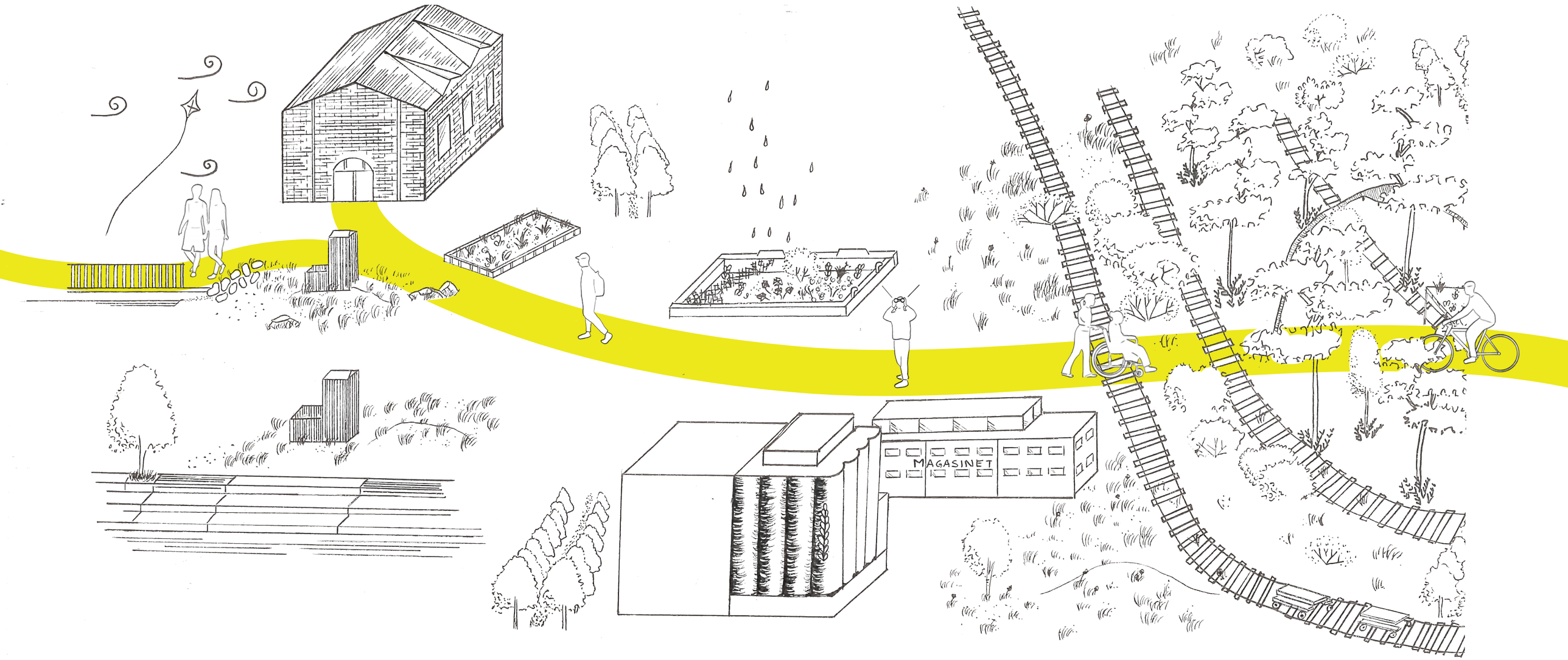

Layers of Time and Growth

Designing a Naturalistic, Heritage-Based Landscape in Nyhamnen, Malmö

Sonja Niedermaier & Merel Anna Smit

Independent Project • 30 hp
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Preface

Merel

During my bachelor's program in Garden and Landscape design, I took extra courses that further shaped my interests. I learned more about Urban Vegetation Design; this strengthened my focus on vegetation and plant-based design. Other additional courses I took were at SLU (Alnarp), those included a course on climate change and a studio course on materiality and composition.

For my bachelor's graduation project, I developed a redesign proposal for Park Transwijk in Utrecht, where I discovered my interest in working with cultural heritage through a design approach engaging with the park's post-war modernist principles. This experience motivated me to continue my studies at SLU in the master's programme in Landscape Architecture at Alnarp.

During my master's studies at SLU, I explored the theoretical side of the field and worked with cultural heritage through a design critique on heritage representation and the course Conservation of Gardens, Parks and Designed Landscapes.

I believe that the identity of a place can be expressed in both tangible and intangible ways, and that vegetation can play an important role in heritage design. This thesis brings these interests together.

Sonja

After graduating from high school, I decided to undertake a landscaping apprenticeship. I enjoy working outside and creating beautiful gardens. Working mostly with private clients, the focus of the company I was working on was on creating gardens that were representative and easy to manage, in order to meet the clients' expectations. To me, it was obvious that a garden should be colorful, with exotic plants that create a vivid impression. The more colors and patterns the better.

However, during my master's program, my opinion on this began to change slightly. In my first year at SLU in Alnarp, I took a course focused on dynamic vegetation design. Drawing inspiration from natural plant communities, we designed low-maintenance areas that benefit nature. As I read more on the subject, I realized that it is not only flora and fauna that thrive in such an environment it is also beneficial for humans, as a natural-looking setting is very relaxing and has a restorative impact on well-being.

This made me wonder. If we feel most relaxed and at peace in nature, why don't we bring more of it to us? Why don't we bring more nature to ourselves? Colorful gardens and green spaces can certainly be beautiful, but perhaps creating naturalistic green areas could be an alternative to modern garden styles, benefiting both humans and nature.

THANK YOU

First of all, we would like to thank Petra Thorpert for guiding us through this phase of our academic journey and for all her support. Special thanks also go to Patrick Bellan, who introduced us to Malmö city's vegetation planning practices and shared his personal experiences. We would also like to thank Björn Wiström for his help with the planting design. Finally, we would like to thank Molly Karlsson for her mental support, and for the discussions and reflections that helped us to optimize our work. You all made this thesis worthwhile and we are grateful for your help!

Abstract

Rapid urbanization drives the transformation of industrial sites worldwide. On one hand these sites carry valuable heritage that faces the risk of being erased in redevelopment. On the other, they are offering opportunities to create ecological meaningful green spaces that strengthen biodiversity and resilience and connect people to nature.

This thesis investigates how heritage-based design and naturalistic vegetation design can be combined in such contexts, using Nyhamnen, a former harbor area in Malmö (Sweden), as a case study.

Through a twofold literature study, key design goals and strategies were identified for both heritage integration to strengthen place identity, and naturalistic vegetation design as a way of creating ecological resilience, increasing biodiversity, and improving human mental well-being. The strategies and findings from the literature studies and analyses were then applied in a design-proposal for a part of the urban landscape of Nyhamnen.

The resulting design demonstrates that the two strategies are not only compatible but can also elevate one another. Industrial heritage elements provide spatial structure and cultural legibility, while naturalistic vegetation softens and activates these structures ecologically. The findings suggest that post-industrial sites are particularly well-suited to this combined approach, offering both a strong connection to the industrial identity, and the local landscape while providing a chance to integrate nature in urban settings. All this results in a design proposal for the urban landscape of Nyhamnen that aims to create a meaningful and connective place for its users.

Contents

Glossary

Biophilia
The innately emotional affiliation of human beings to other living organisms (Beatley 2011:3).

Cultural Heritage
Aesthetic, historic, scientific, social or spiritual value for past, present or future generations. Cultural significance is embodied in the place itself, its fabric (meaning all the physical material of the place including elements, fixtures, contents and objects), setting, use, associations, meanings, records, related places and related objects. Places may have a range of values for different individuals or groups (ICOMOS 2013).

Ecosystem Resilience
The capacity of a system to maintain functioning, structure, and feedback in the face of environmental change (Kharouba 2024).

Ecosystem Services
The benefits humans derive over time from natural or near-natural systems and processes. The four subcategories are:

1. Regulating services (e.g. watershed protection, pollution control)
2. Supporting services (e.g. nutrient cycling)
3. Cultural services (e.g. recreation, tourism)
4. Provisioning services (e.g. food, fuel)

*(*Millennium Ecosystem Assessment 2005*).*

Habitat Connectivity
The ability of organisms or their genetic material to move among potential habitats and their population (Butler et al. 2022).

Industrial Heritage
Consists of the remains of industrial culture which are of historical, technological, social, architectural or scientific value. These remains consist of buildings and machinery, workshops, mills and factories, mines and sites for processing and refining, warehouses and stores, places where energy is generated, transmitted and used, transport and all its infrastructure, as well as places used for social activities related to industry such as housing, religious worship or education (TICCIH 2003).

Intangible Cultural Heritage
Includes the practices, representations, expressions, knowledge, and skills—along with associated instruments, objects, and spaces—that communities recognize as part of their cultural heritage. It includes traditions or living expressions inherited from our ancestors and passed on to our descendants such as oral traditions, performing arts, social practices, rituals, festive events, knowledge and practices concerning nature and the universe or the knowledge and skills to produce traditional crafts (UNESCO n.d.).

Landscape Narratives
Narrative is a vital activity coursing through oral tradition, texts, idea and other media, reflecting the diverse motives and contexts for telling stories. [...] Narratives are also there in landscapes. They intersect with sites, accumulate as layers of history, organize sequences and inhere in the materials and processes of the landscape. In various ways, stories 'take place'. The term landscape narrative designates the interplay and mutual relationship that develops between landscape and narrative. To begin with, places configure narratives. Landscape not only locates or serves as background setting for stories, but is itself a changing, eventful figure and process that engenders stories (Potteiger & Purinton 1998:4-6).

Naturalistic Vegetation Design
*If you work in a naturalistic way, then by definition you are inspired by nature (*Dunnett 2019*).*

Playscapes
*Intentionally designed, dynamic, vegetation-rich, play environments that nurture young children's affinity for nature (*Carr et al. 2017*).*

Post-Industrial
Post-industrial landscapes are sites left behind by deindustrialization—factories, mines, quarries, ports—where production has ceased. Once seen as ruins of decline, they have become terrains for new ecologies, cultural reuse, and design experiments. They are haunted by contamination and memory but also rich in unexpected biodiversity. For landscape architects, post-industrial sites are among the most challenging and fertile grounds (Landezine 2025).

Translations / Explanations

Swedish		*English*
Bassängen	=	The Basin
Färjeterminalen	=	The Ferry Terminal
Frihamnen	=	The Freeport (Harbor area in Malmö)
Lantmäteriet	=	The Swedish Mapping, Cadastral and Land Registration Authority
Lantmännen	=	An agricultural cooperative owned by Swedish farmers
Magasinet	=	The Warehouse
Malmö Stad	=	Malmö City Council
Nyhamnen	=	The New Harbor (Harbor area in Malmö)
Översiktsplan	=	Overview plan
Slagthuset	=	The Slaughterhouse
Smörkontrollen	=	Butter control (Dairy control center)
Stambanan	=	Main train tracks
Stickspår	=	Side train track
Urban Skog	=	Urban Forest
Trädkarta	=	Tree map (Provided by Malmö Stad)
Västra Hamnen	=	Western harbor (Harbor area in Malmö)

Plant Species Translations

Scientific name		*English name*
Betula pendula	=	Silver birch
Sorbus intermedia	=	Swedish whitebeam
Crataegus monogyna	=	Common hawthorn
Pinus sylvestris	=	Scots pine
Quercus robur	=	English oak
Ribes alpinum	=	Alpine currant
Juniperus communis	=	Common juniper
Thymus serphyllum	=	Creeping thyme
Empetum nigrum	=	Crowberry
Arctostaphylos uva-ursi	=	Bearberry
Sesleria autumnalis	=	Autumn moor grass
Polypodium vulgare	=	Common polypody
Geranium sanguineum	=	Bloody cranesbill
Convallaria majalis	=	Lily of the valley
Hepatica nobilis	=	Liverwort
Helianthus occidentalis	=	Western sunflower
Platycodon grandiflorus	=	Balloon flower
Rudbeckia missouriensis	=	Missouri coneflower
Aster ptarmicoides	=	Upland white aster
Gaillardia aristata	=	Blanket flower
Narcissus triandrus	=	Angel's tears
Tulipa batalinii	=	Batalin tulip
Tulipa praestans	=	Leather bulb tulip
Anemone blanda	=	Grecian windflower

1. Introduction

1.1 Background

Malmö is the third largest and fastest growing city of Sweden's three major cities. With an increasing number of people moving to the city, it can be expected that Malmö will increase by 29,000 people by the year 2035, bringing the total population to 395,000 inhabitants. To provide sufficient housing for the growing population, Malmö Stad aims to redevelop the former industrial harbor area of Nyhamnen and turn it into a new mixed neighborhood with housing, offices, businesses and multiple parks (Malmö Stad n.d.).

The goal of this thesis is to design parts of the urban green space of Nyhamnen. Given its rich industrial history and potential for improving the green infrastructure, the focus lays on working with industrial heritage and naturalistic vegetation design.

(Above from left to right) Fig. 1-4: Location of Nyhamnen in Scania (1) and Malmö (2) (based on Lantmateriet n.d.), showing the current situation of Nyhamnen (3) (based on Malmö Stad 2019) and the basemap of the design (4).

(Right) Fig. 5: Overview of the vision for Nyhamnen in the future (Mandaworks see Malmö Stad 2019)

The redevelopment of post-industrial areas has been in progress for years. In post-industrial countries, urban industrial sites are falling into disuse and are ideal for redevelopment, especially given the growing housing shortage in many urban areas (Braae 2015:23; Ai & Kim 2025). Well-known examples such as the Landschaftspark in Duisburg-Nord (Germany) show how the preservation of industrial elements can be combined with pioneer vegetation. The High Line in New York (USA) also demonstrates designs that integrate industrial heritage with natural vegetation (Skerl 2025; Brezar 2026). These examples illustrate in various ways how industrial areas can be transformed into new living spaces, with a greater focus on people and nature.

Nyhamnen is not just such an industrial site, it also has the distinctive feature of being a former harbor. As a former harbor area, it is filled with historical buildings and structures that relate to the harbor identity, but it lacks the vegetation needed to meet the area's changing demands. We believe that successful transformations requires careful integration of vegetation and also heritage values, this should be properly combined and applied in a proposal. Therefore, we developed a design that connects the heritage of Nyhamnen while enriching it with naturalistic vegetation design.

1.2 Context

Located north of Malmö Central Station and on the Öresund coast lies Nyhamnen, the harbor area that formed the core of Malmö 150 years ago (fig. 3). In this area ships transported goods, food was processed and people departed to discover new destinations (Malmö Stad 2023). The industrial identity is strongly noticeable in the buildings, materials, and the spatial layout of the area, with open spaces and fenced areas. Currently, the area is undergoing a transformation from industry to a new, mixed-use urban district.

Malmö Stad has outlined a vision for a dense and attractive new district with green and blue structures, preserved cultural values, and mixed uses (Malmö Stad 2019). The vision provides a base for the area as a whole and sets broad goals. New residential areas, green areas, a Blue-Green Loop (a route that connects the green areas), and other connections in the form of (public transport) roads and bridges are planned (ibid.). These are the development plans from Malmö Stad and the base that we will work with for this project. However, these development plans do not go into much detail. There is only little information provided on how industrial heritage and vegetation should be incorporated into the emerging urban landscape.

1.3 Aim and Questions

The aim of this thesis is to explore how cultural heritage design and naturalistic vegetation design can be combined to make a design proposal for a part of Nyhamnen that will strengthen its identity, create a biodiverse and ecological resilient place and strengthen the visitor's connection to nature and the industrial history.

The main research question of this thesis is:

'How can heritage-based design and naturalistic vegetation design simultaneously express the industrial identity of Nyhamnen while establishing resilient vegetation systems that support biodiversity and human well-being?'

This question will get answered by dividing it into two sub questions:

'How can the industrial heritage of Nyhamnen be interpreted and incorporated into its urban landscape design and how can it strengthen the visitors' connection to the post-industrial site?'

'How can naturalistic vegetation design in Nyhamnen increase biodiversity, strengthen ecological resilience, and support human mental well-being while adapting to the site's conditions?'

1.4 Methods and Materials

For the overall method of this thesis, we oriented ourselves on the approach of 'research for design'. It needs to be distinguished from 'research on design' and 'research through design'. 'Research for design' covers research that supports the design product or its process (Lenzholzer et al. 2017). It could be interpreted as research-based knowledge that is specifically developed for design or can be used for it (Jansson et al. 2019).

In this thesis we are using knowledge generated from literature studies and from analyses to support our design decisions. We therefore use the research conducted to support our design product. Besides the 'research for design' we defined, based on the literature study, two design strategies: one for designing with industrial heritage and one for designing with naturalistic vegetation. These two design strategies are included in the overall 'research for design' approach and will be explained further in the literature studies (page 14-15 and page 20).

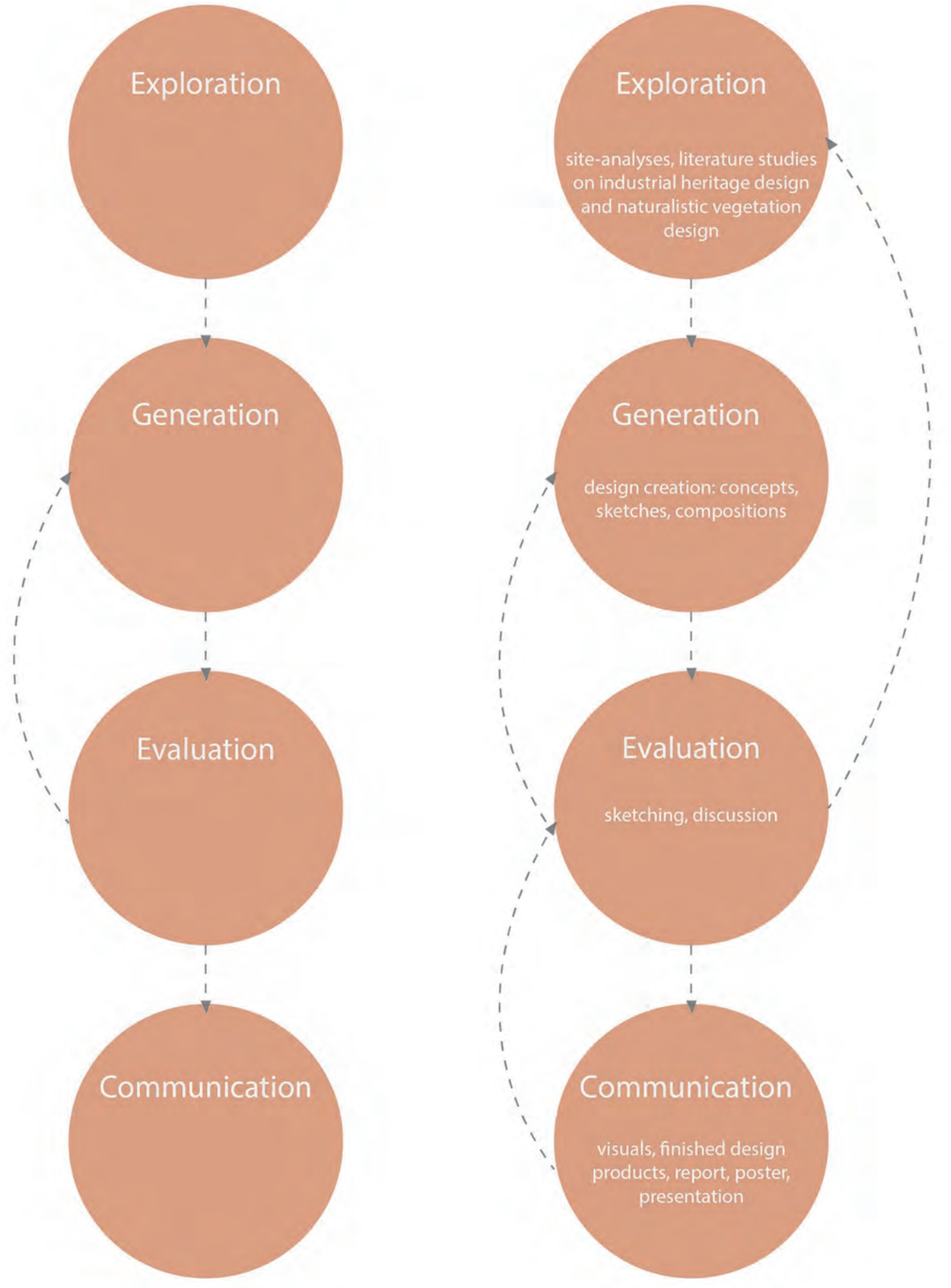


Fig 6: The diagram on the left shows the four-phase model by Cross (2021). The diagram on the right presents the model with adjustments and by the authors showcasing the design process in this work. The adjusted diagram shows more loops between different steps within the four-phase model, showing how this is an iterative process, it also shows which products were produced within each step. On the right is a rendition by the author showcasing the design process in this work. In the rendition one can see the circuit created between the creation and evaluation, this is a cycle within which a majority of the time is spent during the process (Edited from Cross 2021:28).

To explain our method in more detail, we compare it to the design process by Nigel Cross (2021) which consists of a simple four-phase model: exploration, generation, evaluation, and communication (fig. 6).

The evaluation phase does not directly lead to the presentation of the final design. The diagram provides a realistic picture of how a design process consists of loops, making it an iterative process (Cross 2021). In this thesis, we also experienced this iterative process, not only between evaluation and generation, but also between evaluation and exploration; sometimes we discovered that we needed more information (from the research phase, such as the literature studies or the site analysis) to generate new ideas and then re-evaluate them. It can be challenging to describe the 'research for design' process; as Schön (1983 see Murphy 2016:18) notes, designers are exposed to "situations of uncertainty, uniqueness, instability, and conflicting values". As a result, the design process develops iteratively (Cross 2021). We experienced that design solutions emerged not only from research (analysis and literature review) but also from personal interpretation, experience, and site-specific or contextual factors.

During the preparation work for the thesis, we planned the steps for this project in a linear order, such as literature study, analysis, sketching, concept development, and the then following design process, while also leaving enough room for necessary reflections and adjustments (knowing that it is an iterative process). To describe the design process, we outlined the steps we took: literature study, analysis and design. The literature studies and analyses are part of the exploration phase, while generation, evaluation, and communication are part of the design process. Evaluation, however, is not limited to the design phase; it is a process that takes place throughout the entire process. We conducted this evaluation by consulting with one another, brainstorming, sketching, during our supervision sessions and, finally, in the discussion phase at the end. As mentioned, the knowledge generated from research within our thesis is twofold. It is separated into the literature studies and site analyses.

Exploration phase - Literature Studies
The literature studies are divided into two parts. The first part is focused on the design of urban landscapes with industrial heritage and the second is focused on naturalistic vegetation design.

The study on industrial heritage mainly builds upon both key references encountered during previous coursework in landscape architecture and heritage studies and by searching for sources relevant for this topic (mainly through the SLU Library Database, with keywords: "industrial heritage, harbor transformation and industrial heritage transformation", filtered on English results that are either books, chapters or articles). The sources from previous courses represent established and frequently cited works within the field of heritage design. Central references are the book 'Beauty Redeemed' by Ellen Braae (2015) and also specifically the paper on 'Site specificity in contemporary large-scale harbor transformation projects' by Braae and Diedrich (2012), which addresses design approaches for industrial and former harbor sites and is therefore highly relevant to this thesis. Another important source has been the paper by Heesche, J., Braae, E. M. & Jørgensen, G. (2022) on 'Landscape-Based Transformation of Young Industrial Landscapes'. Also, the paper of Riesto and Tietjen (2019) on 'Planning with Heritage' on the heritage planning process was an important contribution to the literature study. Additional literature on site-specific design includes the books 'Landscape Narratives' by Potteiger and Purington (1998) and 'Site Matters' by Andrea Kahn (2021). International heritage charters, including the 'ICOMOS Burra Charter' and the 'TICCIH Charter', were used for definitions and to guide the interpretation and design of post-industrial heritage. This literature study was conducted between October 2025 and June 2026.

The main literature focusing on naturalistic vegetation design are the books: 'The Dynamic Landscape' (2004) by Hitchmough and Dunnett, 'Planting in a Post-Wild World' (2015) by Rainer and West, and 'Urban Biodiversity: From Research to Practice' by Ossola and Niemelä. This literature and multiple additional useful papers were provided in previous courses (Dynamic Vegetation Design) or found through the SLU library database. The research was conducted between October 2025 and March 2026. The main keywords for the screened literature were "urban biodiversity, Perception nature, Dynamic vegetation, urban vegetation, vegetation landfill, ecosystem services". Filters were used to get English results that are either books, chapters or articles.

Exploration phase - Analysis
The second part of the exploration phase of the project is the gathering of information through analyses. The analysis phase is characterized by collecting and interpreting information on Nyhamnen with the goal of increasing the understanding of the situation and identifying possibilities.

For this thesis we gathered information about Nyhamnen by looking at its historical development, buildings and infrastructure, the soil, the wind, the current vegetation and materials and the future development plans. For the research on history, historical maps from Lantmäteriet were analyzed and information provided by Malmö Stad was used. Furthermore, the overview plan for Nyhamnen by Malmö Stad (2019) was used to get information on buildings and sightlines that should be preserved. This document was also used to receive data on soil contamination. The primary source used to obtain the information on soil types is the website of the Geological Survey of Sweden (SGU). The "Quaternary map viewer" on this website provides a range of maps with data concerning the composition, distribution and presence of gravel, moraine and peat in Sweden (Sveriges geologiska undersökning n.d.). The wind analysis was done using the website meteoblue.com, providing information on wind direction and intensity. The tree map by Malmö Stad was used to identify the tree species in Nyhamnen. Site visits in autumn and winter (2025-2026), photography, and sketching were important tools for our inventory and analysis of the materials on the site. Since the area is not built yet, the overview plan by Malmö Stad (2019) was also used for data on future buildings and infrastructure planned for Nyhamnen.

Generation, evaluation and communication phases – the design process
The literature studies and the analyses on the area provided information and the base from where the concept emerged through a creative process. Through sketching sessions, mind mapping and brainstorming, we represented our ideas to each other and then discussed them. Often leading to a combination of our ideas. Meetings with our supervisor Petra Thorpert were also part of the evaluation phase of this thesis project. On the one hand, the goal of this process was to arrive at a design solution, while on the other, the solution is adjusted by the design process itself. This again shows that the design process is an iterative process. Often new ideas were included into the design and later backed up with theoretical knowledge through literature, analyses or interviews.

To gain information on how to establish the vegetation on the specific site, an interview was held with Patrick Bellan from the Department of Public Environment in Malmö. This interview gave us insights on the city's typical planting strategies and materials. Another interview was held with Björn Wiström, a senior lecturer at the department of Landscape Architecture, Planning, and Management at SLU, with him we discussed the implementation and management of the woodland areas in our design-proposal.

We communicated our thesis by creating this report, a scientific poster and an oral slide presentation. In these products, the design is communicated in various ways: through the creation of the masterplan, maps, sections, diagrams, visualizations, and sketches, on different scales. The analyses are also frequently presented visually to enhance clear communication with the reader.

1.5 *Limitations*

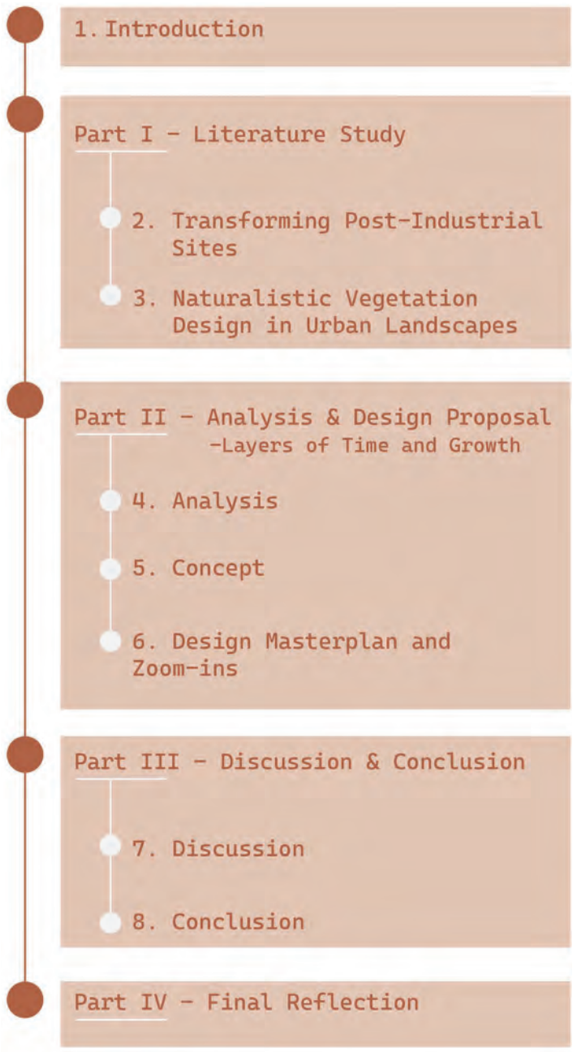
The Nyhamnen area, which has been set up to be redeveloped, covers several hectares. Since designing the entire area would exceed the scope of this thesis, we focused on a specific section within Nyhamnen. By focusing on a smaller scale, we had the opportunity to include more details in the design proposal and show ways of representing industrial heritage values and naturalistic vegetation design elements.

Due to time restraints, it was not possible to integrate citizen participation in the creation of the strategy and design of the parks in this thesis.

Because of the scope limitations, only key elements of Nyhamnen's industrial heritage were included, based on relevance for the design.

While the masterplan, additional material details, and planting plans include a level of technical detail suitable for a master's thesis, the project does not provide full engineering-level construction drawings or infrastructure details. These fall outside the scope and require specialized technical studies.

1.6 *Structure and Reading Guidelines*



The scheme at the left explains the structure of this thesis and provides a guideline that will be repeated in this document to support reading the thesis.

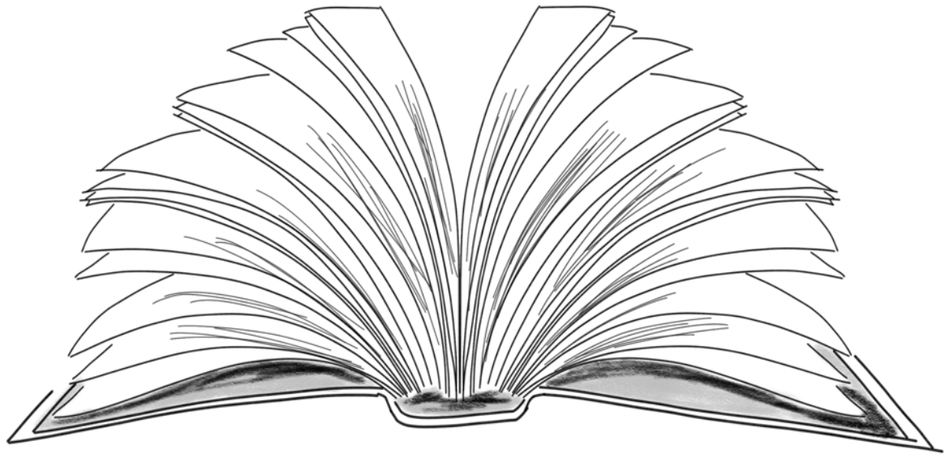
The introduction is the current part, including the background, context, research questions, method and materials and limitations.

Part I includes the literature studies describing industrial heritage and how to work with post-industrial sites. Then the importance of vegetation in urban sites and how to work with naturalistic vegetation design is described.

Part II, the analysis and the design proposal, is supported by findings of the first part. It starts with analyses of the site, including the past and the present situation, and future visions. Then the concept is explained. After that, the masterplan and zoom-ins are presented. From there, we showcase four design details of important areas of the design.

Part III is the discussion and conclusion, where we discuss the results and answer the sub and main questions.

The last part is Part IV, the more personal reflection on the thesis.



Part I - Literature Study

To establish the foundation for the design proposal, literature studies were conducted. The literature study is twofold, focusing on the topics of industrial heritage design within landscape architecture and naturalistic vegetation design in an urban environment.

2. Transforming Post-Industrial Sites

This chapter introduces the characteristics of post-industrial landscapes, and the opportunities and challenges when working with post-industrial sites. It begins by showcasing the characteristics of urban post-industrial harbors, as this is relevant to specific location of this thesis project. Then, the value of industrial heritage in landscape architecture will be described, explaining more about the increased appreciation of heritage sites, their characteristics and the opportunities and challenges of working with these sites and how a new approach is needed for these younger heritage sites. The following section is about how post-industrial landscapes can be communicated and how visitors can experience them. Finally, the process of designing with industrial heritage will be elaborated on, which explains why the design process of industrial heritage sites should be transformative and it will dive deeper into the strategy that is used in this thesis project.

2.1 Post-Industrial Urban Harbor Sites

Industrial sites like Nyhamnen have been de-industrialized in the third wave of industrialization (this period is characterized by globalization, changing technologies, and distribution logic). During this period, many locations in post-industrial countries (e.g. most of Western Europe and the United States) closed down and moved elsewhere , leaving behind often large areas that are occasionally located in or nearby cities that are expanding and in need of more space to develop (Braae 2015:23; Ai & Kim 2025). As a result of this de-industrialization, many harbor areas have become "empty" and are attractive for developers to repurpose (Braae & Diedrich 2012).

Fig. 7: Abandoned industrial sites are interesting for development

Site specificity is apparent in industrial harbor sites in their connectivity. This comes with a challenge, since harbors are originally disconnected entities: physically, administratively and in terms of use. And also, the other way around: the harbor disconnected the city from the waterfront (Braae & Diedrich 2012:26).

Harbor areas have unique characteristics; they often consist of large areas and are part of many different processes (e.g. processing goods) and consist of various networks and connections (often large-scale infrastructure). This variety in networks and processes (such as different ways of transportation, and the variety in material flows on different scales) often makes these areas complex. Central to the transformation of harbor areas is, according to Braae & Diedrich (2012:26), sustaining the "otherness" while legitimating their integration. The question rises: how to develop these vast heavily built-up areas while still keeping their uniqueness?

The transformation of harbors has the ability to offer strong connections, for example connecting the harbor with the city, and connecting city and waterfront. Water defines these sites spatially and functionally, the location on this "edge" between water and city creates opportunities to provide densely built-up districts near the urban core with extensive open public spaces. The future use of harbor areas is defined by their ability to link the urban core to the water and to provide open public spaces that were previously inaccessible, making these areas transition zones (Braae & Diedrich 2012).

2.2 The Value of Industrial Heritage in Landscape Architecture

Since the 18th century in Europe, historical monuments have been selected for protection and preservation. Experts were the decision-makers, deciding what historical objects would be protected and how to do it. This was done to prevent them from undergoing undesirable changes or to get lost over time. What was or was not worth protecting changed over the years, with more types of heritage later being included, such as larger structures and landscapes (and no longer just individual monuments and buildings). Heritage became increasingly contemporary, and industrial sites were also considered heritage locations. These are part of "new heritage," which is no longer just about preservation, but also about managing change and using heritage for local development (Riesto & Tietjen 2019:246-247).

Industrial Heritage Values and Characteristics

It is important to consider industrial cultural heritage when designing post-industrial sites. Existing structures are essential for conscious consideration in the design process, as they prevent homogenization and ensure the preservation of the area's identity. Incorporating history into the design reveals the uniqueness of the place. This identity is reflected in the specific structures, materials, processes, and practices. Therefore, these are not just objects belonging to industrial heritage, but they are also relational places with material, ecological, social, and immaterial values (Braae & Diedrich 2012).

The increasing appreciation of industrial heritage sites results in the growing interest in transforming these areas (Braae 2015:308). The definition of industrial heritage, according to TICCIH (2003), are *"the remains of the industrial culture that are of historical, technological, social, architectural or scientific value"*. TICCIH (The International Committee for the Conservation of the Industrial Heritage) is the world organization for industrial heritage and special advisor to ICOMOS on industrial heritage. ICOMOS (The International Council on Monuments and Sites) is the advisor on heritage for UNESCO. The goals for TICCIH are to promote international cooperation in preserving, conserving, investigating, documenting, researching, interpreting, and advancing education of industrial heritage (TICCIH n.d.).

Industrial landscapes are carriers of materials of the industrialization period. The relevant historical period extends from the beginning of the Industrial Revolution to the present. *"Industrial areas have a certain typology and include buildings and machinery, workshops, mills and factories, mines and processing and refining sites, warehouses and storage areas, places where energy is generated, transported and used, transportation and all associated infrastructure, as well as places used for social activities related to industry, such as housing, worship or education"* (TICCIH 2003). This demonstrates that post-industrial landscapes can possess a wide range of characteristics, which offers a wide range of opportunities to connect with the identity of industrial landscapes. Some characteristics relevant to the Nyhamnen project area include: the large scale, the diversity of infrastructure, geometric and functional landforms and structures, raw materials, the visibility of weathering and decay and signs of use, the transformative character, the multi-layeredness, and the scarcity of vegetation (TICCIH 2003; Braae 2015).

Fig. 8: Decay and weathering give industrial sites their unique character

Industrial heritage differs fundamentally from other forms of cultural heritage. According to TICCIH (2003), industrial heritage consists of environments that emerged through use and production rather than aesthetic intention. Unlike traditional monuments or historic buildings that exist as singular, finished objects, industrial landscapes comprise complex systems and processes operating at a large scale (Braae 2015). Therefore, these sites are often fragmented, incomplete and continuously changing with the processes of decay, adaptation and (re)use over time being present (Braae 2015:20).

The layers of the industrial sites and what shaped them over time are the processes of industrial activity, the transformations that took place and shaped (and continue to shape) the continuously changing area. These processes consist of both human interventions and natural processes, such as weathering and decay. Together, these processes make industrial areas complex and multi-layered, making it more challenging to work with them. When working with industrial sites, it can be valuable to engage with this complexity and the processes that are part of industrial landscapes and not view them as a blank slate. This allows engagement with the special characteristics of industrial landscapes (Braae 2015; Braae & Diedrich 2012:25).

Opportunities and challenges of working with industrial heritage

Industrial heritage is also valuable because it constitutes important evidence of historical industrial activity. It is not about unique locations, but about preserving representative examples with historical significance. Industrial heritage has social, technological, scientific, and sometimes aesthetic value, and contributes to identity. It also has value for "ordinary" people and their identity. This value is not only present in buildings and machin-

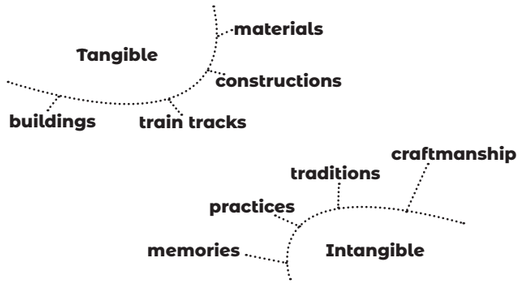


Fig. 9: Tangible and Intangible Heritage

ery, but also in the landscape, documentation, and intangible memories. These intangible values are found in human memories and use (fig. 9). Rare, early, or innovative examples of industrial sites are particularly valuable and deserve special attention (TICCIH 2003). Other examples of intangible values include memorable actions, traditions, expressions, social practices, knowledge, and craftsmanship (UNESCO n.d.).

