Department of Architecture,
Design & Media Technology
Aalborg University

How Do People's Journeys Shape Urban Spaces?

Active Mobility On The Fjord's Bridges Between Aalborg And Nørresundby

Master Thesis in Urban Design
By Marwa Shokair
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Title: How Do People's Journeys Shape Urban Spaces?

Focus: Using Ethnographic Research into Active mobility on the Fjord's Bridges between Aalborg and Nørresundby.

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Abstract

The movement patterns and experiences of people in cities play a crucial role in shaping urban spaces. Urban designers and planners like Kevin Lynch, Jan Gehl and William Whyte have long studied how individuals navigate cities, influencing the development of more functional and people-centered environments. Several key theories highlight the relationship between human movement and urban design.

This thesis explores the reciprocal relationship between people's daily journeys and urban spaces, with a focus on active mobility across the fjord's bridges connecting Aalborg and Nørresundby in Denmark.

Using ethnographic research methods, the study investigates how individuals experience and navigate these urban environments, paying attention to how physical elements shape behavior, accessibility, and social interaction.

The findings reveal that these urban materials not only guide movement but also create affordances and limitations that influence the rhythm and inclusivity of city life where the attention is given to the diverse user groups, whose movements and needs actively shape the function and feel of public spaces.

The report concludes with a design proposal for Kulturbroen and spatial design recommendations for the existing and future bridges, aimed at fostering more inclusive, accessible, and responsive urban environments.

Preface

Under Kulturbroen, the flow of movement never seems to pause—people and sounds weaving together like threads. The senior couple moves under the bridge with great care as they check their path multiple times to ensure safety before they move ahead. A middle-aged man rests on a bench nearby while staring at the fjord but shows no reaction to the surrounding constant activity. Everyone nearby selects a distinct path through the area since people choose to walk, run, bike and hold conversations while traveling.

Today, bicycles dominate the scene. Many bicycles of different types pass by under the bridge including large bikes with carriages, sleek racing bikes and casual city bikes. All passing individuals seem to stop and check the counter machine while they look at the displayed count with interest. A child stands with his mother to eagerly count the bikes and pedestrians displayed on the counter.

People ride bicycles with confidence on the well-maintained concrete bike path as others walk in different directions or use the sidewalk to pass under the bridge. The area shows a couple pushing a baby stroller while people walk their dogs and jog with headphones and stroll with friends who talk deeply. A young man walks beside a bench before sitting down briefly and becomes happy when his friend shows up. Two friends talk while walking slowly before they depart after fifteen minutes of time.

The wind beneath the bridge blows stronger than on the Aalborg side and carries a clear sound of water. Bicycles wheels produce a constant humming noise which merges with human voices and footsteps until a train passes by every ten minutes and produces a loud rumbling sound that quiets everything.

The location serves as a transitional spot where water, wind, wheels, and footsteps merge into one flowing and ever-changing instant that connects each person to the common flow.

19/03/2025
12:30-13:00
Nørresundby kulturbroen

Reading Guide

This reading guide is intended to help readers clearly understand the report's structure and content. Each chapter builds upon the previous ones.

The first 67 pages of this report provide an understanding of the topic and framework based on theory, methods, analysis, and answering the research questions. From pages 76 to 93, the design proposal will be presented for Kulturbroen and spatial design recommendations for Limfjord's Bridges. Lastly, the report will summarize the project through a conclusion and a discussion in the last chapter, along with the appendix.

The names of places, and streets will be in Danish, e.g. Limfjordsbroen which means Limfjord's bridge and Kulturbroen which means Culture Bridge. The references will be through the text and on the references page in Harvard Style. All Base maps from: kort.plandata.dk and edited by the author to serve the content. And lastly, all the pictures in the report and the illustrations are taken and created by the author except those which were written beside the illustration list where I have permission to use them from their owners.

Enjoy reading this report.

Motivation

The motivation for doing this thesis project comes from my daily journey between Aalborg and Nørresundby, and the different feelings in different way I used to move, by bike, car, bus or on foot. Many times, while biking through the area, I fell or faced difficulties, which made me realize that something about the site needed attention and improvement.

And from my internship I learned new methods for site analysis, where I decided to apply to a route that I, along with my family and friends, use every day. on the other hand, working on the Active Cities project during that time gave me new insight into understanding active users and their behavior, further motivating my decision to focus on this site.

Acknowledgment

First and foremost, I would like to express my gratitude to my supervisor, Claus Lassen, for his guidance and encouragement throughout my project. I am also thankful for my previous counselor during my internship, Andrea Victoria Hernandez Bueno in Aalborg University for her support in these methods which I used for this project.

On a deeply personal note, I want to thank my husband, family and friends for supporting me.

Thank you all for being part of this journey.

PRELIMINARY

This chapter provides an overview of the thesis project, outlining its background and objectives. It presents the central research questions, describes the methodological approach adopted throughout the study, and introduces the theoretical frameworks that inform the research.

Introduction

Urban environments and human movements are intertwined—how people navigate and experience the city shapes its spaces, just as the built environment guides and influences patterns of mobility. In recent years, there has been growing interest in understanding how everyday journeys contribute to the form, function, and feel of urban areas. This thesis investigates the mutual relationship between human movement and the urban landscape, focusing on active mobility across the bridges that connect Aalborg and Nørresundby in northern Denmark.

The project aims to explore how human movement affects urban environments while also examining how the built environment influences and directs people's mobility patterns. The study specifically concentrates on the fjord's bridges—Limfjordsbroen and Kulturbroen—as key transitional spaces that reveal how infrastructure both facilitates and hinders mobility, social interaction, and accessibility. To approach this, ethnographic research methods were used to observe and interpret people's daily journeys, behaviors, and interactions with the built environment.

The findings reveal that materiality like benches, pavement texture, lighting, and barriers shape how people move and interact within the spaces. These elements not only provide affordances but also present limitations, influencing rhythms of use and perceptions of accessibility. Designing with these diverse human experiences in mind allows for more inclusive, welcoming, and responsive urban environments.

The structure of the thesis is organized into five main chapters:

1. PRELIMINARY provides an overview of the thesis project and research framework.
2. ANALYSIS presents a detailed analysis of the two bridge sites, Limfjordsbroen and Kulturbroen.
3. VISION introduces the project's vision and defines the key design criteria.
4. PRESENTATION introduces a site-specific design proposal for Kulturbroen, along with spatial design recommendations for Limfjord's exist and future bridges.
5. EPILOGUE concludes the thesis with reflections and final thoughts.

Through this investigation, the thesis aims to contribute to the discourse on human-centered urban design by highlighting the importance of understanding mobility as a lived, embodied experience within the fabric of the city

Research Questions

How do people's journeys shape urban spaces? And how do urban areas affect users' mobility?

- How does the design of the bridges of the fjord between Aalborg and Nørresundby afford and/or hinder active mobility along with their meeting the land?

- Who are the users and what do they do on the sites?

- How do people move? And why?

By addressing the research questions, this project aims to explore how the connections between Aalborg and Nørresundby can be improved to promote active mobility, enhance human well-being, and transform these areas into accessible, vibrant, and socially engaging public spaces.

Limfjordsbroen

Kulturbroen

Ill. 01. The atmosphere of the sites

Methodology

"Only by examining the interplay between the built environment and human behavior can we plan and design urban spaces that are truly livable."
Gehl, J., 2010. Cities for People. Washington, DC: Island Press.

This study employs **ethnographic research** as its primary methodological framework to investigate active mobility across the two bridges of the fjord. Ethnographic research is a qualitative methodology that seeks to understand cultural practices, behaviors, and social interactions within their natural environments. Rooted in anthropology, ethnography emphasizes immersive observation and participatory engagement, allowing researchers to capture the lived experiences of individuals in specific contexts.

This methodological approach focuses on uncovering insider perspectives that reveal the meanings and values individuals assign to their everyday activities (Geertz, 1973).

In the context of urban and public spaces, ethnographic research is particularly valuable for examining how individuals interact with their physical surroundings. Urban spaces, characterized by dynamism and diversity, serve as arenas for social exchange, movement, and cultural expression. Ethnographic methods facilitate an in-depth understanding of the underlying social, economic, and political processes shaping these environments. Public spaces, for example, often highlight the tension between formal planning objectives and informal human behaviors, leading to unintended uses or adaptations. This duality underscores the relevance of ethnographic approaches in urban studies.

To comprehensively explore active mobility across bridges, this study allows for a detailed and nuanced understanding of how pedestrians, cyclists, and other non-motorized users experience the bridges and their surrounding environments. This method integrates various research tools to provide holistic analysis of mobility patterns and user interactions.

Visiting the Aalborg Historie building and doing desktop research serves as an initial step, offering an overview of the sites and their spatial configurations from a macro perspective. This phase involves reviewing the history of the sites with support from Aalborg Historie, assisted by Bente Jensen - Archivist in Aalborg Stadsarkiv which is the archive for Aalborg Municipality and also serves as a local history archive for Aalborg and the surrounding area -, who provided valuable insights into their transformations and granted permission to use high-resolution historical images, municipal planning documents and existing literature to contextualize the study within broader urban mobility discussions. Subsequent site visits enable the collection of thick descriptions through direct observations, counting, and mapping user flows. These activities provide insights from the researcher's perspective on the case study, capturing both above and below staging dynamics.

To incorporate users' perspectives and to answer the research question, the study employs citizen surveys, interviews, and the analysis of drawn journeys and serial visions. These techniques allow for an exploration of users' voices and rights in shaping urban spaces, shedding light on their behaviors, needs, and interactions within the study area. Additionally, strolling and shadowing methods are used to compare users' stated perceptions with their actual interactions and practices on-site. These techniques enable the researcher to observe in detail the obstacles users encounter along their routes and journeys.

Furthermore, visual documentation methods such as photography and video recording are utilized to create an archive of observations. These materials serve as tools for analysis, reinforcing the credibility of the findings and supporting the interpretation of mobility patterns. By integrating these ethnographic

methods, the study aims to offer a comprehensive and human-centered analysis of active mobility across the two bridges of the fjord.

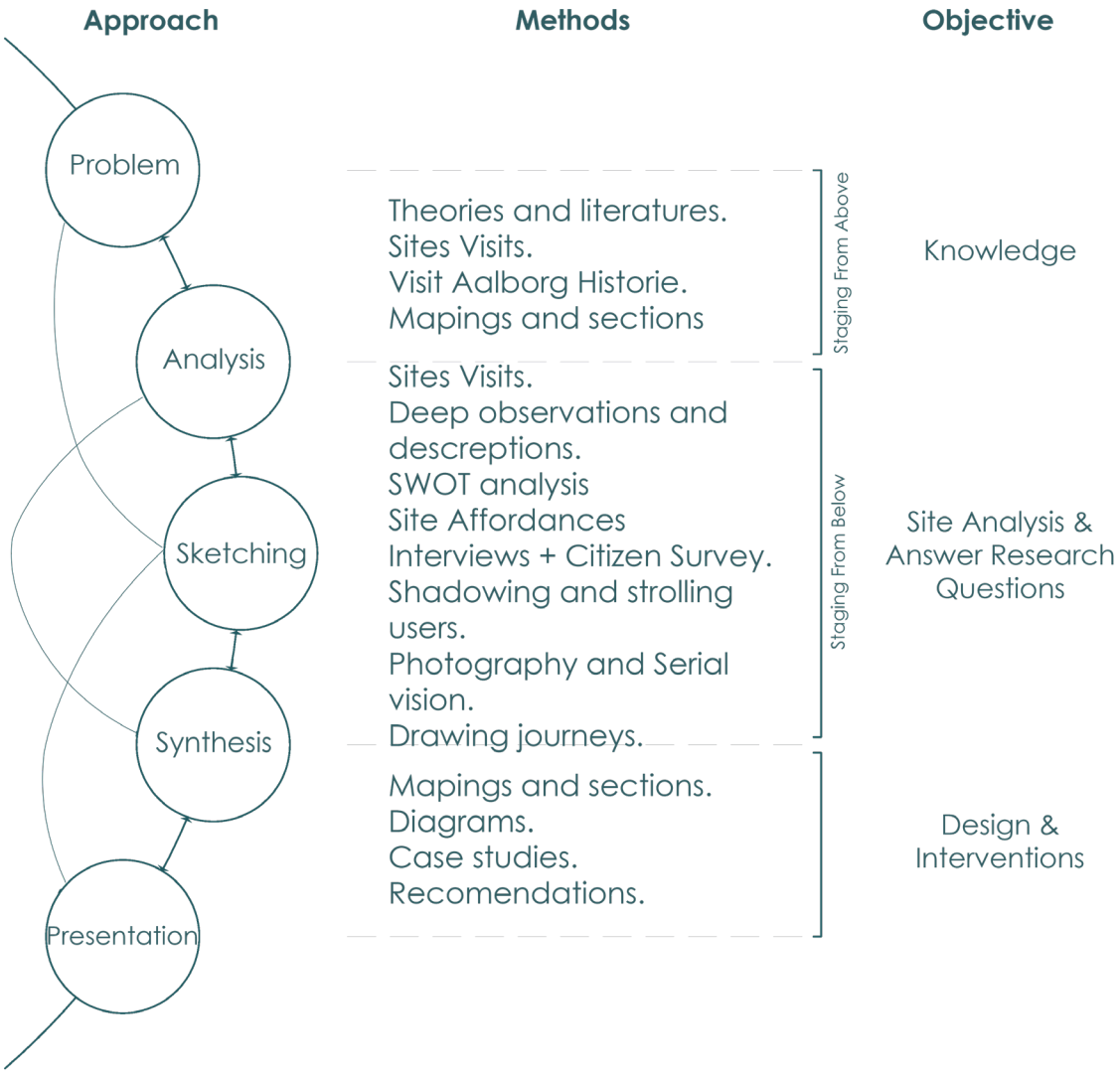
To understand sites layers in plans, sections and models, 2D and 3D Cad programs (AutoCAD and ArchiCAD) have been used. On the other hand, they helped to evaluate multiple ideas of the solutions to make the final proposal.

The process of the project begins by identifying the problem and the aim of the research. And the Solutions are developed with a strong focus on user needs and contextual factors and evolve through cycles of ideation, prototyping, and testing. Which is based on The Integrated Design Process (IDP) method from Aalborg University and its Phases of the IDP Process:

o Understanding the problem and stakeholders. Using slow ethnography tools.
o Brainstorming potential solutions.
o Creating and testing models.
o Iterating based on feedback.
o Applying the final solution in real-world settings.

This method ensures that solutions are not only technically sound but also practical and user-friendly. It is widely recognized for fostering critical thinking, creativity, and teamwork among students and professionals. (Hansen& Knudstrup, 2005)

Artificial intelligence methods were occasionally used through the text to refine sentence formulations and to assist in searching for some references.



Ill. 02. Methodologies used in research.
(Own illustration)

Theories

"Cities are a product of the society that creates them. Sustainable cities must be about people."
Rogers, R., 1997. Cities for a small planet. London: Faber and Faber.

As sustainability becomes a central focus for cities worldwide—particularly in Denmark—urban development increasingly emphasizes environmentally conscious, socially inclusive, and economically viable strategies. Beginning with a focus on active mobility, this section introduces the concept of sustainability and its connection to urban design, highlighting how walking and cycling contribute to livable and resilient cities. Furthermore, it explores Ole B. Jensen's insights on staging mobility, offering a deeper understanding of how everyday movement patterns shape urban spaces through both planning and lived experiences.

Sustainability is a fundamental principle in urban development, ensuring that cities grow in ways that balance environmental, social, and economic needs. The United Nations' Sustainable Development Goals (SDGs) provide a comprehensive framework for achieving sustainable urban development, with several goals directly influencing the design of urban areas and public spaces. Among the 17 SDGs, three are particularly significant for urban planning: SDG 11 (Sustainable Cities and Communities), SDG 13 (Climate Action), and SDG 7 (Affordable and Clean Energy). These goals collectively contribute to the creation of resilient, inclusive, and environmentally responsible urban environments.

SDG 11 highlights the importance of fostering inclusive, safe, resilient, and sustainable cities by improving housing, transportation, and green spaces (United Nations, 2015). This goal is widely adopted in urban development to guide policies that enhance livability and reduce social inequalities. Similarly, SDG 13 focuses on climate action, advocating environmentally friendly urban practices such as green infrastructure, energy-efficient buildings, and climate resilience strategies (Bulkeley & Betsill, 2013). Meanwhile, SDG 7 supports the integration of renewable energy into urban planning, encouraging sustainable energy solutions that lower carbon footprints and enhance energy efficiency (Goldthau, 2014). The implementation of these goals ensures that urban spaces not only promote economic development but also prioritize environmental stewardship and social equity.

The starting point in achieving these sustainability goals is the promotion of active mobility where this thesis is focusing on, which includes walking and cycling. According to Gehl (2010), cities should be designed for people, prioritizing pedestrian-friendly environments and bicycle infrastructure to enhance livability. Urban spaces that support active mobility contribute to human well-being, reduce carbon emissions, and stimulate economic vitality (Newman & Kenworthy, 1999). Additionally, active transport reduces reliance on cars, leading to improved air quality, lower emissions, and decreased traffic congestion (Banister, 2008). Beyond environmental benefits, increased physical ac-

tivity contributes to better public health by lowering obesity rates and improving mental well-being (WHO, 2018). Research further suggests that cities designed for active mobility encourage social interaction and inclusivity, fostering a sense of community and enhancing urban resilience (Jacobs, 1961).

Integrating sustainability and mobility into urban design requires balancing structured planning with the lived experiences of city dwellers. Ole B. Jensen's theory on staging mobility provides insight into how urban spaces are shaped both by top-down planning and everyday interactions. Jensen argues that mobility is not merely a functional necessity, but a staged performance influenced by infrastructure, regulations, and social practices. He distinguishes between designing cities from above—where planners and policymakers structure movement through transit networks and zoning laws—and from below, where individuals navigate and reinterpret these spaces based on their daily experiences (Jensen, 2013). Therefore, project analysis is based on staging mobility theory to make a deep understanding of the sites and users' interactions and journeys into them. (See in Ill. 02 p: 19, how the analysis is depending on staging from above and below).

The development of urban spaces occurs through daily journeys of people who shape cities by letting their movement patterns and needs determine how cities transform over time. Urban planners who study these patterns can develop environments that combine accessibility with engagement and sustainability while making livability their top priority instead of functionality.

Using these theories, this study aims to develop project sites by applying insights into the relationship between sustainability and urban design. Grounded in research that emphasizes people's daily journeys, behaviors, and perceptions, the analysis seeks to create environments that respond to real human needs while promoting sustainable urban living.

Ill. 03. Theories illustration
(Own illustration)

ANALYSIS

This chapter presents the analysis of the project, beginning with an exploration of its context at multiple scales through desktop research and on-site observations. It addresses the research questions using a range of ethnographic methods conducted in the field. The chapter concludes with key insights and mini conclusion from the analysis.

Context

"Architects must understand the environment and culture they are working in. To build without respecting the spirit of the place is to build lifeless shells."
Fathy, H. (1973). Architecture for the Poor: An Experiment in Rural Egypt.

Building on the motivation behind selecting this project, the initial phase involves developing a general understanding of the context at various scales and dimensions, starting from the national level of Denmark and narrowing down to the specific project sites, guided by Fathy's insights as referenced above.

Denmark

Denmark is a highly developed Scandinavian nation known for its strong economy, sustainable urban mobility, well-planned infrastructure, and focus on research and innovation. The country's approach to urban development and sustainability has positioned it as a global leader in livability and environmental consciousness. Denmark is renowned for its efficient and sustainable urban mobility.

Copenhagen, the capital, has one of the highest rates of bicycle usage worldwide, with over 40% of residents commuting daily by bike (Copenhagen Municipality, 2021). The city has invested significantly in cycling infrastructure, including dedicated bike lanes and bridges. The government prioritizes green mobility solutions, including the expansion of electric vehicle charging stations and hydrogen-powered transport initiatives (Transport Ministry of Denmark, 2022).

Denmark has a high-income economy with a strong emphasis on innovation, renewable energy, and digital transformation. (World Economic Forum, 2023). Urban and rural development in Denmark follows a balanced approach that prioritizes economic growth while ensuring environmental and social well-being. The government promotes mixed-use developments that enhance urban density and accessibility (Gehl, 2020).

Smart city initiatives, including sensor-based traffic management and renewable energy integration, are widely implemented across urban areas, furthermore the concept of "active cities" is integral to Danish urban planning. Green spaces, pedestrian-friendly zones, and cycling-friendly infrastructure promote an active lifestyle among citizens. (Smart City Denmark, 2022). It is a global leader in sustainability, aiming to become carbon-neutral by 2050. The country heavily invests in renewable energy, with wind power providing over 50% of its electricity (Danish Energy Agency, 2022).

Denmark exemplifies a forward-thinking nation with a strong emphasis on sustainability, innovation, and high quality of life. Through integrated urban mobility, economic resilience, infrastructure, and ambitious future initiatives, Denmark continues to be a model for modern, sustainable development.

Aalborg Municipality

Aalborg Municipality, located in North Jutland, Denmark, see Ill. 04 has a well-developed infrastructure supporting economic growth and urban living. The city of Aalborg, the municipality's central hub, is connected through a robust transport network, including Aalborg Airport, railway links, and a well-maintained road system (Danish Ministry of Transport, 2020). Aalborg has experienced rapid urban development over the past few decades, transitioning from an industrial city to a knowledge- and service-based economy. Major urban renewal projects, such as the waterfront redevelopment, have transformed the cityscape, promoting modern architecture and public spaces (Gehl, 2020).

Sustainability is a key focus for it, which has a role in implementing green policies, where Aalborg's urban mobility strategy prioritizes sustainable and efficient transport. The municipality has expanded its cycling infrastructure, promoting bike-friendly commuting (Danish Road Directorate, 2021). Additionally, public transport has been enhanced with electric buses and a future light rail project, aimed at reducing congestion and emissions (Aalborg Municipality, 2022).

Looking ahead, Aalborg Municipality aims to further strengthen its position as a smart, green, and inclusive city. Strategic plans emphasize climate resilience, smart city technologies, and continued economic diversification (Aalborg Municipality, 2024). The development of new residential and commercial districts is set to accommodate population growth while maintaining sustainability standards.

Aalborg and Nørresundby

Aalborg and Nørresundby, two closely linked urban areas in Aalborg municipality, are situated on opposite sides of the Limfjord. Aalborg, Denmark's fourth-largest city, lies to the south, while Nørresundby, historically an independent town, is located to the north. Over the years, Nørresundby has increasingly integrated with Aalborg, particularly since the administrative merger in 1970, creating a dynamic and interconnected urban region. This integration is reflected in their demographic growth and ongoing urban development projects aimed at enhancing connectivity and quality of life.

Demographically, both cities have experienced steady population growth, reinforcing their status as attractive residential and economic hubs. As of 2024, Nørresundby's population stands at 24,281, marking a significant increase from 20,923 in 2006. Aalborg, in contrast, had 142,561 residents in 2021. This consistent growth highlights the region's appeal, driven by urban renewal projects, economic opportunities, and improved infrastructure. (Citypopulation.de, 2024)

Connectivity between the two cities has historically relied on key infrastructure such as the **Limfjordsbroen** road bridge and **Kulturbroen** the railway bridge, both crucial for daily commuting and economic interaction. Additionally, the E45 motorway provides efficient regional access, while Aalborg Airport, located just west of Nørresundby, serves as an important gateway for international and domestic travel. However, as traffic demands continue to rise, new infrastructure projects have been proposed to enhance

connectivity and support sustainable mobility. (see Ill. 5).

One of the most anticipated developments is the Stigsborg Bridge, a proposed pedestrian and cyclist bridge linking the Stigsborg waterfront in Nørresundby with Aalborg's Østre Havn, (Stigsborg, 2024). Another major initiative is the Third Limfjord Connection, a proposed motorway designed to alleviate congestion on existing routes and provide an additional north-south link. This new highway aims to improve regional mobility, support economic development, and accommodate the growing traffic between the two cities. (Niras.dk, 2025)

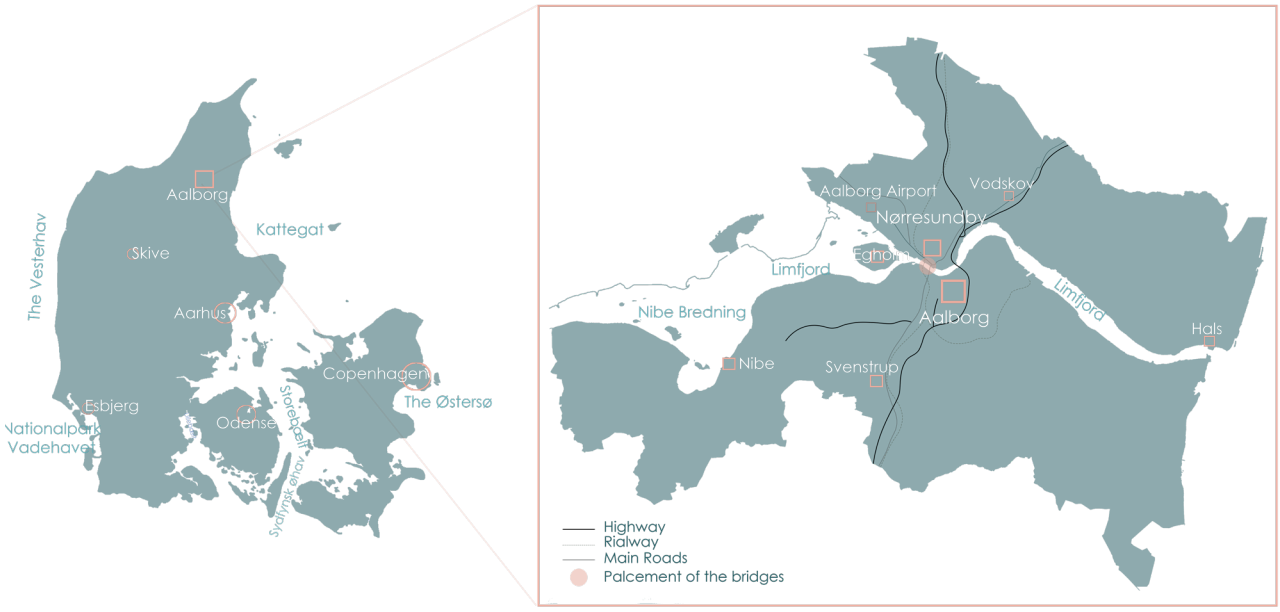
On the other hand, Aalborg Waterfront has transformed from an industrial harbor into a vibrant urban space offering a mix of recreational, cultural, and social activities. The area features promenades, green spaces, and public seating that encourage walking, cycling, and relaxation along the Limfjord (Gehl, 2010). Key attractions include the Utzon Center, a cultural venue designed by Jørn Utzon, and Nordkraft, a former power plant now hosting theaters and sports facilities (VisitAalborg, 2023). The waterfront also supports outdoor dining, seasonal events, and water-based activities like kayaking and swimming, enhancing community life and making the area a model of successful urban regeneration (Carmona et al., 2010).

