LEFT ALONE

SPATIAL AND PROGRAMMATIC INTERVENTIONS COUNTERING URBAN LONELINESS IN LINKEROEVER

TIMO VAN OORSCHOT

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Delft University of Technology
Faculty of Architecture and the Built environment
Department of Urbanism
Studio Design of the Urban Fabric

Mentors
First mentor: Ir. Robbert Jan van der Veen
Second mentor: Prof.dr.ir. Machiel van Dorst
External examiner: Dr.ir. Willem van der Spoel

Author
Timo van Oorschot
Student number – 4831586

Images are by the author unless stated otherwise

TU Delft Department of Urbanism
BK Bouwkunde

PHILIP-SPANGENBERG-TRAVEL-GRANT

“Think big but always remember to make the places where people are to be, small.”

Jan Gehl

Abstract: People are feeling more and more lonely, especially in cities. This has negative effects on mental and physical well-being as well as on the economy. Feeling lonely is not just caused by internal factors like genetics and social skills, as many people think. The environment we live in contributes 52% to the feeling of loneliness. This environment is something changeable, especially for urbanists. Therefore, this thesis aims to bridge the gap between the existing theories about loneliness and the practical applications of these in the built environment of Linkeroever. Linkeroever is a deprived modernist neighbourhood in Antwerp separated from the rest of the city by the Scheldt River, where urban loneliness is a serious issue. This thesis will propose spatial and programmatic interventions through different scales and grounded in literature and empirical research that stimulate social cohesion and collective development on a legible human scale, countering urban loneliness. This will be done by answering the research question: how to improve spatial and programmatic conditions in Linkeroever that stimulate social cohesion and collective development, countering urban loneliness? Methods including research by design, literature analysis, and field trips helped by answering this question and resulted in an urban design for Linkeroever. Key takeaways from this research and design are that to counter urban loneliness important topics are social cohesion, social interaction, collective and personal development opportunities, and a legible and human scale. Spatial elements like hybrid zones, collective courtyards, and better public transport connections, together with programmatic solutions like a diverse public space offer, providing people with choices regarding social and development spaces, and making people proud through landmarks, can be used by urban designers and planners to counter urban loneliness all over the world.

Keywords: urban loneliness, social cohesion, collective development, human scale, urban fabric, hybrid zone, Linkeroever Antwerp

TABLE OF CONTENTS

1 Introduction **10**

1.1 Topic introduction 13
1.2 Location introduction 15
1.3 Problem field 18
1.4 Project approach 20

2 Context **30**

2.1 Defining urban loneliness 32
2.2 Problem analysis 37
2.3 The future of Linkeroever 52

3 Urban elements of loneliness **56**

3.1 Collective & personal development 58
3.2 Social cohesion & social interaction 76
3.3 Legible human scale 96
3.4 Design framework 116

4 The design **122**

4.1 Design approach 124
4.2 Lonely people 128
4.3 A lonely city 174
4.4 Live together 190

5 Conclusion and reflection **224**

5.1 Countering urban loneliness by design 226
5.2 Conclusions 228
5.3 Reflection 232

List of references 238
Appendices 244

01 INTRODUCTION

1.1 Topic introduction

1.1.1 Urgencies 13
1.1.2 Motivation 14
1.1.3 Thesis question 14

1.2 Location introduction

1.2.1 Selection 15
1.2.2 Characteristics 15

1.3 Problem field

1.3.1 Definition 18
1.3.2 Related fields 18
1.3.3 Problem statement 19

1.4 Project approach

1.4.1 Research questions 20
1.4.2 Research aim 21
1.4.3 Methodological framework 22
1.4.4 Theoretical framework 24
1.4.5 Conceptual framework 26
1.4.6 Limitations 28
1.4.7 Thesis structure 29

Loneliness is a familiar feeling for most people. It is unpleasant and has negative effects on physical and mental health. Unfortunately, loneliness is a growing problem, especially in cities. In this thesis, I will research the spatial and programmatic causes of loneliness in cities and try to come up with a strategy and design, to counter the urgent problem of urban loneliness. I will specifically look at Linkeroever in Antwerp, a modernist post-war neighbourhood that is monotonous and segregated. Urban loneliness is not a problem that stands on its own, it is related to other social and physical problems like deprivation, poverty, and the growing number of single-person households.

Figure 1.1 Entrance point of Linkeroever

Urban design does not create social cohesion and collective development, it can just facilitate or complicate it.

1.1 TOPIC INTRODUCTION

1.1.1 Urgencies

We all know the feeling of loneliness, right? Most of us know that this feeling of loneliness is unpleasant and has a negative effect on mental and physical health. Especially during the recent covid-19 pandemic a lot of people experienced loneliness due to isolation. Even before the pandemic, loneliness numbers were rising. Now, after the pandemic, the trend seems to continue. Loneliness is a growing problem.

Loneliness could be deemed a silent epidemic, having a big impact on global health while flying under the radar most of the time. Loneliness increases the risk of premature death by 26%. It affects a third of the people in industrialised countries, one in twelve severely. Moreover, no one is safe regarding wealth, sex, education, or ethnicity (Cacioppo & Cacioppo, 2018). So, loneliness is a real epidemic that deserves more attention.

Loneliness is a problem that is significantly more apparent in urban areas compared to rural areas, despite the availability of more social functions in most cities (MacDonald et al., 2020). In Flanders, the region in which this thesis takes place, people in big cities have between 10% and 20% fewer social contacts than people from the countryside and from towns (Vlaanderen.be, 2022). So, urban loneliness is an urgent problem that needs to be addressed.

In this thesis, I will research the spatial and programmatic causes of loneliness in cities and try to come up with a strategy and design, to counter the urgent problem of urban loneliness.

Figure 1.2 Collection of news articles regarding (urban)loneliness (Couzy, 2017; Easton, 2018; Rakshit, 2023; Remmery, 2022)

Twee op de drie Belgen zijn matig tot erg eenzaam

MENTAAL WELZIJN
GENT
Silke Remmery

Twee op de drie Belgen voelen zich matig tot erg eenzaam, zo blijkt uit het Nationaal Geluksonderzoek van de UGent. Volgens psychologe Leslie Hodge is dat niet altijd problematisch, maar wel als het langdurig aansleept.

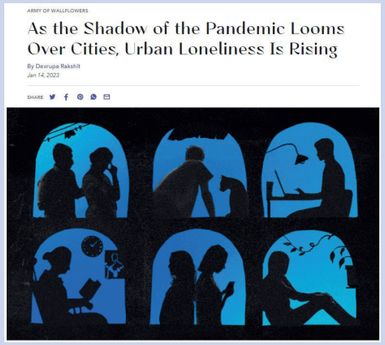
Uit de steekproef bij 1.602 deelnemers voor het Nationaal Geluksonderzoek van UGent-NN blijkt dat 32 procent van de Belgen erg eenzaam is, 36 procent matig eenzaam en slechts 32 procent niet eenzaam. Mensen die werkloos of langdurig ziek zijn, lopen het hoogste risico. Onder studenten voelt dan weer 47 procent zich matig eenzaam. Dat laatste is niet onlogisch, zegt Leslie Hodge, psychologe en auteur van *Eenzaam tussen Mensen*. Zij weet dat het gevoel van eenzaamheid vaak gepaard gaat met grote veranderingen in het leven. "Niet alleen bij een scheiding of sterfgeval, ook bij positieve ervaringen die je leven veranderen en je een stuk moet loslaten. Zoals bevallen, verhuizen of gaan studeren: ze gaan op kot, hebben vaak hun eerste partner en twijfelen of hun opleiding wel de juiste is."

Verwachtingen niet ingelost

Maar wat is dat dan eigenlijk, die eenzaamheid? Het gaat niet alleen over geen sociaal netwerk hebben. Want zelfs wie omringd is door allerlei mensen, kan het voelen. "Eenzaamheid is eerder een pijnlijk, onaangenaam gevoel dat je krijgt als de relaties die je hebt niet zijn zoals je wenst. Het kan je overkomen in relaties met je vrienden, maar ook met je ouders of partner. Vaak wordt het nog gezien als iets dat je eigen schuld is, omdat je geen initiatief neemt tot sociaal contact. Maar dat is niet zo: het overkomt je."

De chronische eenzaamheid en de bijhorende stress verkorten onze levensverwachting. FOTO SHUTTERSTOCK

Het is bovendien niet per se problematisch, voegt Hodge eraan toe. "Eenzaamheid hoort bij het leven, en kan je zien als een signaal zoals honger: als je het voelt, is het de bedoeling dat je er iets mee doet. Om op zoek te gaan naar contact om de gevoelens te compenseren." Wél moeten alarmbellen afgaan als die eenzame gevoelens langdurig aanhouden. Volgens de psychologe stelden onderzoekers namelijk vast dat chronische eenzaamheid en de bijhorende stress onze levensverwachting verkort. "Het is vergelijkbaar met het roken van 15 sigaretten per dag, stellen wetenschappers. Omdat er een groter risico is op hart- en vaatziekten, hogere bloeddruk of slaapproblemen."



ARMY OF WALLFLOWERS

As the Shadow of the Pandemic Looms Over Cities, Urban Loneliness Is Rising

By Deerupa Rakshit
Jan 14, 2023

SHARE

How should we tackle the loneliness epidemic?

11 February 2018

GETTY IMAGES

By Mark Easton
Home editor
@BBCMarkEaston

Onderzoek Groei en vergrijzing in Amsterdam versterken het probleem

Eenzaamheid grijpt om zich heen

Amsterdam is een magneet voor kwetsbare mensen. Uit GGD-onderzoek blijkt dat tachtigduizend Amsterdammers zich ernstig eenzaam voelen.

Michiel Couzy
AMSTERDAM

Bijna de helft van de Amsterdammers voelt zich, in meer of mindere mate, alleen. De eenzaamheid sloeg maar toenemen, dweilde de stad goed, vergrijst en veel alleenstaanden komen naar de hoofdstad, zo blijkt uit cijfers.

In totaal zijn 300.000 Amsterdammers eenzaam, dat is 48 procent van de volwassenen, blijkt uit onderzoek van de GGD Amsterdam, waarvoor de gemeenteraad zich meegen baigt. Tachtigduizend Amsterdammers, 13 procent, voelen zich zelfs ernstig eenzaam. "Die zijn er echt slecht aan toe", zegt wethouder Thao van Tilburg, verbonden aan de VU, Amsterdam en gespecialiseerd in eenzaamheid.

Expats en studenten

Het is al met al een groot probleem, concludeert Van Tilburg, die Amsterdam bestaat in de aanpak van eenzaamheid. Een grootstad problemen bevordert, want het aantal eenzamen en ernstig eenzamen is de afgelopen jaren toegenomen, in heel Nederland sprake de problemen voor 43 procent van de volwassenen.

Vooral studenten en expats die de hoofdstad elijn. Veel meer dan Nijmegen of Rotterdam, waar de eenzaamheid niet is gegroeid. "Amsterdam is een magneet voor mensen die hier (alleen eerste maanse komen," zegt Van Tilburg. Jongeuten bijvoorbeeld, die zich, ver van hun ex-huisel, bouwgemiddeld eenzaam voelen. Maar ook expats, die vaak alleen op de bank zitten.

Ook veel studenten voelen zich verloren in de grote stad. Zo'n 49 procent van de Amsterdammers tussen de 19 en 34 jaar voelt zich matig of sterk eenzaam. En dan is er nog de vergrijzing, waardoor de stad veel ouderen herbergt, een groep die forse eenzaamheid eenzaam is.

De komende jaren zal Amsterdam sterk groeien, door de bouw van 160.000 woningen. De associatie en de eenzaamheid zullen hierdoor al deen maar toenemen, verwacht Thao van Tilburg.

Taboe doorbreken

Amsterdam-Amsterdam, wethouder van Pvda-raadslid Maarten Poorter, aan een stedelijke aanpak van eenzaamheid. Na zaaaden van voorbeeldingen zullen op 1 juli de eerste concrete maatregelen ingaan. Die gaan vooral over signaleren en herkennen van eenzaamheid en het doorbreken van het taboe erop. Alleen al hiervoor is 1 miljoen euro per jaar vrijgemaakt.

Maar dat is niet wiskundig, vindt Poorter. "We moeten meer doen om eenzaamheid te voorkomen," zegt hij. "Met 1 miljoen euro gaan we het niet redden."

Pvda en GroenLinks dienen morgen een motie in om het geld voor de aanpak van eenzaamheid 4 miljoen euro het plan uit te voeren.

Hoogleraar Van Tilburg vindt het terecht dat de gemeente een stelde rolt tegen dezeenzaamheid. Volgens hem is er veel winst te behalen. "Er valt lets tegen te doen, al is het wel lastig te bepalen wat precies. Als dat lukt, is het goed voor Amsterdammers en voor de stad."

80.000 → Het aantal ernstig eenzamen in de afgelopen jaren toegenomen. Voor 80.000 Amsterdammers zijn de problemen ernstig.

1.1.2 Motivation

Urban loneliness is a serious and relevant topic that combines my interests in complexity and the role people play in the urban environment. I am fascinated by the fact that we as urban designers can shape the built environment in a way that affects people's experience.

Furthermore, the topic of loneliness is a relevant one. During the covid-19 pandemic many of us, including me, experienced an increased level of loneliness. A feeling we rather not experience again. The pandemic might be over in most of the world, but loneliness is still rising. I want to explore to what extent spatial and programmatic interventions can help counter this trend.

Linkeroever in Antwerp is the case study of this thesis. It is a district I was intrigued by the first time I went there. Last year, I did a project on the Scheldt river shores in Antwerp. The differences between both sides struck me. So, when I was looking for a part of a city where loneliness was severe and Linkeroever popped up, I was sold. I want to better understand this intriguing part of Antwerp.

1.1.3 Thesis question

To round off the topic introduction, I will present the question that is central to this thesis:

How to improve spatial and programmatic conditions in Linkeroever that stimulate social cohesion and collective development, countering urban loneliness?

Later, I will elaborate on this research question and present sub-questions and methods on how I will answer them.

Figure 1.3 Linkeroever at sunset

1.2 LOCATION INTRODUCTION

1.2.1 Selection

As stated previously, the case of this thesis is Linkeroever in Antwerp. I selected it based on the higher-than-average loneliness numbers there, on my experiences and fascination with Antwerp from last year, and because of the distance, I can visit it multiple times.

In this district, almost one in four does not have multiple social contacts a week and one in ten has social contact less than once a month (figures 1.4 and 1.5). The statistics show that urban loneliness in Antwerp is most apparent in Linkeroever. That is why I focus on this district in my graduation thesis.

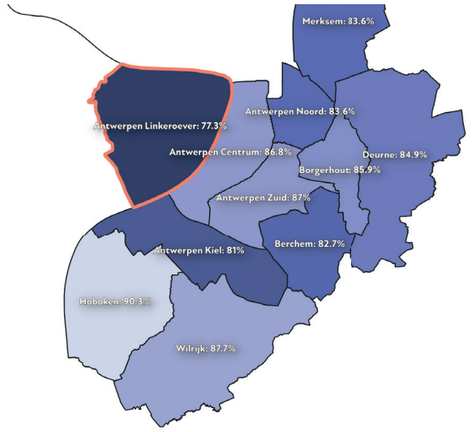


Figure 1.4 Percentage of people with multiple social contacts a week (stadincijfers.antwerpen.be, 2019)

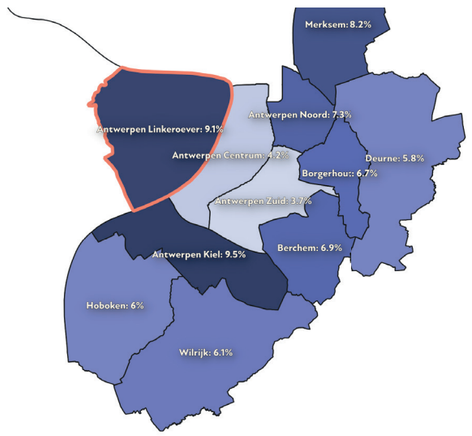


Figure 1.5 Percentage of people with less than one social contact a month (stadincijfers.antwerpen.be, 2019)

1.2.2 Characteristics

Every district is different. My project area, figure 1.6, has several characteristics that make it unique. If and how these characteristics are related to urban loneliness will become more clear during this thesis.

Modernism

Linkeroever is a post-war modernist district. This means that there is a lot of open space and that the infrastructure is centred around cars. Most of the buildings are from this era. A distinctive typology is the high-rise flat, placed on a huge field of grass.

Monotony

Overall, the area is very monotonous. Public spaces all look the same, wide grass fields. There are only four building typologies which are often clustered. This results in smaller neighbourhoods where all the houses look the same. Furthermore, Linkeroever is predominantly a residential district. So, there is little diversity in function.

Segregated

Linkeroever is separated from the rest of Antwerp by the Scheldt river. Because there are very few connections, Linkeroever is physically segregated. Historically, Linkeroever has its own identity as it once was an independent town.

Qualities

Not everything about Linkeroever is negative. It is a great place for recreation and has plenty of space for nature, compared to the rest of Antwerp. This makes it a great place to escape the buzzy city. People who live there appreciate the space, light, and peace the district provides.

Statistics

Statistics help to get a general sense of the scale of the assignment. Based on Antwerp's databank (stadincijfers.antwerpen.be, n.d.) Linkeroever does have approximately 17.000 inhabitants living in 9.000 dwellings on 300 hectares.

Linkeroever Antwerp

Figure 1.6 Project area

1.3 PROBLEM FIELD

In this sub-chapter, I will give an introduction to the problem field of urban loneliness. It is a problem that does not stand on its own. The overview will be quite general and not be specific to my location yet. In sub-chapter 2.2 the problems and opportunities will be analysed in more detail, resulting in a location-specific problem statement.

1.3.1 Definition

Before urban loneliness can be placed in a wider problem field, it must be clear what urban loneliness means. Loneliness "is the outcome of a process in which a person weighs up his or her existing personal relationships against his or her own wishes and social expectations with regard to relationships" (van Tilburg, 2021, pp. 335–336). The result is a negative feeling of distress and dissatisfaction (MacDonald et al. 2020). Urban loneliness, as I define it, is a type of loneliness that is caused, facilitated, or strengthened by the characteristics of the social and physical urban environment.

1.3.2 Related fields

More and more people live in cities, so cities are becoming more crowded, leaving less room for public spaces and public functions. **Urbanisation** also brings a lot of people together who are unfamiliar with each other's backgrounds. Too many people together create anonymity, which can limit social interaction. In cities, the number of **single-person households** is growing. This does not equal loneliness, but it can be an extra struggle in meeting your social wishes and expectations.

Moreover, the quality of the built environment and the public spaces is lagging. A lot of neighbourhoods struggle with this, especially post-war expansion areas which were often built in a modernist style, fifty to seventy years ago. These neighbourhoods have **liveability** issues. When a neighbourhood is unpleasant to live in, people go outside less often and have a weaker connection with their neighbours and the place.

The current society also demands more from us. Children must perform excellently in school and adults should work harder. Our society has turned into a **performance society**. This results in stress and less time spent socializing and exploring. Our society is afraid to fail and too focused on the individual, resulting in more urban loneliness.

The gap between rich and poor is growing. **Deprivation and poverty** are big problems in cities. They also relate to urban loneliness. People who live in poverty have more trouble paying for transport to go somewhere to meet people. They also do not have the financial means to pay for activities or socialising in their free time. They are more dependent on free places they can go to in their own neighbourhood, like libraries, thrift stores, and community centres.

Another related problem field is digitalisation. Well, problem? **Digitalisation** allows us to have contact with people from across the globe. Which could be countering urban loneliness by lowing the threshold and proving wide access. In that case, it would be an opportunity. However, online interactions might be of lesser quality. It is not clear if digital social contact can replace the need for face-to-face interactions.

So, all these problem fields are affecting urban loneliness. On the other hand, urban loneliness does have a big impact on **mental and physical health**. This is a serious and expensive problem in cities. Mental health issues related to loneliness include increased anxiety, depression, a higher risk for dementia, and suicidal intentions. Physically, loneliness is associated with poor cardiac health, inadequate sleep patterns, and lower subjective health ratings (MacDonald et al., 2020). In conclusion, urban loneliness is not just a problem on its own but is related to many other problems.

1.3.3 Problem statement

People are feeling more and more lonely, especially in cities. This has negative effects on mental and physical well-being as well as on the economy. Social and physical characteristics of the urban environment can facilitate or limit urban loneliness. The rise of urban loneliness is associated with other challenges of our age, situating it in a wider context. Global urbanisation results in unfamiliarity among people, the growing number of single-person households makes meeting social expectations even harder, and liveability leaves much to be desired contributing to weaker ties with our neighbours and our neighbourhoods. At the same time, our society demands more from us, the constant need to perform results in stress and less time for social interactions and activities. Add to this the growing gap between rich and poor, why fewer people can afford to participate in society, and we have ourselves a serious problem. Urban loneliness is a silent epidemic harming mental and physical health. Designing spatial and programmatic solutions for all people can help to counter urban loneliness.

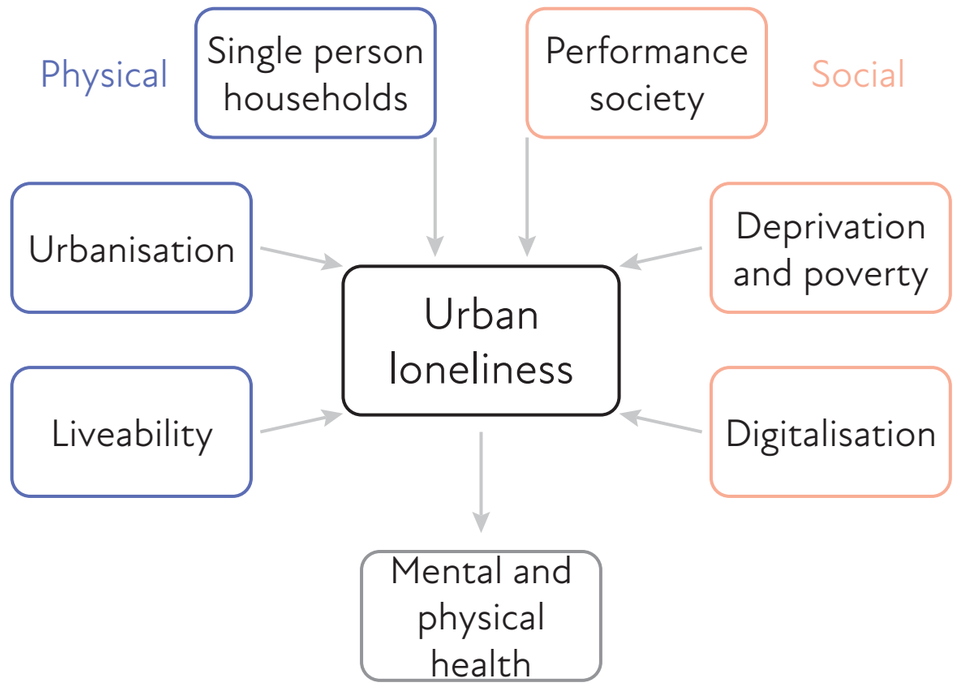


Figure 1.7 Problem field

1.4 PROJECT APPROACH

1.4.1 Research aim

This research aims to bridge the gap between the existing theories about loneliness and applications of these in the built environment. Most theories about loneliness and related topics come from the fields of psychology and sociology while there are few cases where this knowledge is used in the field of urbanism to counter urban loneliness. So, applying knowledge about loneliness in the built environment is something challenging and new.

More specifically, this thesis aims to counter urban loneliness in cities with Linkeroever in Antwerp as a leading example. Therefore, this thesis will apply knowledge about loneliness, social cohesion, collective development, and legible human scale in practical spatial and programmatic solutions for the post-war district Linkeroever.

1.4.2 Research question

To fulfil the set aim, the research question and sub-questions as stated below will be answered in this report. Important to note is that the research question mentions both spatial and programmatic solutions instead of the more general notion design. This is done to emphasise that design is not just creating a nice spatial environment but also a strong urban program to activate the spaces.

RQ

How to improve spatial and programmatic conditions in Linkeroever that stimulate social cohesion and collective development, countering urban loneliness?

SQ1

What is the context shaping urban loneliness in Linkeroever?

- What is urban loneliness?
- What are the problems in Linkeroever?
- What are the opportunities in Linkeroever?
- What future of Linkeroever to design for?

SQ2

How to design against urban loneliness?

- How to design for social cohesion and social interaction?
- How to stimulate collective and personal development through spatial design and program?
- How to bring back the legible human scale?
- How to establish a framework for design?

SQ3

How to redesign Linkeroever?

- How to create an integral design for Linkeroever trough all scales?
- How to strategically implement the design over time?
- What will the new life of the people in Linkeroever be?
- What design principles can be extracted?

SQ4

To what extent do spatial and programmatic conditions affect urban loneliness?

- What is the impact of the design on urban loneliness in Linkeroever?
- What is the impact of spatial and programmatic interventions on urban loneliness?
- What measures outside the scope of the urbanist are essential to counter urban loneliness?

Figure 1.8 Research questions

1.4.3 Methodological framework

To answer the research question and sub-questions, I will follow multiple methods all contributing to an iterative research and design process. The exact methods are visualized in figure 1.9 and will be elaborated on below.

To answer the first sub-question: what is the context shaping urban loneliness Linkeroever?, fieldwork analysis, cartographic analysis, data analysis, and some theory and policy reading will be the most important methods used. The result will be a better understanding of the context of Linkeroever and urban loneliness. Analytical maps, statistics, and future scenarios will be products that support the outcomes of this question.

After the broader context is clear, it is time to dive deeper into urban loneliness and design by answering the second sub-question: how to design against urban loneliness? Methods to be used for this include research by design, experimenting with design options, applied theory research, and reference studies. The results will be visualized in simple designs, design principles, and a design framework. The main goal of this chapter will be to understand the urban fabric that stimulates urban loneliness and find an alternative fabric to replace it with to combat urban loneliness.

When the elements that contribute to urban loneliness and the design principles countering it are known, the challenge is to bring them together in an integral design on all scales. This will be done by answering the sub-question: How to redesign Linkeroever? Methods for this are design testing, integrating/concluding, designing through scales, and combining top-down and bottom-up design. Vision, strategy, and design represented by personas, maps, sections, and perspectives are the main products of this chapter. The products will be made through and for multiple scales creating a multi-scale design.

Finally, I will reflect on the design by answering the sub-question: to what extent do spatial and programmatic conditions affect urban loneliness? This will be done by methods like a theory check, a design principal check, resident consults, and academic reflecting. This will result in a reflective text as the main product.

The first three sub-questions form an analysis-design-present loop in which the lines are a bit blurry. Afterwards, a thorough reflection will conclude this evidence-based design thesis. If all is well, the research question: How to improve spatial and programmatic conditions in Linkeroever that stimulate social cohesion and collective development, countering urban loneliness? should be answered after these four chapters are completed.

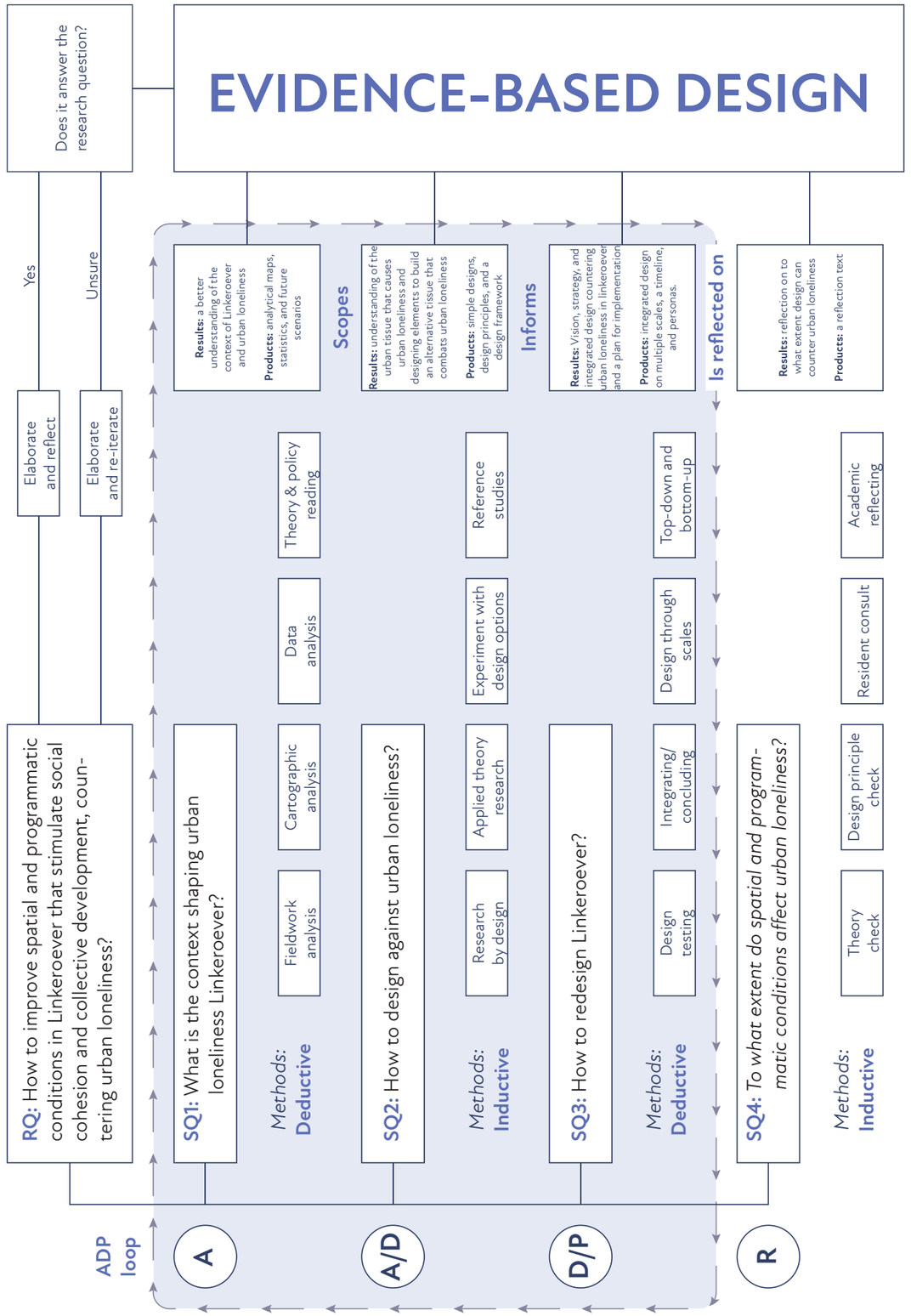


Figure 1.9 Methodological framework

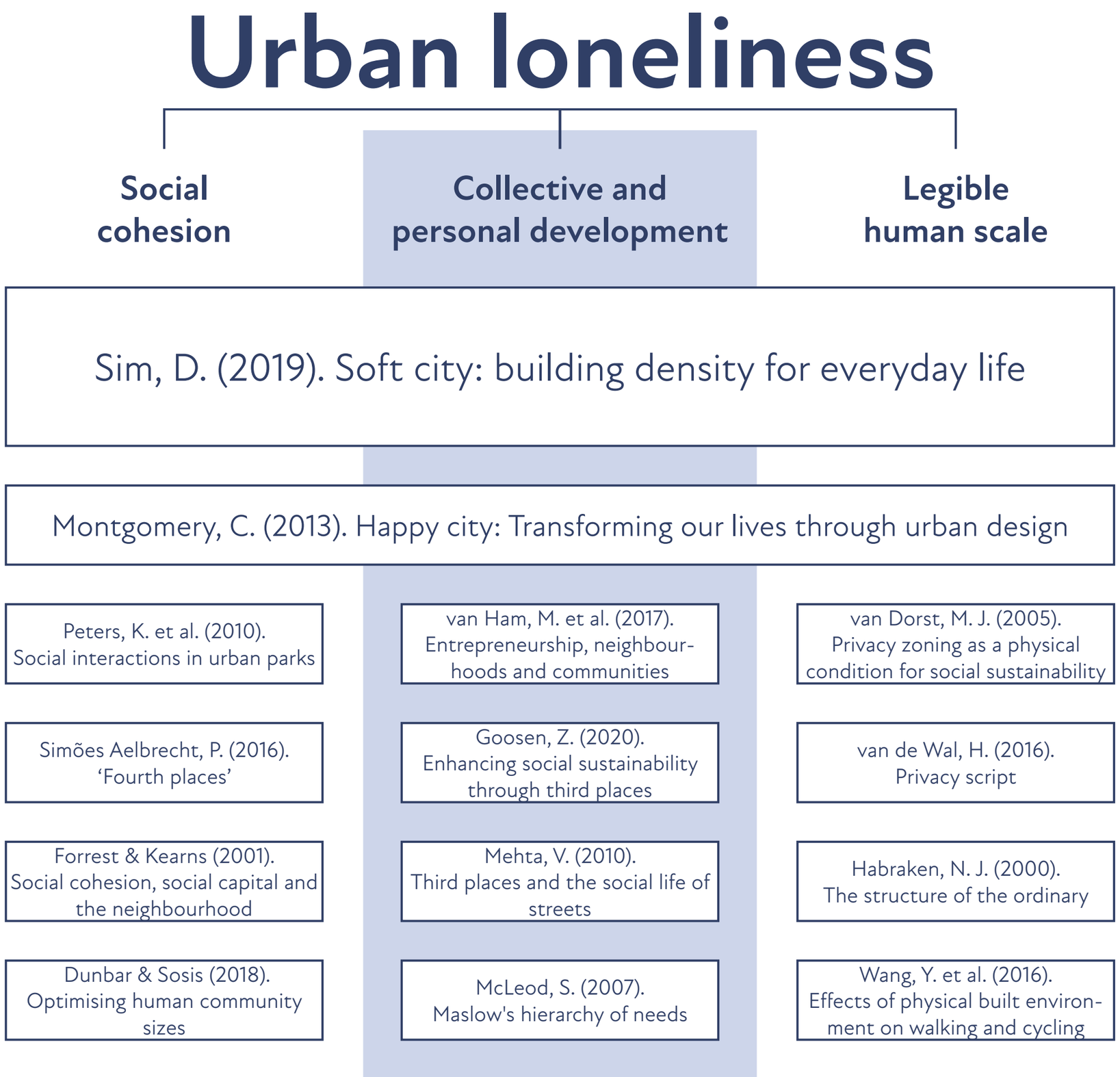


Figure 1.10 Theoretical framework

1.4.4 Theoretical framework

The theoretical framework, figure 1.10, includes the most important pieces of literature that are used in this thesis. The happy city by C. Montgomery is a book that inspired me and motivated me during the process. The soft city by D. Sim, part of Jan Gehl's office, is the closest to an integral design approach against loneliness. The focus of this book is on designing a cosy city 'hygge', however a lot of lessons also apply to urban loneliness. These two books formed the overall basis for this thesis.

Besides these two books, more topic-specific books are important to make the connection between urban loneliness and spatial and programmatic solutions. Social interactions in urban parks (Peters, et al., 2010) and fourth places (Simões Aelbrecht, 2016) are key literature when it comes to social interaction and ultimately social cohesion. Third places and the social life of streets (Mehta, 2010) and entrepreneurship, neighbourhoods and communities (van Ham et al., 2017) provide a great insight into the power of personal and collective development spaces. Privacy zoning (van Dorst, 2005) and privacy script (van de Wal, 2016), two related pieces, form the base for designing a legible human scale.

1.4.5 Conceptual framework

The conceptual framework shows the three main social-spatial elements that contribute to countering urban loneliness. The relation between these three concepts and the notion of urban loneliness will be elaborated on in sub-chapter 2.1. For now, it is important to note that these three concepts, strengthen each other and together can help to counter urban loneliness. Development spaces give social cohesion a higher purpose, a legible human scale makes the development spaces accessible, and a legible human scale can strengthen social cohesion by providing space for interaction with the right dimensions.

Diversity, both physical, programmatic as well as social, and connective fabric bind three main concepts together. Diversity and connective fabric are not concepts on their own because they are part of all three main concepts. Furthermore, the conceptual framework shows that the process is iterative through the scales. So, all concepts will play a role on all scales. However, some elements might be more apparent on a specific scale.

