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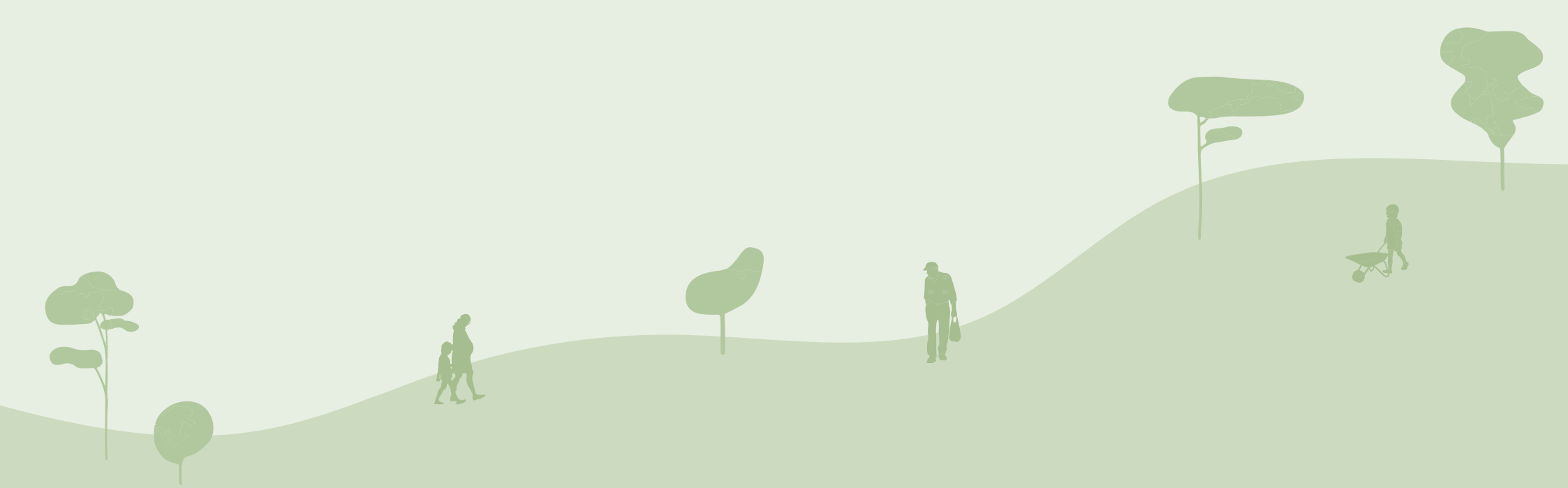

Urban Design that Invites Back Into the Open

Colophon

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On a more lighthearted note, I would like to thank coffee for the early mornings and the numerous urban benches, parks, and waterfronts that functioned as spontaneous workstations and, appropriately, as tangible evidence of the main point of this thesis.

Foreword

This thesis explores the relationship between digital lifestyles, resident´s well-being, and the design of urban neighborhoods. In an increasingly "always-on" culture, daily life is often characterized by prolonged indoor time, reduced physical movement, and constant cognitive pressure. These conditions contribute not only to mental overload but also to a growing disconnection from the urban environment itself.

The work argues that neighborhood-scale design can play a key role in counteracting these effects. By integrating stress-sensitive design principles, diverse green and blue spaces, and environments that encourage slow movement and everyday outdoor presence, urban space can actively support health, recovery, and overall well-being.

Through theoretical research and design-based exploration, this thesis proposes the concept of a healthy neighborhood on Refshaleøen as a spatial framework that reconnects people with their surroundings, restores balance to daily routines, and enables moments of calm, strength, and resilience within the city.

Keywords: digital lifestyle, health, urban disconnection, stress-sensitive design, healthy neighborhood

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Built With Help From...

Nikolaj

Interview Partner



„Refshaleøen is a „destination visit“.“

„There is a certain distance between Refshaleøen and the rest of the city - not only „streetwise.“

„If they would make a decision tomorrow, it would take around 12 years.“ (BIOFOS redevelopment)

Mads

Interview Partner



„The smell of the food, the sounds of people - that's nice. But as soon as you step away from the market itself, it gets very quiet and very empty very quickly. And that contrast is a bit unsettling. Where's the transition? Where's the bit in between that says „you can be here too“?“ (Mads, 2026)

Elena

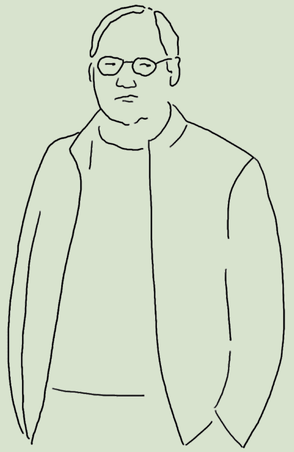
Interview Partner



„I cycle into the city most days for university, which I actually love, but coming home in the evening, especially in winter... it feels very isolated. Very dark. The walk from the bus stop to the containers - there's nothing. No lights, no people, nothing open. It doesn't feel safe, honestly.“ (Elena, 2026)

Ole

Interview Partner



„There is something about a place that has physical beauty and proximity to nature that makes the phone feel less urgent. When I'm walking here I genuinely don't think about it. The environment gives you enough to engage with that the device becomes irrelevant for a while.“ (Ole, 2026)

From Pixels To



Where the City Lets Us Breathe

Always on, our days retreat behind illuminated screens,
Bodies held in stillness while the mind runs endless scenes.
The city fades to background noise, untouched, unseen,
As movement, air, and daylight slip from what we've been.

But here, the neighborhood slows the pulse of every street,
Inviting breath, restoring rhythm to each step and beat.
Green rooms open wide, blue waters cool the mind,
Spaces shaped to ease the weight we didn't know we'd find.

Paths curve gently through the shade of varied, living ground,
From quiet lawns to vibrant edges where attention softens down.
Design grows careful, both subtle and sincere,
Turning urban form to something held, not hurried, not severe.

Open AI, 2026

Glossary

Active Frontages

Active frontages refer to the ground-floor edges of buildings that are designed to engage directly with the adjacent public realm through transparent facades, entrances, display windows, and publicly accessible uses. By generating visual connection and social interaction between interior and exterior spaces, active frontages contribute to the perceived safety, vitality, and pedestrian comfort of streets and public spaces (Gehl, 2010; Jacobs, 1961).

Blue Infrastructure

Blue infrastructure refers to the network of water-based elements within the urban environment - including rivers, canals, lakes, ponds, and coastal edges - that contribute to ecological health, climate resilience, and human well-being. Contact with water has been consistently associated with restorative psychological effects, reduced stress, and enhanced quality of life in urban contexts (Völker & Kistemann, 2011; White et al., 2010).

Brownfield

A brownfield is a previously developed site - typically of former industrial, commercial, or institutional use - that is abandoned, underutilised, or contaminated, and available for redevelopment. In urban planning, brownfield sites represent significant opportunities for sustainable densification and the regeneration of degraded urban fabric, though they frequently require remediation before residential or public use can proceed (De Sousa, 2008; Dixon, 2007).

Buffer Zone

A buffer zone is a transitional spatial layer - composed of vegetation, topography, water, or programmed land use - that mitigates the negative environmental effects of one zone upon another. In urban design, buffer zones are deployed to reduce noise, odor, and visual intrusion between incompatible land uses, while simultaneously providing ecological and recreational value (Marcus & Sachs, 2014; WHO, 2016).

Digitalization

Digitalization refers to the broad societal transformation driven by the proliferation of digital technologies, platforms, and networked communication systems in everyday life. Beyond its economic and organizational dimensions, digitalization has profound implications for human behavior, social interaction, and health - reshaping patterns of movement, and attention. (OECD, 2019; Twenge et al., 2018).

Health-Promoting Urban Design

Health-promoting urban design focuses on creating built environments that actively support physical, mental, and social health. This includes walkable neighborhoods, access to green spaces, clean air, and inclusive public spaces that encourage active lifestyles, social interaction, and overall well-being (Frumkin et al., 2017; WHO, 2016).

Mental Health

Mental health encompasses an individual's emotional, psychological, and cognitive well-being - including the capacity to manage stress, maintain meaningful relationships, and engage purposefully with everyday life. In urban contexts, mental health is strongly influenced by the quality of the built and natural environment, with green space access, spatial legibility, social infrastructure, and restorative environments. (WHO, 2016; Kaplan & Kaplan, 1989).

Nature

In the context of urban design, nature refers to the presence of living organisms, ecological systems, and natural processes within the built environment - encompassing vegetation, water, soil, wildlife, and the sensory qualities associated with non-built landscapes. Contact with nature has been extensively documented as a fundamental contributor to human health, stress recovery, and psychological restoration (Wilson, 1984; Hartig et al., 2014).

Nature-Based Strategies

Nature-based strategies integrate natural elements and ecological processes into urban design to address environmental, social, and health-related challenges. These strategies include green infrastructure and water-sensitive design, contributing to climate adaptation and improved quality of life (EEA, 2019; Kabisch et al., 2016).

Physical Health

Physical health refers to the functional condition of the human body - encompassing cardiovascular fitness, musculoskeletal integrity, metabolic function, and the absence of disease. In urban contexts, physical health is significantly shaped by the built environment through its influence on patterns of movement, active mobility, access to recreational areas, and exposure to environmental stressors (Sallis et al., 2006; WHO, 2016).

Place Attachment

Place attachment describes the emotional and cognitive bonds that individuals develop with specific places through lived experience, memory, and social interaction. It plays a fundamental role in shaping identity, well-being, and patterns of spatial behavior - with strong place attachment associated with enhanced mental health, community cohesion, and a heightened sense of belonging within the urban environment (Altman & Low, 1992; Lewicka, 2011).

Preservation of Industrial Heritage

The preservation of industrial heritage acknowledges the cultural, historical, and architectural value of former industrial structures. By adaptively reusing these sites, urban development can maintain local identity, reduce material consumption, and create meaningful connections between past and present urban narratives (Plevoets & Van Cleempoel, 2011; Rodwell, 2007).

Public Space

Public space refers to areas of the urban environment that are openly accessible to all members of society, regardless of age, ability, or socio-economic status. Parks, streets, squares, and waterfront promenades constitute the primary typologies of public space, which serves as the spatial framework for social interaction, participation, and everyday restorative experience (Carmona et al., 2010; Gehl, 2010).

Restoration

Restoration, in the context of environmental psychology and urban design, refers to the psychological and physiological process of recovery from stress and directed attention fatigue through exposure to restorative environments - most commonly natural or green settings (Kaplan & Kaplan, 1989; Ulrich et al., 1991).

Sedentary Lifestyle

A sedentary lifestyle is characterized by prolonged periods of physical inactivity and is recognized as a significant independent risk factor for a wide range of physical and mental health conditions, including cardiovascular disease, obesity, depression, and anxiety. The built environment plays a central role in either enabling or discouraging active lifestyles through its design of public spaces and mobility infrastructure (Biswas et al., 2015; Tremblay et al., 2011).

Sense of Belonging

Sense of belonging refers to the subjective experience of feeling accepted, valued, and connected within a social group or spatial community. In urban neighborhoods, it is fostered through the quality of shared public spaces, the presence of inclusive social infrastructure, and the legibility and distinctiveness of the physical environment - and is considered a fundamental dimension of social health and psychological well-being (Lewicka, 2011; Putnam, 2000).

Social Health

Social health refers to the capacity of individuals to form and maintain meaningful relationships, participate in community life, and experience a sense of belonging within their social and spatial environment. In urban contexts, social health is shaped by the design of public spaces, the distribution of community facilities, and the degree to which the urban fabric supports spontaneous encounter (Oldenburg, 1989; Putnam, 2000).

Stress

Stress is a physiological and psychological response to perceived demands or threats that exceed an individual's capacity to cope. In urban environments, stress is generated by a range of spatial conditions including noise, crowding, visual complexity, poor wayfinding, and the absence of restorative natural environments (Ulrich et al., 1991; WHO, 2016).

Stress-Sensitive Urban Design

Stress-sensitive urban design refers to design approaches that aim to reduce psychological and physiological stress in urban environments (Koohsari et al., 2025). It focuses on mitigating environmental stressors such as noise, overcrowding, heat, and visual disorder, while promoting spatial qualities that support comfort, safety, and mental well-being (Ulrich et al., 1991; WHO, 2016).

Third Places

Third places are informal public gathering spaces besides the home (first place) and the workplace (second place). They provide the spatial conditions for spontaneous social interaction, community building, and a sense of belonging. Cafés, parks, libraries, and community centers represent the primary typologies of third places, which are considered essential infrastructure for the social health and resilience of urban neighborhoods (Oldenburg, 1989; Jeffres et al., 2009).

Well-being

Well-being is a multidimensional concept encompassing the physical, mental, and social dimensions of human health and life satisfaction. This includes not only the objective conditions of health, safety, and access to resources but also the subjective experience of happiness, purpose, and fulfillment. In urban design, well-being is increasingly recognized as a primary goal of spatial planning (WHO, 2016; Frumkin et al., 2017).

Report Structure

This thesis is organized into three sequential parts, each representing a distinct phase of the research process and building incrementally upon the preceding one to form a coherent and logically progressive body of work.

Part One establishes the foundation of the research through an introductory phase of problem definition. Beginning with a broad pre-research inquiry into the relationship between digitalization, urban lifestyles, and human health, it narrows progressively toward a precisely formulated problem statement that identifies the specific spatial challenges and health vulnerabilities addressed by the thesis. This part concludes with the formulation of the central research and design questions that guide all subsequent investigation.

Part Two develops the methodological and theoretical apparatus through which the research questions are addressed. It introduces the research methodology and the layered theoretical framework - structured across three thematic lenses of health-promoting urbanism, stress-sensitive urbanism, and the reconnection of people to urban space - from which a catalogue of spatial criteria is derived. These criteria are subsequently synthesised into a conceptual framework that translates theoretical insight into operative analytical and design dimensions, forming the intellectual bridge between research and application.

Part Three constitutes the results phase of the thesis, encompassing both the analytical and design components of the work. The site analysis - conducted across multiple scales and four thematic aspect groups - identifies the spatial conditions, urgencies, and opportunities of Refshaleøen, culminating in a SWOT analysis for each group. These findings directly inform the design strategies and proposals that follow, which are developed at varying scales and ultimately synthesised into a potential masterplan for the site.
The thesis concludes with a reflection on the broader impact of the proposals - examining their significance beyond the boundaries of the site and their contribution to the wider discourse on health-promoting urban design.

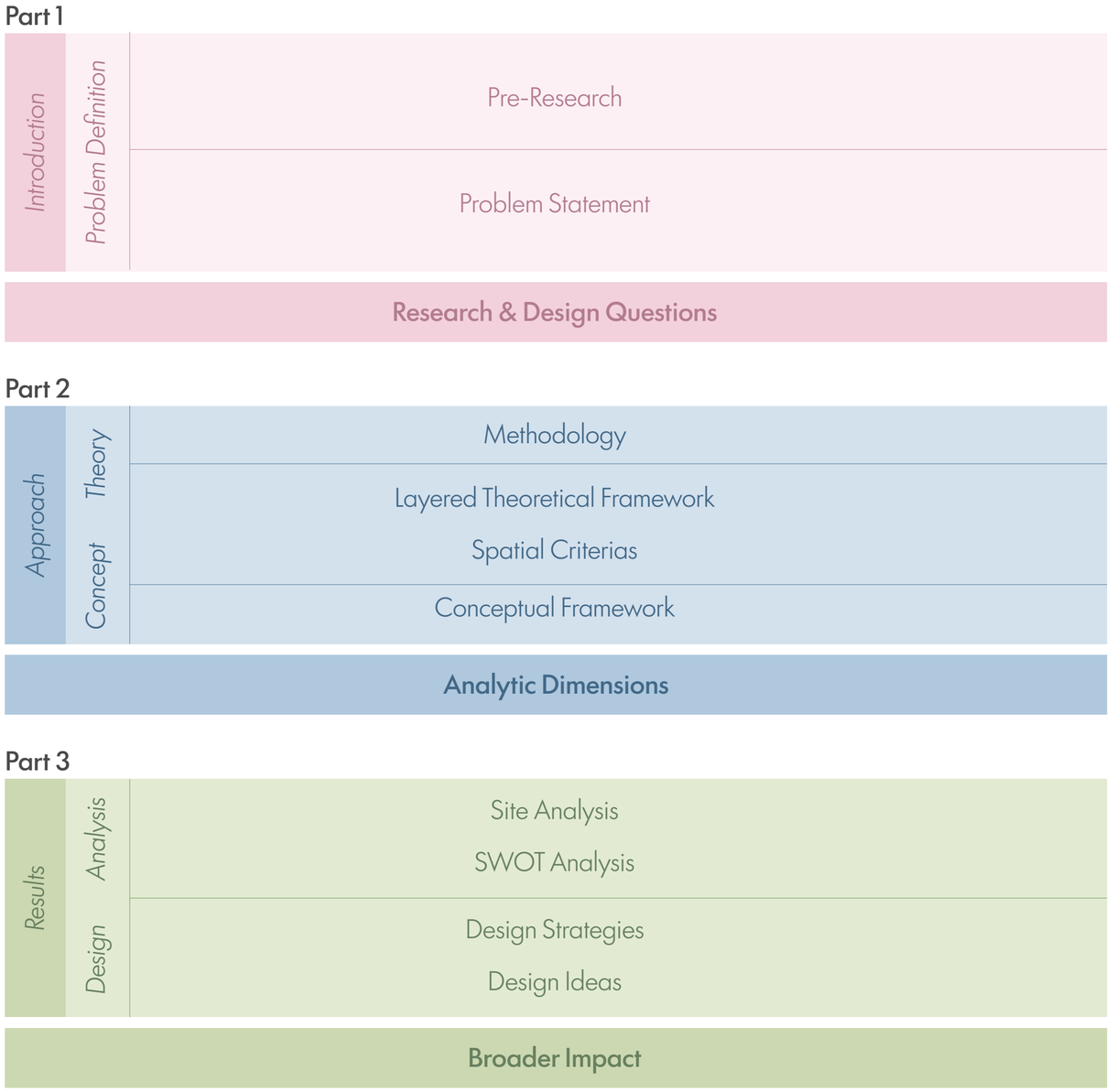


Figure 1. Overview of the report structure, illustrating the three main components: Introduction, Approach, and Results.

Introduction

Part 1

This chapter establishes the foundation of the thesis by outlining the central problem and its relevance within contemporary urban life. It begins with a description of current conditions shaped by digitalization, reduced everyday movement, and increasing mental pressure, framing these developments as spatial and societal challenges.

It then situates the problem at the neighborhood scale, critically examining existing urban design approaches and their limitations. Building on this analysis, the problem is further problematised and condensed into a clear problem statement. This forms the basis for the derivation of the research questions and key concepts that structure the thesis as a whole.





Children in England growing up ‘sedentary, scrolling and alone’, say experts

Grant (2025)

Excessive screen time among youth may pose heart health risks

The time children and young adults spend on phones, gaming consoles and other devices could put their heart health at risk, finds a new study published in the Journal of the American Heart Association

(Excessive Screen Time Among Youth May Pose Heart Health Risks, n.d.)

We live in an age defined by constant connectivity. Screens have become the primary interface through which we work, communicate, consume information, and navigate daily life. The digital revolution has brought with it undeniable conveniences - but alongside them, a quietly escalating public health concern that is only beginning to receive the attention it demands. Research published over the past decade points to a growing body of evidence linking excessive screen time, sedentary digital behaviour, and the psychological pressures of hyperconnected living to a wide range of physical and mental health conditions. Disrupted sleep patterns, deteriorating posture, diminishing attention spans, rising rates of anxiety and depression - particularly among younger generations - are increasingly understood not as isolated personal struggles, but as systemic consequences of how our built environments and daily routines have been reshaped by digital technology. What the headlines capture in fragments - a generation glued to devices, a workforce suffering from burnout, children losing the ability to concentrate - this project takes as its starting point. The question it poses is architectural: if the digital era is producing measurable harm to human health and wellbeing, what responsibility does the design of space carry in response? And more specifically - can the way we build, organise, and densify the city become part of the answer?

A silent crisis in adolescent mental health: 42 million years of healthy life projected lost by 2030

One of the report’s most heartbreaking projections is that 42 million years of healthy life will be lost to mental disorders or suicide in 2030, which is two million more than in 2015. Mental health is “the single largest cause of disease burden among adolescents across all countries,” according to the report.

Santos and Santos (2025)

So gefährlich ist zu viel Bildschirmzeit für Kinderherzen



Laut einer Erhebung kommen 15-Jährige in Deutschland auf knapp sieben Stunden Bildschirmzeit pro Tag

(“So Gefährlich Ist Zu Viel Bildschirmzeit Für Kinderherzen,” n.d.)

This generation is facing a host of completely unique health threats

Four ways the world has profoundly changed for today's young people, according to a comprehensive new global report.

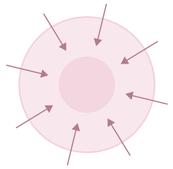


Ferreira (2025)

Problem Field I Broad

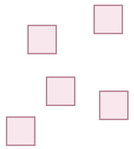
Digital Lifestyles, Sedentary Behavior, and Spatial Stress

Contemporary digital lifestyles increasingly shape how urban space is used and experienced. Prolonged screen-based work, remote activities, and constant connectivity reduce everyday movement and shift daily routines indoors. From an urban design perspective, this leads to underused public spaces and weakened relationships between built form and bodily experience. Spatial environments that do not actively invite movement, pause, or sensory engagement can intensify mental stress (Katz et al., 2022). Landscape elements such as vegetation, terrain variation, and climatic buffering remain underutilized as tools to counterbalance digital overload and support everyday well-being (Kaplan & Kaplan, 1989).



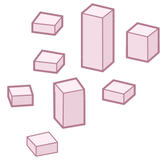
Disconnection from Urban and Public Space

As daily activities become less spatially embedded, many residents experience a growing detachment from their immediate urban surroundings. Streets, courtyards, and open spaces are often designed as transitional or functional zones rather than experiential environments. In urban and landscape design, this disconnection is reinforced by rigid zoning, mono-functional spaces, and limited opportunities for informal use. The absence of soft edges, diverse landscapes, and human-scaled transitions reduces the potential of public space to function as a place of restoration, social encounter, and embodied presence within everyday life (Gehl, 2010).



Neighborhood Design & Mental Health

Mental well-being is rarely treated as a primary design parameter in neighborhood-scale planning. Urban design often prioritizes density, accessibility, and economic efficiency, while landscape elements are reduced to decorative or residual green spaces. This overlooks the potential of landscape architecture as an infrastructural system capable of regulating stress, microclimate, sensory stimulation, and movement patterns (Ulrich et al., 1991). Diverse green and blue spaces - ranging from quiet, enclosed areas to active, open landscapes - can provide differentiated restorative environments that respond to varying stress levels and daily rhythms (WHO, 2016).



Problem Field I Focus

Performance-Oriented Urban Culture in Copenhagen

Copenhagen is internationally recognized for its livability, sustainability, and strong public realm. However, the city is also characterized by high productivity, flexible work structures, and a digitally advanced society. These conditions create subtle but persistent mental pressure that is not always visible in urban form. While public spaces are abundant, they are often designed for activity, mobility, and social performance. Urban and landscape design therefore face the challenge of integrating spaces that allow withdrawal, calm, and recovery without contradicting the city's active and efficient identity (Gehl, 2010).



Landscape Potential and Inequality of Access in Copenhagen

Copenhagen's access to water, green corridors, and open landscapes offers significant potential for health-supportive urban environments. Yet this potential is unevenly distributed across neighborhoods. Some areas benefit from proximity to parks and waterfronts, while others lack diverse, everyday-accessible landscape spaces. Addressing mental well-being through neighborhood-scale urban and landscape design is particularly relevant in Copenhagen, as it allows existing environmental assets to be reinterpreted as stress-sensitive infrastructure and integrated more equitably into the daily lives of residents (WHO, 2016).



Problem Statement

The contemporary world is undergoing rapid and continuous transformation, driven largely by accelerating **digitalization** and the unprecedented availability of digital media (OECD, 2019). With near-constant access to digital platforms, societies have become increasingly shaped by digitally mediated forms of communication and everyday interaction (OECD, 2019). **Copenhagen** represents one of the most digitally oriented urban contexts in Europe, standing at the forefront of digital public services, data-supported governance, and intensive everyday use of digital media (OECD, 2019).

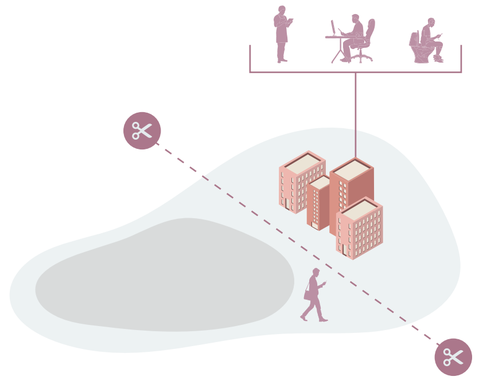
Despite the wide-ranging benefits associated with digital innovation - such as increased efficiency, enhanced connectivity, and improved access to information (OECD, 2019) - an emerging **urban health crisis** has become increasingly visible (WHO, 2016). This crisis can be understood in relation to digitally mediated lifestyles that have been associated with raised sedentary behavior and mental health challenges (OECD, 2019; Odgers & Jensen, 2020). These issues are particularly acute among children, adolescents and young professionals, who represent three of the most vulnerable demographic groups in relation to the pressures of contemporary digital culture (Odgers & Jensen, 2020). Increasing numbers of residents report sleep deprivation, sedentary lifestyles, social isolation, and mental health challenges such as reduced self-esteem, depression, and anxiety (WHO, 2016; Odgers & Jensen, 2020).

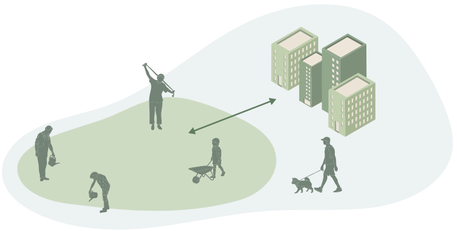
Concurrently, a growing **disconnection from outdoor and public spaces** has produced tangible spatial consequences within the urban fabric (Gehl, 2010). Underused public spaces, weakened neighborhood ties, and a declining frequency of face-to-face encounters have collectively undermined the social and spatial vitality of the city (Gehl, 2010).

These dynamics point to a broader structural problem in which digital behaviors intersect with urban space, revealing significant gaps in the capacity of contemporary cities to support **stress-sensitive** and **health-promoting environments** for residents in the digital era (WHO, 2016; Marcus & Sachs, 2014).

Copenhagen forms the principal geographical focus of this challenge. Within the city, the area of **Refshaleøen** - an industrial brownfield waterfront site - represents both a symptom of and an opportunity within this urban condition. Characterized by fragmented public spaces, temporary uses, and significant redevelopment potential, Refshaleøen holds promise for sustainable densification and transformation into a neighborhood capable of addressing health-related vulnerabilities intensified by the digital era (Gehl, 2010). Its strategic location, industrial heritage, and adaptable spatial structure render it an important testing ground for such urban development approaches.

Investigating how such design strategies can mitigate the health impacts of digitalization is therefore crucial for addressing the increasingly untenable living conditions facing residents in Copenhagen today (WHO, 2016; Odgers & Jensen, 2020).





Relevance I Scientific, Societal & Ethical

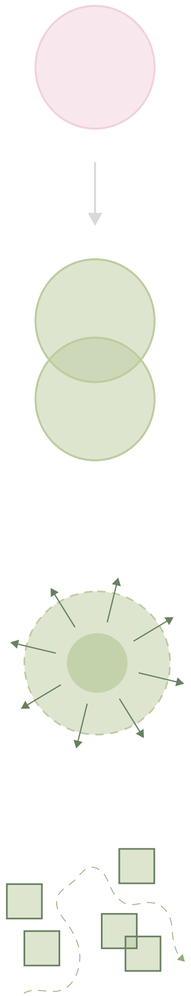
Scientific Relevance

This thesis contributes to advancing the scientific understanding of the complex interactions between digitally mediated lifestyles, human behavior, and the spatial qualities of urban neighborhoods.
While a substantial body of research exists on the health consequences of digital technology use on one hand, and on the restorative potential of urban design on the other, few studies have systematically examined the intersection of these two fields at the neighborhood scale - precisely the scale at which everyday routines, habitual movement patterns, and social behaviors are most durably shaped (Gehl, 2010; Hartig et al., 2014). This thesis addresses that gap directly.
By investigating the experiential and spatial consequences of prolonged sedentary behavior, constant connectivity, and the progressive underuse of public space, the research integrates perspectives from urban design, landscape architecture, and environmental psychology into a coherent, cross-disciplinary framework (Ulrich, 1984; Kaplan & Kaplan, 1989). It advances existing theoretical models of restorative environments and urban health by applying and operationalizing them within the specific context of digitalized urban life - a context that, despite its growing prevalence, remains underrepresented in spatial research (Odgers & Jensen, 2020; WHO, 2016). The outcome is a structured theoretical and conceptual framework for stress-sensitive, health-promoting neighborhood design, demonstrating how spatial interventions - ranging from accessible green and blue spaces and slow streets to diverse landscape typologies and socially activating public realms - can mitigate the health impacts associated with contemporary urban lifestyles (Marcus & Sachs, 2014; Gehl, 2010).
In doing so, the thesis not only expands the scientific discourse on urban well-being but also provides a replicable, evidence-based methodology for translating theoretical insight into spatial design decisions - offering a contribution of relevance to researchers and practitioners working at the intersection of public health, environmental psychology, and urban design (Frumkin et al., 2017).

Societal & Ethical Relevance

The societal relevance of this research is grounded in the urgent and increasingly visible need to address the health and well-being challenges arising from digitalized urban lifestyles. Rising levels of stress, anxiety, social isolation, and physical inactivity are no longer peripheral concerns - they represent a structural public health challenge affecting broad segments of urban populations across age groups, professions, and socio-economic backgrounds (WHO, 2016; Twenge et al., 2018). As cities like Copenhagen continue to lead in digital integration, the spatial consequences of these shifts demand a proportional response from urban design practice and policy (OECD, 2019). Beyond individual health outcomes, the erosion of public life carries significant consequences for the social fabric of neighborhoods. Declining face-to-face interaction, weakened community ties, and the progressive abandonment of shared urban space collectively undermine the conditions necessary for social cohesion, collective identity, and civic belonging (Gehl, 2010; Putnam, 2000). These are not merely aesthetic concerns - they represent a fundamental degradation of the quality of urban life that urban design has both the capacity and the responsibility to address.

From an ethical standpoint, this thesis proceeds from the conviction that access to restorative, health-supportive urban environments is not a privilege but a right. The unequal distribution of green space, walkable streets, and high-quality public realm across urban neighborhoods reflects broader structures of spatial injustice that disproportionately affect those with the fewest alternatives (Wolch et al., 2014; Jennings et al., 2016). By proposing neighborhood-scale design strategies that embed health-promoting qualities into the everyday spatial experience of all residents, this work foregrounds the moral imperative to design cities that are not only functional and efficient, but actively equitable and restorative (Marcus & Sachs, 2014). In this sense, the thesis frames urban design as a proactive instrument of public health and social equity - one capable of responding meaningfully to the pressures of contemporary digital culture while laying the spatial groundwork for more resilient, inclusive, and humane urban environments (Frumkin et al., 2017; WHO, 2016).



Motivation & Objective

Motivation

My motivation for this research stems from both academic interest and personal experience. Having spent extended periods in cities that actively encourage outdoor activity and engagement with public space, I have personally experienced the restorative potential of well-designed urban environments. Walking through streets that invite exploration, sitting in thoughtfully integrated nature areas, and encountering water and greenery within daily routines not only enhanced my physical movement but also had a profound positive effect on my mental health, focus, and overall sense of well-being. These experiences have shaped my understanding of urban spaces as more than functional infrastructure - they are active contributors to the quality of life and everyday resilience of their inhabitants.
It is therefore my motivation to contribute to the creation of exactly such environments - spaces that invite both residents and visitors to pause, to linger, and to engage meaningfully with their surroundings. By designing urban spaces that foster moments of rest, connection, and sensory experience, I aim to translate these personal insights into built environments that actively support the well-being and everyday quality of life of the people who inhabit them.

Objective

In response to the structural challenges outlined above, this thesis aims to investigate how neighborhood-scale urban design can systematically address the physical, mental, and social health impacts associated with digitally mediated urban lifestyles. Rather than treating these challenges as inevitable consequences of technological progress, the research proceeds from the position that deliberate spatial intervention holds significant potential to counteract the conditions that digitalization has intensified - sedentary behavior, social isolation, stress, and disconnection from public life.
Grounded in theories of environmental psychology, human behavior, and evidence-based urban design, the research identifies the spatial principles and design strategies through which urban environments can actively promote restoration, movement, and social resilience among residents. These insights are systematically structured into a spatial criteria catalogue and conceptual framework, forming the operative basis for the design work that follows.
The findings are ultimately translated into a tangible design proposal: a potential masterplan for Refshaleøen. The masterplan examines how stress-sensitive, health-promoting design principles can be embedded into the structure of a new neighborhood from its inception, with the well-being of future residents positioned as the primary driver of spatial decision-making. In doing so, the proposal aims to demonstrate a transferable design approach with broader relevance for the transformation of post-industrial urban districts in the digital era.

Scope

Refshaleøen

The scope of this thesis is defined both conceptually and spatially.
Conceptually, the research focuses on the intersection of urban design and resident well-being, narrowing its inquiry to the specific health challenges associated with digitally mediated lifestyles - namely increased stress, reduced physical activity, and social disconnection. While the broader discourse on urban health encompasses a wide range of factors, this thesis deliberately concentrates on the spatial dimension of these challenges, examining how the design of public space, movement infrastructure, and green and blue environments can serve as active instruments of health promotion at the neighborhood scale.



Figure 2. Location of the project site within Copenhagen. N

Spatially, the thesis focuses on Refshaleøen in its entirety - a post-industrial waterfront site of approximately 400 hectares located in the eastern harbor of Copenhagen. Currently subject to ongoing planning processes and gradual transformation, the site presents a clearly bounded and spatially coherent area of investigation. Its scale is considered appropriate for the development of a neighborhood-level masterplan, allowing for the exploration of overarching spatial strategies without requiring the resolution of detailed architectural or engineering specifications. The final design proposal therefore takes the form of a conceptual masterplan, operating at a scale that captures the organization of public space, movement networks, landscape structure, and programmatic distribution across the site.
Given the eight-month timeframe of the thesis, the scope has been carefully calibrated to ensure feasibility. The research and design process is structured sequentially - moving from theoretical grounding and site analysis to first design strategies and leading to the development of a framework plan and a final masterplan - allowing each phase to build incrementally on the last. By maintaining a consistent focus on strategic, neighborhood-scale design decisions rather than detailed technical resolution, the thesis remains both intellectually rigorous and realistically achievable within the given time constraints.

Urban life today is increasingly shaped by digital technologies, leading to prolonged indoor routines, constant connectivity, and reduced physical movement. People spend more time alone in front of screens, while streets, parks, and public spaces are used less and less. This growing disconnection and isolation limits opportunities for movement, social interaction, and restorative experiences, reinforcing everyday stress and separating mind and body from the urban environment that could support well-being (Katz et al., 2022). As a result, the city loses its potential as a place of recovery and everyday engagement, while individuals navigate digital overload largely on their own.

Research & Design Questions

All these insights naturally give rise to the research and design questions of this thesis, which seek to understand how neighborhood-scale environments can actively support well-being, movement, and social engagement, and how design strategies can translate these findings into health-supportive urban solutions.

Main Research Question

How can stress-sensitive, health-promoting urban design interventions be developed and spatially implemented to mitigate the physical, mental, and social health impacts of digitalization on residents in Copenhagen, with Refshaleøen serving as a strategic site for testing such interventions?

Sub-Research Question 1

Spatial Diagnosis:

How do current urban spatial conditions on Refshaleøen – particularly the configuration, accessibility, and experiential quality of public spaces – contribute to or fail to alleviate the identified health issues?

Sub-Research Question 2

Learning From Practice:

Which urban design principles have proven effective in supporting resident´s well-being in comparable urban contexts at specific case study areas?

Sub-Research Question 3

Site-Specific Application:

In what ways can Refshaleøen be redeveloped and serve as a testing ground for integrating the defined strategies into a holistic spatial framework that demonstrates their potential impact at neighborhood scale?

The conceptual diagram presented underneath synthesizes the central argument of this chapter and visualizes the overarching logic that underpins the thesis.
It illustrates the trajectory from brownfield redevelopment - encompassing site assessment, remediation, and spatial transformation - toward the realization of a healthy neighborhood, structured around three interdependent design objectives: reducing stress, activating residents, and fostering social connection.
At the core of the diagram lies the concept of the healthy neighborhood, understood as the convergence of mental health aspects, physical health aspects, and social dimensions of urban life. These three dimensions are not treated as isolated outcomes but as mutually reinforcing conditions that emerge from the deliberate integration of health-promoting design principles into the spatial fabric of a redeveloping urban district.
The spiral form of the diagram deliberately evokes a processual logic - one in which brownfield transformation does not merely produce new built fabric, but actively generates the conditions for resident well-being from the ground up.
Applied to the context of Refshaleøen, this framework positions the site's ongoing transformation not simply as a planning challenge, but as a structural opportunity to embed health-sensitive design thinking at the earliest stages of neighborhood development - precisely where spatial decisions carry the greatest long-term consequence for the lives of future residents.
This diagram thus serves as the conceptual bridge between the problem identified in this chapter and the methodological and theoretical apparatus developed in the chapter that follows. Having established the societal, scientific, and spatial dimensions of the research problem, the thesis now turns to the question of how - through which analytical methods, theoretical frameworks, and design principles - a response to this problem can be systematically developed and spatially implemented.

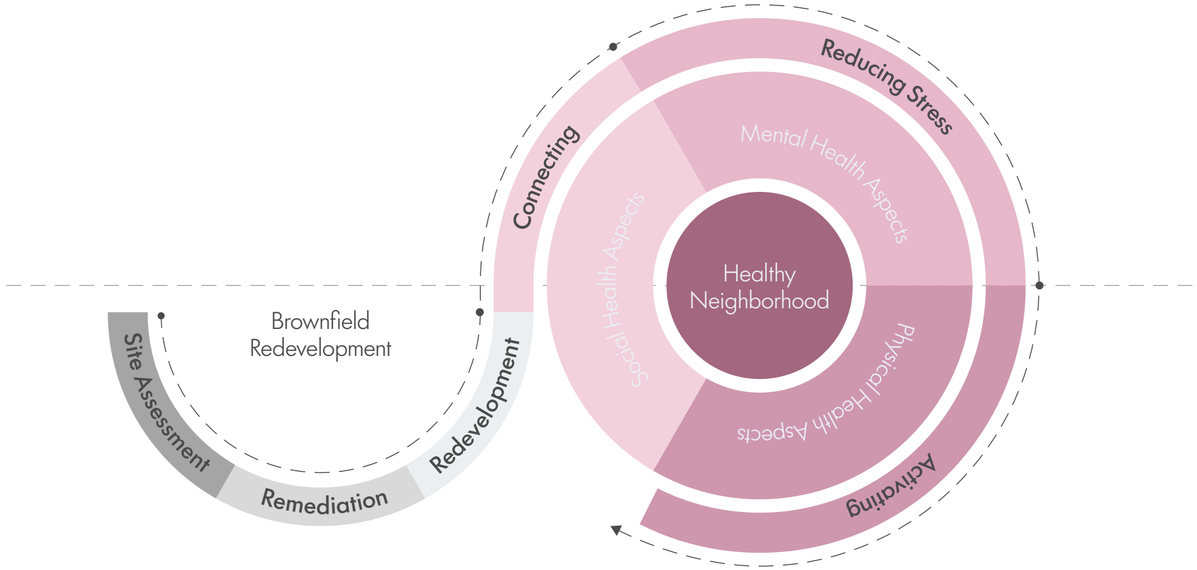


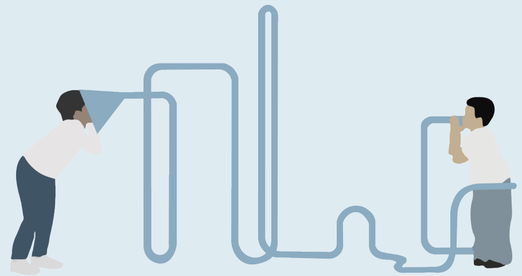
Figure 3. Conceptual diagram illustrating the main phases of the design process.

Approach

Part 2

This chapter establishes the methodological foundation of the thesis and delineates the framework through which the central research questions are systematically addressed. It presents an integrated approach combining analytical, theoretical, and design-based inquiry, translating abstract questions into spatial reasoning across multiple scales.

Following the introduction of the applied research methods, the chapter develops the theoretical basis of the research, drawing on established frameworks from human behavior, environmental psychology, public health, and urban design. These theories are distilled into a structured catalogue of spatial criterias, which - together with the resulting conceptual framework - lays the groundwork for the site analysis and design development presented in the subsequent chapter.

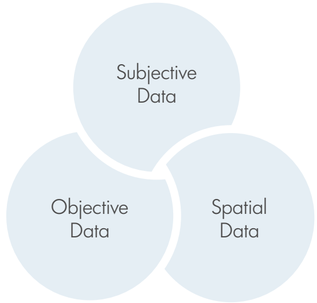




Methodological Approach I Framework

The methodological approach of this thesis is grounded in a combination of qualitative, spatial, and design-based research methods, selected for their collective capacity to capture the multi-dimensional relationship between urban space, human experience, and health outcomes.
Given the experiential and perceptual nature of the research questions, a purely quantitative or desk-based methodology would be insufficient. Instead, the chosen methods prioritize direct engagement with the site, the lived experiences of its users, and the spatial patterns that structure everyday urban life. Together, they form a methodologically coherent framework that moves from empirical observation through spatial analysis to iterative design exploration.

The methodological framework illustrates how the individual research questions are addressed through specific methods.
By structuring the research process within a clear methodological framework, the thesis ensures transparency, coherence, and traceability.





Sub-Research Question 1

How do current urban spatial conditions on Refshaleøen – particularly the configuration, accessibility, and experiential quality of public spaces – contribute to or fail to alleviate the identified health issues?

Sub-Research Question 2

Which urban design principles have proven effective in supporting resident´s and visitor´s well-being in comparable urban contexts at specific case study areas?

Sub-Research Question 3

In what ways can Refshaleøen be redeveloped and serve as a testing ground for integrating these interventions into a holistic spatial framework that demonstrates their potential impact at neighborhood scale?

Figure 4. Methodological framework linking the research question to the applied methods.

Method Cards

Sensory Observations

Description
Systematic recording of behaviors and interactions within real-world setting

Important Aspects
- Behavior
- Context
- Presence

Strengths & Weaknesses
+ Direct empirical evidence
+ Context-sensitive
- Observer influence

Process Timeline
0 A1 A2 A3 A4

Walking Interviews & Photo Diaries

Description
Mobile interviews conducted in situ to capture spatial perceptions and stressors

Important Aspects
- Movement
- Experience
- Place

Strengths & Weaknesses
+ Spatially grounded insights
+ Enhance participant engagement
- Limited controllability

Process Timeline
0 A1 A2 A3 A4

+

Description
Participant-generated visual documentation of everyday spatial experiences

Important Aspects
- Visuality
- Reflection
- Subjectivity

Strengths & Weaknesses
+ Rich experiential data
+ Participant-led perspectives
- Interpretation complexity

Process Timeline
0 A1 A2 A3 A4

On-Site Mapping

Description
Systematic mapping of environments, flows, and interactions

Important Aspects
- Interpretation
- Insights
- Observation

Strengths & Weaknesses
+ Supports visual and intuitive understanding
- Time- and resource-intensive

Process Timeline
0 A1 A2 A3 A4

GIS Data Analysis

Description
Spatial analysis of georeferenced data to identify patterns and relationships

Important Aspects
- Spatiality
- Accuracy
- Scale

Strengths & Weaknesses
+ High analytical precision
+ Visual representation
- Data availability constraints

Process Timeline
0 A1 A2 A3 A4

Iterative Design Testing

Description
Development of alternative future scenarios to assess potential outcomes

Important Aspects
- Uncertainty
- Futures
- Strategy

Strengths & Weaknesses
+ Supports long-term thinking
+ Integrates complexity
- Speculative nature

Process Timeline
0 A1 A2 A3 A4

Taken together, these five methods form an integrated and mutually reinforcing research framework.
Empirical observation and participant-generated data inform the spatial analysis; spatial analysis grounds and calibrates the design testing; and the iterative design process continuously feeds back into the refinement of both analytical categories and spatial criteria. This recursive relationship between observation, analysis, and design is fundamental to the epistemological approach of the thesis, ensuring that the final masterplan proposal emerges not from abstract principles alone, but from a rigorous and evidence-based engagement with the site, its users, and its spatial conditions.

Figure 5. Method cards outlining description, value, and limitations of individual methods.

Methodological Background

Sensory Observations



Sensory Observations constitute the foundational empirical layer of the research. By systematically recording human behaviors, social interactions, and spatial presences within real-world settings, this method generates direct, context-sensitive evidence of how people inhabit and respond to urban space. In the context of this thesis, sensory observations are particularly valuable for identifying patterns of spatial use and avoidance, moments of social activation or isolation, and the ambient conditions - noise, light, greenery, enclosure - that shape the experiential quality of public space at Refshaleøen.
The method's strength lies in its immediacy and contextual grounding, though the potential influence of the observer on observed behavior is acknowledged as an inherent limitation.

Walking Interviews & Photo Diaries

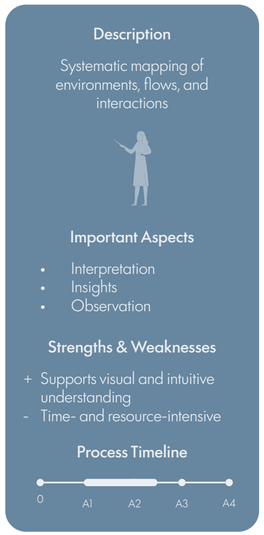


+



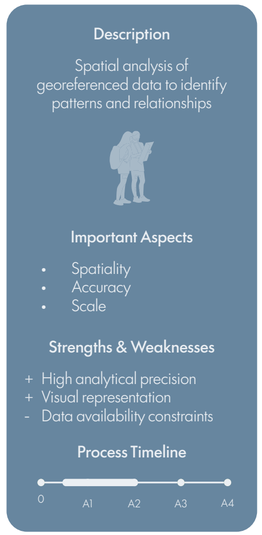
Walking Interviews and Photo Diaries are employed in combination as a complementary and participant-centered method. Walking interviews - conducted in situ as mobile conversations between researcher and participant - capture spatially grounded perceptions, emotional responses, and stress-related experiences as they arise in direct relation to specific places and movement sequences. This approach moves beyond the abstraction of conventional interview settings, situating subjective accounts within the physical environments they describe. Photo diaries extend this logic further, inviting participants to document their everyday spatial experiences visually and independently, thereby generating rich, participant-led data that foregrounds subjectivity, reflection, and the personal significance of urban space.
Together, these methods are especially pertinent to a thesis concerned with the experiential dimensions of urban well-being, as they access precisely those qualitative, affective, and perceptual dimensions of space that resist quantification.

On-Site Mapping



On-Site Mapping provides a systematic spatial record of the environments, flows, and interactions observed across the site. As a method, it translates empirical observations and sensory data into spatial diagrams and interpretive drawings, supporting both visual and intuitive understanding of the site's structural conditions. On-site mapping is central to identifying how spatial organization - the distribution of open space, the configuration of movement routes, the positioning of green and blue elements - either supports or undermines the health-promoting qualities the thesis seeks to promote.
While the method is acknowledged as time- and resource-intensive, its capacity to render complex spatial relationships legible makes it indispensable to a design-oriented research process.

GIS Data Analysis



GIS Data Analysis complements qualitative and observational methods with a layer of analytical precision. Through the spatial analysis of georeferenced datasets, GIS enables the identification of patterns and relationships across the site at multiple scales - including the distribution of green and blue infrastructure, pedestrian accessibility, land use configurations, and connectivity structures.
This method is particularly valuable for substantiating and spatially locating the conditions identified through qualitative inquiry, ensuring that design decisions are anchored in verifiable spatial evidence. The primary limitation of this method lies in the availability and resolution of existing datasets, which may constrain the granularity of certain analyses.

Iterative Design Testing



Iterative Design Testing constitutes the design-based dimension of the methodological framework, and represents the point at which research insight is translated into spatial proposition. By developing and critically evaluating alternative spatial scenarios, this method supports a reflective design process in which assumptions are tested, consequences are anticipated, and strategies are progressively refined. Its strength lies in its capacity to integrate complexity and support long-term spatial thinking - qualities that are essential when working at the scale of a neighborhood masterplan, where decisions carry significant and enduring consequences for the well-being of future residents. The speculative nature of scenario-based design is acknowledged, but is understood as a productive and necessary dimension of forward-looking urban design research.

Time Schedule I A1, A2, A3 & A4

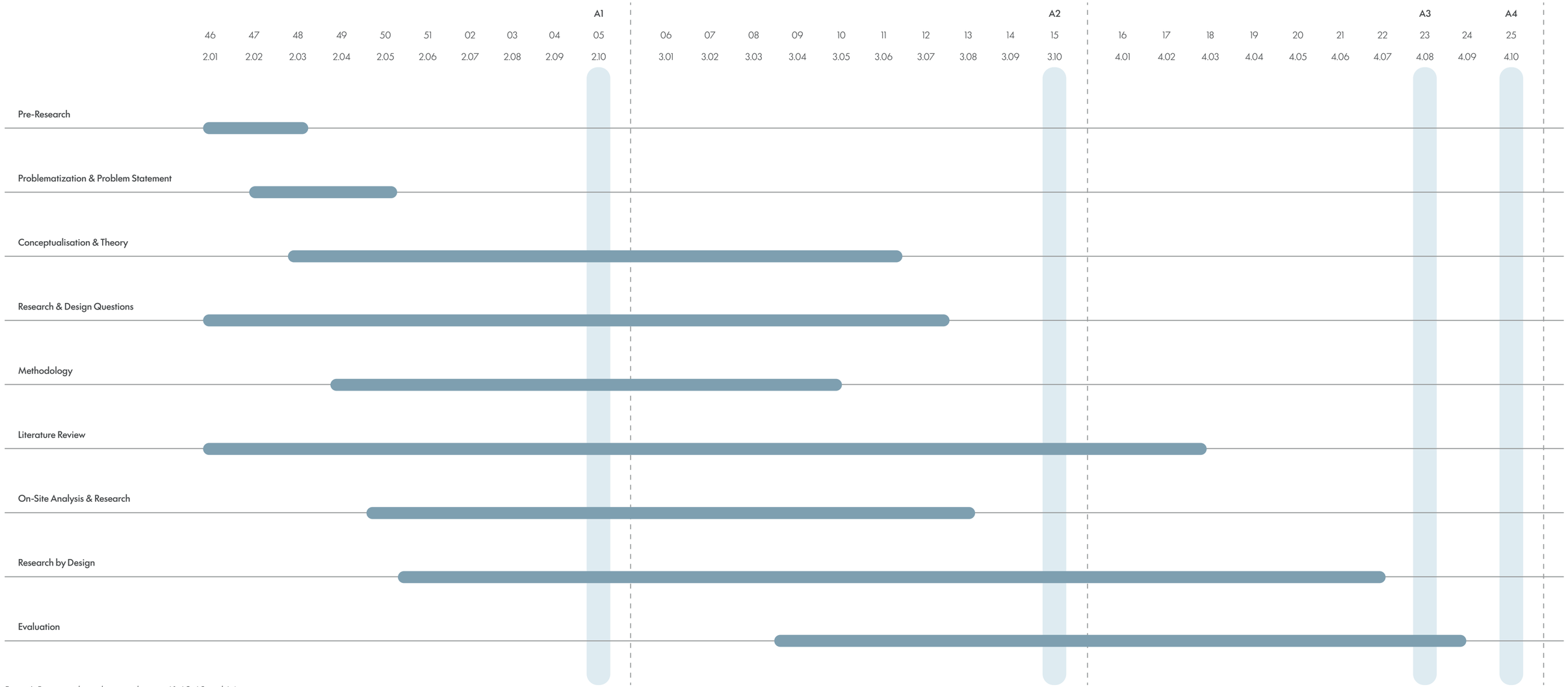


Figure 6. Project timeline indicating milestones A1, A2, A3, and A4.

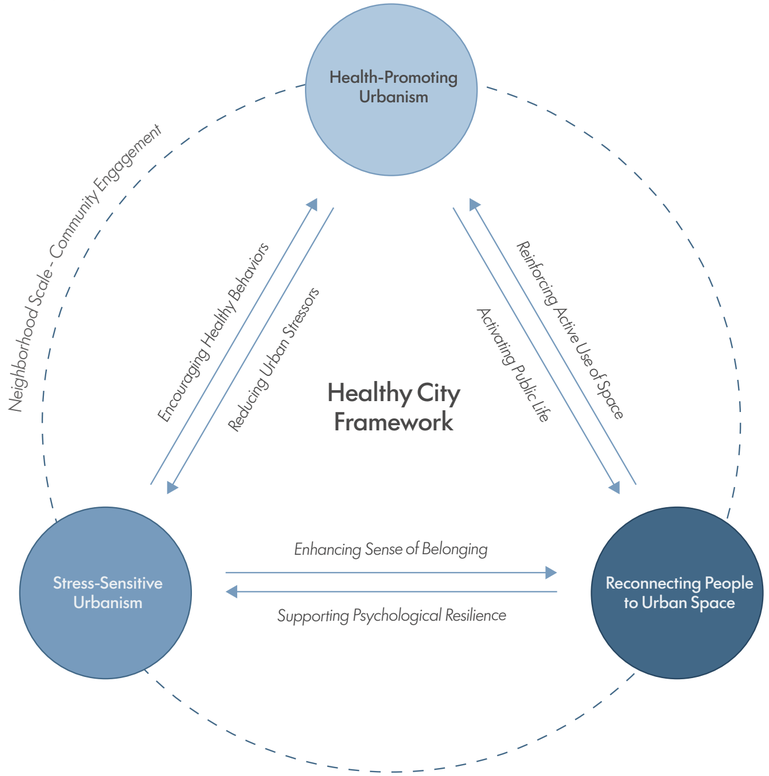


Figure 7. Three-layered theoretical framework serving as the primary conceptual backbone of the project.

The above graphic outlines a three-layered theoretical framework that structures the investigation and reflects the core themes derived from the problematization and associated research questions. Each layer represents a distinct yet complementary theoretical approach within urban design, collectively forming an integrated perspective on the studied phenomenon (Gehl, 2010; Marcus & Sachs, 2014).
The three layers - namely health-promoting urbanism, stress-sensitive urbanism, and reconnecting people to urban space - are individually unpacked and examined in the subsequent chapters, where their theoretical foundations and practical implications are discussed in detail. During the course of the research, the engagement with each theoretical layer led to the formulation of specific spatial criteria.

These criteria emerged as key interpretative tools, translating abstract theoretical principles into tangible spatial considerations (Carmona et al., 2010). They subsequently informed the development of the conceptual framework, which serves as an intermediary step between theory and application.In the following stage, the criteria are operationalized as analytical aspects, enabling a structured and comprehensive evaluation of the site. This process ensures that the site is rigorously assessed in relation to the identified problem, allowing for the identification of spatial shortcomings and opportunities. The insights gained through this analysis ultimately guide the generation of design proposals, ensuring that they are both context-sensitive and theoretically substantiated (Lynch, 1960).

Sustainable Development Goals (SDGs)

Examining this thesis through the prism of the United Nations Sustainable Development Goals (SDGs) adds an important layer of strategic and critical relevance to the theoretical framework (United Nations, 2015).
Although the study is primarily rooted in urban design, public health, and environmental psychology, the SDGs provide a valuable global reference point for understanding how urban environments can support human well-being in a more holistic sense (WHO, 2016). They help position the research not only within academic discourse, but also within a broader international agenda concerned with the livability, inclusivity, and resilience of cities (United Nations, 2015).
The framework developed in this thesis - structured around health-promoting urbanism, stress-sensitive urbanism, and the reconnection of people to urban space - aligns most strongly with SDG 3 (Good Health and Well-being) and SDG 11 (Sustainable Cities and Communities) (United Nations, 2015). These goals are directly reflected in the emphasis on active mobility, mental restoration, accessible public space, and socially supportive urban environments (Gehl, 2010; Frumkin et al., 2017). In addition, the framework also relates to SDG 10 (Reduced Inequalities) through its concern with inclusive and equitable urban experiences (Wolch et al., 2014), and to SDG 15 (Life on Land) through the integration of biophilic and nature-based principles (Wilson, 1984).
Together, these connections demonstrate that the quality of urban space has implications not only for physical health, but also for psychological well-being, social cohesion, and environmental quality (WHO, 2016; Hartig et al., 2014). At the same time, the relevance of the SDGs within this research should be understood as differentiated rather than universal. Certain principles are only moderately considered, particularly where the relationship between spatial design and broader sustainability outcomes remains indirect or context-dependent. By contrast, other principles can be assessed as highly or very highly relevant, especially where the conceptual overlap between urban form, health, stress, and social belonging is explicit (Antonovsky, 1987). This is particularly evident in relation to the WHO Healthy Cities framework, salutogenic thinking, and biophilia, all of which strongly resonate with the SDGs' broader ambition to foster healthier, more inclusive, and more resilient urban futures (WHO, 2016; Kellert & Wilson, 1993).
As such, the SDGs function less as a standalone theoretical lens and more as a supporting framework that helps contextualize the contribution of this thesis within contemporary sustainability discourse (United Nations, 2015). Rather than serving as a prescriptive checklist, they are used here as a reflective framework for highlighting how the selected theoretical concepts contribute to the development of healthier, more equitable, and more supportive urban environments.

- Very Highly Considered
- Highly Considered
- Moderately Considered

United Nations (n.d.)



Figure 8. Sustainable Development Goals and their extent of integration within the project.

WHO Healthy Cities

The WHO Healthy Cities approach is a comprehensive urban health framework that emphasizes the integration of health considerations into all areas of local governance, planning, and policy-making (WHO, 2016). It promotes intersectoral collaboration, community participation, and equity to create supportive urban environments that enhance physical, mental, and social well-being (Hancock & Duhl, 1988). By addressing the social determinants of health, the approach aims to reduce inequalities and improve quality of life in cities (WHO, 2016).

Relevance: This framework is relevant by establishing health as a cross-cutting objective of urban governance, planning, and environmental design, *Timeframe:* Since 1986 (Ottawa Charter; Healthy Cities Network from 1988), *Key Actors:* World Health Organization (WHO)

Compact City

The compact city model promotes high-density, mixed-use urban development aimed at reducing urban sprawl and encouraging sustainable mobility patterns (Jenks et al., 1996). It emphasizes proximity, efficient land use, and access to services, thereby supporting walkability and reducing reliance on private vehicles (Burton, 2000). This approach contributes to environmental sustainability while also fostering healthier lifestyles through increased opportunities for daily physical activity (Frank et al., 2003).

Relevance: The compact city model is significant for this research as it highlights how density, proximity, and mixed-use development can shape health-supportive urban environments, *Timeframe:* 1990s onward, *Key Actors:* Mike Jenks; Elizabeth Burton; Katie Williams

Active Living by Design (ALbD Framework)

Active Living by Design is an approach to urban planning that prioritizes physical activity through the design of built environments that support walking, cycling, and everyday movement (Sallis et al., 2009). It integrates land use, transportation systems, and public space design to encourage active lifestyles and reduce sedentary behavior (Frank et al., 2003). By fostering accessible, safe, and connected communities, the approach contributes to improved population health and enhanced urban livability (Sallis et al., 2009).

Relevance: By emphasizing the relationship between spatial design and everyday movement, this approach supports the thesis' focus on how urban form can encourage healthier lifestyles, *Timeframe:* Early 2000s, *Key Actors:* Active Living Research; Robert Wood Johnson Foundation



Relation of SDG´s to Layer 1

The category of health-promoting urbanism shows the strongest alignment with SDG 3 (Good Health and Well-being) and SDG 11 (Sustainable Cities and Communities) (United Nations, 2015), both of which can be considered very highly relevant to this part of the framework. The theories grouped within this category - including the WHO Healthy Cities approach, Active Living by Design, and the Compact City model - share a common concern with how urban form and governance can systematically support healthier lifestyles and improve overall well-being (WHO, 2016; Sallis et al., 2009; Jenks et al., 1996). In particular, they emphasize walkability, accessibility, active mobility, and the provision of supportive urban environments, all of which directly contribute to the promotion of physical and mental health (Gehl, 2010; Frank et al., 2003).

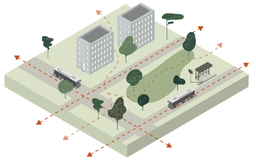
In addition, SDG 13 (Climate Action) may be considered moderately to highly relevant, especially in relation to compact urban development and reduced dependence on private automobiles (Burton, 2000). Although climate mitigation is not the primary focus of this thesis, the spatial principles associated with this category - such as density, proximity, and sustainable mobility - also carry important environmental implications (Jenks et al., 1996).

Human-Scale Edges that Invite Movement (A)



Urban environments should be structured at a human scale, where building heights, spatial proportions, and edge conditions support perceptual comfort and engagement (Gehl, 2010). Active frontages and articulated façades contribute to a sense of enclosure and orientation, enabling individuals to navigate and experience space intuitively while maintaining visual and physical connection to their surroundings (Jacobs, 1961).

Permeable Streets that Enable Choice (B)



A fine-grained street network with short blocks and multiple route options enhances spatial permeability and movement efficiency (Hillier, 1996). Such configurations allow for flexible navigation, reduce travel distances, and support both pedestrian and cyclist flows, fostering a resilient and adaptable urban structure that accommodates diverse patterns of use (Carmona et al., 2010).

Daily Needs Within Walking Distance (C)



The integration of mixed-use functions ensures that daily needs can be met within walking distance, reducing dependency on motorized transport (Jacobs, 1961). By combining residential, commercial, and social infrastructures, urban areas become more vibrant and continuously activated, supporting economic vitality and everyday convenience (Gehl, 2010).

Connected Squares that Anchor Social Life (D)



A coherent system of public spaces, hierarchically connected and continuously accessible, strengthens spatial legibility and social cohesion (Lynch, 1960). These spaces should vary in scale and function, forming an interconnected network that accommodates movement, gathering, and transition across the urban fabric (Carmona et al., 2010).

Distributed Green that Embeds Nature Daily (E)



Green spaces should be distributed throughout the urban environment rather than concentrated in isolated parks (Wolch et al., 2014). This network of greenery enhances ecological performance, microclimatic conditions, and accessibility, ensuring that natural elements are embedded in everyday spatial experience (Hartig et al., 2014).

Salutogenic Model of Health

The salutogenic model of health focuses on factors that support human health and well-being rather than on factors that cause disease (Antonovsky, 1987). It emphasizes the concept of a sense of coherence, which reflects an individual's capacity to perceive life as comprehensible, manageable, and meaningful (Antonovsky, 1987). Applied to urban environments, this model highlights how supportive, legible, and resource-rich spaces can strengthen resilience and promote mental well-being (Eriksson & Lindström, 2006).

Relevance: Its relevance lies in shifting attention from disease prevention toward the environmental conditions that actively support well-being and resilience., *Timeframe:* 1970s, *Key Actors:* Aaron Antonovsky

Biophilia

Biophilia refers to the innate human affinity for nature and natural processes, suggesting that contact with natural elements is essential for psychological and physiological well-being (Wilson, 1984). In urban design, this concept underpins the integration of green spaces, natural materials, and ecological systems into the built environment (Kellert & Wilson, 1993). Such interventions can reduce stress, enhance cognitive functioning, and foster a deeper connection between people and their surroundings (Kellert et al., 2008).