These infrastructure projects signify a commitment to strengthening the urban ties between Nørresundby and Aalborg while promoting sustainable transportation and economic growth. By investing in innovative urban planning and connectivity solutions, both cities are paving the way for a more integrated and livable future, ensuring that their development remains both dynamic and sustainable.

Limfjordsbroen and Kulturbroen

Limfjordsbroen and Kulturbroen are two significant bridges connecting Aalborg and Nørresundby, each playing an essential role in facilitating mobility and transportation. Limfjordsbroen, opened in 1933, is designed for road traffic. It replaced an earlier pontoon bridge to accommodate increasing vehicle volumes and was expanded in 1960 to further increase capacity. The bridge's lift mechanism allows large ships to pass, maintaining a balance between road and maritime traffic. On the other hand, Kulturbroen, opened in 2017, provides a dedicated pedestrian and cycling route. Built west of the railway bridge, it supports active mobility by the new path. Both bridges are crucial for improving connectivity between Aalborg's city center and Nørresundby. Their construction and continued use represent the region's commitment to accessible and efficient transportation infrastructure.

(C.F. Møller Architects, 2017; Enjoy Nordjylland,2019; Aalborg Bibliotekerne,2025).



III. 04. Denmark map and Aalborg municipality location

III. 05. Aalborg city and the fjords' connections

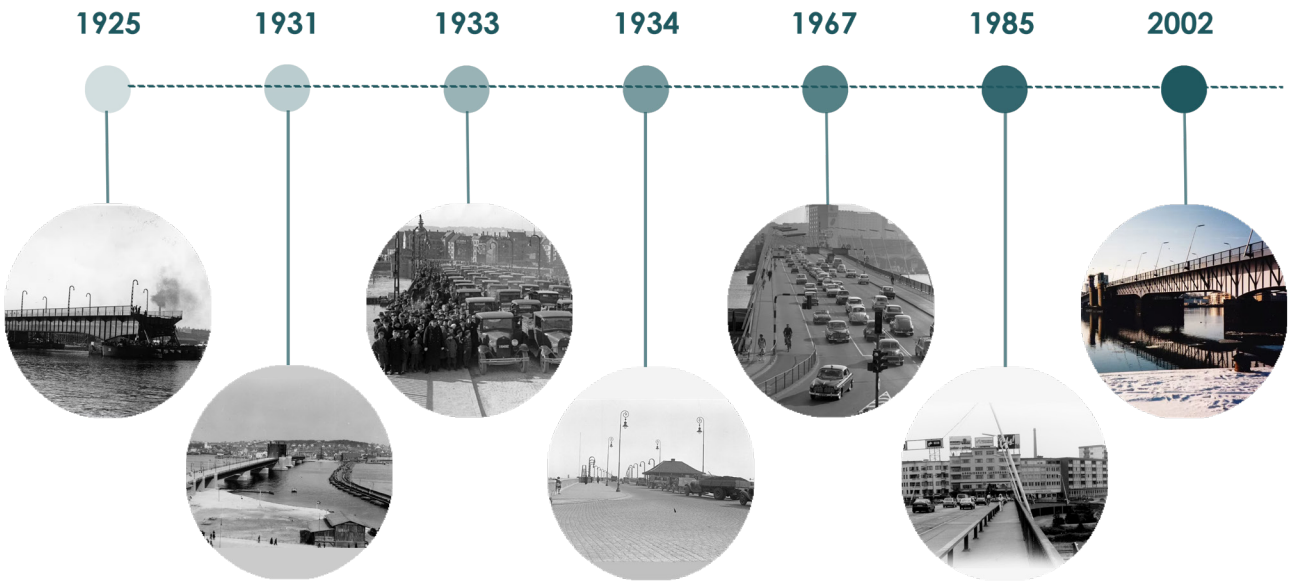
Limfjordsbroen

The Evolution of Limfjordsbroen

Limfjordsbroen has undergone significant development since its inception. The first fixed crossing was a pontoon bridge, established in 1865, which served the area until the early 20th century. This bridge had limitations in terms of load capacity and traffic flow, leading to the need for a more robust structure.

In 1930, construction of the current Limfjordsbroen began. The process lasted 150 weeks and involved between 100 and 200 workers from Aalborg. Many of the bridge's components were prefabricated at Aalborg's harbor front, west of the current bridge location. A week before the official inauguration, a load test was carried out, during which 48 fully loaded trucks were placed on the bridge sections to ensure the structure's strength. The bridge was officially opened on March 30, 1933, in front of approximately 30,000 spectators. Initially, it was a toll bridge, but the toll fee was abolished in 1935.

In 1960, the bridge was widened from 14.5 meters to 21.4 meters to accommodate increasing traffic demands. Despite this expansion, the bridge remained one of Denmark's busiest road connections until the opening of the Limfjord Tunnel in 1969. Over the years, Limfjordsbroen has continued to serve as a central traffic artery and a landmark for the region.
(Jensen, 2008)



Ill. 6. The development of Limfjordsbroen through the years.

The Site and Its Functions

Limfjordsbroen plays a crucial role in the everyday lives of residents. Beyond being a practical infrastructure element, the bridge is a landmark woven into the urban, recreational, and cultural fabric of both cities. It connects two harborfronts, both rich with residential and commercial buildings, as well as public and recreational spaces that line the fjord's edge.

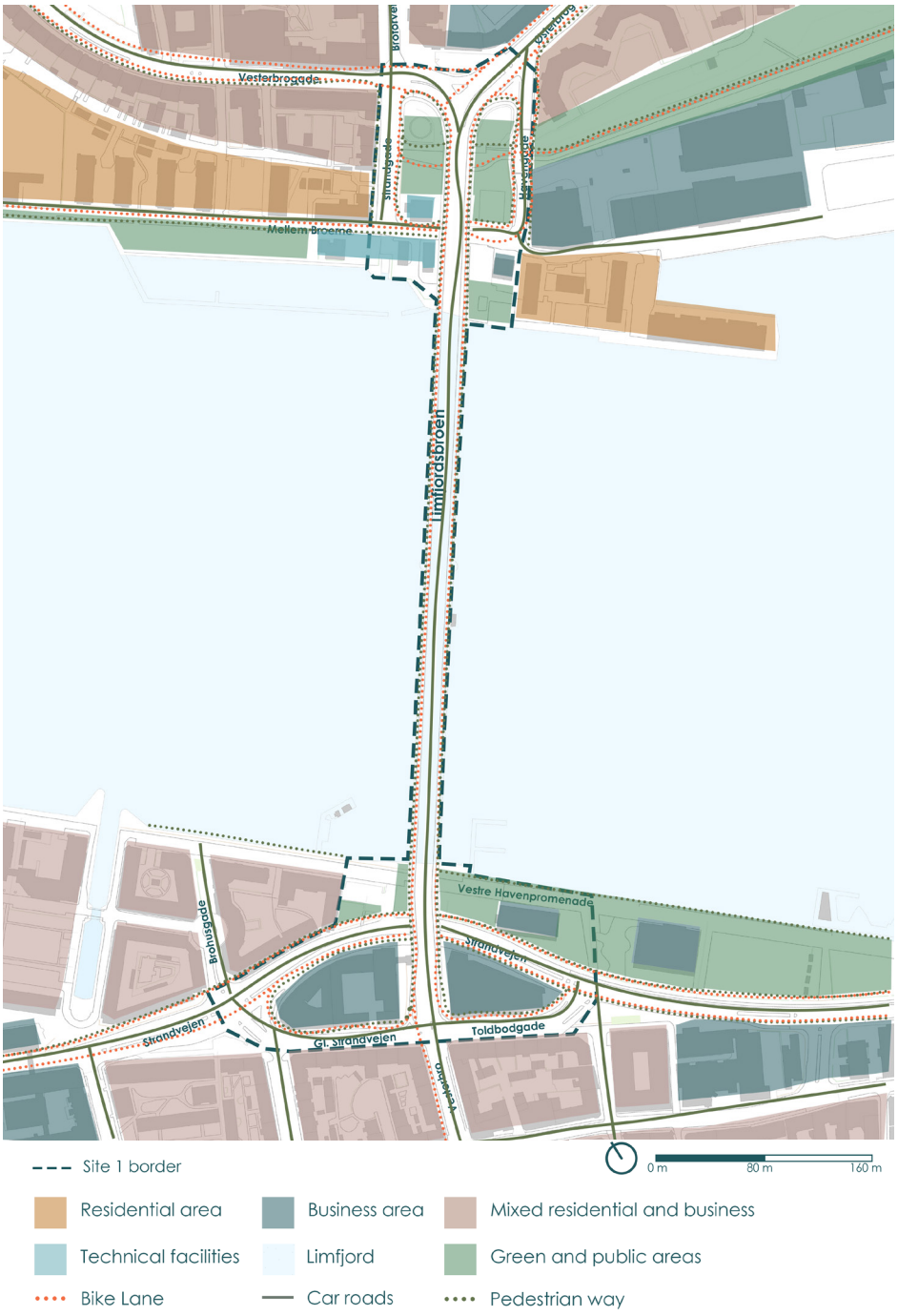
The structure of Limfjordsbroen supports multiple modes of transport: it has four lanes for vehicles, two elevated bike lanes, and two pedestrian paths—one on each side of the bridge. The pedestrian and bike lanes are separated by a slim iron divider, primarily functional but sometimes used by passersby to rest, despite its narrow width. The elevated bike paths create a sense of separation and safety from vehicle traffic. Together, these features support strong intercity mobility and access for pedestrians, cyclists, and motorists alike. (see Ill.8A, section B1).

A visually distinctive element of the bridge is its colorful control tower at the middle, which operates the drawbridge mechanism when ships need to pass through the fjord. This operational feature reflects the bridge's integration with maritime activities and emphasizes its importance in a harbor environment full of technical infrastructure. There are several art drawings on the walls around and beneath the bridge. Numerous signs are placed throughout the area, affording to understand how users experience and navigate the space.

From the Nørresundby side, Limfjordsbroen is linked to a lively recreational area underneath the bridge. Here, residents enjoy facilities such as a ball field, a playground, training equipment, green spaces with aging wooden furniture, and both pedestrian and bike paths that connect Strandgade and Havnegade. Two staircases from the bridge provide access to this inviting space. In contrast, the Aalborg side offers a single staircase leading to the Vestre Havnepromenade. This area also includes a small park with seating, a restaurant, a playground, and sports fields along the street.

At the beginning of the bridge on the Nørresundby side, a counter registers the daily flow of pedestrians and cyclists, measuring in both directions. This data provides valuable insights into the usage and mobility patterns across the bridge, reflecting its significance in urban commuting and recreational use.

(Scan the parcode in Appendix A p: 107 to explore the pictures of the whole site).



III. 7. Site 1 Limfjordsbroen functions map

Limfjordsbroen is not just a physical connector but also a symbolic one. It frequently serves as a venue for public events and celebrations, cementing its role as a cultural landmark. It is the setting for the Danish Championships in Cycling (Andersen, 2025), the colorful Aalborg Karneval, which takes place annually in May (Aalborg Karneval, 2024), a place for fireworks in new year and a high space to jump from it to the water and swim. These events showcase the bridge as a vibrant and communal space.

However, the bridge also holds more somber associations, as there have been unfortunate incidents involving pedestrians falling into the fjord (Berlingske.dk, 2014), reminding us of the ongoing need for safety measures.

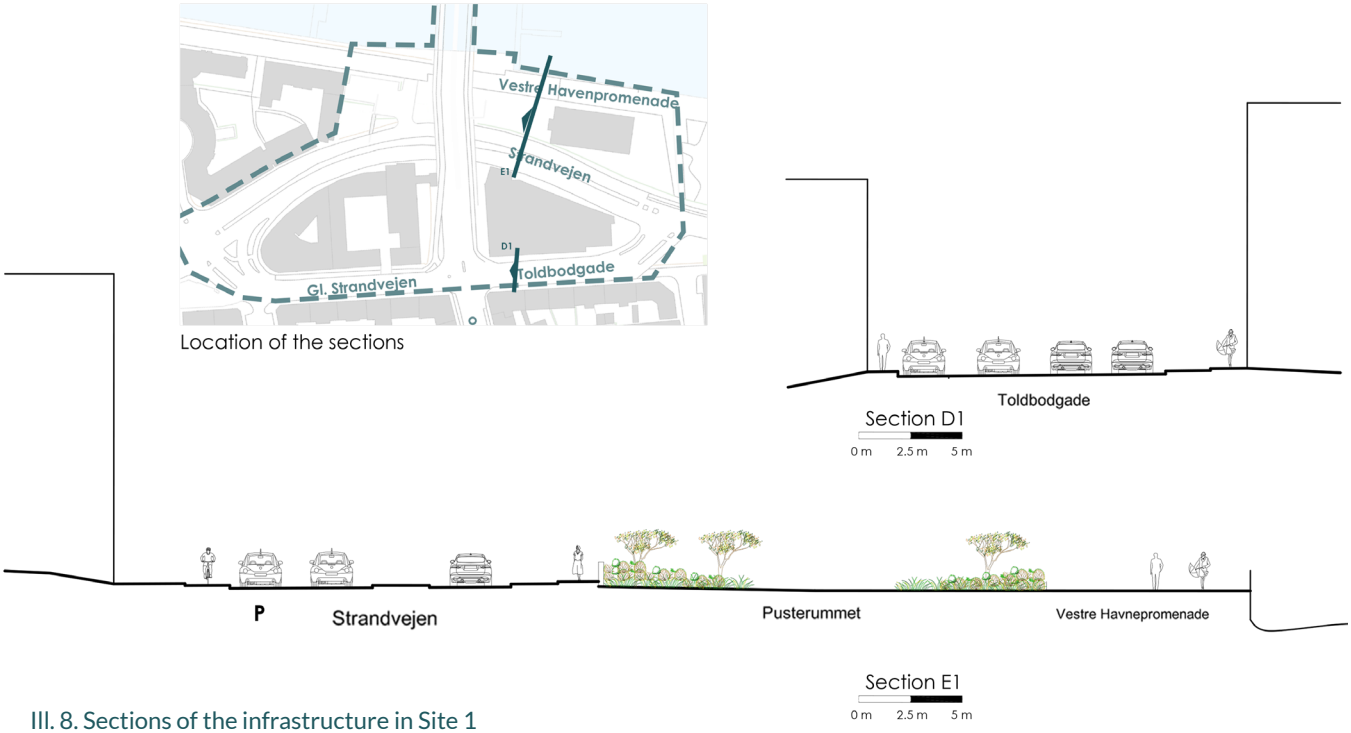
In conclusion, Limfjordsbroen is much more than a crossing point over the Limfjord. It is an essential artery for urban life, blending infrastructure, recreation, and culture. Its multifunctional design and frequent public use demonstrate how a bridge can serve both practical and symbolic roles in the life of a city.

Sections

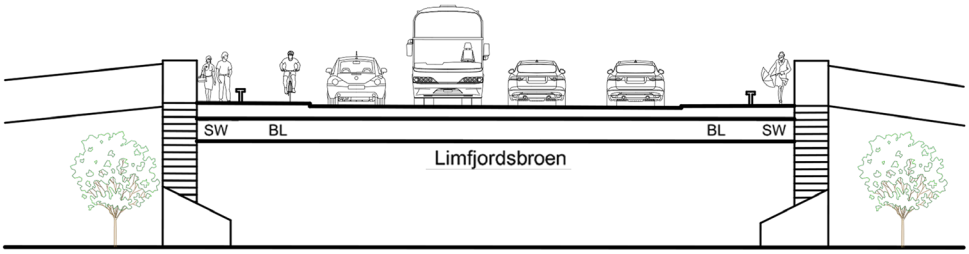
Through sectional analysis of the streets, a deeper understanding of the surrounding infrastructure is revealed, offering insight into how the site physically supports active mobility for different bodies.

The bridge section, as shown in Section B1, facilitates active movement through the presence of dedicated bike lanes and pedestrian pathways on both sides, creating a clear structure for non-motorized users. In contrast, several streets around and beneath the bridge, such as Strandgade and Toldbodgade, lack bike lanes on one side due to the prioritization of car parking, as illustrated in Sections A1 to D1.

Additionally, some streets—like Mellem Broerne—lack both sidewalks and visible bike lanes, which creates a more challenging and less inclusive environment for pedestrians and cyclists, as shown in Section H1.



III. 8. Sections of the infrastructure in Site 1



Section B1

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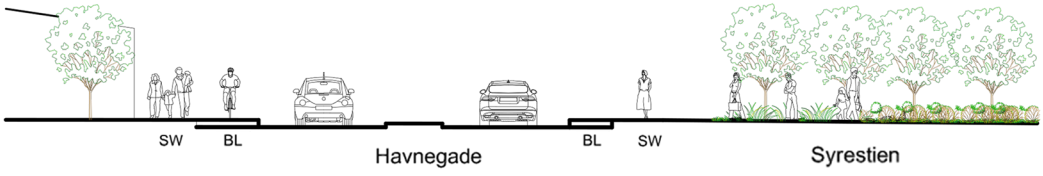

Section C1

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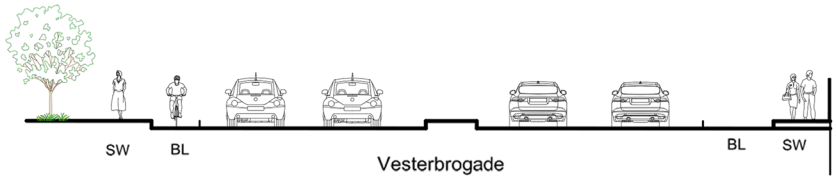

Section F1

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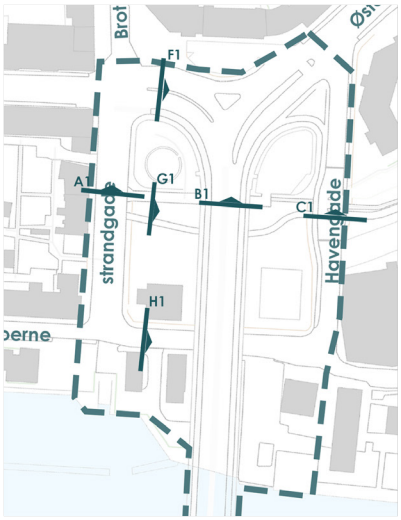
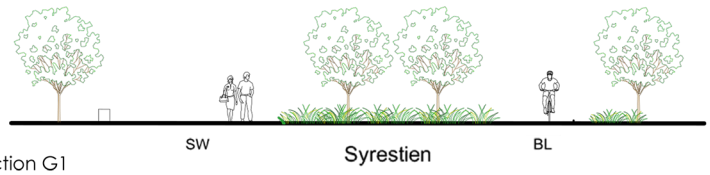


Location of the sections



Section G1

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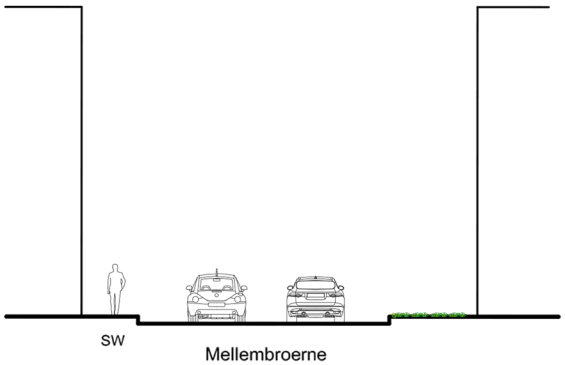

Section H1

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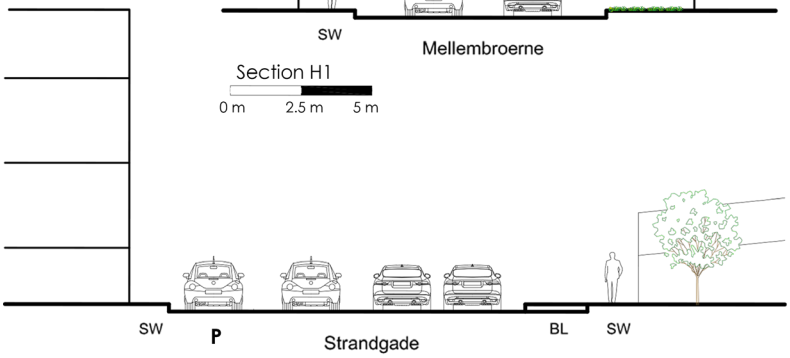

Section A1

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Ill. 8A. Sections of the infrastructure in Site 1

Kulturbroen

Kulturbroen Over The Time

The Limfjord Railway Bridge, officially known since 2003 as Jernbanebroen over Limfjorden, serves as a vital rail connection between Aalborg and Nørresundby in North Jutland, Denmark. This bridge has undergone significant transformations since its initial construction, evolving to meet the region's transportation needs.

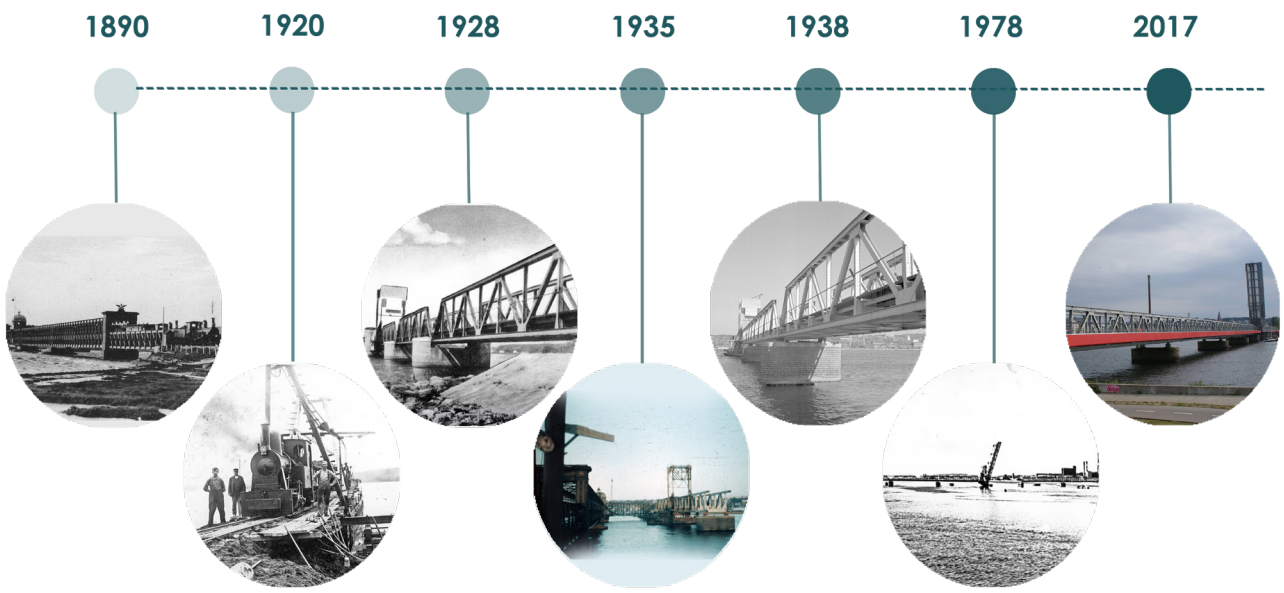
The original railway bridge over the Limfjord was inaugurated in 1879, coinciding with the establishment of the Vendsyssel railway line, which connected Nørresundby to Frederikshavn. This development necessitated a fixed rail crossing over the Limfjord to ensure the new line's viability and integration with the existing Randers-Aalborg railway. The initial structure was a swing bridge, designed to accommodate both rail traffic and maritime navigation by allowing sections of the bridge to pivot open for passing vessels. (Jernbanebroen.dk, 2025)

In 1904, to address increasing traffic demands and operational challenges, the bridge underwent significant modifications. These upgrades included the electrification of its operating mechanisms, enhancing efficiency and reliability in its opening and closing functions.

