industrial harbour places be regenerated as part of an urban greening strategy without the potential negative effects of environmental gentrification - to foster socially inclusive and attractive urban green spaces for everyone?

The timeline on the following page visualises the progression of this thesis with three research phases and the applied methods falling in to the individual phases.

Conducting research is founded in defining a relevant research question, that responds to a gap in the literature within a certain study field, and selecting the appropriate approach and rigorous methods to help structure the thesis to produce robust answers to the research question (Lucas, 2016). The literature review in the initial desk-study phase of the thesis points towards a growing body of literature regarding the social aspects of growth-led urban greening strategies and waterfront regeneration, and a gap concerning the negative aspects in particular. This was the offset for this thesis project, and has along with document analysis guided the selection of the exploratory case study, located in Randers, along with the way in which the thesis has been structured and the methods applied.

The chosen methodological approach is determined by the nature of the research question. As the research question deals with social aspects, it naturally corresponds to a predominantly qualitative approach to the methodology, however combined with selected guantitative methods elaborated in section '4.3.

The literature review in chapter 2 and the introduction to Randers and policy review in chapter 3 represent research phase 1 and serve as the secondary data aiming at establishing key themes within the literature along with the base knowledge of Randers to guide the research in a direction and select the appropriate methods for the analysis in phase 2.

The empirical data acquired during fieldwork in phase 2 serve as the primary data which in combination of the previous phase gives an appreciation of the chosen site and a set of key aspects that must inform the design framework developed in phase 3. These key aspects are; heritage, accessibility, public realm, nature and program, and the methodological approach to explore these aspects will be unpacked in the following section 4.3.

This chapter is divided into two main sections. The first section starts by introducing and justifying the selected thesis site location in Randers, followed by an unpacking of the research phases which the thesis project has been divided into, along with introducing and explaining the methods selected.

20/02/19	Supervision	0	tudy
28/02/19	Site visit	•	s k - s
05/03/19	Pin-up 1	0	1: 06
28/03/19	Site visit	•	
01/04/19	Supervision Site visit		
09/04/19	Pin-up 2	0	
29/04/19	Supervision		
10/05/19	Supervision	0	
23/05/19	Project submission	0	
04/06/19	Thesis exam	0	

01/02/19 Thesis start



Fig. 7 Thesis structure with timeline and applied methods

4.2 Site selection

Following the research findings of the literature review in chapter 2 and the previously acquired knowledge of Randers and preliminary understanding of the current development of the 55-hectare area in chapter 3, a site is selected to analyse in depth and explore environmental gentrification and waterfront regeneration in a Danish context. The following section justifies the selection of the site and introduces the character areas defined in the city of Randers.

Chapter 3 provided insight to Randers Municipality's incentives behind the green-led development plans for a 55-hectare waterfront redevelopment project called 'Byen til Vandet', and revealed a growth-led urban greening development agenda. This development project and its green-led scheme was initially the reason for selecting Randers as the city to situate an explorative case study of environmental gentrification. Currently, a parallel commision design competition is taking place involving consultants that do not have the appropriate time to develop a contextually appropriate masterplan that takes the significant character of the areas bounding the development site into account. The Byen til Vandet development area spans over a number of different areas in Randers, each highly characteristic and defined by their location, character, significance for the city and history, and will throughout the thesis be referred to as character areas. The map on the right illustrates the boundaries of each of the five identified character areas bordering the Byen til Vandet development area.

The current development plans fail to take the different character areas into account in the large-scale development project and run the risk of neglecting the rich character and history rooted in each of the areas.

The character areas bounding the Byen til Vandet development boundary are introduced and analysed further ahead in the thesis in chapter 5, in order to encapture the essence of the case study location.

The review of Randers Municipality's plans in chapter 3 reveals the expected time frame for the relocation of the harbour activities at Randers Harbour (see ill. 21), which will make space for a step by step urban redevelopment at the centrally located harbour front areas. A smaller part of the Byen til Vandet development boundary, corresponding to 8 hectare, located in the northern harbour area, has been selected as the specific project site location for this thesis. This is a key location in the full development scope of Byen til Vandet, as it is close to the city centre and forms part of one of the first development phases to be implemented. Furthermore, the site is situated in the midst of two distinct character areas (see ill. 23), the Tøjhushave Quarter (B) and the harbour area (D), each of them having guite unique characteristics and significance for the city of Randers with historic dense low-rise housing on the one side and tall industrial buildings on the other. The site is bounded by nature areas and water as well.

When developing this site, it has a huge impact on the entire city, as the area has been a marker for Randers' past identity as a proud industrial city, and the redevelopment must speak to these characteristics and historical context. Hence, this project site will be analysed in depth (see chapter 5) to inform a contextually appropriate design framework (see chapter 6). For the remainder of the thesis the site location will be referred to as the project site or the Toldbodgade site.



Byen til Vandet boundary Character areas

4.3 Research phases

This thesis project has been structured around three research phases, where each phase has been subject to an iterative process of selecting different methods to find the appropriate methods that would produce rigorous and robust empirical data in order to meet the defined research objectives introduced in chapter 1. The table (see fig. 8) introduces the final applied methods for each research phase and how they are linked to the aforementioned objectives, which are the following:

- 1. Review scholarship on the presence of environmental gentrification in the regeneration of post-industrial spaces in order to identify critical challenges related to urban greening as a growth-led development strategy.
- 2. Assess the implications of the current municipal plans and urban development process in the case study location of Randers harbour front.
- 3. Empirically investigate the spatial characteristics and constraints of the case study location, along with understanding the local community's perception of the site.
- 4. Synthesise data collected to develop a design framework for a chosen site, used to demonstrate an illustrative masterplan on how to develop a socially inclusive and contextually appropriate area at the harbour front.

Research phase	Objective	Methods
Phase 1: desk study	Links to objective 1 and 2	Literature review Policy review Document analysis
Phase 2: fieldwork	Links to objective 3	Site analysis Interviews Questionnaire
Phase 3: framework	Links to objective 4	Sketching Visualising

Phase 1: Desk-study

During the desk-study phase the initial thesis proposal with research question and associated objectives is continuously being revised by reading relevant international peer-reviewed literature to establish the key authors within the identified topics of waterfront regeneration, urban greening and environmental gentrification, and to narrow down the knowledge gap that the thesis will respond to. This process helped steering the focus of this thesis, selecting a case study location and the appropriate methods to explore the research question.

Document analysis

Throughout this phase thorough document analysis is conducted to redefine the focus of the study and establish the research aim and objectives. An analysis of the history of the case study location (see section 3.4) investigated the historical development of the harbour front areas in Randers to understand the case study location's change in proximity to nature, where as a demographics analysis along with moving and commuting patterns (see section 3.2) creates an understanding of the current socio-demographic situation of Randers City which is used to understand how Randers Municipality anticipates the development of Byen til Vandet throughout the policy review in section 3.5. The desk-study phase will in conclusion help determine the appropriate methods for the following research phase.

Fig. 8 Research phases and associated objectives and methods

Phase 2: Fieldwork

Following the desk-study, the fieldwork phase provides mainly gualitative insight to the characters and challenges of the Toldbodgade site by conducting a variety of multi-scaled urban design analysis along with interviewing key stakeholders which is summarised in fig. 9. The previous desk-study phase identified relevant aspects to investigate further through the field work, and made it possible to determine the appropriate methods in doing so and to meet some of the previously identified research objectives. Through the iterative process of fieldwork and site analysis it was possible to identify several additional key aspects to investigate further. These aspects include: heritage, accessibility, public realm, nature and program, and will inform the developed design framework presented in chapter 6.

Site analysis

A variety of different methods within urban design analysis is applied to uncover different aspects of the Toldbodgade site itself and its surrounding context. The defined character areas (see section 4.2) helps structuring the analysis. The context is understood through mappings of the infrastructure, green and blue spaces and hydrology to gain insight to the accessibility and the presence of nature and water in the case study location. Furthermore, a photo-mapping of the five character areas of Randers City helps identifying the present character and atmosphere in each of the areas.

The site specific analysis is done through various mappings of site conditions as noise, land ownership and program to further understand the nature of the site location, whereas a mapping of the local associations and social meeting spaces identifies the social network of the Toldbodgade site. Moreover, a serial vision analysis visualises the entrances to the site location; revealing the atmosphere, materiality, character and accessibility which encapsulates the pedestrian experience to the site and the harbourfront areas. This is accompanied by a topographical analysis of the landscape to further visualise the existing topography and the influence it has on the experience of the Toldbodgade site.