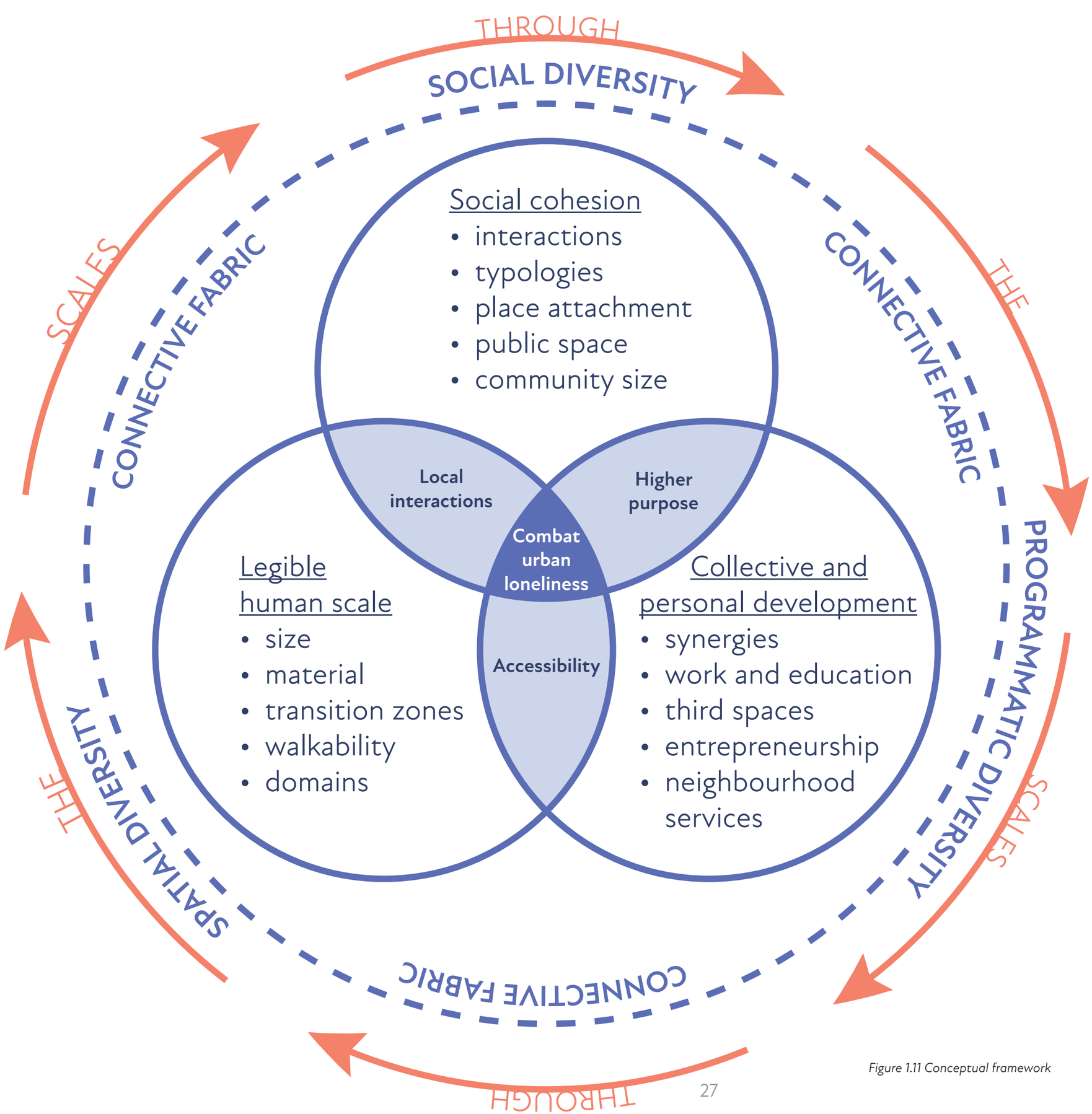


Figure 1.11 Conceptual framework

1.4.6 Limitations

This thesis aims to counter urban loneliness in Linkeroever. However, this research is limited in what it can achieve. The most important limitation is the fact that urban design does not create social cohesion and collective development, it can just facilitate or complicate it. It can however create a legible human scale to support the former two. In general, urban design has just a facilitating role in countering urban loneliness.

The design of spatial and programmatic interventions affects the physical environment which influences the social environment. We cannot directly design a new social environment in which loneliness is non-existent. The social and physical environments play a big role in urban loneliness but genetics are also responsible for how someone deals with loneliness. So, even though this thesis can have a big impact on urban loneliness, the field of psychology is also needed to deal with this urgent problem.

Other limitations are related to the time and resource limitations of this graduation thesis. For example, I cannot test if the interventions I propose really work, as that would take many years. There are also limited opportunities to visit the location. There are a lot of analyses and topics I would like to dive into. However, because of the time constraint, choices must be made based on their potential impact on countering urban loneliness.

1.4.7 Thesis structure

You have just read the introduction to this thesis. What will follow are four more chapters based on the four sub-questions of this research.

Chapter 2: Context
Answering: What is the context shaping urban loneliness Linkeroever?

Chapter 3: Urban elements of loneliness
Answering: How to design against urban loneliness?

Chapter 4: The design
Answering: How to redesign Linkeroever?

Chapter 5: Conclusion and reflection
Answering: To what extent do spatial and programmatic conditions affect urban loneliness?

All chapters (2) will consist of multiple sup-chapters (2.1) and paragraphs (2.1.1). Their structure will be presented on the first page of each chapter. On the second page, there is a short abstract that summarises the content of the chapter. After each sub-question is answered in its respective chapter, the answer to the main research question will be given in chapter five.

Figure 1.12 Alone in Linkeroever

02 CONTEXT

2.1 Defining urban loneliness

2.1.1 Loneliness 32
2.1.2 Types of loneliness 32
2.1.3 Affected by loneliness 34
2.1.4 The consequences 35
2.1.5 The causes 36

2.2 Problem analysis

2.2.1 Urban loneliness in Antwerp 37
2.2.2 Problems and opportunities 38
2.2.3 Problem statement Linkeroever 50
2.2.4 Problem scales 51

2.3 The future of Linkeroever

2.3.1 Future of urban loneliness 52
2.3.2 Future projects Linkeroever 54

Loneliness is a negative feeling of distress and dissatisfaction that can is the outcome of a process in which a person weighs up his or her existing personal relationships against his or her own wishes and social expectations with regard to relationships. There are three types of loneliness, social loneliness, emotional loneliness, and existential loneliness, which all require different solutions. Loneliness has negative consequences on physical health, mental health, and the economy. The environment we live in is responsible for 52% of the feeling of loneliness. This environment is facilitated by the physical environment, which we as urbanists can change. Loneliness is more apparent in cities, like Antwerp. Linkeroever is the district with the most worrying statistics regarding urban loneliness. This is partly due to characteristics like deprivation, monotony, being mainly residential, having too much open space, lacking human scale, and being disconnected. These problems are apparent through all scales. The problems regarding urban loneliness seem to only get worse if nothing happens. Therefore, it is time to take action now.

Figure 2.1 The contrast in Linkeroever

2.1 DEFINING URBAN LONELINESS

2.1.1 Loneliness

Before an attempt can be made to counter urban loneliness through spatial and programmatic interventions, it must first be clear what (urban) loneliness entails. As described by MacDonald et al. (2020), loneliness is a negative feeling of distress and dissatisfaction that someone experiences regarding their current social relationships. This can be because the current relationships do not provide sufficient social interactions, the current social interactions are of low quality, or the number of social relationships is too low or non-existent at all. This means that a person with a lot of social relations (friends) can still feel lonely if their quality is insufficient. At the same time, another person with just a few social relationships does not need to feel lonely if this amount satisfies them and the quality of the social interactions is great.

Van Tilburg (2021, pp. 335–336) makes an important addition to the previously stated definition of loneliness. He adds that loneliness "is the outcome of a process in which a person weighs up his or her existing personal relationships against his or her own wishes and social expectations with regard to relationships". This shows that the conditions that make someone experience loneliness change from person to person and depend on someone's social needs and expectations. So, as urban designers, we should aim to develop an environment that facilitates a wide range of social needs to counter urban loneliness.

Being alone or feeling alone

Feeling alone is a complex and person-specific notion. It is sometimes confused with the notion of being alone. These concepts are closely related and someone alone is often more likely to feel alone. However, someone being alone does not necessarily feel alone. On the other hand, someone accompanied by friends at a party can feel lonely. That is why being accompanied is the opposite of being lonely, but not of feeling lonely. In this thesis, the focus will be on the more complex notion of feeling alone, but what is the opposite of feeling lonely?

Related notions

Other concepts that are related to loneliness are solitude, isolation, and segregation. These notions are not the same as feeling alone. Often someone living in solitude (being alone) is fine with this and they do not experience the distress and dissatisfaction associated with feeling alone. Isolation is something we all experienced during the Covid-19 pandemic. It often limits social interactions because people are not able to be physically in the proximity of possible relations. Isolation is often physical, but can also be social when someone is excluded from a group. When isolation continues for a longer period it can result in feeling lonely, this was happening during the pandemic to a lot of people. Segregation is related to isolation but applies often to groups of people rather than individuals. A group can be segregated from the rest of society.

2.1.2 Types of loneliness

The notion of loneliness, feeling lonely, can be subdivided into three types of loneliness according to van Tilburg (2021). These three types are social loneliness, emotional loneliness, and existential loneliness. Social loneliness is experienced when someone lacks a larger group of social relations or an engaging social network. So, the magnitude of the existing personal relationships does not match the wishes and expectations. Emotional loneliness is experienced when the current social relationships cannot provide the intimacy or emotional support that is desired. Both social and emotional loneliness are often caused by reduced social interactions. These kinds of loneliness can therefore be countered from an urbanism perspective by stimulating social interactions and social cohesion through spatial and programmatic conditions.

Existential loneliness is experienced when someone is doubting their existence, role in life, or role in society. The main driver in this case is a lack of meaning in life. According to van Tilburg (2021), existential loneliness cannot be countered. However, I think that when someone feels lost and wandering and does not see a meaning in life, they can be helped by places that give them purpose. These are places for personal and collective development. This is supported by Maslow's hierarchy of needs, figure 2.2 (Mcleod, 2018).

From an urbanist perspective, this kind of loneliness can be solved by spatial and programmatic conditions that facilitate personal and collective development opportunities. The relations between the types of loneliness and the social-spatial topics are visualised in figure 2.3.

At this moment it might sound like urban design can solve urban loneliness by itself. This is not the case. I want to stress that urban design does not create social cohesion and collective development, it can just facilitate or complicate it. So, to counter loneliness urban design can only attempt to be a part of the solution.

Figure 2.2 Maslow's hierarchy of needs (adapted from Mcleod, 2018)

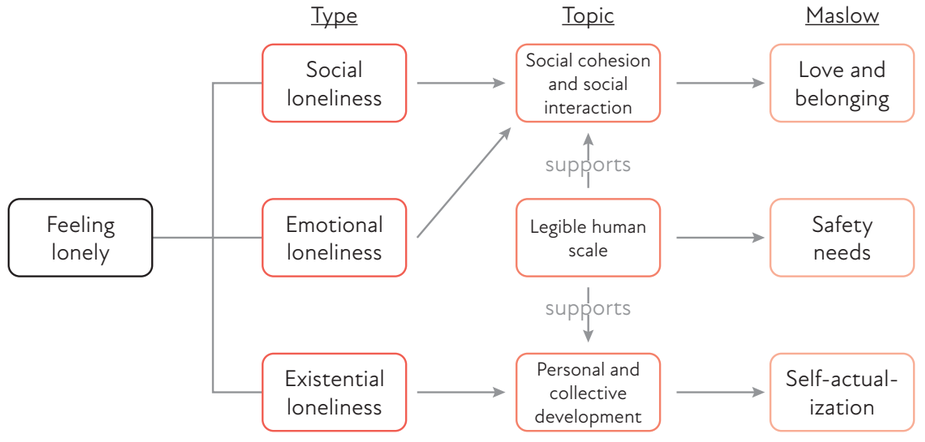
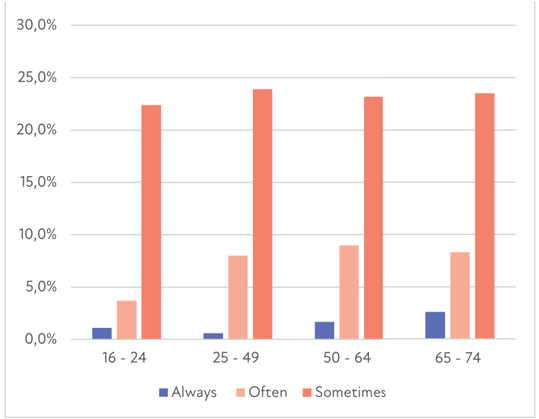


Figure 2.3 Relation types of loneliness and social-spatial topics

Urban loneliness

Loneliness is more prevalent in urban areas despite the availability of more social functions in most cities (MacDonald et al., 2020; Vlaanderen.be, 2022). MacDonald et al., (2020) note that in urban areas mood and anxiety disorders are more frequent and that social support is lower. In rural areas, there seems to be a stronger sense of community and lower rates of depression, a sign of less loneliness. The statistics of Vlaanderen.be (2022) show that a lower percentage of people have weekly social contact with family, friends, and neighbours in cities compared to towns and the countryside, figure 2.5. Dutch data (RIVM, 2020) confirms that loneliness is more present in cities, especially in the neighbourhoods on the edge of cities. So, urban loneliness is the phenomenon that loneliness is most prevalent in cities and that the feeling of loneliness is caused, strengthened, or facilitated by the urban environment.



2.1.3 Affected by loneliness

Not every demographic group is affected by loneliness equally. As previously mentioned, people living in cities are more likely to be lonely that the same people in towns or the countryside. The Belgian population study (Stabel, 2022) Shows that the older someone gets, the more likely it is they feel lonely, figure 2.4.

Contrary to what the data for Belgium suggests, is the current global discourse that young adults are at least as vulnerable to loneliness (Barreto et al., 2021). Reasons for this could be the instability of their social networks, exploration, moving out, new jobs, new environments, broken relations, and other elements of change that happen in this period of one's life. So, while the Belgian numbers point to the elderly as extra vulnerable to loneliness, in this thesis the young generation is deemed as least as vulnerable. In both the Belgian and global studies the results present a slight increase in loneliness in men compared to women (Barreto et al., 2021; Stabel, 2022). Other vulnerable groups include the jobless, the long-term ill, and people who live alone.

Figure 2.4 Loneliness according to age in Flanders (Stabel, 2022)

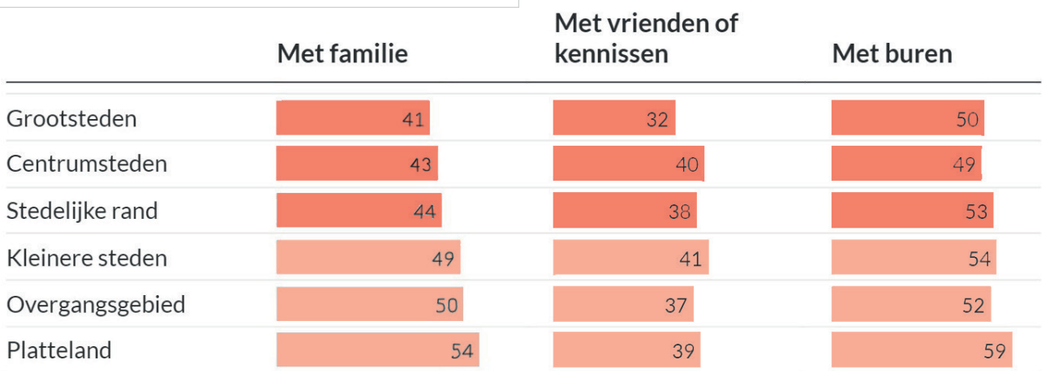


Figure 2.5 Percentage of inhabitants with social contacts at least once a week in Flanders in 2022 (Vlaanderen.be, 2022)

2.1.4 The consequences

Loneliness is not just an unpleasant experience but it can result in mental and physical health issues. Someone can adapt to the feeling of loneliness by connecting on a higher emotional level with current relationships or by seeking new social interactions and developing new relationships (MacDonald et al., 2020). When someone fails to adapt and social relationships remain insufficient, the loneliness can become chronic. At this point, loneliness can result in mental issues including increased anxiety, depression, a higher risk for dementia, and suicidal intentions. Physically, loneliness is associated with poor cardiac health, inadequate sleep patterns, and lower subjective health ratings (MacDonald et al., 2020). Together, all these negative effects lead to a 26% increase in the risk of premature death (Cacioppo & Cacioppo, 2018).

Economic consequences

Unfortunately, the negative consequences of loneliness do not end there. While health issues are mostly personal, the economic consequences of loneliness and their related health issues harm society as a whole. Research by Mcdaid et al. (2017) puts a price tag on the cost of loneliness to society. They focussed on individuals over 55 years old and estimated that the costs to society would conservatively be €2.000 per person over ten years. The older and more severely lonely people would cost €7.000 per person over the same period.

Mcdaid et al. (2017) distinguish three kinds of measures that could be taken to prevent loneliness and the associated costs. These are befriending, participation in social and healthy lifestyle activities, and signposting/navigation to identify and match people and activities.

Befriending is the most cost-effective returning 8 to 24 times the investment depending on the kind of intervention (Mcdaid et al., 2017). Befriending is very person specific but comparable to creating social interaction and social cohesion on a neighbourhood scale. The economic and social effect of participation in social and healthy lifestyle activities is less clear in this study. I think this measure is related to both social cohesion and collective and personal development which can stimulate the local economy and counter loneliness at the same time. Signposting/navigation combines a legible human scale with a purposeful destination. Investing in this could yield a 2-3 time return on investment (Mcdaid et al., 2017). This is closely related to creating a legible human scale. The relations between the proposed measures and the socio-physical environmental topics are visualized in figure 2.6.

So, the money society loses to loneliness-related issues could be better spent on preventing it by investing in spatial and programmatic solutions that stimulate social cohesion, collective development and a legible human scale. This has as an advantage that not only loneliness is countered, but that the liveability of a neighbourhood improves for everyone.

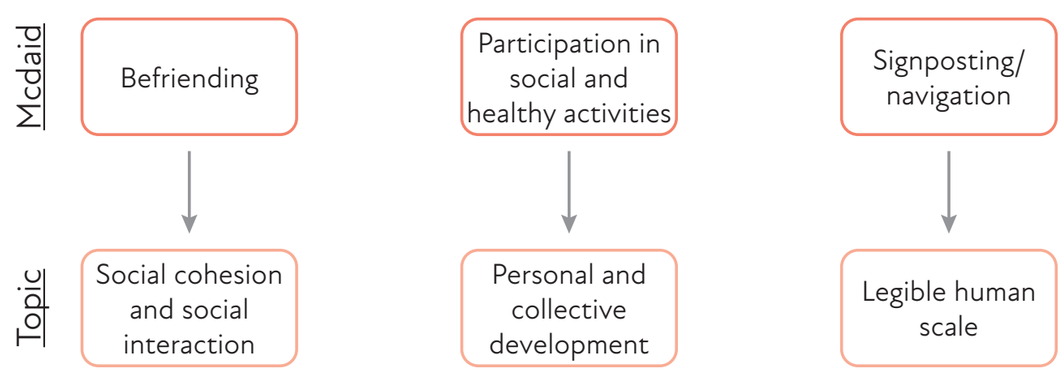


Figure 2.6 relations between economic measures and the socio-physical environmental topics

2.1.5 The causes

The feeling of loneliness can be caused by a complex mix of factors. As discussed previously, not having sufficient social relationships, not reaching a sufficient quality within social relationships, and lacking meaning in life are some of them. A study on twins in Amsterdam (Cacioppo, 2008) divides the causes into two groups. Our genetics contribute 48 per cent to the feeling of loneliness, while the world we encounter is responsible for the other 52 per cent. The genetics we cannot control. We cannot change the fact that some people are more receptive to loneliness or have fewer social skills to establish relationships, but psychology can help them understand and deal with it. The world we encounter can change, especially by urbanists.

This environment is both the social and physical environment. The social environment includes the people you are surrounded by and how they interact with you or influence your feelings or behaviour. The social environment can for example make you feel stressed because there are a lot of people with you in a small space. The physical environment in this case is the stage that facilitates this crowdedness because the space is small. The physical environment facilitates or sometimes limits the social environment. Therefore, the physical environment plays a big role in causing urban loneliness. The relation between the physical environment and urban loneliness is visualised in figure 2.7. What specific elements of our environment influence loneliness will be discussed in more detail later in this thesis.

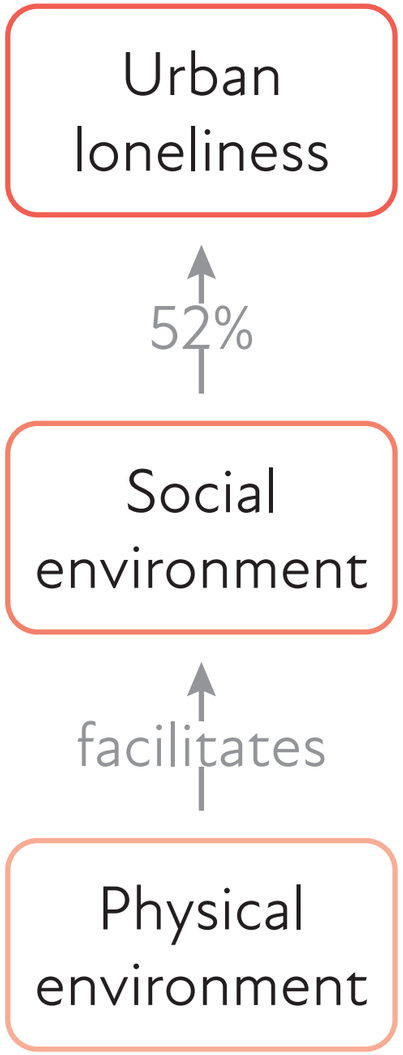


Figure 2.7 From physical environment to urban loneliness

2.2 PROBLEM ANALYSIS

2.2.1 Urban loneliness in Antwerp

As presented in the previous sub-chapter, loneliness is a serious problem and even more so in cities. In cities like Antwerp, people have between 10% and 20% less social contacts than people in the countryside and in towns (Vlaanderen.be, 2022), even though the density of people and functions is higher in cities. In Antwerp, 41,3% have weekly social contact with neighbours, family, or friends in 2020 (stadincijfers.antwerpen.be, 2020). This is less than the 48,7% and 44,4% in 2014 and 2017 respectively. If these numbers are compared with the average for centre cities (centrumsteden) of 2022. Antwerp seems to be below average. It also ranks very low if people are asked if they consider the social fabric in their neighbourhood as strong. So, Antwerp is considered lonelier than average.

Zooming in on Linkeroever, the results are even worse. Linkeroever is the loneliest district of Antwerp. Based on a different study, on district level conducted in 2019 (stadincijfers.antwerpen.be, 2019), just over three in four residents does have multiple social contacts a week and for one in ten, the number of social contacts is less than one a month. Compared to the 85,5% and 6,2% city average, Linkeroever is significantly lonelier. The demographic might be part of this issue because elderly people are overrepresented in Linkeroever and are more vulnerable to loneliness. The difference is significant with 16,3% compared to 26,3% of people above the age of 65.

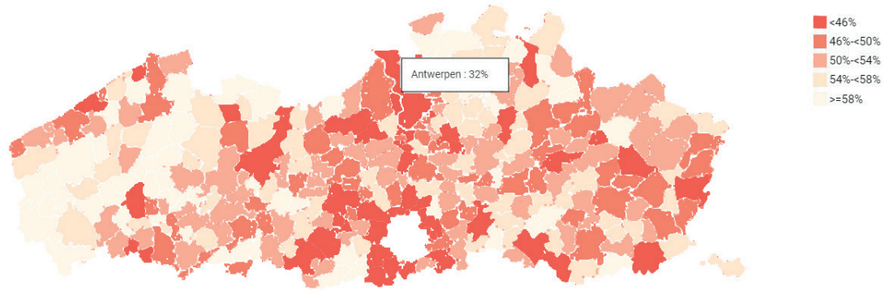


Figure 2.8 Percieved quality of social fabric (Agentschap Binnenlands Bestuur, 2020)

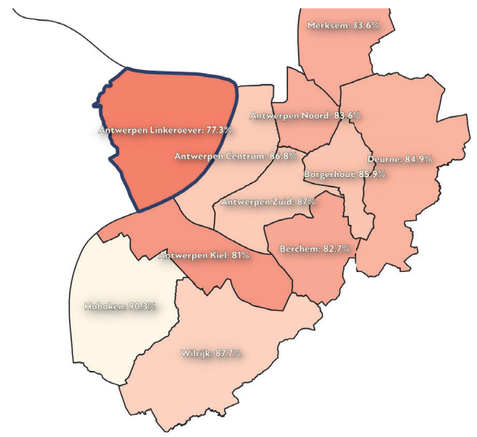


Figure 2.9 Percentage of people with multiple social contacts a week (stadincijfers.antwerpen.be, 2019)

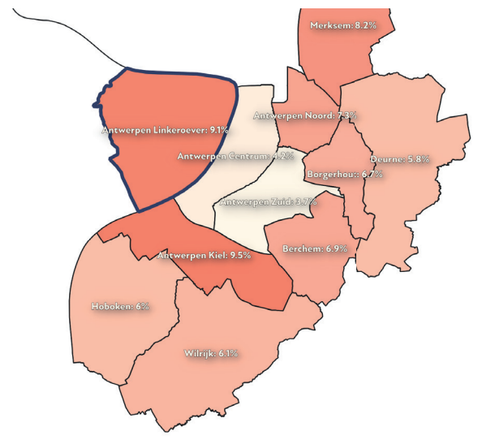


Figure 2.10 Percentage of people with less than one social contact a month (stadincijfers.antwerpen.be, 2019)

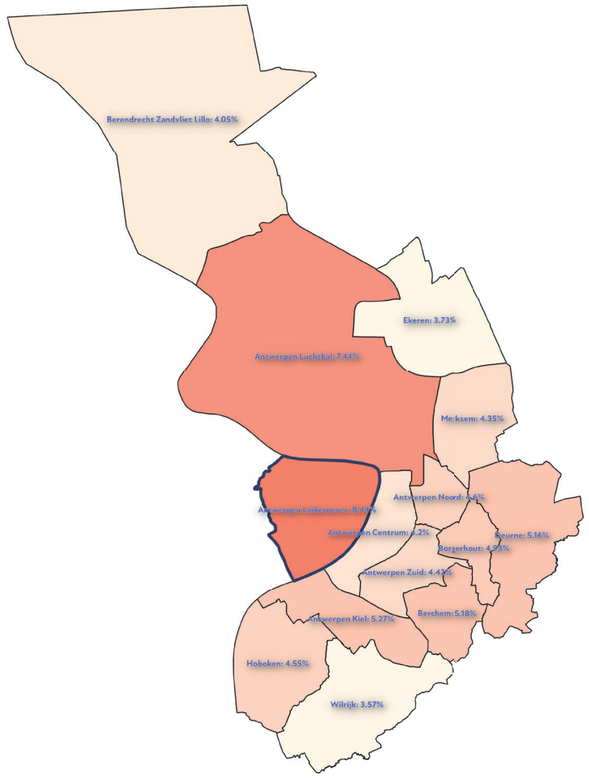
2.2.2 Problems and opportunities

A disadvantaged neighbourhood

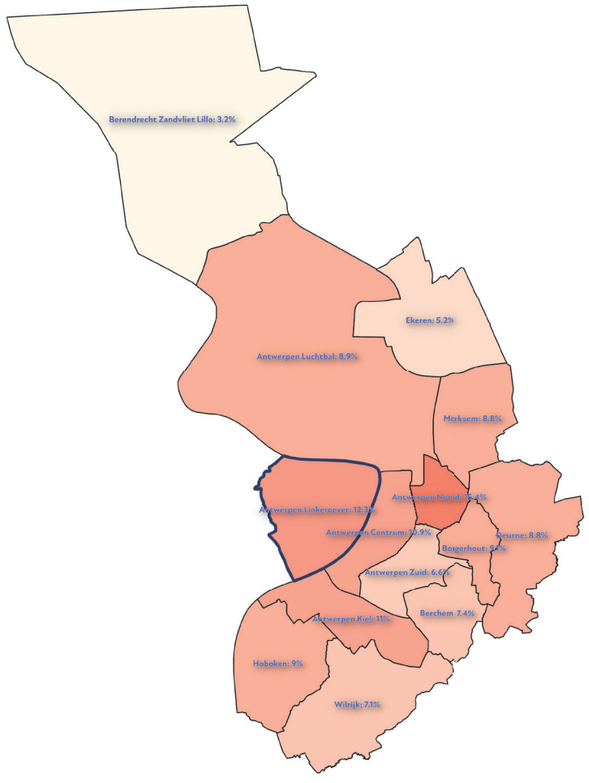
Linkeroever is not only a lonely neighbourhood but also one of the most disadvantaged neighbourhoods within Antwerp. Deprivation is a serious problem as almost 50% of the children in Linkeroever are living in deprivation. In over 50% of families, the main language is not Dutch, which complicates communication, social interaction, and personal development. A city high 12,3% of students in high school are delayed more than one year. Almost 8,5% of adults receive social assistance benefits, and the average salary is just below €18.000 (stadincijfers.antwerpen.be., 2021).

A record-breaking 44,4 per cent share of the dwellings is social housing, concentrating financially less strong persons in this neighbourhood. The city average for social housing is only 10,7%, so the dispersion is not fair. All these facts present that Linkeroever is disadvantaged, not only in location but also in population. Urban loneliness and deprivation might be related and can strengthen each other. So, just stimulating social contact will not be enough. The problems in Linkeroever are bigger than that.

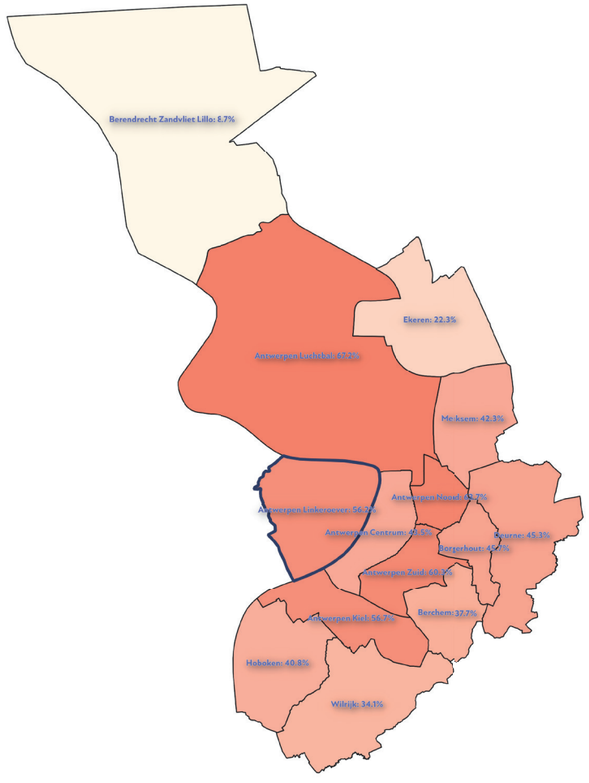
Figure 2.11 Deprivation in Antwerp (stadincijfers.antwerpen.be, 2021)



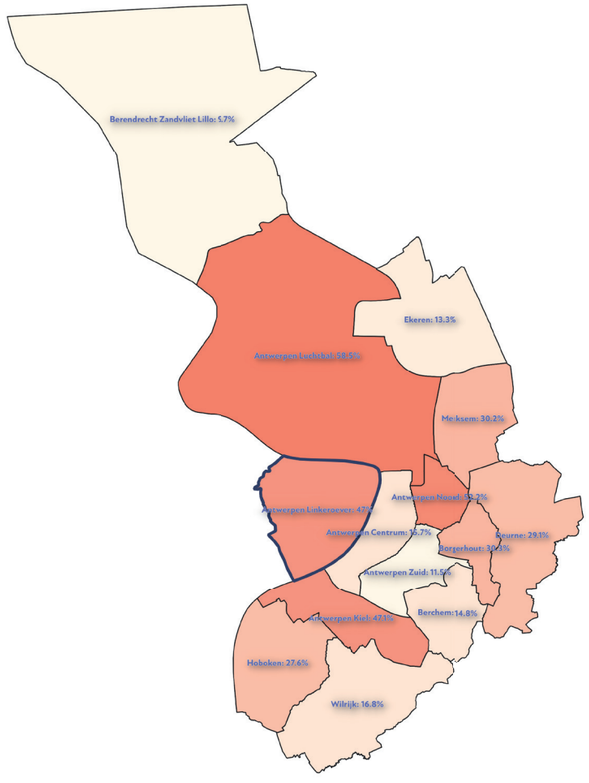
Percentage of people who receive benefits (2017)



Percentage of high school students with over one year of delay (2020)



Percentage of children in primary school no Dutch at home (2019)



Percentage of children living in deprivation (2021)

Figure 2.12 Building typologies

A monotonous neighbourhood

Linkeroever is monotonous in both appearance and function. Most buildings are dwellings, almost 90%. A majority of these are high-rise apartment slabs from the 1970s. These buildings are in poor condition and the question is whether renovation will save them. Their vertical orientation is detrimental to social cohesion. There are too many people in one building which makes it impossible to know with whom you are sharing your building. Furthermore, the circulation spaces are too small to facilitate social interaction. The plinths are blind and do not have transition zones or space for appropriation.

There is a big contrast with the other dominant typology; rowhouses. These come in two kinds. Almost half of the rowhouses have only a garage and a door on the ground floor. This complicates social control and social interaction. The final typology has the most potential. The courtyard typology could help counter urban loneliness if the courtyards were actually used as a community space, rather than a space for cars. In general, these typologies do not stimulate (visual) interactions and therefore contribute to urban loneliness.

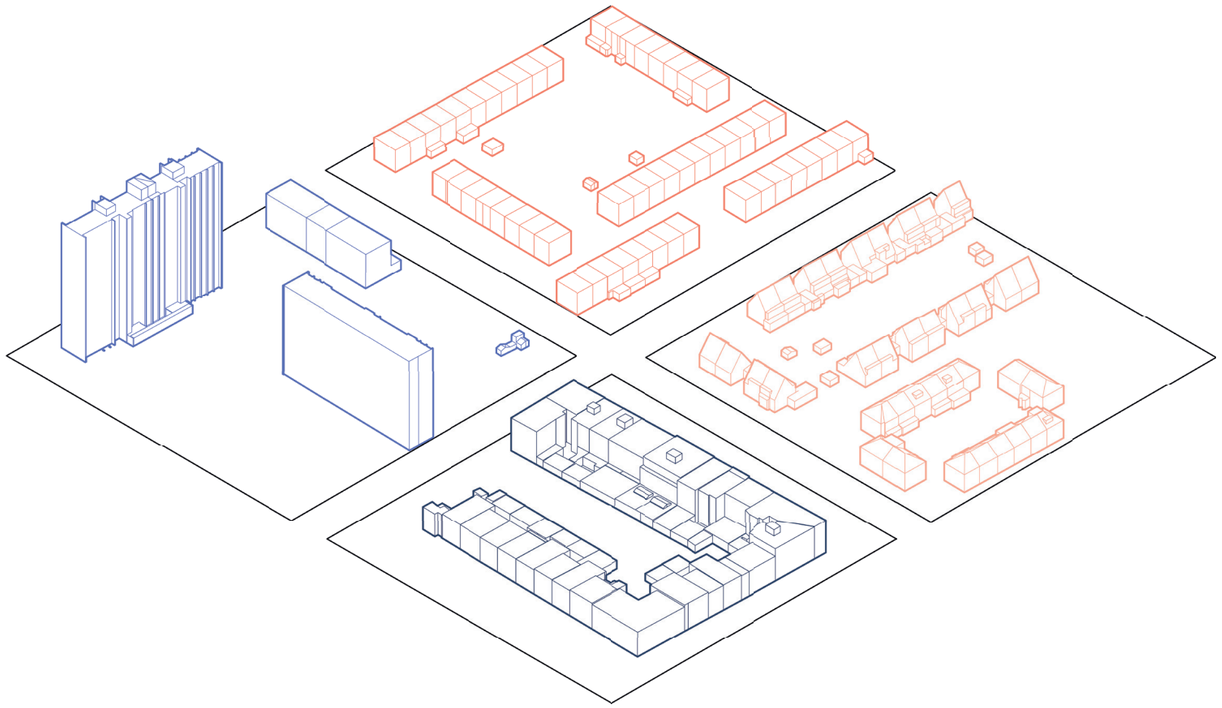


Figure 2.13 Axonometric view of the four dominant typologies

A residential neighbourhood

In Linkeroever there are sufficient amenities, relative to the number of inhabitants when it comes to primary needs like schools, supermarkets, and healthcare. However, because of the low density, the absolute number is low, and distances are often large. Moreover, the quality of the amenities is often sub-standard. Amenities regarding leisure, social activities, or personal development are limited. This limits opportunities for people to meet and develop themselves. Cultural facilities and spaces for adolescents are lacking. For work, most people must leave the neighbourhood, as there are just 5.000 workspaces for a workforce of approximately 10.000.

Linkeroever excels in green amenities and recreation, but also here the qualities leave something to be desired. For example, community gardens, which play an important role in social cohesion are missing. Linkeroever needs to provide more facilities with better quality to counter urban loneliness. Especially when Linkeroever will be densified in the future and many more people have their needs.

Figure 2.14 Existing Situation (Author, 2020)

Figure 2.15 The bakery and tearoom, one of only social functions

Figure 2.16 Open space Linkeroever (Author, 2016)

An open neighbourhood

For all the missing amenities, space is required. Fortunately, there is enough, maybe too much, open space in Linkeroever. Over 75% of the parcels in Linkeroever are undeveloped, and huge plots of land are dedicated to parking, road, or just grass. The footprint of the buildings is just 10% of the 300 hectares making up the residential part of Linkeroever. While over two-thirds of the area is dedicated to asphalt or grass. The balance is lost, making distances between destinations unnecessarily big.