Between 1935 and 1938, a comprehensive reconstruction of the railway bridge was undertaken. Remarkably, the new bridge structure was relocated from Frederikssund, where it had previously been part of the Zealand Middle Railway (Sjællandske Midtbane). This repurposed bridge replaced the original swing bridge, providing a more robust and reliable crossing. The updated design featured a single-track bascule bridge with a 400-ton counterweight, facilitating efficient lifting operations for maritime traffic. The bridge spans 403 meters in length and 5.7 meters in width, with a navigation clearance width of 29 meters. The maximum permissible speed for trains crossing the bridge is 60 km/h. (Jernbanebroen.dk, 2025)

As of the early 21st century, the Limfjord Railway Bridge continues to play a crucial role in connecting the Vendsyssel railway line with the Randers-Aalborg line, serving as a key infrastructure component in the region's transportation network. Ongoing maintenance and assessments ensure the bridge meets contemporary safety and operational standards, reflecting its enduring importance to both rail and maritime activities in North Jutland. (Jernbanebroen.dk, 2025)

In 2017, a pedestrian and cycling bridge was inaugurated west of the railway bridge. Proposed in 2006, it faced delays due to some previous collisions but finally opened on March 4, 2017. (TV2 Nord, 2017)



Ill. 9. Historical transformation of Kulturbroen

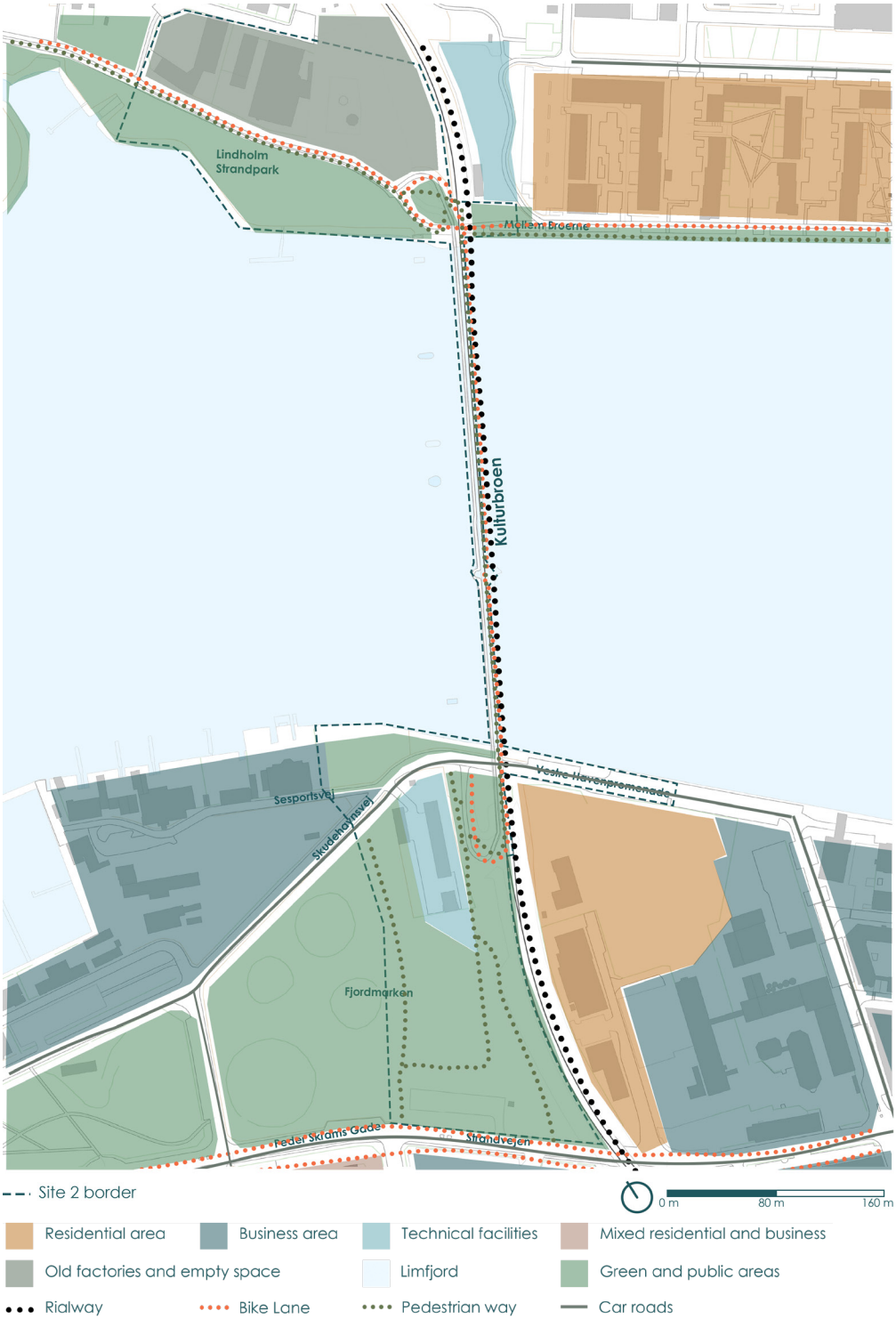
The Site and Its Functions

Kulturbroen functions as a prominent architectural element of Aalborg's urban environment. The bridge stands in the central area of Aalborg's mid-western part parallel to Limfjordsbroen while its evening illumination and red color make it easily identifiable. The bridge has earned Aalborg the nickname "Paris of the North" because of its warm appearance and beautiful fjord and Egholm Island views and tranquil atmosphere since its 2017 opening. (Enjoy Nordjylland, 2019).

The bridge serves both functional and recreational purposes. It accommodates a railway line for trains and features a shared path for pedestrians and cyclists on one side. In the center, the bridge opens to allow ships to pass through the Limfjord. A distinctive closed red railing runs along its length, opening up only in the middle where a small rest area with a bench invites users to pause and enjoy the view.

Kulturbroen connects two large green waterfront areas that support outdoor activity and relaxation. On the Nørresundby side, Lindholm Strandpark features clear, designated paths for cyclists and pedestrians that seamlessly link to the bridge. On the Aalborg side, Fjordmarken offers a spacious green field with earthy paths, trees, and a ball field equipped with fitness elements.
Both ends of the bridge are equipped with gently sloping ramps, supporting accessible movement from Aalborg and Nørresundby. Along the way, well-placed signs afford easier navigation for users.

On the Nørresundby side, the bridge currently terminates near a group of empty, disused industrial buildings as shown in Ill. 10, two of them are totally unused, another one called Graffiti which is full of art and drawings and there is an ice cream shop which forms a small part of them in the corner.



Ill. 10. Site 2 Kulturbroen functions map

However, moving toward Mellem Broerne, the urban environment becomes more welcoming—featuring trees, benches, and waterfront seating that afford a more inviting experience for active users.

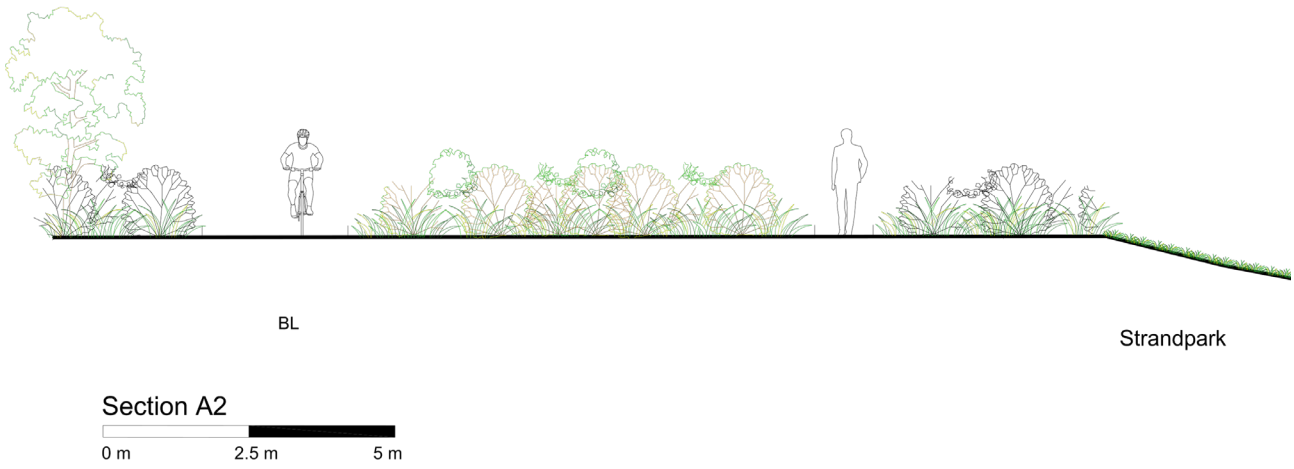
From the Aalborg side, several pathways lead to Vestre Havnepromenade, located beneath the bridge. Here, the area is defined by car parking, business offices, and a technical facility, though a new residential development is gradually emerging alongside the railway line.

At the entrance to the bridge on the Nørresundby side, a digital counter tracks the daily flow of pedestrians and cyclists in both directions. This data offers valuable insight into patterns of mobility and highlights the bridge's importance for both commuting and recreational use.

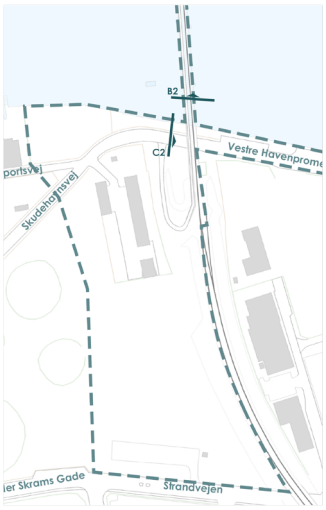
Sections

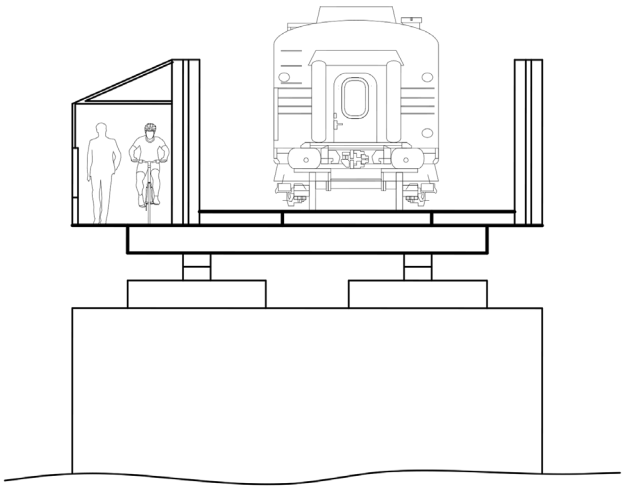
The Site 2 sections display the current infrastructure which enables active users to exist in the area. Section B2 demonstrates how cyclists and pedestrians travel together on the bridge while the Nørresundby tunnel section contains a shared pedestrian and cycling area.

The Aalborg side presents distinct limitations when compared to other areas. Vestre Havnepromenade lacks dedicated bike lanes and sidewalks according to Section C2. The waterfront area does not have functional public space, and its urban element arrangement creates spatial chaos.



Ill. 11. Sections of Site 2 Kulturbroen





Section B2

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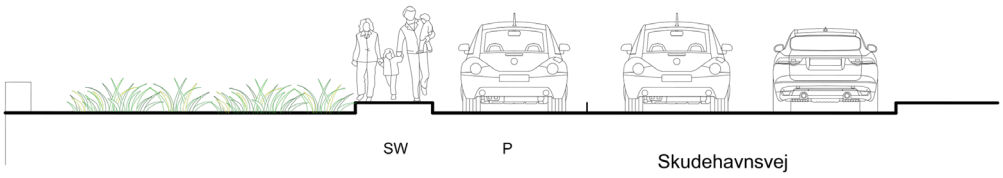

Section C2

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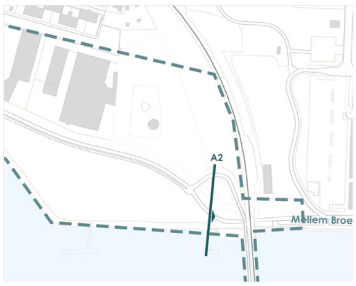
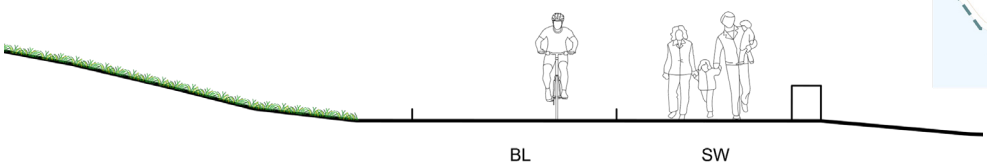




Ill. 11A. Sections of Site 2 Kulturbroen

How does the design of bridges afford and/or hinder active mobility?

"The material sites and the technologies that our bodies negotiate in mobile practices may then be thought of as 'mobility affordances'. By this is meant how the specific relation between the moving body and its material environment opens up to particular modes of mobility, different speeds, trajectories, temporalities, etc. 'Mobility affordances' illustrate the very specific and material dimensions to mobile situations"
Ole B. Jensen (2014) Designing mobilities. P. 49

Materiality Affordances

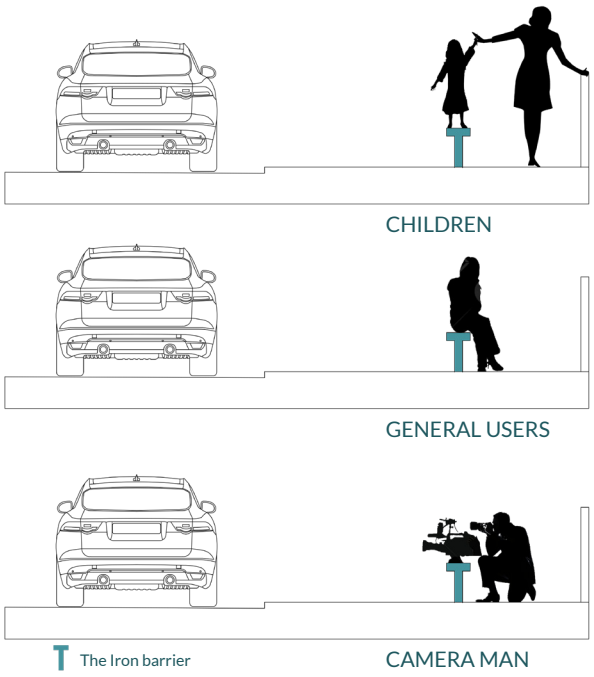
The physical components of urban areas including benches and pavements and barriers and lighting function as active components which direct social conduct and movement patterns. The materials in urban environments provide both directions and limitations which direct human behavior throughout space and determine their movement patterns and emotional responses to the environment. Material affordances function to generate the urban life rhythm together with its flow and atmosphere.
(Jensen, 2013).

The two bridges of Limfjordsbroen and Kulturbroen utilize multiple materials and artifacts to create distinct mobility experiences for users who have different abilities and behaviors. The presence of urban elements is unavoidable because they interact with human bodies in various ways regardless of their ability to provide affordances.

The **Limfjordsbroen** area presents a predominantly grey color scheme because of its extensive concrete and tile infrastructure from the bridge and walkways. The surrounding streets feature asphalt as one of their main construction materials. Green spaces create visual relief from the monotonous environment by introducing both life and contrast to the setting. The artistic elements, which include Street Art on and beneath the bridge as well as signage and flowers create vibrancy.

The site includes several design elements which create positive experiences for users, including playground areas that provide entertainment space for children and their parents and tree-shaded seating areas that provide rest opportunities. The tactile guidelines created from various materials enhance navigation for some vulnerable users. The accessibility of comfortable wheelchair movement remains uncertain which will be investigated in more detail through the journeys.

A thin iron barrier on the bridge provides a resting spot that reveals the lack of designated resting areas throughout the path and various activities (see Ill. 12). The route includes some thoughtful design elements which create an enhanced active experience for the body. A book cabin located at Vesterbrogade and Limfjordsbroen intersection provides a bench and books inside and staircase access to a rooftop seating area that offers panoramic views of the surrounding landscape.

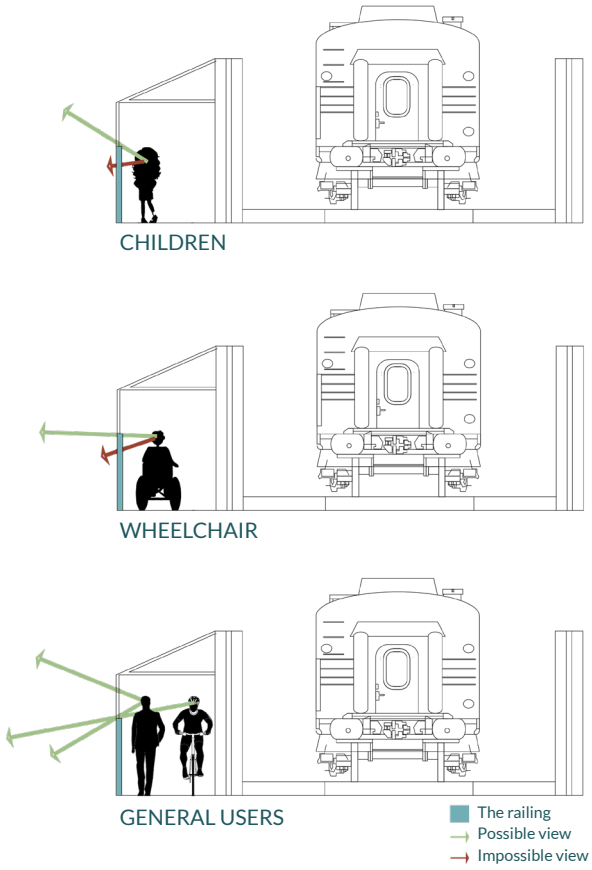


The bridge features stairways which connect both sides to surrounding areas while enabling people to move between different urban layers. The site features dominant colours of grey, brown and blue which match the construction materials. The wooden benches under the bridge display brown colour while blue accents matching the bridge railing and fjord and sky create this connection between structure and nature.

Ill. 12. Illustrations show how the iron barrier on Limfjordsbroen affords different experiences for different users.

Kulturbroen area shows dominant grey tones, but extensive green spaces create balance in the environment. A strong red line made from the bridge closed railing cuts through the natural blue hues of the fjord and sky to create visual contrast which affords different expeiriences for various users, (see Ill. 12A). The site includes multiple seating areas which provide users with increased possibilities to rest as well as socialize and eat and simply dwell. Various seating elements including wooden benches of different sizes and stone seats and fjord wall edges create an accessible and engaging public space.

Still, one might wonder: what if more elements and better-developed spaces were introduced—spaces that afford even richer, more accessible, and more meaningful experiences for all users?



Ill. 12A. Illustrations show how the closed railing of Kulturbroen affords different experiences for different users.

SWOT Analysis

Through SWOT analysis, the research can adopt a more structured and insightful approach. Site visit observations reveal a range of spatial characteristics, highlighting strengths, identifying weaknesses, and uncovering opportunities for meaningful interventions to enhance the design and functionality of spaces.

Limfjordsbroen holds a strong presence in the urban landscape of Aalborg, functioning as a vital connector between the city center and Nørresundby. Its historical significance and central position enhance its identity, while the panoramic views over the fjord on both sides make the crossing a scenic experience. The bridge is actively used and offers both functional and recreational value, with services such as mechanical systems, traffic counters, and even artistic interventions like street art. Below the bridge, the area comes alive with playgrounds, harbor boats, and pedestrian activity, making it a multi-layered urban space.

Despite its strengths, the site faces several weaknesses. The absence of dedicated rest areas along the bridge limits opportunities for users to pause and enjoy the surroundings. Pedestrian access is restricted, requiring a detour to the traffic light on Borgergade, which disrupts continuity. Aesthetically, the dominance of grey tones and neglected materials in certain spots reduces the space's appeal, especially for vulnerable users. Moreover, the lack of consistent bike lanes and sidewalks, coupled with unclear signage and confusing mobility patterns, detracts from the user experience. (See Ill. 14, p:44).

There is clear potential for transformation. Small-scale interventions—such as the addition of street furniture, greenery, and rest areas—could greatly enhance the quality of the space. Slightly widening the bridge would offer more room for movement and inclusivity. Interactive spaces and improved navigation could make the bridge more welcoming and vibrant. (See Ill. 16, p:45).

Kulturbroen stands as a testament to Aalborg's industrial and infrastructural history, once a key railway link and now a crucial pedestrian and cyclist route. Its location offers a scenic view over the fjord and connects directly to major parks, enriching its recreational value. A distinctive feature is the rest area at the center of the bridge, providing a moment of pause with a rare quality in urban crossings. The technical and mechanical services embedded in the structure support its functional role, while the ample space around the bridge suggests untapped potential.

Nonetheless, Kulturbroen contends with several challenges. The surrounding infrastructure lacks consistent bike lanes and sidewalks, creating discontinuities in access

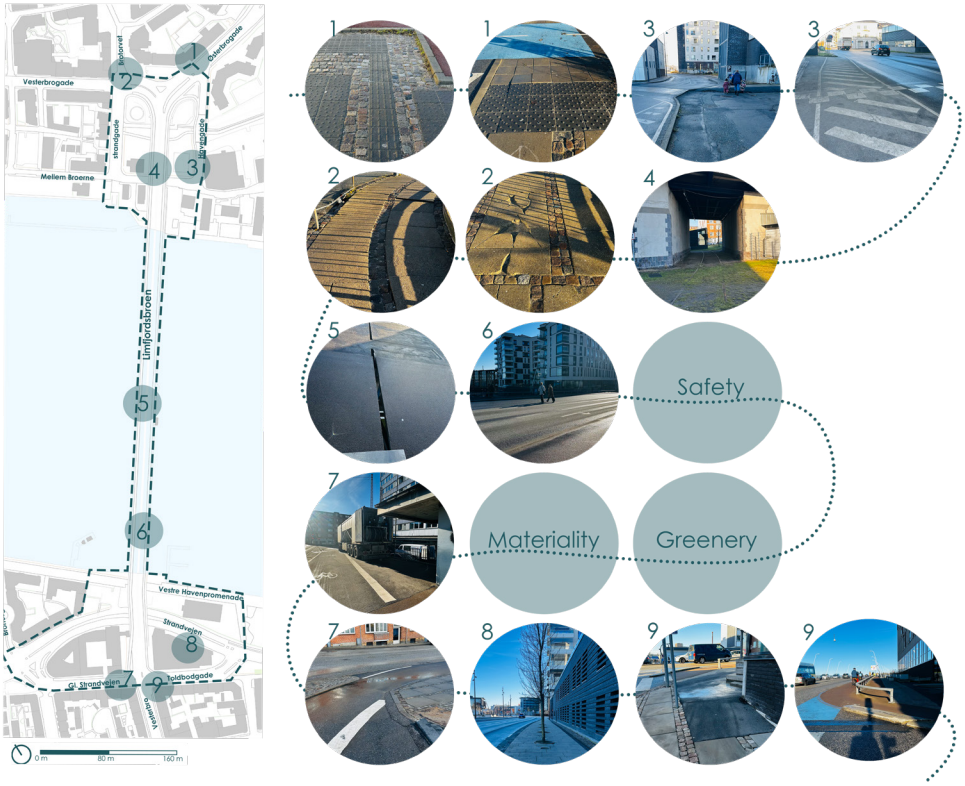
and safety. The monotone grey palette under and on the bridge detracts from its liveliness, while poor material conditions in parts of the path impact vulnerable users. The steep slopes where the bridge meets the land, due to topographical constraints, can be difficult to navigate. Furthermore, the absence of cultural or artistic elements, such as street art, limits its expressive identity. (See Ill. 15, p:44).

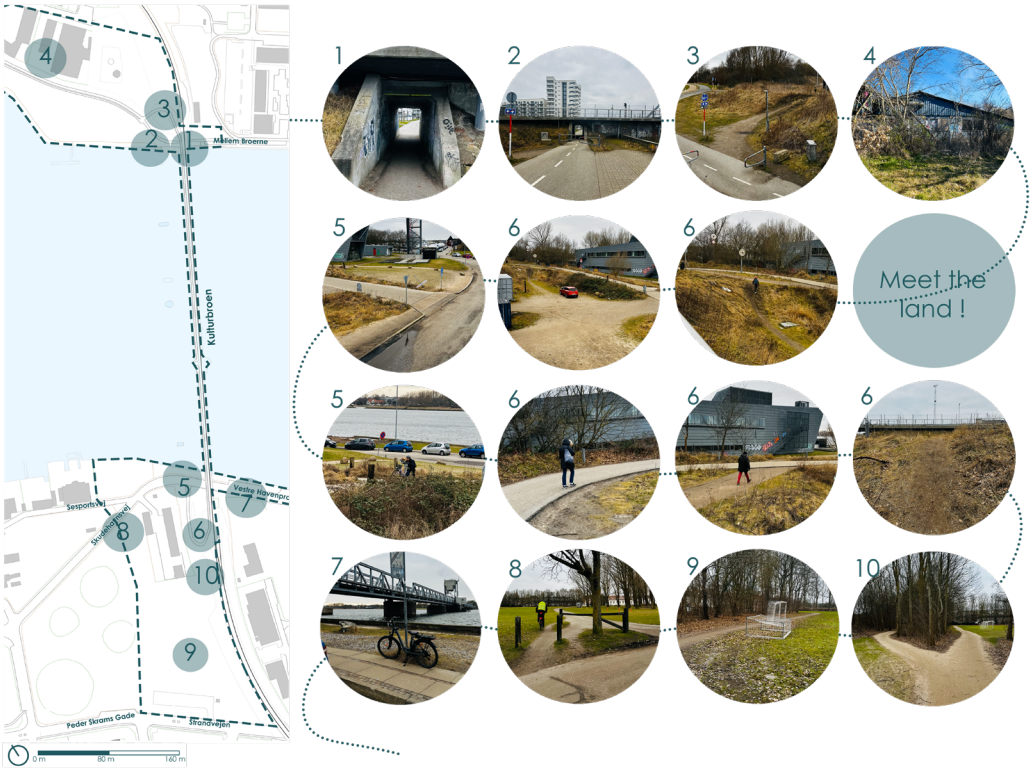
Yet, the bridge and its adjacent spaces present strong opportunities for urban enhancement. The generous landings and nearby vacant plots—such as old factories and open waterfronts—can be transformed into vibrant meeting points. Slight widening of the bridge and improved interventions at ground level would significantly improve accessibility and usability. These spaces could also host cultural activities or green infrastructure to connect people and places. (See Ill. 17, p:45).

Overall, Kulturbroen is a space rich with potential and historical value. With careful design and inclusive planning, it can become not only a thoroughfare but also a cultural and social destination along Aalborg's waterfront.

