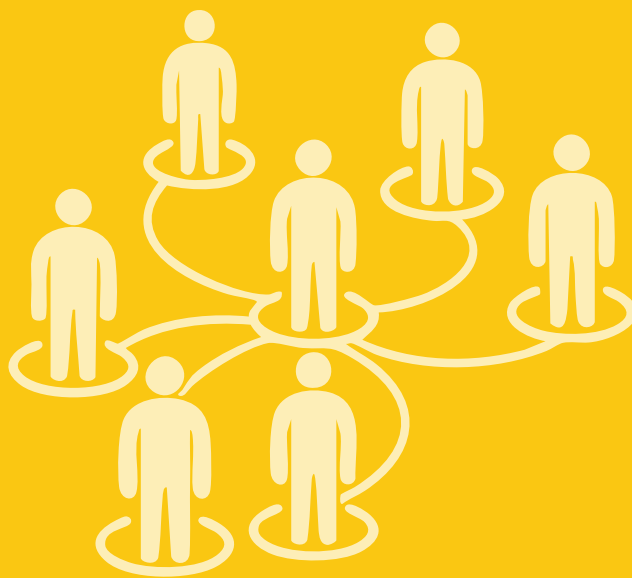


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# SPACES OF BELONGING

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INTERGENERATIONAL COMMUNAL SPACES  
TO ALLEVIATE URBAN LONELINESS, A STUDY



## **Research Report**

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MSc Dwelling Graduation Studio

Designing for Health & Care in an Inclusive Environment

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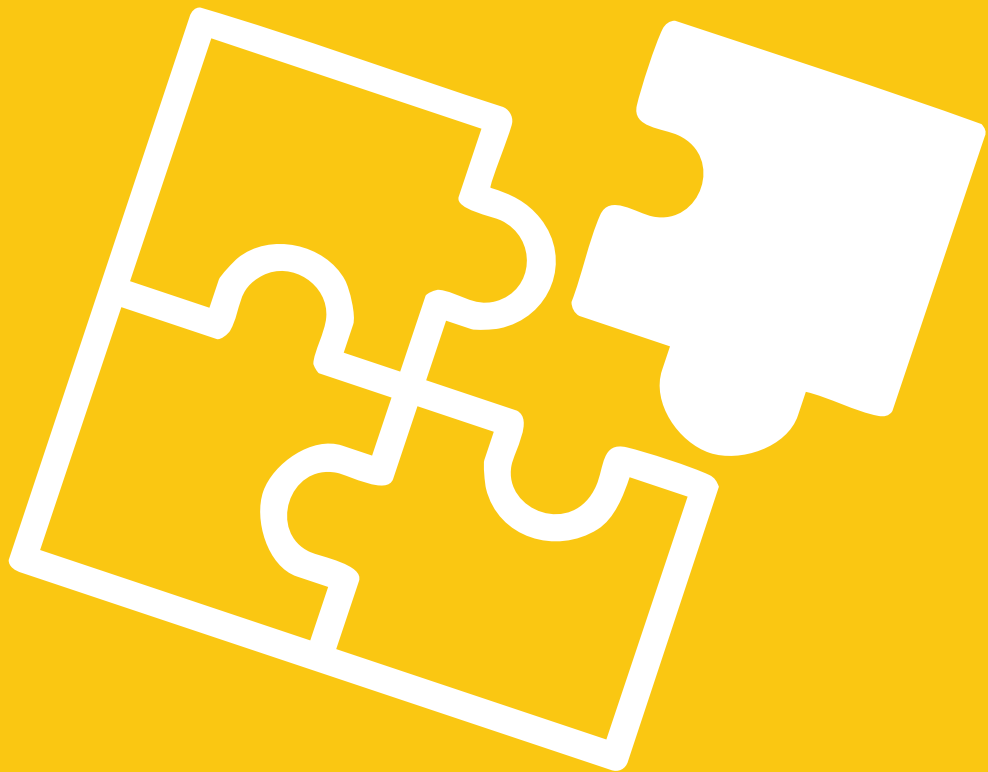
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# PROBLEM STATEMENT & RELEVANCE



# CHAPTER 01

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# PROBLEM STATEMENT & RELEVANCE

## INTRODUCTION

The assignment for the graduation studio Dwell-ing Designing for Health and Care focuses on designing a health- or care-related building that promotes an inclusive and supportive living environment for the lonely in society. Tarwewijk, an urban neighborhood in Rotterdam South, serves as the central case study.

## PROBLEM STATEMENT: LONELINESS

Loneliness is a growing social and health issue that needs to be addressed in Western cities, particularly in urban neighbourhoods. While occasional loneliness is not inherently harmful, chronic loneliness poses serious health risks, including depression, heart disease, and increased mortality (Cacioppo et al., 2006; Thurston en Kubzansky, 2009; Penninx et al., 1997, Coalitie Erbij, 2018; Holt-Lunstad et al., 2015). In the Netherlands, elderly individuals are especially vulnerable due to declining physical and cognitive health, which hinders social connections (Campen et al., 2018). The Campaign to End Loneliness emphasizes its severity, equating its health impact to smoking 15 cigarettes daily (Holt-Lunstad et al., 2015).

However, young adults aged 16 and 24 are also at high risk of loneliness, according to international surveys, especially in Western countries (e.g., Hammond et al., 2018; Nemecek, 2020; DiJulio et al., 2018; Pyle & Evans, 2018; Payne, 2021; Ibbetson, 2019). Factors, such as relocation for education or work (Kaplan et al., 2020), or reliance on digital communication, rather than socializing in person with friends, family, neighbours or colleagues (Roe & McCay, 2021), contribute to this trend. Urban contexts further amplify loneliness in this group when feelings

of distrust, insecurity, or lack of belonging arise (Pyle & Evans, 2018). This shows the complexity of loneliness because it is multifaceted, multigenerational and context-specific (Moore et al., 2023), requiring tailored urban interventions to promote inclusion and social engagement.

## SUB-CONCLUSION

In conclusion, loneliness among elderly people and young adults is increasingly prevalent and detrimental to health in urban neighborhoods. This study investigates how urban neighbourhoods, like Tarwewijk, can incorporate multigenerational communal spaces that foster social wellbeing, social engagement and a sense of belonging in the neighbourhood, hypothesizing that such designs are an architectural means to alleviate loneliness.

## RESEARCH QUESTIONS

**In what way can the design of communal spaces in urban neighbourhoods, such as the Tarwewijk, help reduce loneliness among residents of different age groups?**

1. What specific factors contribute to feelings of loneliness among residents in the Tarwewijk?
2. What roles do the current communal spaces play regarding combating loneliness in the Tarwewijk?
3. How can the design of (future) intergenerational communal spaces be catered to the social needs of the elderly and young adults?





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# PROBLEM STATEMENT & RELEVANCE

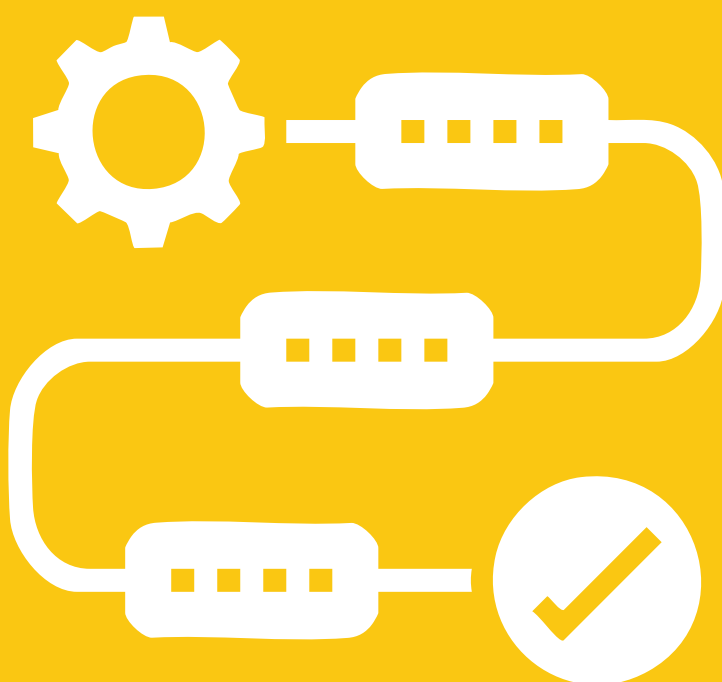
## RESEARCH OBJECTIVE

The objective of this research is to explore how certain spatial design strategies can strengthen, diversify and expand social relationships through multigenerational communal spaces, focusing on the role of these spaces in urban neighbourhoods while grounding this in loneliness theory. The spatial design strategy will incorporate communal spaces—indoor or outdoor—integrated within proposed housing typologies, as these spaces encourage informal and spontaneous interactions. This research relies on the layer model of Hawkey et al. (2008) gaining insights regarding the psychological and sociological scientific evidence of combating loneliness, while utilizing the restorative framework of Roe & McCay (2021) for example to ensure an evidence-based design approach. This study hypothesizes communal spaces embedded in urban architecture can mitigate loneliness across multiple generations.



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# METHODOLOGY





# CHAPTER 02

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# METHODOLOGY

## INTRODUCTION

The research will follow a qualitative, mixed-method approach combining site analysis, interviews, and observational studies, and a literature review on how communal spaces might combat loneliness (see Figure 1, see Appendix page 163 for extra explanation). The target groups in this study are elderly (65+) and students (aged 16-24).

## LITERATURE REVIEW

Firstly, a literature review investigates what loneliness is, what the relation is between communal spaces and loneliness (or social wellbeing) though the main literature sources of Hawkley et al. (2018), who investigate loneliness predominantly from a psychological and sociological point of view. Kaplan et al (2020) and Petermans & Cain (2019) underline which intergenerational programming can mitigate loneliness and promote social wellbeing. Whereafter Petermans & Cain (2019) and Lee (2022) argue for the benefits of sensory design in intergenerational communal spaces (ICS) through Lee's (2022) sensory framework. Furthermore, Roe and McCay (2021), provide examples of design principles (e.g. how to arrange greenery or apply tactile materials to activate sensory experiences) to make communal spaces beneficial for the target groups social well-being.

## QUANTATIVE DATA

Secondly, data is collected from the neighbourhood to make the research context-specific. Quantitative data of Wijkprofiel rotterdam (2022) aids in understanding the objective and subjective data on loneliness of Tarwewijk residents.

## QUALITATIVE DATA

Next, qualitative methods help analyse communal spaces in the Tarwewijk to understand their layout characteristics through spatial analyses, observational studies, comparative case studies and interviews. The spatial analysis considers a mapping of diverse and existing communal spaces in the Tarwewijk and their contribution to its community regarding social well-being. As a guide the Sensory Framework of Lee (2022) helps identify physical design elements that revitalize or harm social wellbeing (e.g. sensory interventions). It also considers accessibility, as this impacts the avoidance or appeal these spaces among the target-groups.

Further, a set of interviews will be conducted with local seniors (65 years plus) and young adults (16-24 years), since they are the most vulnerable for loneliness. The objective is understanding their individual encounters in communal spaces to uncover social preferences or needs. As researching loneliness is a fragile topic, questionnaires of Campen et al. (2018) from the SCP's loneliness report of 2018 will guide a "safe" and constructive conversation. Moreover, on-the-spot observations aid in tracking how these target group (socially) engage in communal spaces. Additionally, a comparative study with different cases, i.e. Liv Inn Hilversum (mainly elderly) and Ourdomain Holendrecht (mainly young adults), as they are all built examples in urban neighbourhoods with qualitative ICS. In the first week of P2, together with fellow students, fieldwork will be conducted in Liv Inn Hilversum.

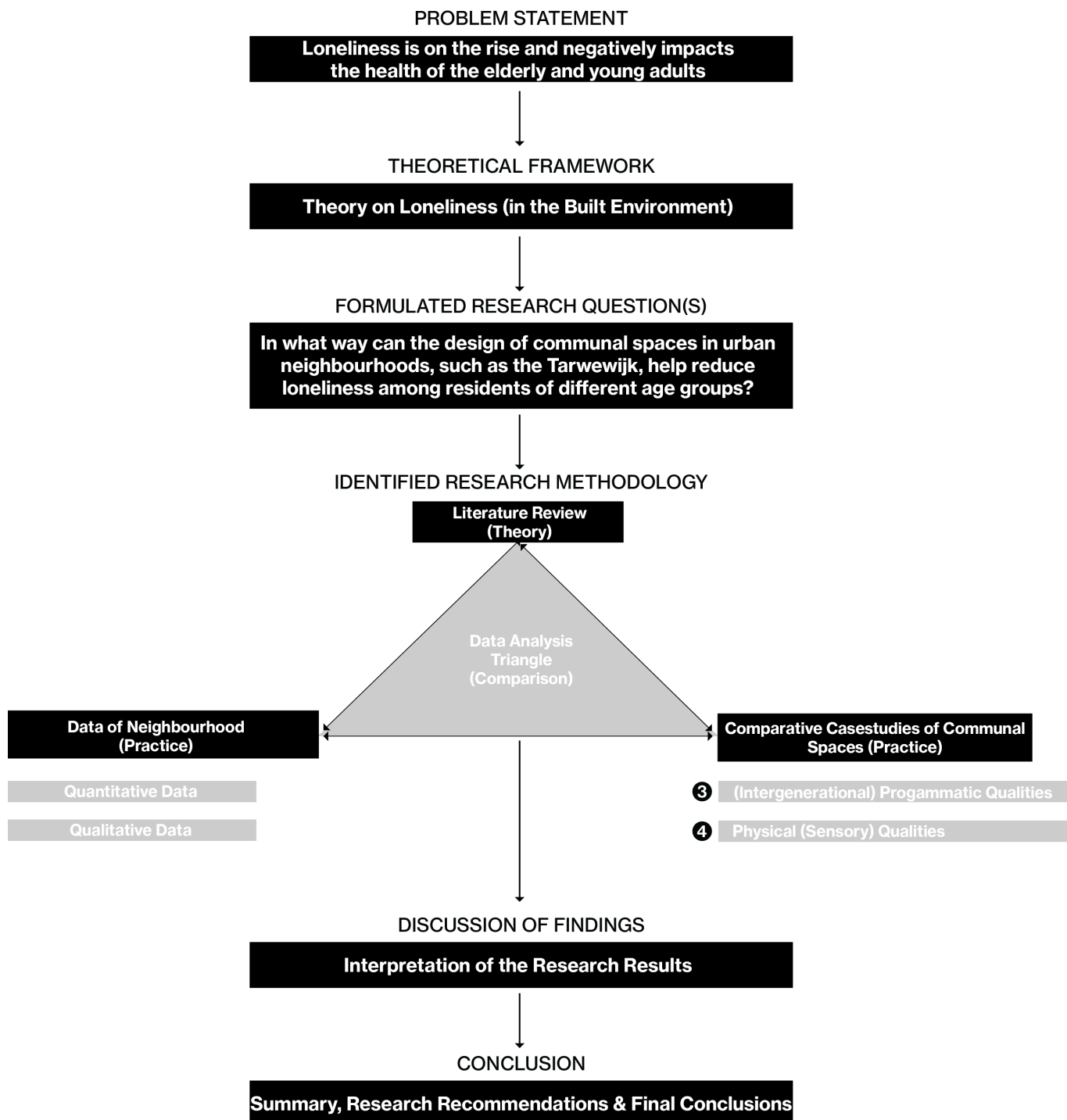


Figure 1. Flowchart of Research Plan. Source: Personal Work

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# METHODOLOGY

## CONCLUSION

In the end, all results are combined and informs the design strategy for multigenerational communal spaces easing feelings of loneliness in urban areas. By triangulating the data found through theoretical findings, comparative casestudies and research grounded in Tarwewijk, this study aims to provide design guidelines for a healthy housing concept that combats loneliness. The conclusion will provide design guidelines for architects and city planners on creating communal spaces that cater to intergenerational audiences in response to the increasing problem of loneliness in city communities like the Tarwewijk.



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# THEORY



**CHAPTER**  
**03**

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# THEORY

## INTRODUCTION

This study integrates viewpoints from multiple disciplines (see Figure 2) to construct its theoretical framework. Since the focus is on designing for individuals experiencing loneliness, an interdisciplinary approach analyzing behavior in urban neighborhoods is essential. This approach aims to identify social needs of the elderly and young adults more effectively, while offering a comprehensive perspective on designing communal spaces that foster social connections, reduce loneliness, and enhance inclusivity for multigenerational users. The framework incorporates insights from Sociology, Psychology, Environmental Psychology, and Urban Design to inform the architectural design of communal spaces. For instance, urban neighborhoods play a significant role in young adults' wellbeing, as feelings of distrust or lack of safety in their surroundings can heighten loneliness due to a reduced sense of belonging (Pyle & Evans, 2018). This underscores loneliness as a multifaceted, multigenerational, and context-specific issue (Moore et al., 2023). Consequently, creating socially engaging and inclusive urban spaces may help alleviate loneliness and improve wellbeing for diverse age groups (Moore et al., 2023).

## WHAT IS LONELINESS?

### *Definition*

This study adopts the definition of loneliness by De Jong Gierveld and Van Tilburg (2007): a perceived discrepancy in the quality or quantity of social relationships, experienced as an unpleasant lack of meaningful connections. Feeling disconnected is a fundamental aspect of loneliness (Campen et al., 2018). In urban environments, loneliness is often exacerbated by high popula-

tion density combined with poor social cohesion (Scharf & De Jong Gierveld, 2008).

### *Proximal Factors Influencing Loneliness*

Loneliness in urban settings arises from factors such as a reduced sense of belonging, safety concerns, and difficulty maintaining social networks (Pyle & Evans, 2018; Phillipson, 2007). Moore et al. (2023) emphasize its context-specific and intergenerational nature. Hawkley et al.'s (2008) layered model, originally developed in the American context and adopted by the Dutch Sociaal en Cultureel Planbureau in the Loneliness Report of 2018, is particularly relevant. The model categorizes factors influencing loneliness into layers: (1) personal contact, (2) opportunities to meet others, (3) autonomy, (4) health, (5) housing and geographical characteristics, and (6) demographic and socio-structural characteristics (see Figure 3).

## INTERGENERATIONAL COMMUNAL SPACES FOR SOCIAL WELL-BEING

This study explores Intergenerational Contact Zones (Kaplan et al., 2020) as a potential solution to combat loneliness among elderly and young adults. By integrating anthropology, sociology, and environmental psychology, this multi-disciplinary approach informs the design of socially supportive spaces, crucial for addressing the complex loneliness and health issues in the Tarwewijk.

### *What are intergenerational contact zones?*

Kaplan et al. (2020) define Intergenerational Contact Zones (ICZ) as spaces where different generations can interact, build relationships, and address local concerns. This study extends the



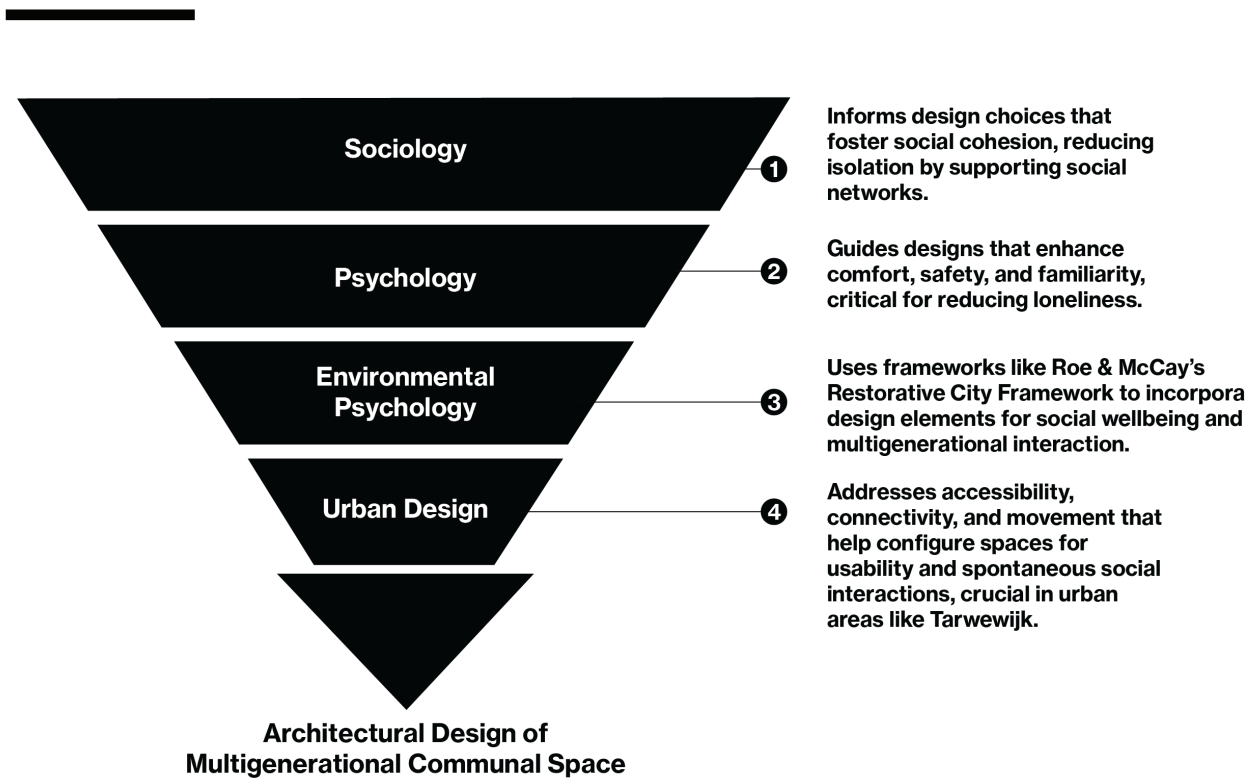
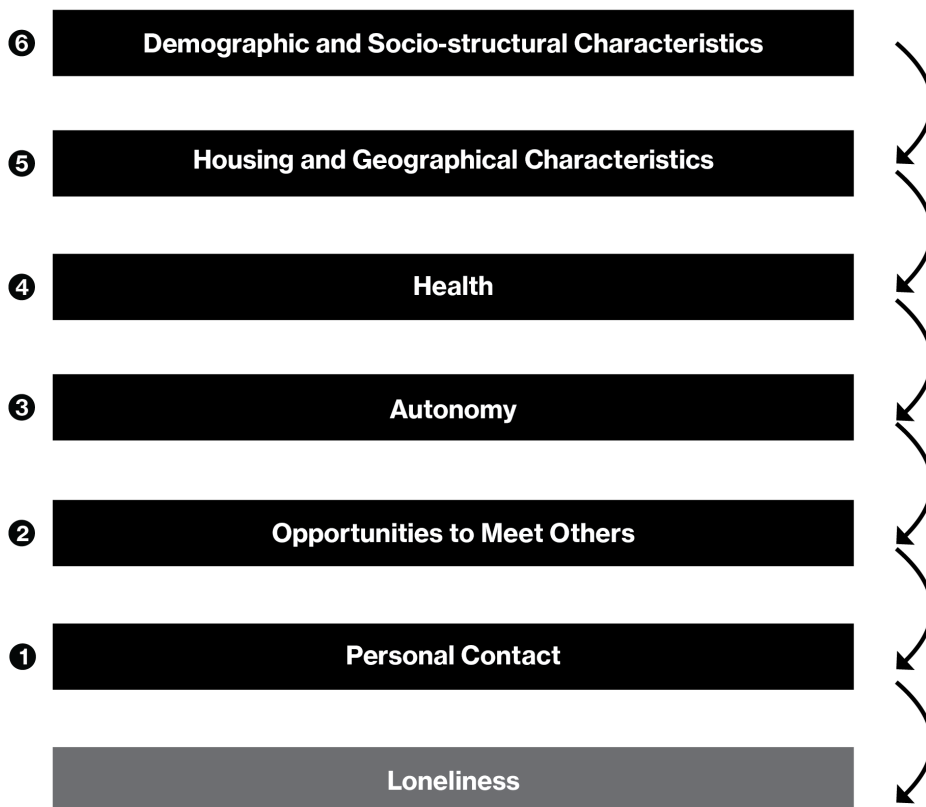


Figure 2. Theoretical Framework as a Thought Field of Interdisciplinary Perspectives. Source: Personal Work

## PROXIMAL FACTORS REGARDING LONELINESS



Six categories of factors, each increasingly closer to loneliness.

Figure 3. Layermodel of Loneliness according to Hawkey et al (2008). Source: Personal Work

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# THEORY

concept, proposing Intergenerational Communal Spaces (ICS) to facilitate the sharing of facilities, values, and cultures (Pratt, 1991 as cited in Thang, 2015). ICS are hypothesized to reduce loneliness and promote social well-being in this study. Examples include communal kitchens, gardens, and recreational spaces (Roe & McCay, 2021). This study focuses on ICS within residential settings such as parks, community rooms, and gyms, targeting students (young adults between 18–24) and the elderly (65+).

## ***Why are intergenerational communal spaces important for social wellbeing?***

Generational segregation often leads to social isolation and loneliness (Kaplan et al., 2020). Henkin and Patterson note that age-segregated environments diminish social capital for both young and elderly populations (Kaplan et al., 2020). ICS provide opportunities for intergenerational interaction, fostering social connection, belonging, and self-esteem (Seeman et al., 2001). For older adults, particularly those in low-income housing, ICS address challenges like limited social networks, health issues, and isolation (Goyea et al., 2018; Taylor et al., 2018). Similarly, the majority of Tarwewijk residents have a low-income, where similar issues might apply. Moreover, weekly engagements in ICS have been shown to reduce loneliness and enhance community participation.

## ***Potential Challenges and Benefits***

While ICS may occasionally generate tension due to diverse cultural and generational perspectives, they also promote understanding and shared experiences (Kaplan et al., 2020; Pratt, 1991 as cited in Thang, 2015). For instance, intergenerational living increases social capital, well-being, and even

life expectancy (Muenning et al., 2017). Access to nature through ICS like communal gardens has been linked to reduced stress, improved health, and greater social interaction (Van den Berg et al., 2015). Elderly residents can share their time and skills with younger generations, creating opportunities for environmental learning and intergenerational engagement (Kaplan et al., 2020).

## ***How do these spaces foster social wellbeing and diminish loneliness among elderly and young adults?***

ICS offer spaces for planned and spontaneous interaction, enabling individuals to build social networks and reduce loneliness. Examples include community rooftop gardens, which foster intergenerational collaboration and provide access to nature in urban settings. For elderly residents, these spaces encourage social engagement and generativity—sharing skills, experiences, and knowledge with younger generations (Kaplan et al., 2020). Additionally, nearby nature and communal spaces improve cognitive functioning, psychological well-being, and overall health (Banay et al., 2019; Takano et al., 2002).

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# THEORY

## DESIGNING SPACES OF BELONGING

### ***Why the need for a deeper focus on the interior of ICS?***

The World Health Organization (WHO) and the United Nations predicted in 2010 that an unprecedented rise in urbanization, suggesting that social and interior spaces will gain greater significance as urban areas expand (Petermans & Cain, 2019). Inclusively designed places must be non-discriminatory, welcoming, and accommodating for individuals across generations who seek social interaction for various purposes. However, interior environments often reflect biases and authority, limiting their potential to foster connection and interaction—both essential for well-being (Kaplan et al., 2020).

### ***Understanding the relation between interior design and social well-being***

Theoretically, this research explores the elements of a socially oriented, cozy, and identifiable communal space based on the framework of Kneuyhe Lee (2022) (see Figure 4) and Roe & McCay (2021) (see Figure 5). The concept of a “third place” (Oldenburg, 1989) offers insight into alternative spaces where social interactions occur. Unlike the “first place” (home) or “second place” (work), third places encourage spontaneous gatherings and a sense of community across age groups. Intergenerational communal spaces (ICS) fall under this category, facilitating social connectedness, which Van Bel et al. (2008) define as:

*“The momentary affective experience of belonging to a social relationship or network. Social connectedness can be the outcome of subtle events in one’s peripheral area of attention, or it may be caused by explicit acts, such as by making a phone call or visiting a friend.”*

Although these momentary experiences can happen spontaneously, they can also be supported through the design of the interior space where these types of (communal or social) activities happen (Kaplan et al., 2020)

Terence Mann (2013) elaborates on how these spaces become meaningful:

“Many of us choose not to consider the role that place plays in our individual and collective identity. Yet at the same time, almost all people seem to have specific places that in some way anchor them.” The local café or mall becomes a meeting place, or the local church becomes a community space for a particular culture, when the conditions favor access and social interaction.

### ***Conditions for inclusive and social ICS***

The design of ICS often determines whether social connectedness and inclusion are universally accessible or unintentionally exclusive, such as for individuals with disabilities (Petermans & Cain, 2019). Activities like meeting for coffee or cooking together become inaccessible when spaces are poorly designed for inclusion. This challenge becomes particularly relevant for elderly individuals, who are more likely to experience physical, auditory, visual, or cognitive decline (Lupton & Lipps, 2018; Van Tilburg, 2007; Hawkley et al., 2008; Kaplan et al., 2020; Petermans & Cain, 2019).

To address this, a multi-sensory design approach is essential for fostering social connectedness in intergenerational spaces. Inclusive design allows individuals from diverse backgrounds and with varying (dis)abilities to share meaningful experiences, promoting broader participation.

The Body																	
Morphological Factor										Sensual Factor				Influential Factor		The Body	
	Volume	Scale	Rhythm	Order	Proportion	Contrast	Texture	Light	Shadow	Color	Temperature	Sound	Smell	Culture	Local	Senses	Movements
BKC	○	○				○	○	○	○		○	○	○		○	○	○
SP	○	○			○	○		○	○	○	○	○				○	○
SS			○	○	○				○				○	○		○	
PM	○	○	○	○	○		○							○		○	○

BKC: Bruder Klaus Chapel, SP: Serpentine Pavilion, SS: Sensing Space, PM: Prosth Museum.

Figure 4. Sensory framework based on interior characteristics. Source: Lee (2022).



Figure 5. The Restorative Framework. Source: Roe & McCay (2021)

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# THEORY

While various design strategies may shape spatial cues, this study will focus on multi-sensory interior design principles, particularly tailored for elderly populations who face greater challenges in engaging with their environments, which in turn results in a multi-benefit solution for students as well.

## ***How multi-sensory design contributes to socially supportive ICS***

Sensory design elements and how individuals navigate spaces for social interaction are integral to social connectedness. Interior spatial cues, such as materiality, light, noise, and smell, physiologically and psychologically influence responses to space, either stabilizing or destabilizing them (Petermans & Cain, 2019; Lupton & Lipps, 2018). Additionally, factors like access (e.g., stairs, elevators), cultural background, age, and physical capacity affect how people perceive these cues, ultimately shaping social experiences.

As people age, their environmental perception changes (Petermans & Cain, 2019). Research shows that simple alterations in color, materials, and lighting, alongside strategic placement of social activities, can significantly enhance social connectedness by improving orientation and making spaces feel more welcoming (Poldma, 2006; Kaplan et al., 2020; Lupton & Lipps, 2018). Conversely, poor contrast and lighting reduce sensory and visual stability, making it harder to read the space, especially in ICS. This impairs movement, autonomy, and negatively impacts social wellbeing and loneliness (Petermans & Cain, 2019; Hawkey et al., 2008; Van Tilburg & De Jong Gierveld, 2007).

## **Analysing multi-sensory design aspects in spaces through a framework (what are the spatial qualities that help for ICS?)**

### ***Introducing the Sensory Framework***

Keunhye Lee (2022) identifies three key aspects essential for analyzing interior experiences: (a) bodily stimulation through movement and senses, (b) materiality, which enhances awareness of sensual qualities in space, and (c) emotional connections, formed both individually and socially. Lee asserts that these elements are interconnected and together create a multi-sensory experience. Cultural experience is triggered through shared memories, while abstract aspects of design, even without formal architecture, engage the body and evoke personal memories. For example, sensory experiences like smell, touch, and sound of materials in the space can elicit emotional responses, connecting individuals to their past (Lee, 2022; Petermans & Cain, 2019). Thus, interior experience is a blend of physical, sensory, cultural, and mental elements (see Figure 6).

The characteristics of architectural projects can be understood through case studies analyzed using Lee's (2022) framework (see Figure 4). This approach helps designers focus on materials and sensory stimulation to create a spatial experience and emotional connection. Sensory materials enable individuals to experience and perceive space in unique ways. Zumthor (2006) notes that "materials react with one another and have their radiance, so the composition creates something unique." Materiality stimulates the senses interactively, offering a multi-sensory experience of a place in time.

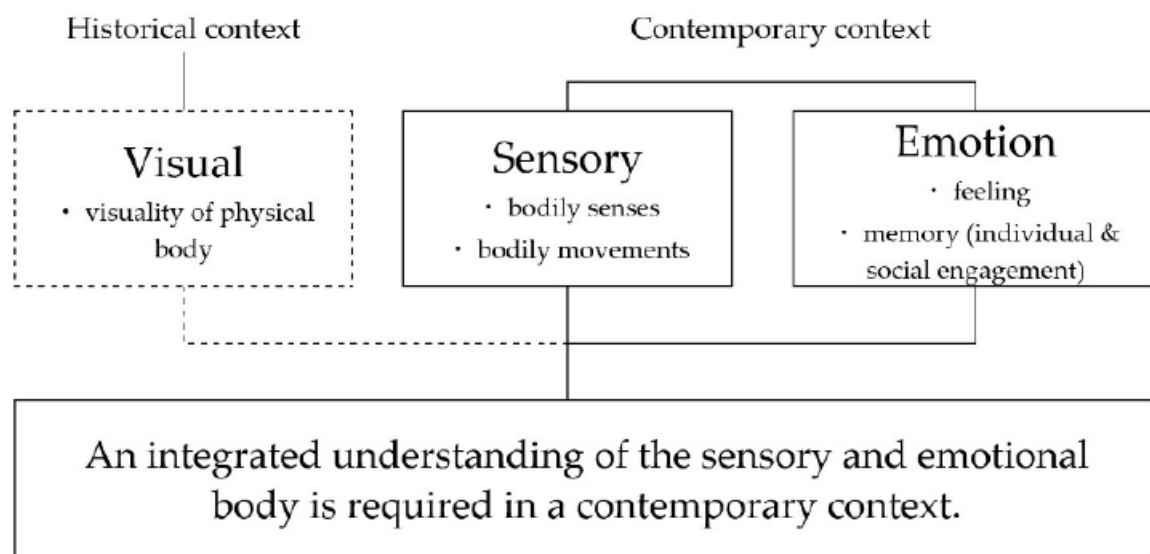


Figure 6. Integrated understanding of sensory and emotional experiences. Source: Lee (2022).

### Purpose Sensory Analysis within (Communal) Spaces

Lee's (2022) framework: the focus is on sensory factors in communal spaces, including texture, light, shadow, color, sound, and smell, while temperature is excluded in this study due to its uniformity across rooms. A detailed analysis of morphological factors is also excluded to keep the scope manageable. This study provides key insights for designing healthy spaces in Tarwewijk ICS to combat loneliness. Schaff et al. (2022) note that analyzing sensory factors can impact emotional and social well-being by balancing stimuli like light, texture, and sound to foster both privacy and interaction. Lee (2022) argues that multi-sensory engagement creates emotional connections to space, enhancing social well-being and identity, and promoting social interaction to alleviate loneliness in ICS.

See Appendix p. 70-71 for applications of sensory design and its purpose in housing context.

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# SPATIAL RESEARCH

## SPATIAL RESEARCH



**CHAPTER**  
**04**

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# SPATIAL RESEARCH

## FIELDWORK RESEARCH

### 1. Case: Liv Inn Hilversum

#### *Introduction*

The Liv Inn is an elderly housing model where residents determine the shape of their aging journey. During the Dwelling Studio's fieldwork week, a week-long stay at the Liv Inn in Hilversum—the leading example of its aging-in-place approach—enabled qualitative research (see Appendix, p. 106–140). Alongside three fellow students, interviews, interactive activities to identify living preferences, observations of shared spaces, and spatial analysis revealed how intergenerational communal areas encourage connection and combat loneliness. Peter Boerenfijn, director of the Dutch housing cooperative Habion, highlights the contrast between the Liv Inn model and traditional elder care (see Appendix, p. 107–108). Conventional care involves phased transitions, starting with aging at home and progressing to institutional facilities like care centers, senior homes, or hospices. The Liv Inn model emphasizes three core elements: Community Spaces that encourage social bonds, active lifestyles, and resident-driven engagement; Apartment Living with flexible, self-sufficient units for aging in place; and Care on Demand, delivering comprehensive, seamless care within the community to ensure stability, dignity, and continuity without relocation.

#### **Programming: Challenges in Intergenerational Engagement**

##### 1. *Little to no overlap in schedules between elderly and students*

While residents value the communal spaces at the Liv Inn for their spatial quality and opportunities for social interaction, these intergenera-

tional communal spaces (ICS) face challenges. Elderly residents hope for greater student involvement, but differing schedules hinder interaction. Seniors are most active midday, while students are often studying during the day and socializing in the evening, resulting in limited overlap for meaningful engagement.

##### 2. *Declining volunteering pool*

Interviews indicate a decline in active younger residents (ages 55–65) at the Liv Inn, traditionally pivotal in organizing events and maintaining community spirit. The majority now comprises older residents (ages 80–90), many of whom are less mobile and prefer remaining in their apartments, reducing participation in communal activities. This shift increases pressure on the few active volunteers, leading to burnout. For instance, communal dinners in the shared kitchen see low attendance, with fewer than 20 participants, due to a lack of volunteers and resident interest. This limited turnout reflects broader issues like isolation, health constraints, or unengaging programs.

##### 3. *Lack in intergenerational programming in ICS*

Students note that current activities primarily cater to elderly residents, lacking intergenerational elements that include them. Currently, the two groups rarely interact outside of communal dinners or holiday events. Introducing activities like movie nights, pool tournaments, or game nights could better engage students and create opportunities for meaningful connections between the groups.

##### 4. *High dependability between elderly on few students*

The Liv Inn employs a “buddy system” where 11



Figure 7. ICS Lounge in Liv Inn Hilversum. Source: Personal Work

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# SPATIAL RESEARCH

resident students assist elderly residents (about 270) with daily tasks, such as grocery shopping, medication pick-ups, cooking, cleaning, and being on-call 24/7 for emergencies. However, students report feeling overwhelmed by the high dependency of the elderly, which strains their already busy schedules. They suggest adjusting the ratio to 30% students and 70% elderly, enabling students to share responsibilities while fostering more social interactions for the elderly. Another proposal involves clustering student and elderly apartments in shared hallways to encourage spontaneous encounters and reduce isolation.

## **Analysis of Liv Inn's ICS - A Multisensory Analysis**

A sensory analysis, based on Keunhye Lee's (2022) framework, is conducted to examine the physical qualities of interior spaces and their role in fostering belonging, comfort, home, and social well-being. The analysis evaluates five multisensory design elements: lighting, shadows, texture, color, smell, and sound. Four key ICS—Theater (TH), Bar (B), Inner Garden (IG), and Communal Kitchen (CK)—are selected for the study.

This analysis focuses on sensory factors within communal interior spaces, excluding temperature as it is uniform across all areas. Orange dots indicate “good” sensory performance, while green dots indicate “very good” performance. The absence of both dots signals insufficient or no perceptible sensory impact.

### ***Light***

Lighting shapes the ambiance and functionality of spaces. In the theater, movable spotlights and wall-mounted fixtures provide “accent lighting” to highlight key areas, such as the stage and piano, creating a theatrical, inviting atmosphere. In the bar, decorative lighting highlights nos-

tagic elements like posters and vinyl covers, enhancing its emotional and aesthetic appeal.

### ***Shadows***

Shadows intensify the atmosphere of spaces. In the theater, the absence of natural light allows shadows to interact with accent lighting, highlighting areas like curtains and floors, aligning with the space's theatrical intent. In the bar, soft lighting minimizes shadows, fostering a warm, inviting environment.

### ***Texture***

Textures in communal spaces enhance comfort and sensory interaction. The theater features wooden panels, carpeted floors, and plastered walls, creating a tactile, acoustically friendly environment. In the inner garden, polished concrete walkways contrast with red hexagonal tiles and wood finishes, defining zones and adding warmth.

### ***Color***

Warm, vibrant colors shape mood and function. The theater features welcoming blue curtains and carpets paired with wooden furniture. The bar uses bright yellows, blues, and vinyl records to evoke nostalgia. The inner garden combines red brick, wood, and greenery for a cozy, versatile setting.

### ***Smell***

Smell is subtly influenced by spatial openness. The inner garden's open layout invites aromas from the communal kitchen, like cooking and coffee, encouraging movement and resident interaction. This sensory integration fosters a communal and an inviting atmosphere for conversation.