The 330m2 of 'experience' green per inhabitant looks great on paper, but when the quality is this poor neither humans nor animals will enjoy it. Open space is a problem at this moment but can be an opportunity for the future, as there is space enough for densification, new functions, and qualitative public spaces.

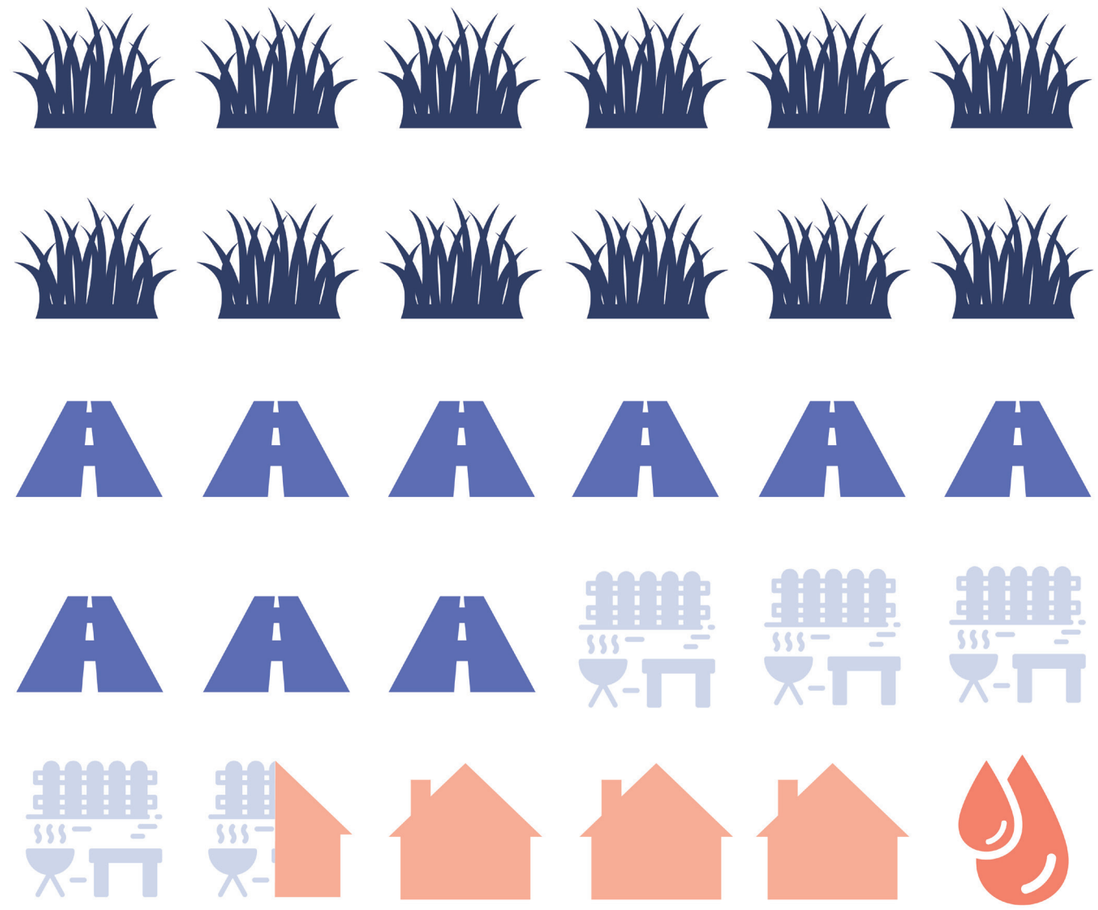


Figure 2.17 Division of land-use

Figure 2.18 Dimensions of Linkeroever

A scale-less neighbourhood

Not only does Linkeroever have a lot of open spaces without purpose, but the dimensions are also wide. The public spaces are often as wide as 150 x 150 meters. This makes them unclear, unsafe, and anonymous. The transitions between the building and public space are often non-existent and the streets are wider than they need to be. This enlarges distances and limits social interaction. The large dimensions are boundaries that divide the space. The fabric of Linkeroever is therefore not able to fulfil a connective function.

The scale is not tailored to humans but to cars. The materials used reflect this as well. Asphalt is everywhere to make transportation by car as smooth as possible. Cars do not have social interactions, so the machine-like fabric that is present in Linkeroever contributes to urban loneliness.

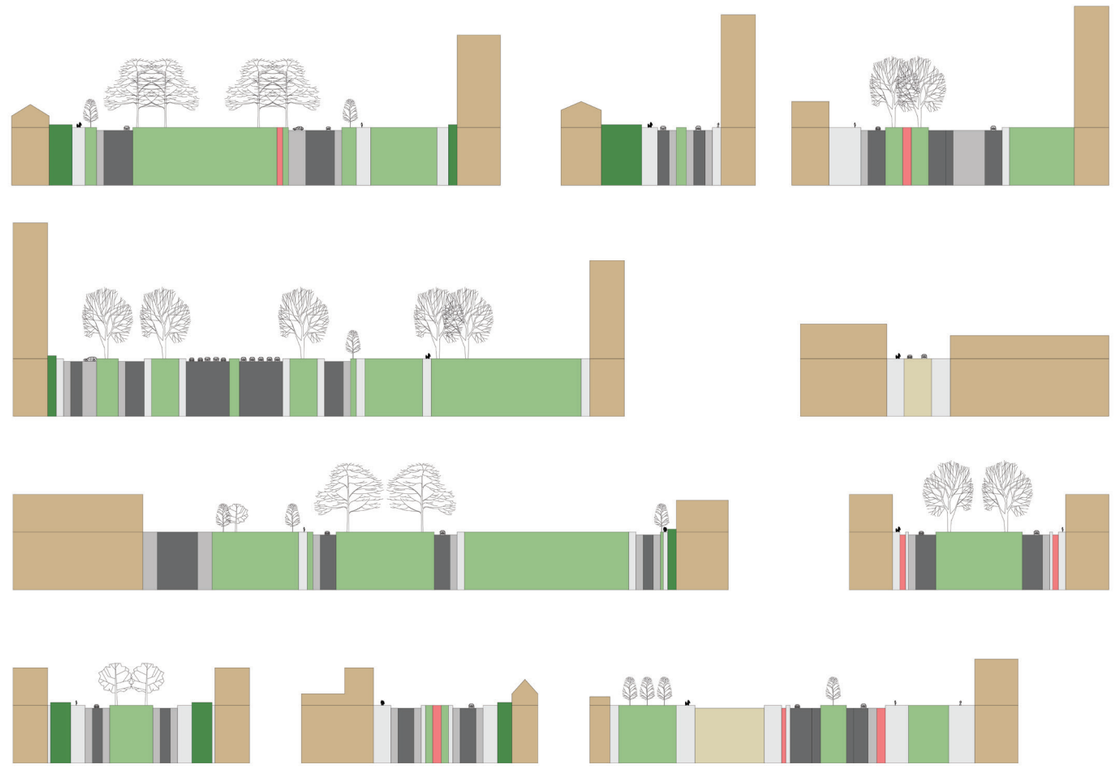


Figure 2.19 Wide street profiles

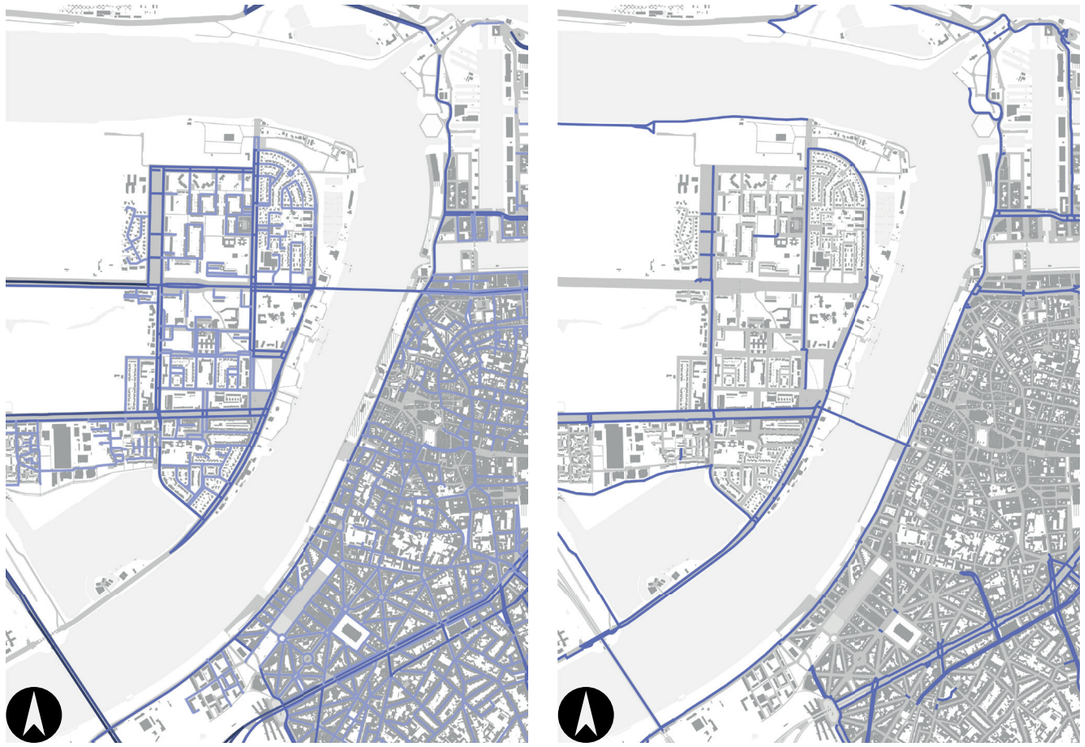


Figure 2.20 Infrastructure connections

A disconnected neighbourhood

Linkeroever is physically disconnected from the rest of the city. There are only two slow traffic tunnels, a ferry, one metro connection, and two car tunnels that connect Linkeroever to the city centre. The city wants to improve the relations between the districts and the city centre.

Mobility, public transport, is one of the main things current residents complain about. Now that the bus is no longer driving between both shores, there is only one point to cross the river by public transport. There are plans for a big multi-modal connection in the north and a bicycle bridge in the south. However, at this moment the situation segregates people on the left shore, it limits their development possibilities and can give them a lonely feeling of not belonging.

There are opportunities for better connections and synergies between left and right. The Left can offer green and recreation while the right can offer culture and social spaces. Synergies are also possible between the main shopping street on the right and a possible new Highstreet, with making and working on the left. Those axes could form thematic connections between Linkeroever and the city. It would be great if the whole city as a collective would benefit from this.

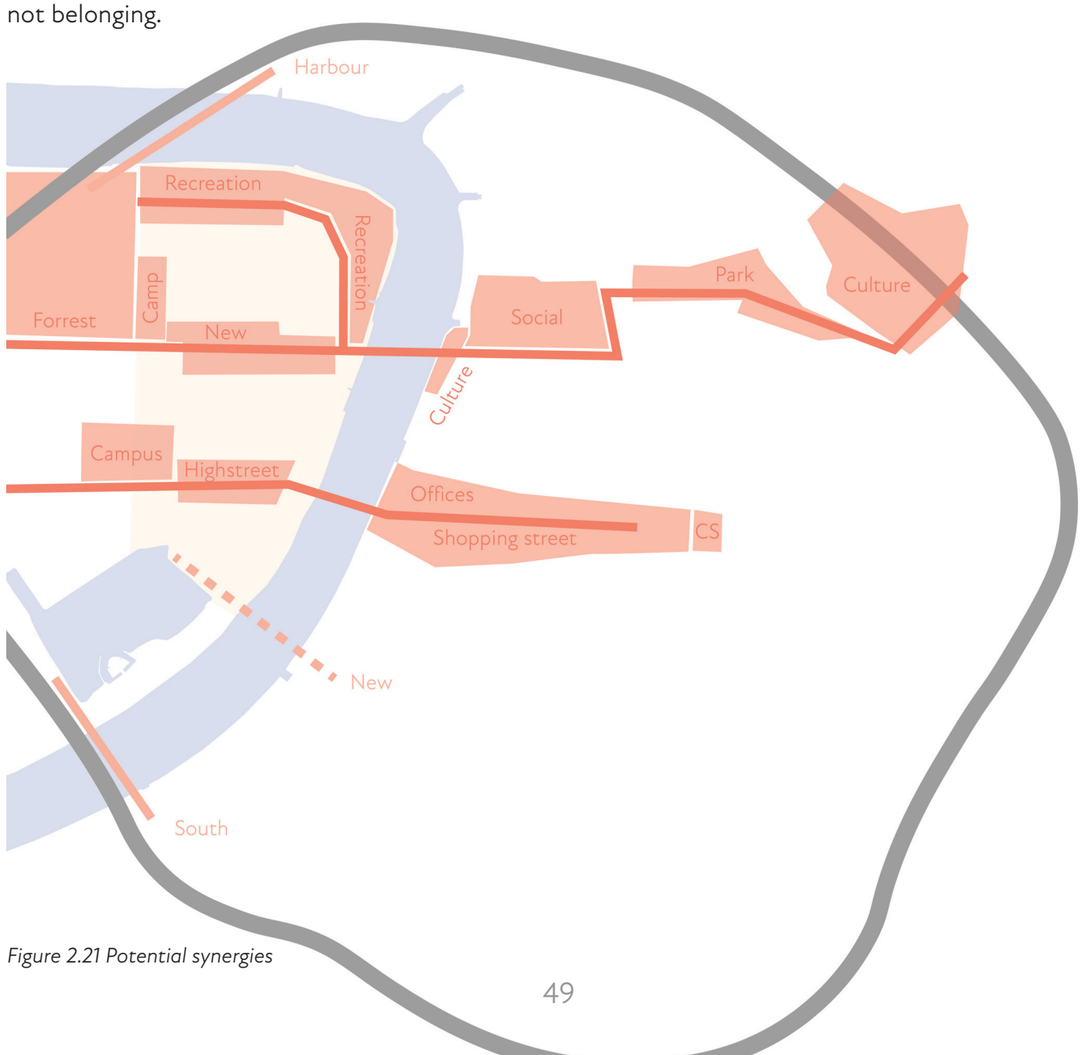


Figure 2.21 Potential synergies

2.2.3 Problem statement Linkeroever

People are feeling more and more lonely, especially in cities. This has negative effects on mental and physical well-being as well as on the economy. Feeling lonely is not just caused by internal factors like genetics and social skills, as many people think. The environment we live in contributes 52% to the feeling of loneliness. This environment is something changeable, especially for urbanists. One of the areas where urban loneliness is present and change is desired is Linkeroever in Antwerp. In this disadvantaged neighbourhood are low-income, deprivation, and non-Dutch-speaking families some of the social-economical elements that amplify urban loneliness. The monotony in typology and function, lack of qualitative amenities, insufficient collective development options, and the absence of the human scale are spatial and programmatic aspects that result in anonymity. Together with poor connections, this results in urban loneliness. Linkeroever could benefit from repurposing the large amount of open space. There are possibilities for densification, new functions, and possible connections and synergies with the rest of the city.

2.2.4 Problem scales

The problems and challenges in Linkeroever regarding urban loneliness and related fields, manifest themselves on different scales. The six scales that form the backbone of this thesis are the following.

The city scale is the largest this project will go. On the sale of Antwerp synergy, unity, densification, and connections are the biggest challenges. Linkeroever in total is the district this thesis focuses on. On this scale, human scale, diversity, open space, and connective fabric are relevant topics. The connective fabric and diversity are also relevant on the scale of the neighbourhood. On this scale, walkability, functions, and public space design are also important.

One scale smaller is the block, a collection of buildings. On this scale, typologies, social cohesion, and legible domains are challenges to tackle. The one but smallest scale is the scale of the building and the public space. On this scale, materials and transition zones become important as well as dimensions and the microclimate. The smallest scale is the doorstep. Materials and transition zones are important here as well. Appropriation, visual interaction, and a lively plinth are also relevant topics.

The largest scale of this project, on which will be designed, is the city. However, the impact might transcend this scale. Urban loneliness is a global problem, and this project can function as an example with some great transferrable design principles.

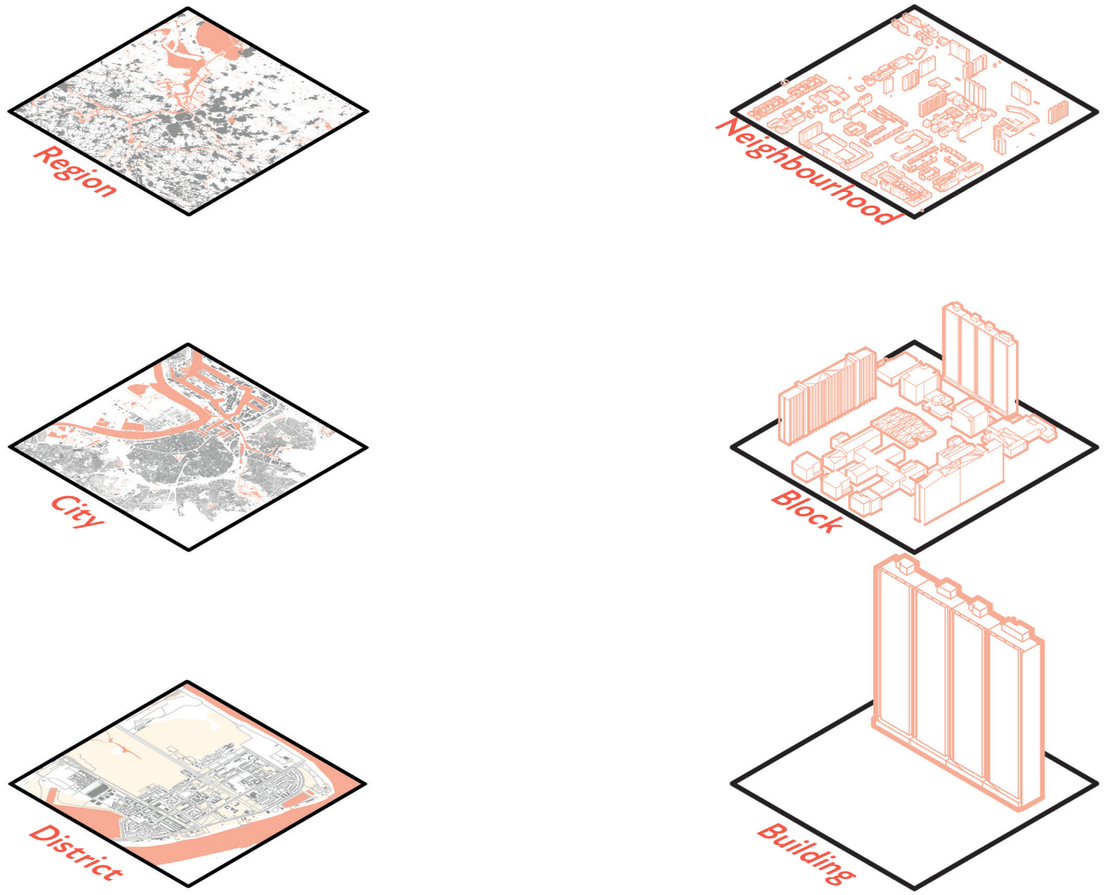


Figure 2.22 Problem scales

2.3 THE FUTURE OF LINKEROEVER

2.3.1 Future of urban loneliness

To predict the future of loneliness, the past can be a great tool to understand trends. The Netherlands is one of the few countries with reliable historic data regarding the feeling of loneliness and the culture is like Flanders. Between 2012 and 2020 a steadily increasing trend is visible as shown in figure 2.23 (de Staat van Volksgezondheid en Zorg, 2020). The data of social contacts for Antwerp and Linkeroever show a similar trend, however with a dip in 2016, figure 2.24 (stadincijfers.antwerpen.be, 2019). These statistics support the current discourse of rising (urban) loneliness.

Something that is easier measurable than loneliness is the amount of single-person households. As discussed before this is about being alone and not feeling alone. However, when someone is alone the change is bigger that they feel alone as well. So, while we should be critical of the meaningfulness of these statistics, the message is clear. Worldwide, single-person households are more prevalent now than ever, figure 2.25 (Ortiz-Ospina & Roser, 2020). Antwerp and Linkeroever are exceptions to this global trend. Here the percentage of single dwellers has decreased by approximately five percentage points since 2006, as shown in figure 2.26 (stadincijfers.antwerpen.be, 2022). So, while the global data points towards a more individual-dwelling society, this is not necessarily the case in Antwerp.

During the Covid-19 crisis, loneliness numbers skyrocketed globally, figure 2.27 (Hartman, 2022). Loneliness increased by up to 224% in some age groups. Events like these are hard to predict. However, it is likely that there will be a new pandemic in the future. How prepared we are and how we react will have a big influence on the future of urban loneliness.

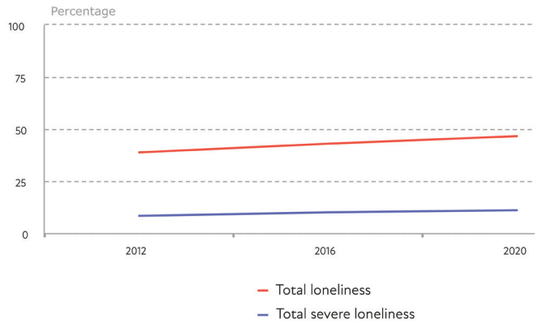


Figure 2.23 Trend on loneliness in the Netherlands (de Staat van Volksgezondheid en Zorg, 2020)

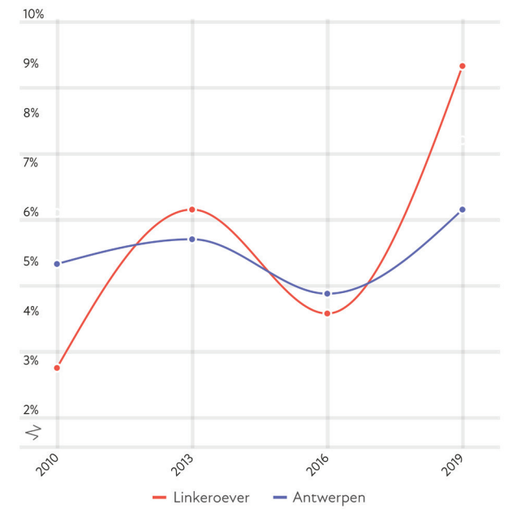


Figure 2.24 Trend on loneliness Antwerp (stadincijfers.antwerpen.be, 2019)

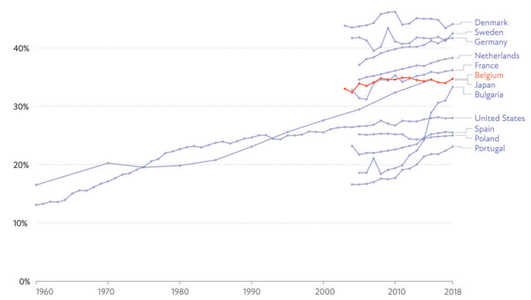


Figure 2.25 Percentage of one-person households (Ortiz-Ospina & Roser, 2020)

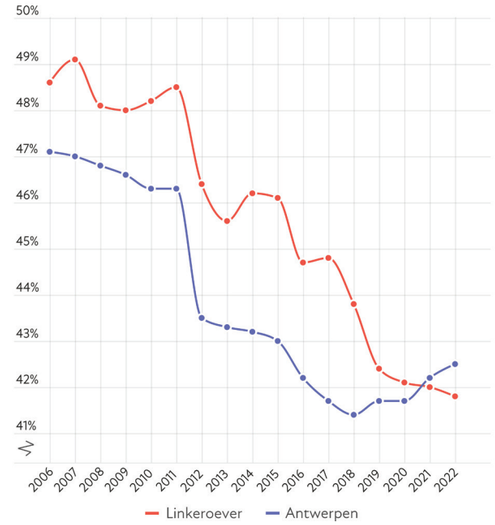


Figure 2.26 Trend on one-person households Antwerp (stadincijfers.antwerpen.be, 2019)

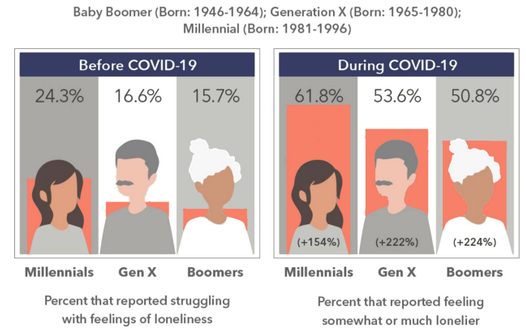


Figure 2.27 Effect of covid-19 on loneliness (Hartman, 2022)

The use of social media has grown in recent years among young adults up to a point where it is a big part of their daily life. Some are worried that the time spend in front of screens replaces time spent in face-to-face interactions and therefore enhances loneliness (Yavich et al., 2019). Others state that it is surprising that the current generation may be the loneliest ever because social media enhances interconnectivity (Pittman & Reich, 2016).

Research cannot seem to agree. Pittman and Reich (2016) state that image-based social media may decrease loneliness, while happiness and satisfaction with life may increase. Yavich et al. (2019) argue that there is no significant link between social media use and loneliness. O'Day et al. (2021) indicate that lonely people may use social media to find social support and compensate for a lack of in-person relationships. If this helps the lonely persons or drags them deeper into the lonely feeling is not clear to them. Hunt et al. (2018) on the other hand present a study that showed significant reductions in loneliness and depression by limiting social media use. So, what effect the still-growing influence of social media is on the future of urban loneliness is not completely clear. It can have both a positive as well as a negative impact.

Robots are also something to consider if we want to predict the future of urban loneliness. Can they replace human social interactions? Research on the elderly by Gasteiger et al. (2021) showed that robots have a positive impact on loneliness most of the time. Overall, the robots helped to counter loneliness by "acting as a direct companion (69%), a catalyst for social interaction (41%), facilitating remote communication with others (10%) and reminding users of upcoming social engagements (3%)" (Gasteiger et al., 2021). So, if used well robots could result in a future society where loneliness is less prevalent.

To conclude, the current trend of growing urban loneliness will most likely continue if nothing changes. This might be exaggerated by future pandemics or social media. Increased urban loneliness is not the only scenario, but it is the most probable if nothing changes. With changes like robots, but moreover changes in the physical environment we might be able to reverse the trend and decrease urban loneliness. This future is possible and desirable, so we must attempt to realise this future.

2.3.2 Future projects Linkeroever

The future of Linkeroever is not only shaped by the future of urban loneliness. Planned or ongoing projects shape the context that influences the future of Linkeroever and should therefore be considered in this thesis. These projects include; Scheldeboorden Linkeroever, Europark, De grote verbinding, and De Scheldebrug (antwerpenmorgen.be, 2022).

Scheldeboorden Linkeroever is a huge project involving the estuaries of the Scheldt river, figure 2.28. The Scheldt is a tidal river and due to the sea level rise, the protection needs to be improved. This project is part of the large **Sigmaplan** involving all cities along the Scheldt river. After the elevation of the estuaries, the city of Antwerp will construct a new six-kilometre-long green pedestrian promenade along the Scheldt. **Sint-Anneke Plage** will be a special part of the promenade. Situated in the north, this area will become the recreational hotspot it used to be.

Project **Europark** will create a new future for the heart of Linkeroever. The social housing will be renovated, and the city will invest in the landscape and public space in this residential area to stimulate a sustainable transformation of the neighbourhood. If these measures are sufficient to counter urban loneliness remains to be seen. If necessary, additional measures will be proposed in this thesis. Demolishing some buildings is not unthinkable for me.

De grote verbinding, translating to the great connection is a big project concerning the closing and roofing of Antwerp's ring road, making Linkeroever better connected. The masterplan is shown in figure 2.29. The parks that will cover the ring road are an important part of **Het goenplan** (the green plan) for the city. The green areas in the city will be better connected and of better quality. This also applies to the natural areas in Linkeroever. **De Scheldebrug** (Scheldt bridge) is also a part of the great connection but is now planned in an inconvenient location for pedestrians and cyclists who are supposed to make use of it. The current location leads from nowhere to nothing, figure 2.30. If the bridge suits my design better in a different location, I will not hesitate to move it

Figure 2.28 Masterplan Scheldeboorden (antwerpenmorgen.be, 2022)

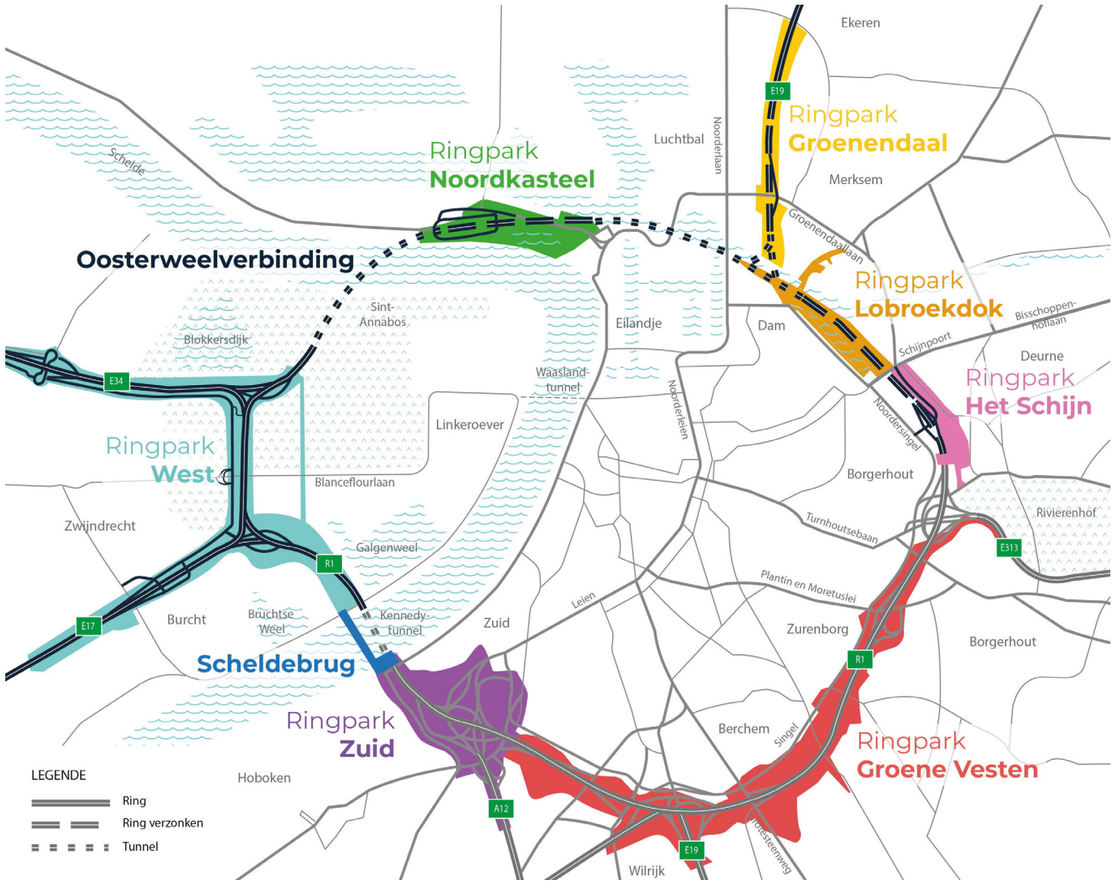


Figure 2.29 Masterplan De Grote Verbinding (antwerpenmorgen.be, n.d.)

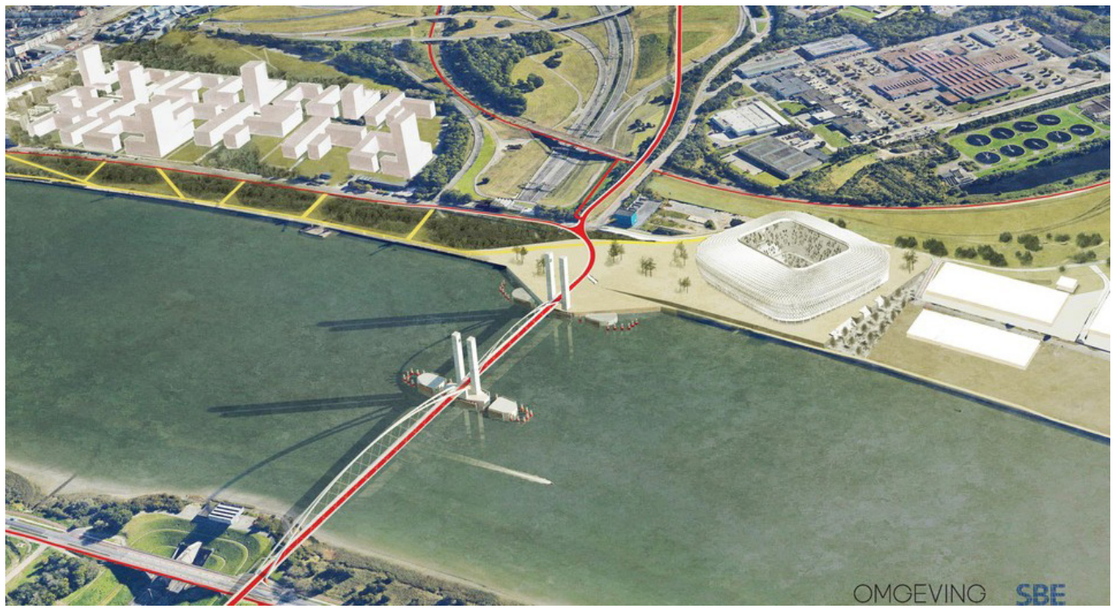


Figure 2.30 Design for Scheldebrug (van Wiele, 2020)

03 URBAN ELEMENTS OF LONELINESS

3.1 Personal & collective development

3.1.1 Synergies 58
3.1.2 Amenities 66
3.1.3 Connective fabric 72

3.2 Social cohesion & social interaction

3.2.1 Place attachment 76
3.2.2 Social interaction 84
3.2.3 Social fabric 88

3.3 Legible human scale

3.3.1 Domains & privacy script 96
3.3.2 Dimensions & materials 106
3.3.3 Local fabric 112

3.4 Design framework

3.4.1 Design principles 116
3.4.2 Design framework 120
3.4.3 Use of framework 120

In this chapter, the question, of how to design against urban loneliness is central. Synergies and better public transport can help to establish a sense of belonging. Amenities and public functions attached to public spaces stimulate purposeful interactions. A diverse offer of public space means that there is a place that suffices the needs of all the different personalities, resulting in widespread place attachment. Hybrid spaces, mixed ownership, and natural public spaces improve a feeling of place attachment as well. Low and small building forms result in manageable community sizes where contact with neighbours happens more naturally. Hybrid zones, open plinths, and a clear hierarchy help with establishing a clear privacy script where it is easy to choose more or less privacy and social interaction. Smaller streets with small-scale materials make it more attractive to go outside. This new fabric offers people places to develop themselves and connect with others, all in an environment that is easy to navigate and inviting.

Figure 3..1 Alone in a field of grass

3.1 PERSONAL & COLLECTIVE DEVELOPMENT

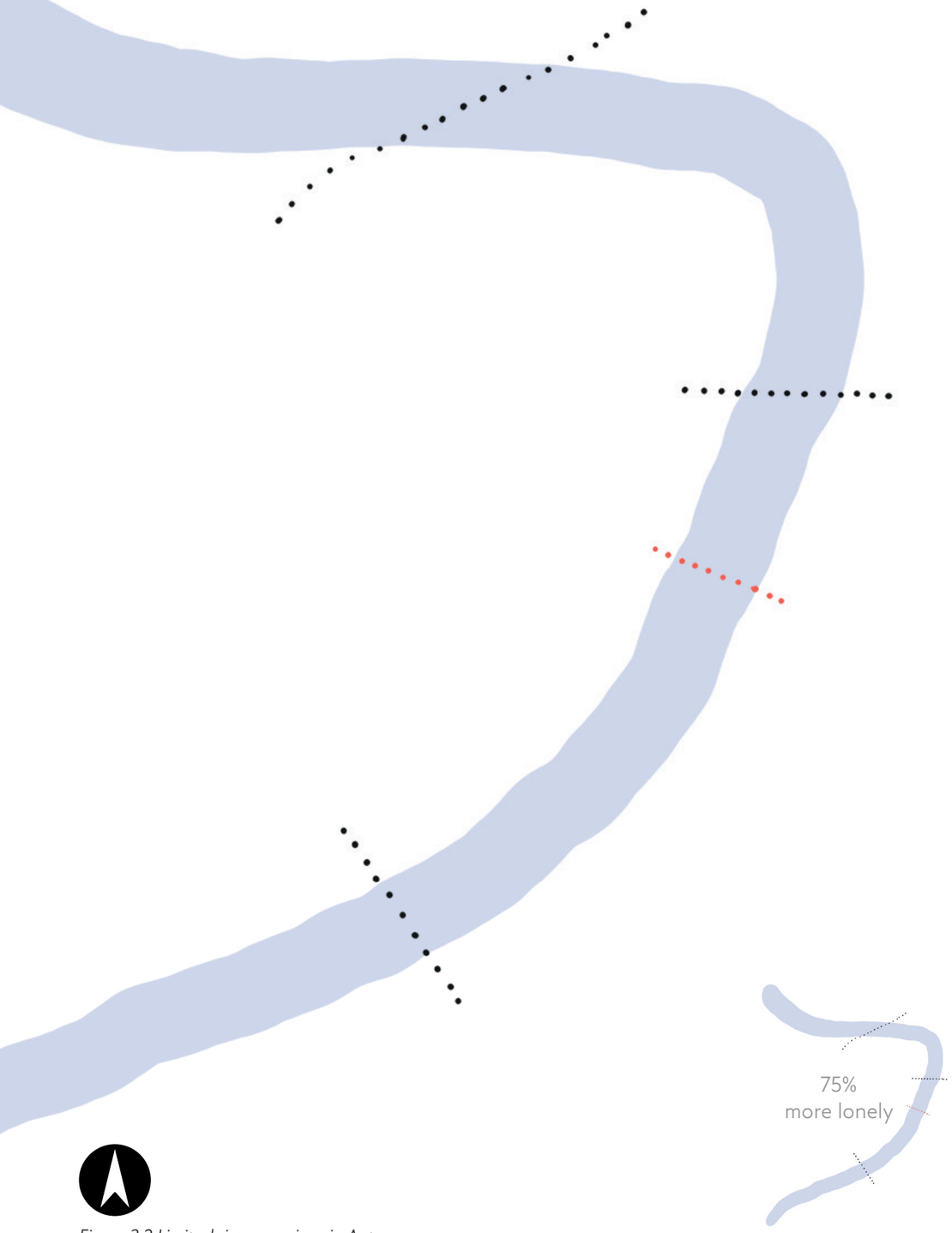


Figure 3.2 Limited river crossings in Antwerp

Figure 3.3 River crossing in European cities

Personal and collective development entails the opportunity for people of all ages and backgrounds to grow as a person and as a collective. This way they can reach the highest point of Maslow's hierarchy of needs (Mcleod, 2018). To facilitate personal and collective development there need to be spaces and corresponding program that stimulates this. These spaces need to be accessible to all people.