SITE	STRENGTH	WEAKNESSES	OPPORTUNITIES
SITE 1 LIMFJORDSBROEN	- Its position and its function - Its history - Very usable - Connect to centers of Aalborg and Nørresundby - The view over it to the fjord in the both sides - Activities in the area under the bridge (playground- the harbor boats - Services on and under the bridge (Technical, mechanical , count machine...) - Street art drawings	- No rest area along the bridge. - Pedestrians can't cross the bridge until the traffic light on Borgergade in Aalborg. - Very grey color on and under the bridge. - Bad conditions and materials in some places for vulnerable users. - Absence of bike lanes or sidewalks in some sections of the streets. - Confusing of guidelines in the area. - Confusing of mobility in some places.	- Develop the furniture and some areas. - Widening the bridge a bit - Space for more greenery - Space for rest area on the bridge. - Make some places more interactive.
SITE 2 KULTURBROEN	- Its position and its function - Its history as an important connections for railway over the years. - Very usable - Connect to big parks - The view over it to the fjord - Services on and under the bridge (Technical, mechanical , count machine...) - Rest area on the middle of the bridge.	- Absence or narrow bike lanes or sidewalks in the area around the bridge in some places. - Very grey color on and under the bridge. - Bad conditions and materials in some places for vulnerable users. - Very slope ways when the bridge meet the land because of the topography of the area and the height of the bridge - Confusing of mobility in some places. - The absence of Street art.	- Enough space to make interventions on the points when the bridge meet the land. - Widening the bridge a bit - Enough space to develop meeting points. (empty spaces and old factories - Develop the waterfront

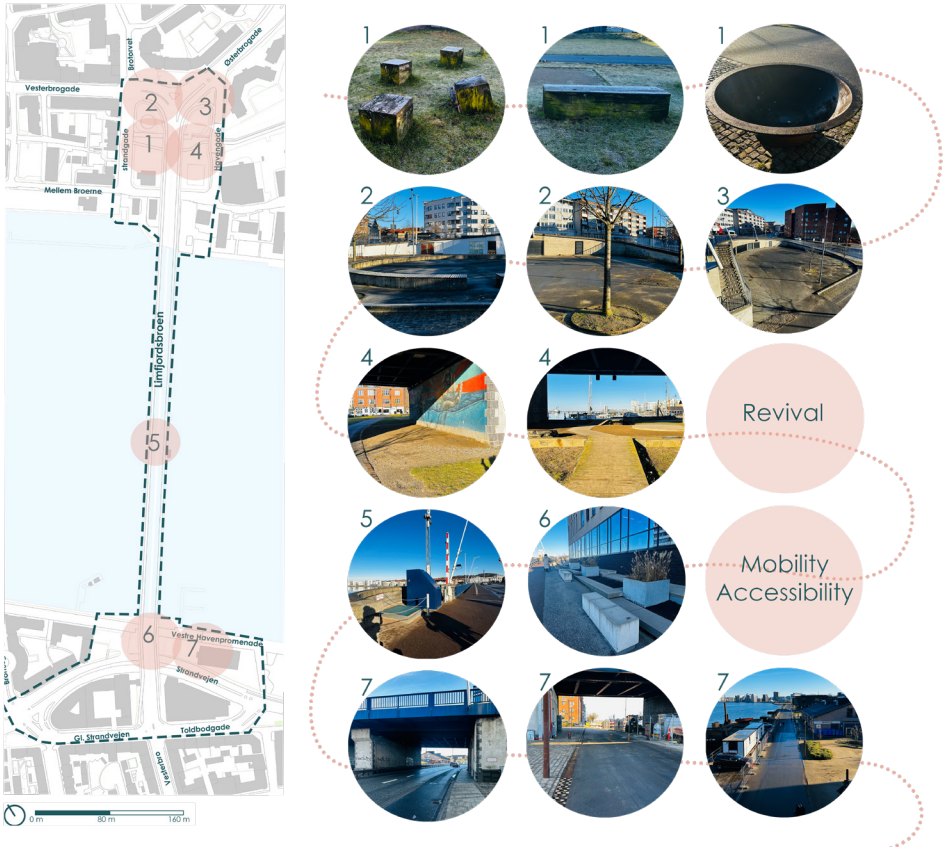
Ill. 13. Table of SWOT analysis main points.

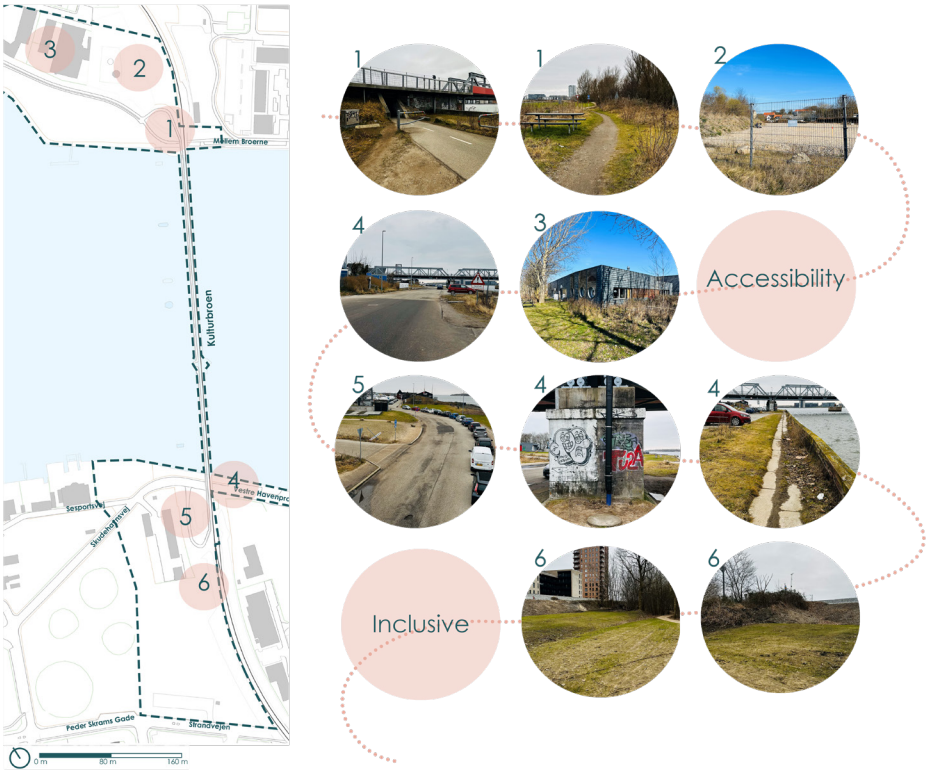




Ill. 14. Obstacles through site 1 Limfjordsbroen

Ill. 15. Obstacles through site 2 Kulturbroen





Ill. 16. Opportunities through site 1 Limfjordsbroen

Ill. 17. Opportunities through site 2 Kulturbroen

Who are the users and what do they do on the sites?

"We must look at the performances of real places for the people who live there. No theory will be mature until it shows how performance tends to vary with the political and social context"
Kevin Lynch (1981) Good City Form, p. 323

The Limfjordsbroen and Kulturbroen bridges were visited to observe and photograph the wide range of human activities that take place on and under these bridges. These are vibrant public areas where people move through, interact with, and occupy space in informal ways, consistent with several theories in urban design and sociology.

The bridges attract a diverse range of users of varying ages and abilities, including the elderly, adults, young people, children, families, and couples—each engaging with the space for different purposes and in different context. (See Ill. 18).

On **Limfjordsbroen**, people were observed running, walking, cycling, meeting, eating and drinking, and standing still to take in the fjord view. Under the bridge, the same wide range of activities took place: children played in different parts of the site, and groups congregated for barbecues and small parties in the adjacent park. Others were seen documenting the area: young people making videos of each other, perhaps for social media or creative projects, and a man taking photographs of the bridge's street art. These behaviors suggest that Limfjordsbroen is culturally significant and is an important visual and social landmark in the city.

Another activity involves a group of young people who place flowers on the bridge's railing annually, commemorating a friend who died in an accident. This ritual imbues the bridge with collective memory, transforming it into a site of emotional significance. Moreover, the bridge hosts public events such as carnivals, running races, and communal dining, particularly on occasions marking its historic opening. These programmed and spontaneous activities highlight the layered social function of the bridge as a space for both celebration and remembrance. (See Ill. 18).

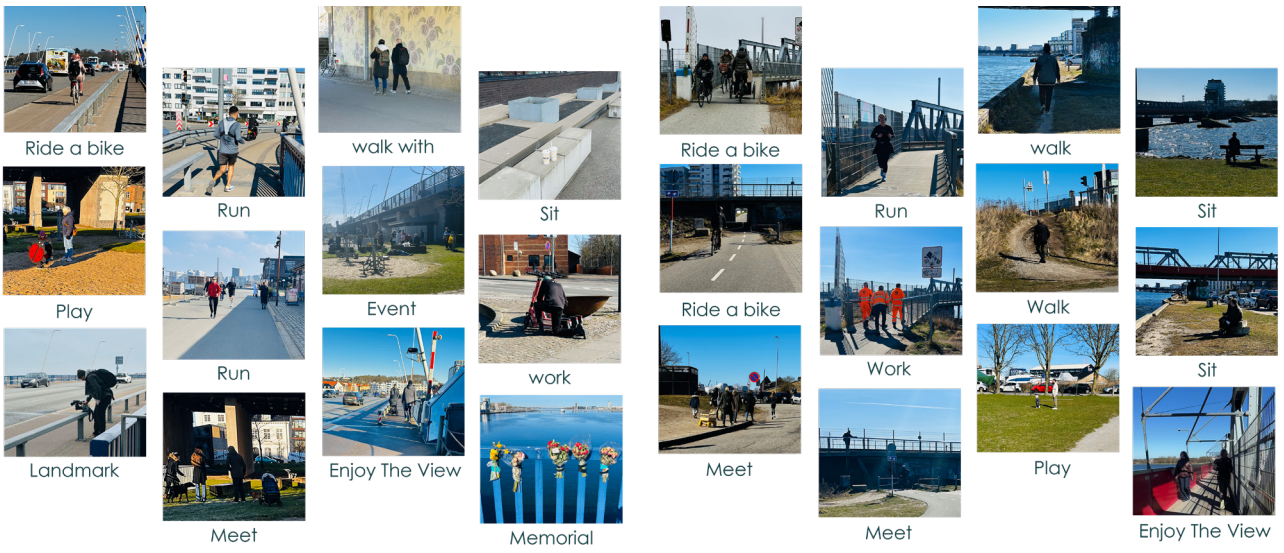
Similarly, on **Kulturbroen**, people are walking, jogging, cycling, eating, and socializing, both on the bridge and in the surrounding areas. The bridge connects two major parks, which serve as popular gathering places for families and friends. People were observed sitting by the ice cream shop, lounging on the grass, and enjoying the sunshine, using the space in relaxed, informal ways.

These observations align with William H. Whyte's (1980) theory on the social life of urban spaces, which emphasizes the importance of design elements that encourage

user engagement—such as sun exposure, accessible seating, and proximity to movement and activities. Whyte argues that successful public spaces are characterized by behaviors such as sitting, people-watching, and informal socialization, all of which were abundantly present on and under both bridges.

Jan Gehl's (2011) classification of outdoor activities into necessary, optional, and social categories also helps frame these observations. The use of bridges for commuting and work purposes reflects necessary activities, while optional and social activities—such as meeting friends, resting, and celebrating—are supported by the spatial qualities of the site. Under-bridge areas, often considered marginal or underutilized, can become vibrant if designed or adapted to support these kinds of activities, as evidenced by the barbecues, play, and creative expressions observed during the visit.

In addition, the cultural and memorial functions of the bridges indicate that they are part of the community's social fabric. This is also supported by David Mitchell's (2003) work on the right to public space, which stresses the significance of public spaces as sites for expression, memory and identity. The activities observed at Limfjordsbroen and Kulturbroen, which span from casual leisure to memory making, underscore the multifaceted meanings and roles that are embedded in these public structures.



Ill. 18. People's actions on both sites

How do people move? And why?

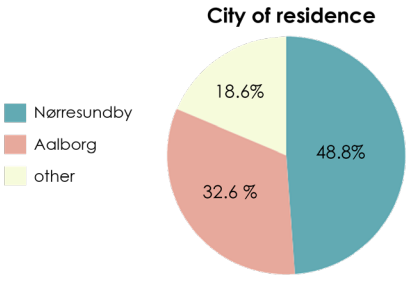
"There is no single best method questionnaire, interview, simulation, or experiment for studying people's adaptations to their environments. One chooses methods to suit the problem and the people and not vice versa. These methods are generally complementary rather than mutually exclusive"
Robert Sommer, Personal Space. The Behavioral Basis of Design, 2007, p. 221

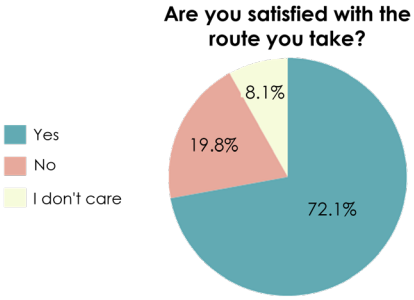
Contemporary urban design along with planning requires a basic understanding of human conduct within urban environments. Understanding user flows through spatial analysis enables planners to evaluate spatial functionality and accessibility while studying social interactions in public spaces (Gehl, 2011). When observational studies are combined with qualitative methods including interviews and citizen surveys, they provide essential data for designing solutions based on actual user needs and experiences (Whyte, 1980; Al-Kodmany, 2001). User-centered design principles together with participatory approaches lead to context-sensitive and inclusive urban development by democratizing the process (Sanders & Stappers, 2008).

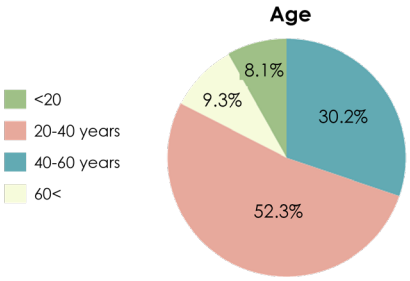
A survey collected data from Nørresundby residents along with commuters who use the fjord bridges that connect Aalborg to Nørresundby. The main goal was to study transportation patterns alongside residents' satisfaction with present infrastructure and their ideas for future improvements in accessibility and aesthetic appeal and usability. The collected data provides essential information needed to develop recommendations for future improvements that promote sustainable urban development. (See Citizen Survey process in Appendix B, p: 110).

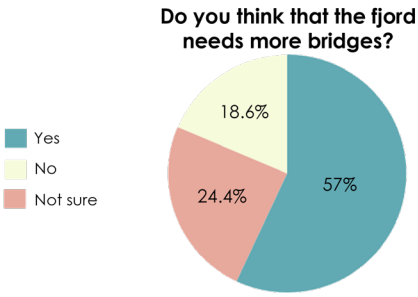
The survey included 86 participants representing a range of age groups, with the majority falling between 20 and 60 years old, as illustrated in Diagram Ill. 19. The research shows that students and working professionals make up half of the respondents who reside in Nørresundby. Most participants chose Limfjordsbroen as their primary bridge connection although Kulturbroen received usage from about half of the respondents. The different users used the bridge for their various activities that included traveling to work or school and shopping and recreational purposes like walking and exercising. The population of active users who walked or biked made up 62.8% of survey participants indicating non-motorized transportation plays a vital role in this area.

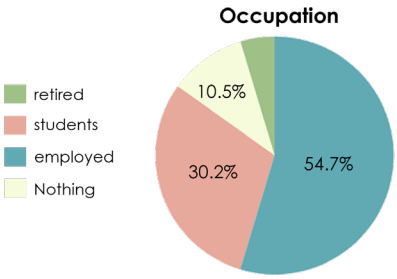
Most survey participants expressed satisfaction regarding the current condition and attractiveness of the bridges although they asked for enhancements to increase comfort and functionality. Many participants requested wider pedestrian paths together with bike paths and additional vegetation like trees and plants and better urban fixtures. (See Appendix B, p: 112).

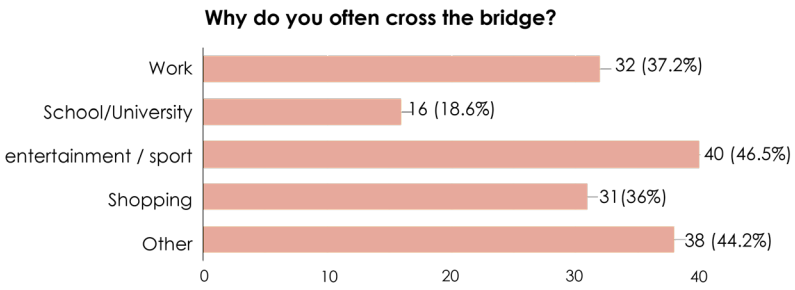


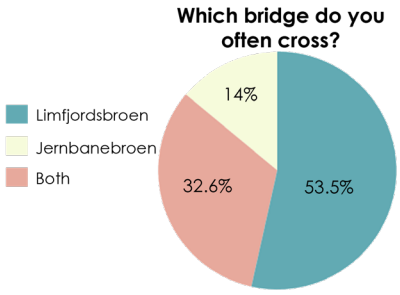


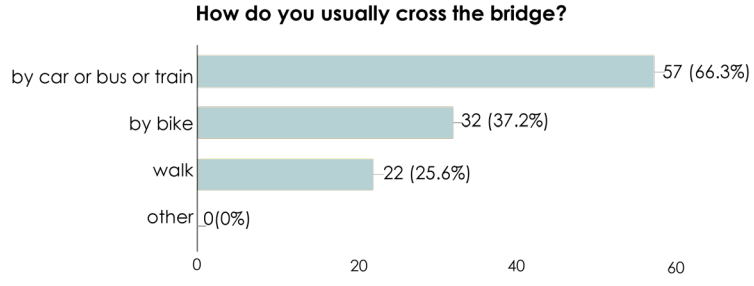


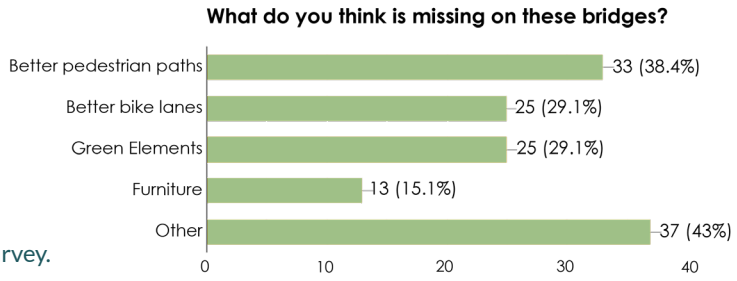












Ill. 19. Diagrams show the results of Citizen Survey. n = 86 participants.

Residents interviewed and informally spoken to supported survey results yet showed interest in building more bridge connections. Active users residing in Stigsborg (Nørresundby) and Vejgaard (Aalborg) suggested this demand because they need to travel longer distances across the fjord. The users stressed how new connections can enable better sustainable transportation systems for daily mobility in the region.

User journey mapping together with persona creation have become essential tools for urban researchers and practitioners to understand various user experiences during the past few years. Designers utilize personas which represent real users through fictional profiles backed by data to predict both behavioural patterns and emotional responses in particular urban settings (Pruitt & Grudin, 2003).

These methods used together with journey mapping reveal user pathway challenges and possibilities which lead to improved spatial quality and usability and better well-being of spaces (Stickdorn et al., 2018). An analytical structure derived from this investigation will assess the site by combining practical observations with user feedback to create a comprehensive evaluation.

The mapping process focused on tracking bridge routes through the perspective of users who walked or biked while considering their comfort and mobility requirements. Researchers gathered their understanding through field observations as well as surveys and direct interviews and they implemented immersive methods which included the following users in the field. The collected information led to the creation of specific personas that focused on real-life scenarios when developing them.

Each persona contains basic demographic information along with an account of the person's trip profile together with their unique experiences and preferences and goals. The analysis of user experiences during mobility will create a general understanding of bridge route interactions and the encountered emotions and challenges which lead users to their destinations.

Persona:

1- Child (4 years old) – Walking on Limfjordsbroen

2- Young Man (22 years old) – Walking and running on Kulturbroen

3- Mature Woman (35 years old) – Walking on Limfjordsbroen

4- Mature Man (38 years old) – Cycling on Kulturbroen

5- Elderly Woman (68 years old) – Walking on Kulturbroen

6- Elderly Man in a Wheelchair (85 years old)- Navigating a journey between the bridges

In the journey's route map presented on the following pages, point A represents the starting location, while point B indicates the intended destination.

A Child's Journey

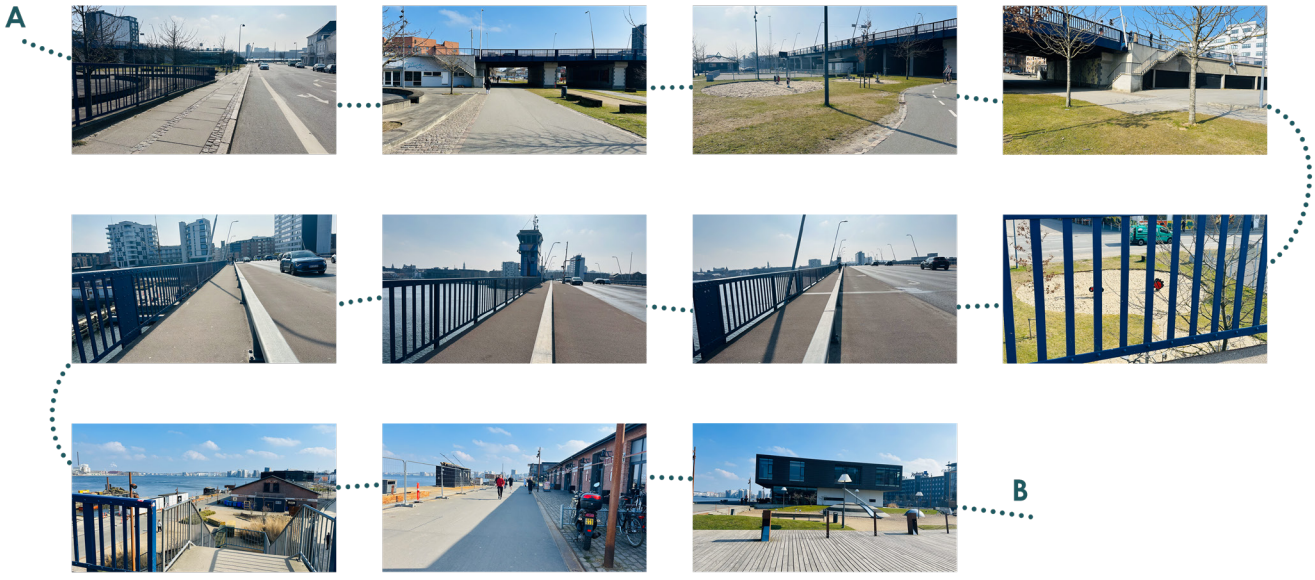
Age: 4 years old
Occupation: Kindergarten Student
Status: Energetic and inquisitive child, eager to explore the world around him.

Journey & Experience:
He enjoys moving freely and exploring without rigid rules. On this journey, he started at Nørresundby Torv and walked across Vesterbrogade, following the pedestrian paths under the bridge. Along the way, he was drawn to a playground, where he played for about 10 minutes before continuing.

As he climbed the stairs to Limfjordsbroen, he became fascinated by the view, pausing to look down at the playground and field below. His curiosity led to a stream of questions about the destination, what they would do upon arrival, and details about the things he observed the control tower's colors and purpose.

Despite his excitement, his energy waned as the walk continued. He attempted to balance iron barriers, took short breaks, and eagerly recognized a familiar place that reassured him. By the time he reached the playground on Strandvejen, he was too tired to play and requested to return home by car or bus.

Motivations & Needs:
- He enjoys climbing, balancing, and playing, often seeking opportunities for physical activity.
- Long walks can be tiring, and he appreciates breaks, familiar sights, and comfort.
- He expresses his thoughts and needs openly, looking for interaction and responses to his curiosity.



III. 20. The route of the child's journey.

III. 21. Serial Vision of the journey.

Mature Woman's Journey

Age: 35 years old
Occupation: Office Worker in Aalborg City Center
Status: Married

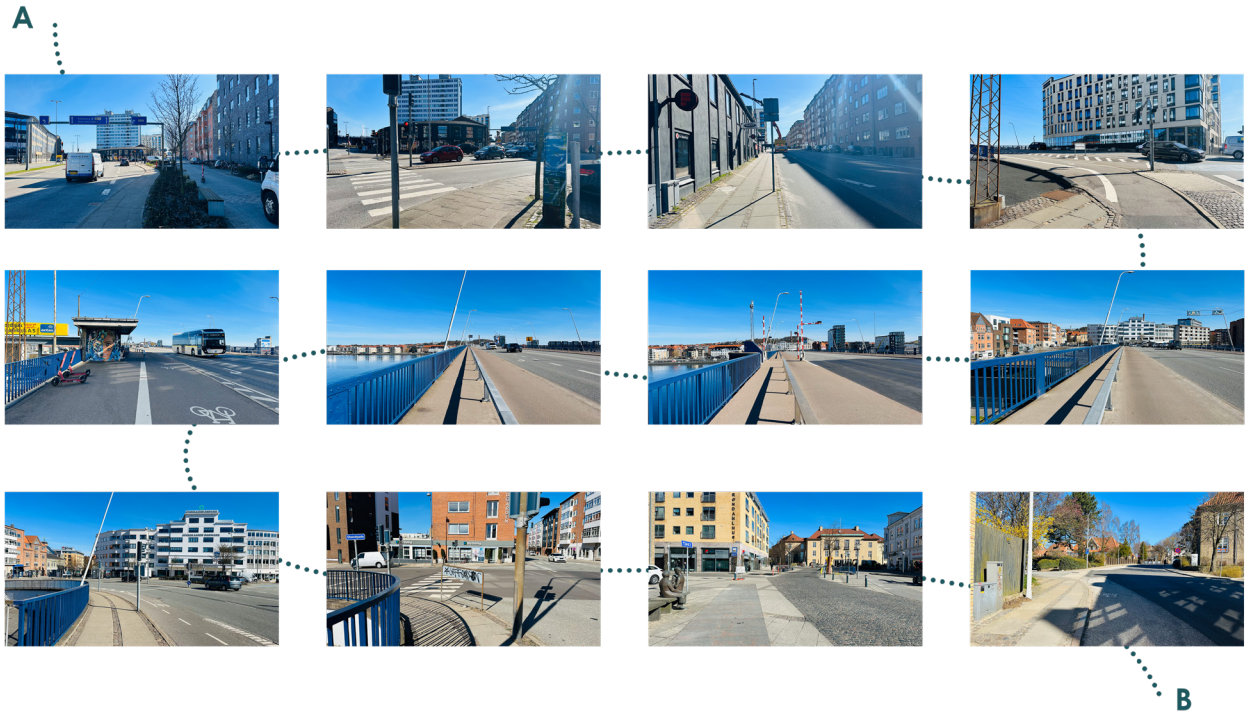
Journey & Experience:
She rarely walks across Limfjordsbroen, as she usually commutes by bus to work or drives for other errands. On this journey, she chose to walk across Limfjordsbroen instead of Kulturbroen, preferring its wider structure and better views. However, she admitted she only crosses it on foot with friends in the summer after work—never alone, due to her discomfort with heights.