According to Braae (2015:309), the size and the fact that industrial areas have their own identity, which differs from the urban context, are qualities that should be considered. This makes these types of areas suitable for transformation into new, future-oriented areas with positive effects, and they can also function well as experimental areas (ibid.).

The atmosphere of industrial landscapes is created by the combination of traces, materials, and ruin-like features. These elements (weathering, decay, layered histories, raw materiality) together create specific spatial experiences that are unique for industrial locations. Because of these dynamic processes that have taken place over time, and the transformative character of post-industrial sites, they should not be seen as static and historical, but as active and transformative areas (Braae 2015:311-312). Industrial landscapes can be difficult to classify; they can appear as unstructured and contain a range of features. They can also be called “in-between landscapes” or “edge cities”. They are not easy to read; for example, they lack a clear center but are rather a network full of diversity (Braae 2015:20).

A New Approach to ¨New¨ Heritage

Heritage used to focus primarily on the preservation and reconstruction of existing structures. However, for new forms of heritage (such as industrial heritage), a new approach to heritage is needed. Riesto & Tietjen (2019:248) refer to a “new heritage approach.” In this approach to, for example, industrial heritage, greater emphasis is placed on managing change and utilizing heritage for the benefit of local development. This makes the process of working with heritage more complex; as a landscape architect, one plays a key role in the complexity of heritage formation. This new approach to heritage is more inclusive; more actors can contribute to collaborative processes (not just heritage experts), and it focuses on more forms of heritage than before (e.g., both young and old, and both tangible and intangible heritage). It is important to meet contemporary needs; this also involves new ways of dealing with heritage, such as the use of reuse, transformation, and even demolition. Two important parts in this new heritage approach are the heritage making process, which involves selecting heritage and the targeting of heritage (this will be elaborated further in 2.4) (Riesto & Tietjen 2019:248).

Working with this ‘new heritage approach’ is a way to honor the identity of a site and create meaningful connections with its past and identity in a way that works well for, among other things, industrial heritage. Creating a design that values the heritage gives visitors the opportunity to connect with the site and it also makes the site connect with its context, and with its different time layers.

2.3 *Communicating Industrial Heritage*

The history and identity of industrial sites reveal the uniqueness of a place. Places that carry history, where people have lived and left their mark, are received as fascinating places (Biddau et al. 2020). Transforming industrial sites can enhance the visitors’ connection to a place, this connection can be guided through spatial experience, narratives and material traces.

Landscapes carry narratives, they are not only background settings for stories but are full of dynamic processes that generate meaning. Landscapes are shaped by stories, memories and everyday use. In this sense, identity is not fixed but continuously produced through interaction between people and place. Getting to know the stories of a place, interpreting its processes and events, is essential to understanding that place. As a landscape architect, you encounter narratives through traces in the landscape, the way one interacts with these memories and narratives defines how legible and accessible they become for visitors (Potteiger & Purinton 1998; Braae & Diedrich 2012).

Industrial heritage holds particular significance and meaning in Europe. According to TICCIH (2003), “Industrial heritage is part of the common identity of the people of Europe. It is a testimony to the dynamic development of European countries.” TICCIH describes the values of industrial heritage as “having profound historical consequences, social value as part of the lives of ordinary people, and technological, scientific, and aesthetic significance. These values are intrinsic to the site itself: its fabric (meaning all the physical material of the place), components, machinery, setting, and the intangible records contained in human memories and customs” (TICCIH 2003). Connecting to industrial heritage means connecting to the history of ordinary people and providing a sense of identity that connects history to everyday life (Braae 2015).

A possible approach is to present the site’s history as a continuous narrative including past, present and also the future, allowing visitors to experience this simultaneously. As a result, heritage consists of old and new tangible and intangible values, and even future additions can be made part of this heritage narrative (Riesto & Tietjen 2019:250).

People experience connectedness and gain well-being through ambience, tangibility (materiality) and socialization (Tan et al. 2025). It is important to be aware that this connectedness could disappear or weaken when heritage elements are removed. And creating something new without understanding the cultural meanings can damage the heritage experience (Tan et al. 2025).

2.4 *Industrial Heritage design*

Transforming Industrial Sites

Riesto & Tietjen (2019) describe how working with heritage has transformed over the years. While the initial focus of working with heritage was on protection and preservation, the process of working with industrial heritage has created more space for a design-oriented and future-oriented approach. The value of industrial heritage, therefore, lies not only in preserving the past but also, and certainly, in its transformative use in the present and future (ibid.).

In Europe, the closure of industrial areas has transformed urban landscapes since the late 1950s by repurposing these areas for urban expansion. Since the 1980s and 1990s, redevelopment projects have taken place there, but at the time these areas were viewed as abandoned lots, and often a tabula rasa approach was applied (Heesche, Braae & Jørgensen 2022). According to Braae (2015:312) this approach is not desirable, since the origins of these sites give it its unique industrial characteristics. Braae believes that transformation means turning something into something else in a way that connects with its origins. Therefore, insight into the transformative and site-specific values is necessary (ibid.).

Design and transformation are both principles for creation. Design traditionally originates in the designer’s mind; it starts as a new idea that begins abstractly and can then be realized. Transformation, however, takes the existing situation as its point of departure; it cannot take place without the presence and observation of what already exists. In transformation, designing takes place through interventions; working with exploration, intervention and dialogue rather than innovation (Braae 2015:281-282). In this sense, transformation can be understood as a design approach rather than its opposite. In this thesis the process is described as a design process, but it is one with a transformative character, shaped by what is already there.

The outcome of a transformation process depends on the content of the existing (Braae 2015:312). Transformation requires the designer to be creative in selecting and adapting rather than actually creating, and to have the ability to find rather than invent (Braae 2015:276). Transformation is about reshaping, not merely about creating something new.

Industrial Heritage Strategy

Based on the literature used in this study, the strategies described are combined into an ‘Industrial Heritage Strategy’ (fig. 10) that fits the scope for this thesis. These steps show similarities to the overall four-phase method described in the introduction of this thesis (exploration, generation, evaluation and communication); however, while the overall method focuses on the entire design process, this industrial heritage approach is specifically focused on designing with industrial heritage and it includes the following steps:

- Collect
- Select
- Create
- Evaluate

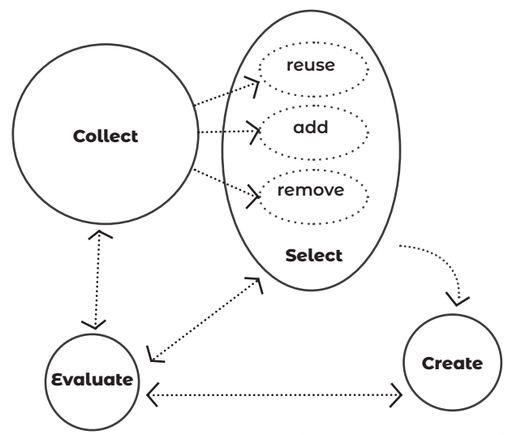


Fig. 10: Industrial Heritage Strategy

Collect

As mentioned earlier, industrial heritage sites have distinctive characteristics; these areas are often built on functionality, are rooted in production-driven processes and have evolved through multiple phases (from pre-industrial through industrial to post-industrial states) giving them a layered and dynamic character. This differs from more traditional heritage sites, which tend to be understood as relatively fixed cultural or aesthetic sites. Consequently, approaches to working with industrial areas differ fundamentally from those applied to traditional heritage sites (Braae & Diedrich 2012). To identify the cultural value of a site, tangible and intangible values must be considered. Braae and Diedrich (2012:25) reflect on this by extending the conventional heritage distinction between tangible and intangible aspects with a third flux layer (capturing natural processes and human practices as changes and transformations that took place over time and are visible in the landscape, and the visability of the processes themselves), indicating that traditional heritage frameworks do not adequately account for the dynamic aspects of such sites.

The first step is to gather information. Post-industrial locations are defined by their layering, traces, and processes. It is important for designers to decode these site-specific qualities in order to understand these places (Braae 2015). The first step involves what Diedrich calls “site reading”, which is about understanding historical layers, structures, and materials before intervention. This can be done through analyzing the site (Diedrich 2021:182), including also the flux layer in this process. Analysis can be done in various ways, such as site visits, sketching, mapping, literature studies and archive studies. Riesto & Tietjen (2019) mention that it is valuable to incorporate input from the users of the site or local inhabitants in the process, this can already take place during the analysis phase.

Select

Heritage making is, according to Tunbridge and Ashworth (Riesto & Tietjen 2019:248), a process that involves heritage selection and heritage targeting. After collecting the heritage resources and values of the site, the heritage maker (e.g. the landscape architect) will select the heritage that they think is the most useful in relation to the desired development objects and users. Selecting is a very important step in the process, according to Braae (2015:314) in a transformative design process, creative selection and adaptation are very important, it reforms what already exists instead of focusing merely on inventing and creating something new.

It is therefore important to define what is meaningful and worth preserving. To honor industrial heritage, new additions must somehow relate or engage with what already exists, placing old and new together whereby the contrast between new and old strengthens the meaning of both. This can be done in a way that simultaneously creates new, future-proof places (Braae 2015).

Important in the transformation of industrial heritage sites is the possibility to reuse, since this prevents homogenization, and activates the complexity and multi-layeredness of these places. Reusing can be done in different scales, it can mean reusing the whole overall physical structure, but it can also mean reusing singular elements or materials on site. Throughout the years, the focus has shifted from reusing unique individual elements, to a more overarching reuse of larger structures (Heesche, Braae & Jørgensen 2022:12).

Choosing what to select can cause issues regarding conflicting views on what to do with the heritage (Riesto & Tietjen 2019:248). Possible options to use heritage could be to reuse, add, remove or transform (parts of) it. The concept of ‘dissonant heritage’, discussed by Riesto & Tietjen, acknowledges that heritage is subjective and potentially conflicting. Heritage makers (such as landscape architects) must be aware of their role as heritage selectors (ibid.).

Create

After collecting and selecting the data that will be used in the design, the creation process starts. ‘Site editing’ is about the transformation of the site and comes after ‘site reading’ . Site reading is part of the ‘collect’ step and also the ‘select’ step. The ‘site editing’ step is where the ¨actual¨ design process comes in. The boundaries between editing and reading are not that clear and can happen simultaneously (Diedrich 2021:182).

Fig. 11: Industrial heritage traces in Nyhamnen

The result of this creation process is a ‘heritage product’, this arises from interpreting and packaging the selected heritage, also known as ‘heritage targeting’ (Riesto & Tietjen 2019:248). According to Braae, transformation depends on the place, its content and the context (Braae 2015:285). There are many ways to work with the site-specific values, for example: historical traces and structures can serve as the foundation for the new structure, or objects and materials can be reused or referenced. According to Braae & Diedrich (2015:25) representation of the tangible, intangible and flux layers of heritage should be incorporated during the creation process of the design product.

Evaluate

Being reflective is an important part of the heritage making process. Evaluation comes after, but also during the collection, selection and creation processes, it consists of loops in which the reflection repeats when data is collected, heritage is selected and when new creations are made.

When evaluating in the design process, it is important to consider the visitor’s perspective. This can best be done through incorporating them in the process (Riesto & Tietjen 2019). Although this can be done in different ways, it can be a challenge to incorporate this participatory evaluation since there are not always local inhabitants present in these kinds of areas. The focus on evaluating could then be to create a platform for future users’ dialogue with the existing site (Braae & Diedrich 2012:26). Since Nyhamnen has currently no local inhabitants on site, and since new people will move to this area, the decision was made to not work with input from locals (also described in the limitations in the first chapter of this thesis). In this thesis the focus was put on reflecting whether the design creates opportunities for future engagement with the industrial heritage.

Creating heritage is complex and subjective (for example in the selection step: choosing which historical period to highlight, in the creation process whether to reveal multiple layers, and to reflect on how clear or subtle to communicate to the users). Being aware of this helps to ensure that you approach this process in a reflective manner, which is, according to Riesto & Tietjen, necessary for heritage-making (Riesto & Tietjen 2019:254). It is therefore important to have a reflective attitude, to express values and argue for design choices, while staying open for input, both during and after the design process.

This ‘Industrial Heritage Strategy’ shows that designing sites with industrial heritage can be complex, multi-layered and subjective. It connects to the unique qualities of the site, represents and respects its history and helps create places that hold stories and can create new ones, while remaining connected to the context and with its visitors.

3. Naturalistic Vegetation Design in Urban Landscapes

To set goals for the future world wide, the United Nations created a framework that attempts to create a sustainable world. With the development of 17 Sustainable Development Goals (SDGs) the aim is to secure the well-being of everyone on a planet that is healthy and thriving (The United Nations n.d.). Two of these goals are particularly relevant for this study: SDG 11 and SDG 15. SDG 11 promotes urban development in a sustainable way to create resilient, safe and inclusive cities for the future (United Nations Sustainable Development n.d.). SDG 15 targets life on land, with one of its aims being the protection of biodiversity and natural habitats (The Global Goals n.d.).

Achieving these sustainability goals requires understanding nature's role in urban areas. In cities, nature forms the ecological basis for human–nature relations and the production of urban ecosystem services (Russo & Cirella 2021), with biodiversity and resilience being key determinants of how much benefit these systems can provide (Keune et al. 2013). Ecosystem services are the benefits humans derive over time from natural or near-natural systems and processes. They span four categories: provisioning services (e.g. food and water), regulating services (e.g. water management and disease control), cultural services (e.g. recreational and spiritual benefits), and supporting services (e.g. nutrient cycling) (Millennium Ecosystem Assessment 2005). Together, these services directly link biodiversity to human well-being, reinforcing both SDG 11 and SDG 15 (Keune et al. 2013).

To understand the connections between the topics discussed in this literature study, it helps to imagine ecosystem services as the fruit of a tree (figure 14). The tree grows within a system, its soil and nutrients allowing many roots to take hold, representing biodiversity. The more roots, the more stable the trunk: resilience. That stability of this trunk is what allows the tree to grow fruits, the ecosystem services. But the tree cannot thrive anywhere. It depends on the right surrounding conditions, which, in an urban context, means the environments that allow biodiversity and resilience to develop in the first place.

Since this thesis focuses on bringing humans closer to heritage and nature, the emphasis lies on near-natural systems transposed into an urban context. Such systems can contribute to the quality of life by providing multiple ecosystem services like managing stormwater and improving health and well-being through contact with nature (Russo & Cirella 2021). Beyond delivering these ecosystem services, they support progress towards SDG 11 and SDG 15. This makes biodiverse, resilient urban design essential.

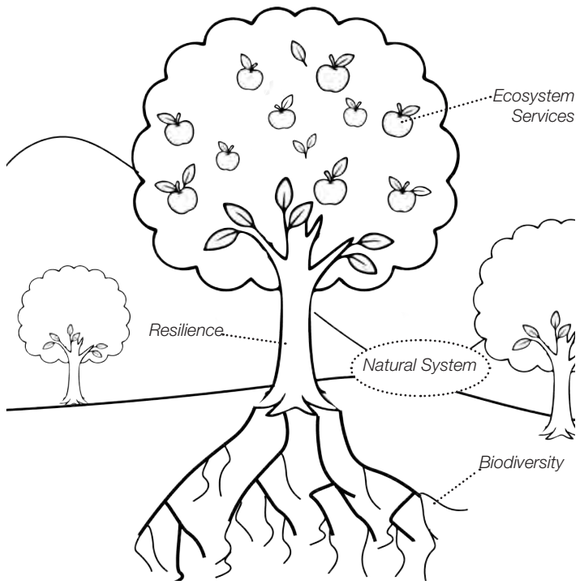


Fig. 12: Apple tree in an ecosystem

Naturalistic vegetation design can serve as a starting point for creating these biodiverse, resilient areas. As the project of this thesis lies within an urban context, the aim is to show how designing in a naturalistic way can establish a base for a biodiverse and resilient landscapes that provides ecosystem services and positively impacts mental well-being, thereby contributing to both SDG 11 and SDG 15.

3.1 Naturalistic Vegetation Design in Urban Landscapes

To define 'naturalistic vegetation design' it is important to look at the word 'naturalistic' itself. The term 'naturalistic' can be interpreted in a wide range. The Collins dictionary refers to it as 'resembling something that exists or occurs in nature' (Collins COBUILD Advanced Learner's Dictionary 2025), while the Cambridge dictionary defines it as 'showing things as they really are' (Cambridge Advanced Learner's Dictionary & Thesaurus 2025). For the purpose of this thesis the definition offered by Dunnett in his book 'naturalistic planting design' is used, stating that, if you are working in a naturalistic way, you are inspired by nature (Dunnett 2019).

The contemporary urban landscape design remains dominated by conventional, homogenous landscapes, often rooted in either the English-style park or the modernist style. Green spaces oriented to this style often feature high maintained lawns, including scattered patches of shrubbery, trees and flowerbeds. While these green spaces may appear natural, they do not represent ecological quality (Ignatieva 2018). In contrast, the urban areas with the most quality and native vegetation can be the remnant natural areas (Aronson et al. 2018:109). They can increase biodiversity, create resilient ecosystems and support mental well-being. How naturalistic vegetation design within the urban areas can bring those qualities to cities will be explained in the following.

Increasing Biodiversity in an Urban Context by Designing in a Naturalistic Way

Given the density of built structures in cities and the pollution and disturbance caused by human beings, urban areas are often assumed to have a negative impact on plant and animal diversity. However, research shows that cities can actually support and promote the richness of flora and fauna species. Liu et al. (2025) discovered a positive indirect effect of urbanization on biodiversity in major cities. They defined positive indirect effects as "an increase in biodiversity resulting from changes to the urban environment caused by urbanization compared to the natural environment".

Yet not all urban greenery contributes equally to biodiversity. The species composition of urban greenery has a significant impact on fauna diversity. English-style lawns, for instance, are designed exclusively for human use. They consist of a limited amount of grass species and, to maintain their aesthetic value, require regular mowing, pesticides and herbicides - conditions that are making it hard for other species to survive (Aronson et al. 2018). Nevertheless, they remain one of the most common features in modern urban areas, accounting for up to 70 percent of urban green spaces (Ignatieva 2018).

In their book 'The Dynamic Landscape', Dunnett and Hitchmough (2004:2) question the benefits of these species-poor urban green spaces and are promoting naturalistic designs instead, a design that is inspired by nature and its range of habitats that is created by diverse compositions of plants. The vegetation structure within these plant compositions is one feature influencing a site's biodiversity. The volume of understory vegetation, for example, can have a highly positive effect on bird species richness and the density of large trees can also positively affect bird breeding activity (Threlfall et al. 2016). A research in Malmö investigated the species richness and abundances of butterflies and bumblebees in green structures. The results show that the bumblebee species richness and the butterfly abundance was positively correlated with cover of flowering vegetation and number of flowering plant species (Haaland 2023).

These findings show that the vegetation structure, composition and size directly impact the diversity of the fauna in urban green areas. One particularly important quality of the vegetation structure that supports biodiversity is the habitat connectivity.

Habitat Connectivity as an Ecological Feature

Habitat connectivity is defined as the ability of organisms or their genetic material to move among potential habitats and their population (Butler et al. 2022). It is a highly desirable ecological feature as its interconnected habitats are more likely to maintain ecological processes and natural communities (Fischer and Lindenmayer 2007). Urban green spaces with their ecological values can serve as important habitats. Different kinds of small green spaces (like gardens, cemeteries or vacant lots) in connection with core green spaces (like bigger parks or reserves) offer different kinds of habitats with different qualities, contributing to urban biodiversity. Birds and insects especially respond to the level of connectivity of patches (Munro et al. 2007; Barrett et al. 2008) and need them for sustainable development. Connecting different green spaces can create a green matrix that is greater than the sum of the individual parts and should be considered in city development (Minor et al. 2018:194).

Since urban areas often have limited space for green structures, it is increasingly important to strengthen the connectivity between these green structures. In many cities, large-scale green infrastructure plans have been developed over the last few decades, aiming to protect biodiversity and provide other benefits by preserving core habitats (Minor et al. 2018:186). In Nyhamnen, Malmö Stad wants to create a green corridor and multiple green connections between parks to strengthen the connectivity (Malmö Stad 2019).

Fig. 13: Photocollage of how biodiversity could change Nyhamnen

Resilience
Besides supporting biodiversity, another positive factor of the naturalistic vegetation design is its resilience. Ecosystem resilience is typically defined as the capacity of a system to maintain function and structure, despite environmental change (Kharouba 2024). It is a combination of resistance and recovery. Resistance defines the amount of change that a system can withstand while keeping its structure and function. Recovery means the ability of the system to return to the situation before the disturbance (Kharouba 2024). In an urban context this means - less maintenance. The more a system can take care of itself, the less interference by humans is needed. Natural landscapes have already created their functioning system over many years. The different species work together creating a self-maintaining community, therefore they serve as a good inspiration for designers when aiming to create a resilient landscape (Rainer and West 2015:41).

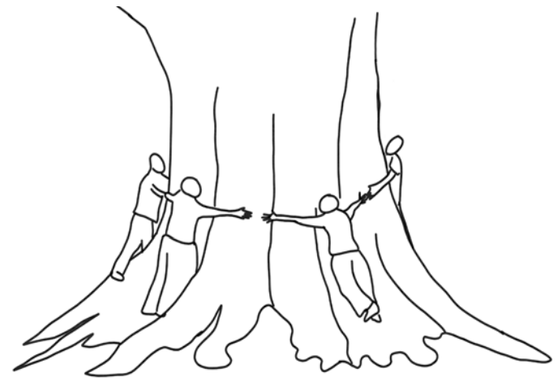


Fig. 14: Connecting to Nature

Nature's Impact on Human Mental Well-being
As mentioned before, urban green areas improve mental well-being, as perceived naturalness is a significant predictor of improved mental health (Vanhöfer at al. 2025).

However, this naturalness that can be experienced within these urban areas is limited. Doing things like hunting and harvesting food for oneself has become rare, especially in urban areas. Activities that used to be based in our nature, have been replaced by modern actions, such as going to the grocery store instead of producing food ourselves.

But humans seek natural landscapes in modern surroundings, to receive emotional responses (Rainer and West 2015:24). Daily contact with nature is necessary to be a healthy and productive individual (ibid).

There is a large body of scientific evidence demonstrating the beneficial effects of contact with nature on human beings. It can positively affect well-being in a physical, psychological and social way (Jorgensen 2004:430). A study conducted with hospital patients showed that those with a view of trees and nature recovered more quickly and easily than those with a view of a wall (Beatley 2011). Being in nature can also reduce stress, improve cognitive skills and academic performances and can even help moderate the effects of autism and ADHD (ibid). Meng et al. (2024) found a positive correlation between the perceived biodiversity and mental health. In their study they found that a high tree canopy, a high actual biodiversity in shrub layers and the existence of birds positively impacts the perception of biodiversity, which in turn has a positive impact on mental health. Even small green spaces can have a therapeutic and preventive value regarding mental health disorders (Egerer et al. 2024). It is confirmed that for example urban woodlands have restorative benefits on urban dwellers. They are rich in their cultural and symbolic meanings and are therefore valued by respondents (Bussey 1996). But not only urban forests can positively impact mental health. Also, grasslands have positive impacts on people's mental well-being. One psychological explanation for this is that we have an evolutionary basis for preferring certain landscapes (Rainer and West 2015). Low grasslands can uplift us, reminding us of sunny, wide-open spaces where we feel safe and urban flower meadows evoke positive emotions in people that improve their well-being (Simonienko et al. 2025). Our instincts still influence our behavior, preferences and actions (Dunnett 2019).

A group of people that especially needs to receive those positive effects are children. 'The importance of designing woodlands which support children, their development, their creativity and their play in groups as well as individually, has recently been stressed by many researchers' (Gustavsson 2004). The Institute for Social Research of the University of Michigan released a report in 2015 that found that the average child in America between the ages of six and 17 only spends seven minutes a day playing outdoors - a decline of 50 percent over the last 20 years (Hintzen 2015). Furthermore, children's ability to discover nature by climbing trees or playing in the woods has diminished due to parents' concerns about crime and traffic (Beatley 2011:12). To give children the opportunity to explore the world without their parents worrying about their safety, governments must provide space and landscape architects must create the proper

conditions through their designs. In his book *'Biophilic Cities: Integrating Nature into Urban Design and Planning'*, Beatley emphasizes that creating biophilic cities requires easily accessible and abundant nature (Beatley 2011).

Connecting with natural surroundings does not only benefit humans, in return it can also benefit nature itself. By providing access to nature and to "nature experiences" it can also happen that visitors increase knowledge on specific taxa and increase the likelihood of engaging in pro-environmental behaviors and support biodiversity conservation (Jakstis and Fischer 2024; Lemes de Oliveira & Mahmoud 2024). Designers should be aware of this chance and set the stage for meaningful connections between people and nature.

Fig. 15: Seating areas covered by Salix, Malmö

3.2 Designing Naturalistic Vegetation

The conducted literature study shows that to create resilient and biodiverse plant communities, it is best to take inspiration from nature (Rainer and West 2015:69). This does not mean that a design combining plants that are not forming a community in nature can't create a stable plant community. However, the natural existing communities are already 'tested' by nature and therefore carry less risks with them when implementing as they have been forming a stable community for many decades (Rainer and West 2015:41).

These different communities can be separated in different types of landscapes. It is helpful to distinguish between those different types of landscapes, each with their own specific characteristics and features. In their book *'Planting in a post-wild world'* (2015) Rainer and West defined three different types of landscapes called '*archetypes*' (fig. 16). They distinguish between grasslands, wood- and shrublands, and forests.

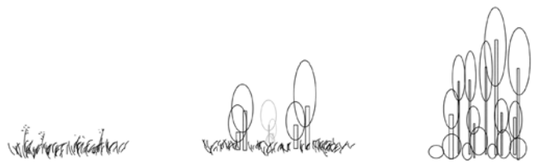


Fig. 16: The three different Archetypes

Depending on factors like the geographical location, disturbance or weather, the archetypes can look entirely different. A forest in a tropical location looks completely different to a forest in Scandinavia. However, they all create similar feelings and associations and consist of the same essential layers and some kinds of patterns. These patterns found in nature can be a base for a design of diverse naturalistic plantings (Dunnett 2004).

As the coastline that was used as inspiration for the design in this thesis (this will be explained further in the concept, on page 36) consists out of grassland and forest, these two archetypes will be described in more detail.

Forest

One archetypal landscape community that can be used in the design process as an inspiration is the forest. Forests' typical characteristics are their dense tree canopies, creating shades on the ground below, furthermore they consist of different layers.

The highest layer is often referred to as the 'canopy layer' or the 'upper layer' (Gustavsson 2004; Rainer and West 2015). It consists of the key characteristic species that the woodland is mostly named after. For example, pine, alder or a mix of broadleaf species. These species control the movement of air, the light, and the rain that reaches the layers beneath them. This 'upper layer' is followed by the so-called 'shrub layer' or 'understory'; the layer that is sheltered from wind and sun. It normally consists of young tree species that have a future role in the layer above and of shrubs that are adapted to the conditions the upper layer provides (Gustavsson 2004). The lowest layer is called the 'field layer' or 'herbaceous layer', characterized by perennial herbs, grasses, and ferns. If located in four-season countries such as Sweden, this layer experiences dramatically changing conditions throughout the year: during winter, it lies exposed to direct sunlight and snow, in spring it undergoes several sunny and relatively dry weeks before the canopy fully develops its leaves, after which the field layer becomes shaded by the canopy, creating a humid climate.

The zones connecting the forest to its surroundings are called the forest edges. They are the result of changes in the site's conditions. As site conditions in nature usually change gradually, the edges develop on those gradients, forming a transition zone between two conditions. If used as a design inspiration, those edges can improve the microclimate and create healthier and more resilient plant communities (Rainer and West 2015). Additionally, the forest edge, with its strips of open and semi-open vegetation, provides valuable habitats for animals such as reptiles and butterflies (Duchesne et al. 2023; Schlegel 2022).

Using forests as a reference in an urban design brings plenty of advantages to a site, providing ecosystem services. Besides improving biodiversity, a canopy of forty percent within the built environment can already maximize cooling effect, which is especially needed in urban areas (Egerer et al. 2024). But forests can not only promote healthy living for residents and dwellers, they also promote water and air quality, and cope with climatic extremes (Gustavsson 2004).

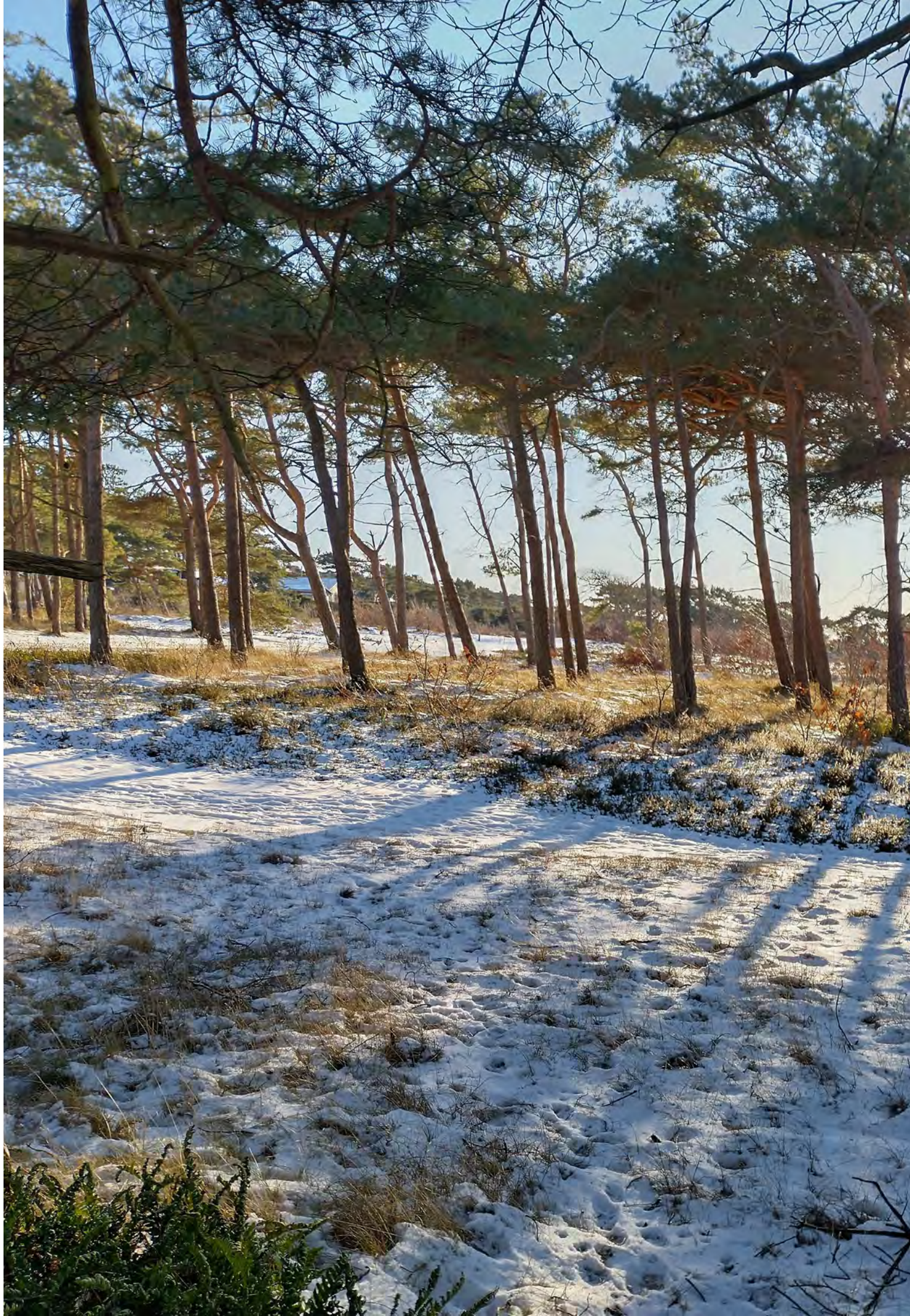


Fig. 17: Pine forest in Scania

Grasslands

„Many eyes go through the meadow,
but few see the flowers
in it.“
- Ralph Waldo Emerson (1964)

Another archetypal landscape is the grassland. Grasslands exist almost all over the world and are shaped by two environmental factors: a relatively low amount of average rainfall and some kind of regular disturbance of the system from outside. This could be for example fire, mowing or grassing. The dry soil makes it hard for forests to develop but is moist enough for deep-rooted grasses (Rainer and West 2015:71).

Just like forests, grassland communities do consist of layers. They might miss high vertical shrubs and trees but within their height they show a high diversity in their layers. Some species are more shade tolerant than others, using the spaces in between high raising species, without competing with them. The different morphologies allow the different species to grow next to each other (Rainer and West 2015:78).

Grasslands can be used as a design feature no matter how small or big the scale is. On one hand, on a big scale they can positively impact the mental well-being of humans as they evoke positive emotions (Simonienko et al. 2025). On the other hand, being one of the most diverse ecosystems in the world, already small-scale grasslands are supporting biodiversity (Lyons et al. 2023). Including them in urban design therefore can support both, humans' and fauna's lives.

3.3 *Design Strategy for Naturalistic Vegetation*

Based on the literature research we have defined a 'Naturalistic Vegetation Strategy', that we are using for our design. It is consisting of four steps.

1. Site analysis
2. Selecting reference landscape(s)
3. Selecting its favorable characteristics
4. Adapting it to the site conditions and human preferences

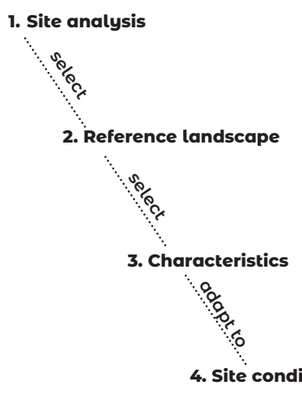


Fig. 18: Strategy to design with naturalistic vegetation

1. Site Analysis
Before choosing which reference landscape to use as an inspiration, it is essential to get familiar with the site's conditions, as they influence the possibilities of references. Conditions that should be researched include for example the soil, the weather conditions and the setting (urban vs. rural).

2. Reference Landscape
To select a reference landscape, it is practical to look for natural sites that face similar conditions as the ones analyzed and show the qualities that are aimed to be implemented into the design. It is advantageous to look in the close surroundings to find a fitting reference landscape that faces the same conditions and is proven to work within them (Rainer and West 2015).

When getting inspired by plant communities that have established in similar settings to the project site, the chance of them establishing on the site are higher then by putting together a species mix. Dunnet calls this the 'right plant, right place' philosophy that can support our choices for a suitable and resilient plant composition (Dunnett 2004: 127).

3. Characteristics
After selecting a landscape that appears to be a great fit for the place, analyzing it in more detail helps to capture certain favorable characteristics that later on should be implemented in the design.

4. Site Conditions and Human Preferences
After doing so, simply transferring the reference landscape to the site is not enough; it needs to be adjusted to the different, human shaped environment. In an urban environment the green space is often smaller than in nature and influenced by for example, a warmer climate, pollution and the surrounding hardscapes. At the same time these green spaces are being used by humans and should therefore be adjusted to their needs. What we humans find appealing in nature, we might find disturbing or messy in an urban environment. A layered-dense broad-leaf forest with dead branches on the floor and no artificial lighting might be calming in daylight on a stroll through nature, but frightening if it was in a city and one has to walk through it to get home at night. Hence it might be beneficial to remove less visually appealing elements or reduce visual complexity (Kingsbury 2004) (fig. 19). Certainly, taking away some species to create a less complex landscape influences the diversity of the site, hence a balance between the aesthetic and the species' richness needs to be found.

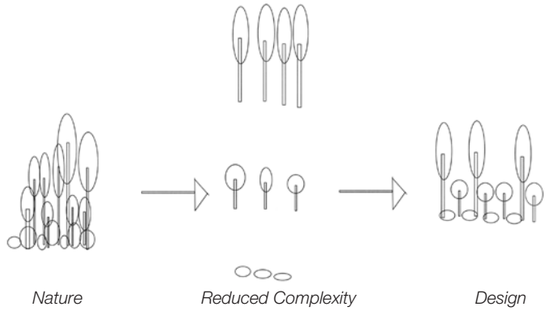
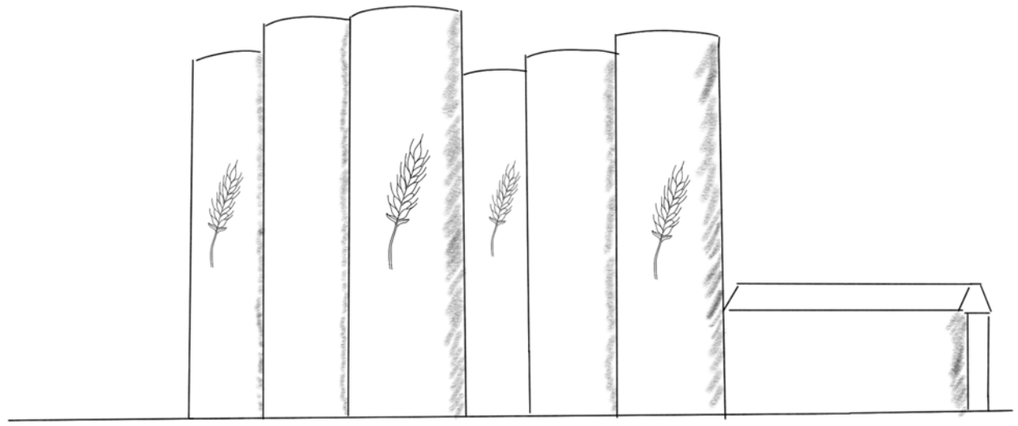


Fig. 19: Adapting to the site

To achieve a connection of humans to nature playscapes (dynamic, vegetation-rich, play environments that nurture young children's affinity for nature *(*Carr et al. 2017) can be integrated into the design. This could for example be done by adding hills or other interesting topographies into a design to stimulate nature play. Alternatively, rocks that can be climbed upon could be used (Beatly 2011:89). When it comes to vegetation it is important to stress its robustness. Children might enjoy playing with vegetation. Therefore, especially lower vegetation like shrubs and young trees should be robust or high in number, so when getting damaged by children, it doesn't hugely influence its development (Gustavsson 2004:257).