### ***Sound***

Acoustic design improves functionality and comfort. In the theater, wooden panels and carpets absorb sound, reducing distortion and thus ensuring clarity for performances and gatherings.



Analysis Interior Communal Spaces

	Morphological Factor						Sensual Factor							Influential Factor		The Body	
	Volume	Scale	Rhythm	Order	Proportion	Contrast	Texture	Light	Shadow	Color	Temperature	Sound	Smell	Culture	Local	Senses	Movements
TH							<div></div>	<div></div>	<div></div>	<div></div>		<div></div>					
B							<div></div>	<div></div>	<div></div>	<div></div>		<div></div>					
IG							<div></div>	<div></div>		<div></div>			<div></div>				
CK							<div></div>	<div></div>	<div></div>	<div></div>							
...																	
...																	
...																	
Theater (TH), Bar (B), Inner Garden (IG), Communal Kitchen (CK)																	

Similarly, the bar’s textured surfaces reduce noise, fostering an intimate auditory experience.



Figure 8. Bar ICS Framework and Analysis in Liv Inn Hilversum. Source: Personal Work

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# SPATIAL RESEARCH

## ***Introduction***

OurDomain Holendrecht, a contemporary residential complex in Amsterdam's Holendrecht district, offers diverse housing and shared spaces for students, professionals, and families. Communal lounges, co-working areas, kitchens and study rooms foster interaction and community, encouraging spontaneous encounters among residents while addressing varied needs. This inclusive approach demonstrates how shared spaces reduce loneliness, strengthen networks, and promote urban well-being through sensory design, making ourDomain Holendrecht an ideal case study to this research (see Appendix, p. 82-89).

## ***Programming: In what way is the programming intergenerational?***

OurDomain Holendrecht, while not specifically targeting elderly residents, accommodates individuals meeting income requirements. Its flexible ICS facilitate intergenerational engagement by hosting monthly community events. Organized by volunteers, staff, or outsourced professionals, these events, both new and/or recurring—such as yoga classes, painting workshops, and marshmallow evenings—offer opportunities for all residents to connect and participate.

## ***Analysis of Liv Inn's ICS - A Multisensory Analysis***

OurDomain Holendrecht's communal spaces are notable for uniting people from diverse backgrounds. Four spaces were selected for analysis based on their potential to meet the needs of both elderly residents and students in Tarwewijk: the Cinema Room (CR), Study Room (SR) and Lounge (L).

## ***Light***

Lighting is strategically utilized to shape ambience and function. The cinema room uses adjustable and fixed spotlights to create contrasts suitable for presentations and films. In the study room, accent lighting on tables and abundant daylight from east- and west-facing windows foster an ideal study environment. The lounge, with its decorative lighting and large windows, is visually connected to the inner park.

## ***Shadows***

Shadows play a nuanced role in different spaces. In the cinema room, shadows enhance the cinematic experience, creating a dark and immersive environment when spotlights are off. This interplay of light and shadow helps users intuitively understand or read the space's atmosphere.

## ***Texture***

Texture is emphasized to add depth and tactile engagement. In the cinema room, deep blue carpeting and heavy drapes provide a layered sensory experience. The study room incorporates plush brown carpeting, decorative wallpaper with a 3D effect, and a padded ceiling, creating a comfortable, distinct environment. The lounge combines wooden paneling, brown carpeting, plants, and checkered flooring to evoke a warm, inviting living-room atmosphere.

## ***Color***

Color enhances recognition and mood. The cinema room uses dark blue to create a cohesive, shadowed space. The study room features warm hues, wood, and red leather seating for a cozy, inviting feel. Similarly, the lounge incorporates warm colors, greenery, and textured flooring (i.e., carpets) to promote lingering and comfort.



Figure 9. ICS Lounge in OurDomain Holendrecht. Source: OurDomain Holendrecht



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# SPATIAL RESEARCH

## ***Smell***

Smell is not a significant element in the (chosen) communal spaces, at least not as an intentional design feature.

## ***Sound***

Sound control differs between spaces. The cinema room benefits from carpets and heavy curtains for acoustic control, but could improve with more acoustic panels. The study room uses soft carpets, wooden elements, and acoustic panels to reduce noise and maintain a focused environment. The lounge, however, lacks adequate sound control, suggesting the need for partitions or additional panels.

## **SUB-CONCLUSION**

The emphasis on sensory design and intergenerational programming at both Liv Inn and OurDomain Holendrecht provides important insights for ICS design. While Liv Inn is successful in creating inviting, multisensory spaces like theaters and gardens, its ability to encourage intergenerational interaction is limited by scheduling conflicts and a reduced volunteer base. On the other hand, OurDomain's flexible ICS primarily caters to young adults and families, with less attention to seniors. However, its adaptable design encourages spontaneous social interaction through a variety of events, such as yoga and workshops. Collectively, these examples underscore the need for flexible programming, sensory-focused environments, and an understanding of resident demographics to foster intergenerational engagement in ICS.



Analysis Interior Communal Spaces

	Morphological Factor						Sensual Factor							Influential Factor		The Body	
	Volume	Scale	Rhythm	Order	Proportion	Contrast	Texture	Light	Shadow	Color	Temperature	Sound	Smell	Culture	Local	Senses	Movements
CR							●	●	●	●		●					
SR							●	●		●		●					
L							●	●		●		●					
GR																	
...																	
...																	
...																	

Cinema Room (CR), Study Room (SR), Lounge (L), Game Room (GR)



Figure 10. Study Room ICS Sensory Framework and Analysis in OurDomain Holendrecht. Source: Personal Work

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# RESEARCH GROUNDED IN TARWEWIJK

# CHAPTER 05

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# RESEARCH GROUNDED IN TARWEWIJK

## **1. Quantitative and Qualitative Data on Loneliness within the Neighbourhood**

The Wijkprofiel Rotterdam (2022) serves as a gauge for the city's performance, assessing 14 districts and 71 neighborhoods in terms of social, physical, and safety issues. The scores are based on both objective data and the perceptions of the city's residents. The research methodology combined quantitative and qualitative approaches. The following sections explore social connectedness and the perception of current communal spaces in more detail (see Appendix, p. 92-95).

### ***View on sense of belonging and social connectedness***

Tarwewijk residents score 69% on the "quality-of-life-meter," well below Rotterdam's average of 93%. This indicates a lower satisfaction with the neighbourhood regarding aspects such as social activities, family connections, health and well-being (Wijkprofiel Rotterdam, 2022). While loneliness is not explicitly measured in Rotterdam's municipal index, factors that impact one's feelings of loneliness or social wellbeing, such as sense of belonging and social connectedness, are examined. In 2022, just 37% of Tarwewijk residents reported feeling connected to their neighborhood, compared to Rotterdam's average of 50%. Furthermore, 29% of residents lack acquaintance with their neighbors, a factor that restricts interactions. Despite this, 73% feel a sense of responsibility for the neighborhood, with 9% actively participating in community initiatives.

### ***View on current communal spaces within the Tarwewijk***

Overall, residents used to report feeling happy about the existing amenities within the neighbourhood in 2018 (with 45%). Yet, reports in 2022 show a slightly lower score with 36% residents satisfied compared to Rotterdam's average of 48%

### ***Greenery***

Furthermore, over 61% of Tarwewijk's residents agree that there is sufficient greenery (i.e., grass areas or trees) within the neighbourhood, a drastically lower number than Rotterdam's score of 78%. Additionally, only 44% of residents agree that there are enough green amenities in the area (e.g., to picnic, exercise or play), compared to Rotterdam's score of 65%.



Figure 11. Wijkprofiel of Tarwewijk Categorized in Three Indexes. Source: Wijkprofiel Rotterdam

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# RESEARCH GROUNDED IN TARWEWIJK

## **2. Interviews on Loneliness on Design Location, Wolphaertsbocht**

### ***Interview with community center, residents and neighbourhood counselor***

For this part of the research, an interview was conducted at Vereniging Versaar, involving residents from Tarwewijk and surrounding areas, a neighborhood counselor, and the community center's head. Topics discussed included communal spaces, neighborhood activities, and loneliness (see Appendix, p. 96-99).

### ***Social Connections and Community Building***

Tarwewijk residents highlight the role of communal spaces, such as the Vereniging Versaar community center, in promoting social cohesion and a sense of belonging. These spaces enable shared meals, prayers, recreational activities, and small gatherings, offering a safe environment for connection. For the elderly, such moments offer brief yet meaningful opportunities to socialize, helping to combat loneliness.

### ***Support for Intergenerational Interaction***

The head of the community center underscores the significance of intergenerational relationships in Tarwewijk, a culturally diverse area previously labeled a "problem neighborhood." He highlights that elderly residents appreciate sharing life experiences with the youth, while also gaining digital skills and learning Dutch. In turn, younger residents learn about elders' cultural backgrounds and engage in activities such as futsal, workshops, and gaming, thus fostering their connection to the community. These interactions promote mutual respect, understanding, and social cohesion across generations.

### ***Overcoming Poverty and Safety Concerns***

The community center actively addresses poverty by promoting resource-sharing and support among residents. It offers a safe space for

youth, shielding them from negative influences through e.g. workshops on career, personal growth, health, and exercise. While its proximity to transportation benefits elderly residents, the neighborhood is fragmented by tramlines and metro lines, which hinders collective initiatives, according to the neighborhood counselor.

### ***Challenges and Recommendations***

The community center has positively impacted the neighborhood, but the neighborhood counselor emphasizes the need for sustainable programs to ensure long-term benefits. Residents prefer continuous initiatives, such as workshops and lectures, over one-off events. Addressing Tarwewijk's infrastructural divides could bridge gaps within the neighborhood, fostering greater community engagement and combatting loneliness.



Figure 12. Vereniging Versaar (near design location). Source: Vereniging Versaar



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# RESEARCH GROUNDED IN TARWEWIJK

### 3. Survey on Loneliness (especially focusing on students (18 -24) and elderly (65+))

The survey aims to gain a further understanding into the needs of prospective students or elderly residents in Tarwewijk, focusing on individuals in Rotterdam South who match the expected resident profile of the proposed housing design. This includes students who have moved to the area for their studies and elderly residents living independently or with a partner (see Appendix, p. 100-105).

#### ***Loneliness***

The survey examines loneliness among the target groups using 11 questions adapted from the established “Loneliness Scale” by Hawkey et al. (2008) and the Dutch Loneliness Report 2018 (Campen et al., 2018). Most participants reported strong social connections, indicating they have friends or family for support, belong to a friend group, and experience social enjoyment (“gezelligheid” in Dutch). However, 14% reported feelings of loneliness or emptiness, consistent with national data showing that 1 in 10 Dutch people feel very lonely and nearly one-third experience some level of loneliness (CBS, 2024). Moreover, over 10% stated they do not “feel at home in the world,” and 21% reported moderate detachment, indicating that more than a third lack a strong sense of social belonging. Additionally, 24% perceived their social connections as superficial or lacking depth.

#### ***Sharing Intergenerational Communal Spaces***

More than half of the participants live in shared or communal environments, with 28% sharing these spaces with people not in their household. This situation seems to be largely due to financial constraints, as 83% expressed that they would prefer not to share living spaces if they had the means. Furthermore, only 21% believe that communal living promotes social interaction, while 39% (a combined percentage) felt it had minimal impact.

Participants expressed their preferences for intergenerational communal spaces. A majority were against sharing more private areas such as toilets, showers, living rooms, or dining spaces due to concerns about privacy and hygiene. There were also apprehensions about cleanliness that deterred the use of communal kitchens. In contrast, public communal areas like study rooms, laundries, lounges, and workshops were favored. Popular options included communal gardens, gyms, libraries, study areas, and roof terraces. Some participants highlighted the importance of having greenery spaces nearby for communal use during the summer, while others pointed out that gyms or study rooms were more suitable for winter when outdoor access is limited.

### **SUB-CONCLUSION**

Research conducted in Tarwewijk highlights issues related to social connectedness and the use of communal spaces. Only 37% of residents report feeling a sense of connection to their neighborhood, and interactions with neighbors are low at 23%, leading to feelings of loneliness and a poor quality of life for 69% of individuals. While communal spaces like Vereniging Versaar aim to enhance social cohesion through programs for both youth and the elderly, the absence of amenities tailored to the elderly and a lack of satisfactory functional greenery (61% satisfaction) hinder inclusivity. Additionally, surveys show a preference for less personal community spaces, such as rooftop gardens and libraries. These results emphasize the necessity for community spaces in Tarwewijk that promote social engagement, reduce loneliness, and support inclusive, intergenerational design.



Figure 13. Tarwewijk Residents in (Green) Public Spaces. Source: Veldacademie

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# DISCUSSION OF DATA

## DISCUSSION OF DATA

**CHAPTER**  
**06**



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# DISCUSSION OF DATA

## INTRODUCTION

By triangulating data, this chapter combines insights from the theoretical framework, spatial research, and the Tarwewijk study to develop practical strategies for intergenerational communal spaces (ICS). The analysis aims to uncover deeper patterns and relationships, that will guide future design guidelines, emphasizing aspects such as loneliness, social connectivity, intergenerational activities, and multisensory design principles.

## Lessons learned for Intergenerational Programming

The Wijkprofiel Rotterdam (2022) index showed that more than a third of residents in Tarwewijk feel isolated from their community, with less than 25% claim having knowledge of their neighbors, indicating a potential issue with loneliness. Studies have found that both students and elderly individuals often experience loneliness when they lack community ties (Pyle & Evans, 2018; Philipson, 2007). Interviews conducted at the Liv Inn highlighted this issue, especially among those who felt marginalized from established groups due to disabilities, being newcomers, or having different backgrounds. It is essential for ICS design to promote inclusivity by creating environments where people from various backgrounds can connect, interact, and alleviate feelings of loneliness.

Residents of Tarwewijk confirm that Integrated Community Spaces (ICS) can enhance community involvement by tackling issues like poverty through shared resources and alleviating feelings of loneliness. Housing designs should include adaptable social options—such as workshops, group fitness classes, communal dining, and tea gatherings—to encourage social interaction, foster meaningful relationships, and decrease isolation for both students and older residents. Programs that connect different generations are essential, as they facilitate the exchange

of life experiences, skills, and cultural insights. Research indicates that effective intergenerational programs can lower social isolation while boosting feelings of belonging, self-worth, and overall social well-being through shared activities (Seeman et al., 2001; Kaplan et al., 2020). Examples of ICS encompass lounges, libraries, communal kitchens, gyms, meeting spaces, laundrettes, and rooftop gardens (Kaplan et al., 2020). Successful implementations can be seen at Liv Inn Hilversum and OurDomain Holendrecht.

Even so, due to a decrease in volunteers at Liv Inn, which was designed to promote resident-led communities and engagement, a new strategy for Tarwewijk is suggested. Instead of depending solely on residents, monthly community events could be organized with the help of professionals or staff. This approach enables elderly residents and students to participate in a way that keeps them mentally and physically active without causing them stress.

The housing design in Tarwewijk aims to foster community engagement by incorporating flexible communal spaces that can host neighborhood events. One example is the communal living room in the Liv Inn, which serves as a neighborhood center (referred to as “buurthuis” or “buurtkamer” in Dutch) due to the area’s lack of such facilities. This space can also be rented out for meetings or used for public exhibitions. This approach in the graduation project seeks not only to benefit the residents of the building but also to connect with and support the surrounding neighborhood upon its completion.

Furthermore, over half of the residents in Tarwewijk express a desire for improved green amenities, like parks and gardens, as the current greenery mainly consists of grassy areas. Research indicates that having access to nearby



Figure 14. Co-living and Intergenerational Communal Spaces. Source: Stadsleven

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# DISCUSSION OF DATA

nature is essential for alleviating loneliness in urban environments, often described as “concrete jungles” (Kaplan et al., 2020). Rooftop gardens are an effective way to utilize unused roof spaces and create “nearby nature” amenities, which are linked to enhanced health, social interaction, and community connections (Kaplan et al., 2020). Additionally, although not situated on rooftops, the Liv Inn and OurDomain Holendrecht feature communal greenery such as gardens and parks that promote social activities.

It is essential to understand that while developing high-quality intergenerational programming is valuable, it is not a straightforward solution to loneliness, as the issue is complex and multifaceted (Moore et al., 2023). The design must accommodate the needs of both current and future students and elderly residents in the housing project in Tarwewijk, which will be explored in more detail through research. Current interviews at the Liv Inn reveal that students and elderly individuals often have conflicting schedules, which should be taken into account when planning communal events in the new housing design. Furthermore, designers need to create flexible and socially inclusive communal spaces that can support diverse activities for residents of varying backgrounds, ages, and abilities, as the demographic makeup may change significantly over the next decade.

## **Lessons learned for Multisensory ICS**

Petermans and Cain (2019) highlight that spatial perception is shaped by shared experiences and sensory signals, with aspects like materials, lighting, noise, and scents playing a crucial role in promoting comfort, social well-being, and a sense of community. When creating inclusive and healthy living environments for the elderly and students, sensory design becomes vital, as deteriorating physical, cognitive, or mental health can impede their ability to maintain social connections

(Campen et al., 2018; Wrzus et al., 2013; Victor & Yang, 2012). For example, elderly residents at Liv Inn steered clear of certain common areas due to disruptive noise affecting their hearing aids. Therefore, sensory design not only improves accessibility and usability but also fosters inviting environments that promote social interactions. Designers should ensure that the functional aspects of a space, such as sound control and lighting in cinema rooms (as demonstrated in OurDomain Holendrecht), align with sensory elements identified by Lee (2022): texture, light, shadow, color, sound, and smell. Nostalgic sensory features, like familiar scents or items such as vinyl record players, can evoke a sense of home for older residents (Petermans & Cain, 2019). Liv Inn effectively integrated nostalgia into its communal bar by incorporating vintage elements like a cigarette dispenser and vinyl records, which added visual interest and fostered a welcoming atmosphere for socializing. Ultimately, sensory design in inclusive community settings anchors residents, enhances social well-being, and helps mitigate feelings of loneliness (Mann, 2013).

## **Limitations & Recommendations**

This study could benefit from improved and more qualitative data by conducting additional interviews with residents of Tarwewijk, particularly students and elderly individuals who align with the target demographic. This would provide a more comprehensive understanding of the existing context. Furthermore, the limited number of elderly respondents in the survey regarding loneliness and ICS raises questions about how the findings might change with better representation. Nonetheless, the study has opened up innovative research approaches, and through various tutor sessions and feedback, the complexities surrounding loneliness and health became increasingly clear. As a result, the extensive data gathered has led to several design





Figure 15. Sensory Designed Kids Playroom . Source: Spruce

guidelines that can assist designers in creating environments that foster a sense of belonging, encourage social interactions, nurture meaningful relationships, and prioritize social well-being for various age groups. It is recommended that further research focus on the specific needs of the target resident profiles (students and elderly) regarding loneliness and ICS in Tarwewijk.

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# DESIGN GUIDELINES

SEE APPENDIX FOR MORE ELABORATION (P. 68-69)

# CHAPTER 07

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# DESIGN GUIDELINES

The design guidelines are categorized in three dimensions, namely urban, block and interior level. This has to do with the findings in the literature studies, case studies (practice) and research grounded in Tarwewijk which can also be grouped in these three categories.

## URBAN LEVEL

On an urban level a designer could opt for a flexible spatial design of communal spaces as Kaplan et al. (2020) also suggest. This way ICS of a building become valuable for the neighbourhood as well, providing accommodation for a variety of social activities within the same space. This is also the case in the Liv Inn, for example where the theater space serves as an exhibition space but also as a cinema room or a space for yoga and Tai Chi (see Appendix page 106-139).

Additionally, accessibility should be prioritized when housing (lonely) elderly and students, as elderly are becoming less mobile with age and students are heavily dependent on a good or close connection to public transport for educational or work-related reasons.

Furthermore, community-centric programming refers to the ability of the building to attract and retain active community members, as seen in the Liv Inn for example where the meeting room is also rented out to other organizations in the area, and more importantly, to host neighbourhood council events ("buurtkamer"). By adding intergenerational programming, as discussed by Kaplan et al (2020) in particular, it will also benefit the direct neighbourhood as well as the building's residents, resulting in the building block becoming of much importance to its surrounding urban context.

Lastly, by developing greenery in a concrete-dominant environment residents are able to have access to nearby nature which have many benefits

for their (mental) health and social wellbeing. Developing rooftop gardens in particular make for a suitable intergenerational program for elderly and students as they are able to interchange knowledge about for example gardening, healthy eating habits or personal development topics (Kaplan et al, 2020). It also supports autonomy, especially among the elderly who have a lot of free time and patience according to Kaplan et al. (2020).

## BLOCK LEVEL

Firstly, the centrality of access systems and ICS play a crucial part in realizing spontaneous social encounters among residents and neighbours. Through visual connections community members can engage in conversations much easier, as seen in the Liv Inn. Other benefits are easy accessibility and equal distances from apartments to the central spaces that buzz with activity, lowering the threshold to partake in social activities or events.

Secondly, activating the plinth by designing with transparency (e.g. large glass windows), helps create an inward and outward visual connection, which in turn stimulates an inviting "pull" of people to the ICS (as seen in OurDomain Holendrecht).

Creating shared infrastructure and clustering housing units of different generations help facilitate spontaneous social interaction. Shared infrastructure makes for sustainable usage of resources among the community (e.g., shared cars, bikes or laundrettes) and naturally encourages residents to meet on their daily routines. Clustering the housing units was inspired through the interviews with students and elderly in the Liv Inn, where they mentioned that this would help increase a "preferred" way of informally meeting others and promoting social connection between the two groups.

Lastly, optimizing rooftop space allows for a suitable space where autonomy can be exer-

cised and transmission of knowledge among different generations takes place (e.g., elderly with student-neighbours or their (grand)children) (Kaplan et al., 2020). Also many respondents in the survey express their need for nearby greenery and accessible rooftop space, as this would lower the threshold to go outside in colder months, help appoint this space as a meeting place, and helps them to be near nature.

## INTERIOR LEVEL

Acoustic sound control in ICS can enhance usability, functionality and comfort. By using materials with performative acoustic properties unwanted noise can be dampened, creating an intimate and enjoyable auditory environment for everyone, including people with hearing aids or impairments. It prevents avoidance from these individuals behaviour from noisy spaces, preventing social isolation and loneliness.

Light is a tool to define the ambiance and functionality of ICS, it enhances social well-being and reduces loneliness by fostering the readability of a room and sense of orientation, crucial for elderly mobility. When using warm tones, accent lighting, controlled shadows, and contrast, light has the ability for optimizing a space's readability, safety perception, comfort, sense of orientation and social connectedness. The design could include layered lighting (e.g., decorative or accent lighting), natural light, and dimmable options for diverse activities in ICS. Avoid creating glare (caused by strong contrast between the surroundings and light sources) by balancing natural and interior light sources.

Textures are a tool that can visually or tactilely guide users to navigate in between spaces, particularly relevant for elderly with a decline in their visual ability. They add depth and tactile engagement, visual contrast that can make spaces

feel warm, recognizable or distinctive. Textured flooring can signal level changes and provide comfort for walking and to make falls less dangerous (e.g., cork, rubber, linoleum). Textures also allow for zoning and soft transitions using contrasting materiality, allowing for soft barriers that can still promote both public and more private interior zones for varying social interactions.

Colors are a means to stimulate comfort, warmth, appeal, moods and recognizability. The interplay of contrasting (vibrant) colors can visually aid in reading the interior of ICS, distinguishing the function per space, and aiding in signalling level changes. They can be utilized as a wayfinding system by using distinctive colors, patterns or works of art. Simple changes in color combined with strategic placement of certain social activities can drastically increase social connectedness.

Shadows are a tool to enhance the dramatic quality of ICS. Shadows can evoke depth, intimacy, immersion while maintaining visibility. Thus, it can play nuanced roles in different ICS (e.g., cinema room, lounge or bar). Through diffuse and low intensity lighting harsh shadows can be minimized, creating cozy and comfortable environments where people want to linger and socialize.

Smell is a design factor that influences how people evaluate spatial cues and in turn, they might experience social relations with others within ICS. The smell of food or coffee might be an invitation (or rather excuse) to go and socialize with others, fostering both movement and social opportunities. The fragrances of plants can evoke comfort, home-like feel or nature-feel which can bring life to ICS.

Other design guidelines for the interior sphere include, adding greenery as residents using ICS in the Liv Inn and OurDomain Holendrecht argue that it can "lift the mood" and create a cozy and

comfortable atmosphere to interact with one another. Hence, promoting social connection and mitigating loneliness among these groups. Also, including nostalgic themes in the design of ICS (as seen in the Liv Inn). Researchers Lee (2022) and Petermans and Cain (2019) also argue that adding nostalgic themes or objects are crucial for elderly's sense of belonging as these themes or objects can have emotional meaning attached to them that they relate to "home". Lastly, designers should include more private zones in the interior spaces where residents can draw back to and semi-isolate themselves. This lowers the threshold for them to go to ICS and see it as an extension of their home, rather than a space where they are only forced to engage socially. The separation of the public and private can be done seamlessly using (floor) textures or semi-transparent walls or room-dividers.







# URBAN

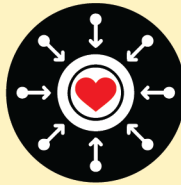


**FLEXIBLE SPATIAL  
DESIGN**



**PRIORITIZE  
ACCESSIBILITY**

# BLOCK



**CENTRALITY OF ICS  
AND ACCESS SYSTEMS**



**ACTIVATE PLINTH**



**SHARED  
INFRASTRUCTURE**

# INTERIOR



**SOUND**

Acoustic sound control in ICS can enhance usability, functionality and comfort.



**LIGHT**

Light is a tool to define the ambiance and functionality of ICS, it enhances social well-being and reduces loneliness by fostering the readability of a room and sense of orientation, crucial for elderly mobility.



**TEXTURE**

Textures are a tool that can visually and tactilely guide users to navigate in built spaces, particularly relevant for users with a decline in their visual acuity.

# DELINEs



**COMMUNITY-CENTRIC  
PROGRAMMING**



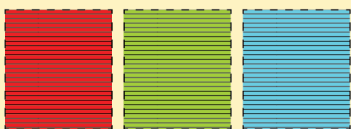
**GREENERY**



**GREENERY**



**NOSTALGIC  
THEMES**



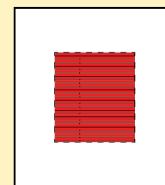
**CLUSTER INTER-  
GENERATIONAL  
HOUSING UNITS**



**OPTIMALIZING  
ROOFTOP SPACE**



**FLEXIBLE ICS**



**PRIVACY/PUBLIC  
ZONING**



**COLOR**



**SHADOW**



**SMELL**

ually or  
between  
elderly  
ability.

Colors are a means to stimulate comfort, warmth, appeal, moods and recognizability.

Shadows are a tool to enhance the quality of ICS. Shadows can evoke depth, intimacy, immersion while maintaining visibility.

Smell is a design factor that influences how people evaluate spatial cues and in turn, they might experience social relations with others within ICS.

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# CONCLUSION

**CHAPTER**  
**08**

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# CONCLUSION

Loneliness is a significant issue in urban areas such as Tarwewijk, impacting both young adults and the elderly due to feelings of disconnection, weakened social networks, and limited opportunities for meaningful engagement (Roe & McCay, 2021; Van Tilburg et al., 2007). This study intends to develop design guidelines to address loneliness by creating inclusive Intergenerational Communal Spaces (ICS) that foster wellbeing and social interaction.

The recommendations emphasize the importance of socially supportive environments and are based on the layered model of loneliness by Hawkey et al. (2008) and the Restorative Cities framework by Roe & McCay (2021). They also draw insights from intergenerational programming research by Kaplan et al. (2020) and incorporate physical sensory qualities based on Lee's (2022) sensory framework. Integrated Community Spaces (ICS) are designed to act as "third places" that connect different generations, enhancing interaction between the elderly and students while cultivating a sense of community. For seniors and individuals with disabilities, sensory design—encompassing elements like light, sound, texture, and nostalgic themes—is crucial for ensuring accessibility and comfort during social activities.

Case studies like Liv Inn Hilversum and OurDomain Holendrecht illustrate how inclusive environments and adaptable programming can foster significant intergenerational relationships. OurDomain showcases the potential of versatile, multifunctional areas, while Liv Inn highlights the value of sensory-rich environments. However, challenges such as scheduling conflicts and insufficient volunteer support underscore the need for flexible design and professional programming when engaging with both elderly individuals and students.

The guidelines address these challenges at various levels: block-level solutions promote inter-

generational housing and shared facilities; interior designs incorporate sensory features and optimize underutilized areas such as rooftops; urban strategies emphasize accessible green spaces and community-oriented programming (detailed descriptions can be found in the Appendix). These guidelines aim to establish a framework for designing health-oriented residential buildings in urban settings, with the goal of reducing loneliness and enhancing social wellbeing across multiple generations. Case studies such as Liv Inn Hilversum and OurDomain Holendrecht illustrate how inclusive environments and adaptable programming can foster meaningful intergenerational relationships. OurDomain highlights the potential of flexible, multifunctional spaces, while Liv Inn focuses on the significance of sensory-rich environments. However, challenges like conflicting schedules and limited volunteer resources underscore the need for flexible design and professional programming when addressing the needs of both elderly individuals and students.





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# CHAPTER

# 09

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# APPENDIX

## APPENDIX



# **CHAPTER** **10**

# URBAN



## FLEXIBLE SPATIAL DESIGN

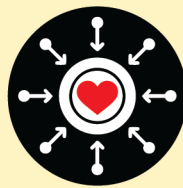
This makes the ICS of the residential building very valuable to the neighbourhood as well, providing accommodation for various social activities within the same floorplan area. So, a theater can also serve as an exhibition space.



## PRIORITIZE ACCESSIBILITY

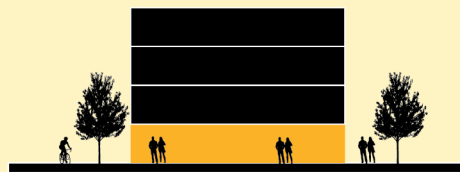
Proximity of public transport and accessibility to it is crucial for elderly and students, as elderly are probably less mobile and students need to travel more often or farther for their education or classes.

# BLOCK



## CENTRALITY OF ICS AND ACCESS SYSTEMS

The central placement of ICS and access systems lowers the threshold for spontaneous interactions due to constant visual connections. This also allows for easy accessibility and creates a similar distance to all apartments, which could encourage elderly to join social activities such as communal lunches.



## ACTIVATE PLINTH

Through public functions and transparency through large windows the plinth becomes activated, fostering an inward and outward visual connection, thus inviting local residents to socially and visually engage with the building.



## SHARED INFRASTRUCTURE

Develop shared facilities like gyms, study rooms, cars, bikes and laundrettes within the residential blocks, which can reduce loneliness by naturally encouraging resident interaction during daily routines through its proximity and sharing principle.

# INTERIOR



## SOUND

**Acoustic sound control in ICS can enhance usability, functionality and comfort.** By using materials with performative acoustic properties unwanted noise can be dampened, creating an intimate and enjoyable auditory environment for everyone, including people with hearing aids or impairments. It prevents avoidance from these individuals' behaviour from noisy spaces, preventing social isolation and loneliness.



## LIGHT

**Light is a tool to define the ambiance and functionality of ICS, it enhances social well-being and reduces loneliness by fostering the readability of a room and sense of orientation, crucial for elderly mobility.** When using warm tones, accent lighting, controlled shadows, and contrast, light has the ability for optimizing a space's readability, safety perception, comfort, sense of orientation and social connectedness. The design could include layered lighting (e.g., decorative or accent lighting), natural light, and dimmable options for diverse activities in ICS. Avoid creating glare (caused by strong contrast between the surroundings and light sources) by balancing natural and interior light sources.



## TEXTURE

**Textures are a tool that can visually or tactilely guide users to navigate between spaces, particularly relevant for elderly with a decline in visual ability.** They add depth and engagement, visual contrast that can make spaces feel warm, recognizable or disorienting. Textured flooring can signal level changes and provide comfort for walking (e.g., cork or linoleum). Textures also allow for soft transitions through the use of contrasting materiality, allowing for soft barriers that still promote both public and more private interior zones for varying social interactions.

# DELINE



## COMMUNITY-CENTRIC PROGRAMMING

This activates the public intergenerational public program and nurtures cross-generational participation and connections. For example, a meeting room can be of use for community meetings of the neighborhood ("buurtkamer").



## GREENERY

Develop rooftop gardens, pocket parks, or green corridors with shaded seating and interactive landscaping to create nearby nature which boosts (mental) health and fosters social connections

## OTHER



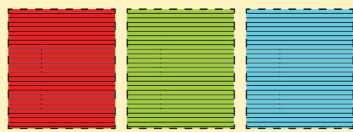
## GREENERY

Include greenery in ICS as it can lift the mood and foster social connection and health



## NOSTALGIC THEMES

Include nostalgic themes to make elderly feel at home in ICS, which is linked to raising their sense of belonging



## CLUSTER INTER-GENERATIONAL HOUSING UNITS

Develop clusters of intergenerational housing units to facilitate spontaneous social interaction and the creation of meaningful relationships. Through its proximity clustered units can promote interaction between elderly and students.



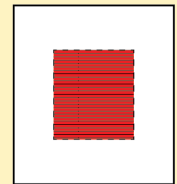
## OPTIMALIZING ROOFTOP SPACE

Rooftop gardens allow for autonomy, transmission of intergenerational knowledge and nearby nature which can boost (mental) health and mitigate loneliness



## FLEXIBLE ICS

Develop multifunctional ICS that allow for transitions between uses and allows for various social activities



## PRIVACY/PUBLIC ZONING

Develop interior zones with more or less privacy (e.g., inner garden), which might invite different types of social meetings



## COLOR

visually  
gate in  
relevant  
in their  
and tactile  
can make  
distinctive.  
changes  
and to  
rubber,  
ing and  
contrasting  
that can  
private  
actions.

**Colors are a means to stimulate comfort, warmth, appeal, moods and recognizability.** The interplay of contrasting (vibrant) colors can visually aid in reading the interior of ICS, distinguishing the function per space, and aiding in signalling level changes. They can be utilized as a wayfinding system by using distinctive colors, patterns or works of art. Simple changes in color combined with strategic placement of certain social activities can drastically increase social connectedness.



## SHADOW

**Shadows are a tool to enhance the dramatic quality of ICS. Shadows can evoke depth, intimacy, immersion while maintaining visibility.** Thus, it can play nuanced roles in different ICS (e.g., cinema room, lounge or bar). Through diffuse and low-intensity lighting harsh shadows can be minimized, creating cozy and comfortable environments where people want to linger and socialize.



## SMELL

**Smell is a design factor that influences how people evaluate spatial cues and in turn, they might experience social relations with others within ICS.** The smell of food or coffee might be an invitation (or rather excuse) to go and socialize with others, fostering both movement and social opportunities. The fragrances of plants can evoke comfort, home-like feel or nature-feel which can bring life to ICS.

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# SENSORY DESIGN IN HOUSING CONTEXT

by Ellen Lupton & Andrea Lipps, 2018

## Multisensory Design Guidelines for Elderly People and Students

Throughout this study, a realization occurred that when designing for the elderly (one of the vulnerable groups for loneliness), students will also largely benefit from this. It becomes a multi-benefit design solution. For example, when a designer aims for acoustic control in a space by using more wooden material — which is proven to help against noise or sound distortion in interior space — it allows elderly with hearing impairments and/or hearing aids to comfortably engage in social activities instead of avoiding these. Although the students might not have the same deterioration in their hearing abilities — as they are still young — they are able to benefit from an acoustic space by partaking in conversations with both elderly people or their peers, due to less disturbed and easier communication, and increased understandability (Lupton & Lipps, 2018).

In the widely-used book **The Senses - Design Beyond Vision** by Ellen Lupton and Andrea Lipps (2018)— a rich collection on the topic of sensory design — the **NYC department for Aging collaborated with the American Institute of Architects New York Design for Aging Committee** to publish guidelines that assist designers to assist multiunit residential buildings and apartments to support aging in place. In the following paragraph, several of these examples will be mentioned in order to get an understanding of how design tools might facilitate (relevant) sensory experiences within ICS which promote social interaction, social connection and tackles loneliness for especially elderly people, yet still beneficial to young adults (students).

## Tactility (textures)

A designer can opt for the use of resilient floor coverings, such as cork, rubber, and linoleum to provide comfort for walking and to make falls less dangerous. Alternatively, textured flooring to signal a level change and identifying stair treads with slip-resistant textured strips in a contrasting color. Another example is using consistent floor surfaces to distinguish between a building's different functional areas, such as hallways and stairs. Or, marking circulation routes in shared or public areas of a building with handrails. Lastly, the designer can install lever-style hardware in sinks, showers, and baths as well as installing hand-held, adjustable showerheads.

## Light

Furthermore, designers must avoid creating glare (caused by strong contrast between a light source and its surroundings) by balancing natural and interior light sources. Another measure is using indirect light (directed against walls or ceilings) to avoid shining light directly into people's eyes or installing sun louvers or window blinds. Additionally, designers can opt for even lighting to eliminate dark areas inside and outside a building. In apartments, motion-sensor night-lights could illuminate hallways.

## Color, Pattern, Line

Moreover, designers can make entrances stand out with contrasting colors as well as clear illumination. They can change floor colors to signal a level change or threshold, or avoid concealing level changes with patterns or arbitrary color shifts.

In hallways, applying contrasting wainscot trim can provide a visual and tactile point of reference. More importantly, they can create a wayfinding system by using distinctive colors, patterns, and/or works of art to identify the different floors of a building. But also using different colors can help identify different doorway functions, such as entrances to apartment units, trash areas, and stairwells.

**Smell**

Lastly, designers can use plants to add fragrance as well as movement and life to public spaces.



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# MULTISENSORY ANALYSES: LIV INN HILVERSUM

Analysis framework by Keunhye Lee (2022), Personal Work

## Purpose Sensory Analysis

To decypher the physical qualities of the interior space and its relation to creating spaces of belonging, comfort, home and social wellbeing a sensory analysis is made based on the framework of Keunhye Lee (2022).

According to Gwendoline Schaff et al. (2022) in *Home in Later Life* by sensorial factors directly impact emotional and social wellbeing. By balancing sensory stimuli like light, material texture, and sound, spaces can encourage both privacy and interaction. Alternatively, Keunhye Lee (2022) advocates that multi-sensory engagement (e.g., through light, shadow, texture, and smell) creates emotional connections to space, enhances social well-being and establishes (cultural) identity in that space. Such design enriches spatial experiences by fostering personal and shared cultural memories, which can mitigate loneliness and promote social interaction.

Moreover, analysing sensory design elements in the design can help generate specific acoustic parameters for the people with hearing difficulties and adequate lighting compositions for the visually-impaired. For example, residents of the Liv Inn also mention that focusing on making the lighting more diffused and adding acoustic measures for communal spaces, which can be too loud for those with hearing disabilities, are important factors for the comfort, coziness or user-satisfaction within the communal spaces.

## Analysis

The analysis focuses solely on the sensory factors of the interior communal spaces, i.e. texture, light, shadow, color, sound and smell. Temperature is left out in this scenario, as it is hard to identify and fairly similar in each room (personal opinion).

The orange dot indicates that the sensory element works "good". And the green dot indicates that the element works "very well". The absence of both means that there is no or insufficient perceptible evidence of that specific sensory factor.

Analysis Interior Communal Spaces

	Morphological Factor						Sensual Factor							Influential Factor		The Body	
	Volume	Scale	Rhythm	Order	Proportion	Contrast	Texture	Light	Shadow	Color	Temperature	Sound	Smell	Culture	Local	Senses	Movements
TH							●	●	●	●		●					
B							●	●	●	●		●					
IG							●	●		●			●				
CK							●	●	●	●							
...																	
...																	
...																	
Theater (TH), Bar (B), Inner Garden (IG), Communal Kitchen (CK)																	

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# MULTISENSORY ANALYSES: LIV INN HILVERSUM

Analysis framework by Keunyehe Lee (2022), Personal Work

## Sound

To absorb the sound emitted from the speakers or instruments in the theater, wooden panels on the side of the walls help reduce unwanted noise or distortion, contributing to the acoustic quality of the room. Additionally, the floor is carpeted which can contribute to the absorption of soundwaves due to its physical qualities and soft surface.

## Light

Throughout the communal spaces of the Liv Inn, (movable) spotlights are used (see figure to the right). These spotlights, "accent lighting", emphasize important areas in the theater, such as the stage or area with the tables and chairs or the piano area. Alternatively, wall-mounted armatures are used as decorative lighting, which helps to set the mood or positively contribute to the atmosphere of the building.