A facade analysis of the two character areas bounding the site location encaptures the architectural and historical heritage of the site, and is further amplified by a historical analysis of the Toldbodgade site, making it possible to gain access to the site's soul and previous history, in order to develop a place that is rooted in an existing or forgotten identity.

Online survey

An online survey was set up to reach out to the wider community in the city of Randers, with a total of 276 respondents. The survey was used to identify trends and to get an idea of the community's knowledge of the current plans for Byen til Vandet along with their wishes for the development. By using social media platforms such as Facebook and Twitter the aim is to use as many channels as possible to encourage people to participate in the survey. These channels were activated by establishing contact to local gatekeepers, such as the local school, art museum, library etc.

Stakeholder category	Name of stakeholder	Stakeholder representative
Policy makers	Randers Municipality, the Planning Department	Interviewee S.P.N. Architect and urban planner in the Byen til Vandet team.
Landowners	Randers Harbour	Interviewee J.M. Harbour director for 25 years.
Local institutions	Gaia Museum & Academy	Interviewee A.N.B. Head of the Museum and Academy
	FOF Randers	Interviewee M.K. Principal of FOF since 2011
	Randers Lille Skole	Interviewee P.K . School principal and vice principal
	VIA University College	Interviewee P.M. Head of the Pedagogical Education at VIA since 2013.
Local community organisations and	Randers Rowing Club	Interviewee M.H. Chairman for the past two years.
associations	Randers Yacht Club	Interviewee O.U.C. Chairman for the past seven years.
	Randers Sports Fishermen's Club	Interviewee J.H . Chairman
Local people, neighbours	Long-time resident in Tøjhushave-district	Interviewee B.O. Rresident since 1973. Former principal of FOF for 36 years.

Fig. 9 Table illustrating the stakeholder categories interviewed

4.4 Concluding the methodology

Semi-structured interviews

Key stakeholders are identified in connection to the Toldbodgade site, and 10 semi-structured interviews were carried out in order to get their perspectives on the development of Byen til Vandet.

The semi-structured interview allows for a free-flowing conversation on the basis of an interview guide structured around themes rather than specific questions, which makes it possible for the interviewee to elaborate on topics of interests that pops up during the conversation. This may take the conversation in another direction than anticipated (Lucas, 2016), and carries the potential of getting valuable insights.

The 10 interviews were conducted with policy makers, landowners, local institutions, local community organisations and local people to cover different stakeholder categories and their usage and understanding of the Toldbodgade site and the current development of the harbour front areas in Randers City. Figure 9 summarises the identified actors interviewed in associated stakeholder categories. The interviews have contributed with valuable insight about the Toldbodgade site, the attitude towards the plans for Byen til Vandet, the wishes for the development and the non-physical networks between cultural institutions and local community associations existing in the area.

Phase 3: Framework

The findings from the desk-based research in the first research phase combined with the empirical data acquired from the field-work in the second research phase will be processed and synthesised to inform the design framework and key design guidelines with associated parameters. This will function as a set of recommendations for the future development of the Toldbodgade site, to secure a sensitive and contextually responsive development of the area. The framework will be developed through brainstorming, sketching and visually processed and finally be presented through a selection of axonometric drawings, that are concluded in an illustrative masterplan, precedents that visualise the parameters defined and visualisations that give an insight to what the urban life on the Toldbodgade site could look like if the framework was implemented in a masterplan. This chapter has introduced the three research phases, 1) desk study, 2) fieldwork and 3) framework that this thesis is structured around, and has unpacked the associated methodological approach within each phase.

The findings throughout the literature review during phase 1 points towards a sensitivity when implementing growth-led urban green strategies in urban development and waterfront regeneration, with an explicit focus on social aspects. The context, character, history and local community must be considered, in order to create socially inclusive urban spaces that are not detached from their surroundings. As this thesis is concerned with social aspects of urban development, the methods selected have largely been qualitative as these are more useful to encapture non-quantifiable aspects such as non-physical networks, atmospheres and phenomenological understanding of a place.

With this knowledge in mind, along with a preliminary understanding of Randers, the municipality's incentives behind the development of Byen til Vandet and five defined character areas in Randers, it has been possible to select a specific case site location in Randers as well as the appropriate methods to explore the case site in further detail during the field work and empirical data collection in phase 2. The important aspects derived from phase 1 (described in chapter 2 and 3) are used to analyse the chosen project site in more detail in phase 2, and during this process of collecting empirical data even more crucial aspects came to the surface. The key aspects derived from research phase 1 and 2 are: heritage, accessibility, public realm, nature and program. The project site, referred to as the Toldbodgade site, has been selected to demonstrate the development of a socially inclusive post-industrial space through an illustrative masterplan, rooted in the understanding and appreciation of the area's character and local community through the incorporation of the identified key aspects.

The following chapter will analyse the character areas along with the Toldbodgade site to arrive at the five key aspects deemed important in the development of a contextually appropriate design framework for the Toldbodgade site.
05 Analysis

This chapter presents the analysis made at the Toldbodgade site and its context by unpacking five different character areas, which have been identified in connection to the project site in section 4.2. The chapter begins with introducing the city of Randers and the character areas and continues with a range of contextual analysis to situate the project site within its context. This is followed by site specific analysis that goes into detailed analysis of the Toldbodgade site. Ultimately, the chapter ends by introducing the key components deduced from the analysis to inform the design framework presented in chapter 6.



5.1 Introduction to character areas in Randers City

The following section introduces Randers City, where the development of Byen til Vandet is located. The map below attempts to indicate how the city is developing and living along the waterfront through the location of activities and functions seen in ill. 25. With nature areas adjacent to the city centre, culture and educational institutions across the city, a historical city centre with shopping facilities, harbour activities and a marina, the central parts of Randers paint a

picture of distinct character areas defining Randers City and introduced in section 4.2. The following chapter contains different analysis which will seek to unpack the character areas, firstly in a larger strategic scale and since in a more site specific scale, in order to develop a contextually informed design framework for developing the Toldbodgade site. A vignette is placed at the top of the subsequent pages indicating the implied character areas being analysed.







(9) Harbour areas

- (10) Marina
- (11) Allotment
- (12) Highway E45
- Project site boundary
- Character areas:
 - A: Historical city centre
 - **B:** Tøjhushave Quarter
 - C: Marina
 - D: Harbour
 - E: Nature areas



5.2 Photo mapping of character areas

The photo mapping illustrates the different characters in each of the five character areas, defined in section 4.2, which borders the Byen til Vandet development. It is clear from the photo mapping how distinct the character areas are, and this is valuable insight when doing the site specific analysis later in section 5.4.



A: Historical city centre

An old historical city centre characterised by a richness of details, half-timbered buildings, red bricks, monuments, cobble stones and narrow streets.

















harbour nearby, red bricks and old half-timbered buildings.







B: Tøjhushave Quarter

Old district characterised by the Tøjhushave Park, a creative atmosphere, dense low-rise buildings, the location of the





















C: Marina

A variety of different water activities, including a marina, rowing and yacht clubs, and new built penthouse apartments.

D: Harbour

of the harbourfront.







A large area dominated by harbour activities, a huge power plant, the Randers Fjord and elements indicating an industrial past and present. Tall industrial buildings create a very recognisable image

















E: Nature areas

An area defined by unique nature typologies, rich flora and fauna, and the Gudenå river that meets the Randers Fjord in an estuary.

5.3 Contextual site analysis

This section contains contextual mappings and analysis of the surroundings to the Toldbodgade site. This is done to get an idea of the potentials and challenges of the areas near to the project site as these will influence the development of the final design framework presented in chapter 6.





- Connection between green hotspots
- Missing connection between green hotspots

Green and blue spaces

Randers is a city located by the water where Randers Fiord meets the river Gudenåen. The city has a couple of high quality and well-used green spaces in the form of parks north east and south west of the project site. In the north east one can find the cemetery, Skovbakken Park, and the Tøjhushave Park, which have great recreational and barbeque facilities and wonderful, big, old trees. South west of the project site exists green areas such as Justesens Plæne and Tronholm Park, which are more flat green areas with no big trees, but they are being used actively for recreational purposes, relaxation and exercise. These green spaces are quite well connected as they are located next to one another and have a well functioning path system connecting them.

The project site itself is placed in the middle of these green areas, but it lacks the presence of high quality public green space and a connection to the other green areas. The only public green space available at the project site is a square of grass on the former cattle square with a simple dog walker fence and no other functions or furniture attached. The project site has the potential of becoming a stepping stone to connect the green hotspots in the existing green areas to conclude the green belt in the city.