Concluding this literature research, it becomes evident that naturalistic vegetation design is an approach that can increase biodiversity, strengthen ecological resilience, and promote human mental well-being in urban areas. Using the four introduced steps, this strategy can be applied in Nyhamnen.



Part II - Analysis & Design Proposal

- *Layers of Time and Growth*

From the literature studies, we have learned how and why we should work with industrial heritage and naturalistic vegetation. The next step is to analyze the location to collect location-specific details including the history, soil, wind, materials, and more. The analysis is divided into the past, the current situation, and the future plans developed by Malmö Stad.

The information will then be summarized, indicating what these analyses mean for the target location of this thesis. Then follows the design concept, the masterplan, more detailed zoom-ins on important parts of the design and a light plan.

Fig.20 Impressions of Nyhamnen

4. Analysis

This chapter presents the conducted analyses on Nyhamnen. Complementary to the literature study, they are part of the exploration phase.

4.1 *Coastline Development of Northern Malmö*

Nyhamnen, located in northern Malmö, is characterized as an industrial and harbor area and formed the heart of the city 150 years ago. The processing of goods, migration, and other forms of industrial work characterize this area (Malmö Stad n.d.). The maps below show the development of Malmö's northern coastline. They show the expansion to the north, with the pink dot indicating the Nyhamnen area.

In the 19th century, the Swedish railway was built, this was a starting point for the industrialization of Malmö. During this period, Malmö's population grew significantly. A new port was needed because ship capacity increased during industrialization and space was insufficient. This led to the completion of Nyhamnsbassängen in 1903 (Malmö Stad 2025).

The shipping activities in Nyhamnen were mainly focused on the processing of goods, shipping of bulk goods (like grain) and rail and ferry traffic. The products that were processed were mainly agricultural products, meat and dairy (Malmö Stad 2025). The use of container ships was an important step forward in the efficiency of shipping activities. Around 1980, container ships were being used in Malmö; this took place mainly in the port areas adjacent to Nyhamnen (Frihamnen and Mellersta hamnen) (Copenhagen Malmö Port 2022). Due to developments and the port's growth, and to keep Malmö's city center free of freight traffic, Norra Hamnen was constructed between 2009 and 2011. As a result, Nyhamnen gradually became less occupied with industrial activities (Skanska n.d.).

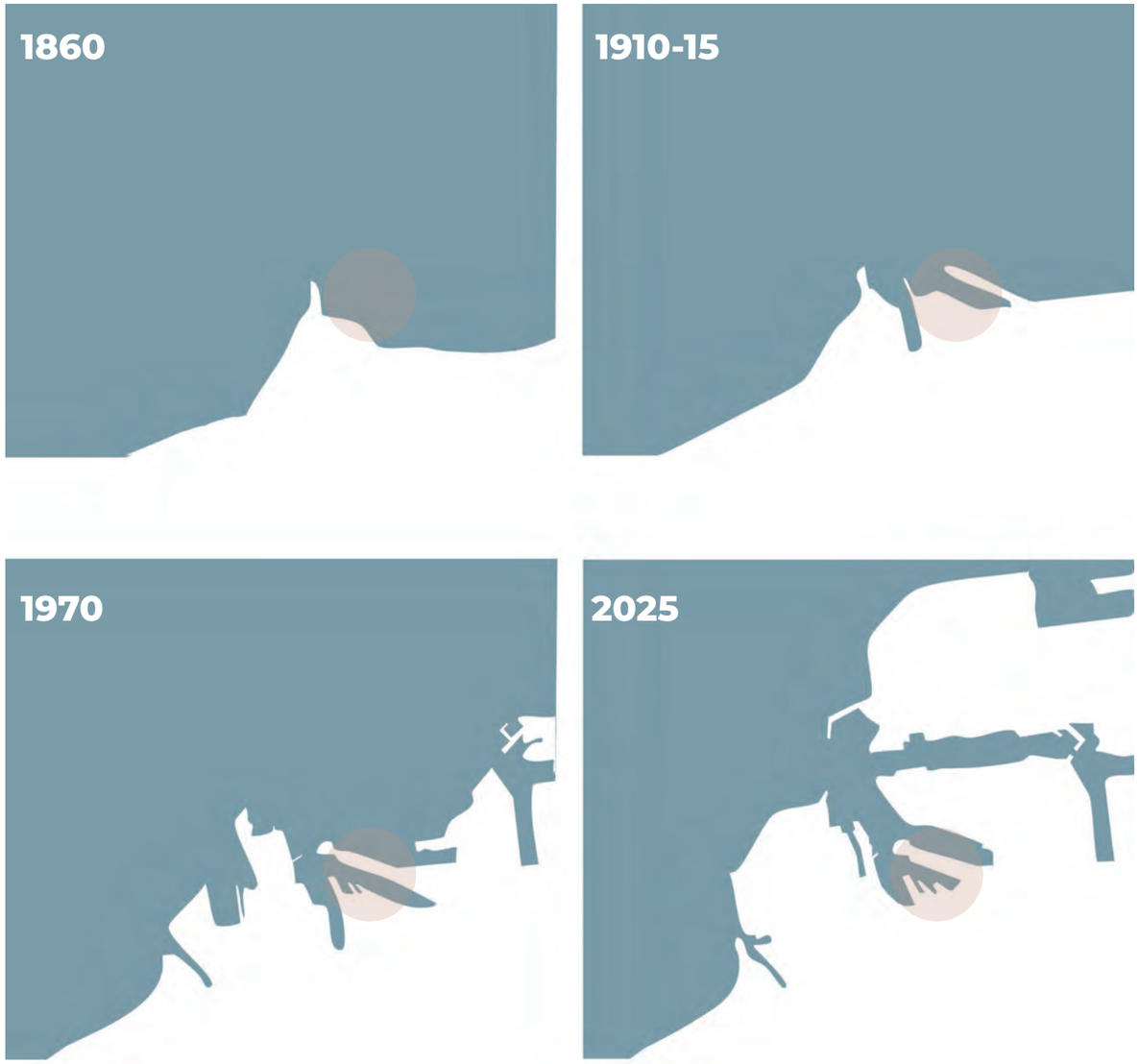
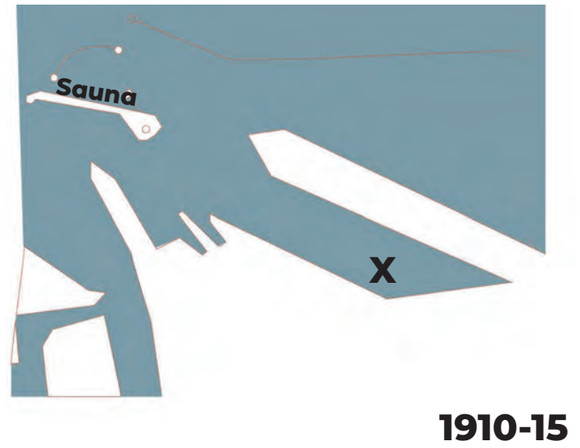


Fig. 21-24: Transformation of the harbor of Malmö (based on Lantmateriet n.d.)

4.2 *Coastline Development of Nyhamnen*

Zooming in, it is visible that the coastline of Nyhamnen itself transformed over the years. In the map of 1910-15 the inner basin (Nyhamnsbassängen) of the harbor was rather big (marked with an X), this is where currently the 'big slap' is located: an open area, where between 2013 and 2023 the Big Slap Festival has been hosted (Big Slap Festival 2023).

Furthermore, the shapes and sizes of the docks were different and in the north-west was an island with a sauna situated (Malmö Stad 2023).



In the current map of 2025, it is evident that the water of the inner harbor has been drained to gain usable land. It originally extended all the way down to Jörgen Kocksgatan. In the early 1990s, the innermost part of the harbor basin was filled in again and became a parking lot for cars that were to be shipped to Germany (Malmö Stad 2023).

In this map, the maps of 1910-15 and 2025 are combined. This overlay illustrates the human-made change in the landscape that created more land available to utilize. It shows how much this part of Nyhamnen has transformed over the years.

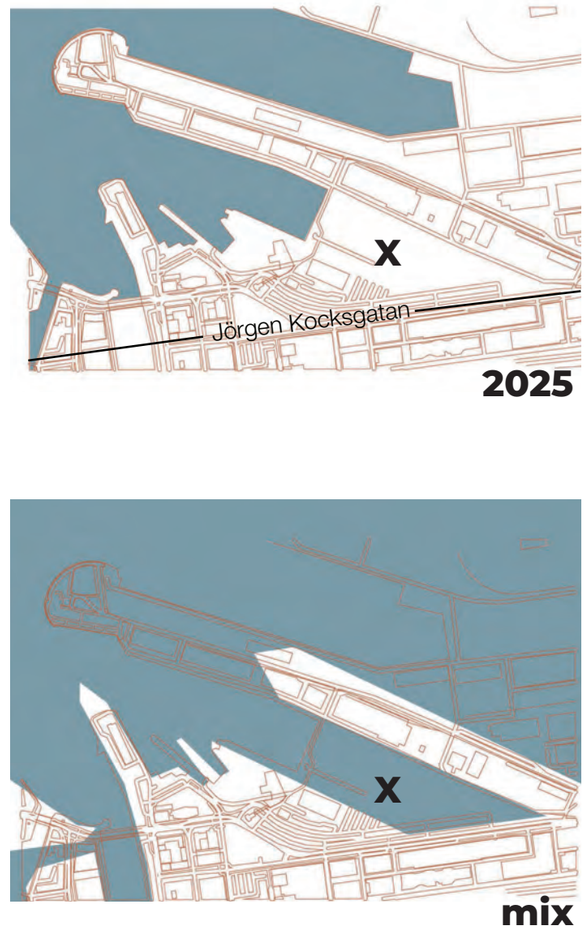


Fig. 25-27: Transformation of the coastline of Nyhamnen (based on Lantmateriet n.d.)

4.3 Nyhamnen's Infrastructure

Nyhamnen's transport infrastructure currently consists of roads. However, its historical infrastructure tells a different story. In the past, the main ways of travel were linked to industrial processes, namely shipping and rail transportation. The area was industrial and located at the interface with the sea, serving as one of Malmö's primary shipping hubs for goods. It was also the location where people departed from (and arrived to) the country via the ferry terminal to Copenhagen, making it Sweden's gateway to continental Europe. It was therefore a point of arrival and departure for both people and goods (Malmö Stad 2023).

Nyhamnen can be seen as the transition zone between the sea and the city, making it an important place, both economically and logistically. The systems of the sea and the land merge together, connecting local production to global trade routes. The rhythms of the sea (tides and shipping schedules) intersected with life in the city: work, commerce, and daily life.

This gave Nyhamnen a dual character. On one hand, it was a connecting area that facilitated flow and exchange. On the other hand, it acted as a physical barrier that separated the city from direct access to the waterfront, creating an industrial buffer zone between the two.

Nyhamnen was built close to the central train station. To link it to the surrounding railway system, the train tracks in the harbor were then connected to the Lund train-tracks in 1856 and Södra Stambanan (main train tracks) in 1864 (Malmö Stad 2023).

Ships that entered or left the harbor transferred their goods to train wagons. Stickspår (side train tracks) were used, to connect the harbor with the railway network (fig. 29). These tracks are partly still a visible part of the infrastructure in Nyhamnen (Malmö Stad 2023).

Network Complexity
Multiple networks were layered and intertwined in Nyhamnen. For example, grain harvested from the agricultural fields of Scania were stored in the Lantmännen silos (Lantmännen 2026). Lantmännen is a company that exports grain to other parts of Europe (Lantmännen 2026). We assume the grain got harvested from the fields, packaged and then transported via the rail network to Nyhamnen on freight wagons. Here it was stored in silos (fig. 28) or warehouses.

As mentioned before, a diversity of goods was transported and processed here, such as grain, dairy and meat products (Slagthuset n.d.; Malmö Stad 2025). Additionally, non-food products like cars were stalled and then further transported to other countries like Germany (Malmö Stad 2023). This all contributes to creating a complex web of flows that made Nyhamnen an important central node in regional, national, and international trade networks during the industrial era.

At the end of the 19th century and the beginning of the 20th century, many Swedes emigrated, and Nyhamnen was one of the largest ports of departure for these emigrants (Malmö Stad 2023), which also contributed to Nyhamnen's network complexity, making it not only a harbor for trade but also a place where people departed and arrived, requiring ship and train traffic to be organized accordingly.

The traces of industrial activity, for example the historical structures like the train tracks, contribute to Nyhamnen's identity as an area with industrial harbor-heritage (fig. 20).

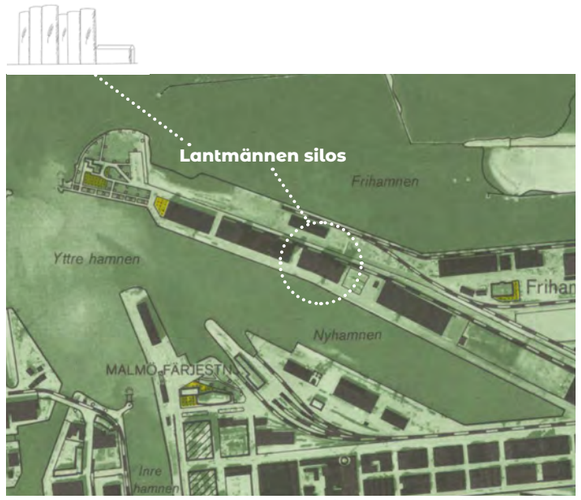


Fig. 28: Historical map of Nyhamnen, 1970 (Lantmateriet n.d.)


Fig. 29: The connecting track to the steam ferry in Jörgen Kocksgatan. The right set of tracks goes to the Steam Ferry Station (Järnvägsmuseet n.d.)

4.4 Present Historical Traces

Nyhamnen was formerly a harbor and industrial area, characterized by quays, water basins, railway lines, warehouses, and technical infrastructure. Its landscape is flat, open, and large-scale, with sightlines over both water and land.

Currently the area is mostly consisting of wide-open spaces, like parking lots (fig. 31). With only a small amount of buildings, it is exposed to strong winds. Both spatially and visually Nyhamnen feels like a transitional area between the sea and the city.

Traces of its industrial past are visible in the dimensions, materials, and linearity (fig. 30). The linearity can be seen in the directions of the buildings, roads and (former) train tracks that were used for (un)loading the ships.

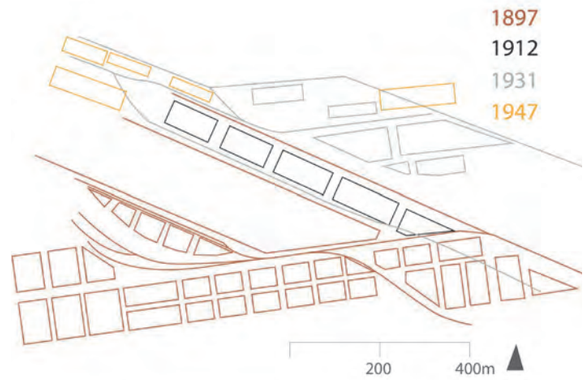


Fig. 30: The lines of Nyhamnen throughout the years (based on © CC0 Malmö Stad n.d.)

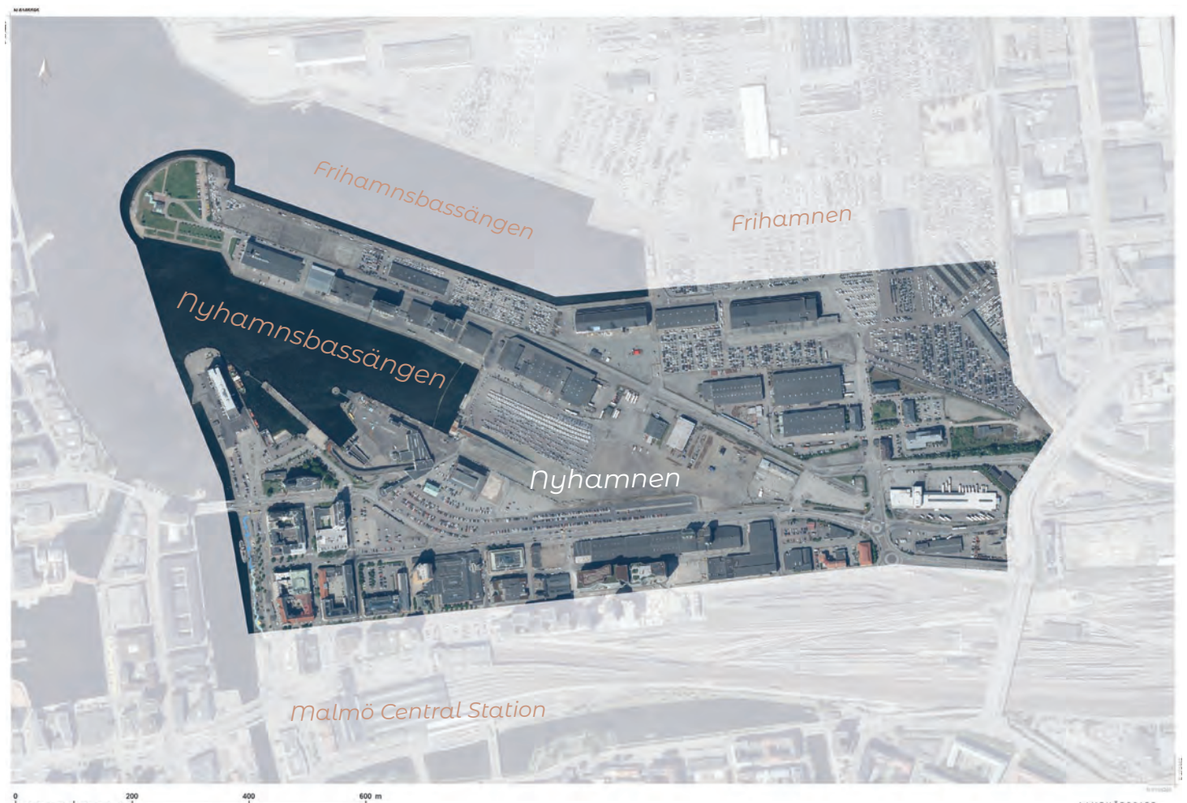


Fig. 31: Nyhamnen location (based on Lantmateriet n.d.)

Materials

Traces of the industrialization are also evident in the existing materials that remain from this period which have been preserved. The area mostly consists of different kinds of hard surfaces that were needed for the transportation of goods.

This is visible in the asphalt, covering large areas or train tracks, connecting the harbor to the whole of Scania and Sweden. These rough, industrial materials show traces of weathering and decay and lots of areas are currently inaccessible, surrounded by fences.

The design of the 'Urban Forest' (page 28) already picks up some of the materials in the design, connecting the future with the site's heritage.

Fig. 32: Wooden Plank

Fig. 33: Rails in Nyhamnen

Fig. 34: Sealed Parking Lot

Fig. 35: Benches in the Urban Forest

Fig. 36: Mooring bollard and fenced areas

Fig. 37: Yellow Container

History of Nyhamnen

Nyhamnen was not only a harbor, in the late 19th and early 20th century other industries such as food processing and handling were present here as well.

These food industries were for example the public slaughterhouse (Slagthuset, present since 1904) and Smörkontrollen for eggs and dairy products.

These industries carried negative effects, such as pollution and noise with them. However, they also brought opportunities for many, contributed to the economy of Malmö and provided jobs for inhabitants in the city, contributing to the identity of Nyhamnen (Malmö Stad 2023).

In the following part, some of the historical buildings that (due to their location) are relevant for the design proposal will be discussed.

Historical buildings in Nyhamnen

The map below (fig. 38) shows the buildings and sightlines that are, according to Malmö Stad, worth preserving. The buildings are all linked to the industrial character of Nyhamnen, functioning as places for food handling, processing or storage and other shipping-related activities.

Sightlines

There are two sightlines from the old central station and one sightline towards the ferry terminal, following the old train tracks, that should be preserved, according to Malmö Stad (2019).

Magasinet

Located near the water, where boats used to dock, this modern office building is located. In 2012 this building was renovated into offices, also another floor was built on top. Only the original facade and frame were retained, as well as details from the time when boats sailed into the quay to load and unload goods.

It used to be an old warehouse and storage area for, among other things, grain and potatoes that were pre-

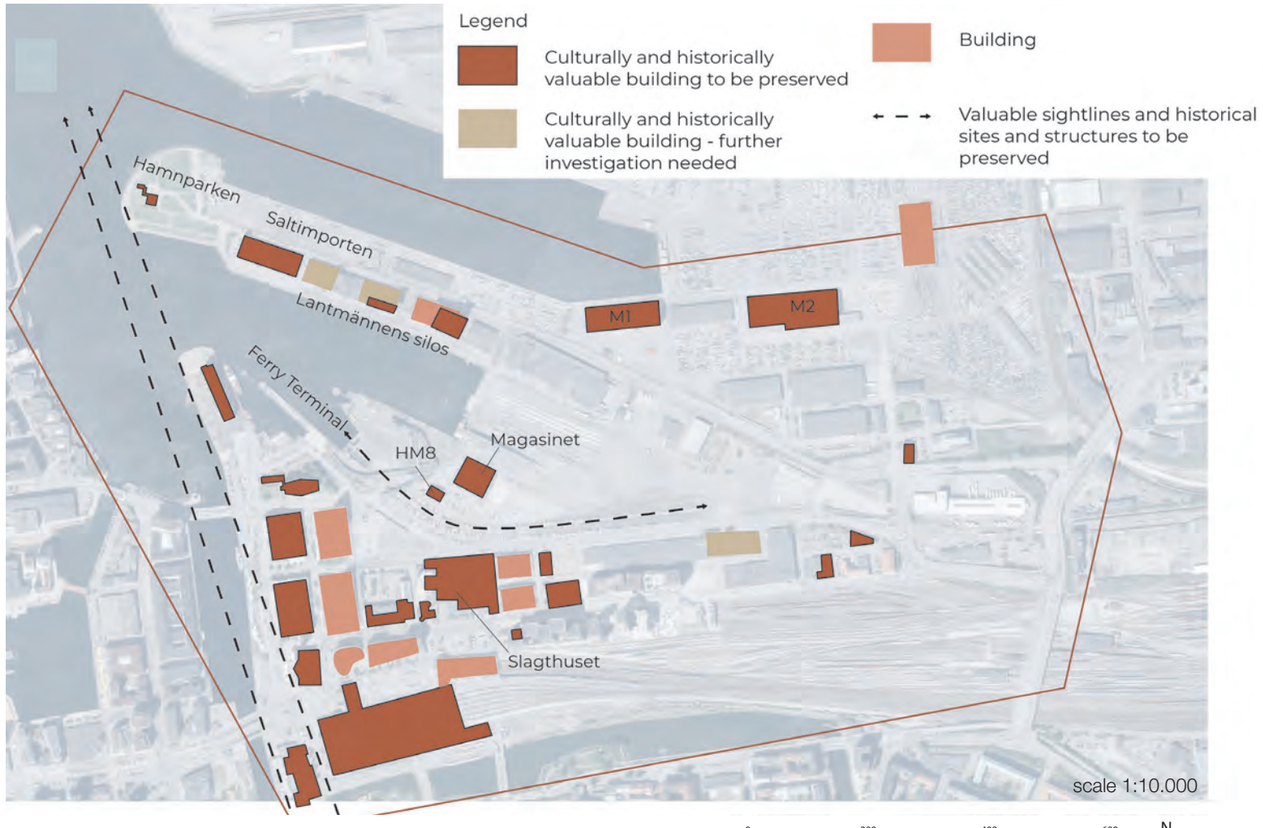


Fig. 38: Historical buildings in Nyhamnen (based on Översiktsplan Malmö Stad 2019)

Fig. 39: Magasinet

viously handled here. The building was built in 1951, the special staircase design towards the seaside was designed by architect Tage Möller to facilitate unloading from boats up to Magasinet. Today these staircases are used as terraces (Fors 2025).

Closely located is another building (Hans Michelsensgatan 8, in short: HM8) which consists of three floors. The house was built in 1931 for the Customs Administration and is one of the oldest properties at this former quay. It has gone under extensive renovation in 2020, including facade renovation, roof replacement and drainage work. It now houses a variety of conference rooms, meeting rooms and open office spaces (Wihlborgs 2026).

M1 and M2

These buildings are also 'Magasins' and used to be storage space for various goods. M1 was built in 1919-21 as an intermediate storage building for import / export. M2 was built around 1920-1940 as a warehouse as well (Andersson et al. 2024). These buildings are now defined to be used for public use and cultural activities (Malmö Stad 2025).


Fig. 40: Building M1

Slagthuset

This building is originally a slaughterhouse (built started around 1904). Since 1990 it has been transformed into a multifunctional complex: with an office hotel, meeting point, theatre, restaurants and (previously) one of Scandinavia's biggest nightclubs and big event spaces. Since 2021 the focus has been on meetings, events, culture and restaurants. In the future it will be further developed as event/congress/culture space combined with offices, workplaces and restaurants (Slagthuset n.d.).


Fig. 41: Slagthuset

Färjeterminalen (ferry terminal)

In the western part of Nyhamnen used to be a ferry and terminal area, and a logistic zone for shipping and car traffic.

Currently its undergoing transformation: temporary and experimental urban functions (such as the urban forest, flower meadows, cultural programming, outdoor activities and public seating) have been implemented by the municipality and project groups.

Malmö Stad is planning to develop this as a green space for Nyhamnen, to host public and cultural events. It will be a mix of temporary green/art installations and permanent integration into the urban landscape (Malmö Stad 2025).


Fig. 42: Färjeterminalen

These buildings are visible structures that are prominent when visiting the site. However, the traces of history are not only evident in the obvious visible physical structures, it also impacts other conditions like the soil. In industrial areas the soil can be contaminated by the processes that take place. When designing landscapes, it is important to know the quality of the soil to determine whether it will impact the choice of plant species.

4.5 Contamination

With its rich industrial history in Nyhamnen, there is a possibility of finding contaminated soil. Contaminated deposit or chemical spills disturb and affect soils and can influence humans and plants health (Szlavecz et al. 2018).

To investigate this, research was conducted on contaminated soil in Nyhamnen. As there are currently no companies in Nyhamnen engaged in hazardous activities, the safety risks in this location are relatively low. The marshalling yard, which is located outside the planning area, poses the greatest risk (fig. 43). The most common dangerous goods transported there are ammonia, LPG, sulfur dioxide and chlorine (Malmö Stad 2019).

The planning guidelines by Malmö Stad for the development of Nyhamnen point out that if an alarming contamination is identified, the soil needs to be remediated if needed, so it can be used without risk to human health (Malmö Stad 2019).

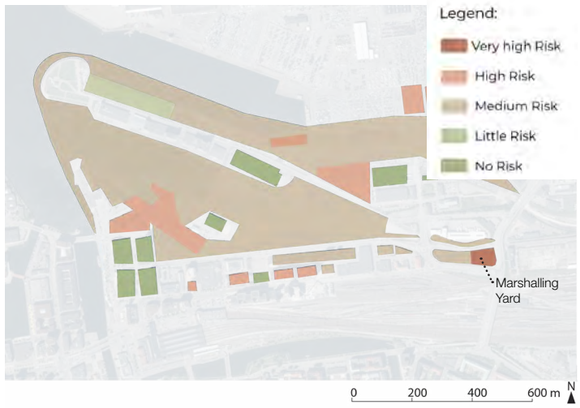


Fig. 43: Nyhamnen Hazard Risk (Based on Länsstyrelserna n.d.)

During an interview with Patrick Bellan, a tree specialist from Malmö Stad who was part of the team planning the urban forest in Nyhamnen, it became evident that the contaminated soil on the site will be removed when redeveloping Nyhamnen (Bellan 2025). Therefore, in the scope of this thesis, the soil is not given particular consideration.

4.6 Soil Types

The soil can also provide important ecosystem services. It is the medium which vegetation needs to grow in, a habitat for soil organisms and a recycling system for nutrients and organic waste (Szlavecz et al. 2018). An analysis of the existing soil in Nyhamnen is therefore important to see what the initial situation is.

As most of the area in Nyhamnen is land reclamation, the existing soil does mostly consist out of inorganic materials. The materials that were used to fill up the area are not described more detailed than 'Filling'. The southern area of Nyhamnen consists out of a mixture of filling and postglacial sand or a clayey moraine (fig. 44).

The lack of organic material on site means that all the needed material needs to be delivered to the site from outside the area. In Malmö usually the 'Malmö Soil' is used: a mix including pumice, green compost and biochar (Bellan 2025).

Fig. 44: Nyhamnen Soil Types (Based on Sveriges geologiska undersökning n.d.)

4.7 *Current Vegetation in Nyhamnen*

The lack of organic material in the soil also impacts the presence of vegetation in Nyhamnen.

The 'Trädkarta' that is provided by Malmö Stad gives information on the species composition and abundance (as of November 2025). This tree map illustrates the tree population within the city on public grounds. The current amount of greenery is limited and only a limited number of areas have a higher concentration of tree cover (fig. 45).

In terms of overall dominance, the Sorbus intermedia is the most occurring species in Nyhamnen. It is planted along Terminalgatan (Areas 1 and 2) in Hamnparken (Area 3), in Area 4, a small park located along Frihamnsplatsen, and in Area 6. The majority of Sorbus intermedia planted in Nyhamnen are between 15 and 30 years old. Besides the Sorbus intermedia there were some Salix, Tilia cordata and Carpinus betulus 'Fastigiata' and some spontaneous vegetation.

It is clear that Nyhamnen is an area that is defined by hardscape materials, and that the amount of vegetation is scarce. The trees that are already existing in the area appear to be suitable for the local conditions. It is good to pay attention to the coastal, maybe harsher, conditions in the area. Species should be strong enough to withstand strong winds, sea salt and the chance of pollution in the soil should be considered as well.

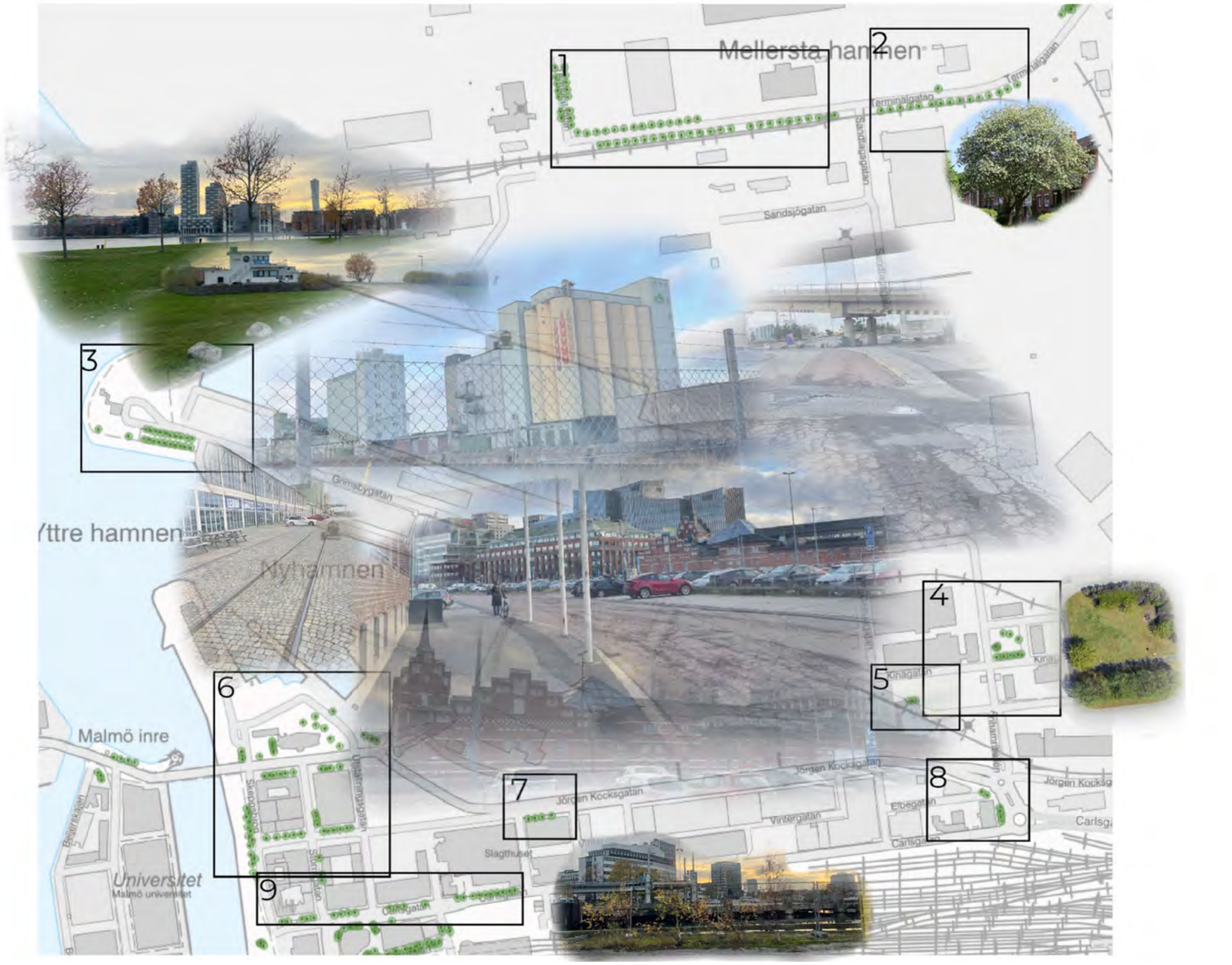


Fig. 45: Vegetation of Nyhamnen today (based on © CC0 Malmö Stad 2025)

Fig. 46: The Urban Forest

The Urban Forest

In 2025, the Urban Forest (Urban Skog) was built to create a room for activities, cultivation projects and recreation. This green space is not presented in the previous map (fig 45) since it is recently planted and not present in the 'Trädkarta' yet. This green area contrasts with the rest of Nyhamnen and shows a high variety of plants, varying from multiple species of conifers, to deciduous trees and perennials. The bed that is located the closest to the ocean consists of plants that can withstand water and wind. The further into the land, the lusher and denser the trees become. The urban forest also serves as a test area to see what types of trees can thrive within the Malmö climate. It will remain for at least five years (Bellan 2025).

4.8 *Development Plans*

Malmö Stad sees the importance of improving the liveability of this developing area. Therefore, enhancing the connectivity and quality of the outdoors is important. In the overview plan of Malmö Stad (2019), the structure of the area with its goals and visions is presented as a development plan. This is not the current situation (during the writing, 2025), but the predictions for the future situation. Since the design proposal is situated in this area, the following analyses are based on the overview plan of Malmö Stad (2019).

Figure 48 shows where Malmö Stad is planning to have a green corridor (Blue-Green Loop) and the green connections.

Green Connections and Corridor

According to Malmö Stad (2019), parks, elementary schools, preschools, cafés, playgrounds and other facilities are placed along the green corridor (this is the Blue-Green Loop), creating a green and safe environment in the heart of Nyhamnen. This corridor should also elevate the possibilities of various plant and animal species to spread. The green corridor will (together with the parks) provide added value through open stormwater management that delays water during heavy rainfall (Malmö Stad 2019:16).

The term 'green connections' is used in Malmö Stad's overview plan as well, but it is not explicitly defined and no clear aims and requirements are stated. Since these green connections are planned in our design proposal target area, we will interpret these as accessible and continuous green spaces that create connections between green areas. These green connections form a great part of Nyhamnen's future green structure and they are located in streets that are focused on pedestrians and cyclists.

Malmö Stad (2019) believes that greenery is of great importance for the attractiveness of the area and in general supports the biodiversity, air quality and microclimate.

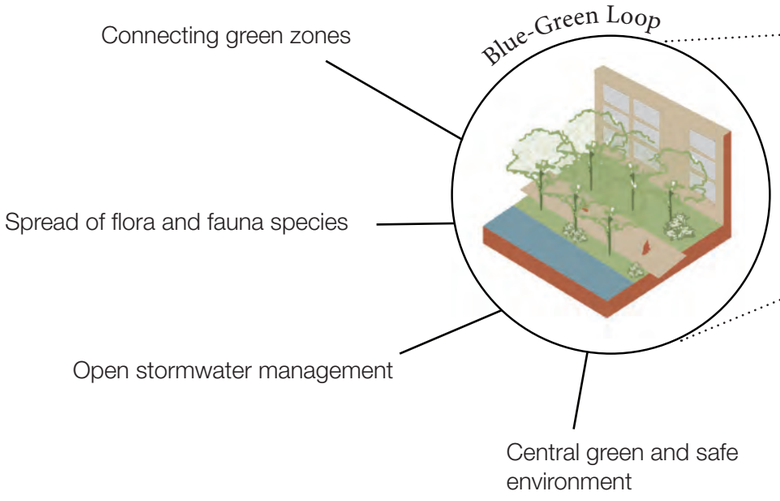


Fig. 47: Scheme showing the characteristics of the Blue-Green Loop

Green Connections and Corridor

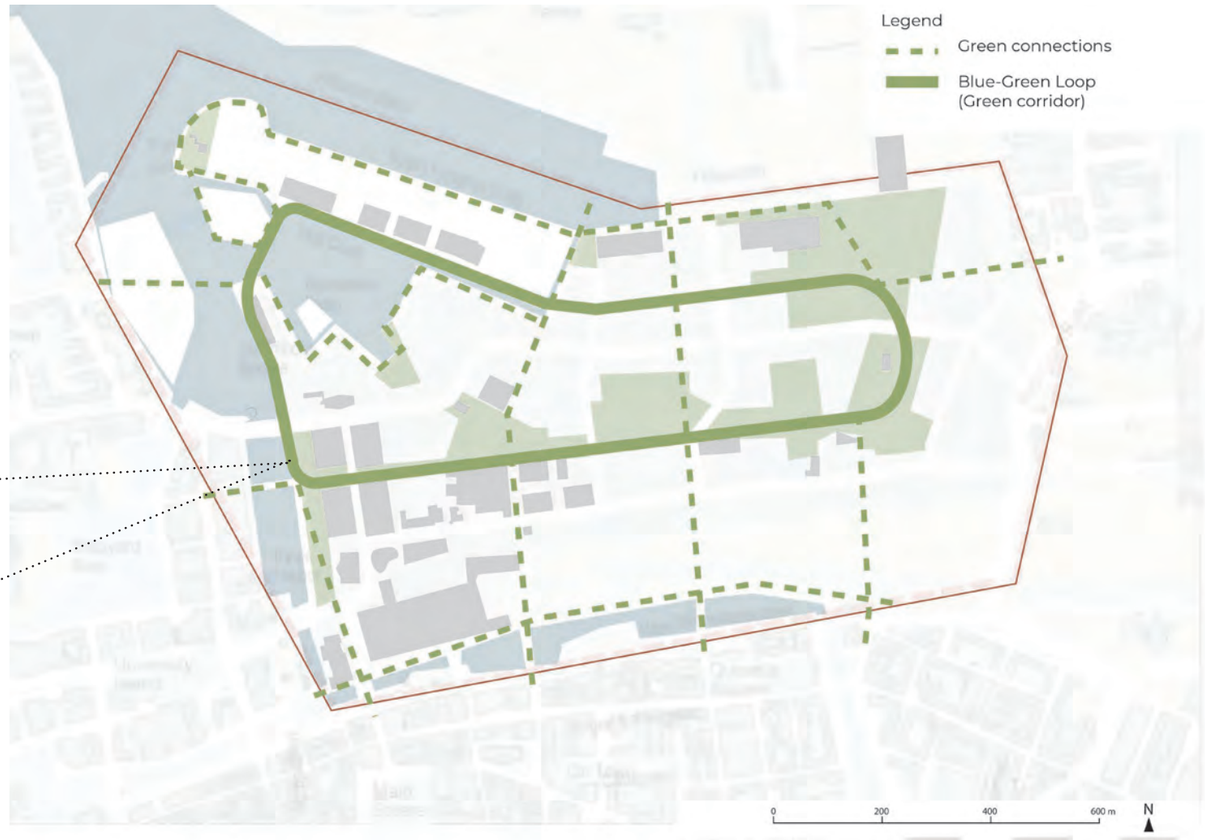


Fig. 48: Planned Green Connections of Nyhamnen and examples of corridors (based on Översiktsplan Malmö Stad 2019)

Infrastructure Nyhamnen (future)

To improve the current situation of the infrastructure, a new main route from west to east is planned, including multiple bus stops (fig. 49). The development plans of Malmö Stad (2019) show a focus on sustainable ways of transportation such as a grid of bike and pedestrian ways and multiple bus stops. Car traffic is secondary.