## Shadows

With little to no windows openings, the theater is naturally dark, which is ideal for this specific function. The shadows create a dramatic and contrasting play with the lighting, as the accent lighting focuses more on the stage, tables, piano area, and wall-armatures more on decorating the walls. This leaves room for the shadows dramatize shadows in the corner (located at the hanging curtains) and on the floors, especially near its entrance.

## Texture

Wooden panels, the carpeted floor and plastered (colored) walls mainly make up for the play with texture in this room. Carpeted floor also increase the feel of comfort, coziness and home, next to their acoustic properties.

## Color

Vibrant colors contribute to the atmosphere of the theater, as the blue curtains, carpet, walls are inviting, lively and complimentary to the wooden objects in the room (e.g. color of the tables, chairs, wooden panels).



SOUND



LIGHT



TEXTURE



COLOR



SHADOW



SMELL



1. Theater

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# MULTISENSORY ANALYSES: LIV INN HILVERSUM

Analysis framework by Keunyehe Lee (2022), Personal Work

## Sound

To absorb the sound emitted from the speakers or instruments in the theater, wooden panels on the side of the walls also help reduce unwanted noise or sound distortion, contributing to the acoustic quality of the room. Similarly, the floor is carpeted which can contribute to the absorption of soundwaves due to its physical qualities and soft surface.

## Light

The bar uses decorative lighting that helps to set the mood and positively contribute to the atmosphere or look-and-feel of the space. Similar to the theater, accent lighting is used in this space, but now to emphasize the decorative posters, flyers, old vinyl covers on the wall, and "nostalgic" furniture of the elderly (e.g. cigarette dispenser or traditional wall cabinet).

## Shadows

With the decorative lighting as the main lighting for the bar, shadows are a little less prominent in this space. On the other hand, the lighting makes the room less illuminated which in turn causes for a cozy and homy feel.

## Texture

Similar to the theater wooden panels, the carpeted floor and plastered (colored) walls mainly make up for the play with texture in this room. Again, the carpeted floor can contribute to the acoustic performance of the room. Alternatively, various (almost random) object hanging from the walls or ceiling add a 3D texture to the space, which acts as a "Wunderkammer", where every object you focus on is totally random but still has its own story and (nostalgic) value.

## Color

Apart from the vibrant yellow color of the wall, and blue carpet, the bar also becomes interesting through the old vinyl record collection of an acquaintance of the Liv Inn residents that were used by the interior designer. The various colors of the covers and center of the vinyls make the room colorful and compliments well with the vibrant colors of the walls and floors.





1. Bar, "De Soos"

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# MULTISENSORY ANALYSES: LIV INN HILVERSUM

Analysis framework by Keunye Lee (2022), Personal Work

## Light

The inner garden mainly uses decorative lighting that helps to set the mood and positively contribute to the atmosphere or look-and-feel of the space. Besides that, the inner garden is adjacent to large window openings on the first floor in the Liv Inn, which allows a lot of natural daylight to come through.

## Texture

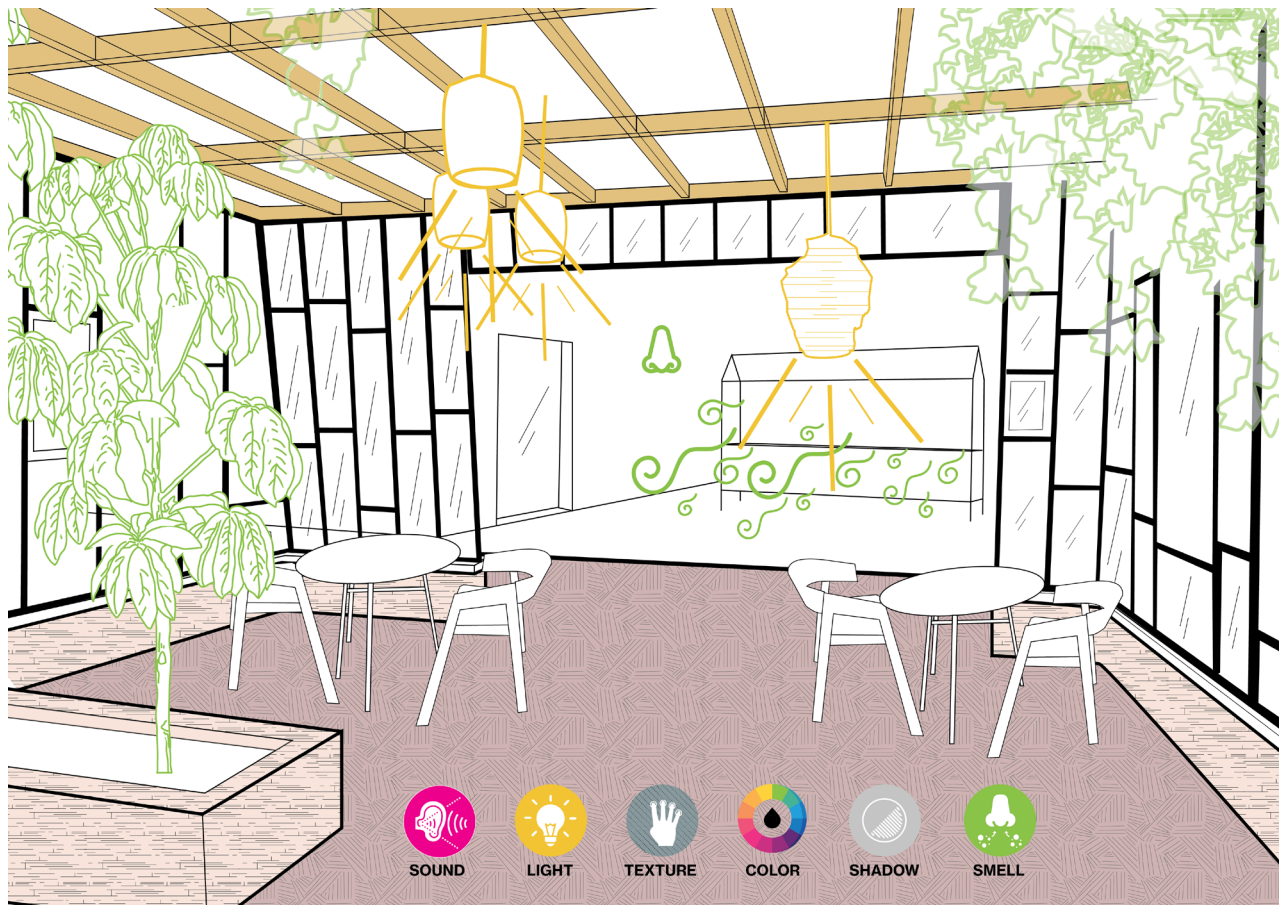
The inner garden, as the name suggests, focuses on creating a garden-like environment in the interior of the Liv Inn. By drastically bordering the floor surface texture with red hexagonal tiles of the inner garden in comparison to the walkways or other functions with a polished concrete look, a contrast and zoning of the inner garden becomes evident. Apart from that the glass partition cause for a semi-transparent wall around the space. An open wooden ceiling and refurbished wooden elements in the glass wall add to the warmth of the space. To further border the inner garden in the open, yet central interior space it finds itself in, the architect's use a plinth made of red brickwork, which also adds the the warmth and interplay of textures within the space.

## Color

By using warmer colors such as wood, red brickwork, red hexagonal ceramic tiles and greenery around the ceiling and in planting beds which are integrated in the brick plinth, the inner garden certainly feels comfortable, cozy and invites lingering and provides an atmosphere that is suitable for study or work. The latter is concluded based on talks with staff, a student and elderly who confirm this success of the inner garden.

## Smell

Although the garden is drastically bordered or partitioned from the surrounding interior spaces, it still has an open design. This allows for the smell from cooking or coffee from the communal kitchen to enter the space. This can residents to possibly move from the inner garden to the communal kitchen, which is often occupied by residents during certain peak hours for either drinking coffee, a drink, cooking or eating.



1. Inner garden, "De Binnentuin"

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# MULTISENSORY ANALYSES: LIV INN HILVERSUM

Analysis framework by Keunyehe Lee (2022), Personal Work

## Light

The communal kitchen is also seen as the heart of the building. The kitchen uses decorative lighting above the dinner table which contributes the the atmosphere atthe table when eating or drinking. Additionally, accent lighting in the form of spotlights are used to emphasize and illuminate the kitchen islands (where the cooking and the washing of dishes happens), and the shelves (to the left in the drawing) where the glasses and other kitchen equipment is stored.

## Shadows

Although the presence of shadows is minimal, the play of accent lighting and the decorative lighting above the dinner table causes the shadows to seperate three main areas in the communal kitchen: the shelvers or cabinets (left), dinner table (middle) and kitchen islands (right).

## Texture

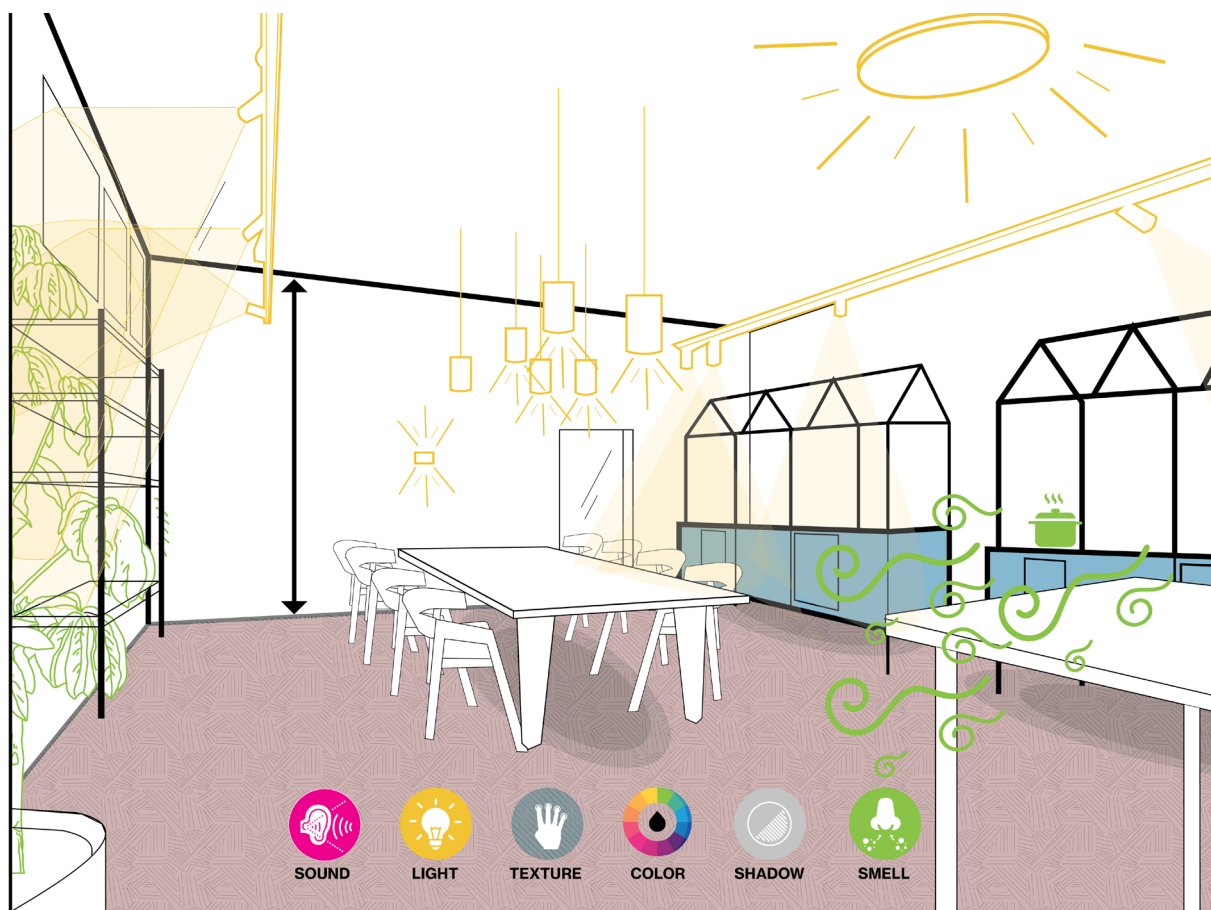
Similar to the inner garden, red hexagonal ceramic tiles are used to border the communal kitchen from the surrounding walkways and interior spaces. Other than that, the walls are white plastered.

## Color

The vibrant blue color used in the theater is repeated to highlight the cabinets of the kitchen islands. This makes them both noticable and act as borders in the open space. For example, the tiles in combination with the kitchen islands that lie in one line indicate when a person either enters or leaves the communal spaces. Decorative greenery also adds to the atmosphere and coziness of the kitchen.

## Smell

Almost logically, the large kitchen is designed where the smell of cooking from the oven or induction plates, or the smell of coffee from the coffee machine can be experienced.



1. Communal Kitchen, "De  
Leefkeuken, oftewel  
het hart"



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# MULTISENSORY ANALYSIS: OURDOMAIN HOLENDRECHT

Analysis framework by Keunye Lee (2022), Personal Work

## **OurDomain Holendrecht**

The communal kitchen is also seen as the heart of the building. The kitchen uses decorative lighting above the dinner table which contributes to the atmosphere at the table when eating or drinking. Additionally, accent lighting in the form of spotlights are used to emphasize and illuminate the kitchen islands (where the cooking and the washing of dishes happens), and the shelves (to the left in the drawing) where the glasses and other kitchen equipment is stored.

The following analysis is conducted in a similar way as the ICS in the Liv Inn through Lee's (2022) sensory framework in order to decipher physical sensory qualities that allow for socially supportive ICS.

Analysis Interior Communal Spaces

	Morphological Factor						Sensual Factor							Influential Factor		The Body	
	Volume	Scale	Rhythm	Order	Proportion	Contrast	Texture	Light	Shadow	Color	Temperature	Sound	Smell	Culture	Local	Senses	Movements
CR							●	●	●	●		●					
SR							●	●		●		●					
L							●	●		●		●					
GR																	
...																	
...																	
...																	
Cinema Room (CR), Study Room (SR), Lounge (L), Game Room (GR)																	

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# MULTISENSORY ANALYSIS: OURDOMAIN HOLENDRECHT

Analysis framework by Keunye Lee (2022), Personal Work

## Texture & Color

The room is carpeted with a dark blue soft surfaced material, this material is solely used in the cinema room and causes for a recognizable material and color users can associate the cinema room with. The room is further filled with heavy curtains in a similar dark blue color that adds to the layering of textures within the room.

## Light

The cinema room uses spotlights that are both static and movable. This can be seen as accent lighting to highlight certain areas in the room for a presentation for example. Otherwise, the lighting allows for a suitable contrast between light and shadow which is suitable for a cinema room. The curtains cover up the penetration of daylight, so in case natural daylight is needed, users can opt to open up the curtains.

## Shadow

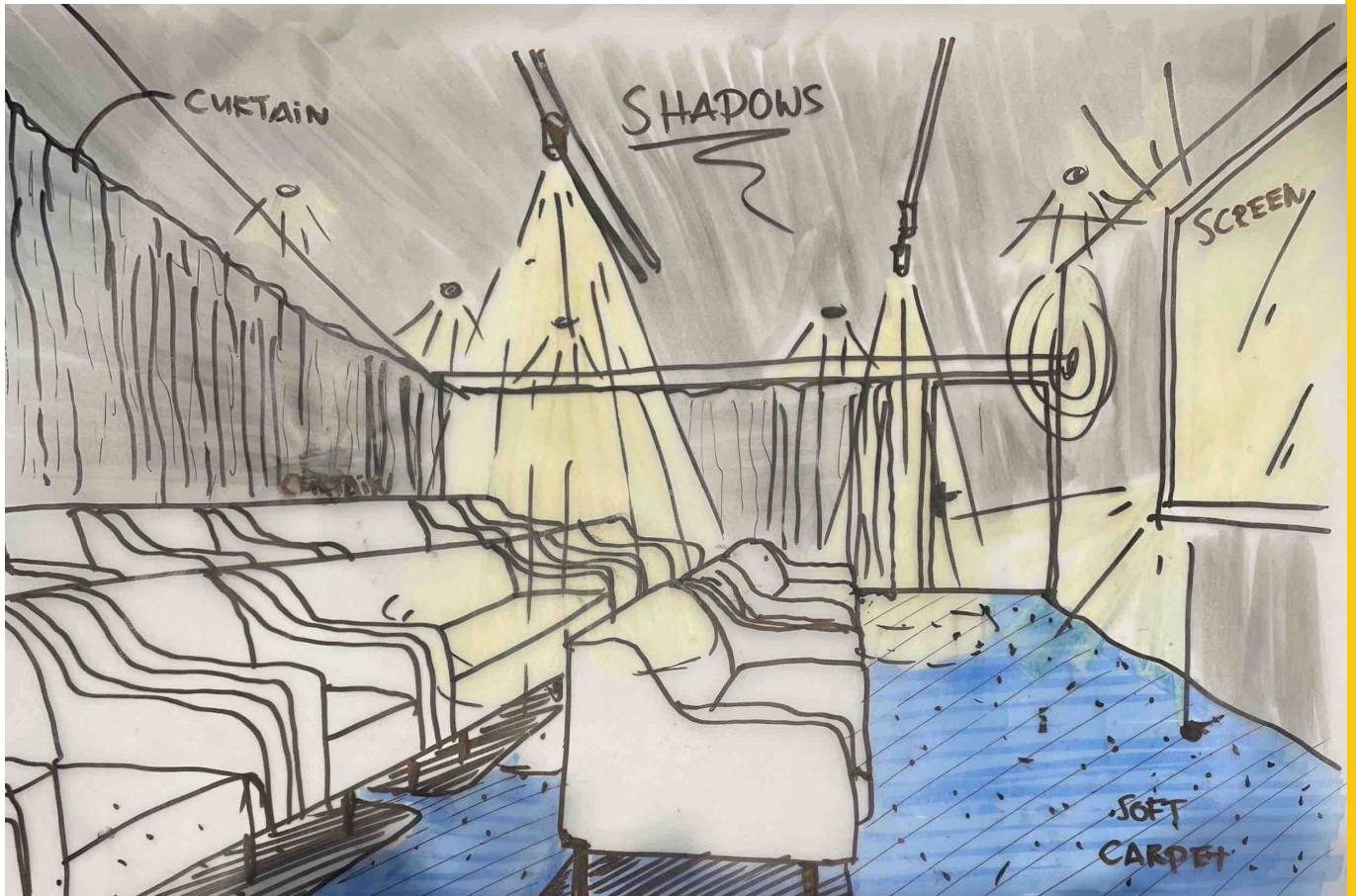
As mentioned above, the cinema room has a suitable interplay (for a cinema space) between light and shadows which allows for an "easy-to-read" and recognizable space for users who have been to cinema's before. The shadows are prominent when the spotlights are turned off which enhances the experience for the users when the large screen is portraying a movie for instance.

## Color

The dark blue color is both recognizable for all users of the space, they associate the color with the cinema room. Moreover, a darker color works well with the purpose of the room (as it easily makes the room filled with shadows or darkness).

## Sound

The speakers are placed above the large screen towards the users. Although the soft carpet and heavy curtains will aid in making the space acoustically controlled, it might still be sub-optimal. Designers could have opted for the use of acoustic panels in the room for example, to further enhance the sound experience.



1. Cinema Room

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# MULTISENSORY ANALYSIS: OURDOMAIN HOLENDRECHT

Analysis framework by Keunyehe Lee (2022), Personal Work

## Texture & Color

The decorative wallpaper creates a certain depth to the study space in terms of texture, it looks as if the texture is three-dimensional. Additionally, soft carpets are used in a warm brown color. The use of wood and red leather-like seating compliment the use of warm colors in the space. Although minimally, the space has touches of greenery through the potted plants. Lastly, when looking up, the raw look (foamy) of the insulated coating of the installations adds to the texture layering and matches well with the color of the decorative wallpaper. Combining all of this, the study room is made unique, making it easy to recognize and associate the space specifically for studying for users.

## Light

The use of accent lighting is prominent in the study space, orientated specifically on the study tables and cubicles. This makes for pleasant studying as there is sufficient light. Additionally, natural daylight comes right through the large windows of the room -- directly through the eastside (right side in drawing) and indirectly through the west-side, as this side borders the interior lounge space which also has large windows with a lot of natural daylight shining through.

## Sound

The soft carpeted floor and wooden elements contribute to acoustic control of the room. Especially the use of acoustic panels on the study tables help diminish unwanted noise of conversations, typing or other noises that might occur through users.



1. Study Room



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# MULTISENSORY ANALYSIS: OURDOMAIN HOLENDRECHT

Analysis framework by Keunyehe Lee (2022), Personal Work

## Texture & Color

The interplay of textures is complimenting well in the shared lounge. By using wooden panels around columns, brown carpets, much greenery through bigger potted plants, foamy-like ceiling, transparency of the large windows' glass and checkered tiles, the space becomes unique and rich in textures. The colors used are again warm to contribute to the "cozy and comfy feel" to give users the impression that they are in their own living room, helping them to linger longer in these spaces. Furthermore, the principle of using varying textures on the floor is used to subtly differentiate spaces from one another without making an abrupt border. This makes the transition smooth while still bordering the space

## Light

The uses of decorative lighting is mainly used in the lounge. On the walkways neighbouring the lounge, movable spotlights are used as accent lighting to help users' wayfinding. Additionally, the large windows allow for a lot of natural daylight shining through, making the lounge connected to the outside inner garden through its transparency.

## Sound

Apart from the small carpet and the wooden panels on the columns, no visible acoustic measures have been taken to enhance the sound experience. On a busy day in the lounge this could cause for a increased chance that user groups might find each others noise annoying or unpleasant. The use of acoustic partition screens or acoustic panels could be a solution.



1. Lounge

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# MULTISENSORY ANALYSIS: OVERALL CONCLUSIONS



## LIGHT

**Layered Lighting:** Integrate layered lighting types such as combining accent lighting and decorative lighting to create an inviting atmosphere

**Natural Light:** Maximize natural daylight with large windows in communal spaces, as it enhances mood and fosters connection with the outside environment



## SHADOW

**Dynamic Play of Shadows:** Employ lighting that produces soft, dramatic contrasts. Use shadows to evoke depth and intimacy while maintaining visibility

**Soft Transitions:** Prioritize diffuse and low-intensity lighting to minimize harsh shadows, creating a cozy and homelike feel



## TEXTURE

**Tactile Diversity:** Use varied materials to provide tactile richness and visual contrast, making spaces feel warm and recognizable

**Functional Textures:** Use distinct textures to define zones, which can visually guide users to navigate



## COLOR

**Warm and Vibrant Tones:** Utilize warm and vibrant colors like red brick or vibrant accents to foster appeal, comfort or recognizability

**Personal and Nostalgic Touches:** Include personalized or nostalgic coloured elements such as vinyl records or curated artifacts to evoke emotional connections and stimulate conversation



## SMELL

**Aromatic Flow:** Design open connections between areas to allow pleasant or identifiable smells, to permeate and encourage movement and socialization

**Natural Scents:** Incorporate natural greenery and plants into spaces like inner gardens to provide a refreshing sensory experience and enhance calmness



## SOUND

**Acoustic Treatment:** Use sound-absorbing materials to minimize noise and echo

**Purposeful Noise Control:** Design spaces with clear acoustic zoning to ensure sound is contained where needed and reduced in adjacent areas to foster pleasant conversations



## **RELATION TO LONELY PEOPLE (IN TARWEWIJK)**

Poor lighting prevents one's ability to "read" the space, making it feel unsafe or comfort, hinders their mobility and sense of orientation, decrease in social connectedness (Petermans et al., 2019)

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Poor contrast to the lighting (with shadows) can have the same effects as the ones stated above.

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Poor lighting prevents one's ability to "read" the space, making it feel unsafe or comfort, hinders their mobility and sense of orientation, decrease in social connectedness.

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Studies show that even simple changes in colour combined with strategic placement of certain social activiteit can drastically increase social connectedness (Petermans et al., 2019)

Despite being in a new environments, the sense of wellbeing among elderly can be traced back to the (nostalgic) things that recall meanings of home, which are often tied to objects of home from their past (Petermans et al., 2019)

---

The smell of food or coffee might be an invitation (or rather an excuse to some) to go and socialize with others (e.g. coffee time at lunch or joining communal dinners)

Smell is directly linked to the spatial perception of people. It is a design factor that influences how people (partially) evaluate spatial cues and in turn, how they might experience social relations with others within that space (Petermans et al., 2019)

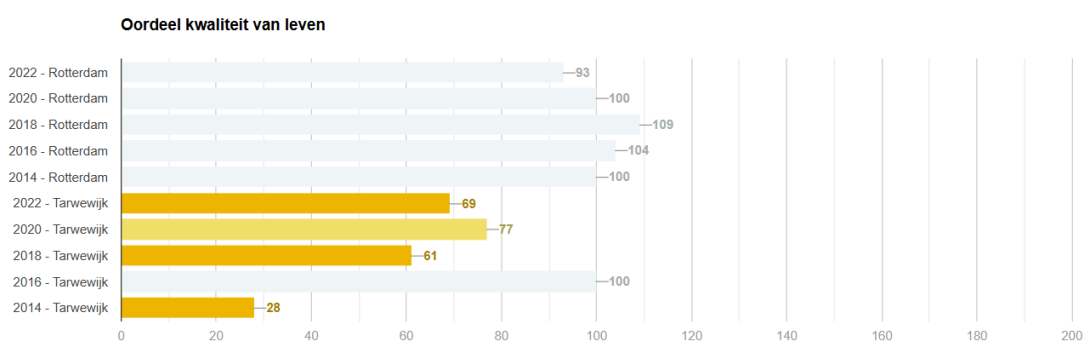
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People with hearing impairments, that might use hearing aids, might avoid (communal) spaces that become to noisy when crowded, resulting in them potentially further isolating themselves. Designing acoustically-sound spaces might encourage these individuals to participate in social activities

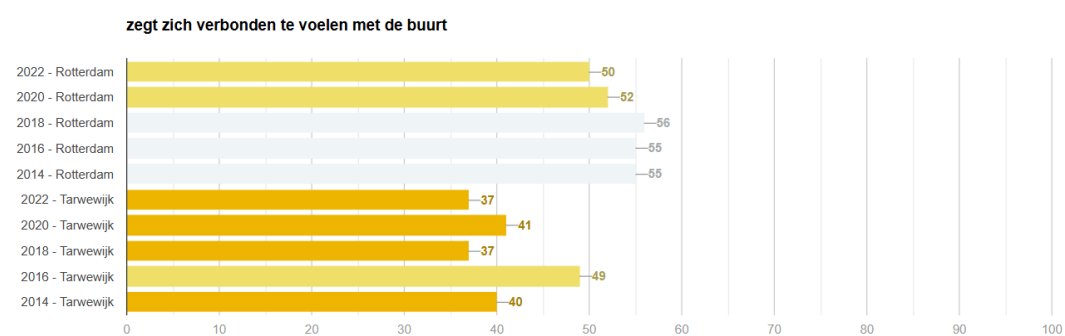
# WIJKPROFIEL ROTTERDAM

by Wijkprofiel, 2022

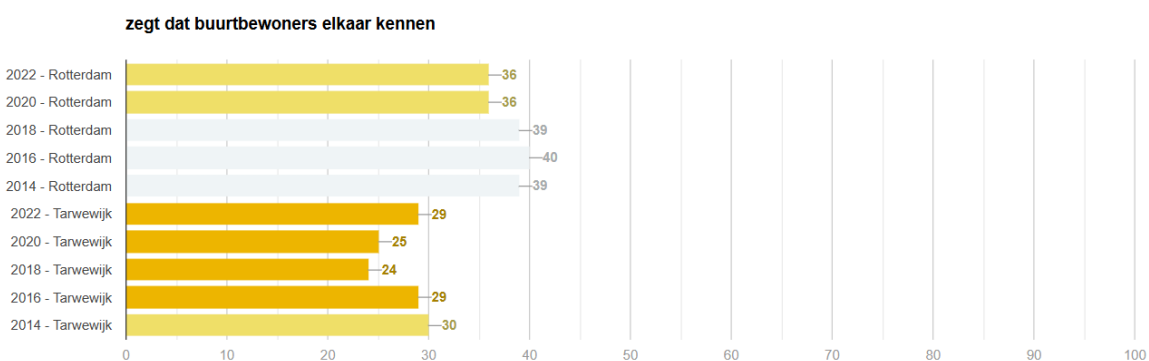
## Overall Data: Judgement on Quality of Life



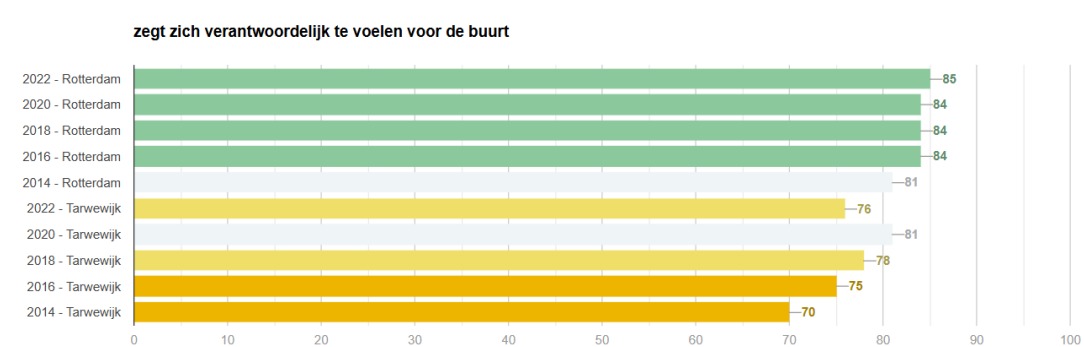
## Subjective Data: Sense of Belonging in the Neighbourhood



## Subjective Data: Acquainted with Neighbours



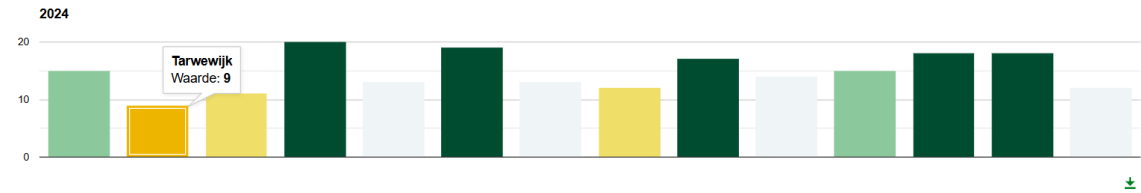
## Subjective Data Feelings Responsible for the Neighbourhood



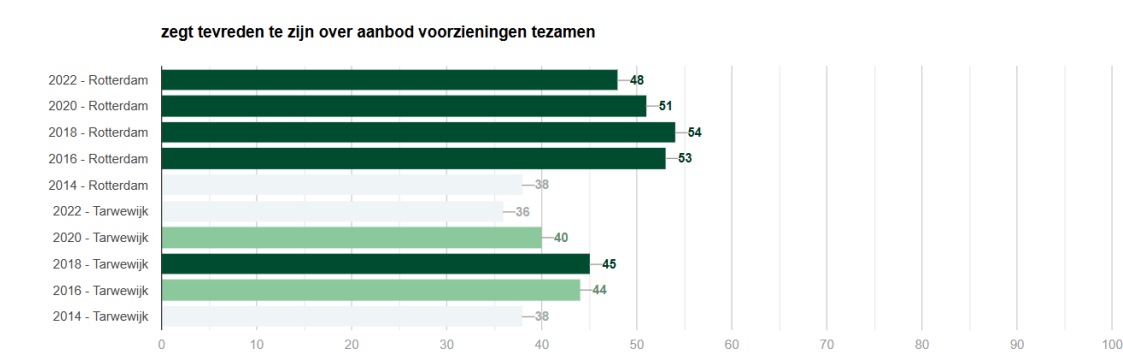
## Objective Data: Sense of Belonging in the Neighbourhood

bewoners die zich actief voor de buurt inzetten ①

[bekijk als tabel](#)



## Objective Data: Satisfaction with Communal Amenities





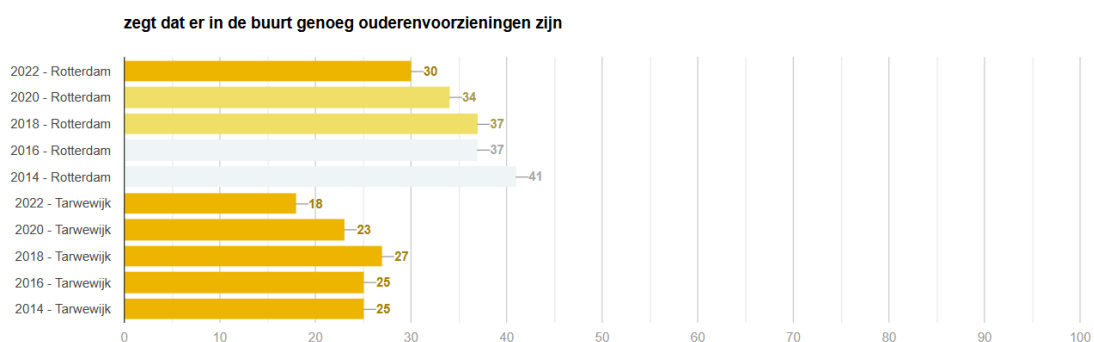
# WIJKPROFIEL ROTTERDAM

by Wijkprofiel, 2022

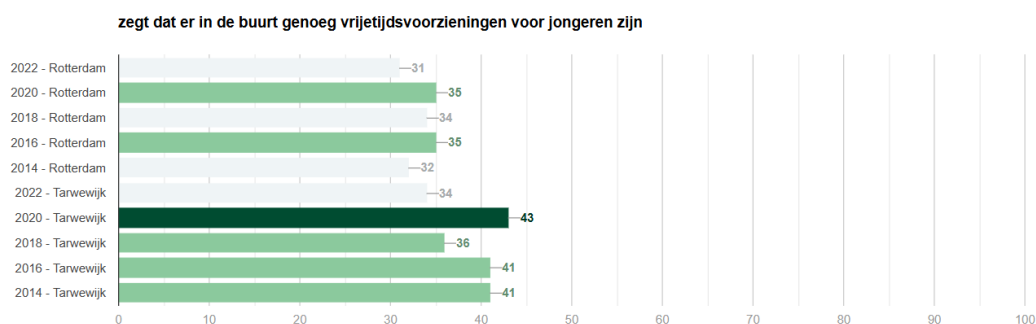
## Subjective Data: Satisfaction with Communal Neighbourhood/Residential Activities



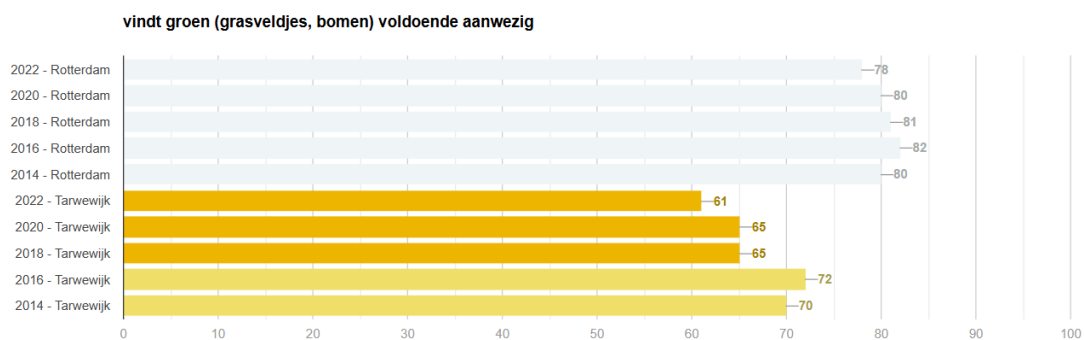
## Subjective Data: Concerns about Elderly Amenities



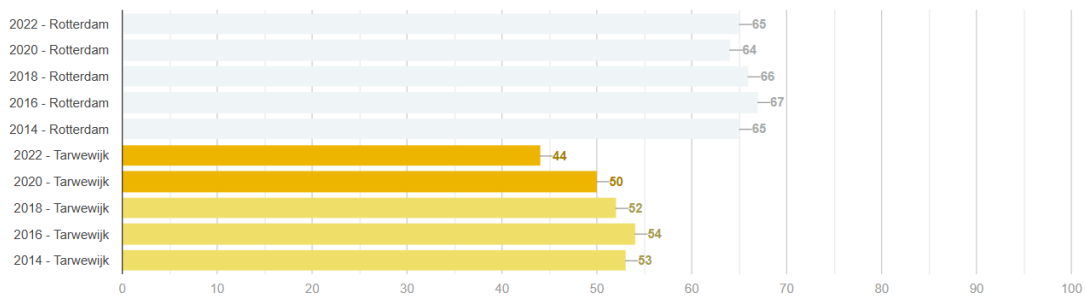
## Subjective Data: Positive about Youth Amenities



## Subjective Data: Satisfaction regarding Greenery (i.e., grass areas or trees)



## Subjective Data: Satisfaction regarding Green Amenities (e.g., parks to picnic)



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# INTERVIEW VERENIGING VERSAAR

Interview by Anton Presûra, Mara Popescu, Dean Simson

## Introduction and Overview

This interview provides insights into the experiences and perceptions of various users of communal spaces, particularly the community center Vereniging Versaar in Tarwewijk. The discussion highlights the importance of these spaces for fostering connections, organizing activities, and supporting a sense of community in a culturally diverse neighborhood. The feedback also includes observations on the challenges faced by these spaces and ideas for improvement. The building started out as a community center (buurthuis), it was also a school and now it's an Islamic community center the past 9 years.

## 1. Significance of the Communal Spaces

The users emphasized that spaces like the community center are more than just meeting places; they are vital for maintaining social cohesion in the neighborhood. The community center, in particular, was described as a "beautiful space," providing opportunities for residents to connect over tea, meals, prayers, games, and small gatherings. This multifunctional space accommodates a variety of needs, from casual interactions to organized events such as reunions, small religious gatherings, and sharing moments over food and drinks.

The interviewees noted that the communal spaces often provide a sense of comfort and familiarity, which is especially valuable in a culturally diverse and dynamic neighborhood like Tarwewijk. These spaces play a crucial role in ensuring that residents, particularly the elderly, feel supported and connected to their community.

## 2. Daily Activities and Routines

The community center operates on structured schedules to ensure accessibility for a wide range of residents. Key activities throughout the day include:

- Morning sessions (6:30–8:00 AM): These

early activities often focus on quiet, reflective moments, such as small reunions for prayers.

- Midday lunches (12:30 PM): Residents gather for shared meals, which foster a sense of community and provide a regular point of connection and prayers again.
- Afternoon and evening sessions: These cater to diverse activities, including small celebrations, educational sessions, and recreational gatherings. In the evenings it's usually busy with the elders and in the weekends with the youth.

## 3. Peak hours or days

- Fridays: the Fridays are special prayer and communing days for the Islamic users of the community center. They gather around 12h and pray until 13h, where they afterwards have something to eat and something to drink like Turkish tea.
- Sundays: on this day people come together more often than during the week due to the parking costs (7-8 euros during the week). Parking is free on Sundays namely. They come together in the morning around 10-11h to have breakfast/brunch together. Here, members bring food and/or drinks as treats for each other

The users appreciate these scheduled moments, which allow them to maintain social routines and integrate them into their daily lives.

## 4. Cultural and Demographic Dynamics

There's cultural richness reflected in the activities held in the community center, which often incorporate elements of their heritage. The interviewees highlighted the importance of these spaces for maintaining and celebrating cultural identity while also fostering connections between residents of different backgrounds.

One participant mentioned that these spaces are crucial for offering "social control, safety, and

trust." For many parents, the communal areas serve as safe environments for their children to play and interact with others, promoting a sense of responsibility and belonging from a young age. Users come from all over with approximately 75-80% from the Tarwewijk. Others come from the Rotterdam West, Afrikaanderwijk, Lombardijen or IJsselmonde for example.

#### **5. Reaction to hypothesis: moving to another location o renovation**

The interviewee explains that moving to another location will not likely happen due to the fact that the community center is their property, but hypothetically moving to another place would not necessarily harm the communion. As they will always find a way to come together, as they have experienced times without a building or being in a different location before moving here.

#### **6. Top activities in the community center**

- Praying
- Talks with the youth (combined with fun activities afterwards such as futsal or gaming on the Playstation)
- Saturdays and/or Sundays making and eating doner kebab. Also treating each other to food on Sundays during the brunch
- Meetings, engagement parties, ramadan
- Imaam who organizes activities on Sundays, as there's a bigger likelihood people might be able to join because of free parking
- Extra tutoring for students of elementary school or high school
- Sport activities: futsal or pool tournaments, chess, checkers
- Gaming: Playstation or board games

#### **7. Usage of Backyard**

When the backyard is used (not often during bad weather), it's mostly used for drinking tea or eating together. In the past they held a mini-

Kermis and had tents set up to sell small items.