3.1.1 Synergies

Current connections

Antwerp as a city has plenty of spaces where personal and collective development is stimulated. However, most of these facilities are in the city centre and surrounding neighbourhoods, not in Linkeroever. This means that people from Linkeroever must cross a physical and mental barrier to make use of these places. The same is true for people on the right shore who want to make use of the recreational and natural spaces Linkeroever has to offer.

Current connections are limited and of poor quality. There are two connections for cars and a third one planned, this is not bad, but the car is not sustainable for trips within the city. There is only one public transport line connecting the left and right. This is in the lower half, making it inaccessible by foot for half of the population. For slow traffic, there are two tunnels and a ferry. The tunnels have a limited elevator capacity for bikes and the ferry has waiting times and limited opening hours. There is one bridge planned for slow traffic, but at the proposed location it would connect nothing to nowhere.

Compared to other European cities, Antwerp has few river crossings (figure 3.3). Most cities have more connections and higher quality connections like bridges. Paris and London are exceptional, even cities like Amsterdam, Rotterdam, and Copenhagen all have more connections. The difference in loneliness between the shores in these cities is also less.

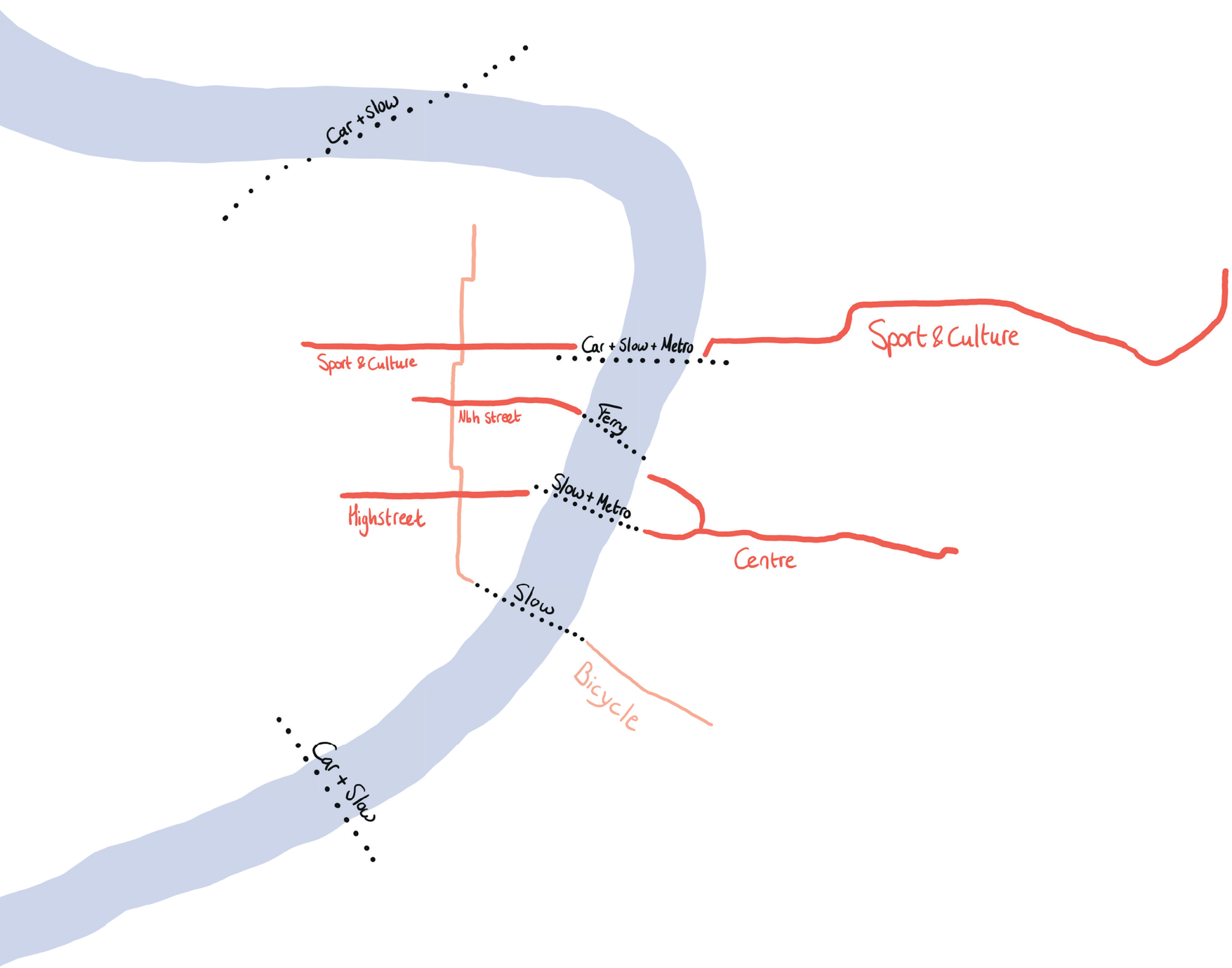


Figure 3.4 Possible synergies

Possible synergies

To give people from Linkeroever better access to growth opportunities, there are two options. One is to provide better connections between both shores of the Scheldt river, and the second option is to have more amenities for development in Linkeroever. Both options will be explored and could strengthen each other.

Better connections are the first option. Extra physical connections are great but become even more valuable when they connect both sides in such a way that the left and right benefit from them. This is called synergy. Linkeroever has nature, recreation, and space to offer. The right shore has a city centre with shopping streets and social hangout spots, cultural functions, and a lot of jobs.

There are two great options for synergies, one in the north and one in the south. The northern axis could facilitate development options regarding sport, recreation, and culture. To make this happen the urban fabric must change in Linkeroever. The connection that is currently there will not suffice as it only allows car traffic. Therefore the function needs to be changed to allow a new metro line and slow traffic. If this is not possible in the current tunnel, a new connection must be established.

In the south, the Sint-Anna tunnel can connect the city centre with a new Highstreet on Linkeroever. The courtyard typology that is already present is a great fit for makers and the creative industry. One might think that moving the ferry connection to this axis is a great idea, but I disagree. If the ferry stays where it is, the Louis Paul Boon Straat could be extended towards the water and become the heart of Linkeroever. The ferry connects this less public axis with the city.

The final question is, where should the slow traffic bridge go? As is limited to the southern half of Linkeroever due to cruise ships, I argue that it should focus on connecting high-quality bicycle infrastructure on both sides. The location drawn in figure 3.4, is in my opinion most suitable.

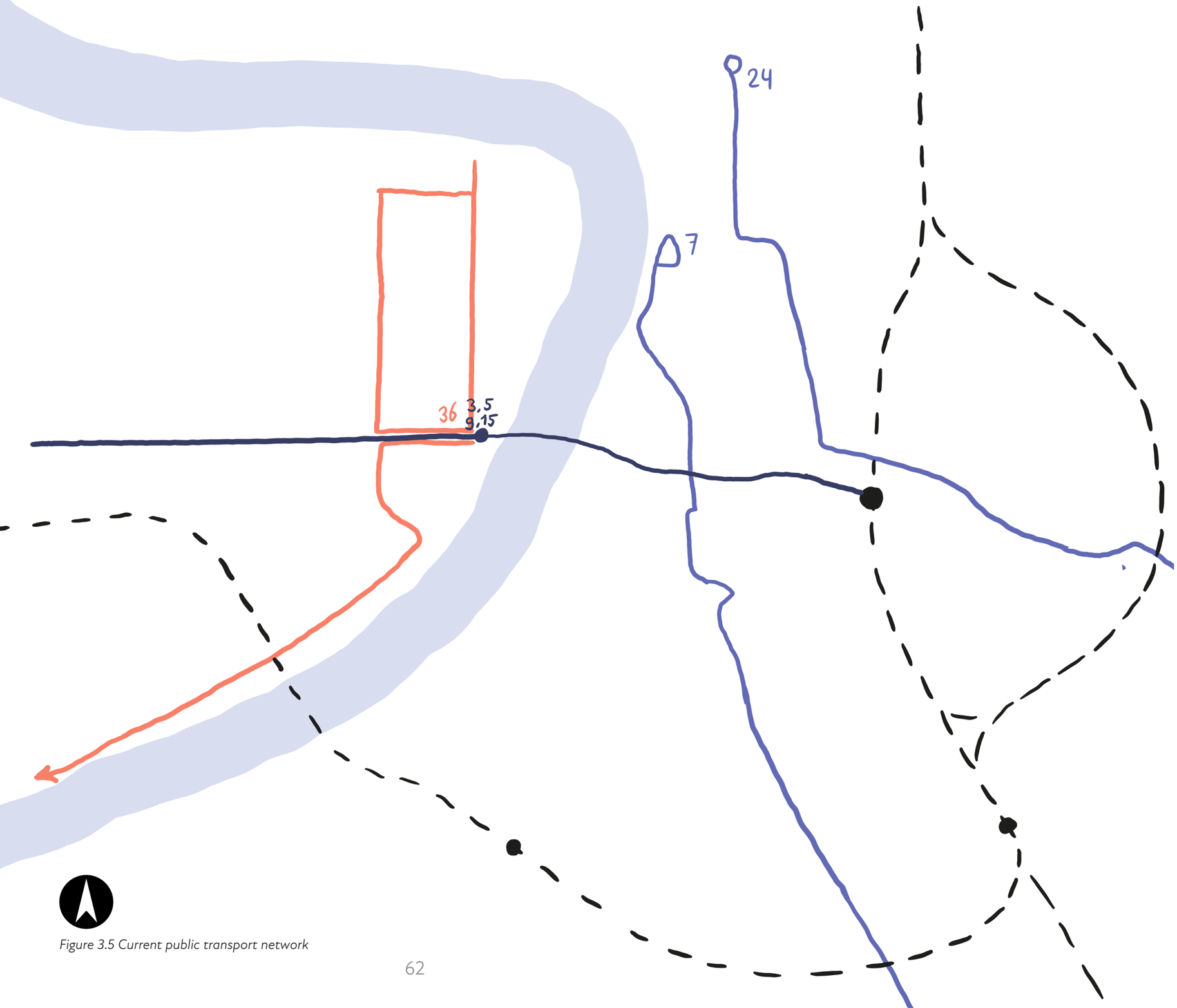


Figure 3.5 Current public transport network

Current mobility network

When I spoke with residents the main complaint was about mobility. Linkeroever is connected with the rest of the city by the pre-metro. It enters Linkeroever at Frederik van Eedenplein in the south and goes to three different locations on the right shore. The “hub” at Frederik van Eedenplein is exemplary for Linkeroever. It is neglected, made for cars, and grey.

From this hub, the busses also depart. Some of these busses go to neighbouring municipalities in the south, but the most important is line 36. This line makes loops around Linkeroever, functioning as a collector for the metro but also as a connector for functions within the district. The people I spoke to, were bummed that this bus does not stop near the facilities for the elderly anymore. These facilities are nicely clustered and have a bus stop in front, but no service nowadays.

A better mobility plan is required if Linkeroever wants to become part of the city. It is also necessary to transport more people to locations where they can develop themselves. Mobility is vital to make the synergy axes a success and in countering urban loneliness.

Improved mobility network

I propose to continue tram line 24 towards the northern part of Linkeroever. It should be turned into a (pre-)metro and connect the northern axis with the city. Line seven will run the route of line 24 in the area Het Eilandje, this way no stop disappears. Line three, running through the south of Linkeroever will continue all the way to the train station of Zwijndrecht. At Frederik van Eedenplein a worthy mobility hub will be built, giving Linkeroever an icon to be proud of.

The bus is a more challenging issue. It is fine that the bus does not connect left and right, as the metro is now more accessible. So, the main goal of the bus is to connect the hotspots within Linkeroever. The bus could keep its current route that is efficient and has everything within 500 meters of walking, or the bus could adopt a new route and zig-zag through the axis stopping right in front of most of the amenities. A drew the current route in the big transportation map, figure 3.6, because I think it is the most realistic. The zig-zag route is shown in figure 3.7 as an alternative that is still an option.

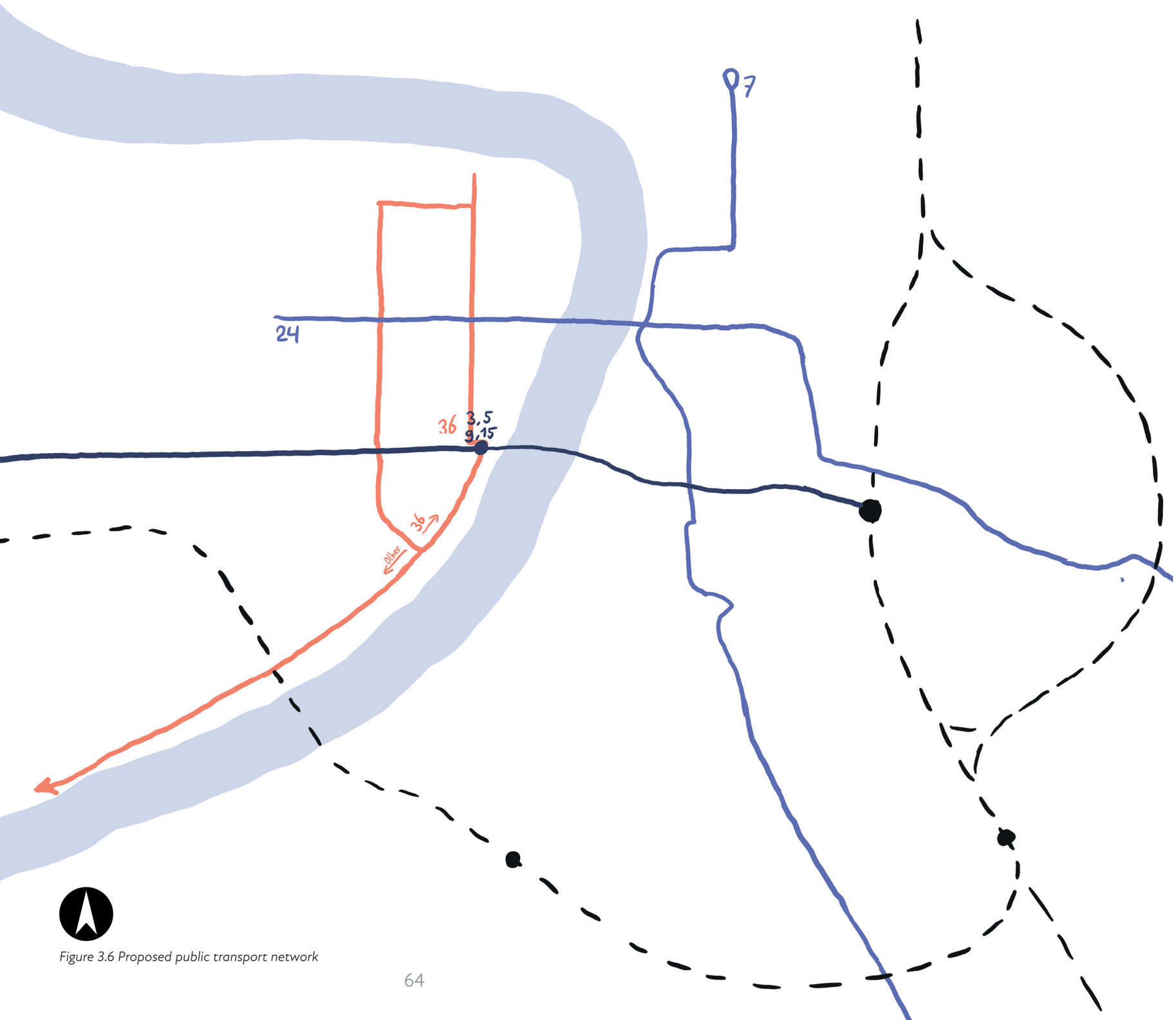


Figure 3.6 Proposed public transport network

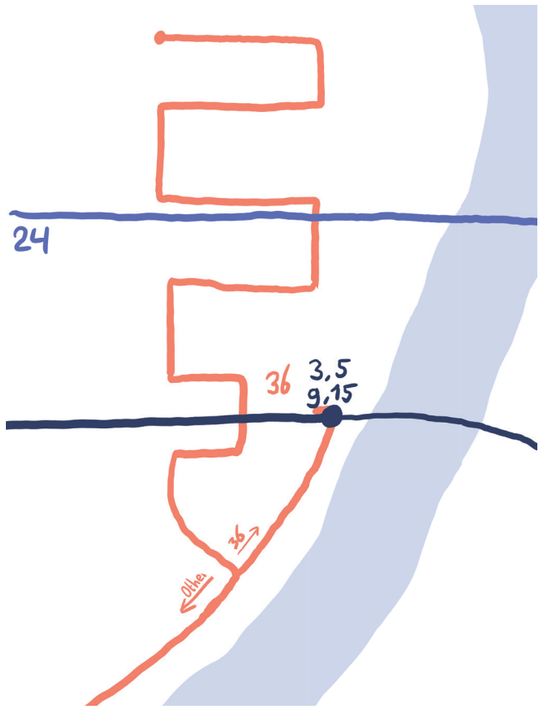


Figure 3.7 Alternative bus route

Figure 3.8 Social amenities

10
comunity

15
educational

50
amenities

10
sport clubs

3.1.2 Amenities

Second spaces, like work and school, and third spaces, like bars, (sports)clubs, small businesses, and libraries, are key elements of individual and social well-being (Goosen & Cilliers, 2020) and are vital locations for personal development. It is already an improvement if the facilities on the other side of the river are more accessible, but it would be even better if the amenities are located within Linkeroever itself.

The second spaces include work and school. Schools are there enough now in Linkeroever. If the population grows more schools are desired as well as a modernisation of current ones. In Linkeroever there are approximately 5.000 jobs available, while the workforce counts 10.000 people. This means that half of the people must leave Linkeroever for work. It would be great if more people could work within their neighbourhood, developing their skills and contributing to the community.

Third places are arguably more important as they are places where one can develop as a person in their free time. A third space is a location away from home, work, and school. People talk, socialize, and participate in activities. Third places are well-personalised and recognisable places with great permeability to the street where seating and shelter are crucial characteristics that contribute to sociability (Mehta & Bosson, 2010). Linkeroever does not have enough third places. For example, the people there told me that the three community centres are not enough. Moreover, the community centres for adults and youth are separated, missing opportunities for synergies. There are some sports clubs in Linkeroever, but cultural places are missing. Bars and other places to socialize are hardly there.

Figure 3.9 Proposed amenities network

15
comunity

20
educational

100
quality
amenities

15
sport clubs

Proposed additions

To deal with the existing backlog and the assumed population growth to 28.000, Linkeroever needs to invest in second and third spaces. The number of elementary schools would need to grow from eight to fourteen, the number of high schools can stay the same at four if they modernise and expand a bit, and one location for higher education should be added. Higher education could be focused on the maritime industry and form a maritime campus.

There are now 5.000 jobs in Linkeroever which is sufficient for almost 30% of the population. The average in Antwerp is one job for every two residents. This number is maybe not realistic for Linkeroever, which has relatively more elderly. A total of 12.000 jobs, 43%, would be a great goal. Making and creative industries could have their place along the new Highstreet, while maritime companies could benefit from proximity to the maritime campus. Furthermore, community entrepreneurship should be stimulated, but more on that later.

Linkeroever reportedly has almost 100 hospitality places like bars and restaurants. Only a few have a role as a social hideout. If it wants to meet the city average and handle the population growth, 200 extra locations are desired. This seems like a lot. In my opinion, quality is more important than quantity, so if every neighbourhood has a few places they can go to, it is fine. Corners of blocks are perfect locations for social spots like these.

Sport is well represented but should grow along the north axis, a future sports axis on a city level. Culture is non-existent and plays a big role in personal and collective development. Several locations should therefore be added at strategic points. Finally, community centres are the glue of society. Therefore, there should be at least one in each of the five neighbourhoods. Three community centres located along the three axes specifically for the youth should help them connect.

Figure 3.10 The few local entrepreneurs in Linkeroever

Figure 3.11 Community entrepreneurship in Rotterdam (MVRDV, 2020)

Community entrepreneurship

An important part of personal and collective development is to be able to start your own business or start a business together. A strong community needs entrepreneurs and entrepreneurs need a strong community. Communities and neighbourhoods can be interrelated but do not always overlap. Communities can be bigger than a neighbourhood or can only exist of a specific group within a neighbourhood. How big or how small the communities and neighbourhoods might be, it is always beneficial for the local economy to have local entrepreneurs.

Entrepreneurs not only foster local economic networks but also local social networks between business partners and customers. Networks might exceed the neighbourhood. There are citywide or even regional communities of entrepreneurs with the same practice. Being able to follow your passion and become an entrepreneur in a specific field can make a person feel part of a guild, resulting in a feeling of belonging and therefore helping to counter urban loneliness.

Other benefits of these local entrepreneurs are that they help to get young people out of unemployment and into work. They can also help to educate people and develop their skills. These local entrepreneurs are therefore not only important for their own development but also for the development of the next generation.

In Linkeroever there are at the moment not many places where entrepreneurs can start their own businesses. When this district will be redeveloped there must be sufficient affordable spaces for entrepreneurs, in places with high traffic. Recent worldwide examples have shown that when local entrepreneurship is not part of the revitalization plans, aims to strengthen local opportunities for employment or decrease levels of social isolation have failed (van Ham et al., 2017).

More and more people are self-employed nowadays. Many of these self-employed workers use their home as their workplace. For them, their homes must support this way of living and working in one place. The public domain around their home should facilitate small interactions that would normally happen at a coffee machine in an office. They should have places where they can network or meet with fellow self-employed people or clients. For these people home is the same place as work, therefore the risk of isolation and loneliness is bigger. Having a place outside of the house where they can go to socialise is extra important for them.

Besides the more well-known commercial entrepreneurs, there are also community-based social enterprises. According to van Ham et al. (2017), this kind of business can take over the management of formerly state-provided services or facilities, help to combat poverty and support the bottom-up regeneration of deprived neighbourhoods. They can do this alone, together with local governments, or in opposition to local authorities. Bottom-up community-based entrepreneurial activities are often seen as a local solution that can fill the gap that local authorities failed to close.

In conclusion, entrepreneurship is considered a key element in enhancing local economic development through job creation and increased productivity, as well as ensuring greater social inclusion. So, in Linkeroever there should be more spaces that local entrepreneurs can use. In this way, the entire district can grow and develop as a strong collective.

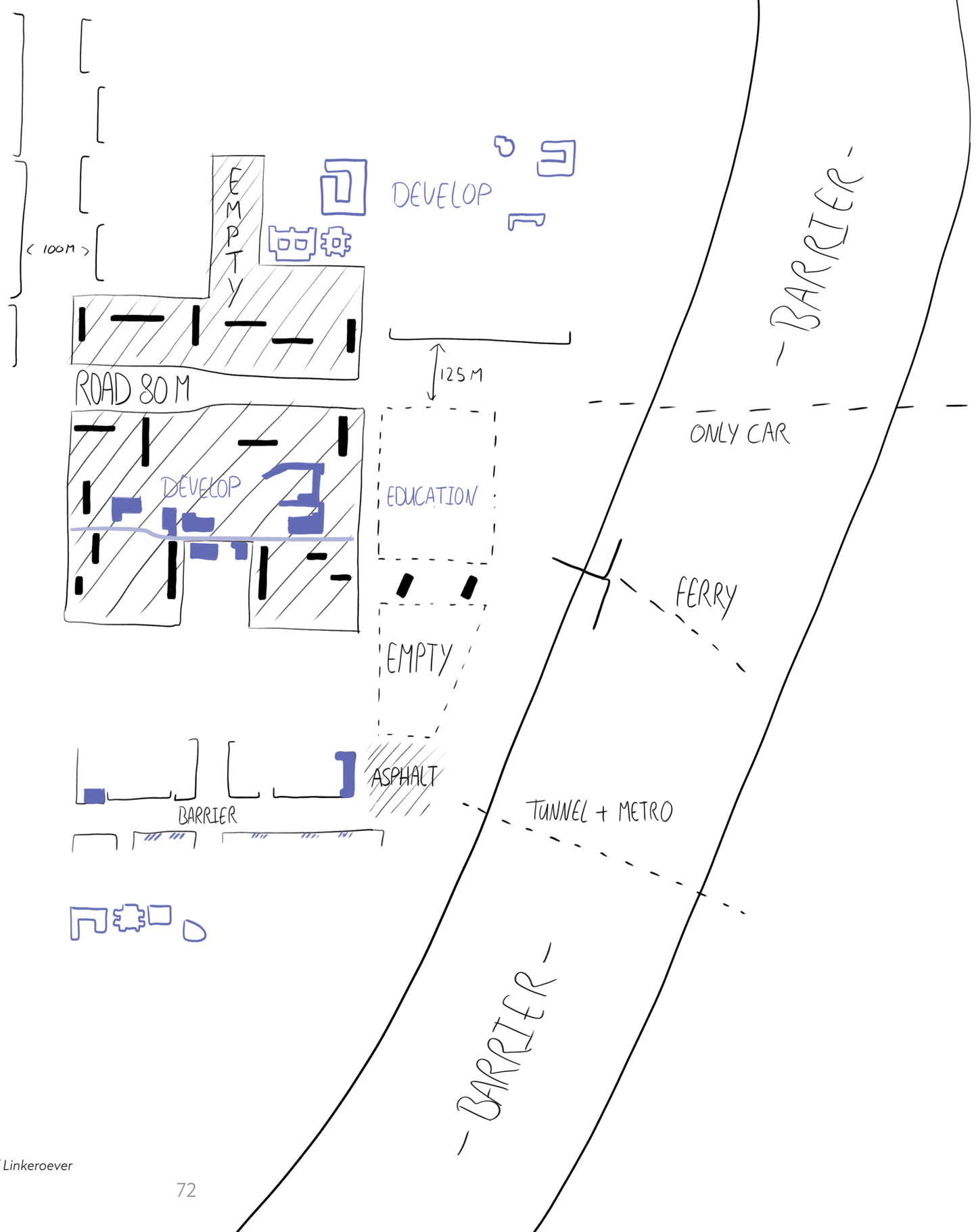


Figure 3.12 Large scale fabric of Linkeroever

3.1.3 Connective fabric

Large scale fabric

To stimulate personal and collective development two things are of main importance. First, there need to be places which have a function that stimulates people to develop their skills. These can be second spaces like work or school but also third spaces like sports clubs or community centres. Secondly, these spaces need to be accessible. People need to be able to get to those spaces, also people who are more vulnerable and do not have a car for example. These amenities do not only need to be accessible physically but also economically. People from all classes of society should be able to develop themselves, therefore these spaces should cost little to no money. When both criteria are met, it means that there are opportunities for everyone to develop themselves, both individually as well as in a community.

The urban fabric in Linkeroever is limiting people on both criteria. There is little to no public programme that facilitates development. The few places that are there, are poorly accessible because the distances within the district are too big. For personal or collective development people from Linkeroever are dependent on spaces elsewhere in the city. This is not ideal, but the poor public transport and bicycle infrastructure make it even worse. Development spaces are inaccessible to these people. So, the urban fabric of Linkeroever limits personal or collective development and therefore people have less purpose, less meaningful social interactions, and are in the end more lonely.

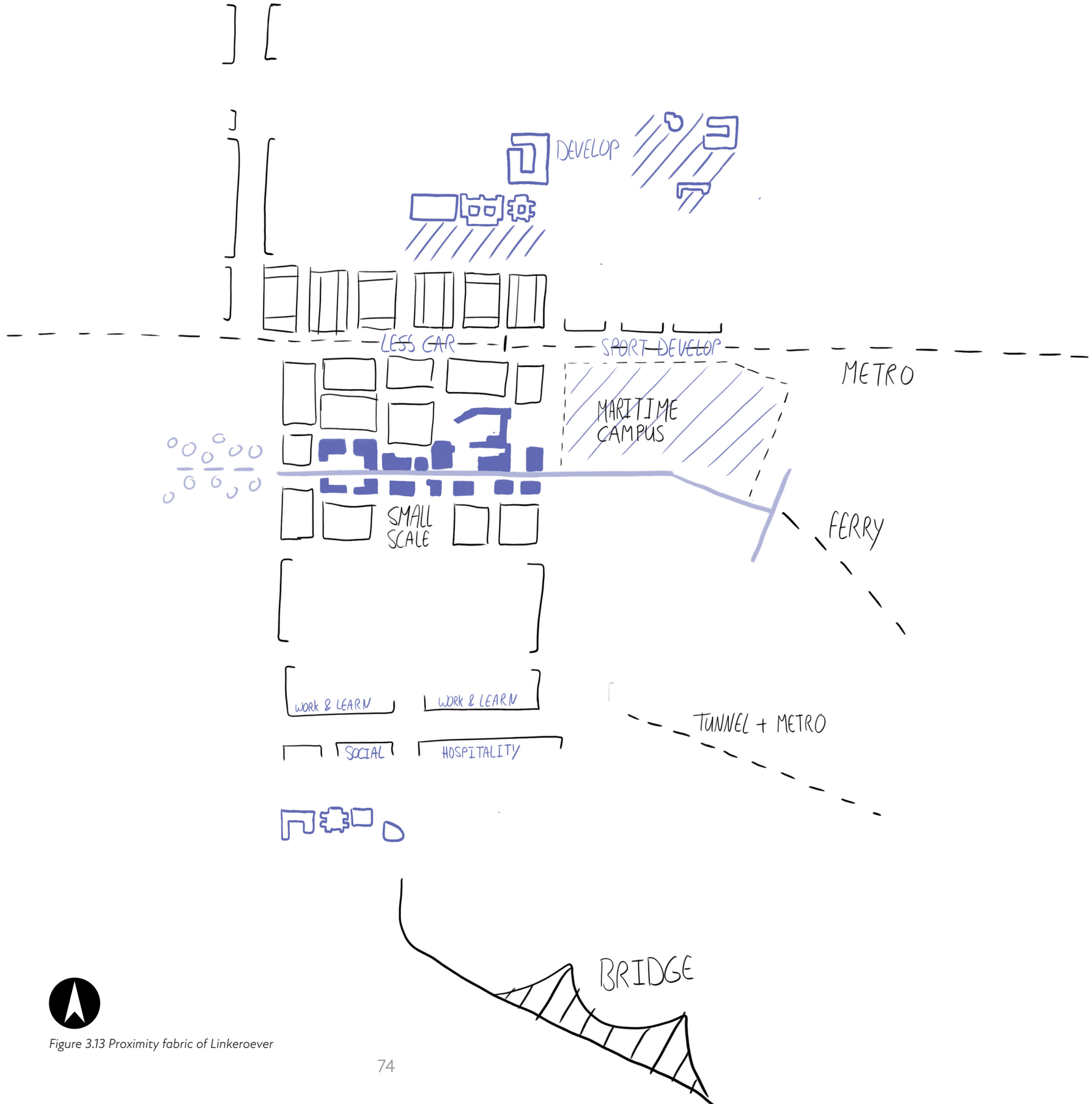


Figure 3.13 Proximity fabric of Linkeroever

Proximity fabric

To stimulate personal and collective development in Linkeroever, the urban fabric needs to change. Despite Linkeroever being a mainly residential area, it still has sufficient density to accommodate more amenities. Especially when the number of inhabitants will grow in the coming years. Linkeroever will not only needs more opportunities for personal and collective envelopment but also amenities of a higher quality.

Besides increasing the offer and diversity of amenities it is also important to make them more accessible. Within the district, placing buildings close together and prioritising slow traffic over cars make these places more accessible. Because Linkeroever will still lack some high urban functions, better connexions between both shores are necessary. Better connexions by public transport or by bicycle will bring both sides of the city closer together and therefore allow everyone to make use of amenities that their district cannot offer. This will result in an urban fabric that prioritises proximity and synergies. Only in this way, personal and collective development can be stimulated and urban loneliness can be countered.

Key projects to make this new fabric a success are a new bridge for slow traffic, an extra metro line in the north, and the three thematic axes on the left shore. Together with more public program, these measures will help to bring down urban loneliness by stimulating personal and collective development.

3.2 SOCIAL COHESION & SOCIAL INTERACTION

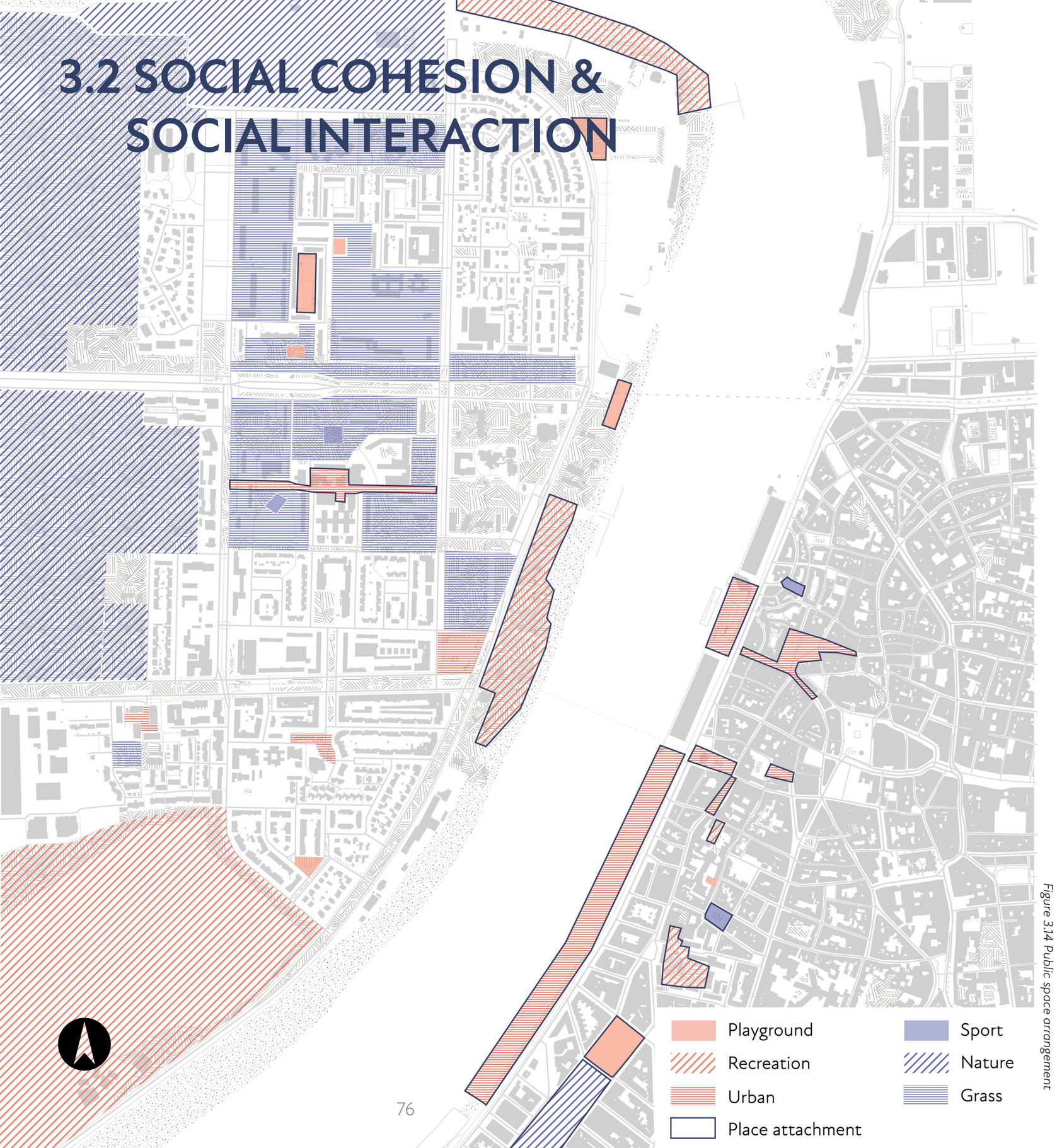


Figure 3.14 Public space arrangement

3.2.1 Place attachment

Place attachment can be described as a positive emotional connection between people and their environment (Peters et al., 2010). It connects people to a place, and therefore to other people who connect to that same place. This contributes to social cohesion in an area. Research in a residential neighbourhood in the United Kingdom proved that there is a positive correlation between place attachment and social cohesion (Forrest & Kearns, 2001).