Relevance: This theory is important to the thesis because it explains why the integration of natural elements into urban space can positively affect psychological and emotional health, *Timeframe:* 1980s, *Key Actors:* Edward O. Wilson; Stephen Kellert

Attention Restoration Theory (ART)

Attention Restoration Theory proposes that exposure to natural environments facilitates the recovery of directed attention capacities depleted through sustained cognitive effort (Kaplan & Kaplan, 1989). Developed within the broader field of environmental psychology, the theory identifies restorative experiences as those characterized by fascination, a sense of extent, compatibility with individual needs, and a feeling of being away from ordinary demands - qualities frequently associated with natural and green urban settings (Kaplan, 1995).

Relevance: Attention Restoration Theory is relevant to this thesis because it explains how restorative environments can support cognitive recovery and mental well-being, *Timeframe:* Since 1970s, *Key Actors:* Rachel Kaplan; Stephen Kaplan

Stress Recovery Theory (SRT)

Stress Recovery Theory explains how exposure to natural environments facilitates rapid psychological and physiological recovery from stress (Ulrich, 1983). It posits that humans have an evolutionary predisposition to respond positively to certain natural settings, leading to reduced arousal, improved mood, and enhanced cognitive restoration (Ulrich et al., 1991). In urban contexts, access to greenery and restorative environments plays a crucial role in mitigating stress and promoting mental health (Ulrich, 1984).

Relevance: Stress Recovery Theory contributes to the thesis by providing a theoretical basis for understanding how restorative environments can reduce urban stress, *Timeframe:* 1980s–1990s, *Key Actors:* Roger Ulrich

Theoretical Background

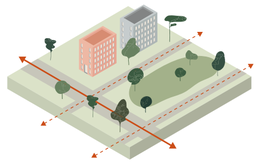


Relation of SDG´s to Layer 2

The category of stress-sensitive urbanism aligns most strongly with SDG 3 (Good Health and Well-being) and SDG 11 (Sustainable Cities and Communities) (United Nations, 2015), both of which are of high to very high relevance. This category is primarily concerned with the psychological and emotional dimensions of urban environments, focusing on how spatial qualities can reduce stress, support restoration, and enhance mental well-being (Kaplan & Kaplan, 1989; Ulrich, 1984). The selected theories collectively highlight the importance of designing urban spaces that are not only functional, but also restorative, legible, and emotionally supportive (Antonovsky, 1987; Marcus & Sachs, 2014).

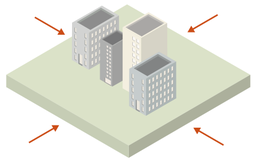
A further connection can be identified with SDG 15 (Life on Land) (United Nations, 2015), due to the integration of natural systems and green elements within the urban environment (Wilson, 1984; Hartig et al., 2014). Therefore, this category expands the sustainability discourse of the thesis by emphasizing that urban well-being depends not only on physical infrastructure, but also on sensory experience, emotional comfort, and human–nature relationships (Kellert et al., 2008).

Legible Structure that Supports Orientation (F)



Urban layouts must exhibit a clear spatial hierarchy and legible organization, enabling users to orient themselves and understand the structure of their environment (Lynch, 1960). Recognizable paths, nodes, and edges contribute to cognitive mapping and enhance the overall usability of space (Carmona et al., 2010).

Comfortable Walking Distances (G)



Spaces should be designed with manageable walking distances and universal accessibility in mind, ensuring usability for individuals of all ages and abilities (Gehl, 2010). This includes barrier-free design, intuitive circulation, and spatial arrangements that reduce physical and cognitive effort (WHO, 2016).

Buffered Zones that Relieve Urban Pressure (H)



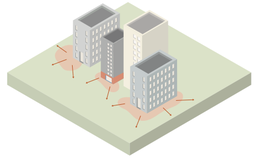
Urban design should incorporate quiet zones, greenery, and buffer spaces that mitigate noise and visual stress from traffic and dense activity (Ulrich et al., 1991). Such interventions create environments that support mental well-being and provide opportunities for retreat within the city (Kaplan, 1995).

Restorative Pockets that Invite Recovery (I)



Restorative environments are characterized by shaded areas, seating opportunities, and elements of visual relief (Marcus & Sachs, 2014). These spaces allow individuals to pause, recover, and engage in passive activities, contributing to psychological regeneration within everyday urban settings (Kaplan & Kaplan, 1989).

Active Frontages that Foster Safety (J)



Active frontages enhance visibility, safety, and engagement through transparent façades, entrances, and appropriate lighting (Gehl, 2010). These edges promote interaction between indoor and outdoor spaces, increasing vitality and perceived security in public realms (Jacobs, 1961).

Place Attachment

Place attachment refers to the emotional and cognitive bonds that individuals develop with specific places through lived experiences, memories, and social interactions (Altman & Low, 1992). It plays a crucial role in shaping identity, well-being, and patterns of behavior in urban environments (Low & Altman, 1992). Strong place attachment can foster a sense of belonging, encourage stewardship, and enhance community cohesion within cities (Lewicka, 2011).

Relevance: Place attachment is relevant because it helps explain how emotional bonds to urban environments influence well-being, identity, and patterns of use, *Timeframe:* 1970s onward, *Key Actors:* Irwin Altman; Setha Low

Third Places

The concept of third places describes informal public gathering spaces - such as cafés, parks, and community centers - that exist outside of home and work (Oldenburg, 1989). These spaces facilitate social interaction, foster community life, and contribute to a sense of belonging (Oldenburg, 1989). In urban contexts, third places are essential for strengthening social networks and enhancing overall well-being (Jeffres et al., 2009).

Relevance: The concept of third places supports the thesis by highlighting the role of informal public spaces in fostering social interaction and belonging, *Timeframe:* 1980s, *Key Actors:* Ray Oldenburg

Topophilia

Topophilia describes the affective bond between people and place, encompassing emotional, aesthetic, and symbolic connections to the environment (Tuan, 1974). It highlights how sensory experiences, cultural meanings, and personal memories shape human relationships with space (Tuan, 1974). In urban design, fostering topophilia can enhance place identity, attachment, and long-term engagement with urban environments (Relph, 1976).

Relevance: Topophilia is relevant to this research because it addresses the affective and symbolic relationships people develop with place, *Timeframe:* 1970s, *Key Actors:* Yi-Fu Tuan

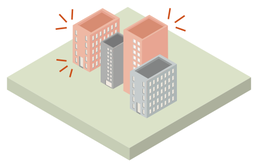


Relation of SDG´s to Layer 3

The category of reconnecting people to urban space is particularly closely related to SDG 11 (Sustainable Cities and Communities), which can be regarded as very highly relevant, and to SDG 3 (Good Health and Well-being), which is also of high relevance (United Nations, 2015). The theories included in this category - place attachment, third places, and topophilia - focus on the social, emotional, and experiential dimensions of urban environments (Altman & Low, 1992; Oldenburg, 1989; Tuan, 1974). They emphasize that urban spaces should not only be efficient or health-supportive in a technical sense, but also meaningful, inclusive, and capable of fostering belonging and everyday social interaction (Gehl, 2010; Lewicka, 2011).

This category also demonstrates a clear relationship with SDG 10 (Reduced Inequalities) (United Nations, 2015), particularly in relation to equitable access to welcoming, inclusive, and socially supportive public spaces (Wolch et al., 2014). By foregrounding the role of emotional connection, identity, and informal social life, this dimension of the framework highlights how urban sustainability is deeply tied to questions of inclusion, participation, and social cohesion (Putnam, 2000).

Distinctive Places that Build Identity (K)



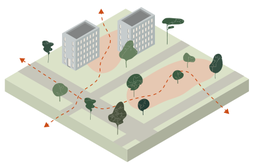
A strong local identity is fostered through distinctive landmarks, recognizable spatial features, and culturally embedded design elements (Lynch, 1960). Such characteristics create meaningful places that support emotional attachment and reinforce a sense of continuity and belonging (Relph, 1976).

Flexible Spaces that Spark Encounter (L)



Urban spaces should facilitate social interaction through small-scale gathering areas and flexible configurations (Gehl, 2010). These environments encourage spontaneous encounters and planned activities, supporting diverse forms of community engagement (Oldenburg, 1989).

Everyday Spaces that Sustain Activation (M)



Spaces designed for everyday routines, rather than solely for events, ensure continuous activation and relevance (Jacobs, 1961). Functional diversity and accessibility enable regular use, embedding public spaces into daily life patterns (Carmona et al., 2010).

Inclusive Design that Welcomes All (N)



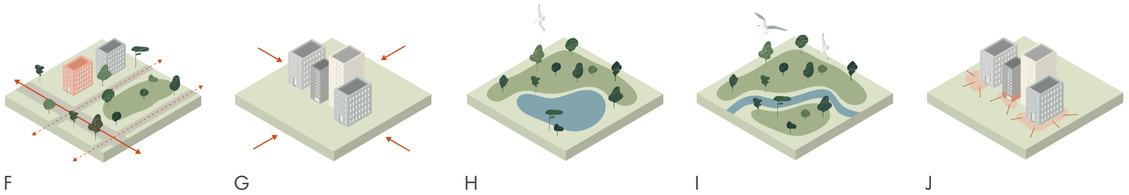
Inclusive design strategies that accommodate all ages and abilities foster a sense of belonging (WHO, 2016). By addressing diverse needs and promoting equitable access, urban environments become socially sustainable and supportive of collective identity (Gehl, 2010; Wolch et al., 2014).

Spatial Criteria I All Layers

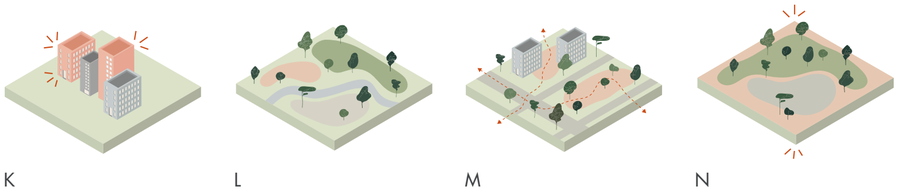
First Layer - Spatial Structure



Second Layer - Stress-Sensitivity



Third Layer - Reconnection



The outlined spatial criteria collectively establish a coherent and interdependent foundation for urban design, integrating physical, functional, and experiential dimensions into a unified framework. Elements such as human scale, connectivity, and mixed use define the structural logic of the built environment, while public space, green structure, and active frontages ensure continuity and activation across spatial systems. At the same time, criteria including comprehensibility, manageability, and stress reduction address cognitive and physiological responses to space, reinforcing usability and well-being. Complementary aspects such as restoration, social interaction, and everyday use further embed these environments within daily life, while local identity and belonging contribute to emotional attachment and long-term place integration.

Together, these criteria operate not as isolated principles but as mutually reinforcing components, forming a holistic basis for resilient, inclusive, and perceptually supportive urban environments.

Conceptual Framework I Combining All Layers

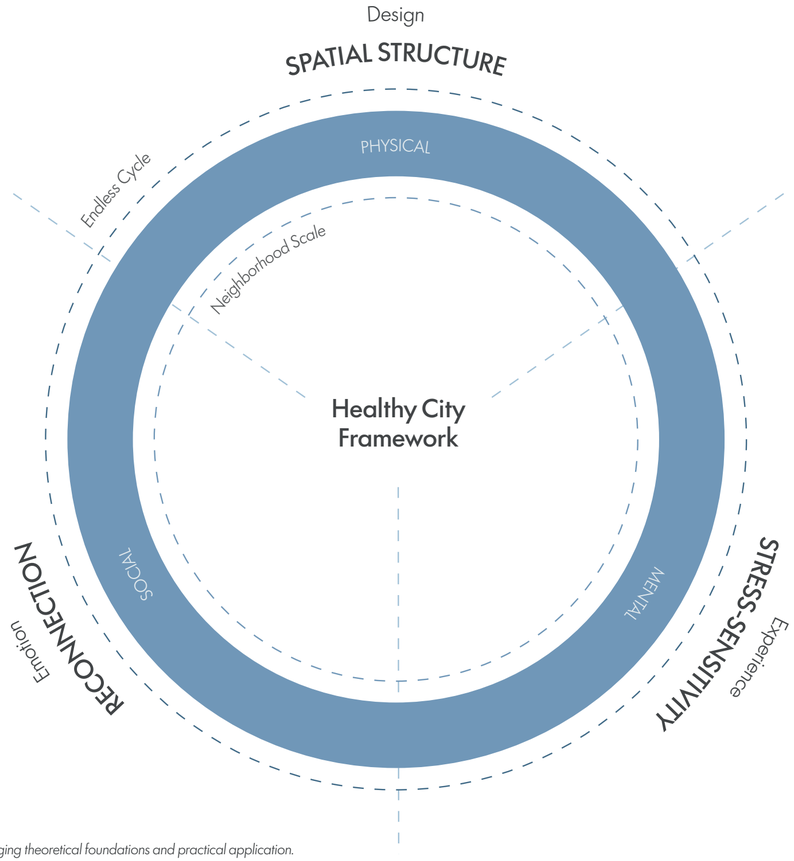


Figure 9. Conceptual framework bridging theoretical foundations and practical application.

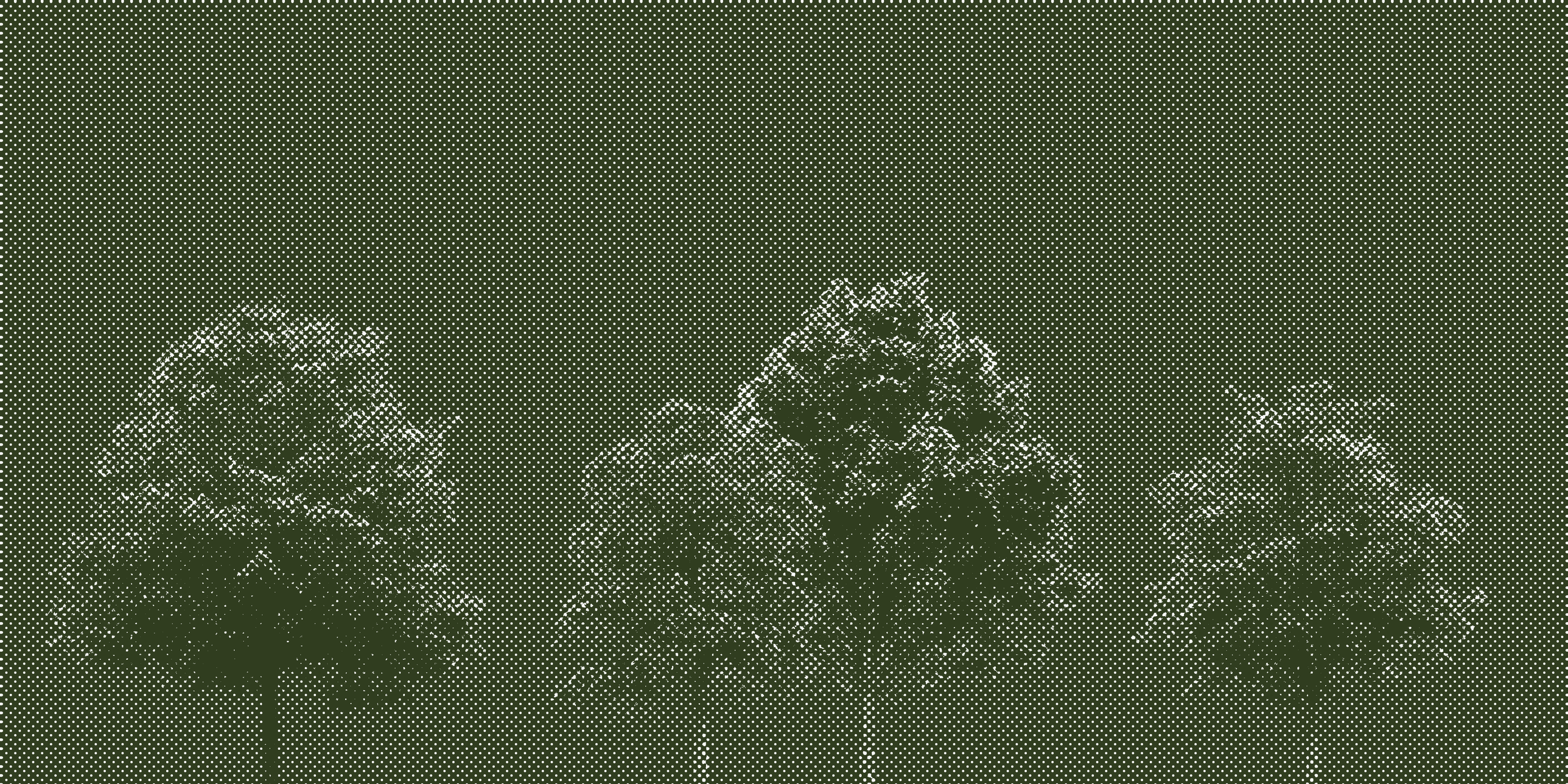
These spatial criteria are consolidated within the conceptual framework, which translates the theoretical foundation into a structured, design-oriented approach. Aligned with the theoretical framework, the model is organized into three interrelated levels: spatial structure, stress-sensitivity, and reconnection. The first level, spatial structure, focuses on the built environment and its formal configuration, incorporating criteria such as connectivity, scale, mixed use, and green structure. The second level, stress-sensitivity, addresses the experiential dimension, emphasizing how spatial qualities influence perception, orientation, and psychological comfort through aspects such as comprehensibility, manageability, and stress reduction. The third level, reconnection, engages with the emotional and social dimension, integrating criteria such as restoration, social interaction, local identity, and belonging to foster attachment and well-being. Through this layered organization, the conceptual framework synthesizes spatial design, human experience, and emotional response into a cohesive model that guides the creation of supportive and meaningful environments.

Results

Part 3

This chapter presents the results of the research, structured through a set of analytical aspects applied across multiple spatial and experiential levels. Through this approach, the existing conditions of the area are evaluated, allowing for the identification of key strengths and weaknesses. Building on these findings, a research-by-design method is used to test initial design ideas at different scales, from localized interventions to broader spatial strategies. This iterative process enables the development of a potential future design scenario, translating analytical insights into coherent and forward-looking design propositions for the area.



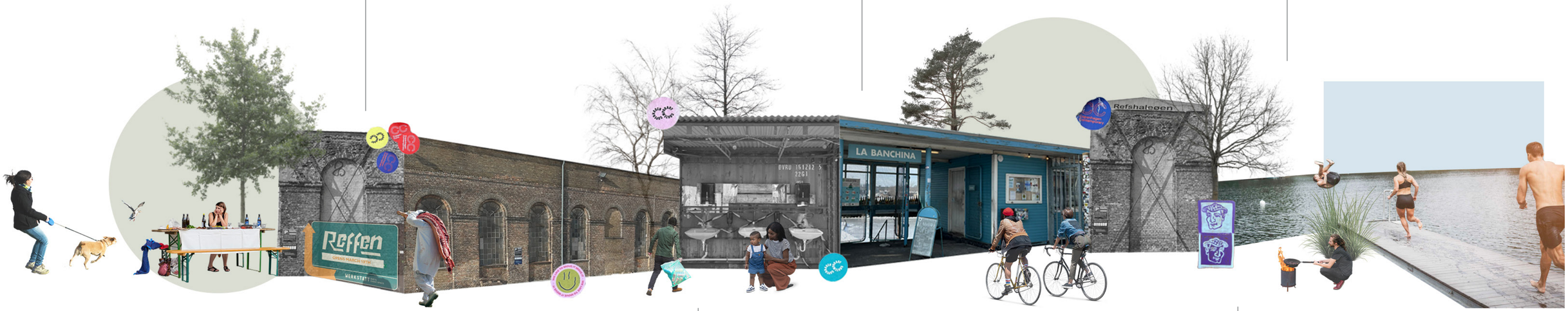


How is the Atmosphere?

Parts of the **existing built fabric** reflect the cultural and industrial heritage of the area, expressed through robust structures and reused materials. These elements contribute to a distinct spatial character and provide a valuable foundation for preserving and reinterpreting local identity.

The existing **street structure** represents one of the site's most significant spatial challenges. Characterized by wide, car-oriented roads and an absence of a coherent hierarchical network, the current layout prioritizes vehicular movement at the expense of pedestrian comfort and spatial legibility. The lack of a clear street grid results in disorienting spatial sequences, making wayfinding exceptionally difficult and undermining the conditions necessary for intuitive navigation and everyday walkability.

The **waterfront** represents a major spatial asset, offering strong potential for both active and passive use. While currently not fully accessible or utilized, it holds opportunities for activities such as bathing, leisure, and sports, as well as functioning as a restorative element that enhances sensory experience and connection to water.



Reffen Street Food plays a central role in shaping the identity of the area, offering a vibrant atmosphere through a mix of food, seating, music, events, and its proximity to the waterfront and skatepark. However, its activation is highly seasonal, operating primarily from March to September, which limits year-round use and continuity.

Green infrastructure is notably limited, both in terms of vegetation and functional performance. There is a lack of planting, trees, and shaded areas, as well as insufficient use of landscape for retention purposes, resulting in reduced environmental quality and comfort.

Throughout the area, stickers from Copenhagen Contemporary, along with graffiti and various artistic installations, highlight a rich layer of **cultural expression**. These elements contribute to the unique atmosphere and emphasize the creative identity embedded within the site.

Figure 10. Collage highlighting key assets and urgencies of the site in its current condition.

From Theory to Design



Figure 11. Process diagram outlining the transition from analysis to design.

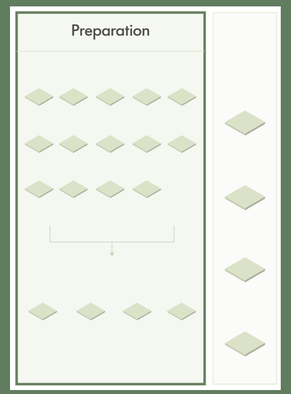
The diagram above outlines the methodological structure that governs both the analytical and design phases of the thesis. As a preparatory step, the spatial criteria derived from the theoretical framework are systematically organised into four thematic aspect groups, each further subdivided into concrete sub-aspects that serve as operative analytical lenses. By structuring both analysis and design development within the same thematic groups, the framework ensures that each dimension considered critical to the creation of a health-promoting neighborhood receives dedicated and thorough attention throughout the research process.

Within each of the four aspect groups, the investigation proceeds from site analysis through to the development of design strategies, maintaining thematic coherence across both phases. The analysis encompasses the site itself as well as three carefully selected case study areas, chosen for their capacity to demonstrate relevant spatial qualities and transferable precedents. Conducted across multiple scales and further enriched by the perspectives of personas representative of the target demographic groups, this multi-layered approach enables a nuanced understanding of both the existing qualities and the spatial urgencies of Refshaleøen, ultimately synthesised into a SWOT analysis for each aspect group.

Building directly upon the findings of the SWOT analyses, the design phase translates identified urgencies and opportunities into spatial propositions for each aspect group. The proposals are developed across multiple scales - from the overall site configuration to the building block and the lived atmospheric experience - ensuring that interventions are conveyed with both spatial precision and experiential depth. The four sets of design proposals are subsequently integrated and synthesised into a coherent conceptual framework, which culminates in a masterplan for Refshaleøen. This is accompanied by a phasing and implementation strategy, ensuring that the vision presented is not only spatially compelling but also grounded in a realistic understanding of how a healthy neighborhood can be incrementally realised over time.

Process Phase 1

Having established the theoretical foundation and derived the spatial criteria, the research now enters its analytical phase.



Analysis I Turning Spatial Criterias Into Analysis Aspects

How to Go From Theory to the Analysis?

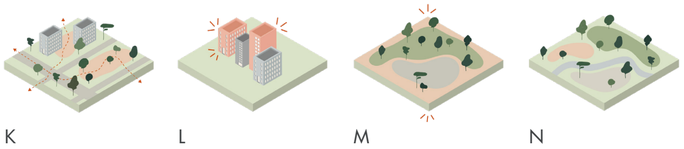
First Layer - Spatial Structure



Second Layer - Stress-sensitivity



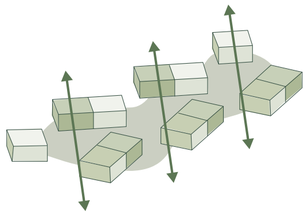
Third Layer - Reconnection



The spatial criteria established through the theoretical framework are organised into four thematic aspect groups that structure the subsequent analysis and design development. Each group clusters a set of closely related spatial criteria around a common thematic concern, ensuring that the full breadth of health-relevant spatial conditions is addressed in a coherent and systematic manner. Together, the four groups provide a comprehensive and thematically balanced framework through which both the analytical findings and the design proposals are developed, ensuring that the spatial response to the identified health challenges is addressed holistically and across all relevant dimensions of the urban environment.

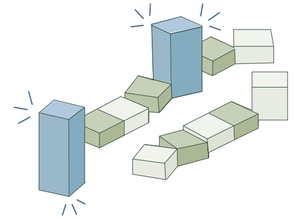
Analysis Aspects

Street Structure & Mobility Features



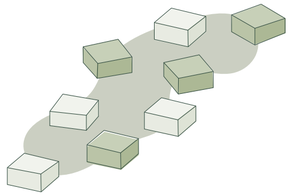
Forming the connective tissue of any neighborhood, street structure and mobility networks fundamentally shape how residents experience and navigate their everyday urban environment. This group examines the organisation, hierarchy, and permeability of movement infrastructure, addressing the extent to which the existing and proposed street network supports active, pedestrian- and cyclist-oriented mobility. Beyond mere connectivity, it investigates how street design contributes to wayfinding, comfort, and the overall legibility of the neighborhood as a walkable and health-supportive environment.

Built Environment



At the scale of the individual building and its immediate surroundings, the physical fabric of the urban environment exerts a profound influence on how space is perceived, used, and experienced. This group examines the spatial qualities of the built environment, with particular attention to building scale, massing, façade articulation, and the character of ground-floor edges. These conditions collectively determine the degree to which the built fabric supports human-scale experience, perceptual comfort, and a legible spatial structure - all of which are considered essential prerequisites for a neighborhood that actively promotes well-being.

Public Space Design & Socio-Spatial Features



Central to the ambition of a health-promoting neighborhood is the quality and social vitality of its shared urban spaces. This group investigates how the design, programming, and accessibility of public space can foster spontaneous social interaction, a sense of belonging, and the conditions necessary for restorative everyday experience. It considers both the physical configuration of spaces and their social dimensions - examining how inclusivity and spatial diversity contribute to neighborhoods that are not only well-designed, but genuinely inhabited and socially alive.

Green & Blue Structure



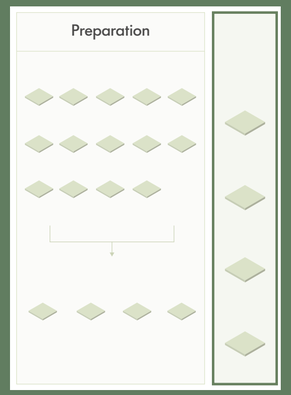
Perhaps most directly connected to the health-oriented ambitions of this thesis, the integration of green and blue infrastructure represents a critical dimension of neighborhood design. This group examines how vegetation, water, and ecological systems can be woven into the urban fabric as active contributors to mental restoration, physical activity, and sensory richness. Rather than treating nature as an aesthetic addition, this group approaches green and blue spaces as essential spatial infrastructure - one that shapes microclimatic conditions, supports biodiversity, and provides residents with the everyday access to restorative natural environments that contemporary research consistently identifies as fundamental to well-being.

Process Phase 2

The following page presents the structure of the analysis and the design in four aspect groups.
Each group is examined through focused sub-aspects, collectively building a comprehensive spatial assessment of the site's current conditions, qualities, and urgencies.

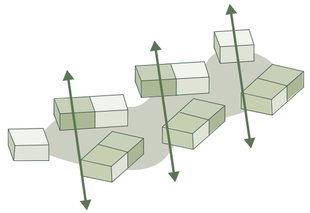
The analysis draws on direct site observations, GIS data, and case study comparisons to evaluate Refshaleøen against the spatial criteria established in the theoretical framework.

By systematically working through each aspect group, the analysis ensures that all dimensions relevant to the health-promoting ambitions of the thesis are addressed with equal rigor - generating the evidence base from which the subsequent design proposals are developed and justified.

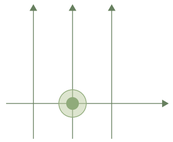


Analysis Aspects

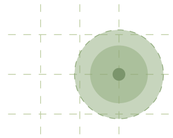
Street Structure & Mobility Features



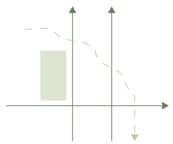
The street structure of Refshaleøen is examined with particular attention to how its current configuration either supports or hinders active, pedestrian-oriented movement. The following sub-aspects address the legibility, hierarchy, and connectivity of the existing network.



Guidance and Legibility examines the degree to which the street network provides clear spatial orientation and intuitive wayfinding, assessing whether routes are readable and transitions well-defined.

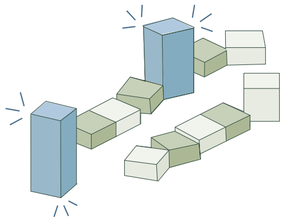


Entrances & Gateways focuses on the points of arrival into the site, examining whether existing entrances are spatially defined and capable of establishing a clear sense of arrival and orientation.

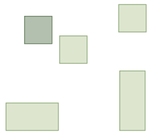


Street Hierarchy investigates the differentiation between streets, examining whether a legible hierarchy exists that supports both efficient movement and neighborhood-scale liveability.

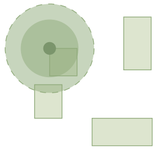
Built Environment



The built environment of Refshaleøen reflects its industrial heritage, presenting a mix of large-scale structures, open plots, and emerging residential development. The following sub-aspects examine how the existing fabric shapes spatial experience at the human scale.



Building Scale and Massing examines how the scale and volumetric presence of existing structures relates to the surrounding public realm, assessing whether proportions support a human-scale environment.

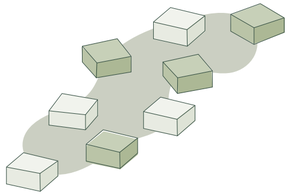


Programming assesses the functional mix and spatial distribution of daily needs that enable routine activities to be performed locally, thereby reducing dependency on motorized transport and supporting urban resilience.

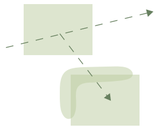


Landmarks investigates the presence and distribution of distinctive places that foster the sense of belging and place attachment to the neighborhood.

Public Space Design & Socio-Spatial Features



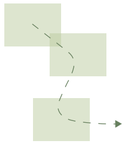
The public spaces of Refshaleøen are currently fragmented and unevenly distributed across the site. The following sub-aspects assess their spatial quality, social capacity, and potential as everyday restorative environments.



Edge Conditions & Active Frontages investigates the quality of the interface between buildings and public space, examining the extent to which ground-floor edges are active, transparent, and spatially engaging.



Social Activation & Programming investigates the extent to which existing public spaces support diverse forms of social activity, examining how spatial design encourages or inhibits spontaneous encounter and community use.



Recognizable Spaces examines the presence, distribution, and interconnectivity of public squares as legible and identifiable nodes within the urban fabric. It considers how these spaces function as social anchors and facilitating gathering.

Green & Blue Structure



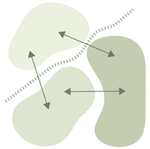
The green and blue infrastructure of Refshaleøen represents one of the site's greatest spatial assets, yet remains largely underutilised and poorly integrated into the everyday life of the area. The following sub-aspects examine its current condition and potential.



Environmental Relief examines the implementation of spatial buffers that mitigate environmental stressors, including noise, air pollution, and unpleasant odors. It assesses how transitional zones, vegetation, and built forms are strategically employed to protect sensitive uses and enhance environmental comfort within dense urban contexts.



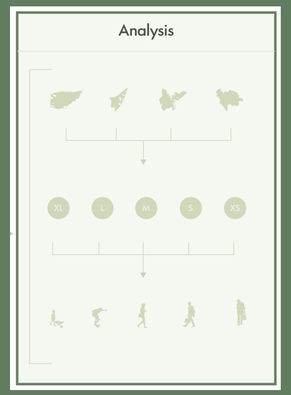
Restorative Pockets investigates the availability and quality of small-scale spaces designed for rest, retreat, and sensory relief. It evaluates elements such as acoustic shelter, shade provision, seating, and enclosure, considering how these features support psychological restoration and contribute to overall urban well-being.



Green Space Distribution & Accessibility examines the spatial distribution of green areas, assessing whether existing vegetation is accessible and embedded within everyday movement routes rather than isolated from daily use.

Process Phase 3

Before the analytical framework can be applied, a thorough understanding of the site itself is essential.
Refshaleøen is a place of remarkable complexity - shaped by over a century of industrial history, defined by its exceptional waterfront location, and currently navigating a period of profound urban transformation. The following page introduces the site across four key dimensions: its industrial past and the spatial legacy it has left behind, its geographical position within Copenhagen and the large-scale development initiatives that will fundamentally reshape its connectivity and role within the city, the presence of the Biofos facility, and the rich but fragmented cultural programming that characterises the area today.
Together, these four perspectives establish the contextual foundation upon which the subsequent multi-scalar analysis is built.



Where are We in the City?



Figure 12. Map of Copenhagen situating the site within the overall urban structure.

Refshaleøen occupies a strategically significant position within Copenhagen, situated between the historic inner city and emerging development areas. Despite its central location, the site has long remained poorly connected to the wider urban fabric (Copenhagen Municipality, 2021). This is set to change with the planned M5 metro line: the M5 is intended to provide efficient public transport to new urban development areas including Refshaleøen and Lynetteholm, and is expected to open in two stages in 2036 and 2045 respectively. The adjacent Lynetteholm project is planned to provide 20,000 homes, create new jobs, and serve as a barrier against rising sea levels. Together, these interventions position Refshaleøen as a critical node within one of Copenhagen's most significant urban transformations in decades (By & Havn, 2022).

Land Area
Copenhagen
Water Structure
Residential Development
Recreational Areas
Site
Future Development Lynetteholmen
Future Development M5 Metro

N Scale 1 : 75.000

BIOFOS Area

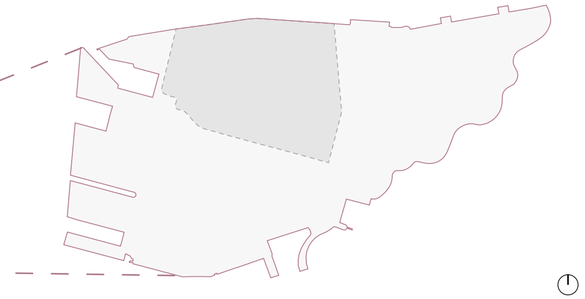


Figure 13. Map of the site area including BIOFOS. N

The Biofos wastewater treatment plant is Denmark's largest wastewater utility, treating wastewater from 1.2 million inhabitants across the Copenhagen metropolitan area at its three treatment plants. The facility occupies a considerable portion of land directly adjacent on the site and represents a significant infrastructural constraint on the spatial development of the northern edge of Refshaleøen (BIOFOS, 2023).

Industrial Past



Figure 15. Photograph illustrating the industrial past of the site, exterior view of halls. Refshaleøens Ejendomsselskab (2025)

Refshaleøen's spatial identity is inseparable from its industrial heritage. Burmeister & Wain was established in 1843 as a machine shop, and its shipyard at Refshaleøen was built in 1872. At its peak, the shipyard became the largest employer in Denmark with more than 8,000 employees, housing over a hundred years of maritime industrial history and launching more than a thousand ships. The site held considerable political significance as a

Current Program



Figure 14. Photograph depicting a key program: Contemporary Art Copenhagen.

Since its post-industrial transition, Refshaleøen has developed a distinctive identity as one of Copenhagen's most vibrant cultural destinations. The area has emerged as a vital hub for cultural and creative activities, leveraging its post-industrial landscape to foster arts, design, and innovation. The repurposed B&W halls now host a diverse range of cultural venues, independent food markets, music events, and creative industries, attracting both residents and visitors from across the city (Bille & Schulze, 2006).



Figure 16. Historical interior photograph of an industrial hall. Refshaleøens Ejendomsselskab (2025)

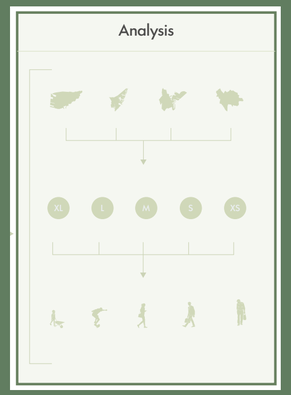
stronghold of the labour movement, and its monumental industrial structures - vast concrete halls, dry docks, and warehouses - remain as defining physical traces of this heritage today (Lange, 2011). Following the shipyard's bankruptcy in 1996, the area underwent significant change, with abandoned buildings gradually repurposed by creative entrepreneurs, small businesses, and cultural uses.

Process Phase 3

The selection of case study areas forms a critical methodological step in the research process, providing spatial precedents from which transferable design lessons can be drawn and applied to the development of Refshaleøen.

The three areas were chosen deliberately to represent complementary scales of reference, geographical contexts, and thematic relevance - collectively offering a rich and diverse evidence base that informs both the analytical assessment of the site and the design proposals that follow.

Each area is examined through the lens of the four thematic aspect groups, ensuring that the case study analysis remains consistently anchored in the spatial criteria established by the theoretical framework.



Location I The Site in Relation to the Case Study Areas

Site (Copenhagen, DK)

N

Examining built precedents is a well-established method in urban design research, providing empirical grounding for design decisions that might otherwise remain purely speculative. By studying areas that have already navigated comparable spatial, social, or programmatic challenges, it becomes possible to identify which design strategies have proven effective in practice - and under what conditions they can be considered transferable. In the context of this thesis, case study areas serve a dual function: they offer critical insight into how health-promoting, stress-sensitive, and socially connective urban environments have been realised elsewhere, and they provide a comparative reference against which the current spatial conditions of Refshaleøen can be evaluated. Rather than prescribing solutions, the case studies inform and calibrate the design thinking - ensuring that the proposals developed for Refshaleøen are grounded in evidence, enriched by precedent, and responsive to the specific conditions of the site.

Østerbro (Copenhagen, DK)



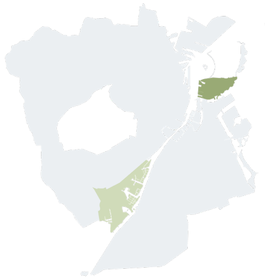
N

Østerbro is an established residential neighborhood located in the northern part of inner Copenhagen, bordering the harbour to the east and the green expanses of Fælledparken to the west. Well-connected by metro, bus, and cycling infrastructure, it occupies a central position within the city's urban fabric and is widely regarded as one of Copenhagen's most liveable and spatially coherent districts.

N

Østerbro was selected for its exemplary integration of green space, active mobility infrastructure, and high-quality public realm within the context of a dense, mixed-use residential neighborhood. Its street network, pocket parks, and activated ground floors demonstrate how health-promoting spatial qualities can be embedded into everyday urban life at the neighborhood scale. As a locally grounded reference, it provides a directly relevant benchmark for the kind of liveable, pedestrian-oriented environment that Refshaleøen aspires to become.

Sydhavn (Copenhagen, DK)



N

Sydhavn - or the Southern Harbour - is a post-industrial waterfront district located in the southwestern part of Copenhagen, currently undergoing large-scale transformation from a former industrial and port area into a new mixed-use residential neighborhood. Situated along the harbour, the area is characterised by its waterfront proximity, emerging residential fabric, and ongoing public realm development.

N

Sydhavn was chosen for its direct contextual parallels with Refshaleøen - both are post-industrial Copenhagen waterfront sites in active transition, facing comparable challenges around connectivity, public space provision, and the integration of new residential communities. Studying Sydhavn allows for a critical assessment of how Copenhagen is currently approaching the transformation of former industrial land, providing lessons - both positive and cautionary - that are of immediate relevance to the design ambitions of this thesis.

Utrecht (NL)

N

Utrecht is the fourth largest city in the Netherlands, located in the geographic centre of the country. Its historic inner city is characterised by a dense canal network, fine-grained street structure, and a strong culture of cycling and active mobility. The city is widely recognised for its thoughtful approach to integrating green and blue infrastructure into the urban fabric, particularly along its historic waterways and at the transitional edges between built and natural environments.

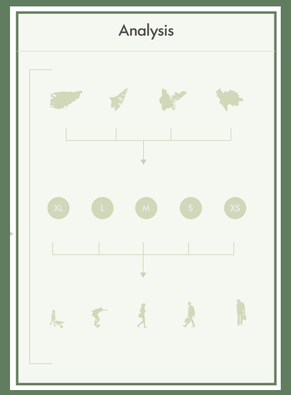
N

Utrecht was selected specifically for its exemplary handling of green space at edge conditions - demonstrating how transitional zones between built structures, waterfronts, and open landscapes can be designed as active, restorative, and ecologically rich environments rather than residual or underutilised spaces. Given that Refshaleøen is defined by a series of significant edge conditions, Utrecht offers highly relevant spatial lessons. Its approach illustrates how edge situations can be transformed into some of the most valuable and health-promoting spaces within a neighborhood, directly informing the green and blue spatial strategies developed in this thesis.

Process Phase 3

In order to ensure that both the analysis and the design proposals are developed with spatial precision and contextual awareness, the research operates across five distinct scales - from the city to the detail. This multi-scalar approach reflects the conviction that a health-promoting neighborhood cannot be understood or designed from a single vantage point. Urban environments are simultaneously shaped by large-scale infrastructure decisions and the intimate qualities of everyday spatial experience, and a robust design methodology must be capable of navigating between these registers with consistency and clarity.

The following page introduces the five scales that structure both the analytical and design phases of this thesis, explaining their respective roles and demonstrating how they operate in relation to one another as a coherent and integrated spatial framework.



What are the Different Scales?

XL L M S XS

Urban environments are experienced and shaped at multiple levels of resolution simultaneously. A decision made at the city scale - such as the routing of a metro line or the designation of a development zone - has direct consequences for the character of a street or the quality of a public space. Equally, the success of a neighborhood-scale strategy ultimately depends on whether it translates meaningfully into the lived, bodily experience of the individual resident. For this reason, both the analytical assessment of Refshaleøen and the subsequent design proposals are structured across five scales - from the city to the detail - ensuring that spatial decisions are always understood in relation to their broader context while remaining grounded in the human experience they are ultimately intended to serve. This scalar framework applies consistently across all four thematic aspect groups, providing a coherent and comparable structure through which findings and proposals can be developed, communicated, and evaluated.

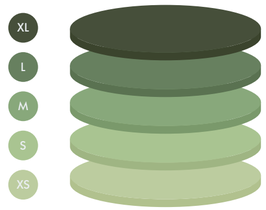
XL: *City Scale*
At the city scale, Refshaleøen is examined in relation to Copenhagen's broader urban structure - ts connectivity, its position within the harbour development areas, and its relationship to existing green, blue, and mobility networks across the city.

L: *Site Scale*
At the site scale, the analysis and design address the overall spatial organisation of Refshaleøen - including its internal movement structure, the distribution of public space and green infrastructure, and the general disposition of land uses across the area.

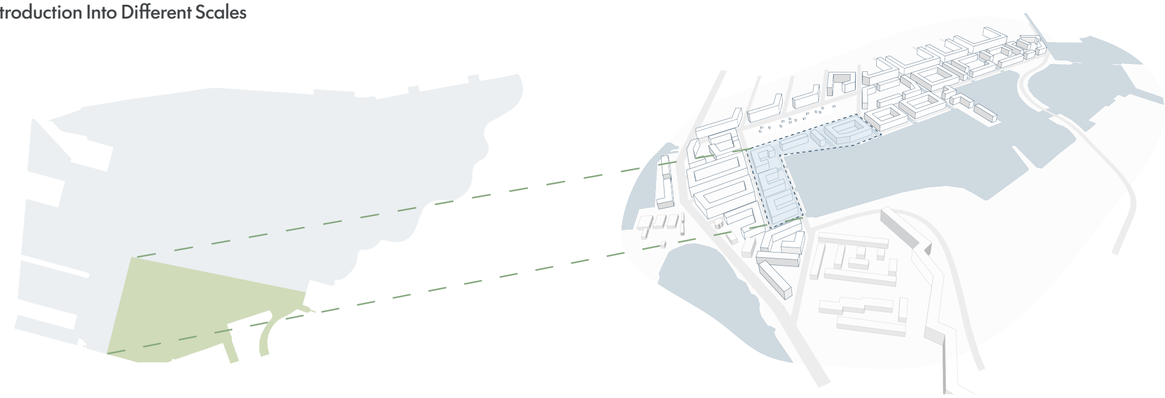
M: *Chunk Scale*
At the chunk scale, a selected portion of the site is examined and designed in greater detail, allowing for a more precise spatial response to the specific conditions, opportunities, and urgencies identified at the broader scales.

S: *Block Scale*
At the block scale, attention shifts to the spatial logic of individual building blocks and their immediate surroundings - addressing street cross-sections, edge conditions, and the relationship between built fabric and public space.

XS: *Detail Scale*
At the detail scale, the focus moves to the granular qualities of space - materiality, furniture, planting, and the specific spatial elements that determine the sensory and atmospheric experience of the everyday urban environment.



Introduction Into Different Scales

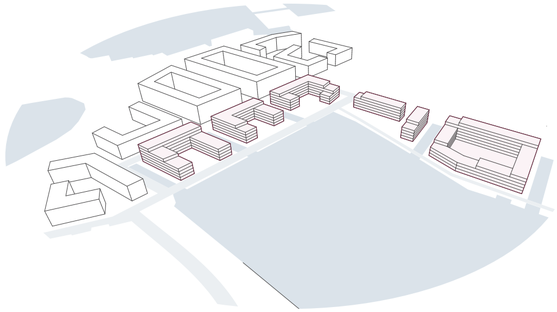


L

M



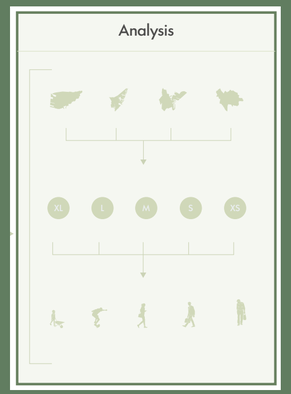
XS



S

Process Phase 3

Understanding who will inhabit a neighborhood is as fundamental to the design process as understanding the site itself. Personas are a well-established tool in human-centered design, allowing complex and diverse user needs to be translated into concrete, relatable profiles that can guide spatial decision-making throughout the research process (Chapman & Milham, 2006). Rather than designing for an abstract average resident, personas make visible the specific vulnerabilities, daily routines, mobility patterns, and spatial needs of distinct demographic groups - ensuring that the design proposals respond meaningfully to the full range of people who will live in and move through Refshaleøen.
The five personas introduced on the following pages represent the demographic groups most relevant to the thesis - those identified in the problematization as being particularly vulnerable to the health impacts of digitalized urban lifestyles (Odgers & Jensen, 2020; WHO, 2016).



Which Age Groups are Most Vulnerable?

Children

Jonas (5 years) & Mia (10 years)



Jonas and Mia live with their family in the emerging residential area of Refshaleøen but are largely dependent on their parents for access to the wider site, as poor connectivity, wide car-oriented roads, and a lack of safe play infrastructure prevent them from exploring the area independently.

Health Issues (0-12 year olds)

Through increasing digital media use from an early age, children spend significantly less time outdoors, resulting in a higher risk of early sedentary lifestyles that heavily influence their physical development (Tremblay et al., 2011). Prolonged screen use and a lack of outdoor light exposure contribute to rising rates of myopia and disrupted sleep rhythms, leading to irregular sleep patterns and chronic fatigue (Holden et al., 2016). From a mental health perspective, excessive screen-based consumption is associated with attention difficulties, impaired self-regulation, and disrupted cognitive development (Lillard & Peterson, 2011). Algorithmically driven content further increases the risk of unhealthy eating habits and weight gain (Robinson et al., 2017). Socially, as digital play increasingly replaces physical peer interaction, children face significant challenges in developing the communication, empathy, and cooperative skills that are formed through embodied, unstructured play in shared outdoor environments (Gray, 2011).

Adolescents

Felix (16 years)



Felix lives on the site and spends much of his time indoors or navigating the area by skateboard, but finds few dedicated spaces that cater to his age group - leaving him disengaged from public life and reliant on digital environments for social connection and stimulation.

Health Issues (13-19 year olds)

Adolescents represent one of the groups most acutely affected by the health consequences of digital culture. Physically, the combination of prolonged screen time and reduced outdoor activity contributes to sedentary behavior, postural problems, and declining cardiovascular fitness (Biswas et al., 2015). Persistent engagement with social media platforms is strongly associated with disrupted sleep, as evening screen use suppresses melatonin production and delays sleep onset (Hale & Guan, 2015). From a mental health perspective, constant exposure to curated social comparisons on digital platforms is closely linked to reduced self-esteem, heightened anxiety, and increasing rates of depression among this age group (Odgers & Jensen, 2020). The pressure of constant connectivity and the blurring of boundaries between online and offline identity create significant psychological strain (Twenge et al., 2018). Socially, while digital tools offer new forms of connection, they frequently replace rather than supplement face-to-face interaction, weakening the depth of social bonds and reducing participation in shared physical spaces (Putnam, 2000).

Students

Maria (23 years)



Maria lives in one of the container housing units on the site - an affordable but spatially constrained living situation that leaves her craving more diverse social spaces, restorative green environments, and cultural offerings within walking distance of her home.

Health Issues (20-29 year olds)

Physically, long hours of screen-based studying contribute to sedentary behavior, musculoskeletal strain, and disrupted movement patterns throughout the day (Biswas et al., 2015). Irregular schedules, combined with the stimulating effects of evening screen use, frequently result in chronic sleep deprivation - a condition with well-documented consequences for cognitive performance and physical health (Hale & Guan, 2015). Mentally, the pressures of academic performance, amplified by constant digital availability and social comparison, contribute to elevated rates of stress, burnout, and anxiety (Twenge et al., 2018). The dissolution of clear boundaries between study, leisure, and social life - all increasingly mediated by the same digital devices - undermines the capacity for genuine rest and psychological recovery (Kaplan & Kaplan, 1989). Socially, despite high levels of digital connectivity, many students report feelings of loneliness and social isolation, particularly in urban environments where informal third places for spontaneous encounter are absent or inaccessible (Oldenburg, 1989).

Young Professionals

Martin (31 years)



Martin has recently moved to Refshaleøen attracted by its character and proximity to the city centre, but finds that the area's limited public space offer and lack of everyday amenities make it difficult to maintain an active and socially connected lifestyle after long hours of screen-based work.

Health Issues (25-35 year olds)

Young professionals are among the groups most embedded in digitalized work cultures, spending the majority of their waking hours in front of screens and increasingly subject to the expectation of permanent digital availability (OECD, 2019). Physically, this translates into highly sedentary daily routines, elevated rates of musculoskeletal complaints, and a significant reduction in incidental physical activity (Biswas et al., 2015). The erosion of clear boundaries between professional and personal life - facilitated by smartphones and remote working technologies - contributes to chronic stress and an inability to adequately recover between working periods (Stadin et al., 2016). Mentally, the sustained cognitive load of digital work, combined with the psychological pressure of constant connectivity, is associated with rising rates of burnout, anxiety, and reduced life satisfaction (Sonnentag, 2012). Socially, the shift toward remote and hybrid working models reduces the frequency of face-to-face interaction, weakening professional networks and eroding the informal social encounters that urban public life ordinarily provides (Putnam, 2000).

Elderly

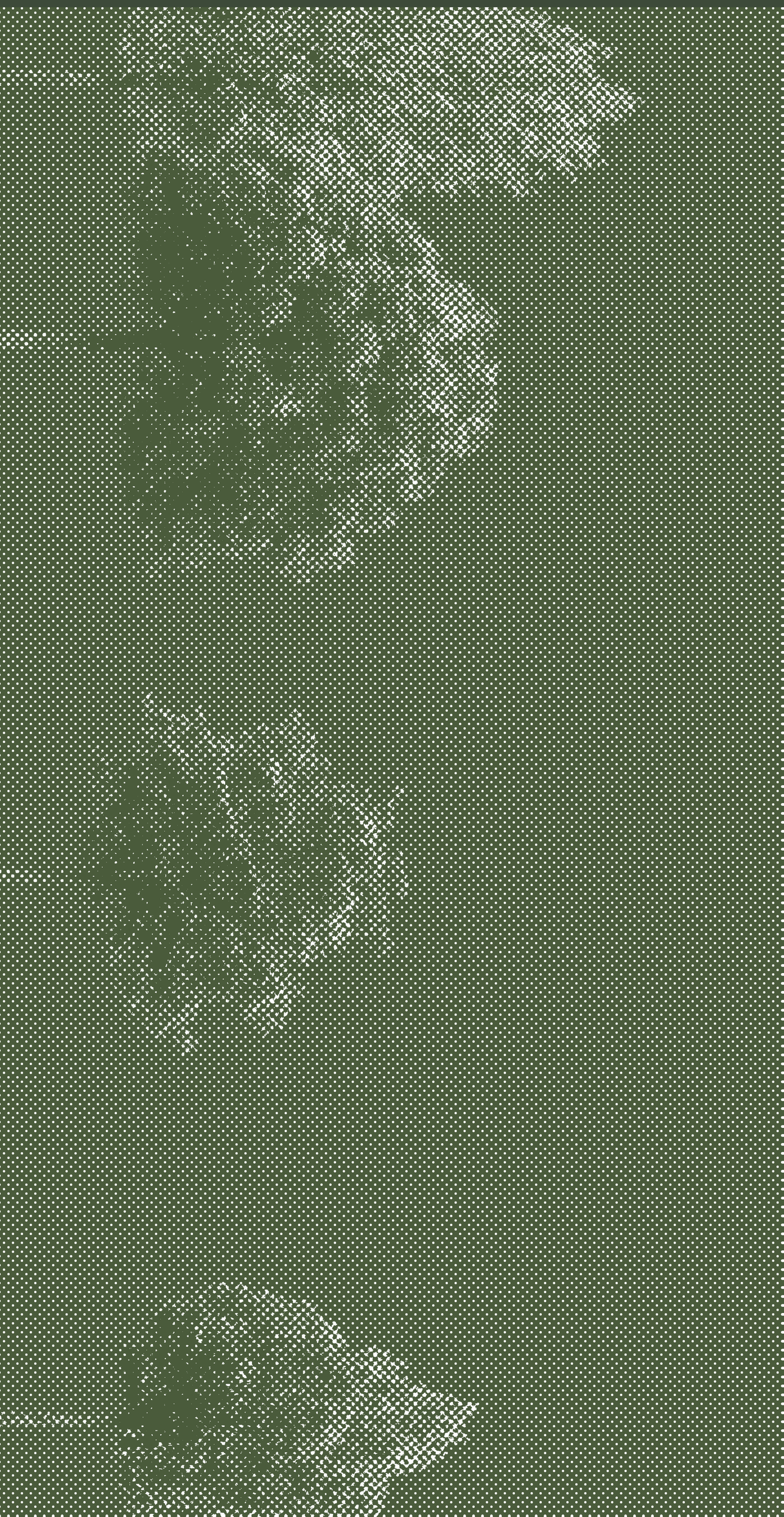
George (78 years)



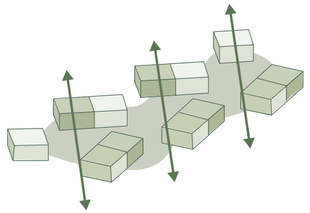
George has lived near Refshaleøen for many years and visits the area occasionally, but finds it increasingly difficult to navigate due to poor wayfinding and the lack of seating and rest opportunities.

Health Issues (65+ year olds)

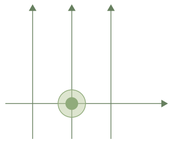
While seniors are often assumed to be less affected by digital culture, the increasing digitalization of everyday services creates significant and often overlooked challenges for this age group. Physically, the progressive replacement of in-person services with digital alternatives reduces opportunities for incidental movement and active participation in public life, contributing to accelerated physical decline and reduced mobility (Sallis et al., 2006). The social consequences are equally significant: as peer networks diminish with age and digital platforms become the primary channel for maintaining social contact, many seniors experience profound isolation. (Cacioppo & Hawkley, 2003). Mentally, the combination of social isolation, reduced autonomy, and the disorienting pace of technological change contributes to heightened anxiety and a diminished sense of belonging within the urban environment (WHO, 2016). For this group, the quality and accessibility of public space is not merely a matter of comfort - it is a direct determinant of health, independence, and dignity (Gehl, 2010).



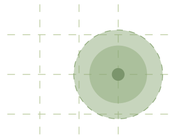
Analysis Group



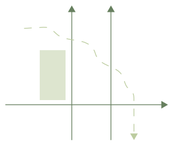
The street structure of Refshaleøen is examined with particular attention to how its current configuration either supports or hinders active, pedestrian-oriented movement. The following sub-aspects address the legibility, hierarchy, and connectivity of the existing network.



Guidance and Legibility examines the degree to which the street network provides clear spatial orientation and intuitive wayfinding, assessing whether routes are readable and transitions well-defined.



Entrances & Gateways focuses on the points of arrival into the site, examining whether existing entrances are spatially defined and capable of establishing a clear sense of arrival and orientation.



Street Hierarchy investigates the differentiation between streets, examining whether a legible hierarchy exists that supports both efficient movement and neighborhood-scale liveability.

Relevant Spatial Criteria

Permeable Streets that Enable Choice (B)

A fine-grained street network with short blocks and multiple route options enhances spatial permeability and movement efficiency (Hillier, 1996). Such configurations allow for flexible navigation, reduce travel distances, and support both pedestrian and cyclist flows, fostering a resilient and adaptable urban structure that accommodates diverse patterns of use (Carmona et al., 2010).

Legible Structure that Supports Orientation (F)

Urban layouts must exhibit a clear spatial hierarchy and legible organization, enabling users to orient themselves and understand the structure of their environment (Lynch, 1960). Recognizable paths, nodes, and edges contribute to cognitive mapping and enhance the overall usability of space (Carmona et al., 2010).

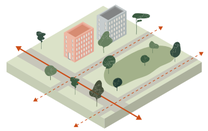
Comfortable Walking Distances (G)

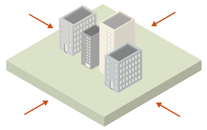
Spaces should be designed with manageable walking distances and universal accessibility in mind, ensuring usability for individuals of all ages and abilities (Gehl, 2010). This includes barrier-free design, intuitive circulation, and spatial arrangements that reduce physical and cognitive effort (WHO, 2016).

Inclusive Design that Welcomes All (N)

Inclusive design strategies that accommodate all ages and abilities foster a sense of belonging (WHO, 2016). By addressing diverse needs and promoting equitable access, urban environments become socially sustainable and supportive of collective identity (Gehl, 2010; Wolch et al., 2014).









Key Locations Where to Analyze Key Aspects

Connectivity

Integration of the Site Into City Structure

XL

Mobility on Site

L

Slow Mobility
Fast Mobility
Barriers/
Fences

Legibility

Street Layout Site

L

Street Layout Østerbro

L

Readable Layout
Spatial Hierachy
Fine-Grain Street
Network

Entrances & Gateways

Entrances to Site

L

Entrance Area

M

Walkability
Legibility
Entrances

Location on Bigger Scale



The analysis of the first aspect group begins at the city scale, examining how Refshaleøen is currently connected to the broader urban fabric of Copenhagen. The site reveals significant connectivity deficits that fundamentally undermine its accessibility and integration into the city's movement networks.
At present, Refshaleøen is reachable primarily by a single road corridor, with limited cycling infrastructure and nearly no direct public transport connection - conditions that effectively isolate the site from the everyday mobility patterns of the city. The absence of a metro connection is particularly striking given the site's scale and development potential. While the planned M5 line will fundamentally alter this condition upon its completion, the analysis of the current state reveals the infrastructural gap that must be addressed.



Connectivity

How Well is the Site Integrated in the City Structure of Copenhagen?



Figure 17. Map of Copenhagen highlighting fast mobility systems.

Scale 1 : 125.000

- Land Area
- Site
- Radius 1 KM
- National Roads
- Primary Roads
- Secondary Roads
- Residential Roads
- Important Metro Stops
- Metro Stops
- Metro Lines
- Train Lines

N

Fast Mobility Systems

Refshaleøen is served by a single vehicular access road, creating a critical dependency on car-based movement that actively undermines conditions for a safe, pedestrian-oriented environment.



Figure 18. Map of Copenhagen highlighting slow mobility systems.

Scale 1 : 125.000

- Land Area
- Site
- Cycling Network
- Bus Lines

N

Slow Mobility Systems

Despite Copenhagen's cycling culture, dedicated infrastructure connecting Refshaleøen to the broader network remains fragmented - discouraging active travel and disconnecting the site from surrounding neighborhoods.

How Can the Site be Implemented Into the Existing City Structure?

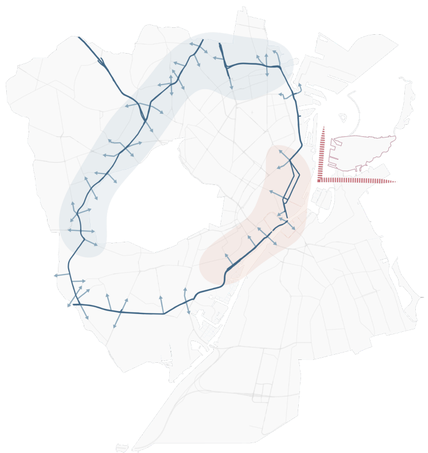


Figure 19. Map identifying key disconnections between the city and the site.

Scale 1 : 125.000

- Land Area
- Site
- National & Primary Roads
- Connections Primary-Secondary
- Secondary Roads
- Well Connected Areas
- Inverted Connected Areas
- Disconnected Site

N

Barriers & Disconnection

Wide vehicular roads, industrial remnants, and undefined spatial edges create physical and perceptual barriers that fragment movement both internally across the site and externally toward adjacent urban areas.

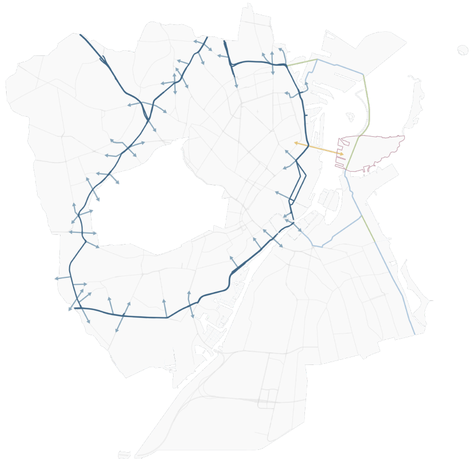


Figure 20. Map illustrating the proposed mobility structure at the city scale.

Scale 1 : 125.000

- Land Area
- Site
- National & Primary Roads
- Connections Primary-Secondary
- Secondary Roads
- Strengthened Existing Roads
- Added Roads
- Added Connections

N

The Need for a Defining Road Structure

A clearly defined primary road framing the site is essential - serving as the structural backbone from which a finer-grained, pedestrian-friendly street network can be developed.