#### **8. Intergenerational Opportunities**

- Would you like to live in an elderly home?: "No I don't want to live with elderly solely. I would rather like to live around younger people, as I'm able to share my life lessons with them. It also feels different, more fulfilling to be able to help the youth. I would only move to an elderly home if I had no other choice, due to health complications for example. It is also more fun being around younger people, because I also learn from the younger generation when it comes to digital problems on my phone for example or the Dutch language."
- What is the impact of these community centers for elderly?: "Elderly people can come together for drinking tea, but usually just show up quickly and then leave. But they can socialize if they want, even if it's short. Community centers like this can aid to combat loneliness."

#### **9. Organizational Collaboration**

The management of the community center in Tarwewijk benefits from a close partnership with the Municipality of Rotterdam, particularly Charlois. This collaboration enables the funding and organization of various initiatives, such as group meals and small events. However, the interviewees emphasized the importance of maintaining autonomy in planning activities to ensure they reflect the needs and preferences of the residents.

The garages that are near the center sponsor the activities of the community center, especially the youth activities where talks are held, or futsal tournaments or games are organized.

- Youth Engagement: It was noted that engaging younger residents requires creativity and sustained effort. Ideas included offering workshops and gaming spaces like PlayStations to attract their interest while ensuring they remain

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# INTERVIEW VERENIGING VERSAAR

by Anton Presûra, Mara Popescu, Dean Simson

connected to the community. It also keeps them off the streets and rather keeps them in a safe and controlled environment with elders who can take on an "advice role".

## 10. Wijkraadslid / Member of the Neighbourhood Council

- Bringing together the youth, elderly and families is really needed
- The youth loves to come to the center, as they are many initiatives where a lot of (young) members take part in
- Talks with the youth are also quite frequent. For example, a psychologist came by to talk about how they can develop themselves on a personal level.
- Sundays breakfast/brunches are organized, everyone in the neighborhood is invited
- The community center also helps against combating poverty, because everything helps each other with whatever. Whether it's with talks or resources.
- The location of the community center is good, no nuisance of the neighbours, which is especially good for the youth who can be a bit louder. In the evenings for example around 50 young people can gather on the upper floors in the buildings to game. And that is much better than having them on the corner of the streets
- Good relationship with the neighbours, they send their children to the center
- The tram stop is ideal for the elderly but it's a hard border that contributes to the splitting up the neighbourhood. The Tarwewijk itself is split into three, one time due to the tramline, and the other time due to the metro line. It makes it harder to organise something for the whole neighbourhood of the Tarwewijk as activities might clash and don't consider each other.
- Last remarks: Tarwewijk was a problem neighbourhood, but now through many initiatives

(and daysessions for the youth for example) it is going a bit better but it is still not enough. You have to provide them with sustainable resources, rather than sessions that only last one day and then it's done. Give lectures, workshops and end it on a high-note with futsal or gaming on the playstation. This teaches them something more in life and keeps them involved in the community.





# SURVEY LONELINESS & ICS

by Dean Simson

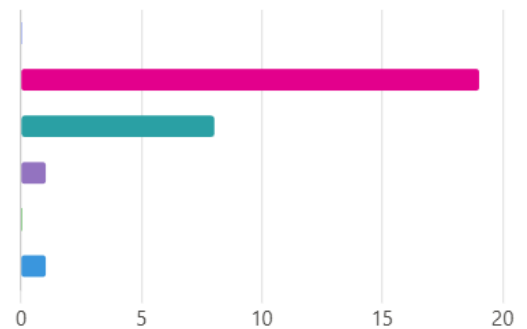
## 1. Gender

Man	15
Vrouw	14
Dat zeg ik liever niet	0
Other	0



## 2. Age group

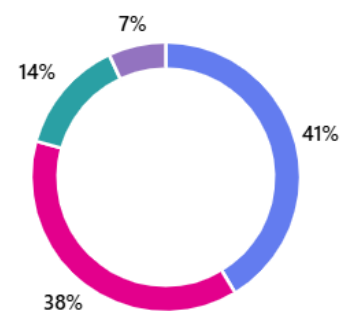
0-18	0
19-24	19
25-39	8
40-54	1
55-64	0
65+	1



## 3. Loneliness Scale:

There is always someone I can talk to about my day-to-day problems.

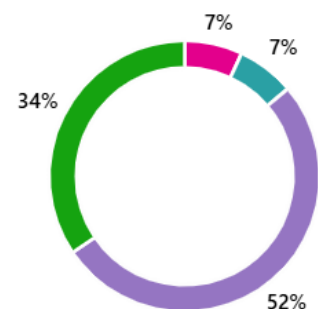
Ja ! (= geheel mee eens)	12
Ja	11
Min of meer	4
Nee	2
Nee! (geheel mee oneens)	0



## 4. Loneliness Scale:

I miss having a really close friend

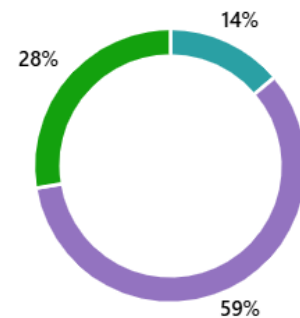
Ja ! (= geheel mee eens)	0
Ja	2
Min of meer	2
Nee	15
Nee! (geheel mee oneens)	10



## 5. Loneliness Scale:

I experience a general sense of emptiness

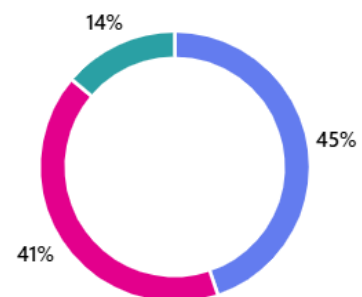
Ja ! (= geheel mee eens)	0
Ja	0
Min of meer	4
Nee	17
Nee! (geheel mee oneens)	8



## 6. Loneliness Scale:

There are plenty of people I can lean on when I have problems

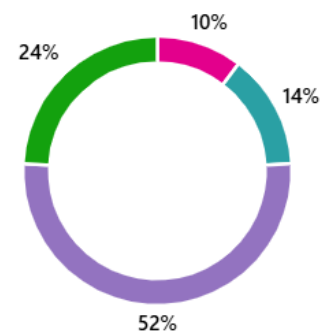
Ja ! (= geheel mee eens)	13
Ja	12
Min of meer	4
Nee	0
Nee! (geheel mee oneens)	0



## 7. Loneliness Scale:

I miss the pleasure of the company of others

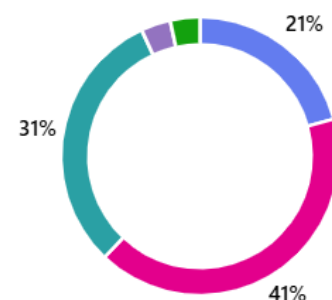
Ja ! (= geheel mee eens)	0
Ja	3
Min of meer	4
Nee	15
Nee! (geheel mee oneens)	7



## 8. Loneliness Scale:

I find my circle of friends and acquaintances too limited

Ja ! (= geheel mee eens)	6
Ja	12
Min of meer	9
Nee	1
Nee! (geheel mee oneens)	1

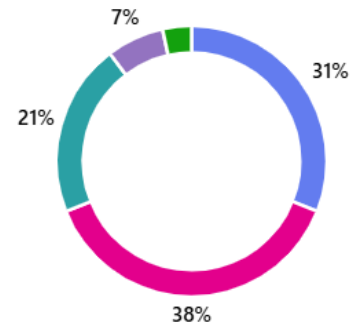


# SURVEY LONELINESS & ICS

## 9. Loneliness Scale:

There are many people I can trust completely

Ja ! (= geheel mee eens)	9
Ja	11
Min of meer	6
Nee	2
Nee! (geheel mee oneens)	1



## 10. Loneliness Scale:

There are enough people I feel close.

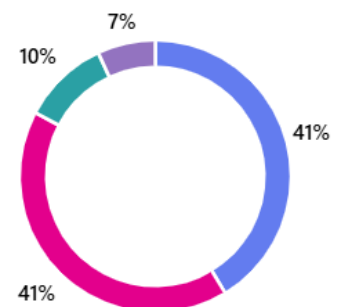
Ja ! (= geheel mee eens)	14
Ja	14
Min of meer	1
Nee	0
Nee! (geheel mee oneens)	0



## 11. Loneliness Scale:

I miss having people around me.

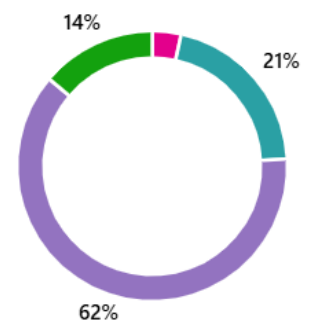
Ja ! (= geheel mee eens)	12
Ja	12
Min of meer	3
Nee	2
Nee! (geheel mee oneens)	0



## 12. Loneliness Scale:

I often feel rejected.

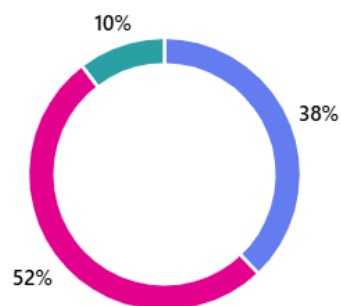
Ja ! (= geheel mee eens)	0
Ja	1
Min of meer	6
Nee	18
Nee! (geheel mee oneens)	4



### 13. Loneliness Scale:

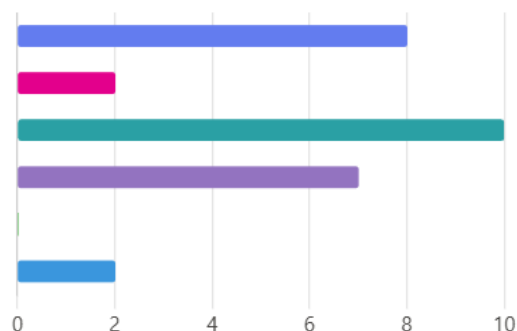
I experience a general sense of emptiness

Ja ! (= geheel mee eens)	11
Ja	15
Min of meer	3
Nee	0
Nee! (geheel mee oneens)	0



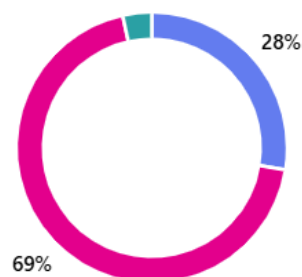
### 14. Living Situation

Ik woon alleen	8
Ik woon met een partner	2
Ik woon met vrienden/in een studentenwoning	10
Ik woon met mijn ouders/verzorgers/familie	7
Ik woon in een zorginstelling	0
Other	2



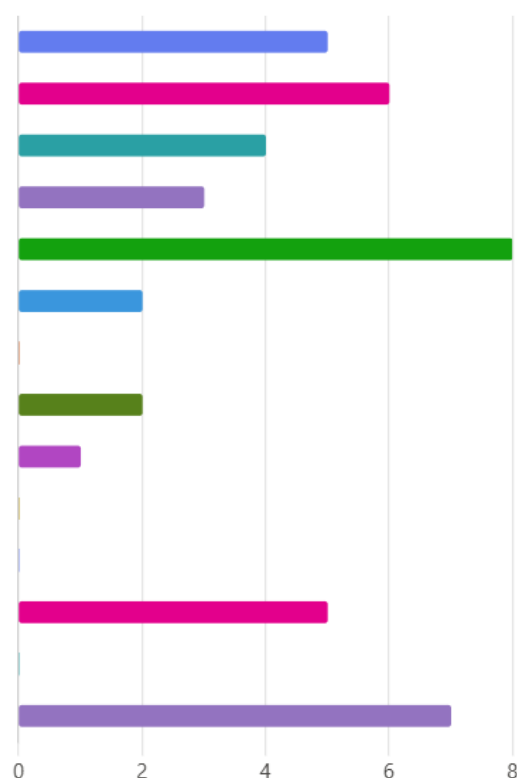
### 15. Sharing with Others Outside of Own Household

Ja	8
Nee	20
Other	1



### 16. What do you share?

Badkamer + WC	5
Keuken	6
Woonkamer	4
Eetkamer	3
Wasruimte / Wasserette	8
Game Lounge / Speelruimte	2
Bibliotheek	0
Gym / Sportruimte	2
Klusruimte	1
Studieruimte	0
Tuin	0
(Dak)terras	5
Muziekruimte	0
Other	7

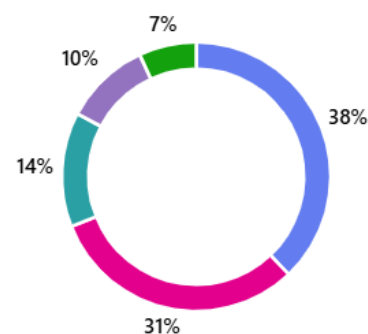


# SURVEY LONELINESS & ICS

## 17. Would you still share if your financial situation was better?

"Indien ik over voldoende financiële middelen zou beschikken, en niet genoodzaakt zou zijn om bepaalde wo onvoorzieningen (bijvoorbeeld badkamer, woonkamer, wasserette) te delen met anderen, zou ik alsnog deze voorzieningen willen delen met hen."

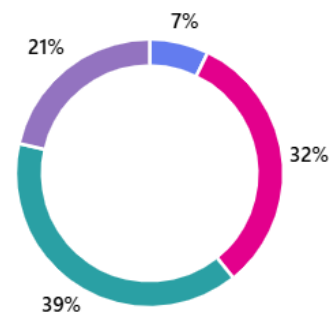
● Helemaal mee oneens	11
● Oneens	9
● Neutraal	4
● Eens	3
● Helemaal mee eens	2



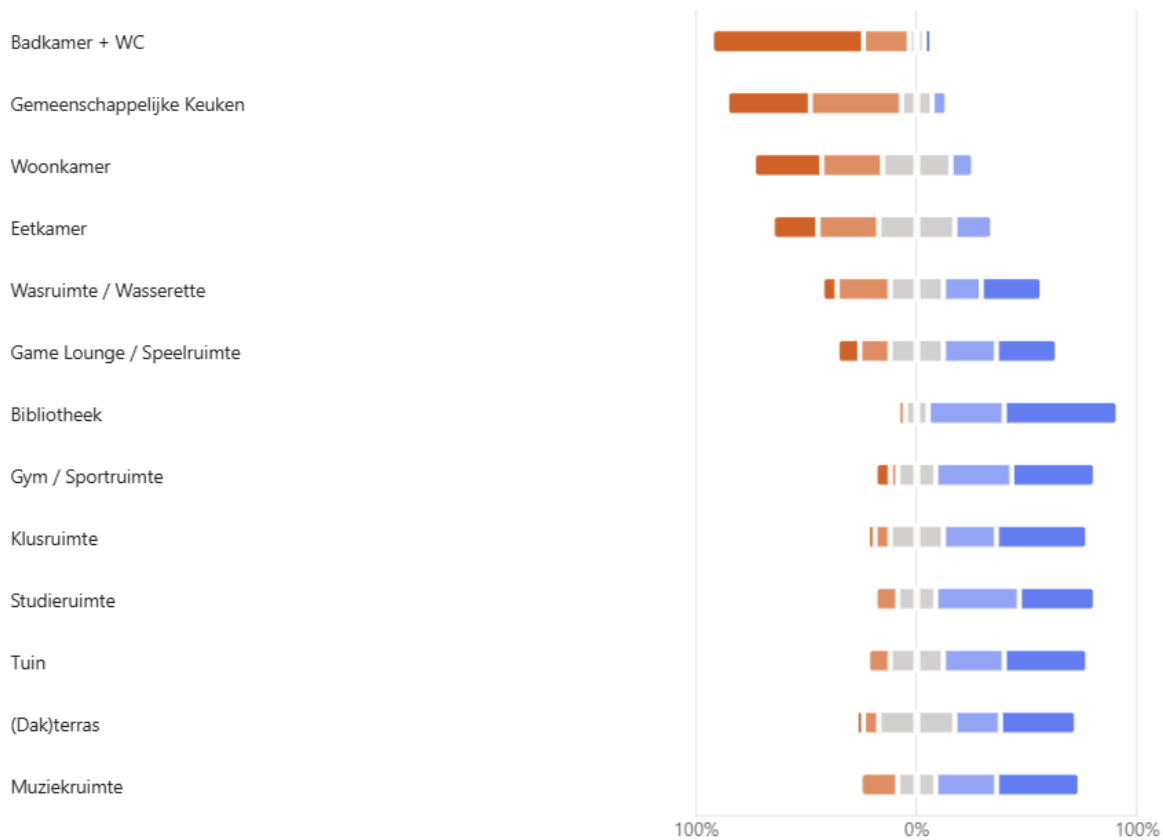
## 18. Do shared spaces help you get in contact with others more easily?

"Gedeelde voorzieningen in en rond mijn woongebouw helpen mij om makkelijker met anderen in contact te komen."

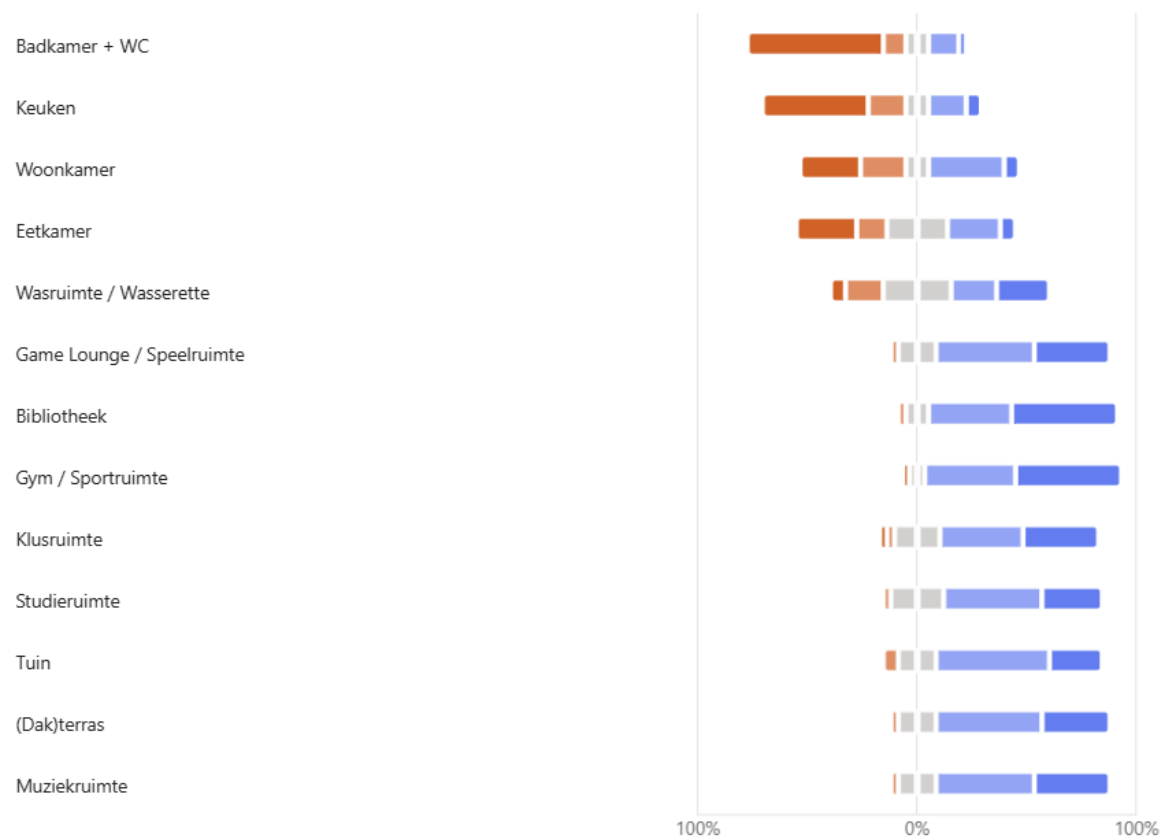
● Helemaal mee oneens	2
● Oneens	9
● Neutraal	11
● Eens	6
● Helemaal mee eens	0



## 19. Preference in Sharing Spaces with Elderly (65+)



## 19. Preference in Sharing Spaces with Students (18-24)





# Fieldwork at Liv Inn Hilversum

Fieldwork Report  
AR3AD110 Dwelling Graduation Studio:  
Designing for Care in an Inclusive  
Environment (2024/25 Q2)

TU Delft // Faculty of Architecture and  
the Built Environment // Department of Architecture  
Chair of Architecture and Dwelling

Authors:  
Dean Simson  
Mara Popescu  
Jasper Holtus  
Shreya Sen

Tutors Research:  
Leo Oorschot

# 01 Traditional Care vs. Liv Inn Model

Insights into the comparison between traditional care models and the Liv Inn model are derived from an interview with Peter Boerenfijn, the director of the Dutch housing cooperative Habion. The traditional approach to elderly care is characterized by a phased progression, beginning with individuals aging in their own homes. This is followed by relocation to a centralized institutional care facility, often transitioning through stages such as elderly care homes, specialized care facilities, and ultimately, hospice care.

## Independent Living at Home:

- Independent living with minimal or no care needs
- Care is brought in as needed but often leads to isolation due to a lack of community support.

## Elderly Care Home:

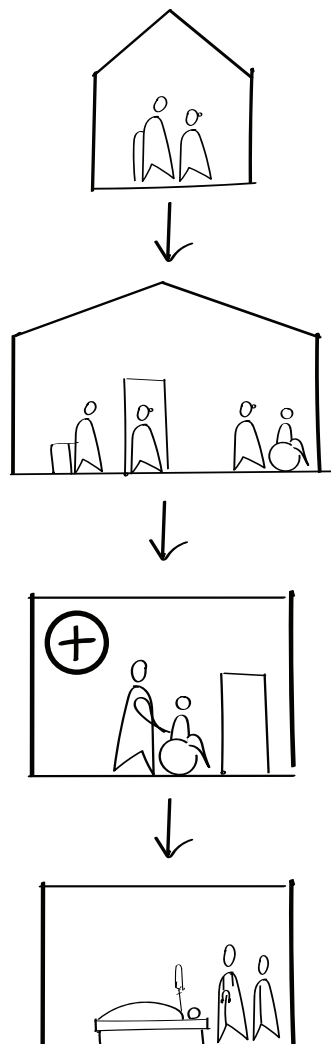
- When living alone becomes difficult, people move to an elderly home.
- Basic care and assistance are provided, but the transition can feel disruptive and disempowering for many.

## Specialized Care Facility:

- Individuals requiring intensive medical or dementia care move to highly specialized facilities.
- Social connections and personal environments are often left behind.
- Long waiting lists and shortage of staff makes it not scalable for the future

## Hospice:

- In the final stages of life, individuals are moved to a hospice for end-of-life care.
- This can mean another significant transition for the individual and their family.



The Liv Inn model brings care to residents through three pillars: Apartment Living, with adaptable, independent apartments designed for aging in place; Community Spaces, fostering social interaction and active ageing, and a resident-driven community; and Care on Demand, offering seamless, comprehensive care within the same community, ensuring continuity, dignity, and stability without relocations.

## Pillar 1: Apartment Living

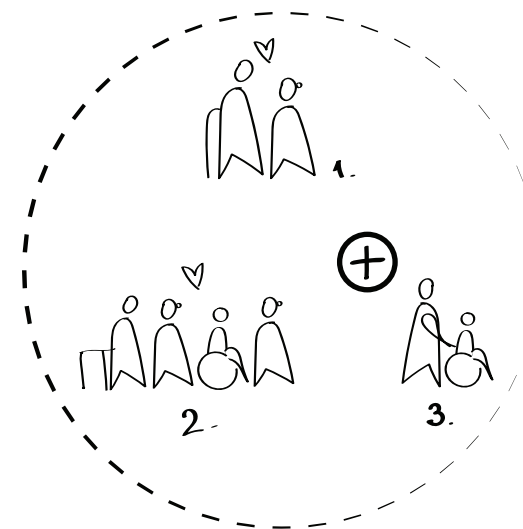
- Residents at the complex live independently in apartments designed for aging in place.
- Apartments are adaptable to evolving care needs, eliminating the need for relocation.
- Encourages ownership, autonomy, and personalization of living spaces.

## Pillar 2: Community/Communal Spaces

- Shared spaces foster social interaction, reducing isolation and building a sense of belonging.
- Activities, events, and shared meals create a vibrant, active community.
- Residents actively shape the community, contributing to its development and purpose.

## Pillar 3: Care on Demand

- A full spectrum of care is available, from minimal support to specialized end-of-life care, all within the same building.
- Care providers work seamlessly within the community, supporting residents' independence and dignity.
- No disruptive moves between facilities, ensuring continuity and emotional stability.



# 02

## Integration & Interview Process

Liv Inn Hilversum was created through the residents' ideas on how they wanted to age, according to the developer that created the Liv Inn in Hilversum. Moreover, over a hundred future-oriented social housing units are realized with interactive communal living spaces, where elderly can receive care if necessary and where residents are both central and in charge over how you (actively) age.

### Entering the Liv Inn

The policy for all Liv Inn locations is that residents have to be motivated to live there. Yet, it differs per location how people can apply for a room. Sometimes they can do it directly and other times it has to be done through "WoningNet", a room application website. Everyone must meet income requirements for rental housing set by the government per room type or Van Der Linden. Additionally, a check is done for their age. If they meet all of these requirements, they are invited to preliminary talks, are interviewed and get a tour through the Liv Inn. Although the Liv Inn has "care rooms", it is an important part of the interview and the contract that they sign where the elderly state that they are allowed to live at the Liv Inn as long as they are not a threat to themselves or to others, hinting that the Liv Inn accommodates a limited level of (professional) care. For the students that are allowed to live in the studio's in the building, the agreement is that they have to study something related to the topic of elderly people.

### Becoming a Member of the Liv Inn Association

The association is set up by and for the residents of the Liv Inn. Through this, residents are able to exercise their hobbies, participate in many social events (e.g. communal dinner, happy hour at the communal bar) or writing in the Reuring magazine of the building. Residents are able to become members of various groups that actively organize activities within the Liv Inn and their always able to communicate and propose their own initiatives or ideas that they have for the community (e.g. creative club, finance commission and cooking team). The membership is €20 per year and €40 for residents that do not live in the Liv Inn itself.

# 03

## Interaction Between Age Groups



Research of student living in the Liv Inn Hilversum

The research of the student explores the dynamics of multigenerational interaction within a communal living environment, focusing on its impact on resident well-being, inclusion, and the effectiveness of communal spaces. The findings highlight both positive outcomes and significant challenges, offering valuable insights into how these spaces can foster relationships across age groups. The research is motivated by an interest in understanding how shared living environments like Liv Inn can reduce isolation and promote meaningful connections. Its problem statement emphasizes the difficulty of designing communal spaces that meet diverse needs while fostering supportive, intergenerational relationships.

### Positives

Interactions between age groups at Liv Inn contribute significantly to building a sense of community and mutual support. Many residents reported reduced feelings of isolation due to opportunities for interaction created by the presence of other older individuals and (occasionally) younger residents, such as students. These intergenerational exchanges often include assistance with daily tasks, participation in activities, and shared learning experiences, fostering a sense of purpose and belonging. Communal spaces are essential in facilitating these connections. Areas such as the "binnentuin", lounges, and kitchen-dining rooms serve as meeting points for informal interactions and structured activities, including communal meals and celebrations. These spaces allow for spontaneous exchanges and provide a framework for organized events, enhancing the overall social fabric of the community. Residents who actively participate in these activities often report an improved quality of life, as the interactions provide emotional support and meaningful engagement.

### Negatives

Despite the strengths of Liv Inn's multigenerational setup, several challenges remain. Social dynamics within the community sometimes lead to exclusion, particularly for newcomers or quieter residents. Tight-knit groups among long-term residents occasionally create barriers to inclusion, leaving some individuals

feeling disconnected. Additionally, gossip and cliques can exacerbate feelings of exclusion, discouraging participation in activities and reducing the effectiveness of communal spaces in fostering inclusion.

The lack of volunteers to support community events limits opportunities for interaction. This challenge is particularly evident among residents with limited mobility, who may find it difficult to access or fully utilize communal spaces. Design shortcomings, such as inadequate seating or unwelcoming corridors, further restrict engagement for less active individuals. While many residents benefit from the communal setup, those unable to participate due to physical or social barriers often experience continued isolation. Additionally, in an interview with the student it became evident that there is limited interaction between the students and the elderly due to varying schedules and interests. The student further explains that most activities are focused on the elderly, which makes it less appealing for the younger audience to join. Besides that, constant negative comments about their attendance and lack in support by the elderly further demotivate them to participate in the communal activities. Even piloted activities initiated by a studentbased commision struggled to launch after having minimal elderly attendees.

Behavioral issues during social gatherings, such as excessive alcohol consumption during the “happy hour” at the communal bar, have disrupted community harmony on occasion (e.g. fight and medical incidents that required police and/or medical interventions). Such incidents detract from the sense of comfort and inclusivity that these spaces are designed to promote.

#### Recommendations to use in Tarwewijk

- **Boost Volunteer Participation:** Actively engage more residents, especially younger and mid-aged individuals, to support and organize activities, reducing reliance on a few individuals
- **Promote Inclusion:** Develop programs and small-group activities to ensure quieter or less mobile residents feel involved and valued within the community.
- **Improve Accessibility:** Adjust communal spaces to accommodate mobility limitations, ensuring they are welcoming and usable for all residents.
- **Establish Behavioral Guidelines:** Introduce clear rulesto address issues like gossip, exclusion, and disruptive behaviors, fostering a more inclusive and respectful environment. The student mentioned in an interview that this might be outsourced so the role does not fall on the residents

## 04 Buddy System



The buddy system was introduced to the residents of the Liv Inn as a way to provide mutual support between the elderly and the students. The idea is that each student (e.g. a newcomer) is assigned to several elderly people and helps them with their daily tasks, such as doing the groceries, or digital hurdles, and participation in the social activities. In an interview with an elderly resident, she explained that a student helps with the cooking and cleaning three times a week and doing the groceries, which helps her a lot since she has limited mobility due to ageing. Another interview with a student highlighted that the students are “stand-by 24/7” and ready to call for help in case the elderly need medical attention, if they fall for example.

#### “Spread too thin”

Although the buddy system seems like a fitting concept to promote social interaction and mutual support between the two age groups, the student-interviewee says the system is not convenient at the moment. This is mainly due to the elderly who are becoming more dependent on the few students (11 in total) that in the Liv Inn. She mentions that it can be very unfamiliar for newcomers (students)

# 05

## Situation in Neighborhood

that are assigned to some elderly that need more informal care such as help with the cleaning, cooking or groceries. It results in a lot of pressure for the students as they already have a busy schedule. A proposed solution is to change the ratio between students and elderly, so students can cover for each other when one is sick or not available at that moment to help the elderly for example. Additionally it can also increase the number of people the elderly resident meets and foster more meaningful relationships between the two age groups.

### Neighbours as buddies

The students live mainly in the “corners” of the buildings, as this is where the studio-apartments are located. At least two students live in every corner. The student-interviewee mentions that this helps the neighbouring elderly to spontaneously meet and interact with the younger age group. Furthermore, she mentions that she prefers these spontaneous meetings in the hallway or at an elderly resident’s room more than meeting new people at the communal activities, as it is more organic. Lastly, she finds it interesting to further research how a mix student-elderly clusters in the hallways (instead of only the corners), might affect the stimulation of building meaningful relationships.



Source: Habion; Vragen, antwoorden & plattegronden Liv inn Hilversum

The Liv Inn buildings in Hilversum is designed around a central core or “heart” that organizes the surrounding space. The ensemble consists of three individual buildings set within a park-like environment. Access points are strategically placed along major streets such as Vondellaan, Vaartweg, and Boomborglaan, emphasizing its orientation towards easy navigation and fostering community interaction with the neighborhood.

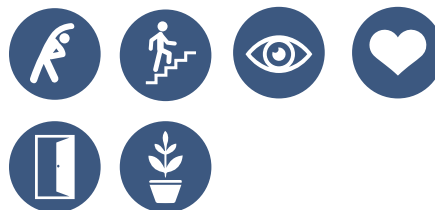


# 06

## Interviews at Liv Inn Hilversum



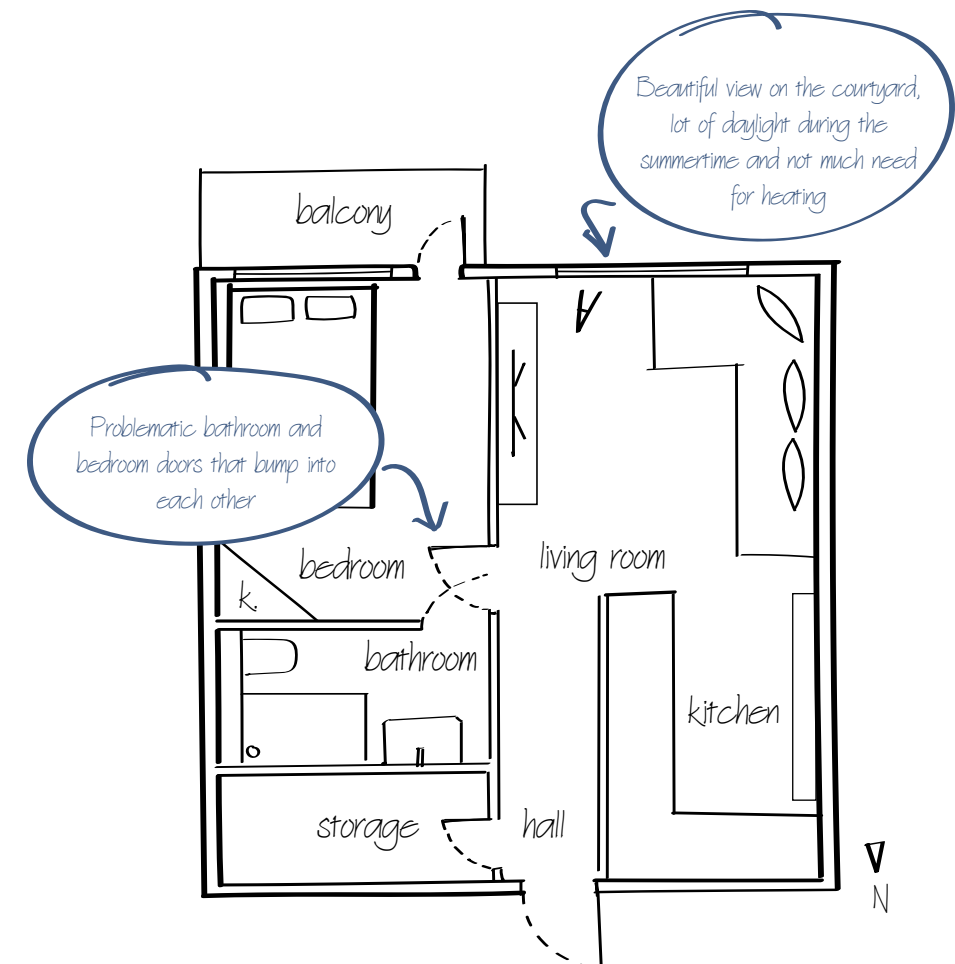
Name: P  
Gender: F  
Age: 70  
Persona: The Volunteering Group



- P is responsible for finances, contracts, and planning activities at the Liv Inn.
- She moved to Hilversum 2-3 years ago to age in a more active way. She is one of the most **active volunteers** at the Liv Inn in planning activities and also coordinating with Habion and the Congress.
- She prefers to **take the stairs** instead of the elevator to stay active and healthy.
- She is frustrated by the lack of volunteers who are willing to help organize events and activities. There is a lack of younger, active adults (aged 50-60) who are more mobile. In her opinion, the group predominantly consists of people aged 80-90, many of whom stay in their apartments and do not interact much. Communal dinners are planned in the shared kitchen, but only about 20 people (or fewer) attend, partly due to the **lack of volunteers and willingness to participate**.
- P believes that more intensive care facilities are not well-suited for the Liv Inn and suggests that residents who need more support may need different housing arrangements. She has ongoing discussions with Habion about how to handle residents who may pose a danger to themselves or others (referring to people with dementia), as they need intensive care and are not suited to participate at Liv Inn.
- Prefers more residents from Hilversum, as most residents are from other parts of the Netherlands.
- Her apartment is 38 m<sup>2</sup> and, while compact, it is well suited for her needs. She has a beautiful **view of the central garden**. She is frustrated with the way the **bathroom door collides with the bedroom door**, says that the room must have been "designed by a man" and didn't take into account her needs
- She is dissatisfied that she does not have a say in how the garden is managed (interior policies amongst the residents as to who is in charge).
- Likes to watch tv in her free time
- She plans to travel to Spain for four months during the winter. Habion (management) does not accept new residents who plan to be away for extended periods, as they want **active participants**.
- Pauline mentions that Habion's interview process ensures that candidates are available to stay at the Liv Inn most of the year and don't spend too much time away in the summer or winter. She enjoys walking, but here not so much because there aren't walking trails/routes. She likes to run and ski.
- She is trying to smoke less



View of the central courtyard from P's room



P's apartment, located in the older part of the Liv Inn Hilversum building





Name: E  
Gender: F  
Age: 75  
Persona: The Volunteering Group



- E is an **active participant** in **communal dinners** at the Liv Inn, where she cooks once a month.
- She enjoys cooking Surinamese food with spices and finds it relaxing.
- She used to be heavily involved in **gardening** but stepped back due to internal disputes and her **arthritis**, which makes movement difficult. The head of the gardening committee is very stubborn and insists on doing things his way.
- Her husband R assists with electrical work, lighting and other technical chores within the community. R is very active at the workshop space by the entrance, he is there most of the day.
- Both E and P commented that the Liv Inn might not be the best fit for individuals with limited mobility, as they may struggle to fully participate and contribute.
- Enjoys the happy-hour **gatherings**



Name: E  
Gender: F  
Age: 77  
Persona: The Active Group



- L, an American resident, enjoys **playing pool** with her friend circle in the evenings.
- She has been living in the Netherlands for around 40 years due to her husband's work, and her grasp of Dutch remains limited, especially in formal **language contexts**. She therefore also struggles to fit in at the Liv Inn community at times.
- She mentions that she worked at Schiphol for a long time for multiple airlines, and that she had to wake up early, so now she tends to sleep in.
- L's apartment is small, which she likes, but she misses some of her old furniture, which she had to leave behind in her old house which was bigger and had stairs. She would like to have a bigger countertop for **cooking**.
- Sometimes, she **forgets** where she put things around her apartment due to the limited storage space.
- When asked if she likes the community, she said it has both ups and downs. She likes to stick with her friend group which periodically plays pool together.
- She mentions **walking her dog** Max in the evening, so she can wait until the late morning before walking him again.
- She also joined in the **communal yoga session**



Name: G  
Gender: M  
Age: 87  
Persona: -



- G has been a resident at the Liv Inn for three years.
- A few years ago, a close friend of his, who was in critical health, also moved into the Liv Inn. G and his friends provided care and support during his friend's final years, highlighting the value of informal care networks and the ability to spend the last stages of life in a communal living environment rather than relying solely on a specialized care facility or hospice.
- Additionally, professional care services are available through Amaris, located on the building's second floor.