Infrastructure

Randers is a city defined by the presence of infrastructure, cars and heavy transport from the harbour. The city is well-connected both regionally with the highway E45 only 3,5 km east of the city centre and locally with large road structures both on the south-north axis and the east-west axis. The large amount of traffic passing Randers Bridge, which is the only car bridge to get across, causes massive congestion during rush hour (Randers Municipality 2016b). For bicyclists and pedestrians the roads form a barrier in terms of moving from the city centre to the harbour, as the crossings are large and guite unmanageable due to the physical environment being unpleasant with large noise levels. As described in section 3.5, a new bridge across the pier is expected to redistribute the amount of traffic on Randers Bridge and make the Havnegade street less noisy with far better accessibility.

Hydrology

Randers figures on a list counting the 10 most vulnerable cities in Denmark when it comes to climate changes and rising sea levels (Randers Municipality, 2016b). This is due to the city's topographical situation and location by the water, meaning that the hills of the city create a bowl like situation where big big areas are located beneath +1.5 m (COWI, 2013). This is a critical level, as heritage and the harbour areas are endangered of flooding if the sea level rises 1.5 m, and already now a normal 10 year storm surge event is a threat to the area. Especially the areas just north and south of Randers Bridge are exposed to rising sea levels and floods (Randers Municipality, 2014). Precipitation and a high groundwater table are also issues that must be taken into account, as the hilly landscape in the northern part of the city causes the water to run towards the city centre, and the sewage system does not have the capacity to hold the water masses coming from severe rain (Randers Municipality, 2014).



- Areas located below +1.5 m
 100 year's storm surge event in 210
- ♦ Water runoff direction

III. 28 1:20.000

5.4 Toldbodgade site analysis

This section contains a variety of site specific mappings and analysis of the Toldbodgade site which is bounded by the Tøjhushave Quarter and the harbour. The purpose of these analysis is to get a better understanding of the site in order to create a better foundation for developing the design framework in chapter 6.





Noise from the pier

The noise coming from the harbour activities at the pier is mainly coming from a wood chipper producing fuel for the power plant. As of today, the buildings located on the northern harbour function as a noise buffer between the wood chipper and the housing located in the Tøjhushave Quarter, and this buffer disappears if the buildings are demolished. However, it is uncertain how the power plant supply will develop in the future, and most likely it will change into something less noisy. In all cases remediations will be made should the wood chipper still be in function if the northern harbour is going to be developed with noise sensitive programs, such as housing, in the future, and in that way noise should not be a problem for the development of the project site.



III. 30 1:10.000

Social Housing Randers Municipality Wastewater Plant Private ownership

Landownership

The landownership mapping shows that Randers Harbour owns the majority of the land at the project site along with the adjacent pier. The municipality owns the large green field along with the other underused spaces defined in the demolition and preservation analysis (see ill. 33). The rest of the context is owned by private companies or private people. Some of the houses are social housing that allow for a diversity in the social mix of the context of the site location. The location of the wastewater plant facilities shows the presence of the rainwater protection barriers in the area.

Built percentage

The northern part of the Tøjhushave Quarter is dense with built percentages ranging from 110-140 %. This is due to the dense structures of low-rise housing units in the area. Closer to the harbour, the built percentage drops to 30-65 % caused by fewer buildings. The northern harbour itself has a built percentage equivalent to 90 % due to fewer taller buildings scattered on the harbour, so the individual density of each building is high, whilst the footprint of the buildings on the entire plot is lower than in the northern part of the Tøjhushave Quarter. These calculations tell the story about the project site, where two character areas with significant differences in scale and density meets, and this must be considered in the design framework.

Contamination

The majority of the harbour areas are assumed to be polluted , as it is evident, that there have been activities on the ground which potentially can have caused a pollution of the soil. Smaller parts of the area are proven polluted through different examinations of the soil. When developing an area which is polluted it is necessary to know about the scale and nature of the pollution in order to implement mitigating measures, as different pollutants require different methods. By introducing certain plants and trees it would be possible for the plants to absorb the toxins in a process of phytoremediation, making the cleaning of toxic-waste sites much simpler and without the need for massive excavation of the soil.



III. 31 1:10.000



Assumed pollutionEvident pollution

III. 32 1:10.000





Removed building
 Preservable building
 Underused spaces available for development

III. 33 1:10.000



Industry Daycare and schools Commercial Health Culture Leisure Housing Inaccessible

Program

It is clear from the mapping of the project site and its immediate surroundings that there is a lack of public programs, with the site location being primarily dominated by the industry on the northern harbour along with housing creating a homogenous context. There are a few options for leisure and culture located north to the project site, with only one restaurant by the Marina. The industrial buildings take up a large amount of space on the waterfront obstructing the access and sightlines to the waterfront, and due to terror restrictions make the waterfront areas inaccessible to the public. A diverse and multifunctional program in the site and adjacent context is missing with a lack of public programs to help bring the city to the water.

architectural or aesthetical quality and would be

recommended removed after having served their

industrial purpose. Furthermore is located on the

site a number of underused spaces which can

potentially be developed as urban green spaces as

part of the redevelopment of the site.

VIA University	5 Randers Lille Skole	Sailing Club
2 Popular education	6 Remisen	ወ Østervold
3 GAIA Museum	7 Sailer Club	 Kulturhuset
OLG Industry	8 Marina restaurant	

Local associations and social meeting places

The Toldbodgade site does not host any local associations or social meeting places as the harbour area is closed off due to terror restriction legislation. But as the map reveals there is a whole bunch of local associations, cultural institutions and social meeting places in close proximity to the project site. Through interviews with some of these local associations and cultural institutions, different networks were identified in the area. One network exists between the Culture House a compilation of Randers Library, the Museum of Eastern Jutland, Randers Art Museum, Gaia Museum and FOF Randers, and it is said that these cultural institutions together form a culture axis, in which they help each other to promote art in Randers. Other networks exist as well, e.g. between VIA University College and Gaia Museum, where Gaia helped decorate the canteen at VIA and the canteen is run by people from Gaia as well.

These local associations and networks are important to acknowledge in the development, and there is a huge potential in strengthening the culture axis to make the development area more exciting with different cultural activities. This, alongside with expanding the network of social meeting places, are huge assets to consider in the design framework.



We have an axis of art, which we are very fond of, with synergy between Gaia, FOF and the Art Museum. We have had a long lasting collaboration with Gaia regarding our mentally disabled students, and that is truly unique for Randers.

Interviewee M.K.

Review of stakeholders' perspectives

This section contains a few selected quotes illustrating the perspectives of interviewed key stakeholders and a graphical representation of the wider community's responses to the Toldbodgade site location's current conditions and the future Byen til Vandet development.

"

The accessibility is not optimal. If you try to get here by bus you would have to walk from the city centre, and that is not very accessible. We have for a time now felt like we have lost touch with the city centre. A D Eg

I would like a waterfront that is not closed for access. It is the worst when a waterfront has been made inaccessible to people.



Randers is situated perfectly in terms of accessibility to water. Gudenåen is a unique nature resource with a diverse range of fish species.

Randers Sports Fishermen Club

"

III. 36 Map of interview location 1:15.000

"

"

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The current plans with the new bridge would mean that the sailing club would have to move, and with that the atmosphere of the marina, which many people love, will be gone.

Randers Sailing Club

It would be amazing if it was possible to swim in the harbour... It would be great to be able to use the water.

Randers Lille Skole

Responses from the wider community

There is a well articulated wish among the local community for more informal recreational open spaces and activities that involve the harbourfront, the water and the nature at the project site. It is important to the locals that there are activities free of charge and something to do for everyone.

Some of the activities and facilities mentioned, are cafés and restaurants, water related activities including a harbour bath, sports and cultural facilities, including an amphitheater and multi sports field, and playgrounds.

The current infrastructure and traffic situation is also highlighted by many as an obstacle for pedestrians and the experience by foot or by bike.

> wish for more cafés, restaurants and ice cream shops



53 %

wish for more places to stay in the nature

Fig. 10 Responses from the wider community towards the plans for Byen til Vandet (online survey)

"

It would be great to have the opportunity to sit at the harbour front and enjoy an ice cream in good company. Online survey

"

Harbour front development is a trend phenomenon, and I am strongly against cities plastering their harbour areas with tall buildings.

Online survey



Serial vision

The following section visually illustrates the entrance routes mapped above to the site location in order to capture the character of the place, the accessibility and atmosphere. The three routes are introduced as a series of images going from top left image and down.





III. 37 Serial vision route 1:10.000

1. The view from the heavily congested road of Havnegade shows no clear incidation of bike path or pavement for pedestrians. The industry buildings of DLG are clear in the frame of the city.