Tourism, Retail and the Community Services of Nyhamnen (future)

Throughout Nyhamnen, Malmö Stad (2019) has designated locations for tourism and retail. The goal of Malmö Stad is to increase the commercial services and tourism; this suits the area since it is located close to the central station and the waterfront. With a growing residential population, this will be a promising area for businesses to start (such as restaurants, cultural places and stores). With the improved connectivity (fig. 50), this area will be an extension of the original city center of Malmö.

With the arrival of new residents, there will also be an increased need for community services, such as schools and sports facilities, which will also be in Nyhamnen itself. Healthcare facilities are not clearly specified in the overview plan, but they will likely be added (Malmö Stad 2019:27).

Figure 50 gives an overview of the services and zones in the area. This is useful to make an estimation of the visitors of the site. It helps with estimating who will live, move, work here and how they will use the outdoor spaces.

Combined development plan of Nyhamnen (future)

This combined development plan (fig. 51) shows an overview of the big development that Malmö Stad plans to proceed in Nyhamnen. It includes land reclamation, bridges, canals, green areas and public transport routes. More detailed information on this can be found in appendix I.

Infrastructure Nyhamnen

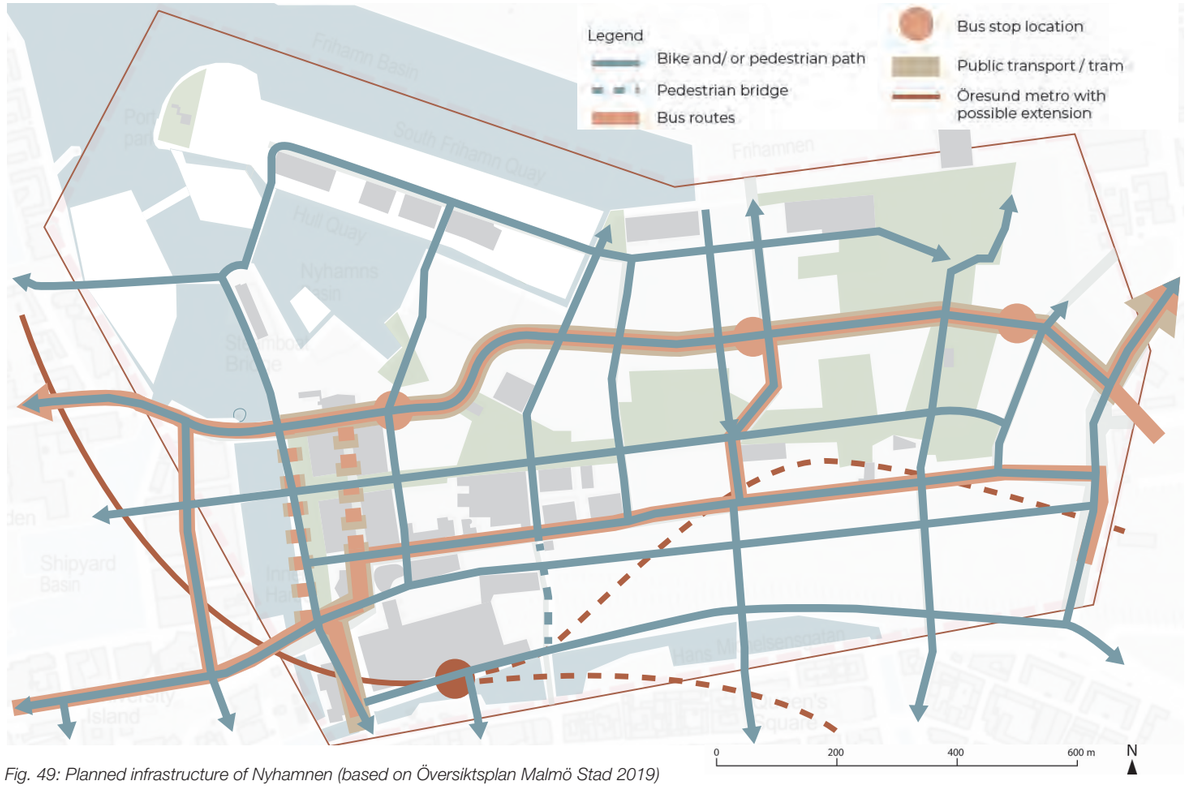


Fig. 49: Planned infrastructure of Nyhamnen (based on Översiktsplan Malmö Stad 2019)

Tourism, retail and the Community Services of Nyhamnen

Fig. 50: Tourism, retail and educational areas (based on Översiktsplan Malmö Stad 2019)

Combined development plan of Nyhamnen

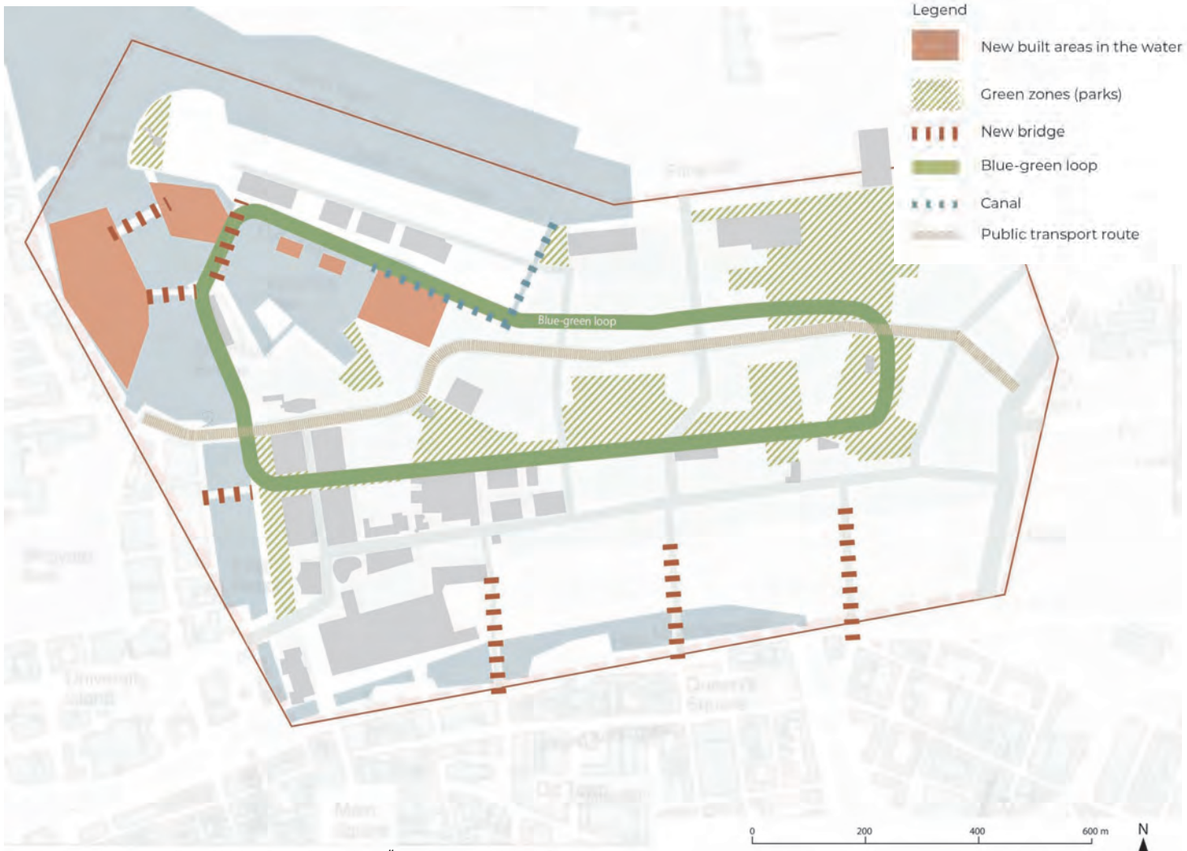


Fig. 51: Development plan of Nyhamnen (based on Översiktsplan Malmö Stad 2019)

4.9 *Target Location Analysis*

For the scope of this thesis project, we focus on a specific target location within Nyhamnen. The reasoning for selecting this specific target area will be presented in this section, along with supporting information of the chosen site.

Basemap for our Target Location
Since we will work with a design proposal that is situated in a future scenario, we will base our site conditions and base map on the future plans that are created by Malmö Stad (2019). Currently there is no precise overview map that shows the planned buildings and structures of Nyhamnen. To create a base to work with, we combined two maps (see Appendix II) that are provided in the overview plan by Malmö Stad. With this, we created our own base map.

Our basemap may differ from Malmö Stad's actual plans. We had to speculate on factors such as the width of paths and the shapes of buildings, since it was not possible to determine the actual measurements.

Combined Analysis Findings for the Target Location
The selection of the more narrowed-down project site was made by deciding what suits our research interests the most. As we partly focus on planning with heritage, the site should offer some areas that show historical importance.

For the naturalistic vegetation planning it was important to have sites with a variety of conditions, for instance varying in size, in proximity to the ocean and in shape. Furthermore, the connection between those two sites is something we want to strengthen with our design.

Most of the analysis findings, relevant to our target locations, are summarized in fig. 54. It shows the structures, largely outlined based on the overview plan Malmö Stad (2019). Other findings from the analysis can also be found on this map.

The map shows that the target location consists of two parks that are connected by a route for cyclists and pedestrians. This route should remain the main path in our design to ensure an easy and quick way to travel from south to north or vice versa.

In proximity to the target area lie two preschools as well as an elementary school. The north and western part of Nyhamnen is planned on being a primary location for tourism.

Green connections and the Blue-Green Loop will cross the target location. A new canal is also part of the new structure of this area.

Closely situated are some important historical buildings: Magasinet and M1 (warehouses) the grain silos and the Slagthuset. Another important historical element is the sightline to the old ferry terminal.

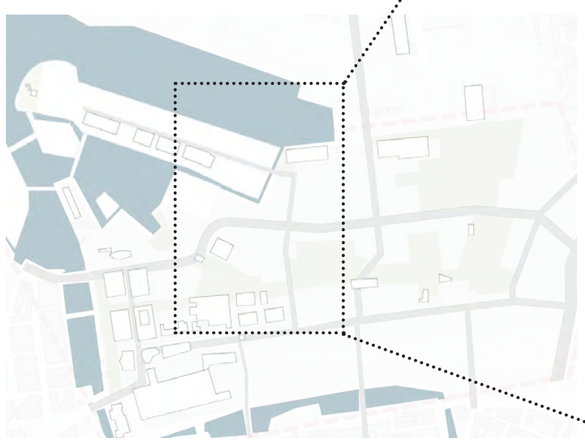


Fig. 52: Target location, placed in Nyhamnen

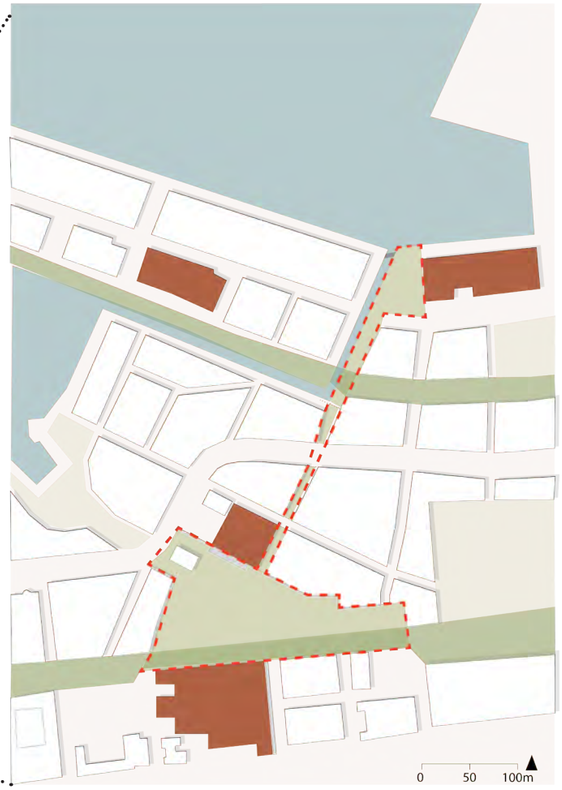


Fig. 53: Basemap target location

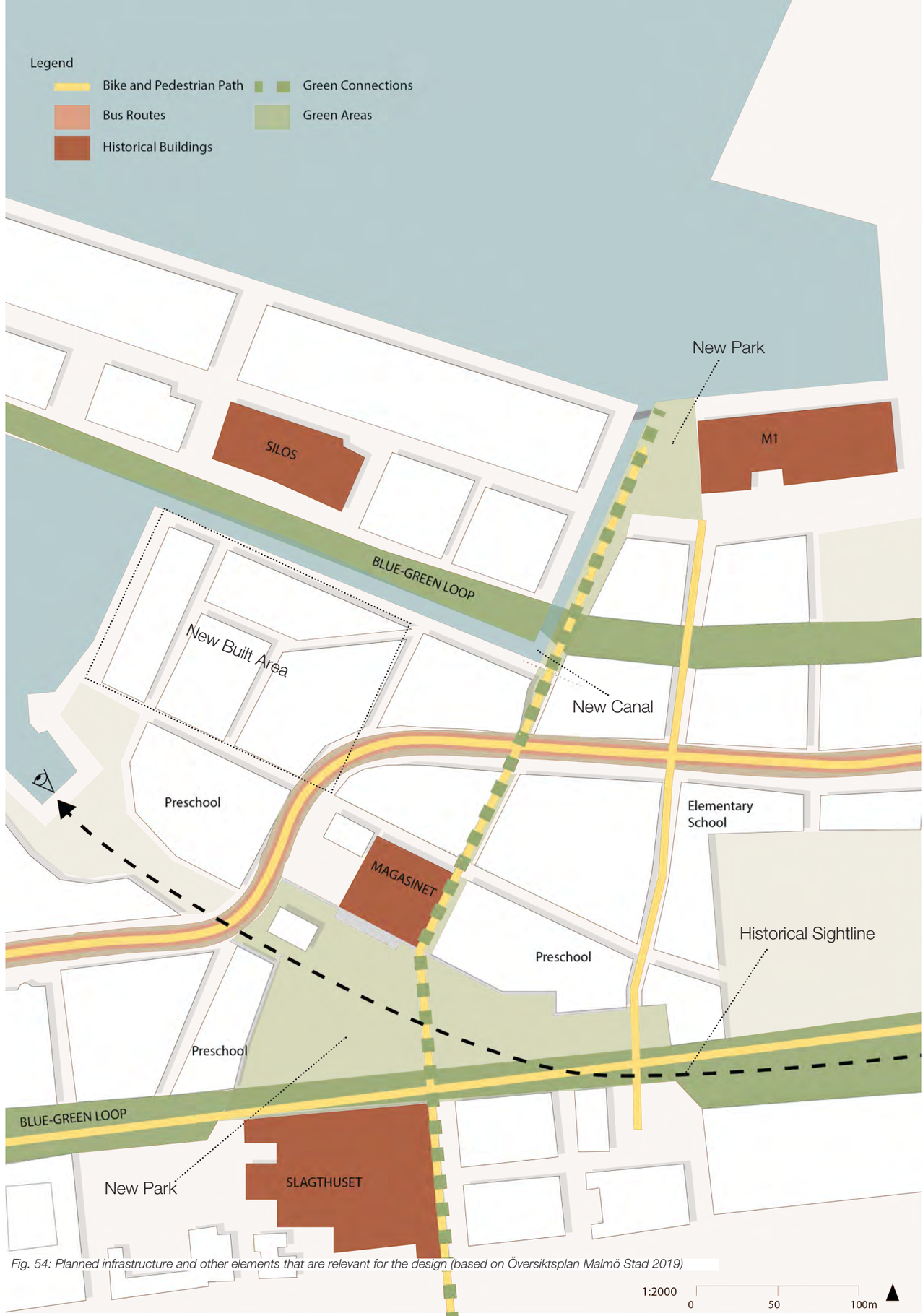


Fig. 54: Planned infrastructure and other elements that are relevant for the design (based on Översiktsplan Malmö Stad 2019)

To provide additional information that is important for the design of our target area, we conducted additional analyses on the wind and shadow of our chosen site.

Wind analysis

The closest area for which we could find a wind analysis was Västra Hamnen. This is an area on the coast, located about 1 km west of Nyhamnen. The wind rose (fig. 55, see Appendix III for a bigger version) shows how many hours per year the wind blows from each direction. In Västra Hamnen, the wind blows from all directions, but most frequently from the west. In total, the wind blows from the west for more than 1,000 hours a year and from the north and south for about 400 hours a year (Meteoblue n.d.). Transferred to our target site, it likely means there will mostly be wind from the west in the southern part and wind from the north and west in the smaller, northern part.

Shadow analysis

The 3D images of the site show where the shadows will be. Building heights are estimated, using the images in the overview plan (Malmö Stad 2019). With the shadow tool in Sketchup, the shadows are visualized on the shortest and the longest day of the year, respectfully showing the longest and the shortest shadows.

Malmo Västra Hamnen - 55.61°N, 12.98°E (5 m asl).

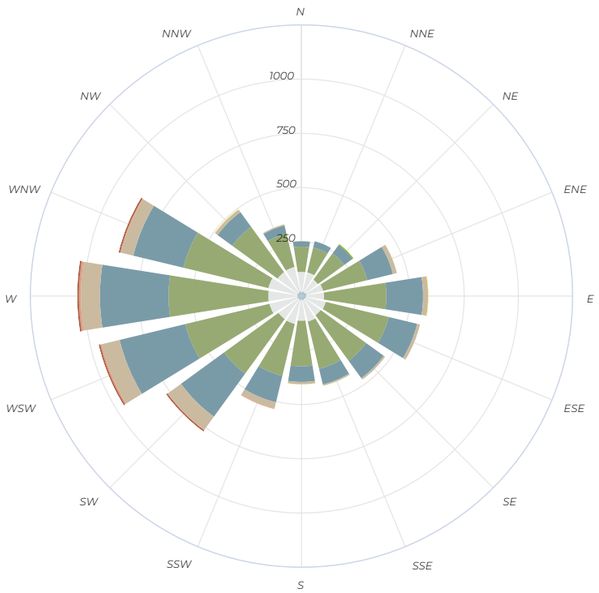


Fig. 55: Wind analysis (based on Meteoblue n.d.) (BY-NC)

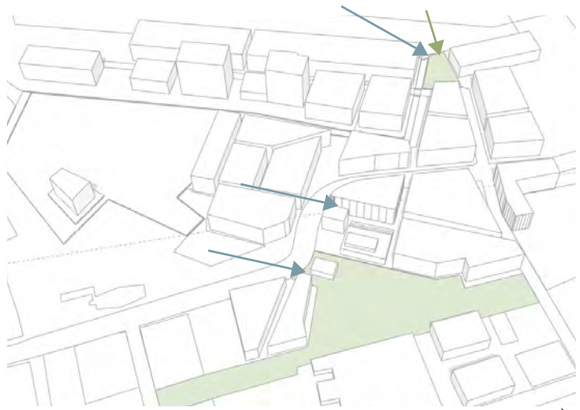


Fig. 56: Wind analysis on the site

Fig. 57: Shadow Analysis 21 December 12:00

Fig. 58: Shadow Analysis 21 June 12:00

Fig. 59: Nyhamnen and the Urban Forest today

5. Concept

The concept consists of two main components, the layers of time; referring to the industrial heritage and identity, and the layers of growth; the natural coast landscape.

I Layers of Time - Industrial Heritage
In the layers of time the industrial history and identity of this area is represented in various ways. The Grain Route and the lines of the historical grid are the primary focus.

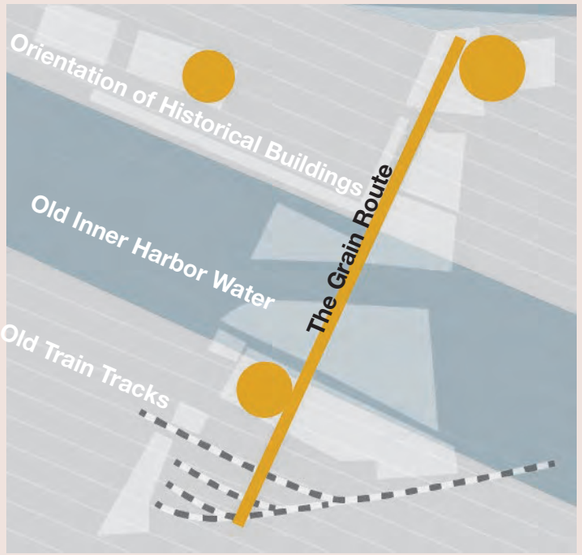


Fig. 60: Concept Layer of Time

The Grain Route
The Grain Route is both a new narrative layer and a connecting route between the historical buildings on and near the site. These buildings were storage locations from where the ships were loaded and then transported the goods overseas. The trains on the tracks transported the goods, from and to these buildings and ships.

As Scania is well known for its arable land in which grain production has been present for centuries (Olsson & Svensson 2008; Skoglund 2022) we call it the 'Grain Route'.

Historical Grid
The route is part of a strong green corridor that links industrial heritage, ecological systems and daily urban life in a coherent and future-proof manner. Perpendicular to the historical orientation are the lines that align with historical elements like the former train tracks, inner harbor water and the orientation of most historical buildings and streets.

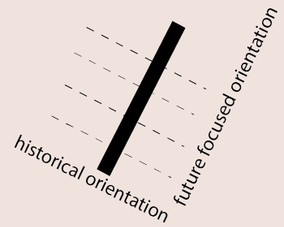


Fig. 61: Historical grid

II Layers of Growth - Naturalistic Vegetation Design
The naturalistic landscape supports the industrial structures. Vegetation is paramount, with the Swedish southwest coast represented in the plant selection and spatial design.

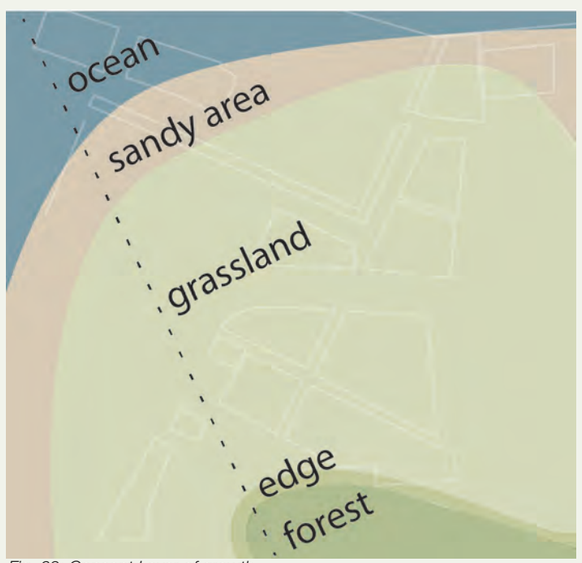


Fig. 62: Concept Layer of growth

Swedish Coast Vegetation
The target area is near the sea. Inspired by the layout of the Urban Forest and the landscape of Sweden's southwest coast, the concept of a coastal landscape emerged, simulating the spatial progression from ocean to forest.

Gradients and Transitions
The transition from water to forest is a line, a transition zone with multiple landscape types. This also reflects the transition zone that harbors are: the transition from water to city. The harbor connects the city to the sea, for example through transport and industry.

Fig. 63: Landscape types

5.1 *Overall Concept*

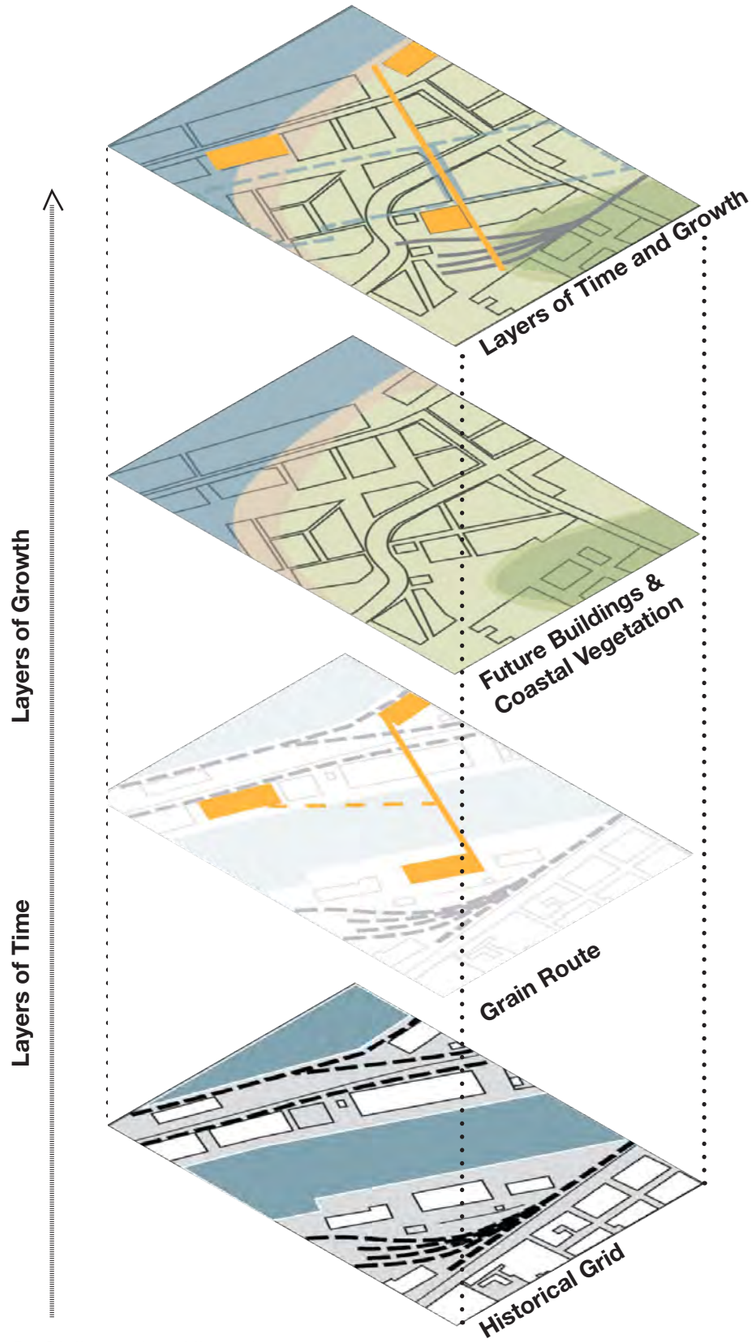
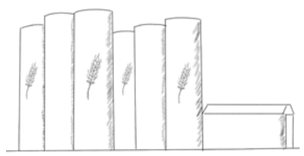


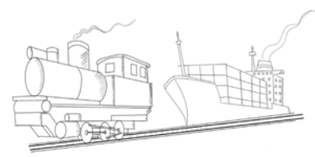
Fig. 64: Combination of Concepts

Concept

Coastal Vegetation in the Urban Context



Former Grain Storage



Harbor and Railway from the 1970s

By combining these two layers they form a concept that connects to the site's identity, in various ways.

In the following pages we will introduce the two layers in more depth.

The Grain Route tells the story of food export and import in Nyhamnen. This path forms a strong connection between the two parks in the target location. It is a route that connects historical buildings and is joined by supporting objects to enhance the visitor's connection to the place.

The route can be perceived from two ways; starting in the north, at M1, or starting in the south.

Walking along the route, visitors can follow the historical process of the goods. While some goods were imported to Sweden, others were exported. In Nyhamnen, they underwent three different processes:

1. Arrival / Departure
2. (Un)loading
3. Storage

The design is focused on grain, therefore we will describe the steps in the process in more detail, for grain. These steps are represented in the design, in different ways.

1. Arrival / Departure
Grain gets transported by trains from the agricultural fields of Scania. On the freight wagons, the grain travels to Malmö, there it arrives at the intermodal railyard.

2. (Un)loading
With the help of gantry cranes, the containers get unloaded from the freight wagons.

In the design, the (un)loading of goods is represented by the yellow shipping containers.

3. Storage
When the goods cannot be loaded on the ships (or trains) directly, they get stored. Storage can take place in the warehouses or the silos. The grain in Nyhamnen was stored in the silos. In the design, the connection with the silos in the Grain Route is strengthened by adding a viewpoint.

To represent grain storage in warehouse M1, we placed a larger assembly of yellow shipping containers in front of the building.

The containers in the design are located throughout the project area to represent the movement of the goods in the harbor. They are either filled with vegetation that resembles grain fields in terms of color and appearance or are transformed into roofs to provide shelter.

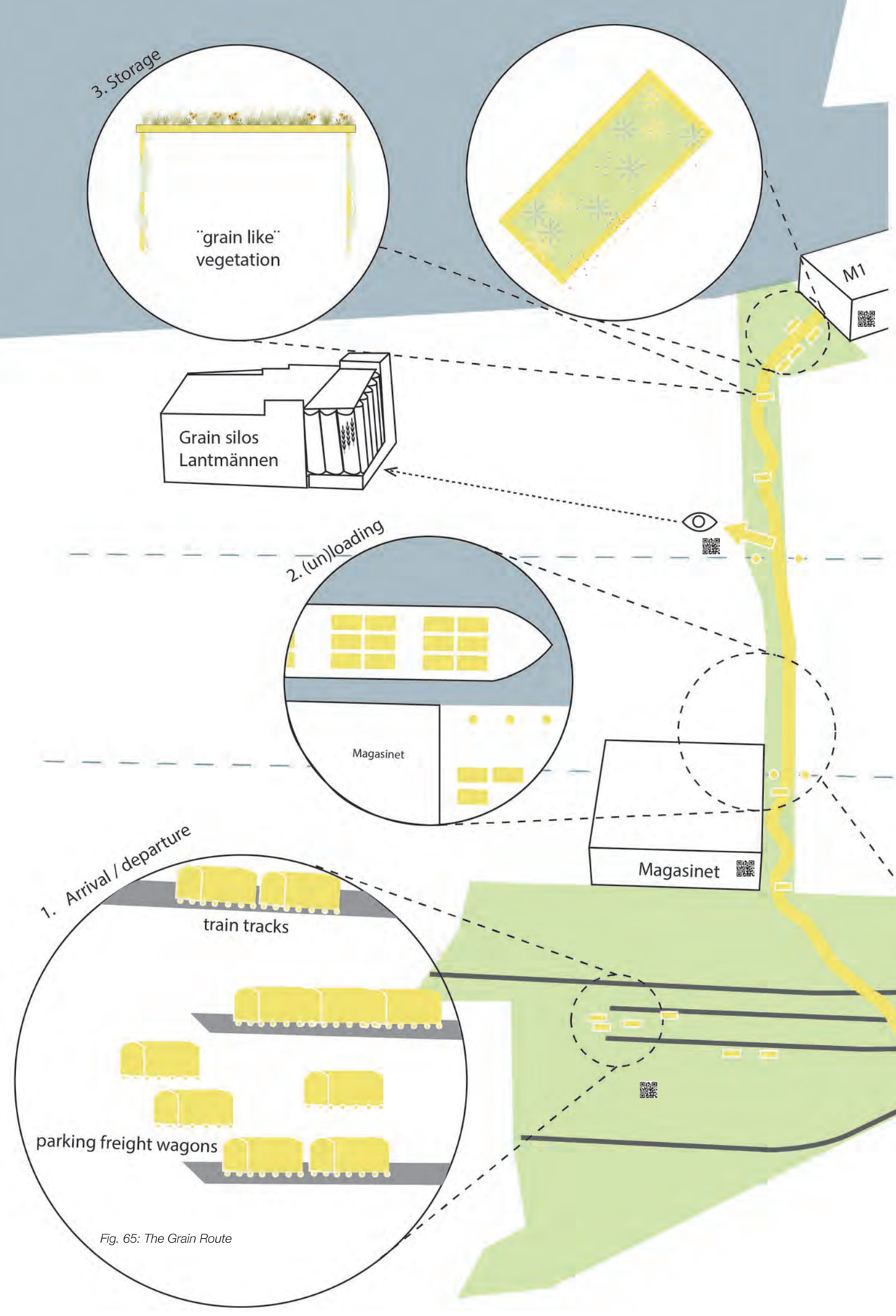
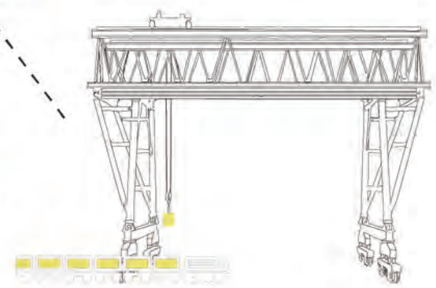
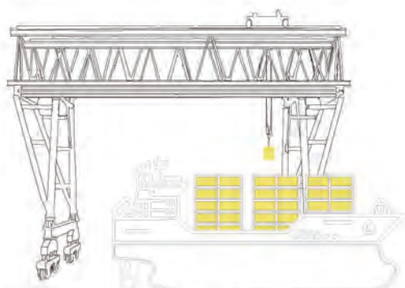


Fig. 65: The Grain Route

If people are interested in the concept they can find more information on QR codes that are located in different spots of the design.



(un)loading the freight wagons



(un)loading the ships

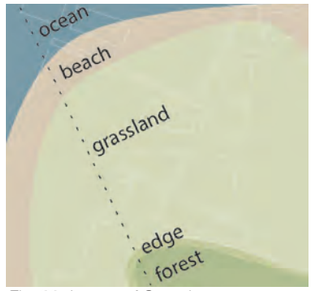


Fig. 66: Layers of Growth

Vegetation concept

For the vegetation concept, we decided to use the typical coastal vegetation found along the western coastline of Scania. We wanted to integrate different archetypes into Nyhamnen to provide a wide range of benefits for humans and nature. In order to draw inspiration from nature and transfer it in a fitting way to the urban landscape of Nyhamnen, we had to find a suitable reference landscape.

Reference Landscape

To find a suitable reference landscape of individual archetypes, we conducted site visits along the west coast of Scania. First, we identified where natural reserves were located on the coast. This would ensure that the landscape was rather natural. We looked for areas with

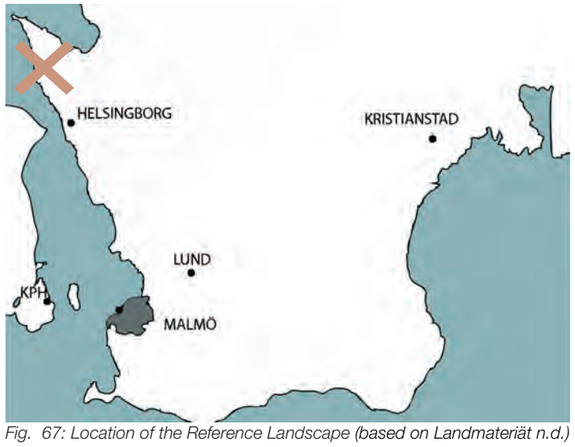


Fig. 67: Location of the Reference Landscape (based on Landmateriät n.d.)

transition zones between the ocean and forest, or large patches of dense vegetation, as these are what we planned to introduce to our site. After filtering out a few options that seemed suitable, we visited the sites. This helped us to 'read' the landscape and understand the proportions of the structures, volumes and species.

One landscape that we found particularly suitable was the 'Nyhamnsläge Strandbad' on the south coast of Kullaberg. Its different archetypes and smooth transition zones convinced us. The County Administrative Board distinguishes between the different Natura 2000 nature types (Länsstyrelsen Skåne 2005).

Starting with 'shifting sand dunes with sand ridges' (nature type 2120) in the west it gradually transforms into 'permanent sand dunes with orthovegetation' (2130). After that 'decalcified permanent sand dunes with Crowberry' (2140) dominate the coastline. Towards the houses pine plantations have been planted (Länsstyrelsen 2005). Furthermore, the western tip of the 'Nyhamnsläge Strandbad' shows the nature types 'annual vegetation on drift lines' (1210), 'perennial vegetation on rocky shores' (1220) and 'revs' (1170). The dominant nature type 'decalcified permanent sand dunes with Crowberry' suggests that the bed rock in this area probably has a lower PH value, making it suitable for heather like the crowberry.