„There is a certain distance between Refshaleøen and the rest of the city - not only streetwise." (Nikolaj, 2026)

Location on Bigger Scale



Shifting from the city scale to the site scale, the analysis now examines the internal connectivity and movement conditions of Refshaleøen in greater detail. At this level, a series of significant spatial deficiencies become apparent. The site's considerable size generates substantial walking distances that are currently unmediated by a legible or comfortable pedestrian network, making large portions of the area effectively inaccessible on foot for many user groups. Physical barriers - including fences, undefined edges, and remnant industrial infrastructure - further fragment movement across the site, interrupting potential routes and creating dead ends that discourage exploration and everyday use. Compounding these conditions, the site's sole bus stop is located exclusively at the neighborhood entrance, leaving the vast majority of Refshaleøen without any meaningful public transport access.



Connectivity

How Well is the Site Connected?



Scale 1 : 20.000

- Land Area
- Water Structure
- Buildings
- Street Structure
- Bus Lines
- Bus Stops
- Parkings Spots
- Future Metro Stop
- Radi 400/800m Bus Stop
- Radi 400/800m Metro

Figure 21. Map showing public transport accessibility and walking distances on the site.

How Well is the Walkability on Site?



Scale 1 : 20.000

- Land Area
- Water Structure
- Buildings
- Street Structure
- Barriers or Fences
- Sidewalks
- Important Crossings
- Walking Distance From Entrance 5/10/15 Min

Figure 22. Walkability assessment map of the site.

Photos Site



Figure 23. Photograph of site barrier (fence).



Figure 24. Additional photograph of fence condition.

Scattered fencing, undefined edges, and residual industrial boundaries interrupt pedestrian movement across the site, discouraging exploration and fragmenting what could otherwise be a continuous and legible public realm.

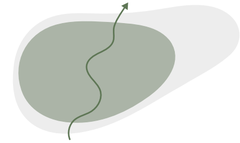
How can Car-Driving be Discouraged?



Scale 1 : 20.000

- Land Area
- Water Structure
- Buildings
- Street Structure
- Radi 400/800m Added Stops
- Radi 400/800m Bus Stop
- Radi 400/800m Metro

Figure 25. Map illustrating strategies to reduce car dependency on the site.



A single bus stop at the neighborhood entrance leaves the majority of Refshaleøen without meaningful public transport access. A more distributed network of stops throughout the site is essential to ensure equitable mobility and reduce dependency on private vehicles.

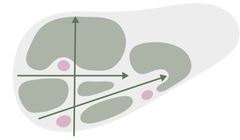
How can Walking & Cycling be Encouraged?



Scale 1 : 20.000

- Land Area
- Water Structure
- Buildings
- Street Structure
- Primary Roads
- Potential Mobility Hub
- Walking Distance 5/10/15 Min

Figure 26. Map proposing improvements for walking and cycling infrastructure.



Strategically placed mobility hubs along primary streets - offering bike sharing, public transport access, and car-free connections - would discourage vehicle penetration into the neighborhood interior, actively encouraging walking and cycling as the primary modes of everyday movement.

Section Walkability Scale 1 : 3.000

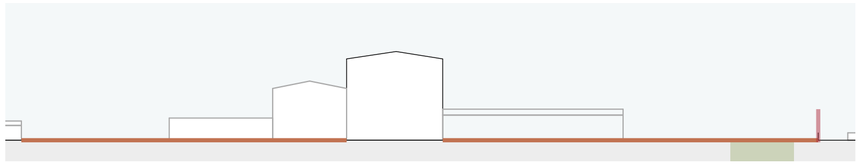


Figure 27. Section illustrating large unprogrammed distances on the site.

The considerable scale of Refshaleøen results in walking distances that feel disproportionate and uninviting without adequate spatial activation along the way. The absence of programmed edges and resting opportunities underlines the urgent need for a continuously activated pedestrian network.

Location on Bigger Scale



Moving deeper into the site-scale analysis, the focus now shifts to the readability and hierarchical organisation of Refshaleøen's street structure. A legible street network - one that clearly differentiates between primary routes, secondary streets, and pedestrian pathways - is a fundamental prerequisite for a walkable, health-promoting neighborhood.

To illuminate the deficiencies of the current situation, the site is examined in direct comparison with Østerbro, an established and well-loved residential neighborhood in Copenhagen that exemplifies how a coherent street hierarchy can support active mobility, social life, and spatial orientation. The contrast between the two areas is striking, and reveals the extent to which Refshaleøen's current street structure falls short of the conditions necessary to support everyday pedestrian life.



Legibility

How Readable is the Street Structure of the Site?



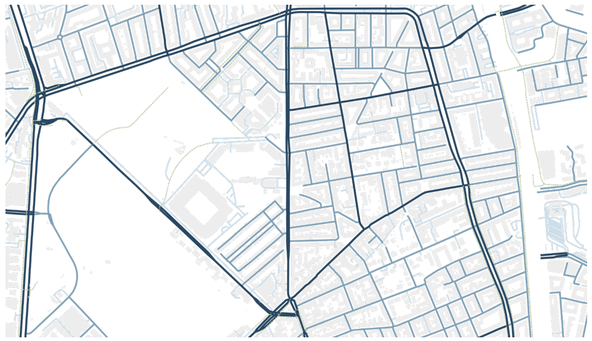
Scale 1 : 20.000

- Land Area
- Water Structure
- Buildings
- Primary Roads
- Secondary Roads
- Parking Spots
- Places with <2 Route Options
- Places with >4 Route Options

N

Figure 28. Map showing readability of the street structure on site.

What can be Learned From Other Neighborhoods?



Scale 1 : 20.000

- Land Area
- Buildings
- Primary Roads
- Secondary Roads
- Residential Roads
- Walking Paths

N

Figure 29. Map showing readability of the street structure in Østerbro.



Figure 30. Photograph of wide streets and non-human scale buildings on site.



Figure 31. Photograph illustrating lack of clear spatial edges on site.

Refshaleøen's streets are predominantly wide, car-scaled, and spatially undefined - offering little guidance to the pedestrian. The absence of clear edges and activated frontages makes navigation across the site disorienting and uninviting.

Zoom-In Into the Street Structure of the Site



Figure 32. Zoom-in map showing unclear street hierarchy on site. *Google (2026)*

- Primary Roads
- Secondary Roads



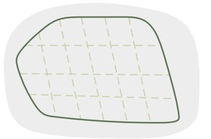
Refshaleøen lacks this differentiation entirely. Main and secondary routes are spatially indistinguishable, and the absence of dedicated pedestrian infrastructure results in a homogeneous and disorienting network that fails to support safe, comfortable, or intuitive movement across the site.

Zoom-In Into the Street Structure of Østerbro



Figure 33. Zoom-in map of Østerbro illustrating clear street hierarchy. *Google (2026)*

- Primary Roads
- Secondary Roads



Østerbro's street network exhibits a clear differentiation between main streets, secondary residential streets, and pedestrian pathways - a hierarchy that distributes movement flows appropriately and creates a gradual transition from busy arterials to quiet, human-scale residential environments.



Figure 34. Photograph of a main street in Østerbro.



Figure 35. Photograph of a residential street in Østerbro.



Figure 36. Aerial view of typical building blocks in Østerbro. (Google, 2026)

Østerbro demonstrates how a well-structured street network supports intuitive navigation and pedestrian comfort. Its clearly defined routes, activated ground floors, and consistent spatial proportions create a neighborhood that is immediately readable and easy to move through.

Location on Bigger Scale



The analysis now turns to the entrance conditions of Refshaleøen - the critical threshold through which residents, visitors, and commuters access the site.

What becomes immediately apparent is that the existing entrance is overwhelmingly oriented toward vehicular traffic, with little spatial consideration given to the pedestrian or cyclist arriving on foot or by bike.

The lack of a clearly defined, welcoming arrival sequence undermines the first impression of the area and sets a tone that is at odds with the ambition of a vibrant, health-promoting residential neighborhood.



Entrances & Gateways

Attractive Entrances into the Neighborhood???



Scale 1 : 20.000

- Land Area
- Water Structure
- Buildings
- Main Entrance
- Street Structure

N

Figure 37. Map of the site entrance area.



Scale 1 : 8.500

- Land Area
- Water Structure
- Buildings
- Street Structure
- Main Entrance
- Pedestrian Paths
- Barrier or Fences
- Unclear Area

N

Figure 38. Zoom-in map of the site entrance area.

Poor Activation Along the Entrance Route

The route leading to the site's entrance is characterised by sparse programming, blank edges, and an absence of the spatial qualities that would make the approach feel inviting and safe. For the pedestrian, the journey to the site offers little incentive and does little to signal arrival into a living neighborhood.

Where should entrances be strategically placed?



N

Scale 1 : 20.000

- Land Area
- Water Structure
- Buildings
- Street Structure
- Primary Roads
- Potential Entrance Areas
- Kept Buildings

Figure 39. Map illustrating proposed entrance placements.

Photo Entrance Area



Figure 40. Photograph of entrance area 1.



Figure 41. Photograph of entrance area 2.



Figure 42. Photograph of roundabout on site.

Photos Route to Site



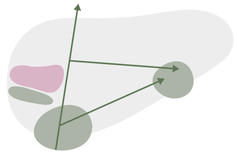
Figure 43. Photograph of bicycle route to site (10-minute distance).



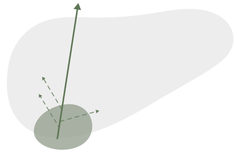
Figure 44. Photograph of bicycle route to site (2-minute distance).



Figure 45. Photograph of site entrance along route.



The site's eastern edge offers significant potential for a new entrance that brings visitors into immediate contact with the waterfront - one of Refshaleøen's greatest spatial assets. Equally, a western entrance would enable direct connections from Indre By, making the site accessible to a far broader urban population and integrating it meaningfully into the everyday movement patterns of the city.



The existing entrance offers no clear spatial direction upon arrival. Without legible routes, visible landmarks, or a defined sense of threshold, visitors are left disoriented - uncertain of where to go and unable to intuitively navigate toward the site's key destinations and public spaces.

> *„There is no entrance at all."*
> *(Nikolaj, 2026)*

Before vs. After

From an Unclear Entrance Area to Multiple Inviting Entrances

The analysis reveals a critical absence of defined, welcoming arrival points across the site. Moving forward, the design strategy proposes multiple new entrance situations distributed along the site's perimeter - each spatially defined, programmatically activated, and capable of establishing a clear and inviting threshold that draws residents and visitors into the neighborhood from multiple directions.



From a Chaotic Street Structure to a Readable Layout

The current street network of Refshaleøen lacks the hierarchy, definition, and legibility necessary to support confident pedestrian navigation. The design response proposes a clearly structured street layout that differentiates between primary movement corridors, secondary residential streets, and intimate pedestrian pathways - creating a spatial framework that is intuitive to navigate, comfortable to inhabit, and supportive of active everyday mobility.



From Barriers to Connectors

Where the existing site is fragmented by fences, undefined edges, and residual industrial boundaries, the design strategy proposes a fundamental spatial inversion - transforming points of disconnection into moments of connection. By removing barriers, activating edges, and introducing continuous pedestrian routes, the proposals aim to stitch the site together internally while strengthening its links to the surrounding city.



Before Scale 1 : 3.000

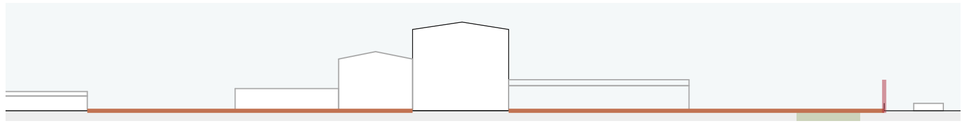


Figure 46. Section of street structure before intervention.

After Scale 1 : 3.000

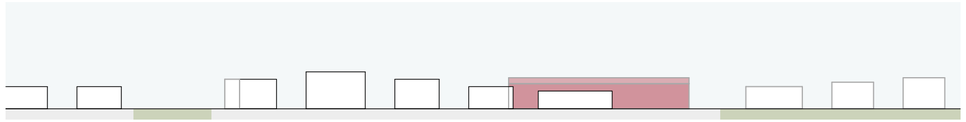


Figure 47. Section of intended street structure.

Turning the Site From an Unclear and Disconnected Network ...



Scale 1 : 15.000

- Land Area
- Lynetteholmen Development
- Existing Water Structure
- Existing Buildings
- Existing Street Structure
- Entrance
- Barriers
- Walking Distance 5/10/15 Min
- Main Service Roads
- Other Roads

N

Figure 48. Map of existing street structure on site.

... Into a Readable Neighborhood That Encourages Movement



Scale 1 : 15.000

- Land Area
- Lynetteholmen Development
- Existing Water Structure
- Existing SurroundingBuildings
- Kept Buildings
- Entrances
- Street Grid
- Bridges
- Main Streets
- Residential Streets
- Green Streets

N

Figure 49. Map of proposed street structure design.

Location on Bigger Scale

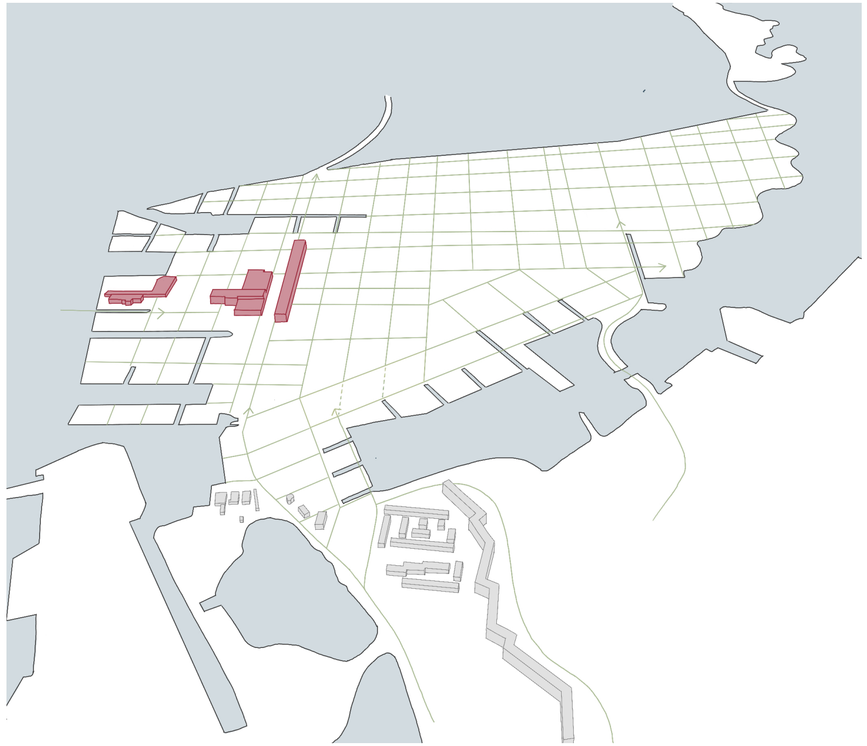


The design response to the analysed street structure deficiencies begins at the site scale with the proposal of a new street grid for Refshaleøen. Rather than imposing an abstract geometric order onto the site, the proposed grid is developed organically - taking its orientation from both the existing internal street structure of the area and the spatial logic of the site's perimeter edges. This approach ensures that the new network feels spatially coherent and rooted in the specific character of Refshaleøen, rather than disconnected from its context. The grid dimensions are derived directly from a comparative analysis of neighboring Copenhagen districts, ensuring that the proposed block sizes and street spacings align with the proven spatial proportions that support walkable, liveable, and socially active neighborhood environments.



Legibility

New Street Grid



Land Area
Surrounding Buildings
Existing Water Structure
Kept Buildings
Street Grid

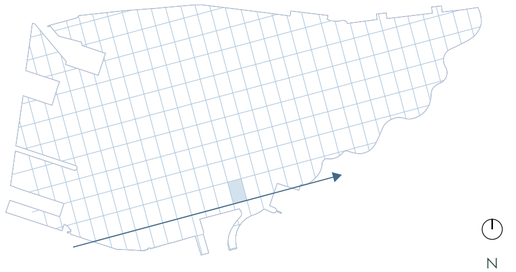
Figure 50. Aerial view of new street grid.

Orientation Along the Central Axis



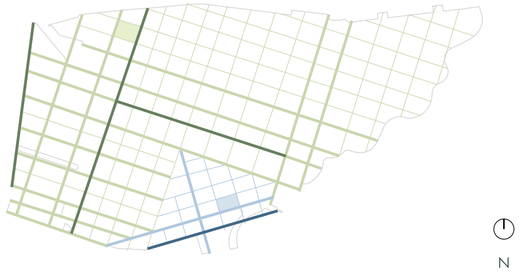
The first step in the grid development takes its cues from the site's existing central axis - the primary organisational spine that currently runs through Refshaleøen. By anchoring the initial grid to this established orientation, the proposal builds upon existing spatial logic rather than overriding it.

Orientation Along the Southern Waterfront



A second grid orientation is derived from the southern waterfront edge - one of the site's most significant spatial assets and the location of key new entrance situations. This alignment ensures that the grid responds to the waterfront's geometry, drawing movement toward the water and reinforcing its role as a central structuring element of the neighborhood.

Combining the Grids



The two grid orientations are overlaid and combined into a single coherent framework, incorporating existing streets and their alignments. The resulting grid reflects the complexity of the site - balancing internal spatial logic with waterfront orientation to produce a street network that feels both purposeful and naturally embedded within the area.

Learning from Østerbro

Overlaying Østerbro's street grid onto the site confirms that the proposed block dimensions align closely with those of one of Copenhagen's most successful residential neighborhoods. While the grid idea and scale are drawn from this precedent, the layout is precisely adapted to the specific geometry, edges, and conditions of Refshaleøen.

Entrances & Gateways

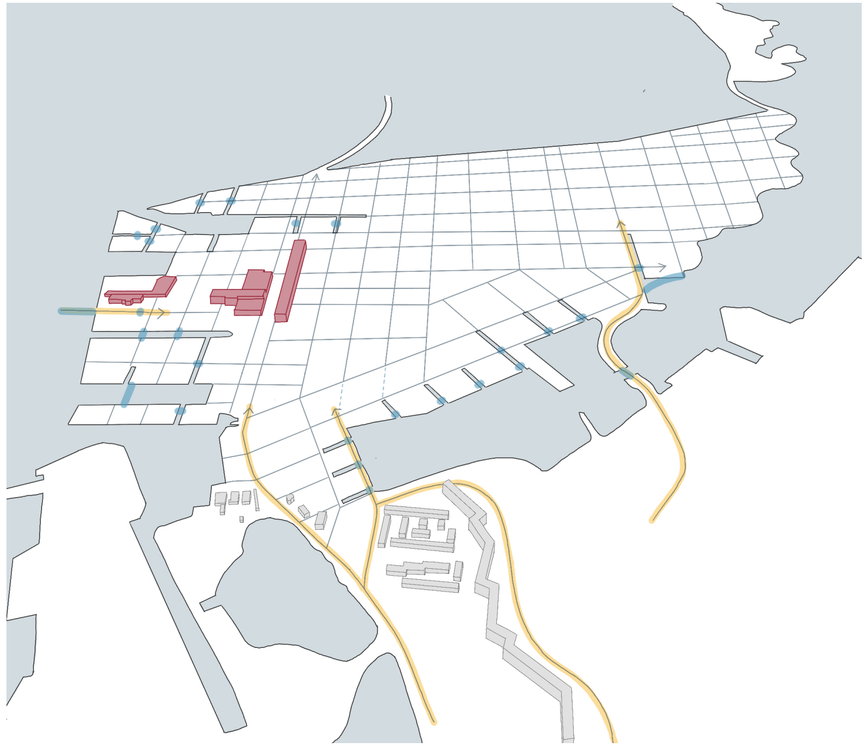
Location on Bigger Scale



Having established the structural logic of the street grid, the design now addresses one of the most critical findings of the analysis - the absence of defined, welcoming, and multi-directional entrance situations across the site. The proposal introduces four distinct entrance points, each carefully positioned and individually characterised to serve different modes of arrival, different user groups, and different spatial experiences. Together, they ensure comprehensive accessibility across the neighborhood while simultaneously embodying the fundamental principles of the thesis - prioritising calmness over speed, facilitating contact with nature and heritage, and creating moments of arrival that invite rather than disorient. Each entrance communicates a different dimension of what Refshaleøen can become, collectively establishing a first impression that is worthy of the neighborhood's ambitions.



New Entrance Situations



Land Area
Surrounding Buildings
Existing Water Structure
Kept Buildings
Street Grid
Bridges
Entrances

Figure 51. Aerial view of proposed entrance configurations.

The Main Entrance - Redesigned Northern Gateway



The existing northern entrance is retained as the primary vehicular access point - the only entrance through which cars may enter, in keeping with the neighborhood's traffic-calmed vision. However, the entrance is fundamentally redesigned to address the urgencies identified in the analysis, transforming it from a car-dominated threshold into a spatially defined, welcoming gateway that clearly orients the arriving resident and visitor.

The Southern Entrance - Quiet & Green



A new pedestrian and cycling entrance is introduced at the southern tip of the site, situated directly along the waterfront. Characterised by greenery, calm spatial sequences, and immediate proximity to the water's edge, this entrance offers an arrival experience defined by tranquility and natural connection - setting the tone for the restorative qualities of the neighborhood beyond.

The Western Entrance - Heritage Gateway



The western entrance, also accessible by bridge, leads directly into the site's industrial heritage area - immersing the arriving visitor in the rich spatial character of Refshaleøen's past from the moment of entry. This threshold fosters an immediate sense of place, identity, and belonging, grounding the new neighborhood in the historical layers that give it its distinctive character.

The Eastern Entrance - Waterfront Bridge



The eastern entrance is established via a new pedestrian and cycling bridge, bringing visitors into immediate and direct contact with the waterfront upon arrival. This threshold celebrates one of Refshaleøen's most defining spatial assets from the very first moment of entry, offering a memorable and health-promoting arrival experience that connects the site to the wider harbour landscape.

Location on Bigger Scale



With the street grid established and the entrance situations defined, the design now introduces a clear hierarchical differentiation between street types - transforming the currently undifferentiated and car-dominated network into a legible, multi-layered system that supports both efficient movement and high-quality pedestrian life. The existing central axis is retained as an important spatial reference and primary orientation element within the neighborhood. Three distinct street typologies are introduced - main streets, residential streets, and green streets - each with a specific spatial character, mobility profile, and role within the overall network. While main streets and residential streets accommodate car traffic, vehicular presence on residential streets is significantly reduced, prioritising the pedestrian and cyclist.



Legibility

Street Hierarchy

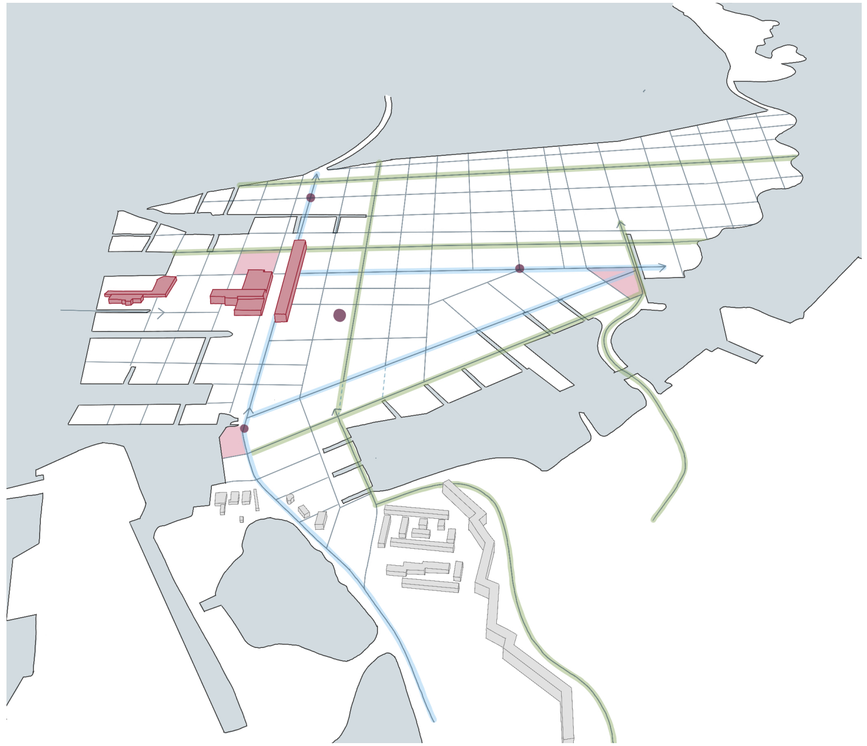


Figure 52. Aerial view illustrating proposed street hierarchy.

- Land Area
- Surrounding Buildings
- Existing Water Structure
- Kept Buildings
- Street Grid
- Main Streets
- Green Streets
- Mobility Hubs
- Public Transport Stops

Street Grid



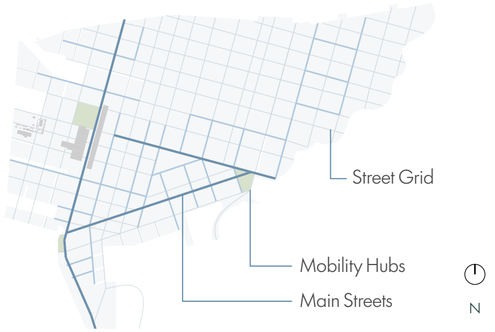
The proposed street grid establishes a coherent spatial framework for Refshaleøen, deriving its orientation from the site's existing structure and waterfront edges. Its block dimensions align with the proven proportions of successful Copenhagen neighborhoods, ensuring a walkable and legible spatial organisation.

Street Hierarchy



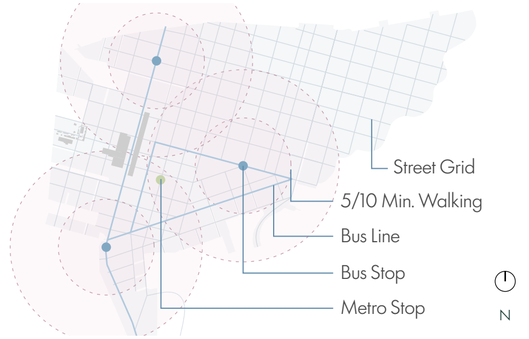
Three clearly differentiated street typologies - main streets, residential streets, and green streets - introduce a spatial hierarchy that distributes movement flows appropriately and creates a gradual transition from activated primary routes to quiet, human-scale residential environments.

Mobility Hubs & Car Routes



Strategically located along the main car routes, mobility hubs offer residents convenient access to bike sharing, public transport, and car-free onward connections - actively discouraging vehicle use within the neighborhood interior and supporting the shift toward active and sustainable everyday mobility.

Public Transport Stations & Walkability



The introduction of new public transport stops distributed throughout the neighborhood marks a fundamental improvement in the site's walkability. No resident is left beyond comfortable walking distance of a stop, ensuring that the neighborhood is accessible, equitable, and genuinely independent of private vehicle use.

Location on Bigger Scale

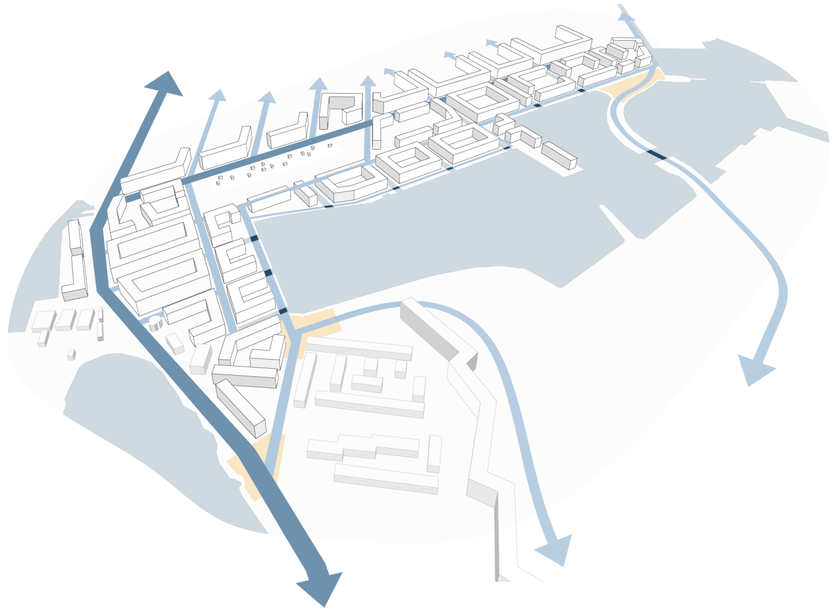


The design now zooms into the first chunk - a residential development situated directly at the southern entrance area of the neighborhood. This scale allows for a more precise spatial articulation of the design principles established at the site level, translating the street grid and hierarchy into a legible and experientially rich built environment. The bird's eye perspective reveals how the different street typologies manifest spatially within this part of the site, with key entrance areas clearly marked and the transition between street types made legible through spatial differentiation. Crucially, the configuration of the street grid at this scale demonstrates one of its most important qualities — its capacity to draw residents and visitors naturally into the heart of the neighborhood, creating an intuitive spatial sequence that guides movement inward while offering a series of varied and engaging spatial experiences along the way.



Legibility

Street Hierarchy



- Land Area
- Surrounding Buildings
- Existing Water Structure
- Added Buildings
- Entrance Area
- Main Streets
- Other Streets
- Bridges

Figure 53. Zoom-in aerial view showing hierarchy and readability.

Public & Private Streets



Not all streets within the proposed network are conceived as equally public in character. While the main streets are designed as fully public corridors - activated, accessible, and programmed to serve the entire neighborhood and beyond - the residential and green streets operate within a more private register. These streets are not exclusively restricted, and remain physically accessible to all, but their spatial character, scale, and programming are deliberately oriented toward the residents of the immediately surrounding buildings. This gradual transition from fully public to semi-private street space creates a layered spatial structure that supports both the social vibrancy of the main routes and the sense of calm, ownership, and belonging that makes residential environments feel genuinely liveable - a quality considered essential to the health-promoting ambitions of the neighborhood.

Permeable Street Structure

Before: A single access road with no internal street network offers virtually no route choice for pedestrians or cyclists, rendering large portions of the site unreachable on foot.
After: A coherent grid of differentiated streets provides multiple route options across the site, supporting flexible, intuitive navigation for all modes of active travel.



Legible Structure

Before: The absence of a discernible street hierarchy and the homogeneous scale of the industrial fabric leave the site spatially disorienting, with no clear spatial cues to guide navigation.
After: A clearly differentiated street hierarchy - anchored by the retained central axis and articulated through main streets, residential streets, and green streets - establishes a legible spatial order that supports confident and stress-free navigation.



Location on Bigger Scale



The section through the first chunk reveals how the proposed street typologies translate into three-dimensional spatial reality, demonstrating the relationship between street character, building height, ground-floor programming, and the quality of the spaces in between. Moving from the main street through the residential street to the waterfront edge and the green courtyard beyond, the section illustrates a carefully considered spatial gradient - one in which the transition from public to private, from activated to restorative, and from urban to natural is made legible through deliberate architectural and landscape decisions at every level of the built environment.



Legibility

Street Hierarchy



Figure 54. Section along main street showing street types. Scale 1 : 500

The main street is conceived as the neighborhood's most urban and publicly activated edge, and its built form reflects this role. Buildings along the main street are positioned at greater heights, providing the spatial enclosure necessary to define a strong public corridor while also creating a degree of acoustic buffering between the busy street and the more intimate residential environments beyond. Ground floors are occupied by active plinths - commercial, cultural, and community uses that animate the street throughout the day. Balconies along the main street facade are deliberately limited, reinforcing the distinction between the public character of this edge and the more private residential life that unfolds on the quieter sides of the block.

In contrast, the residential street is smaller in scale and more intimate in character. Buildings are lower here, bringing the built form into closer alignment with the human body and creating a sense of enclosure and comfort that supports social interaction and a feeling of neighborhood belonging. The reduced building height also ensures generous daylight access to both the street and the dwellings themselves - a condition directly linked to well-being and restorative everyday experience. Ground floors accommodate residential programs alongside occasional active uses, reinforcing the semi-private character of these streets. Balconies are present on every floor, ensuring that residents maintain a strong visual and sensory connection to the outdoor environment - a quality considered essential for mental well-being and the experience of nature within daily life.

As the section moves toward the waterfront, the building height gradually reduces further, creating a spatial sequence that opens up toward the water and maximises views and light penetration across the site. Balconies deepen and orientate themselves toward the waterfront, generating generous indoor-outdoor transitions that invite residents to engage with the blue edge as part of their everyday domestic experience. Finally, the green courtyards enclosed within the blocks are conceived as intimate, nature-filled spaces surrounded by balconies and windows on all sides - ensuring that every resident enjoys direct visual access to greenery, supporting the restorative and health-promoting ambitions that lie at the heart of the neighborhood's design.

Location on Bigger Scale

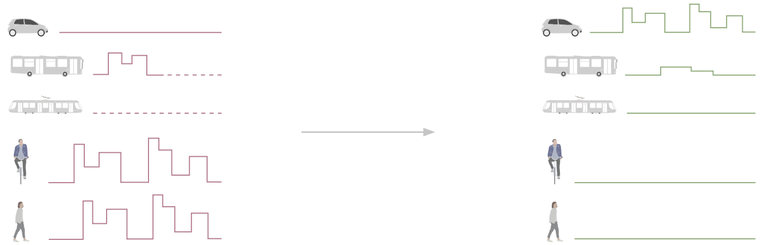


This page brings together the key design proposals developed within the Street Structure & Mobility aspect group, presenting a consolidated overview of the spatial interventions that collectively address the urgencies identified during the analysis phase. From the definition of a coherent street grid to the differentiation of street typologies and the introduction of new entrance situations and mobility hubs, the proposals form an integrated spatial framework - one in which every decision is guided by the ambition of creating a walkable, legible, and health-promoting neighborhood environment for the future residents of Refshaleøen.



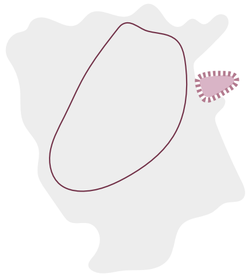
Relation to City

Movement Prioritisation



Before

Before, Refshaleøen existed at the margins of Copenhagen's urban fabric - physically close to the city centre yet functionally disconnected from it. Reachable by a single car-oriented road corridor, with no direct public transport connection and fragmented cycling infrastructure, the site demanded private vehicle use as the default mode of access - a condition that not only isolated it from the everyday mobility patterns of the city but actively reinforced the car dependency and sedentary behaviors that the thesis identifies as central to the health challenges of contemporary urban life (Gehl, 2010; Sallis et al., 2006). Pedestrians and cyclists were, in effect, spatial afterthoughts.



After

After, Refshaleøen becomes a connected node within Copenhagen's broader mobility network. New pedestrian and cycling bridges link the site directly to Indre By and the eastern harbor, while the future M5 metro line integrates it into the city's public transport infrastructure. Mobility hubs along the main streets provide shared transport options that actively discourage car use within the neighborhood interior, and a fine-grained, hierarchically differentiated street network ensures that walking and cycling are not merely possible but genuinely preferable as the primary modes of everyday movement. The site shifts from a place one drives to, to a place one moves through - seamlessly, actively, and on foot.

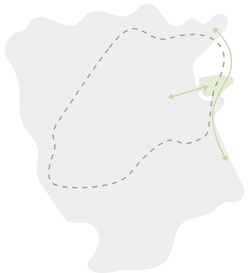




Figure 55. Map of combined proposed design (Aspect Group 1).

The design proposals for this aspect group are structured around three interconnected spatial moves. First, the introduction of a new street grid establishes the fundamental organisational framework of the neighborhood - deriving its logic from the site's existing structure, its waterfront orientation, and the proven block dimensions of established Copenhagen districts. Second, a clear street hierarchy differentiates between main streets, residential streets, and green streets, distributing movement flows appropriately and creating a spatial gradient from fully public and activated corridors to intimate, semi-private residential environments. Third, the strategic placement of mobility hubs along primary routes, combined with the introduction of new public transport stops throughout the neighborhood, actively encourages residents to prioritise walking, cycling, and public transport over private vehicle use - embedding active mobility into the everyday routines of the neighborhood from the ground up. Together, these interventions transform Refshaleøen's currently fragmented and car-dominated movement infrastructure into a coherent, legible, and human-scaled spatial framework capable of supporting the health and well-being of its future inhabitants.

Scale 1 : 8.500

- Land Area
- Lynetteholmen Development
- Existing Water Structure
- Existing SurroundingBuildings
- Kept Buildings
- Entrances
- Street Grid
- Bridges
- Main Streets
- Residential Streets
- Green Streets

N

Location on Bigger Scale



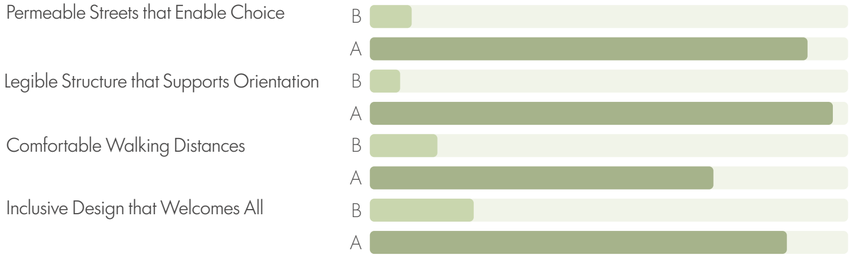
This page brings together the key design proposals developed within the Street Structure & Mobility aspect group, presenting a consolidated overview of the spatial interventions that collectively address the urgencies identified during the analysis phase. From the definition of a coherent street grid to the differentiation of street typologies and the introduction of new entrance situations and mobility hubs, the proposals form an integrated spatial framework - one in which every decision is guided by the ambition of creating a walkable, legible, and health-promoting neighborhood environment for the future residents of Refshaleøen.



Spatial Criteria

The analysis of Refshaleøen's existing street structure revealed a series of fundamental spatial deficiencies - a car-dominated access infrastructure, an absence of hierarchical differentiation, poor legibility, and a movement network that actively discourages pedestrian and cyclist use. The design proposals developed within this aspect group directly respond to each of these urgencies, translating the spatial criteria established in the theoretical framework into concrete interventions that measurably improve the quality, accessibility, and health-promoting potential of the neighborhood's movement environment. The following overview maps the most significant transformations - illustrating how each relevant spatial criterion shifts from its current deficient state to the improved condition proposed by the design.

Before vs. After



Permeable Streets that Enable Choice

Before: A single access road with no internal street network offers virtually no route choice for pedestrians or cyclists, rendering large portions of the site unreachable on foot.
After: A coherent grid of differentiated streets provides multiple route options across the site, supporting flexible, intuitive navigation for all modes of active travel.

Legible Structure that Supports Orientation

Before: The absence of a discernible street hierarchy and the homogeneous scale of the industrial fabric leave the site spatially disorienting, with no clear spatial cues to guide navigation.
After: A clearly differentiated street hierarchy - anchored by the retained central axis and articulated through main streets, residential streets, and green streets - establishes a legible spatial order that supports confident and stress-free navigation.

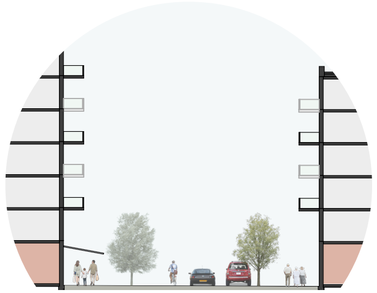
Comfortable Walking Distances

Before: Large undifferentiated expanses without programmatic activation, seating, or spatial variety make walking across the site feel disproportionate and uninviting.
After: A fine-grained street grid, distributed public transport stops, and continuously activated pedestrian routes significantly reduce effective walking distances and make movement through the neighborhood a genuinely comfortable and engaging experience.

Inclusive Design that Welcomes All

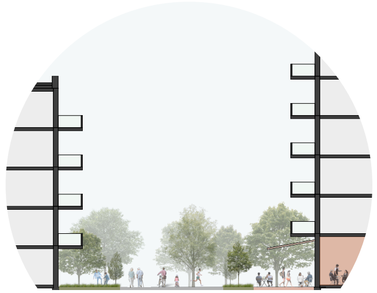
Before: The site's non-human scale, poor accessibility, unsafe conditions after dark, and lack of seating and rest opportunities create an environment that is uninviting and functionally exclusionary for many user groups.
After: Universal accessibility for all age groups and abilities ensure that the benefits of the neighborhood's spatial quality are available to every resident equally.

Main Street



Main streets form the primary public corridors of the neighborhood - fully activated, accessible to all, and lined with active ground-floor uses that ensure continuous vitality throughout the day. Their spatial proportions and building heights create a defined urban character, while mobility hubs at strategic intervals support the shift toward car-free everyday movement.

Residential Street

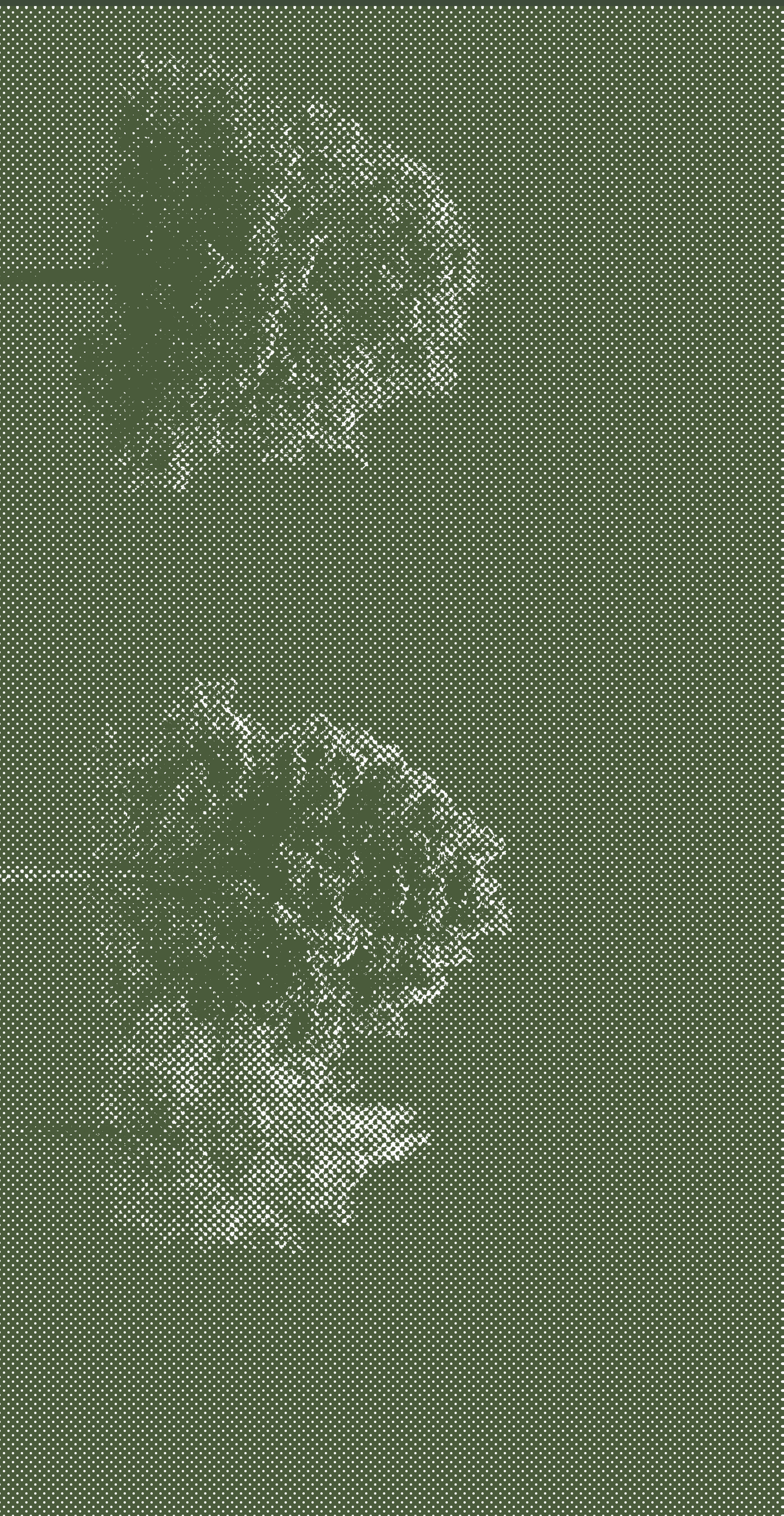


Residential streets occupy a quieter, more intimate register - smaller in scale, lower in building height, and oriented toward the daily life of immediately surrounding residents. Car presence is significantly reduced, and generous balconies on every floor ensure a strong connection between domestic life and the outdoor environment, supporting well-being and a sense of neighborhood belonging.

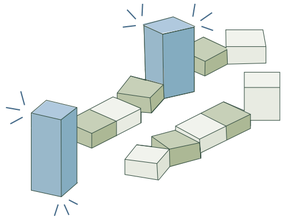
Green Street



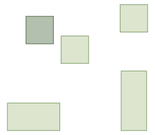
Green streets represent the most private and nature-oriented layer of the street network. Conceived as calm, heavily planted corridors that prioritise the pedestrian and the resident, they provide moments of greenery, tranquility, and sensory relief embedded within the everyday fabric of the neighborhood - functioning as restorative connectors between the more activated public edges and the intimate green courtyards within the blocks.



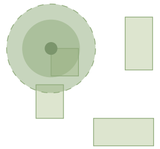
Analysis Group



The built environment of Refshaleøen reflects its industrial heritage, presenting a mix of large-scale structures, open plots, and emerging residential development. The following sub-aspects examine how the existing fabric shapes spatial experience at the human scale.



Building Scale and Massing examines how the scale and volumetric presence of existing structures relates to the surrounding public realm, assessing whether proportions support a human-scale environment.



Programming assesses the functional mix and spatial distribution of daily needs that enable routine activities to be performed locally, thereby reducing dependency on motorized transport and supporting urban resilience.



Landmarks investigates the presence and distribution of distinctive places that foster the sense of belging and place attachment to the neighborhood.

Relevant Spatial Criteria

Human-Scale Edges that Invite Movement (A)

Urban environments should be structured at a human scale, where building heights, spatial proportions, and edge conditions support perceptual comfort and engagement (Gehl, 2010). Active frontages and articulated façades contribute to a sense of enclosure and orientation, enabling individuals to navigate and experience space intuitively while maintaining visual and physical connection to their surroundings (Jacobs, 1961).

Daily Needs Within Walking Distance (C)

The integration of mixed-use functions ensures that daily needs can be met within walking distance, reducing dependency on motorized transport (Jacobs, 1961). By combining residential, commercial, and social infrastructures, urban areas become more vibrant and continuously activated, supporting economic vitality and everyday convenience (Gehl, 2010).

Distinctive Places that Build Identity (K)

A strong local identity is fostered through distinctive landmarks, recognizable spatial features, and culturally embedded design elements (Lynch, 1960). Such characteristics create meaningful places that support emotional attachment and reinforce a sense of continuity and belonging (Relph, 1976).

Inclusive Design that Welcomes All (N)

Inclusive design strategies that accommodate all ages and abilities foster a sense of belonging (WHO, 2016). By addressing diverse needs and promoting equitable access, urban environments become socially sustainable and supportive of collective identity (Gehl, 2010; Wolch et al., 2014).









Key Locations Where to Analyze Key Aspects

Post-Industrial Heritage

Building Typology & Density

XL

Spatial Qualities on Site

L

Landmarks
Building Sizes
Materials
Industrial Artfeacts

Programming & Amenities

Program on Site

L

Amenities on Site

L

Program
Amenitites
Walking Distance
Daily Rythms

Location on Bigger Scale



The analysis of the built environment begins at the site scale with an examination of Refshaleøen's existing building typologies and overall density - assessing its current spatial character in relation to comparable Copenhagen neighborhoods and exploring the range of residential development models that the site could accommodate. This comparative perspective reveals both the significant scale of the site's redevelopment potential and the range of typological approaches available for translating that potential into a coherent, human-scale neighborhood fabric.



How is the Building Size and Typology Compared to the Rest of the City?



Figure 56. Diagram comparing building types and scales.

Refshaleøen's existing built fabric is dominated by large-scale industrial structures whose dimensions bear little relationship to the human scale of a residential neighborhood. In comparison with surrounding Copenhagen districts, the site exhibits a striking absence of the fine-grained typological variety - row houses, perimeter blocks, mixed-use buildings - that typically characterises liveable and socially diverse urban neighborhoods.

- Refshaleøen
- Østerbro (North)
- Sydhavn (South)
- Vesterbro (West)
- Amager (East)
- Indre By (Inner City)

Site Scale 1 : 20.000



Figure 57. Map of existing buildings on site.

Site + Østerbro (High Density) Scale 1 : 20.000



Figure 58. Map overlay with Østerbro buildings.

Site + Sydhavn (Middle Density) Scale 1 : 20.000



Figure 59. Map overlay with Sydhavn buildings.

Site + Amager (Low Density) Scale 1 : 20.000

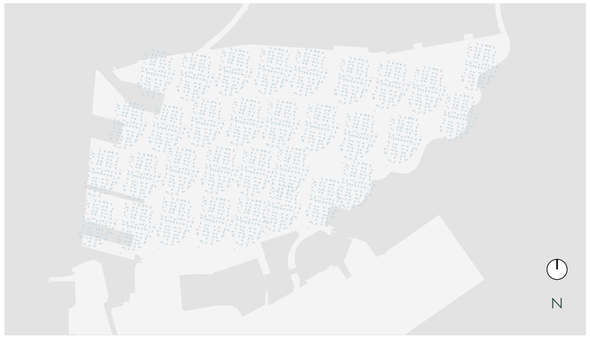


Figure 60. Map overlay with Amager buildings.

To explore the site's development potential, three density models drawn from existing Copenhagen neighborhoods are projected onto the site - low-density row house development, medium-density typologies as found in Sydhavn, and high-density perimeter block development as seen in Østerbro. This comparative overlay reveals that the site is capable of accommodating a diverse and graduated density distribution, providing a evidence-based foundation for the subsequent design decisions regarding built form and neighborhood character.

- Land Area
- Water Structure
- Existing Street Structure
- Existing Buildings (Site)
- Buildings Østerbro
- Buildings Sydhavn
- Buildings Amager

Location on Bigger Scale



Beyond its structural deficiencies, Refshaleøen possesses a rich and distinctive spatial character rooted in its industrial past. The site's existing built environment contains a range of heritage qualities - industrial artefacts, architecturally significant buildings, and a material palette shaped by over a century of maritime and manufacturing activity - that represent an invaluable spatial resource for the development of a neighborhood with a strong and authentic sense of identity. This layer of the analysis focuses on identifying, mapping, and understanding these qualities as assets to be preserved, activated, and woven into the fabric of the future neighborhood.



Post-Industrial Heritage

What Qualities are Already Present in the Neighborhood?



Figure 61. Map of current built environment qualities.

A spatial mapping of the site's qualitative built assets reveals a striking concentration of heritage value in the western portion of Refshaleøen. The remainder of the site is largely characterised by generic industrial structures with limited spatial or cultural significance, underscoring both the importance of protecting the western heritage cluster and the relative freedom available for new development across the broader site.

Industrial Artefacts Along the Central Axis



Figure 62. Photographs of industrial artefacts on site.

Scattered along the site's central axis, a series of industrial artefacts - anchors, H-profiles embedded in the ground, remnant machinery foundations, and structural steel elements - bear quiet testimony to Refshaleøen's shipbuilding past. These objects constitute a form of outdoor industrial memory, offering rich material for a future public realm that connects residents and visitors to the unique history of the place they inhabit.

„The first time I came here I didn't know what to expect. Then you arrive and it's just... big. Industrial." (Mads, 2026)

Architecturally Significant Buildings & Character



Several existing buildings on the site stand out for their architectural or programmatic distinctiveness - from the raw industrial grandeur of the large festival hall with its striking sculptural presence, to the cultural vibrancy of the Mikkeller brewery building with its graffiti-covered facade, and the contemporary ambition of Copenhagen's contemporary art museum.

Together, these buildings establish a cultural and architectural character that is unique to Refshaleøen and constitutes a significant spatial asset for the emerging neighborhood.

Figure 63. Photographs of typical buildings on site.

Material Library



The site's material palette reflects the layered history of Refshaleøen in all its complexity - from weathered brickwork and corroding steel to graffiti-covered walls and improvised art installations. Alongside these culturally rich surfaces, areas of neglect and decay are equally present - overgrown lots, deteriorating masonry, and accumulated waste. Read together, this material landscape tells the story of a site in transition, offering a diverse and evocative vocabulary from which a future neighborhood identity can be carefully constructed.

Figure 64. Photographs of typical materials on site.

Location on Bigger Scale



The programmatic analysis of Refshaleøen reveals a site dominated overwhelmingly by office and workspace uses, with a conspicuous absence of the residential development and everyday amenities that are essential to a genuinely liveable neighborhood. An examination of daily activity rhythms further exposes the fragmented and mono-functional character of the current programming - with isolated, punctual uses attracting visitors at specific moments rather than generating the continuous, overlapping activity patterns that define vibrant urban neighborhoods. In response, the design proposes a fundamental programmatic rebalancing - one that prioritises residential development while retaining and strengthening existing office uses, cultural programs, and sports facilities. Within this new program, the site's industrial heritage plays a central role.



Programming & Amenities

What is the Program of the Site? Scale 1 : 20.000



Figure 65. Map of current program distribution.

Land Area
Water Structure
Existing Street Structure
Business
Residential
Cultural
Sports

The existing program of Refshaleøen is heavily skewed toward business and office uses. Residential development is almost entirely absent, and cultural and sports uses remain sparse and unevenly distributed.

How are the Daily Rythms?

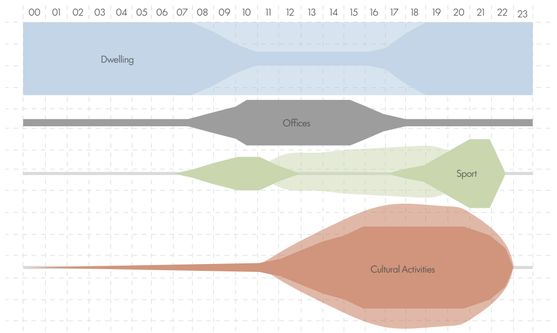
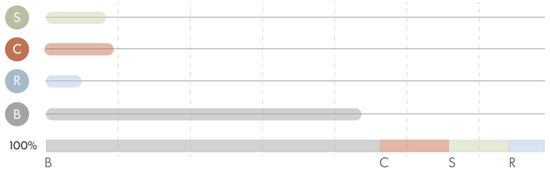


Figure 66. Diagram illustrating daily rhythms (weekday vs. weekend).

Residential Weekday
Residential Weekend
Business Weekday
Business Weekend
Sports Weekday
Sports Weekend
Cultural Weekday
Cultural Weekend

An analysis of activity patterns across reveals a programmatic landscape characterised by isolated peaks rather than continuous activation - a condition directly at odds with a healthy and social vitality.

What is the Current Program of the Neighborhood?



The programmatic imbalance of businesses to cultural activities and residential developments fundamentally undermines the site's capacity to function as a complete and self-sufficient neighborhood.

What Should be Kept and Strengthened? Scale 1 : 20.000

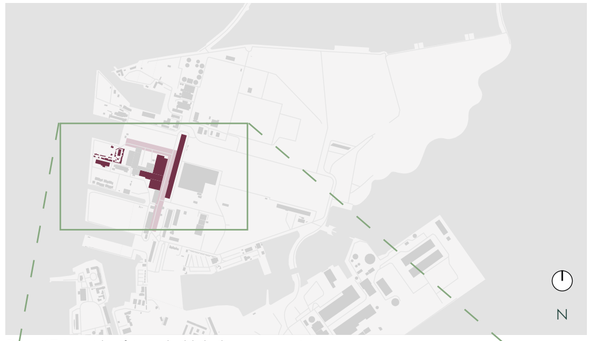
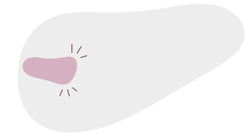
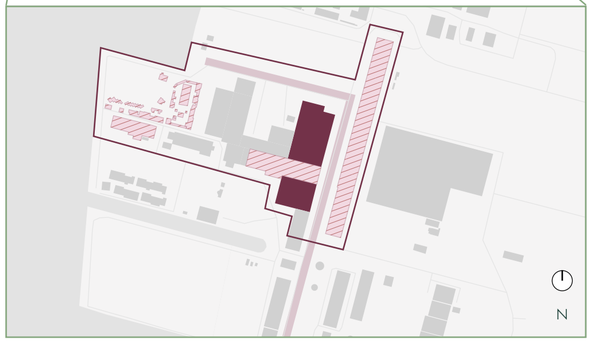


Figure 67. Map identifying valuable built assets to retain.

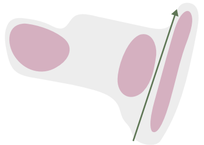
Land Area
Water Structure
Existing Buildings
Existing Street Structure
Buildings to Keep
Connections to Strengthen



The buildings and structures proposed for retention fall into two categories: those of architectural or material significance, and those of programmatic value such as the contemporary art institution.

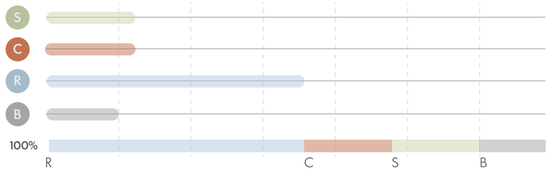


Land Area
Water Structure
Existing Buildings
Existing Street Structure
Buildings to Keep
Program to Keep
Connections to Strengthen
Heritage Part



Together with the central axis and its industrial artefacts, these retained elements form the heritage part of the neighborhood - a spatially coherent zone that connects future residents to the industrial past of Refshaleøen and provides the neighborhood with a sense of depth, identity, and belonging that no new building can replicate.

How Should the Program be Filled?



Business
Residential
Cultural
Sports

The proposed program rebalances the site in favor of residential development - introducing a diverse mix of housing typologies as the primary land use - while retaining a meaningful proportion of office space and expanding cultural, sports, and community programming. The result is a mixed-use neighborhood in which uses overlap, complement one another, and generate activity across all times of day and week.

Location on Bigger Scale



A well-functioning neighborhood is defined not only by the quality of its streets and buildings, but by the accessibility of the everyday amenities - shops, schools, sports facilities, restaurants, and green spaces - that support the health, convenience, and social life of its residents. The amenity analysis of Refshaleøen reveals a deeply inadequate provision in this regard: basic necessities are not only unevenly distributed across the site, but in several cases require walking distances of over forty minutes to reach - a condition entirely incompatible with the thesis's ambition of a healthy, walkable, and self-sufficient neighborhood. The following pages map the current state of amenity provision, identify the most critical gaps, and outline a vision for a future neighborhood in which all essential amenities are accessible within comfortable walking distances and Refshaleøen itself becomes a destination for residents of surrounding districts.



Programming & Amenities

What Amenities are Present on the Site? Scale 1 : 20.000



Land Area
Water Structure
Existing Buildings
Existing Street Structure
Mixed Use Buildings
Active Frontages
Active Areas
Walking Distance 5/10 Min

The spatial mapping of existing amenities reveals a fragmented and unevenly distributed provision across the site. Key facilities are clustered at specific points, leaving large portions of Refshaleøen underserved and generating unnecessary and discouraging walking distances between daily destinations.

Figure 68. Map of existing amenities on site.



Figure 69. Photograph of traffic training ground.



Figure 70. Photograph of private yacht harbor.



Figure 71. Photograph of Reffen food market signage.



Figure 72. Photograph of Contemporary Art Copenhagen signage.



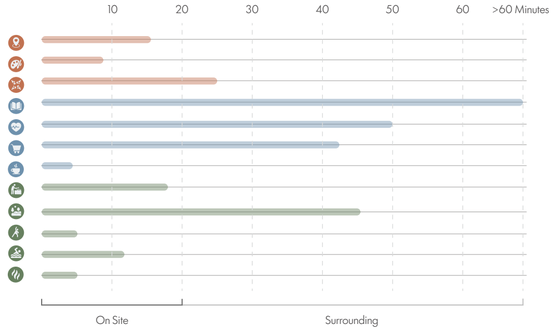
Figure 73. Photograph of Contemporary Art Copenhagen building.



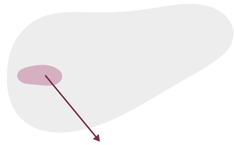
Figure 74. Photograph of Reffen food market structure.

The photographic survey of existing amenities reveals a striking contrast between genuine spatial assets - cultural landmarks such as Reffen and the contemporary art institution - and large, underutilised or inaccessible areas, including traffic practice grounds and undefined open spaces that currently contribute little to the quality of everyday life on the site.

Walking Distance from Site

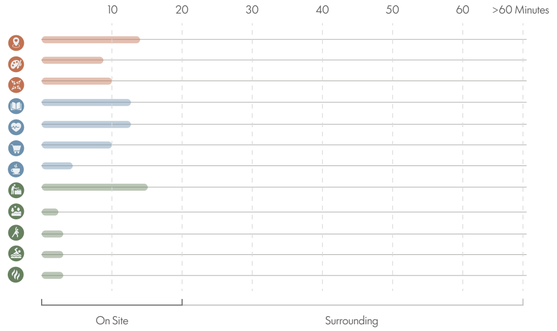


Attraction
Arts & Culture
Social Facilities
Education
Health Care
Shopping
Eat & Drink
Local Food Production
Recreation
Sport Facilities
Bathing
Sauna

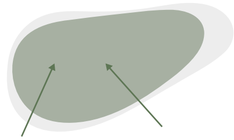


The before and after amenity diagrams make the transformation legible in spatial terms. Where the current diagram reveals isolated points of provision separated by long and underactivated distances,...

What Amenities are Needed?



Attraction
Arts & Culture
Social Facilities
Education
Health Care
Shopping
Eat & Drink
Local Food Production
Recreation
Sport Facilities
Bathing
Sauna



...the proposed diagram shows a well-distributed network of amenities embedded within the neighborhood fabric - ensuring that no resident is more than a comfortable walk from the facilities that support their daily life, health, and social well-being.

From Leaving the Site ...

The most significant finding of the amenity analysis is the extent to which residents are currently required to leave the site entirely to access basic everyday necessities. Supermarkets, schools, and healthcare facilities lie over forty walking minutes from much of the site - a condition that not only undermines convenience but actively discourages the active, neighborhood-based lifestyle that is central to the health-promoting ambitions of the thesis.

... to a Self-Sufficient Neighborhood

The proposed amenity framework ensures that all essential facilities are represented within the neighborhood itself, with walking distances to key destinations significantly reduced. Beyond mere self-sufficiency, the vision positions Refshaleøen as a destination neighborhood - one whose cultural, recreational, and gastronomic offer attracts visitors from surrounding districts, generating the diverse and continuous activity that characterises truly vibrant urban neighborhoods.

Before vs. After

From a Lack of Active Areas to a Network of Urban Streets

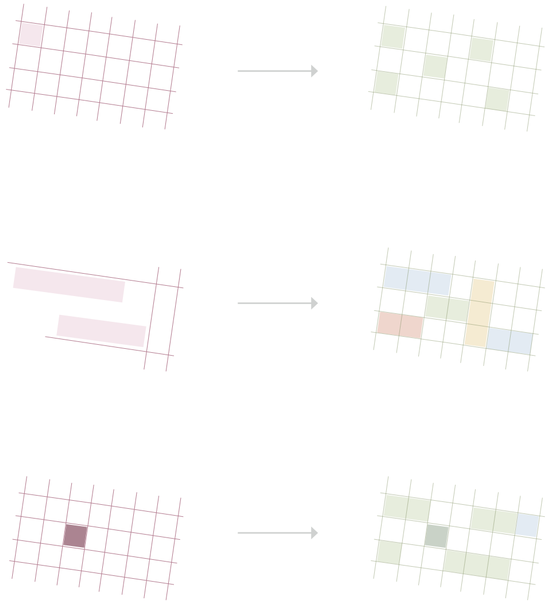
The analysis revealed a site largely devoid of the activated, programmed edges and street-level vitality that characterise liveable urban neighborhoods. The design response introduces a network of clearly defined urban streets - differentiated in character and scale - that generate continuous activity, guide movement through the neighborhood, and ensure that the public realm is experienced as an engaging and socially rich environment at every point of the day.