As she approached the bridge, she hesitated at intersections, feeling unsure of the route. She also found the change in sidewalk materials disorienting. Though she has passed through the area countless times in a vehicle, she noticed an artwork for the first time, highlighting how different the experience is when walking.

While crossing the bridge, she initially walked close to the iron barrier, feeling anxious about the height above the water. Midway through, the noise of traffic and the section of the bridge that opens for boats heightened her discomfort. She pointed out the gap between the two bridge sections and the loud sounds, expressing a strong sense of insecurity.

She only began to feel more at ease towards the end of the bridge. She admitted she had never used the connecting stairs before and continued her walk home, feeling relieved to be back on familiar ground.

Motivations & Needs:
- Feels uncomfortable in high, open spaces and avoids walking bridges alone.
- Easily disoriented by changing pathways and materials; benefits from clear signage and structured routes.
- Loud traffic noises and gaps in the bridge structure increase her anxiety.
- Prefers Familiar & Comfortable Transport.
- Observant in a New Way where while walking, she noticed details she had never seen before.



III. 22. The route of the woman's journey.

III. 23. Serial Vision of the journey.

Young man Journey

Age: 22
Occupation: University Student
Status: Single, Lives in Lindholm Brygge, Nørresundby

Journey & Experience:
He is an active student who enjoys running and walking outdoors. Living near Lindholm Strandpark, he frequently runs to Lindholm Fjordpark or Vestre Fjordpark, crossing Kulturbroen through Fjordmarken and the harbor area. He finds these routes particularly enjoyable in summer, appreciating the greenery and pleasant atmosphere.

However, he avoids running on Limfjordsbroen, as he sees it as more functional than enjoyable. The narrow space on the bridge often forces him and his running friend to move in a single file, especially during peak times when pedestrians, cyclists, and strollers crowd the path. Additionally, he finds the entrances to the bridge confusing and dislikes the shared spaces between pedestrians and cyclists.

Motivations & Needs:
- He values scenic and well-designed routes that make exercise enjoyable.
- More spacious and well-planned pedestrian and cycling infrastructure.
- Improved accessibility and clearer entrances to shared paths.
- A better running experience without congestion and confusion.

III. 24. The route of the young man's journey.

III. 25. Serial Vision of the journey.

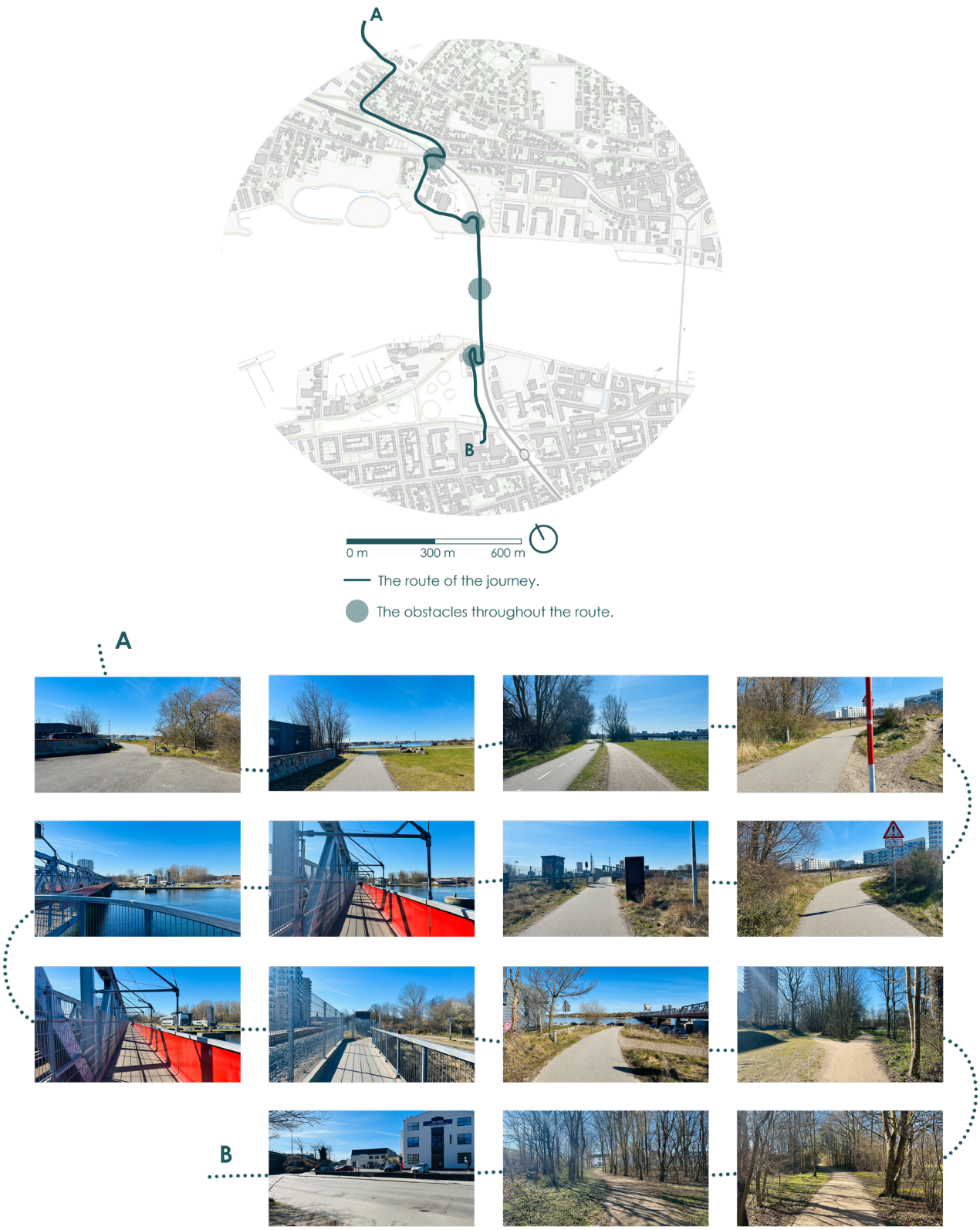
Mature man - Bike's Journey

Age: 38
Occupation: Teacher at Sprogcenter Aalborg
Status: Lives in Lindholm Søpark, Nørresundby, with his girlfriend and two children

Journey & Experience:
He is a dedicated teacher and a family man who balances his work and daily responsibilities efficiently. Every morning, he takes his children to kindergarten and school using his cargo bike before commuting to work. To save time, he crosses Kulturbroen, though he finds it somewhat narrow and less comfortable for cyclists.

For errands, shopping, or family outings in Aalborg city center, he prefers Limfjordsbroen, as it offers more space for his large bike. However, he feels the bridge lacks vibrancy, describing it as too grey and dark at night. He believes simple enhancements, such as adding color and seating areas, could improve the atmosphere.

Motivations & Needs:
- Maintaining an active lifestyle, and ensuring a safe and enjoyable city experience for his family.
- More spacious and cyclist-friendly infrastructure on Kulturbroen.
- Enhanced lighting and aesthetics on Limfjordsbroen to create a more inviting space.
- More family-friendly activities and play areas in parks near the bridges.
- Improved accessibility, particularly addressing the sloped entrances to Kulturbroen.



III. 26. The route of the bike journey.

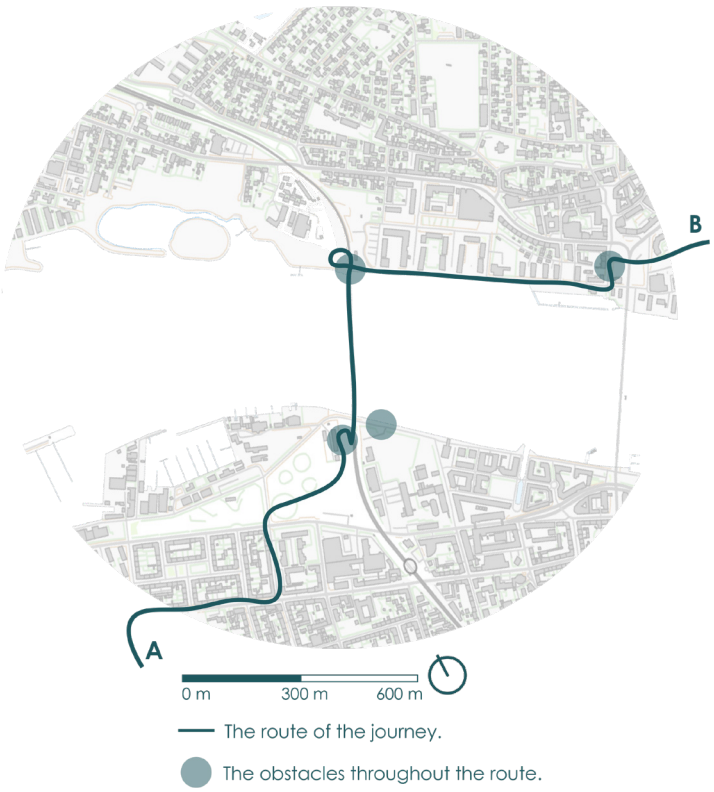
III. 27. Serial Vision of the journey.

Elderly woman's Journey

Age: 68
Occupation: Retired
Status: Lives in Vestbyen, Aalborg, with her husband

Journey & Experience:
She is an active retiree who enjoys daily walks, either alone or with her husband. She values green, open spaces and prefers routes that allow her to stay active while enjoying the natural surroundings. She frequently crosses Kulturbroen, as it offers scenic walking paths and a peaceful environment for exercise.

Motivations & Needs:
- Staying active, enjoying outdoor walks, and socializing while exploring the city.
- She wishes for more green spaces and natural areas within the city.
- Additional resting spots along walking routes.
- Improved pedestrian infrastructure for safer and more enjoyable walks.
- Well-maintained and accessible pathways that encourage outdoor activity for all ages.



III. 28. The route of the elderly woman journey.

III. 29. Serial Vision of the journey.

A Journey Between Bridges on a Wheelchair

Age: 85 years old
Occupation: Retired
Status: Lives in a nursing home in Nørresundby; requires a wheelchair.

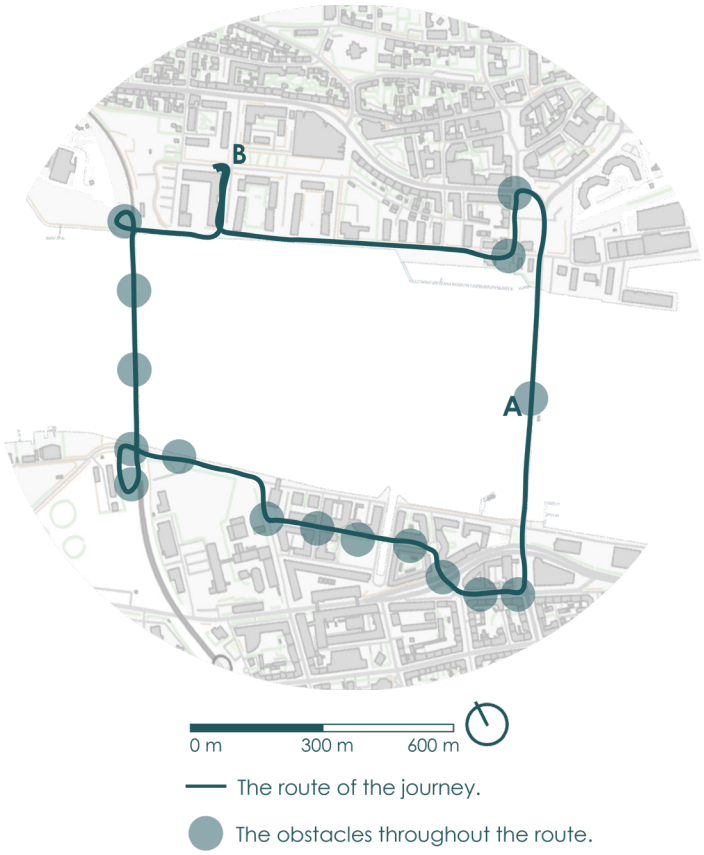
Journey & Experience:
He is a frail, elderly man who seldom speaks, yet he finds comfort in his routine outings. Every other day, his son takes him on a familiar route across the city's two bridges. Their journey begins at Carl Klitgaards Vej, moving toward Limfjordsbroen, crossing into Aalborg, and then continuing towards Kulturbroen from Vestre Havnepromenade.

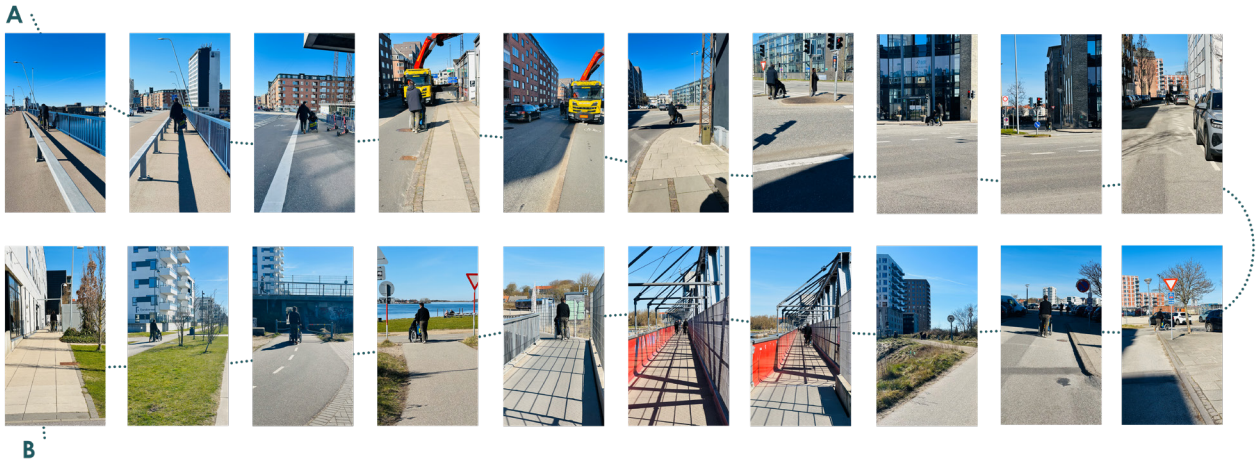
Navigating the city in a wheelchair presents challenges. The smooth asphalt streets are their preferred paths, avoiding the uneven cobblestone sidewalks that make the ride bumpy. At times, they move into bike lanes when necessary to ensure a smoother and safer journey. His son pushes the wheelchair with care, describing the world around them—the people passing by, the sounds of the fjord, and the city's ever-changing landscape.

For him, Limfjordsbroen is more than just a bridge, it holds memories. He prefers its open railing, which offers an unobstructed view of the water, unlike Kulturbroen's enclosed design. The width of the bridge also makes it easier for the wheelchair to navigate, and its familiarity brings a sense of ease.

On sunny days, they pause for a while, gazing at the fjord. His son fills the silence with stories and observations, while he listens quietly, occasionally staring into the distance.
The incline at the entrance of Kulturbroen always makes the journey more difficult, requiring his son to exert extra effort to push him up the slope. Under Kulturbroen in Nørresundby, they always wait for a safe moment to cross, navigating the unpredictable movement of pedestrians and cyclists before making their way back to the nursing home.

Motivations & Needs:
- Smooth surfaces are essential, as uneven sidewalks make movement difficult and uncomfortable.
- Gentle inclines, well-designed ramps, and wider pathways improve his experience and reduce strain on his son.
- Walking a known route provides a sense of security, especially across Limfjordsbroen.
- Open spaces, especially those with a view of the fjord, offer moments of peace and reflection.





III. 30. The route of the wheelchair journey.

III. 31. Serial Vision of the journey.

How do people's journeys shape urban spaces? And how do urban areas affect users' mobility?

Drawing on the citizen survey, users' journeys, observed behaviors, and the affordances of the sites, this section addresses its central research question, supported by a range of relevant theories.

From the departure of the various life experiences of urban users which demonstrate how their distinct mobility patterns form the character of urban environments. The relationship between urban users' actions and design elements reflects urban studies theories which explain how people jointly develop environments through their daily interactions (Gehl, 2011; Whyte, 1980).

Children demonstrate unrestricted exploration through their journey which shows how essential it is to create open spaces that allow spontaneous exploration and social interaction. As shown through materiality affordances and the journeys. The mature users experience shows that urban infrastructure needs clear navigation and a safe physical environment to support those who feel vulnerable or insecure in high open spaces. Jacobs (1961) supports the idea that urban vitality emerges from environments which combine predictable spaces with engaging features that create accessible and safe urban areas.

The active lifestyle of young users demonstrates that well-defined and spacious pathways are essential for active commuting because congestion and unclear entrances negatively affect the quality of the urban experience, as conducted through the survey and the observations. Cyclists across bridges require both functional infrastructure and aesthetic improvements such as better lighting and greenery to turn functional areas into lively spaces that welcome them and their families. Gehl (2011) supports these observations by emphasizing that urban design should balance functionality with aesthetic appeal to create active and sustainable mobility systems.

The experiences of elderly users confirm that urban areas need to be accessible and inclusive for people with mobility limitations. As shown in elderly woman's journey where she chose walking paths with green surroundings and calmness while wheelchair users required smooth surfaces and gentle slopes and enough space to navigate which shows that practical urban design solutions can improve daily mobility and well-being. Research today supports the practical requirement for inclusiveness because user-centered design and participatory planning create sustainable and accessible urban environments (Sanders & Stappers, 2008).

The study's thorough user journey mapping, persona, people perspectives and the observations during the visits demonstrate that how people navigate through urban spaces directly shapes environmental development. Various journeys show that urban spaces both controls how people move and transform through the real-life experiences of their users.

Takeaway Insights

This mini conclusion of the analysis section serves as a bridge to the next phase, introducing the vision and design concept proposed for the project. It summarizes the insights drawn from each part of the analysis chapter.

Context:
The Importance of Strategic Connectivity Between Aalborg and Nørresundby.
There is a growing need for additional bridges to improve connectivity between the two cities.

Site 1 analysis – Limfjordsbroen
Over the years, the Limfjordsbroen bridge has been expanded to accommodate increasing traffic demands.
The bridge holds cultural and social significance, that make it more than just a connection from point A to B.
Despite its activity and importance, several issues are apparent:
• The absence of sidewalks and bike lanes in some places
• A predominance of grey tones during winter.
• Disorganized and chaotic areas beneath the bridge on the Aalborg side
• A lack of rest areas along the bridge.

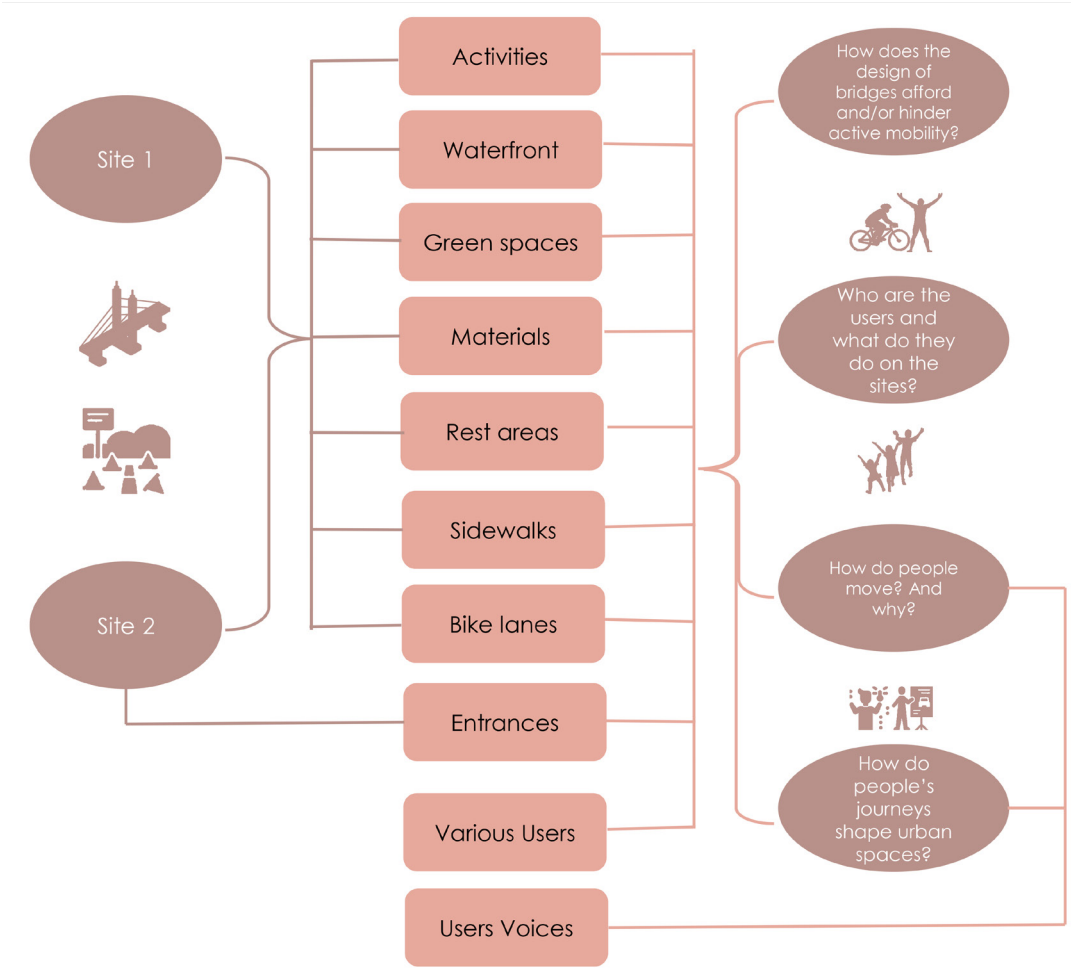
Site 2 analysis – Kulturbroen
Kulturbroen is dedicated to pedestrians and cyclists, promoting active transportation while adding cultural and aesthetic value through features such as its iconic red railings and lighting.
The bridge connects large green spaces, but faces several challenges:
• Underutilized spaces surrounding the site
• Steep entrances
• Limited space on the bridge for active users
• A lack of surrounding activities to draw people to the area

How does the design of bridges afford and/or hinder active mobility?
Physical elements like benches, pavements, lighting, and barriers influence how people move, interact, and feel within urban spaces. These materials create both affordances and limitations that affect accessibility, behavior, and the rhythm of urban life.
With targeted interventions—like more seating, greenery, interactive features, and improved accessibility, both bridges could become not just transit routes but vibrant, inclusive urban destinations that better serve all users, including the vulnerable and mobility-impaired.

Who are the users and what do they do on the sites?
People of all ages engage in a wide range of activities, from commuting and relaxing to socializing.
The bridges hold cultural and emotional significance, serving as sites of ritual, remembrance, and public events.

How do people move? And why?
The two bridges—Limfjordsbroen and Kulturbroen—are not just for getting from one place to another.
Each individual experiences the sites uniquely, influenced by factors such as age, needs, and daily routines. For instance, the behavior of elderly people often differs from that of younger, as well as the experiences of pedestrians can vary from wheelchair users.
Most people surveyed use the bridges without a car. This shows that safe and comfortable paths for walking and biking are important. But there are still problems, like narrow spaces, steep slopes, or bumpy sidewalks, that make it harder for some people, especially children, older adults, and people in wheelchairs users as shown in the Persona sections.

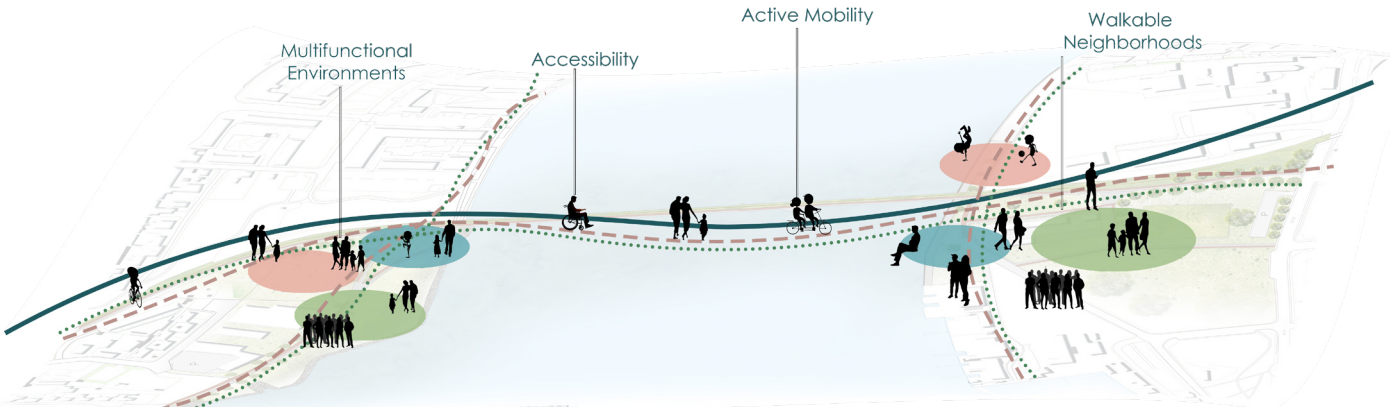
How do people's journeys shape urban spaces?
Children, elderly users, and others experience the city in different ways, and their movements help shape how urban spaces feel and function. Designing with their needs in mind makes cities more welcoming and human-centered. For example, children need more enjoyable places as well as families. Cyclists need more defined and clear paths to move.
Clear pathways, safety, greenery, and good lighting all help make public areas more enjoyable and accessible—whether someone is commuting, exploring, or just relaxing.



Ill. 32. A takeaway mind map highlighting the key criteria emphasized throughout the analysis.

VISION

This chapter introduces the project's vision, and defines the key design criteria guiding the development process.



Ill. 33. The Vision of the interventions for bridges.

Vision

The development of the Limfjordsbroen and Kulturbroen bridges with their surrounding urban environments represents building on the analysis a transformative opportunity to redefine mobility, accessibility, and livability in the city. This vision draws on multidimensional design principles where bridges are not only transit structures but a vibrant, connective, and human-centered urban infrastructure as the analysis found through exploring the research questions.