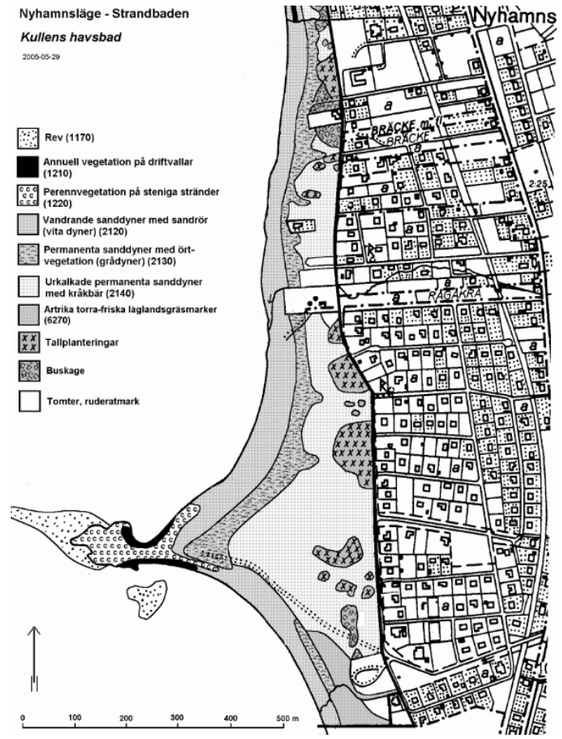


Fig. 68: Natura 2000 types (Länsstyrelsen Skåne 2005)

Fig. 69: Photos from Nyhamnsläge Strandbad

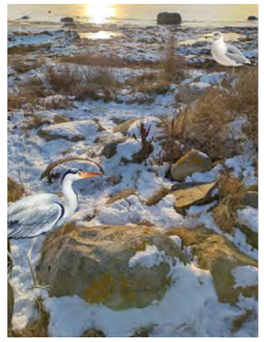
The Character of the Coast at Nyhamnsläge Strandbad

OCEAN

BEACH

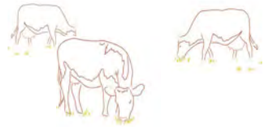
The flat coastal region and the reef are of great importance for resting seabirds. Throughout the year, various wading birds, ducks and pipits can be observed (Länsstyrelsen Skåne, n.d.).

Here, grass is frequently interrupted by sand and stones.



GRASSLAND

The Grassland takes up the biggest space of the section. The vegetation consists of alternating areas of the grass Leymus arenarius and herb-rich heathland, heather and crowberry, and bare sandy areas.



The open landscape has been created with the help of grazing animals' mouths and hooves (Länsstyrelsen Skåne n.d.).

EDGE

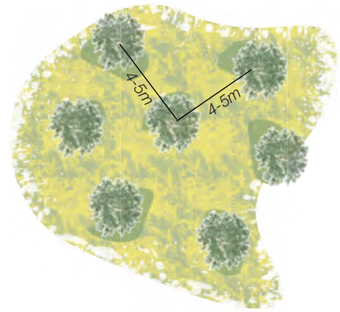
The area where the grassland meets the forest is showing a variety in species. Consisting of trees and shrubs such as Betula pendula, Quercus robur, Tamarix parviflora and Corylus avellana, they grow to a height of up to 5 meters and are spaced 2–3.5 meters apart. Sunny areas between these woody species are filled with Erica, Calluna, Rosa and Empetrum, growing up to 40 cm tall.

Towards the coast, the shrubs are partially replaced by smaller Pinus trees, shaped by the wind. The shaded ground around them is covered in Polypodium vulgare. The transition between the edge and the grassland is covered in Erica.

Towards the forest, the structure of the meadow is broken up by individual, small Quercus trees shaped by the wind.

FOREST

The Pinus grow about 4-5 m apart. Surrounding their stem are patches of Polypodium vulgare. In the sunnier areas between the patches is growing Deschampsia flexuisa.



The shrub layer is missing completely making it feel like walking through a pillar hall.

Fig. 70: The Character of Nyhamnsläge Strandbad

With this knowledge in the back of our minds our aim is to transfer the character we found in nature to our design, while adapting it to the concept of the grain route and the urban surroundings.

6. Design Masterplan & Zoom-ins

In this chapter, the design will be presented, starting with the masterplan and followed by the zoom-ins. For the zoom-ins, four locations are selected that offer a wide range of qualities; it will proceed from north to south.

6.1 *Masterplan*

This masterplan (Fig. 71) was developed using information from the analysis and literature study and is based on the concept. It shows the two parks and the green connection between them, with the connecting factor being the Grain Route: a cycling and walking path that connects the entire target location.

The zoom-ins provide more information, but not everything has been worked out in detail. For example, the roads where buses / cars drive have not been further detailed, but an estimate of what they would look like has been drawn on the masterplan to provide some context. This also applies to the Blue-Green loop, where the double rows of trees described in Malmö Stad's overview plan (2019) are planned. However, this has not been further elaborated because we believe it should be addressed on a larger scale, considering the other green areas of Nyhamnen.

A bigger version of the masterplan is attached in the Appendix IV.

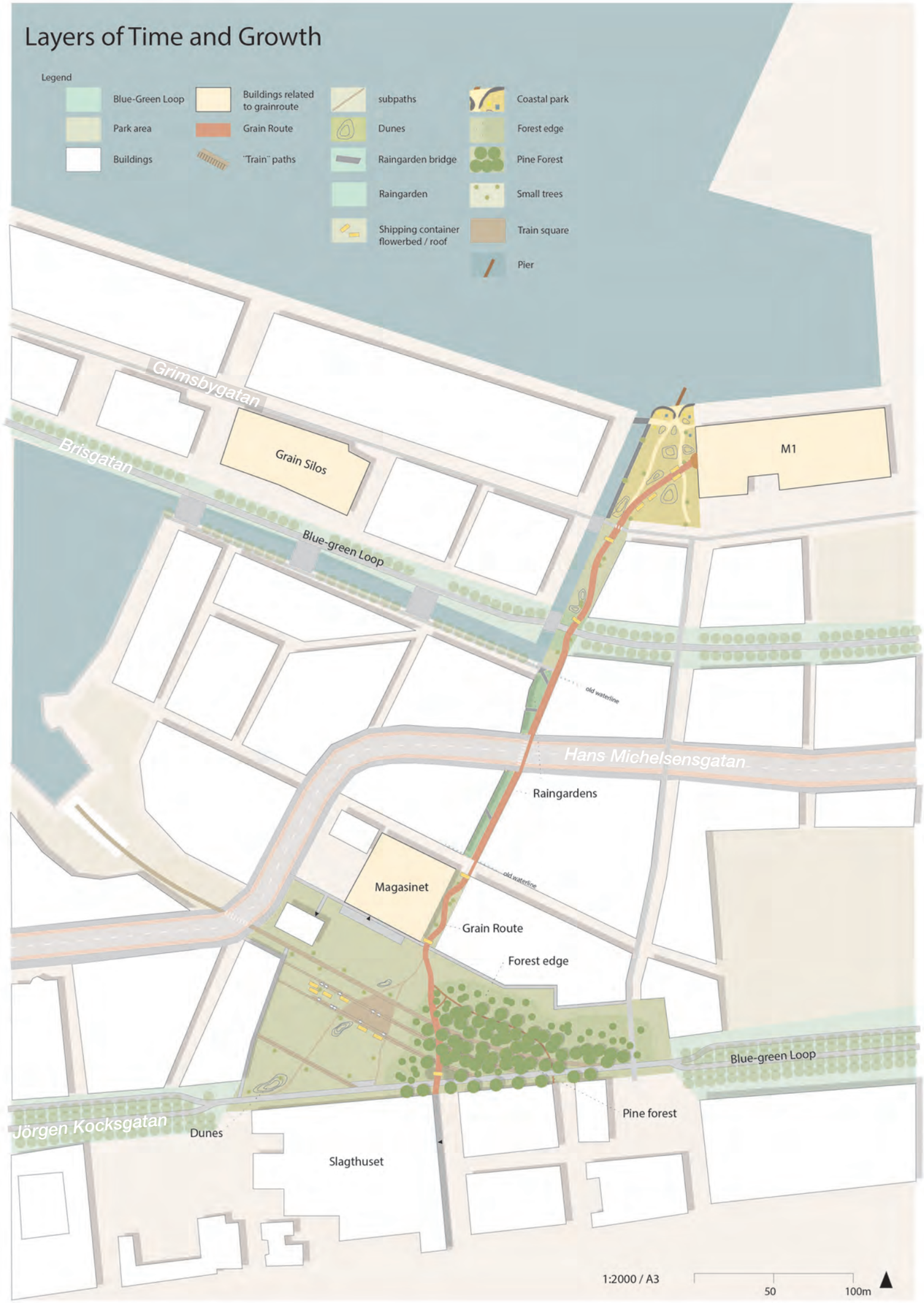
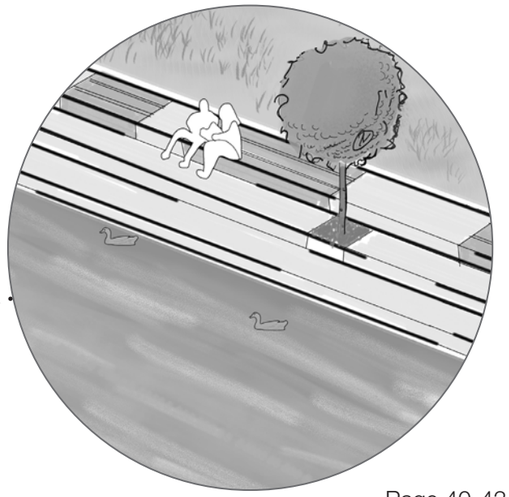


Fig. 71: Masterplan for the design of 'Layers of Time and Growth'

6.2 Zoom-ins

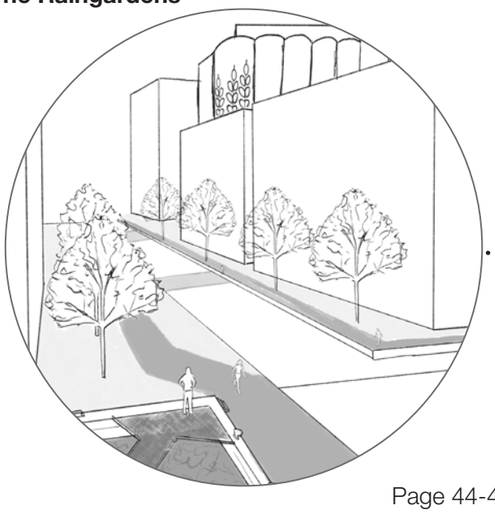
The focus of the zoom-ins is to show the design of the parks and the green connection between them. It starts with the Coastal Park in the north, then followed by the Raingardens, which is part of the green connection. In the Rail Park in the south, first there will be zoomed in on the resting areas in the west and then on the Pine Hall in the east.

The Coastal Park



Page 40-43

The Raingardens



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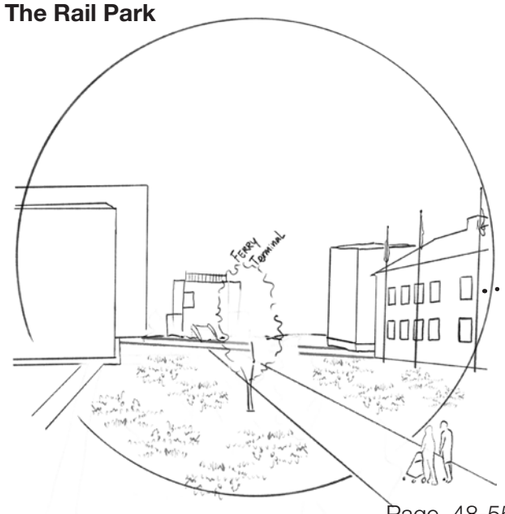
The Rail Park



Page 48-55

Fig. 72: Locations of Zoom ins

The Pine Hall

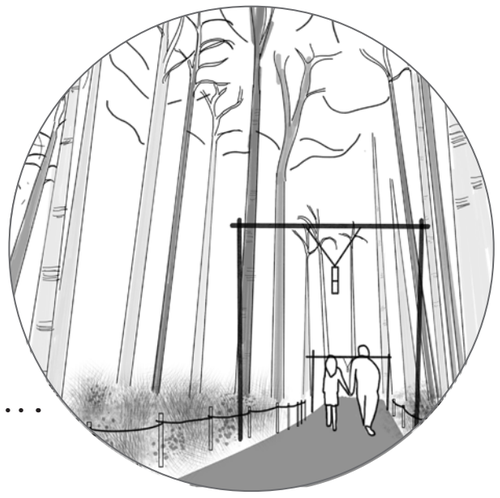


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Fig. 73: Location Zoom-in Coastal Park

6.2.1 The Coastal Park

Overall Design

For the area closest to the sea, we wanted to capture the sense of excitement you get when enjoying the Scanian coastline. Therefore, this part is characterized by the dunes, sand and the vegetation that can be found close to the water in the inspiration Landscape Nyhamnsläge Strandbad. In the north it starts with a sandy area, that connects the land to the ocean. To strengthen the importance of the water as infrastructure in the past, a deck connecting to the sea is placed here. In this way the urban core can be link to the water and to provide open public spaces that were previously inaccessible (Braae & Diedrich 2012:26). To compensate for the difference in elevation a wall made out of stones, inspired by the coastal landscape is created. The main area of the Coastal Park is an open meadow with dunes. Gradually from the ocean to the street the amount of sand is being reduced and the grass takes up more and more space. This on one hand refers back to the reference landscape and on the other ensures that no sand will be blown further into the city. Individual Sorbus intermedia are spread thought the design adding more biodiversity and connecting back to the reference landscape. However, we shifted from the Quercus found in the reference landscape to Sorbus as we wanted to ensure the trees retain its smaller size and connect to the surrounding currently existing Sorbus in the Nyhamnen area.

The meadow covering most of this park is a mixture provided by the Swedish company ‘Pratensis’. This is a company that produces Swedish meadow mixes using plants grown from wild-collected seeds. Using a mix offered by Pratensis ensures that we are introducing a ‘nature-tested’ plant community, making it a safer choice than creating our own mix (Rainer and West 2015:41). For this site, we have opted for the ‘115 B – dry sea meadow including annual flower field seed’ mix, which is designed for dry beach meadows by the sea (Pratensis AB n.d. a). This mix ensures a high biodiversity, what can benefit humans' mental health and help providing ecosystem services (Meng et al. 2024; Keune et al. 2013).

The coastal park offers multiple ways to connect to nature. At the water’s edge, the sandy area invites visitors to dip their toes in the sea. The dunes in this park create playscapes for children to experience and connect to nature. And the wind, that is often perceived as disruptive, can be used to fly kites. These interactions with nature are ways that in the long run could strenghten the pro-environmental behaviors and support biodiversity conservation (Jakstis and Fischer 2024; de Oliveira & Mahmoud 2024).

For additional wind-protected resting areas, we took inspiration from the colorful huts often seen on the Swedish coast. We did not see them during the site visit but as they are prominent within the Scanian landscape we wanted to include them and their advantages into the design. We transformed them into small wind shelters that welcome workers and visitors alike to take a break. They come in blue and yellow, connecting to the blue amenities in the Urban Forest and the yellow mooring bollards in the harbor.

To connect to the site's heritage, we picked up the history in multiple ways. The Grain Route starts or finishes in the M1 building. To emphasize this spot, multiple yellow containers are placed here. The mix inside the containers is inspired by the mix ‘Indianersommer’, provided by the ‘Association of German Perennial Mixers’. This association aims to promote the use of perennials in public and private green spaces with tested mixes of perennials adapted to specific site conditions (Bund Deutscher Staudengärtner 2026). Another connection to the heritage is done at the entrance to the M1 building, which is designed to mirror the facade. This is a subtle way to connect spaces with intangible value. By projecting the semicircle above the main entrance and using the same bricks the old structure is revealed again. The benches refer to the beams that are present around the sea in Nyhamnen.

Fig. 75: Grass interrupted by stones in Västra Hamnen

Inspiration

Fig. 74: Huts on the Swedish coast

Fig. 76: Coastal Park zoom-in

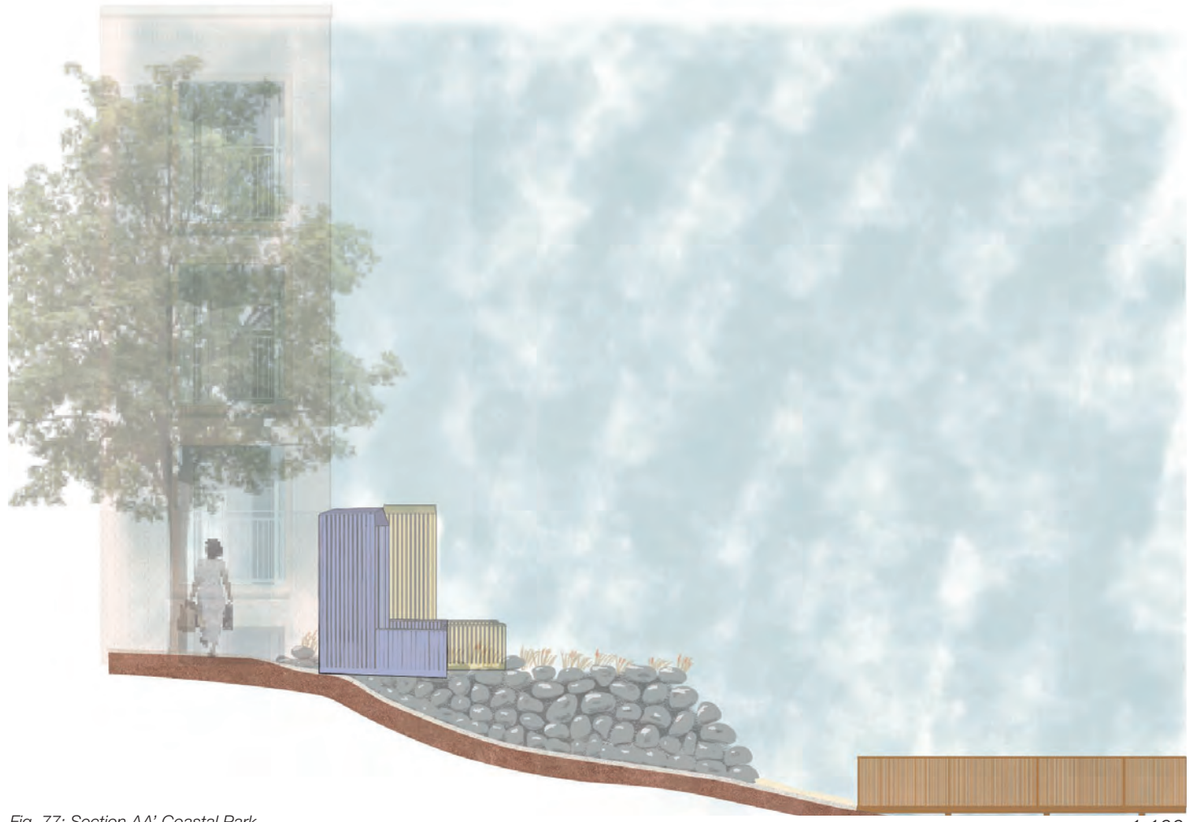


Fig. 77: Section AA' Coastal Park

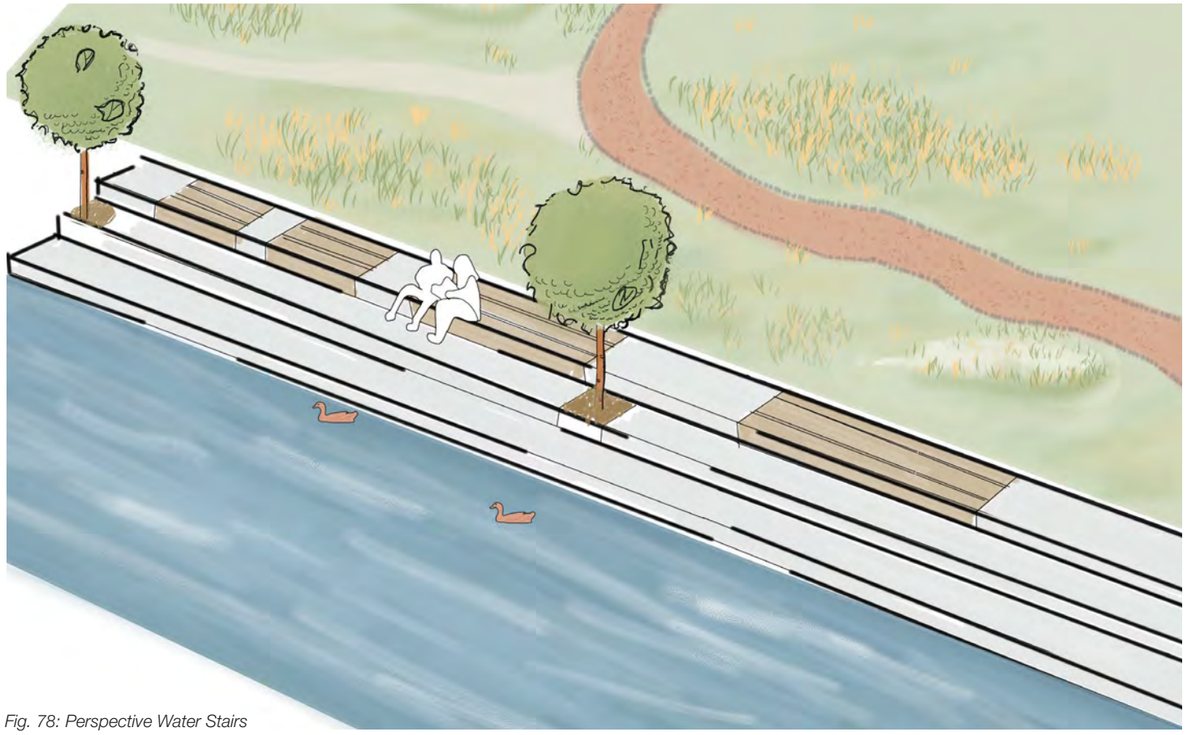


Fig. 78: Perspective Water Stairs

Additional seating along the newly created canal offers opportunities to take a break.

Fig. 79: Detail A Coastal Park

Grain containers, framing the Grain Route

1:100 N

Fig. 80: Section BB' Coastal Park

M 1:200

Materials
As mentioned before, the material connects to the site's heritage. This is for instance visible in the clinkers on the entrance M1 and the benches placed along the main routes to rest and wait for people, inspired by the beams along the water in Nyhamnen. Also, the containers, now being filled with flowers, refer to the site's shipping history. These ways of using and choosing materials connect to the identity and history of post-industrial landscapes (TICCIH 2003; Braae 2015).

The facade of M1 is being reflected to the entrance.

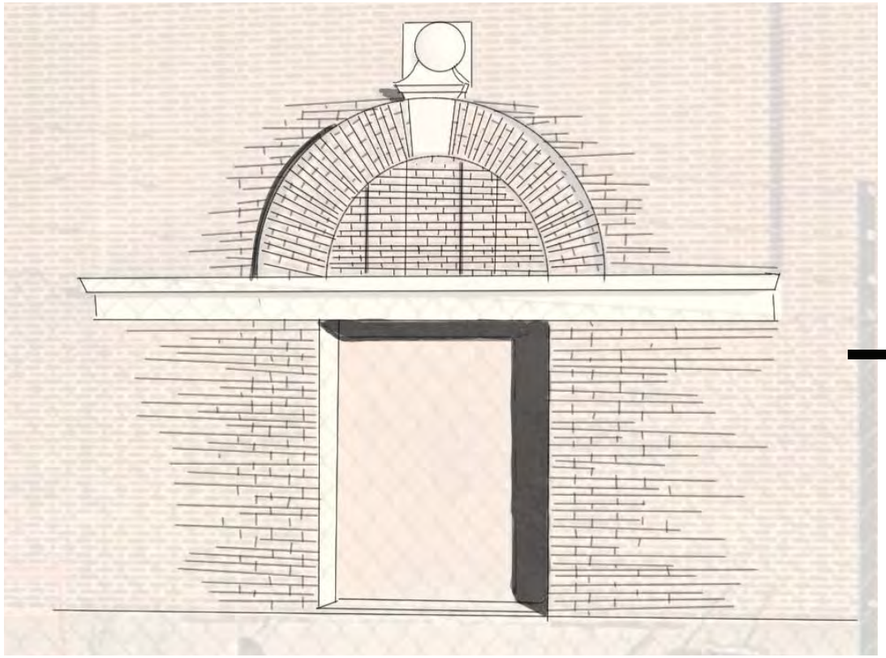


Fig. 83: Entrance M1 Building

Detail B

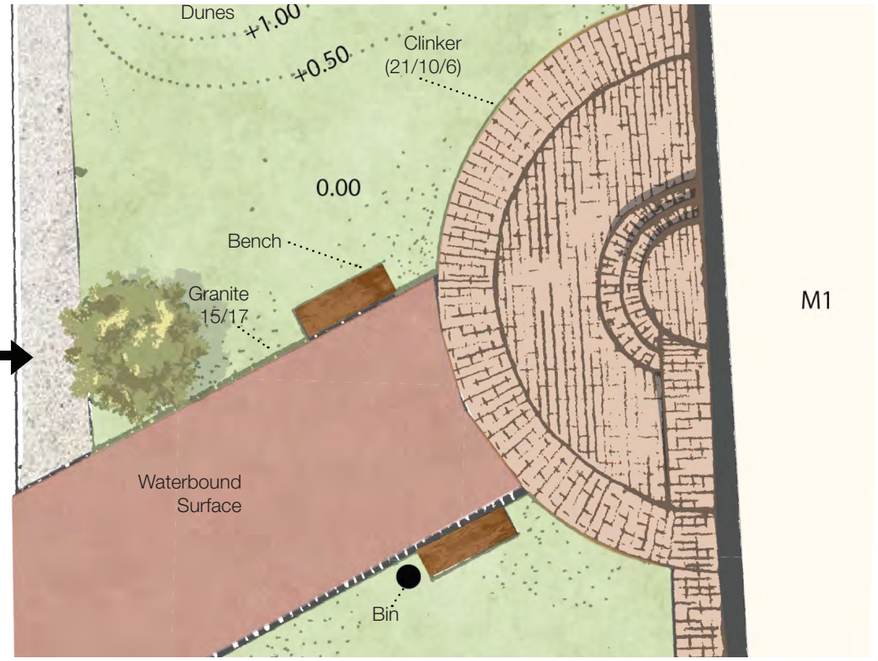


Fig. 84: Detail B Coastal Park

1:100 N

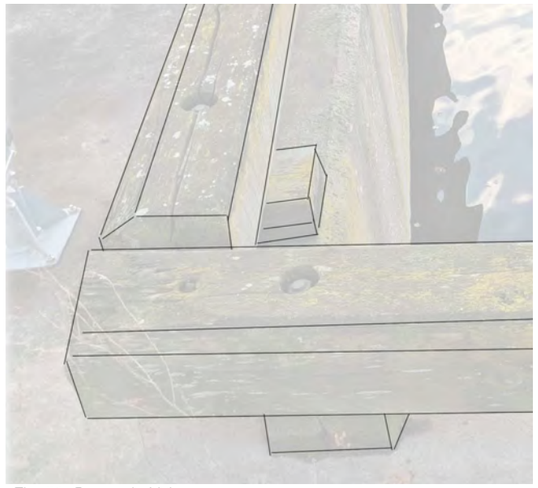


Fig. 81: Beams in Nyhamnen

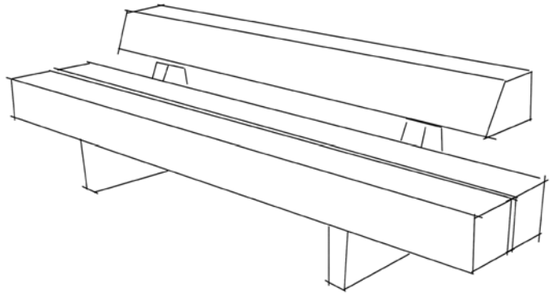


Fig. 82: Benches inspired by Beams

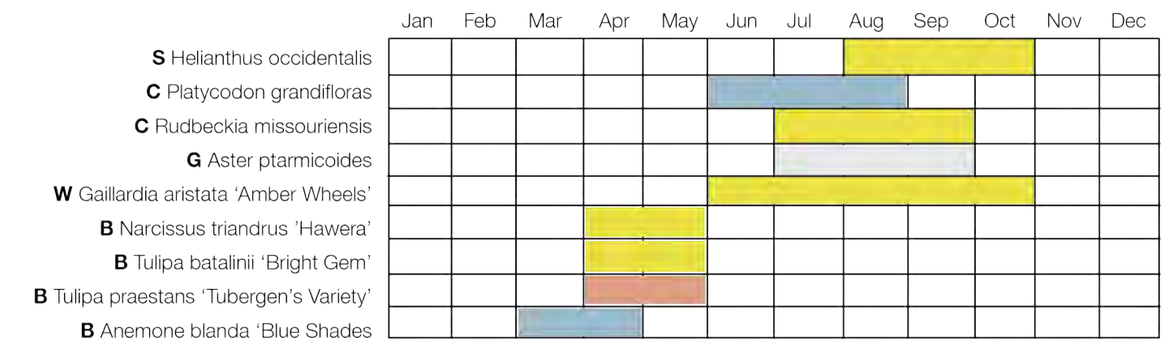


*Fig. 85: the blossoming time of the different flowering plants that we have extracted from the 'Indianersommer' mix by the 'Association of German Perennial Mixers'. The plants are grouped in structure plants (**S**), Companion plants (**C**), Ground covers (**G**), Weavers (**W**) and Bulbs (**B**). Besides those flowering plants, the grass Sporobolus heterolepis serves as a structure plant and the grass Nassella tenuissima as a companion plant.*

Fig. 86: Container planting

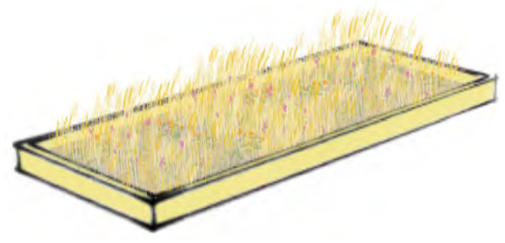


Fig. 87: Shipping grain containers are used for flower beds

Benches in front of the entrance provide a place for visitors to rest.

Meadow introduction and maintenance
For the introduction of the meadows, it is important that the soil is not too nutrient-rich. The meadow should be sown in late August or September. It may take several years for the meadow to become fully established. During the first year, annual weeds from the soil's seed reserve may sprout. These should be cut when they reach a height of approximately 10 cm.

Meadows need to be mown annually to develop in the long term. This should be carried out in late summer, once most of the herbs have flowered. All hay should be removed after a few days so that it can seed without increasing the nutrients in the soil. The meadow should not be fertilized, as this promotes grass and weeds that compete with the meadow plants.

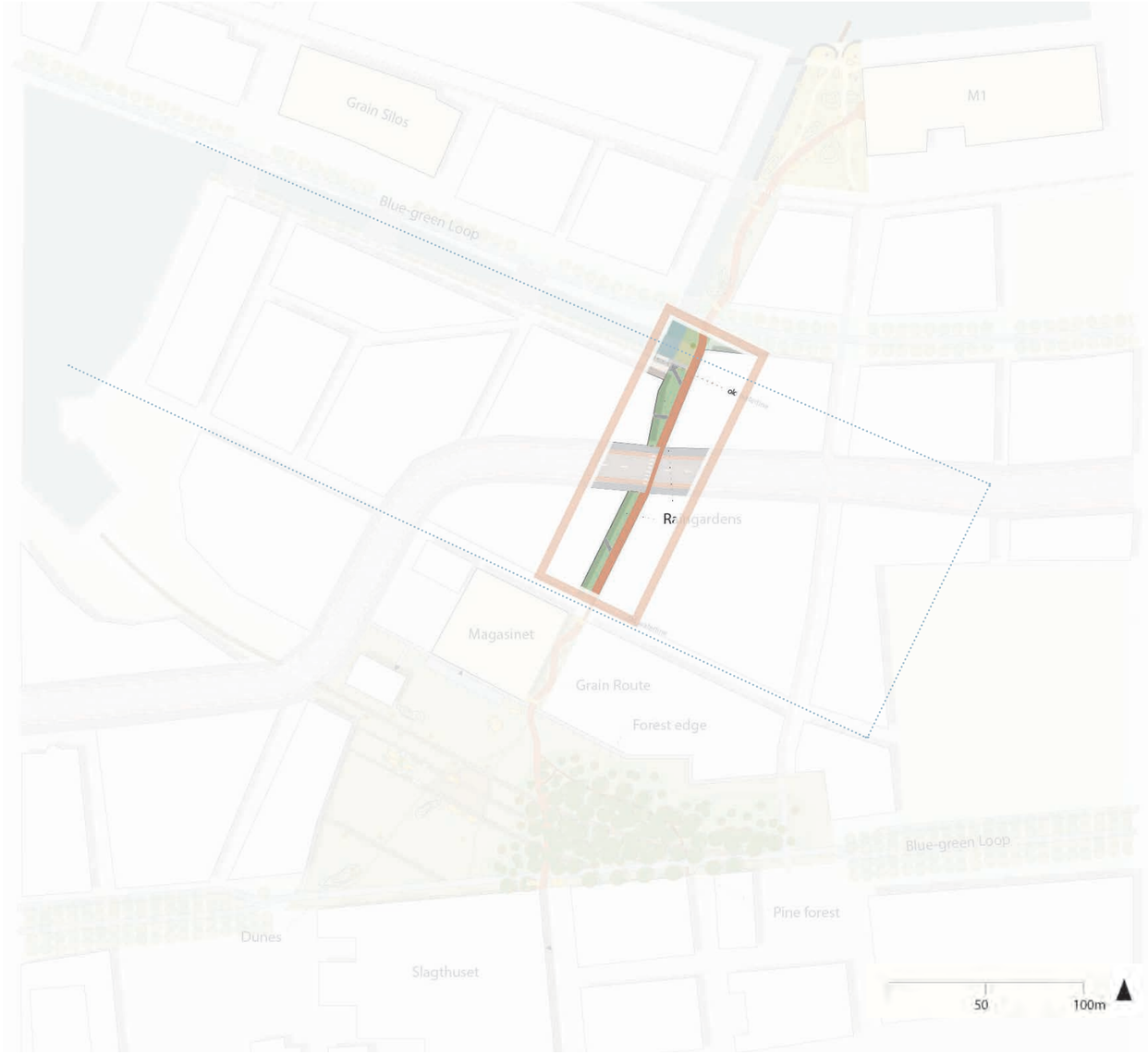


Fig. 88: Location Zoom-in Raingardens

6.2.2 *The Raingardens*

Overall Design

The raingardens form a big part of the green connection that is situated between the two parks in this design target location. This zone consists of a path on one side (The Grain Route) and the raingardens next to it. The raingardens aim to slow down the runoff of rainwater and help storing water in the flowerbeds, preventing from overflooding the sewer systems.

Connections with the area's industrial heritage is presented in various ways. The design pays homage to the area's industrial past: raingardens are now located on the site where the harbor's inner water once was.

In the "Layer of Growth" part of the concept, this area is marked as the grassland zone. However, grasslands are not represented within the raingardens, but along the edges, the areas adjacent to the rain gardens, there are meadows that do represent this zone in the planting concept, these areas are not been further elaborated.

The natural landscape concept takes a step back to make place for creating a historical reference. The raingardens relate to one of the transformation processes that took place in Nyhamnen; the change of the coastline and water structure of the area. This way of referring to historical processes adds a new narrative and becomes part of an ongoing process of storytelling that fits the transformative character of post-industrial heritage sites. Since the raingardens are related to water in a different way, and by the choice of its materials and shapes, it shows elements that can be linked to the historical quays. The appearance of the raingardens reinforces what may be a subtle reference to history.

By designing the connection between the two parks as a raingarden, we are changing Malmö Stad's drainage vision (see figure 89) that is represented in the overview plan. This will create an additional area that can store and utilize rainwater. The raingardens collect excess rainwater from roofs and paved surfaces, it slows runoff, and allows the water to gradually seep into the ground. This prevents flooding, purifies the water, and replenishes the groundwater (The Aquifer Project 2022).

In this way, the raingardens serve as a subtle historical reference while also providing a sustainable and future-proof space that will help regulate the heavier rainfall predicted for the future.