From Monofunctional Uses to a Livable Mixed Use Area

Refshaleøen's current dominance of office and workspace uses creates a programmatically impoverished environment that functions at limited times and for limited audiences. The design proposes a fundamental shift toward a genuinely mixed-use neighborhood - one in which residential, cultural, commercial, and recreational uses overlap and reinforce one another, generating the diverse and continuous activity patterns that support social cohesion, everyday convenience, and the well-being of all residents.

From Kept Buildings to a Built Environment that Feeds Them

The retained heritage buildings currently stand as isolated spatial assets within an otherwise undefined and underutilised built fabric. The design creates a new built environment that actively supports and amplifies their value - surrounding them with appropriately scaled new development, integrated public space, and a programmatic framework that draws residents and visitors toward them, embedding the kept buildings at the heart of a living, breathing neighborhood rather than leaving them as isolated monuments.



Before Scale 1 : 3.000

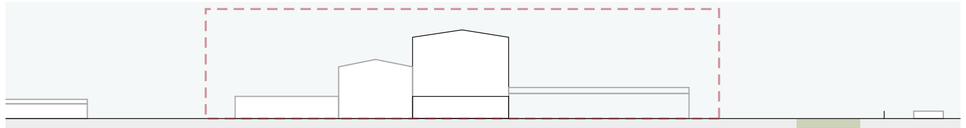


Figure 75. Section of built environment before intervention.

After Scale 1 : 3.000

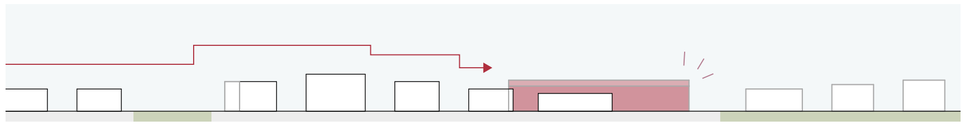


Figure 76. Section of intended built environment outcome.

Turning the Site From an „Destination Neighborhood" ...

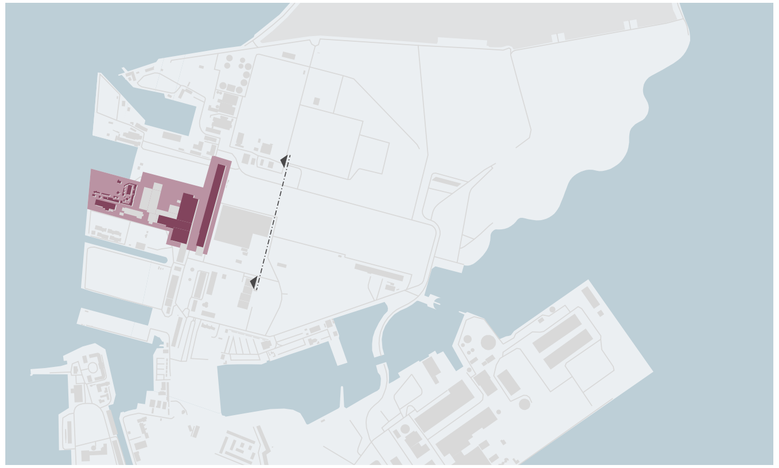


Figure 77. Map of built environment before intervention.

Scale 1 : 15.000

- Land Area
- Lynetteholmen Development
- Existing Water Structure
- Existing Buildings
- Existing Street Structure
- Kept Buildings
- Heritage Part

N

„It's a destination, not a place to hang around." (Mads, 2026)

... Into a Diverse District that Combines Living, Working & Spaces for Recreation



Figure 78. Map of proposed built environment design.

Scale 1 : 15.000

- Land Area
- Lynetteholmen Development
- Existing Water Structure
- Existing SurroundingBuildings
- Kept Buildings
- Heritage Area
- Active Areas
- Added Landmarks
- Residential Building Plots
- Mixed Use Building Plots

N

Post-Industrial Heritage

Location on Bigger Scale



The first design page establishes the spatial framework that gives Refshaleøen its identity and organisational logic - bringing together the retained heritage buildings, two newly introduced landmarks, and a network of active zones that collectively structure the public life of the neighborhood. The kept buildings and their programs form the cultural backbone of the site, anchored within the heritage part that occupies the western portion of the neighborhood. The active zones extend outward from this core along the main streets, ensuring that the heritage part is not an isolated enclave but a fully integrated and continuously accessible part of the neighborhood fabric. New landmarks are introduced at strategic points along these active routes, guiding residents through the site, marking moments of arrival, and ensuring that the site's most valuable spatial assets are visible from the very first moment of entry.



Kept Buildings & Active Areas

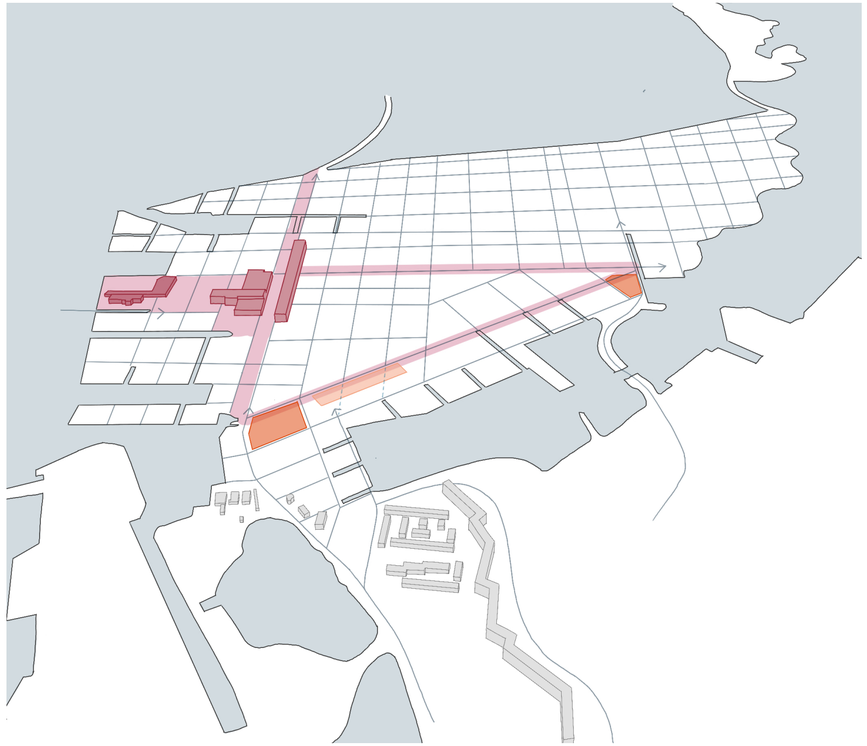
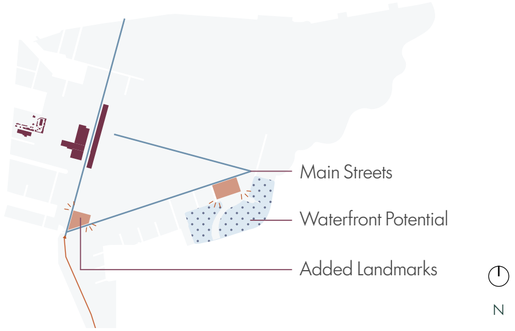


Figure 79. Aerial view of retained buildings and new active areas.

- Land Area
- Surrounding Buildings
- Existing Water Structure
- Kept Buildings
- Street Grid
- Active Zones
- Added Landmarks
- Added Public Space

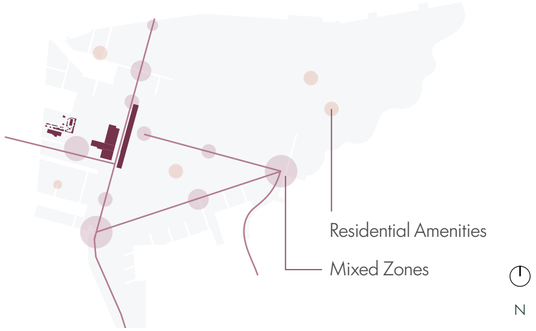
The buildings proposed for retention maintain their existing programs - a decision grounded in the recognition that uses such as the Mikkeler Brewery, Reffen Food Market, the bouldering hall, and Contemporary Art Copenhagen represent irreplaceable cultural assets that serve not only the future residents of Refshaleøen but the wider city. The one significant exception is the large warehouse complex retained for its structural value, whose program is transformed from storage into a multifunctional community hall - the social heart of the heritage part. This space is conceived as a place where the neighborhood meets, exchanges, and builds the everyday routines and social bonds that define a genuine community.

Added Landmarks



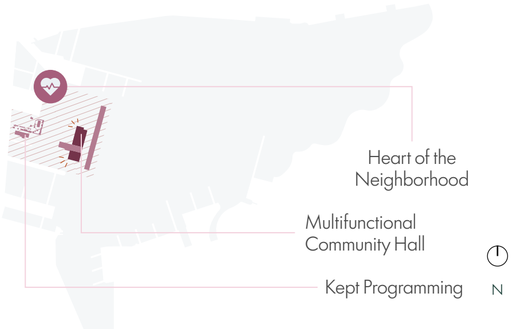
Two new landmarks are introduced at carefully considered positions within the neighborhood. The first is located at the intersection of two main streets at the primary entrance - a position that makes it visible from outside the site while simultaneously orienting arriving visitors toward both the central axis leading to the heritage part and the waterfront edge to the east. The second landmark is positioned at the eastern entrance along the waterfront, immediately visible from the first - creating a legible spatial sequence that draws visitors through the neighborhood and toward its most significant public assets. Together, the two landmarks function as a navigational and experiential framework, ensuring that residents and visitors are guided naturally toward the qualities that make Refshaleøen unique.

Mixed Zones & Amenity Distribution



Active mixed-use zones are distributed along the main streets, ensuring that the neighborhood's most publicly activated edges generate vitality and convenience for residents while maintaining quieter, more private conditions within the residential blocks beyond. Amenity provision is broadly distributed across the neighborhood, with concentrations at key intersections - ensuring that no resident is far from the facilities that support their daily life while avoiding the mono-functional clustering that currently characterises the site.

Kept Buildings & Program



Distinctive Places

Before: Beyond a handful of isolated cultural venues, the site offers little in the way of distinctive spatial character or place identity that could give future residents a genuine sense of belonging.
After: The retention and activation of industrial heritage buildings, the introduction of two new landmarks, and the creation of a vibrant heritage part collectively establish a neighborhood identity rooted in the history and cultural richness of Refshaleøen.



Programming & Amenities

Location on Bigger Scale



The site's four residential developments emerge directly from the spatial logic established by the street grid, the heritage part, the entrance conditions, and the active zones - each occupying a position within the neighborhood that gives it a distinct character, a specific relationship to the site's key assets, and a clearly defined target community. The heritage part forms the cultural centre of the site, while the main streets and active areas create a more vibrant and publicly activated southern and western edge. In contrast, the northeastern portions of the site offer the quieter, more sheltered conditions essential to a genuinely balanced and health-promoting neighborhood - one that provides both stimulation and retreat, activity and calm, social encounter and private restoration.



Residential Developments & Mixed Zones

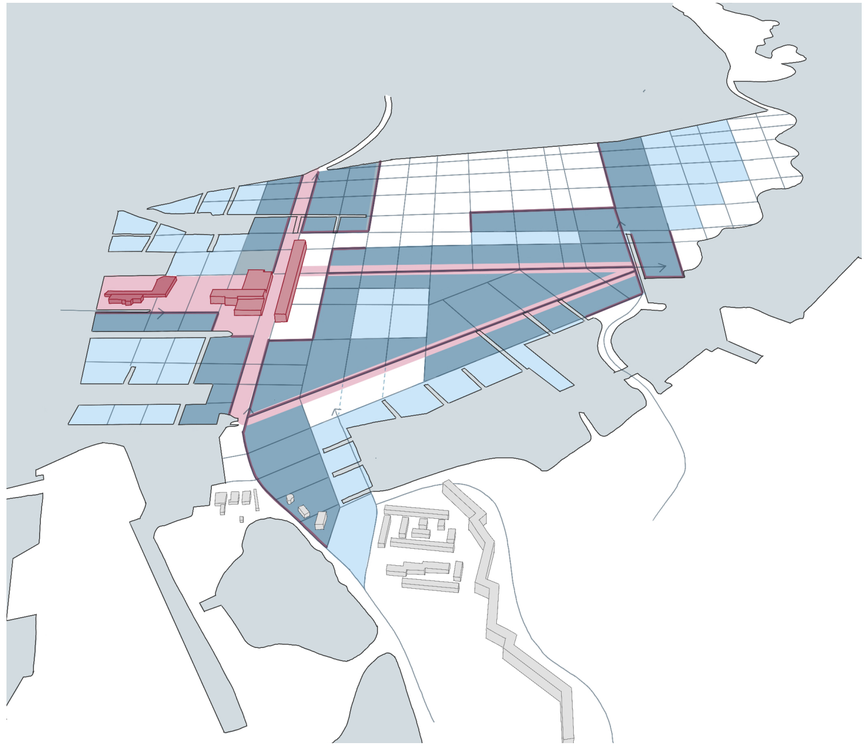


Figure 80. Aerial view of residential development and mixed-use zones.

- Land Area
- Surrounding Buildings
- Existing Water Structure
- Kept Buildings
- Street Grid
- Active Zones
- Multifunctional Edges
- Mixed Zones
- Purely Residential Zones

Development 1 - Southern Waterfront & Heritage Edge



Situated south of the heritage part and west of the central axis, the first development enjoys a privileged relationship with both the industrial heritage and the waterfront facing the city. Its lower density creates generous breathing space around the kept buildings, ensuring that the heritage structures retain their spatial presence and visual impact. This is a neighborhood for those who seek proximity to culture, water, and the urban energy of the main entrance - a place where the history of Refshaleøen is felt as part of everyday domestic life.

Development 2 - Northern Heritage Edge



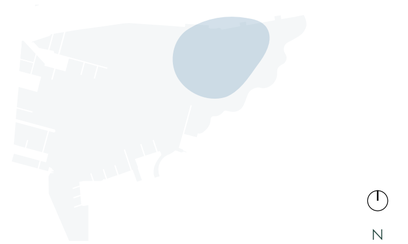
Located north of the heritage part, the second development shares the cultural richness of its southern counterpart while offering a slightly more sheltered and residential character. Its orientation toward the heritage zone ensures that residents enjoy constant visual and physical access to the community buildings and public spaces at the heart of the neighborhood, fostering a strong sense of belonging and daily social connection.

Development 3 - Eastern Waterfront & Family Neighborhood



The third and largest development occupies the eastern portion of the site along the waterfront, forming the primary residential landscape of Refshaleøen. Higher-density blocks along the main streets give way to more intimate residential streets and generous green courtyards within the blocks - creating a neighborhood that balances urban vitality with family-friendly calm. Schools, playgrounds, and community facilities are embedded within the fabric, making this the most complete and self-sufficient of the four developments.

Development 4 - Northern Green Retreat



The fourth development occupies the quieter, more secluded northern portion of the site, nestled between the two major green corridors that traverse the neighborhood. Its lower density and freer building arrangement create a more open and nature-oriented spatial character - a place for those who seek tranquility, proximity to nature, and a sense of distance from the intensity of urban life, while remaining connected to the broader neighborhood fabric.

Location on Bigger Scale



The density distribution across Refshaleøen is not arbitrary - it is the direct spatial expression of the neighborhood's programmatic logic, its relationship to key public assets, and the health-promoting principles that underpin the thesis. Density is calibrated in response to street type, proximity to the waterfront and green infrastructure, entrance conditions, and the need to balance urban vitality with residential calm. Alongside density, the articulation of open and closed facades plays an equally important role in defining the spatial character of each part of the neighborhood - determining the degree to which buildings engage with or shelter themselves from the public realm, and shaping the quality of the transition between interior domestic life and the outdoor environment.



Programming & Amenities

Density & Open vs. Closed Facades

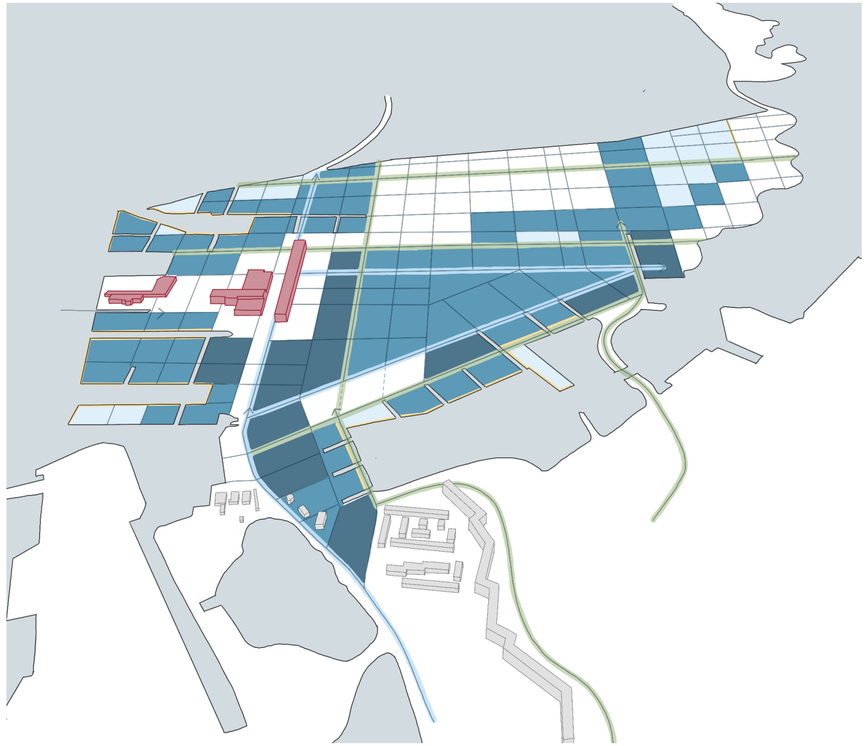
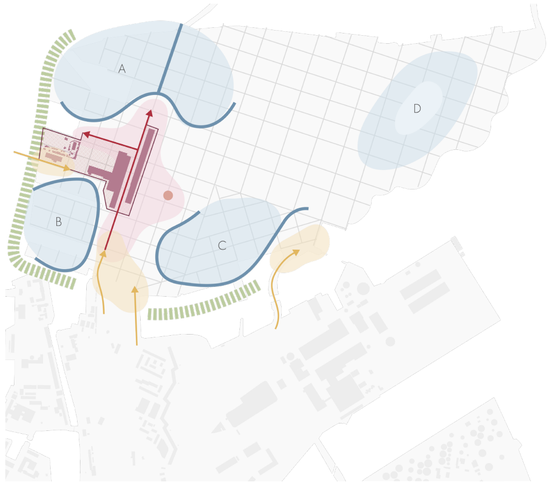


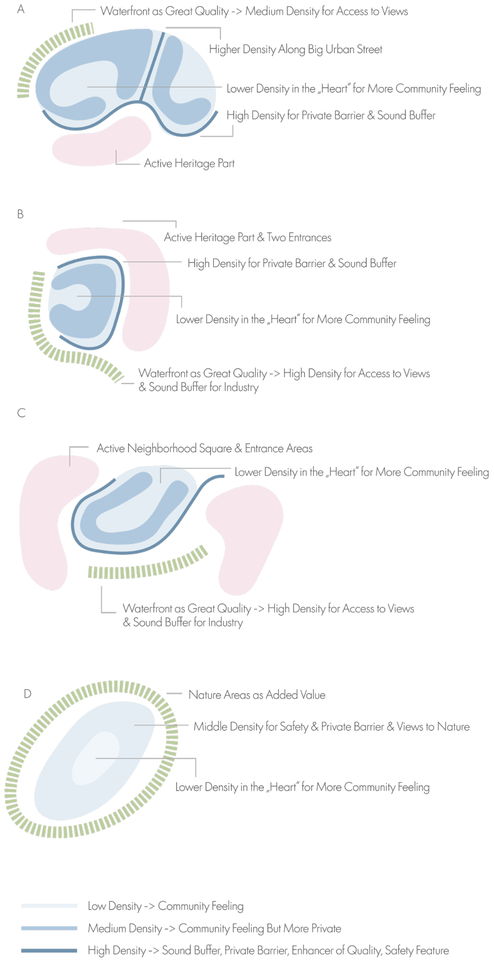
Figure 81. Aerial view of density and facade conditions.

- Land Area
- Surrounding Buildings
- Existing Water Structure
- Kept Buildings
- Street Grid
- Main Streets
- Green Streets
- Open Facades
- High Density
- Medium Density
- Low Density

What is the Density Variation?



Density across the site is carefully graduated in response to spatial context. Along the main streets, higher-density development creates the spatial enclosure and acoustic buffering necessary to maintain residential quality while ensuring a vibrant and activated public edge.
Toward the waterfront and green corridors, density shifts to a middle register - sufficiently generous to ensure a broad distribution of nature views and natural light, yet restrained enough to allow the built fabric to open toward the landscape rather than dominate it.
The entrance areas are characterised by higher density, reinforcing the sense of arrival, spatial definition, and safety that a welcoming neighborhood threshold requires.
The heritage part and its immediate surroundings maintain the lowest densities on the site, giving the retained buildings the spatial presence and visual breathing room they require while ensuring that the human scale of this culturally significant area is never overwhelmed by new development.



Location on Bigger Scale



Copenhagen's urban fabric is not homogeneous. Across its neighbourhoods, the city has accumulated distinct patterns of density, scale, and spatial organisation that reflect decades of incremental planning decisions, topographic conditions, and shifting housing ideals. From the compact perimeter blocks of the inner city to the open grain of its southern edges, these typologies form a readable catalogue of how density can be shaped and inhabited. This project takes these existing Copenhagen archetypes as its primary reference. The density development of the proposed design is grounded in three of these local typologies: Østerbro as a model for high-density urban structure, Sydhavn for medium-density with expanded communal space, and Amager for low-density residential grain.



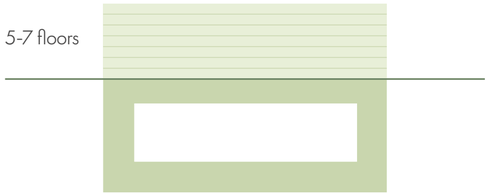
Copenhagen as a Built Catalogue

High Density

Typical Amount of Floors

5-7 floors

Typical Building Typology



>100 m

Figure 82. Typical building block in Østerbro.

Østerbro is characterised by a continuous, high-density block structure typical of Copenhagen's late 19th-century expansion. Buildings of five to seven storeys align tightly along the street edge, forming dense perimeter blocks with narrow, elongated courtyards at their centre. The limited distance between facing façades creates a strong sense of enclosure - both along the street and within the block interior. This typology prioritises urban density and a clear distinction between public front and semi-private back. The rhythm of the street is determined by the repeating bay widths of residential buildings, while the courtyard - though often compact - serves as a shared outdoor space for residents. The spatial logic of Østerbro is one of continuity, compression, and urban density at its most consistent.

Middle Densitv

4-6 floors



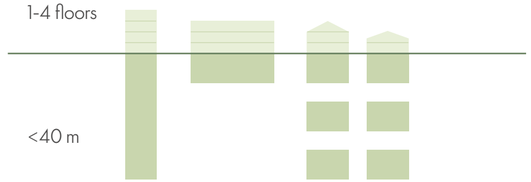
40-100 m

Figure 84. Typical building block in Sydhavn.

Sydhavn represents a more recent and consciously planned approach to medium-density urban development. Buildings here typically range from four to six storeys, arranged in perimeter or semi-open block configurations with significantly wider courtyards than those found in Østerbro. The increased distance between buildings allows for more generous landscaping, better daylight penetration into the block interior, and a softer boundary between communal outdoor space and private dwelling. This typology strikes a balance between urban density and residential amenity - maintaining a clear street presence while opening up the inner block to a scale that feels liveable and light. Sydhavn's housing blocks demonstrate how medium-density development can sustain urban character without sacrificing spatial quality.

Low Densitv

1-4 floors



<40 m

15-40 m

Figure 86. Typical building typologies in Amager.

Amager's residential fabric stands in clear contrast to the inner city, defined largely by low-density typologies: terraced housing, semi-detached homes, and detached single-family houses organised in loose rows or individual plots. Building heights rarely exceed two to three storeys, and the spatial relationship between buildings is defined by generous gardens, open green verges, and wide separations between volumes. The grain is fine, the block structure dissolved, and the dominant spatial experience is one of openness, greenery, and private outdoor space. While Amager lacks the urban compactness of Østerbro or Sydhavn, it offers a distinct residential quality rooted in direct access to ground and a quieter, more horizontal scale. This typology sets the lower boundary of the density spectrum explored in this project.

Examplary Bird View of Neighborhoods in Copenhagen

Østerbro



Figure 83. Aerial view of Østerbro. *Google (2026)*

Sydhavn



Figure 85. Aerial view of Sydhavn. *Google (2026)*

Amager



Figure 87. Aerial view of Amager. *Google (2026)*

Post-Industrial Heritage

Location on Bigger Scale



Zooming into the heritage part at the chunk scale, the design elaborates the spatial relationships between the retained buildings, the new development fabric, and the waterfront edge that together define this culturally significant zone of the neighborhood. The kept buildings - several of which are of considerable scale - are given generous open space in their immediate surroundings, ensuring that their architectural presence can be fully appreciated and that the human experience of moving through this part of the neighborhood is never overwhelmed by spatial confinement. The transition from heritage structures through new development to the waterfront is made legible through a carefully considered section - one that moves from the monumental scale of the industrial buildings through intermediate open spaces and new built fabric to the open horizon of the water beyond.



Landmarks & Added Built Structure

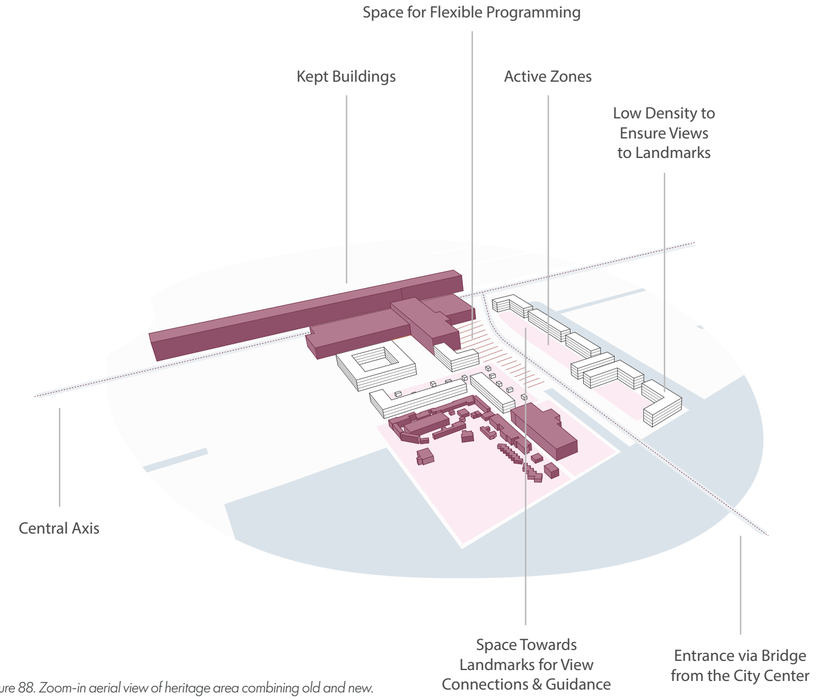


Figure 88. Zoom-in aerial view of heritage area combining old and new.

Reference - Sydhavn



Figure 89. Photographs of Sydhavn landmarks and surrounding spaces.

The preserved power plant in Sydhavn remains visible from virtually every point within the district, functioning as a vertical datum that structures the neighbourhood's skyline and provides spatial orientation across its entirety. Its deliberate framing as a landmark anchors the new urban fabric within the site's industrial memory.

Section

„And I would insist on keeping the industrial character - the materials, the scale, the memory of what happened there. That is what gives a place its soul."" (Ole, 2026)

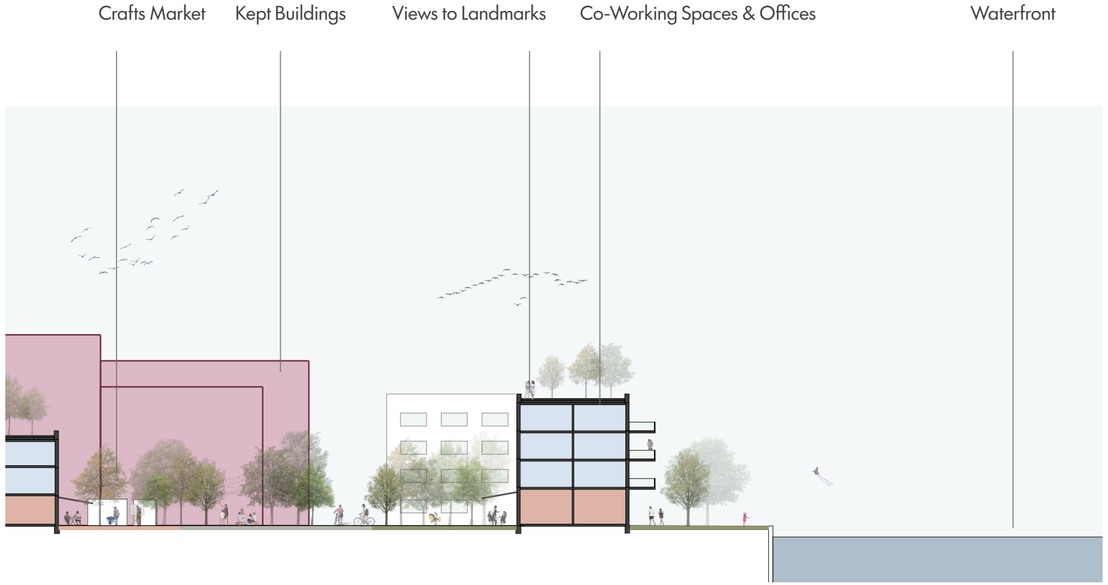


Figure 90. Section showing height progression and landmark views.

Scale 1 : 500

The section through the heritage part reveals the spatial logic of a carefully orchestrated transition. The retained industrial buildings - large, robust, and materially distinctive - anchor the western edge of the zone, their scale balanced by the generous open spaces immediately surrounding them. These open areas serve both as breathing room for the kept buildings and as active public spaces for the community - markets, gatherings, and everyday social life unfolding in the shadow of structures that embody the neighborhood's industrial identity.

Moving eastward, the new built fabric rises incrementally before stepping down again as it approaches the waterfront, ensuring that views toward the water are preserved from within the heritage zone and that the spatial sequence culminates in a generous and accessible waterfront edge - a moment of openness and natural connection that provides a powerful counterpoint to the density and materiality of the industrial structures behind.

Programming & Amenities

Density Development

Location on Bigger Scale



Zooming into the residential development at the southern entrance, the chunk scale reveals how the density principles established at the site level translate into the three-dimensional reality of floors, facades, and spatial relationships. The development responds simultaneously to four distinct spatial conditions - the waterfront to the south, the green streets within the blocks, the residential streets that define the neighborhood's internal character, and the main streets that connect it to the wider site. Each of these conditions generates a specific building response in terms of floor count, facade articulation, and the degree of openness toward the outdoor environment - collectively producing a built fabric that is varied, contextually sensitive, and deeply responsive to the health-promoting principles of the thesis.



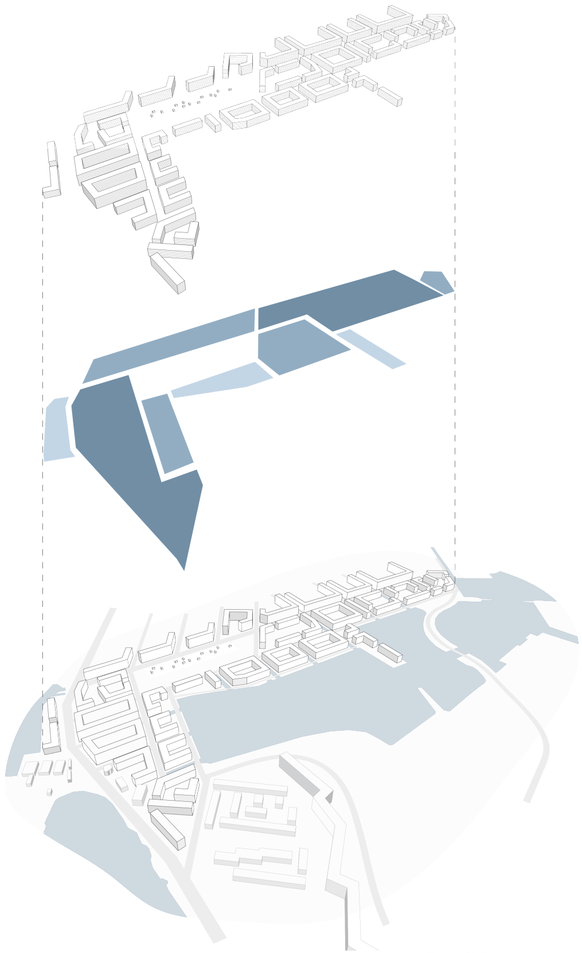


Figure 91. Density development diagram (residential zoom-in).

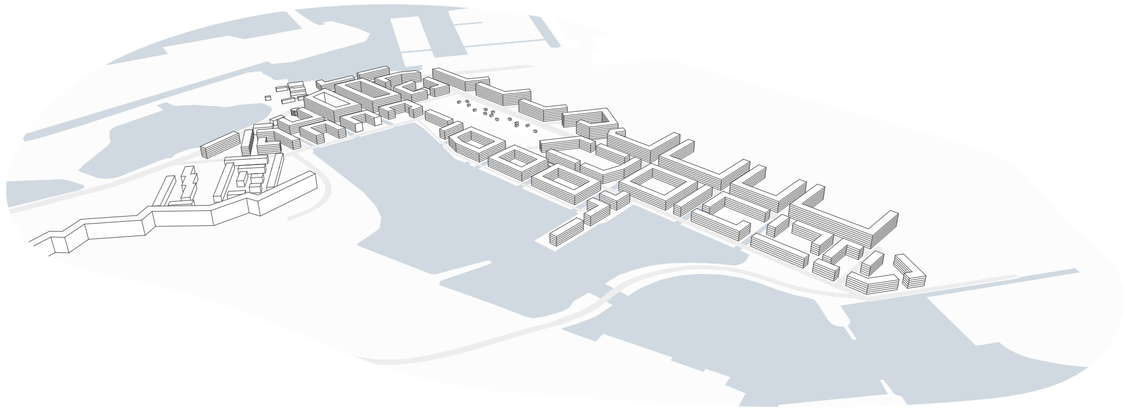


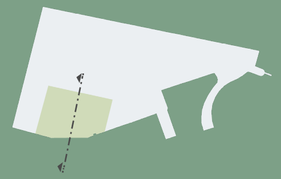
Figure 92. Aerial view of residential zoom-in.

Human-Scale Edges

Before: The site is dominated by vast industrial structures and wide car-scaled roads that create a spatially overwhelming environment, offering no human-scale enclosure or invitation to linger.
After: A differentiated building typology and calibrated street proportions create edges that feel comfortable, safe, and inviting - actively encouraging pedestrians to slow down, explore, and engage with the public realm.



Location on Bigger Scale



At the block scale, the design principles established at the chunk level are given their most precise spatial expression. The transition toward the waterfront is characterised by a progressive reduction in building height - each block stepping down as it approaches the water's edge in a manner characteristic of Copenhagen's finest waterfront neighborhoods. This typological gesture simultaneously generates generous roof terraces at each level, creates an open and inviting character toward the water, and ensures that the waterfront edge is experienced not as a wall of built fabric but as a permeable and visually accessible landscape. The section through this transition reveals the full spatial logic of this progression.



Programming & Amenities

Bird View - Density Transition

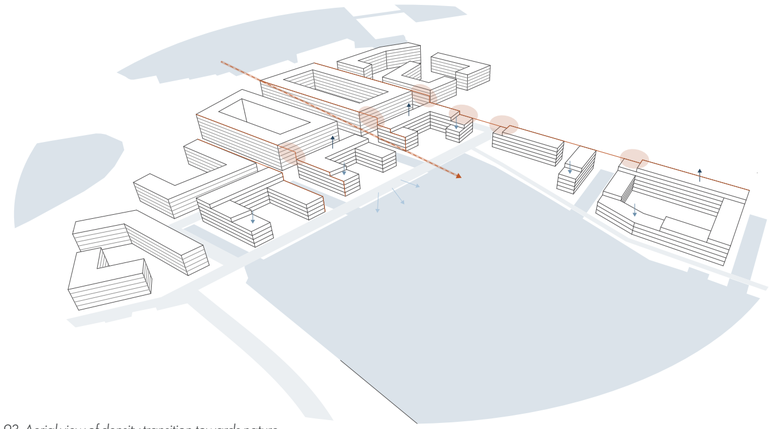


Figure 93. Aerial view of density transition towards nature.

Bird View - Open & Closed Building Blocks

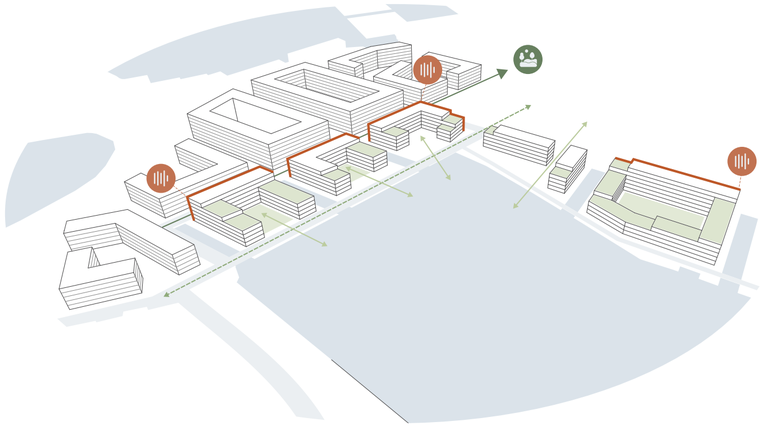


Figure 94. Aerial view of open and closed facade conditions.

Progression of Height

> *„Those balconies are important. People are out on them - you can see it even now. They're using them, not just having them as a feature. That means the orientation is right, the depth is right, the acoustic conditions are manageable. These things matter enormously and they're very easy to get wrong." (Ole, 2026)*

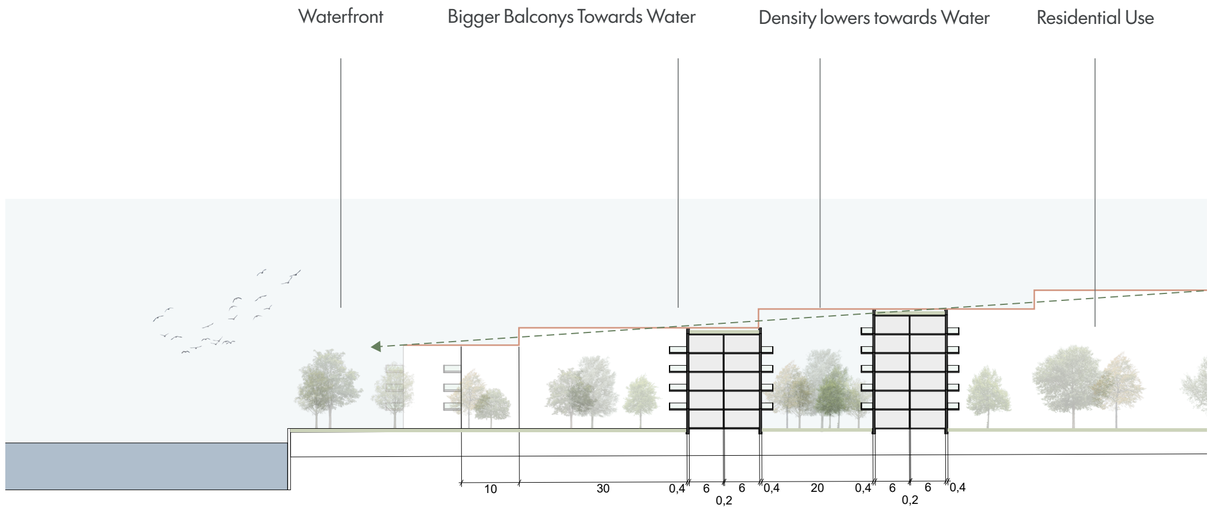


Figure 95. Section showing height progression from street to waterfront.

Scale 1 : 750

The section illustrates a carefully calibrated progression of building height from the residential street edge to the waterfront - moving from the taller, more enclosed street-facing blocks through intermediate volumes to the lower, terrace-forming buildings at the water's edge. The closed street-facing facades provide acoustic buffering and spatial definition along the public corridor, while the open, terraced waterfront facades dissolve the boundary between interior and exterior - generating a series of generous indoor-outdoor transitions that bring residents into direct sensory contact with the water, the light, and the landscape. The resulting spatial sequence embodies one of the thesis's core ambitions: that the everyday domestic environment should be an active contributor to the well-being, restoration, and nature connection of the people who inhabit it.

Location on Bigger Scale



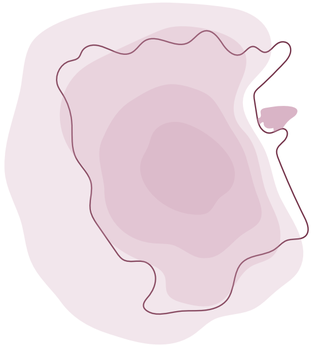
The design proposals developed within the Built Environment aspect group collectively establish the spatial, programmatic, and typological framework that gives Refshaleøen its identity as a neighborhood. From the definition of density gradients and street-responsive building heights to the retention of heritage structures and the introduction of a mixed-use program, every decision within this group is guided by the conviction that the built fabric of a neighborhood is not merely a container for life - it is an active shaper of it.



Relation to City

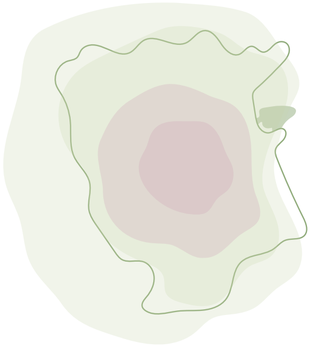
Before

Before, Refshaleøen contributed almost nothing to Copenhagen's residential fabric. Dominated by office and workspace uses, it offered no meaningful housing provision at a moment when the city is facing a well-documented and worsening housing shortage - with rising rents, displacement of lower-income residents, and an acute scarcity of affordable family housing placing significant pressure on communities across the city (Børresen, 2020; Whitehead & Scanlon, 2007). The site's vast, underutilised plots represented not only a spatial missed opportunity but a civic failure - valuable urban land lying dormant while thousands of Copenhagen residents struggled to find adequate housing within the city.



After

After, Refshaleøen becomes a meaningful contributor to Copenhagen's housing supply - introducing a diverse mix of residential typologies across four distinct neighborhood developments that together house thousands of new residents in a location of exceptional spatial quality. By accommodating significant new residential density while maintaining the human-scale character, mixed-use programming, and heritage identity that make the neighborhood genuinely liveable, the development demonstrates that the city's housing crisis need not be addressed through the kind of generic, mono-functional densification that produces quantity without quality. Refshaleøen offers a model for how post-industrial brownfield sites can absorb urban growth while simultaneously raising the standard of what new Copenhagen neighborhoods can be (De Sousa, 2008; Dixon, 2007).



Scale 1 : 8.500



Figure 96. Map of combined design (Aspect Group 2).

The built environment proposals for Refshaleøen are structured around four interconnected spatial moves. First, the retention and activation of the site's most significant heritage buildings establishes a cultural backbone for the neighborhood - anchored by a reprogrammed community hall at the heart of the heritage part that serves as the social centre of the emerging community. Second, the introduction of two new landmarks at strategic entrance positions creates a legible spatial sequence that orients visitors and draws them toward the neighborhood's most valuable assets. Third, a carefully calibrated density distribution - responsive to street type, waterfront proximity, and programmatic context - ensures that the built fabric supports both urban vitality and residential calm across the full range of the site's spatial conditions. Fourth, the distribution of mixed-use zones along the main streets and the embedding of amenities throughout the neighborhood fabric ensures that everyday needs are met within comfortable walking distances, supporting the active, self-sufficient lifestyle that is central to the thesis's health-promoting ambitions.

- Land Area
- Lynetteholmen Development
- Existing Water Structure
- Existing SurroundingBuildings
- Kept Buildings
- Heritage Area
- Active Areas
- Added Landmarks
- Residential Building Plots
- Mixed Use Building Plots

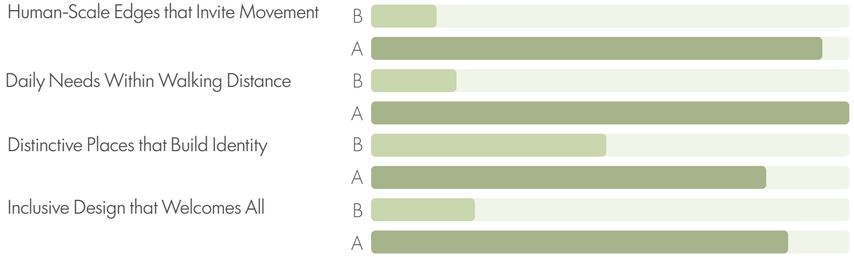
N



Spatial Criteria

The built environment proposals directly address the spatial deficiencies identified during the analysis phase, translating each relevant spatial criterion from its current deficient state into a measurably improved condition. The following overview maps these transformations - demonstrating how the design interventions collectively shift the site from a mono-functional, car-scaled, and spatially incoherent environment toward a diverse, human-scaled, and health-promoting neighborhood fabric.

Before vs. After



Human-Scale Edges that Invite Movement

Before: The site is dominated by vast industrial structures and wide car-scaled roads that create a spatially overwhelming environment, offering no human-scale enclosure or invitation to linger.
After: A differentiated building typology and calibrated street proportions create edges that feel comfortable, safe, and inviting - actively encouraging pedestrians to slow down, explore, and engage with the public realm.

Daily Needs Within Walking Distance

Before: Essential amenities including supermarkets, schools, and healthcare facilities are located over forty minutes on foot from much of the site, forcing residents into car dependency for basic daily needs.
After: A distributed network of amenities embedded throughout the neighborhood ensures that all daily necessities are accessible within a comfortable ten-minute walk from every residential cluster.

Distinctive Places that Build Identity

Before: Beyond a handful of isolated cultural venues, the site offers little in the way of distinctive spatial character or place identity that could give future residents a genuine sense of belonging.
After: The retention and activation of industrial heritage buildings, the introduction of two new landmarks, and the creation of a vibrant heritage part collectively establish a neighborhood identity rooted in the history and cultural richness of Refshaleøen.

Inclusive Design that Welcomes All

Before: The site's non-human scale, poor accessibility, unsafe conditions after dark, and lack of seating and rest opportunities create an environment that is uninviting and functionally exclusionary for many user groups.
After: Universal accessibility, distributed rest opportunities, safe and well-lit routes, and a programmatic diversity that serves all age groups and abilities ensure that the benefits of the neighborhood's spatial quality are available to every resident equally.



Before ***After*** ***Before*** ***After***

1a. 1b. 2a. 2b.

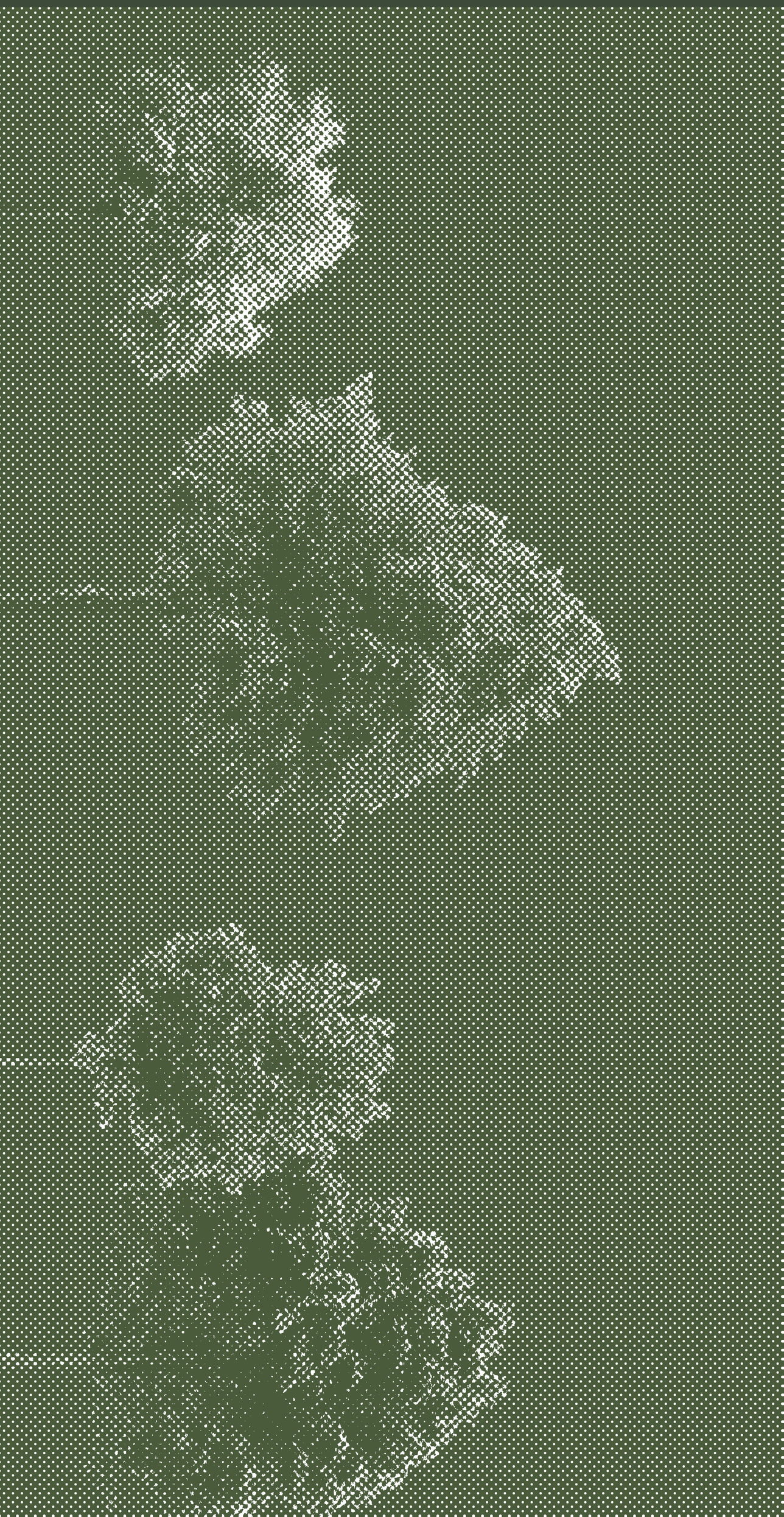


The existing condition presents a narrow, utilitarian pathway running alongside a continuous red metal fence, flanked by bare trees. The space reads as purely infrastructural: a corridor of movement with no spatial quality, no activation, and no invitation to dwell. The boundary treatment dominates the experience entirely, reducing the public realm to a leftover strip between fence and road. The proposed condition transforms this edge into a generous, tree-lined promenade integrating pedestrian and cycle movement within a landscaped sequence. Dense planting softens the building frontages and draws the green corridor directly into the residential fabric. The presence of residents in motion - running, walking - signals a street that is no longer merely passed through, but actively inhabited as part of daily life.

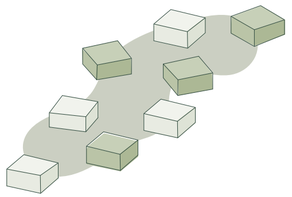
The before condition depicts a wide, exposed access road in a state of infrastructural transition - cracked surfaces, mounded snow, and industrial-scale signage rendering the space hostile and spatially undefined. The absence of enclosure, greenery, or human scale leaves the area feeling abandoned rather than urban. In the proposed scheme, the same street corridor is reframed as a residential address. Building volumes with articulated facades and generous balconies establish a clear spatial edge, while mature tree planting introduces rhythm and scale at the level of the pedestrian. A cyclist moving through the scene anchors the composition in everyday urban life, reinforcing the shift from industrial remnant to an active, inhabited neighbourhood street.

Figure 97. Photograph of existing street condition.

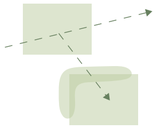
Figure 98. Collage illustrating potential street programming.



Analysis Group



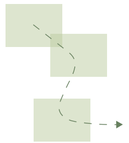
The public spaces of Refshaleøen are currently fragmented and unevenly distributed across the site. The following sub-aspects assess their spatial quality, social capacity, and potential as everyday restorative environments.



Edge Conditions & Active Frontages investigates the quality of the interface between buildings and public space, examining the extent to which ground-floor edges are active, transparent, and spatially engaging.



Social Activation & Programming investigates the extent to which existing public spaces support diverse forms of social activity, examining how spatial design encourages or inhibits spontaneous encounter and community use.



Recognizable Spaces examines the presence, distribution, and interconnectivity of public squares as legible and identifiable nodes within the urban fabric. It considers how these spaces function as social anchors and facilitating gathering.

Relevant Spatial Criteria

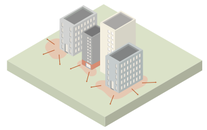
Connected Squares that Anchor Social Life (D)

A coherent system of public spaces, hierarchically connected and continuously accessible, strengthens spatial legibility and social cohesion (Lynch, 1960). These spaces should vary in scale and function, forming an interconnected network that accommodates movement, gathering, and transition across the urban fabric (Carmona et al., 2010).



Active Frontages that Foster Safety (J)

Active frontages enhance visibility, safety, and engagement through transparent façades, entrances, and appropriate lighting (Gehl, 2010). These edges promote interaction between indoor and outdoor spaces, increasing vitality and perceived security in public realms (Jacobs, 1961).



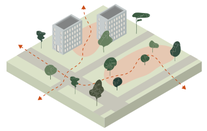
Flexible Spaces that Spark Encounter (L)

Urban spaces should facilitate social interaction through small-scale gathering areas and flexible configurations (Gehl, 2010). These environments encourage spontaneous encounters and planned activities, supporting diverse forms of community engagement (Oldenburg, 1989).



Everyday Spaces that Sustain Activation (M)

Spaces designed for everyday routines, rather than solely for events, ensure continuous activation and relevance (Jacobs, 1961). Functional diversity and accessibility enable regular use, embedding public spaces into daily life patterns (Carmona et al., 2010).



Inclusive Design that Welcomes All (N)

Inclusive design strategies that accommodate all ages and abilities foster a sense of belonging (WHO, 2016). By addressing diverse needs and promoting equitable access, urban environments become socially sustainable and supportive of collective identity (Gehl, 2010; Wolch et al., 2014).



Key Locations Where to Analyze Key Aspects

Safety

On Site

L

→ View Connections
Lightning

Public Space Network

On Site

L

Sydhavn

L

→ Flexible Uses
Small-Scale Spaces
Network

Location on Bigger Scale



The analysis of Refshaleøen's public space structure and safety conditions reveals a site that is not only critically underserved in terms of qualitative public space provision, but also fundamentally compromised in its capacity to feel safe, legible, and inviting - particularly after dark. To contextualise these findings and identify a relevant spatial precedent, Sydhavn is introduced as a case study: a post-industrial Copenhagen waterfront district that has successfully developed a coherent network of neighborhood squares and activated public edges within a comparable transformation context, offering directly transferable lessons for the design of Refshaleøen's public realm.



Safety

Safety Issues Scale 1 : 20.000



Figure 99. Map of safety issues on site.

- Land Area
- Water Structure
- Existing Buildings
- Existing Street Structure
- Lightning
- View Connections

The absence of lighting, activated edges, and clear sightlines renders large parts of the site - particularly after dark - spatially disorienting and unsafe, conditions fundamentally at odds with the ambitions of a health-promoting neighborhood.

Missing Public Space Network Scale 1 : 20.000



Figure 100. Map of current public spaces.

- Land Area
- Water Structure
- Existing Buildings
- Existing Street Structure
- Active Frontages
- Disconnected Public Space
- Event Space
- Recognizable Space

Only two identifiable public spaces currently exist on the site which are entirely unconnected, and neither belongs to a coherent network. The site suffers from a critical absence of small-scale, flexible, and qualitatively programmed public spaces that support everyday social life.



Figure 101. Photograph of Reffen food market.



Figure 102. Photograph of event space at the site.

The photos underscore both the individual qualities and their collective insufficiency. The vast event ground highlights the urgent need for spatial differentiation, programming, and a human-scale approach to public space design.

How can Safety be Increased? Scale 1 : 20.000

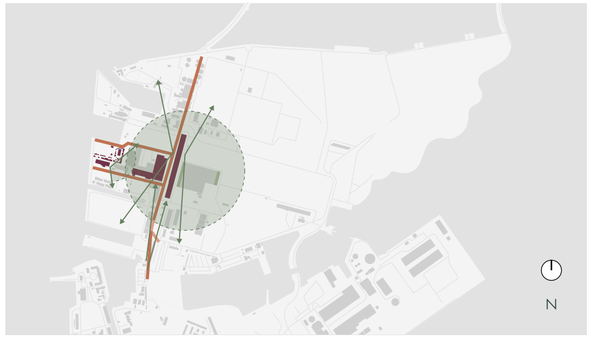
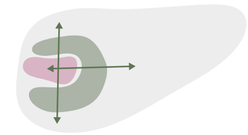


Figure 103. Map of proposed safety improvements.

- Land Area
- Water Structure
- Existing Buildings
- Existing Street Structure
- Existing Lightning
- Lightning Needed
- Existing View Connections
- View Connections Needed



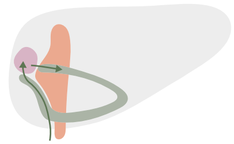
The first spatial strategy addresses the fundamental safety and legibility deficiencies of the site. Increased lighting along key routes, the introduction of additional view corridors, and the activation of ground-floor edges are proposed as the primary instruments for transforming Refshaleøen's public realm into an environment that feels safe, navigable, and welcoming at all times of day.

Where Should Public Spaces be Placed? Scale 1 : 20.000



Figure 104. Map of proposed public space locations.

- Land Area
- Water Structure
- Existing Buildings
- Existing Street Structure
- Active Frontages Needed
- Potential Public Spaces
- Public Space Network
- Recognizable Space



The second strategy maps a series of potential public space locations distributed across the site, forming the basis for a coherent and connected public space network. Positioned at key intersections, entrance points, and alongside the waterfront, these spaces are designed to guide residents and visitors through the neighborhood.







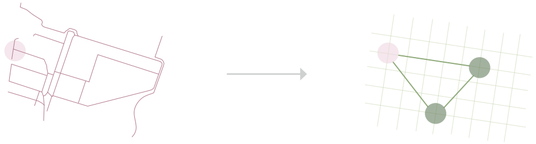
Figure 105. Photographs of public squares in Sydhavn.

Sydhavns public spaces vary in scale, character, and programming - from activated urban squares to quieter, greened neighborhood pockets - offering a directly relevant model for the kind of diverse and connected public realm that Refshaleøen urgently requires.

Before vs. After

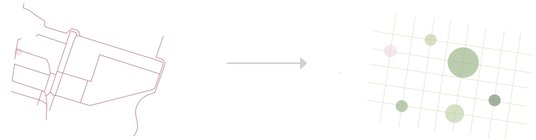
From a Lack of Public Spaces to a Qualitative Network

The analysis exposed a site with almost no qualitative public space provision - a condition that undermines social life, safety, and the sense of belonging essential to a health-promoting neighborhood. The design response introduces a coherent network of public spaces distributed across the site, varying in scale, character, and programming - ensuring that every resident has access to a diversity of outdoor social environments within comfortable walking distance.



From One Recognizable Area to a Diversified Structure

Reffen's singular identity as the site's only truly recognizable public destination reflects a broader spatial monoculture that leaves the majority of Refshaleøen spatially anonymous and socially inert. The design proposes a diversified public space structure - anchored by existing landmarks but extended through a series of new, distinctly characterised spaces that collectively give the neighborhood a rich and varied public identity.



From Empty Streets to a Plinth Activation

The prevalence of blank, inactive ground-floor edges across the site contributes directly to the feelings of unsafety, disorientation, and spatial emptiness that characterise the current pedestrian experience. The design introduces a systematic activation of ground-floor plinths along key routes - embedding commercial, cultural, and community uses at street level to generate the continuous activity, social presence, and visual engagement that transforms empty streets into vibrant, safe, and inviting public corridors.



Before Scale 1 : 3.000

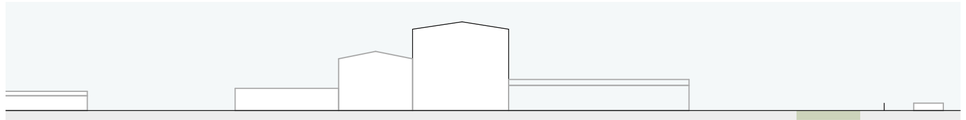


Figure 106. Section of public space before intervention.

After Scale 1 : 3.000

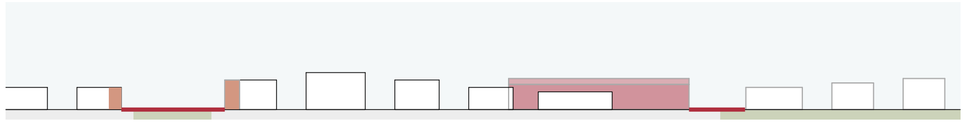


Figure 107. Section of intended public space outcome.

Turning the Site From an Unprogrammed Area ...



Figure 108. Map of public space before intervention.

> *„Sydhavn feels like it was designed with the inhabitant in mind. Reffen feels like it was designed with the visitor in mind."*
> *(Ole, 2026)*

Scale 1 : 15.000

- Land Area
- Lynetteholmen Development
- Existing Water Structure
- Existing Buildings
- Existing Street Structure
- Recognizable Open Public Spaces
- Active Frontages

N

... Into a Network of Attractive Public Spaces that Invite Going Outdoors

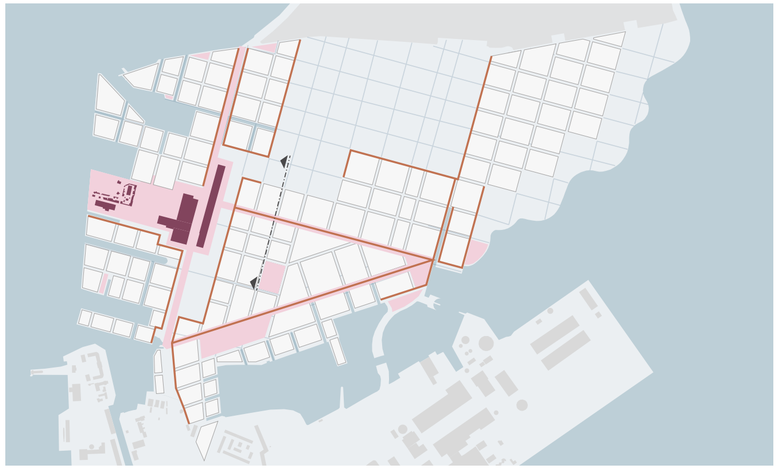


Figure 109. Map of proposed public space design.