Public space

Public spaces can help to connect people to the location they live in. Research by Peters et al. (2010) focuses on urban parks and place attachment. I think that some of the lessons from this research are transferrable to other urban public spaces as well. The first result is that urban parks do more for place attachment than larger natural areas. They have a more inclusive character and therefore connect with a more diverse range of people. A nice view from an urban park, or another public space, invites people to sit down and stay longer, thus creating a better connection with the place. Slopes limit cycling and sport, which are connection activities for some but stimulate sitting and meeting, which are activities for others. A diverse mix of types of public spaces serves as many people as possible and gives therefore more people the opportunity to bond with the location. A public space with an open character allows for all kinds of activities. Public spaces in Linkeroever are not that diverse and inviting, figure 3.14, but they have the potential to become great catalysts for place attachment.

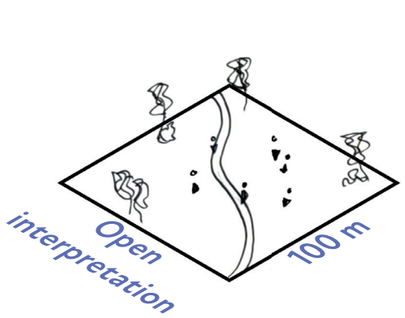
People do often go to a public space not to meet strangers, but rather to meet with people they already know (Forrest & Kearns, 2001). When you frequently run into their neighbours who connect to the park as well, they will not be strangers anymore. When a public space is well embedded in a neighbourhood people will even treat it as their back garden. This is a sign of great place attachment.

Public space for everyone

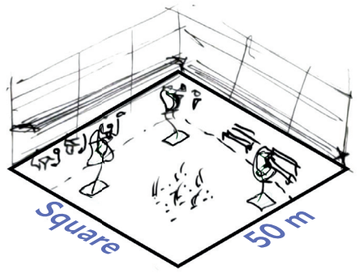
People have their preferences, also when it comes to public space. Some people prefer a quiet park, while others enjoy an active skatepark. To accommodate the plurality of current and future residents, Linkeroever should diversify its public space offer. When there is a public space for everyone to connect to, place attachment will improve. So, diverse public space plays an important role in countering urban loneliness.

In figure 3.15, sixteen different public spaces are visualized and assessed. This figure gives a great overview of the possibilities regarding public space. Some public space typologies like the path, nature, open interpretation, playground, sport, and park are already present in some form. However, their presence does not necessarily mean quality, as dimensions are often too big, they are not part of the urban fabric, or they are badly maintained.

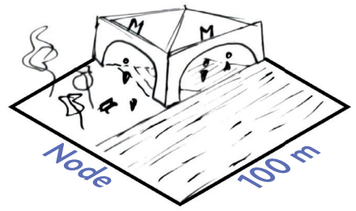
Backyard parks which play an important role in connecting with your specific location and your neighbours (Peters et al., 2010) are one of the public space types that are currently missing. A second type of public space that is lacking and could play an important role in the new Highstreet is a public space that is designed specifically to spend your lunch break from work or school. This second space-related public space can make working in the area more attractive and bring small entrepreneurs together. These public space typologies function as an inspiration to diversify the public space offered in Linkeroever.



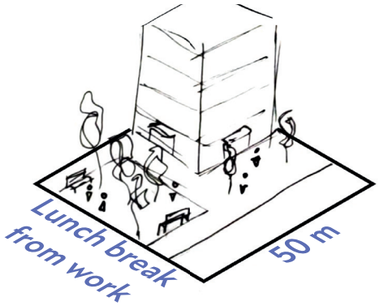
+ Attracts a diverse people
- Anonymous



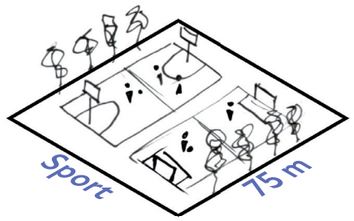
+ Economic value
- Needs functions



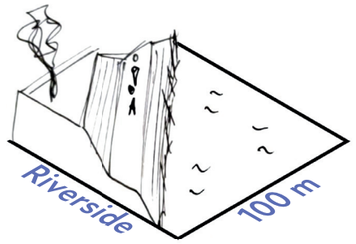
+ Connection and destination
- Too many people



+ Matched to function
- Very specific use

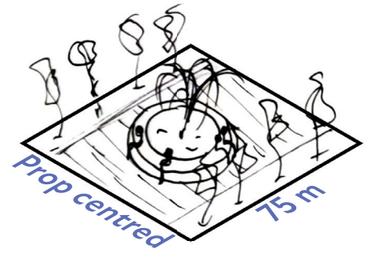


+ Healthy
- Hard surface

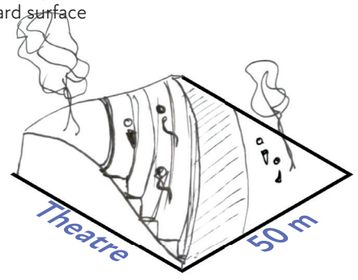


+ Connection with identity
- Needs a river

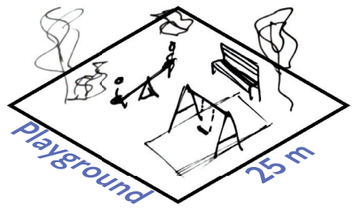
+ Intensive to stay



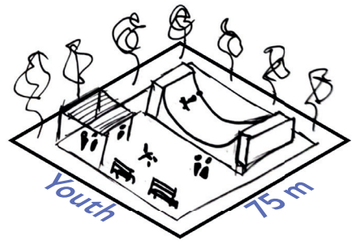
+ Triangulation
- People are not centre



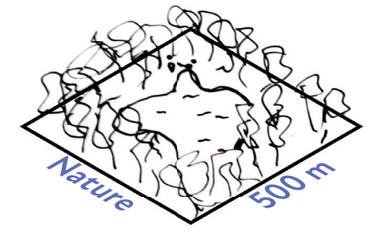
+ Interaction
- Two parts



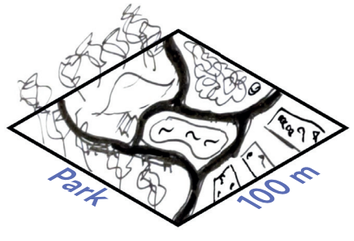
+ Small
- Only for kids



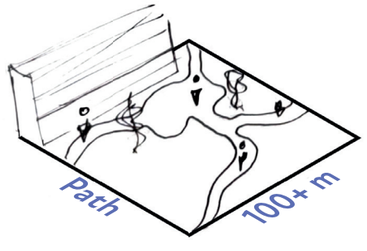
+ Youth has purpose
- Nuisance risk



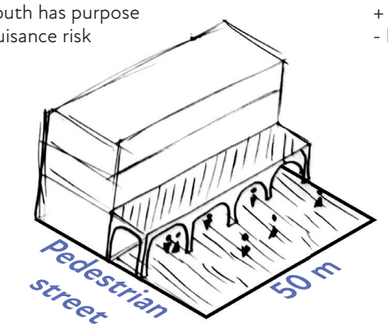
+ Biodiversity
- Large space



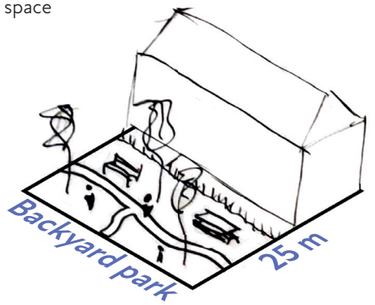
+ Great combination



+ Connector
- Needs to be surprising



+ Economic value
- Hard to implement



+ Appropriation
- Not public enough

Figure 3.15 Public space typologies

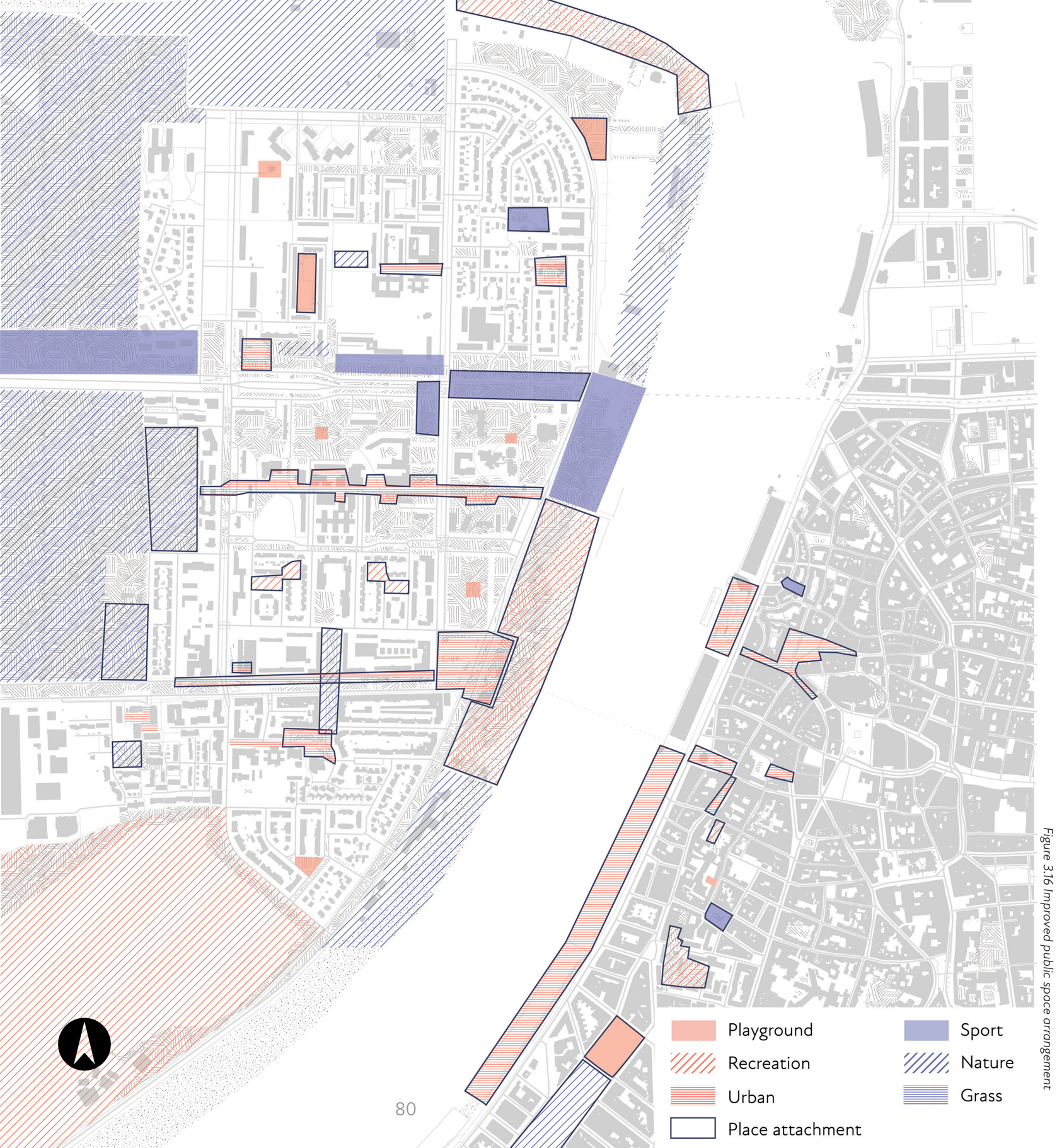


Figure 3.16 Improved public space arrangement

Public space strategy

For the public space in Linkeroever to contribute to place attachment, three aspects are the most important. Firstly, public spaces should be more intimate to get rid of anonymity. Secondly, public spaces should become more connected with the urban fabric. The relationship between building and public space allows for better use and control. Finally, the public space stock should be more diverse to accommodate everyone's needs.

The strategy presented in figure 3.16, shows a ring of more public recreational and natural public spaces on the edges of the Linkeroever. The public spaces penetrate the built-up area following the three thematic axes. In the north, the public space will focus more on sports and culture. In the middle, public spaces are the most intimate, relating to all social functions along this axis. In the south, the public spaces have a lively character catering to the workspaces and shops along the Highstreet.

In between the axes, public spaces are strategically located to connect the axes and are related to the more private residential character of these neighbourhoods. Together all public spaces form a diverse network that has something to offer to everyone and is within walking distance of all residents.

Appropriation

The private domain contributes significantly to place attachment and therefore social cohesion as well. Van Dorst (2005) describes that a significant part of the feeling of social cohesion depends on the attitude of the residents towards their own homes. This is a sign that place attachment is hugely affected by what someone owns or has an influence on. This is called appropriation of space. Homeowners are also more attached to the place they live in than people who rent a dwelling (Brown et al., 2003). So, for place attachment a healthy mix between owner-occupied homes and (social)rent dwellings is desirable.

Appropriation or personalisation of space not only helps to get the owner more attached to a space but also helps to regulate the privacy script. It makes the space more readable and defines where public space transitions into private space. The design of the urban fabric should allow the personalisation of certain spaces. Hybrid zones and collective spaces are great for this. In Linkeroever there are not a lot of signs of appropriation in the high-rise and social rent areas. However, there is more appropriation visible in the self-owned low-rise neighbourhoods, see figure 3.19.

Participation

The ultimate form of appropriation is being involved in the (re)design process of your own house, apartment, or neighbourhood. This process of active participation will help to root the residents in their neighbourhoods and to create better connections between them, resulting in high levels of place attachment and social cohesion.

Baugruppen is the German way of co-development where the future residents take on the role of the developer and develop the buildings individually, plot by plot (Sim, 2019). This results in a diverse, high-quality, and more affordable housing stock. This way of developing often brings community and social functions to the urban fabric. Vauban in Freiburg and Südstadt in Tübingen, figure 3.17, are two great examples of the success baugruppen can have.

Intensive participation like this might not be suitable for Linkeroever. Partly because the most challenged area in Linkeroever is where most of the buildings are owned by social housing corporations, as shown in Figure 3.18. Different forms of participation could help create place attachment.

Figure 3.17 Südstadt (eco-quartiers.fr, n.d.)

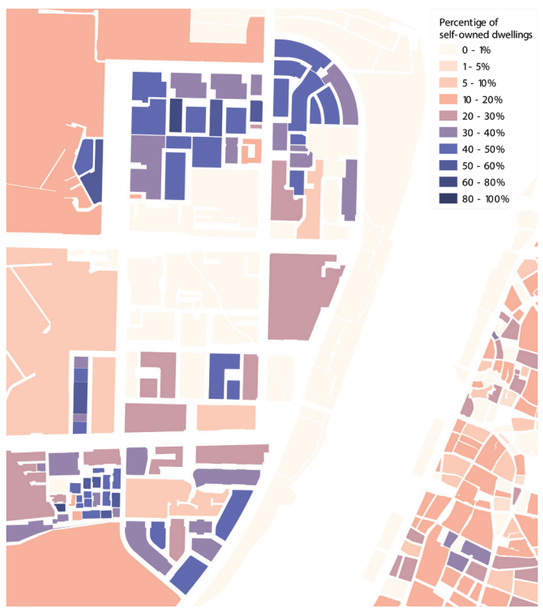


Figure 3.18 Percentage of self-owned dwellings

People decorated the entrance to their apartment building

Blind plinth is vandalised by graffiti, because appropriation is impossible

Shared entrance is well maintained and decorated

Private garden makes appropriation easier as shown in this Christmas example

Even new construction has a garage at ground floor making appropriation harder

This is one of the few attempts to appropriate a garage typology, it still looks blind

Figure 3.19 Signs of appropriation in Linkeroever

3.2.2 Social interaction

To establish social cohesion in a neighbourhood, it is important to facilitate social interactions between the neighbours. There is widespread agreement that interactions between strangers and neighbours are beneficial to social cohesion (Simões Aelbrecht, 2016). Interaction leads to participation, which leads to acceptance, which in the end leads to less urban loneliness (Peters et al., 2010). Interactions often happen in the public or semi-public domain and can range from simple greetings to elaborate conversations and events. Social interactions can be both spontaneous as well as planned. All different kinds of social interactions should be facilitated. For them to happen there needs to be space (fourth places), a reason (triangulation), and an intensive to stay (comfortable microclimate).

Figure 3.20 An edge as fourth space

Fourth places

Fourth places are places where social interactions among strangers or neighbours take place in public and semi-public spaces (Simões Aelbrecht, 2016). Fourth places focus on in-between places whereas third spaces are often primary places in the urban fabric. The social interactions in fourth places are not necessarily as direct as expected. Activities such as people-watching, walking, waiting, or killing time are also social interactions when these take place in the public realm. Simões Aelbrecht (2016) distinguishes six elements that make great fourth places.

Thresholds are spaces between public and private where people move through, this creates an environment where people tend to take breaks, a potential for social interaction. Edges structure our physical world but also our social behaviour, offering refuge and comfort. Pedestrian-friendly paths, such as streets, promenades, and passages are important centres of urban life. If paths offer variation in terms of enclosure and width, types of encounters, and different vistas they turn into great spaces for walking and people-watching. Nodes can contribute to social interactions when they offer stationary and social activities, like some public transport stations or shopping centres. Props are elements like public art, play equipment, or street furniture that triangulate social interactions. The final element that shapes fourth places is publicness. This means that the best public spaces are complex and novel. I do not completely agree with this element, as public spaces that have a history and are simple to understand can make people more comfortable and the spaces less anonymous.

In Linkeroever there are not a lot of fourth places that stimulate social interaction, the ones that are there are often props and thresholds. This is visualised in figure 3.21. More fourth places could help to stimulate social interaction and therefore social cohesion in the search to counter urban loneliness.

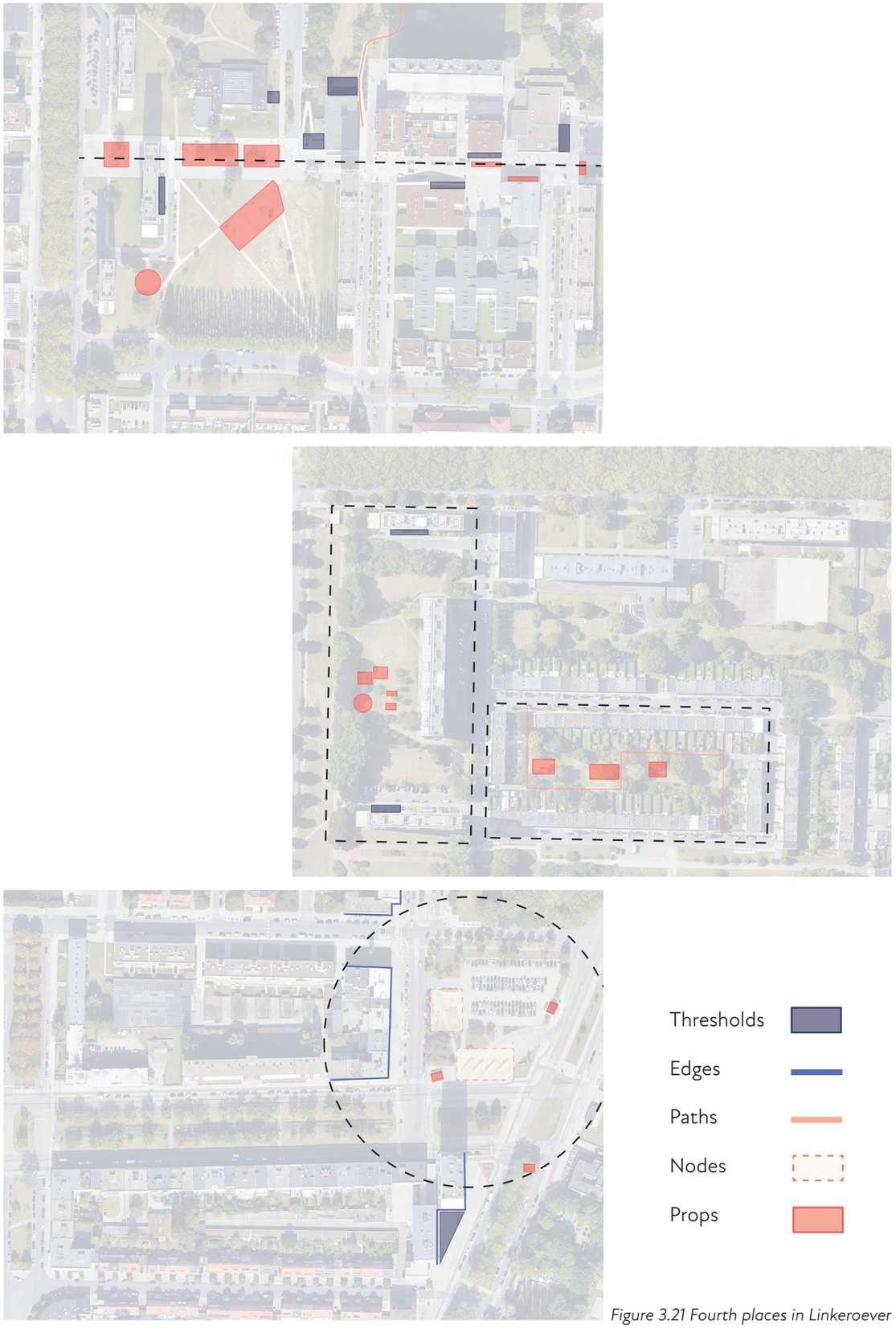


Figure 3.21 Fourth places in Linkeroever

Triangulation

People do not interact in public spaces unless there is an obvious reason to do so (Peters et al., 2010). An event, amenity, or object can be such a reason to start a social interaction between strangers. Amenities like a gym, a library, or a comic bookstore attract people with similar interests. Events can do the same but have the disadvantage that they are temporary. Objects or props bring people together as well, a bench can invite multiple people to sit on it and a ball can be an intensive for kids to join a common sports activity. This process is called triangulation. Examples of points of triangulation in Linkeroever are shown in figure 3.26.

The landscape or public space itself can also be shaped in a way that triggers triangulation. Open spaces allow for all kinds of activities and events while sloped spaces invite sitting down and meeting. When public space is clearly defined in stage and audience, like a theatre, it invites social interactions like people watching (Simões Aelbrecht, 2016). A tree is also an element of the landscape that stimulates triangulation by providing shade and something to lean on, which makes it a resting spot. This is still triangulation but touches on the next topic of a comfortable microclimate.

Figure 3.22 Points of triangulation

Comfortable microclimate

Spaces can have a reason to interact, but if the environment is uncomfortable people want to leave as soon as possible. A comfortable microclimate can help to let people stay longer and develop more valuable social interactions, resulting in stronger social cohesion. David Sim (2019) states that a comfortable microclimate is vital to encourage walking, cycling, and spending time outdoors. The way buildings are arranged can block wind, sloped roofs allow more sunlight to enter the urban fabric, and arcades provide cover from the rain. Together, these measures can help to create a comfortable microclimate.

Creating a better microclimate is also important for the use of public transport because people often walk towards the public transport hub and wait some time outside. We cannot change the weather, but as urbanists, we can shape the built form in a way that softens the effects of the weather. The pleasant microclimate should start right outside of someone's front door. Here the journeys and interactions start. The microclimate should remain pleasant throughout the urban fabric, to facilitate social interactions everywhere.

Unfortunately, I cannot perform a microclimate analysis for all Linkeroever. In general, tall buildings, like the ones in Linkeroever, catch stronger and colder winds and divert them down toward the ground (Sim, 2019). This makes the in-between spaces that are vital for social interactions unpleasant, colder, and windy. Tall buildings also cast longer shadows, resulting in cold and dark places. When I first visited Linkeroever it was a rainy day. The impact of simple arcades and canopies became extremely clear to me, we should have more of those.

Figure 3.23 A arcade to shelter from the rain

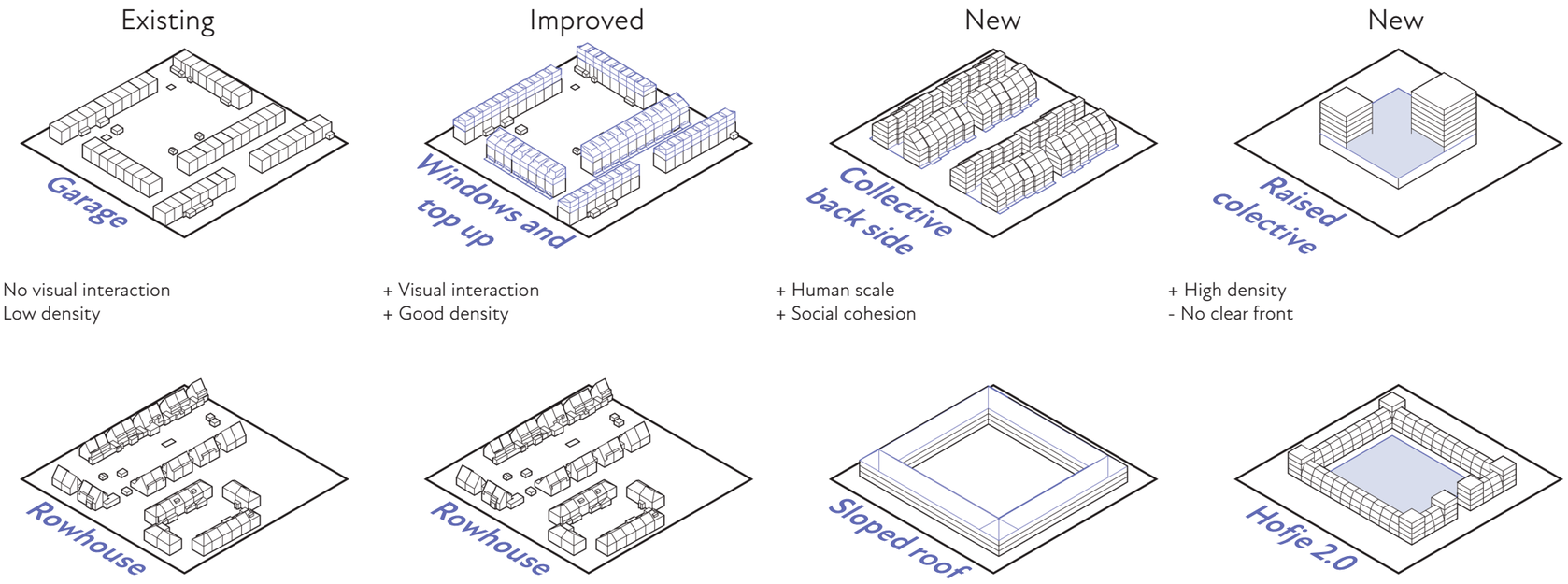


Figure 3.24 Possible building typologies

3.2.3 Social fabric

Building typologies

An improved social fabric, including place attachment and social interaction, is the way towards stronger social cohesion and less urban loneliness. Building typologies are an important part of the social fabric. Buildings can make or break social interactions and social cohesion. Of the four existing typologies, the high-rise buildings are the worst. They host too many people, resulting in unfamiliarity and they limit interaction due to small spaces and blind plinths. The garage type is something special. There are no windows on the ground floor, thus visual interaction is limited. The courtyard typology has a huge potential if the courtyards are actually used for the collective good. The row houses are the best, as they allow for interaction and appropriation through their front gardens. However, their density is not city-like.

The housing stock of Linkeroever must change. Figure 3.24 shows examples of possible transformations and new typologies. According to Sim (2019), a building that contributes to social cohesion is joined up, has small individual parcels, is about five stories high, has a clear front and back, has a sloped roof, and preferably has some kind of courtyard.

To accommodate the rules set by Sim (2019), the garage type should be remodelled. The ground floor should have a window and be for humans, not cars. Furthermore, the buildings could be vertically extended resulting in a more urban density. The courtyard typology is fine, but the courtyard itself should have a communal function. The high-rise slabs are so detrimental to urban loneliness that the best solution is to demolish them and build something new. However, renovation making the building lower, adding dynamics, and a lively plinth could save them if that is desired. The rowhouses are fine as they are and can stay as long as density will be added elsewhere.

Community size

Social control is easier in smaller communities. At the moment you cannot recognize the people around you because there are too many, they become anonymous and social control becomes harder. Communities have a distinctive layered structure. Someone can have up to 15 good friends, 50 friends, 150 meaningful contacts, 500 acquaintances, and 1500 recognisable people (Dunbar & Sosis, 2018).

Social cohesion depends on the community size. The optimal community size is not always related to one number. It will ultimately be determined by the functional demands of the socio-ecological environment (Dunbar & Sosis, 2018). Social cohesion can start whit communities as small as 50 people. When a threshold of 500 is passed, cohesion is weakened and communities need a formal structure to function. If a community is bigger than 1500 it is hard to recognise people in your community.

Communities often consist of the people living on the same street as you and the people using the same public spaces and amenities. In a modernist neighbourhood, the community can be all the people living in the same high-rise building that stands on its own piece of grass. When the community sizes in Linkeroever are analysed, this might say something about the potential of social cohesion. The results show that the high-rise buildings cause too big community sizes along the bigger roads. They also result in quite big communities (150+) within one building. Inside the neighbourhood, the community sizes are good, with around 300 people per community.

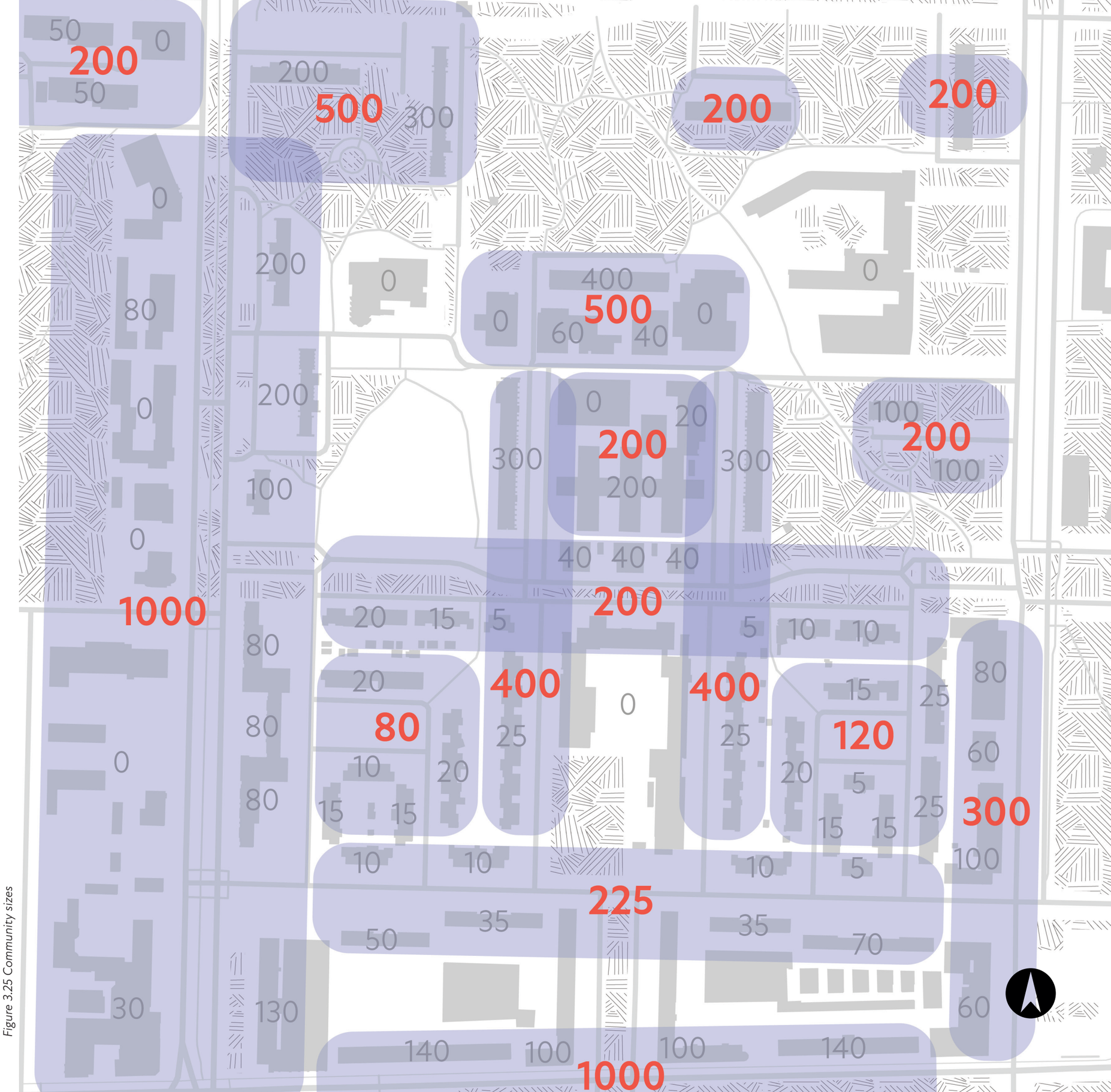


Figure 3.25 Community sizes

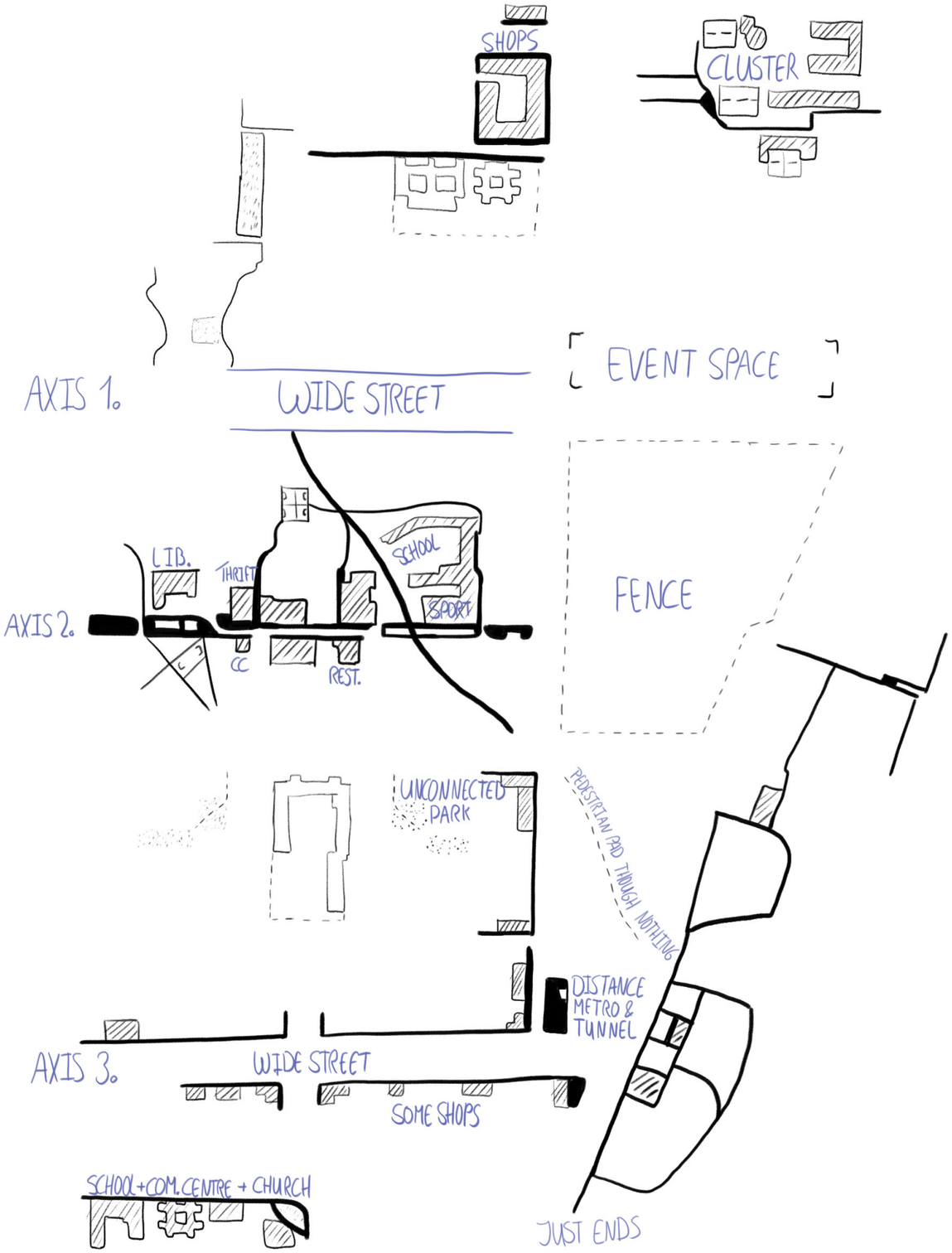


Figure 3.26 Current social fabric

The three axes now

To understand the social fabric of Linkeroever, the locations of the proposed three axes are analysed based on collective use. What is clear from this analysis is that the social fabric of Linkeroever is disconnected. There are some clusters of social functions, which are poorly connected with the neighbourhoods, let alone with the district or city. Only the social fabric of the Louis Paul Boon Straat makes good use of the interspace and does not let its fabric be dominated by cars. In general, the social fabric needs a make-over to help counter urban loneliness. The offer needs to be more diverse, connections need to be better, and the interspace must not be dominated by cars.