The vision considers bridges as more than routes from A to B. They must be functionally efficient, structurally durable, and interconnected with the fabric of city life. They must embody aesthetic quality, be accessible to all, and support life in motion, social, economic, and physical.

This vision lies in promoting **active mobility**. Walking and cycling are to be prioritized as primary modes of movement, with dedicated infrastructure such as safe, wide pathways, integrated cycling lanes, and pedestrian crossings that naturally extend from the bridges into the surrounding districts. The aim is to improve the quality of mobility through human-scale development that emphasizes pedestrian-friendly environments and reduces car dependency. Sidewalks, benches, street lighting, and landscape elements will be introduced to make these spaces more inviting and comfortable.

Accessibility could be a key design, metric spaces and infrastructure should be inclusive, ensuring use by diverse users. Mobility networks can be expanded with seamless connections between the bridges, city centers, waterfronts, and residential zones. Connectivity enhancements will involve not just physical infrastructure, but also the integration of green and recreational spaces that encourage social interaction and public life.

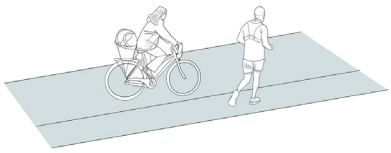
Sustainability could also be pursued through thoughtful material choices, efficient use of space, and long-term durability. Reclaimed or low-impact materials will be prioritized, echoing both environmental goals and aesthetic ambitions. By reactivating neglected and underutilized spaces around the bridges, the development can offer new urban functions—such as small parks, public plazas, and cultural nodes—that increase safety, attractiveness, and user engagement.

The overall urban strategy will focus on creating **livable, multifunctional environments** where bridges serve not just as connectors but as destinations and shared social spaces. Mixed-use zoning and proximity to amenities will promote dynamic, walkable neighborhoods, while public art and cultural programming can embed memory and identity into the everyday journey.

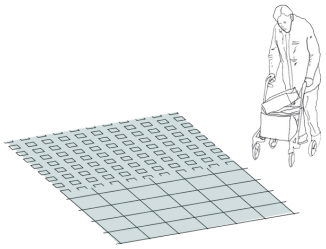
Design Criteria

Safety and Accessibility
Create a safe and inclusive environment for active users by focusing on:

- **Bike Lanes & Pedestrian Pathways**
Design clearly separated, accessible routes for both cyclists and pedestrians to ensure smooth and safe movement.



- **Materials**
Select materials that enhance safety, comfort, and ease of mobility.

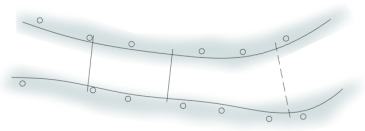


- **Bridge Entrances**
Minimize the slope at bridge access points and clearly define main entrances to avoid confusing movement.

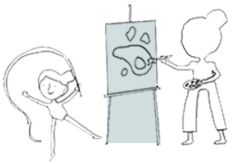
More than A to B

Transform the user journey into a meaningful and memorable experience through:

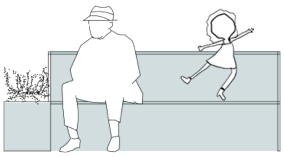
- **Waterfront Integration**
  Reimagine waterfront areas to encourage active mobility and enrich the cityscape.



- **Art and Sculpture Park**
  Enhance diverse activities that promote physical and mental well-being for different user groups.



- **Rest Areas**
  Utilize natural topography to create engaging rest zones with multifunctional and recreational furniture.



- **Green Elements**
  Incorporate lighting, greenery, and artwork to create vibrant, inviting environments.

PRESENTATION

This chapter presents a design proposal for Site 2, Kulturbroen, informed by the project's future vision and international case studies. It explores new design concepts for key elements such as materials, waterfront interface, access points, and potential activities. Additionally, the chapter offers spatial design recommendations for Limfjord's Bridges to support a cohesive urban development strategy.

Welcome to Kulturbroen

"Design is the deliberate shaping of the environment in ways that satisfy individual and societal needs."
Norman, D.A., 2007. The Design of Future Things. New York: Basic Books, p.171.

The redesigned Kulturbroen and its surrounding site are formed by human needs and everyday user behavior. Rather than serving as a passage from A to B, the bridge is reimagined as a multidimensional space shaped by and for the people who use it.

The design approach transforms the bridge into a dynamic destination, one that supports diverse experiences and encourages meaningful interactions. Key interventions include improved the quality of the connections for cyclists and pedestrians to major destinations, the creation of vibrant urban spaces at each bridge landing, and the establishment of a recreational loop that weaves through Aalborg's harbor, making Kulturbroen a central feature in the city's daily and cultural life.

The new design introduces the site in a way that improves how active users move through the area. The bridge entrances will be redesigned to better connect with the surrounding landscape. The railing of the bridge will be opened in some places, gives better views for some users like children and wheelchair users and keeps its red color. Old and unused buildings and spaces in Nørresundby will be repurposed with new functions (see Ill. 34, P: 78). The natural landscape will be used to transform the waterfront into a more attractive and recreational area.

On the Aalborg side, the idea is to close the road under the bridge (where Skudehavnsvej meets Vestre Havnepromenade) to car traffic, remove some parking spaces along the street, and redesign the waterfront to create a more inviting and walkable space for people.

Ill. 34. The new design of Kulturbroen

Ill. 35. Master plan of Kulturbroen


P
9
8
5
P
0 m
80 m
160 m

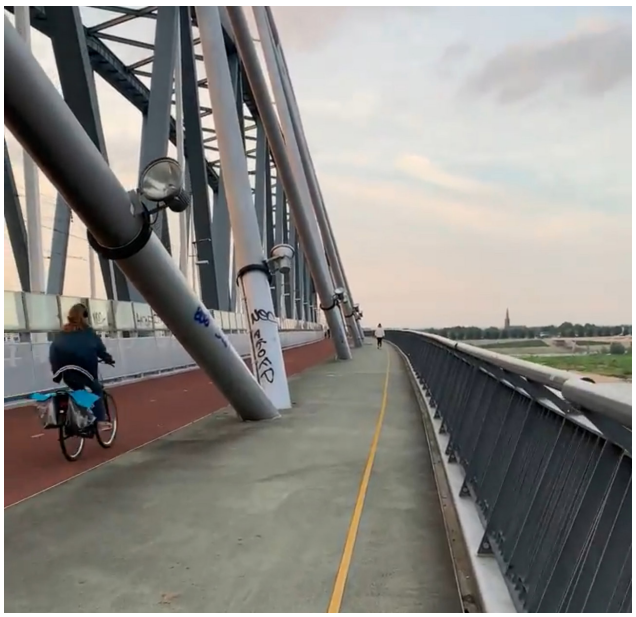
Bike lanes and Pedestrians' pathways

The project focuses on improving cycling and walking paths between the bridges and important destinations. The new bridge design will make these connections better by creating separate spaces for pedestrians and cyclists, wider sidewalks and bike lanes.

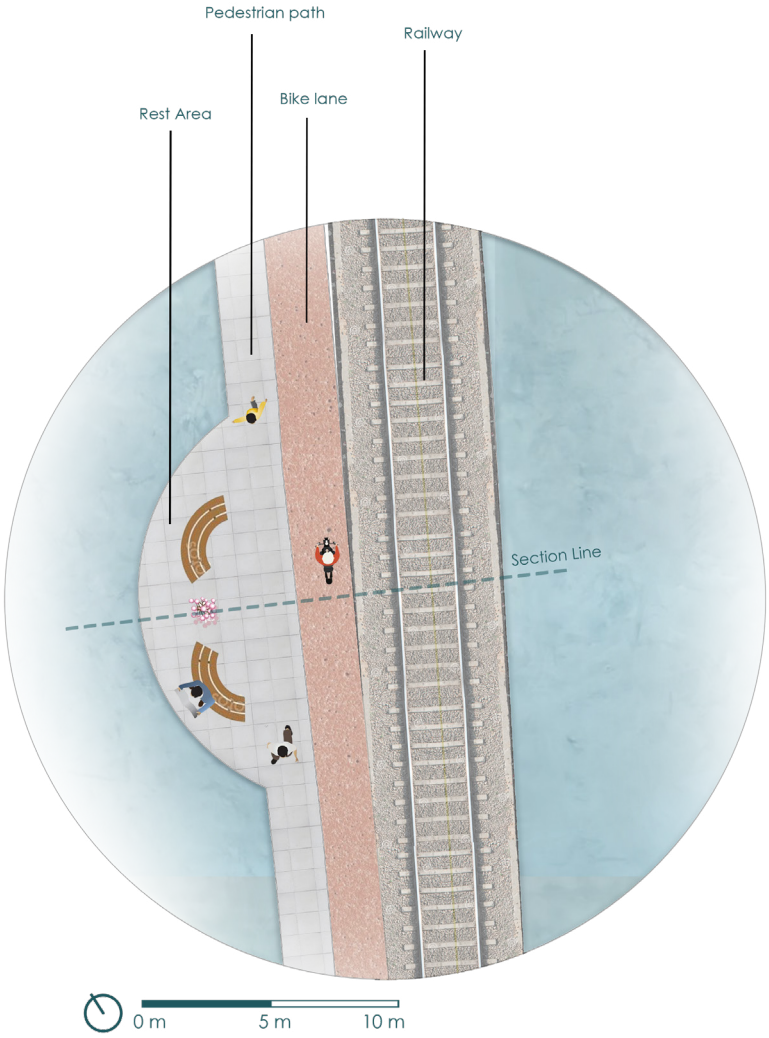
These changes aim to make movement easier and reduce confusion in the area. The bridge will also be extended by one meter to improve access and flow for people. (See Ill. 37,38)

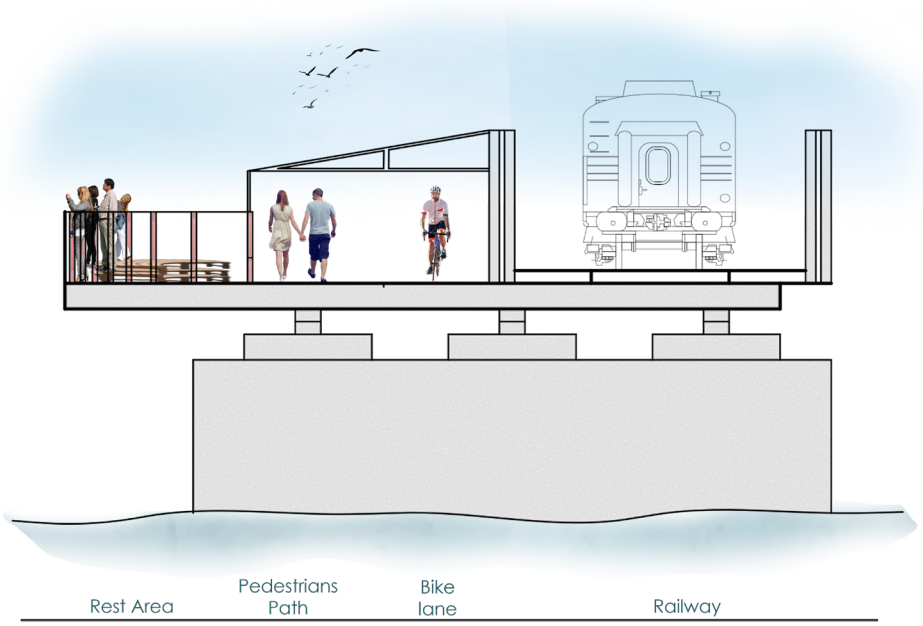
In Nørresundby, the space under the bridge will be opened so pedestrians can safely continue their routes. The new network of paths has been carefully planned to connect well with nearby infrastructure.

A good example of this approach is the Nijmegen Railway Bridge in Netherlands. Next to it is the Snelbinder, a separate path for pedestrians and cyclists, opened in 2004. It connects the north and south of Nijmegen and supports sustainable travel. The design clearly separates pedestrian and bike routes, offering enough space and showing a strong focus on accessibility and eco-friendly urban planning.
(Bakker, 2019; de Vries, 2021).



Ill. 36. Nijmegen Railway Bridge in Netherlands.





Ill. 37. Map shows the new design of Kulturbroen.

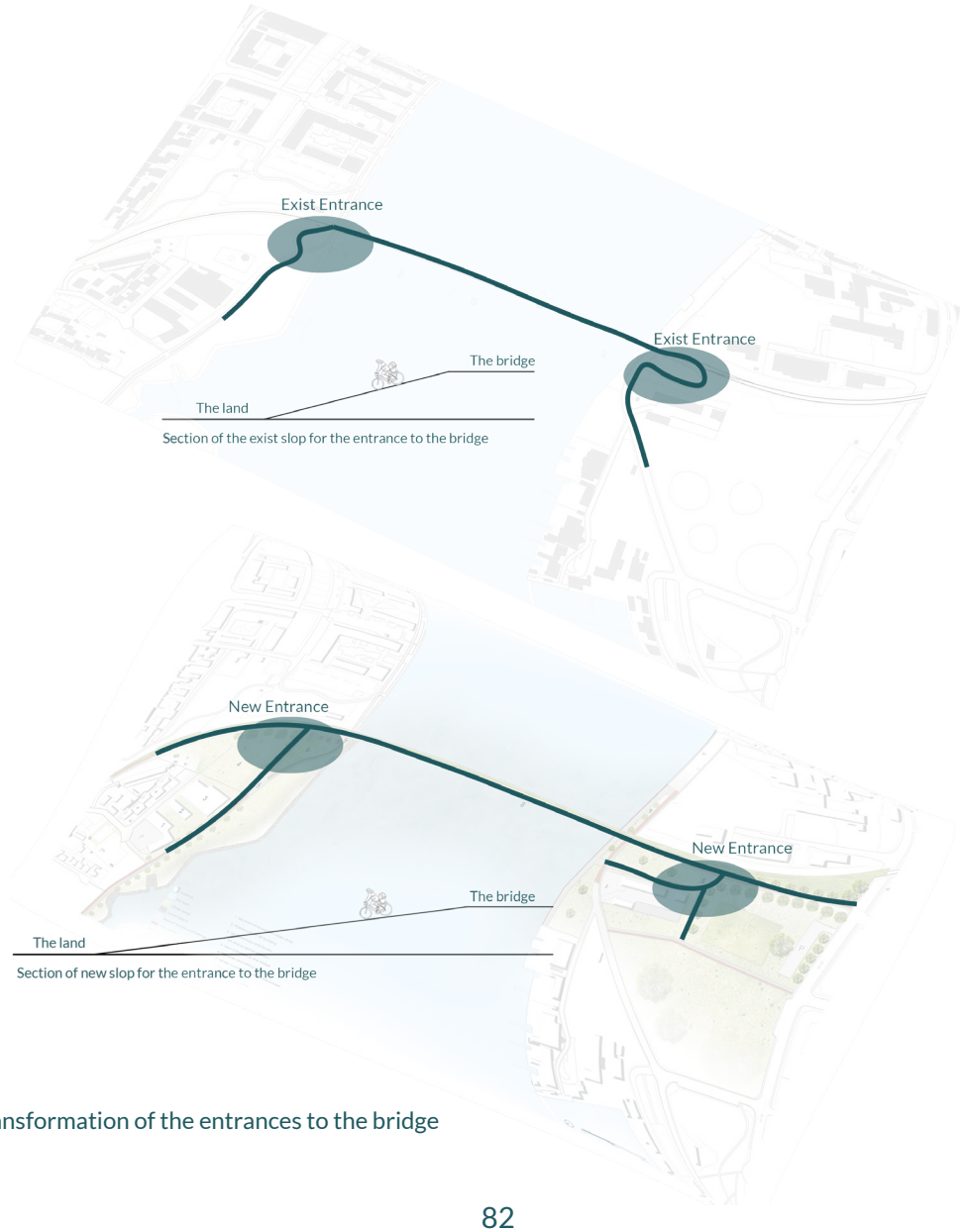
Ill. 38. Section Shows the division of the spaces on Kulturbroen.

Entrances to the bridge

One key improvement is to adjust the bridge entrances by reducing the slope where space allows. This will be done through a new design of the connections, making the area easier to access and better balanced with the landscape and the site's functions.

Around Kulturbroen, there are many empty and unused spaces that offer opportunities for development and new interventions.

On the Nørresundby side, there is a large vacant area next to the railway (see Ill. 39), and a similar situation exists on the Aalborg side. The redesign of the bike and pedestrian paths will also include changes to the entrances, as part of the overall landscape transformation.



Ill. 39. The transformation of the entrances to the bridge

Materials

The primary reason for focusing on site materials is to enhance user mobility and safety. For example, bike lanes are often made by red coloring as in many countries and through some cities in Denmark that improves visibility and user awareness. Asphalt has become the preferred material for most cycle paths due to its high load-bearing capacity, smooth ride quality, and reduced susceptibility to damage from vegetation, it also supports a safe and comfortable surface. Asphalt can be made in different colors by adding pigments, and red is usually made using iron oxide (Admin, 2024).

"Coloured asphalt should not be directly compared to traditional black asphalt. When applied, it serves several purposes: it can be practical (offering high comfort for road users and quick reopening to traffic), aesthetic, but most importantly, it enhances traffic safety. Coloured asphalt increases awareness, guides traffic and creates a clear and understandable traffic situation. It makes more sense to compare coloured asphalt with a coating or, for example, coloured paving stones. After all, you can't put a price on traffic safety, can you?"
Ventraco, (Admin, 2024).

Concrete pavers are the choice for pedestrian and public spaces due to their durability, safety, and design flexibility. Designed to support heavy foot traffic and variable weather conditions, they feature slip-resistant, textured surfaces that improve pedestrian safety (Ben-Joseph, 2005). Permeable and interlocking pavers support surface drainage, helping to reduce urban flooding (Moughtin, 2003). Their modular design also allows for cost-effective maintenance, as individual units can be easily replaced without disrupting the whole surface (Ben-Joseph, 2005). Concrete pavers provide level, consistent surfaces, enhance accessibility for wheelchair users, strollers, and those with mobility impairments (Preiser and Ostroff, 2001). Aesthetically, they are available in a wide range of colors, shapes, and textures, offering cost-effective alternatives to natural stone while supporting urban design (Carmona et al., 2010). Additionally, permeable pavers contribute to sustainable urban development by supporting stormwater management and integrating with green infrastructure such as bioswales and tree pits, (Moughtin, 2003).

"Pervious paver systems contribute to sustainable urban drainage by reducing surface runoff and allowing groundwater recharge."
Moughtin (2003)


Coloured asphalt


Concrete pavers

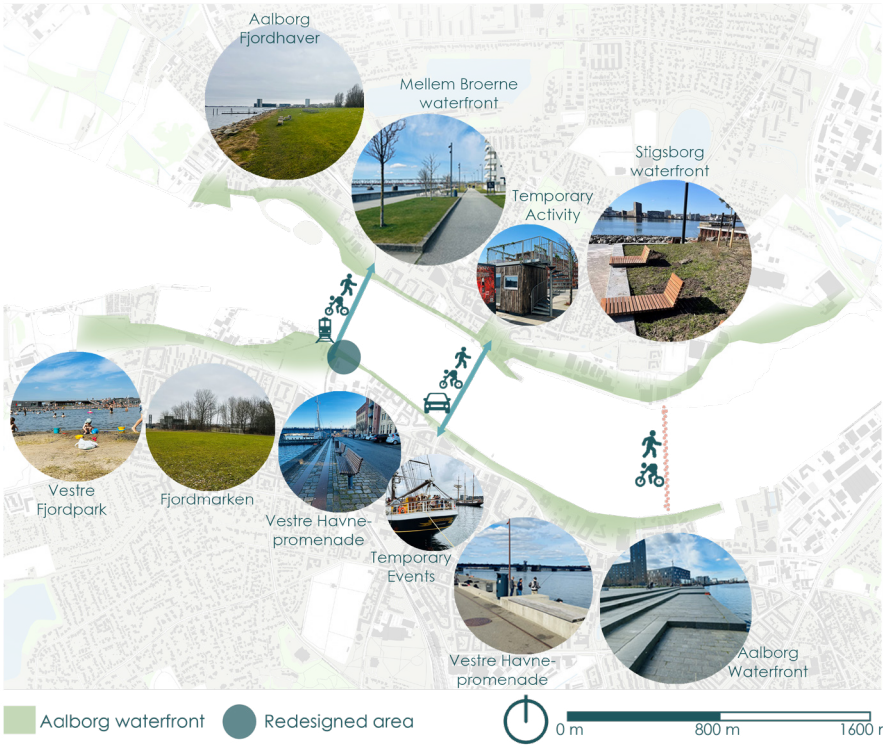
III. 40. The chosen materials for bike lanes and pedestrians' paths.

Waterfront

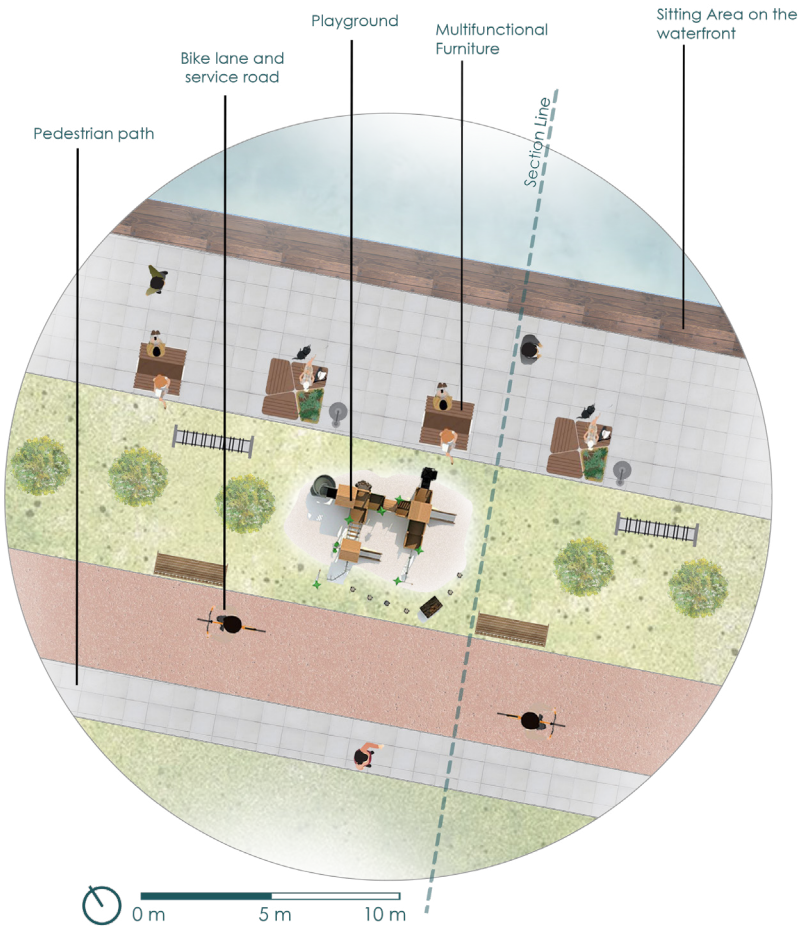
Special attention is given to enhancing Aalborg waterfront as a key recreational loop around the harbor, connecting Kulturbroen in the west with the proposed new bridge in the east and integrating the activities along the route. A central focus is the redesign of **Vestre Havnepromenade**, where spaces will be redefined and enriched with new attractions to create a more engaging and creative environment for active users and leisure visitors. (See Ill. 41).

The first step involves closing sections of the road to car traffic - where Skudehavnsvej meets the Vestre Havnepromenade - and remove parking beneath the bridge to prioritize pedestrian safety. Inspired by the opposite waterfront in Nørresundby, the redesign will include a dedicated bike lane, defined pedestrian paths, expanded green areas, diverse seating options, and play features for children. (See Ill. 42,43).

A broad pedestrian zone will offer flexible space for walking, relaxing, reading, and socializing. In addition, a wooden plaza extending over the water will allow for fishing and closer interaction with the fjord. This approach continues throughout the project, integrating new walking and cycling infrastructure that supports both movement and place-making across the harbor area.



Ill. 41. Diverse activities along Aalborg waterfront.



III. 42. The plan of the redesigned waterfront of Vestre Havnepromenade.

III. 43. The Section of the street shows the new design.

Art and Sculpture Park

Denmark has a big interest to integrating art into public life, with a particular emphasis on making art accessible and engaging within urban spaces. This interest is evident in cities like Aalborg, where street art has become one of the features in the city's cultural. Denmark supports public art through various cultural policies and initiatives. These efforts aim to enhance the quality of life in urban areas by incorporating art into everyday environments. (Jørgensen & Larsen, 2021)

North Jutland, Denmark, is recognized for its integration of art into public spaces, where sculpture parks and outdoor installations express both the region's cultural heritage and its artistic outlook. Among the most notable sites is the Blokhus Sculpture Park (Skulpturparken Blokhus), located in Hune which regarded as Denmark's largest open-air art exhibition, hosting works in a variety of materials and themes, including the internationally acclaimed annual Sand Sculpture Festival (VisitDenmark, n.d.).

In Aalborg, Mølleparken offers sweeping views of the Limfjord and features significant sculptural works (Enjoy Nordjylland 2, n.d.). Another important site is Kildeparken, which stands as one of Aalborg's oldest and most culturally rich urban parks, hosting classical sculptures and fountains within a green, central setting (Enjoy Nordjylland 1, n.d.). Additionally, the Kunsten Museum of Modern Art plays a central role in Aalborg's cultural life. While primarily housing indoor exhibitions, it extends its engagement with art into its surrounding outdoor space, where a sculpture garden complements the museum's architectural ethos (MigogAalborg, 2023). Together, these locations illustrate how North Jutland fosters public engagement with art, creating inclusive spaces where artistic expression is woven into the everyday environment. This commitment reflects Denmark's broader cultural policy, which emphasizes the value of accessible, community-oriented art in enhancing public life and enriching urban identity.

From the departure point of the importance of art works in Denmark, the new vision for the project aims to create a welcoming environment for a diverse range of users. One key aspect of this vision is to enhance activities that attract as many people as possible

to the area. In addition to existing features like fishing spots and playgrounds, and in keeping with the name of the bridge—Kulturbroen (The Culture Bridge), the proposed activities will enrich social interactions both among people and with the place itself.