Scale 1 : 15.000

- Land Area
- Lynetteholmen Development
- Existing Water Structure
- Existing SurroundingBuildings
- Kept Buildings
- Public Space Network
- Active Frontages
- Street Grid
- Building Plots

N

Location on Bigger Scale



The design establishes a comprehensive and hierarchically differentiated public space network for Refshaleøen - one that ranges from large, fully public urban squares along the main streets to smaller, more intimate neighborhood squares embedded within the residential developments. Each space is carefully positioned to serve both the neighborhood as a whole and the specific communities that surround it, ensuring that public life is distributed equitably and continuously across the entire site. A dedicated public square is also introduced at the location of the future M5 metro station - marking this moment of arrival with an appropriately significant and activated public space that anchors the neighborhood's connection to the wider city.



Public Space Network

Hierarchy of Public Spaces

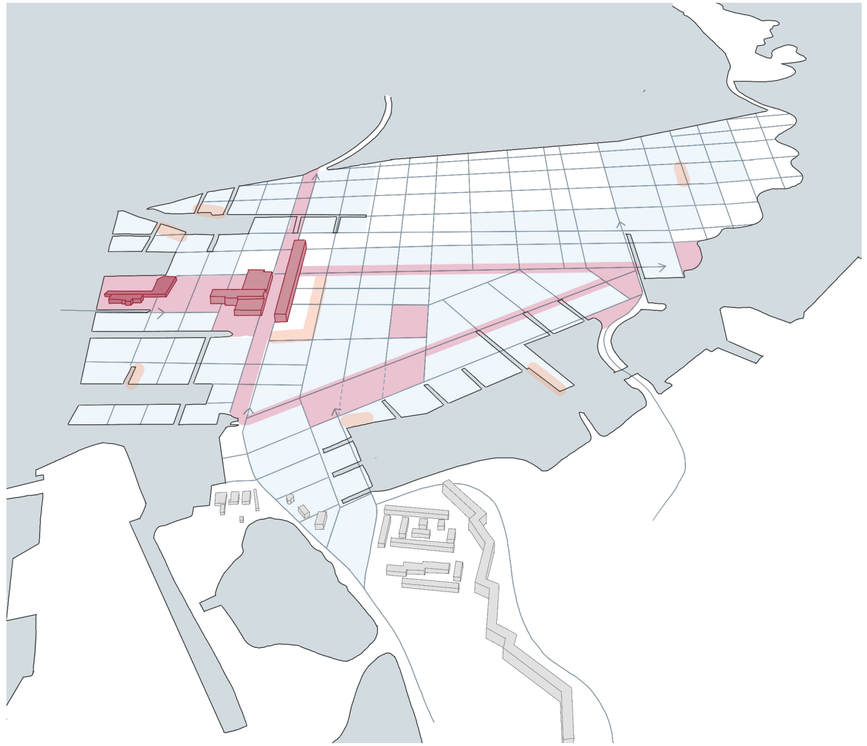


Figure 110. Aerial view of new public space network.

Connected Squares

After: A hierarchical network of public squares, distributed along main streets and embedded within residential developments, creates a connected and navigable public realm that supports social life across all times of day.



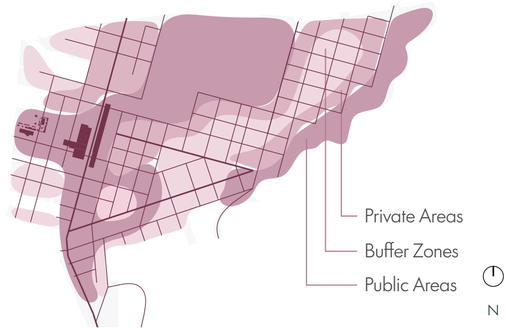


Public Space Hierarchy & Network



The public space network is structured around two tiers. Primary public spaces are located along the main streets and at key entrance points - highly visible, fully programmed, and accessible to all. Smaller neighborhood squares are embedded within the residential developments - positioned at the waterfront or along green axes to draw out the specific qualities of each neighborhood, offering residents intimate, nature-adjacent gathering spaces that complement the more urban character of the primary squares.

Public & Private Space Distribution



The neighborhood's public and private spatial hierarchy follows a clear and legible logic. The entrance sequences, central axis, and heritage part are conceived as fully public - spaces that belong to the entire neighborhood and beyond, including the future connection toward Lynetteholm. From these anchors, a gradual transition unfolds toward the residential developments, which are characterised by a predominantly private spatial register - offering residents the sense of ownership, calm, and security that is essential to a genuinely restorative living environment.

Before

I. II. III.



After

I. II. III.



Location on Bigger Scale

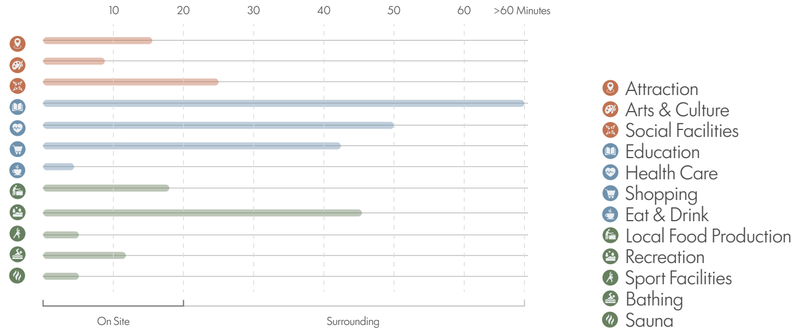


Building on the amenity analysis conducted in the second aspect group, this page translates the identified programmatic gaps into a coherent land-use framework for Refshaleøen. The distribution of active uses across the site is deliberately structured in response to the spatial logic of the public space network and street hierarchy - concentrating activation along main streets and active frontages while allowing quieter, more residential programs to unfold within the blocks beyond. Particular attention has been paid to the provision of daily-needs amenities currently absent from the site, as well as the integration of schools and childcare facilities in response to municipal requirements.

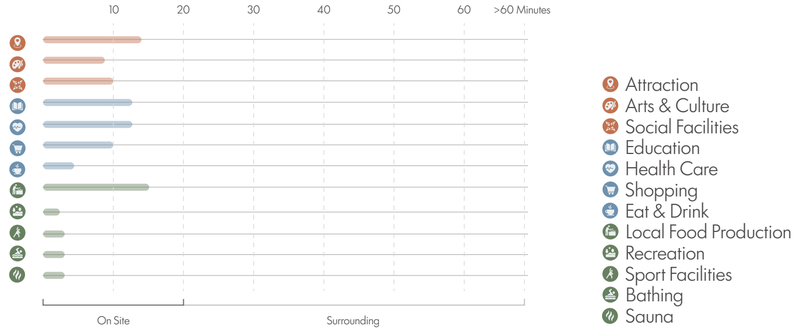


Programming & Active Frontages

Walking Distance from Site - Before



Walking Distance from Site - After



Amenity Findings Revisited

The analysis demonstrated unequivocally that Refshaleøen currently fails to meet even the most basic standards of neighborhood self-sufficiency, with supermarkets, schools, and healthcare facilities located over forty walking minutes from much of the site. This finding directly informs the programmatic framework proposed here - ensuring that the full range of daily necessities is embedded within the neighborhood fabric and accessible within comfortable walking distances from every residential cluster (Københavns Kommune, 2021).

Potential Programming Scale 1 : 8.500



Figure 111. Map of potential programming distribution.

The proposed programming map distributes active uses along the main streets and mixed-use zones, while integrating community facilities, schools, and childcare at strategically accessible locations within the residential developments. The framework ensures that the neighborhood's programmatic offer is both diverse and equitably distributed - supporting the everyday routines of all resident groups while generating the continuous activity patterns that underpin a safe, vibrant, and health-promoting public realm.

- Land Area
- Lynetteholmen Development
- Existing Water Structure
- Existing SurroundingBuildings
- Kept Buildings
- Public Space Network
- Active Frontages
- Street Grid
- Building Plots

- Attraction
- Arts & Culture
- Social Facilities
- Education
- Health Care
- Shopping
- Eat & Drink
- Local Food Production
- Recreation
- Sport Facilities
- Bathing
- Sauna

Location on Bigger Scale



Zooming into the heritage part at the chunk scale, the design elaborates the rich and complex layering of public spaces and programs that make this zone the cultural and social heart of Refshaleøen. The existing public assets of the area - most notably the Reffen Food Market - are retained and complemented by a series of new public spaces, programmatic uses, and flexible open areas that collectively generate a continuously activated, socially diverse, and culturally vibrant neighborhood centre. The presence of a neighborhood entrance in this zone further reinforces its public character, making it the most highly activated and publicly accessible part of the entire site.



Public Space Network

Kept & Added Public Spaces

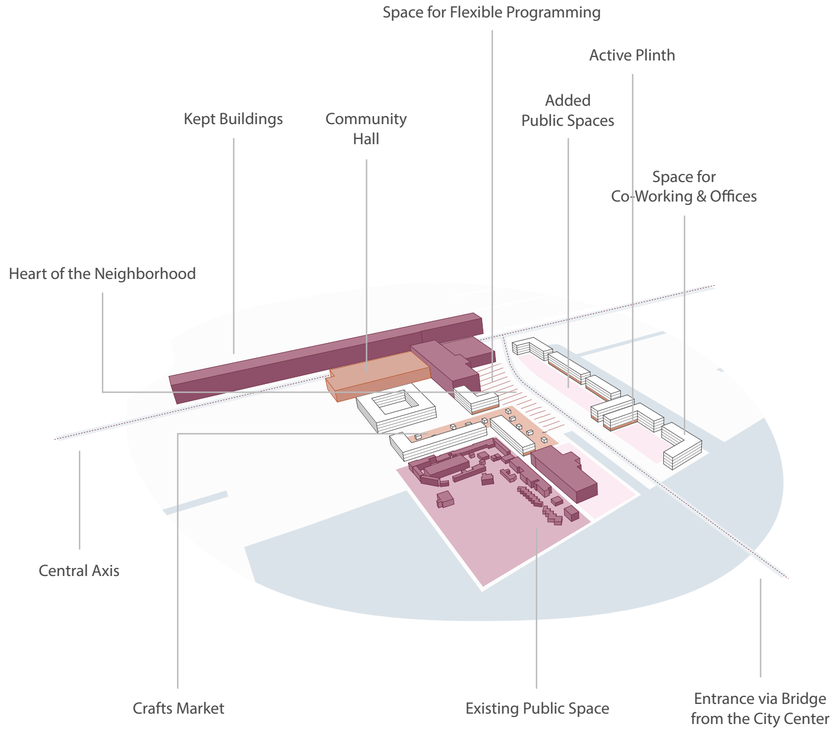


Figure 112. Zoom-in aerial view of heritage public space integration.

Flexible Spaces

After: A diverse range of flexible public spaces - from activated urban squares to intimate courtyard gardens - accommodates spontaneous, informal, and diverse forms of social use across all times of day and year.



„Living here feels like being promised something that hasn't been delivered yet. The ingredients are all here - the water, the space, the character." (Elena, 2026)

Section



Figure 113. Section of public space activation (heritage area).

Scale 1 : 500

The section through the heritage part reveals a carefully orchestrated spatial sequence that moves from the co-working and office spaces overlooking the kept buildings - their generous glazing ensuring continuous visual connection to the industrial heritage beyond - through the activated urban courtyards between new development, to the crafts market and flexible open space at the water's edge. The urban courtyards between the new buildings are conceived as publicly accessible, greened urban spaces - animated by playgrounds, cafés, and informal gathering areas that embed daily social life within the shadow of the retained industrial structures. Adjacent to Reffen, the crafts market - formed by a series of repurposed containers in deliberate homage to its neighbor - provides affordable studio and workshop spaces for local artists and makers, extending the cultural and creative character of the heritage part while offering a tangible connection to the site's rich artistic layer. Beyond the crafts market, a flexible open space accommodates a rotating program of weekly markets, outdoor cinema screenings, small concerts, community events, and seasonal installations - ensuring that this part of the neighborhood remains dynamic, inclusive, and continuously relevant to the life of its residents.

Location on Bigger Scale



Zooming into the residential development at the chunk scale, the design elaborates the relationship between active ground-floor programming, the public realm of the main street, and the more intimate spatial conditions of the residential street beyond. The Makers District - a counterpart to the heritage part's Crafts Market, oriented more toward craft and making than fine art - anchors one of the main street intersections, providing a neighborhood destination that draws residents and visitors alike. The section through the residential street demonstrates how active plinths, narrow planted buffers, and the prioritisation of pedestrian and cycling movement can together create a ground-floor environment that is both commercially vibrant and spatially comfortable.



Safety & Range From Private to Public

Different Neighborhood Squares

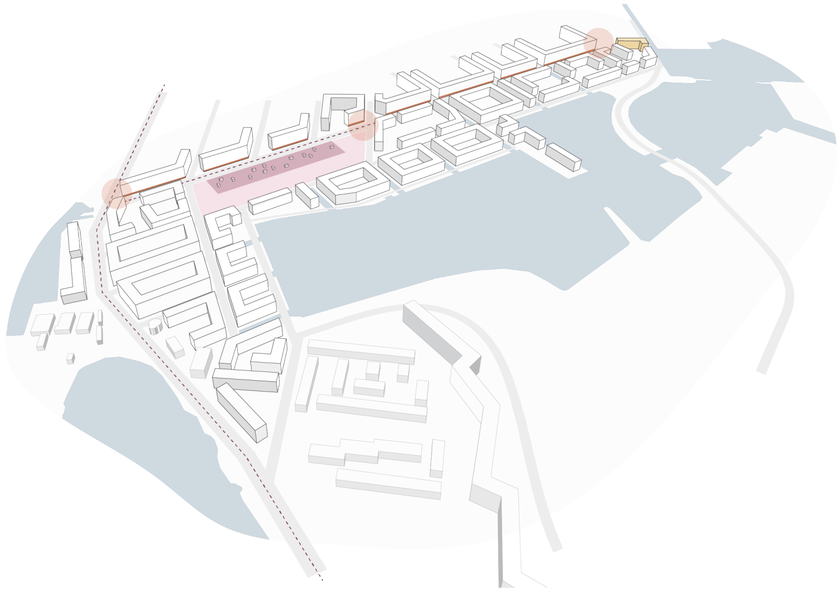


Figure 114. Aerial view of residential public space activation.

- Land Area
- Surrounding Buildings
- Existing Water Structure
- Added Buildings
- Streets
- Main Streets
- Active Plinth
- Amenities
- Public Space
- Makers District
- Added Landmark

Residential Street with Active Plinth

Scale 1 : 200



Figure 115. Section of residential street with active frontages.

Safety & Range From Private to Public

Active Plinths & Building Character

Location on Bigger Scale

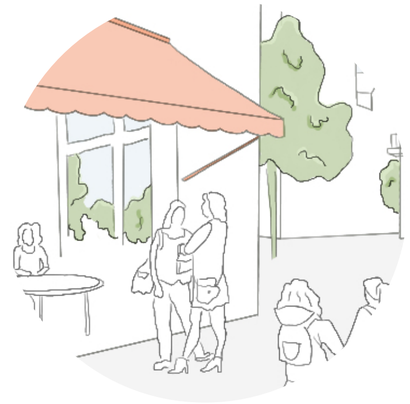


The section along the main street of the residential development provides the most precise spatial articulation of the relationship between active ground-floor programming, building height, facade articulation, and the quality of the pedestrian environment. The section reveals how architectural decisions at the scale of the individual building - the height of the ground floor, the positioning of balconies, the articulation of the facade - directly shape the safety, vitality, and experiential quality of the street below.



Figure 116. Section of main street with plinth activation.

Scale 1 : 750



Section

The section illustrates a ground floor of generous ceiling height, clearly distinguished from the residential floors above - creating a spatial presence that signals public use and invites entry. Balconies begin at the second floor rather than the first, providing a degree of acoustic and visual separation between the activated street level and the private domestic spaces above. Where they do appear, balconies are arranged in an alternating pattern across the facade - ensuring privacy between neighboring units while maintaining a sense of visual connection between interior and exterior. The result is a street elevation that is simultaneously urban and residential - activated at the ground, inhabited above, and articulated across its full height in a manner that contributes positively to the spatial quality of the public realm.

Active Frontages

After: Systematically activated ground-floor plinths along key pedestrian routes generate continuous visual engagement, social presence, and perceived safety - transforming the neighborhood's streets into welcoming and inhabited public corridors.





„The smell of the food, the sounds of people - that's nice. But as soon as you step away from the market itself, it gets very quiet and very empty very quickly. And that contrast is a bit unsettling. Where's the transi-tion? Where's the bit in between that says „you can be here too"?" (Mads, 2026)

Location on Bigger Scale



At the block scale, the three distinct public space typologies proposed for the residential development are examined in spatial detail - demonstrating how the transition from fully public to semi-private urban to semi-private green is articulated across the neighborhood fabric. The bird's eye view reveals the size differential between the three space types, while the atmospheric sketches at eye level communicate the experiential qualities that each space is designed to offer - grounding the spatial proposals in the lived, bodily reality of the future resident.



Public Space Network

Three Space Typologies

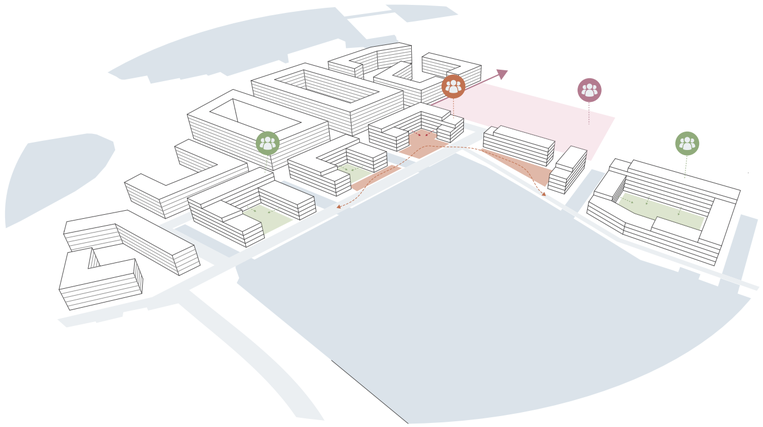


Figure 117. Aerial view of building block with diverse public spaces.

The overhead view makes legible the spatial logic of the three public space types and their relationship to the built fabric and waterfront edge. The public square - larger, more urban, and facing the closed street-fronting facades - serves the neighborhood as a whole. The semi-private urban spaces - smaller, more intimate, and equipped with playgrounds and community seating - serve primarily the surrounding residential blocks. The semi-private green spaces - open courtyards facing the waterfront and nature - dissolve the boundary between indoor and outdoor life, actively reducing the psychological barrier to going outside and strengthening the everyday connection between residents and the natural environment.

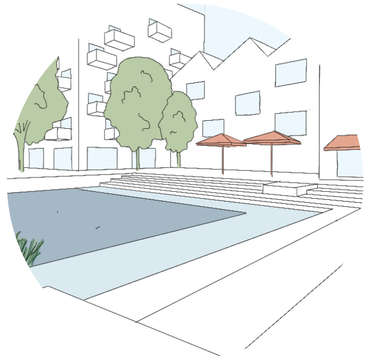
- Land Area
- Added Buildings
- Existing Water Structure
- Added Buildings
- Streets
- Main Squares
- Urban Neighborhood Squares
- Green Neighborhood Squares

Everyday Spaces

After: A mixed-use programming framework, distributed amenities, and a coherent public space network ensure that the neighborhood generates continuous, overlapping activity throughout the day — embedding public life into the everyday routines of all residents.



Waterfront Square



At the waterfront edge, the semi-private green space opens generously toward the water - framed by lower building volumes that step back to maximise views and sunlight penetration. Seating steps descend toward the water's edge, inviting residents to pause, observe, and simply be present with the harbor landscape. The atmosphere is calm, open, and restorative - a daily antidote to the cognitive demands of contemporary urban life.

Greened Neighborhood Square



Within the residential blocks, the greened neighborhood square offers a different but equally restorative spatial experience - enclosed, planted, and quietly activated by the everyday life of surrounding residents. Children play freely in a space that belongs unmistakably to their neighborhood; adults pause on benches beneath the canopy of mature trees; the sounds of the city recede. This is the kind of space that transforms a residential development into a genuine community - intimate, safe, and deeply connected to the natural world.



Figure 118. Photograph of Sydhavn bathing area.



Figure 119. Photograph of Sydhavn canal waterfront.



Figure 120. Photograph of greened courtyard.

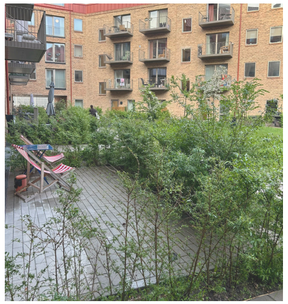


Figure 121. Photograph of transition from private garden to shared courtyard.

Location on Bigger Scale



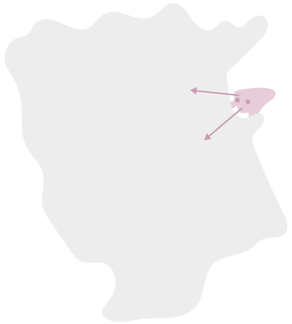
The design proposals developed within the Public Space & Socio-Spatial Features aspect group collectively transform Refshaleøen from a site characterised by spatial anonymity, programmatic emptiness, and social isolation into a neighborhood defined by a rich, diverse, and continuously activated public realm. From the hierarchical public space network to the systematic activation of ground-floor plinths and the careful differentiation of public, semi-private urban, and semi-private green space typologies, every proposal within this group is guided by the conviction that the quality of shared space is a direct determinant of the health, well-being, and social cohesion of the communities it serves.



Relation to City

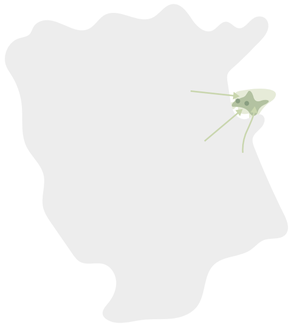
Before

Before, Refshaleøen's public life was episodic and externally dependent - a handful of cultural destinations drawing visitors from across the city for specific events, but offering nothing to sustain the daily routines and social needs of a residential community. For the basic amenities of neighborhood life - supermarkets, schools, healthcare, community facilities - residents were entirely dependent on surrounding districts, with walking distances to essential services exceeding forty minutes in many cases. The site was, in programmatic terms, a destination rather than a neighborhood: a place one visited, not a place one lived (Oldenburg, 1989; Carmona et al., 2010).



After

After, Refshaleøen becomes a self-sufficient neighborhood that not only meets the daily needs of its own residents but generates a public offer significant enough to attract visitors from across the city. The heritage part - with its community hall, crafts market, cultural institutions, and flexible public spaces - establishes a destination of city-wide cultural relevance. Distributed amenities ensure that every resident can access daily necessities within comfortable walking distance, while the diversity and quality of the neighborhood's public realm positions Refshaleøen not merely as a place to live but as one of Copenhagen's most distinctive and socially vibrant urban destinations. In this way, the neighborhood contributes to the broader city not by drawing resources from it, but by giving something genuinely valuable back.



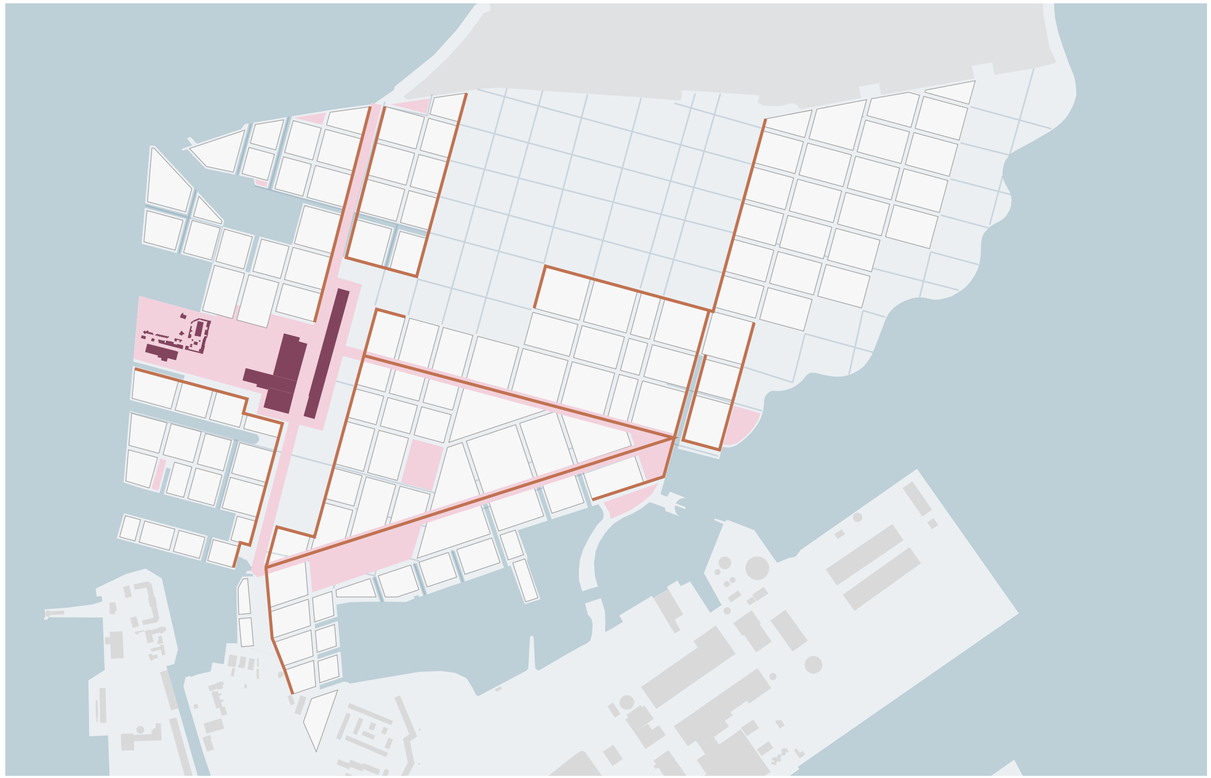


Figure 122. Map of combined design (Aspect Group 3).

The design proposals for this aspect group are structured around three interconnected spatial moves. First, a hierarchical public space network distributes a diverse range of gathering spaces across the entire site - ensuring that every resident can access a qualitative public space within a maximum of ten minutes walking distance from the centre of their residential development. Second, the systematic activation of ground-floor plinths along main streets and active frontages generates the continuous social presence, visual engagement, and programmatic diversity that underpin both the safety and the vitality of the neighborhood's public realm. Third, the careful differentiation between fully public, semi-private urban, and semi-private green space typologies creates a spatially rich and socially nuanced environment - one in which the transition from the collective to the intimate, and from the urban to the natural, is made legible, comfortable, and deeply supportive of the everyday well-being of future residents.

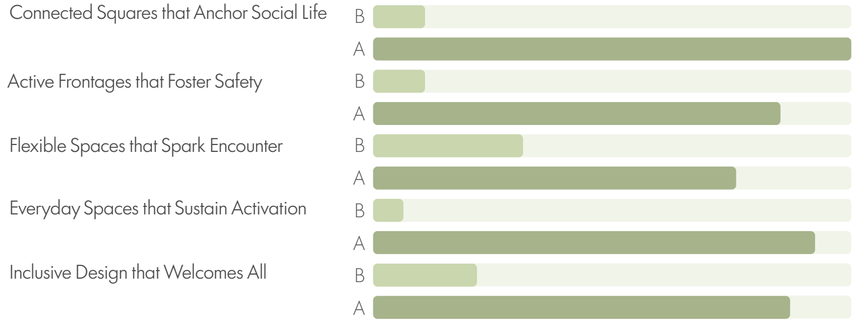
Location on Bigger Scale



The design proposals developed within the Public Space & Socio-Spatial Features aspect group collectively transform Refshaleøen from a site characterised by spatial anonymity, programmatic emptiness, and social isolation into a neighborhood defined by a rich, diverse, and continuously activated public realm. From the hierarchical public space network to the systematic activation of ground-floor plinths and the careful differentiation of public, semi-private urban, and semi-private green space typologies, every proposal within this group is guided by the conviction that the quality of shared space is a direct determinant of the health, well-being, and social cohesion of the communities it serves.



Spatial Criteria Transformation - Before vs. After



Connected Squares that Anchor Social Life

Before: Only two identifiable public spaces exist on the site - Reffen and a large undefined event ground - with no spatial connection between them and no infrastructure for everyday social life.
After: A hierarchical network of public squares, distributed along main streets and embedded within residential developments, creates a connected and navigable public realm that supports social life across all times of day.

Active Frontages that Foster Safety

Before: Blank, unlit ground-floor edges along the site's primary routes generate spatially unsafe and socially inactive street conditions, particularly after dark.
After: Systematically activated ground-floor plinths along key pedestrian routes generate continuous visual engagement, social presence, and perceived safety - transforming the neighborhood's streets into welcoming and inhabited public corridors.

Flexible Spaces that Spark Encounter

Before: The absence of small-scale, adaptable gathering spaces leaves no spatial framework for the spontaneous social encounters that build community life over time.
After: A diverse range of flexible public spaces — from activated urban squares to intimate courtyard gardens - accommodates spontaneous, informal, and diverse forms of social use across all times of day and year.

Everyday Spaces that Sustain Activation

Before: The site's public life is episodic and event-driven, with almost no spatial infrastructure capable of sustaining continuous everyday activity and use.
After: A mixed-use programming framework, distributed amenities, and a coherent public space network ensure that the neighborhood generates continuous, overlapping activity throughout the day — embedding public life into the everyday routines of all residents.

Inclusive Design that Welcomes All

Before: The site's non-human scale, poor accessibility, unsafe conditions after dark, and lack of seating and rest opportunities create an environment that is uninviting and functionally exclusionary for many user groups.
After: Universal accessibility, distributed rest opportunities, safe and well-lit routes, and a programmatic diversity that serves all age groups and abilities ensure that the benefits of the neighborhood's spatial quality are available to every resident equally.

Potential Programming Scale 1 : 8.500



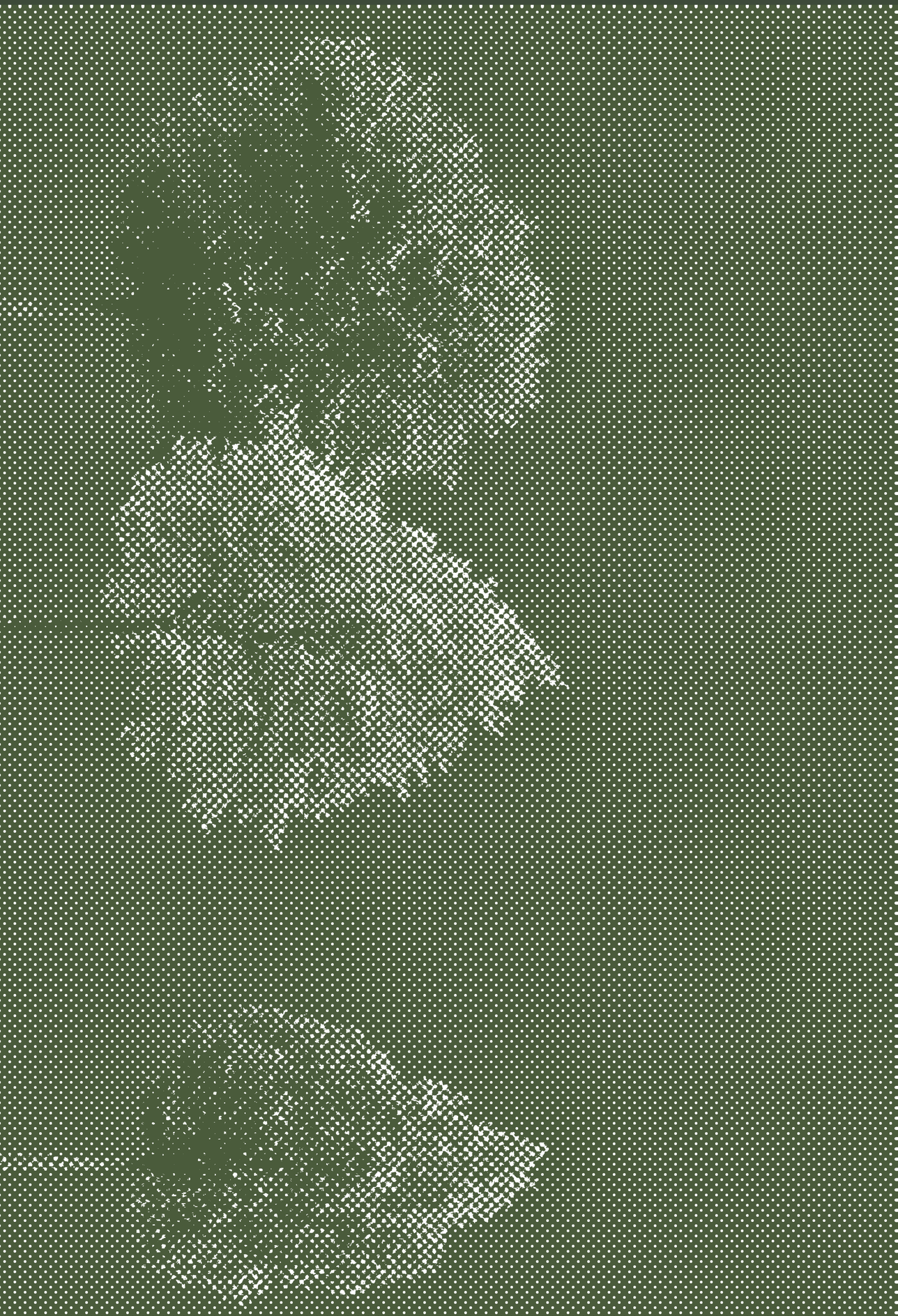
Figure 123. Map of urban programming and walking distances.

- Land Area
- Lynetteholmen Development
- Existing Water Structure
- Existing SurroundingBuildings
- Kept Buildings
- Public Space Network
- Active Frontages
- Street Grid
- Building Plots
- 5/10 Min Walking Distance From Center of Residential Development

- Attraction
- Arts & Culture
- Social Facilities
- Education
- Health Care
- Shopping
- Eat & Drink
- Local Food Production
- Recreation
- Sport Facilities
- Bathing
- Sauna

N

„I cycle into the city most days for university, which I actually love, but coming home in the evening, especially in winter... it feels very isolated. Very dark. The walk from the bus stop to the containers - there's nothing. No lights, no people, nothing open. It doesn't feel safe, honestly." (Elena, 2026)



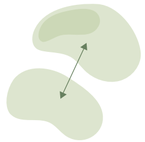
Analysis Group



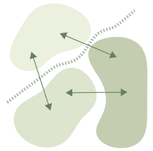
The green and blue infrastructure of Refshaleøen represents one of the site's greatest spatial assets, yet remains largely underutilised and poorly integrated into the everyday life of the area. The following sub-aspects examine its current condition and potential.



Environmental Relief examines the implementation of spatial buffers that mitigate environmental stressors, including noise, air pollution, and unpleasant odors.



Restorative Pockets investigates the availability and quality of small-scale spaces designed for rest, retreat, and sensory relief.



Green Space Distribution & Accessibility examines the spatial distribution of green areas, assessing whether existing vegetation is accessible and embedded within everyday movement routes rather than isolated from daily use.

Relevant Spatial Criteria

Distributed Green that Embeds Nature Daily (E)

Green spaces should be distributed throughout the urban environment rather than concentrated in isolated parks (Wolch et al., 2014). This network of greenery enhances ecological performance, microclimatic conditions, and accessibility, ensuring that natural elements are embedded in everyday spatial experience (Hartig et al., 2014).



Buffered Zones that Relieve Urban Pressure (H)

Urban design should incorporate quiet zones, greenery, and buffer spaces that mitigate noise and visual stress from traffic and dense activity (Ulrich et al., 1991). Such interventions create environments that support mental well-being and provide opportunities for retreat within the city (Kaplan, 1995).



Restorative Pockets that Invite Recovery (I)

Restorative environments are characterized by shaded areas, seating opportunities, and elements of visual relief (Marcus & Sachs, 2014). These spaces allow individuals to pause, recover, and engage in passive activities, contributing to psychological regeneration within everyday urban settings (Kaplan & Kaplan, 1989).



Inclusive Design that Welcomes All (N)

Inclusive design strategies that accommodate all ages and abilities foster a sense of belonging (WHO, 2016). By addressing diverse needs and promoting equitable access, urban environments become socially sustainable and supportive of collective identity (Gehl, 2010; Wolch et al., 2014).



Key Locations Where to Analyze Key Aspects

Environmental Conditions

On Site

L

Sydhavn

L

Soil Pollution
Smell Nuisance
Noise Nuisance
Buffers

Variety of Nature Areas

On Site

L

Utrecht

L

Green-Blue Network
Programming
Active vs. Calm
Transitions

Location on Bigger Scale



The analysis of Refshaleøen's green and blue infrastructure begins with an examination of the environmental conditions that fundamentally shape the site's livability - and in several areas, actively undermine it. Soil contamination across significant portions of the site, combined with the severe noise and odor nuisance generated by the adjacent Biofos wastewater treatment facility, create conditions that are directly detrimental to the mental and physical health of current and future residents. The near-total absence of trees and green buffer infrastructure not only fails to mitigate these conditions but renders the site spatially exposed, ecologically impoverished, and experientially hostile - conditions that demand urgent and ambitious remediation before meaningful residential development can proceed.



Environmental Conditions

Where are Spatial Buffers Needed?

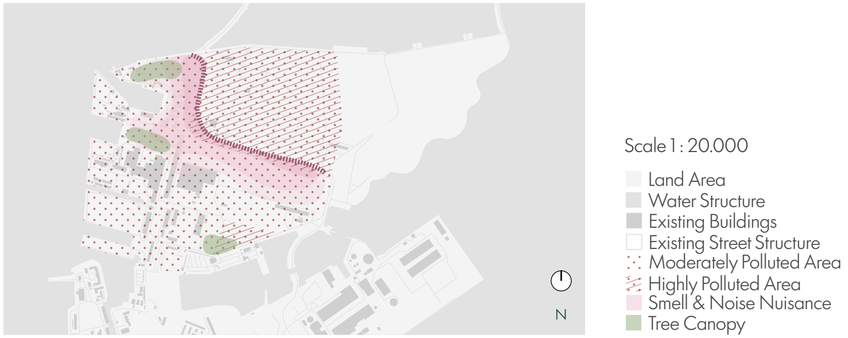


Figure 124. Map of nuisance and soil pollution.

Photos BIOFOS Area



Figure 125. Photographs of BIOFOS facilities and barriers.

The photos reveal a site boundary characterised by high fencing, industrial infrastructure, and a complete absence of transitional green space. Rather than offering any form of spatial or psychological relief, this edge actively compounds the mental health pressures associated with urban living - presenting future residents with a hard, uninviting boundary that offers no connection to nature, no visual softening, and no restorative quality whatsoever.

Mitigation of Nuisance

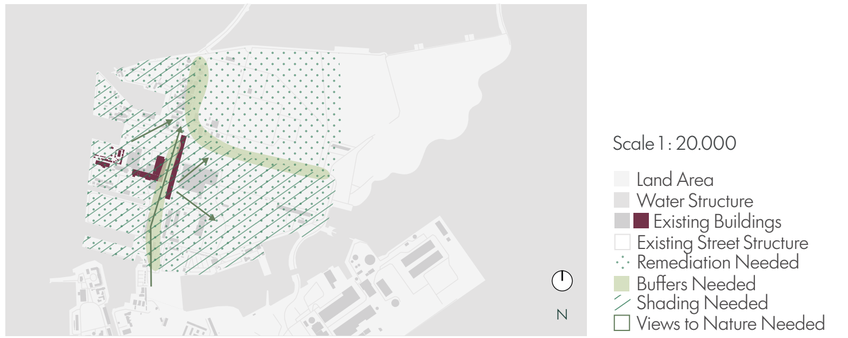


Figure 126. Map of proposed nuisance mitigation strategies.

Noise, Odor & Soil Contamination

The spatial analysis identifies significant areas of soil contamination across the site - a legacy of over a century of industrial activity - alongside severe noise and odor nuisance concentrated around the Biofos treatment facility. These overlapping environmental stressors create conditions that are fundamentally incompatible with the health-promoting neighborhood ambitions of the thesis, and establish remediation and buffering as non-negotiable prerequisites for any credible development strategy.

The Urgency to Act

The scale and severity of the environmental conditions identified on the site demand a design response that goes beyond the cosmetic. Soil contamination requires systematic remediation before residential use can proceed safely. Noise and odor nuisance from the Biofos facility necessitates robust spatial buffering - through dense planting, topographic intervention, and strategic land-use zoning - to ensure that the health and well-being of future residents are not compromised by industrial neighbors. The absence of these measures would render the neighborhood's health-promoting ambitions fundamentally contradictory - and is therefore treated in this thesis as a foundational design imperative rather than a secondary concern (WHO, 2016; Marcus & Sachs, 2014).

Buffered Zones

Before: No green buffering exists between the Biofos facility and adjacent areas, leaving future residents entirely exposed to significant noise and odor nuisance with no spatial or psychological relief.

Location on Bigger Scale



The analysis of Refshaleøen's existing green and blue infrastructure reveals a site almost entirely devoid of qualitative natural environments. What green space does exist is characterised by undifferentiated grass surfaces offering no ecological value, no programmatic activation, and no spatial quality - failing entirely to meet the restorative, recreational, and ecological standards that a health-promoting neighborhood requires. Against this backdrop, the analysis maps a series of potential areas for a new green-blue structure, identifying both large-scale nature zones and smaller green connectors that could be woven throughout the residential developments to ensure that nature is experienced not as an occasional destination but as a continuous and integral dimension of everyday neighborhood life.



Variety of Nature Areas

Where Should Green-Blue Connections be Placed? Scale 1 : 20.000



Figure 127. Map of existing green-blue spaces.

The mapping of existing green areas reveals a sparse and qualitatively inadequate provision - surfaces characterised by undifferentiated lawn, absent of ecological diversity, spatial programming, or the sensory richness that restorative environments require. These spaces offer neither the psychological restoration associated with natural environments nor the biodiversity necessary for a genuinely sustainable urban landscape.

Fælledby: Henning Larsen Architects, Copenhagen, Denmark



Figure 128. Rendering of residential view towards green areas. Henning Larsen (n.d.)



Figure 129. Rendering of green-blue areas at eye level. Henning Larsen (n.d.)

Fælledby is modeled on the idea of the rural village, translating its defining principles - active corners, green corridors, and a concentrated active center - into an environmentally minded district conceived to encourage social interaction between its future residents. The plan also integrates areas for urban farming, offering residents „access to productive fields, fruit orchards, and herb gardens - all of which extend a sense of connection to the land and place" (Henning Larsen, n.d.). Green corridors allow residents increased and direct access to nature while simultaneously allowing the animal species of Amager Fælled to move freely through and within the area. For Refshaleøen, Fælledby offers a compelling and locally grounded precedent for the integration of nature, community programming, and residential development into a coherent and ecologically responsive neighborhood framework.

Potential Green-Blue Structure Scale 1 : 20.000



Figure 130. Map of proposed green-blue spaces.

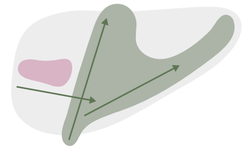




Figure 131. Photograph of existing green area.



The potential green-blue framework identifies two primary nature areas - one in the northern-central part of the site forming a transitional zone toward the Lynetteholm development, and one in the northeastern area along the waterfront - complemented by a series of green connectors threaded through the residential developments. This structure ensures that residents are never far from a meaningful natural environment, embedding nature as a continuous spatial presence rather than an isolated amenity.

Distributed Green

Before: Green space on the site consists of sparse, ecologically impoverished grass surfaces with no spatial quality, programmatic activation, or restorative value.

Restorative Pockets

Before: The near-total absence of small-scale, sheltered, and nature-adjacent spaces leaves no spatial infrastructure for the everyday psychological restoration that urban residents need.

„The waterfront is nice but it's not accessible in the way it should be. There are fences everywhere. It feels like you're being kept out of the best part of the site." (Elena, 2026)

„When I come here I feel calm. That's the first word - calm. The water does something to you that I don't think we fully understand scientifically, but you feel it physically. The breathing slows down. The thoughts stop racing." (Ole, 2026

„Sometimes I really miss being somewhere genuinely wild. Even just a bigger park, something that doesn't feel completely managed." (Mads, 2026)

Location on Bigger Scale



Utrecht serves as a compelling international precedent for the thoughtful resolution of edge situations between built fabric, water, and green infrastructure. The city's approach to these transitional zones - refined through decades of urban transformation and most powerfully demonstrated through the restoration of the Catharijnesingel canal - demonstrates how edges between the built and natural environment can be transformed from residual or conflicted spaces into some of the most qualitative and health-promoting environments within the urban fabric. For Refshaleøen, where a series of significant edge conditions define the spatial character of the site, Utrecht offers directly transferable lessons in how nature strategies can be deployed to resolve, activate, and enrich these critical transitional zones.



Variety of Nature Areas

The Catharijnesingel: From Infrastructure to Green-Blue Edge



WLA (n.d.)



WLA (n.d.)



Stijn Poelstra (n.d.)

Figure 132. Photographs of activation along Catharijnsingel.

The restoration of the Catharijnesingel canal represents Utrecht's most significant edge transformation - converting a former urban motorway into a continuous green-blue corridor that mediates between the historic inner city and surrounding neighborhoods. The edge between built fabric and water is resolved through a layered strategy of sitting stairs, planted banks, pedestrian promenades, and café terraces that bring residents into immediate physical and visual contact with the water. The transition is neither abrupt nor uniform - it unfolds gradually through a series of spatial conditions that range from the fully activated urban waterfront to quieter, more naturalistic bank sections, demonstrating that a single edge can accommodate multiple characters and uses without losing its spatial coherence.

Green Connectors: Bringing Nature into the Neighborhood





Figure 133. Renderings of transitions to restorative green. KCAP (n.d.)

Utrecht's approach to green infrastructure is characterised by the deliberate threading of green connectors through the urban fabric - ensuring that nature is not confined to large parks at the periphery of the city but is woven continuously through its residential neighborhoods. Pocket parks, planted courtyards, tree-lined residential streets, and canal-side green corridors collectively ensure that no resident is ever far from a qualitative natural environment. This principle of distributed, connected green infrastructure - rather than concentrated, isolated green destinations - is one of the most important transferable lessons that Utrecht offers for the design of Refshaleøen's green-blue network.

Troldhedestien is a „picturesque nature trail stretching from the city of Kolding to the historic Dybvadbro Station - once a bustling railway line connecting Kolding with Troldhede in West Jutland, thoughtfully transformed into a recreational pathway" (Skerl, 2024) that honours its industrial heritage while embracing the beauty of the surrounding natural landscape. The trail is designed to follow the natural contours of the land, moving through different ecological zones, with a series of shelters offering places to rest or stay overnight - each designed to harmonise with its specific setting, whether in open fields, within woodland, or near wetlands.

Programmed to Unprogrammed: The Green Gradient



Landezine (n.d.)



Landezine (n.d.)



West 8(2026)

Utrecht demonstrates how a single green edge can transition seamlessly from programmed, activated spaces to unprogrammed, naturalistic zones - creating a spatial gradient that serves the full range of resident needs without imposing a uniform character on the landscape. Playgrounds and café terraces give way to open lawns and planted meadows, which in turn transition into wilder, ecologically autonomous zones where nature is left to determine its own spatial logic. This gradient - from the human to the ecological - is directly reflected in the programmed-to-unprogrammed distinction that structures Refshaleøen's green-blue framework, and Utrecht's successful application of this principle provides strong evidence for its spatial and social viability.

Building-to-Green Edges: Activating the Transition



BURA (n.d.)



BURA (n.d.)



BURA (n.d.)



BURA (n.d.)

Utrecht demonstrates consistently how the edge between a building and its adjacent green or blue space can be designed as an active and spatially rich transition rather than a neutral boundary. Generous ground-floor openings, stepped facades, planted terraces, and direct access from ground-floor dwellings to communal green spaces ensure that the built fabric actively engages with the natural environment rather than simply facing it. This approach - dissolving the hard boundary between interior and exterior - is directly relevant to Refshaleøen's residential developments, where the quality of the building-to-green edge will determine the degree to which residents experience nature as an integral part of their daily domestic life.

Troldhedestien: Kolding, Denmark



Skerl (2024)



Skerl (2024)



Skerl (2024)



Skerl (2024)

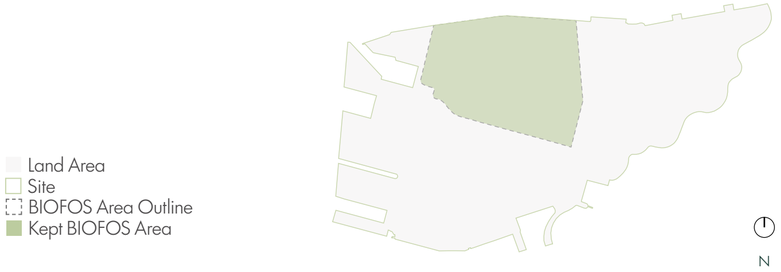
Location on Bigger Scale



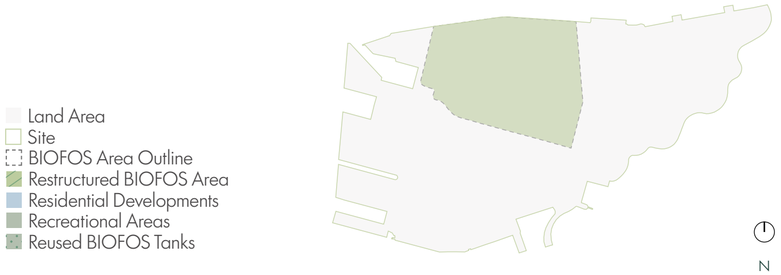
The future of the Biofos facility represents one of the most significant spatial variables in the development of Refshaleøen. Ongoing restructuring discussions have generated three plausible scenarios for the facility's future footprint - each with distinct implications for the amount of land available for green, blue, and residential development in the northern part of the site. The following scenarios are developed in response to these possibilities, ensuring that the design framework remains robust and adaptable regardless of which outcome materialises.



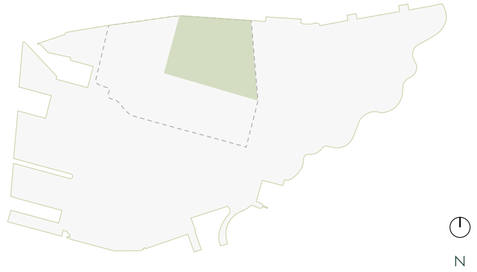
Alternative 1 - Site Unchanged



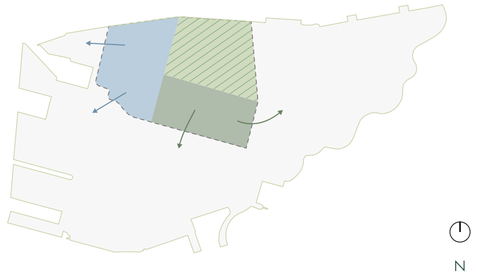
In the first scenario, the Biofos facility retains its current footprint, with operations modernised and upgraded to current technical standards. While no additional land is released for development, the modernisation of the facility is expected to significantly reduce noise and odor emissions, improving conditions for the adjacent residential developments. The design response focuses on maximising the quality of the buffer zones along the facility's perimeter - transforming this edge from a spatial liability into a programmed green corridor.



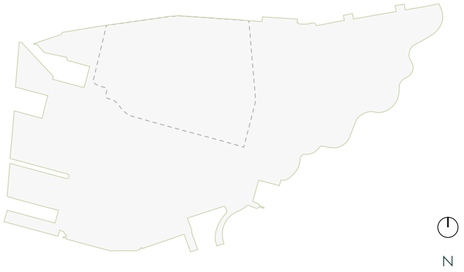
Alternative 2 - 25% Reduction



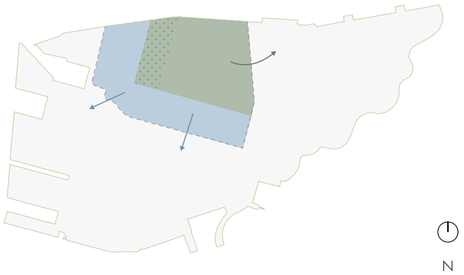
In the second scenario, approximately 25% of the Biofos site is released through the partial relocation of functions below ground - freeing the areas responsible for the greatest noise and odor nuisance (BIOFOS, 2023). The released land is distributed between additional residential development in the western portion of the site and an expanded green-blue structure, significantly improving both housing provision and the quality of the natural environment in this part of the neighborhood.



Alternative 3 - Full Relocation



The third and currently most financially viable scenario for the company involves the full relocation of Biofos operations to an adjacent island, releasing the entire site for redevelopment (BIOFOS, 2023). The freed land is envisioned as a generous combination of new residential development and an expansive green-blue landscape - with several of the existing treatment tanks retained and rewilded as unique ecological habitats, creating a distinctive and biodiverse landscape feature that connects the industrial memory of the site to its natural future.



Before vs. After

From Sound and Smell Nuisance to a Relieving Landscape

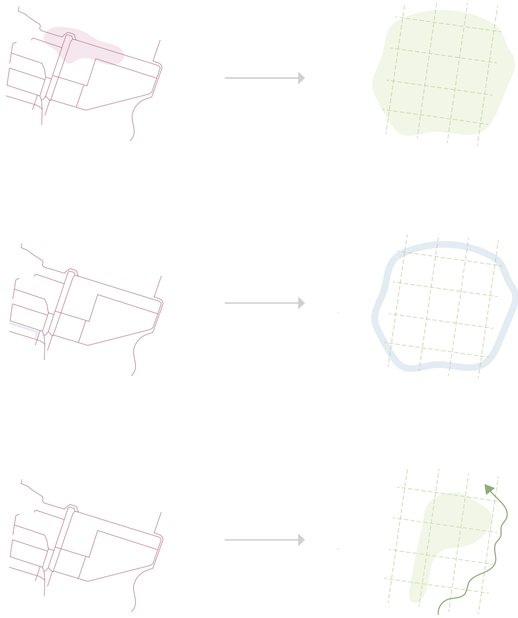
The environmental analysis revealed that noise and odor from the Biofos facility represent one of the most acute threats to the health and well-being of future residents. The design responds by transforming the most affected edges of the site into a dense, ecologically rich buffer landscape - converting what is currently a source of environmental stress into a restorative green corridor that actively supports the mental and physical health of the neighborhood.

From an Unused Waterfront to Extensive Swimming & Water Areas

Refshaleøen's extraordinary waterfront - one of the site's greatest spatial assets - is currently inaccessible, underutilised, and disconnected from the everyday life of the area. The design proposes a fundamental transformation of this edge, introducing extensive bathing areas, water-adjacent public spaces, and active waterfront programming that bring residents into direct, daily contact with the water - one of the most powerful restorative environments available in an urban context.

From Missing Green Spaces to a Connected Parkland

The near-total absence of qualitative green space on the site represents a critical gap in the neighborhood's capacity to support the mental restoration, physical activity, and nature connection of its residents. The design introduces a comprehensive and ecologically diverse parkland structure - distributed across the site in a continuous network of programmed and unprogrammed nature areas - ensuring that green space is experienced not as a rare destination but as an ever-present and integral dimension of daily life in Refshaleøen.



Before Scale 1 : 3.000

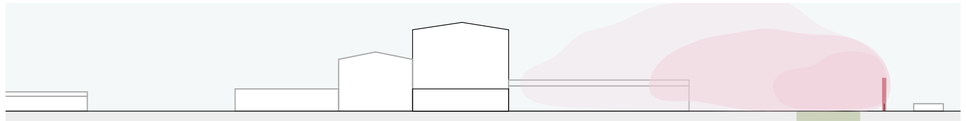


Figure 134. Section of green-blue spaces before intervention.

After Scale 1 : 3.000



Figure 135. Section of intended green-blue outcome.

Turning the Site From a Grey, Noisy and Unpleasant Space ...

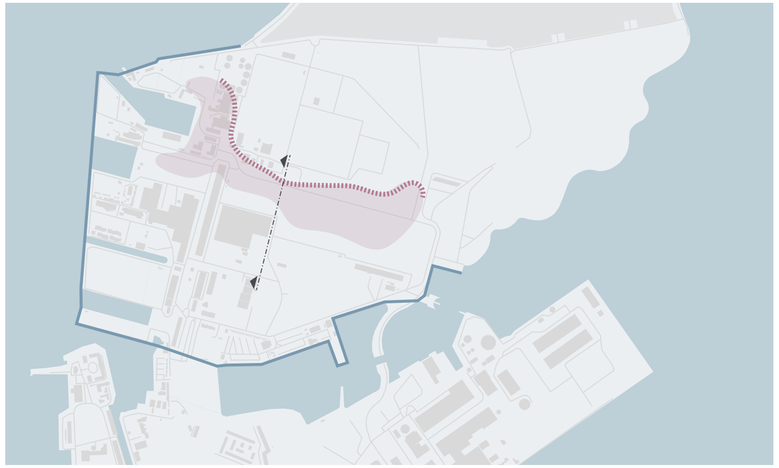


Figure 136. Map of green-blue spaces before intervention.

... To a Green and Blue Network that Invites Calmness and Regeneration



Figure 137. Map of proposed green-blue design.

Variety of Nature Areas

Location on Bigger Scale



The green-blue plan establishes the overarching spatial framework for nature within Refshaleøen - a comprehensive and ecologically ambitious structure that weaves green and blue infrastructure through the entire neighborhood, from the programmed urban parks adjacent to the residential developments to the deep nature areas at the heart of the site's two major green zones. The plan differentiates between a rich variety of spatial conditions - programmed and unprogrammed, active and calm, land and water - ensuring that the green-blue network serves the full spectrum of resident needs while also supporting biodiversity, ecological connectivity, and climate resilience across the site.



Gree-Blue Network

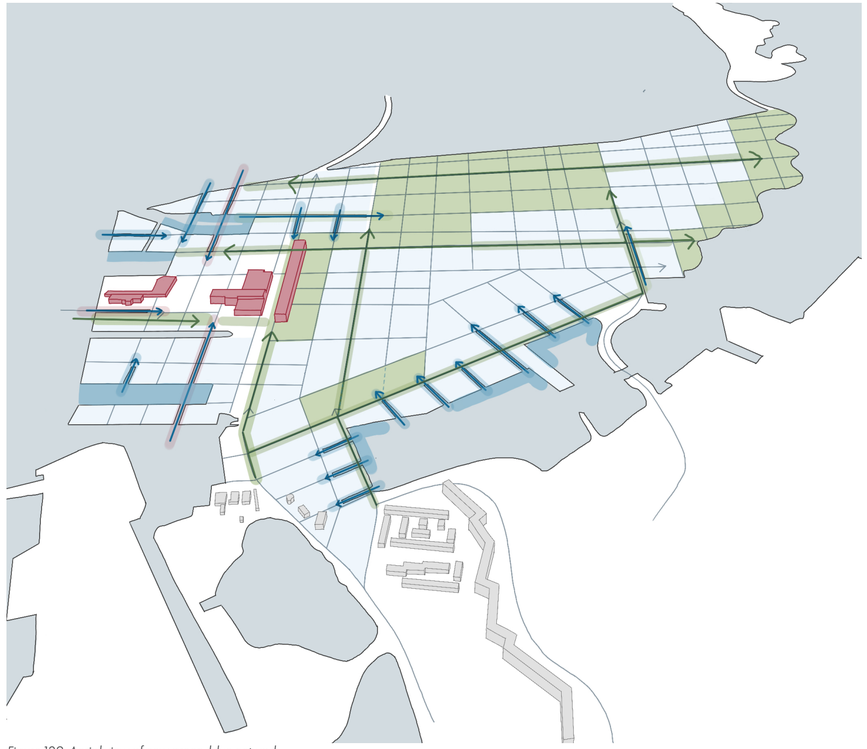


Figure 138. Aerial view of new green-blue network.

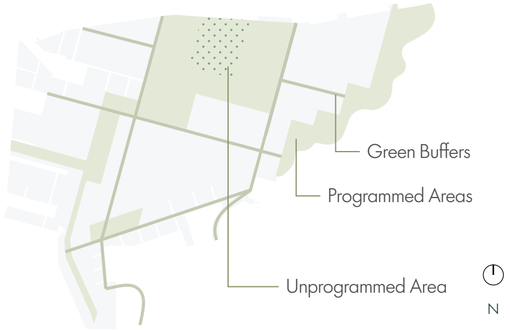
Distributed Green

After: A comprehensive green-blue network weaves nature continuously through the entire neighborhood - from green streets and courtyard planting to parklands and waterfront edges - ensuring daily proximity to nature for every resident.



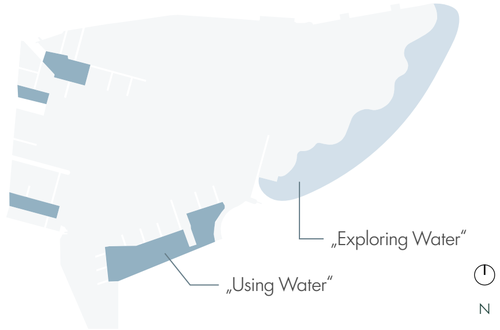


Programmed & Unprogrammed Green Spaces



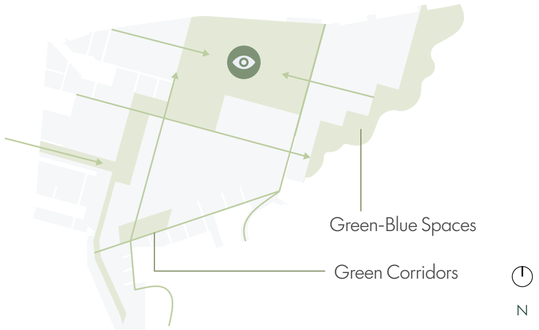
The green-blue structure distinguishes clearly between programmed and unprogrammed zones. Programmed areas are located primarily at the edges of the green zones adjacent to residential development in order to generate social life, ensure safety, and draw residents into the natural landscape. Unprogrammed areas are concentrated in the heart of the larger green zones to allow nature to unfold freely.

Waterfront Characteristics



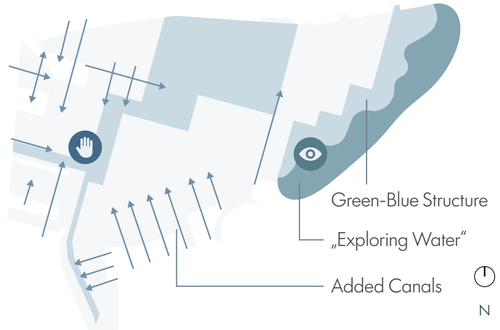
The waterfront is conceived around two distinct experiential characters. The first „Using Water" encompasses the bathing areas, water sports facilities, and active waterfront edges distributed along the residential developments, inviting residents into direct physical engagement with the harbor. The second „Exploring Water" characterises the more open waterfront where the relationship with water is more contemplative: watching, sensing, being.

Green Streets & Views to Nature



Throughout the neighborhood, all green streets connect directly to larger green and blue structures to ensure that every resident enjoys a continuous visual and physical pathway toward nature from their immediate doorstep.