At the end of this chapter, I also want to look critically at the proposed improvements in social cohesion and the social fabric. Lloyd et al. (2016) point out that social networks are exceeding the neighbourhood and even the city in the globalised society of today. Social networks are even getting digital and virtual. So, is it even relevant to invest in the local social fabric? I think it is because a strong social fabric helps someone feel accepted where they live. Moreover, children and the elderly are not as mobile and digital and therefore are more reliant on the local social fabric. So, for me, the local social fabric and social cohesion are still vital to counter urban loneliness.

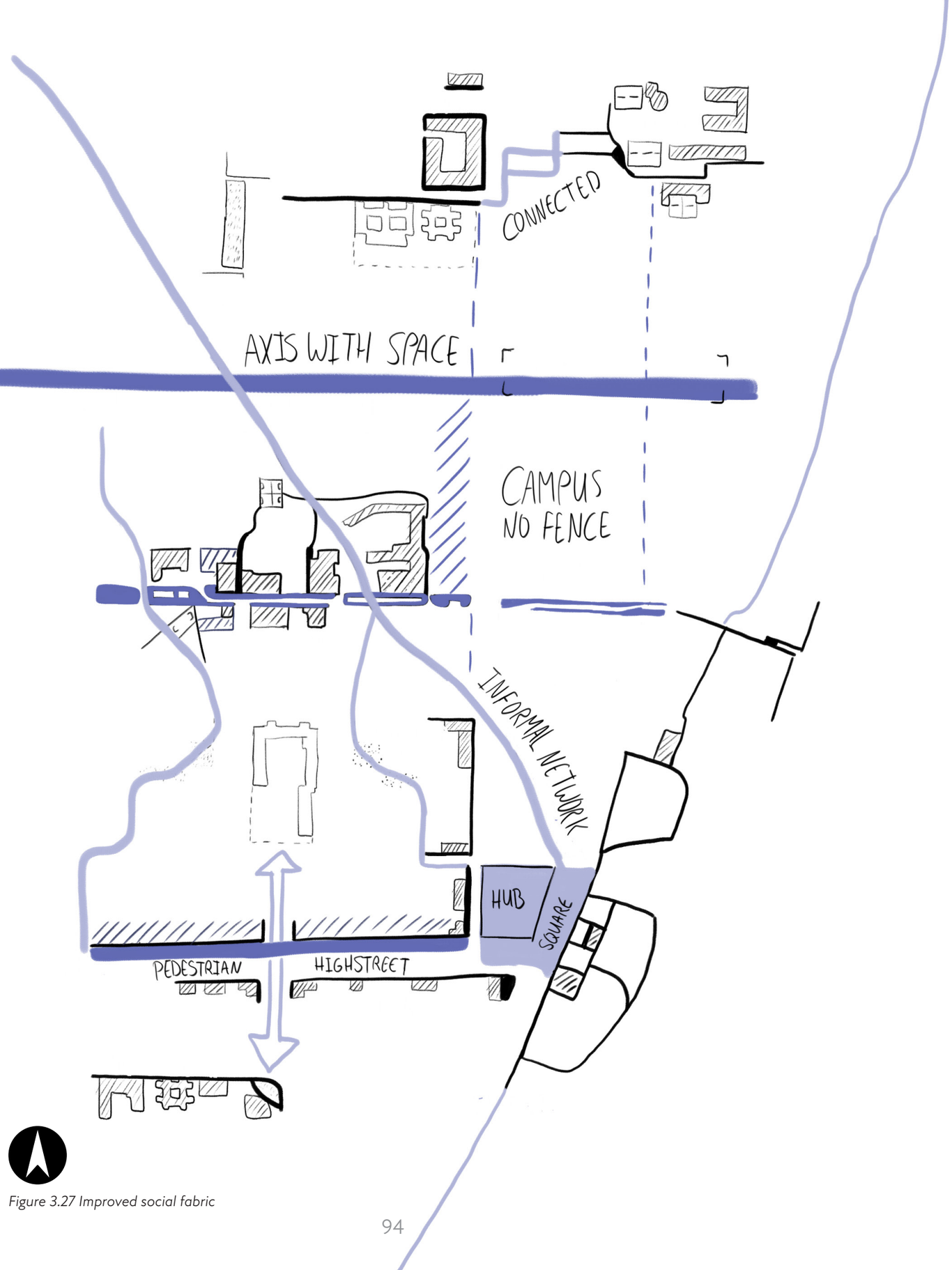


Figure 3.27 Improved social fabric

The three social axes

For the axes to become part of the social network of Linkeroever, they need to connect instead of divide. The three axes should connect the social functions and other amenities in Linkeroever. Important for this is that the axes prioritize slow traffic. The northern and southern axis could take some space from the car and turn this into pedestrian space. The middle axis already has less car traffic. This axis is extended and breaks through the fence that used to be there, extending the social network. Social connections should go in all directions, therefore there are informal connections between the axes. Another intervention is to give the space between the metro station and the tunnel entrance back to the people, to make a square where social interaction is possible.

3.3 LEGIBLE HUMAN SCALE

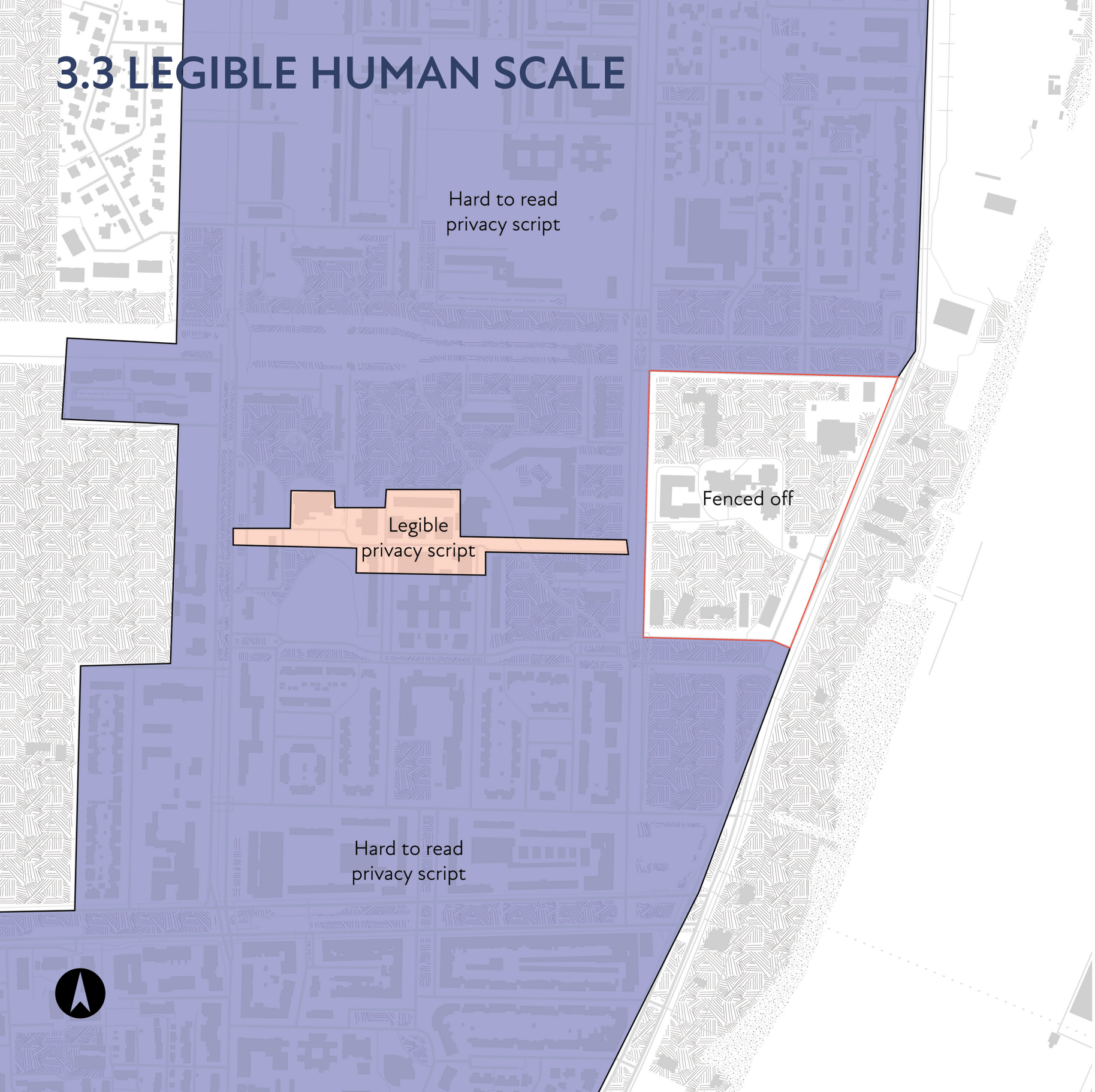


Figure 3.28 Unreadable privacy script

3.3.1 Domains and privacy script

A legible human scale is important to support social cohesion and collective development. When well executed it helps people to find their (social) destination and feel safe in their environment.

Unreadable privacy script

A readable privacy script helps people to choose more or less privacy and therefore more or less social interactions (van Dorst, 2005). This way people are more likely to find the number of social relationships they desire, countering urban loneliness. Good privacy zoning makes clear which spaces are more private or more public. This makes clear who controls the space, and it allows someone to choose to be in a more private or more public domain. Privacy zoning makes it possible to participate in the social environment, which stimulates social cohesion (van Dorst, 2005).

After all, groups want to control social interaction. Therefore, they need to be able to recognise and own private, semi-private and public spaces. When the degree of privacy of a territory is legible, it prevents anonymity and insecurity and stimulates social control and interaction. Once the privacy script (degree of privacy) of a public space is not legible, it will not be respected and used as intended. This is exactly what is happing in most of Linkeroever.

The private domain is legible most of the time in Linkeroever, this includes the homes and private back gardens. The public domain on the other hand is not legible. The public domain is often so big that it is not clear to whom it belongs. It belongs to no one and everyone at the same time, making the spaces anonymous. So, in Linkeroever there are very private spaces and too public spaces with nothing in between. There are too few privacy zones to choose from and the dimensions are too big to be legible. This is contributing to urban loneliness and should be changed.

Privacy script on eye level

How the privacy script is experienced on eye level contributes for a large part to wayfinding. When people easily find their way they are more likely to feel comfortable in public spaces, seek interactions, and find their way to social or development spaces.

Habraken (2000) states two important things about legibility and wayfinding. Firstly, hierarchy in streets makes public space legible. In Linkeroever all the streets look the same and all use asphalt, therefore there is little suggestion of hierarchy. He also states that when buildings are free-standing, roads become an independent system. This phenomenon is visible in Linkeroever where both systems are separated, it feels like a machine.

Van de Wal (2016) and van Dorst (2005) both talk about domains. Domains should be clear and suggest a way of use, am I a passerby or am I a participant in social life? They talk about four domains, private, collective, parochial, and public. In the exercise on the right, figure 3.31, I tried to determine which domain belongs to each eye-level perspective to see if it matched my feeling. I felt the need to add a fifth domain, the anonymous domain because there were a lot of spaces where I felt lost and where there are not even enough clues to call it public. This domain is disastrous for urban loneliness.

Kevin Lynch (1960) speaks about five elements that should help with wayfinding. These are paths, edges, districts, nodes, and landmarks. When these elements are not easily identifiable or non-existent, people are less likely to find their way and this could lead to feeling lost. Feeling lost can lead to loneliness. When drawing Linkeroever with the elements of Lynch, figure 3.29, it is clear that there are not a lot of elements that help people with wayfinding. Therefore, more elements need to be added to make sure people do not get lost, figure 3.30.

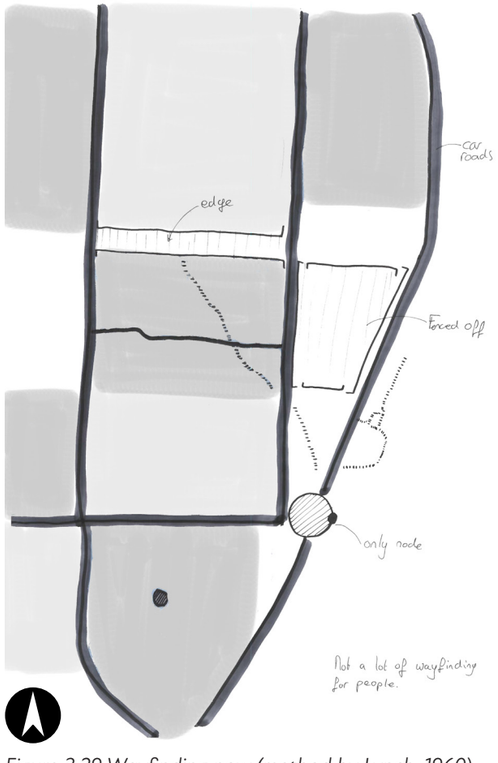


Figure 3.29 Wayfinding now (method by Lynch, 1960)

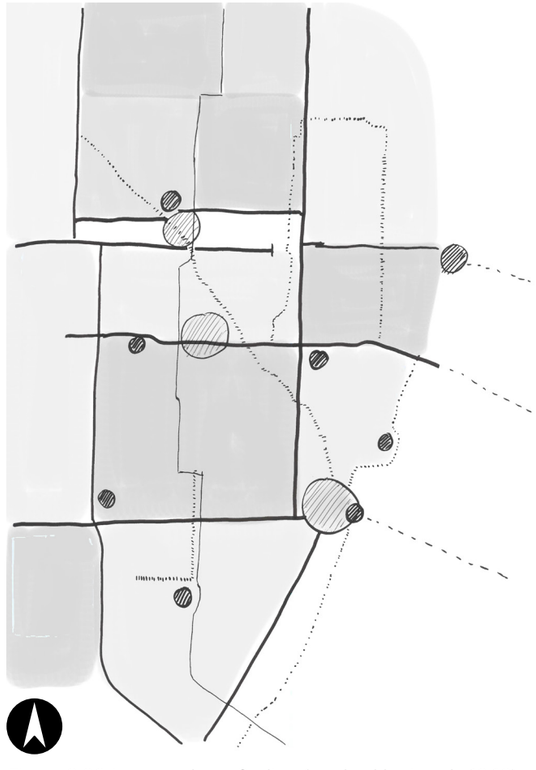


Figure 3.30 Improved wayfinding (method by Lynch, 1960)

Edge, Private, - Fence is an edge to walk around

Node, Public, + Landmarks introduce the city

Path, Anonymous, - Building and path are seperated

Path, Anonymous, - Not clear where path goes

Path, Anonymous, - The scale is not human

District, Anonymous, - Street material suggest it is a highway

Landmark, Anonymous, - Landmarks look too similar

Edge, Anonymous, - Wide field is a barrier

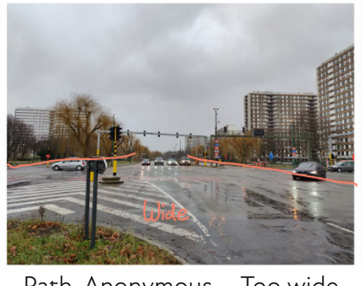
Path, Public, + Path is clear and follows the water

Landmark, Public, + Landmarks is recognisable

Edge, Parochial, + Edge separates domains

Landmark, Public, + Landmarks shows where people should go

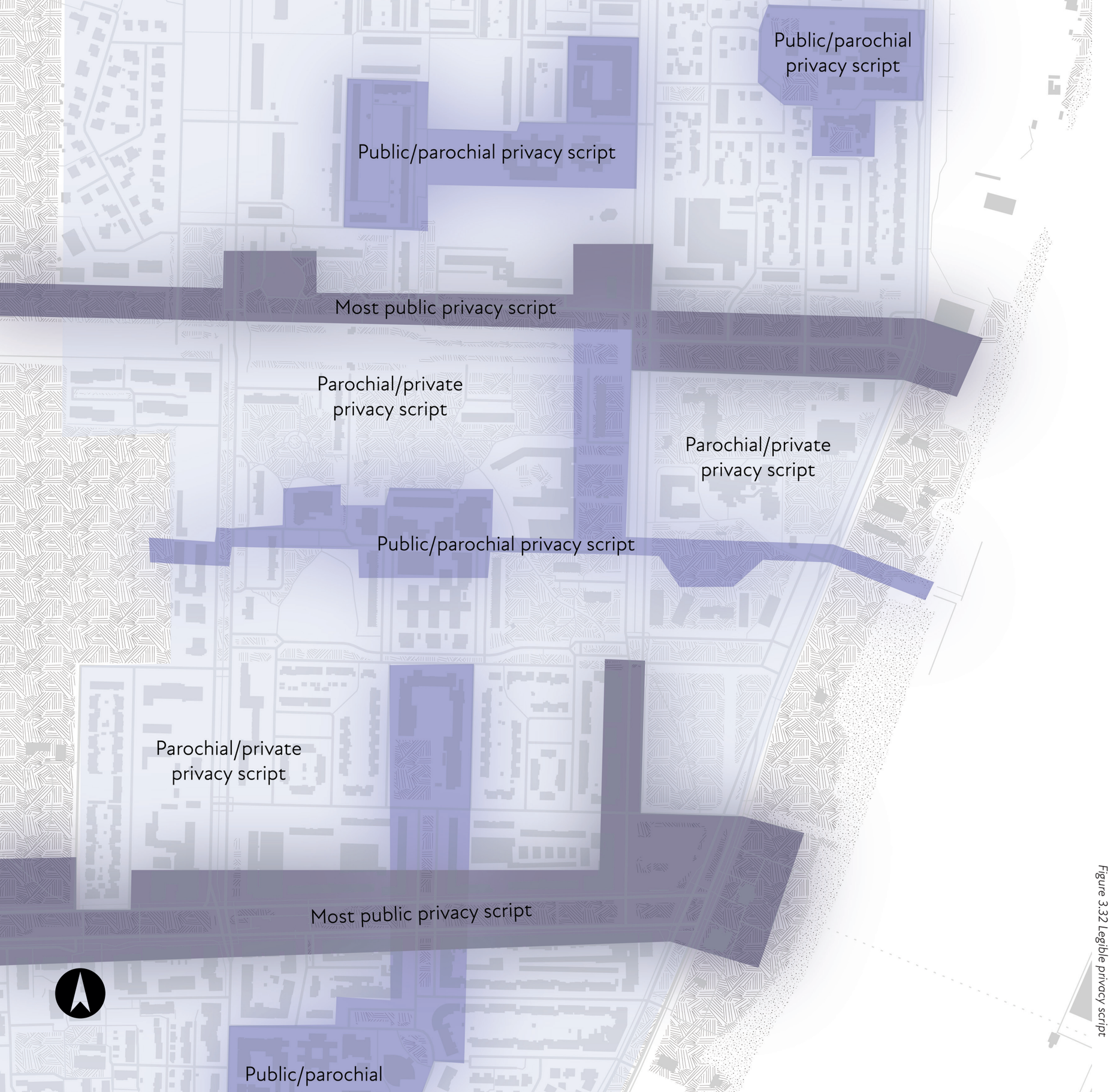
Path Public, + Clear and wide path



Path, Anonymous, - Too wide for a human scale

Path, Parochial, + Path is closed to buildings and has a goal

Figure 3.31 Privacy script on eye-level



Legible privacy script

The proposed legible privacy script for Linkeroever includes a clear hierarchy of publicness, human scale dimensions, hybrid zones, and materials that suit the different levels of privacy. A more elaborate exploration of dimensions and material will later.

The proposed hierarchy of publicness is based on the three axes introduced previously. The north and south axes will be the most public as they are part of a continuous line through the city. With this publicness come public functions and public spaces. To be legible, public spaces should have a clear purpose and human-scale dimensions. These axes should make the people of Linkeroever proud, some landmarks could help with this.

The axis in the middle is also quite public but more catered towards the local residents. Dimensions can be smaller here and the domain would be more parochial. From all three axes, branches spread into the neighbourhood becoming less public as they are further from the axes. In the residential neighbourhoods, the domain is parochial, characterised by hybrid zones and small collective spaces. The private domain is situated beyond the hybrid zone, in the homes and backyards.

At the moment there are very few people who spent time outside of their private domain. A more legible human scale must contribute to people spending more time together outdoors, resulting in less urban loneliness. This is possible if they feel comfortable in the public space, can read the degree of privacy, and can appropriate the space.

Figure 3.32 Legible privacy script

Hybrid zones

Hybrid zones are zones in between the public and private domains, they play an important role in making privacy legible. Hybrid zones can signal transitions between two domains. Hybrid spaces also stimulate social interaction, as they are spaces that are not too private nor too public. Semi-private areas, like front gardens, also provide great social control. They allow for appropriation and create some distance between a window and the public street.

In Linkeroever hybrid spaces are often too big, too small, or not existent at all. Especially the high-rise flats lack hybrid zones. According to van Dorst (2005), circulation spaces, like galleries in flats, are less suitable for social control and social interaction. This is partly because there is no space for hybrid zones here. The hybrid spaces in front of the row houses are often too big, as van de Wal (2016) states that hybrid spaces should have a maximum depth of two metres. If they are too big, they are not a connector anymore. So, hybrid spaces are important to bring back the human scale and facilitate social interaction.

There is a hybrid space for each typology. For the ground floor, there are plenty of options. From the Delftse stoep to simple front gardens. For galleries, some options transform a circulation space into a more dynamic space. All hybrid zones have different qualities and can be used in diverse contexts. An overview of options and their qualities is presented in figure 3.33.

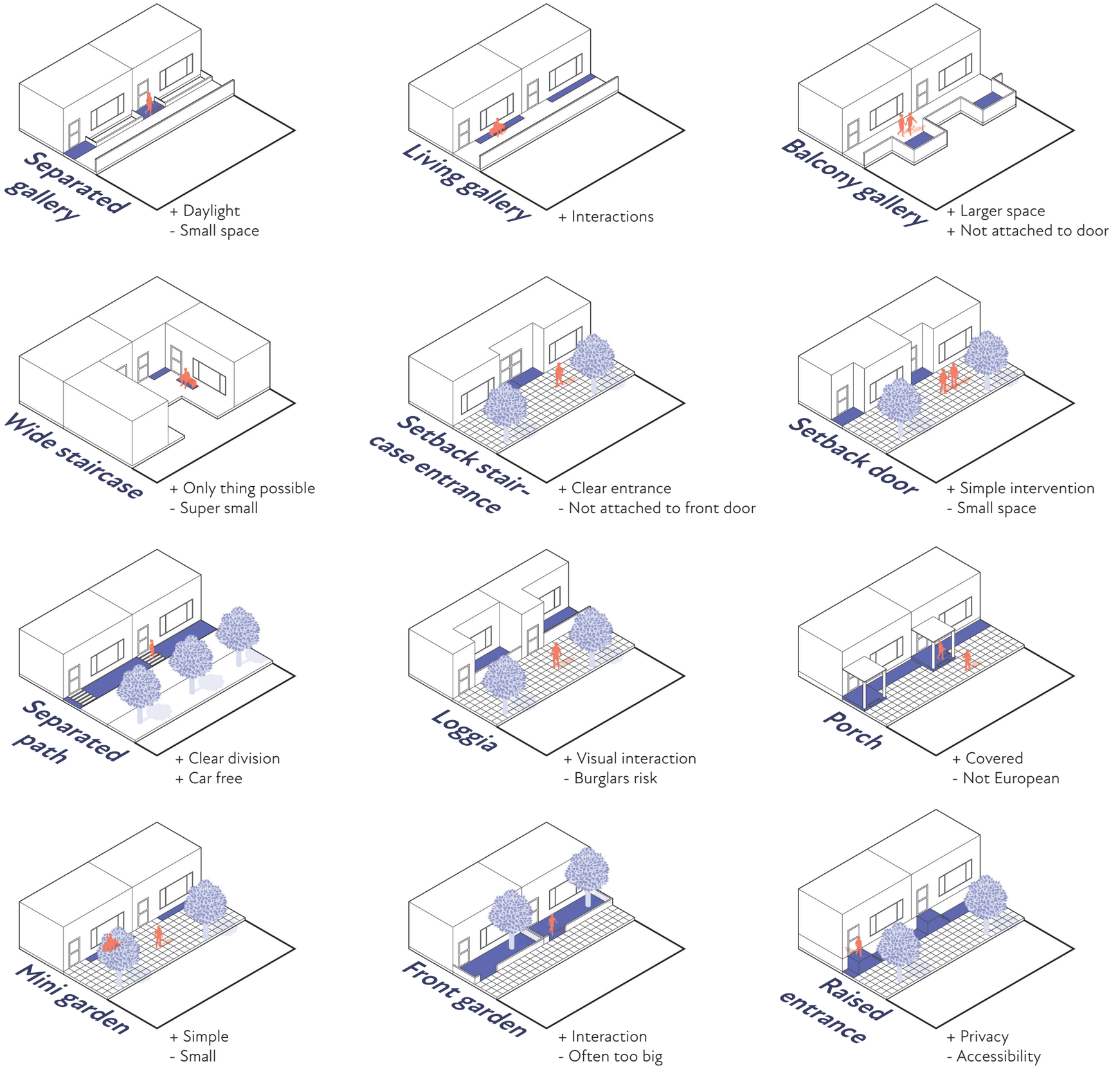
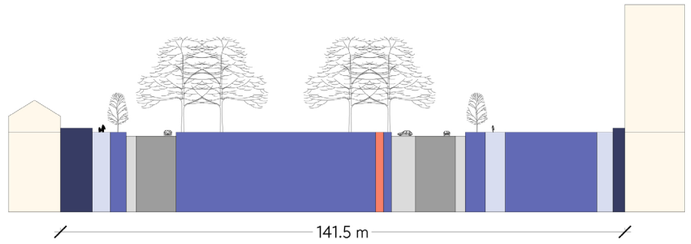


Figure 3.33 Potential hybrid zones

Figure 3.34 Location of the sections



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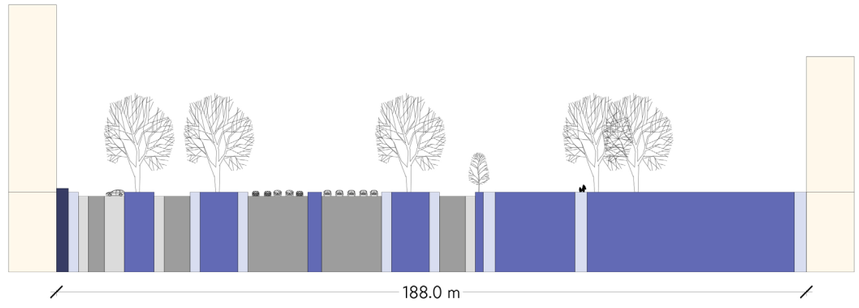

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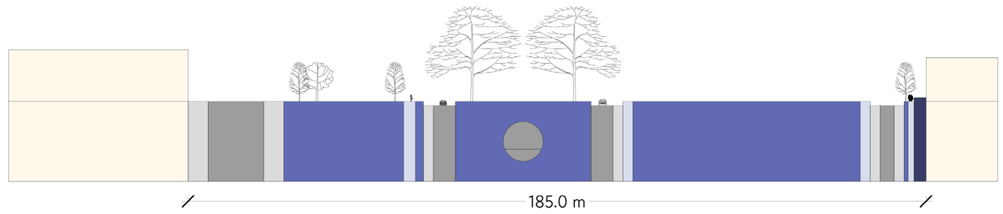
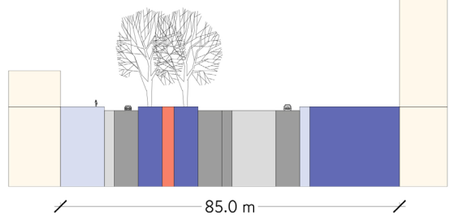
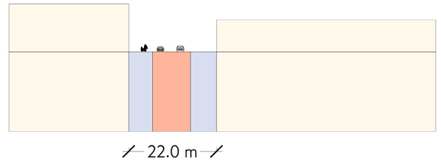


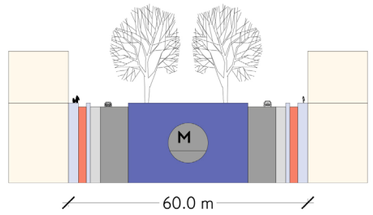
3. Charles de Costerlaan



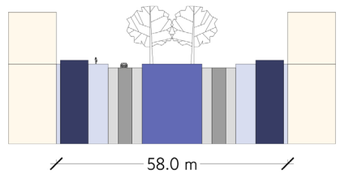
4. Halewijnlaan



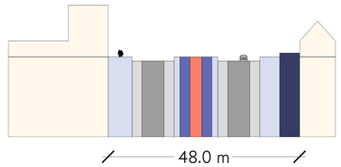
5. Louis Paul Boon Staat



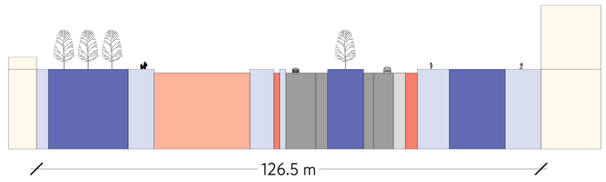
6. Blancefloerlaan



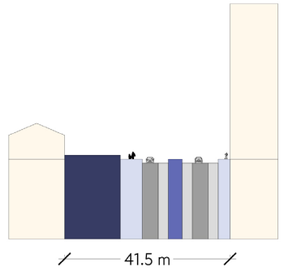
7. Waterhoenlaan



8. Gloriantlaan



9. Frederik van Eedenplein



10. Carel van Manderstraat

Figure 3.35 Wide street profiles

3.3.2 Dimensions and materials

Street profile

An important part of a legible human scale is street profiles. Currently, the street profiles in Linkeroever are over-dimensioned and cater for the car instead of the human. The ten sections of figure 3.35 show the immense width of some streets.

The enormous width creates boundaries that divide the urban fabric. It makes it harder to get to a destination where you can develop yourself and it makes it harder to have interactions in public spaces. This shows that a legible human scale is vital to countering urban loneliness.

The sections show a lot of green. Some of them look like beautiful lanes. However, the green is often without a function and inaccessible. Good lanes do not need this much green. Smaller parts of green which can be used and appropriated could provide a more sustainable green network.

Not just the dimensions of the streets are huge, but the dimensions of some of the buildings are too big as well. The high-rise slabs of 50 meters high and 100 meters long, do not contribute to the human scale at all. Some of the sections are over 180 meters wide. Imagine you have to cross that on foot. It is a huge barrier. In most trips around Linkeroever, someone must cross multiple of these huge profiles. No wonder people feel lonely if they are so isolated by the urban fabric.

Fortunately, not all street profiles are bad. The Louis Paul Boon Straat is an example of a street profile that is designed at a human scale. The space is also dominated by humans and not by cars. This street could be an example for the rest of Linkeroever. It could use some trees, however.

In figure 3.37, ideas are tested to bring back the human scale. Investing in small green, lower buildings, and hybrid zones, results in a more compact urban fabric. This urban fabric brings people closer together and makes (social) functions more accessible. All of this contributes to countering urban loneliness.

Figure 3.36 One of the wide streets

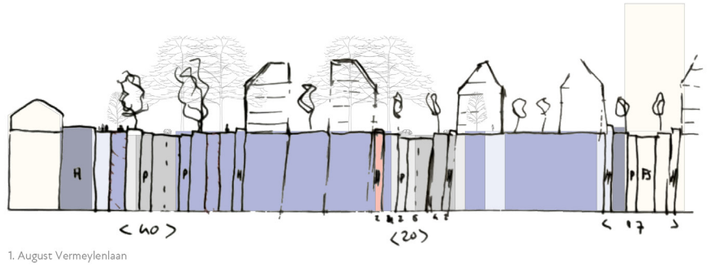


Figure 3.37 Ideas for compact streets

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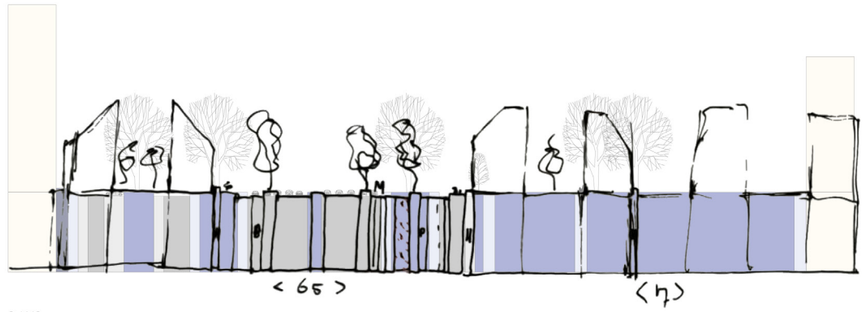

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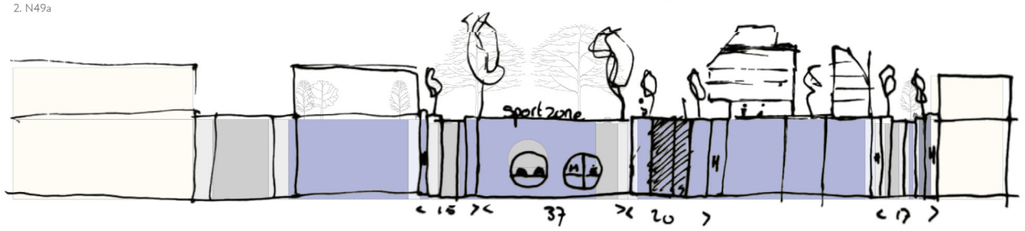
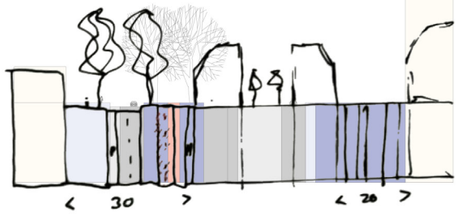
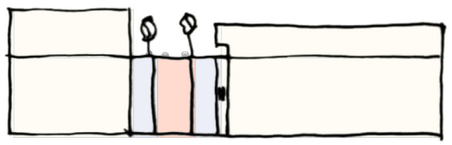


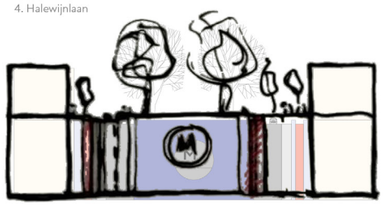
3. Charles de Costerlaan



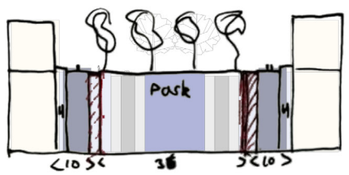
4. Halewijnlaan



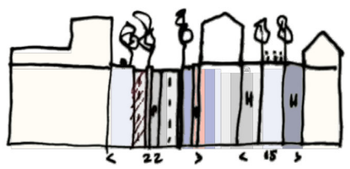
5. Louis Paul Boon Staat



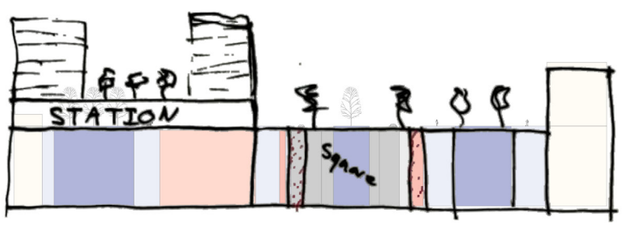
6. Blancefloerlaan



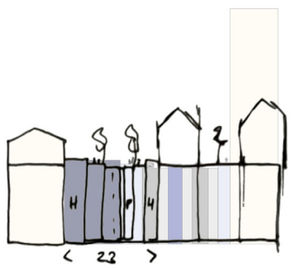
7. Waterhoenlaan



8. Gloriantlaan



9. Frederik van Eedenplein



10. Carel van Manderstraat

Separating materials

The perceived human scale is not only influenced by the measurable distances but also by the materials used in public space. The never-ending asphalt or grass and large concrete tiles make the perceived distance only longer. Asphalt, concrete, and grass are often used in Linkeroever. Asphalt is everywhere, even on the smallest residential streets.