2. Industrial train tracks are seen on the right side. The DLG buildings scale characterises the area.

3. A two lane bike path is located on the left, with no pedestrian pavement on either side. A large green field is located on the left with no recreational spaces. The area is dominated by parked cars.

4. The area does not seem pedestrian safe with no clear markings, pavements or meeting spaces. The presence of the industry, and the fencing surrounding the buildings, on the right side creates no possibility of access to the waterfront.

5. Arriving to the site from Rosenørnsgade with heavy traffic on the right.

6. The Mediehuset on the left has a clear pathway in front followed by greenery and rows of parked cars.

7. The area has a large presence of parked cars located in between the green spaces, making the greenery inaccessible.

8. The roads show no pavement, with the view to the waterfront being obstructed by the industrial buildings located in the background

9. A private channel has been established to the owners of the building on the right, with the marina located in front of the building.

10. A pathway located near the marina allows the pedestrian to enjoy the waterfront, with a restaurant located on the right.

11. The pathway is brought to a halt in an awkward manner with the industry denying further access to the waterfront.

12. The pedestrian is redirected back to Toldbodgade, with the industrial spaces.

























Section cut analysis

The section cut shows that Randers is a very hilly city with steep terrain leading down to the Tøjhushave Quarter and the harbour. The terrain gives an impression of a city in multiple layers and with a great depth. It is important to preserve the view both uphill and downhill as it is a significant character of the city to keep the sightlines clear.





Randers North East

Skovbakken Quarter

Tøjhushave Quarter



The history of the Tøjhushave Quarter

The following history analysis makes it possible to capture the essence and character of the Toldbodgade site, bounding two different character areas, and its change over time in order to develop a sense of what this place has been.





The Tøjhushave Quarter has a unique history, starting out as a fashionable district dating back to the 1870s where the first houses were built in the wet meadow east to the city (Stochholm, 2019). The quarter is named after the preserved Nørrejyske Tøjhus, which is a former military storage facility. The district changed as larger industries came to be in the late 1800s, along with the creation of the rail tracks to the harbour in the early 1910s. The result of the blooming of industry in the district meant a great number of houses were built to accommodate the workers, and along with it the quarter changed character from the former fashionable place to a poor workers quarter (B. Olesen, interview, 2019). The cattle market (imaged above) characterised the area, with cattle roaming the streets, along with a great number of taverns and bars along the waterfront creating life and activity on the streets. The quarter experienced a revival in the 1970s, where young people moved in with revolutionary and creative ideas and turned it into a boheme district . A massive renovation of the quarter in 1997 to 2004 meant that several old buildings were demolished to clean up the reputation of the place that by many was deemed full of drunks, drugs and prostitution. The quarter renovation brought it a revival and secured much needed protection from floodings. The harbour activities remain as sign of the areas industrial history along with the abandoned buildings and rail tracks (Stochholm, 2019).





Above is pictured the Tøjhushave channel that was constructed around 1802 up to the Tøjhus from Randers Fjord, which was a military storage facility, in order to transport heavy goods along the channel to Tøjhushavevej and was used up until the early 1900s where the channel was filled with soil and closed (B. Olesen, interview, 2019). On the right is pictured the Tyveholmen, which later on was expanded and became the existing Randers Pier. The architectural style of the quarter is quite unusual with a great representation in styles ranging in many different building architectural styles and types. There is a variety of different half-timbered buildings, beautiful red brick mason villas (image on left), historical industrial buildings, and newer and older housing blocks shaping the character of the district.



"

When I moved here the quarter was plagued by flooding. I have sailed in a boat in the streets of the district. You could not get out of the door because there was one meter of water outside.

Interviewee B.O.



The Tøjhushave quarter has, as the rest of the harbour quarter in Randers, been plagued by recurrent flooding. When the floodings were bad the water would reach Niels Ebbesens Gade. Water would be everywhere, to a point were the local residents of the area decided to establish a boat guild with flat bottomed barges that would help them transport themselves during the frequent floodings (Stochholm, 2019).



The quarter has previously housed a range of public functions with theatres, taverns and pubs, many specialised shops and a large grouping of creative people such as painters, musicians, artists and dancers creating a quarter full of life and activity (Stochholm, 2019).





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"

A large number of houses were torn down as part of the massive quarter lift in 1997 to 2004. A large contrast in typologies and state of buildings was and is still present today. Nearly every second building in the area was of poor quality and situated next to well maintained buildings (B. Olesen, interview, 2019).

Back in the 50's and 60's the waterfront was populated by taverns. The coming development will be a reintroduction of what once existed. Interviewee P.K.

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Facade study of the Toldbodgade site

This facade analysis will further encapture the character of the Toldbodgade site location to understand the industrial and architectural heritage.







2. Lene Bredahls Gade 3



- 4. Kongensgade 8



5. Niels Ebbesens Gade 28



6. Mediehuset

III. 47 Building heights and facade character 1:5.000 This facade study is situated in the intersection between the historical housing area, the Tøjhushave Quarter and the raw industrial area at the harbour.

The old historical buildings (2, 5 and 6) are mainly 2-5 stories, many of them made from red bricks, and their facades have a great level of detail.

The industrial buildings (1, 3 and 4), on the other hand, are less detailed in their appearance, but they have other significant features. The DLG building (1) rises high in the area, and can be seen from a long distance, which make it a landmark in the city. The harbour also contains

small scale industrial buildings (3) with their own significant industrial character and twisted angles which give them an interesting appearance.

The study clearly shows how different the character areas are and how they each contain significant characters, details and scale, which gives the area a unique quality. These must feed into the development of the project site, which is situated right in the intersection between these two character areas.

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I hope that Randers will use the opportunity to let the history play a role in the development of Byen til Vandet, because it is an old industrial labor city.

Interviewee P.K.

5.5 Synthesising the analysis

This chapter has put forward a variety of analysis in different scales in the central parts of Randers. The analysis has shown that the city consists of highly significant areas with each their own character: The city centre being the old, low-rise historical centre telling the story of an old merchant node; the Tøjhushave Quarter, being a dense low-rise district that has previously been home for the industrial working-class, filled with activity and life, but with a gritty image, and has undergone an area lift; the Marina which is a maritime breathing space with water related activities; the harbour with chimneys and smoke marking the past and present of an industrial city; the great nature areas with unique flora and fauna as opposed to the rough harbour milieu. In this sense, Randers is a multi-layered city. Randers is also multi-layered in a more physical way as it is a quite hilly city with steep terrain, which gives the city a great spatiality and depth, and secures the view to the water from many different locations. However, this also entails a challenge for the city, as rain water and rising sea levels are issues that the city must deal with in the light of climate changes.

Moreover, Randers is a city challenged by the infrastructure and heavy traffic cutting through the city, making the pedestrian and bicycle experience from the different districts unpleasant and filled with obstacles. The coherence between the city centre and the project site is challenged by this, and so are the green corridors. There are different high-quality parks and green areas north-east and south-west of Randers Bridge, but the project site marks a vacuum in the green progression in the city. The development of the Toldbodgade site offers a great opportunity to fill this vacuum and at the same time enhance the pedestrian experience by introducing more urban greening.

The Toldbodgade site is situated right in the intersection between the two character areas, Tøjhushave Quarter and the harbour which are completely different in terms of scale and character, and it is important to incorporate these different characters in the design of the area in order to create a sense of place. Furthermore, the majority of the northern harbour quay is fenced off due to terror restrictions, interrupting the flow along the harbourfront. Today, the buildings located at the northern harbour quay function as a noise buffer from the industry and it is worth considering how to replace this when developing the site so that the Tøjhushave Quarter will remain unaffected by the noise pollution.

Chapter 2 highlighted the possible pitfalls of developing an area as the project site and how urban redevelopment at waterfronts with urban greening as a key driver potentially can come at the expense of the local community. Thus, it has been vital to gualify the analysis by including local perceptions and opinions of the development of the project site. An online survey and interviews with key stakeholders have shown that there is a well articulated wish among the local community for more recreational activities at the harbour front, including activities related to the water, and there is a desire that these activities are of a more informal and folksy character, which includes everyone. Furthermore, industry is a vital part of Randers' identity as shown in section 3.4 and it is important for the local people that the development protects and reuses some of the industrial character and heritage, so the area will not lose its identity. Another key finding is that a cultural axis exists on the border of the project site where different cultural institutions form a network of synergy. It is important to support this network in the redevelopment as it is a key asset for Randers and can potentially function as a generator for public life and support the rebranding of Randers in a highly contextual manner.