New Canal Structure



A network of new canals is introduced throughout the neighborhood, drawing water directly into the residential fabric. By making water tangible and proximate, water is being transformed from an abstract distant presence into an intimate, daily companion.

Location on Bigger Scale



Building on the green-blue framework, this page elaborates the spatial differentiation between sitting and moving spaces, the strategic deployment of tree sizes as both acoustic and visual instruments, and the introduction of the Gate to Calmness - a dedicated pedestrian and cycling route that connects the eastern entrance across the green landscape toward Lynetteholm, guiding users through a carefully orchestrated progression from urban activation to deep natural calm.



Environmental Conditions

Buffers & Relief

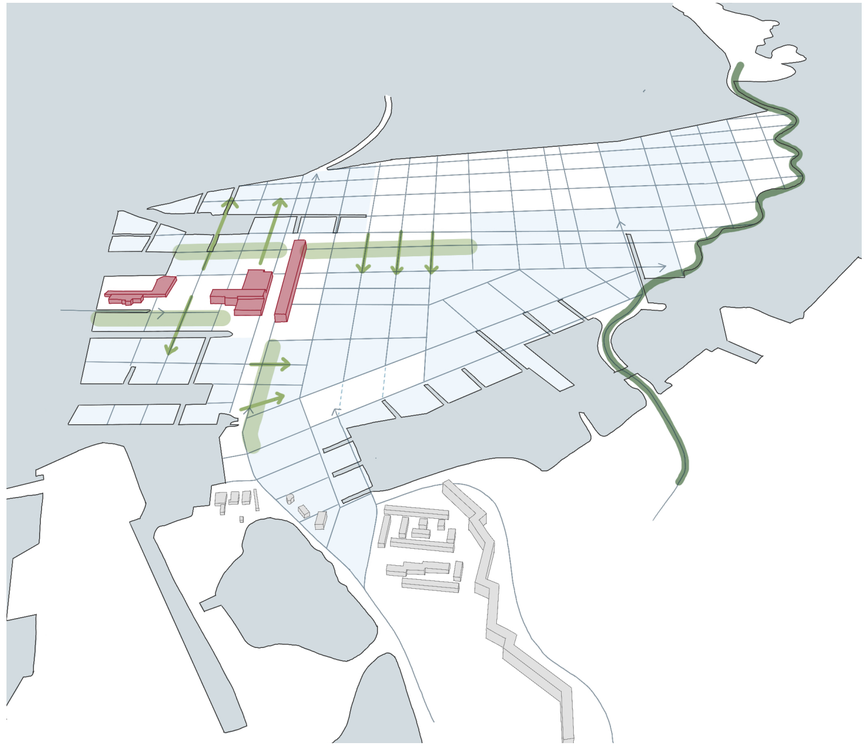


Figure 139. Aerial view of buffered zones.

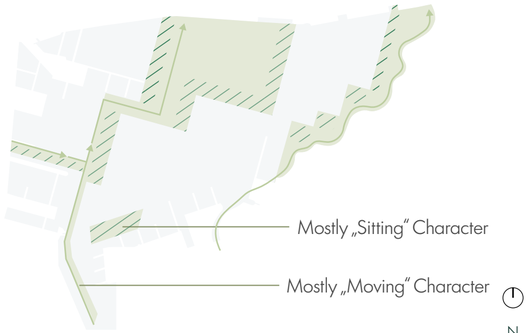
Buffered Zones

After: Dense green buffer zones - combining woodland planting, topographic intervention, and programmed landscape - transform the site's most environmentally compromised edges into restorative corridors that actively protect and support residential well-being.



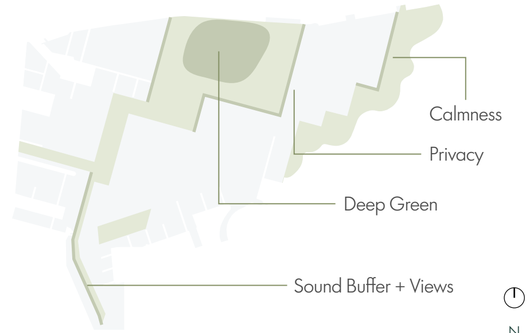


Sitting vs. Moving



The green-blue network differentiates between spaces designed for movement that encourage active engagement with the landscape and spaces designed for sitting, pausing, and resting. This distinction ensures that the natural environment supports both physical activity and psychological restoration, catering simultaneously to the body's need for movement and the mind's need for stillness (Ulrich et al., 1991).

Tree Sizes



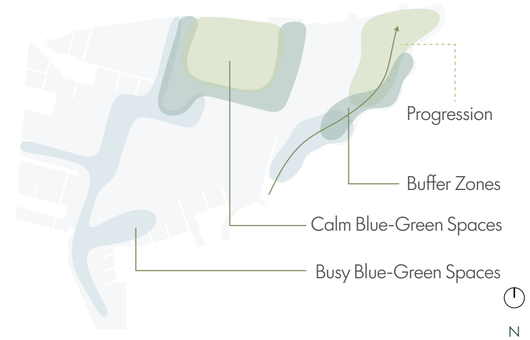
The deployment of trees across the site is calibrated in response to spatial function. Large, mature trees are positioned along the edges of residential buildings where acoustic buffering and visual privacy are most needed, and within the unprogrammed nature areas where their scale contributes to the sense of immersion and ecological richness. Smaller trees and planting are used within the more activated programmed zones, where they provide shade, sensory enrichment without overwhelming the spatial character.

Gate to Calmness



The Gate to Calmness is a continuous pedestrian and cycling route that begins at the eastern entrance and extends through the eastern green structure toward Lynetteholm. As users move along this route, the spatial character transitions deliberately and progressively from the activated public edges to the deep calm of the unprogrammed nature areas beyond.

Progression of Busy to Calm Spaces



The spatial progression from active to calm is a consistent organizing principle across the entire green-blue structure. The transition unfolds gradually and deliberately, beginning with activated, programmed edges adjacent to streets and residential development and moving progressively through semi-programmed zones toward the unprogrammed heart of the landscape.

Location on Bigger Scale



Before the programming of the nature areas can be spatially distributed across the site, it is essential to establish a clear understanding of the full range of program types available and their respective positions on the spectrum from active to calm and from programmed to unprogrammed. The following typologies represent the complete palette of nature-based programs considered for Refshaleøen - each briefly described and subsequently positioned within a two-dimensional diagram that maps their character across the axes of activity level and degree of spatial programming. This diagram serves as the operative tool through which the subsequent distribution of programs across the site is guided and justified.



Nature Programming Typologies

Unprogrammed

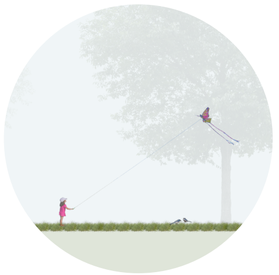
A. Wetlands



Active — Calm

Ecologically rich transitional zones between land and water, supporting diverse flora and fauna while offering a deeply restorative and visually distinctive landscape experience.

B. Open Green



Active — Calm

Generously scaled, largely unstructured green surfaces that accommodate free play, informal gathering, and spontaneous use across all seasons.

C. Forest



Active — Calm

Dense tree planting that creates conditions of spatial immersion, acoustic shelter, and ecological richness - among the most restorative landscape typologies available in an urban context.

D. Deep Nature



Active — Calm

The most ecologically autonomous zone of the site, left entirely to the self-determination of flora and fauna, accessible only by elevated paths to minimise human impact.

Semi-Programmed

E. Orchard



Active — Calm

A productive landscape of fruit trees that combines ecological value with seasonal sensory richness and a gentle, generative form of engagement with nature.

F. Animal Farm



Active — Calm

A small-scale farm environment offering therapeutic contact with animals - a well-evidenced restorative intervention (Frumkin et al., 2017).

G. Hiking Trails



Active — Calm

Defined walking routes that guide users through the landscape while encouraging physical activity, exploration, and sustained engagement with the natural environment.

H. Camping Areas



Active — Calm

Designated overnight spaces that deepen the relationship between residents and the natural landscape, extending the temporal dimension of nature contact beyond the day visit.

I. Shelters



Active — Calm

Simple, robust structures offering protection from the elements and a sense of refuge within the landscape - inviting extended stays and fostering a spirit of quiet adventure.

J. Rewilded BIOFOS Tanks



Active — Calm

Existing treatment tanks are retained and rewilded - transforming industrial infrastructure into unique ecological habitats that connect the site's industrial memory to its natural future.

Location on Bigger Scale





Nature Programming Typologies

Programmed

K. Park Structure



Active — Calm

Designed green spaces with defined spatial character, pathways, and planting - providing the familiar comfort and accessibility of the traditional urban park.

L. Urban Farming



Active — Calm

Community-based food production embedded within the neighborhood fabric, fostering connection to seasonal cycles, shared responsibility, and the therapeutic benefits of working with the land.

O. Community Gardening



Active — Calm

Shared cultivation spaces that foster social connection, environmental stewardship, and a sense of ownership over the neighborhood's natural environment.

P. Nature School



Active — Calm

An outdoor educational facility embedded within the green structure, offering children direct, sustained, and structured engagement with the natural world.

Q. Natural Playground



Active — Calm

A play environment that uses natural materials, topography, and landscape elements to encourage free, creative, and physically active play in direct contact with nature.

M. Café



Active — Calm

Small-scale hospitality nodes positioned at key moments within the green structure - providing amenity, social activation, and a reason to linger within the natural landscape.

N. Art Pavillons



Active — Calm

Architecturally distinctive structures that serve as cultural destinations within the green landscape - hosting exhibitions, installations, and events that bring art into direct dialogue with nature.

R. Activity Points



Active — Calm

Distributed, small-scale intervention points offering sports installations or interactive elements that encourage spontaneous physical activity within the green network.

S. Kajak Rental



Active — Calm

A waterfront amenity that enables direct engagement with the harbor and canal network, extending the active use of the blue infrastructure beyond the water's edge.

T. Lake



Active — Calm

A constructed body of water that serves simultaneously as an ecological habitat, a visual centrepiece, and a recreational resource.

Location on Bigger Scale



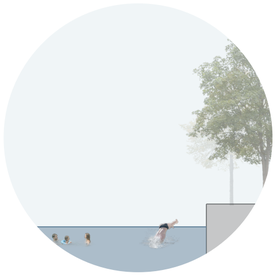
XL
L
M
S
XS



Nature Programming Typologies

Programmed

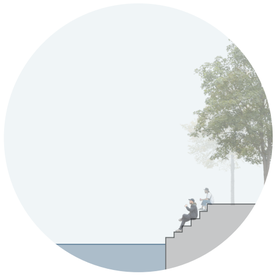
U. Pool Areas



Active — Calm

Designated bathing areas within the open harbor, offering direct physical contact with the water in a safe and publicly accessible format.

V. Sitting Stairs



Active — Calm

Generous stepped edges at the waterfront that invite residents to sit, gather, and simply be present with the water - among the most simple and most effective restorative interventions in an urban waterfront context.

W. Elevated Path



Active — Calm

Raised walkways that make ecologically sensitive areas accessible without disturbing the underlying landscape: offering immersive, contemplative experiences of deep nature and open water.

The breadth of the program palette reflects the ambition of creating a green-blue landscape that serves the full diversity of Refshaleøen's future resident population - from children seeking active play to elderly residents seeking calm and restoration, from families cultivating community gardens to individuals seeking solitary immersion in deep nature. The two-dimensional programming diagram - mapping each typology across the axes of active to calm and programmed to unprogrammed - provides a clear spatial intelligence tool for the subsequent distribution of programs across the site, ensuring that the final landscape proposal is internally coherent, ecologically sound, and experientially rich.

Scheme

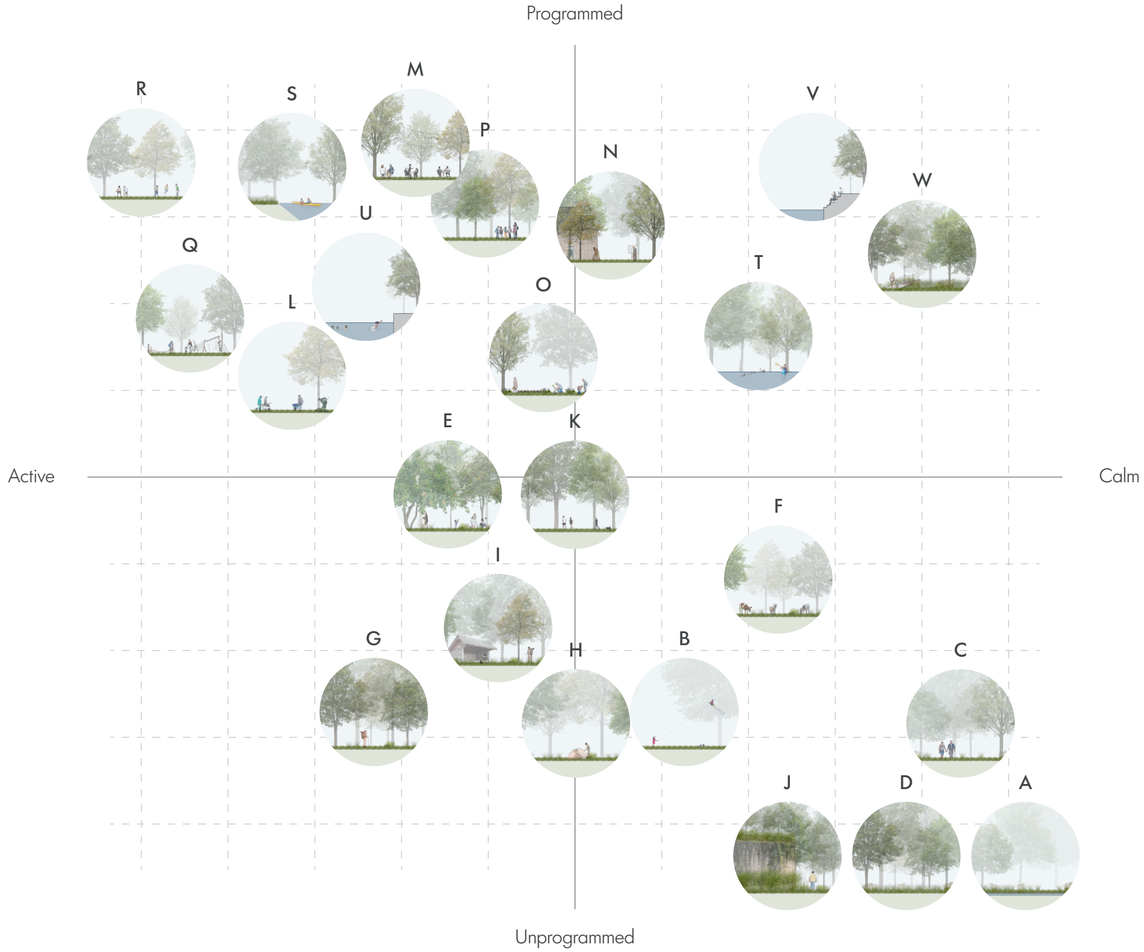


Figure 140. Diagram categorizing programming (active/calm, programmed/unprogrammed).

Location on Bigger Scale



With the full range of program typologies established and positioned on the active-calm and programmed-unprogrammed diagram, the design now translates this palette into a spatially precise distribution across the site's nature areas. The governing principle of this distribution is the consistent application of a progression from active and programmed edges - adjacent to streets, entrances, and residential development - toward calm and unprogrammed interiors, ensuring that the natural landscape becomes progressively more restorative and ecologically autonomous the further one moves from the built fabric of the neighborhood.



Variety of Nature Areas

Programming Distribution



Spatial Reasoning

The distribution of programs across the site's nature areas reflects a deliberate and consistent spatial logic. Edges adjacent to residential development and main streets are activated with programmed uses - cafés, playgrounds, activity points, and community gardens - that ensure safety, social life, and a clear invitation to engage with the landscape. As one moves deeper into the green structure, the programming becomes progressively lighter and more nature-oriented, transitioning through semi-programmed zones of community gardening, orchards, and lakes toward the unprogrammed heart of the landscape where deep nature, wetlands, and forest are left to the autonomous rhythms of ecological processes. This gradient is not merely spatial - it is experiential, ensuring that every resident can find, within walking distance of their home, a landscape environment that precisely matches their need for activity, restoration, calm, or ecological immersion on any given day.

Scale 1 : 8.500

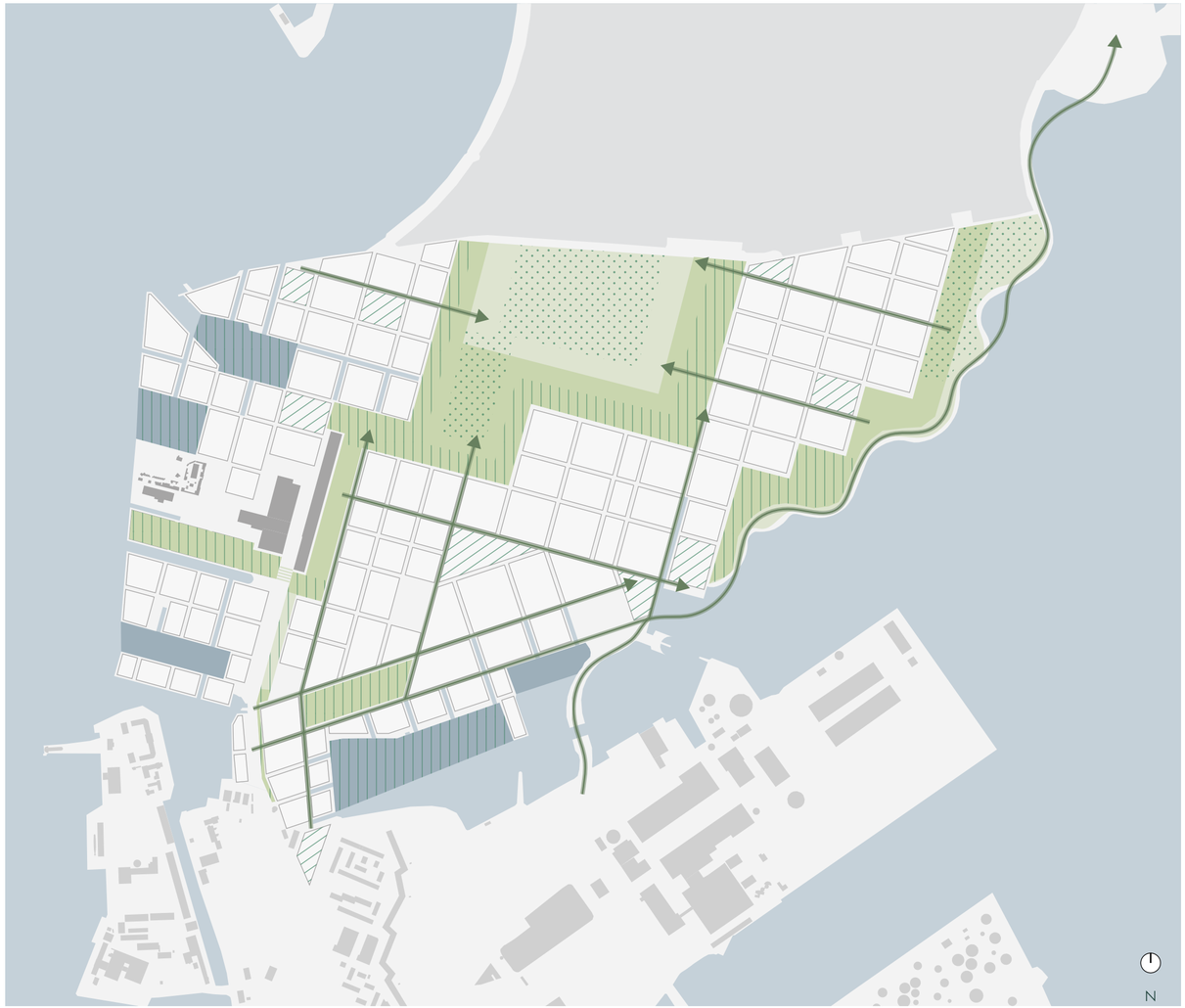


Figure 141. Map showing zoning categories and overlaps.

Location on Bigger Scale



The detailed programming maps translate the spatial logic established on the preceding page into precise programmatic placements across each of the site's green chunks - ensuring that every zone is activated in a manner that is responsive to its specific spatial context, its relationship to the surrounding built fabric, and its position within the broader progression from active to calm. This level of precision is essential to ensuring that the green-blue landscape functions not merely as an aesthetically pleasing backdrop to residential life, but as a genuinely health-promoting, socially rich, and ecologically diverse environment that actively supports the well-being of all future residents of Refshaleøen.



Variety of Nature Areas

Detailed Programming Placement

K M Q R



Chunk A: Heritage Part Green

M R O T E



Chunk B: Central Axix Green-Blue

N K



Chunk C: Makers District Green

K R Q T



Chunk D: Heritage-Residential Transition

Scale 1 : 8.500



Figure 142: Map of programming allocation (Zone 1 – south).

A. The green space adjacent to the heritage part is conceived as the most publicly activated outdoor space on the site: a natural extension of the cultural and social life generated by the kept buildings, community hall, and crafts market nearby. A café, activity points, and a playground ensure that this space is animated throughout the day and across all age groups, while a park structure provides the spatial comfort and greenery necessary to make it a place of genuine lingering and enjoyment.
B. The green programming along the central axis is deliberately moderate in intensity - active enough to engage and invite, but restrained enough to maintain the axis's primary role as a connective spine that draws people deeper into the neighborhood toward its most significant destinations. A café, activity point, and community gardening provide gentle animation, while a lake introduces the first moment of water and calm. An orchard planted behind the landmark provides a distinctive and seasonally rich programmatic element - unexpected, productive, and deeply connected to the sensory qualities of the natural environment.
C. Adjacent to the Makers District, a park structure and art pavilions create a programmatic dialogue between the creative energy of the neighborhood's craft and making culture and the restorative qualities of the natural environment
D. At the transition a park, activity points, playground, and lake provide the active and family-friendly programming that this highly trafficked zone demands. The lake serves a dual function - as a recreational and aesthetic centrepiece of the active zone, and as the spatial signal that marks the beginning of the calmer, more nature-oriented landscape beyond.

Location on Bigger Scale



XL
L
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XS



Variety of Nature Areas

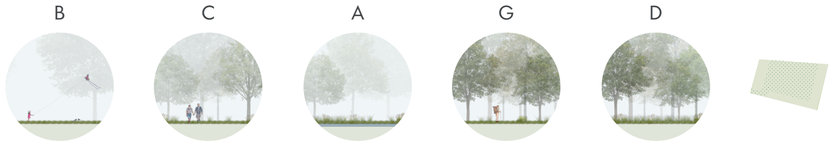
Detailed Programming Placement

K M I O J



ChunkF: Residential Edge (South)

B C A G D



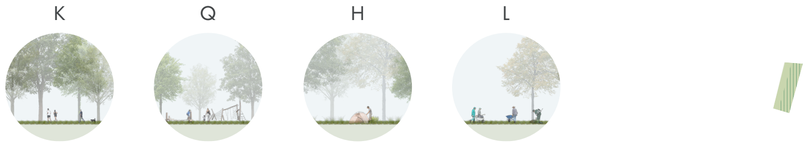
Chunk G: Deep Nature Core

P Q M K



Chunk H: Residential Edge (North)

K Q H L



Chunk I:Residential Edge (East)

Scale 1 : 8.500



Figure 143. Map of programming allocation (Zone 2 – north).

F.Along the edge of Residential Development 2, a park structure, cafés, shelters, and community gardening form the activated fringe of the larger green-blue structure - ensuring that residents of this neighborhood enjoy immediate access to a diverse and welcoming natural environment directly from their doorstep. The rewilded Biofos tanks - in the event of partial or full relocation - are introduced at the transition between this programmed edge and the deeper nature areas beyond, marking the shift from the human to the ecological with a landscape feature of extraordinary distinctiveness and ecological value.
G.The heart of the northern green structure is conceived as the most ecologically autonomous and spatially immersive zone on the site. Open green, hiking trails, wetlands, and forest give way progressively to deep nature - a landscape of genuine wildness where ecological processes are given precedence over human programming. The progression from the activated edges to this quiet interior is one of the most powerful spatial experiences the neighborhood has to offer - a daily reminder that the city and the natural world are not opposites, but participants in the same continuous landscape.
H.Along the transition from the green-blue structure to the southern residential development, a nature school, playgrounds, cafés, and park structure provide an ecologically educational and family-oriented programmatic layer - embedding nature-based learning and active outdoor play into the everyday environment of the neighborhood's youngest residents.
I.At the eastern transition between the green structure and the residential development, a park, playground, camping areas, and urban farming create a programmatic landscape that combines active recreation with productive nature engagement - fostering a sense of ownership, stewardship, and daily connection to the natural environment among the residents of the adjacent development.

Location on Bigger Scale



XL
L
M
S
XS



Variety of Nature Areas

Detailed Programming Placement

T W B F



Chunk J: Mid-Section

C A D



Chunk K: Gate to Calmness Upper Section

R T W B V



Chunk L: Gate to Calmness Buffer

M R Q K O



Chunk M: Gate to Calmness Entrance

Scale 1 : 8.500



Figure 144. Map of programming allocation (Zone 3 – east).

J.The middle section of the Gate to Calmness route transitions between its activated entrance zone and the deeper calm of its northern conclusion. A lake, elevated paths, open green, and animal farm provide a diverse and gently engaging landscape - offering moments of encounter with water, wildlife, and productive nature that enrich the journey without interrupting the progressive shift toward calm and restoration.
K.The upper conclusion of the Gate to Calmness is the most ecologically autonomous zone of the route - forest, wetlands, and deep nature create an environment of genuine immersion that rewards the effort of the journey with a quality of calm and natural richness rarely available within a city of Copenhagen's density.
L.Between the active entrance zone and the calmer upper sections of the Gate to Calmness, activity points, a lake, and elevated water paths provide a transitional buffer - offering moments of engagement and orientation that ease the journey between activity and rest, ensuring that the progression toward calm feels natural and unhurried rather than abrupt.
M.The entrance to the Gate to Calmness is conceived as its most vibrant and inviting section - a café, activity points, playgrounds, park, and community gardening create a generous and welcoming threshold that draws users into the route from the residential developments and the eastern entrance beyond. This zone is active, nature-connected, and highly accessible - establishing the Gate to Calmness as a neighborhood destination in its own right, not merely a transit route toward Lynetteholm.

Location on Bigger Scale

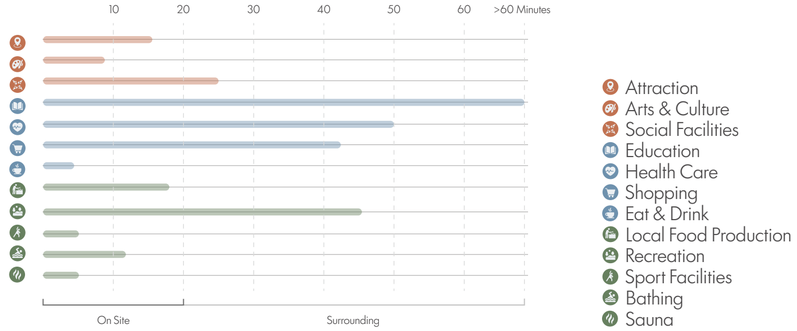


Having established the full programmatic framework for Refshaleøen's green-blue structure, this page returns to the amenity analysis conducted in the second aspect group - revisiting the walking distance findings in relation specifically to the nature-based amenities proposed in the green-blue plan. The juxtaposition of the current and proposed amenity distributions makes visible the transformative impact of the green-blue strategy on the everyday accessibility of natural environments for all future residents of Refshaleøen.

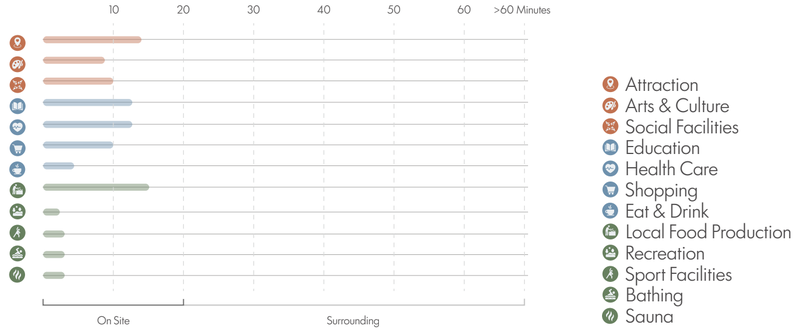


Nature Amenities & Walking Distances

Walking Distance from Site - Before



Walking Distance from Site - After



Amenity Analysis Revisited

The original amenity analysis demonstrated the near-total absence of qualitative green and blue amenities within accessible walking distances of the site. Natural spaces, water access, and recreational nature facilities were found to be either entirely absent from the site or located at distances that effectively preclude regular use - a condition directly contrary to the restorative and health-promoting ambitions of the thesis.

Potential Programming Scale 1 : 8.500



Figure 145. Map of combined green-blue programming.

The proposed green-blue programming ensures that a diverse range of nature amenities - from community gardens and natural playgrounds to lakeside sitting areas and forest trails - is distributed throughout the neighborhood in a manner that places every resident within comfortable walking distance of multiple qualitative natural environments. The concentration of amenities at programmed edges and key transition points ensures both equitable access and continuous activation, while the unprogrammed nature areas provide the deeper ecological and restorative qualities that no single amenity can replicate.

Social Facilities
Eat & Drink
Local Food Production
Recreation
Sport Facilities
Bathing
Sauna

Land Area
Lynetteholmen Development
Existing Water Structure
Existing SurroundingBuildings
Kept Buildings
Swimming Areas
Green Structure
Green Connectors
Street Grid
Building Plots
Greened Building Plots

Location on Bigger Scale



The two sections presented on this page examine the spatial relationships between built fabric, green infrastructure, and waterfront edge at two critical transition moments within the neighborhood - illuminating how the design negotiates the shift between the urban and the natural across different scales and spatial conditions.



Variety of Nature Areas

Green-Built Transitions



- Land Area
- Water Structure
- Surrounding Buildings
- Kept Buildings
- Lynetteholmen
- Building Plots
- Greened Building Plots
- Green Corridors
- Programmed Blue Area
- Programmed Green-Blue Area
- Unprogrammed Green-Blue Area
- Active Areas
- Calm Areas

The first section moves from the Gate to Calmness through Residential Development 4 to the western nature area. Buildings facing the open green are deliberately taller - providing the spatial enclosure and safety necessary at the edge of a large, less-programmed landscape - while those facing the Gate to Calmness are lower, responding to the more intimate scale of this green corridor. Ground floors are activated in both directions, ensuring that the transition between built and natural is never abrupt or spatially ambiguous. Generous balconies on all floors open toward the green - ensuring that every resident of this development enjoys a direct and daily visual connection to the natural landscape immediately beyond their facade.

The second section traces the transition from a green street through residential development to the waterfront edge. As the section moves toward the water, building heights reduce progressively - opening the built fabric to the harbor landscape and maximising the number of dwellings with direct water views. The green street itself is generously planted and pedestrian-prioritised - providing a calm, nature-connected route that leads residents from their doorstep directly to the water, reinforcing the thesis's commitment to embedding nature and movement into the everyday fabric of neighborhood life.

Green to Green

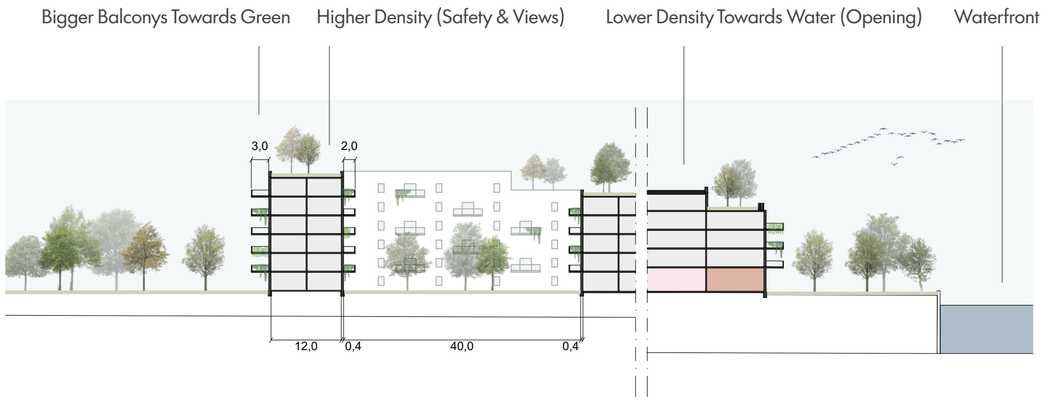


Figure 146. Section showing transition from residential to waterfront.

Scale 1 : 750

Green Street & Waterfront

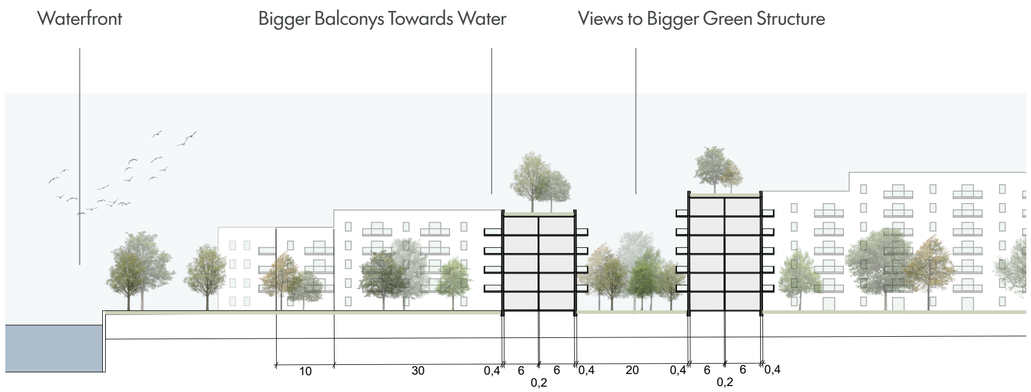


Figure 147. Section showing transition via green street.

Scale 1 : 750

Location on Bigger Scale

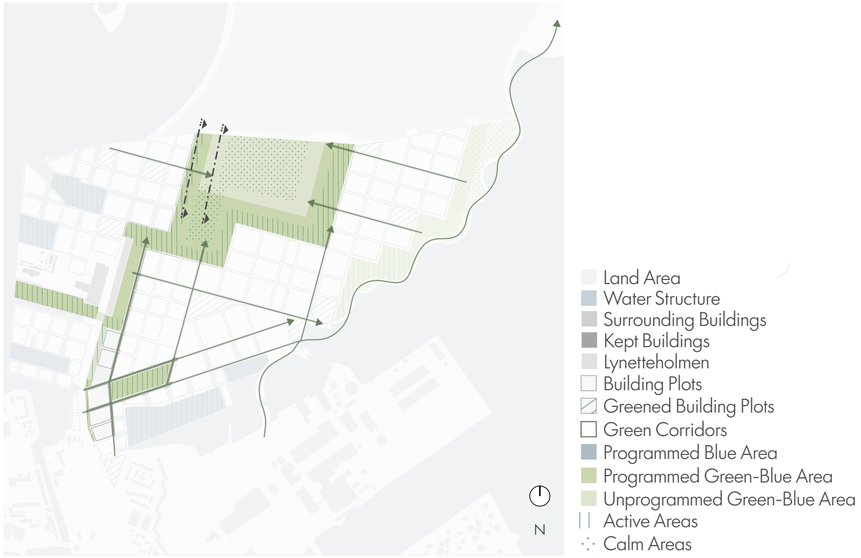


The transition between Refshaleøen and the future Lynetteholm development presents one of the most significant spatial design challenges of the entire site - a change in ground level of up to five meters that, at its most pronounced, makes built development impractical and instead calls for a landscape-based response. The design embraces this constraint as an opportunity, proposing a generous and ecologically ambitious nature area that bridges the two developments through a continuous green landscape - simultaneously managing the topographic transition and establishing Refshaleøen's green-blue structure as a direct spatial and ecological connection to the broader harbor landscape beyond.



Variety of Nature Areas

Lynetteholmen Transition



Semi-Programmed Nature - Calm Activities

The semi-programmed zones within the transition area are characterised by calm and ecologically sensitive programming - a lake that supports both biodiversity and quiet recreation, an animal farm that provides therapeutic contact with nature for residents of all ages, and open green that accommodates free, unstructured use without imposing a spatial order on the landscape. These uses gently zone the area while preserving the sense of openness, freedom, and ecological richness that defines this part of the green-blue structure.

Programmed Nature - Residential Edge

Adjacent to the residential development, the programmed layer of the transition area provides the activated, family-oriented programming necessary to create a safe and socially alive edge between the neighborhood and the deeper nature beyond. Playgrounds, cafés, and a park structure invite residents into the landscape and ensure that the green-built transition is experienced as an invitation rather than a boundary - a threshold that draws people outward rather than marking the limit of the neighborhood

Semi-Programmed



Figure 148. Section illustrating connection to Lynetteholm (semi-programmed).

Scale 1 : 500

Programmed



Figure 149. Section illustrating programmed connection.

Scale 1 : 500

Location on Bigger Scale



XL
L
M
S
XS



Variety of Nature Areas

Lynetteholmen Transition



- Land Area
- Water Structure
- Surrounding Buildings
- Kept Buildings
- Lynetteholmen
- Building Plots
- Greened Building Plots
- Green Corridors
- Programmed Blue Area
- Programmed Green-Blue Area
- Unprogrammed Green-Blue Area
- Active Areas
- Calm Areas

Unprogrammed Nature - Deep Ecology

The unprogrammed zones within the Lynetteholm transition area are conceived as spaces of genuine ecological autonomy - deep nature areas where flora and fauna are given the space and freedom to develop without human intervention. These zones are accessible only via elevated paths that minimise ground disturbance, ensuring that the ecological integrity of the landscape is maintained while still allowing residents to experience its extraordinary natural richness at close range.

„Sometimes I really miss being somewhere genuinely wild. Even just a bigger park, something that doesn't feel completely managed." (Mads, 2026)

Unprogrammed



Figure 150. Section illustrating unprogrammed connection.

Scale 1 : 500

Amager Fælled



Urban Agency + C.F. Møller (n.d.)

Nestled on the island of Amager in Copenhagen, Amager Fælled spans approximately 223 hectares and serves as the largest green area in the Danish capital. A former military area, the site gained protected status and today contains meadows, lakes, forests, and a range of wildlife including Highland cattle. The nature park offers everything from nature experiences to rest and reflection, with coastal landscapes, magnificent wetlands, marshes, and birch forests accessible to cyclists, runners, walkers, and horse riders alike.
For Refshaleøen, Amager Fælled is a directly adjacent and highly relevant precedent - demonstrating the extraordinary restorative and ecological potential of large-scale urban nature areas within immediate reach of dense residential neighborhoods. Its proximity to the city, its ecological diversity, and its capacity to serve the full spectrum of human needs - from active recreation to deep restoration and solitary nature immersion - directly inform the ambitions of Refshaleøen's green-blue framework. The progression from the programmed edges of the nature area toward its wilder, unprogrammed interior reflects the same spatial logic that underpins the design proposals of this thesis, confirming that the gradient from active to calm is not merely a design aspiration but a proven spatial reality in the heart of Copenhagen itself.

Location on Bigger Scale



Zooming into Residential Development 3 at the chunk scale, the design elaborates the spatial quality of the green streets and courtyard spaces that give this neighborhood its distinctive family-friendly character - demonstrating how the green-blue principles established at the site level translate into the intimate spatial reality of the everyday residential environment.



Variety of Nature Areas

Local Green Spaces - Green Streets & Courtyards



Figure 151. Aerial view of residential green connections.

Restorative Pockets

After: Intimate greened courtyards, waterside sitting areas, and quiet neighborhood squares distributed throughout the residential developments provide accessible spaces of calm and recovery within daily walking distance of every home.





Section - Green Street

Scale 1 : 200

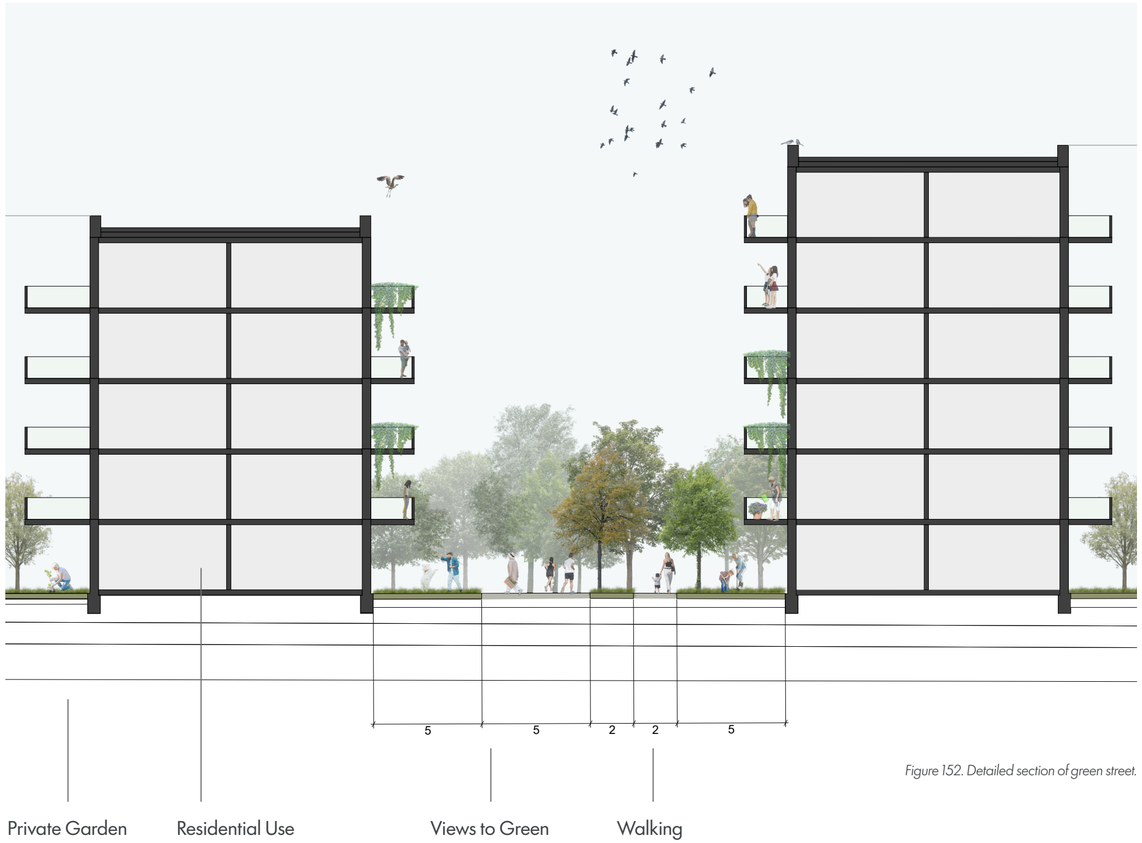


Figure 152. Detailed section of green street.

The section through the green street reveals a carefully calibrated spatial profile - a generously planted corridor that prioritises pedestrian and cyclist movement while providing continuous visual and physical access to greenery at every point along the route. Buildings on either side open toward the street through generous balconies and large windows, ensuring that residents enjoy a direct connection to the planted environment immediately outside their homes. The green street connects seamlessly to the larger green-blue structure beyond, ensuring that the journey from doorstep to nature is always direct, comfortable, and spatially inviting.

Location on Bigger Scale



At the small scale, the design demonstrates how the commitment to nature connection extends beyond the ground plane - ensuring that greenery is experienced not only in parks, courtyards, and streets, but at every level of the building, from the ground floor to the roof. The south-facing orientation of the building massing maximises solar gain and daylight access across all units, while the stepping of building volumes ensures generous air movement and prevents the spatial confinement associated with higher-density development.



Variety of Nature Areas

Local Green Spaces - Roof Terraces

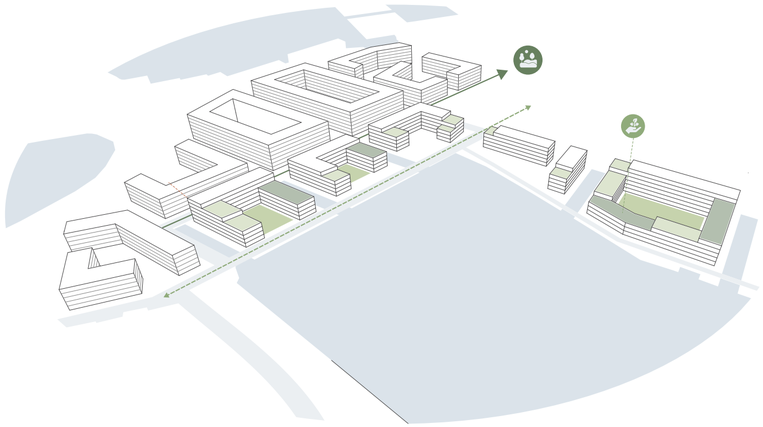


Figure 153. Aerial view of courtyards and roof terraces.

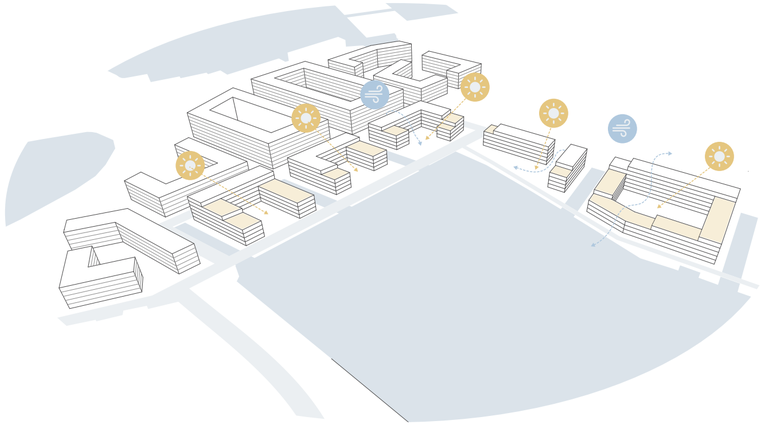


Figure 154. Aerial view of air movement and solar exposure.

Green on Different Levels



Figure 155. Section showing multi-level green exposure.

Scale 1 : 750

The section reveals a building typology in which green terraces accumulate at each successive level as the building steps back toward the waterfront or green edge - creating a vertical landscape of planted terraces that brings nature into direct contact with domestic life at every floor. This approach ensures that even residents in upper-floor apartments enjoy immediate access to outdoor greenery, blurring the boundary between interior and exterior and providing the daily nature contact that research consistently identifies as essential to mental well-being and stress recovery (Kaplan & Kaplan, 1989).

Location on Bigger Scale



At the detail scale, the design addresses the precise spatial and material conditions that determine the quality of the transition between built fabric, public space, water, and deep nature - the moments at which the ambitions of the green-blue strategy are most directly felt by the individual resident and visitor.



Detailed Floorplan and Section Lake



Figure 156. Detailed plan and section of urban lake connection.

Detailed Floorplan and Section Sitting Stairs

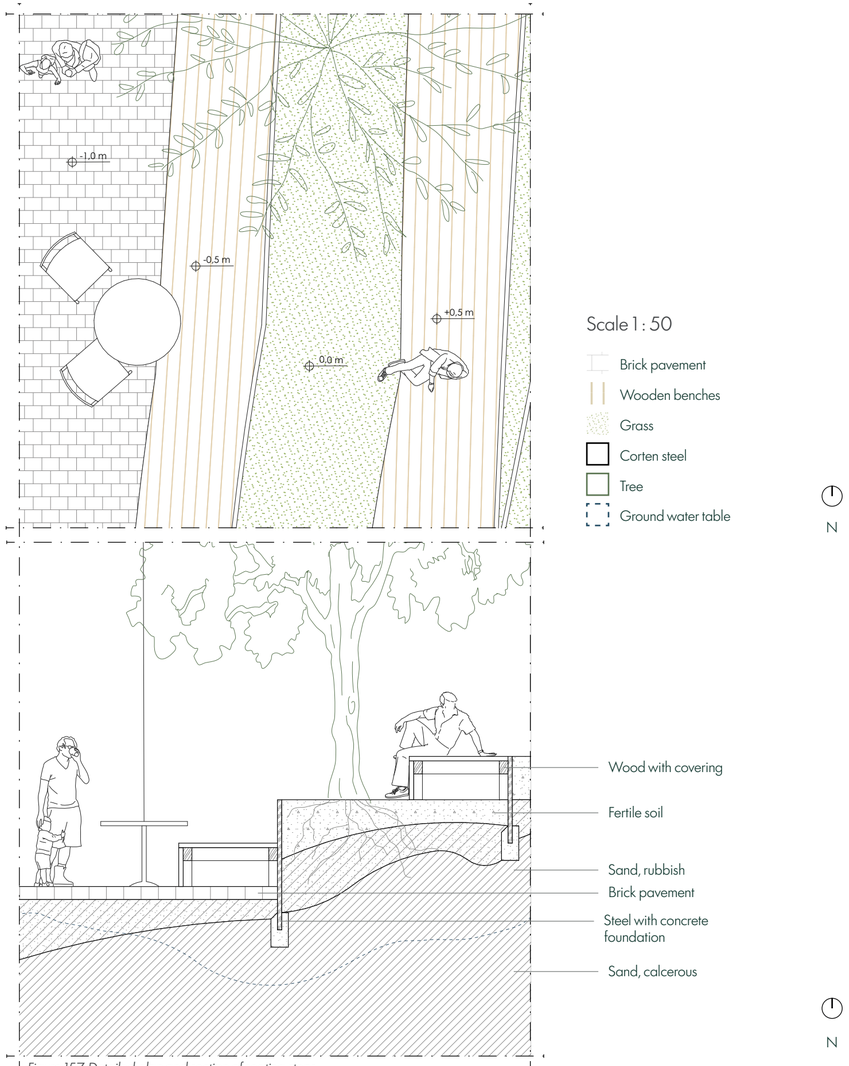


Figure 157. Detailed plan and section of seating steps.

Location on Bigger Scale



The elevated path sections and plans demonstrate how ecologically sensitive areas - whether deep green landscape or open water - can be made accessible and experientially rich without compromising their ecological integrity. The elevated path hovers above the landscape on a lightweight structure, allowing visitors to move through and above the wetlands, forests, and water bodies below - experiencing the natural world at close range while leaving the ground surface entirely undisturbed.



Detailed Floorplan and Section Wetland Without Water

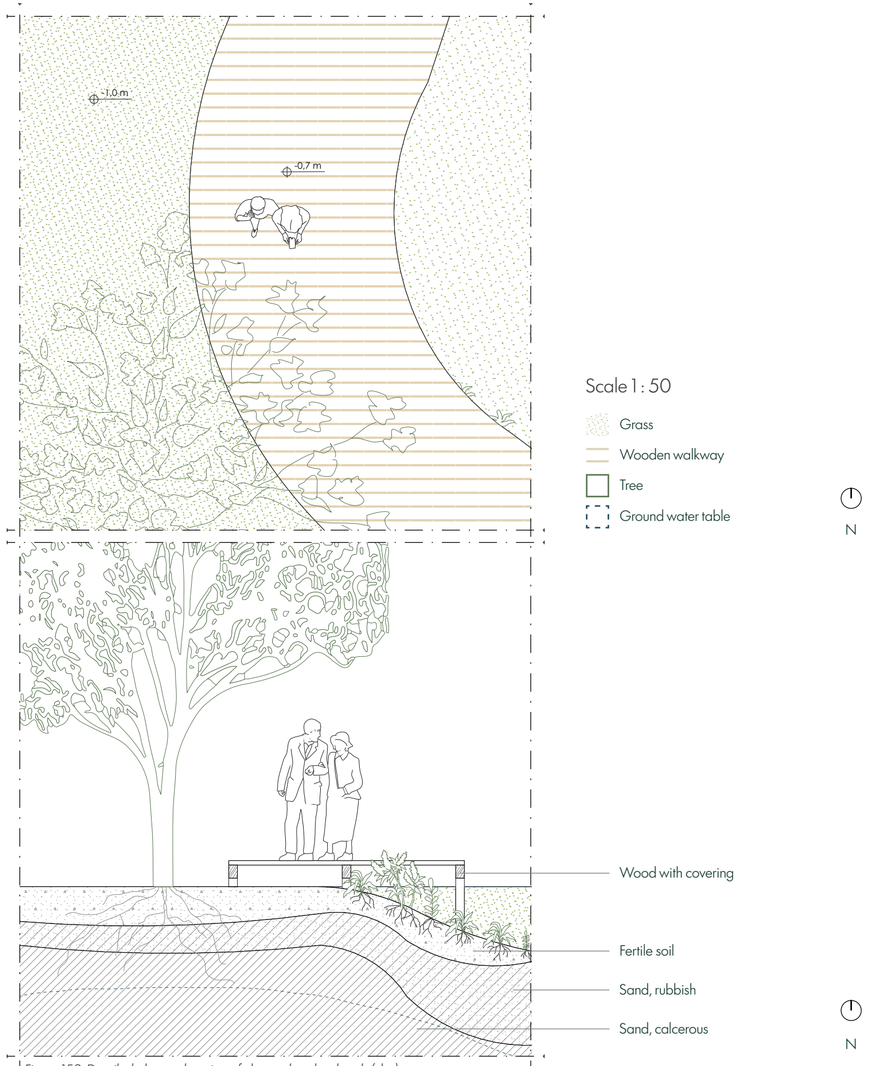


Figure 158. Detailed plan and section of elevated wetland path (dry).

Detailed Floorplan and Section Wetland With Water

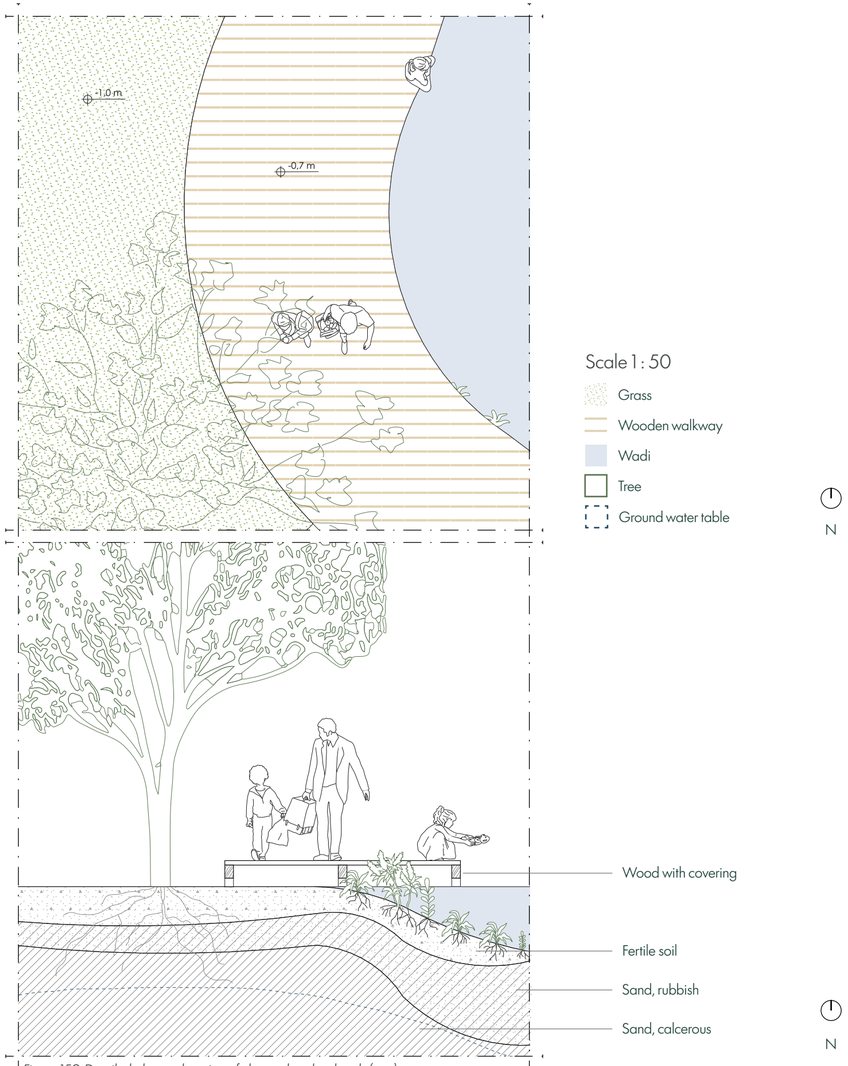


Figure 159. Detailed plan and section of elevated wetland path (wet).

Location on Bigger Scale



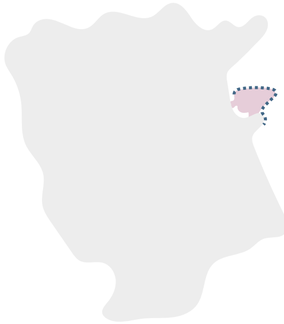
The design proposals developed within the Green & Blue Spaces aspect group represent the most ambitious and ecologically far-reaching dimension of the thesis - transforming Refshaleøen from a site almost entirely devoid of qualitative natural environments into a neighborhood in which green and blue infrastructure is not a supplementary amenity but the primary spatial and experiential framework within which residential life unfolds.



Relation to City

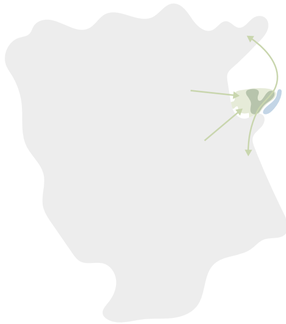
Before

Before, Refshaleøen's extraordinary spatial asset - its extensive waterfront and post-industrial open land - was almost entirely inaccessible, ecologically impoverished, and disconnected from the everyday life of both its own users and the wider city. The waterfront, which could have offered one of Copenhagen's most exceptional recreational and restorative landscapes, was blocked by fencing, undefined edges, and industrial infrastructure. The open land that might have become a significant addition to Copenhagen's green network - a city already under pressure to provide sufficient high-quality green space for its growing population - offered instead a landscape of neglect: undifferentiated grass, contaminated soil, and spatial emptiness (WHO, 2016; Wolch et al., 2014).



After

After, Refshaleøen adds a genuinely unique and ecologically ambitious green-blue landscape to Copenhagen's urban offer - one that no other site in the city can replicate. Extensive bathing areas, canal networks, wetlands, forests, and the Gate to Calmness collectively establish a nature infrastructure of city-wide significance, drawing residents from surrounding neighborhoods and offering the kind of deep, diverse, and continuously accessible natural environment that supports mental restoration, physical activity, and ecological richness at a scale rarely found within the boundaries of a dense European capital (Hartig et al., 2014; Kaplan & Kaplan, 1989). The waterfront - once a barrier - becomes one of the city's most celebrated and health-promoting public assets, giving Refshaleøen a distinctive identity within Copenhagen's urban landscape and demonstrating the transformative potential of treating post-industrial land not merely as a development opportunity but as a rare and irreplaceable ecological resource.



Scale 1 : 8.500



Figure 160. Map of combined design (Aspect Group 4).

The green-blue design proposals are structured around five interconnected spatial moves. First, a comprehensive remediation and buffering strategy addresses the environmental conditions that currently undermine the site's livability - transforming its most problematic edges into ecologically rich and spatially distinctive green corridors. Second, a network of canals, bathing areas, and waterfront spaces brings water into direct and daily contact with residential life - establishing the harbor as an active, therapeutic, and restorative presence within the neighborhood fabric. Third, a carefully graduated programming strategy - moving from active, programmed edges to unprogrammed deep nature interiors - ensures that the green-blue landscape serves the full spectrum of resident needs across all ages, abilities, and states of mind. Fourth, the Gate to Calmness establishes a continuous, experientially curated route from the neighborhood's most activated eastern entrance to the deep ecological calm of the northern nature areas and Lynetteholm beyond. Fifth, green streets, roof terraces, and courtyard planting ensure that nature is experienced not merely as a destination but as a continuous, ever-present dimension of everyday residential life - visible from every window, accessible from every doorstep, and embedded in every aspect of the neighborhood's spatial identity.

Location on Bigger Scale



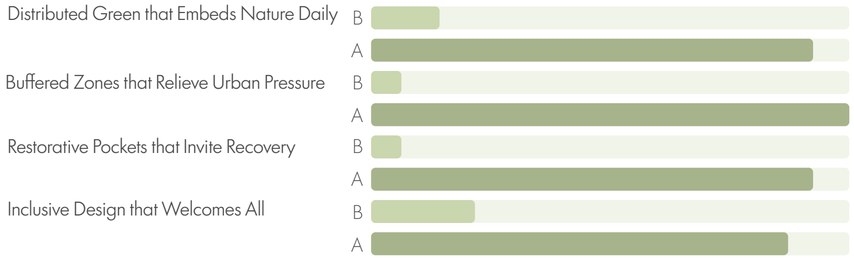
The design proposals developed within the Green & Blue Spaces aspect group represent the most ambitious and ecologically far-reaching dimension of the thesis - transforming Refshaleøen from a site almost entirely devoid of qualitative natural environments into a neighborhood in which green and blue infrastructure is not a supplementary amenity but the primary spatial and experiential framework within which residential life unfolds.



Conclusion

The green-blue proposals directly address the most critical environmental and ecological deficiencies identified during the analysis - translating each relevant spatial criterion from its current inadequate state into a measurably improved condition.

Before vs. After



Distributed Green that Embeds Nature Daily

Before: Green space on the site consists of sparse, ecologically impoverished grass surfaces with no spatial quality, programmatic activation, or restorative value.
After: A comprehensive green-blue network weaves nature continuously through the entire neighborhood - from green streets and courtyard planting to parklands and waterfront edges - ensuring daily proximity to nature for every resident.

Buffered Zones that Relieve Urban Pressure

Before: No green buffering exists between the Biofos facility and adjacent areas, leaving future residents entirely exposed to significant noise and odor nuisance with no spatial or psychological relief.
After: Dense green buffer zones - combining woodland planting, topographic intervention, and programmed landscape - transform the site's most environmentally compromised edges into restorative corridors that actively protect and support residential well-being.

Restorative Pockets that Invite Recovery

Before: The near-total absence of small-scale, sheltered, and nature-adjacent spaces leaves no spatial infrastructure for the everyday psychological restoration that urban residents need.
After: Intimate greened courtyards, waterside sitting areas, and quiet neighborhood squares distributed throughout the residential developments provide accessible spaces of calm and recovery within daily walking distance of every home.