According to Wang et al. (2016), poor aesthetic appearance, poor environmental quality, or poor design of the built environment will reduce a person's motivation to go out walking or cycling. The design and aesthetic of the built environment are not great as it is dominated by grey concrete and asphalt. The frequency of people going out walking or cycling is influenced by the type of paving materials. The same study claims that asphalt is bad for people walking while being great for cycling. Natural materials like earth and pebbles are great for walking when the paths are well maintained.

Other issues with the materials in Linkeroever include the height distances between the pedestrian sidewalks and the roads for cars. When crossing a road, the pedestrian always must step down to the level of the car. This gives a clear sign to the pedestrian that they now are in the domain of the car. A solution for this is often used in the Netherlands, the road is raised to the level of the pedestrians to signal that the car is entering a pedestrian space. This encourages walking and accessibility.

The colour of the materials used does contribute to urban loneliness more directly. Research by Kaya and Heln (2004) concludes that the colour grey evokes feelings of sadness, depression, boredom, and confusion, as well as tiredness, loneliness, anger, and fear in a sample of college students. The study suggests that grey may be associated with negative feelings because it is often associated with overcast weather and gloomy environments. The relationship between colour and loneliness is complex and might not affect everyone.

Figure 3.38 Collage of currently used materials

Connecting materials

When re-designing the streets of Linkeroever for a human scale, it is important to consider the materials used for the pavement, as well as the urban furniture used. Some materials that are often considered to be good options for human-scale street design include natural material, permeable pavement, brick or stone pavers, and smaller green elements.

Natural materials and permeable pavement allow water to seep through, reducing runoff and promoting natural drainage. It can also help to reduce the heat island effect. This makes streets more pleasant for use in extreme weather conditions. Brick or stone pavers provide a textured surface that can improve traction and provide a more pleasant walking experience.

Incorporating trees and other vegetation into the street design can provide shade, improve air quality, and create a more pleasing aesthetic. This should be done in smaller manageable pieces to encourage appropriation and stop it from being a boundary. Adding benches, bike racks, and other street furniture can make the street more comfortable and inviting for pedestrians and cyclists. Adequate lighting is important for safety and can also improve the overall atmosphere of the street.

The colour of the materials used is also important. The use of grey should be limited while blue, red, and purple evoked the most positive feelings and should be used instead. Blue indicates relaxation and calmness, red implies love and romance, and purple stands for relaxation and happiness.

In general, using a variety of materials can create a more interesting and visually appealing environment, which can encourage walking and cycling. This makes it more attractive for people to go outside and easier to interact with others. Resulting in less urban loneliness.

Figure 3.39 Collage of alternative materials

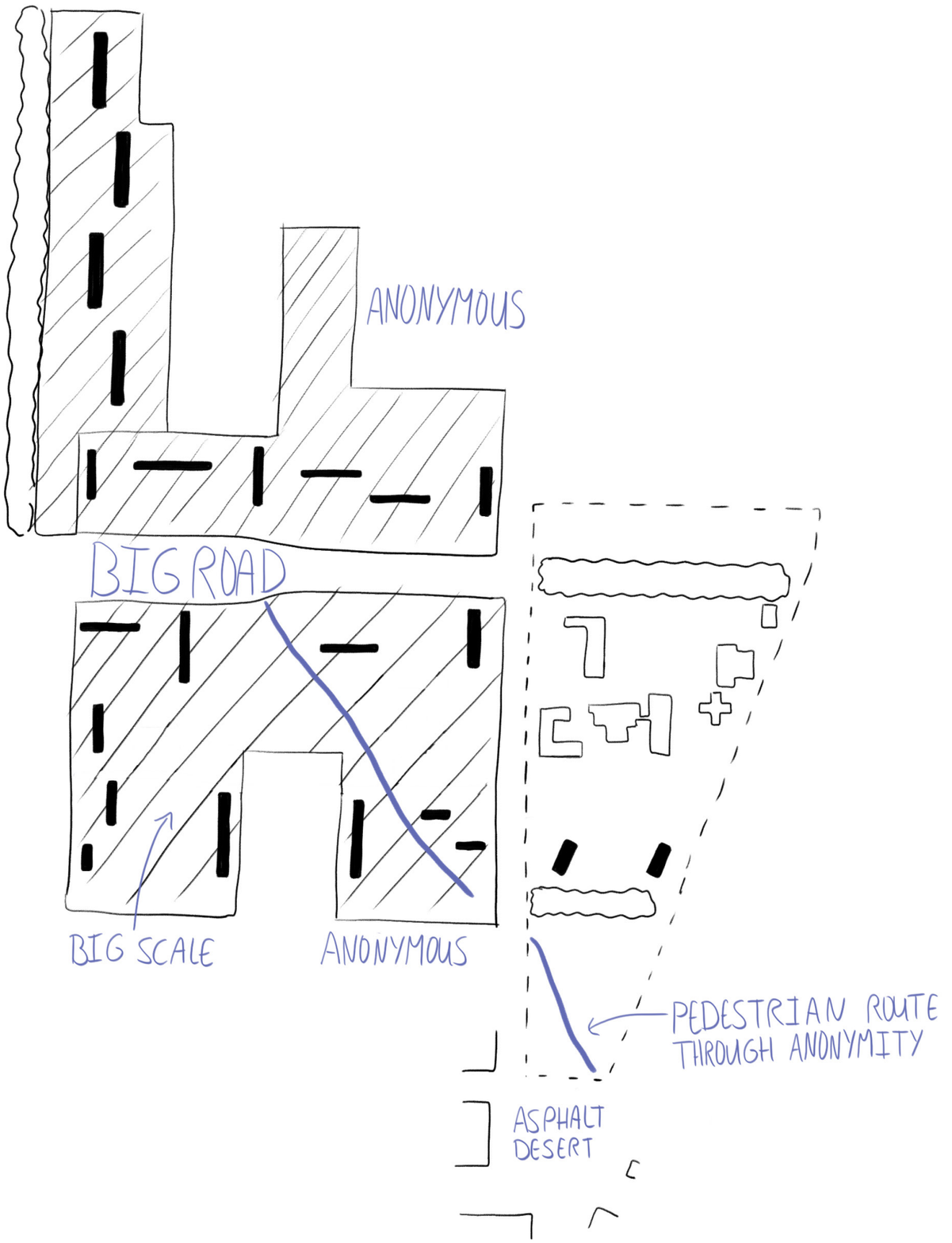


Figure 3.40 Not walkable fabric

3.3.3 Local fabric

Walkable fabric?

Is the urban fabric of Linkeroever walkable enough to support personal and collective development and social cohesion and social interaction at a district scale? As unravelled in this sub-chapter, it is clear that this is not the case. The privacy script and domains are often illegible and too anonymous for people not in a car. The entire fabric of the district is designed with the experience of the car in mind. This means that spaces are often too big for people outside of a motor vehicle to comprehend and appropriate. For example, spaces between buildings and streets, interspaces, are not usable for people. They do not form a coherent informal network where people can interact with each other.

The urban fabric of Linkeroever consists of wide streets and anonymous and large public spaces. These spaces are hard and unpleasant to navigate on foot. Therefore people are not invited to go out. People have more trouble finding their way two development spaces or other people. The way this district is organised right now facilitates urban loneliness by making it unnecessarily hard to walk towards any social space or space where someone can develop themselves. The public space is not inviting to stay and the grey colours and large-scale materials make the outside environment even more unpleasant. So, it is clear that the urban fabric of Linkeroever is not walkable and therefore not helping to counter urban loneliness.

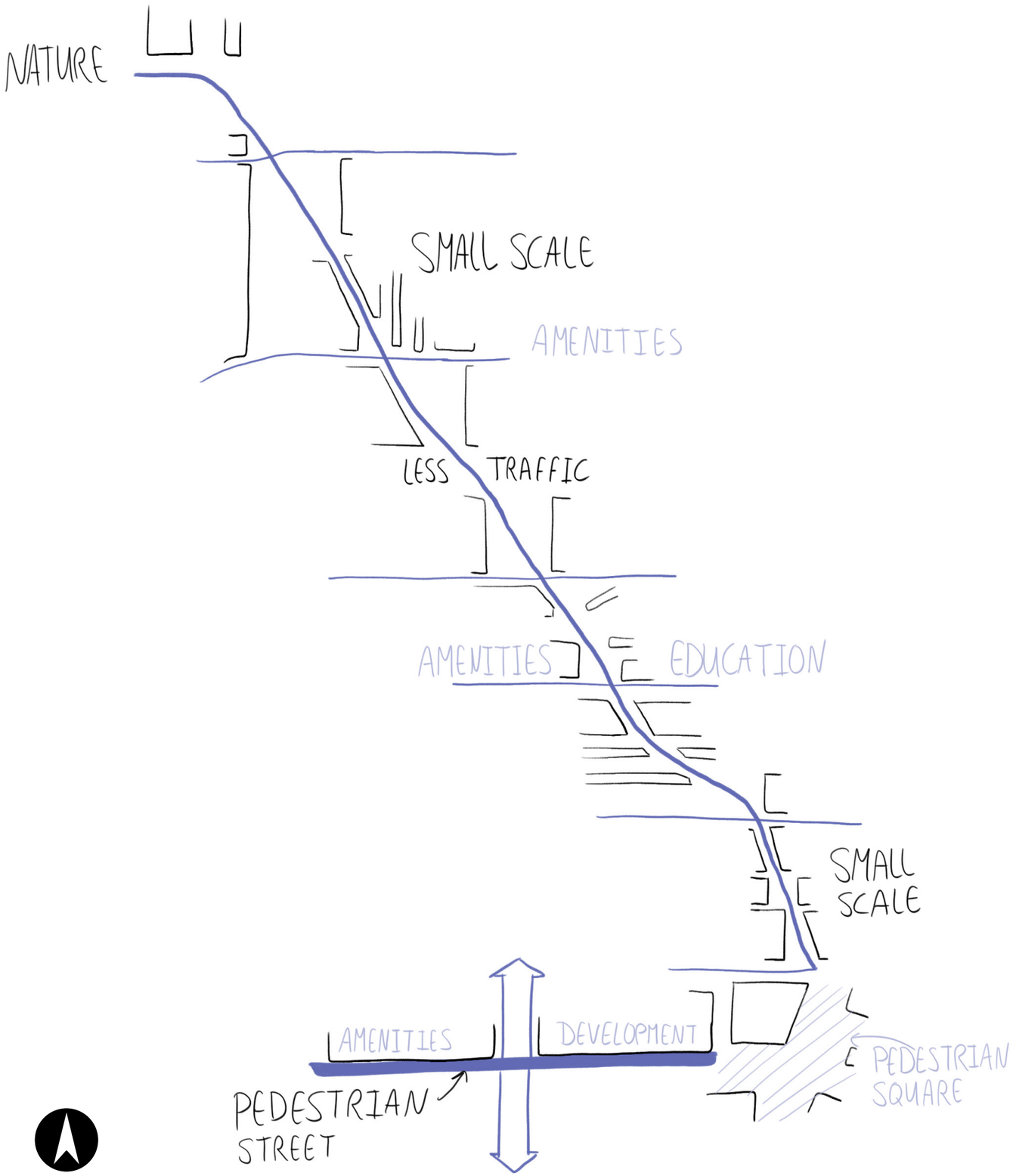


Figure 3.41 Walkable fabric

Walkable fabric!

Linkeroever needs a more walkable fabric that supports personal and collective development as well as social cohesion and social interaction to counter urban loneliness. In this new urban fabric, the car should play a less dominant role and from an eye-level perspective it should be readable for anyone walking and be less anonymous. This means that the urban fabric should have a smaller grain size, less wide streets, and more elements that help with wayfinding. In the new urban fabric, the interspaces are for people and the interspaces are connected to form an informal network. This network helps people to get to their destinations more efficiently, allows for appropriation, and stimulates spontaneous interactions.

A more walkable urban fabric helps people to find their way to personal and collective development locations as well as stimulating people to get out and therefore helping with social interaction in social cohesion. Without this more walkable urban fabric as support, it is near impossible to make personal development or social cohesion work, no matter how great the facilities are. When the environment is hostile and uninviting, people are less likely to go out. Getting people out and giving them a safe and pleasant way towards their destination, is as important as a good destination itself. So, to counter urban loneliness a walkable and legible urban fabric is essential.

3.4 DESIGN FRAMEWORK

3.4.1 Design principles

Bicycle and pedestrian bridge
A bridge for slow traffic could result in better access to development options and a stronger sense of belonging.

Safe and comfortable public transport
If public transport is accessible, safe, and comfortable people are more likely to make use of it and are therefore more connected to development options and other facilities.

Thematic axes
Thematic axes organize amenities in a clearly defined public domain, these are places to go to if you want more publicness.

Benefits for both sides
Cities are often divided and when trying to establish synergies it is important to make sure it is beneficial for both sides.

Landmarks that make proud
A landmark can make people proud and help to establish an identity or tell a story. Resulting in a stronger connection with the location and helping with wayfinding.

More jobs
Work is a place where you can develop as a person and it can give purpose.

Quality social spaces
High-quality social spaces like bars, community centres, and public spaces bring people together and help to establish interactions and relationships.

Access to meaningful activities
It is important to have a place where you can go after school or work to develop your interests.

Diverse offer
It is important to give people choices so they can decide for themselves which public space or amenities fit their needs.

Mixed generational community centres
Each neighbourhood needs a place where young and old can come together and learn from each other.

Pedestrian connections
Pedestrian connections are vital to make amenities, public spaces, and development spaces accessible.

Development + public space
When development spaces are directly attached to a public space they can strengthen each other. The public space can be an extension of the indoor space.

Continuous network
A contentious network between spaces of interest is important to improve accessibility.

Common areas and public space
It is important to connect common areas like community centres and courtyards with public spaces. This results in more interactions and smoother transitions.

Connections in all directions
If connections are only in one direction, they can become boundaries in the other direction.

Diverse public space offer
A diverse offer of public space means that it is more likely that there is a space for everyone to attach to and therefore bond with the location and people.

Appropriation hybrid spaces
Hybrid spaces like front yards allow for appropriation, which results in a stronger connection with the place.

Mixed ownership
Homeowners show a stronger connection to their homes and neighbourhood. It is therefore important to mix and prevent rent-only blocks with no social cohesion.

Exposure to natural spaces
Natural spaces are good for the mind and help to build place attachment.

Intimate public spaces
Intimate public spaces are more approachable for people than large fields and the social control is stronger. So, people are more likely to go and interact.

Windows and balconies
Visual interactions are also valuable interactions, windows and balconies facilitate these interactions.

Points of triangulation
Points of triangulation like benches, kiosks, or art are catalysts for social interactions.

Shelter from the weather
Canopies that protect from the rain or buildings that block the wind make the public space more peasant and make interactions last longerr.

Collective allotment gardens
Collective allotment gardens bring people out and create a shared responsibility, contributing to social interactions and place attachment.

Small and low volumes
When buildings are small and low it is more likely that you know your neighbours and that you build stronger social cohesion.

Enclosure and courtyards
Enclosure gives privacy and security, when this is done in the form of a courtyard it can be an extension of the life inside buildings.

Well maintained buildings
When a building is well maintained, people have a stronger connection with home and rate their neighbourhood better.

Allow natural light to enter
Having sloped roofs allows natural light to enter the streets. This makes the streets more pleasant and interactions more likely.

Community size < 500
When a community is small it is more likely that you know your neighbours, resulting in stronger social cohesion.

Hybrid zones 0,5 - 2 meter
Hybrid zones are vital for the legibility of domains and encourage social interaction and appropriation. Too big and it is a boundary, non-existent and the transition is too harsh.

Multiple privacy zones
More privacy zones allow people to decide how much publicness they need.

Clear privacy hierarchy
A clear privacy hierarchy helps people to understand where it is more public and where more private, this helps to adjust their behaviour.

Clear front and back
When a building has a clear front and back side people know what is the public side and what is the private or collective side, this helps to manage behaviour and enforces social control.

Open plinth
An open or active plinth means that there is interaction possible at the street level and that there are eyes on the street for social control. An open plinth can be commercial or residential.

Small scale green
When the patches of green space are small, social control is easier, people are more likely to use it, and people feel more responsible.

Streets 15-20 meter
If streets are 15-20 meters wide from door to door, this results in streets where social control and cohesion are strong because the other side is visible and everything has a human scale.

Less asphalt and concrete
Asphalt and concrete are materials that lack a human scale, they are dimensionless and their colour harms mental health as well.

Small permeable pavement
Small permeable pavement contributes to a nice outdoor experience due to its tactile characteristics, colour, and human scale.

Raised pedestrian crossings
Raised pedestrian crossings are clear signs of prioritizing humans over cars. They make the outdoor experience more pleasant and improve accessibility.

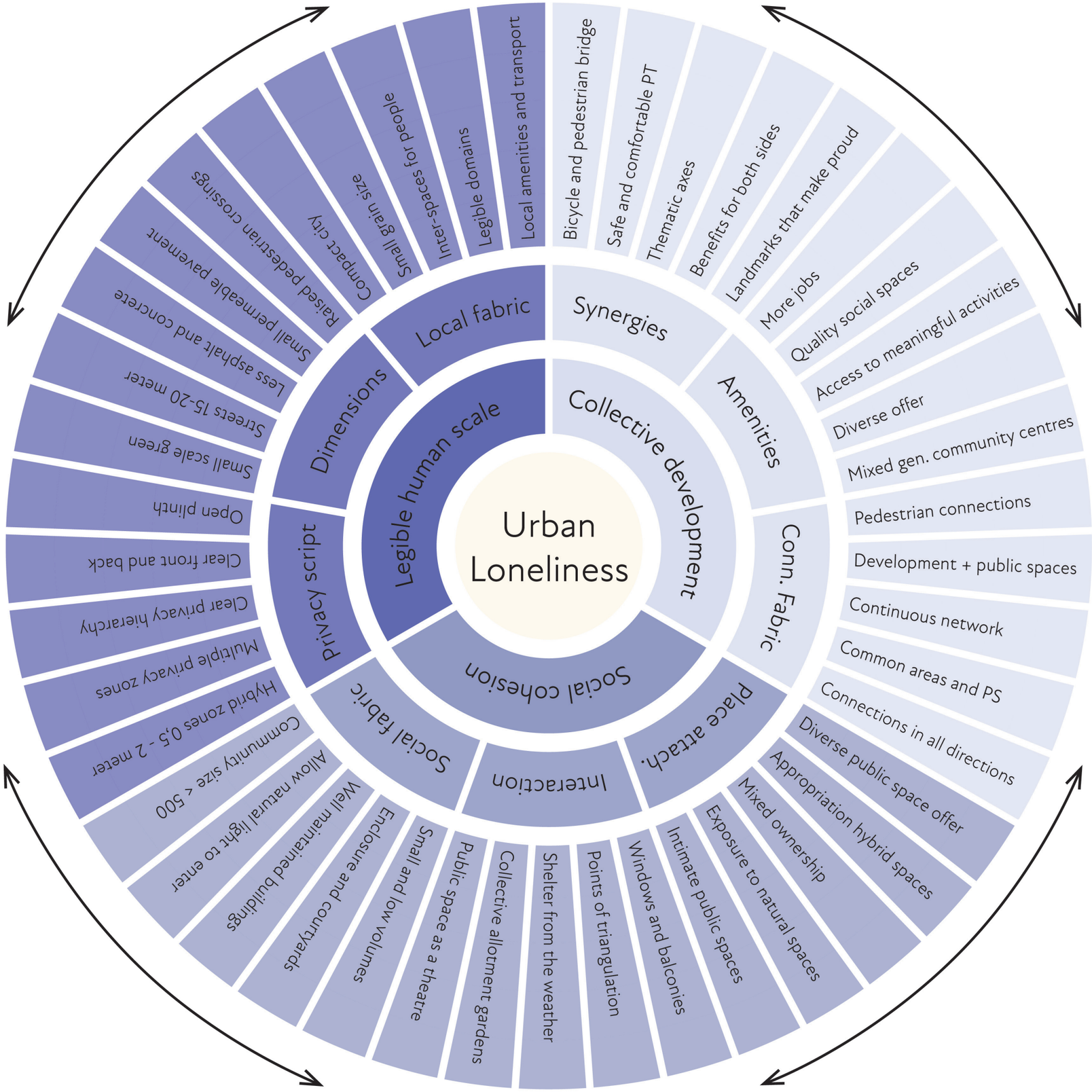
Compact city
When all your daily needs are close, people will walk more and encounter more. This urban form is dense as well as human.

Small grain size
A small grain size means that the network is at a human scale, that there are small community sizes, and fewer big buildings that you have to walk around.

Interspaces for people
When the interspaces are for people, an informal network is created where spontaneous encounters and activities can happen.

Legible domains
Legible domains help to stimulate desirable behaviour and help with knowing how to interact.

Local amenities and transport
Local amenities and transport make life more pleasant in the neighbourhood as well as improve connections between neighbourhoods.

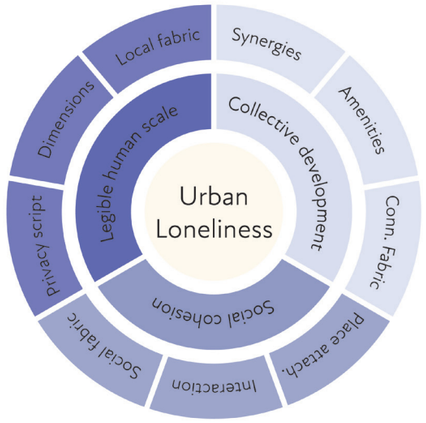


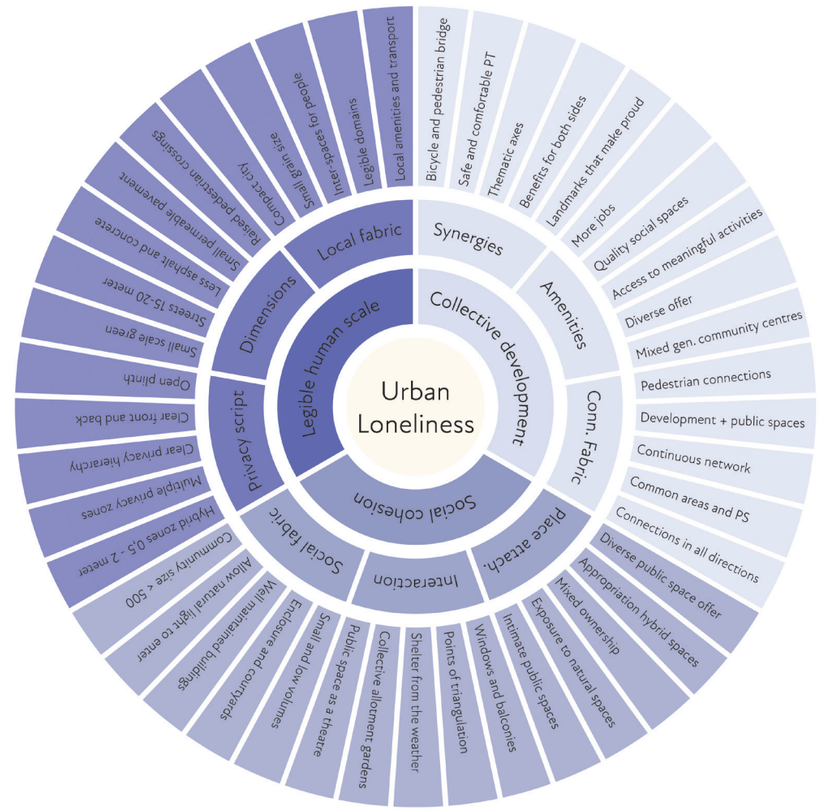
3.4.2 Design framework

The 45 design principles make up the design framework. The design framework starts with the three themes that were central in this chapter, social cohesion and social interactions, personal and collective development, and a legible human scale, in the middle. In the next ring are the nine sub-topics introduced from this chapter. For each sub-topic, the five most important principles made it into the framework. These principles seem to belong to one of the sub-topics, but in reality, most of them link with multiple topics. Therefore, the outer ring can be turned to form new connections.

3.4.3 Use of framework

The design framework is used as an inspiration for the design phase, making clear which topics are important to counter urban loneliness successfully. However, that is not the only role of this framework. It is also used to assess and evaluate the designs throughout the process by scoring each design on a scale from one to five on all 45 design principles. This gives insight into the strengths and weaknesses of each design iteration.





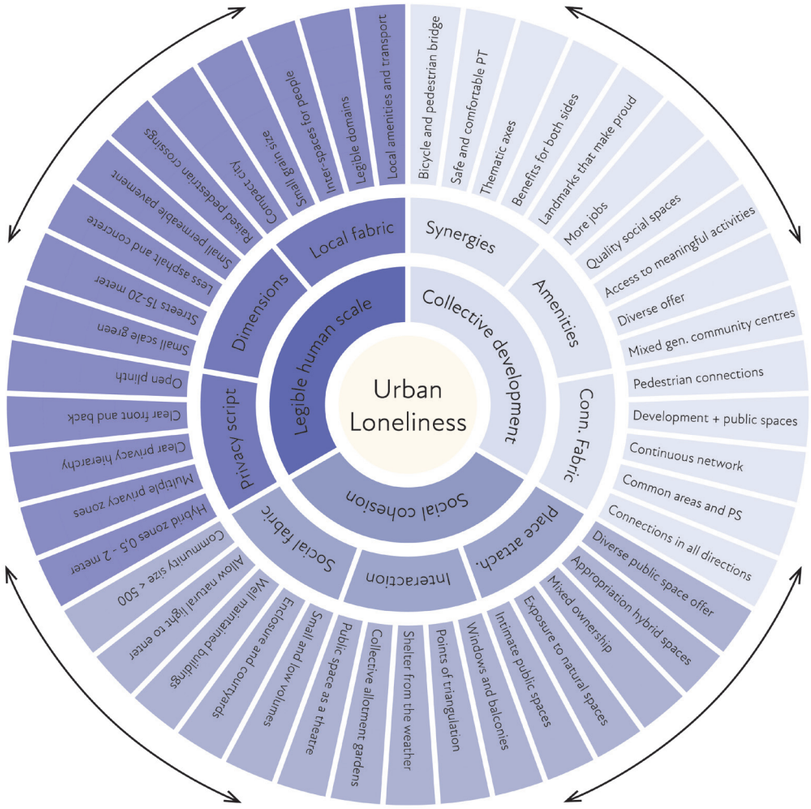


Figure 3.43 Design framework and uses

04 THE DESIGN

4.1 Design approach

4.1.1 Precedent analysis 124
4.1.2 Top-down & bottom-up 126

4.2 Lonely people

4.2.1 Field trips 128
4.2.2 Neela 138
4.2.3 Mr Maaznee 150
4.2.4 Enola 162

4.3 A lonely city

4.3.1 City as a machine 174
4.3.2 City as an organism 180

4.4 Live together

4.4.1 Integral design 190
4.4.2 Phasing 218
4.4.3 Collaboration 222

In this chapter, a redesign for Linkeroever will be presented. From the perspective of the lonely people, bottom-up, neighbourhoods are constructed based on personas, resident input, and theory. Important elements in these neighbourhoods are intimate public spaces, diverse functions, and small-scale buildings. From the perspective of the lonely city, top-down, a flexible framework is constructed based on urban form, program, and theory. The framework consists of three thematic axes which stimulate synergies between both shores. In Linkeroever, these axes provide people with choices and a clear hierarchy. On this scale, landmarks evoke a proud feeling and help to build a collective identity. A landscape layer connects the axes with each other, the neighbourhoods, and the natural areas. In the end, the two perspectives are brought together to form a design that counters urban loneliness.

Figure 4.1 An almost blanc canvas

4.1 DESIGN APPROACH

4.1.1 Precedent analysis

Before designing spatial and programmatic solutions for Linkeroever, it is wise to look at some precedents of similar neighbourhoods to get some inspiration on how to transform the design principles into a real neighbourhood. It is extra important to do this because when the high-rise flats are demolished, there are not a lot of carriers and context on which to build the design.

Dronningesgarde in Copenhagen shows the diversity of the courtyard typology, which allows for differ zones, diverse common use, and which can be divided into two. Bo01 in Malmö is an example of how the arrangement of volumes can protect the public space from the environment and therefore make the public space more attractive. 0519 Mariahoeve in The Hague is a project where inhabitants helped to decide how their courtyard will look after renovations. This process helps with place attachment and makes it more likely that the space will be used. The Bloemkoolburenbond in Almere presents a new enclosed typology, which has a surprising nature due to its asymmetrical layout. Oberbillwerder in Hamburg shows a clear hierarchy that is strengthened by the grain size of the building. This helps with the readability of the privacy script.

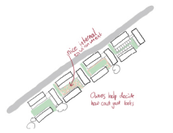
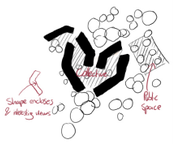
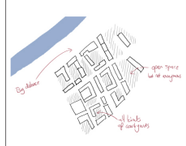
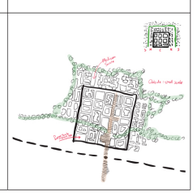
Name	3D	Map	Qualities	Why	Weaknesses	Why	Analysis
Dronningesgarde, Copenhagen			• Enclosed • Density • Diversity of open space • Functions in plinth • Courtyard	• Typology • 5/6 high • Asymmetry • Location and connection with city • Typology	• Non human streets	• Car dominant streets	
Bo01, Malmö			• Materials • Micro climate • Intimate • Attractive outdoor	• Attention to detail, making outdoor experience interesting • Looking at sun and wind, creation shelter • Small public spaces • Material, views, suprises, microclimate	• Disconnected	• Not fully developed area	
Vauban quartier, Freiburg			• Bauguppe • Green • Walkable • Diversity • Layering	• Make it cheaper and build cohesion • No car • Small plot development			
Quartier Massena, Paris			• High density • Intimate spaces using towers • Mixed use	• Towers • Enclosed (court)yards • University	• Not connected to river • Not real human scale	• Big road along river • Too high towers	
0519 Mariahoeve, Den Haag			• Transformation from functionless and antonymous to soft transitions and collective gardens • Privacy because of raised entrance	• Adding transition zone • Making courtyard collective • Raising the transition zone	• Unpleasant outside • Only bene fits the block	• Buildings facing inwards • Rest of NBH is not renovated	
Bloemkoolburenbond, Almere Haven			• Interesting experience • Facing fronts • Modern interpretation of Hofje • Strong community feeling	• Asymmetry • Orientation • Fronts are facing, not backs • No car, close together	• Low density	• Only three stories high • Space lost due to form	
Nieuw Zuid, Antwerpen			• High density • Green environment • Community places • Mixed functions	• Towers • Nice balance build and functional green • Strong program	• Gentri fication • not well connected	• Too expensive location and build • Distance to water • Parking on north as barrier	
Oberbillwerder, Hamburg			• Clear hierarchy • Diversity • Human scale	• Different size of buildings and roads • Limited car	• Isolated from the city	• No connections	

Figure 4.2 Precedent analysis matrix

4.1.2 Top-down & bottom-up

To come to the best design for Linkeroever, I approach this design challenge from two sides at the same time. One of the approaches is top-down and the other is bottom-up.

From top-down, I focus on the lonely city. Synergies, connections, and program are important instruments to counter loneliness at the city scale. The aim is to design a flexible framework which supports personal and collective development. This framework should establish a sense of belonging between both sides which are now segregated.

The bottom-up approach is based on the talks I had with the residents of Linkeroever. It focusses on lonely people, based on a happy home, social cohesion and social interactions, and on the eye level experience. The aim is to design three different neighbourhoods based on three personas. These neighbourhoods deal with loneliness all differently. These neighbourhoods should make people feel part of a community and therefore counter urban loneliness.

After, the results of these two approaches will be combined. The neighbourhoods will be fitted into the framework. When necessary, the neighbourhoods or the framework will be adjusted. The balance between coherence and diversity is important in this phase, as well as the number of amenities that the district can handle. The aim is to create a diverse district with a legible human scale.

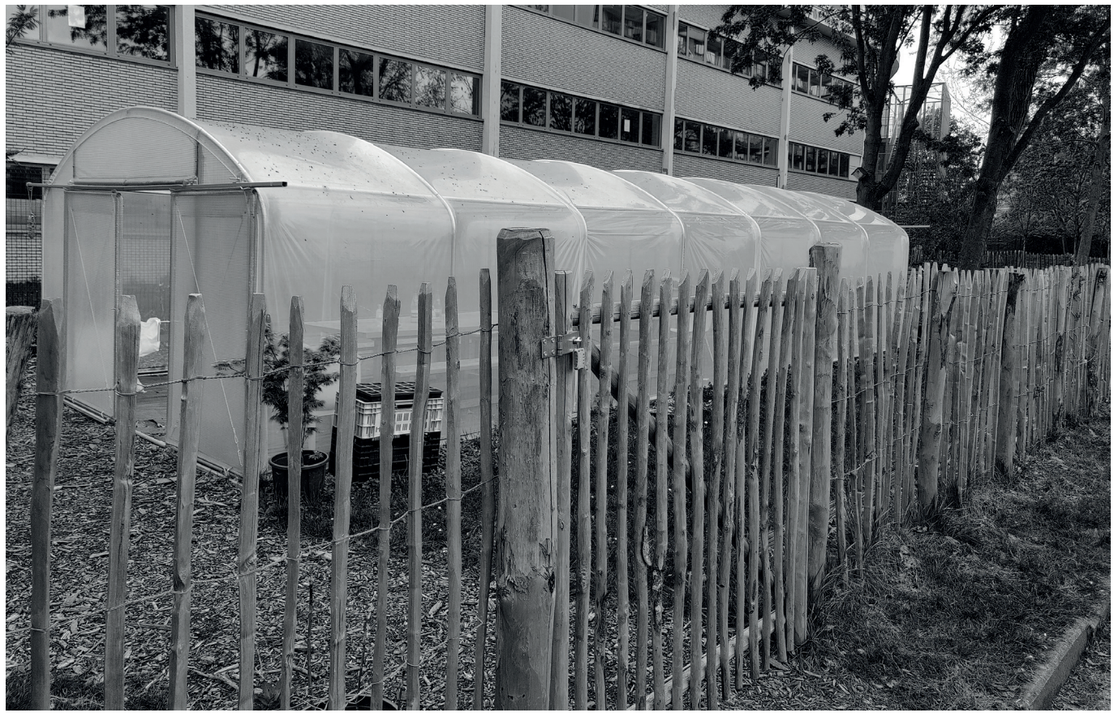


Figure 4.3 A greenhouse built by a bottom-up initiative

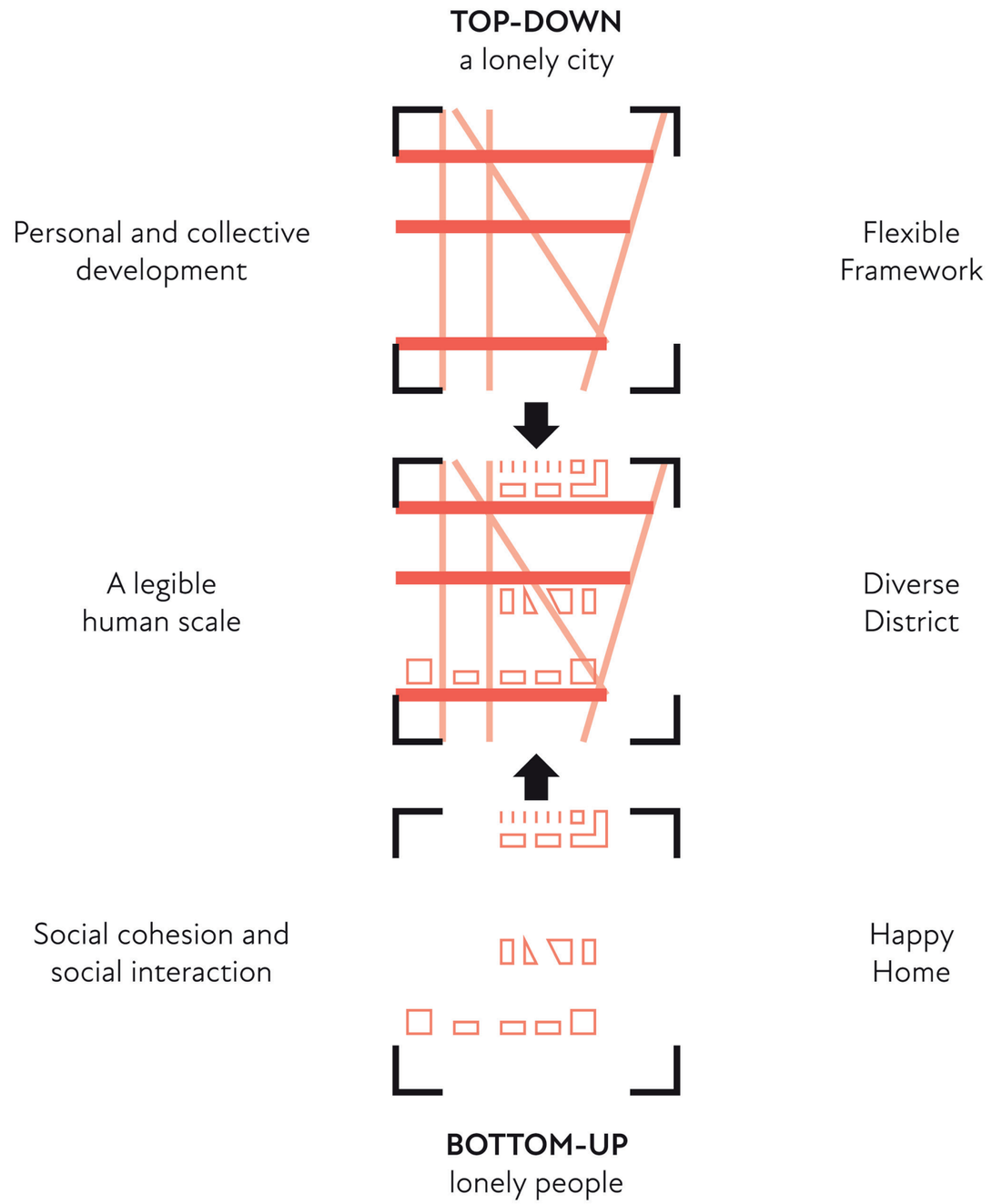


Figure 4.4 Design approach

4.2 LONELY PEOPLE

4.2.1 Field trips

During the graduation period, I visited Linkeroever four times. The first two times for one day and the second two times for two days at a time. The first visit was most explorative and centred around observations. During the second site visit, I had an open discussion with some residents in the community centre. This was valuable information to narrow down my scope and fuel the design. For the third field trip, I prepared three designs based on metaphors. I discussed these designs with the residents and got valuable feedback that helped with the design of the neighbourhoods for the personas. I also spoke with children in the youth centre, which gave a different perspective on the situation in Linkeroever. The fourth field trip was to check if my proposed interventions will have the intended impact. I talked over my design with the head of the community centre. The results of this reflective session are described later when I assess the impact of my design.