The intervention focuses on a neglected area in Nørresundby, characterized by old, unused buildings and a large, empty plot of land dotted with scattered, mature trees. The idea is to repurpose these buildings to support art and cultural initiatives in which Aalborg is already well recognized—by creating spaces such as art studios and workshop venues. The adjacent open space will be transformed into a sculpture park, offering a vibrant setting for events, creative activities, and inclusive programming for children, families, and the elderly in Nørresundby. (see its location in the master plan Ill. 35).

Alongside the green areas along the waterfront, this revitalized zone will become a more creative, engaging, and attractive destination for a variety of users and purposes throughout the day.

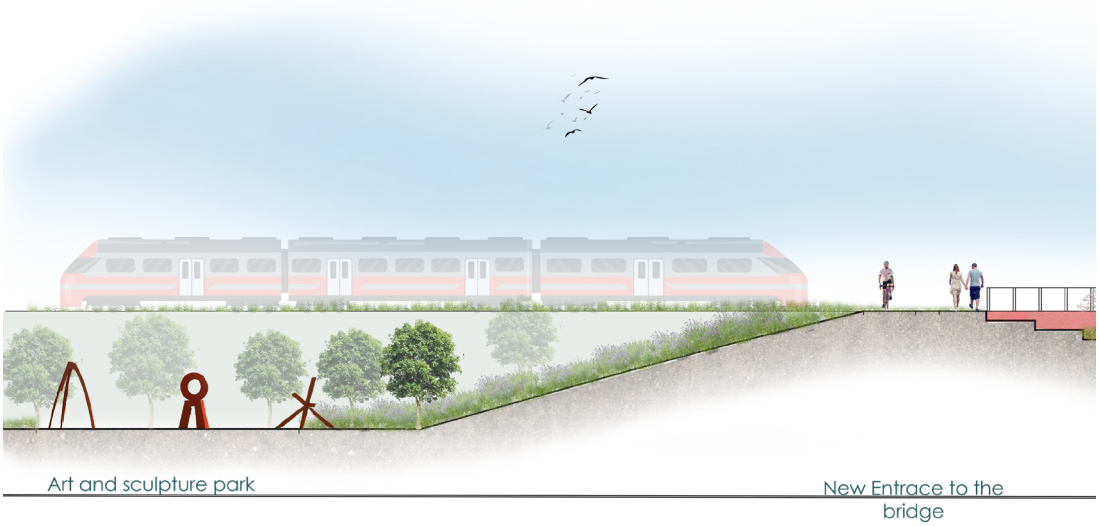
Ill. 44. A visualization shows the vision of the New Art and Sculpture Park in Nørresundby

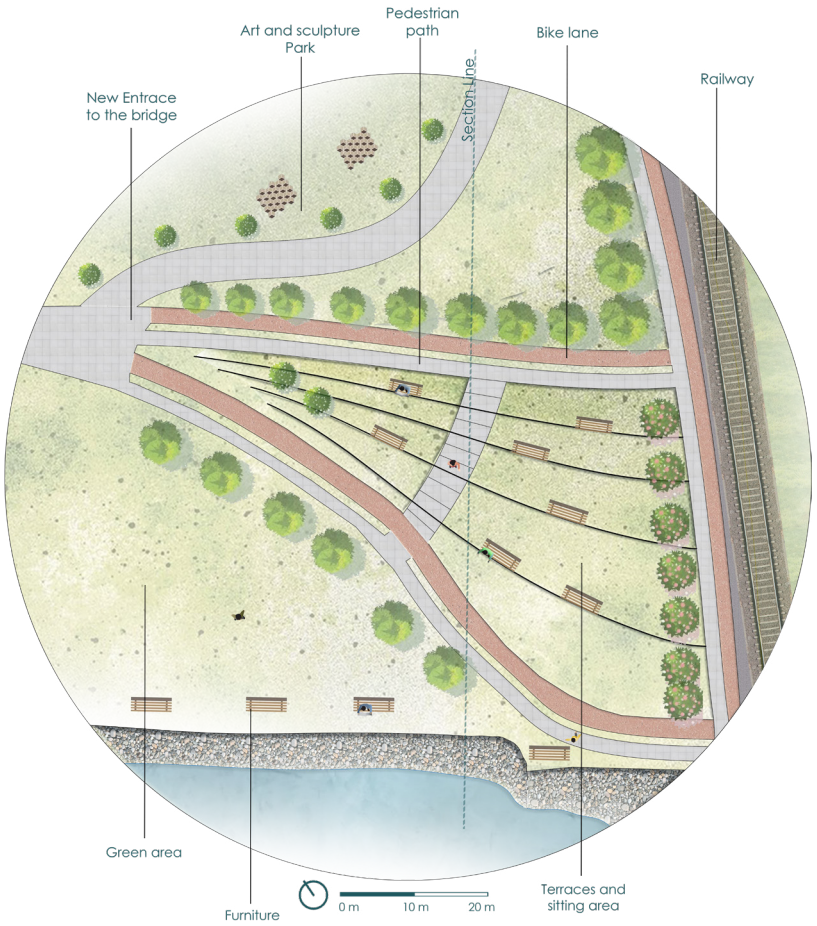
Rest Areas

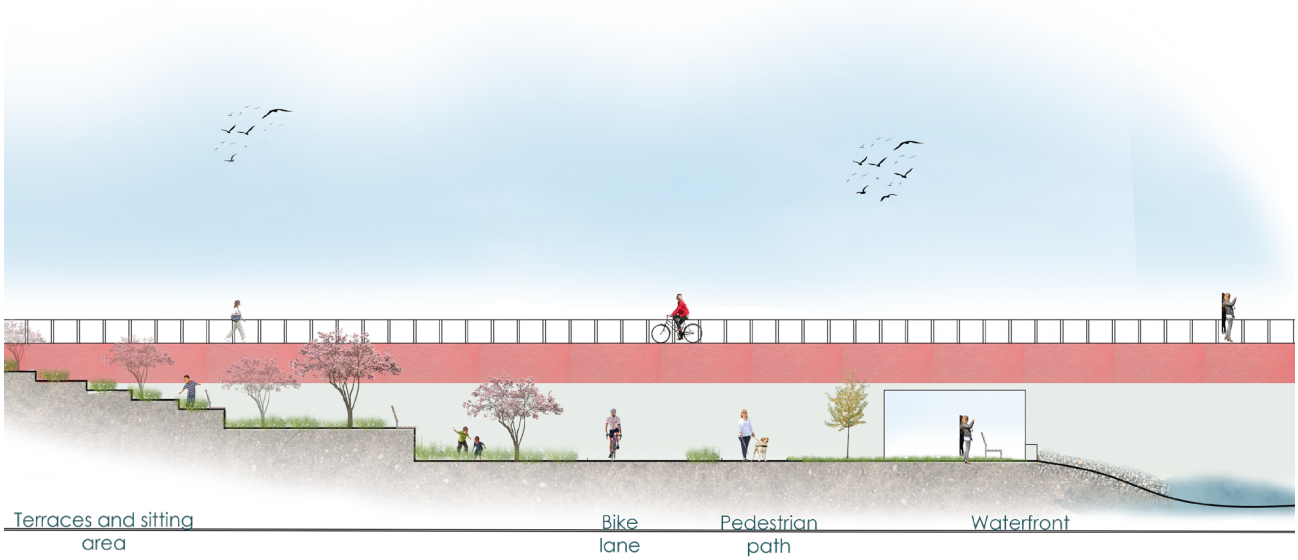
Continuing the vision, the project aims to enhance human well-being through multifunctional furniture placed throughout the area. These will take on various shapes and serve multiple purposes, offering seating along the waterfront and at the center of the bridge, allowing people to enjoy the scenic fjord views.

In parallel, the design of the entrances will feature a new terrace in Nørresundby, providing spaces for sitting, playing, and gathering. This area will be enriched with green plants and colorful trees, creating a vibrant and welcoming atmosphere.

The terraces will be shaped from the existing topography, seamlessly integrating with the surrounding landscape, as illustrated in Ill. 45 and Ill. 46.







III. 45. The plan of the redesigned entrance with the terraces

III. 46. The Section of the terraces shows the new design of the space.

Green Elements

As a part of this project, there has been worked with the greenery at the site. It was important that the chosen plants helped to better the experience of the area, throughout all the seasons. Additionally, the original trees are preserved, and green plants are added throughout the site to create a more homogenous experience.

A focus was on choosing low maintenance plants that would suit the Danish climate. Therefore, most of the plants are perennials, which require partial shade, and have a shallow root structure.

In peak blooming season a color gradient will become apparent, with lighter pinks and purples, and darker reds and marrons. The lighter colors encourage activity and play, whereas the darker colors encourage relaxation and socializing (Kouchaki, M. H., & Gohil, J., 2022).

Varying heights and shapes will also provide interest and different transparency. In the winter situation, the plants will be the key point of interest, as the spire like stems will provide vertical lines, whereas the plumes will give volume and a lightness.

The plants are more than just a visual interest, as certain species have fragrant flowers and stems provide different tactile experiences and create a quiet area with more nature sounds Like birds singing, wind rustling the leaves.

(Oudolf, P. & Geritsen, H., 2021), (Oudolf, P. & Kingsbury, N., 2013), (Oudolf, P. Kingsbury, N., 2001)

Ill. 47. The greenery which is used on the site.

Spatial Design Recommendations for Limfjord's Bridges

These spatial recommendations are based on insights gained through immersive analysis of the existing bridges over the Limfjord.

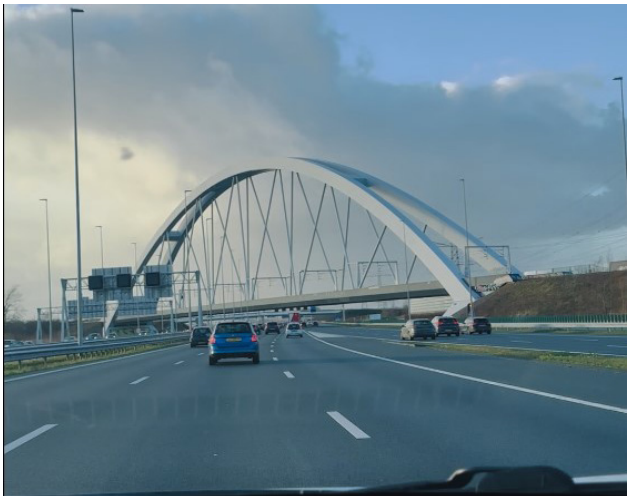
Landmark

Limfjordsbroen, Kulturbroen, and the proposed third connection between Stigsborg and Aalborg hold the potential to become more than just infrastructure, they can be developed into active, aesthetic public spaces that enhance the city's identity and livability.

As Gehl highlights, the aesthetic quality of urban infrastructure, achieved through thoughtful selection of materials, proportions, colors, and spatial rhythm, deeply influences how people feel and behave in space. A bridge that is visually and spatially inviting becomes more than a means of movement; it transforms into a destination where people choose to linger, meet, and experience the city.

Especially for the future bridge connecting Stigsborg to Aalborg, there is a unique opportunity to establish a new urban icon, one that reflects the city's progressive values in mobility, sustainability, and public life. This bridge could symbolize more than physical connectivity; it could represent a connection between people and their environment.

An inspiring precedent is the Zandhazen Bridge in Muiderberg, the Netherlands' longest arched railway bridge. Constructed with high-strength steel and quick-drying concrete, its sleek, curved form and diagonal supports blend structural performance with visual elegance. The bridge was honored with the Dutch Steel Award (Nationale Staalprijs) in 2018 in the infrastructure category (ZJA, n.d.).



Ill. 48. The Zandhazen Bridge in Muiderberg, in Netherlands

Greenery

Urban planting should prioritize species with shallow root systems that thrive in compacted soils and constrained conditions typical of infrastructure settings. These plants minimize conflict with underground utilities and offer flexible integration into bridge designs and surrounding spaces (Rahman et al., 2013).

Incorporating evergreen trees and permanent green elements throughout the year offers consistent ecological, aesthetic, and psychological benefits. They do not only bring seasonal interest and texture but also improve air quality by filtering pollutants and reducing urban heat (Nowak et al., 2014).

For instance, adding greenery to Limfjordsbroen, such as planters with vibrant flowers and trees in varied volumes—would enhance the bridge's visual appeal and encourage more active and pleasant use of the space. (See Ill.49).

Materials

Materials significantly influence how spaces are experienced. Soft pavements can create warm, inviting areas suited for rest and informal gatherings, while harder surfaces facilitate efficient pedestrian and cycling movement. The tactile and visual properties of materials, color, texture, reflectivity can contribute to space feeling.

Choosing the right materials is essential for improving safety, comfort, and accessibility for all users. Key considerations include weather resistance, adaptability to climate changes, maintenance ease, and long-term durability (ArchDaily, 2020).

With the thoughtful combination of plant life, colors, surface textures, street furniture, and green elements, bridges can offer rich, comfortable experiences while meeting practical demands.

Ill. 49. Adding greenery and change bike lane color on Limfjordsbroen

Ill. 50. Example of materials which facilitate users' mobility (Strandvejen, Aalborg)

Lighting

Lighting plays a vital role in activating public spaces throughout the day and across seasons. Beyond mere visibility, well-designed lighting contributes to:

- Safety and comfort
- Wayfinding and Guidelines
- Aesthetic
- Extended usability in nighttime hours

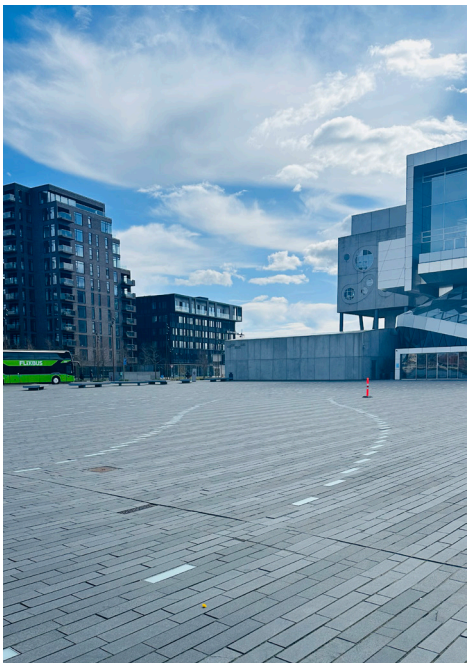
As Lynch (1960) notes, lighting helps people form mental maps of a city, making spaces feel memorable and connected. Whyte (1980) adds that lighting is not just about function, it also draws people in and encourages use.

Lighting elements could be integrated into bridge structures, flooring, or furnishings, using warm or colored lights to create mood and identity. Strategic lighting under the bridges would also enhance usability and atmosphere.

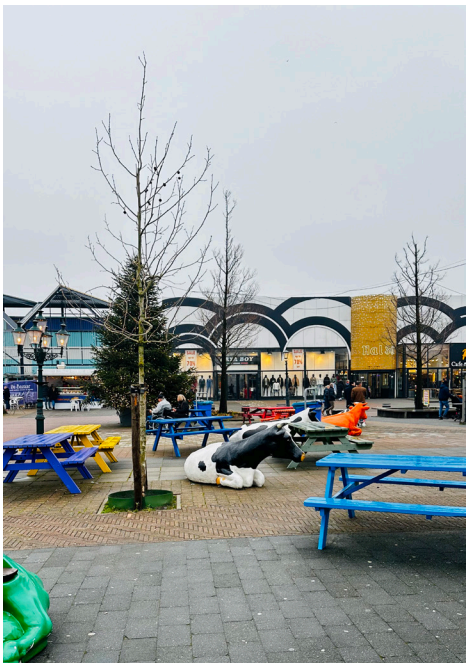
Limfjordsbroen

For Limfjordsbroen, several spatial upgrades are proposed to enhance its role as a people-centered corridor:
- Replace the existing bike lane materials on and under the bridge with surfaces that are safer and more comfortable for cyclists. (See Ill.49).
- Extend bike lanes to surrounding streets that currently lack them, as Mellem Broerne.
- Integrate permanent green features, including trees and flowering plants in varied colors and sizes.
- Install comfortable, well-placed furniture on the bridge for residents and visitors to rest and enjoy the view.
- Use bold-colored furniture and lighting under the bridge to animate the space and support social and recreational activities.

By designing integrated spaces for movement, pause, and interaction, Limfjordsbroen can become more than a crossing.



Ill. 51. Using ground lights as guidelines and Aesthetic. (Musikkens Hus, Aalborg)



Ill. 52. Example of using colored furniture to color the space. (Amsterdam, Netherlands)

EPILOGUE

This chapter presents the conclusion of the project and includes a discussion of the methodologies employed and the design challenges encountered. It also provides a list of illustrations, references, and appendices that support the study.

Conclusion

This project set out to explore the dynamic relationship between human movement and urban environments, focusing specifically on the bridges connecting Aalborg and Nørresundby. These bridges—Kulturbroen and Limfjordsbroen—are more than simple crossings; they are key transitional spaces that reflect how people interact with the city and each other. By examining how movement patterns shape, and are shaped by, these spaces, the study provides insights into how urban design can better support active mobility and social inclusivity.

Ethnographic research methods formed the core of this investigation. These included immersive fieldwork techniques such as observations, interviews, informal conversations, and shadowing users across bridges and surrounding areas. This approach allowed for a deeper understanding of everyday routines, behaviors, and challenges experienced by people of different ages, backgrounds, and physical abilities. The goal was to answer key research questions about how people use these spaces in their daily lives, and what urban elements either support or hinder their movement and overall experience.

Through these methods, it became clear that the bridges hold untapped potential. While currently serving as functional connectors, with targeted interventions they could become much more—vibrant public spaces that invite lingering, interaction, and inclusivity. This is particularly relevant in the context of future development, such as the proposed Stigsborg Bridge. Unlike existing bridges, Stigsborg Bridge is envisioned as a space exclusively for active users—pedestrians and cyclists—marking a shift toward a more human-centered approach to mobility in Aalborg. With thoughtful design, it could become a new symbol of the city's commitment to sustainability, health, and urban livability.

The study emphasizes the importance of integrating human-centered design into urban planning. Design decisions should be

guided by how people actually use spaces, rather than only by technical or aesthetic considerations. For example, improving pathways, creating accessible routes, adding seating areas, and incorporating greenery can transform transitional spaces into destinations. The waterfront area, one of Aalborg's most valuable urban assets, could be reimagined as a continuous, active corridor that supports both movement and gathering, enhancing the city's identity and daily life.

The findings suggest that such infrastructure—when designed with inclusivity and flexibility in mind—can cater to a wide range of users, including children, the elderly, and people with mobility challenges. This reflects the broader principle that bridges, and similar urban elements should not only connect places, but also connect people and communities. Design strategies for bridges like Kulturbroen, Limfjordsbroen, and future projects elsewhere should prioritize social functionality and experiential quality. These strategies are not limited to Denmark; they can be applied globally, in any urban area seeking to promote active mobility and inclusive urban life.

Although the research was conducted over a limited timeframe (February to May), it provides a strong starting point for further exploration. Seasonal variations, for instance, may affect how people use outdoor spaces, influencing design needs throughout the year. Future research could expand to other cities with different social, cultural, or environmental contexts, helping to refine strategies for sustainable and human-centered mobility.

In conclusion, this study contributes to a growing body of knowledge on the role of movement in urban design. By paying close attention to how people navigate, experience, and shape their surroundings, planners and designers can create more responsive, inclusive, and engaging urban spaces that not only support mobility but enrich everyday life.

Discussion

This discussion reflects the methods employed in the project, as well as the design ideas and the challenges encountered.

Ethnography research as a method

I chose to analyze the project's sites using ethnography tools, a qualitative research method that emphasizes prolonged, immersive engagement with a community or environment.

During my observations, I realized that the presence of a researcher often influences how people act, especially when they notice they are being observed. This phenomenon, widely acknowledged in social research, is known as the Hawthorne Effect, where individuals alter their behavior simply because they are aware of being studied. I found that this applies not only to direct observation but also to methods like strolling and shadowing users in public spaces. And to reduce this, future studies could use more natural observation methods, like video recordings (with permission) or longer-term studies where people get used to being observed.

In addition to observations, I conducted interviews and a citizen survey. And I questioned the authenticity of interview responses. Do participants share their right feelings, or do they provide quick answers to quickly resume their activities? This was one of my discussions with my colleagues at Aalborg university. For instance, the observations revealed that some individuals faced challenges moving around the site, yet they did not mention these difficulties during interviews. This raises questions about the reliability of interview data and its ability to uncover deeper issues.

The Design of the bridges

The focus is on people's interactions with their environments to explore how their behaviors shape urban areas. This approach, known as 'staging mobility from below,' examines the everyday movement and activity within the city. But do decision-makers and municipal authorities consider these factors? And if so, how?

The design ideas and recommendations in this project are deeply rooted in an analysis. To ensure safety and accessibility at the sites, proposed solutions include creating safer pathways for both pedestrians and cyclists, which may require extending the bridges. But is this the most suitable solution for the existing structures? A similar challenge was addressed in the Netherlands with the Nijmegen Railway Bridge, where a separate path for pedestrians and cyclists was added alongside the railway bridge, yet the paths appear to function as a single structure (Bakker, 2019).

Technical challenges can sometimes obstruct design ideas, such as the need to open up the area beneath the bridge to accommodate additional paths. This approach would require further studies on the bridge's structural integrity and collaboration with civil and technical engineers to ensure its feasibility.

Early collaboration with structural engineers and city planners is essential to assess technical feasibility and adapt concepts to existing infrastructure. On the other hand, utilizing flexible, modular design solutions can address site limitations without requiring major reconstruction.

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THESIS TITLE PAGE

This form must be submitted for all theses written in programs under the Study Board of Architecture and Design, and it should be placed at the beginning of the appendix section of the assignment.

A printed copy of the form must be submitted along with the printed copy of the thesis.

The information given in this form must also be available in PURE.

(All fields must be filled out)

Program: **Architecture** ☐ **Industrial Design** ☐ **Urban Design** ☒
This thesis was written by (full name): Marwa Shokair
Title of the thesis: How Do People's Journeys Shape Urban Spaces?
Supervisor´s name: Claus Lassen
Submission date/year: 28-May-2025
Is the project confidential? **Yes** ☐ **No** ☒
External collaboration* **Yes** ☐ **No** ☒
External collaboration partner (name of company/organization):
Contact at external collaboration partner (title, name og email):

What is an external collaboration? Read more here.

Appendix A
Additional Analysis

Materials

This section provides an overview of the materials found at both sites (Limfjordsbroen and Kulturbroen), supporting materiality affordances in the report to understand the types of materials used throughout the areas.

Limfjordsbroen

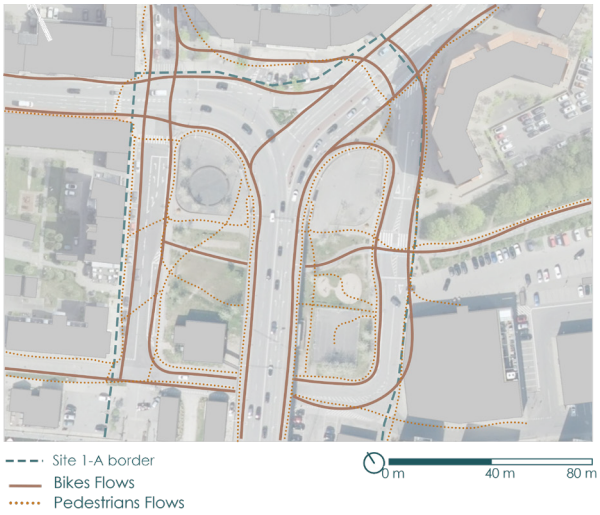
Kulturbroen

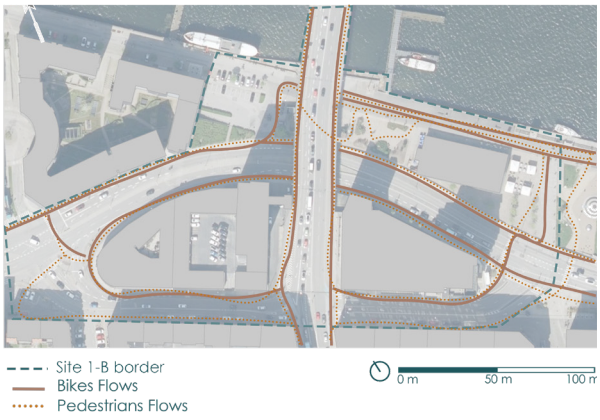
Materials within the sites

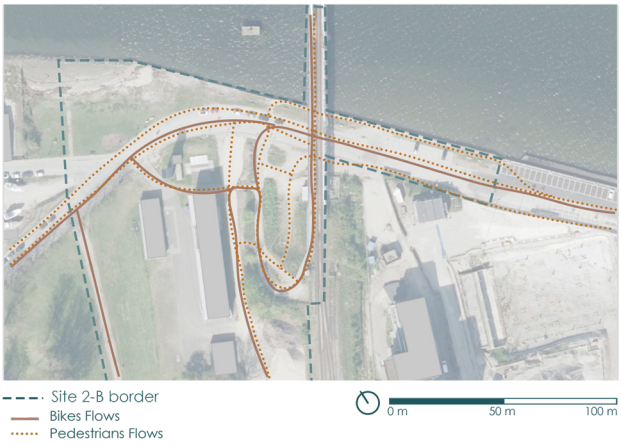
Flows

Flow maps are valuable tools in urban analysis. During the site visits, people were observed, what they do on the sites and how they move around to understand mobility patterns. Drawing flow maps helps provide deeper insights into how the site affords or hinders users' mobility. Together with photographs of the sites, these maps reveal how people interact with different urban spaces, supporting decisions about zoning or new developments.

Scan the QR code to access all the site visit photos for both sites. Or open the link: https://drive.google.com/drive/folders/1uX-7Jbi5IjxKe8ZD9xHWdK2pdjz0hqzQz?usp=drive_link.