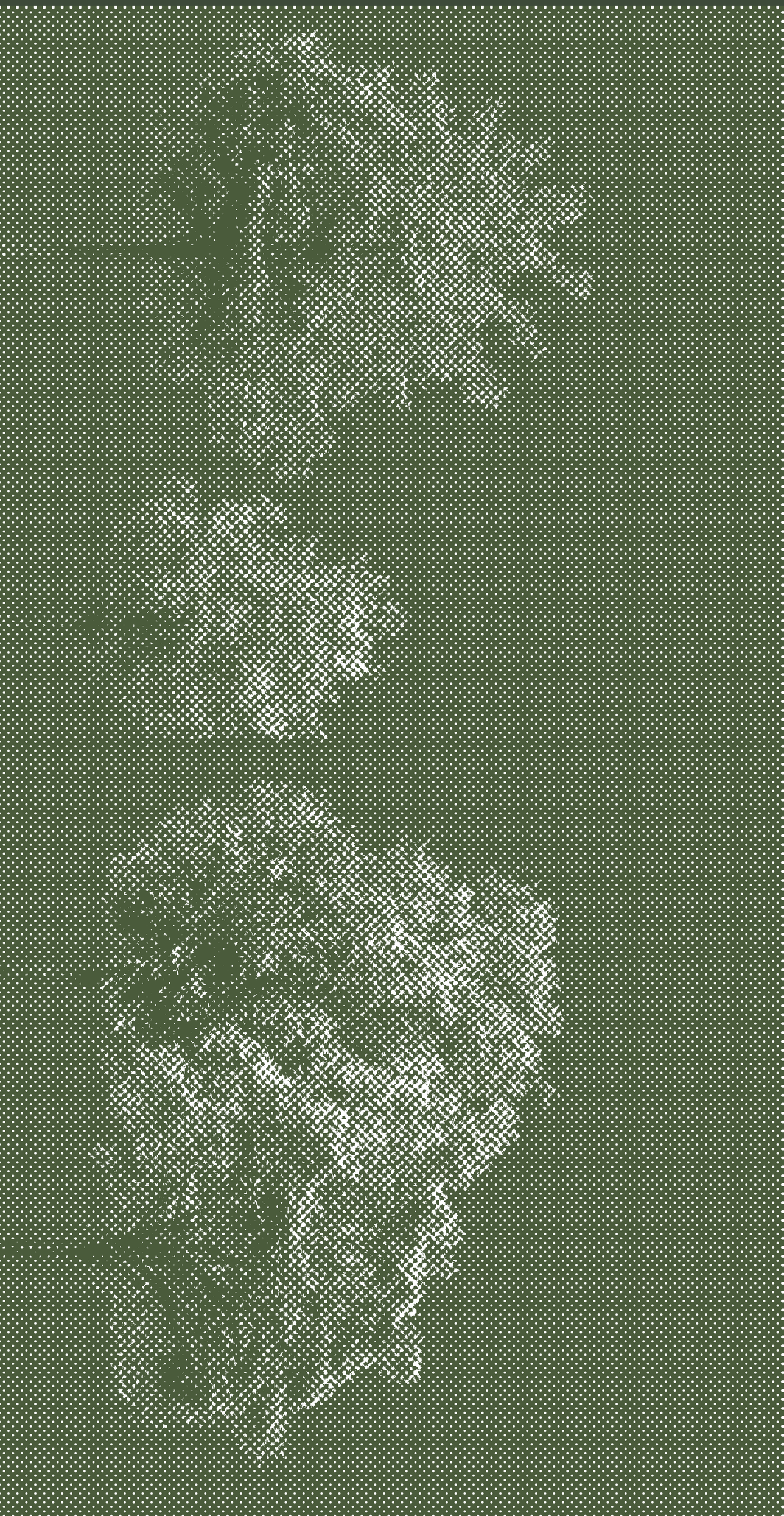
Inclusive Design that Welcomes All

Before: The site's non-human scale, poor accessibility, unsafe conditions after dark, and lack of seating and rest opportunities create an environment that is uninviting and functionally exclusionary for many user groups.
After: Universal accessibility, distributed rest opportunities, safe and well-lit routes, and a programmatic diversity that serves all age groups and abilities ensure that the benefits of the neighborhood's spatial quality are available to every resident equally.

Potential Programming Scale 1 : 8.500



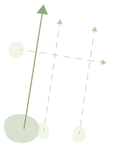
Figure 161. Map of green-blue programming and accessibility.



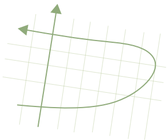
1



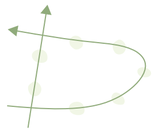
A new street grid, derived from the site's existing structure and the proven block dimensions of established Copenhagen neighborhoods, establishes the fundamental spatial framework of Refshaleøen - supported by a clear street hierarchy, strategic mobility hubs, and a distributed public transport network that prioritises walking and cycling as the primary modes of everyday movement.



Four carefully positioned and individually characterised entrance situations replace the site's single, car-dominated threshold - establishing welcoming, legible, and experientially rich arrival sequences that draw residents and visitors into the neighborhood from multiple directions.

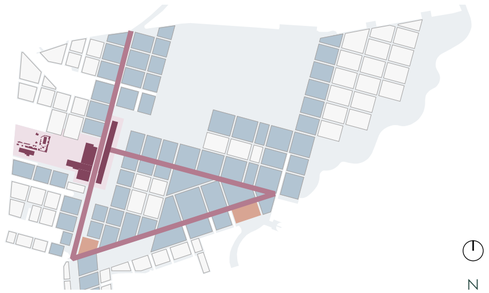


A hierarchically differentiated street network - comprising main streets, residential streets, and green streets - transforms the site's currently disorienting and undifferentiated movement infrastructure into a legible, comfortable, and human-scaled spatial framework.



The systematic removal of fencing, the activation of edges, and the introduction of continuous pedestrian routes transform the site's points of disconnection into moments of spatial and social connection - stitching Refshaleøen together internally and linking it meaningfully to the surrounding city.

2



A calibrated density distribution, a mixed-use programming framework, and the retention and activation of the site's most significant heritage buildings collectively establish a built environment that is spatially varied, culturally rich, and deeply responsive to the health and well-being of future residents.

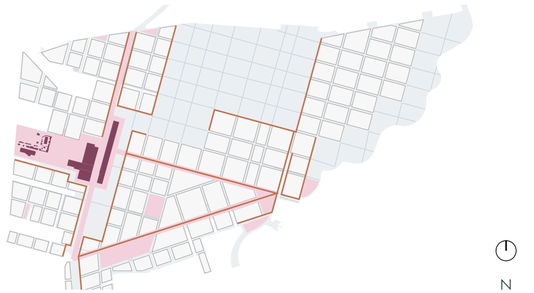
A network of clearly defined, activated urban streets replaces the site's currently inert and car-dominated movement infrastructure - generating continuous social life and spatial vitality across the entire neighborhood.

A diverse and overlapping mix of residential, cultural, commercial, and recreational uses transforms Refshaleøen from a programmatically impoverished workspace into a genuinely self-sufficient and socially vibrant neighborhood.

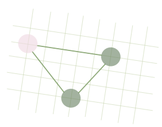


New development surrounds and activates the retained heritage buildings - embedding them at the heart of a living neighborhood rather than leaving them as isolated monuments to the site's industrial past.

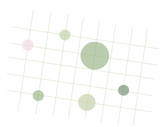
3



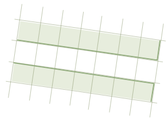
A hierarchical public space network, systematic plinth activation, and a carefully differentiated typology of public, semi-private urban, and semi-private green spaces collectively transform Refshaleøen's currently anonymous and socially inert public realm into a diverse, continuously activated, and deeply health-promoting shared environment.



A connected network of public spaces - varying in scale, character, and programming - ensures that every resident has access to a diverse range of outdoor social environments within comfortable walking distance of their home.



A diverse and spatially distinctive public realm replaces the site's current reliance on a single cultural landmark - giving the neighborhood a rich and multifaceted public identity that serves all residents equally.



Systematic ground-floor activation along key pedestrian routes transforms the site's currently blank and unsafe street edges into vibrant, socially engaged, and continuously animated public corridors.

4



A comprehensive green-blue framework - encompassing programmed parks, semi-programmed nature areas, deep ecological zones, canal networks, and extensive waterfront programming - transforms Refshaleøen into a neighborhood in which nature is not a destination but a daily presence, embedded in every aspect of spatial life from the rooftop terrace to the harbor edge.

Dense green buffer zones transform the site's most environmentally compromised edges into restorative landscape corridors - converting sources of stress into sources of calm and ecological richness.

Bathing areas, water sports facilities, sitting stairs, and canal networks bring residents into direct, daily engagement with the harbor - establishing water as an active, therapeutic, and deeply restorative presence at the heart of neighborhood life.



A comprehensive and ecologically diverse green network ensures that every resident enjoys direct, daily access to a range of qualitative natural environments - from intimate courtyard gardens to deep forest and open water.

Rethinking Refshaleoen

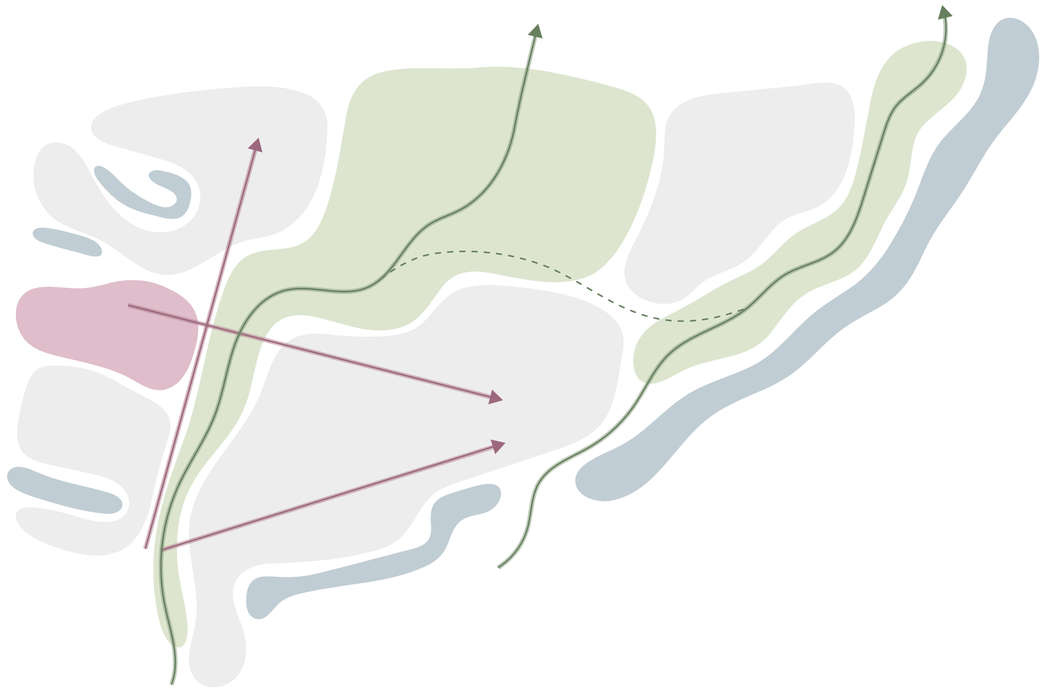


Figure 162. Zoning scheme of the new neighbourhood.

The framework plan emerges from the careful overlaying of the four design group proposals - bringing together the street structure, the built environment, the public space network, and the green-blue infrastructure into a single, coherent spatial vision for Refshaleøen. The plan makes visible the fundamental organizational logic of the neighborhood: the heritage part as its cultural and social heart, the residential developments distributed in response to their relationship to the waterfront, the green structure, and the entrance conditions, and the green-blue network woven continuously through the entire site. The framework plan does not prescribe the neighborhood in its entirety - it establishes the spatial principles, relationships, and hierarchies from which the masterplan is derived, ensuring that every subsequent design decision remains grounded in the evidence-based logic of the research. It is from this framework that the potential masterplan emerges - translating the overlaid spatial intelligence of four rigorous analytical and design phases into a coherent, communicable, and realistically achievable vision for the future of Refshaleøen.

Scale 1 : 8.500

- Land Area
- Lynetteholmen Development
- Existing Water Structure
- Existing SurroundingBuildings
- Kept Buildings
- Entrances
- Street Grid
- Green Corridors
- Green Structure
- Bathing Areas
- Active Areas

N

Framework Plan

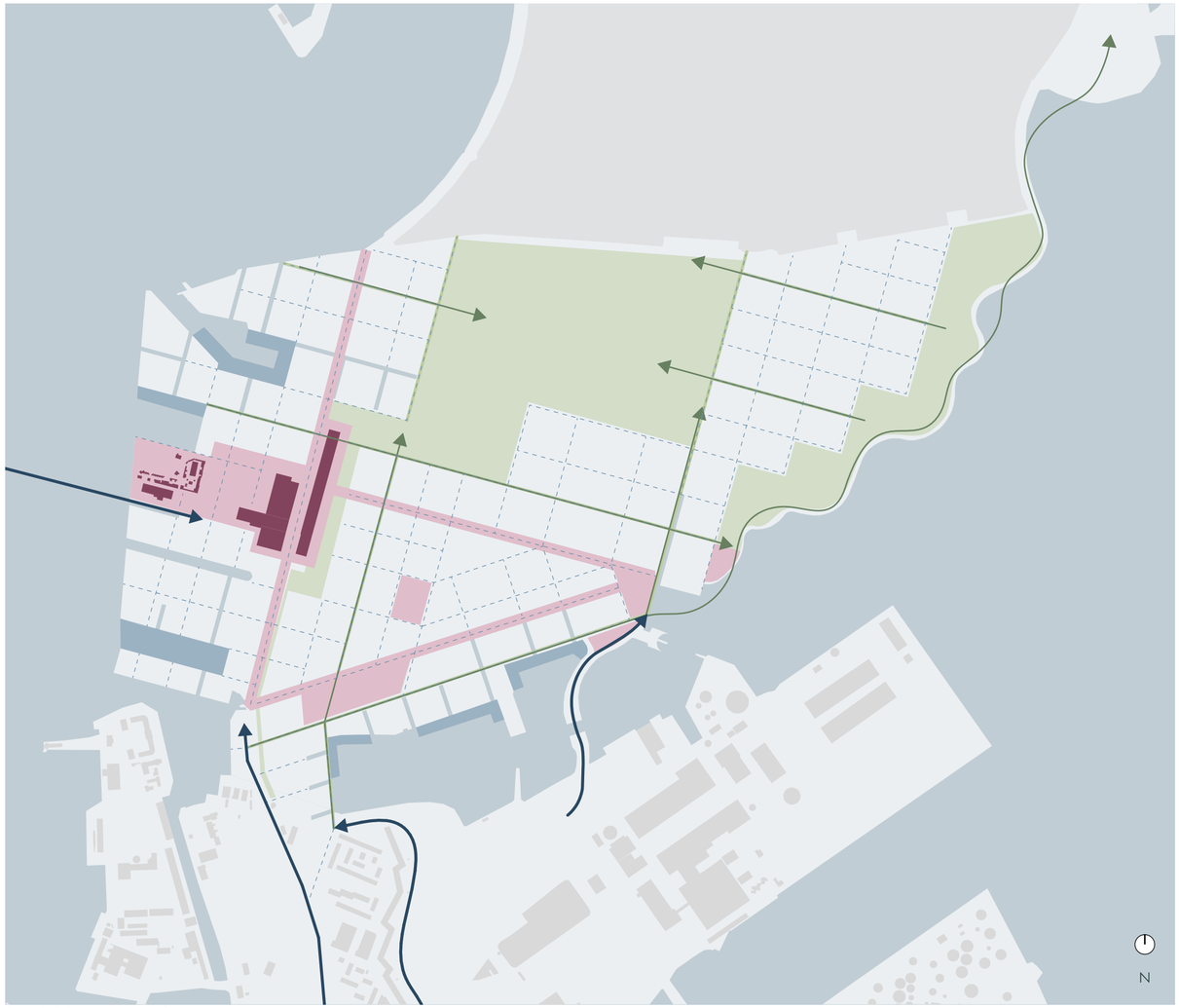


Figure 163. Framework plan of the site.

Layer Street Structure



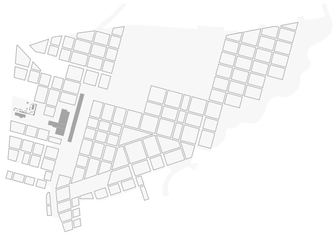
The street structure layer establishes the connective framework of the neighborhood that provides the spatial backbone for all movement, activation, and public life within Refshaleøen. Mobility hubs and public transport stops are distributed at strategic intervals, ensuring that active and sustainable mobility is supported at every point of the neighborhood.

Layer Heritage Part



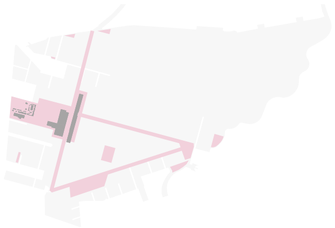
The heritage layer identifies the retained buildings, the central axis, the industrial artefacts, and the new community hall that together form the cultural and social heart of the neighborhood. This layer is the spatial expression of the neighborhood's identity - grounding Refshaleøen's future in the industrial history that makes it uniquely itself.

Layer Building Plots



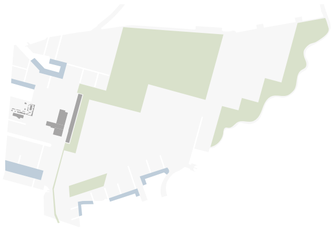
The building plots layer translates the density distribution and typological principles established in the design phase into precise spatial footprints - identifying the location, scale, and orientation of new development across the site and demonstrating how the proposed built fabric responds to its immediate spatial context at every point.

Layer Active Areas



The active areas layer maps the distribution of mixed-use zones, active frontages, public squares, and programmed spaces across the neighborhood - demonstrating how activation is distributed along the main streets and entrance sequences while more intimate and private conditions are maintained within the residential blocks.

Layer Blue and Green Structure



The green-blue layer presents the full extent of the proposed natural infrastructure - from the large northern and eastern nature areas to the canal network, waterfront programming, green streets, and courtyard planting distributed throughout the residential developments - demonstrating how nature is embedded as a continuous and integral dimension of the neighborhood's spatial identity.

- Land Area
- Lynetteholmen Development
- Existing Water Structure
- Existing SurroundingBuildings
- Kept Buildings
- Main Streets
- Active Frontages
- Gate to Calmness
- Green Structure
- Bathing Areas
- Active Areas
- Building Plots
- Greened Building Plots
- Added Landmarks
- Bridges

Potential Masterplan Scale 1 : 8.500

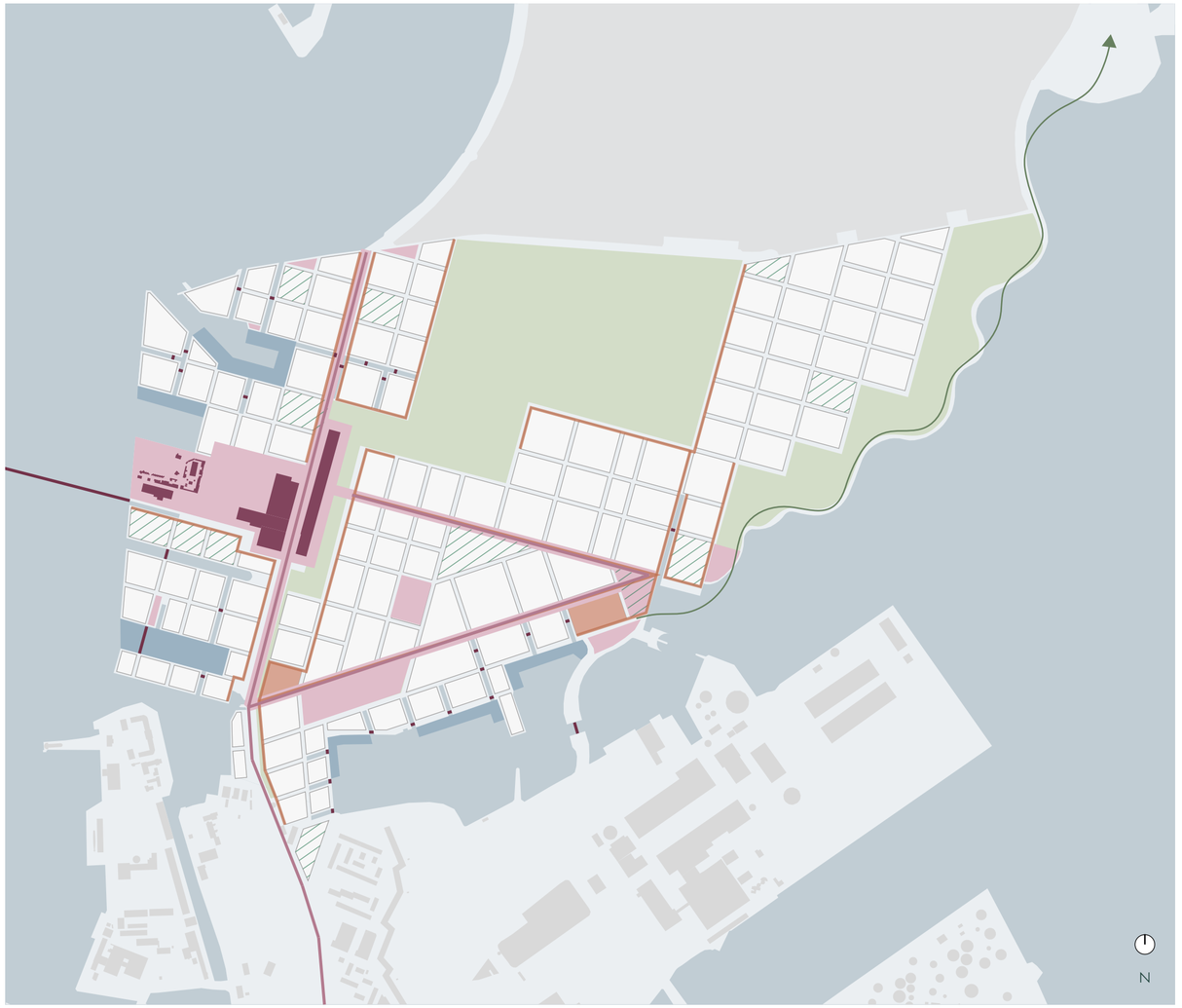
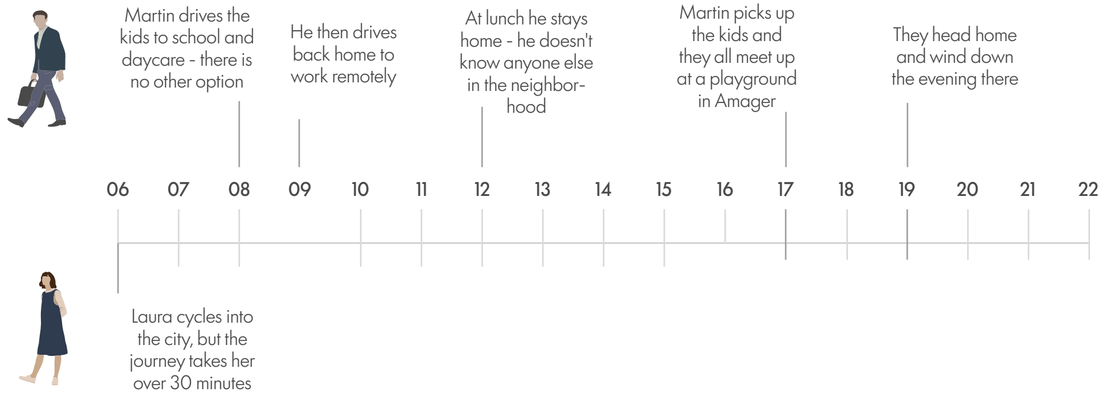


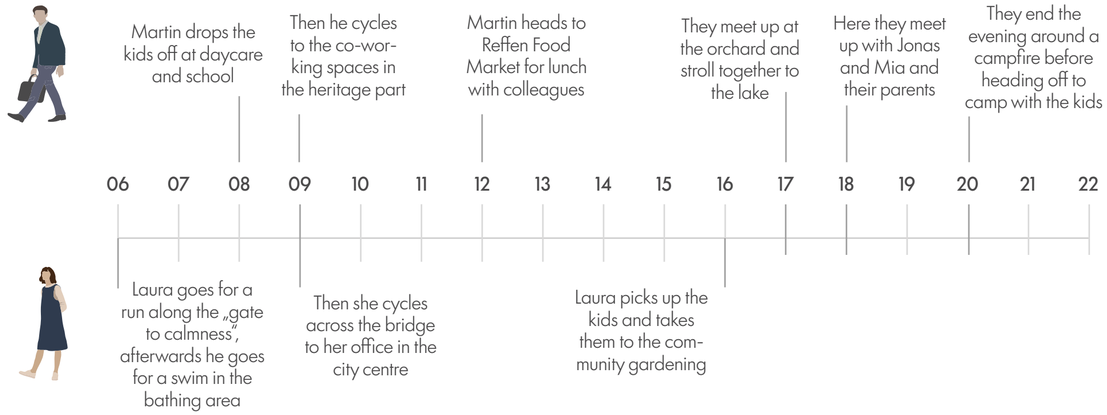
Figure 164. Masterplan projection for 2055+.

The Site of a Resident

Before



After



Route (After) Scale 1 : 8.500



Figure 165. Map illustrating a resident's route.

The daily routine diagrams place the thesis's spatial arguments in their most human and immediate context - showing, through the lens of a persona's day, how profoundly the quality of an urban environment shapes the rhythms, choices, and social life of the people who inhabit it.

- Land Area
- Lynetteholmen Development
- Existing Water Structure
- Existing SurroundingBuildings
- Kept Buildings
- Swimming Area
- Green Structure
- Martins & Lauras Home
- Street Grid
- Building Plots
- Heritage Part
- Route Point
- Cycling Route
- Walking Route

The Site of a Resident

Before 1 2 3 4 5



After 1 2 3 4 5



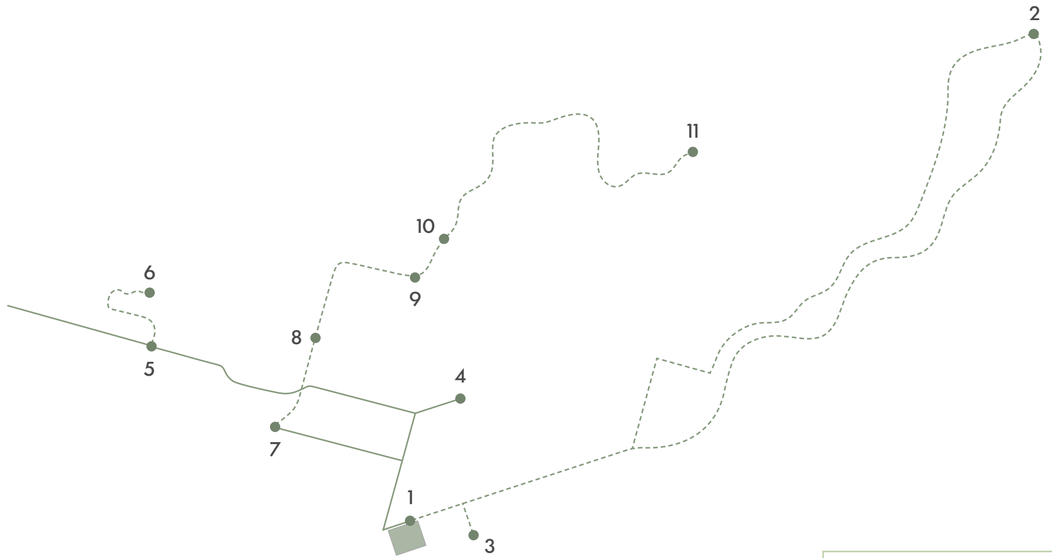
Before 6 7 8 10 11



After 6 7 8 10 11



Route



„You need the place to work on a Wednesday morning in April, not just on a Saturday afternoon in July." (Ole, 2026)

The before and after scenarios trace the same day across two very different spatial realities.
In the before scenario, the routine is defined by absence - daily necessities require a car, there is nowhere to eat or decompress within the neighborhood, and the evenings are spent indoors, in digital environments that fill the void left by a public realm with nothing to offer. Social connection is minimal not by choice, but by spatial circumstance.
In the after scenario, the same day unfolds differently - not because the person has changed, but because the environment has. The morning begins with a run along the waterfront. The children cycle to the nearby school. Lunch is at Reffen or the new café by the crafts market, where familiar faces are beginning to appear. The evening ends beside the canal or around a fire in the park with neighbors who were strangers six months ago. The digital devices are still there - but they are no longer filling a spatial emptiness. They have been joined, and sometimes replaced, by a neighborhood that finally has something to give back.

- Martins & Lauras Home
- Route Point
- Cycling Route
- Walking Route

Three Dimensions of Health Introduction

The design proposals for Refshaleøen are ultimately evaluated against the three dimensions of health that frame the thesis - physical, social, and mental - demonstrating how the spatial interventions developed across the four aspect groups collectively address the health impacts of digitalized urban lifestyles identified in the problematization.
The three dimensions of health are not independent conditions but deeply interconnected aspects of human well-being that are simultaneously shaped by the quality of the urban environment (WHO, 2016). The design proposals for Refshaleøen address all three dimensions through a coherent and evidence-based spatial strategy - ensuring that the neighborhood actively supports the health of its residents not as a secondary outcome but as its primary spatial ambition.

Physical Health

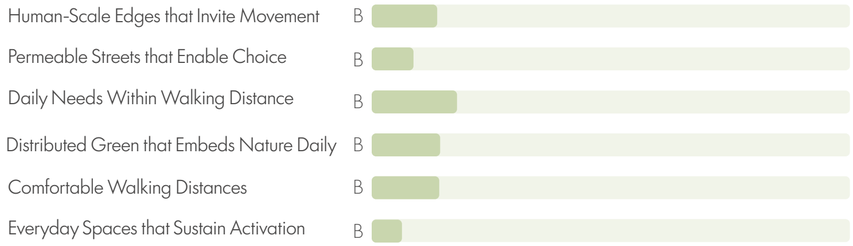
The physical health of future residents is supported through a comprehensive network of active mobility infrastructure, waterfront bathing areas, sports and recreational programming, and the systematic reduction of sedentary car dependency across the neighborhood. Permeable street networks, green streets, and the Gate to Calmness actively encourage walking and cycling as the default modes of everyday movement - embedding physical activity into daily routines without requiring conscious effort (Sallis et al., 2006). The distribution of natural playgrounds, activity points, kajak rental, and waterfront facilities across the site ensures that opportunities for physical engagement with both the built and natural environment are available to all residents, regardless of age or ability.

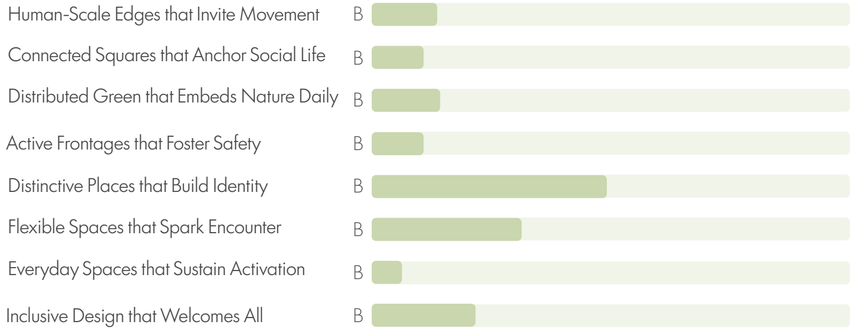
Social Health

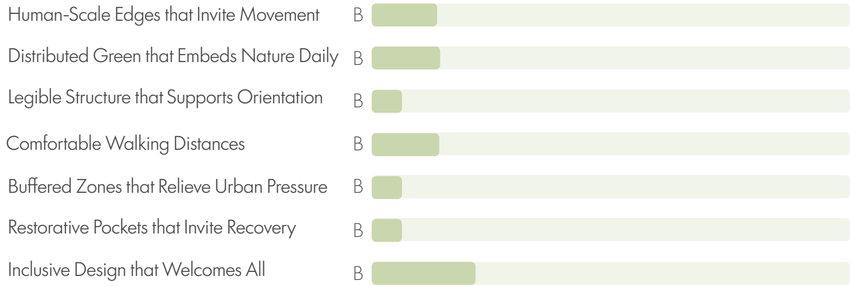
The social health of future residents is supported through a diverse and hierarchically differentiated public space network that provides the spatial conditions for social encounter, community building, and the development of place attachment at every scale - from the fully public urban square to the intimate greened courtyard (Oldenburg, 1989; Altman & Low, 1992). The heritage part - with its community hall, crafts market, and flexible public spaces - establishes the social heart of the neighborhood, providing the kind of third place infrastructure essential to the development of community identity, shared belonging, and the everyday social bonds that protect against the isolation and loneliness associated with digitalized lifestyles (Putnam, 2000).

Mental Health

The mental health of future residents is addressed through the systematic integration of restorative environments - green spaces, waterfront edges, quiet courtyards, and deep nature areas - that provide the conditions for stress recovery, attention restoration, and psychological regeneration identified by Attention Restoration Theory and Stress Recovery Theory as essential to well-being in digitalized urban contexts (Kaplan & Kaplan, 1989; Ulrich, 1984). The progression from active to calm that characterises the neighborhood's green-blue structure - culminating in the Gate to Calmness - ensures that residents always have access to a spatial environment capable of meeting their need for psychological restoration, whatever form that may take on any given day.







„There is something about a place that has physical beauty and proximity to nature that makes the phone feel less urgent. When I'm walking here I genuinely don't think about it. The environment gives you enough to engage with that the device becomes irrelevant for a while." (Ole, 2026)

Which Areas are Important? Scale 1 : 8.500



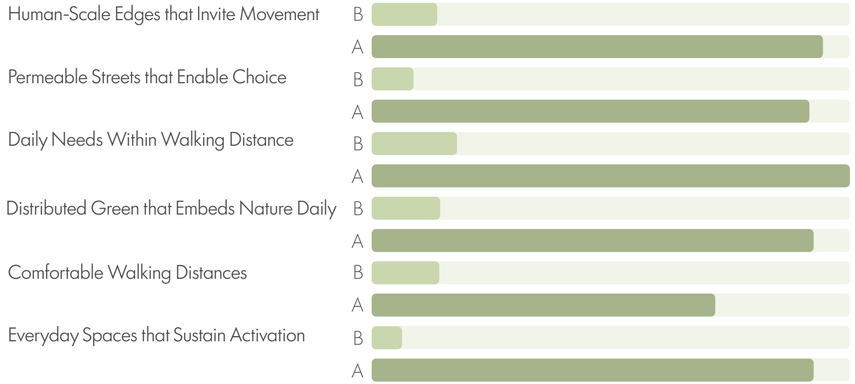
Figure 166. Map highlighting areas supporting physical health.

Land Area
Lynetteholmen Development
Existing Water Structure
Surrounding Buildings
Building Plots
Kept Buildings
Physical Health - Blue Spaces
Physical Health - Blue-Green Spaces
Physical Health - Urban Spaces
Physical Health - Moderately Important
Bridges

After:

The physical health of future residents is supported through a comprehensive network of active mobility infrastructure, waterfront bathing areas, sports and recreational programming, and the systematic reduction of sedentary car dependency across the neighborhood. Permeable street networks, green streets, and the Gate to Calmness actively encourage walking and cycling as the default modes of everyday movement - embedding physical activity into daily routines without requiring conscious effort (Sallis et al., 2006). The distribution of natural playgrounds, activity points, kajak rental, and waterfront facilities across the site ensures that opportunities for physical engagement with both the built and natural environment are available to all residents, regardless of age or ability.

Before vs. After



„It's as if the site was developed as an event space that then accidentally got residents, rather than the other way around." (Elena, 2026)

Before:

Refshaleøen's current spatial conditions actively discourage the physical activity that is essential to the health of its residents and visitors. The site's movement infrastructure is overwhelmingly oriented toward the private car - wide, undefined road corridors dominate the spatial experience, while dedicated pedestrian and cycling infrastructure remains fragmented, discontinuous, and in many areas entirely absent. The result is a neighborhood in which walking and cycling are not the path of least resistance but the path of most - requiring effort, tolerance for spatial discomfort, and a willingness to navigate an environment that was simply not designed with the active traveler in mind. For residents already embedded in the sedentary patterns associated with digitalized work and leisure, this spatial disincentive to movement compounds an already significant health risk (Biswas et al., 2015; Sallis et al., 2006).Beyond the movement infrastructure, the site's almost total absence of qualitative green and blue spaces further undermines physical health. Access to nature - whether for walking, running, cycling, swimming, or simply spending time outdoors - is a well-documented determinant of physical activity levels, yet Refshaleøen offers almost none of the infrastructure that would support it (Hartig et al., 2014). The waterfront - the site's most powerful potential physical activity resource - is largely inaccessible, blocked by fencing, undefined edges, and the absence of the programming that would draw residents toward it. The nearest supermarket lies over forty minutes on foot, the nearest school even further - conditions that not only fail to support healthy daily routines but actively enforce car dependency and the sedentary behaviors that accompany it. For the children, adolescents, young professionals, and elderly residents who will inhabit this neighborhood, the physical health consequences of this spatial environment are not abstract - they are cumulative, daily, and entirely preventable.

Which Areas are Important? Scale 1 : 8.500

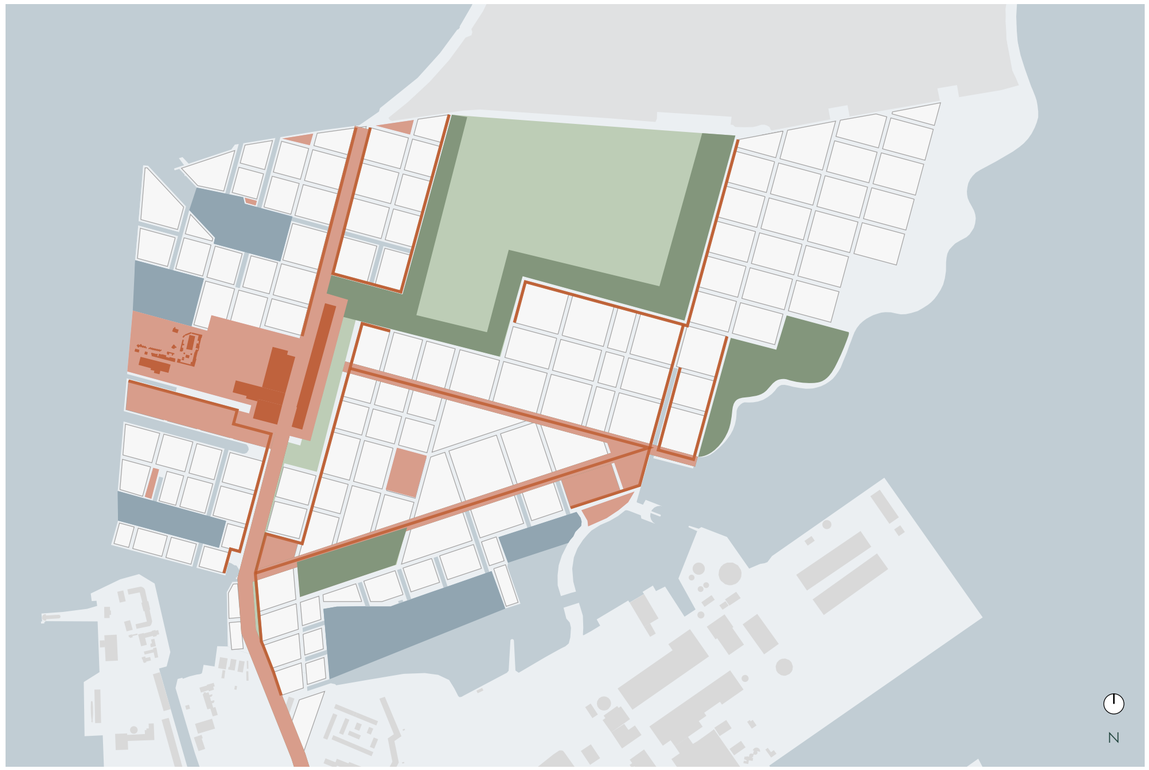


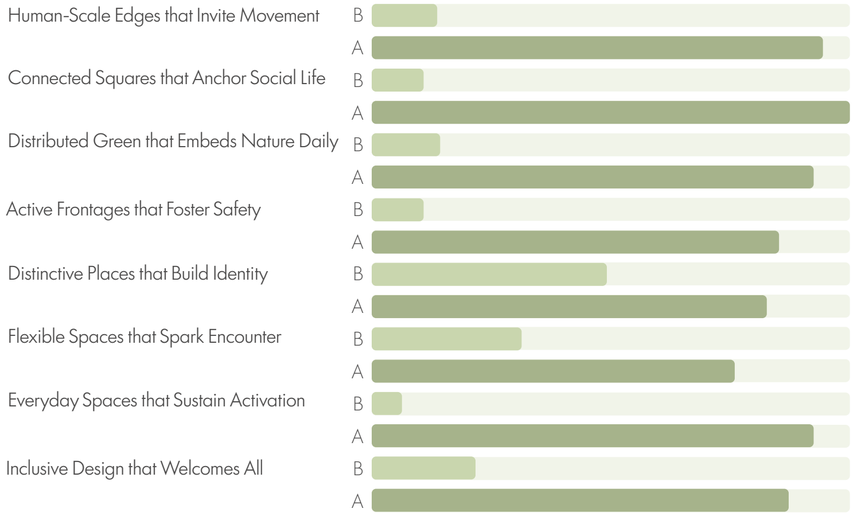
Figure 167. Map highlighting areas supporting social health.

Land Area
Lynetteholmen Development
Existing Water Structure
Surrounding Buildings
Building Plots
Kept Buildings
Social Health - Blue Spaces
Social Health - Blue-Green Spaces
Social Health - Urban Spaces
Social Health - Moderately Important
Active Frontages

After:

The social health of future residents is supported through a diverse and hierarchically differentiated public space network that provides the spatial conditions for social encounter, community building, and the development of place attachment at every scale - from the fully public urban square to the intimate greened courtyard (Oldenburg, 1989; Altman & Low, 1992). The heritage part - with its community hall, crafts market, and flexible public spaces - establishes the social heart of the neighborhood, providing the kind of third place infrastructure essential to the development of community identity, shared belonging, and the everyday social bonds that protect against the isolation and loneliness associated with digitalized lifestyles (Putnam, 2000).

Before vs. After



„What I appreciate most is the energy and the fact that it's unlike anywhere else in Copenhagen. It has a genuine identity. But what's missing is the everyday." (Mads, 2026)

Before:

A neighborhood's capacity to support social health depends on the presence of the spatial conditions that make encounter, connection, and community possible - and by this measure, Refshaleøen currently falls profoundly short. The site possesses only two identifiable public spaces: the Reffen Food Market, a vibrant but event-driven destination, and a vast, undefined event ground that activates occasionally but offers nothing to the resident seeking a place to sit, linger, or spontaneously meet a neighbor on an ordinary Tuesday afternoon. Between these two isolated points, the public realm offers almost nothing - wide, blank-edged streets with no seating, no activation, no shelter, and no sense that human presence is welcome or expected (Gehl, 2010; Oldenburg, 1989). The consequences for social health are direct and significant. Without the informal gathering spaces, activated street edges, and distributed neighborhood squares that support the everyday social encounters from which community life is built, residents are left with few opportunities for the spontaneous, low-threshold social interaction that is essential to a sense of belonging and connection (Putnam, 2000). The site's current character as a destination neighborhood - visited for specific cultural or gastronomic purposes and then left - means that the sustained, repeated, and incidental encounters that build genuine neighborhood relationships simply do not occur. For the young professionals, students, and families who already experience social isolation as a consequence of digitalized lifestyles, arriving in a neighborhood that offers no spatial framework for social life only deepens a condition that the right urban environment could meaningfully begin to address (Odgers & Jensen, 2020; Twenge et al., 2018). The absence of amenities - schools, childcare, community facilities, everyday retail - further compounds the social impoverishment of the site. These are not merely practical conveniences: they are the anchors of neighborhood social life, the places where residents meet, recognize one another, and begin to feel that they belong to something larger than their own household. Without them, Refshaleøen cannot function as a community - it can only function as an address.

Which Areas are Important? Scale 1 : 8.500



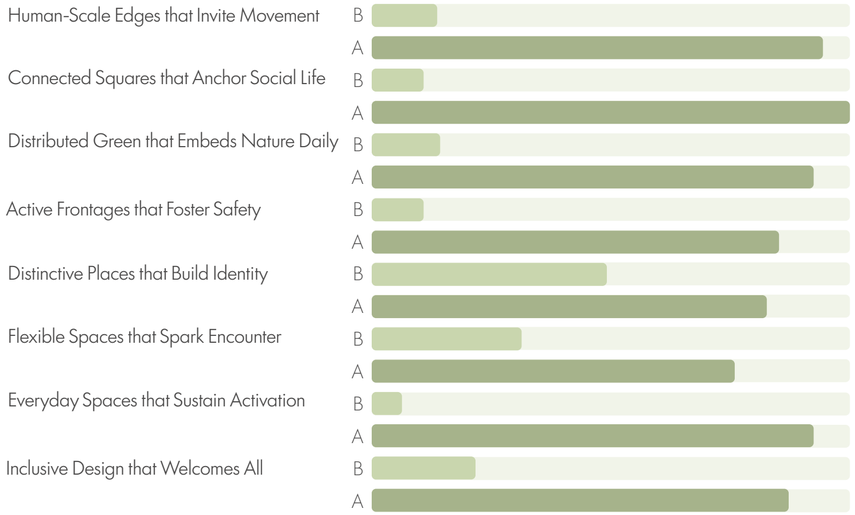
Figure 168. Map highlighting areas supporting mental health.

After:

The mental health of future residents is addressed through the systematic integration of restorative environments - green spaces, waterfront edges, quiet courtyards, and deep nature areas - that provide the conditions for stress recovery, attention restoration, and psychological regeneration identified by Attention Restoration Theory and Stress Recovery Theory as essential to well-being in digitalized urban contexts (Kaplan & Kaplan, 1989; Ulrich, 1984). The progression from active to calm that characterises the neighborhood's green-blue structure - culminating in the Gate to Calmness - ensures that residents always have access to a spatial environment capable of meeting their need for psychological restoration, whatever form that may take on any given day.

- Land Area
- Lynetteholmen Development
- Existing Water Structure
- Surrounding Buildings
- Building Plots
- Kept Buildings
- Mental Health - Blue Spaces
- Mental Health - Blue-Green Spaces
- Greened Building Plots

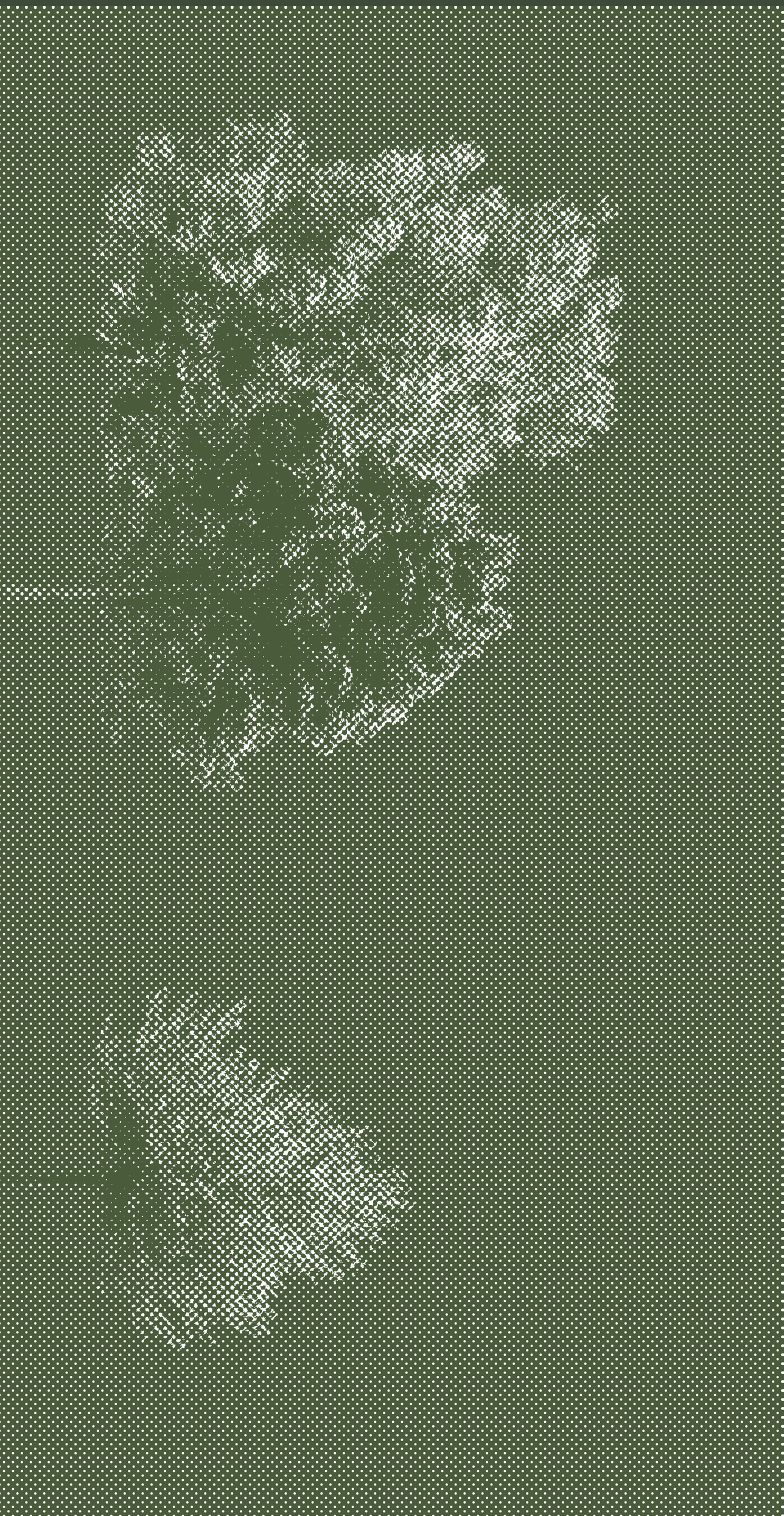
Before vs. After



„...it feels like it's designed for a certain type: young, adventurous, a bit alternative. I fit that profile, so it works for me. But I wouldn't bring my parents here and expect them to feel at ease." (Mads, 2026)

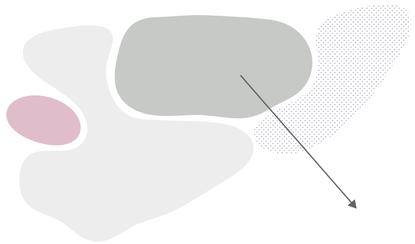
Before:

Of the three dimensions of health, it is perhaps the mental health implications of Refshaleøen's current spatial conditions that are most immediately and viscerally felt by those who spend time there. The site's non-human scale creates an environment that is spatially intimidating rather than comforting, disorienting rather than legible, and exhausting rather than restorative (Lynch, 1960; Ulrich et al., 1991). For residents already carrying the cognitive load of digitalized work and social media engagement, arriving home to an environment that offers no spatial relief and no sense of calm or shelter is not a neutral experience - it is an additional stressor layered upon a daily accumulation of others. The near-total absence of green and blue spaces is particularly significant in this regard. Research consistently and robustly demonstrates that access to natural environments is one of the most powerful instruments available for the recovery of directed attention, the reduction of physiological stress, and the restoration of the psychological resources that sustain mental health in demanding urban contexts (Kaplan & Kaplan, 1989; Ulrich, 1984). Refshaleøen currently offers almost none of this. What green space exists is ecologically impoverished - undifferentiated grass surfaces that offer no sensory richness, no spatial variety, and no invitation to linger. The waterfront, which could provide the deep restorative quality associated with blue environments, is largely inaccessible. And the absence of the small, sheltered, intimate spaces - the pocket park, the quiet courtyard, the waterside bench - that allow individuals to step briefly out of the demands of daily life and simply be present means that the site offers no spatial infrastructure for the psychological recovery that all of its future residents will need (Marcus & Sachs, 2014; White et al., 2010). The absence of lighting and activated edges renders much of the site unsafe and unwelcoming during the long Scandinavian winter - months during which the quality of the indoor-outdoor relationship becomes critical for mental health, and during which access to a welcoming, well-lit, and socially active public realm can make the difference between a resident who remains connected to their neighborhood and one who retreats entirely into digital environments as a substitute for the public life that their urban environment has failed to provide.



Phase 1

Industrial Relocation & Site Clearance (Biofos Transition)



This phase establishes the foundational conditions for redevelopment by orchestrating the gradual relocation of critical industrial infrastructure and the systematic clearance of the existing site. It represents a highly controlled and time-intensive process, in which operational continuity, technical complexity, and spatial release are carefully balanced.

Estimated duration: ~10–12 years

Key components

- Gradual relocation of the existing wastewater treatment plant (Biofos) to a new island site
- Maintenance of continuous operational capacity during transition (critical infrastructure resilience)
- Decommissioning and dismantling of industrial facilities
  Selective demolition vs. preservation (heritage assessment where relevant)
- Logistics planning for heavy infrastructure removal

Key considerations

- Avoid disruption of metropolitan wastewater services
- Regulatory approvals and environmental compliance
- High capital investment and coordination with regional authorities
- Phased handover of land parcels for subsequent redevelopment

Phase 2

Environmental Remediation & Landscape Structuring



This phase addresses the site's industrial legacy through a comprehensive and phased remediation strategy, transforming contamination into a driver for spatial and ecological design. Environmental processes are closely intertwined with the formation of a resilient landscape framework, integrating technical interventions with long-term urban and ecological performance.

Estimated duration: ~8–15 years (partially overlapping with Phase 1 & 3)

Key components

- Comprehensive soil and groundwater remediation (ex situ and in situ techniques)
- Risk-based zoning depending on contamination levels
- Integration of blue-green infrastructure as remediation strategy (e.g., phytoremediation, wetlands)
- Establishment of ecological corridors and water management systems

Key considerations

- Phasing remediation in alignment with development priorities
- Long-term monitoring and adaptive management
- Combining technical remediation with public landscape design
- Climate resilience (flood protection, stormwater retention)

Phase 3

Infrastructure Development & Urban Framework Construction



This phase translates the emerging spatial potential into a structured urban framework, establishing the physical and organizational backbone of the new district. It coordinates the implementation of infrastructure systems with the gradual construction of buildings and public spaces, enabling a flexible yet coherent urban development process.

Estimated duration: ~10–20 years (overlapping with Phase 2)

Key components

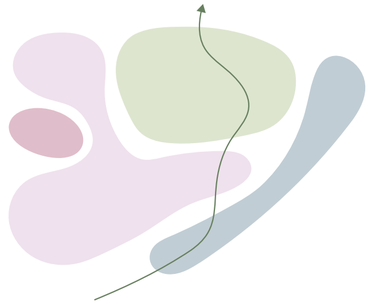
- Construction of primary infrastructure (roads, utilities, mobility networks)
- Parcelization and establishment of urban blocks and public spaces
- Gradual development of housing, mixed-use buildings, and civic functions
- Implementation of sustainable mobility systems (public transport, cycling networks)

Key considerations

- Flexible masterplan allowing adaptation over time
- Coordination between public and private stakeholders
- Early delivery of key infrastructure to unlock development potential
- Integration of energy systems (district heating, renewables)

Phase 4

Activation, Social Integration & Long-Term Urban Maturation



This phase focuses on the gradual occupation and appropriation of the site, supporting the emergence of social, cultural, and economic dynamics. It extends beyond physical construction, emphasizing long-term adaptability, identity formation, and the consolidation of a vibrant and inclusive urban environment.

Estimated duration: ~15–30 years (continuous)

Key components

- Temporary uses (meanwhile uses) during early phases
- Gradual population influx and community building
- Activation of public spaces and waterfront areas
- Development of local identity and cultural programming

Key considerations

- Avoidance of "dead zones" during long construction periods
- Social inclusivity and mixed-income housing
- Economic activation (commercial, creative industries)
- Governance models for long-term management

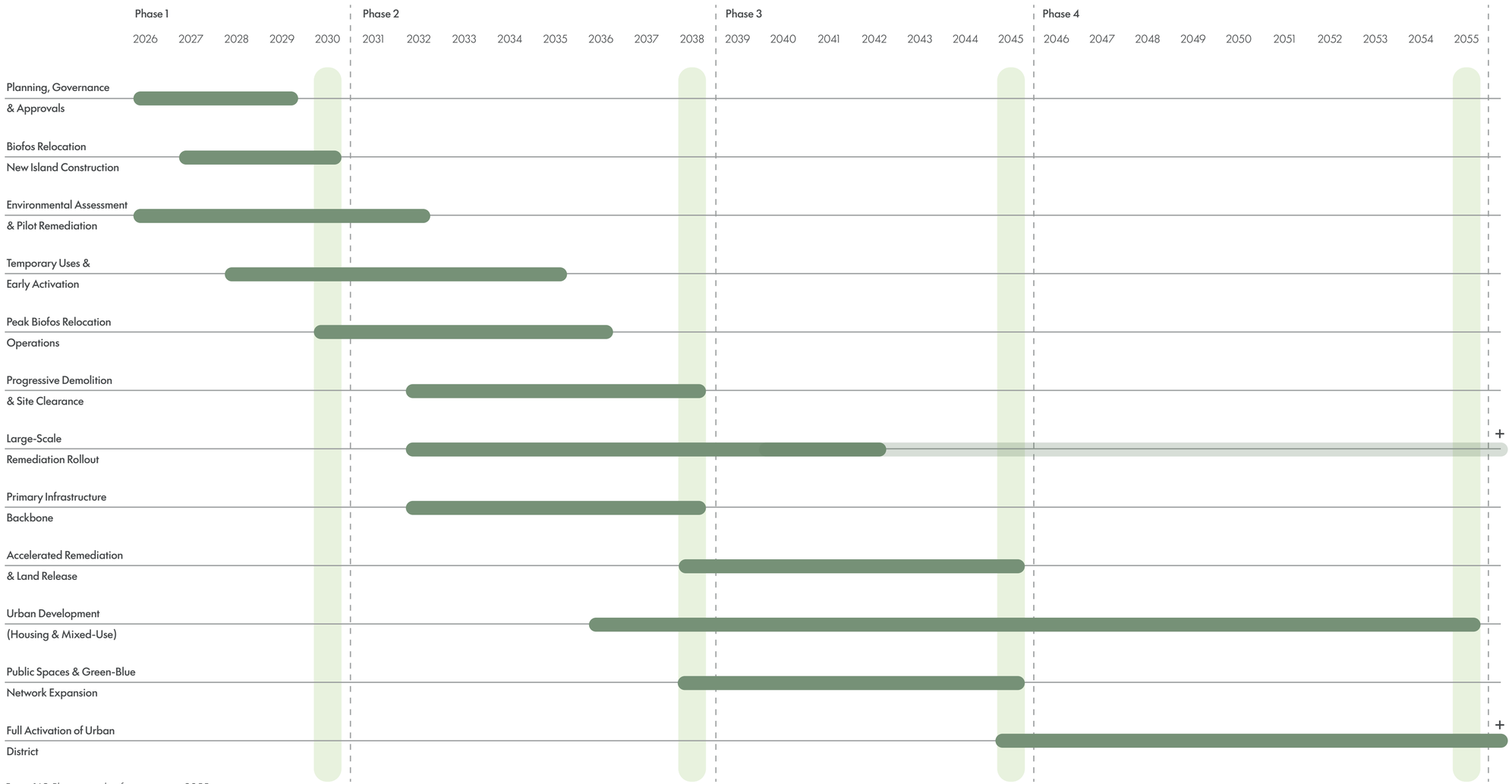


Figure 169. Phasing timeline from present to 2055.

The phasing diagram on the left illustrates the long-term transformation of the site as a layered and overlapping process, structuring the relocation of industrial infrastructure, environmental remediation, urban development, and gradual activation into a coherent temporal strategy.

2026–2030 (Initiation Phase)
The initial phase establishes the strategic and regulatory foundation for the redevelopment process, aligning key stakeholders and securing planning approvals. Construction of the new island marks the beginning of the Biofos relocation, while early environmental assessments define the scope of contamination. Pilot remediation projects and temporary uses activate low-risk areas, introducing first spatial and programmatic transformations on site.

2030–2038 (Transition Phase)
This phase is characterized by the peak relocation of industrial infrastructure and the progressive clearance of vacated areas. Large-scale remediation operations are initiated in parallel, enabling the gradual release of land for development. At the same time, primary infrastructure systems are implemented, forming the structural backbone for future urbanization and coordinating complex overlaps between technical and spatial processes.

2038–2045 (Transformation Phase)
Following the completion of the Biofos relocation, redevelopment accelerates significantly as larger contiguous areas become available. Remediation processes advance in parallel with the construction of housing, public spaces, and mixed-use districts. The expansion of interconnected green and blue networks establishes a resilient landscape framework, integrating ecological performance with urban form and enhancing the spatial identity of the emerging neighborhood.

2045–2055 (Consolidation Phase)
In the final phase, the majority of construction activities are completed, and the district transitions into a fully functioning urban environment. Public spaces and neighborhoods are activated and intensively used, while long-term ecological systems stabilize and mature. The area develops a distinct socio-spatial identity, supported by ongoing adaptation processes and the consolidation of economic and community structures.

The City of Copenhagen - 2050+



Figure 170. Map illustrating broader urban impact on Copenhagen.

Improved Connectivity & Urban Integration

The design proposals for Refshaleøen do not merely transform an isolated site - they fundamentally alter the connectivity of Copenhagen's eastern harbor, establishing new pedestrian and cycling bridges, public transport connections, and spatial links that integrate the neighborhood into the broader urban fabric of the city. The four entrance situations, the Gate to Calmness toward Lynetteholm, and the canal connections to the harbor collectively position Refshaleøen as a new node within Copenhagen's public space and mobility network - a neighborhood that contributes to the city rather than existing in isolation from it.

Qualitative Uplift & Landmark Status

The retention and activation of the site's industrial heritage, the introduction of two new landmarks at strategic entrance positions, and the extraordinary quality of the proposed green-blue infrastructure collectively establish Refshaleøen as a destination neighborhood of city-wide significance. The heritage part - with its cultural institutions, community spaces, and distinctive material identity - gives Copenhagen a new urban landmark that is simultaneously rooted in the past and oriented toward the future, attracting visitors and residents alike and contributing to the city's cultural offer in ways that extend far beyond the boundaries of the site itself.

A Transferable Model for Copenhagen & Beyond

Perhaps most significantly, the design proposals for Refshaleøen demonstrate that the health-promoting, stress-sensitive urban design principles developed in this thesis are not site-specific - they are transferable. Copenhagen's eastern harbor contains numerous post-industrial sites facing comparable challenges of connectivity, programmatic impoverishment, and environmental remediation. The spatial methodology developed here - from the derivation of a context-sensitive street grid through the calibration of density and the integration of a comprehensive green-blue framework - offers a replicable model for the sustainable, health-oriented transformation of post-industrial urban land across the city and beyond. In doing so, the thesis makes a contribution that extends well beyond the boundaries of Refshaleøen - demonstrating that the design of everyday urban space is one of the most powerful instruments available for addressing the health challenges of contemporary urban life.

„If I could combine the two - take the energy and identity of Reffen and put it in a neighborhood with Østerbro's liveability and human scale - that would be something special. Add some actual nature near the water, make it possible to live there normally, and you'd have one of the best neighborhoods in the city." (Mads, 2026)

„At my age, being outside and moving is not something you take for granted - it's some-thing you make a conscious effort to do. And a good neighborhood makes that effort much easier." (Ole, 2026)

Scale 1 : 60.000

- Land Area
- Copenhagen
- Water Structure
- Residential Development
- Recreational Areas
- Site
- Lynetteholmen Area
- Industrial Areas
- Potential Similar Sites
- New Connections

Conclusion, Implications & Reflection

Part 4

This concluding chapter brings together the key findings, reflections, and broader implications of the thesis - drawing the various threads of research, analysis, and design into a final, synthesised assessment of what has been achieved, what remains open, and what this work might mean beyond the boundaries of the project itself. It revisits the central research and design questions, evaluates the outcomes against the theoretical framework established in Part Two, and reflects honestly on the process through which those outcomes were reached. Rather than offering a definitive closure, this chapter is intended as a moment of genuine intellectual stocktaking - acknowledging both the contributions and the limitations of the work, and pointing toward the conversations and investigations that it hopes to inspire.