The presented analysis is essential as it informs a proper contextualised design framework for future design of the Toldbodgade site, together with the findings in the literature review in chapter 2 and the preliminary understanding of Randers in chapter 3. Five key aspects have been derived to be included in the design framework: 1) heritage, 2) accessibility, 3) public realm, 4) nature, and 5) program presented in the following page and will be unpacked in the chapter 6 as design guidelines with associated design parameters as part of the design framework.



Heritage

Preserve existing structures and heritage of the character areas adjacent to the project site, including scale and materiality. Industrial artefacts worth of preserving must be integrated and repurposed to preserve the industrial history and character of the place.

Accessibility

Create a better pedestrian and bicycle experience by improved connections across the districts. The visual contact to the water must be enhanced along with the connection along the harbourfront in order to bring the citizens closer to the water.

Public realm

Provide high guality public realm, where the existing cultural network is utilised as a catalyst for cultural synergy in the area and to activate the public realm. Active frontages along main paths and key corners will support the public life.

Nature

spaces for everyone.

Program

Secure a mixed use area through the program to support a variety of different activities for a broad user group. Transition zones between private and public space and frontages must be well considered to avoid creating a privatised atmosphere.





Reintroduce nature at the project site as a stepping stone to complete the green corridors in Randers, and to bring the citizens closer to nature. The nature must also play a part in the climate adaptation of Randers, as well as contributing to create open, public, healthy green

06 Design framework

This chapter presents the design framework for the 8 hectare Toldbodgade site. The design framework is a response to the issues relating to waterfront regeneration and environmental gentrification covered in the literature review in chapter 2 and the policy review in chapter 3. The framework is partly informed by these initial findings, but mainly by the profound analysis of different character areas in Randers, including the Toldbodgade site, in chapter 5. The framework offers a set of design guidelines with associated design parameters, which must be followed to develop the project site in a sensitive and contextually responsive manner. The chapter unpacks the design guidelines and parameters one by one, and ends by proposing an illustrative masterplan and visualisations that will illustrate how the atmosphere might look at selected places within the Toldbodgade site.



6.1 Introducing the design framework

This framework is a response to key issues relating to waterfront regeneration and environmental gentrification flagged by international literature (see chapter 2), and the plans for the development of the 55-hectare harbour front area Byen til Vandet proposed by the Municipality of Randers (described in the introduction to Randers and policy review in chapter 3). The analysis in the chapter 5 has shown that the Toldbodgade site is multifaceted as it is situated in the midst of two different character areas, each with highly significant characters, atmospheres and importance to the city.

The aim with this chapter is to offer a design framework with associated design parameters that is sensitive and contextually responsive to the specific Toldbodgade site which is a smaller piece of the entire Byen til Vandet project scope defined in the methodology in section 4.2. This is to avoid creating yet another floating island urban design proposal that has little considerations of its surroundings and the perceptions of key stakeholders and the local community. The previous chapter included detailed, multi-scaled analysis as well as the perceptions of key stakeholder and local community, which has been essential to develop the framework.

The design framework consists of five overall design guidelines related to the following key aspects identified through the previous chapters:

- 1 Heritage
- 2 Accessibility
- 3 Nature
- 4 Public realm
- 5 Program

The subsequent pages will unpack these design guidelines one by one in separate sections and within each of the quidelines more specific design parameters are presented to indicate how to achieve the aim of the guideline as presented in the end of the analysis in section 5.5. For each following section, an axonometric diagram will illustrate the design guidelines and associated parameters, followed by precedents showcasing how the design parameters have been implemented other places in a sensible and contextually appropriate manner.

The chapter starts by introducing the current status at the project site, to remind the reader what the site looks like, and to make it clear how the site is developed from the current situation into the illustrative masterplan.



III. 49 Axonometric diagram of the current situation at the Toldbodgade site

The current situation at the Toldbodgade site

The axonometric diagram above shows the current situation of the Toldbodgade site as of today and will act as the basis for the coming axonometric drawings in the subsequent sections. As it has already been established in the analysis in chapter 5, the Toldbodgade site is characterised both by the industrial character of the harbour and the character of the Tøjhushave Quarter. With the exception of a big, empty grass field, there are no green spaces or high-quality public spaces. The space is guite monofunctional and does not give a lot back to the local community.

The following pages will unpack the design guidelines and associated design parameters to show the implementation of the guidelines. The design guidelines are meant to secure the creation of a green area with inclusive public spaces that are sensitive to the context and history of the site and offering a variety of opportunities for the local communities, existing and future residents as well as creating a new identity for the Toldbodgade site that relates to its past industrial identity.

1 Heritage



This section unfolds the design guideline related to heritage as a key aspect. It starts by unpacking the associated parameters, scale, materiality and industrial heritage, which together aim at achieving the goal of the guideline presented in the conclusion of the analysis in section 5.5. The following pages will introduce the design parameters, and illustrate the principles in an axonometric diagram.

Scale



It is important to acknowledge the variety of scale present at the Toldbodgade site and its boundary. There must be a well-considered progression in scale from the tall buildings at the harbour front to the low-rise buildings in the Tøjhushave Quarter at the Toldbodgade site's northern boundary. Furthermore, it is important to keep the buildings along the harbourfront in a scale and density that does not block the connection and view to the waterfront.

Materiality



Red bricks meet the raw character of industry. It is important to facilitate this meeting in a proper way by reusing some of the elements present both at the harbour and in the Tøjhushave Quarter. The red bricks and pitched roof, together with the significant industrial qualities, as rounded or skewed corners and angles, are elements worth of integrating in new-build structures as it makes the area interesting and honors the place and its history.

Industrial heritage



It is important to preserve some of the industrial character as it is part of Randers' history and pride. The DLG building acts as a landmark and a way to identify Randers, together with other industrial artefacts such as old cranes, silos and buildings with significant character witnessing the industrial life at the harbour. Reusing these buildings or integrating them with new-build structures must respect the industrial character.

Preserved industrial heritage Scale of Tøjhushave Quarter Potential development plots

The axonometric diagram illustrates where the three design parameters associated with the heritage design guideline may be implemented. The scale of the low-rise buildings in the Tøjhushave Quarter facing the Toldbodgade site has been highlighted to stress the importance of the scale existing at the area, as well as the scale of the industrial area, being taken into account when creating a design proposal for the site. Furthermore, the axonometric diagram presents the industrial buildings and elements deemed preservable in the previous analysis in chapter 5 and may be reused or revitalised to ensure the preservation of the industrial heritage and identity of the place. The removed buildings free up space for creating potential development plots.



III. 50 Axonometric diagram showcasing the heritage design guideline



2 Accessibility

This section unfolds the design guideline related to accessibility as a key aspect. It starts by unpacking the associated parameters of pedestrian experience, visual access and waterfront connection which together aim at achieving the goal of the guideline presented in the conclusion of the analysis in section 5.5. The following pages will introduce the design parameters, and illustrate the principles in an axonometric diagram.

Pedestrian experience



To connect the project site with the surrounding city, and to create a nice place for pedestrians and bicyclists, it is necessary to enhance the experience of these modes of transportation by reducing the passage of cars and regulate the speed, alongside with creating more calm path systems, that offer different visual and aesthetical gualities, along with activities. Trees and vegetation must be introduced to act as a visual element, a noise barrier and a way to clean the air pollutants from the traffic.

Visual access



It is important to ensure and enhance the visual connection between the surrounding city and the Toldbodgade site as well as securing visual access to greenery and nature in order to ensure healthy, liveable spaces. This can be done by ensuring that key sightlines are taken into consideration, by providing visual access to green spaces and by ensuring that the new-build structures on the waterfront do not block the view to Randers Fjord.

Waterfront connection



The waterfront in the Northern harbour, which will be made accessible to the public once the harbour industries relocate, must be opened up for the public to complete the connection along the harbour front stretching from the Marina in the east to the nature areas west of Randers Bridge. A pedestrianised promenade along the waterfront is a priority while ensuring that the car traffic through the site is restricted for people with an errand in the guarter will further create a safer pedestrian experience.



The axonometric diagram conceptually illustrates the importance of ensuring the design parameters associated with accessibility. The pedestrian experience is highlighted through the introduction of a green path through the Toldbodgade site in order to create a seamless connection between the identified green spaces in chapter 5 surrounding the site where pedestrian experience at the moment is nonexisting. This is further amplified by the transformation of the street of Toldbodgade into a shared space made possible due the relocation of the harbour activities. This will enhance a pleasant pedestrian experience throughout the project site and is further highlighted by ensuring that the experienced connections to the site are taken into consideration. Furthermore, key sightlines are introduced to ensure visual access to the nature and water from various places in the Toldbodgade site.