Name: M  
Gender: F  
Age: 75  
Persona: The Volunteering Group



- M noted the lack of volunteers for cooking activities at the Liv Inn.
- She makes lunch once a month for the **communal dinner**
- She is concerned about what will happen if "X," another resident, is unable to continue volunteering because she always cleans the coffee machine. This shows that each resident is important within the community and some have specific roles
- M lives in a spacious apartment with beautiful **views on the garden**. Also a spacious balcony that is connected to the living room and the bedroom.
- She mentions that she used to live in a more expensive apartment, and her children advised her to move to the Liv Inn where she now pays a third of the **rent**



Name: B  
Gender: M  
Age: 70  
Persona: The Volunteering Group



- B is considered the “lighting expert” of the Liv Inn. He bought a lamp as a housewarming gift and is in charge of setting up Christmas lights.
- He ensured that we knew where the light switches above the sofas we were studying at and fixed the TV. He makes rounds late at night to make sure there are no issues.
- Highly **autonomous**, he interacts well with younger people and engages with students.
- Showed us pictures of students who were here last year. Although most apartments are equipped with kitchens, many residents order **pre-packed meals** from the chef to heat up later.
- He also dines out **with students** and is invited to have dinner with them at their homes.
- He likes to go out to concerts and theaters given his fondness for **music**



B's apartment, located in the newer extension of the Liv Inn Hilversum building



Name: W  
Gender: M  
Age: 75  
Persona: The Volunteering Group



- W is responsible for weekly **communal dinner planning** and is often seen shopping for groceries, ensuring that meals are well-prepared for the group. He cooks once a month for the communal dinner, often cooking Dutch food that the other elderly people are familiar with (e.g. Hutspot)
- He drives regularly, often times in the nearby area in his lease car, sometimes to family in Brabant (longer distance), or to do the groceries. When asked if W would be open to a shared-car concept (deelauto's) for the Liv Inn (with other elderly or students) he replied with a no. He does not want to share his “own” car with others, he assumes that others would not keep it clean.
- He labels his food in the fridge to make sure that others don't take it by mistake.
- He mentioned that once per week the communal areas are cleaned by the cleaning staff. The rooms are cleaned by the residents themselves. If the residents want help cleaning assistance you can apply for help at the municipality, and you pay 20€ for 6h per week



W's apartment, located in the newer extension of the Liv Inn Hilversum building



Name: B  
Gender: F  
Age: 76  
Persona: The Active Group



- B is an **active participant** at Liv Inn. She has been very busy recently, participating in a variety of activities at the Congress. At the Congress she aligns the needs of the residents and what architects can do.
- She shows us her apartment and what she likes/doesn't like. The light switch is inconveniently located behind the designated coat-hanging space, which is considered a design flaw. **A light sensor** has been installed as a practical solution to this issue.
- The bathroom is **wheelchair-friendly**, a convenient feature for future accessibility needs, even though it is not currently required for her.
- The area just outside the entrance to her apartment provides a versatile space that can be personalized and utilized as desired. She pins up her **paintings** on the magnet board.



Magnet/corkboards at the entrance to the individual apartments provides opportunity for personalization



Name: N  
Gender: F  
Age: 77  
Persona: -



add here diagram of N's route with scoot-mobile (Mara)

- Believes that **light** can enhance the feeling of coziness and create a homey environment in the common spaces at Liv Inn. Likes lower lighting, which she feels adds ambiance to her home.
- Appreciates being able to take **walks** whenever she wants, if she's able to. She likes to go for a stroll in the evening for 20-30 min, as it is pleasant.
- She explains that the brickwork in the **corridor** to her room is darker, and that she doesn't like the long hallways because it looks like a hospital.
- Physio is painful for her
- Sometimes likes to watch people come and go from a bench near her room. There are no sufficient **sitting places** at the library, which causes her to take the books to her room, instead of being able to read it in the heart of the building.
- It's nice for her that the Liv Inn has organized lunches and dinners, which means that she does not need to do groceries herself, which is quite difficult for her.
- Although she explains that the students usually don't connect with the elderly, she does explain that there is one student who helps her with dinner, groceries and cleaning 3x a week. One other day she eats **communal dinner**, because she can't do groceries herself. She has a friend who lives on another floor, whom she met through the communal activities.
- She does have a **scoot mobile**, but mentions that it's scary to cross the streets and at intersections.
- Explains that it doesn't necessarily bother her that she can't go outside, because otherwise she has everything she needs in the building.
- There are discussions regarding residents with **dementia**, with varying opinions on how best to integrate them into communal life. Although people with dementia are not allowed to live here due to the special care they need and them being a danger to themselves and others, it's hard to legally kick them out when their health has deteriorated to the point that they've become dement.
- Explains that the Huiskamer is usually used for birthday parties, which allows family members and friends who are visiting to celebrate it with the elderly.
- Likes the size of her room and that she has everything she needs
- When she moved in there was a lot of concrete everywhere and now it's **wood** and it's nicer
- She is a bit **deaf** and doesn't like to sit in loud cafes
- They can pick which spices to plant in the garden, but she has her own balcony and she plants there as well





Name: E  
Gender: F  
Age: 58  
Persona: The Active Group



- Romanian, but moved to NL when she was 18
- Has lived at Liv Inn for one year and is one of the **youngest residents**.
- Chose this place because it is close to where she does **Tai Chi**. Lived in Hilversum before moving at Liv Inn. Is very active: does Tai Chi outside of the Liv Inn, but also gives classes of Tai Chi and chair yoga for the residents of Liv Inn, likes to ski (she used to be a ski instructor). She walks to be more active (biking would be too easy)
- Lack of **dedicated fitness areas** at Liv Inn, need to use makeshift rooms for yoga or Tai Chi
- She sold her house and wanted to rent something small, no big house and garden to take care of alone
- She really likes the **community feeling** at Liv Inn.
- Plays **pool** with 4-5 others almost every night, and she really likes it, sometimes they bring wine and snacks
- The pool group is going to celebrate Sinterklaas together with poems and little gifts
- Lounges need to be **larger and more appealing**.
- **Corridors** should be made livelier; they currently resemble hospital hallways, especially those with brick walls.
- Sound insulation can be improved, it can be very **loud** especially if the band is playing.
- There are biweekly dinners, yoga sessions, Tai Chi classes, and a Christmas lighting ceremony for the central tree, which are well-attended by residents.



Name: F  
Gender: F  
Age: 77  
Persona: The Elite Group



- F likes to play piano, but Liv Inn doesn't have one
- She likes the aesthetics of the other Liv inn more (white frame instead of black)
- Would like a heated swimming pool and sauna
- Used to live in Dan Haag and had a lot of stairs; in the house it was cold, so she wanted something smaller
- She lives 5 mins away from her son
- She doesn't participate in activities here because she doesn't like the organization

# 07

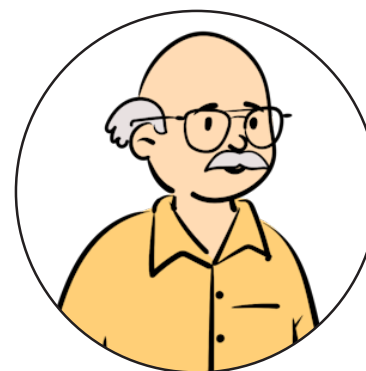
## Personas at Liv Inn



Personas are research-based representations of target group users. In most cases, they make an abstraction of individual people and describe a group formed of three or four people who share similar characteristics or personalities. There are also exceptions to the rule, in the case of individuals possessing character traits that stand out.

The personas were formed based on a combination of quantitative and qualitative research methods, such as interviews and observation conducted at the Liv Inn and it concluded in eight personas:

- the active group
- the elite group
- the lighting man
- the congress group
- the grumpy group
- the volunteering group
- the passive group
- the student group



The use of personas creates a clear distinction of who the user is and what the needs of the user are. It reduces the risk of designing for a general user with non-specific characteristics and ensures that the design solution resonates with the real user.

In the case of the personas formed after the Liv Inn fieldwork, the physical and social activities were of great importance for the target groups, as the main focus of this community is staying active, both mentally and physically. Understanding the different ways in which the personas stay active creates better-defined guidelines for designing. Another aspect of the created personas is the negatives and positives of living at Liv Inn, which offer an in-depth understanding of the things that work well and the things that could be improved, from a user's point of view.



## “The elite group”

AGE: 75  
GENDER: Female  
PREVIOUS OCCUPATION: -  
LIVING SITUATION: living alone

### Physical Activities



#### Piano

She enjoys playing piano, and would like to have a real one in the building, but it was not allowed.



#### Walking

She enjoys walks around the building and neighborhood.



#### Drinks & snacks

A small group of people gather at a specific table from the interior garden for drinks and snacks, creating an exclusive environment.



#### Coffee gathering

She joins the gathering for coffee in the morning.

### Frustrations

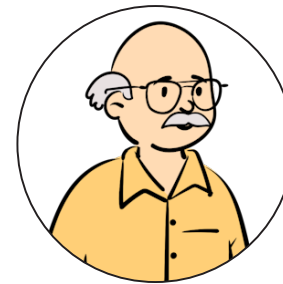
- She would like a real piano, but it was not allowed. She would also like a heated swimming pool and a sauna.

- She does not like the aesthetics of black frames of the Liv Inn, and prefers the aspect of the newer building that has them white.

### Positives

- She lives five minutes away from her son.

- She can easily interact with other people her age.



## “The lighting man”

AGE: 85  
GENDER: male  
PREVIOUS OCCUPATION: -  
LIVING SITUATION: living alone

### Physical Activities



#### Christmas tree lights

He is in charge with setting up the Christmas tree lights and ensuring proper functionality.



#### Music DJ

He takes over the DJ role because he enjoys to play music and creates playlists for gatherings and parties.



#### Walking

She enjoys walks around the building and neighborhood.



#### Bond with students

He has a close relation with the students living in the building, and have dinner or go out for drinks together sometimes.



#### Common dinner

He participates in the weekly common dinners organized in the shared kitchen.



#### Coffee gathering

She joins the gathering for coffee that happens every morning.

### Frustrations

- -

- -

### Positives

- He enjoys the interaction with the students living in the building, and has a close relationship with them.

- He likes that he has full control over costumizing his room and adapting it to his wishes.



## “The congress group”

AGE: 87  
GENDER: female  
PREVIOUS OCCUPATION: -  
LIVING SITUATION: living alone

### Physical Activities



#### Painting

She enjoys painting, even though she is too busy to do it at the moment.



#### Walking

She enjoys walks around the building and neighborhood.

### Social Activities



#### Coffee gathering

She joins the coffee gatherings almost every morning to socialize with the fellow residents.



#### Congress

She is enaging in multiple activities at the Congress.



#### Feedback on floorplans

Works with architects on providing feedback on floorplans for elderly housing.

### Frustrations

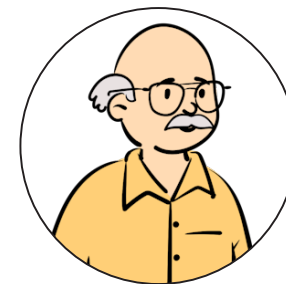
- The light switch on the hallway is hard to access behind the space appointed for hanging coats.

- The kitchen couter is too small, and there is not enough space for cooking.

### Positives

- The bathroom is wheelchair friendly, even if she does not applicable to her at the moment.

- She enjoys being able to personalize the panel outside of her room.



## “The grumpy group”

AGE: 80  
GENDER: male  
PREVIOUS OCCUPATION: -  
LIVING SITUATION: living alone

### Physical Activities



#### Walking

He enjoys walks around the building and neighborhood.



#### Physiotherapy

Once per week there is a gym class organized by the physiotherapy center located in the buiding.



#### Dog walking

Several times per day he walks around the building with the dog.

### Social Activities



#### Coffee gatherings

He joins the coffee gatherings almost every morning to socialize with the fellow residents.



#### Happy hour

Once per week, the happy hour takes place and reidents meet to socialize over a drink.



#### Common dinner

He participates in the weekly common dinners organized in the shared kitchen.

### Frustrations

- Not all activities are according to his liking.

- He does not want to volunteer to organize activities.

### Positives

- He lives close to his children who live in Hilversum.

- He likes that he can be as independent as he wants, without needing permission to get put of the building.





## “The volunteering group”

AGE: 70  
GENDER: female  
PREVIOUS OCCUPATION: -  
LIVING SITUATION: living alone; part time living in Spain

### Physical Activities



#### Walking

She enjoys walking, but she would prefer to have walking trails/routes in the proximity of the building.



#### Cooking

She prepares dinner once per month for the common meals.



#### Ski

She enjoys skiing when she has the chance.



#### Coffee gathering

She joins the coffee gatherings almost every morning to socialize with the fellow residents.



#### Congress

She is enaging in multiple activities at the Congress and is responsible with finance, contracts and planning activities at Liv Inn.



#### Finance and activities

She is in charge of the finance of the building and of organizing activities, so she collaborates often with other residents.

### Frustrations

- She would like more residents of the Liv Inn to come from Hilversum and not other parts of the country.

- Not enough people are young and fit to volunteer for activities.

### Positives

- She is content with her apartment even though it is small.

- She enjoys being part of a community and staying active.



## “The passive group”

AGE: 88  
GENDER: female  
PREVIOUS OCCUPATION: -  
LIVING SITUATION: Living alone

### Physical Activities



#### Walking

She enjoys walking twice a day for approximately half an hour, around the building.



#### Motorized scooter rides

Due to limited mobility, she uses the scooter for longer distances in the neighborhood.



#### Gardening

She likes to plant spieces on her own balcony.



#### Coffee gathering

She joins the coffee gatherings almost every morning to socialize with the fellow residents.



#### Common dinner

She participates in the weekly common dinners organized in the shared kitchen.



#### Help from students

She has a strong bond with the students. She receives cooked meals three times per week from a student and help with cleaning once per week.

### Frustrations

- The brickwork in the hallway where she lives makes the atmosphere too dark and it reminds her of a hospital.

- She thinks there are mixed opinions among residents, making it hard to reach a consensus on various issues, sometimes leading to disagreements.

### Positives

- She appreciates that she can go out of the building whenever she wants, without restrictions.

- She feels like she has everything she needs in the buildin, so she does not mind that she cannot go outside that often due to her mobility limitations



## “The active group”

AGE: 65  
GENDER: Female  
PREVIOUS OCCUPATION: IT developer  
LIVING SITUATION: living alone

### Physical Activities



#### Pool games

Every evening, a small group of people meet and play pool before dinner time, combining physical activity with socializing



#### Chair Yoga

Once a week, the chair yoga class is held, that encourages the residents to stretch, move and relax.



#### Tai Chi

A group of around eight people participates in the Tai Chi classes that are held once per week.



#### Drinks & snacks

While playing pool, the group sometimes enjoys drinks and snacks. They also organize other activities together, such as celebrating Sinterklaas.



#### Tea time

After the yoga class, the participating group gathers to socialize over a cup of tea.



#### Tai Chi

She joins a Tai Chi studio from the neighborhood, which acts both as physical and socializing activity for her.

### Frustrations

- In the need of a proper sports room, big enough for the Tai Chi and Yoga classes to take place freely.

- The sounds insulation in the building is not so good, and you can hear your neighbors through the ceiling.

### Positives

- She liked the community feeling which helps with not feeling alone.

- She liked that the building encourages sports and movement.



## “The student group”

AGE: 20  
GENDER: female  
PREVIOUS OCCUPATION: -  
LIVING SITUATION: living alone

### Physical Activities



#### Going to the gym

She goes to the gym at least once per week.



#### Biking

She often uses the bike to move around the city



#### Helping the elderly

She sometimes helps the elderly with chores or volunteer for activities.



#### Meeting with friends

She likes to hang out with her friends in their free time.



#### Study

She socializes with many classmates during her studies.



#### Work

Through her work, she socializes with her colleagues.

### Frustrations

- Sometimes the elderly complain that the students do not spend time with them.

- It can become too much to help all the elderly with their chores, so she needs to have clear boundaries.

### Positives

- It is a beautiful building with many amenities.

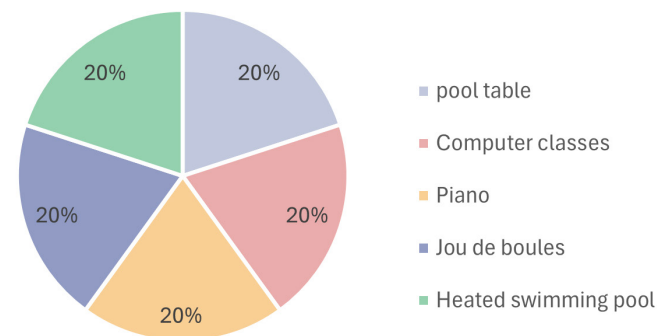
- She does not feel alone because it is a big community.

# 08 Quiz

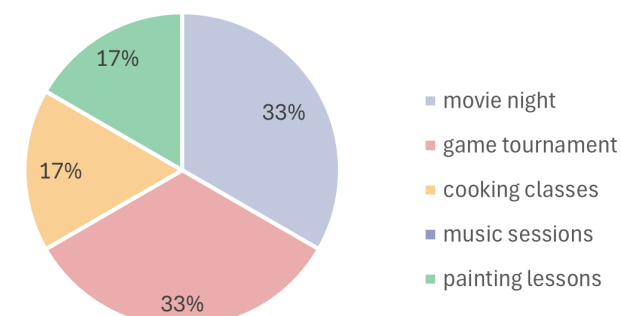
To get to know the residents better informally, a quiz was created that they could fill in. The quiz was composed of questions regarding ideal improvements from the residents' point of view, preferred outdoor and indoor activities, suggestions for room additions, and more. A few questions had an open answer, while most had multiple choice answers, with the possibility of adding another answer as well.

Valuable information was obtained by interacting with the elderly in a fun way. This information will be used as feedback from the residents of the building and will possibly be translated into further guidelines for designing for elderly. The questions will be stated below, with graphs including the answers.

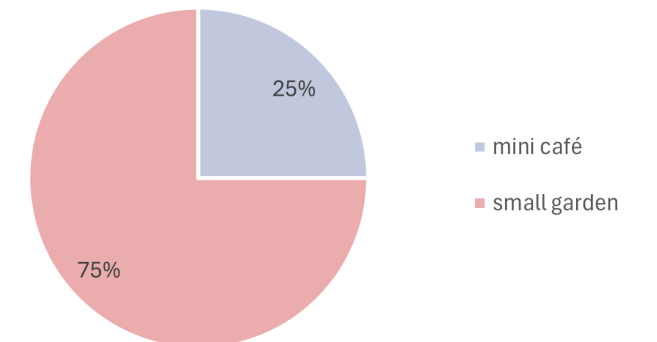
If you had won €5000, what would you want to buy for the Liv Inn?



Suppose you could create one new weekly activity. What would that be?

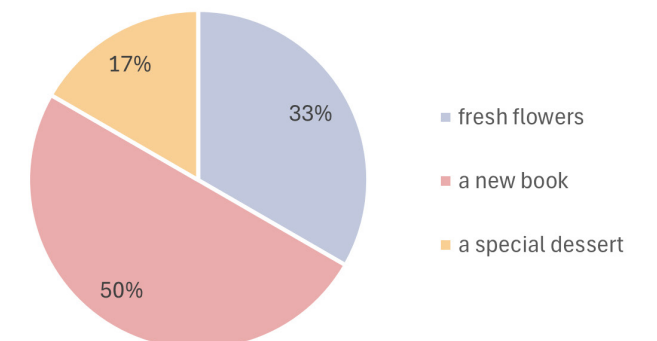


Would you rather have a mini cafe to relax in or a small garden to help maintain?

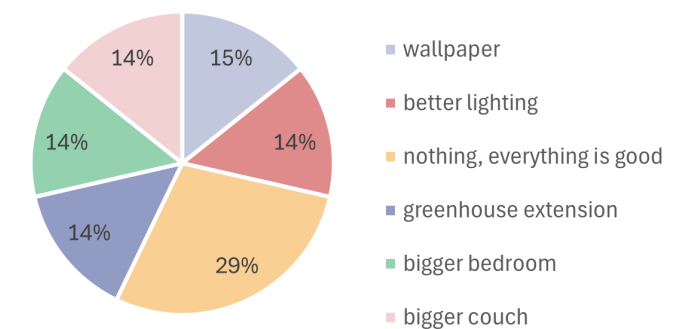


Among the residents choosing the small garden, it was mentioned that the garden should be in the sun, and a cafe would be too busy for them. Among the residents choosing the cafe, it was specified that the cafe should be open daily.

Suppose that every week you could get a personal delivery. What would you choose?



What would you change to make your apartment cozier?

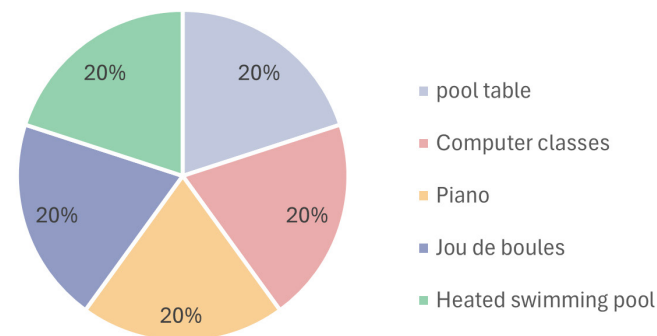


# 08 Quiz

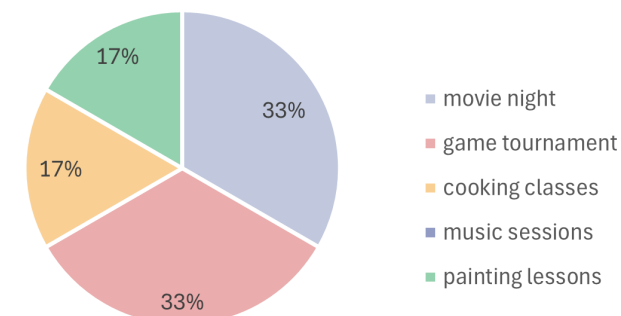
To get to know the residents better informally, a quiz was created that they could fill in. The quiz was composed of questions regarding ideal improvements from the residents' point of view, preferred outdoor and indoor activities, suggestions for room additions, and more. A few questions had an open answer, while most had multiple choice answers, with the possibility of adding another answer as well.

Valuable information was obtained by interacting with the elderly in a fun way. This information will be used as feedback from the residents of the building and will possibly be translated into further guidelines for designing for elderly. The questions will be stated below, with graphs including the answers.

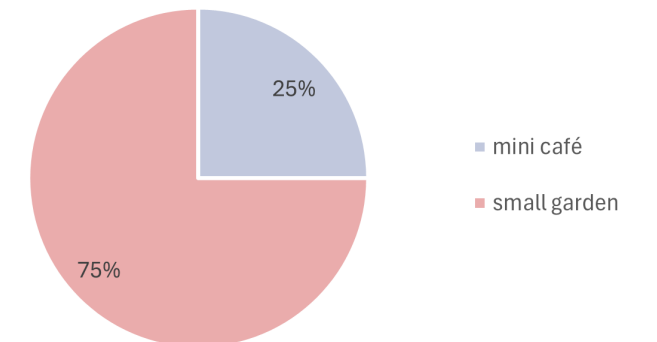
If you had won €5000, what would you want to buy for the Liv Inn?



Suppose you could create one new weekly activity. What would that be?

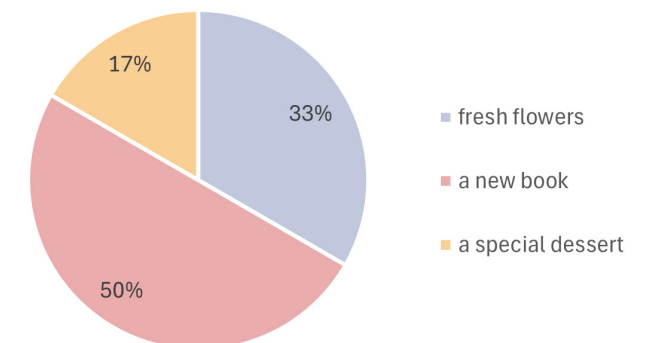


Would you rather have a mini cafe to relax in or a small garden to help maintain?

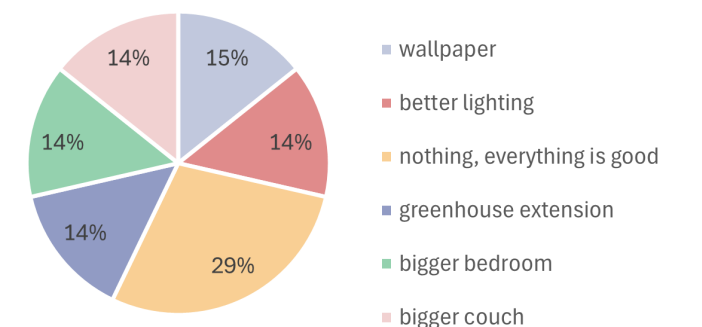


Among the residents choosing the small garden, it was mentioned that the garden should be in the sun, and a cafe would be too busy for them. Among the residents choosing the cafe, it was specified that the cafe should be open daily.

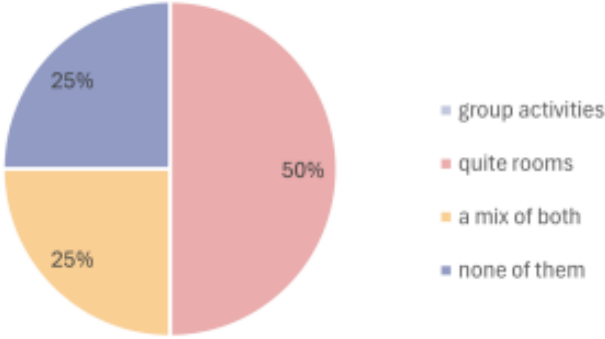
Suppose that every week you could get a personal delivery. What would you choose?



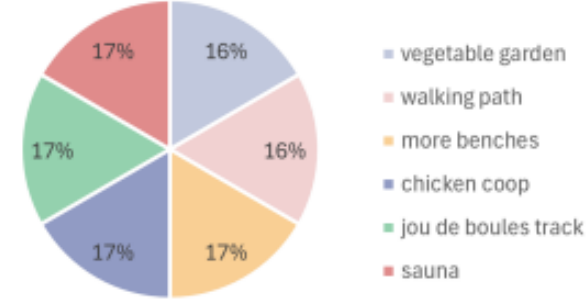
What would you change to make your apartment cozier?



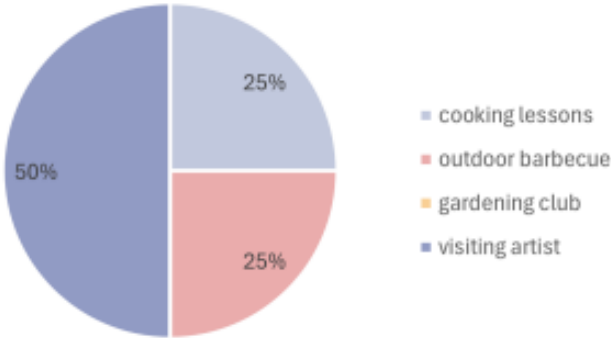
Would you rather have more group activities, more quite and relaxing rooms or a mix of both?



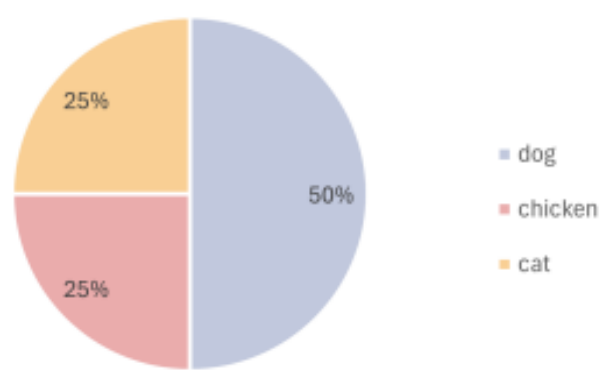
If you could have one new outdoor facility, which one would you rather have?



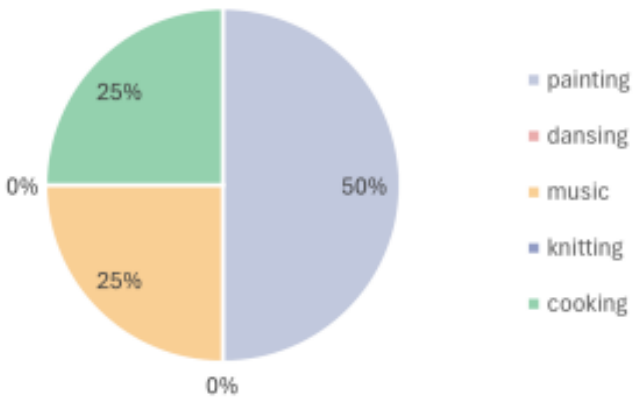
If you could organize one special monthly activity, what would that be?



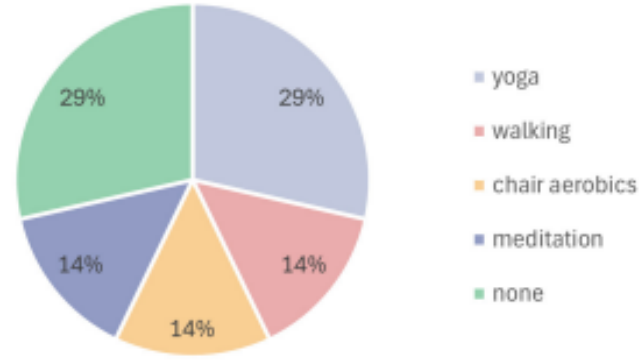
If you could have a small pet at Liv Inn (e.g. a fish, a bird, etc.), what would that be?



If you could invite a hobby instructor, what would you like to learn?



What type of exercises of wellness activities do you find nice?



# 09

## Day in the life

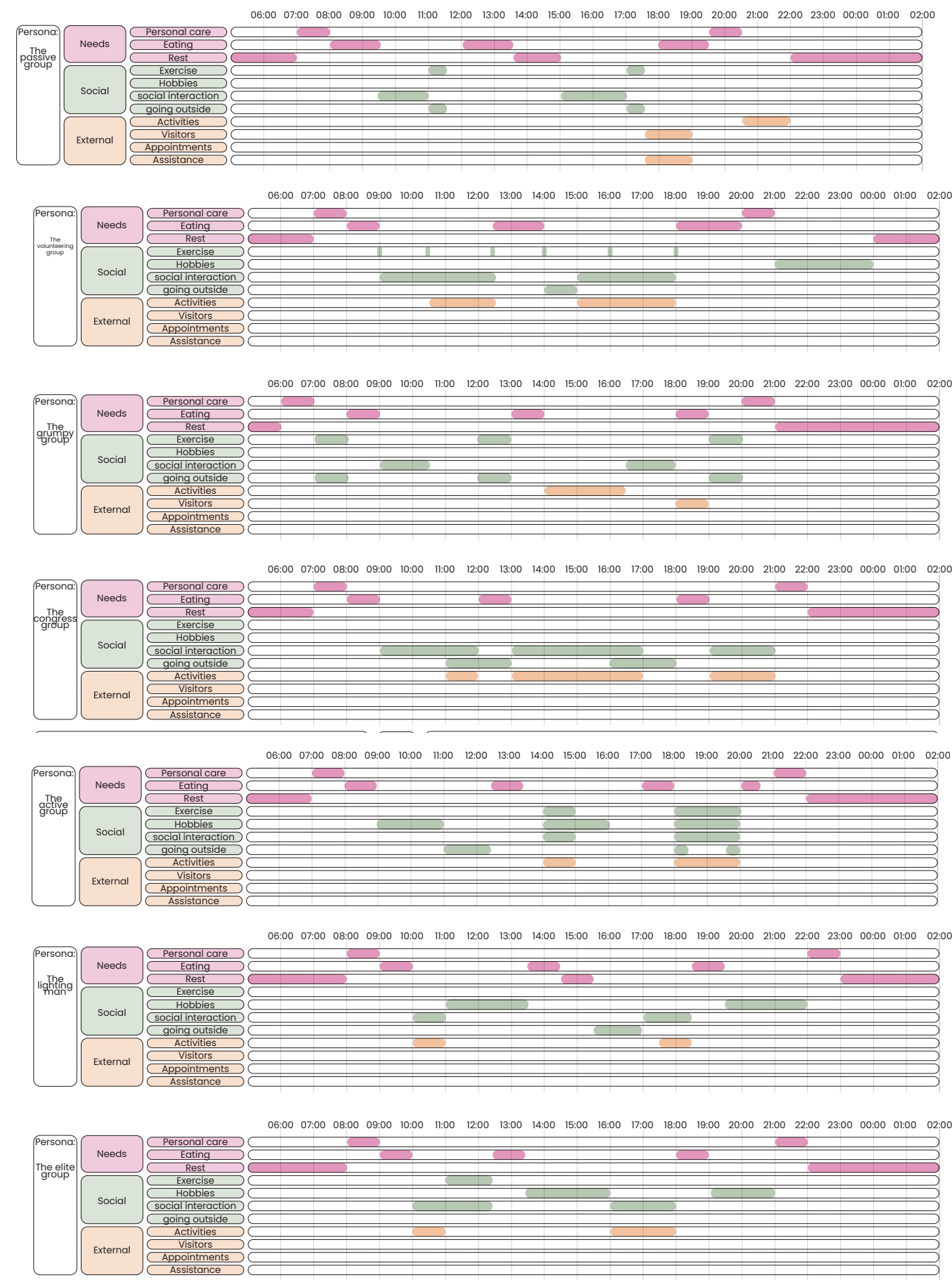
The “day in the life” timelines were created based on the personas defined in the previous chapter, but the schedule belongs to only one individual out of the persona group.

The timeline is divided into three categories: needs, social, and external. These categories are also split further into smaller actions that can be tracked and compared. Some of these actions can happen simultaneously, and overlap, for example needing external help while eating.

On one hand, this timeline has the purpose of understanding when the schedules of different groups of people overlap and when they differ from one another. The overlapping of schedules leads further to examining the activity and peak hours in the common rooms and how the flow of people moves from one area to another. The peak activity in the common rooms is further described in a later chapter.

On the other hand, this timeline looks into the different habits of the residents during a common day in their life. These habits give an insight into how much they socialize, exercise, go outside and receive help in their daily routines. This information is valuable for better understanding the target group as well as designing based on their needs and customs.

The results have been collected using interviews, discussions, and observation and have been mapped out to determine whether there are gaps in daily schedules that are challenging or face unmet needs.





# 10

## Spatial Organization: Peak Hours & Traffic Flows

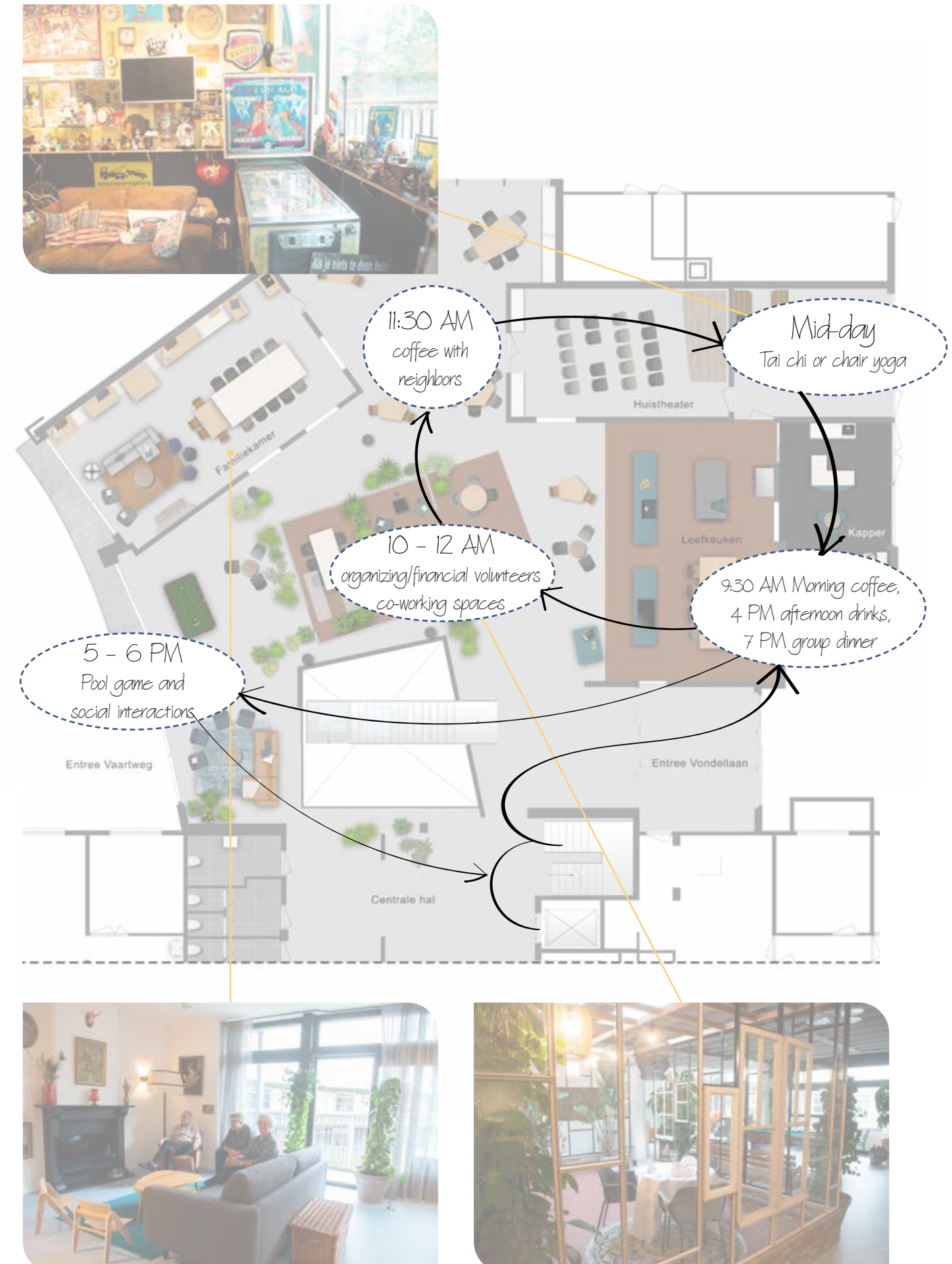
The communal areas at Liv Inn are designed as a central hub, fostering interaction through fluid, adaptable spaces. Soft separations between areas like the communal kitchen ("leefkeuken"), family room, theater, and internal courtyard ("binnentuin") are achieved using wooden frames, varying materials and lighting, curtains, and plants. This approach encourages seamless transitions and social engagement.

Throughout the week, the flow of residents and visitors across these communal spaces reveals distinct patterns of activity. The day typically begins around 9:30 AM with a coffee session in the communal kitchen, which accommodates up to 10 people. If attendance exceeds this, smaller nearby tables are utilized. By 10:30 AM, residents disperse for scheduled activities, personal errands, walks, or grocery shopping, creating a quieter period between 10:30 AM and 12:00 PM. During this time, organizing and financial volunteers often gather at tables near the binnentuin, while the hairdressing and nail art rooms see a steady flow of visitors. Around 11:00 AM, external members frequently rent tables in the binnentuin for co-working purposes.

Organized activities like Tai Chi or chair yoga take place in the theater room, an adaptable space as the building lacks a larger dedicated area for physical activities. Lunchtime varies: on days with organized lunches, the communal kitchen becomes a lively hub around 12:00 PM; otherwise, the space is quieter as residents eat privately in their apartments.

Activity picks up again around 4:00 PM, with residents gathering for drinks at the kitchen table. Between 5:00 PM and 6:00 PM, traffic shifts to the opposite end of the communal spaces near the windows, where a pool game and casual seating create a lively and vibrant atmosphere. If there is a group dinner, residents congregate in the kitchen area once more.

On Sundays, the bar opens from 4:00 PM to 8:00 PM, drawing many residents for an extended social evening, often lasting later than usual.