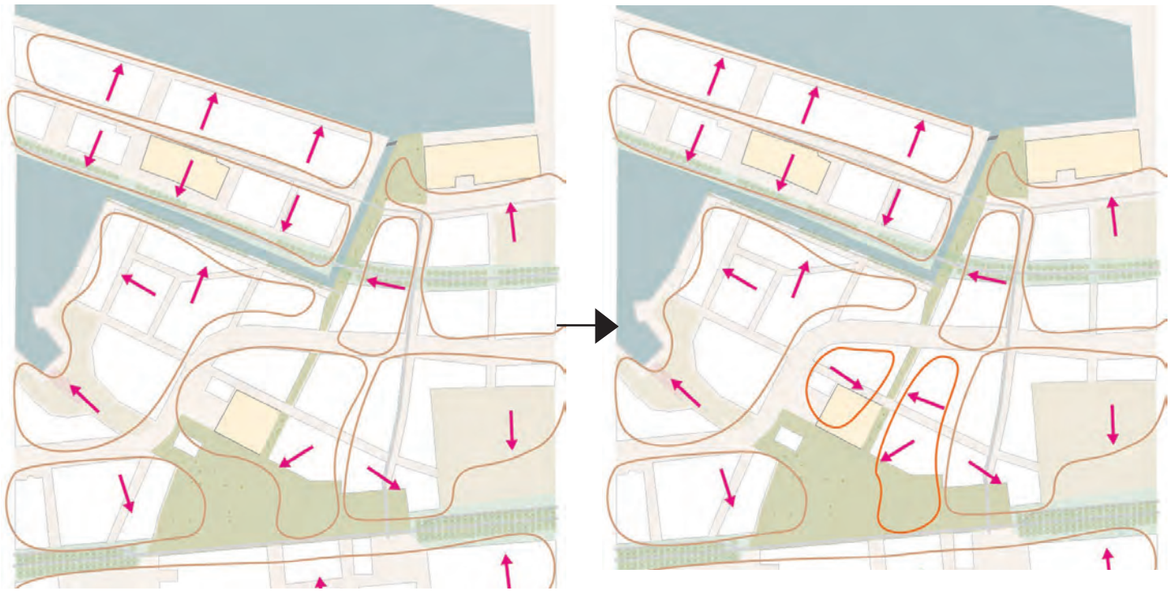


Fig. 89: Planned Drainage of Nyhamnen (based on Översiktsplan Malmö Stad 2019)

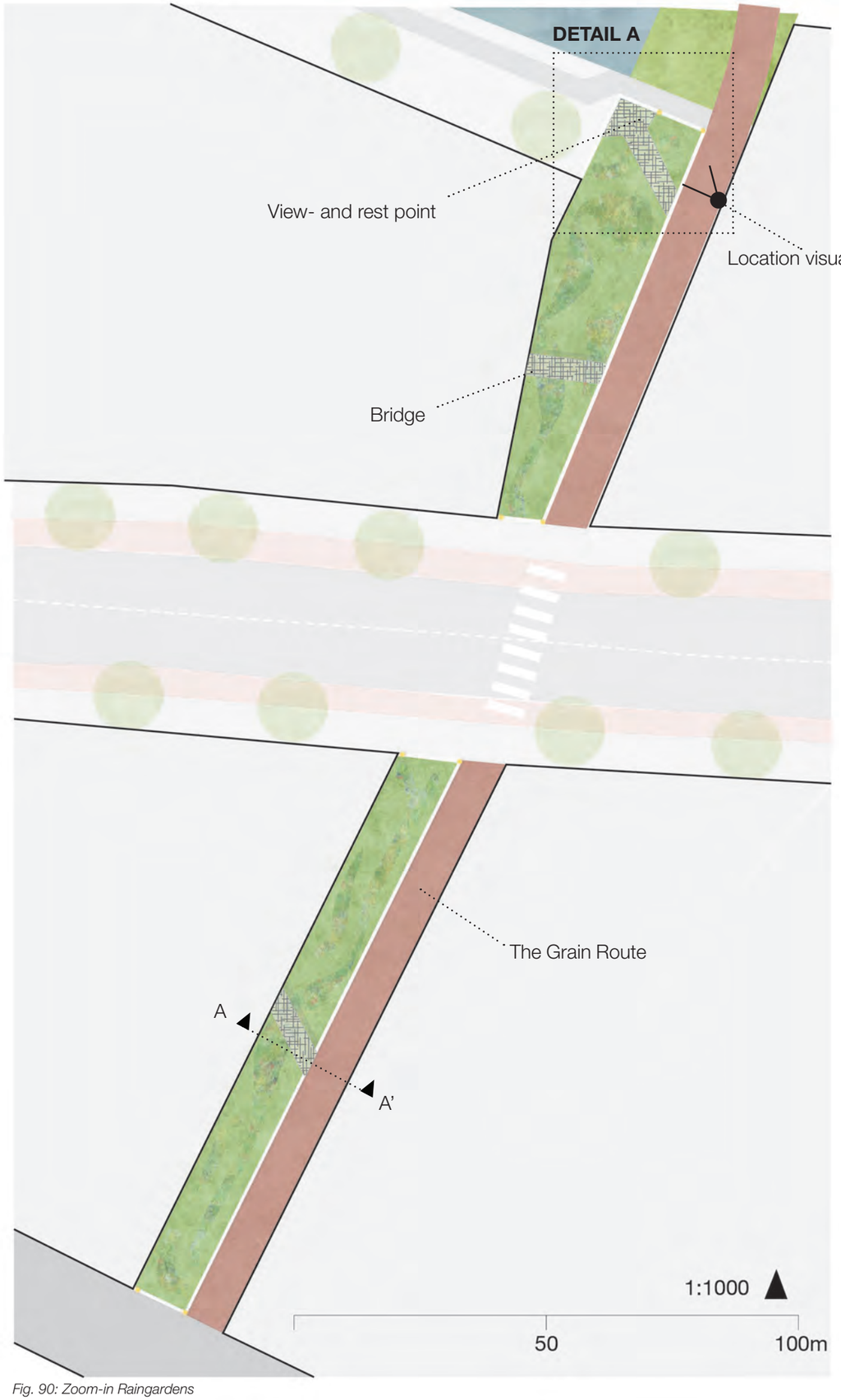


Fig. 90: Zoom-in Raingardens

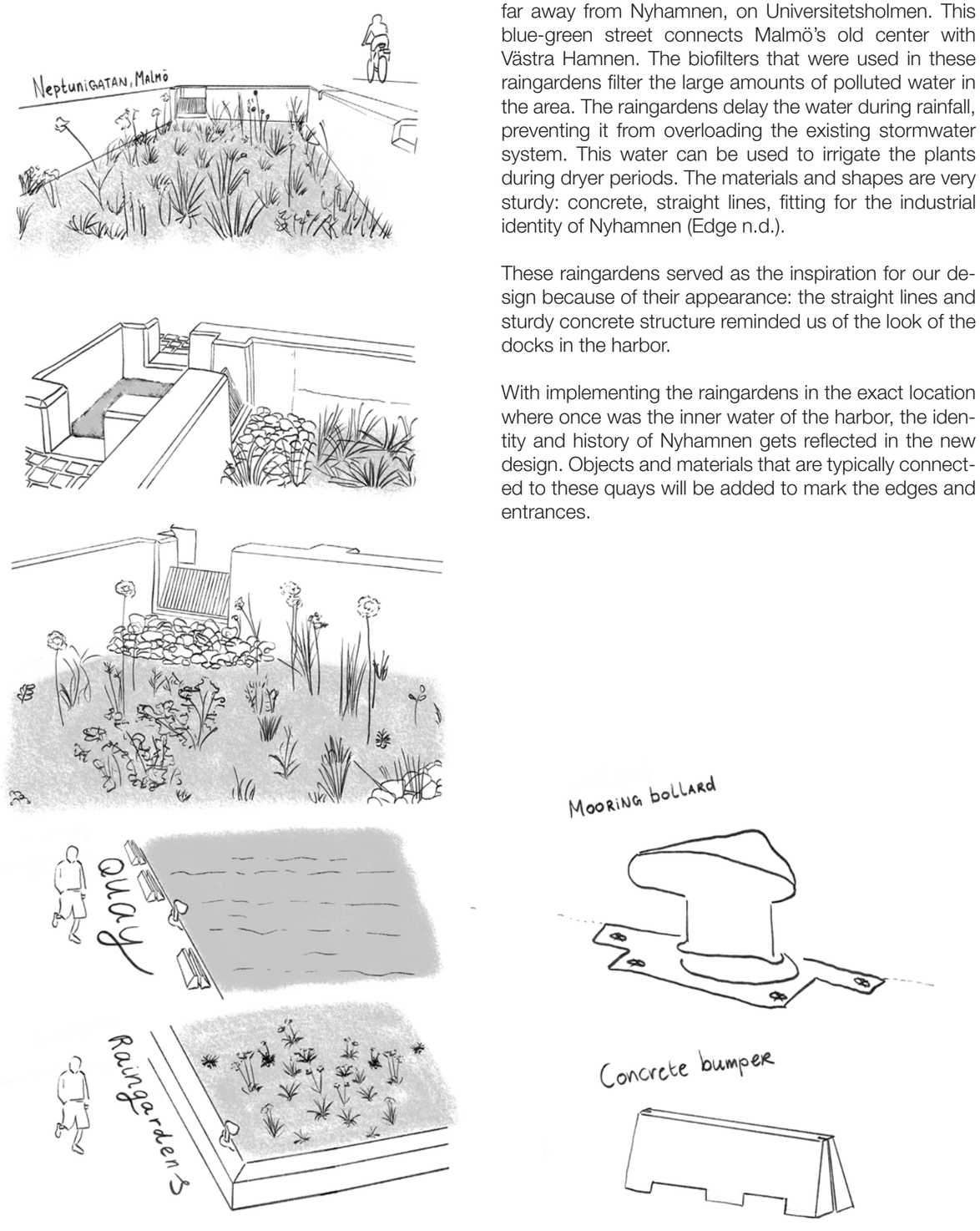


Fig. 91: Sketches Raingardens Inspiration

Inspiration

For the structure of the raingardens, inspiration is drawn from Neptunigatan in Malmö. This street is located not far away from Nyhamnen, on Universitetsholmen. This blue-green street connects Malmö's old center with Västra Hamnen. The biofilters that were used in these raingardens filter the large amounts of polluted water in the area. The raingardens delay the water during rainfall, preventing it from overloading the existing stormwater system. This water can be used to irrigate the plants during dryer periods. The materials and shapes are very sturdy: concrete, straight lines, fitting for the industrial identity of Nyhamnen (Edge n.d.).

These raingardens served as the inspiration for our design because of their appearance: the straight lines and sturdy concrete structure reminded us of the look of the docks in the harbor.

With implementing the raingardens in the exact location where once was the inner water of the harbor, the identity and history of Nyhamnen gets reflected in the new design. Objects and materials that are typically connected to these quays will be added to mark the edges and entrances.

The Raingardens form a big part of creating the green connection in the design. Through the Grain Route, the raingardens connect north and south, the coastal park and the Rail Park & Pine Hall. The aim of this connection is to allow flora and fauna to migrate between these two green areas. This is important because green spaces are often limited in urban areas, so the connections between them are vital, especially to birds and insects (Muro et al. 2007; Barret et al. 2008).

As part of the Grain Route there will be a resting point that also functions as a viewpoint, pointed towards the Lantmännen Grain Silos, the place where grain was stored. In this way, visitors will have a visual connection with the history of the area that related to the transportation and storage of grain. The QR codes that are provided here (seen in the concept) explain more about the site's tangible and intangible heritage. Finally, the viewpoint also offers a way to connect the area with the surroundings.

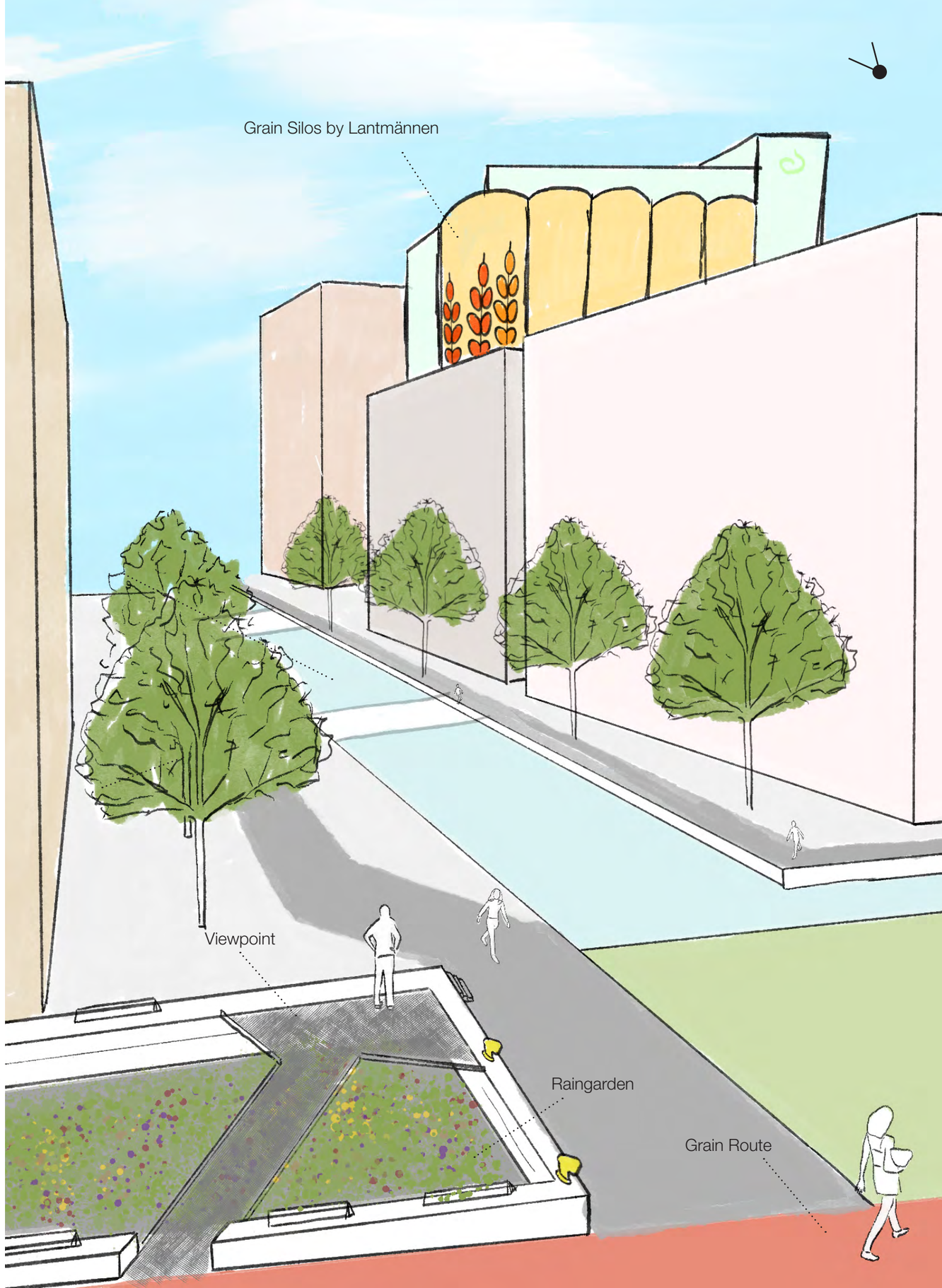


Fig. 92: Visualization Raingardens

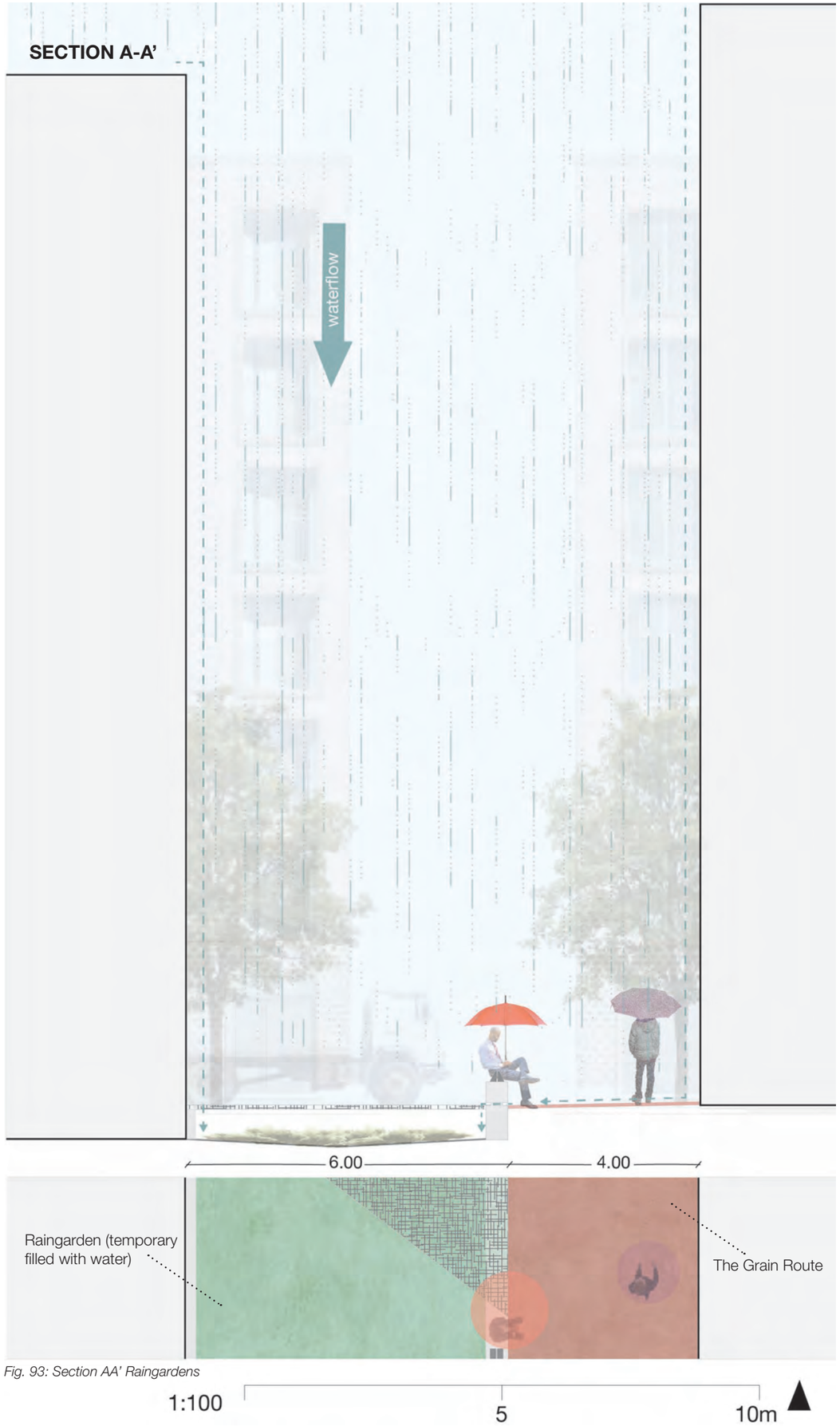


Fig. 93: Section AA' Raingardens

Materials
The chosen materials on the site will partly consist of re-used materials: the mooring bollards and concrete bumpers that were used on the quays to anchor the ships (protecting them and people on the land from falling) will be used in this design. The existing concrete bumpers on site will be reused and placed on the wall of the raingardens that is situated along the Grain Route path. The existing mooring bollards on site will be painted yellow and placed at the entrances of the raingardens.

The raingarden consists of the Grain Route path, which is made of a red gravel. The boundary between the path and the raingarden consists of a low concrete wall (40cm above the water-bound surface), where people can sit on. Little holes through the wall allow stormwater to run off to the vegetation in the garden.

To enter the buildings on the west side of the raingardens and to enter the viewpoint, metal grating footbridges will be placed on top of the walls of the raingardens. The metal frames will be partly see-through, which allows visitors to see the rainwater run through the gardens and see the vegetation that is planted there.

No plant material has been chosen for the raingardens, the guidelines for plant selection are as follows: low-growing plants (under 50 cm) that are suitable for the conditions of a shaded raingarden. Details regarding a filtration system (as seen in the Neptunigatan raingardens, which served as inspiration for this design) and the underground structure have also been omitted from this design proposal.

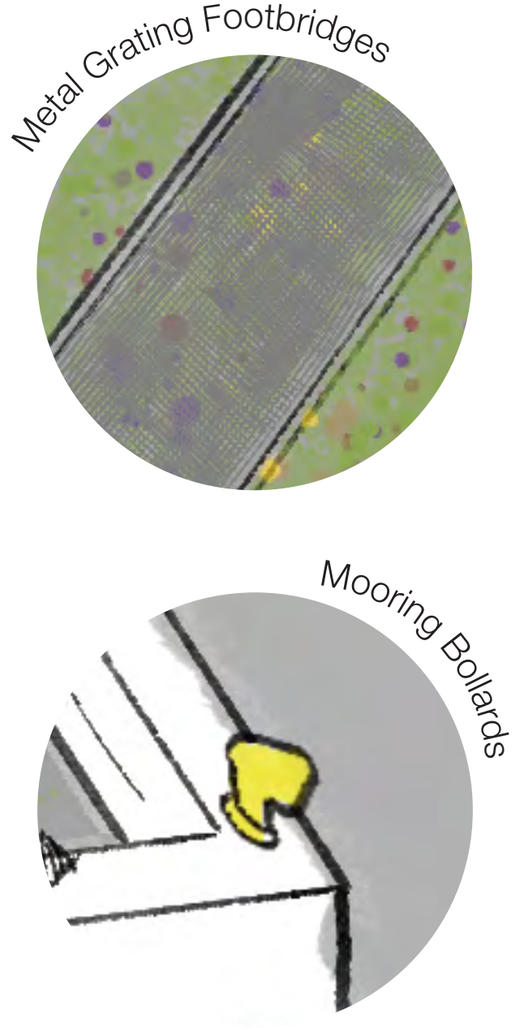


Fig. 95: Important materials in the Raingardens

DETAIL A

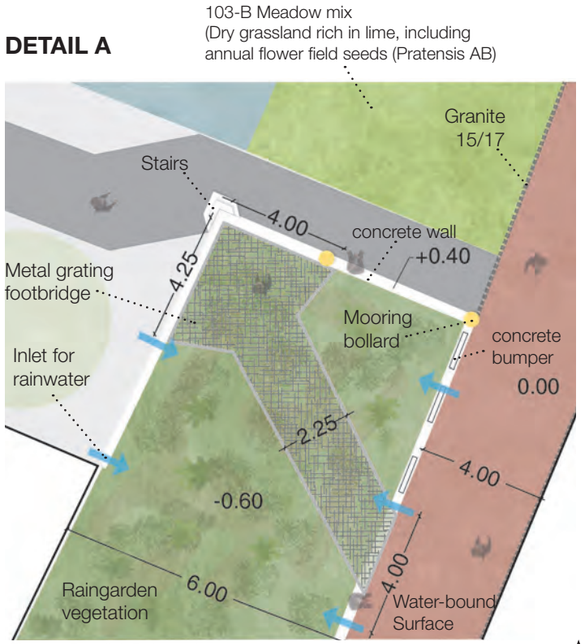


Fig. 94: Detail A Raingardens

Maintenance
The general guidelines for maintaining raingardens include removing litter from between the plants and organic material generated during plant maintenance, such as cuttings, must be removed. Important for the raingarden is to clean the inlet holes in the walls through which rainwater will flow. The filtration system must be properly maintained as well.

Other maintenance regulations include: keeping the plants low (maximum of +0,50m) so that the structure of the raingarden is clearly visible.

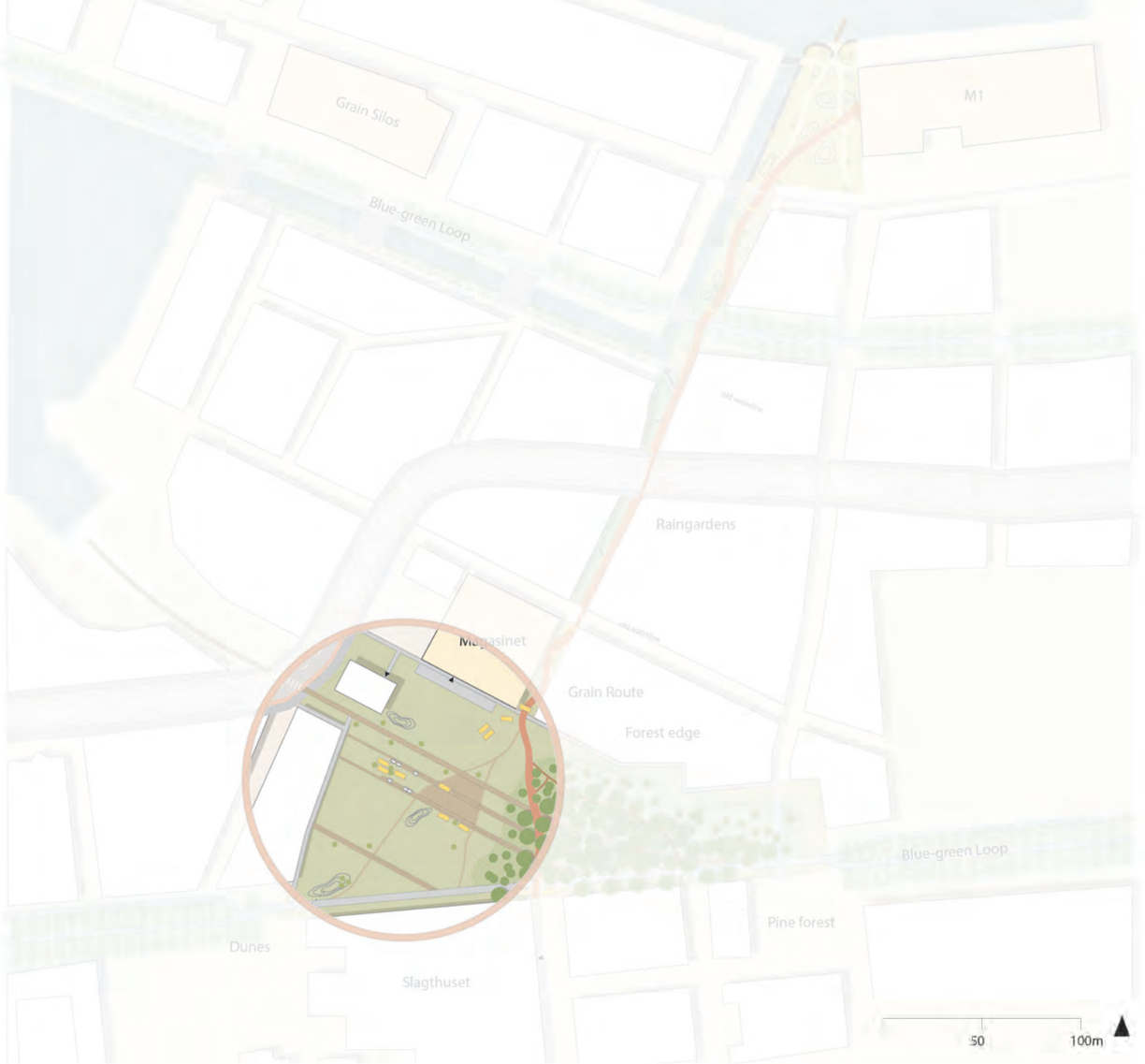


Fig. 96: Location Zoom-in Rail Park

6.5 *The Rail Park*

Multiple historical structures are represented in the Rail Park. Its name is inspired by former train tracks that were once located here. The Rail Park is a place where people can enjoy the outdoors in an open space, a place to walk, rest and a small square for multifunctional use. This section discusses the west side of this park area, the next zoom-in chapter focuses on the east side where the pine forest is located.

The pathway system represents former lines of the urban harbor landscape; both the placement and chosen materials represent the former train tracks (figure 97 shows the location of the historical train tracks that were located here). The paths are located parallel to each other: long lines with a slight curve. These lines are representing the historical grid of Nyhamnen, it reveals the hidden lines of the historical train tracks and enhances the identity of the place (see fig. 98).

The different pathways offer a variety of options to go through the park, it connects the Blue-Green Loop (in the east and west direction), the Grain Route (in the North-South direction) and offers multiple ways to move in the north-west to south-east direction, creating connections between the pine forest and the old ferry terminal.

The park has an open layout with wide meadow fields; the low vegetation and lack of taller green structures such as trees and shrubs create a spatial character similar to that of the industrial area it once was: large open spaces. The large area of rich meadows contributes to biodiversity, creating a pleasant place for insects and birds to forage. The vegetation can grow on the dunes here. This large open area provides a space for playing, resting, exercising, and walking.

Although the area is quite open, a few smaller trees have been placed to highlight the paths. One of the railway-like paths leads to the Urban Forest to the west; this path is situated along a historic sightline. From the path, you can see the old ferry terminal, and the deck where cars used to drive onto the ferry. This sightline is emphasized in the design by creating this path here, and it is supported by Sorbus trees, which provide a strong connection to the harbor heritage in the surrounding areas of this design area.

History is not only represented in the structure and chosen materials, but also in intangible ways: throughout use and by encouraging cultural events, workshops and markets, the historical use of this harbor (craftmanship and trading related history) continues to take place, in this time. Intangible cultural heritage is also represented by referring to historical processes. As this area was a place for the trains (freight wagons) to stop and park, its is now transformed in a place to rest for humans with seating areas.

The meeting square offers a multifunctional area for all kinds of use (a meeting point, small markets, workshops, performances, etc.). The square has a simple design that offers flexibility in use. It is a subtle intangible way to represent history, since this paved area connects to the industrial identity where craftmanship and trade were common themes of this place. In this way, the history can be incorporated in a transformative way, adding a new narrative layer.

The aim of the design of the Rail Park is to create a multifunctional park where people can meet, rest, move, and to offer opportunities to create community; for example, by using the outdoor meeting square and the picknick tables.

The identity of this place is reflected in the fact that its heritage and history are embodied not only in the chosen materials and structures, but also in the way the space is used. As a result, this former rail yard has been transformed into a new, functional urban park, but in a way that connects the heritage to its users. The overarching history related to grain production is also present in this design area; the Grain Route runs through this park, and the yellow containers are also present in several locations.

Fig. 97: Historical map of Nyhamnen, 1970 (Lantmateriet n.d.)

Fig. 98: The connecting track to the steam ferry in Jörgen Kocksgatan. The right of the tracks goes to the Steam Ferry Station (Järnvägsmuseet n.d.)

Inspiration

For this area we were inspired by other green spaces that have reused train tracks in various ways. In this Rail Park, the choice in materials for the paths and the way they are structured was drawn from inspiring projects such as the Highline park in New York. In our design, the railway-like paths are located where historically train tracks were present.

These inspiring projects also show other ways of implementing train tracks in the design of an outdoor space. They can be used as paths, but it can also offer places for vegetation to grow in. The paths can be constructed in a way that the rails really work, by making it suitable for moveable furniture to glide on the rails, offering flexibility for the users to choose where they want to sit.

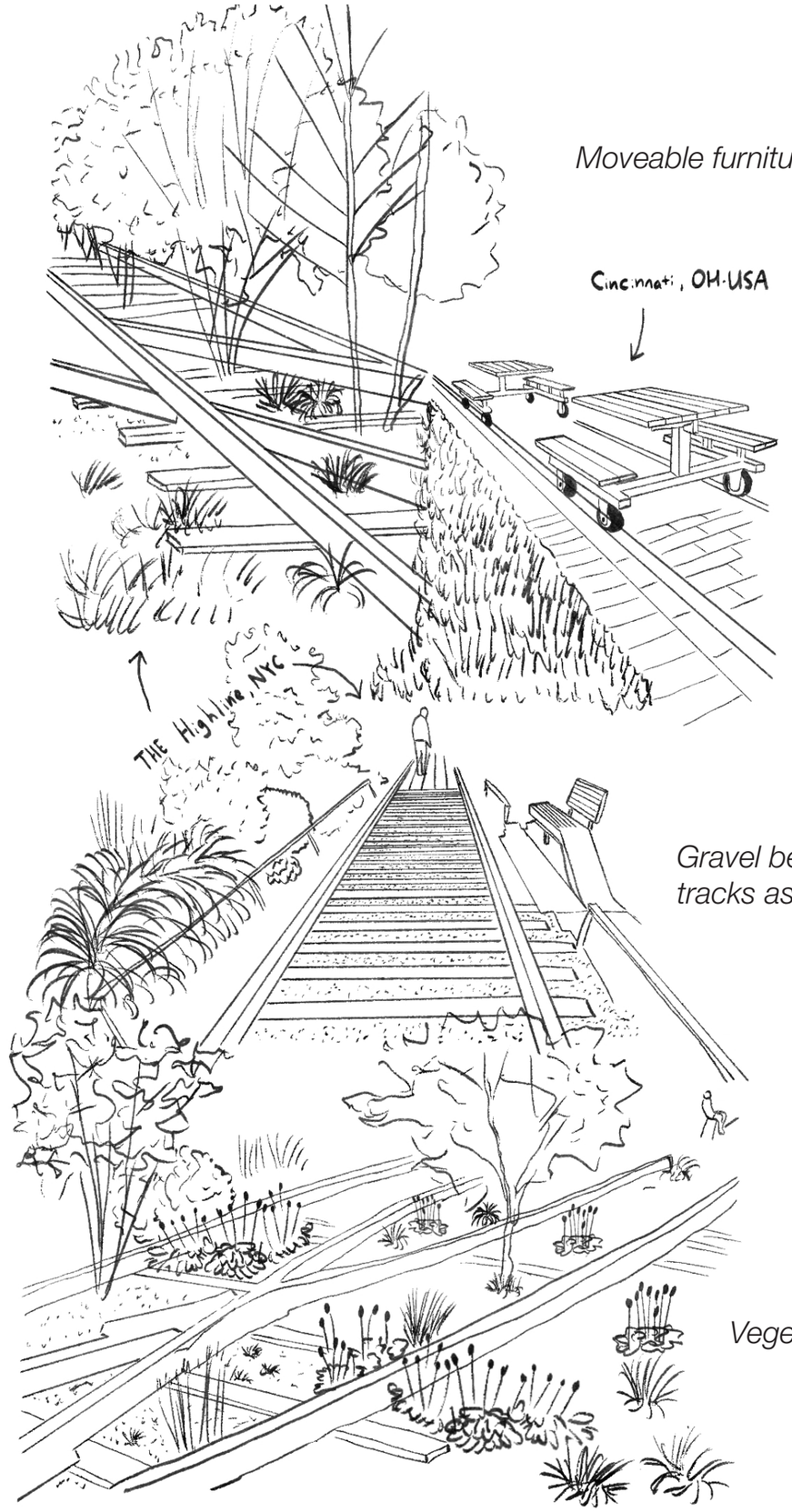


Fig. 99: Inspiration Sketches Rail Park

The images show the currently existing parking lot and how the Rail Park will feature much more greenery and offer opportunities for multifunctional use, while also enhancing the historic structure.

Before

No vegetation

Historical buildings

Lots of hardscapes

Car parking

Fig. 101: Location of the meeting square visualization

Containers as roofs (providing shade) and flowerbeds

After

Increase in vegetation

Multifunctional meeting square

Elevations in the landscape to refer to the dunes in the Scanian landscape

Colorful meadows

Paths reminding of the railway history

Fig. 100: From the parking lot between Magasinet and Slagthuset (top left) to the new meeting square (visualization)

DETAILS

The map highlights key areas of the Rail Park that are shown in more detail; this is where various materials come together.

The network of paths is inspired by the layout of the former railway lines, with the northernmost path representing a continuous railway line, while the other lines in the park come to an end: this was once a resting point for the train wagons, and will now become a resting zone for the users of the park.

The history becomes apparent by actively walking along the railway-like paths. These paths are divided into two sections: half of the path represents the historic rail lines in terms of material and dimensions. The other half is a standard gravel path.

The location of the meeting square was chosen at a spot where multiple routes converge. Nyhamnen will have many tall buildings and this area is chosen since it will receive relatively abundant sunlight, offering users the opportunity to rest in a pleasant, sunny spot, which encourages year-round use.

The building on the western edge of the park will break the strong wind coming into the park from the west. Seating is flexible and is often supported by yellow shipping containers that provide shelter from the sun, rain, and/or wind.

The meeting square is centrally located in the park, allowing people to access it from various directions. If necessary, cars can enter the square via the wider path that preserves the historic sightline.

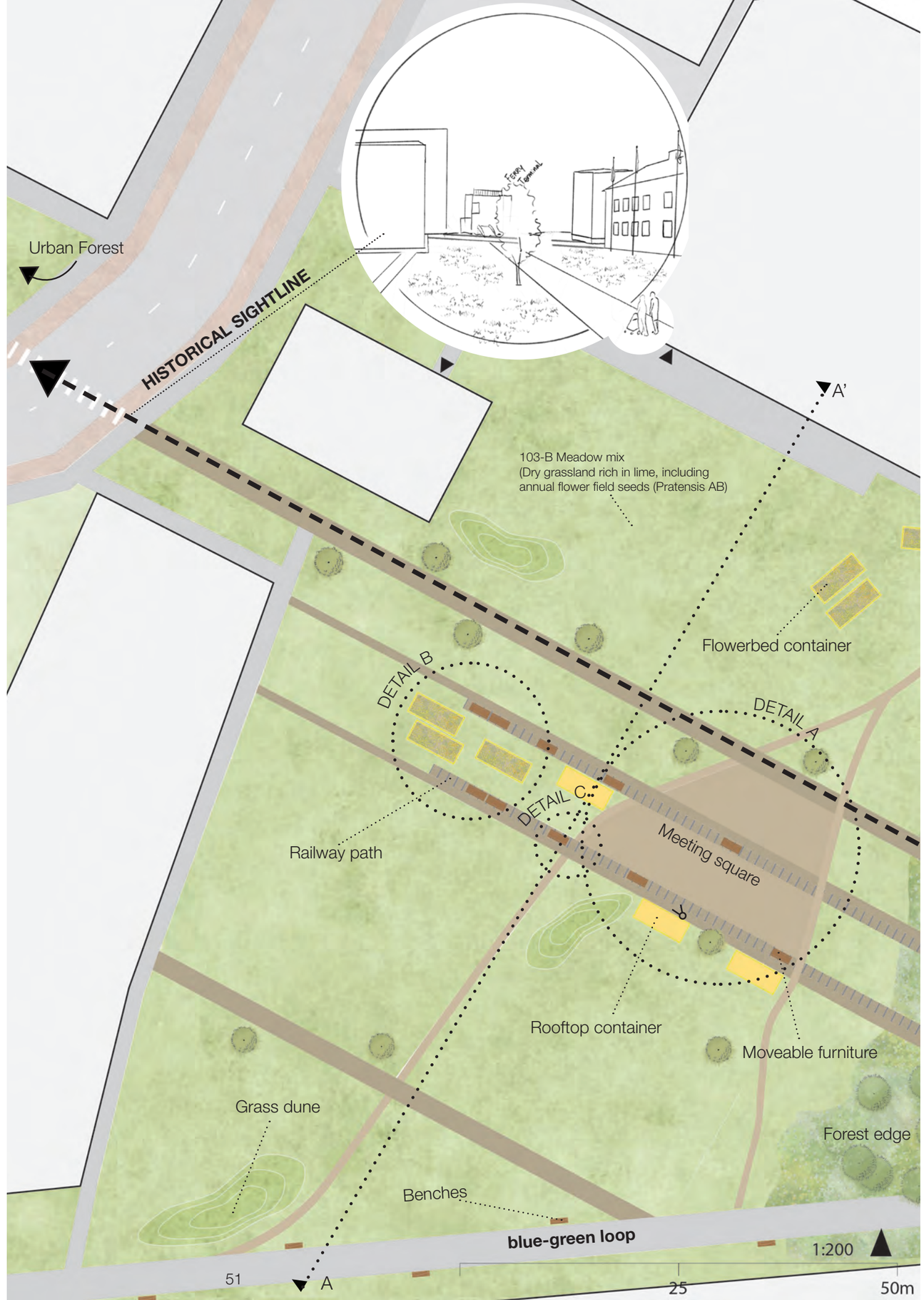


Fig. 102: Zoom-in Rail Park

SECTION A-A’

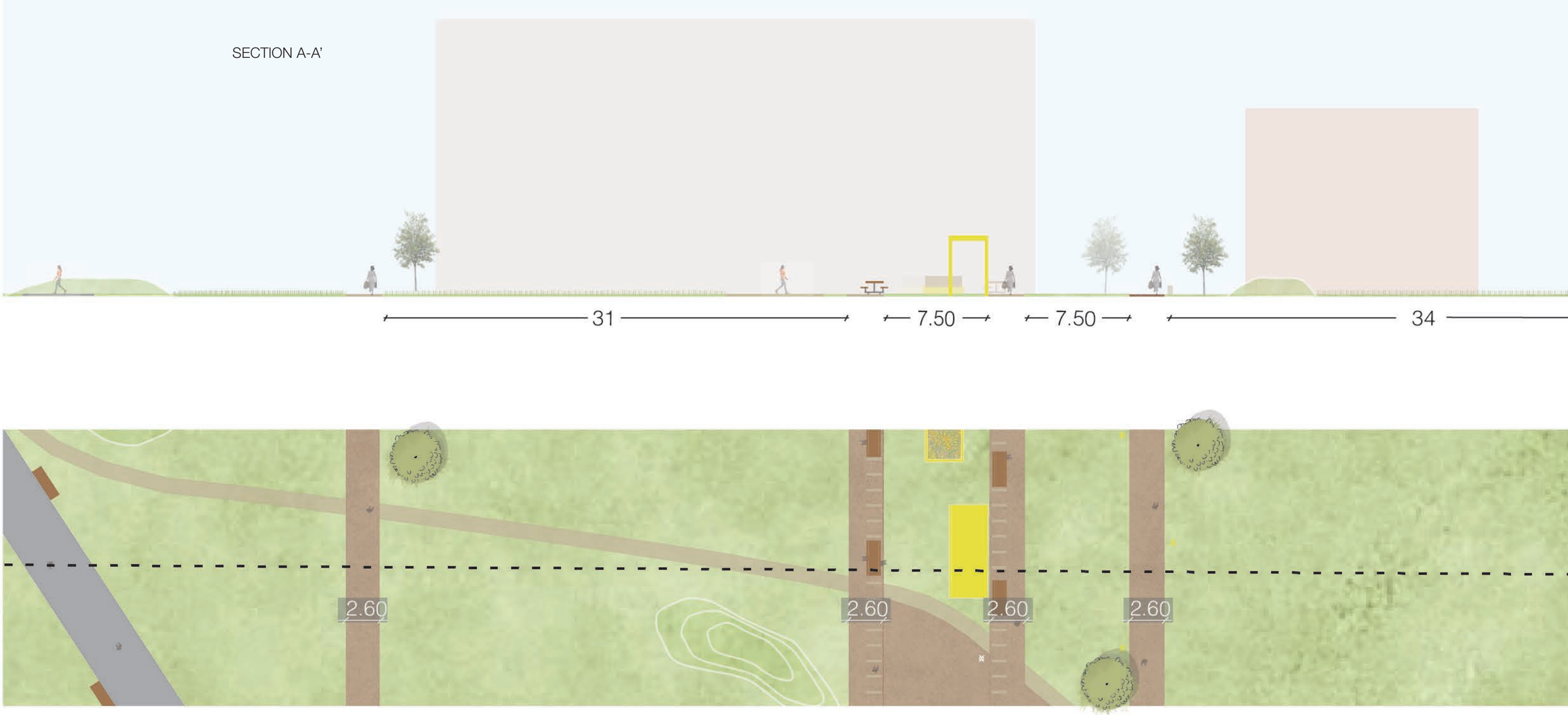


Fig. 103: Section AA’ Rail Park

The spatiality of the Rail Park is represented in large open spaces, reflecting the historical scale of the industrial area of Nyhamnen being wide and open. Small trees pick up the grassland characteristics from the reference landscape and provide shaded areas for recreation. The dunes can be used as a backrest and, thanks to their slope, create an additional microclimate. As in the coastal park, they serve here too to offer children nature experience for playing.