III. 51 Axonometric diagram showcasing the accessibility design guideline



3 Public realm

This section unfolds the design guideline related to public realm as a key aspect. It starts by unpacking the associated parameters cultural synergy, open public spaces and urban art, which together strive at achieving the goal of the guideline presented in the conclusion of the analysis in section 5.5. The following pages will introduce the design parameters and illustrate the principles in an axonometric diagram.

Cultural synergy



A preexisting network of cultural institutions was identified in Randers which must be utilised actively as a way of activating the Toldbodgade site and in the creation of a sense of place. The axis between the Art Museum, Gaia Museum and FOF must be well-considered in developing the site, and can be integrated with other urban life facilities at the site such as the park or by the introduction of new facilities that can sustain and amplify the network synergy.

Open public spaces



The Toldbodgade site must provide a variety of open public spaces designed in a way that invites a wide range of users to interact with and use it. It is a priority that the public spaces include different facilities to accommodate different ages, social backgrounds and ethnicities as well as activities that support recreation and an active lifestyle but in an informal manner that is true to the more folksy identity of the surrounding areas and Randers in general.

Urban art



Art and culture is a big asset in Randers, but is underutilised and not too visible in the public space. The presence of Gaia Museum provides the optimal opportunity in the development of the Toldbodgade site which must support the art and culture present in the project site, and bring it out in the open space as part of creating a visible identity for the place. It can form part of the reutilisation of industrial heritage as a way of contextually transforming the industrial artefacts.



III. 52 Axonometric diagram showcasing the public realm design guideline

The axonometric diagram conceptually visualises the implementation of the design parameters associated with the public realm design guideline. The buildings that will support public urban life have been highlighted and must include public facilities to avoid the creation of privatised public realm. The indication of the public realm has been visualised to showcase the prioritised space for urban life and where important public facilities can be located. The existing network of synergy between the cultural institutions will expand to include the public facilities at the entire site in order to amplify the cultural synergy. Hotspots for urban art can be located in the public realm or be displayed on industrial elements to showcase the existing art culture in Randers in the open public spaces as part of the narrative in recreating the identity and sense of place of the Toldbodgade site.

urban art elopment plots	

4 Nature



This section unfolds the design guideline related to nature as a key aspect. It starts by unpacking the associated parameters, reintegration of nature, inclusive green spaces and water management which together aim at achieving the goal of the guideline presented in the conclusion of the analysis in section 5.5. The following pages will introduce the design parameters and illustrate the principles in an axonometric diagram.

Reintegration of nature



Nature must be reintroduced in the central parts of Randers, both as part of a climate adaptation strategy and to complete the green corridor in the city. The reintegration of nature will further benefit the people of Randers with the ecosystem services provided with cleaner air and the cleansing of the polluted soil through phytoremediation when the harbour industries relocate. Nature must be used to activate the urban recreational life in the neighbourhood as well.

Inclusive green spaces



The green spaces must be for everyone, and must provide a variety of nature types that support both the creation of biodiversity and cleaning the air, but at the same time incorporate multiple activities that enable a variety of people to stay in, and interfere with nature. The green spaces must be of an informal character where the community has the opportunity to inhabit the green spaces on their own terms and engage with the nature.

Water management



Urban greening must be integrated as part of a water management strategy. The water management solutions implemented must have a recreational or sensorial quality. This can be done by introducing either channels or a retention pond as part of a recreational green park area that contributes to public life and recreation.



The axonometric diagram visually represents the application of the design parameters associated with the nature design guideline. Introducing a green corridor at the Toldbodgade site will create a green belt through the Toldbodgade site and connect the site with the adjacent nature areas. The green corridor is tied together with the green path introduced in the design guideline for accessibility. The areas prone to flooding which were identified in chapter 5 would require a water management solution that would integrate a recreational or aesthetical quality in order to create livable green spaces. Retention ponds have been illustrated to showcase their location along with green activity hotspots that would facilitate activities such as nature playgrounds and nature education facilities.

5 Program



This section unfolds the design guideline related to program as a key aspect. It starts by unpacking the associated parameters, mixed use and active frontages which together aim at achieving the goal of the guideline presented in the conclusion of the analysis in section 5.5. The following pages will introduce the design parameters and illustrate the principles in an axonometric diagram, followed by a presentation of three massing options.

Mixed use



The project site must provide a variety of different uses, with a focus on public oriented functions and culture as means to activate the whole area and the urban life. The most public functions are located at the building plots along the harbour front, whereas the building plots situated further away from the harbour front become slightly more private in their character.

Active frontages



To ensure a good relationship between building and public space, active frontages and transition zones must be well considered. At the most public areas along the harbour front active frontages are essential to welcome activity and public use of the area. The transition zones in the more private housing units must be carefully made in a way so that the transition between private and public becomes more smooth, e.g. through the use of vegetation, so it does not create a highly privatised atmosphere.

Activities



In the description of the design guideline related to public realm it was emphasised how a well functioning public realm would include activities for the local community. The Toldbodgade site's location near water makes it possible to create a place with an identity anchored in water related activities that could be made more accessible. A rich history of fishing, swimming, sailing and rowing exists in the area and the marina and could be facilitated for the public through the program.



The axonometric diagram illustrates the design parameters associated with the program design guideline. The programming of the site is visually presented to showcase the types of programs situated across the Toldbodgade site. The building plots previously identified in the heritage design guideline have been assigned programs as well where the massing for each potential development plot is tested in three design options in the subsequent pages. Housing is introduced to accommodate the identified growth that Randers is experiencing. The housing is combined with public functions to ensure a mixed use of the project site to ensure life at the site in different hours and seasons. Culture facilities are introduced by the waterfront to accommodate and amplify the culture synergy identified in the public realm design guideline as well as commercial programming to accommodate the expressed need for social meeting places and cafes along the waterfront. The creation of the active frontages must take into account both the waterfront connection and the street of Toldbodgade so that the revitalised harbour front does not turn its back on the Tøjhushave Quarter.

III. 54 Axonometric diagram showcasing the program design guideline

Three different massing options for program

The program of each development plot has been defined on the previous page. However, the illustrative masterplan, which will be presented in the following, can not commit to a certain massing or typology. This section aims at providing different options for the massing to show how it might look when altering the height on the building plots. It is important to note that the building massing is a representation of the total building plot, hence they do not consider the specific typology of the building plots nor the parking and courtyards that will be included in the detailed design.

Option 1: maximised building plots

The first option shows building plots which are mainly in the same height as the surrounding Tøjhushave Quarter in 2-5 stories. The option shows the maximum size of the building plot footprint but with the lowest height. The strength in this option is that low rise buildings do not create a wall between the Tøjhushave Quarter and the harbour front, however the footprints of the building plots are way too massive.

Option 2: gradual scale



The second option starts to explore the inclusion of taller buildings at the harbour front which speaks to both the tall industrial buildings at the harbour and the low rise buildings in the Tøjhushave Quarter. The option offers a gradual scale in the building plot from the highest being placed closest to the tall DLG building in the middle of the harbour area, and the lowest being placed the furthest away from DLG. This option gives a smooth transition from the very tall buildings at the harbour to the low rise buildings at the marina east of the Toldbodgade site. One building just west of the DLG building is really high to show how it looks. This option will cause the building plots to cast more shadow on the park area in the middle compared to option 1, and it might act as an aggressive transition from the park area to the harbour area of the Toldbodgade site.

Option 3: varying scale



Option 3 is a variation of option 2 with taller building plots than option 1, but instead of gradually scaling the building plots down towards each of the sides of the DLG building, this option offers a variety of scales across the whole site. Furthermore, this option excludes the contruction of tall new buildings. These three different massing options provide an opportunity to compare the best components from each option.



Heritage precedents



Scale



Krøyers Plads - COBE contextual approach through a modern interpretation of the old industrial warehouses found adjacent to the site.



Village Center of Ecouflant - Bruno Huet A housing and retail site based on a A rehabilitated village centre taking the historical heritage and scale into account; creating a dialogue between the contemporary and historical.



Materiality



'Frikvarteret' - Polyform Architects The restoration of former machine halls and facilities into housing was done with respect to the heritage of the site by using materials associated with it.



Kannikegården - LT Arkitekter A brick ruin from a monastery was integrated into a public space to communicate historical layers of reusing the materiality of the site's history.



Industrial heritage



Nordkraft - Cubo Architects The transformation of a former power plant shows a sensible transformation that catalysed the development of the site's identity into a culture hub.