# 11 Occupancy of Communal Spaces

## Communal Kitchen

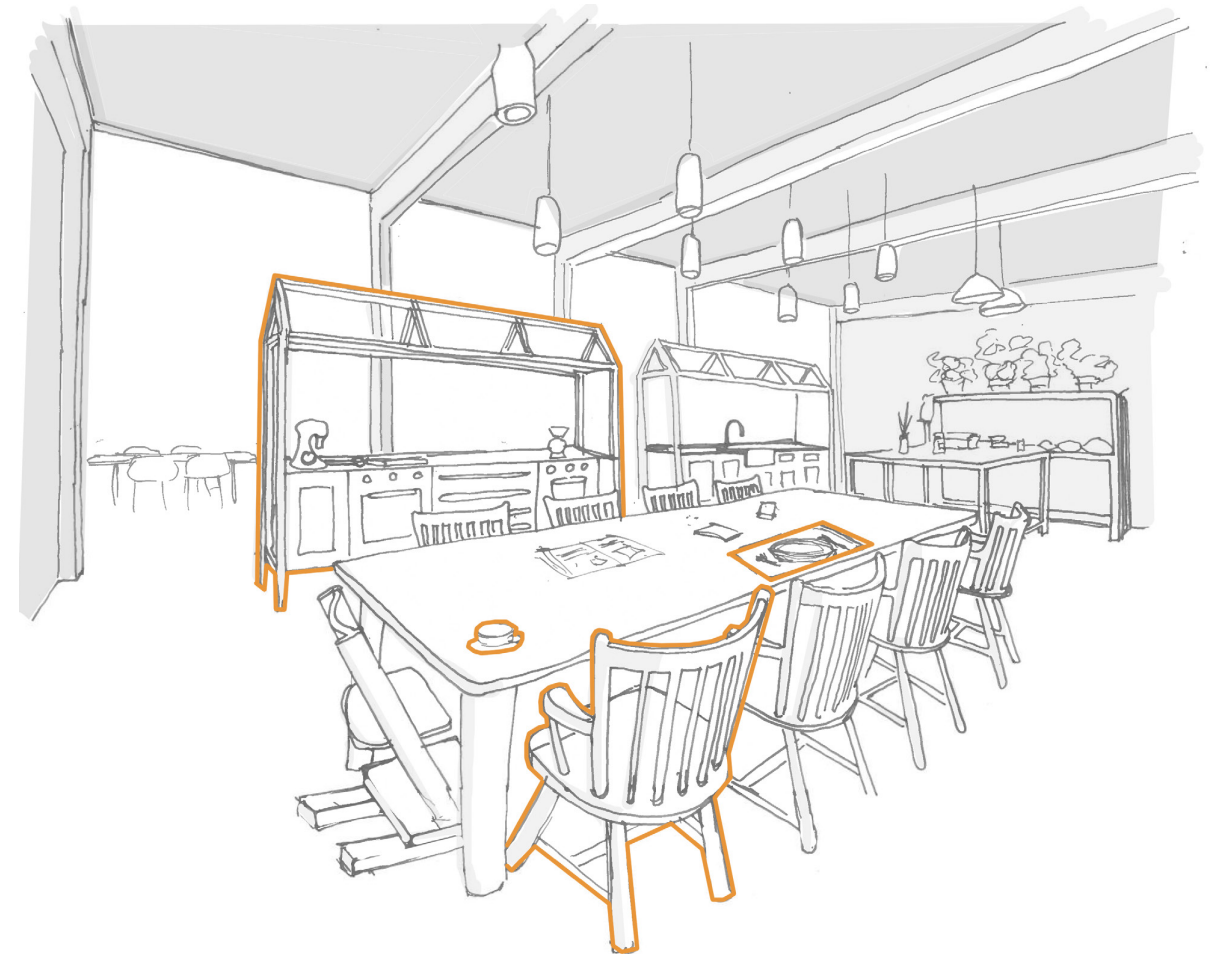
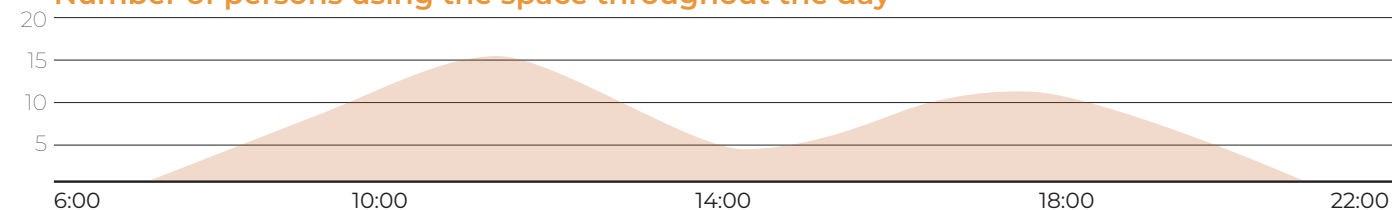
### Space Use

One of the most frequently used spaces by the elderly residents is the large open kitchen. The daily coffee break at 10:00 AM serves as the peak moment of the day in this space, with a group of around 20 elderly individuals gathering each morning to start their day together. After about an hour to an hour and a half, the group disperses, and the kitchen becomes quieter. However, there are always a few residents who remain in the kitchen, as they prefer not to be alone in their rooms and enjoy being among others. On Tuesdays, a lunch is organized by one of the residents, and on Wednesdays, a communal dinner takes place. These events also attract many people to the shared kitchen space. Overall, it is evident that the communal kitchen is a highly valued place for the residents, who consider it a pleasant space to spend time in. However, the kitchen is located quite deep within the building, which results in limited natural daylight and a lack of views to the outside.

### Applying to Tawrwewijk

The Tarwewijk area primarily consists of family homes, many of which come equipped with their own kitchens. Therefore, an additional shared kitchen for the elderly would likely be redundant for most Tarwewijk residents. However, if people are interested in communal dining experiences, the regular lunches and dinners could serve as an opportunity to invite local residents to join and participate, thus fostering a sense of community and making them aware that they are welcome to share a meal together.

Number of persons using the space throughout the day



### Evaluation

Daylight / view	● ● ○ ○ ○	Used by Elderly	● ● ● ● ●
Location in the building	● ● ● ● ○	Combine with Children	● ● ● ● ●
Atmosphere	● ● ● ● ●	Add to Neighbourhood	● ● ● ○ ○
Design score	● ● ● ● ○	Add to Design in Tarwewijk	● ● ● ● ●



Pool Table

Space Use

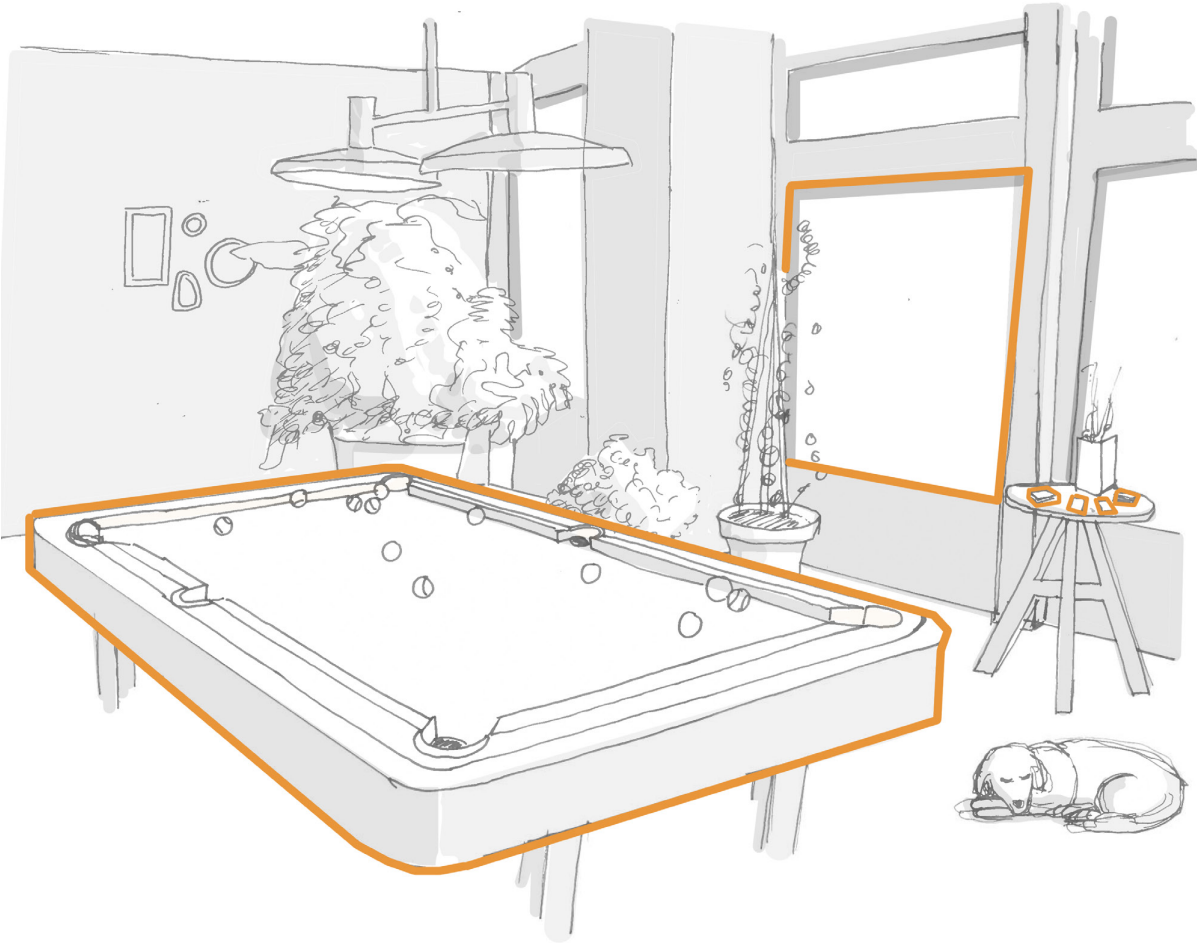
At the heart of the 'Liv Inn,' the pool table serves as a central point for social interaction, especially for the older residents. After dinner, a regular group of elderly individuals often gathers for a game of pool. It is clear that the pool table is an important space where residents can relax and simultaneously engage with one another. However, after 8:00 PM, the use of the pool table shifts to the students in the complex.

Some of the elderly residents have expressed a desire for a billiard table, indicating a need for more variety in available game options, which could make the space more appealing to the older residents. While the game cabinet offers some variety, allowing other games to be played, the desire for more options still exists.

The space around the pool table is located centrally in the building, making it an ideal spot for people who are already present in the heart of the complex to meet. The area has a cozy, homely atmosphere, with benches and chairs around it, where residents can either play other games or watch. The space is filled with greenery, and large windows provide a view of the entrance to the 'Liv Inn.' Overall, it is a pleasant place to spend time.

Applying to Tawrwewijk

The pool table could become a connecting feature for the neighborhood. However, the current space is not large enough to accommodate more people than the group of elderly residents and students already using it. Adding more pool tables would likely compromise the intimate, homely character of the space as it is now. wider community.



Evaluation

Daylight / view	● ● ● ● ●	Used by Elderly	● ● ● ● ●
Location in the building	● ● ● ● ○	Combine with Children	● ● ● ● ○
Atmosphere	● ● ● ● ○	Add to Neighbourhood	● ● ○ ○ ○
Design score	● ● ● ● ○	Add to Design in Tarwewijk	● ● ● ● ○

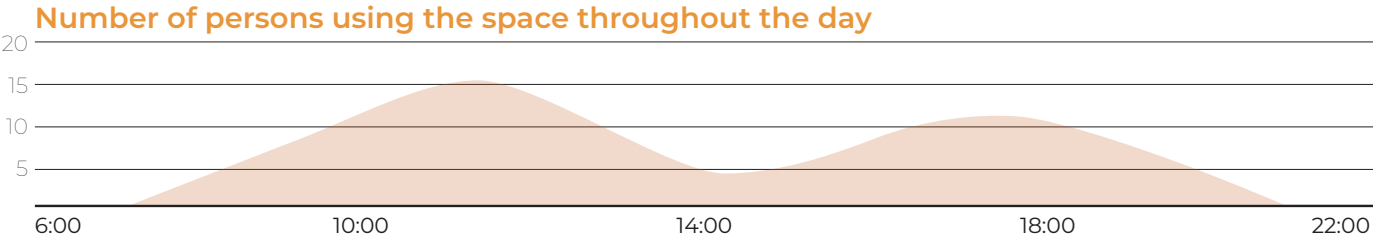
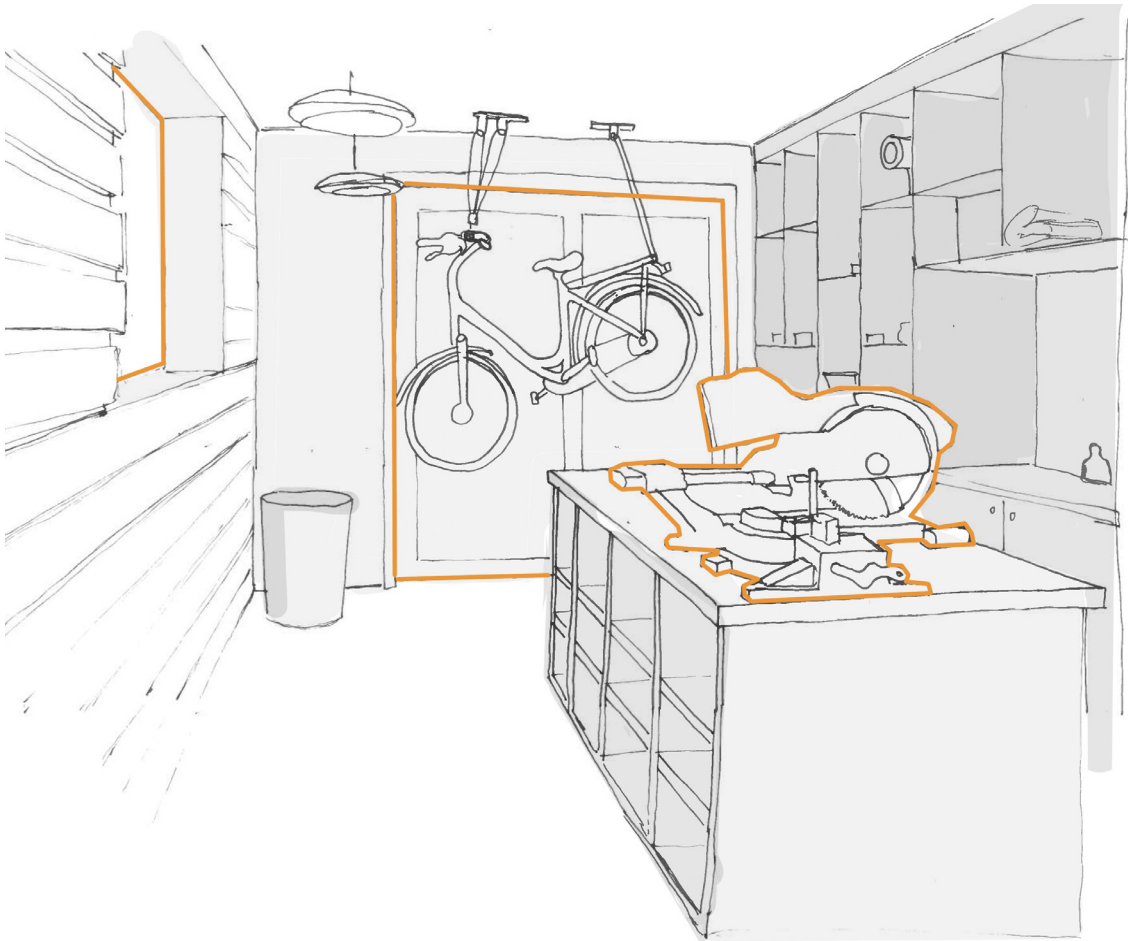
Workshop

Space Use

Observations of the workshop space reveal that it is primarily used by one man, who is often found working there. Residents approach him when things need repairing, whether it's broken lamps, kitchen utensils, or even bicycles. This makes the space a focal point for interaction across the entire community, as it brings together both the elderly and younger residents. The workshop is located next to the building's side entrance, with both an external door and a window that allows passersby, whether inside or outside, to view the space. However, observations suggest that the side entrance is not frequently used, which means few people walk past the workshop. The space itself is large enough to accommodate these repair tasks and has a distinct workshop atmosphere, with the use of raw materials like wood and metal, making it a comfortable environment to work in.

Applying to Tawrwewijk

A workshop space for the neighborhood would be a valuable addition. While the current space is sufficiently large for one person to work and to occasionally accommodate repairs for the 177 residents, if it were to be used as a workshop for the entire neighborhood, both the size of the space and the number of volunteers would need to increase. Expanding these aspects would ensure the workshop could better serve the needs of the wider community.



Evaluation

Daylight / view	● ● ● ● ●	Used by Elderly	● ● ● ○ ○
Location in the building	● ● ○ ○ ○	Combine with Children	● ● ● ● ○
Atmosphere	● ● ● ● ○	Add to Neighbourhood	● ● ● ● ●
Design score	● ● ● ○ ○	Add to Design in Tarwewijk	● ● ● ● ○

The Theater

Space Use

The theater is primarily used when an activity is organized, such as the chair yoga session on Wednesday afternoons or the Tai Chi lessons on Thursday mornings. During these activities, all tables and equipment are moved to the side to create space. The theater also has the capability to screen films on a large projector. Overall, the space is very multifunctional and can be used for various purposes. The theater is located next to the heart of the building, with large windows offering a view of this central area. However, this can sometimes be considered disruptive by participants in the activities, as noise from the heart of the building can cause sound disturbances.

Applying to Tawrwewijk

The theater already hosts regular community gatherings, such as performances and workshops by local musicians and artists. The space accommodates around 30 people, but for larger groups, the open area in the heart of the building is used. The stage in the theater is not suitable for large-scale performances where multiple people need to use the stage simultaneously.



Evaluation

Daylight / view	● ● ● ● ●
Location in the building	● ● ● ● ○
Atmosphere	● ● ● ● ○
Design score	● ● ● ● ○

Used by Elderly	● ● ● ● ●
Combine with Children	● ● ● ● ○
Add to Neighbourhood	● ● ○ ○ ○
Add to Design in Tarwewijk	● ● ● ● ○

Bar

Space Use

The bar is not regularly used by the residents. The dishwasher for the kitchen is located here, so occasionally, people pass through the bar. However, on Sunday evenings, the bar becomes quite popular during happy hour, where residents can enjoy drinks using their punch cards. Typically, between 10 and 15 people gather during this time, and it often remains a lively, social space late into the evening. The space is designed to resemble an authentic pub, with great attention to detail that contributes to a warm and cozy atmosphere. The jukebox and pinball machine are unique additions that enhance the ambiance and provide extra entertainment for visitors. These elements make the bar not only a place to enjoy a drink but also an inviting space for people to socialize and have fun together.

Applying to Tawrwewijk

A bar could be a pleasant addition to the neighborhood, offering a social space for residents. If research shows that there is a demand from the local community, it could be a valuable addition to the Tarwewijk. Since the elderly residents do not use the bar daily, it would be necessary to find a way to separate the bar from the rest of the building to ensure it doesn't disturb other areas when not in use.



Evaluation

Daylight / view	● ● ● ● ○
Location in the building	● ● ○ ○ ○
Atmosphere	● ● ● ● ○
Design score	● ● ● ○ ○

Used by Elderly	● ● ● ○ ○
Combine with Children	● ○ ○ ○ ○
Add to Neighbourhood	● ● ● ● ○
Add to Design in Tarwewijk	● ● ● ○ ○



Family Room

Space Use

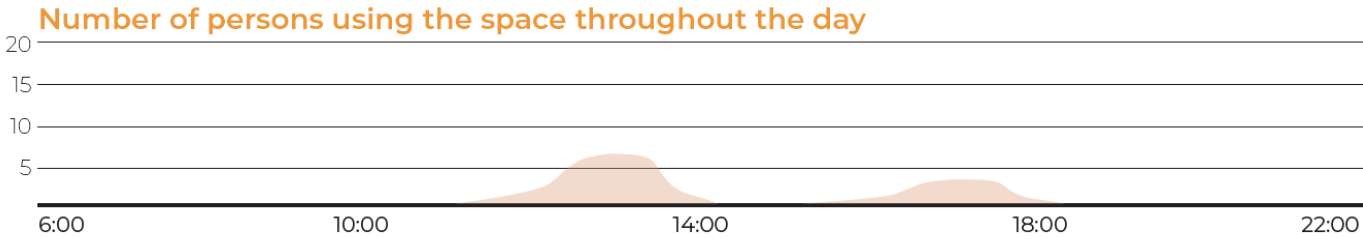
The family room is primarily used by neighborhood residents and visitors, playing a vital role when large groups of family or friends gather and cannot fit in a personal room. This space offers a warm, homely atmosphere with a large living room setup, a spacious dining table, and ample toys for children, making it an accessible and versatile location.

In addition to informal gatherings, the family room is also rented out for various activities. For example, the neighborhood team uses the space weekly for meetings, and discussions with residents and experts are frequently held here. When the room is rented, residents often provide coffee, tea, and snacks in exchange for a small fee, giving the space a personal and welcoming touch.

One notable drawback is that the room is relatively deep within the building, making it feel slightly dark around the dining table. Additionally, the family room is adjacent to the central heart of the building, which, during events in the heart, can result in noise disturbances, potentially hindering the peaceful use of the space.

Applying to Tawrwewijk

The family room is already a valuable addition to any neighborhood. Particularly in Hilversum, where a traditional community center is absent, this space fulfills a similar role. It provides a venue where local residents can come together for social activities, discussions, or simply to connect with one another. In this way, the family room contributes to strengthening the sense of community and fostering relationships among neighborhood residents.



Evaluation

Daylight / view	● ● ● ○ ○	Used by Elderly	● ● ○ ○ ○
Location in the building	● ● ● ○ ○	Combine with Children	● ● ● ○ ○
Atmosphere	● ● ● ○ ○	Add to Neighbourhood	● ● ● ● ●
Design score	● ● ● ○ ○	Add to Design in Tarwewijk	● ● ● ○ ○



# 12

## Role of Lighting in Creating Atmosphere

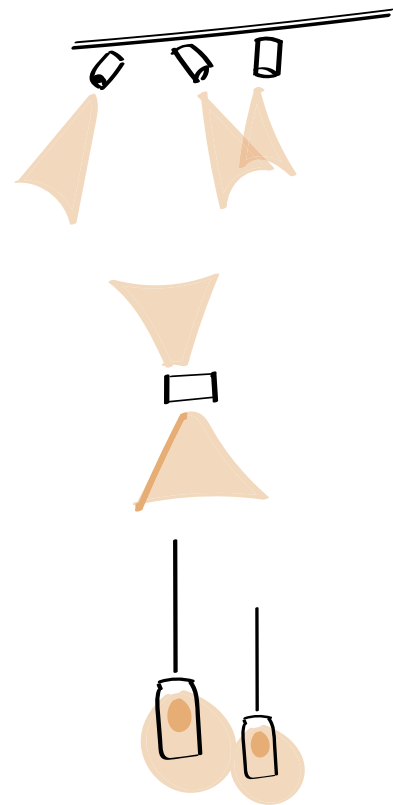
Lighting is a crucial element in interior design, serving not only functional needs but also contributing significantly to the aesthetic and emotional ambiance of a space. At Liv-Inn, the emphasis is on diffused lighting, which helps create a warm and inviting environment, fostering a sense of coziness and comfort. The selection of various lighting fixtures demonstrates how thoughtful design can enhance the atmosphere.

By integrating fixtures of diverse textures, shapes, and materials, the lighting design ensures a harmonious interplay between form and function. These materials allow light to filter through in a manner that is soft and pleasant, avoiding harshness. According to an interviewee, it contributes to the coziness of the spaces and she associated the hanging lights and lanterns with the common spaces. The hanging lights, for example, provide focused yet gentle illumination, striking a balance between practicality and mood enhancement.

The arrangement of lighting in common areas, such as dining or seating spaces, reflects a careful consideration of how light interacts with furniture, decor, and the spatial layout. The combination of natural and artificial light ensures a dynamic yet consistent feel, adapting to different times of the day and the activities within the space.

Through this meticulous approach, lighting not only serves as an aesthetic feature but also becomes an active participant in shaping the experience of those inhabiting the Liv-Inn.

Designing communal spaces requires a thoughtful integration of light, sound, and environmental elements to create an atmosphere that supports well-being and influences behavior. The use of warmer lighting during dinner and softer tones afterward aligns with natural circadian rhythms, fostering comfort and relaxation. Blue-light adjustments, along with the introduction of daylight and outdoor-inspired materials such as tiles, help blur the boundaries between indoor and outdoor spaces, creating a harmonious and inviting environment. Ventilation systems that manage CO2 levels, combined with the careful manipulation of sound and reflection, enhance both comfort and health. These sensory elements, paired with intuitive wayfinding, work together seamlessly to create dynamic, engaging spaces that feel natural and effortless to navigate.



1. Common kitchen area  
2. Binnentuin with rentable office spaces

# 13

## Sensory Analysis of Communal Spaces

To decypher the physical qualities of the interior space and its relation to creating spaces of belonging, comfort, home and social wellbeing a sensory analysis is made based on the framework of Khyeun Lee (2022).

According to architect Gwendoline Schaff in *Home in Later Life* by sensorial factors directly impact emotional and social wellbeing. By balancing sensory stimuli like light, material texture, and sound, spaces can encourage both privacy and interaction. Alternatively, Keunhye Lee (2022) advocates that multi-sensory engagement (e.g., through light, shadow, texture, and smell) creates emotional connections to space, enhances social well-being and establishes identity. Such design enriches spatial experiences by fostering personal and shared cultural memories, which can mitigate loneliness and promote social interaction.

Moreover, analysing sensory design elements in the design can help generate specific acoustic parameters for the people with hearing difficulties and adequate lighting compositions for the visually-impaired (e.g. Qualidom, 2018). For example, residents of the Liv Inn also mention that focusing on making the lighting more diffused and addign measures for communal spaces, which are too loud for those with hearing disabilities at the momemnt, are important factors for the comfort, coziness or user satisfaction the communal spaces. Analysis

The analysis focuses solely on the sensory factors of the interior communal spaces, i.e. texture, light, shadow, color, sound and smell. Temperature is left out in this scenario, as it is hard to identify and fairly similar in each room (personal opinion). The orange dot indicates that the sensory element works “good”. And the green dot indicates that the element works “very well”.

	Morphological Factor						Sensual Factor						Influential Factor		The Body			
	Volume	Scale	Rhythm	Order	Proportion	Contrast	Texture	Light	Shadow	Color	Temperature	Sound	Smell	Culture	Local	Senses	Movements	
TH							●	●	●	●		●						
B							●	●	●	●			●					
IG							●	●		●				●				
CK							●	●	●	●								
...																		
...																		
...																		
Theater (TH), Bar (B), Inner Garden (IG), Communal Kitchen (CK), ...																		

Sensory framework for analyzing interior spaces by Keunhye Lee (2022)



Sensory Analysis: The Theater

Sound

To absorb the sound emitted from the speakers or instruments in the theater, wooden panels on the side of the walls help reduce unwanted noise or distortion, contributing to the acoustic quality of the room. Additionally, the floor is carpeted which can contribute to the absorption of soundwaves due to its physical qualities and soft surface.

Light

Throughout the communal spaces of the Liv Inn, (movable) spotlights are used (see figure to the right). These spotlights, "accent lighting", emphasize important areas in the theater, such as the stage or area with the tables and chairs or the piano area. Alternatively, wall-mounted armatures are used as decorative lighting, which helps to set the mood or positively contribute to the atmosphere of the building.

Shadows

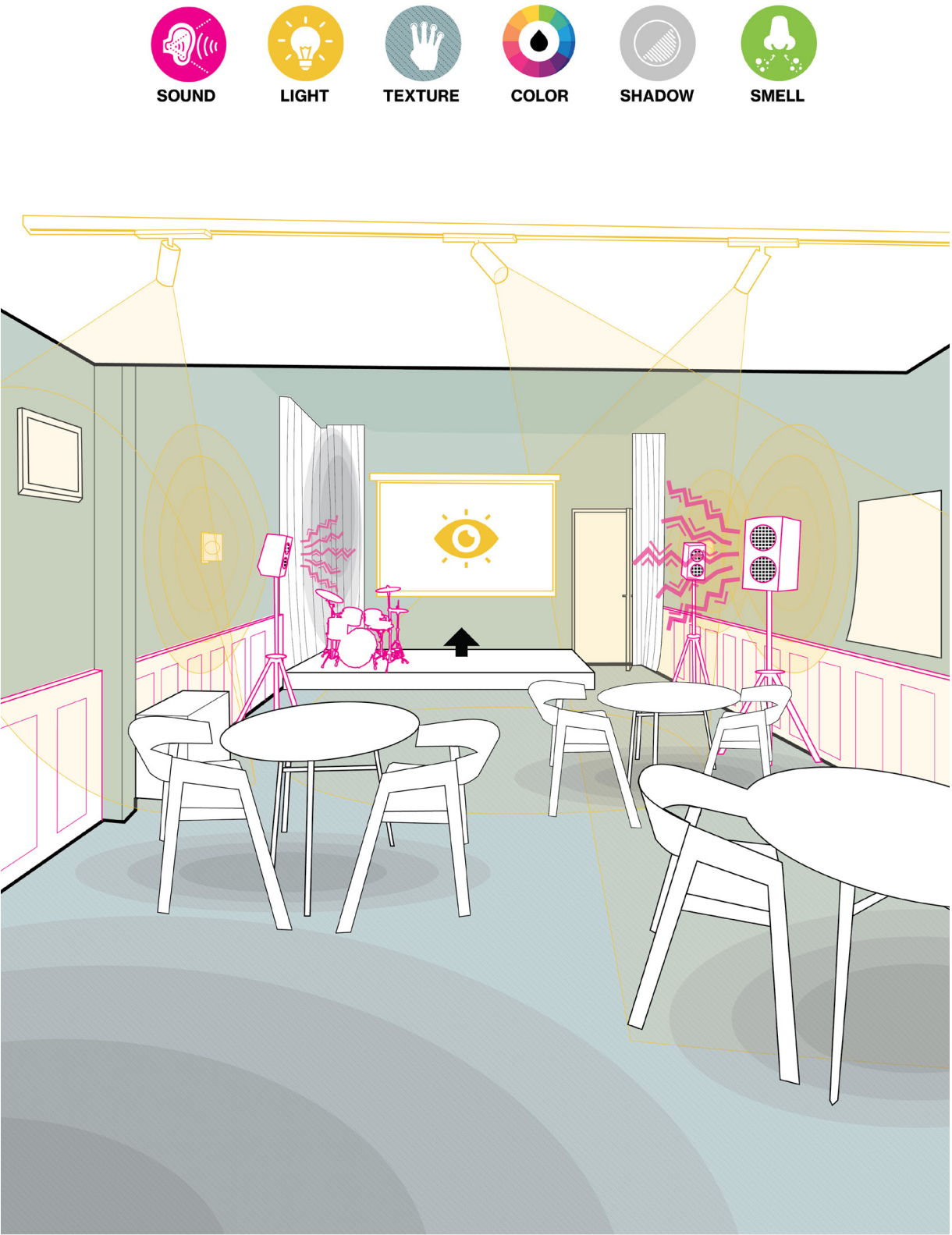
With little to no windows openings, the theater is naturally dark, which is ideal for this specific funtion. The shadows create a dramatic and contrasting play with the lighting, as the accent lighting focuses more on the stage, tables, paino area, and wall-armitures more on decorating the walls. This leaves room for the shadows dramatize shadows in the corner (located at the hanging curtains) and on the floors, especially near its entrance.

Texture

Wooden panels, the carpeted floor and plastered (colored) walls mainly make up for the play with texture in this room. Carpeted floor also increase the feel of comfort, coziness and home, next to their acoustic properties.

Color

Vibrant colors contribute to the atmosphere of the theater, as the blue curtains, carpet, walls are inviting, lively and complimentary to the wooden objects in the room (e.g. color of the tables, chairs, wooden panels).



The Theater

## Sensory Analysis: The Bar

### Sound

To absorb the sound emitted from the speakers or instruments in the bar, wooden panels on the side of the walls also help reduce unwanted noise or distortion, contributing to the acoustic quality of the room. Similarly, the floor is carpeted which can contribute to the absorption of soundwaves due to its physical qualities and soft surface.

### Light

The bar uses decorative lighting that helps to set the mood and positively contribute to the atmosphere or look-and-feel of the space. Similar to the theater, accent lighting is used in this space, but now to emphasize the decorative posters, flyers, old vinyl covers on the wall, and “nostalgic” furniture of the elderly (e.g. cigarette dispenser or traditional wall cabinet).

### Shadows

With the decorative lighting as the main lighting for the bar, shadows are a little less prominent in this space. On the other hand, the lighting makes the room less illuminated which in turn causes for a cozy and homy feel.

### Texture

Similar to the theater wooden panels, the carpeted floor and plastered (colored) walls mainly make up for the play with texture in this room. Again, the carpeted floor can contribute to the acoustic performance of the room. Alternatively, various (almost random) object hanging from the walls or ceiling add a 3D texture to the space, which acts as a “Wunderkammer”, where every object you focus on is totally random but still has its own story and (nostalgic) value.

### Color

Apart from the vibrant yellow color of the wall, and blue carpet, the bar also becomes interesting through the old vinyl record collection of an acquaintance of the Liv Inn residents that were used by the interior designer. The various colors of the covers and center of the vinyls make the room colorful and compliments well with the vibrant colors of the walls and floors.



The Bar



## Sensory Analysis: The Kitchen

### Light

The communal kitchen is also seen as the heart of the building. The kitchen uses decorative lighting above the dinner table which contributes to the atmosphere at the table when eating or drinking. Additionally, accent lighting in the form of spotlights are used to emphasize and illuminate the kitchen islands (where the cooking and the washing of dishes happens), and the shelves (to the left in the drawing) where the glasses and other kitchen equipment is stored.

### Shadows

Although the presence of shadows is minimal, the play of accent lighting and the decorative lighting above the dinner table causes the shadows to separate three main areas in the communal kitchen: the shelvers or cabinets (left), dinner table (middle) and kitchen islands (right).

### Texture

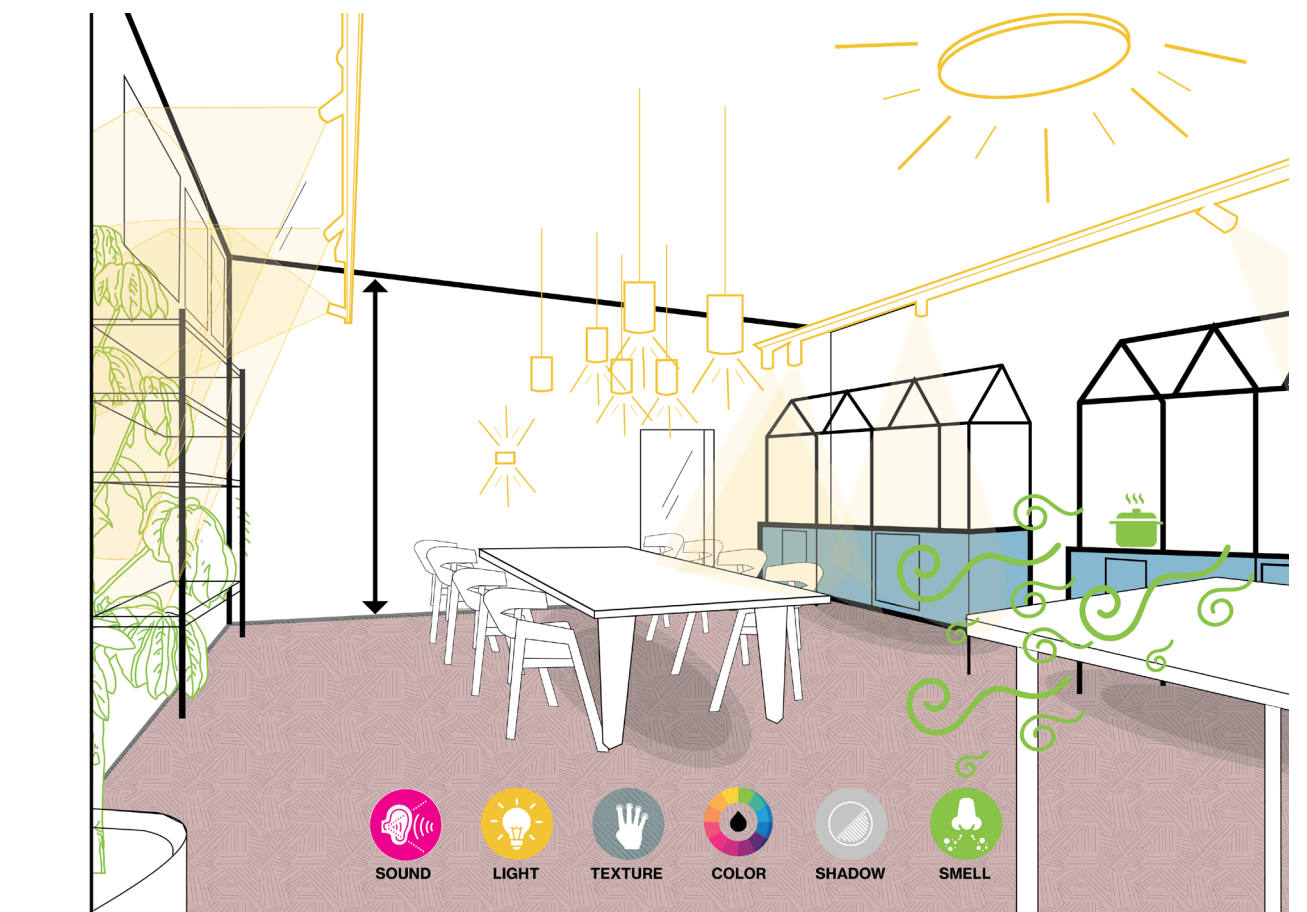
Similar to the inner garden, red hexagonal ceramic tiles are used to border the communal kitchen from the surrounding walkways and interior spaces. Other than that, the walls are white plastered.

### Color

The vibrant blue color used in the theater is repeated to highlight the cabinets of the kitchen islands. This makes them both noticeable and act as borders in the open space. For example, the tiles in combination with the kitchen islands that lie in one line indicate when a person either enters or leaves the communal spaces. Decorative greenery also adds to the atmosphere and coziness of the kitchen.

### Smell

Almost logically, the large kitchen is designed where the smell of cooking from the oven or induction plates, or the smell of coffee from the coffee machine can be experienced.



*The Common Kitchen*



## Sensory Analysis: The Theater

### Light

The inner garden mainly uses decorative lighting that helps to set the mood and positively contribute to the atmosphere or look-and-feel of the space. Besides that, the inner garden is adjacent to large window openings on the first floor in the Liv Inn, which allows a lot of natural daylight to come through.

### Texture

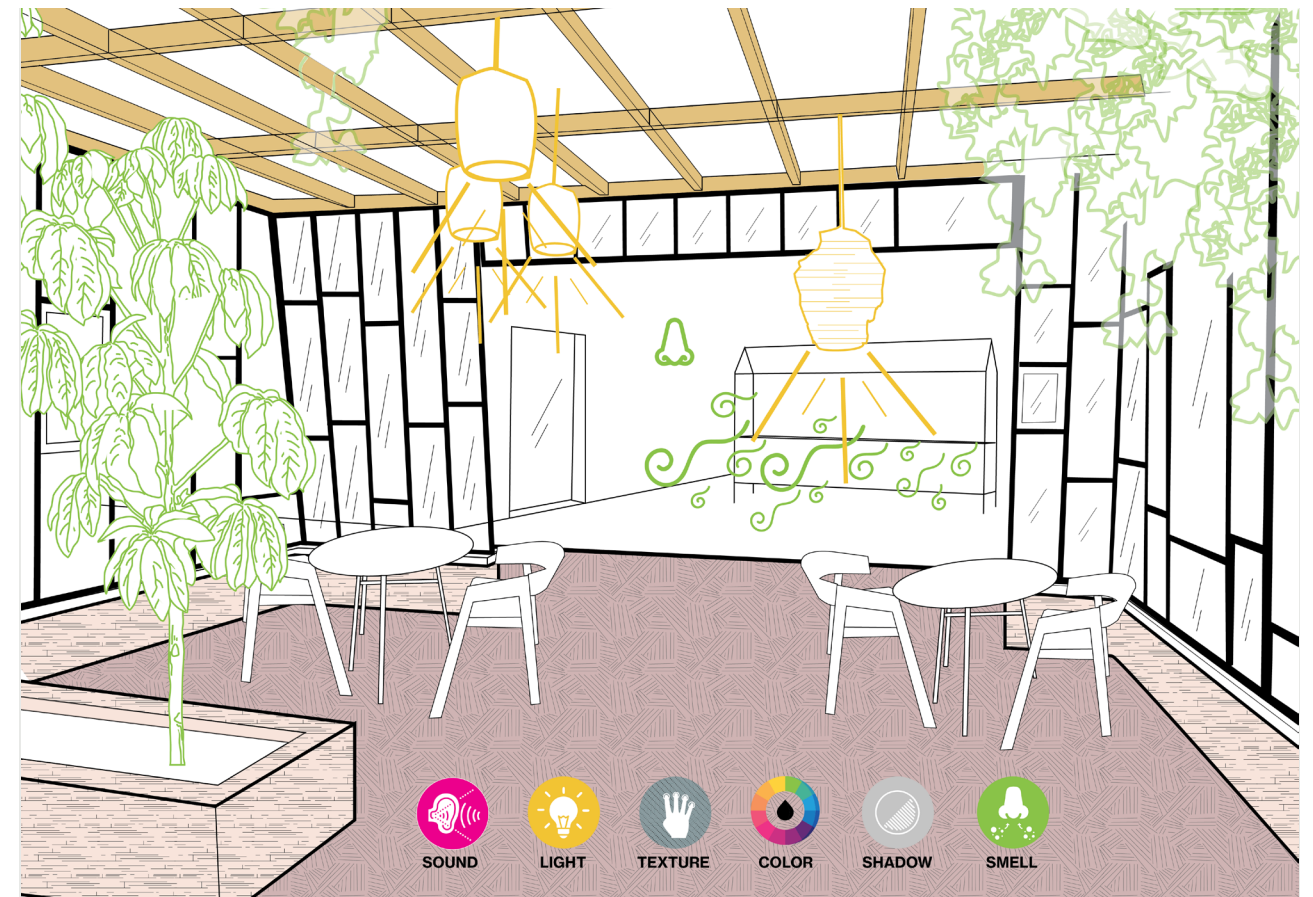
The inner garden, as the name suggests, focuses on creating a garden-like environment in the interior of the Liv Inn. By drastically bordering the floor surface texture with red hexagonal tiles of the inner garden in comparison to the walkways or other functions with a polished concrete look, a contrast and zoning of the inner garden becomes evident. Apart from that the glass partition cause for a semi-transparent wall around the space. An open wooden ceiling and refurbished wooden elements in the glass wall add to the warmth of the space. To further border the inner garden in the open, yet central interior space it finds itself in, the architect's use a plinth made of red brickwork, which also adds the the warmth and interplay of textures within the space.