Materials
Material choices in the Rail Park are derived from various sources such as materials on site, found in other areas in Malmö or materials that correspond with historical objects and happenings.

Furniture is chosen to have a sturdy look and feel; the furniture is sturdy and robust, made of metal and wood, inspired by the materials of the harbor environment.

Picknick tables are placed next to each other, on wheels and are moveable by sliding in the rails. The map of figure 109 shows the zone of the moveable furniture rails, only the end parts of the train tracks are resting points (aligning with the historical zone of the “resting” freight wagons). This moveable furniture offers flexibility for the users so they can choose to sit in a quieter spot, separate from the other tables, or to move tables together when meeting in groups.

Similar to the yellow shipping containers that are used as flowerbeds, there will be yellow containers placed in this area that function as a green roof. These roof-containers serve as places for shelter and shade, while also resembling a part of the tangible heritage of Nyhamnen as a harbor.

The industrial history is primarily reflected in the material composition of the pavement: it resembles train tracks, and some sections will feature functional rails. It consists of tiles and gravel, with the tiles laid out to resemble railroad sleepers. The actual rails used for the movable furniture should be designed in greater detail, but will not be further elaborated in this design proposal. The materials for the paths are chosen to provide comfort and to evoke the historical train tracks that no longer exist. The park offers various ways to use it for different types of users. It is not limited to a single target group; both young and old can enjoy the park and its events; all paths and the square are accessible.

Small trees (Sorbus intermedia), tall meadows and dunes are the main green structures of this area and align with the naturalistic vegetation design concept of the natural coastal landscape of Scania.

The meadow mix 103-B by Pratensis is made for soil with a PH over 7 (which will likely be suitable for the soil in Nyhamnen). It consists 71% out of different gras species like Festuca and Briza and 29% out of different herbs. In addition to perennial herbs, the mixture also contains annual herbs that ensure that the meadow blooms in the year immediately following after the sowing (Pratensis AB n.d. b).

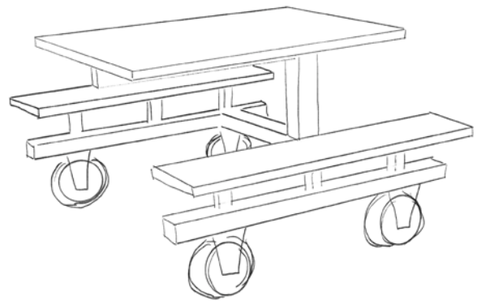


Fig. 104: Sketch Moveable Furniture Structure

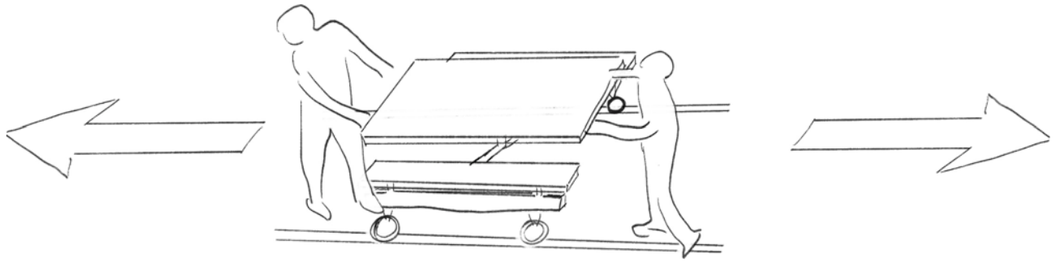


Fig. 105: Sketch Moveable Furniture Use

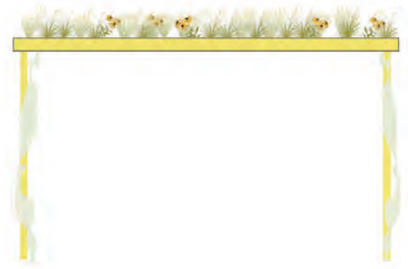


Fig. 106: Grain containers as rooftops for shelter and shade

Fig. 107: Pratensis mix (Pratensis AB b) n.d.)

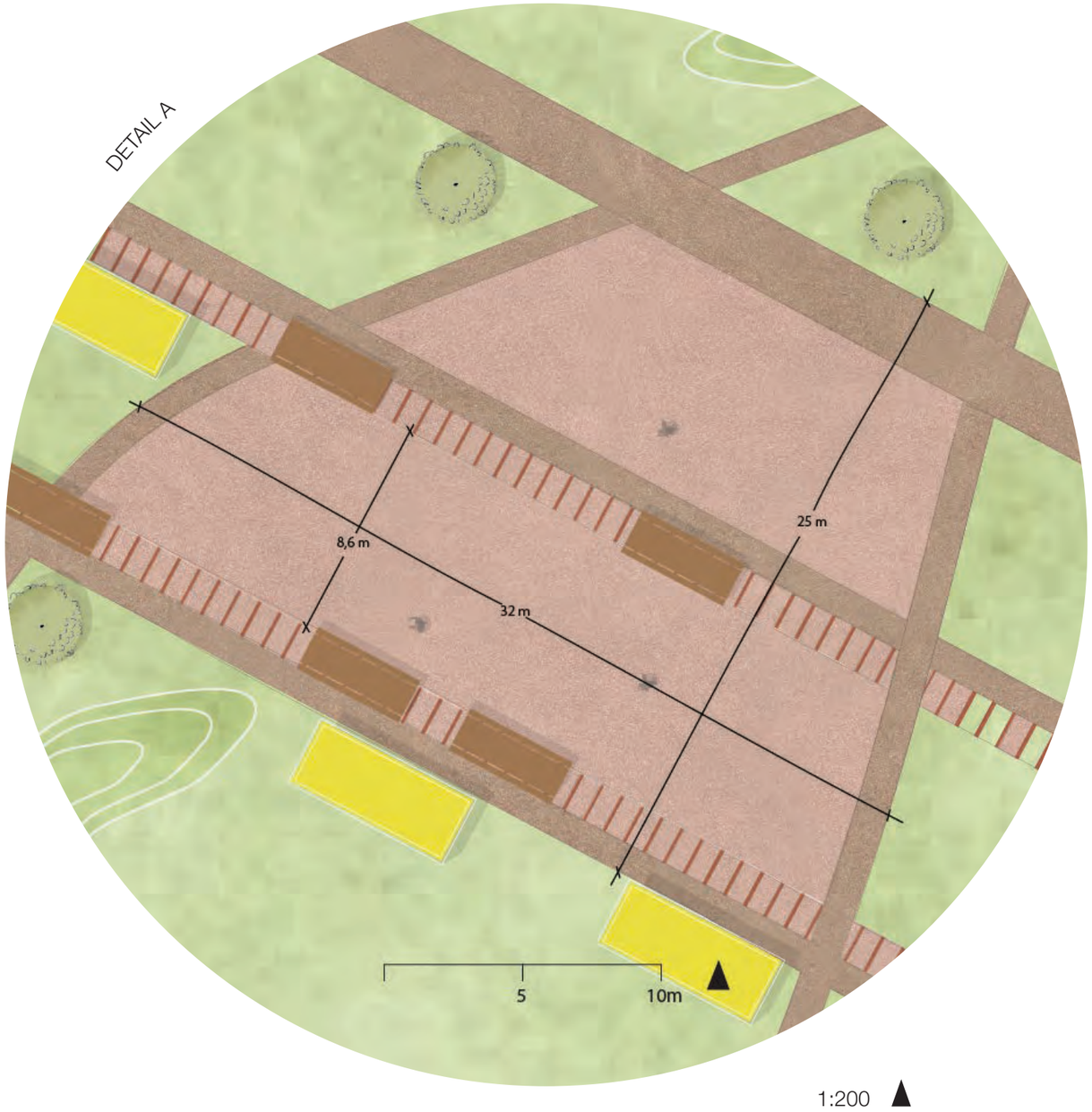


Fig. 108: Detail A, the meeting square

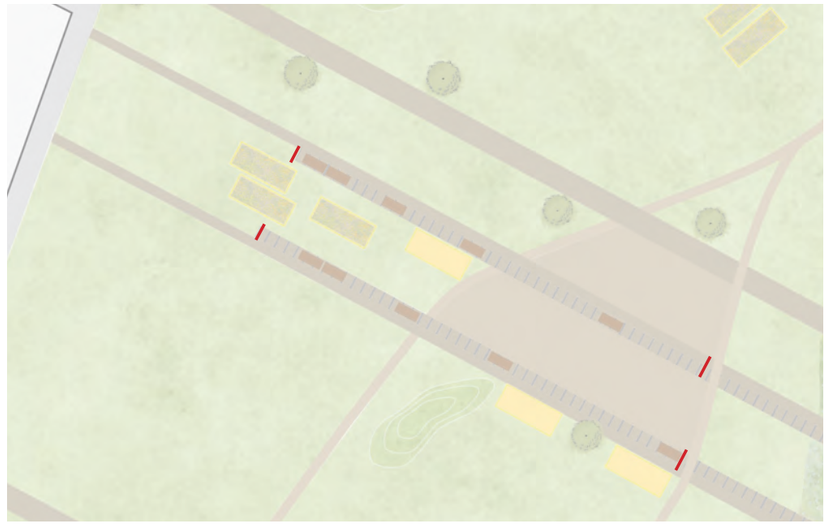


Fig. 109: The red lines represent the boundaries of the rails where the furniture can move

The meeting square shows a place with multifunctional use: moveable furniture can be placed within the square by rolling it on the rails on the train track paths, when events are hosted, the furniture can be moved outside the square to create more open space. Yellow containers offer multiple roofs to shelter.

In between these resting spots, yellow containers are located with flowerbeds (similar to the ones in the Coastal Park).

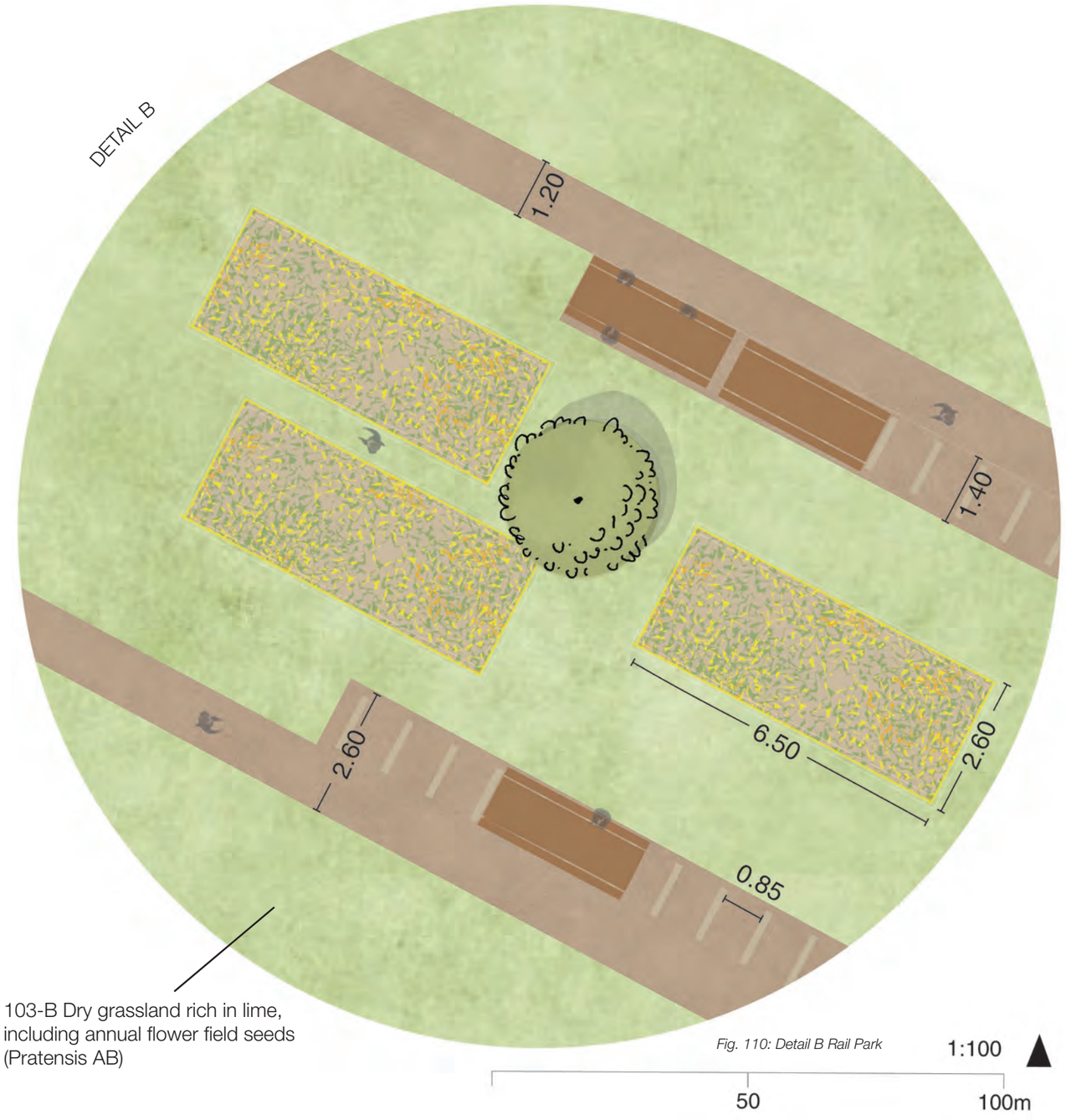


Fig. 110: Detail B Rail Park

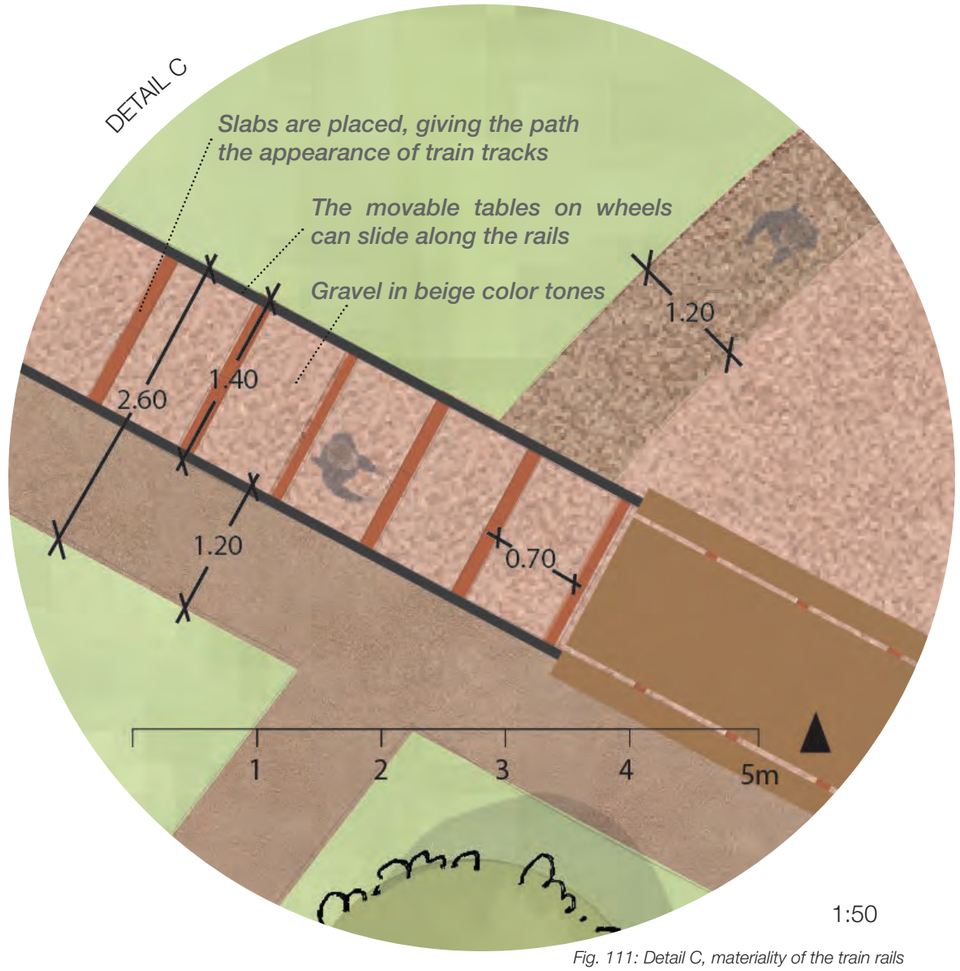


Fig. 111: Detail C, materiality of the train rails

Maintenance and Management

Maintenance of the Rail Park primarily involves managing and maintaining the large meadow; this will be carried out in a manner similar to the maintenance of the Coastal Park.

It is important that the paths are well maintained; the large gravel area of the meeting square should be equipped with adequate drainage slopes toward the grass. If necessary, additional measures will need to be taken to prevent flooding.

It is important that the movable furniture will be closely monitored; the quality of the rail system must be maintained, and there may be a risk of damage from users handling the furniture too roughly.

Fig. 112: Location Zoom-in Pine Hall

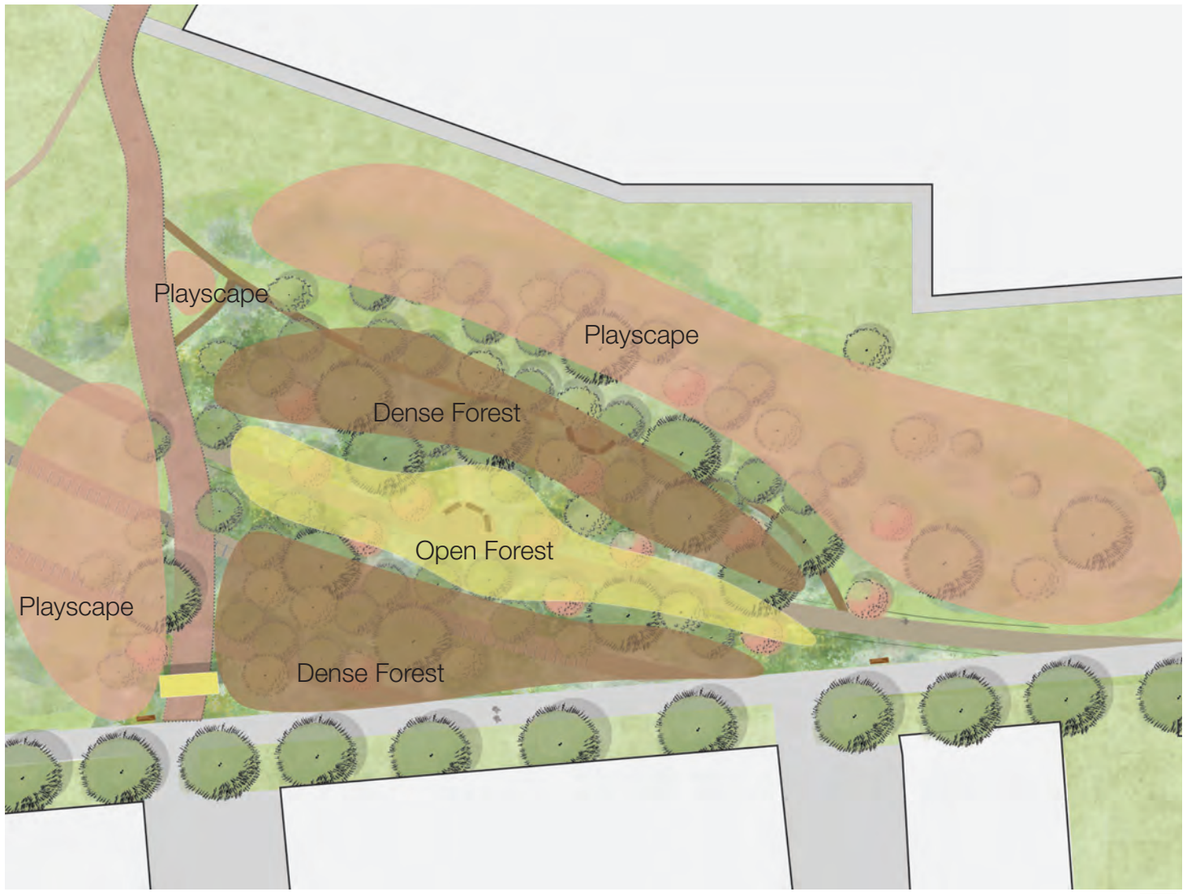


Fig. 113: Different Areas of the Pine Hall

6.2.4 *The Pine Hall*

Overall Design

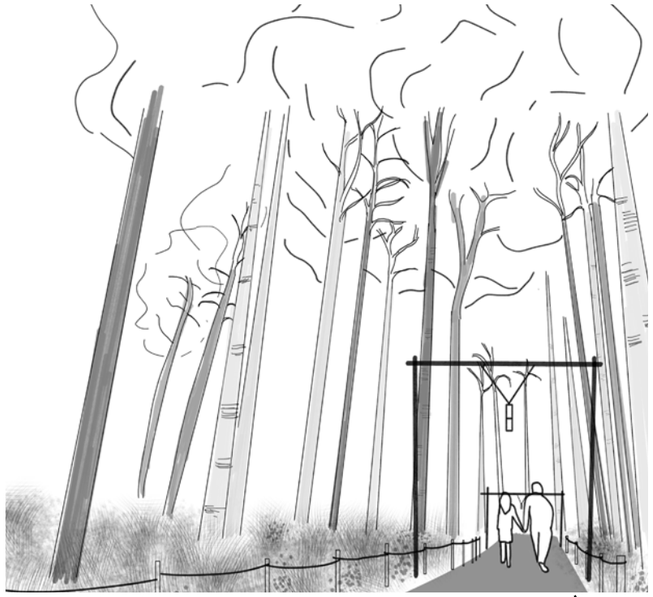
The ‘Pine Hall’ is located in the eastern part of Rail Park. Here, the aim is to create a diverse forest while preserving the character of a Pillar Hall, found in the reference landscape.

Since the soil of the inspirational landscape is acidic and the soil transported to the construction site ('Malmö soil' used by Malmö stad) is alkaline (Bellan 2025), the species selection had to be adapted. The goal is to capture the characteristics of the inspirational landscape, but adapt them to work on the urban site. The size of the forest, its structure and the plant selection where therefore changed to fit the site (more details under 'Planting Composition'). In order to create biodiversity, the focused lays on a diverse field layer and a dense canopy, as well as a diverse and long forest edge. As mentioned in the literature review, these are factors that have a positive effect on bird breeding activity, bumblebee biodiversity and butterfly abundance (Haarland 2023; Threlfall 2016).

To strengthen the connection between humans and nature, different zones have been created (fig. 113). The 'Playscapes' are forest edges with a shrub mix, providing hideouts for children to play within. The 'Dense Forest', has a dense tree canopy, no shrub layer and a diverse field layer. The absence of shrubs here provides a good view for caretakers to spot the children, while they can sit on the benches in the shade. The 'Open Forest' along the main path, has a low density in the canopy and is characterized by light-wood betula. This aims to create an open hallway, strengthening the sightline towards the ferry terminal.

Some seating areas provide an opportunity to take a break, and the wooden path in the northern part of the forest encourages visitors to slow down, focus on the experience of walking, and enjoy the surroundings. Fences along the main paths aim to prevent people from entering the denser areas of the forest to protect the field layer.

As the forest develops over time, it could also foster a connection to the spot across generations, as these playscapes can also inspired many of the adults to be outdoors (Gustavsson 2004). The young children will play in the same forest, but it will look completely different by the time they have children of their own, forming an emotional connection to the place.



The main path within the 'Open Forest' leads the view towards the ferry terminal

Fig. 114: Main path

The wooded deck aims to create a connection between humans and nature

Fig. 116: Wooden deck

Legend:

- Pinus sylvestris
- Sorbus intermedia
- Betula pendula
- Quercus robur

Seating to have a look over children playing in the forest edge

Multiple light wooded Betulas support the sightline.

Sightline

Easily accessible seating to enjoy the surrounding forest

Blue-Green Loop

Fig. 115: Zoom-in Pine Hall

1:500 N

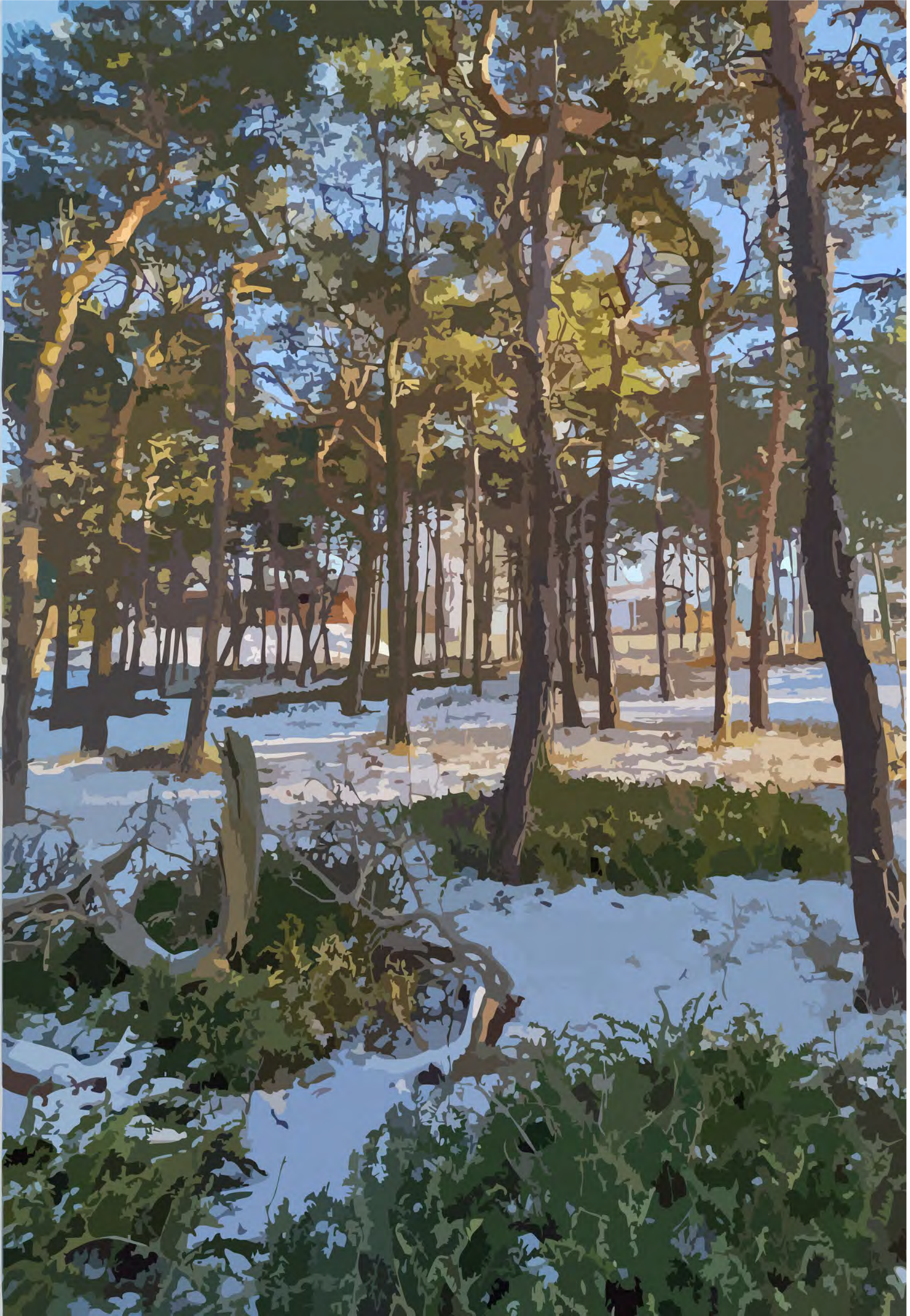


Fig. 117: Pillar Hall Scanian Coast

Detail - Planting Composition

We shifted from our inspiration landscape, a monoculture Pinus forest with an edge consisting of trees and shrubs such as Betula pendula, Quercus robur, Tamarix parviflora and Corylus avellana, to a forest type that is common in Sweden on calcareous grounds. This is the herb-rich pine forest. This type of forest is characterized by a single-story or slightly layered structure, and besides Pinus sylvestris, it often features Betula pendula, Ribes or Sorbus (Wiström 2025).

Wooden plants Forest

Inspired by the herb-rich pine forest, the core of the forest consists mostly out of Pinus. This is supplemented by Quercus robur and Betula pendula. The birch creates a lighter feeling, and the oak will add more character to the pine forest in a later stage. Sorbus intermedia has also been planted. As mentioned in the analysis, this tree is quite prevalent in Nyhamnen. Therefore, it is good to reuse it in the design to create a connection with the surrounding green areas. The Sorbus is also proven to work in this harsh environment as it is already present in the area.

Wooden Forest Edge

To create high biodiversity on site, the aim is to establish diverse forest edges. As well as some Pinus sylvestris, Crataegus monogyna and Ribes alpinum are introduced, whose flowers and fruits provide nutrition for animals, as well as Juniperus communis, which provides evergreen cover throughout the winter. All of these trees/shrubs, except Crataegus monogyna, are typical of herb-rich pine forests (Wiström 2025). Crataegus monogyna is planted because it has many beneficial qualities that support biodiversity, and its habitus is similar to the crooked Quercus seen in the inspiration landscapes. The Crataegus can partially be replaced with Quercus to test whether it performs in the same way in the created setting as in the reference landscape.

Field layer Forest

The field layer in the forest is also mostly covered by herbaceous plants, such as those found in herb-rich pine forests. We also added some Polypodium vulgare as it was a very dominant carpet in the inspiration landscape, and we wanted this character on site. It thrives in similar conditions to herb-rich pine forests (Wiström 2026).

Field layer Edge

The field layer at the edge of the forest is also inspired by the herb-rich pine forest. Here, we have added the dominant Empetrum nigrum from the inspirational landscape to create a wide edge.

Wooden species

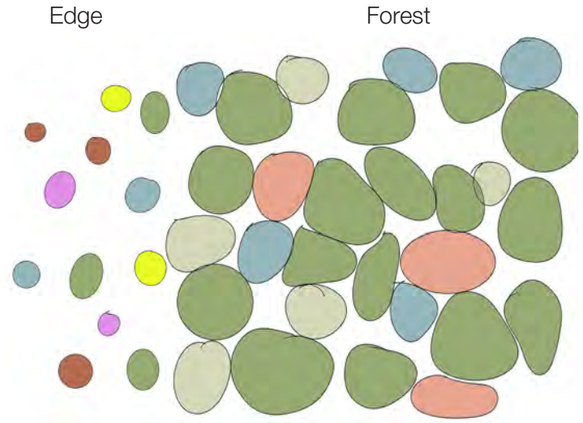


Fig. 118: Wooden Plants Pinus Hall

- *Pinus sylvestris*
- *Pinuns sylvestris*
- *Crataegus monogyna*
- *Betula pendula*
- *Ribes alpinum*
- *Quercus robur*
- *Juniperus ccommunis*
- *Sorbus intermedia*

Field layer

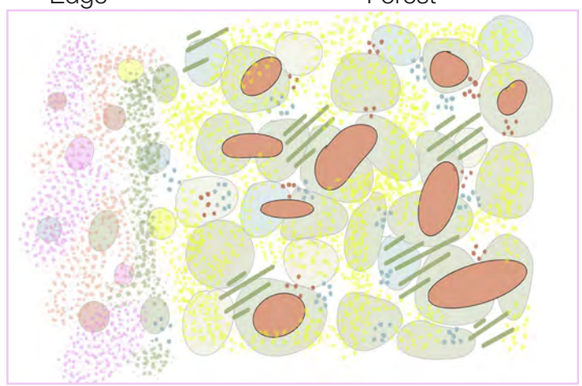
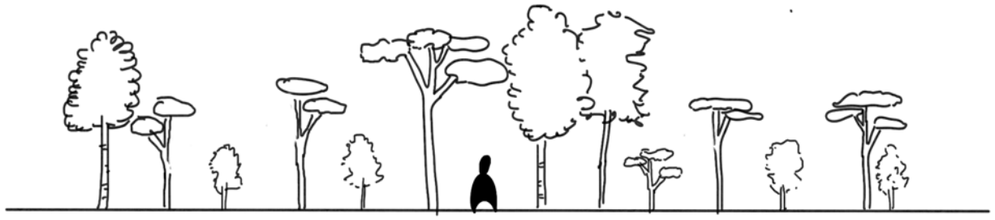
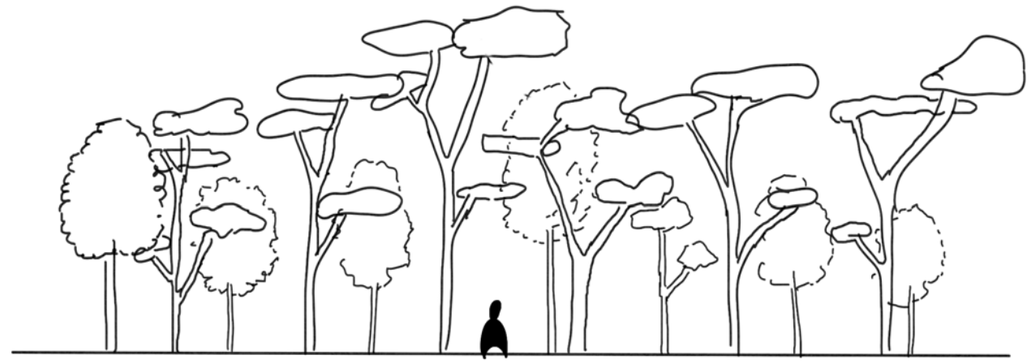


Fig. 119: Field layer Pinus Hall

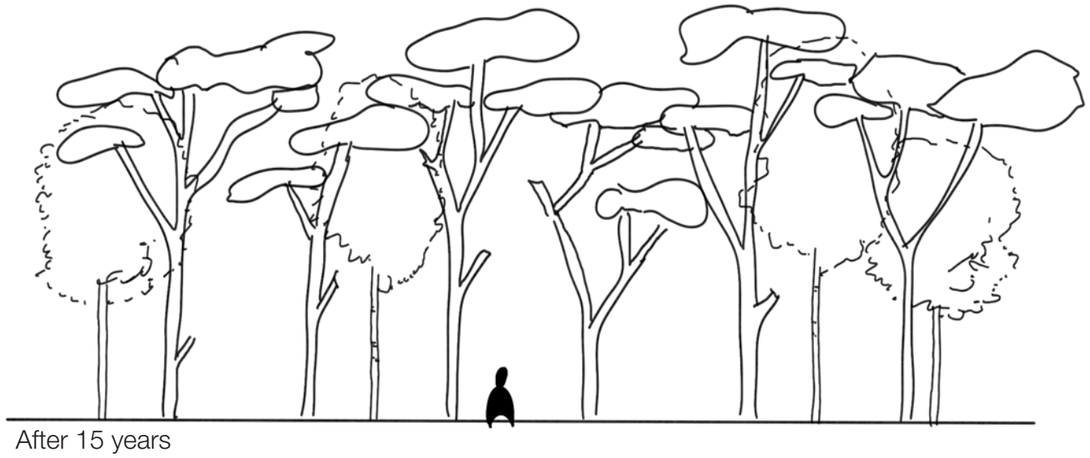
- *Thymus serphyllum*
- *Polypodium vulgare*
- *Empetum nigrum*
- *Geranium sanguineum*
- *Arctostaphylos uva-ursi*
- *Convallaria majalis*
- *Sesleria autumnalis*
- *Hepatica nobilis*



After 5 years



After 10 years



After 15 years

Fig. 120-122: Development of the Pinus Hall over Time

Maintenance and Management

The aim of the Pine Hall is to create a landscape that needs little maintenance. However, in the establishing phase of the forest it is important to make sure that the understory vegetation and the trees establish quickly. Therefore, fences can be added, keeping away rabbits and dogs. Furthermore, time plays a crucial role in naturalistic vegetation design. When planting, trees and shrubs may be quite small, but they grow over time, developing into larger trees. This transformation is described as successional change. It is a long-term change in the character, composition or type of vegetation (Dunnett 2019).