Brønshøj Water Tower - Ib Lunding The previous water tower was emptied and reutilised in order to facilitate cultural functions for the public and houses concerts and festivals.



Pedestrian experience

Accessibility precedents



Herning City - Schønherr The pavement tiles were used in the streets of Herning to tie the city together as part of creating a new identity for the public space.



Waterfront connection



Struer Havn - Schønherr with its waterfront by the introduction of a multi-functional infrastructural solution; creating social meeting places.





Vestled Hvide Sande - Schønherr Creates accessibility for everyone to the clits and the beach by utilising red bricks as pavement in an artistic interpretation of the site.

Big Blue - BIG

The city of Struer was reconnected The large scale transformation of former industrial districts in Skive located near waterfront areas is done through a continous pathway creating cohesion.

Public realm precedents



Cultural synergy



VIAUniversity Randers - Gaia Museum The existing cultural synergy in Randers as the case in the cafeteria of the VIA University College in Randers painted by the artists associated with Gaia Museum. world.



MuseumsQuartier Wien - Ortner & Ortner With approximately 70 cultural facilities, the Vienna MuseumsQuartier is one of the largest cultural complexes in the



Open public spaces



Jomfru Ane Park - Vibeke Rønnow A park near the harbour quay has been submerged with four different gardens allowing the people to inhabit the space as they like.

An internationally renowed street artist

was hired to transform the former grain

silo in Odense to mark the post-industrial

district's cultural transformation.

'Byens Ø' - Roa



Israels Plads - COBE A former carpark was revitalised and restored back into a vibrant and socially inclusive public plaza elevated above the existing street; celebrating its history.



Urban art



Tvillingesiloen - Jonas Pihl A 32 meter tall silo was decorated to illustrate the transformation of the Aalborg to a knowledge city as an ode to the industrial past of Aalborg.



Reintegration of nature

Nature precedents



Sønder Boulevard - SLA A former congested road transformed into an attractive and flexible urban green space through the inclusion of the local community.



Inclusive green spaces



'Opdagelsen' - Bang&Linnet Landskab The urban space Opdagelsen functions as a lively garden- and kitchen workshop with 85 harbour gardens and an outdoor kitchen that may be used free of charge.



Water management



Rives de la Haute Deûle - Atelier A water garden in the former industrial zone in Lille serves as a retention pond and as a phytoremideator to clean the polluted soil; evolving over the years.

was



Promenade Plantée - Philippe Mathieux The former railroad tracks running on a viaduct was revitalised into a green walk path extending nearly five kilometers; reintegrating the nature in the city.



sØnæs - Møller & Grønborg A water management solution in Viborg included a recreational quality in the form of an activity lane for children and adults when not flooded.



Krøyers Hus - Entasis A football field located in the courtyard of a housing complex creating a green recreational area to be used when it does not have to withstand heavy flooding.

Program precedents



Mix use



Valby Maskinfabrik - C.F Møller

A former industrial hall which has been transformed into housing and commercial premises while preserving the industrial expression.



Shoreham Street - Project Orange An industrial brick building rehabilitated into a restaurant within the original shell and duplex studio office units above in the extension of the existing building.



Activities



Faaborg Harbour Bath - CREO Architects Vestre Fjordpark - Adept Architects activities such as swimming and diving.

Krøyers House - Entasis



The harbour bath connects the city An open air swimming pool offers centre with the sea near the city's everyone the access to water and nature culture house to facilitate water related with plenty of activities such as kayak and paddle boarding.



Active frontages



Papirfabrikken - Aarstiderne Architects Transition zones were established A former factory has been transformed between the apartments and the park into a culture house with active through the incorporation of trees and frontages along the Gudenå river that greenery, creating a seamless transition. crosses through Silkeborg.

" There should not only be asphalt, tiles and homogeneous building blocks with balconies made from glass, but instead there should be housing with different tenures and mixed materials. Online survey

6.2 Illustrative masterplan

The following presents the illustrative masterplan made by applying the design framework developed in the previous section. The plan is not meant to be taken as a final masterplan but is merely used to demonstrate a possible implementation of the design guidelines.

The previously introduced design parameters are implemented in the illustrative masterplan with the key component being the introduction of a green corridor connecting the Toldbodgade site through various aspects.

The green corridor connects to the well functioning green spaces adjacent to the Toldbodgade site, which will create a coherent and continuous flow between the different high quality green areas allowing for a rich and sensory nature walk in close proximity to the city centre. Along the corridor different green spots are prioritised for activities and play. The green corridor will furthermore support the identified cultural network in Randers by providing the public space to amplify the synergy existing, and help emphasising the cultural identity unique to Randers.

Moreover, the industrial heritage preserved and revitalised at the harbour front will create a new kind of public realm in Randers which is not currently available. By ensuring a mixed-use program and activities of more informal character it will allow for an inclusive public space.

The introduction, or rather reintegration, of nature at the Toldbodgade site will be an ode to the site's history back when it was still wet meadows. The hydrological conditions of the site has historically caused floods due to the topographical situation meaning that integration of water management in the green corridor will secure the area from future flooding. Combining the water management with recreational qualities would serve as an investment that will benefit the social cohesion of the Toldbodgade site.



III. 56 Illustrative masterplan 1:3000

The following two visualisations serve to create an atmosphere and a sense of what the transformation of the Toldbodgade site could look like. The key aspects of the visualisations are to show how to embrace different kinds of activities, use urban greening in a socially inclusive manner and bring life to the park and harbour front areas.

The first visualisation (ill. 57) illustrates the atmosphere in the park area, and how the park supports the connection through the site, and how water management is paired with recreational purpose and sensory experiences in the form of a retention pond imitating the wet meadows that have historically existed on the Toldbodgade site; creating a space for life and activity for everyone.



III. 57 Visualisation of the green corridor

The next visualisation (ill. 58) illustrates how the northern harbour front can be opened up for public access, which will benefit the local community, e.g. the local fishermen. The silos situated at the western border of the Toldbodgade site are preserved and can possibly be used to display urban art e.g. made by the artists associated with Gaia Museum that displays Outsider Art as one of the only places in Denmark.



III. 58 Visualisation of the harbour front

6.3 Reflecting on the design framework

A design framework has been presented including an illustrative masterplan with associated visualisations of selected places as this thesis' response to the development of the Toldbodgade site, a 8-hectare area part of a 55-hectare development area of Byen til Vandet. As discussed in chapter 3, a masterplan covering the total 55-hectare area will hardly be able to take the appropriate contextual considerations into account as the development boundary spans over a variety of different areas with each their own significant character. When designing a large-scale project it is necessary to be able to take a step back and see the overall picture in the strategic context as well as be able to take a closer look and get to know the significance of the smaller bits of the site. This importance of altering scale is illustrated by Linda Pollak (2006):

"... the role of scale ... supports an inclusive concept of urban landscape that is continually reinvented as it is continually reconstructed. In social terms, this landscape's potential for reinvention means that it is a place that can be appropriated by different constituencies, in such a way as to allow unexpected things to happen." (Pollak, 2006: 138)

Pollak (2006) stresses how scale is significant in forming the social. Hence, developing the Byen til Vandet area by including a solid framework for smaller parts of the development area, informed by profound multi-scaled analysis, is the prerequisite for creating a proper and appropriate design. The presented design framework is an example of how such a framework may look.

It is important to stress though that it is a framework and not a specific design. This thesis does not commit to a specific design, but rather it puts forward important aspects to consider when developing the Toldbodgade site in more detail. Hence, the proposed illustrative masterplan must be considered for what it is - illustrative. An exhaustive plan would have to deal with all the necessary aspects of a proper masterplan such as open spaces, parking, building typologies, user groups, courtyards, waste management, fire lanes etc. These aspects must be further explored when taking the design framework into a detailed design phase, however the framework offers guidelines which must steer the specific design. A masterplan would further require rigorous testing and the development of design options to compare and narrow down to a proper contextually responsive design solution. Important aspects such as the character of the different areas bounding the Toldbodgade site, industrial artefacts, the preexisting cultural network and the local community's perception of the place are crucial for the success of the project.

Moreover, the design framework is flexible with a set of recommendations that address how the Toldbodgade site is at the current moment and can as time goes by and the Toldbodgade site changes, be adjusted respectively.