### Color

By using warmer colors such as wood, red brickwork, red hexagonal ceramic tiles and greenery around the ceiling and in planting beds which are integrated in the brick plinth, the inner garden certainly feels comfortable, cozy and invites lingering and provides an atmosphere that is suitable for study or work. The latter is concluded based on talks with staff, a student and elderly who confirm this success of the inner garden.

### Smell

Although the garden is drastically bordered or partitioned from the surrounding interior spaces, it still has an open design. This allows for the smell from cooking or coffee from the communal kitchen to enter the space. This can residents to possibly move from the inner garden to the communal kitchen, which is often occupied by residents during certain peak hours for either drinking coffee, a drink, cooking or eating.





## RELATION TO LONELY PEOPLE (IN TARWEWIJK)



### LIGHT

**Layered Lighting:** Integrate layered lighting types such as combining accent lighting and decorative lighting to create an inviting atmosphere

**Natural Light:** Maximize natural daylight with large windows in communal spaces, as it enhances mood and fosters connection with the outside environment

Poor lighting prevents one's ability to "read" the space, making it feel unsafe or comfort, hinders their mobility and sense of orientation, decrease in social connectedness (Petermans, 2019)



### SHADOW

**Dynamic Play of Shadows:** Employ lighting that produces soft, dramatic contrasts. Use shadows to evoke depth and intimacy while maintaining visibility

**Soft Transitions:** Prioritize diffuse and low-intensity lighting to minimize harsh shadows, creating a cozy and homelike feel

Poor contrast to the lighting (with shadows) can have the same effects as the ones stated above.



### TEXTURE

**Tactile Diversity:** Use varied materials to provide tactile richness and visual contrast, making spaces feel warm and recognizable

**Functional Textures:** Use distinct textures to define zones, which can visually guide users to navigate

Poor lighting prevents one's ability to "read" the space, making it feel unsafe or comfort, hinders their mobility and sense of orientation, decrease in social connectedness.



### COLOR

**Warm and Vibrant Tones:** Utilize warm and vibrant colors like red brick or vibrant accents to foster appeal, comfort or recognizability

**Personal and Nostalgic Touches:** Include personalized or nostalgic coloured elements such as vinyl records or curated artifacts to evoke emotional connections and stimulate conversation

Studies show that even simple changes in colour combined with strategic placement of certain social activiteit can drastically increase social connectedness (Petermans, 2019)

Despite being in a new environments, the sense of wellbeing among elderly can be traced back to the (nostalgic) things that recall meanings of home, which are often tied to objects of home from their past (Petermans, 2019)



### SMELL

**Aromatic Flow:** Design open connections between areas to allow pleasant or identifiable smells, to permeate and encourage movement and socialization

**Natural Scents:** Incorporate natural greenery and plants into spaces like inner gardens to provide a refreshing sensory experience and enhance calmness

The smell of food or coffee might be an invitation (or rather an excuse to some) to go and socialize with others (e.g. coffee time at lunch or joining communal dinners)

Smell is directly linked to the spatial perception of people. It is a design factor that influences how people (partially) evaluate spatial cues and in turn, how they might experience social relations with others within that space (Petermans, 2019)



### SOUND

**Acoustic Treatment:** Use sound-absorbing materials to minimize noise and echo

**Purposeful Noise Control:** Design spaces with clear acoustic zoning to ensure sound is contained where needed and reduced in adjacent areas to foster pleasant conversations

People with hearing impairments, that might use hearing aids, might avoid (communal) spaces that become too noisy when crowded, resulting in them potentially further isolating themselves. Designing acoustically-sound spaces might encourage these individuals to participate in social activities

# 14

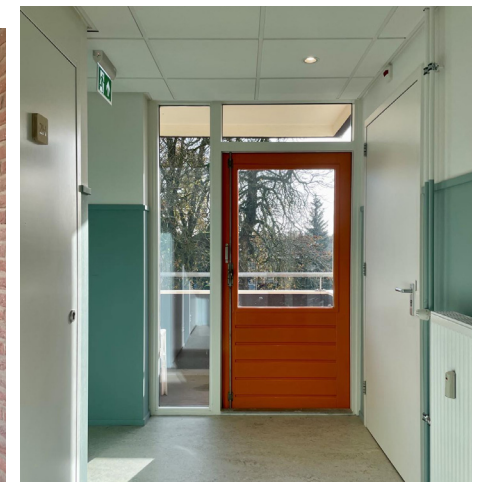
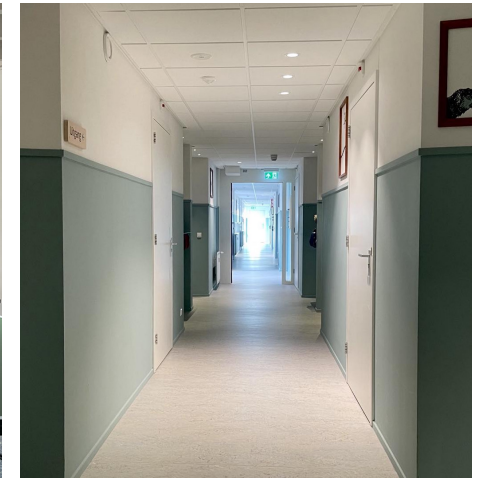
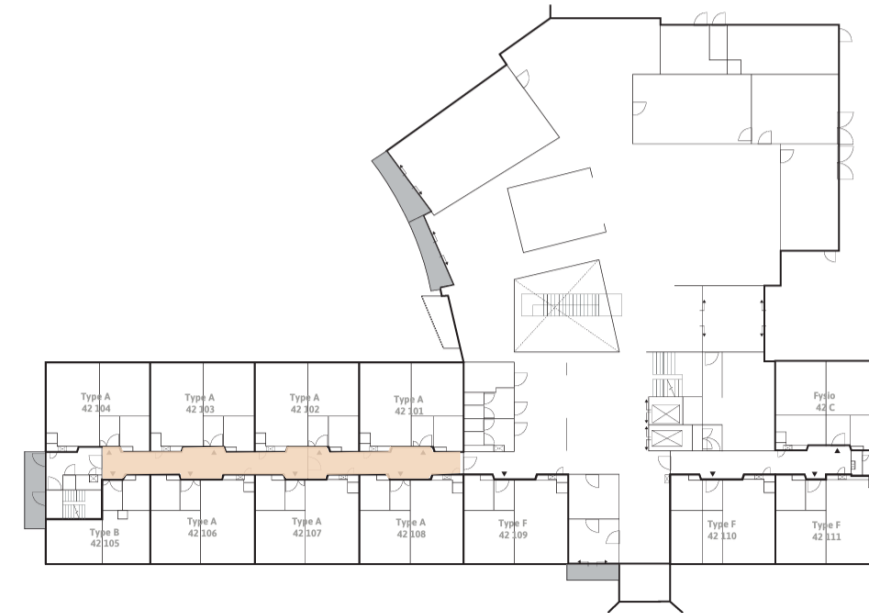
## Deserted Corridors: A Study in Spatial Perception

Among the spaces we observed, the long corridors in the building stood out as the most deserted areas throughout the day. Their configuration—long, linear pathways—evoked hospital-like imagery for one of our interviewees, reinforcing a sense of sterility and disconnection. Despite their functional purpose as transitional spaces, these corridors fail to invite pause or engagement, lacking the warmth or visual interest that might encourage lingering.

The stark difference in wall materials further amplified the divergence in perception. In the newer half of the building, plastered walls, with their bright and reflective surfaces, created a sense of openness and light. By contrast, the older section featured dark, exposed brick walls, which felt heavier and less welcoming according to another interviewee. This juxtaposition of materials offered a striking commentary on how architectural finishes alone can shift the emotional tenor of a space.

The gym on the second floor presented another layer of complexity. The design of this space mimicked the elongated, corridor-like typology of the adjacent spaces: a long, curved room with daylight penetrating only through high, narrow windows. Over the course of our week-long stay, we noted that the gym remained entirely unused. Interviews and observations suggested several possible reasons: its placement in the corner of the building, on an upper floor, creates a sense of inaccessibility. The lack of inviting daylight—restricted to the upper reaches of the walls—renders the room dim and uninviting, despite its potential utility.

Additionally, the gym's elongated configuration reflects a spatial typology associated more with movement through space (like corridors) than with activities requiring presence and engagement. This subtle architectural cue might subconsciously discourage users from spending time there. The lack of direct visual or physical connection to other active spaces in the building further isolates the gym from the rhythms of daily use.



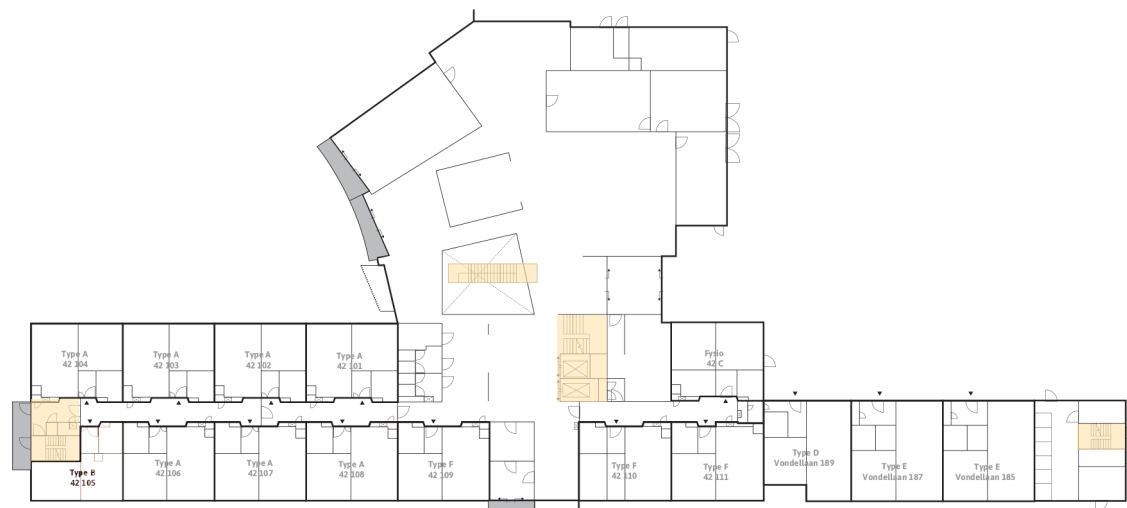
1. Gym on the second floor
2. Corridor along the first floor (newer extension)
3. Corridor along the third floor (old building)
4. Door to balcony at the end of first floor corridor (newer extension)



# 15

## Encouraging Movement through the Built Environment

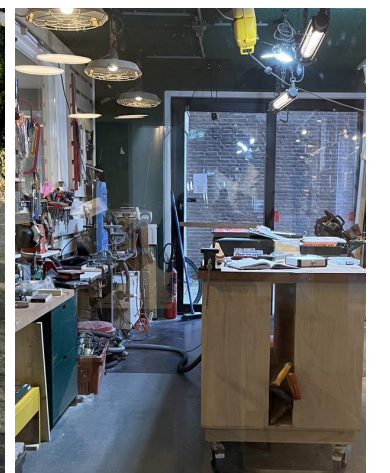
The stairwells are thoughtfully designed to promote walking and physical activity. Interviews with younger, mobile residents reveal a strong preference for taking the stairs over the elevator. The spacious, well-lit main staircase, which connects directly to the communal space, sees frequent use, while the elevator is used less often.



# 16

## Fostering a Sense of Ownership in Collective Living

Spaces at Liv Inn are thoughtfully designed to encourage personal expression and active engagement. Bulletin boards and magnet strips outside individual rooms allow residents to showcase their identities and personalize their spaces. Activities like tending plants, cleaning, and maintaining the communal kitchen and facilities not only foster a sense of responsibility but also keep residents mentally and physically active. The communal garden provides a shared outdoor area for relaxation and interaction, while workshop spaces equipped with tools and equipment for rent offer opportunities for creativity and hands-on projects.



# 17

## Limitations and Discussion Fieldwork at Liv Inn Hilversum

### **Declining Volunteer Pool**

According to our interviews, the Liv Inn is experiencing a shrinking demographic of active, younger elderly residents (aged 55–65), who are traditionally more mobile and capable of taking on volunteer roles to organize events and foster community spirit. This demographic shift leaves the community dominated by residents aged 80–90, many of whom are less mobile and prefer to stay in their apartments rather than participate in shared activities. This lack of active participation not only reduces social engagement but also places additional pressure on the few available volunteers, leading to frustration and fatigue among those willing to help.

Communal dinners in the shared kitchen, while planned, suffer from low attendance (fewer than 20 people) due to both a lack of volunteers and resident willingness to participate. The minimal turnout suggests deeper issues in the community, such as social isolation, health limitations, or a lack of appealing programming to draw residents out of their apartments.

### **Residents Requiring Intensive Care**

The presence of residents with advanced dementia or other conditions requiring intensive care presents unique challenges. While Liv Inn fosters a communal living model, accommodating such residents can strain resources and disrupt the atmosphere. Potentially rethinking the balance between independence and care within the Liv Inn model.

### **Challenges in Inter-generational Engagement**

While residents wish for students to play a more active and engaging role within the Liv Inn community, there is a misalignment between the schedules of elderly residents and students. The elderly are most active midday, whereas students are generally away studying during the day and socialize more in the evenings or nighttime, leaving little overlap for meaningful interaction.

# 18

## Relevance Fieldwork for Tarwewijk

### **Addressing lack of neighborhood volunteers**

The issue of a shrinking volunteer pool is a significant challenge, as seen in areas like Tarwewijk. For instance, the lack of volunteers to manage sports fields and parks often results in closed gates, discouraging community activity and engagement. This highlights that providing physical infrastructure alone is insufficient; the issue is deeply rooted in social dynamics, such as the absence of active, younger residents willing to take initiative. There is a pressing need to coordinate efforts and implement strategies that encourage volunteerism, particularly among younger demographics.

### **Future of informal care in networks**

Promoting ageing in place presents several challenges, especially as elderly residents may reach more critical stages of care or advanced dementia. This underscores the importance of building an inclusive safety net that supports ageing in place while fostering informal networks of care. Strengthening these networks will require community engagement, awareness campaigns, and collaboration among families, neighbors, and local organizations to ensure comprehensive support.

### **Monofunctional spaces prevent inter-generational interaction**

Monofunctional spaces, such as parks designed exclusively as play areas for children, limit opportunities for intergenerational interaction in neighborhoods like Tarwewijk. The lack of shared, multi-use spaces hinders meaningful engagement between residents of different age groups. Addressing this issue will require rethinking urban design to create versatile spaces that encourage social integration and interactions across generations.





# **SITE ANALYSIS**

## DESIGN LOCATION 5

CONTRIBUTORS: ANTON PRESURĂ, RUBEN BOGERT & DEAN SIMSON





# 01 NATURAL INFLUENCES & CONTEXT



## 01 NATURAL INFLUENCES AND CONTEXT

### 01.1 GREENSTRUCTURE

In the Tarwewijk, most of the area is paved. However, there are several green structures throughout the neighborhood. These green structures are shown on the map to the right. The dike forms a linear structure through the neighborhood, and there is also linear greenery along the tram line. Additionally, there are small patches of nature scattered throughout the area. However, it should be noted that the greenery in the neighborhood is often little more than a lawn.



01 NATURAL INFLUENCES AND CONTEXT

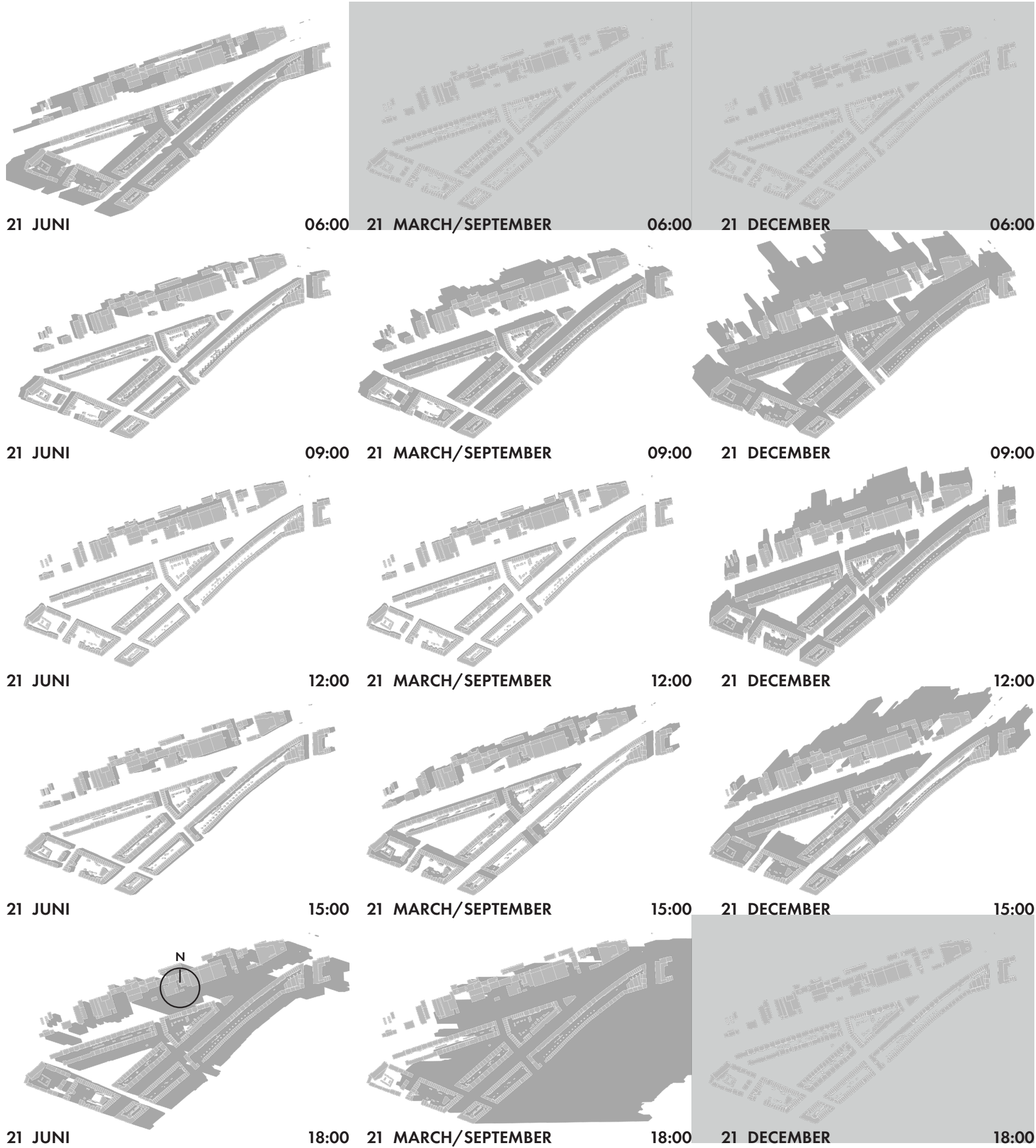
01.2 SUN AND SHADOW

This analysis examines the sunlight and shadow patterns of the plot and the surrounding buildings. Based on the building heights, shadows have been calculated for specific times on selected dates. The chosen dates represent key moments in the four seasons:

- December 21: The day when the sun is at its lowest point.
- June 21: The day when the sun is at its highest point.
- March 21: The day when the sun is midway between its positions on December 21 and June 21 (spring equinox).
- September 21: The day when the sun is midway between its positions on June 21 and December 21 (autumn equinox).

The dates of March 21 and September 21 are nearly identical in terms of shadow patterns, allowing their analysis to be combined.

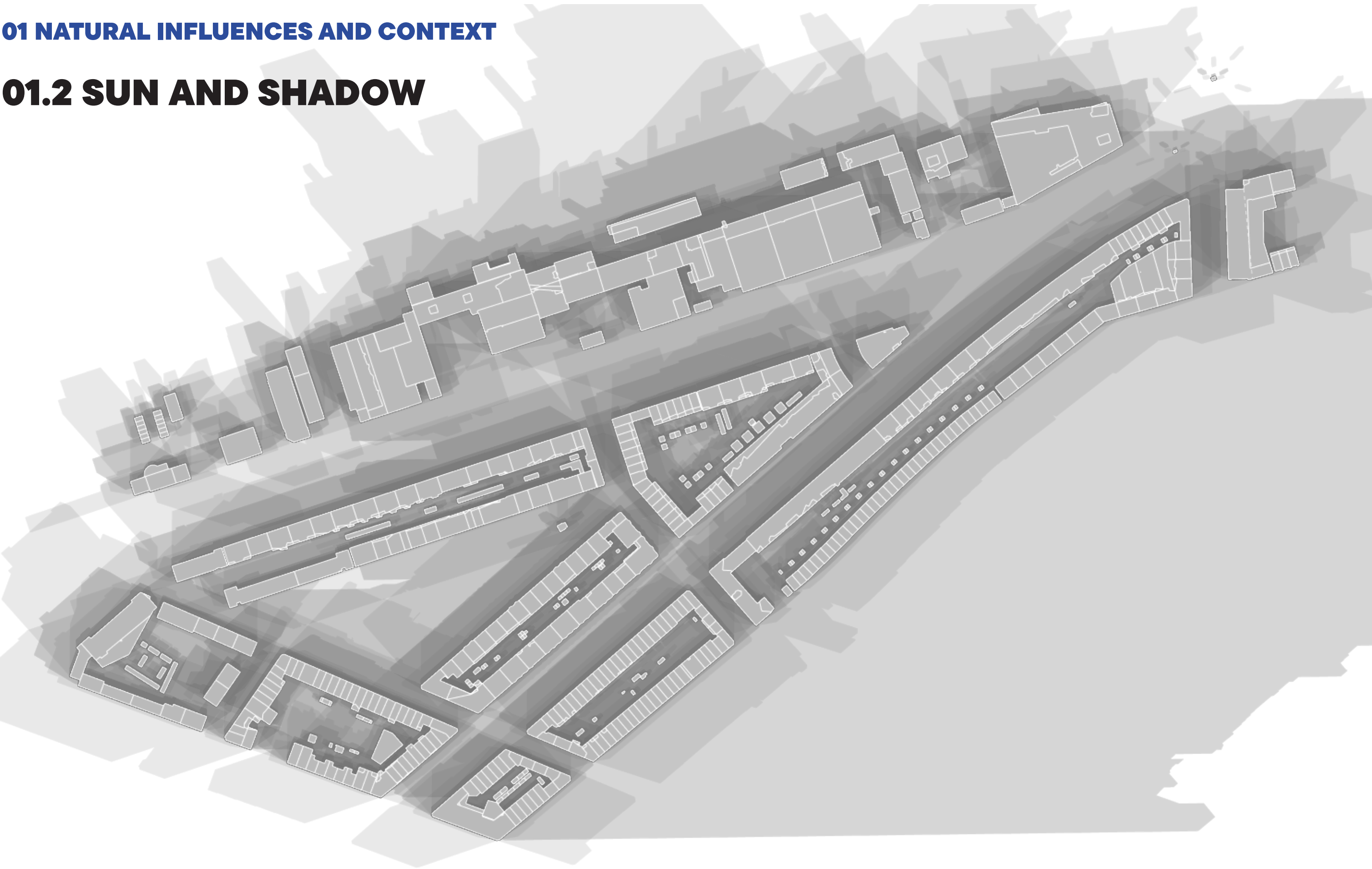
The image below illustrates the combined shadow patterns across all dates and times. It reveals significant shadowing between the buildings, indicating that these areas are predominantly shaded. This is due to the limited distance between the buildings and their heights. A clear relationship can be observed: the closer the buildings are to each other, the more shadow they cast. Additionally, it is evident that the roads generally receive ample sunlight.





**01 NATURAL INFLUENCES AND CONTEXT**

**01.2 SUN AND SHADOW**





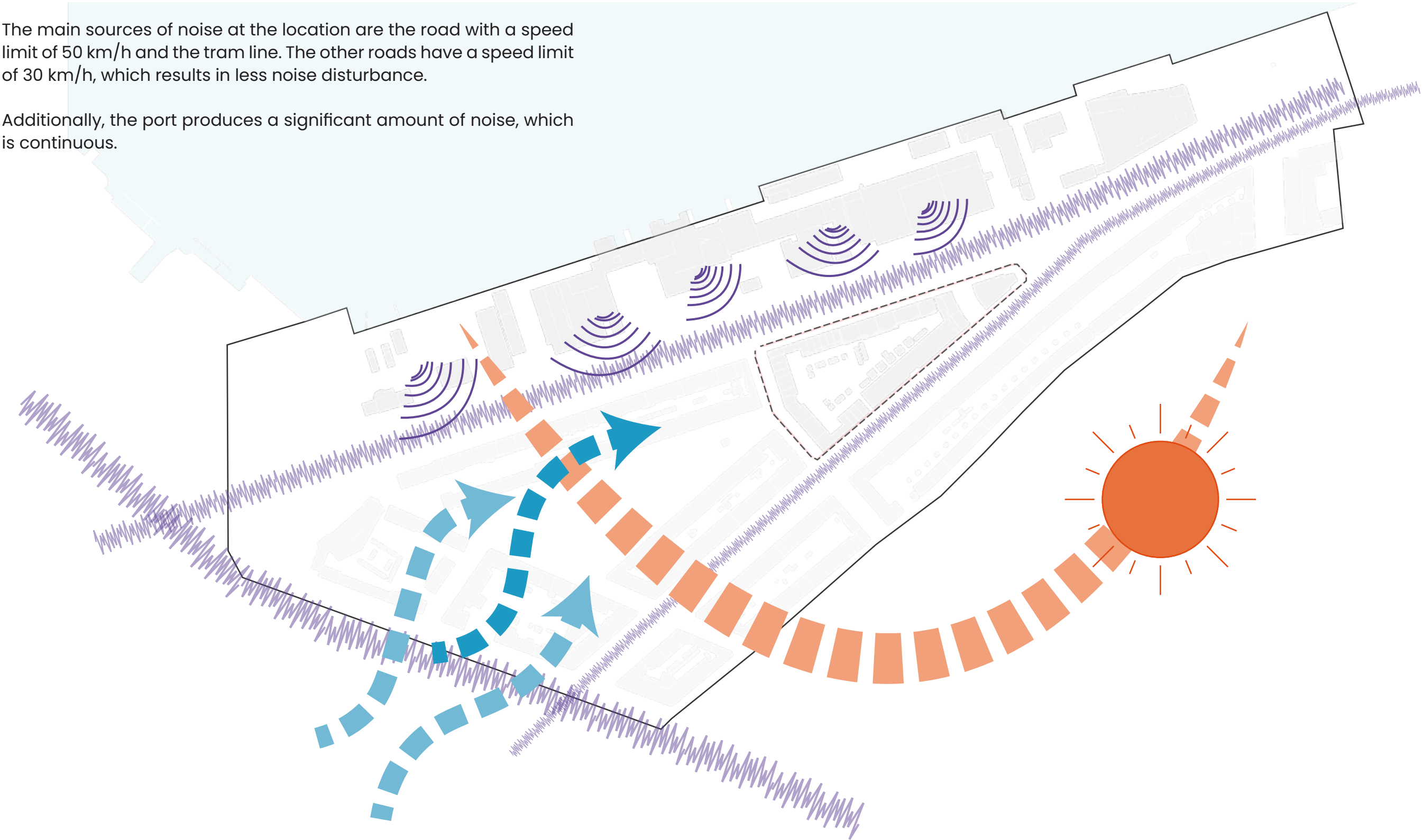
01 NATURAL INFLUENCES AND CONTEXT

01.3 WIND AND NOISE POLLUTION

The wind predominantly comes from the southwest for most of the year, reflecting the annual average. The sun path is also indicated in the drawing to show the times of sunrise and sunset.

The main sources of noise at the location are the road with a speed limit of 50 km/h and the tram line. The other roads have a speed limit of 30 km/h, which results in less noise disturbance.

Additionally, the port produces a significant amount of noise, which is continuous.







# **02**

# **ARCHITECTURAL**

# **&**

# **URBAN**

# **CONTEXT**

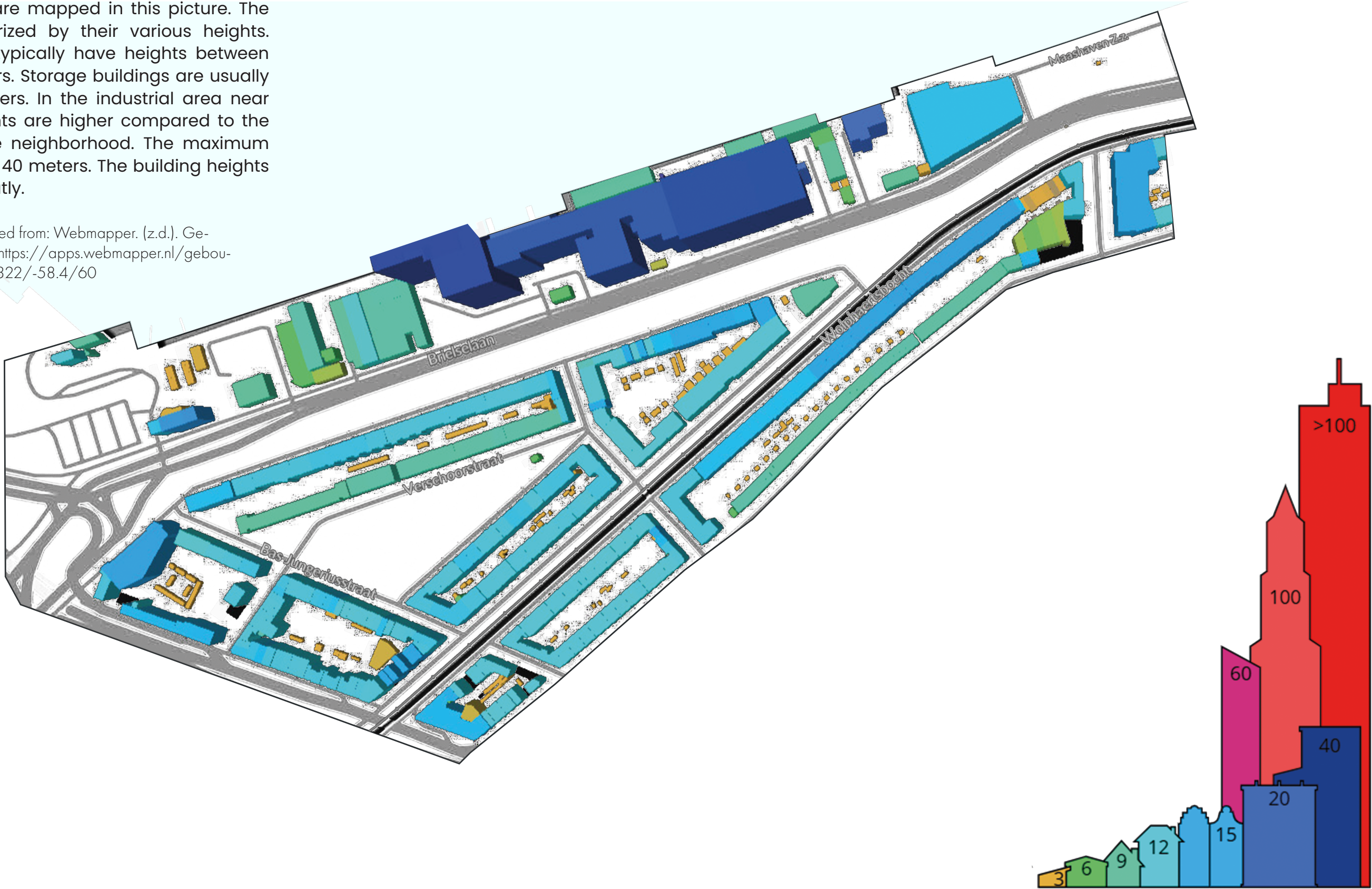


02 ARCHITECTURAL & URBAN CONTEXT

02.1 BUILDING HEIGHTS

The building heights are mapped in this picture. The buildings are categorized by their various heights. Residential buildings typically have heights between 9 meters and 15 meters. Storage buildings are usually no higher than 3 meters. In the industrial area near the harbors, the heights are higher compared to the residential part of the neighborhood. The maximum height in the harbor is 40 meters. The building heights in the harbor vary greatly.

The data and maps are obtained from: Webmapper. (z.d.). Ge-  
bouwhoogte van Nederland. <https://apps.webmapper.nl/gebouwen/#13.83/52.09067/5.1322/-58.4/60>

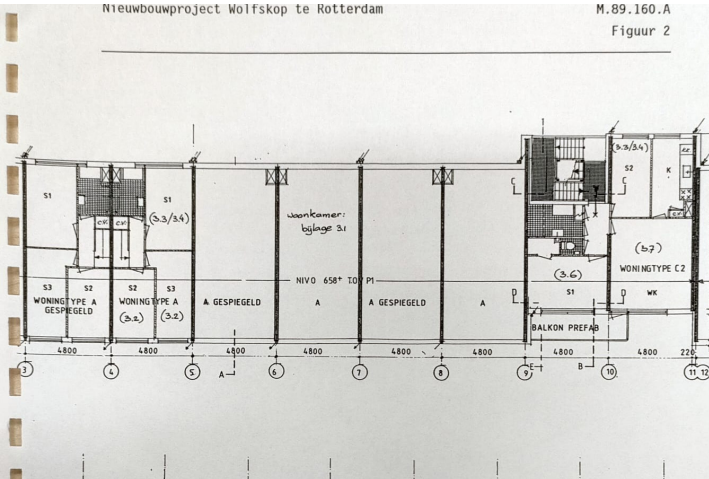
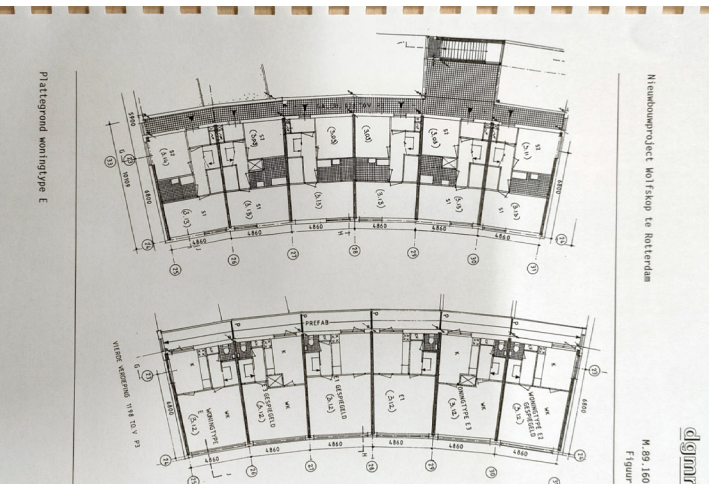
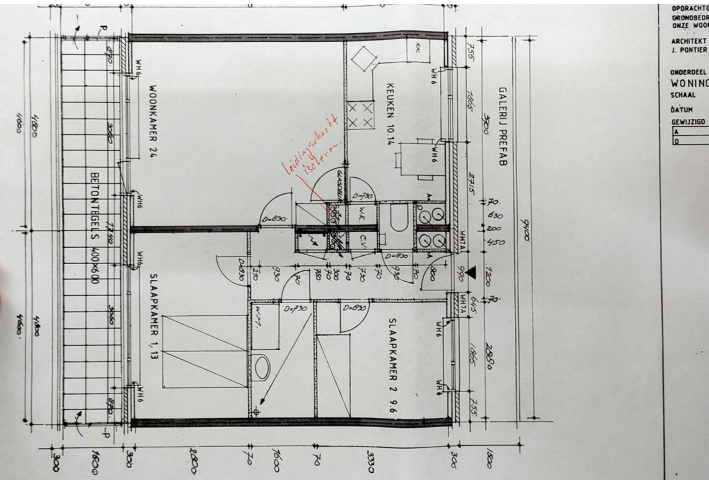
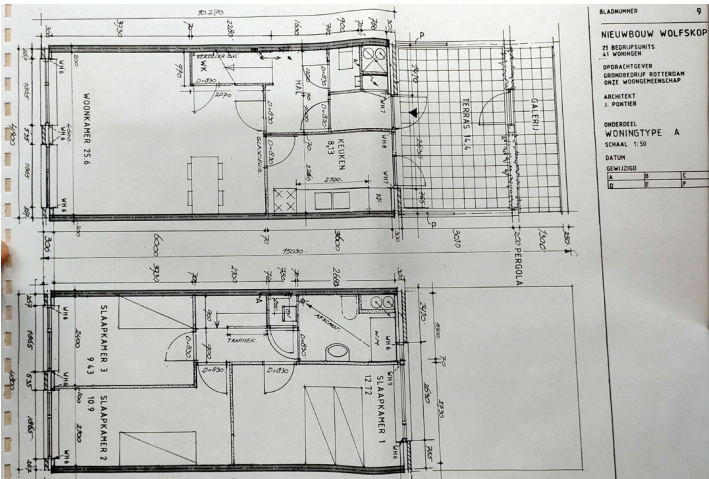
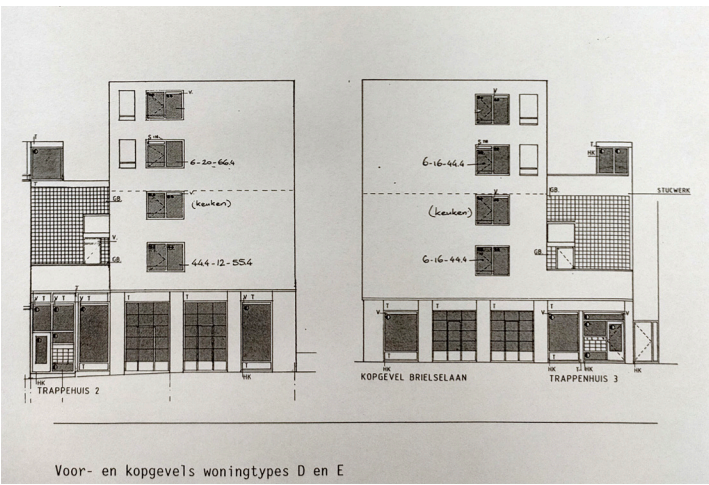
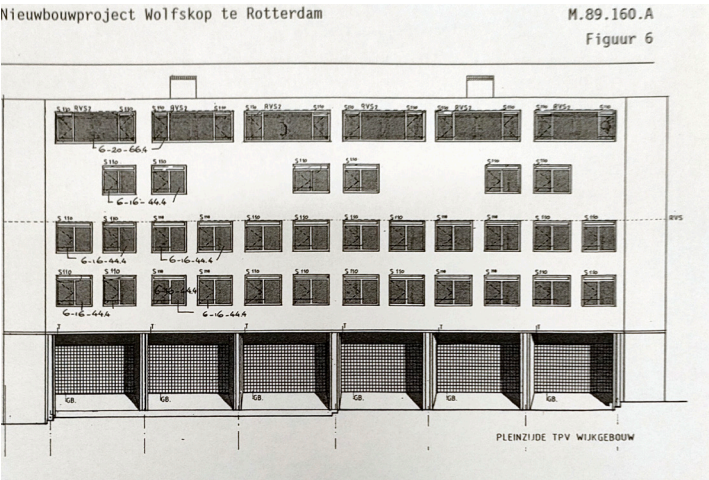
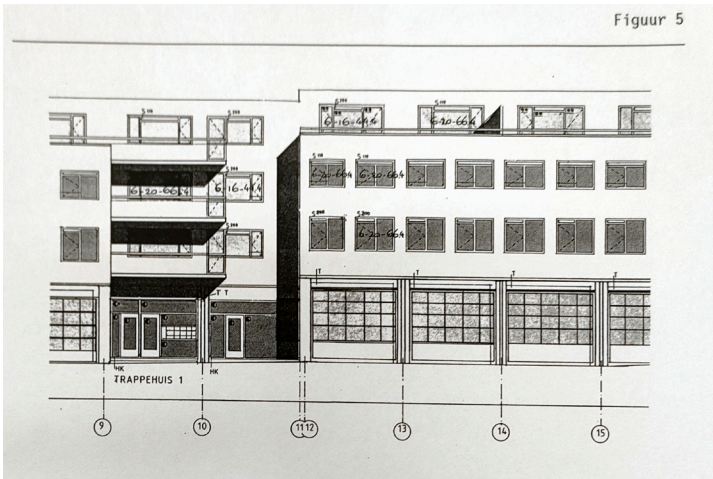
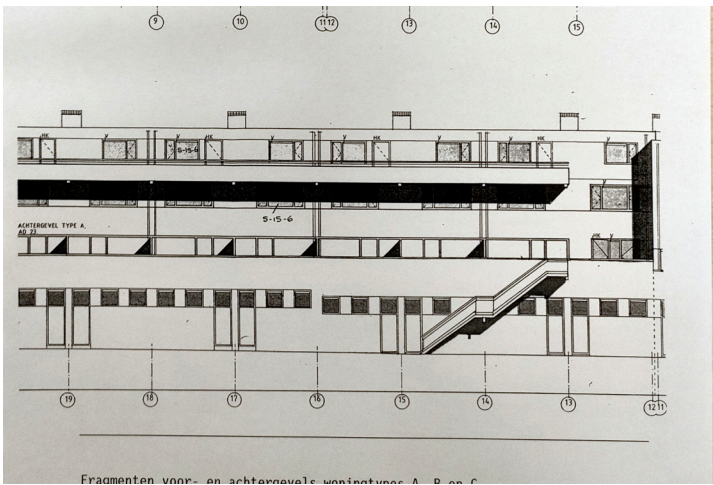
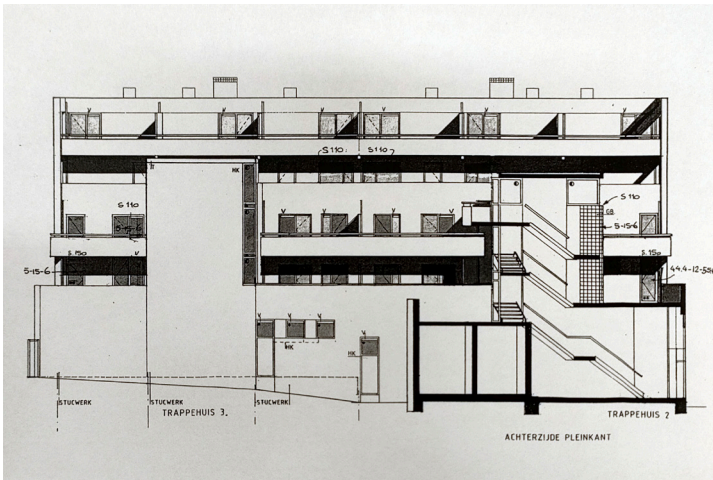




02 ARCHITECTURAL & URBAN CONTEXT

02.2 FACADES & FLOORPLANS

As part of our site analysis, we visited the Rotterdam Archive to gather documents and plans related to the buildings on our chosen plot within Tarwewijk. During this visit, we thoroughly examined the historical records and architectural drawings. One of the most significant findings was that the buildings are not particularly old and that some parts are no longer used as originally intended. For instance, one of the buildings, which was designed with office spaces on the ground floor, now has these spaces repurposed as garages. Additionally, what was initially planned as a neighborhood center has since been converted into a Turkish Muslim center. Moreover, the archival plans provided valuable insights into how the access systems within the buildings are currently functioning, offering a clearer understanding of their usage patterns and circulation.