Answer to Research Questions & Relation to Urbanism Track

The main approach of this thesis is to investigate how stress-sensitive, health-promoting urban design interventions can be developed and spatially implemented in order to mitigate the physical, social, and mental health impacts of digitalization on residents in Copenhagen, with Refshaleøen serving as a strategic site for testing such interventions. The following discussion places the key findings in the light of their context and the existing literature by answering the research questions.

Answer to the Research Questions

SRQ 1: *How do current urban spatial conditions on Refshaleøen - particularly the configuration, accessibility, and experiential quality of public spaces - contribute to or fail to alleviate the identified health issues?*

The site analysis revealed massive gaps in the spatial conditions of Refshaleøen in their current state. In terms of the configuration and the site's street structure being dominated by wide, car-scaled streets with an unreadable layout, the layout offers little spatial guidance or invitation to linger. These insights are directly associated with reduced pedestrian activity and elevated stress responses in urban environments (Gehl, 2010; Ulrich et al., 1991). Moreover, the near-total absence of daily needs within walking distance, the lack of high-quality restorative areas, and the prevalence of long walking routes without programmatic activities collectively undermine the conditions necessary for physical activity, mental restoration, and social encounters (Sallis et al., 2006; Kaplan & Kaplan, 1989).

In terms of accessibility, the site suffers from poor connectivity to the surrounding neighborhoods and is primarily only reachable by a single car-oriented corridor with limited cycling infrastructure and limited public transport connections. Within the site itself, car-oriented movement is highly prioritized at the expense of pedestrian and cyclist comfort. Additionally, physical barriers such as fences and undefined edges interrupt movement. Since large portions of the waterfront are inaccessible at the moment, the well-documented potential of blue environments on the mental well-being (White et al., 2010; Völker & Kistemann, 2011) of residents is being lost.

The experiential quality of the site is equally ambivalent. With mostly non-human-scale structures, including the built and unbuilt environment, an intimidating spatial environment that discourages lingering, rest, and informal social use is being created. Furthermore, the absence of nighttime activation renders much of the site unsafe and unwelcoming after dark. These conditions are tightly intertwined with reduced social cohesion and heightened perceived insecurity (Jacobs, 1961). In contrast, there are the unique qualities that Refshaleøen holds: due to its rich industrial heritage, the site holds a distinctive spatial character and cultural programming with Reffen Food Market and Contemporary Art Copenhagen as important centralities. This gives Refshaleøen a civic significance that extends well beyond its immediate surroundings. These existing assets were treated throughout the trajectory of the thesis not as incidental features but as foundational backbones of the design upon which a healthy neighborhood identity can be built.

SRQ 2: *Which urban design principles have proven effective in supporting resident´s and visitor´s well-being in comparable urban context at specific case study areas?*

The three main case study areas, namely Sydhavn and Østerbro in Copenhagen and Utrecht in the Netherlands, demonstrated diverse insights into how evidence-based design principles can be translated spatially into environments that support the overall well-being of their residents and visitors.

Like Refshaleøen, Sydhavn marks a former industrial waterfront district, which directly describes the undeniable connection between these two sites. Sydhavn hereby demonstrates how such a heritage can be turned into a residential neighborhood that supports well-being while acknowledging the industrial past. Especially through smooth transitions from indoors to outdoors through private gardens, wide balconies, greened semi-public courtyards, and the proximity of public neighborhood squares and green-blue spaces, Sydhavn lowers the psychological barrier to going outdoors. Thus, the neighborhood encourages physical activity and fosters the kind of informal social encounters that build community cohesion and a sense of belonging (Gehl, 2010; Oldenburg, 1989).

On the other hand, Østerbro shows how a hierarchically structured street network generates the cognitive ease and spatial legibility needed in order to allow residents to navigate through their neighborhood with confidence and comfort. Besides, the mixed-use programming and active plinth activation along main streets ensure the feeling of safety at all times of day, providing the continuous social presence that both supports mental well-being and discourages antisocial behavior (Lynch, 1960; Jacobs, 1961).

Finally, Utrecht proves through which strategies diverse green-blue strategies can be successfully embedded into a dense urban structure to create a landscape that moves fluidly from unprogrammed ecological zones to activated recreational spaces and from calm waterfronts to physically engaging blue areas. Its approach to the gradation from active to calm, which is most powerfully demonstrated through the restored Catharijnsingel canal, offers a directly transferable model for the kind of nature-based strategies that this thesis proposes for the site itself (Hartig et al., 2014; Ulrich et al., 1991).

Spatial Criteria Transformation (Before vs. After)

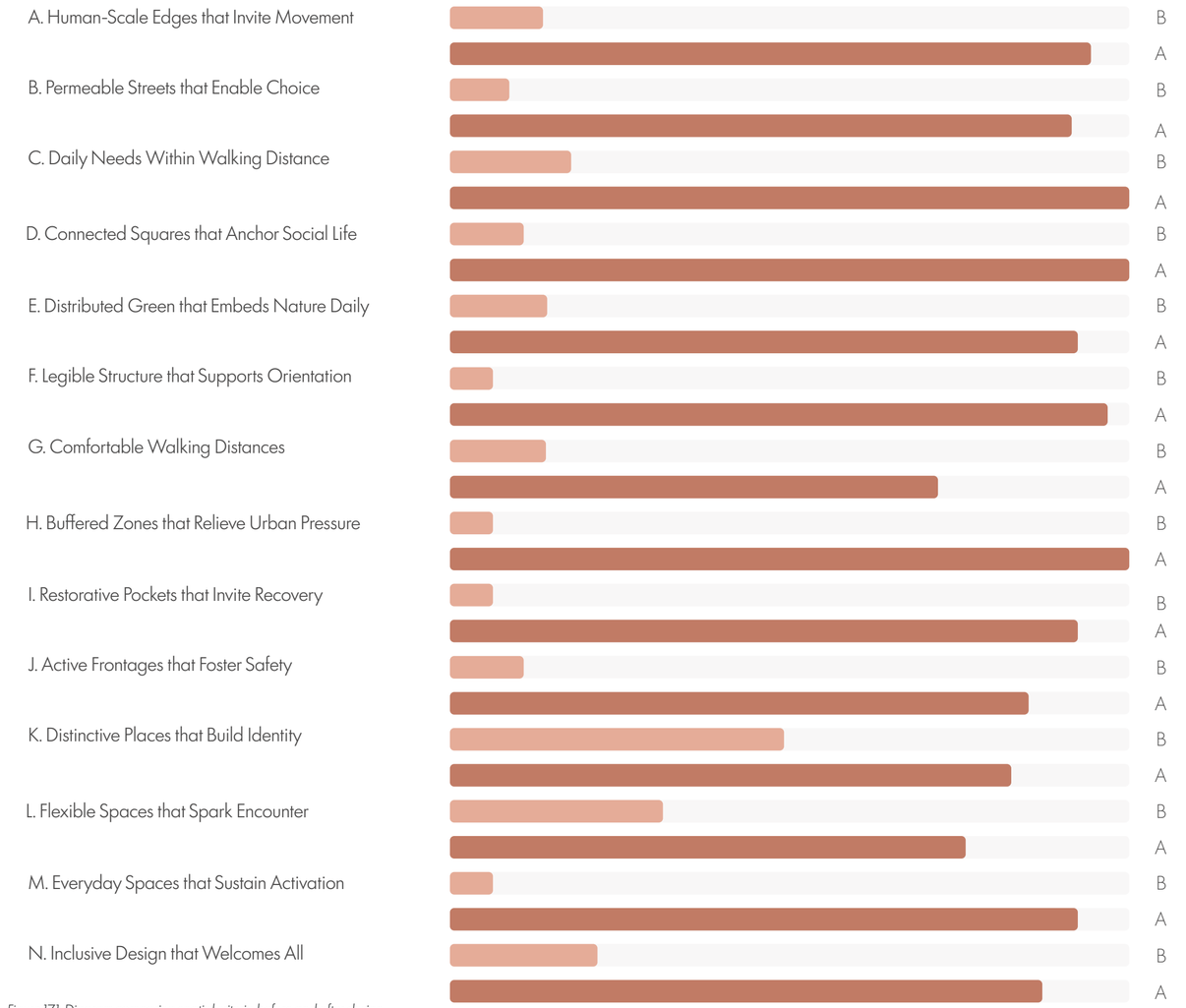


Figure 171. Diagram comparing spatial criteria before and after design.

Conclusion

Answer to Research Questions & Relation to Urbanism Track

SRQ 3: *In what ways can Refshaleøen be redeveloped and serve as a testing ground for integrating these interventions into a holistic spatial framework that demonstrates their potential impact at neighborhood scale?*

Refshaleøen's unique combination of spatial opportunities, ecological potential, and ongoing transformation makes it an exceptionally relevant testing ground for the design strategies developed in the process of this thesis. With the post-industrial character, which goes hand in hand with vast open plots, retained heritage structures, and an extensive waterfront, it provides the spatial flexibility needed to test interventions, from city-wide connectivity improvements to the programming of the green-blue spaces.

The four aspect groups from the analysis and design exploration (street structure and mobility features, built environment, public space design and socio-spatial features, and green and blue spaces) provided a structured and comprehensive framework through which the site's urgencies and potentials were systematically identified and translated into design proposals. The resulting master plan demonstrates that a neighborhood built around health-promoting principles is not solely spatially feasible but deeply contextually grounded.

MRQ: *How can stress-sensitive, health-promoting urban design interventions be developed and spatially implemented to mitigate the physical, mental, and social health impacts of digitalization on residents in Copenhagen, with Refshaleøen serving as a strategic site for testing such interventions?*

All of this comes together in the answer of the main research question, which is mostly the integrated spatial framework and final master plan developed across the analytical and design phases of this thesis. The research proofs that stress-sensitive, health-promoting urban design interventions can be developed through a structured methodology that moves from theoretical grounding through the formulation of spatial criteria that inform the site analysis. Thereby, theoretical insights are being translated into design-relevant principles. Spatially, the interventions proposed for the site demonstrate that the health impacts of digitalized urban lifestyles can be indeed meaningfully mitigated through the deliberate design of permeable street networks, human-scale built environments, activated public spaces, and a comprehensive green-blue infrastructure that embeds nature as a continuous and accessible dimension of everyday residential life. Together, these interventions address all three dimensions of health and demonstrate that the design of urban space is one of the most powerful and equitable instruments available for improving the quality of life of urban residents in the digital era (WHO, 2016; Frumkin et al., 2017). Therefore, the design turns the living situation of Refshaleøen's residents "from pixel-oriented to parklands."

Relation of the Project to the Master Track and the THIC Cluster

Urbanism, as a discipline, is fundamentally concerned with understanding cities in their full complexity, together with their driving forces, and with developing the design skills necessary to intervene in them constructively and responsively. The Master Track Urbanism with the MSc AUBS programme trains precisely this capacity: to read compley urban conditions across multiple scales, to ground that reading in rigorous research and theoretical knowledge, and to translate it into site-specific spatial proposals that genuinely improve the conditions of the places and the lives of the people they address.

This thesis is, in every sense, an exercise in that discipline. It begins with a complex and multi-dimensional urban problem, namely the growing health crisis associated with digitalized lifestyles and the spatial conditions that either alleviate or deepen it, and works systematically through the analytical and design tools of urbanism to arrive at a spatially coherent, theoretically substantiated, and contextually grounded response. The project operates across several scales that the discipline demands, demonstrating the capacity to hold complexity and detail simultaneously without losing sight of either.

In regard to the "Healthy and Inclusive City" Cluster, the project is equally aligned with their ambitions by positioning urban design as a direct instrument of public health and social equity. Rather than engaging with these topics abstractly, the thesis attempts to give them spatial form: proposing a neighborhood in which health is not an afterthought but the primary design principle and in which the benefits of that approach are distributed equitably across all future residents.

Implications

The key findings of this thesis carry implications that extend well beyond the boundaries of the site. Since the thesis directly interferes with several topics such as the field of health-promoting urbanism, post-industrial urban transformation, and the spatial respons to the growing health challenges associated with contemporary digital lifestyles, it addresses several questions about the future of urban design in an increasingly digitalized world.

Perhaps the most significant implication of this project is the demonstration that the intersection of digitalization and urban health constitutes a distinct and largely underserved field of spatial inquiry. While the individual threads such as digital stress, sedentary lifestyles, social isolation, and disconnection from public space have been examined in the existing literature, they have overwhelmingly been treated as separate concerns. As a result, they are being addressed by different disciplines and through separate lenses. In contrast, this thesis argues that these factors are dimensions of a single spatial problem: one that demands an integrated, cross-disciplinary approach in which urban design is positioned not as a peripheral contributor but as a primary instrument of public health intervention (Frumkin et al., 2017; WHO, 2016). Consequently, this project seeks to encourage future researchers and practitioners to treat health not as an add-on to urban design but as its central organizing principle.

Moreover, the methodology developed in this thesis offers a replicable and transferable model for comparable post-industrial redevelopment contexts. Copenhagen´s harbor contains numerous sites that are facing similar challenges of poor connectivity, lack of residential identity, or environmental contamination. The framework which informs this project can be further adapted and applied to these sites without prescribing a universal spatial solution, but giving general guidance by still respecting the specificity of each context.

Additionally, the thesis also meaningfully contributes to an important ongoing debate within urbanism about the relationship between density, economic viability, and well-being. A persistent assumption in development practice is that health-promoting features like generous green areas, reduced car access, and extensive public space come at the cost of density and financial return. This project argues that the integration of such approaches enhances rather than compromises the spatial and economic quality of the neighborhood. Health and value are not two competing priorities but mutually reinforcing outcomes of thoughtful urban design (Gehl, 2010; Jenks et al., 1996).

Ultimately, this project seeks to frame spatial equity as a non-negotiable dimension of health-promoting urban design. The health impacts of the digital era affect all residents regardless of socio-economic status, profession, or demographic profile. But access to the restorative, health-supportive urban environments that can mitigate those impacts remains profoundly and unjustly unequal across the city. The thesis proposes that such access is not a luxury but a right. The design of neighborhoods like Refshaleøen represents an opportunity to demonstrate what genuinely equitable, health-promoting urbanism can look like when spatial equity is treated as a design imperative rather than an aspiration (Wolch et al., 2014; Jennings et al., 2016).

Reflection on the Graduation Process

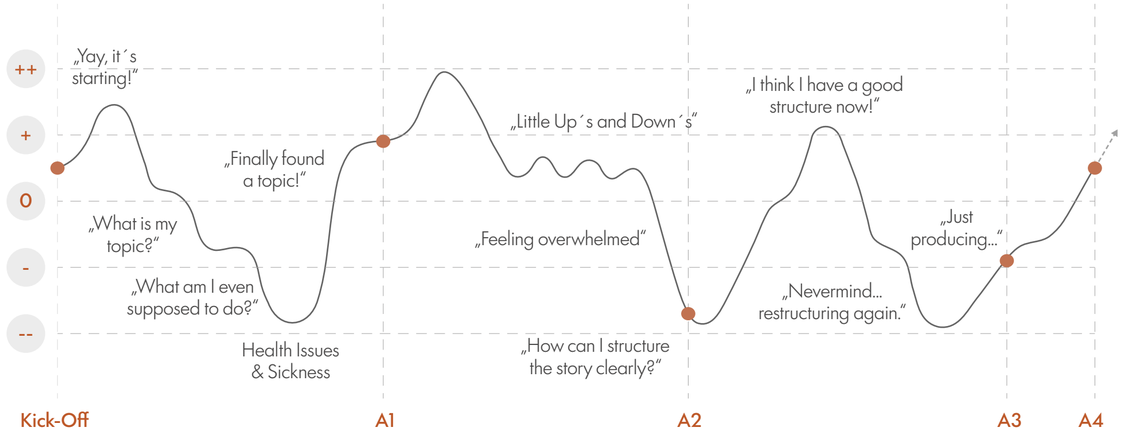


Figure 172. Diagram illustrating the personal journey through the graduation project.

As illustrated in the visual above, the past few months were characterised by numerous highs and lows that I managed to overcome. In retrospect, these experiences have allowed me to look back on the graduation project with a sense of personal growth and an overall positive perspective.

The graduation process was not always smooth. And that is perhaps the most important learning to acknowledge. The thesis was shaped not only by intellectual decisions but also by personal circumstances, moments of doubt, and a gradual process in which I learned to work in ways that had not previously seemed natural or comfortable to me.

Early in the project, a period of health-related challenges coincided with the initial research phase, making the start of the thesis significantly more demanding than anticipated. Managing multiple pressures while simultaneously trying to establish the foundations of such a complex, multi-layered research topic required a degree of resilience, which was, at times, genuinely difficult to sustain. In hindsight, however, this experience deepened the personal resonance of the thesis topic in ways that no amount of purely academic engagement could have achieved. The relationship between health, stress, and the quality of one's everyday spatial environment became not merely an abstract research question but a lived and felt reality. This grounding in personal experience gave the work a depth of conviction that carried through to the final proposals.

The scope of the research turned out to be both a great strength and a persistent challenge. The multi-layered nature of the selected topic (digitalization, public health, environmental psychology, and urban design) demanded extensive pre-research before the analytical framework could be established. This frequently generated a feeling of falling behind or of being overwhelmed by the breadth of the inquiry, especially at the start of the research. What helped was accepting that not everything can be resolved before the process begins and that research and design are not sequential activities but simultaneous ones. The clarity one seeks at the beginning often only arrives through the act of making and maybe most importantly, trusting the process.

Since the topic of the research was chosen from personal experience and genuine curiosity, it was a gift to be able to choose your topic freely and a complication. The deeper the research went, the more there was to understand: the logic behind urban phenomena, the mechanisms of psychological stress, the structure of public spaces, the ecological complexity of post-industrial land... This led to remaining in the initial theoretical and literature phase longer than originally planned. The turning point came through a conversation with my responsible supervisor, Deepti, who reminded me that the goal was not to develop a perfect design that works in theory but more to envision how the neighborhood might be lived in. And then, to learn from that vision. Internalizing this shifted something fundamental in my way of working. As soon as the design phase began, ideas emerged with an energy and clarity that had been absent during the more cautious early phases. And the weeks that followed were among the most engaging and personally rewarding of the entire process. I must say: I am smiling while thinking about it and writing these lines.

One of the most persistent structural challenges of the thesis was to find a way to communicate its complexity clearly and accessibly to an audience. The entanglement of the different dimensions involves many interdependent layers that do not always translate easily into the linear logic of a report. The question of how to make one's own thinking legible to others was one that recurred throughout the whole process and required constant attention to narrative clarity, visual communication, and the strategic ordering of ideas. Something that was quite hard for me in the beginning.

By the end, the challenge was no longer finding things to say; it was knowing where to stop. The topic opened outward at every turn, and the hardest discipline for me was to accept that a thesis is not an encyclopedia but a focused and honest contribution to a conversation that will continue long after the submission. The originally intended outcome included more fully resolved architectural dimensions and a more detailed master plan. Given the time constraints of the graduation project, the focus was shifted towards a spatial framework that communicates the organizational logic of form, function, and experience at the site's scale. A decision that, in retrospect, served the thesis well by maintaining strategic clarity rather than pursuing a technical exhaustiveness that would inevitably have come at the cost of depth elsewhere.

Reflection on the Methodology

The relationship between research and design in this graduation project was honestly never one of simple sequence. Something that occurred to me as undoable in the beginning turned out to be one of the biggest learnings. Previously, I always imagined myself to be very structured while doing the thesis. Starting with the theory that informs the analysis, which then goes into the design phase. But in reality it was completely different, and sitting here now I can say: luckily.

Each phase continuously informed and reshaped the others. The theoretical framework did not simply precede the analysis but was more refined through the process of applying it to the specific conditions of the site itself. The design proposal did not simply follow from the analysis: They both tested, challenged, and in some cases revised the analytical assumptions that had generated them. This relationship between knowing and testing is characteristic of research-by-design methodologies and proved to be one of the most productive aspects of the working process (Cross, 2011; Groat & Wang, 2013).

The design itself functioned as a research method in a very direct sense. Through continuous evaluation against the set of spatial criteria, feedback gathered through walking interviews and repeated site visits that grounded abstract ideas in the physical reality of the place. Thus, the design developed not as a top-down application of theory but as a responsive and contextually embedded spatial proposition. Each iteration of the design revealed something new about the site. This might be a spatial relationship that had been overlooked, a programmatic tension that needed resolving, or an ecological opportunity that had not been initially recognized.

Such a simultaneous approach to research and design helped the project to gain credibility and intellectual rigor. The proposed interventions do not rely solely on spatial intuition but are substantiated by a clear chain of reasoning that connects the health challenges identified in the problematization to the theoretical framework selected in response, followed by the formation of spatial criteria derived from those frameworks, to the design decisions made on the basis of both. This transparency of reasoning is important not only for the academic credibility of the thesis but also for its practical utility. Through this approach the methodology can be understood, evaluated, and adapted by others working in comparable contexts.

Reflection on the Outcome

Value

The primary value of this thesis directly lies in its attempt to close a gap in the existing research literature. By treating the three dimensions of digitalization, human health, and the design of urban space not as separate concerns belonging to different disciplines but as interdependent aspects of a single spatial problem, the thesis offers a framework for rethinking urban design. This project aims to encourage future urbanists to engage with the health dimensions of digital culture as a spatial and design question rather than purely a medical or technological one (Frumkin et al., 2017; OECD, 2019).

Besides, as stated above (see implications), this project also carries a clear ethical argument about spatial equity. Where one lives should never determine the quality of the environment in which one recovers, moves, connects, and finds calm. This thesis demonstrates that this does not have to be the case.

On a more personal level, this thesis is animated by a deep and honestly felt conviction that health is not a luxury. It is the most fundamental dimension of a "good" life. We wish each other health at the new year. We say that health comes always first. We know, intuitively, that no professional achievement, no financial security, and no aesthetic ambition compensates for the absence of physical and psychological well-being. And yet the cities and neighborhoods we design are still largely shaped by economic, infrastructural, and efficiency-driven logics that treat health as a secondary concern: As something to be addressed by institutions and medical systems rather than by the streets, parks, squares, and courtyards in which everyday life actually unfolds. This thesis is, in part, an argument that this needs to change. The spaces we inhabit shape who we are and how we feel in ways that are profound and continuous. Designing those spaces with genuine care for the health and well-being of the people who use them is one of the greatest things an urban designer can do (Gehl, 2010; Marcus & Sachs, 2014).

Limitations and Possible Next Steps

Every piece of research has limits, and it is important to name them honestly. The most significant limitation of this thesis is the one inherent to all graduation projects undertaken within a defined timeframe: the breadth of the research topic meant that certain dimensions could not be explored with the depth they deserved. The design proposal remains at the level of a strategic master plan rather than a fully resolved neighborhood design. A more detailed development of specific building typologies, material strategies, or phasing mechanisms would be a natural and valuable next step.

Additionally, it would also have been particularly valuable to conduct real-life design testing with spatial interventions on the site and measure their actual impact on resident behavior, movement patterns, and subjective well-being. Methods such as physiological stress monitoring through cortisol measurements or heart rate tracking during guided urban walks would have added a layer of empirical precision to the experiential findings gathered through interviews and observations, thus providing a more direct and measurable link between specific spatial conditions and health outcomes. The absence of these methods is not a failure of intent but a limitation of resources and time, which points toward a richer and more rigorous research program that could build meaningfully on the foundations laid here.

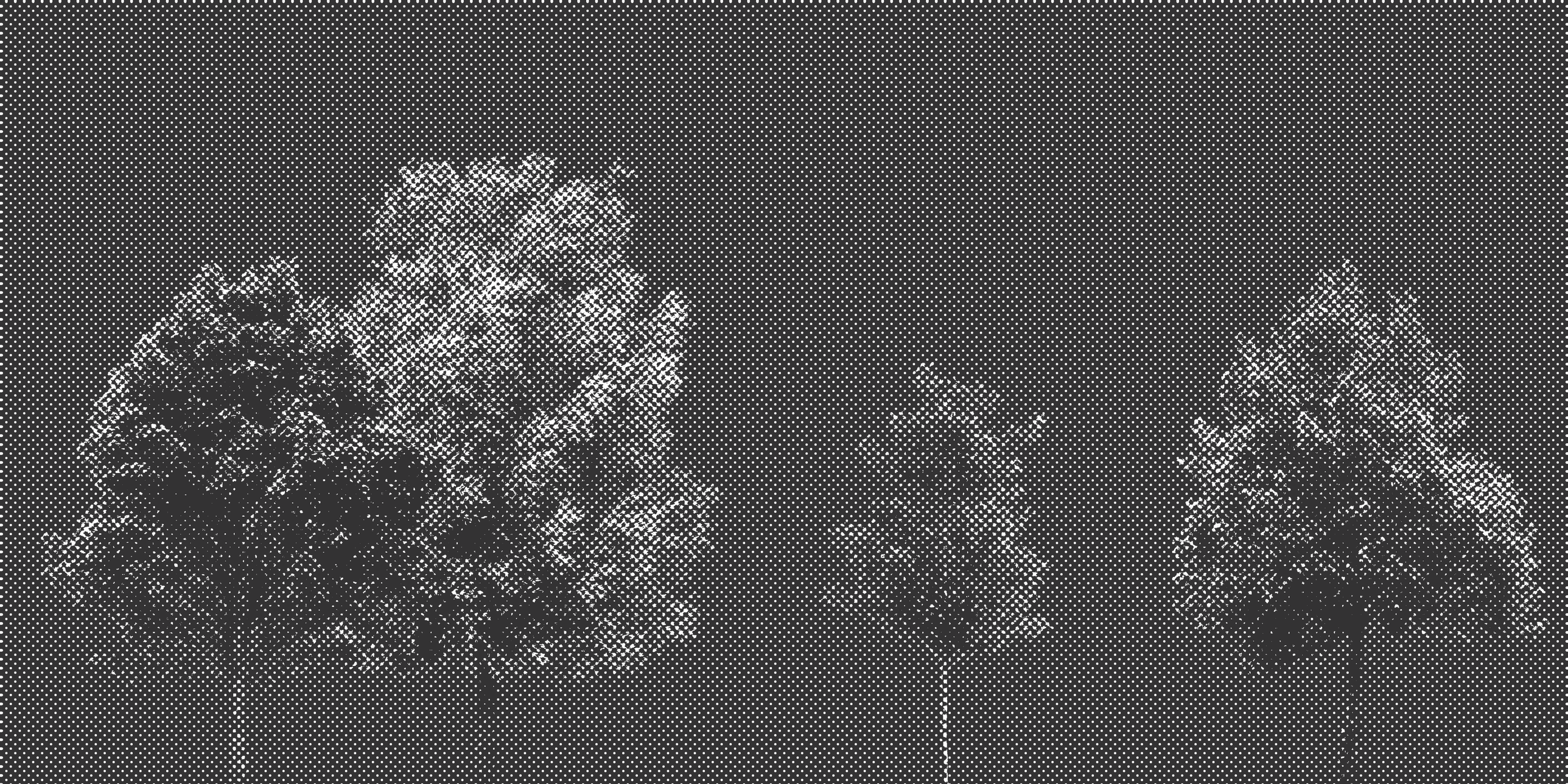
Moreover, as someone who is not a long-term resident of Refshaleøen, there are also inherent limitations to the depth of understanding that can be achieved of the lived experience of the site. The relationship between the outside researcher and local knowledge is always one of approximation rather than identity, and no amount of site visits, interviews, or spatial analysis can fully substitute for the embodied, accumulated knowledge of someone who has inhabited a place over time. To mitigate this, numerous conversations with local stakeholders were woven throughout the research process, but this limitation should still be acknowledged.

Finally, the interdisciplinary nature of the topic meant that the existing literature was, at times, insufficient to fully support the specific argument being made. The individual threads of the research are each well-researched in isolation, but their intersection as a unified spatial problem remains a relatively underdeveloped field. This is simultaneously the thesis's most significant limitation and its most important contribution: the gap that made the research challenging is precisely the gap that makes it valuable. To conclude, this project seeks to contribute to closing that gap.

Back Matter

Part 5





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AI Statement

Artificial intelligence (AI) tools were used in a limited and supportive capacity during the development of this graduation project. AI-generated imagery was employed only for the production of selected visualisations and atmospheric perspectives intended to support the communication of the design proposal (see Appendix).

All conceptual development, spatial strategies, technical decisions, analytical work, and final design choices were carried out by the author. The use of AI did not replace independent design work or critical reflection.

The extent and nature of AI use were discussed with the graduation supervisors and are transparently acknowledged here in accordance with academic integrity principles.

Appendix





01. Data Management Checklist

02. Products A1

03. Products A2

04. Interview Guide

05. Walking Interview 1

06. Walking Interview 2

07. Walking Interview 3

08. Perspectives

Appendix

DATA MANAGEMENT CHECKLIST

Instruction

This checklist is relevant for all graduation projects of the Master AUBS. The form is intended to highlight common aspects of graduation projects that require particular attention with regard to planning the research and data management. Relevant information and supplementary sources regarding each question are provided below each question.

With this checklist, the faculty wants to avoid that students unexpectedly find themselves in complex and stressful situations, in which ethical or privacy matters and/or other laws and regulations become an issue. In projects involving humans, certain types of data processing increase the risks to the human participants: planning such projects requires additional evaluations and advice from university staff before ethical approval can be received and the project can begin. In the case of a graduation project, obtaining additional advice or permits may delay the project with an extra education period or semester. To avoid this, it is recommended that students set up a graduation project with a low level of risk. Therefore, all students have to check their risk, by completing this checklist before their A1.

The first section of the checklist (A) should be completed by all students, together with their supervisor, during the planning of the graduation project, before the A1. It does not need to be submitted to anyone for review or approval. Please consider questions 1 to 3 carefully in relation to the intended graduation project, and answer with ‘yes’ or ‘no’.

The second section of the checklist (B) should only be completed if the graduation project involves working with data from human participants. In that case, the student and their supervisor must apply for and receive ethical approval from the Human Research Ethics Committee (HREC) before the project can begin (see the paragraph ‘Explanation and follow-up’ after the questions). The student can submit the application to the HREC, but the supervisor is responsible for making sure that the project is compliant with relevant privacy regulations and ethical policies.

Section A. General considerations	yes	no
1. Is the graduation project conducted as part of an internship (at a company), or as part of a research project at TU Delft? If a student’s graduation project is conducted at a company or as part of a research project at the university, questions of data ownership and intellectual property rights need to be addressed in a written graduation or internship agreement before the project begins. Students and their supervisor should consult the Intellectual Property Rights of Students webpage. Additional information can also be found in the Extended Personal Research Data Workflow.		✓
2. Does the project involve conducting (part of) the research outside the Netherlands? Students who intend to travel abroad (even to other EU countries) for study, exchange, research, internship, or graduation project purposes need to follow the Travel Safety Protocol. This includes attending a mandatory Travel Safety Training Session: see the Disclaimer.	✓	
3. Will the research involve processing data from humans, such as running a survey, conducting interviews or workshops, collecting data through social media or internet forums, or re-using existing datasets about humans provided by a third party? (If ‘yes’, see follow-up questions 4 to 13 in Checklist B.) Students who work with data from human participants must complete the next section and apply for and receive ethical approval from the Human Research Ethics Committee (HREC) before conducting the research.	✓	

Section B. Extended risk factors (only if question 3 has been answered with 'yes'.)	yes	no
4. Will the project involve participants who may be considered vulnerable, such as the elderly, refugees or asylum seekers, ethnic minorities, patients, or people with disabilities? Participants who may suffer very adverse consequences (for instance, due to discrimination) if their personal data became publicly available can be considered vulnerable.		✓
5. Will the project involve participants who cannot themselves give informed consent for taking part in the project, but for whom consent must be obtained from a legal guardian? Participants who cannot give informed consent can include, for instance, children or participants with intellectual disabilities, mental disorders, or dementia. Such participants are also considered vulnerable in the context of the General Data Protection Regulation (GDPR).		✓
6. Will the project involve processing any of the special categories of personal data below? - Race - Ethnicity - Criminal offence data - Political opinion - Union membership - Religious or philosophical beliefs - Sex life and/or sexual orientation - Health data (including measurements such as heart rate) - Biometric or genetic data (including fingerprints, iris scanning, facial recognition) The General Data Protection Regulation (GDPR) defines a stricter rules for processing special categories of personal data. If it is necessary to process these data in a project, it is it is important to provide additional safeguards.		✓
7. Will the project involve processing personal data that could be considered sensitive, such as the ones listed below? - Information about a person's income, debts, or other payments - Information about a person's (un-)employment status - Information about a person's performance at school or work - Information about relationship problems or (gambling) addiction - Information about poverty, domestic violence, or youth welfare/social work involvement Some types of personal data are considered sensitive, because they can have a high impact on the privacy of the data subject if other persons gain access to these data. Sensitive personal data should only be processed if necessary: in such cases, additional safeguards need to be put in place.		✓
8. Will the project involve processing video-recordings, or photographs of participants? TU Delft considers photographic and video-materials of research participants to be sensitive personal data. If such data need to be processed, additional safeguards must be put in place.		✓

Section B. Extended risk factors (only if question 3 has been answered with 'yes'.)	yes	no
9. Will the project involve sharing or transferring personal data between multiple partners or collaborating organisations involved, such as between TU Delft and an internship company? According to privacy law, sharing personal data between organisations requires a privacy agreement to be in place: setting this up takes time, and requires support from additional university staff. Furthermore, personal data sharing can potentially expose research participants to different types of risks: these risks must be considered in the ethical application.		✓
10. Will the project involve deception, or covert observation of participants? In some types of research, obtaining informed consent for processing participants' personal data is not an option: for instance, if the research involves deception, or the research is covert (conducted without participants knowing about it). In such situations, the steps to mitigate risks to participants are important, and an alternative legal basis for processing the participant's data needs to be established with the help of additional support staff.		✓
11. Will the project involve working with social media data? Social media data are personal data, but since it is usually not possible to ask for informed consent for processing social media data, another legal basis for processing the participant's data needs to be established. Processing of social media data also involves legal considerations related to terms of use of data from third-party platforms: therefore, research with social media data requires expert support on privacy, ethics, and legal matters.		✓
12. Will the project involve using learning algorithms or other AI to analyse, combine, or otherwise process data from participants? The use of AI in research involves many considerations in terms of data protection, ethics, security, and intellectual property: for more information, see TU Delft's Instructions for use of Generative AI.		✓
13. Will the project involve participants who are based in a country or countries outside of the EU? Students affiliated with TU Delft must comply with Dutch and EU regulations of personal data processing (GDPR). Furthermore, the student and their supervisor must make sure that the research complies with local (privacy) legislations of any foreign destinations. Additional support from an external (local) expert may be required.		✓

Explanation and follow-up

If you have answered 'no' to all questions 4 to 13, your project is likely to be considered low or minimal-risk: see the paragraph 'Projects with minimal or low-risk' on the next page.

If you have answered 'yes' to one or more of the questions 4 to 13, your research likely involves extended or high risks to participants, according to the General Data Protection Regulation (GDPR) and TU Delft's privacy and ethical policies: for information regarding such projects, see the paragraph 'Projects with extended or high-risk' on the next pages.

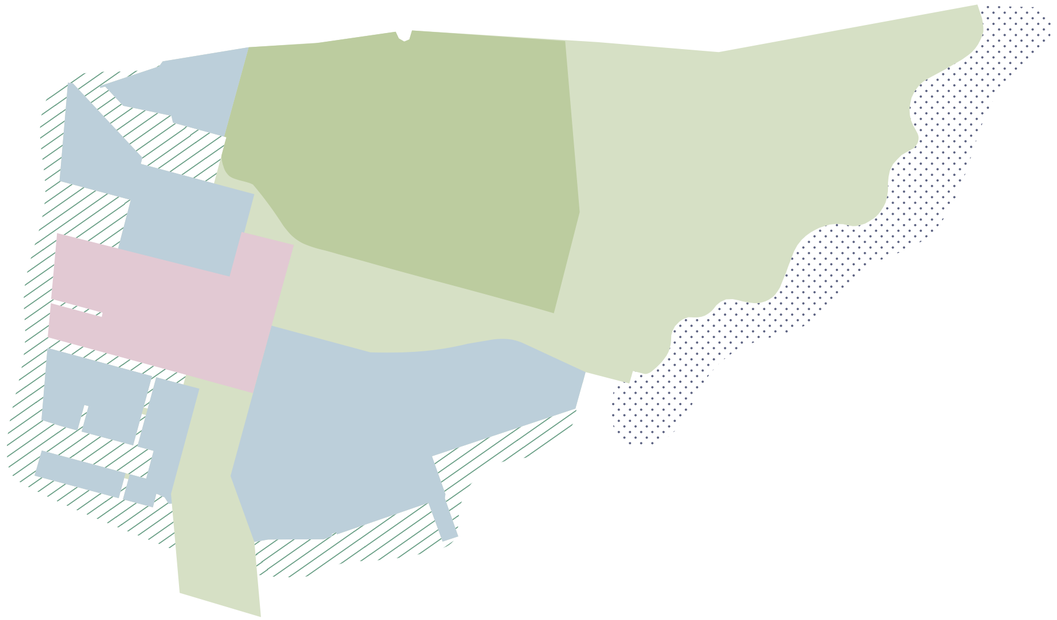
Design Idea - Surrounding Area



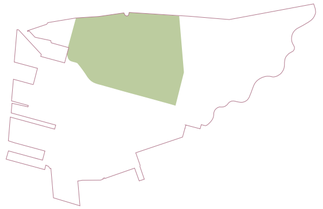
Design Idea - Site Area



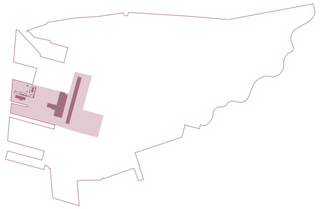
Zoning



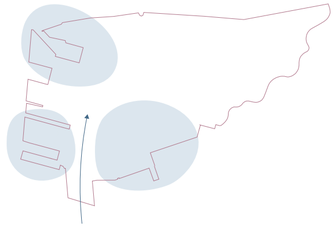
BIOFOS Area



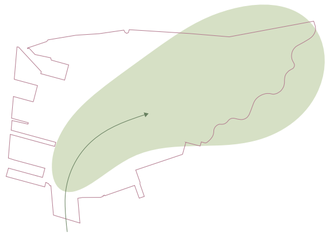
Active Area & Cultural Heritage



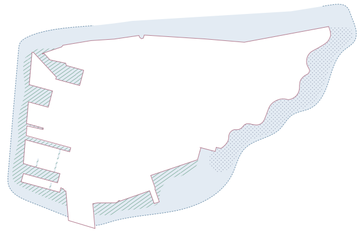
Residential Development



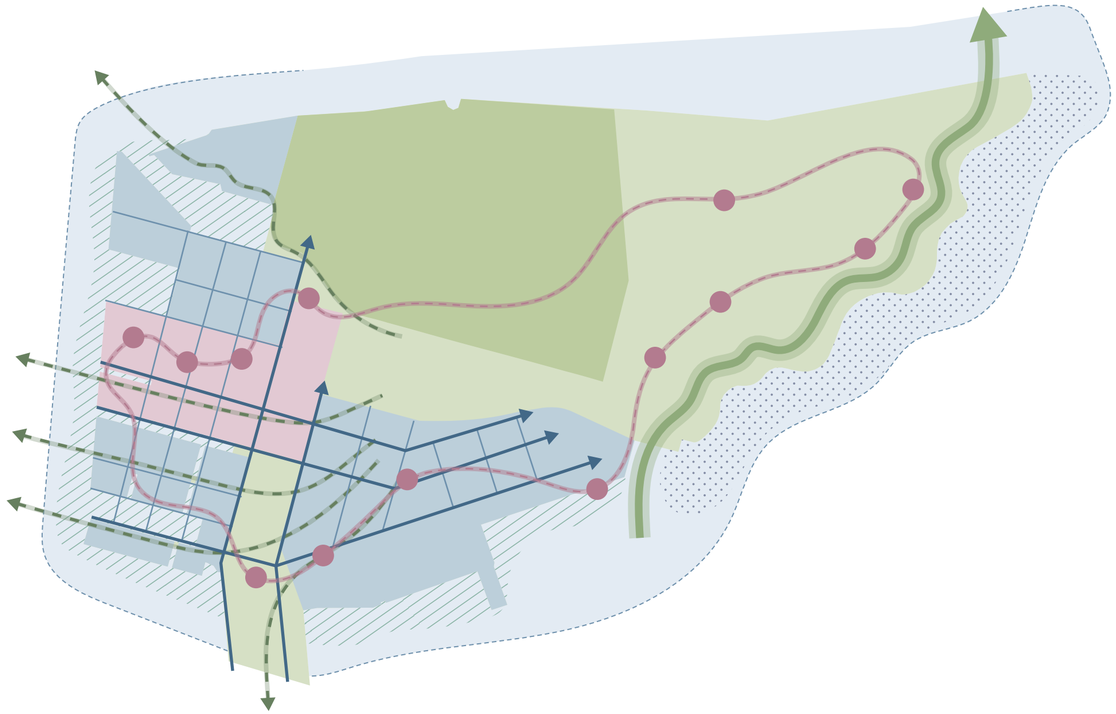
Green Structure



Blue Structure

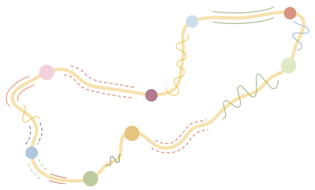


Future of 2050+



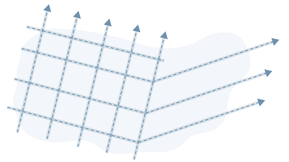
The visual presents a comprehensive overlay of all design principles applied within a preliminary design idea plan. It depicts a forward-looking scenario for the area in 2050+, aiming to provide ample spatial flexibility to accommodate necessary transformations, including potential restructuring of the BIOFOS site. By integrating principles such as human scale, connectivity, mixed use, public space hierarchy, green infrastructure, and active frontages, the plan translates analytical insights into spatial strategies that address both current weaknesses and latent potentials. Social, restorative, and cultural elements are embedded to support everyday use, well-being, and a strong sense of belonging. The layered approach demonstrates how different design interventions can coexist and reinforce one another, ensuring adaptability for long-term urban, functional, and ecological changes while preserving and enhancing the area's unique character and vibrancy. This scenario exemplifies how strategic design can guide the evolution of the site toward a resilient, inclusive, and identity-rich future.

Pearl Necklace



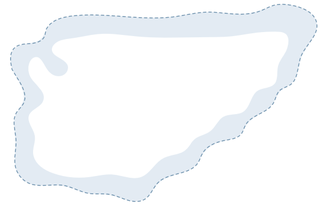
The "Pearl Necklace" principle emphasizes the distribution of key cultural, social, and active points throughout the quarter. By strategically placing recognizable destinations, the design strengthens local identity, supports spatial orientation, and encourages continuous activation across the area. These "pearls" act as nodes of interaction, gathering, and cultural expression.

Unplugged Network



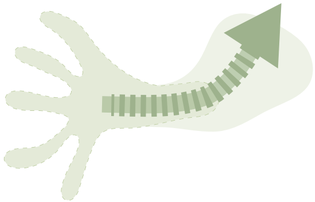
The "Unplugged Network" principle focuses on creating a clear and legible street and path structure. By simplifying routes, enhancing wayfinding, and establishing intuitive spatial hierarchies, it ensures easy orientation and seamless movement for pedestrians, cyclists, and all users. The principle prioritizes clarity, connectivity, and user comfort within the urban fabric.

Blue Hug



The "Blue Hug" principle seeks to embrace the waterfront fully, activating it through diverse uses and character zones. By integrating leisure, recreation, and restorative experiences along the water's edge, the design connects people with the natural environment while creating varied spatial atmospheres that enrich everyday experience.

Fingerplanen 3.0



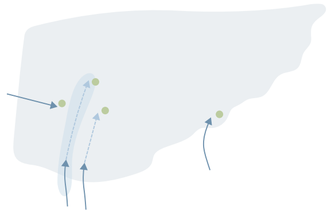
"Fingerplanen 3.0" introduces an extensive green network that extends throughout the quarter. This structure combines programmed and unprogrammed spaces - gardens, parks, play areas, and open greenery - creating ecological continuity, visual relief, and opportunities for social and restorative activities at multiple scales.

Gate to Calmness



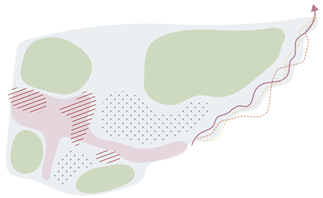
The "Gate to Calmness" principle envisions a bike and pedestrian pathway along the waterfront that transitions from active urban areas to tranquil, natural zones. It offers experiential journeys through water-edge exploration and deeper natural landscapes, fostering connection to nature and providing restorative experiences within the urban environment.

Entrances & Landmarks



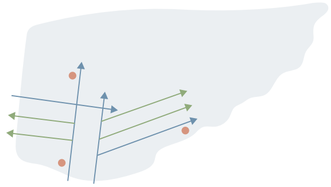
New entrances are introduced throughout the quarter, with only the existing main entrance accessible by car. All other points are dedicated to pedestrians and cyclists. Each entrance is aligned with a landmark to attract people and guide them into the area.

Activity & Calmness



Active and calm zones are distributed across the quarter. The eastern part, featuring the "Gate to Calmness," becomes progressively restorative, while the old heritage center remains a particularly active focal point.

Street Character

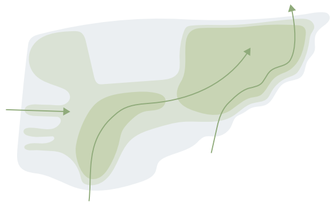


The street network is clearly structured and adapted to the site, with mobility hubs distributed throughout the quarter to ensure strong connectivity and efficient circulation.

Residential Aspects

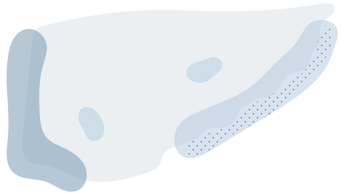
Residential areas are spread across the quarter, each with unique characteristics tailored to its location and surrounding atmosphere, creating diverse living experiences.

Green Structure



Green networks extend throughout the quarter, with immediate greenery at all entrances to connect users to nature. These spaces guide movement from active areas into calmer, restorative zones.

Blue Structure



The waterfront is designed for active and exploratory use. In the western part, it supports activities such as swimming and sports, while in the eastern part it emphasizes exploration and visual connection via elevated paths and viewpoints.

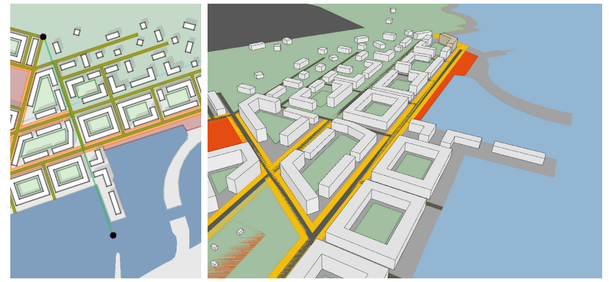
Masterplan - Scale 1:10.000

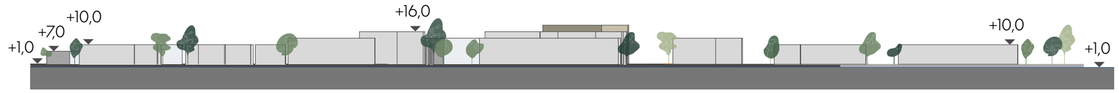


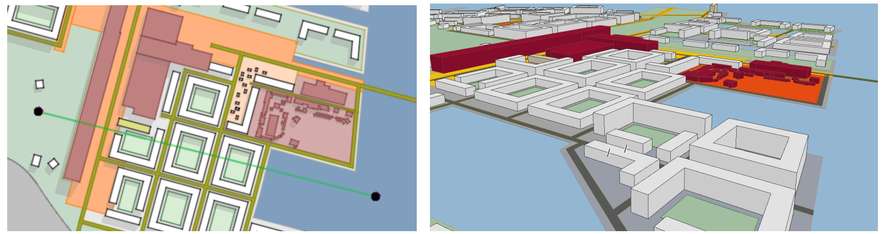
Bird View - 3D Model



Sections - 3D Model









04. Interview Guide

Research Introduction

This research explores how people from diverse age groups, cultural backgrounds, and social contexts perceive and experience urban space, with a particular focus on spatial configuration, atmosphere, and well-being. Using walking interviews as a qualitative method, the study investigates how everyday environments influence emotions, stress levels, and perceived health - especially in relation to contemporary digital media consumption.

The research takes Reffen as a primary case study and compares it to selected urban districts within Copenhagen. By moving through different spatial settings together with participants, the study aims to understand how physical environments, social dynamics, and sensory impressions interact with individual routines, digital habits, and mental states.

1. Warm-Up & Personal Context (Site)

- Can you tell me a bit about yourself and your everyday life?
- How would you describe your current living situation and daily routine?
- How often do you spend time in public or semi-public urban spaces?
- What role does Reffen play in your everyday life, if any?

2. First Impressions & Spatial Perception (Site)

- What is your first impression when entering Reffen?
- How does this place make you feel physically and emotionally?
- If you had to describe Reffen in one word, what would it be?
- What kind of atmosphere does this place radiate for you?
- Do you feel more energized, relaxed, overstimulated, or indifferent here?
- Would you like to live here? Why or why not?

3. Spatial Configuration & Sensory Experience

- How do you perceive the openness, scale, and layout of this space?
- How do sound, smells, movement, and visual elements affect your experience?
- Are there specific spots here that you find calming or stressful?
- Where do you feel comfortable lingering - and where not?
- What materials, colors, or spatial features stand out to you?

4. Digital Media, Stress, and Well-Being

- How would you describe your daily digital media consumption?
- Do you feel that digital media affects your stress levels, mood, or attention?
- When being in Reffen, do you feel more or less connected to your phone?
- Does this space encourage presence and awareness, or distraction?
- Do you think the spatial setup of Reffen counteracts digital overload? If yes, how?

5. Evaluation of Site

- What do you appreciate most about Reffen?
- What bothers you or feels missing?
- Do you feel included or excluded here? Why?
- Who do you think this space is designed for?
- How could Reffen be improved to support well-being and calmness?

6. Transition to Other Urban Areas (Copenhagen)

- How does your body feel as we move away from Reffen?
- Do you notice changes in your mood, breathing, or attention?
- What immediately feels different in this area compared to Reffen?

7. Comparative Walking Interview (Other Districts)

- How would you describe the spatial configuration here?
- How does this place make you feel compared to Reffen?
- What feels better here? What feels worse?
- Do you feel more stressed or calmer - and why?
- How does movement, density, or traffic affect your experience?
- Do you feel observed, anonymous, safe, or pressured here?

8. Stressors & Calming Elements

- Are there specific elements here that you find stressful?
- Are there elements that make you feel calm or grounded?
- Would you like to take photos of anything that feels particularly stressful or relaxing?
- What role do greenery, water, openness, or social activity play for you?

9. Reflection & Imagination

- If you could combine elements from Reffen and this area, what would that look like?
- What kind of urban space would best support your mental well-being?
- What do you personally need from a place to feel at ease?

10. Closing Question

- How would you summarize the difference between these places in one sentence?
- Is there anything you noticed during the walk that surprised you?

05. Walking Interview 1

Mads, 31, Young Professional

Walking Interview conducted at Reffen Food Market and Østerbro

Warm-Up & Personal Context

„I work in digital marketing - mostly from home, which is both a blessing and a curse. I live in Østerbro, have done for about three years now, and honestly I love the neighborhood. It has everything within walking distance - the bakery, the supermarket, friends nearby. But the working from home thing... it means some days I don't leave the flat until well into the afternoon. There's no commute forcing me out the door anymore. I have to consciously decide to go outside, and some days that feels like a lot of effort."

He pauses, looks around as we approach Reffen.

„I come here maybe once or twice a month. Usually for a specific reason - there's a vendor I like, or friends suggest it. But I wouldn't say I come here to spend time. I come here to eat something and then I leave."

First Impressions & Spatial Perception

„Raw. That's the word. The first time I came here I didn't know what to expect - and then you arrive and it's just... big. Industrial. Open in a way that feels both exciting and slightly overwhelming. I like it, but it also doesn't quite invite you to slow down. It's a destination, not a place to hang around."

He looks out toward the water.

„Physically it feels good to be by the water. There's something about that. But emotionally it's a bit ambiguous for me. It feels lively, but not in a way that makes me want to stay. More like a festival than a neighborhood."

Would you like to live here?

„No. Not as it is. There's nothing around it that would make daily life work. No supermarket, no café where you'd go every morning and recognize faces. The cultural stuff is great, but culture alone doesn't make a place liveable. You need the ordinary things too."

Spatial Configuration & Sensory Experience

„The scale is the main thing. Everything here is designed for something bigger than a person - the buildings, the distances between things. It's not hostile exactly, but it's not welcoming either. You feel small in a way that isn't particularly comfortable."

He gestures toward the industrial structures.

„The smell of the food, the sounds of people - that's nice. But as soon as you step away from the market itself, it gets very quiet and very empty very quickly. And that contrast is a bit unsettling. Where's the transition? Where's the bit in between that says ‚you can be here too'?"

Digital Media, Stress, and Well-Being

„I'm on my phone a lot. More than I'd like to admit. Mostly work - Slack, emails - but also just scrolling. It's become a habit I'm not entirely comfortable with. I notice it affects my concentration. I'll sit down to work and within twenty minutes I've checked my phone four times without even thinking about it."

Does Reffen change that?

„A little, yeah. Being outside, with the water and the noise and things moving around you - it pulls you out of your head. But I think it works despite the spatial setup, not because of it. It's not like the space is designed to make you put your phone down. It just happens because there's enough sensory input to compete."

Evaluation of Site

„What I appreciate most is the energy and the fact that it's unlike anywhere else in Copenhagen. It has a genuine identity. But what's missing is the everyday. There's nothing here for a Tuesday morning. No reason to come unless something is happening."

Do you feel included here?

„Mostly yes, but it feels like it's designed for a certain type - young, adventurous, a bit alternative. I fit that profile, so it works for me. But I wouldn't bring my parents here and expect them to feel at ease."

Transition & Comparative Walking

As we move from Reffen toward Østerbro, Mads visibly relaxes.

„You feel it immediately, don't you? The streets are smaller. There are trees. People are walking dogs, pushing prams. It just feels... inhabited. Like people actually live here rather than visit."

He takes a breath.

„My shoulders drop a bit, I think. I didn't realize they were tense."

What feels better here?

„The scale. The fact that there are windows with lights on inside. Active shop fronts. You feel like the street was designed for you, not for a lorry. And there's greenery everywhere - little gardens, trees along the pavement. It makes a real difference."

What's missing?

„Nature. Proper nature. I grew up in Jutland - you could just walk out the door and be in a field or a forest. Copenhagen doesn't have that. Østerbro is lovely, but it's still very urban. Sometimes I really miss being somewhere genuinely wild. Even just a bigger park, something that doesn't feel completely managed."

Reflection & Imagination

„If I could combine the two - take the energy and identity of Reffen and put it in a neighborhood with Østerbro's liveability and human scale - that would be something special. Add some actual nature near the water, make it possible to live there normally, and you'd have one of the best neighborhoods in the city."

Closing

„Reffen feels like a party that hasn't decided yet whether it wants to become a home. Østerbro already made that decision a long time ago."

06. Walking Interview 2

Elena, 24, International Student

Walking Interview conducted at Reffen Food Market and surrounding area

Warm-Up & Personal Context

„I'm from Valencia originally - I came to Copenhagen for my master's in architecture. I've been here about eight months now. I live in one of the container apartments on the site, which is... an experience."

She laughs, but there's a slight edge to it.

„It made financial sense on paper. Renting in the city is honestly impossible if you're a student - I was looking at rooms in Nørrebro or Vesterbro and the prices were just completely out of reach. So the container housing felt like a compromise. You get your own space, it's not a shared flat - but it's also quite small, quite basic, and for what you pay, you'd expect a bit more. It's not cheap, which is the irony."

How does daily life work here?

„It's functional but inconvenient. I have to plan everything in advance. If I run out of milk I can't just pop to the shop - the nearest one is a real journey. I cycle into the city most days for university, which I actually love, but coming home in the evening, especially in winter... it feels very isolated. Very dark. The walk from the bus stop to the containers - there's nothing. No lights, no people, nothing open. It doesn't feel safe, honestly."

First Impressions & Spatial Perception

„When I first came here I thought it was incredibly cool. The industrial buildings, the water, the rawness of it - as an architecture student I found it fascinating. But fascinating and liveable are very different things. After a few weeks, the novelty wore off and I started noticing all the things that aren't there."

One word for Reffen?

„Potential. It has so much potential. But potential is only exciting for so long before it starts to feel like an excuse."

Does it feel energizing or relaxing?

„Energizing when it's busy - when there are people around, food smells, music. But those moments are specific. On a grey Tuesday in November there's basically nobody here, and then it just feels bleak. The space doesn't work without the people. It has no intrinsic quality that makes you want to be here when it's empty."

Spatial Configuration & Sensory Experience

„The scale is very challenging. Everything is too big - the distances, the buildings, the open areas. There's no sense of enclosure, no intimate corners. As someone who has studied architecture, I understand why that happens on post-industrial sites, but understanding it intellectually doesn't make it less uncomfortable to experience."

She stops near the edge of the water.

„This is the one place I come to decompress. Right here, by the water. It's the only spot on the site that feels genuinely calming. I sit here sometimes after studying and it helps. But one good spot doesn't make a neighborhood."

Digital Media, Stress, and Well-Being

„University is very intense - lots of screen time, lots of deadlines, a lot of pressure to perform. I feel the stress of it constantly. My sleep is not great. I spend too much time on my phone at night, which I know makes it worse."

Does Reffen counteract that?

„When it's active, yes - being around people and food and energy pulls me out of my head. But what I really need and don't have here is nature. A park, trees, somewhere green I can walk through without thinking about anything. Valencia has a huge river park running through the city - you can just walk or run along it for kilometers. Nothing like that exists here for me. The waterfront is nice but it's not accessible in the way it should be. There are fences everywhere. It feels like you're being kept out of the best part of the site."

Evaluation of Site

„I appreciate the cultural identity. I love that Reffen exists - it's genuinely one of the coolest food markets in Europe. But the area around it doesn't support the people who actually live here. It's as if the site was developed as an event space that then accidentally got residents, rather than the other way around."

Do you feel included?

„As a young creative person, yes, mostly. But as a woman walking home alone at night? No. The lack of lighting, the emptiness, the fences - it feels unwelcoming and sometimes genuinely scary. That's not something I should have to think about walking home."

Reflection & Imagination

„I would love for this place to have what the rest of Copenhagen has - a supermarket, a café that's open every morning, a small park, safe cycling routes that feel like someone thought about them. And I'd love the waterfront to actually be accessible. Imagine being able to swim here in summer, or just sit and watch the harbor. That would change everything."

Closing

„Living here feels like being promised something that hasn't been delivered yet. The ingredients are all here - the water, the space, the character. It just hasn't been put together in a way that actually works for the people who live here."

Ole, 68, Retired Architect

Walking Interview conducted in Sydhavn

Warm-Up & Personal Context

„My wife and I moved to Sydhavn about six years ago now, after I retired. We'd been in Frederiksberg for most of our lives - lovely neighborhood, but very urban, very dense. When the children left home we thought, why not try something different? We wanted to be near the water."

He smiles.

„I worked as an architect for over thirty years - mostly residential projects, some larger masterplan work. So I look at neighborhoods differently than most people, I think. I notice the things that don't work. But I also notice when something is done very well. And Sydhavn, for all its imperfections, is done quite well."

How often do you use public spaces?

„Every day, without exception. A morning walk along the harbor, often a longer walk in the afternoon. My wife and I have coffee outside whenever the weather allows it. At my age, being outside and moving is not something you take for granted - it's something you make a conscious effort to do. And a good neighborhood makes that effort much easier."

First Impressions & Spatial Perception

We walk along the waterfront promenade.

„When I come here I feel calm. That's the first word - calm. The water does something to you that I don't think we fully understand scientifically, but you feel it physically. The breathing slows down. The thoughts stop racing."

Do you remember what it was like before the transformation?

„Very well. It was industrial - cranes, warehouses, working harbor. Not particularly welcoming. But what they've done well is keep a sense of that history. The materials, the scale of some of the retained structures, the way the water is still very present and very central. It doesn't feel like it was invented from nothing. It feels like it evolved - which is the best thing you can say about a neighborhood."

Spatial Configuration & Sensory Experience

„What works here is the scale. The buildings are tall enough to give enclosure and shelter from the wind, but not so tall that you feel oppressed. The relationship between the buildings and the water is very carefully handled - you always have views, always have a sense of the harbor being present even when you're not directly on the waterfront."

He pauses to look across to a residential building with balconies facing the water.

„Those balconies are important. People are out on them - you can see it even now. They're using them, not just having them as a feature. That means the orientation is right, the depth is right, the acoustic conditions are manageable. These things matter enormously and they're very easy to get wrong."

Digital Media, Stress, and Well-Being

„I retired partly because I felt that the pace of contemporary work - even in architecture, which I love - had become unsustainable. The constant availability, the emails at all hours, the expectation that you are always reachable. It was corrosive. And I think that's only gotten worse for the generation behind me."

Does this environment help?

„Absolutely. There is something about a place that has physical beauty and proximity to nature that makes the phone feel less urgent. When I'm walking here I genuinely don't think about it. The environment gives you enough to engage with that the device becomes irrelevant for a while. That's not a small thing."

Evaluation of Site

„What I appreciate most is the combination of calm and activity. There are places to sit quietly and watch the water, but there are also playgrounds, a café, a small square where people gather. The neighborhood doesn't force you to choose between one or the other - it offers both, in appropriate proportion."

What's missing?

„More mature trees. The planting is still young - in ten or fifteen years it will be very different, much more sheltered and verdant. But right now on a windy day it can feel quite exposed. And I think the transition between the more active areas and the quieter residential parts could be more clearly defined. There are moments where the spatial logic is a little ambiguous."

Comparative Reflection

We discuss Reffen in relation to Sydhavn.

„Reffen has enormous potential and I enjoy visiting it. But it lacks precisely what Sydhavn has managed to develop - a sense of daily life. You need the ordinary alongside the extraordinary. You need the place to work on a Wednesday morning in April, not just on a Saturday afternoon in July."

What makes Sydhavn work for someone at your stage of life?

„The accessibility. Everything is flat, well-paved, well-lit. The distances are manageable. There are places to sit at regular intervals - which sounds trivial but is actually very important when you're older. And the water is always there. Always. That constancy is very grounding."

Reflection & Imagination

„If I were designing Refshaleøen today - and I have thought about it, as an architect you can't help it - I would start from the water. Make the waterfront the spine of everything. Then build the neighborhood inward from there, making sure that the connection to the water is never lost, never blocked, never treated as secondary. And I would insist on keeping the industrial character - the materials, the scale, the memory of what happened there. That is what gives a place its soul."

Closing

„Sydhavn feels like it was designed with the inhabitant in mind. Reffen feels like it was designed with the visitor in mind. The best neighborhoods are the ones that manage to be both - and that is the challenge."

AI generated Perspectives

Entrance Area - Gate to Calmness



Open AI, 2026

Waterfront



Open AI, 2026

AI generated Perspectives

Green Street



Open AI, 2026

Residential Courtyard



Open AI, 2026

AI generated Perspectives

Makers District



Open AI, 2026

Deep Nature Part



Open AI, 2026

AI generated Perspectives

Rewilded BIOFOS Tanks - Bird View



Open AI, 2026

Rewilded BIOFOS Tanks - Eye-Level



Open AI, 2026