The design framework aims at addressing the issues relating to environmental gentrification and social exclusion when developing or redeveloping an area imprinted by its past industrial character as the Toldbodgade site located at the waterfront. The high level of urban greening introduced during the design framework seems at first conflicting with the findings of the literature review in chapter 2 which stressed the dangers of a green-led development strategy, well knowing what mechanisms and social skewing it can cause. However, as local assets such as the existing cultural network between local cultural institutions is incorporated actively, as well as the the preexisting local communities being taken into account in the framework, urban greening becomes a way of opening up the area. The urban greening thus serves to catalyse social coherence and diversity and brings the already existing assets into play in future development. Other aspects such as the creation of public realm, informal areas, multifunctionality and facilities for the public in the ground floor of buildings located along key paths are more generic as they are implemented in many schemes in different places but they are just as important as they are considered in relation to the more site based contextual aspects such as the cultural network; contributing to creating inclusive urban places as well.

In conclusion, this thesis proposes a design framework for the development of Toldbodgade site in Randers in order to refine Randers Municipality's branding strategy for this particular area so that it does not focus explicitly on water and nature but includes culture as well. This thesis stresses how nature and culture must act in synergy and how the urban space must activate both by making it visually and physically accessible for everyone. This is how this thesis anticipates the creation of a socially inclusive and contextually appropriate area at the Toldbodgade site as part of a larger development project.

07 Conclusion

The following chapter provides a conclusion that summarises the thesis project, the outcomes as well as the shortcomings. It concludes with a section including future recommendations of aspects found of interest but are out of the scope of this thesis.



7.1 Conclusion

This thesis set out to explore the phenomenon of environmental gentrification and waterfront regeneration, along with the potential implications for the social balance in cities, with the following research question:

How can former industrial harbour spaces be regenerated as part of an urban greening strategy - without the potential negative effects of environmental gentrification - to foster socially inclusive and attractive urban green spaces for everyone?

The city of Randers was chosen as the case site location to explore the research question in a Danish context as the municipality is planning for a 55-hectare large-scale urban development project at the centrally located harbour front as the harbour activities relocate the coming decades. This is a development project referred to as Byen til Vandet and forms part of Randers Municipality's growth-led strategy to transform the city from an industrial city with an ill reputation to an attractive city by water and nature. Nature thus is a key aspect in the plans.

Preliminary insights in the development project made it clear that the planning process holds major flaws as the parallel commision competition, which is currently taking place in which three consultant teams compete to propose an illustrative masterplan for the entire development area, is done on a questionable foundation. Too little time is given for the consultants to develop a proper contextualised proposal for the entire 55-hectare area.

This thesis stresses that the development runs the risk of making the same mistakes as previous growth-led urban greening waterfront regeneration projects, creating new, gentrified urban districts as disconnected islands in the city with no recognition of its context, the history of the place and the local community. The thesis aims at responding to these issues by pointing towards a step by step development approach in which smaller parts, in the form of defined character areas, are considered as parts of the entity. These character areas, with each their distinct character and significance for the city, must inform the final design.

Ultimately, this thesis presents a design framework for developing an 8-hectare area which is a smaller part of the total 55-hectare development area for Byen til Vandet which is socially inclusive and contextually appropriate. The design framework is developed on the background of empirical data collection, including interviews with identified key stakeholders as well as profound multi-scaled analysis from which key aspects to consider are derived. These aspects inform the design guidelines and specific design parameters in the design framework which has been unpacked in chapter 6.

A design framework for smaller parts of the development site, aligned with the one proposed in chapter 6, must be made to steer the development. However, the pieces must be brought together again to develop the overall strategy for the entire development to ensure the different parts will not become detached from one another as isolated islands. This thesis has identified five character areas associated with the Byen til Vandet development boundary in order to identify the important aspects of each. In this sense, this thesis successfully considered its context in a careful manner, in relation to the character areas, when forming the design framework.

However, the thesis did not manage to consider the development that the Byen til Vandet plans would entail due to the uncertainties in the future development which are bound to have an impact on the Toldbodgade site. The considerations of development projects must relate to changing temporalities by considering the historic and existing conditions but they must also consider future development as these will influence the project as well. The Toldbodgade project site will e.g. be influenced by the new bridge (see ill. 21) that is projected to be constructed just east of the site's boundary; potentially having huge impacts on the site. Furthermore, the pier just south of the Toldbodgade site is bound to be developed, however with a much longer time horizon due to the uncertainties related to the power plants contract. These considerations have been kept at a distance throughout this thesis project as they would add an extra complexity which the thesis would not have been able to address properly.

Other aspects that the design framework does not include are design aspects such as parking, open space, waste management, massing, typologies and courtyards. These are important to include in the design framework as they take up space and thus contribute to altering the public space. However, due to the time available this thesis did not include such considerations. What it does include, however, is important components that are unique to the specific Toldbodgade site such as the cultural network synergy between the cultural institutions situated in the neighborhood. Something that the analysis could have included however is a thorough mapping of the different uses of the Toldbodgade site as is today. Interviews with key stakeholders, including local associations and institutions, were held during the project period and provided insight into the specific use of the area. It would have acted as a strong justification of determining the program of the Toldbodgade site if these activities were mapped. The strength of this lies in the profound understanding of the Toldbodgade site and its surroundings, and this kind of analysis would have strengthened it even more.

7.2 Future recommendations

A strategic urban mindset that takes changes over time into consideration, along with an eye for the detail, is crucial when developing large-scale projects. This thesis did however not intend to propose a masterplan for the entire 55-hectare Byen til Vandet area as it is an impossible task within the available time frame of this thesis. It is recommended that further studies would be continued so that profound analysis is brought forward for the remaining areas within the Byen til Vandet development boundary. On the basis of that a design framework, aligned with the one presented in this thesis, must be developed. By doing this it will become possible to join the parts together to inform a strategic masterplan and still keep the level of detail and contextually responsive considerations on a much more detailed level.

Another aspect that would have been an interesting venture to look into in this thesis is the implementation of temporal uses. The Byen til Vandet project is, as mentioned in chapter 3, developed in phases as the contracts of the harbour activities expire at various times, which continuously frees up space for development. This makes it hard to develop the area all at once, but makes room to explore different temporal solutions in collaboration with the local community in the shape of user involvement projects and workshops, which at the same time will help activating the site. A different temporal aspect that could have been researched further is the process of phytoremediation in urban planning and how it can be activated in the revitalisation of polluted post-industrial sites in phasing plans. When developing an extensive area such as the Byen til Vandet project, it is a huge operation that might change the city fundamentally. Hence, it is recommended to test out different settings and activities before committing to something that will potentially stay for the following years without local attachment and anchorage.



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Illustration list

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Appendix

The following section includes a collection of climate studies done for the Toldbodgade site to understand the sun and wind conditions as well as the average daily traffic passing near the site. Furthermore, the appendix includes a case study and images of the Byen til Vandet development plans that were not included in the report.



Appendix 1: Sun study of the existing conditions



March 21st at 12 p.m.



June 21st at 12 p.m.

Appendix 2: Wind study



Appendix 3: Traffic counts



September 21st at 12 p.m.



December 21st at 12 p.m.



Wind rose made for Randers on the background of wind data collected in the city of Hald. Data retrieved from www.dmi.dk

Appendix 4: Case study - the Lene-Voigt Park, Leipzig, Germany



The Lene-Voigt Park, Leipzig, found via.:https://meinleipzig.eu/Reudnitz-Thonberg/Lene-Voigt-Park-Eilenburger-Strasse-13-04317-Leipzig

The case of the Lene-Voigt Park in Leipzig is an example of how environmental gentrification was an unexpected outcome of an urban greening project supported by the local community.

The Lene-Voigt Park was created in 2001 on a former railway station, that since 1942 had turned into a brownfield. Before the construction of the park, the surroundingwasatypicalworking-classneighbourhood with housing defined by the industrialisation in Leipzig in the 1870s and with high vacancies. The park was part of the holistic rehabilitating programme that came in the wake of the German reunification in 1990, and it was meant to offer more urban green space for the adjacent dense housing areas with playgrounds and recreational space for the locals. The local community was heard, and the park was widely supported. (Haase et al., 2017)

The creation of the park, however initiated a residential change of the surrounding areas, as housing vacancies started to decrease as more affluent, young families with kids moved in. Consequently, the rents increased from 4.5 Euro per square meter in 2000 to almost 7 Euro as of 2017. The are is becoming more and more expensive, which forces former and less wealthy dwellers to leave. (Haase et al., 2017)

The Lene-Voigt Park is an example of how good intentions and local involvement in urban greening strategies still can cause environmental gentrification and displacement. The example calls for attention and consideration when creating urban green spaces, but it is an imbedded paradox in urban greening that it often leads to a form of gentrification

Appendix 5: The Byen til Vandet development plans





Masterplan for the new harbour in Randers

Map of Randers Municipality's plan for the Byen til Vandet waterfront development.



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