When planning, the desired outcome and the approach to achieving it need to be defined. In this design, the goal is to create a slightly layered pine forest with a well-developed field layer. As Pinus is a pioneer species, no nursing trees are needed. To increase the species richness of the area, Quercus and Sorbus are being added. To create a lighter surrounding on the main path and make the space feel more open, some light Betula woodland has been added, and the trees have been planted at a greater distance from each other. Some larger Pinus trees will also be planted initially to create a top layer in the early stages. Since the goal is to create a system that regulates itself as much as possible, the effort required to manage the forest is minimal. At the beginning, light thinning of the trees is recommended every five to seven years. The aim is to start with a fairly dense planting, which encourages the trees to grow quickly in height. After the first five years, competing trees can be removed to ensure better development of the remaining trees. After about 15 to 20 years, the forest will hopefully have reached the desired structure and will only need to be managed when there is a specific need to do so.

Fig. 123: Implementation Sketch

6.7 Light plan

Low light fixture
Pavement lights
Light poles
Overhanging lights
Overhead trainline lights

50 100m

Fig. 124: Light plan

The main objective of the lighting plan is to ensure that the Grain Route is well lit, as users (cyclists, pedestrians, etc.) need to be able to use this route whenever they want.

The wooden walkways in the forest are equipped with underfloor lighting, which creates a special effect that adds to the experience of walking through the forest.

Lighting in the form of overhead train wires will also be installed in the forest. This lighting reinforces the reference to the historic train tracks and creates a safer route through the forest.

Low lighting objects have been placed along paths and areas that are likely to be used more often. Extra attention has been paid to the square, where light poles have been installed to have clear lighting at the square so that events can always be organized under various conditions.

Low Light Objects

Pavement Lights

Light Poles

Overhanging Lights

Overhead Trainline Light

Fig. 125: Lights Sketches

Part III - Discussion & Conclusion

In this section follows a discussion of the design proposal. The aim of the discussion is to link the literature study and the used strategies that emerged from them, to the result of the design-proposal. We also discuss the design in its broader context. We discuss how the concept layers (focusing on both industrial heritage and naturalistic vegetation design) can be combined, what this entails, and what the strengths and weaknesses are. This is followed by the discussion of the method, limitations, future research and the recommendations.

7. Discussion

The outcome of this thesis provided insights on how naturalistic vegetation design and heritage-based design can simultaneously express industrial identity while establishing resilient vegetation systems that support biodiversity and human well-being in a case study of Nyhamnen, Malmö. Providing such a design might influence landscape architects as well as architects working with Nyhamnen to consider these two components when designing different parts of the area. The design could serve as a 'backbone idea' of how the future of Nyhamnen could look like. With this discussion we examine how we implemented the two design strategies (on industrial heritage and naturalistic vegetation design) within our case study and what will be revealed when combining them.

Industrial heritage carries various values that support and strengthen the identity of the area, represented in the design through both tangible and intangible values. Working with these values requires constant choices about what to represent and how. These choices are inherently subjective. The design focuses primarily on the representation of certain aspects in the industrial heritage and the naturalistic landscape. Riesto & Tietjen (2019) discuss in their paper how focusing on a certain part of history could make the industrial narrative authoritative, leaving little room for other histories and prospects. In this project, the focus was mainly on the history of the production and processing of goods. Other site-specific values of Nyhamnen, such as the emigration that took place here, the ferry to Copenhagen, the Slaughterhouse or the bathing culture at the Beach Pavilion (Malmö Stad 2023), are present in the design but not to the same extent. The decision on what to present and what not, is subjective and by doing that the designer should be aware of the choices made. Dissonant heritage is, according to Riesto & Tietjen (2019), the conflict between heritage values that can be present in a design. For this thesis these dissonant heritages are not elaborated on further, clearer communication on our goals for the design and the heritage selection process would have benefit transparency in the design. However, picking up values, like the emigration or the bathing culture, in other designs in Nyhamnen, could create a strong coherent presence of heritage all over the area.

By incorporating industrial materials, creating a livable, green space with strong heritage elements (both tangible and intangible) we aimed to create a pleasant urban outdoor landscape with an industrial character (ambience). Tan et al. (2025) explain how these elements can create connectedness and gain well-being to the users of these places. Material choices are made partly by reusing existing materials on site or nearby. Reuse of materials is done in various ways, for example by repurposing shipping containers and mooring bollards. The reuse of materials in the transformation of industrial sites is very important since this prevents homogenization and helps activating the multi-layeredness and complexity of these areas (Heesche, Braae & Jørgensen 2022:12). It is, however, not sure if this site offers enough of these materials to reuse. This thesis lacks additional information and alternatives for this potential problem, when reusing is not possible, a great part of the design proposal will need to be adjusted, and the representation of tangible industrial heritage will become weaker.

A conscious decision was made to represent history subtly, without information panels or textual references, instead stimulating users to discover the area themselves. This raises a broader question about heritage communication in public space: how explicit should the narrative be? A more explicit approach might make the heritage more accessible to a wider audience, while a subtle one risks the references going unnoticed entirely. In the design QR codes were included to create a balance, but whether this successfully bridges that gap is uncertain.

The design creates new narratives about the transformation from an industrial area to a green neighborhood, adding a future narrative layer to the history of the place. This gives the design a transformative rather than conserving character. In this way the heritage is not frozen but allowed to evolve within a new ecological and social context. It was however challenging for us to incorporate more of this transformative character of the area in the design proposal. As mentioned in chapter two, the flux layer (natural processes and human practices) is an important part of industrial heritage site, according to Braae & Diedrich (2012:25). The design proposal places particular emphasis on the use of recycled raw materials that are in line with the site's industrial character. It also emphasizes the use of naturalistic vegetation, with regular descriptions of the plants' succession. Although the design is focused on undergoing these kinds of processes, it can still be challenging to make sure and communicate that this design is 'dynamic'. In the paper by Riesto & Tietjen, they describe a project where natural and cultural heritage values are combined in one designed landscape, and how this is a dynamic heritage product. This project shows the dynamics of cultural and natural processes as a continuous transformation, which led to raising awareness by the visitors to engage in the development of this landscape (Riesto & Tietjen 2019:255).

The naturalistic strategy was chosen to create a biodiverse urban green area connected to the local Scanian landscape. The concept could be even stronger if applied across all of Nyhamnen, creating a neighbourhood of forests, dunes and meadows tied to the coastal flora of Scania. However, the naturalistic strategy itself involves trade-offs that are worth reflecting on.

The reference landscape was limited to meadows and forest, excluding structural archetypes like shrubland. This likely constrains biodiversity, since greater structural variety tends to support richer habitats for birds and insects (Haaland 2023; Threlfall et al. 2016). The decision not to introduce a shrub layer within the forest similarly reflects a tension between biodiversity ambition and human comfort: not having it may improve perceived safety and sightlines but likely reduces ecological value. Rather than committing to one extreme, we sought a middle ground, though a clearer priority would probably have produced a stronger outcome for either people or nature.

By connecting the Coastal Park and the Rail Park, the design creates a green corridor for flora and fauna to migrate between habitats. However, a major road cuts through this corridor, which may compromise connectivity. Testing this would have required selecting a target species and adapting the design to their specific needs. Without doing that, there is no way to verify whether the corridor functions as intended. However, since connectivity was not a primary concern, the design focuses on reinforcing the link through green infrastructure while acknowledging that its actual ecological impact remains uncertain.

Regarding the reference landscape, a landscape from more southern latitudes might have been better suited to the warmer urban microclimate that may develop as Nyhamnen is built out. However, as we do not know how big this impact will be on the temperature and since we prioritized to use local vegetation, we decided not to focus on that. Additionally, the pH of our chosen reference landscape is lower than the soil likely to be introduced in Nyhamnen, which limited how many of its plant species we could realistically use.

The combination of raw industrial structures with dynamic vegetation creates a tension between control and spontaneity. While the original industry rationalized and ordered the landscape, the design introduces ecological unpredictability, and these two concepts together strengthen the connection that people build with this place. On the one hand, people can attach to nature through natural experiences, and on the other, they can build a connection with the history and identity of the site.

The strong focus on vegetation and heritage also meant that other, more social values public space can create were not prioritized. Amenities such as outdoor gyms, volleyball fields, playgrounds and cut lawns for gathering are not offered in the design. This reflects a tension between creating ecologically and historically meaningful spaces on one hand, and spaces that serve everyday social needs on the other. A design that leans strongly toward one, risks creating a gap that surrounding spaces must fill. Therefore, the designs surrounding our design are indirectly influenced by the choices we have made as they might need to even out this imbalance by providing more social space. Future designers working with similar sites may need to more explicitly negotiate this balance from the start.

Working with industrial heritage is a dynamic process. Rather than preserving it in a static way, the proposal takes a dynamic approach to authenticity where material traces are retained, but their meaning evolves within a new ecological and social context. This is visible in moments where the two layers interact in unexpected ways. The rain garden, for example, deviates from the reference landscape but creates a new habitat by incorporating the former harbor basin. The containers associated with the harbor's shipping industry similarly provided an opportunity to incorporate greater plant diversity while strengthening the heritage concept. These moments suggest that the most interesting design outcomes may emerge where the two layers are in tension rather than in harmony.

Parks such as Landschaftspark in Duisburg, Gas Works Park in Seattle, and The High Line in New York combine industrial heritage with landscape design (Skerl 2025; Brezar 2026). However, we decided not to conduct a case study, both due to time constraints and because we found it challenging to identify a suitable reference area. We were looking for a specific site that was also a former port area that would be developed into a residential area with large green spaces. With the knowledge and resources at our disposal at the time, we were unable to find a suitable reference project that met our (perhaps too high) standards. Looking back on the process, Frihamnen in Gothenburg might have been a suitable reference project; here a residential area is being built along the waterfront with a focus on vegetation. In particular, Jubileumpark, located within the Frihamnen area, is a place where both industrial heritage and natural vegetation are represented (Landezine International Landscape Award n.d.; Göteborgs Stad n.d.). Looking back, this could have been interesting for a case study or as a source of inspiration.

As some of the products exported from Nyhamnen were agricultural products produced within the Scanian landscape, the reference landscape and the heritage layer are not arbitrary combinations but historically connected (Olsson and Svensson 2008). This coherence between the two layers is what distinguishes this approach from other industrial landscape designs.

However, this combination also brings inherent risks. If the industrial character is completely softened by vegetation, the heritage risks becoming merely an aesthetic backdrop. Therefore, whenever these two concepts are combined, the question arises: to what extent does industrial heritage remain recognizable as such, and when does it merely become an aesthetic backdrop to its surrounding vegetation? How can we balance these two concepts while retaining their strengths? These questions must be answered on a case-by-case basis, depending on the individual circumstances. But we hope to have given a possible answer with our design for the case of Nyhamnen. A broader challenge that this thesis also surfaces is the question of how success in this kind of design can be evaluated. There are no straightforward measurements to confirm that the intended heritage narratives are perceived as intended by visitors, or that the vegetation design will deliver the biodiversity and resilience it aims for. This points to a need for post-occupancy evaluation methods that are suited to designs where the goals are experiential and ecological rather than purely technical, something that landscape design as a field could benefit from developing further.

Use of materials (both hard materials and vegetation) is cohesive throughout the whole design: raw materials that represent the industrial harbor characteristics and naturalistic plant species are important ingredients for the design proposal. However, implications for the bigger scale, the whole of Nyhamnen, have not been stated in this design proposal. This is one of the design's weaker points: the absence of showing different, particularly the larger, scales. The design presents a cohesive overall picture, but if the context doesn't align with it, it will seem disconnected, which is undesirable for this new neighborhood.

Method discussion

For our design method we worked with the overall method of 'research for design'. Additionally, we added two strategies within the design describing our way of working with post-industrial heritage and naturalistic vegetation. We used both strategies to analyze the site, identifying factors that could influence two key decisions: which heritage elements to represent and which reference landscape to choose.

The 'Industrial Heritage Strategy' seemed to suit this project well, it connected to the overall design method with a similar structure. For this strategy, the collection of data could have been improved by diving deeper into archives or incorporating knowledge from experts (for example a historian), this could provide better foundations to work with the heritage strategy. Also, clearer communication of the different steps would have benefitted the transparency of the design process, such as stating clearly why certain heritage aspects were selected or excluded. The creation process included lots of sketching and experimenting, this is however not included in this report. Evaluation was done throughout the process, and here in the discussion. The evaluation throughout the process, however, is just like the sketches in the creation process not communicated.

A big challenge in this project was the lack of input from the local community. To incorporate more types of heritage in the design, it could have been enriching to get input from locals, as discussed in the 'Industrial Heritage Strategy' (chapter two). Riesto & Tietjen (2019) explain in their paper how input from locals can be valuable in the heritage creation process. This requires landscape architects to "listen carefully, but also to express their own values and argue for their choices in heritage-making" (Riesto & Tietjen 2019:254). Since there are currently no inhabitants in Nyhamnen and new people will move to this area, it is hard to predict the future use and gain input from locals. According to Braae & Diedrich (2012:26) it is important to provide a platform for future dialogue between the user and the site (see the Industrial Heritage Strategy in the literature study). The design offers multiple possibilities to create such platforms: the meeting square and the fact that the area provides large open spaces gives the freedom to have future developments taking place here. We also think that the use of intangible heritage elements can create a stronger sense of community, by referring to memories and historical practices (such as food handling processes). However, the transformative character of the design proposal and the information on future monitoring could have been stronger in this project, this would provide a design proposal that fits the transformative character of this post-industrial heritage site.

For the strategy of the vegetation design, it could have been helpful to analyze the reference landscape more detailed to check its suitability for the site. The naturalistic strategy itself can also be questioned, especially regarding the biodiversity. Other ways, like introducing non-native species could have produced a wider range of habitat types and potentially higher species richness overall. Additionally, using multiple reference landscapes rather than a single one could have broadened the variety of structures and species compositions available to draw from, though it may have made the overall design harder to read as a coherent expression of the Scanian coastline.

The presentation of the methods, approaches and strategies could have been improved. Having an overall approach (research for design), the overall method with the four phases (exploration, generation, evaluation and communication) and the two strategies in the literature studies might have been confusing for the reader. However, we think it is important to explain our thought process for the overall design and separately for the heritage and vegetation aspects within the design.

In terms of the analysis, it might have been beneficial to include some analyses on a bigger scale, to gather information on the role of Nyhamnen in Malmö and/or Scania. Furthermore, we decided to use the visions and plans Malmö Stad has provided as a base without questioning them. Comments on, for example, the lack of information and guidelines to incorporate industrial heritage could have been more clearly communicated in this report. An alternative would have been to design more independently and deciding by ourselves what history we think is valuable to preserve and what green areas to build instead of simply accepting the frame provided.

Limitations

One of the biggest challenges of this project was that Nyhamnen is not yet developed. Our design is based on documents and plans provided by Malmö Stad and on literature research. While the documents were useful in providing a fictional frame to work within, this frame is still not reality. As a result, we could not conduct site visits, engage with people in the surroundings about their needs and wishes, or visit other green areas planned for Nyhamnen. Unfortunately, we did not receive any response after contacting Malmö Stad and therefore were not able to work with a more detailed plan. This could mean that the design may not be fully feasible in all respects. Furthermore, there is currently almost no organic soil in Nyhamnen, as all material needs to be brought in. It is therefore unclear how much the soil will influence the development of the different species.

Future Research and Recommendations

For future research it might be valuable to assess the transformation of Nyhamnen in terms of connectivity and appropriation (Braae & Diedrich 2012). This assessment could be valuable for the design proposal for Nyhamnen as a whole to test its accessibility and to see how people are using the area. Furthermore, it might be valuable to select measurable parameters that can support the goals we set for our design. This could be done by asking people about their connectivity to the place, by counting species or selecting target species to test the connectivity of the green areas. Regarding the vegetation, the results the testing areas in the urban forest deliver should be considered and eventually lead to an adjustment of the species selection. In case this design is implemented, long-term vegetation management and monitoring are needed to create a resilient and biodiverse system. Furthermore, studies can be conducted measuring the mental well-being of people using this site, to support the theories found in the literature studies.

A detailed calculation of the implementation of the design might provide further knowledge on the usefulness of reusing materials. We hope the reuse of materials on site (like the shipping containers and the mooring bollards for example) would not only be beneficial in a sustainability point of view, but would also save on the budget for the design. We see that the design has some more costly elements, not only the materials but also the maintenance of it, for example the rails with moveable furniture. However, since the design uses a high amount of greenery and the design is focused on the development of the plant species, we believe that this will save costs in the long run. Detailed calculations on the costs of the vegetation design and its development and maintenance would be useful in providing further knowledge of the cost-effectiveness of the design.

8. Conclusion

The first part of the conclusion explains how the two different approaches were addressed in this thesis. The main question focuses on combining the strategies for the design method used. Then, possible future follow-up studies will be considered.

Sub question 1:
‘How can the industrial heritage of Nyhamnen be interpreted and incorporated into its urban landscape design and how can it strengthen the visitors’ connection to the post-industrial site?’

Nyhamnen's industrial heritage can be appreciated for its tangible and intangible traces. By collecting these location-specific values, an overview can be generated. Post-industrial locations are significant because they are part of industrialization history, which is the history of ordinary people. Therefore, a transformative design-process must take place in which values are preserved, transformed, or enhanced. Creativity and thoughtfulness are important while selecting the heritage that is collected. The heritage-product is the result of this process, where values are represented in various ways. It is important to evaluate during the steps in the industrial heritage strategy and. If possible, input from different parties is valuable in this process. The result of this heritage product should be transformative and open to future changes; this characterizes industrial sites. When working with industrial urban harbor sites, the complexity, its specific characteristics and especially the opportunity to enhance the connection between the water and the city are valuable aspects to take into consideration.

Sub question 2:
‘How can naturalistic vegetation design in Nyhamnen increase biodiversity, strengthen ecological resilience, and support human mental well-being while adapting to the site’s conditions?’

One way to do that is by using the four-step strategy that is introduced in the literature study of this thesis. By using this strategy, firstly the specific conditions of Nyhamnen are analyzed. Then inspiration for the vegetation concept is drawn by using the characteristics of the natural landscape of the Scanian coastline. By adapting selected qualities of the coastline to the site, the aim of the design is to increase biodiversity, strengthen ecological resilience, and support human mental well-being in Nyhamnen.

Main question:
'How can naturalistic vegetation design and heritage-based design simultaneously express the industrial identity of Nyhamnen while establishing resilient vegetation systems that support biodiversity and human well-being?'

The combination of heritage-based design and naturalistic vegetation design introduces a suitable method for working with post-industrial sites. Contrary to our doubts, we found that these two very different approaches do not compromise each other’s quality. Rather, heritage structures provide cultural and historical legibility while naturalistic vegetation activates those structures ecologically. Together they can even elevate one another. We believe this makes the combined approach a valuable and meaningful method to transform post-industrial sites, where reflecting both local history and local landscape are two strong ways to create urban landscapes in post-industrial areas.

For future research it would be valuable to carry out additional studies, including participation of inhabitants, measuring the connectivity and the biodiversity and by conducting detailed research on the soil.

It is also recommended to apply the design strategies in the larger scale for the whole of Nyhamnen and see how the different parts of Nyhamnen can interact and work together to create a strong identity for the place.

Part IV - Final Reflection

In this thesis, we attempted to combine two areas of interest that we had developed during our academic studies. By prioritizing heritage and naturalistic vegetation, we explored how these themes could be combined to create a design that holds value for both humans and nature.

This thesis taught us a great deal about collaboration, combining different perspectives and reconciling different starting points, finding strength in the process. We remain passionate about the topics addressed in this thesis and hope to continue developing our knowledge of them.

We also hope that our work will encourage other students to take the risk of working with a partner on their thesis. This experience has strengthened our teamwork skills and shown us firsthand the potential of knowledge transfer and merging ideas.

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Figure 128 Malmö Stad (2019). Översiktsplan för Nyhamnen: Fördjupning av Översiktsplan för Malmö. Malmö stad. https://malmo.se/Stadsutveckling/Stadsutvecklingsomraden/Nyhamnen/Oversiktsplan-for-Nyhamnen.html . [21-12-2025]

Figure 129 Meteoblue (n.d.). Simulated historical climate & weather data for Malmo [Illustration] https://www.meteoblue.com/en/weather/historyclimate/climatemodelled/malmo_sweden_2692969 (BY-NC) [2026-02-26]

Appendix I
Development plans for Nyhamnen by Malmö Stad

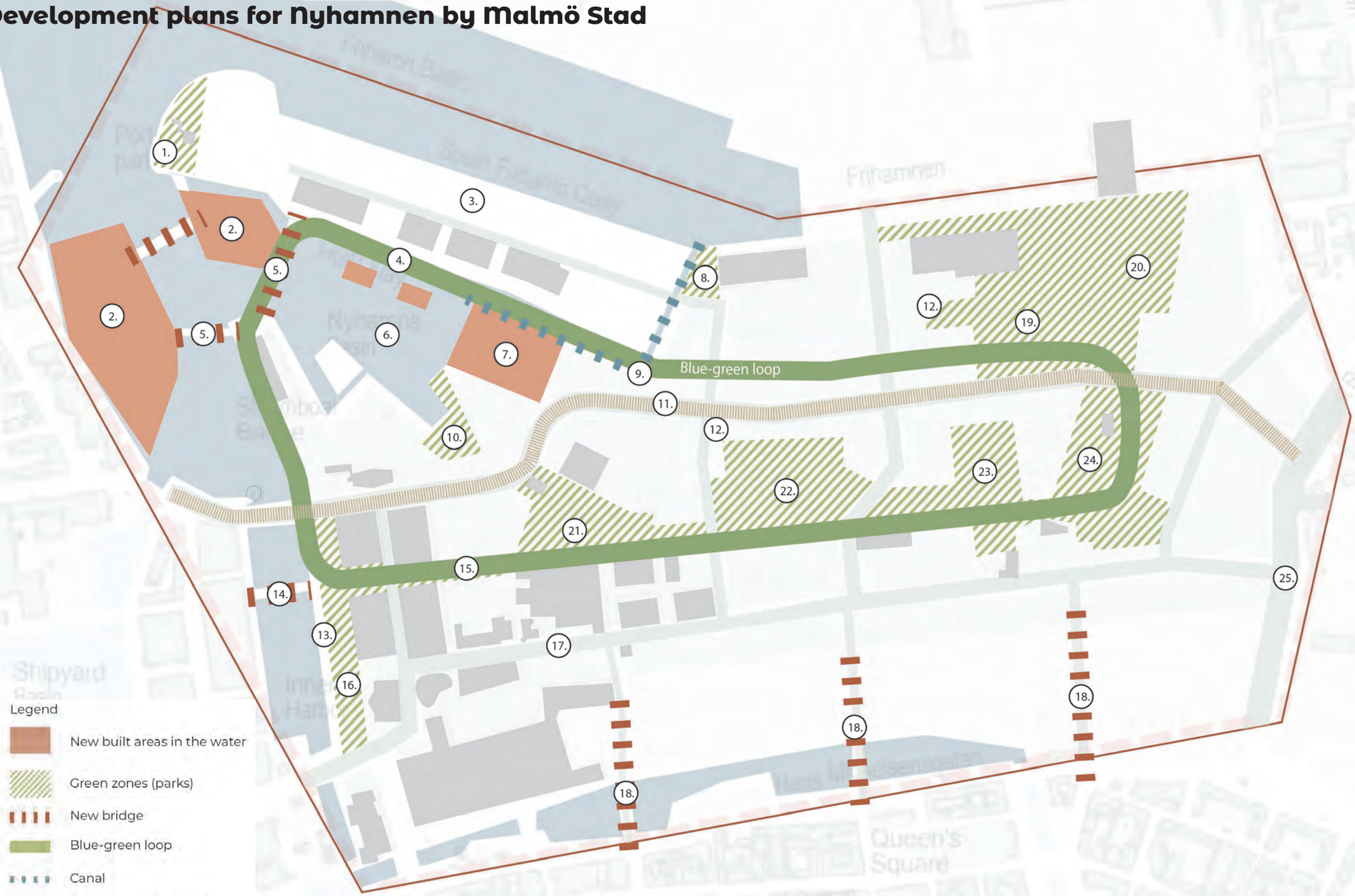

Fig. 126: Visions for Nyhamnen (Översiktsplan Malmö Stad 2019)

1. Green zone / urban park

2. New islands will be constructed for mixed urban development. This will create new canals that contribute to an attractive urban environment. The islands will be car-free at ground level and have underground parking garages. The garages can be connected by a tunnel, making it possible to reach both islands by car from Nyhamnspiren.

3. Opportunities for cruise ships to call at Nyhamnen will be developed. Terminal functions can be integrated into new buildings at Södra Frihamns-kajen. The buildings there will also be designed to protect homes from any disturbance from ships and port activities.

4. With its southern exposure, Hullkajen has great potential as a visitor destination and for recreation. This can be enhanced with public functions on the ground floors of the buildings. The quay will become part of a green corridor – the blue-green loop – through Nyhamnen. Bathing areas can be created at the quay.

5. New openable pedestrian and bicycle bridges will connect the islands with Ångbåtsbron and on to Central Station and Gamla Stan.

6. The Nyhamnsbassängen basin should be able to be used for various water-related functions, such as a marina, swimming, and other water sports. Jetties, stairs, and ramps should increase contact with the water.

7. New built area, extention in the water

8. Green zone / urban park

9. Canals will be constructed between new infill areas and the existing quay. The depth will be no more than necessary. The canal in the extension of Hull Quay will be connected to the Frihamn Basin.

10. Green zone / urban park

11. Hans Michelsensgatan will be extended to form a new public transport route. A centrally located bus stop will create a focal point in the area.

12. Two of Nyhamnen's three elementary schools will be located in the center of Nyhamnen. They will be located adjacent to parks to enable shared use between schoolyards and park areas.

13. Quays with existing buildings will be equipped with protective measures against temporary high sea levels. Barriers can be integrated into the quay edge or serve as multifunctional design elements on the quay.

14. As an extension of the green corridor in the current Jörgen Kocksgatan, Nyhamnen will be connected to Universitetsholmen and Varvsstaden with pedestrian and bicycle bridges.

15. Jörgen Kocksgatan will be rebuilt into a green corridor connecting the eastern and western parts of Nyhamnen. An extension of the green corridor will form a park, and a preschool will be built adjacent to it.

16. Skeppsbron is being transformed into a green quay and developed into an attractive promenade.

17. Carlsgatan will continue to play a major role in Nyhamnen's traffic supply. The street's design should encourage a calm traffic tempo. It should therefore be given a slight change of direction in the middle of the stretch and be equipped with public transport lanes, tree planting, and curb parking. New adjacent buildings should have short facade lengths.

18. Pedestrian and bicycle bridgea will be built at the over the railway yard, leading into central Nyhamnen and helping to bring Nyhamnen closer to the rest of Malmö.

19. A park will be built in the northeastern part of Nyhamnen and designed so that it can be expanded northward in the future to become a city park with an area of approximately 10 hectares. In the eastern part of the park, the ground level will be raised so that it gradually reaches the level of Västkustvägen.

20. The ground level is raised by a slope up to the level of Västkustvägen. Towards the freight track to Mellersta hamnen, the new, higher ground level ends with a retaining wall, which means that new buildings will be approximately 6 m above the level of the track.

21. Green zone / urban park

22. Green zone / urban park, located near a school used for education activities

23. Green zone / urban park

24. Green zone / urban park

25. Västkustvägen will eventually take on an urban character, and new adjacent buildings will have facades with entrances facing the street and outward-facing functions where appropriate. Where possible, Västkustvägen will have kerbside parking and tree planting. Public transport can be routed via a tunnel to a depot east of Västkustvägen.

Appendix II
Reference Maps for Basemap

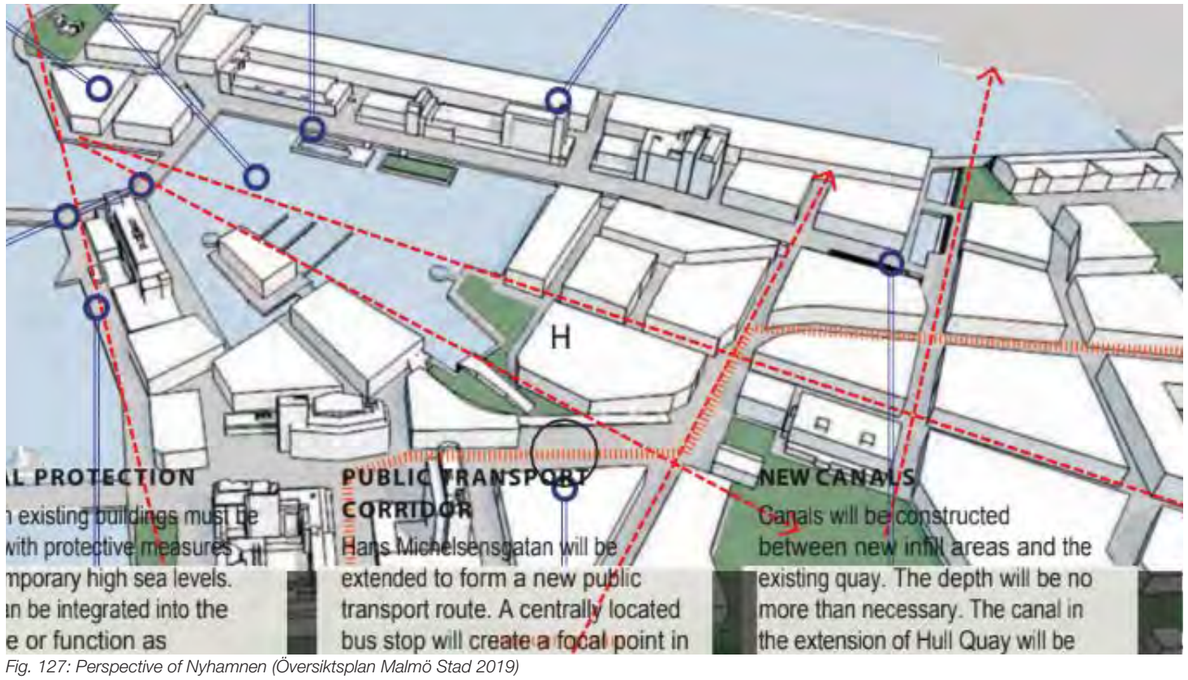

Fig. 127: Perspective of Nyhamnen (Översiktsplan Malmö Stad 2019)

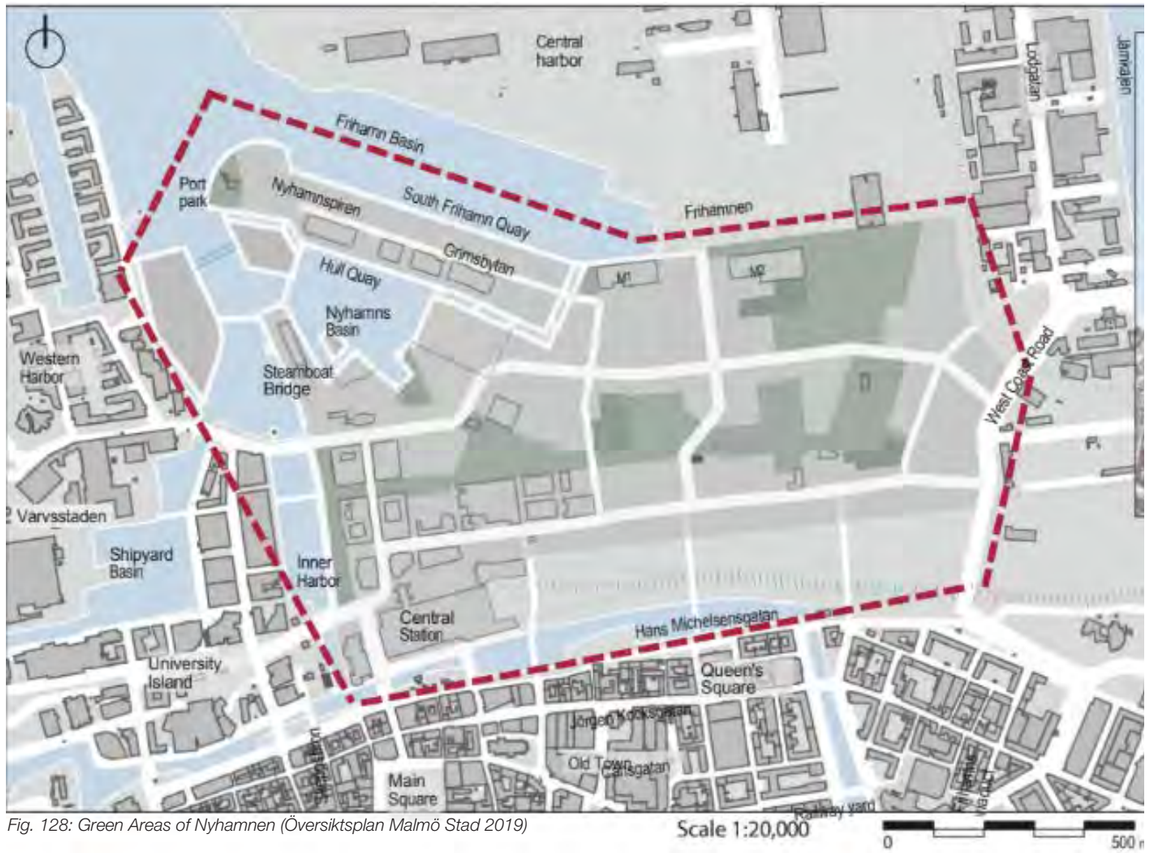

Fig. 128: Green Areas of Nyhamnen (Översiktsplan Malmö Stad 2019)

Appendix III
Windrose for wind analysis

Malmo Västra Hamnen
55.61°N, 12.98°E (5 m asl).

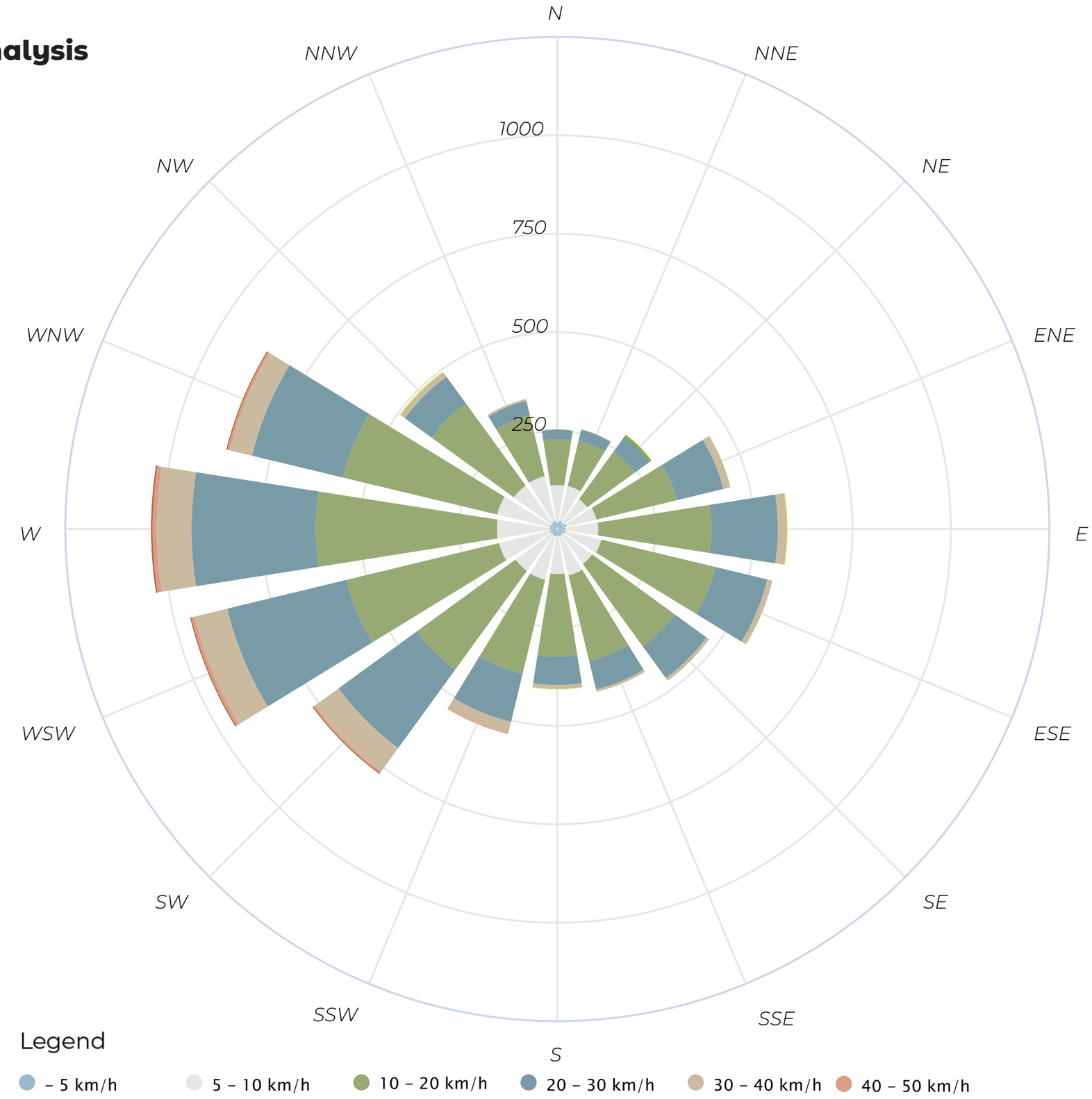

Fig. 129: Wind analysis (based on Meteoblue n.d.)(BY-NC)

Layers of Time and Growth

Legend

- Blue-Green Loop
- Park area
- Buildings
- Buildings related to grainroute
- Grain Route
- "Train" paths
- subpaths
- Dunes
- Raingarden bridge
- Raingarden
- Shipping container flowerbed / roof
- Coastal park
- Forest edge
- Pine Forest
- Small trees
- Train square
- Pier

Grimsbygatan
Brisgatan
Grain Silos
Blue-green Loop
M1
old waterline
Hans Michelsensgatan
Raingardens
Magasinet
old waterline
Grain Route
Forest edge
Blue-green Loop
Jörgen Kocksgatan
Dunes
Slagthuset
Pine forest
50
100m

Fig. 131: Masterplan

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