## 02 ARCHITECTURAL & URBAN CONTEXT

### 02.3 INTERVIEW ‘VERENIGING VERSAAR’

#### **SocialConnectionsandCommunityBuilding**

The residents of Tarwewijk emphasize the importance of communal spaces like the Vereniging Versaar community center for fostering social cohesion and a sense of belonging. These spaces are vital for organizing shared meals, prayers, recreational activities, and small gatherings, offering residents a safe and comfortable environment to connect. For the elderly, these moments provide brief yet meaningful opportunities to socialize and combat loneliness. The community comes together often, but peak moments are Fridays (special day of prayer for Muslims ) and Sunday due to free parking policy in some residential areas on this day in Rotterdam.

#### **Support for Intergenerational Interaction**

Intergenerational relationships are crucial in Tarwewijk. Elderly residents appreciate the chance to share their life experiences with the youth while also learning from them, such as digital skills and language assistance. Younger residents benefit from structured activities like futsal tournaments, PlayStation gaming, and (personal growth) workshops, which help them stay engaged and connected to the community. These interactions foster mutual respect and understanding across generations.

#### **Cultural Identity and Inclusivity**

The community center supports Tarwewijk's cultural diversity by incorporating heritage-

related activities. These spaces enable residents to celebrate their cultural identity while fostering connections among people from various backgrounds. Scheduled events like Friday prayers and Sunday brunches bring residents together, reflecting the neighborhood's dynamic cultural fabric.

**Overcoming Poverty and Safety Concerns**  
The community center actively combats poverty by encouraging resource-sharing and mutual support among residents. It also provides a safe and controlled environment for youth, keeping them off the streets and reducing the likelihood of negative influences. The location's proximity to transportation is beneficial for elderly residents, though infrastructural barriers like tramlines and metro lines fragment the neighborhood, complicating collective initiatives.

#### **Challenges and Recommendations**

While the community center has made strides in improving the neighborhood, sustainable programs are necessary to ensure lasting impact. Residents advocate for workshops, lectures, and long-term initiatives rather than one-time events. Addressing infrastructural divisions within Tarwewijk can also help bridge the gaps between different parts of the neighborhood and enhance overall community engagement.





# 02 ARCHITECTURAL & URBAN CONTEXT

## 02.4 MATERIALS

### Material Palette

The material palette of the Wolphaertsbuurt in Tarwewijk mainly consists of orange-red masonry. Although they look similar when walking on the street, they do differ slightly from each other through a (slightly) different color, texture, grout depth or color. This makes for a rich palette of color whilst still maintaining a coherent appearance of the facades in the neighbourhood. On occasions the use of tiles (e.g., blue or they squares, see images to the right) makes for a expressive or noticable facade in the orange-red brick environment.

For the paving, the use of materials is plain and simple: asphalt (both grey and red) and street tiles (grey). The slight difference in color or texture makes it easier to read for pedestrians, cars or bike to see where the pavement starts and ends.

Furthermore, the building blocks are articulated in a horizontal way, with wide grain ('korrel') or fragmented structures in the facades. This makes it easier for the pedestrian, for example, to read the orange-red brickwork as an constantly and smoothly transitioning between facades.

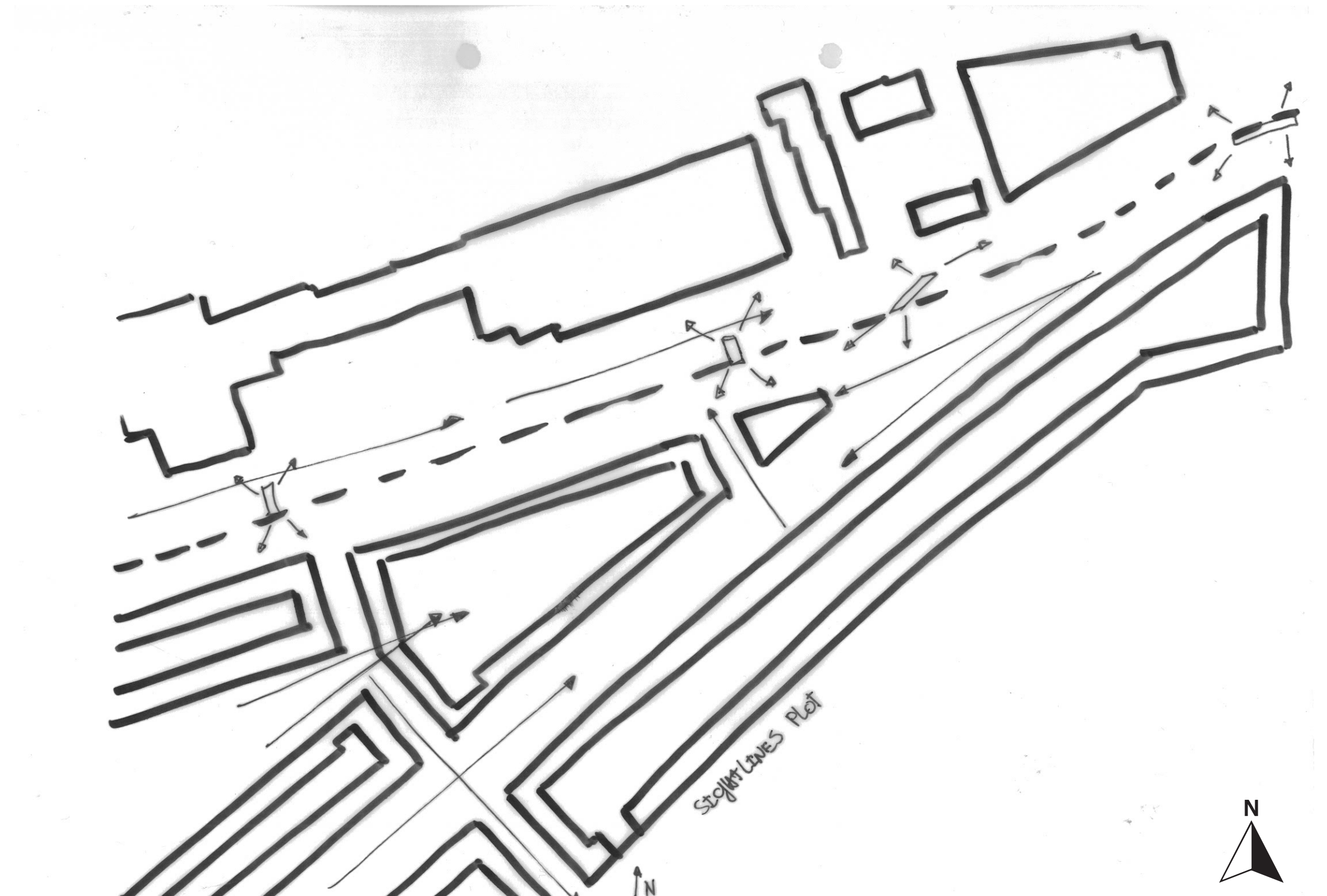
Wood is mainly used for the doors. Although every block has a different color, ranging from red to green to grey and even the natural brown color of wood.



## 02 ARCHITECTURAL & URBAN CONTEXT

### 02.5 SIGHT LINES

The sight lines reveal how the plot is visually connected to its surroundings, particularly from the small staircases crossing the dyke. These elevated points act as natural outlooks, offering broader perspectives of the area. These vantage points highlight the plot's relationship with its context, emphasizing its integration within the urban fabric. Most notably, the plot's visibility from the outside plays a crucial role in its perception, with the corner cutting distinctly through the surrounding urban structure. This unique intersection makes the plot a focal point, shaping how it is experienced both from within and from afar.

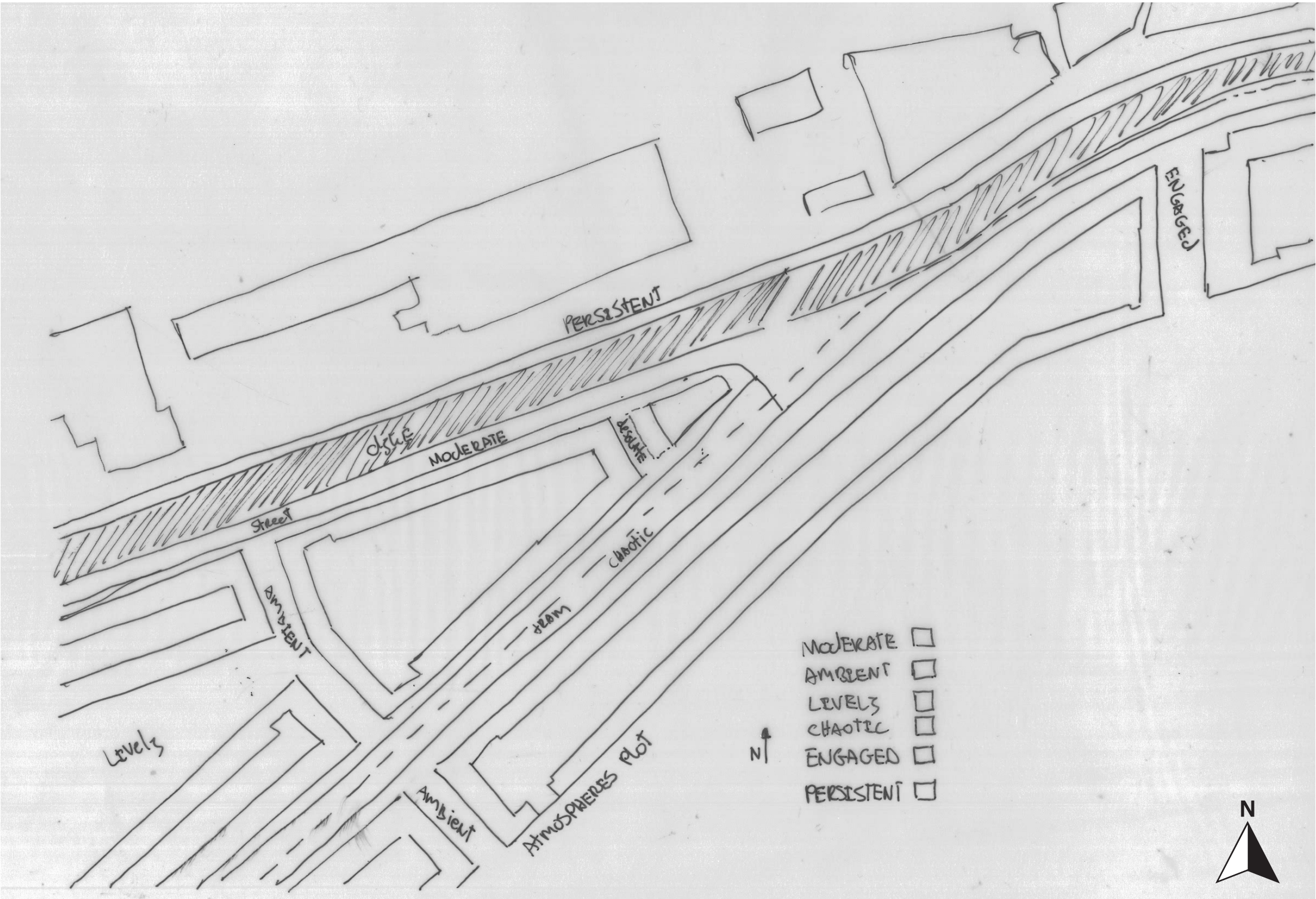




02 ARCHITECTURAL & URBAN CONTEXT

02.6 ATMOSPHERES

The atmospheres of the streets within the area vary significantly, offering a diverse range of experiences. The top street above the dyke feels persistent and dynamic, characterized by a constant flow of passing cars that maintain a steady rhythm. In contrast, the street between the corner buildings feels desolate, with an almost abandoned quality due to the noticeable absence of pedestrian activity. The street north of the plot strikes a moderate balance, hosting a normal amount of traffic that lends it a more stable and functional character. On the south side, the environment becomes chaotic and bustling, driven by its high level of activity and busyness. Meanwhile, the in-between streets further south exude a quieter, ambient atmosphere, reflecting their transitional nature. Lastly, the park stands out as a lively and vibrant space, animated by the presence of people engaging in various activities, adding a sense of community and energy to the area.



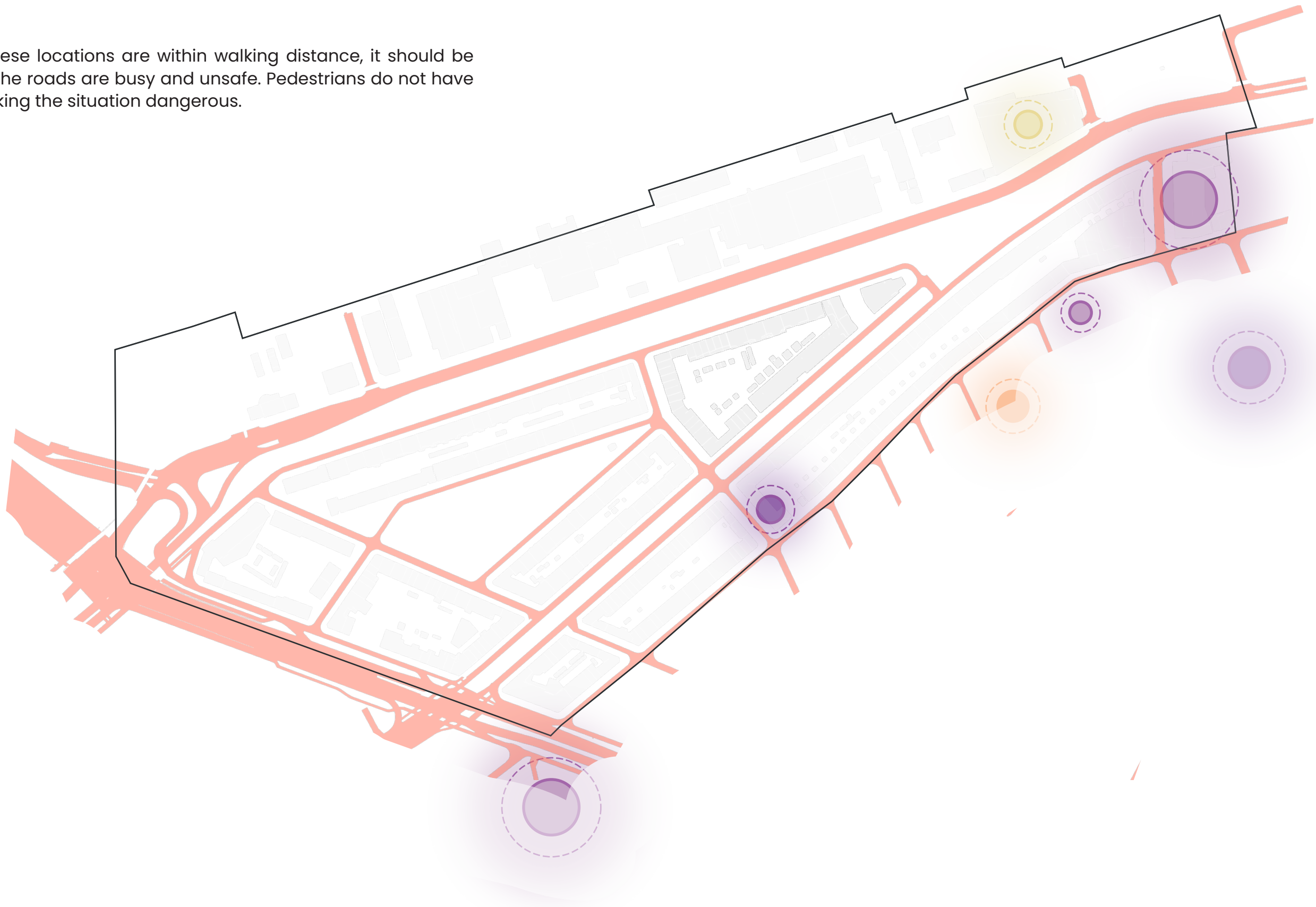


## 02 ARCHITECTURAL & URBAN CONTEXT

### 02.7 AMENITIES

Within a 500-meter radius, various essential services can be found. There is a supermarket within walking distance, as well as an elementary school. Additionally, there is a gym located in the harbor area.

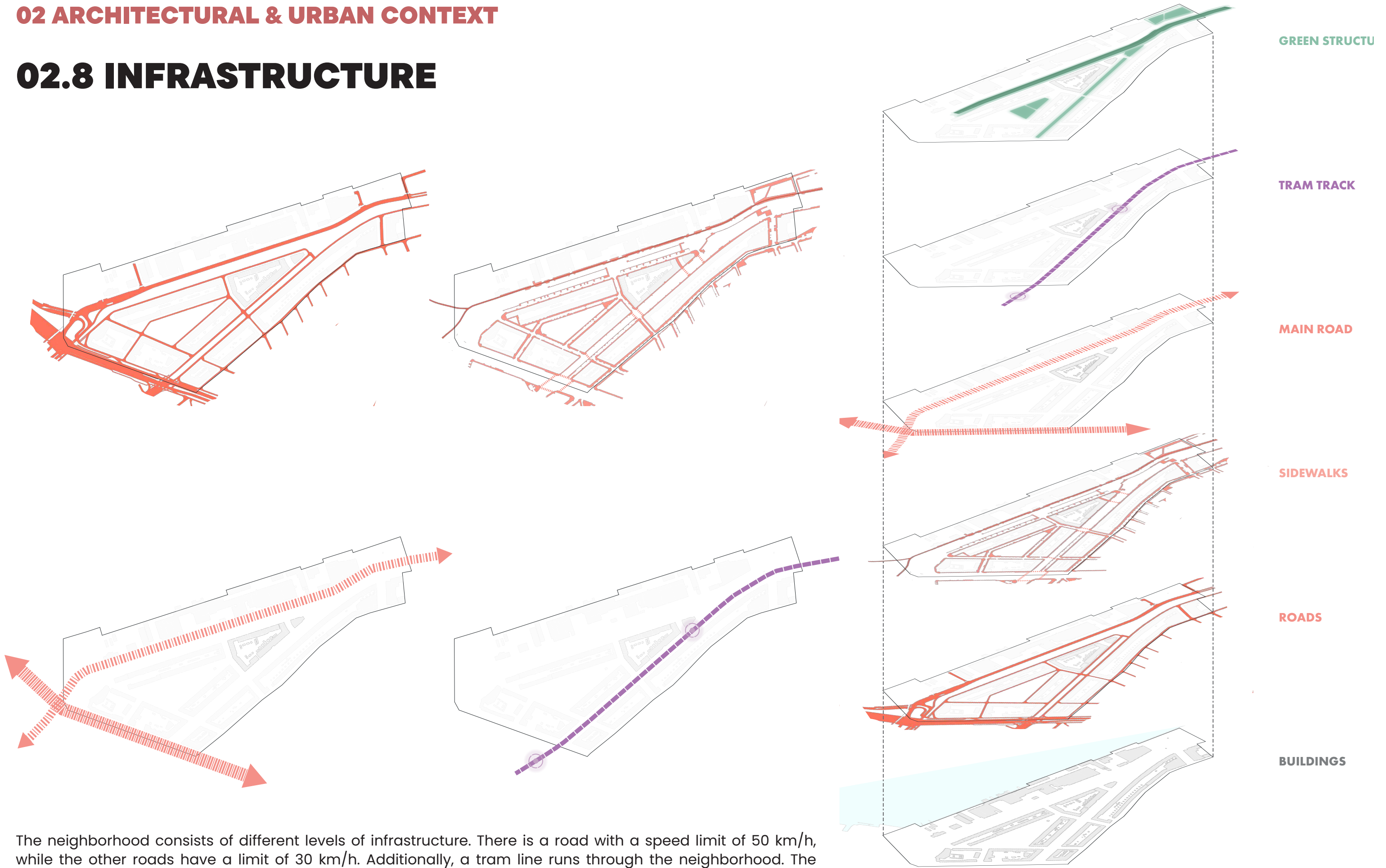
Although these locations are within walking distance, it should be noted that the roads are busy and unsafe. Pedestrians do not have priority, making the situation dangerous.





02 ARCHITECTURAL & URBAN CONTEXT

02.8 INFRASTRUCTURE



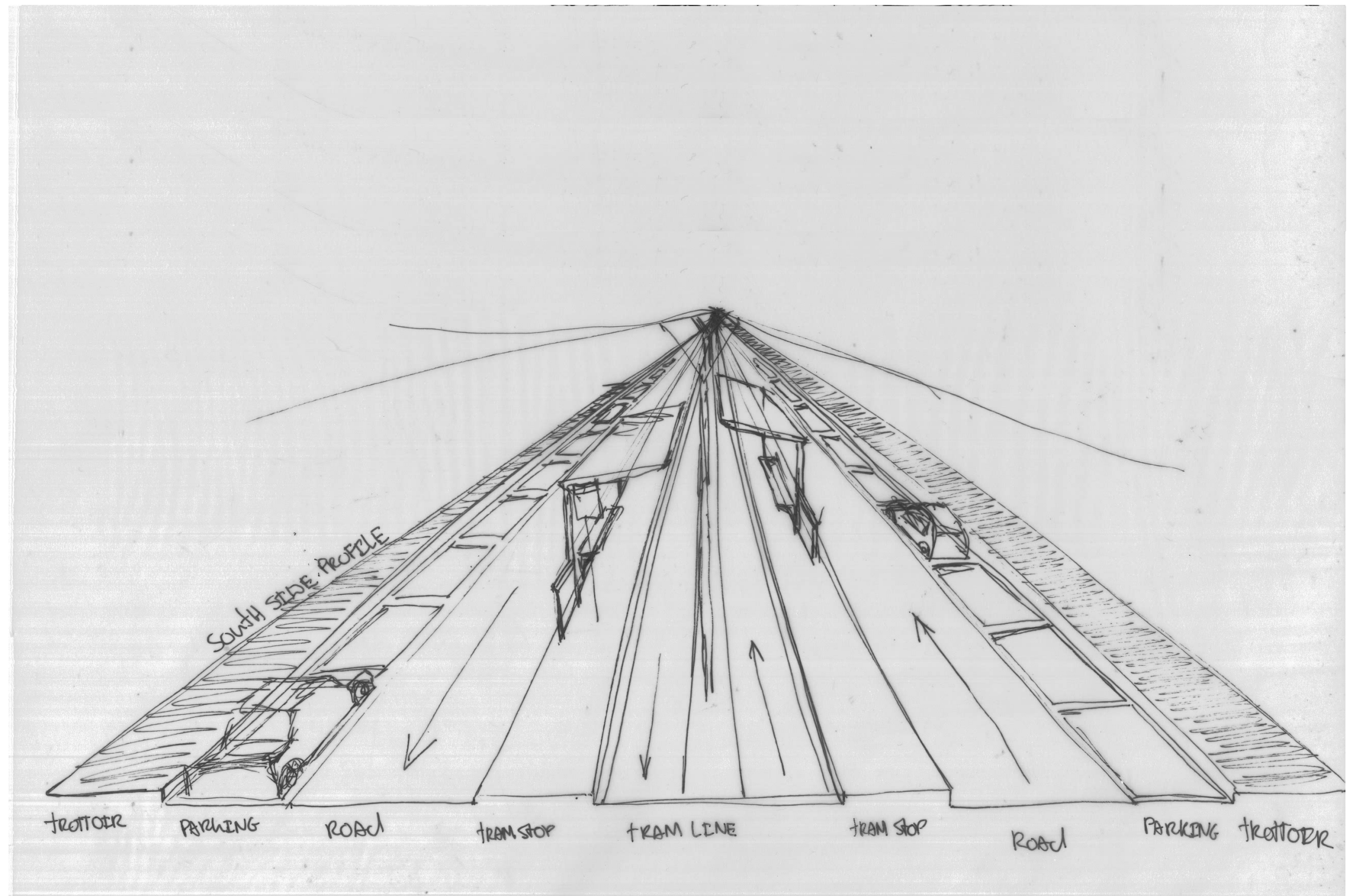
The neighborhood consists of different levels of infrastructure. There is a road with a speed limit of 50 km/h, while the other roads have a limit of 30 km/h. Additionally, a tram line runs through the neighborhood. The infrastructure for pedestrians is the most detailed. It is clear that the busy roads intersect with the smaller scales of infrastructure. Pedestrians do not have priority; rather, cars and trams do.



## 02 ARCHITECTURAL & URBAN CONTEXT

### 02.9 STREET PROFILES

The south side of the plot is notably more active and heavily circulated compared to the north. This side features tram tracks, which contribute to its busier character and higher levels of activity. The street is predominantly used by cars rather than bicycles, and vehicles tend to drive at higher speeds, further distinguishing it from the calmer northern street profile. The presence of a tram station centrally located within this area significantly enhances the accessibility of the plot, making it a vital point of connection for both residents and visitors.

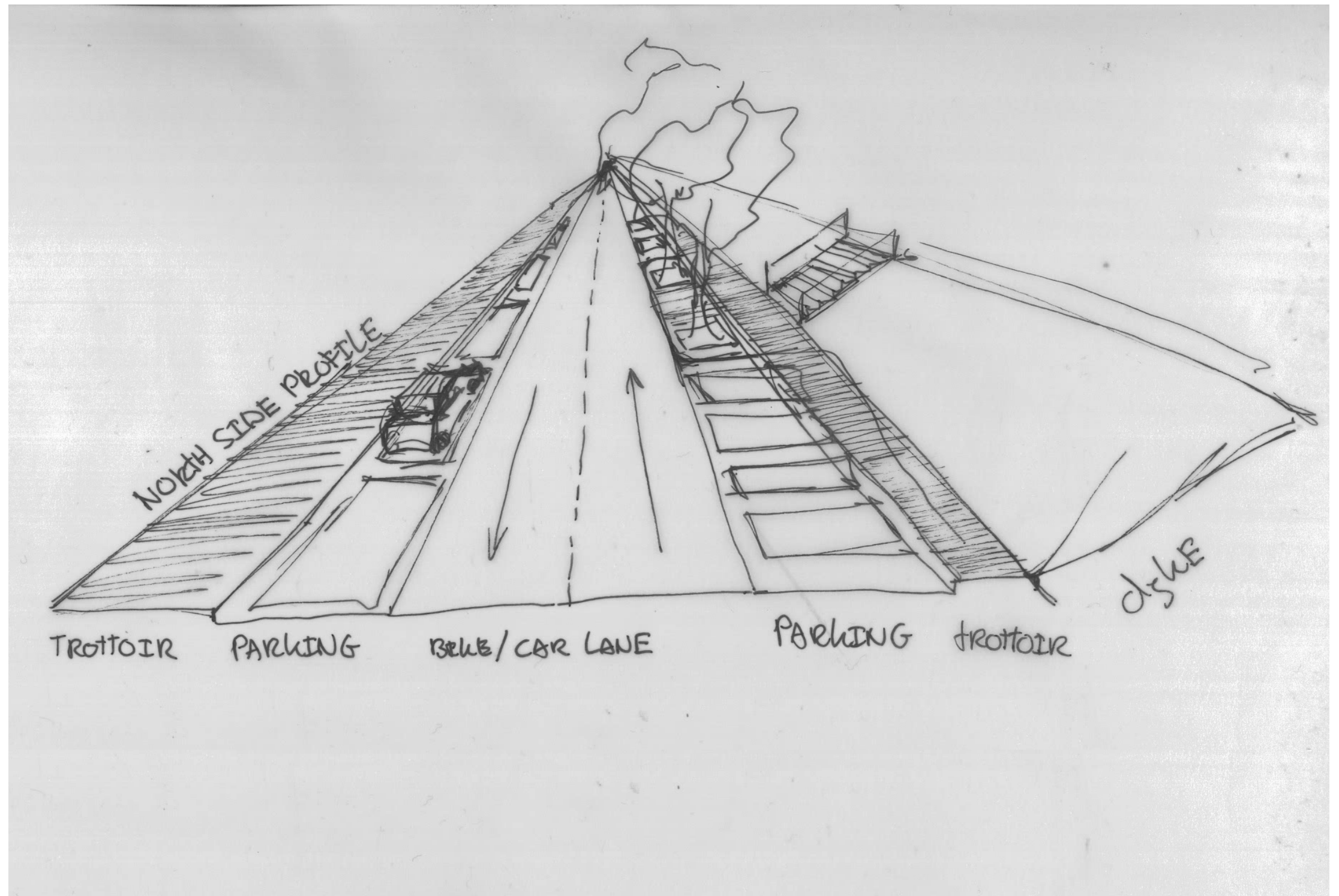




## 02 ARCHITECTURAL & URBAN CONTEXT

### 02.9 STREET PROFILES

The north side of the plot features a relatively calmer and more tranquil street profile. This street primarily serves as an access route for the houses located on the north side, resulting in a quieter atmosphere with fewer passing vehicles and predominantly parked cars. The area also sees a higher number of cyclists, adding to its serene character. Additionally, the north side benefits from its proximity to the dyke, which not only provides a picturesque backdrop but also includes a convenient connection through a small staircase, offering easy access to and from the dyke.

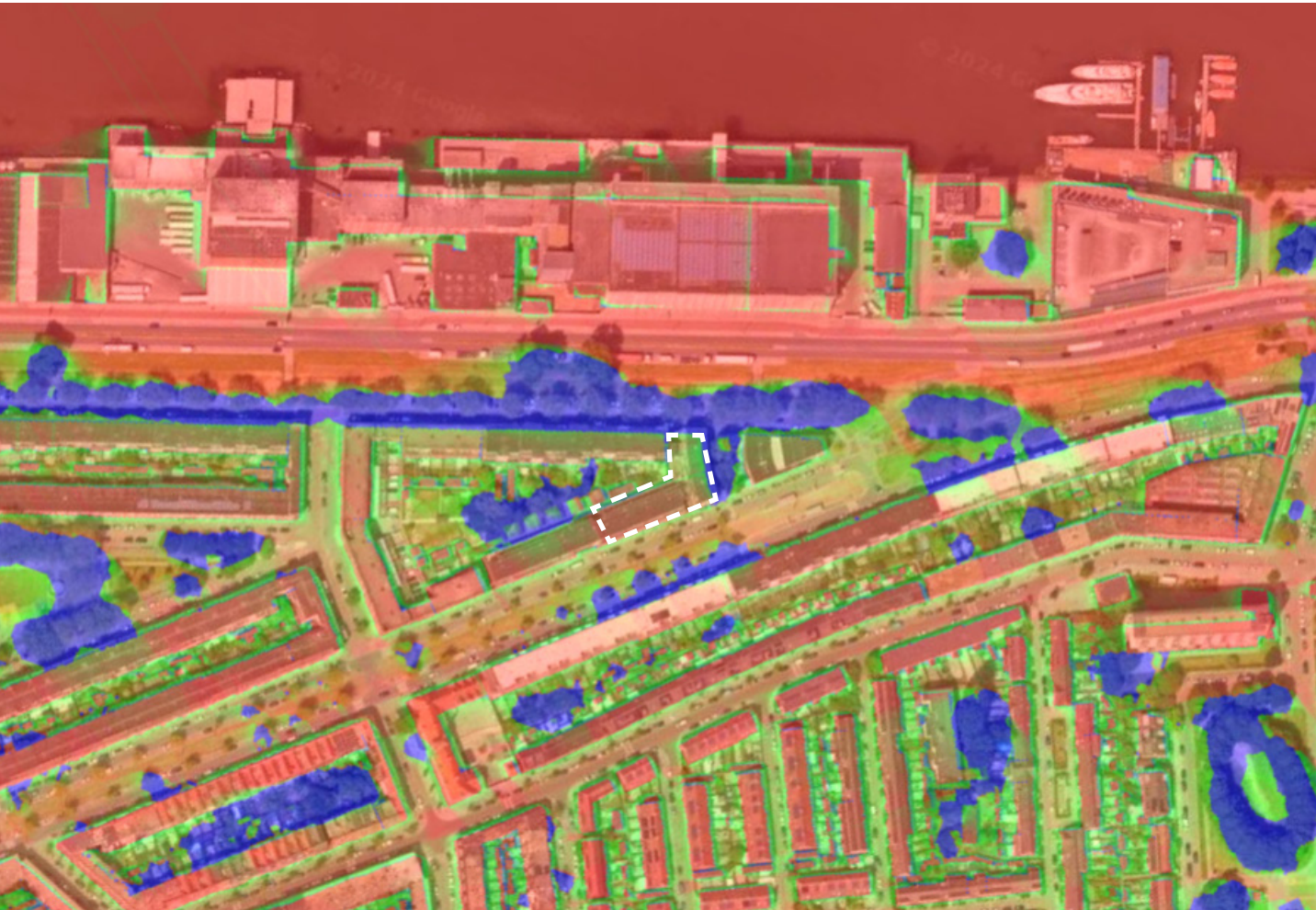




# Natural Influences

## Sun Study

### SUMMER



June 21 (longest day)

Sunrise: 5:23 AM  
Sunset: 10:06 PM  
**Average Sunhours: 16.7 hrs**

**Conclusions Summer:**

- Trees add cooling affect on North-side and connective route
- Playground receives adequate sunlight for potential communal garden
- Back gardens receive sufficient sunlight

### WINTER



Dec 21 (shortest day)

Sunrise: 8:48 PM  
Sunset: 4:33 PM  
**Average Sunhours: 7.7 hrs**

**Conclusions Winter:**

- Playground receives adequate sunlight for potential communal garden
- Back gardens receive no sunlight
- North side is not exposed to sunlight the whole day



# Natural Influences

Shadows

JUNE 21



Sunrise, hour after = 6:30 AM



Noon, 12:00 PM



Evening, 6:00 PM



Sunset, hour before = 9:00 PM



# Natural Influences

Shadows

DECEMBER 21



Sunrise, hour after = 9:45 AM



Noon, 12:00 PM



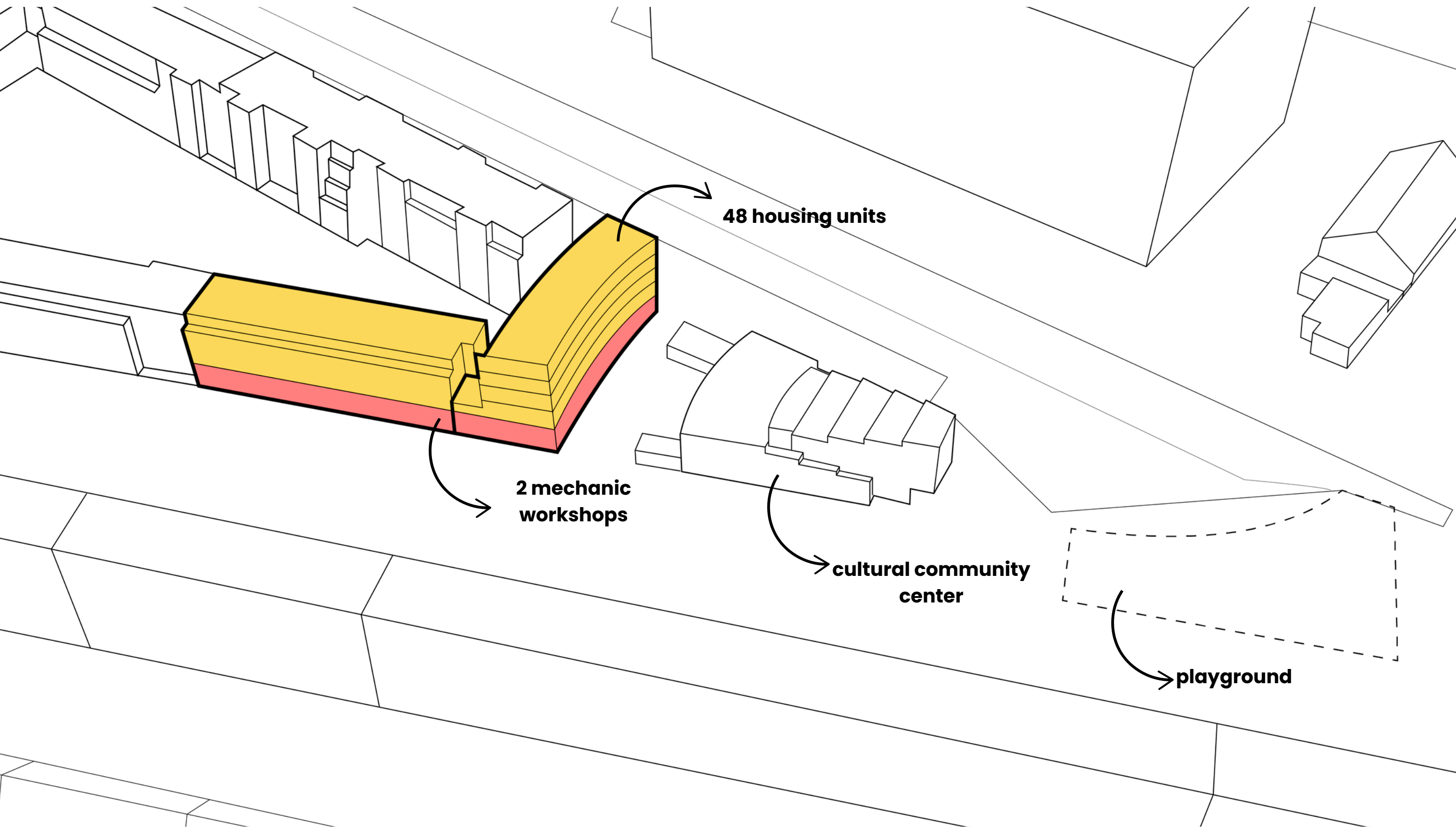
“Evening”, 2:30 PM



Sunset, hour before = 3:30 PM

— Sunrise  
— Sunset





**48 housing units**

**2 mechanic  
workshops**

**cultural community  
center**

**playground**