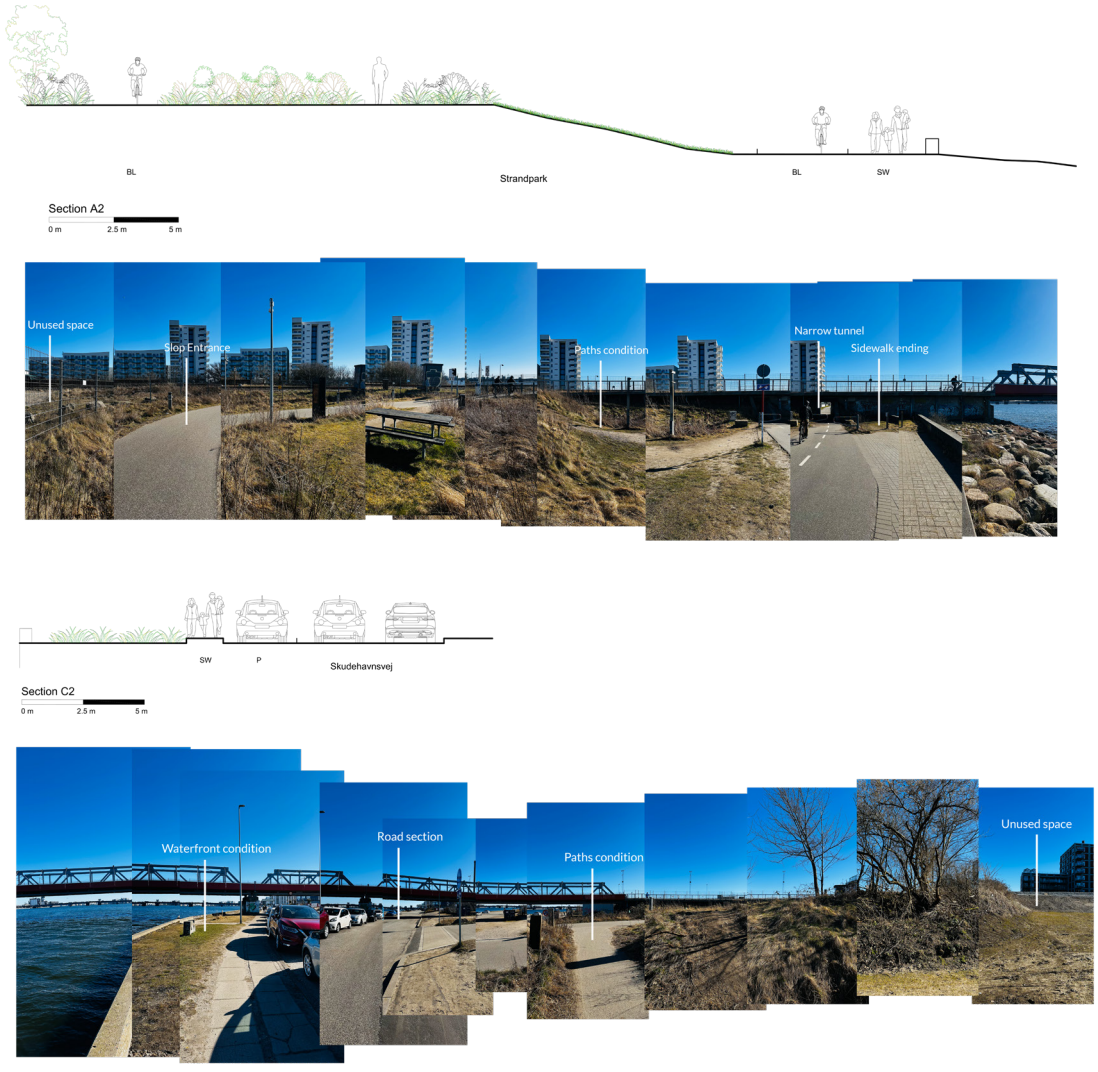




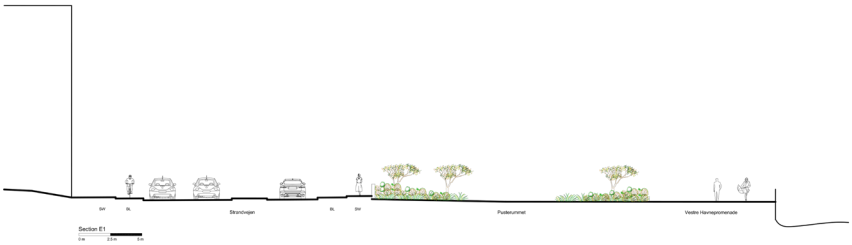
Flows maps

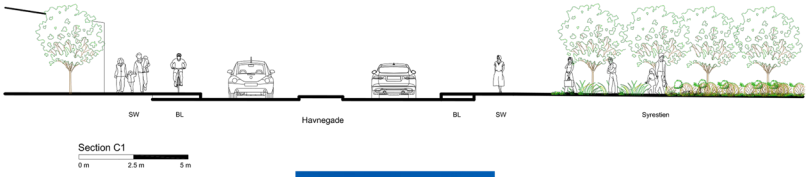
Spatial sections

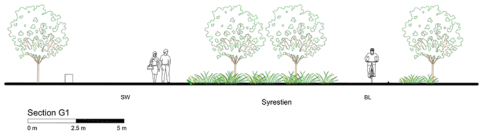
Spatial sections illustrate the relationship between built elements, open spaces, and topography. At both sites, several spatial sections were created to reveal the height, mass, and proportion of buildings in relation to streets and public spaces.
They show how roads, sidewalks, trees, and other urban features are arranged and scaled, using both 2D CAD drawings and 3D spatial photographs. These sections also help visualize how different functions are organized within the site and assist in understanding how elevation changes affect accessibility and visibility.

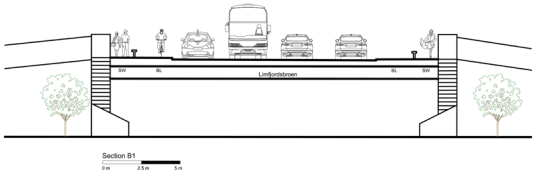


Spatial Sections of Site 2 Kulturbroen









Spatial Sections of Site 1 Limfjordsbroen

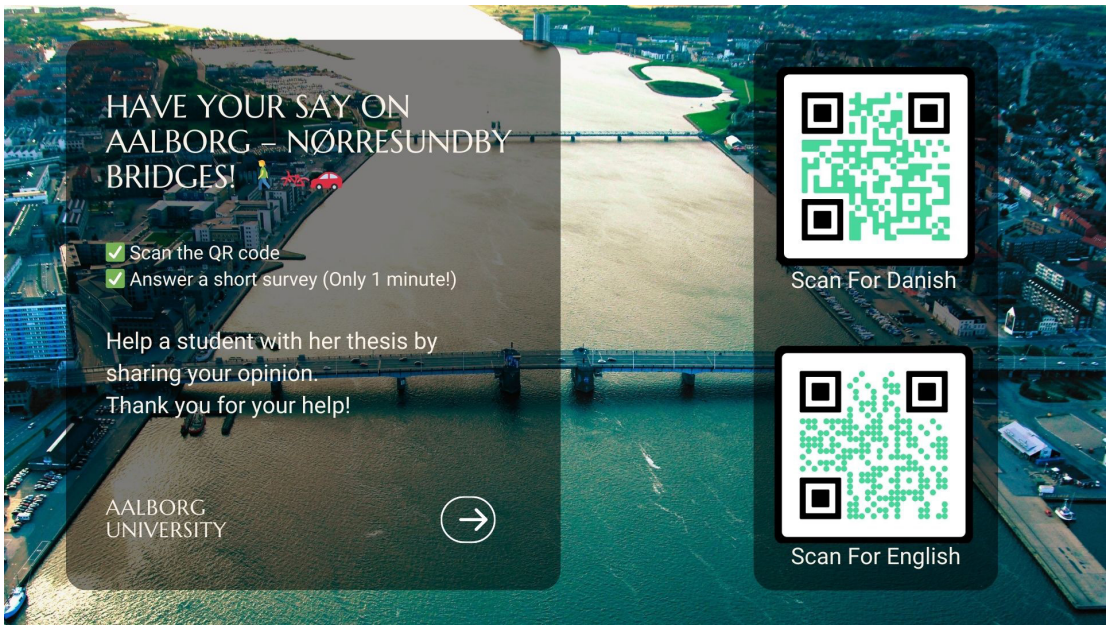
Appendix B
Citizen Survey

Citizen Survey Process

This survey was conducted to gather insights from residents and commuters about their experiences crossing the bridges between Aalborg and Nørresundby. It focused on transportation habits, satisfaction with current routes, and suggestions for potential improvements in infrastructure, aesthetics, and accessibility. The collected data supported planning efforts aimed at enhancing mobility and urban development.

The survey was available in both English and Danish, created using Google Forms, and included the questions and answer options listed below. It was shared via a QR code printed on A5 paper and distributed through social media platforms such as LinkedIn and Facebook, as well as directly to people on-site. All responses were compiled in an Excel sheet to generate diagrams illustrating the results.

The questions installed depend on the primary findings from the desktop research and the observations of the site which are concluded by the sites' analysis, materiality affordances and SWOT analysis, to explore more in people's perspectives and insights.



- Shared version of Citizen Survey via a QR code printed on A5 paper

Age
>20
20-40
40-60
60<

Occupation
student
employed
retired
Nothing

City of residence
Aalborg
Nørresundby
other

Why do you often cross the bridge?
Work
School/University
tour / entertainment / sport
Shopping
Other

How do you usually cross the bridge?
by car or bus or train
by bike
walk
other

Are you satisfied with the route you take?
yes
No
I don't care

What do you think is missing on these bridges?
Better pedestrian paths
Better bike lanes
Green Elements
Furniture
Other

Which bridge do you often cross?
Limfjordsbroen
Jernbanebroen (Railway Bridge)
Both

Do you think that the fjord needs more bridges?
Yes
No
Not sure

Alder
< 20
20-40
40-60
> 60

Beskæftigelse
Studerende
Ansat
Pensionist
Ingen af ovenstående

Bopæl
Aalborg
Nørresundby
Andet

Hvorfor krydser du ofte broen?
Arbejdet
Skole/Universitet
Turisme / Underholdning / Sport
Shopping
Andet

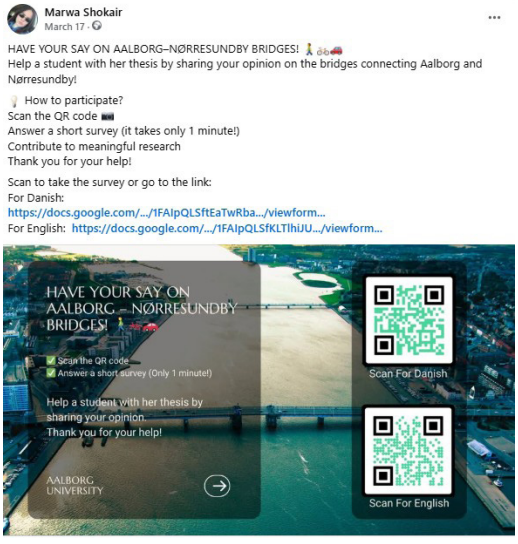
Hvordan krydser du normalt broen?
I bil eller bus
På cykel
Til fods
Andet

Er du tilfreds med ruten, du tager?
Ja
Nej
Det betyder ikke noget for mig

Hvad synes du mangler på broerne?
Bedre gangstier
Bedre cykelstier
Grønne elementer
Møbler
Andet

Hvilken bro krydser du?
Limfjordsbroen
Jernbanebroen (jernbanebro)
Begge

Synes du, fjorden har brug for flere broer?
Ja
Nej
Ved ikke



- The questions of the survey.

- The Publication of the survey.

Table of participants responses

Alder	Beskæftigelse	Bopæl	Hvilken bro krydser du ofte?	Hvorfor krydser du ofte broen?
40-60 år	Ansat	Nørresundby	Limfjordsbroen	Underholdning / Sport, Shopping
20-40 år	Ansat	Aalborg	Begge	Andet
20-40 år	Studerende	Aalborg	Begge	Andet
60< år	Studerende	Aalborg	Begge	Underholdning / Sport
40-60 år	Ingen af ovenstående	Aalborg	Limfjordsbroen	Andet
20-40 år	Ansat	Andet	Limfjordsbroen	Andet
20-40 år	Ansat	Nørresundby	Limfjordsbroen	Arbejdet
20-40 år	Studerende	Aalborg	Limfjordsbroen	Andet
40-60 år	Ansat	Nørresundby	Limfjordsbroen	Arbejdet
40-60 år	Ingen af ovenstående	Nørresundby	Limfjordsbroen	Shopping, Andet
20-40 år	Ansat	Nørresundby	Limfjordsbroen	Arbejdet, Underholdning / Sport, Shopping
40-60 år	Ansat	Nørresundby	Begge	Underholdning / Sport
60< år	Ingen af ovenstående	Aalborg	Limfjordsbroen	Andet
20-40 år	Studerende	Aalborg	Begge	Underholdning / Sport
40-60 år	Ansat	Nørresundby	Limfjordsbroen	Arbejdet, Underholdning / Sport, Shopping, Andet
20-40 år	Studerende	Nørresundby	Limfjordsbroen	Underholdning / Sport
20-40 år	Studerende	Nørresundby	Limfjordsbroen	Arbejdet, Skole / Universitet
40-60 år	Pensionist	Nørresundby	Begge	Shopping
>20 år	Studerende	Aalborg	Begge	Andet
60< år	Pensionist	Nørresundby	Limfjordsbroen	Shopping
40-60 år	Ansat	Andet	Limfjordsbroen	Andet
40-60 år	Ansat	Nørresundby	Begge	Arbejdet, Underholdning / Sport, Shopping
20-40 år	Studerende	Nørresundby	Limfjordsbroen	Skole / Universitet
60< år	Pensionist	Nørresundby	Begge	Andet
40-60 år	Ansat	Andet	Begge	Arbejdet, Underholdning / Sport
20-40 år	Studerende	Nørresundby	Jernbanebroen	Skole / Universitet, Underholdning / Sport, Shopping, Andet
20-40 år	Studerende	Nørresundby	Begge	Arbejdet, Skole / Universitet
40-60 år	Ansat	Nørresundby	Begge	Arbejdet, Shopping
40-60 år	Ansat	Andet	Limfjordsbroen	Shopping
20-40 år	Ansat	Nørresundby	Limfjordsbroen	Arbejdet
20-40 år	Ansat	Nørresundby	Limfjordsbroen	Arbejdet
60< år	Ingen af ovenstående	Nørresundby	Limfjordsbroen	Arbejdet, Underholdning / Sport, Shopping
20-40 år	Studerende	Nørresundby	Limfjordsbroen	Skole / Universitet, Underholdning / Sport, Shopping
20-40 år	Ansat	Nørresundby	Begge	Arbejdet, Underholdning / Sport, Shopping, Andet
20-40 år	Ansat	Nørresundby	Limfjordsbroen	Arbejdet, Underholdning / Sport, Shopping, Andet
20-40 år	Studerende	Aalborg	Limfjordsbroen	Andet
20-40 år	Studerende	Nørresundby	Begge	Skole / Universitet, Underholdning / Sport
60< år	Ansat	Nørresundby	Jernbanebroen	Arbejdet
40-60 år	Ansat	Nørresundby	Jernbanebroen	Arbejdet, Underholdning / Sport, Shopping, Andet
40-60 år	Ansat	Nørresundby	Begge	Arbejdet
20-40 år	Ansat	Nørresundby	Limfjordsbroen	Arbejdet, Underholdning / Sport, Shopping
20-40 år	Ingen af ovenstående	Aalborg	Begge	Underholdning / Sport, Andet
20-40 år	Ingen af ovenstående	Aalborg	Limfjordsbroen	Andet
20-40 år	Studerende	Aalborg	Limfjordsbroen	Andet
20-40 år	Studerende	Andet	Begge	Skole / Universitet
20-40 år	Studerende	Aalborg	Limfjordsbroen	Arbejdet, Skole / Universitet, Underholdning / Sport, Shopping
40-60 år	Ansat	Nørresundby	Limfjordsbroen	Arbejdet
40-60 år	Ansat	Andet	Limfjordsbroen	Arbejdet, Skole / Universitet, Underholdning / Sport, Shopping
20-40 år	Ansat	Aalborg	Jernbanebroen	Arbejdet
20-40 år	Studerende	Nørresundby	Begge	Skole / Universitet, Underholdning / Sport, Shopping
20-40 år	Ansat	Aalborg	Limfjordsbroen	Arbejdet, Underholdning / Sport
20-40 år	Ansat	Nørresundby	Limfjordsbroen	Shopping, Andet
20-40 år	Ansat	Aalborg	Limfjordsbroen	Andet
40-60 år	Ansat	Aalborg	Jernbanebroen	Shopping
20-40 år	Ansat	Aalborg	Begge	Andet
40-60 år	Ansat	Andet	Limfjordsbroen	Andet
40-60 år	Ansat	Andet	Limfjordsbroen	Andet
20-40 år	Ansat	Aalborg	Limfjordsbroen	Underholdning / Sport, Andet
40-60 år	Ansat	Andet	Limfjordsbroen	Shopping
20-40 år	Ansat	Andet	Limfjordsbroen	Andet
40-60 år	Ansat	Andet	Limfjordsbroen	Underholdning / Sport
20-40 år	Ansat	Aalborg	Jernbanebroen	Underholdning / Sport
20-40 år	Studerende	Nørresundby	Limfjordsbroen	Skole / Universitet, Underholdning / Sport, Shopping
20-40 år	Ansat	Nørresundby	Limfjordsbroen	Shopping
20-40 år	Ansat	Aalborg	Begge	Arbejdet, Underholdning / Sport, Shopping, Andet
20-40 år	Studerende	Andet	Limfjordsbroen	Andet
20-40 år	Studerende	Aalborg	Limfjordsbroen	Andet
20-40 år	Studerende	Aalborg	Limfjordsbroen	Arbejdet
20-40 år	Ingen af ovenstående	Aalborg	Limfjordsbroen	Andet
20-40 år	Ansat	Nørresundby	Begge	Arbejdet, Underholdning / Sport, Shopping
20-40 år	Ingen af ovenstående	Nørresundby	Begge	Skole / Universitet
20-40 år	Ansat	Nørresundby	Limfjordsbroen	Arbejdet, Underholdning / Sport, Shopping, Andet
20-40 år	Ansat	Andet	Limfjordsbroen	Arbejdet
40-60 år	Ansat	Andet	Begge	Andet
60< år	Pensionist	Aalborg	Begge	Underholdning / Sport, Andet
60< år	Ansat	Nørresundby	Jernbanebroen	Arbejdet, Underholdning / Sport, Shopping, Andet
>20 år	Studerende	Nørresundby	Begge	Skole / Universitet, Underholdning / Sport
>20 år	Studerende	Aalborg	Jernbanebroen	Underholdning / Sport
>20 år	Ansat	Andet	Begge	Arbejdet, Underholdning / Sport, Shopping, Andet
>20 år	Studerende	Andet	Jernbanebroen	Skole / Universitet
>20 år	Studerende	Nørresundby	Limfjordsbroen	Skole / Universitet, Underholdning / Sport
>20 år	Studerende	Nørresundby	Begge	Skole / Universitet, Underholdning / Sport, Shopping, Andet
40-60 år	Ansat	Nørresundby	Begge	Arbejdet, Underholdning / Sport, Shopping, Andet
40-60 år	Ingen af ovenstående	Aalborg	Jernbanebroen	Underholdning / Sport
40-60 år	Ansat	Nørresundby	Jernbanebroen	Arbejdet, Underholdning / Sport
40-60 år	Ansat	Aalborg	Jernbanebroen	Underholdning / Sport, Andet

Hvordan krydser du normalt broen?	Er du tilfreds med ruten, du tager?	Hvad synes du mangler på broerne?	Synes du, fjorden har brug for flere broer?
I bil, bus eller tog	Ja	Bedre gangstier	Ja
I bil, bus eller tog	Nej	Grønne elementer, Andet	Ja
I bil, bus eller tog	Ja	Andet	Ved ikke
I bil, bus eller tog	Ja	Grønne elementer, Møbler	Ja
I bil, bus eller tog	Det betyder ikke noget for mig	Grønne elementer, Andet	Ved ikke
I bil, bus eller tog	Nej	Andet	Ja
I bil, bus eller tog	Ja	Bedre gangstier	Nej
I bil, bus eller tog	Ja	Møbler	Ved ikke
På cykel, Til fods	Ja	Andet	Ja
På cykel, Til fods	Ja	Andet	Ja
På cykel	Ja	Bedre cykelstier	Ja
I bil, bus eller tog, På cykel	Ja	Andet	Ja
I bil, bus eller tog	Ja	Grønne elementer	Ja
Til fods	Nej	Bedre gangstier	Ved ikke
I bil, bus eller tog	Ja	Andet	Ja
I bil, bus eller tog	Det betyder ikke noget for mig	Bedre gangstier, Grønne elementer	Nej
I bil, bus eller tog, På cykel, Til fods	Nej	Bedre cykelstier	Nej
På cykel	Nej	Andet	Ja
I bil, bus eller tog	Ja	Bedre gangstier	Nej
I bil, bus eller tog, På cykel, Til fods	Ja	Bedre cykelstier	Ja
I bil, bus eller tog	Ja	Andet	Ja
I bil, bus eller tog, På cykel	Ja	Bedre cykelstier	Ja
I bil, bus eller tog	Ja	Andet	Nej
På cykel	Ja	Grønne elementer	Nej
I bil, bus eller tog, Til fods	Ja	Bedre gangstier, Bedre cykelstier	Nej
I bil, bus eller tog, På cykel	Ja	Bedre cykelstier	Ved ikke
Til fods	Nej	Bedre gangstier	Ja
I bil, bus eller tog, På cykel	Ja	Bedre gangstier	Ja
I bil, bus eller tog	Ja	Grønne elementer	Ved ikke
I bil, bus eller tog	Ja	Grønne elementer	Ja
I bil, bus eller tog	Nej	Andet	Ja
I bil, bus eller tog	Ja	Andet	Ved ikke
På cykel	Nej	Bedre cykelstier, Grønne elementer	Ja
I bil, bus eller tog, På cykel, Til fods	Ja	Grønne elementer	Ja
I bil, bus eller tog	Ja	Andet	Ja
På cykel	Nej	Bedre cykelstier	Nej
I bil, bus eller tog, På cykel	Ja	Andet	Ja
På cykel	Ja	Bedre gangstier, Bedre cykelstier	Ja
På cykel, Til fods	Ja	Andet	Ja
I bil, bus eller tog	Ja	Bedre cykelstier	Nej
I bil, bus eller tog	Ja	Andet	Nej
På cykel, Til fods	Ja	Andet	Ja
I bil, bus eller tog	Ja	Andet	Ja
På cykel	Ja	Bedre gangstier	Ved ikke
I bil, bus eller tog	Ja	Bedre gangstier, Grønne elementer, Møbler	Ja
I bil, bus eller tog	Ja	Bedre gangstier	Nej
På cykel	Det betyder ikke noget for mig	Bedre cykelstier	Ja
I bil, bus eller tog	Ja	Bedre gangstier, Møbler	Ja
I bil, bus eller tog	Ja	Bedre gangstier	Ved ikke
På cykel	Nej	Bedre gangstier, Bedre cykelstier, Grønne elementer, Møbler, Andet	Ja
I bil, bus eller tog	Det betyder ikke noget for mig	Bedre gangstier	Nej
I bil, bus eller tog	Ja	Andet	Ja
I bil, bus eller tog	Ja	Andet	Ja
I bil, bus eller tog	Ja	Bedre cykelstier	Ja
I bil, bus eller tog	Ja	Grønne elementer	Ja
I bil, bus eller tog	Ja	Bedre gangstier	Ja
I bil, bus eller tog	Ja	Andet	Ja
I bil, bus eller tog	Ja	Andet	Nej
I bil, bus eller tog	Ja	Andet	Nej
I bil, bus eller tog	Ja	Bedre gangstier, Grønne elementer	Nej
I bil, bus eller tog	Ja	Grønne elementer	Ja
Til fods	Det betyder ikke noget for mig	Andet	Ja
I bil, bus eller tog, På cykel, Til fods	Ja	Bedre cykelstier, Møbler	Ved ikke
I bil, bus eller tog	Nej	Bedre gangstier	Ja
I bil, bus eller tog, Til fods	Ja	Bedre gangstier	Nej
I bil, bus eller tog	Ja	Andet	Ja
I bil, bus eller tog	Ja	Bedre gangstier	Ja
I bil, bus eller tog	Ja	Bedre gangstier	Ja
I bil, bus eller tog	Ja	Møbler, Andet	Ja
På cykel	Ja	Bedre gangstier, Bedre cykelstier, Grønne elementer, Møbler, Andet	Ja
Til fods	Ja	Bedre gangstier, Bedre cykelstier	Ved ikke
På cykel	Nej	Bedre cykelstier, Grønne elementer, Andet	Ja
I bil, bus eller tog	Ja	Bedre gangstier, Grønne elementer, Andet	Ja
I bil, bus eller tog, På cykel	Det betyder ikke noget for mig	Bedre cykelstier, Grønne elementer, Andet	Ja
Til fods	Nej	Bedre gangstier, Grønne elementer, Møbler	Ved ikke
På cykel, Til fods	Ja	Bedre gangstier, Bedre cykelstier, Grønne elementer, Møbler, Andet	Ved ikke
På cykel	Nej	Bedre cykelstier	Ved ikke
På cykel, Til fods	Ja	Bedre gangstier, Bedre cykelstier, Grønne elementer, Andet	Ved ikke
I bil, bus eller tog	Ja	Grønne elementer	Ved ikke
I bil, bus eller tog	Det betyder ikke noget for mig	Andet	Ved ikke
På cykel, Til fods	Ja	Bedre gangstier, Bedre cykelstier, Møbler	Ja
På cykel, Til fods	Nej	Bedre gangstier, Bedre cykelstier, Grønne elementer, Møbler, Andet	Ved ikke
På cykel	Ja	Bedre cykelstier	Ja
Til fods	Nej	Bedre gangstier, Møbler	Ved ikke
På cykel, Til fods	Nej	Bedre gangstier, Bedre cykelstier, Grønne elementer, Andet	Ved ikke
Til fods	Ja	Bedre gangstier	Ved ikke