The information I gathered during these field trips form the basis for my bottom-up approach. The people I met where the inspiration for the personas. Without meeting these people, it would have been harder to come to a bottom-up approach. Talking with them on a personal level also resulted in a design that they felt comfortable with them because they were heard, and difficult issues could be explained well. They told me that this way of designing is great because it shows interest in the people, instead of the top-down plans that have been made in past by the local government or design teams.

Figure 4.5 One of my talks with the head of the community centre

Figure 4.6 The community centre

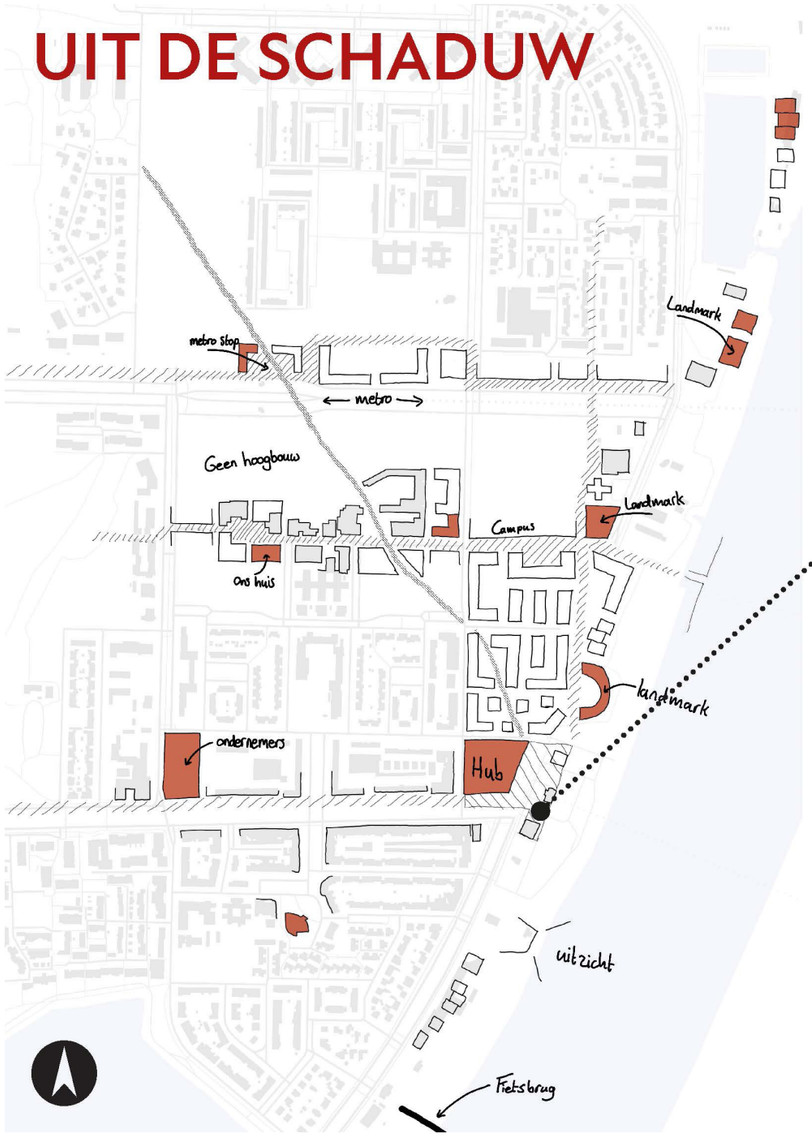
Figure 4.7 Overview of a activity I did with the residents

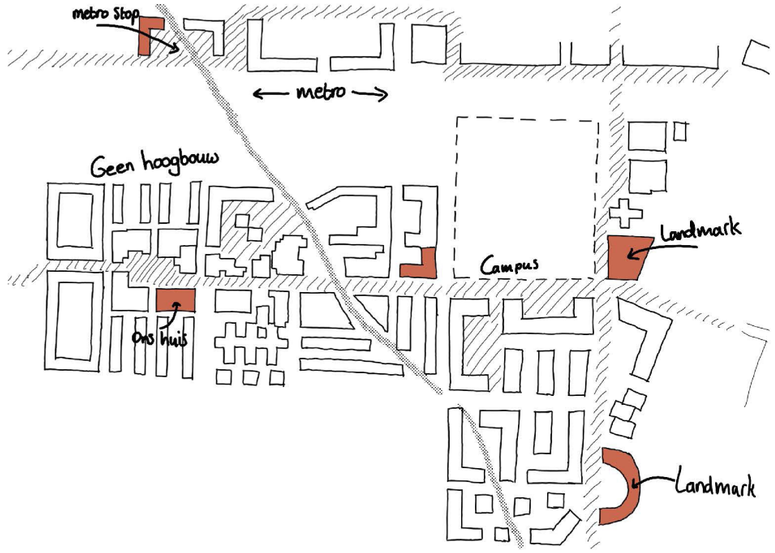
Out of the shadow

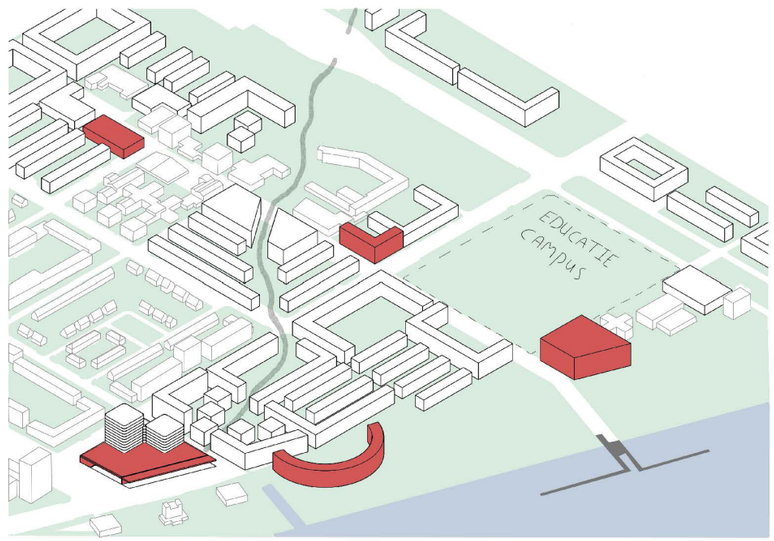
Out of the shadow is the metaphor that describes a concept in which Linkeroever steps out of the shadow literally and figuratively. Most of the high-rises will be demolished and replaced by a compact and lower urban form, resulting in fewer shadows from buildings. At the same time, more landmarks will be introduced along the shore to give the people of Linkeroever something to be proud of. In this way, they step out of the shadow of the city centre and become a valuable part of the city.

The residents I spoke with really like this design. They described the current situation as a desert or as a blend dish. With the proposed interventions they compared can you situation do an oasis, or a dish with a nice amount of herbs and spices. However, they also warned me that Linkeroever should not become too busy. For them, some extra functions are a great idea, but the peace of the district is a quality that they do not want to lose. For these people to be proud of their district connections with the rest of the city must be improved significantly. When we spoke about landmarks that could make them proud, they liked the idea of a fountain and they also spoke about public rooftops where they can meet and have a great view of the city. In general, they liked this idea but it should match Linkeroever and not be too commercial.

Figure 4.8 Alternative 1: out of the shadow





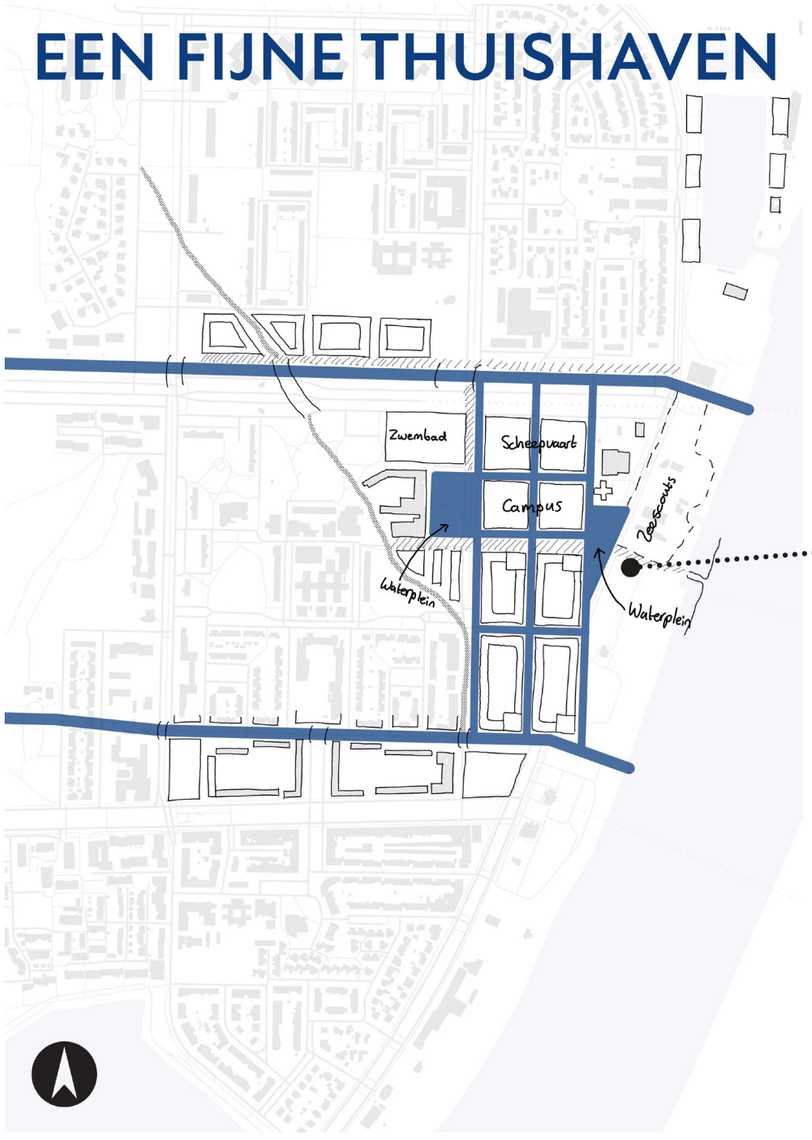


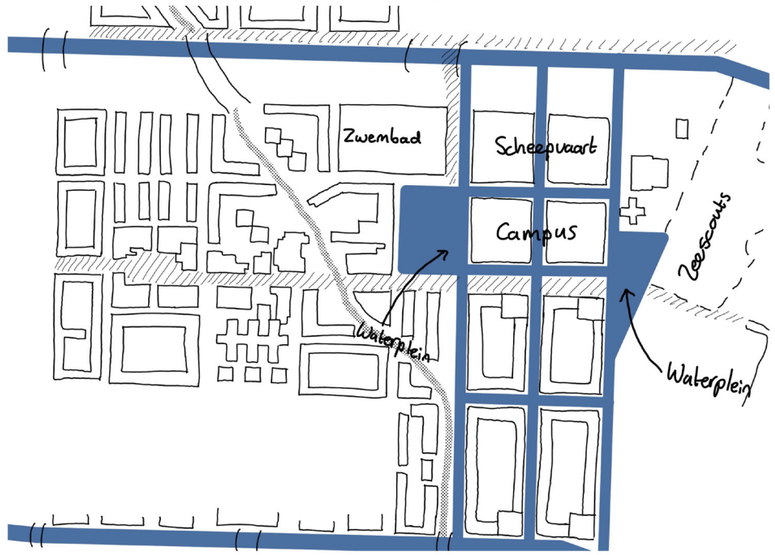
A nice home port

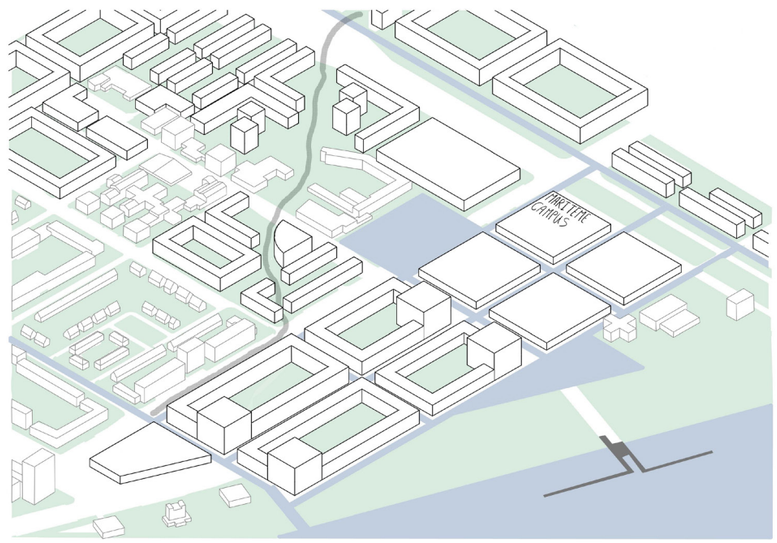
The metaphor of a nice home port is the design concept that combines the maritime identity of the city with a pleasant and safe living environment. In this design, a modern maritime campus will arise at the location where currently maritime schools and maritime-related offices are located. Water will also be incorporated into the neighbourhoods, to connect people better with the identity and history of Antwerp as a water city. The buildings will mostly be courtyard typologies, which ensure safety and social cohesion due to their collective nature and enclosed form. Adding a water square to the public space is an important feature. It helps with water retention but also functions as a public space where people can sit down or play sports.

The residents I spoke with liked the idea of the water square. They can see themselves sitting there, they see this as a spot that can attract younger people. Furthermore, they stated that this design makes them feel better connected with the river. The idea of the courtyards gave them a feeling of a safe and protected home. A great living environment and a nice house is for them the most important. The main critique on this design was that the costs of bringing back the water might be too high and that the people living in this neighbourhood might have different priorities right now.

Figure 4.9 Alternative 2: a nice home port





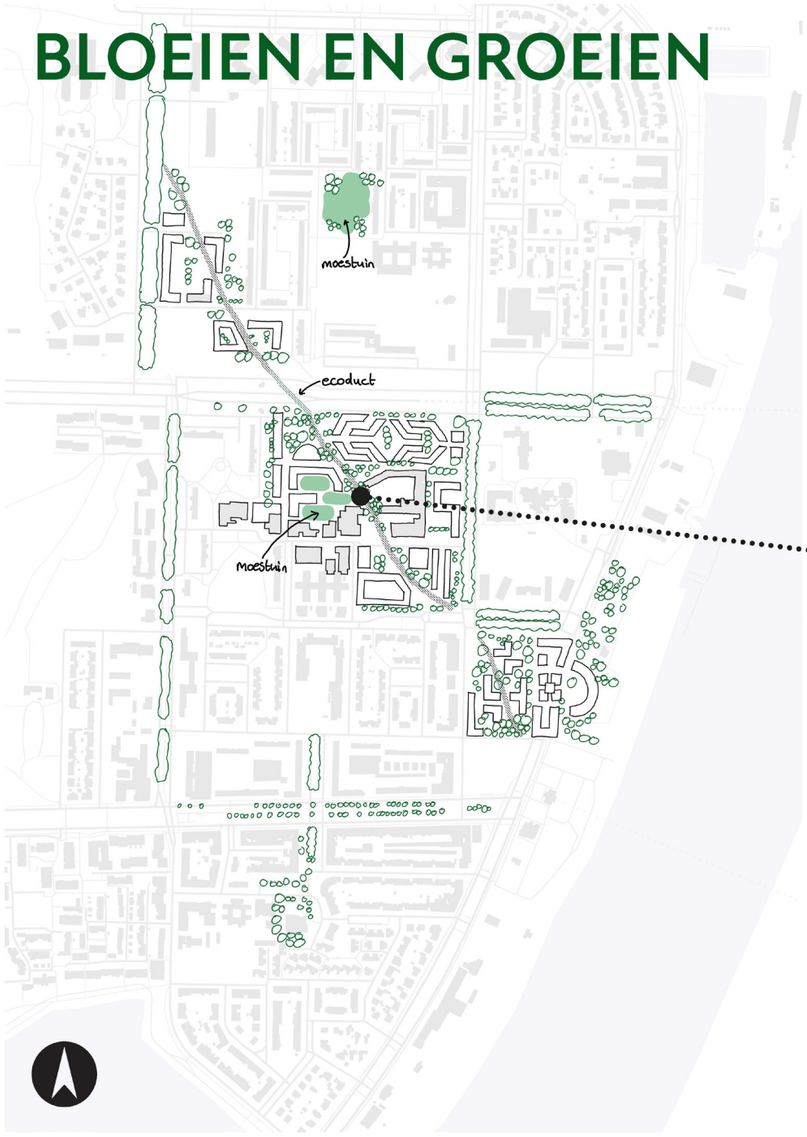


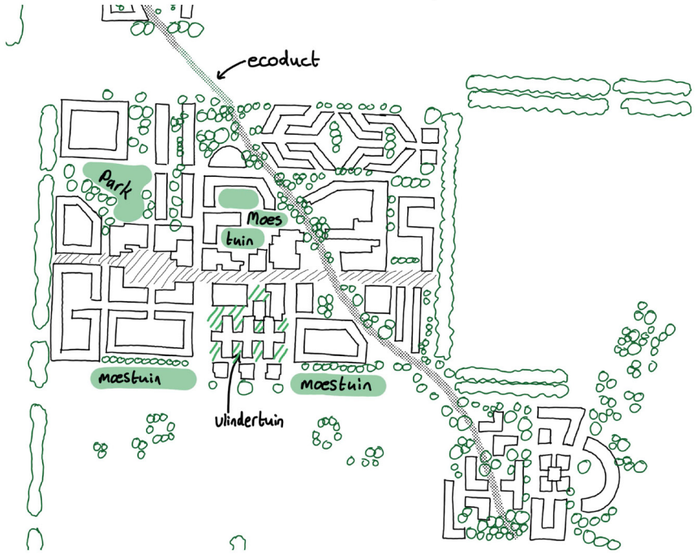
Bloom and grow

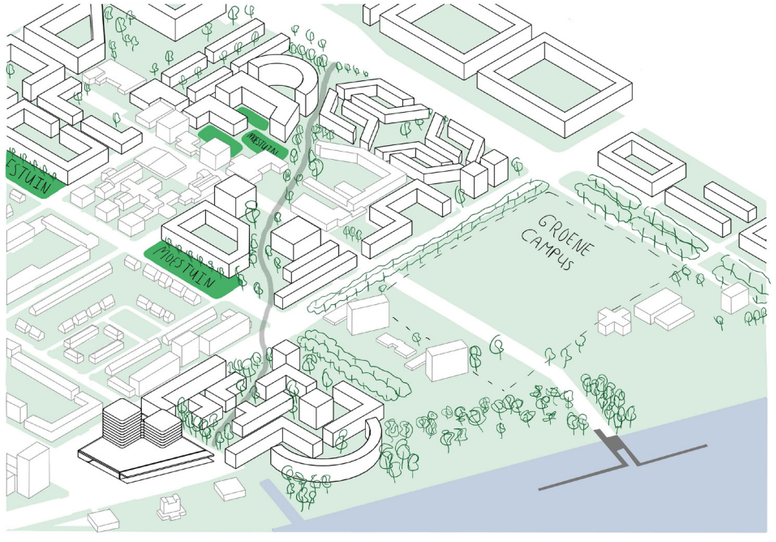
To bloom and grow is a metaphor for a neighbourhood in which both people and nature can bloom and grow. Nature is one of the current values of Linkeroever, although the quality leaves something to be desired. In this design concept, most of the trees will be kept, allotment gardens will be introduced, and living and nature should go hand in hand. Nature has a restorative impact on the human mind and therefore can help to reduce negative symptoms cost by urban loneliness. Allotment gardens can bring people together and they can help to produce healthy and cheap food for low-income households.

The residents I spoke with were interested in this concept. In their opinion, the collective allotment gardens are a good idea and they were eager to participate in this. The prospect of healthy food and social contact is very interesting. In this concept, they saw themselves participating more actively within the neighbourhood, which means that someone is very committed to this design. They also stated that's flowers and other plans could help to make the neighbourhoods more colourful. The final remark was that this design good help to make the public space safer because right now the spaces are often too big and too empty.

Figure 4.10 Alternative 3: bloom and grow







Conclusions

Besides the feedback I got from the residents, I also evaluated the three design concepts by using my design framework. Combining these two methods gave me a clear insight into the strengths and weaknesses of each design. This information is very valuable for further steps in the design process.

According to the residents, better physical connections are vital to create a sense of belonging. Furthermore, it is important to provide enough amenities to create an interesting district, but at the same time, there should not be too many functions that can result in a district that is too busy and noisy. Landmarks, allotment gardens, and a water square are elements that are desirable for the residents. However, the most important aspect for them is a safe, pleasant, and qualitative direct living environment. Accessible social spaces where people can easily interact with one another are also high on the priority list. All three concepts have something valuable to offer. The landmarks and hierarchy of the first concept, the safe living environment and water square of the second one, and the allotment gardens and natural environment of concept three. These elements I will try to combine in future design iterations.

When the three design concepts are evaluated using my design framework it becomes clear what the strengths and weaknesses of each design are. The assessment of out of the shadow points out that a clear hierarchy and a great connection with the rest of the city are the strong points of this concept. On the other hand, this concept scores badly regarding social cohesion, mainly because it lacks the diversity of public space and does not have a lot of locations that invite people to interact. Concept two, a nice home port, excels in creating a nice living environment and a safe pedestrian network. However, its connection with the rest of this city is quite poor, it has nothing special to offer as part of a synergy, and besides the water elements, the urban fabric is quite boring. Bloom and grow is a versatile design with a comfortable human scale. The design is not only great for humans but also for biodiversity. The grow part of this design could be more emphasised. Personal and collective development is important to counter urban loneliness.

In conclusion, all three designs have strong and weak points both from the perspective of the residents as well as from the perspective of theory. The lessons learned from this exercise will be taken into account in the next steps of this design process.

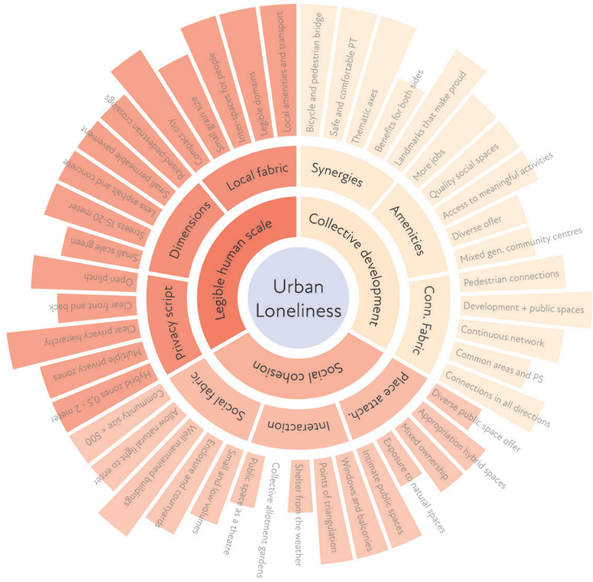


Figure 4.11 Assessment of out of the shadow

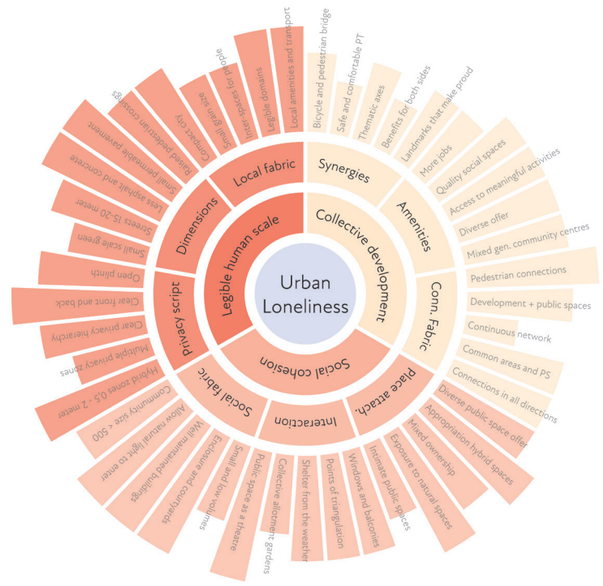


Figure 4.12 Assessment of a nice home port

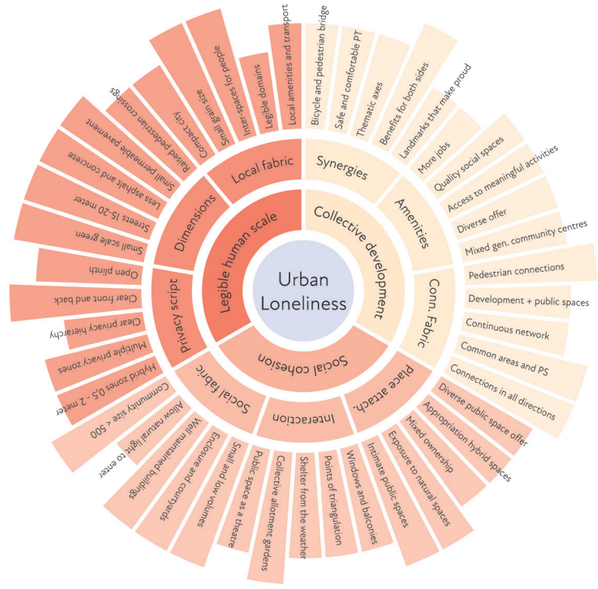
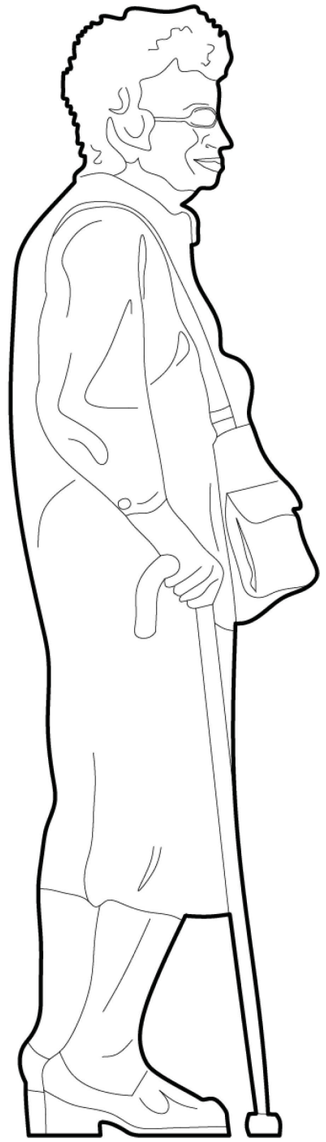


Figure 4.13 Assessment of bloom and grow

4.2.2 Neela

Neela is the first persona created to redesign a part of Linkeroever. She lives here for almost fifty years in one of the social housing blocks, of which the quality is low. She suffers from social loneliness, not enough social connections, since the loss of her husband five years ago and is impeded by limited mobility.

The next four pages will describe a typical day in the life of Neela. First, a day will be presented like it is right now. After that, a similar day will be shown in a future context where everything is done to counter the loneliness of Neela. Reducing the hight of the building Neela lives in, solves several problems by making it easier to go outside, more likely to have social interactions with neighbours you know, and by improving social control. More amenities, better connections to the rest of the city, and mixing generations are other elements that help to counter urban loneliness for Neela.



NEELA

Meet Neela, one of the senior residents of Linkeroever who lives here for almost fifty years. Since she lost her husband five years ago she feels more and more lonely. She lives in one of the social housing blocks and complains about the quality and condition of her apartment. She can walk small distances but is very reliant on public transport.

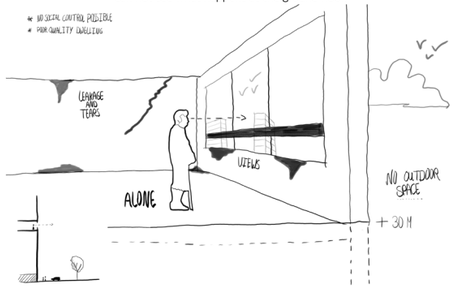
Social loneliness

NEELA

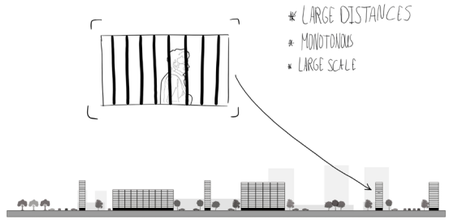
Meet Neela, one of the senior residents of Linkeroever who lives here for almost fifty years. Since she lost her husband five years ago she feels more and more lonely. She lives in one of the social housing blocks and complains about the quality and condition of her apartment. She can walk small distances but is very reliant on public transport.

Social loneliness

Neela wakes up in her social dwelling at the tenth story. The view is breathtaking but she can not see what happens at the ground floor.

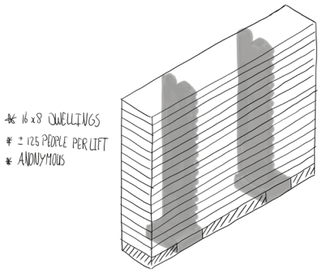


Her dwelling feels like a prison cell in the sky.



She wants to go downstairs to do some grocery shopping.
Hopefully the elevator is operational today.

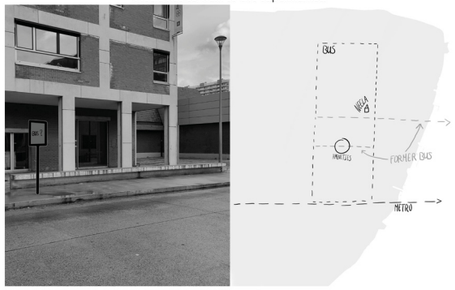
In the elevator and in the lobby, she encounters some of her neighbours.
Most of them she does not know nor recognise. There are just too many.



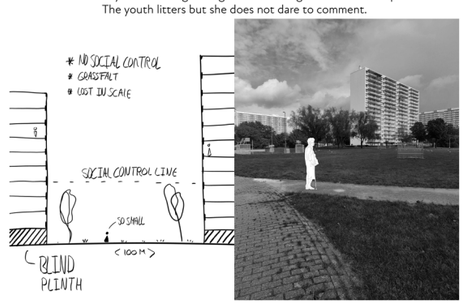
When she steps outside, she is confronted by a sea of asphalt and cars

Fortunately she makes it across the street safely

There used to go a bus to the cluster of amenities, but not anymore.
Neela has to walk to the supermarket.



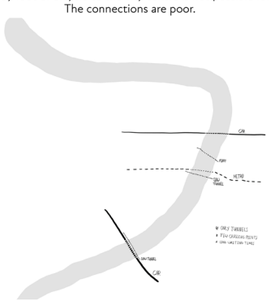
She feels anonymous walking through the fields of grassfalt and blind plinths.
The youth litters but she does not dare to comment.



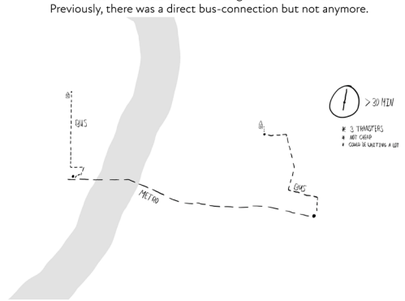
At the supermarket she gets her groceries. She also needs wool for her knitting hobby.
This is not available anywhere at Linkeroever.

After eating lunch alone, she commits to taking the trip to get the wool she needs.

Going by foot or bicycle to the city centre is not possible for her.
The connections are poor.



She takes the bus and metro to get to the other side.
Previously, there was a direct bus-connection but not anymore.

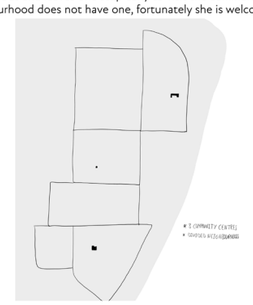


While riding the metro she asks herself: do we as Linkeroever belong?

Once in the city ,she buys the wool and thinks of the time that her daughter and grand kids still lived in the city before moving to Brussels.

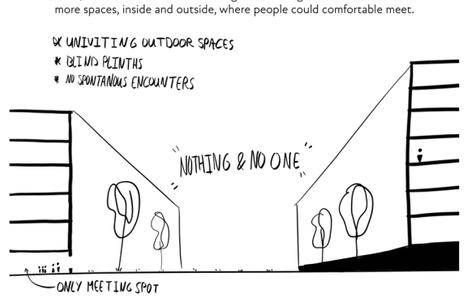
She take the metro back and is disappointed that it takes so long
to buy wool while living in a city.

She takes the bus and leaves one stop early to visit the community centre. Her
neighbourhood does not have one, fortunately she is welcome here.



A cup of thee, some chatting, knitting, or playing a game makes her day a bit better.

After a hour, she heads back home thinking about how great it would be if there were
more spaces, inside and outside, where people could comfortable meet.



She walks back through an outdoor environment where everything looks alike.
She wanders if she wants to spend her final years her... But where else could she go?

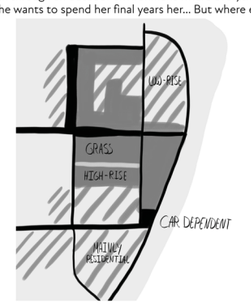
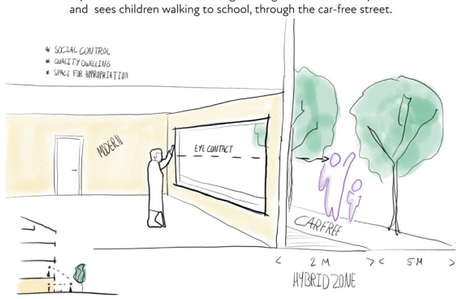


Figure 4.14 A day in the life of Neela

NEELA

Meet Neela, one of the senior residents of Linkeroever who lives here for almost fifty years. Since she lost her husband five years ago, she does not feel more lonely. She lives in one of the social housing blocks and praises the quality and condition of her ground floor apartment. She can walk small distances but can get almost everywhere by public transport.

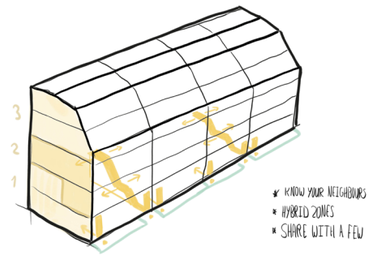
Neela wakes up in her modern social dwelling at the ground floor. She opens the curtains and sees children walking to school, through the car-free street.



Her dwelling feels connected with the neighbourhood.

She wants to do some grocery shopping. She opens her door and enters the street through her little front garden.

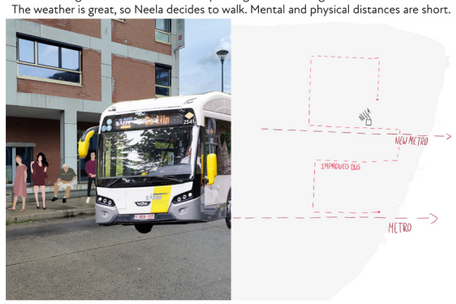
In the streets, she is greeted by her neighbour who is about to bring the kids to school. Before they head off, the make a small talk in the front garden.



When she steps onto the street, the street is green, clean, and free of cars.

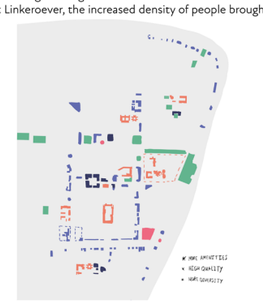
She sees some litter. She picks it up because she feels responsible for her street.

At the edge of the block is a bus stop that goes to the neighbourhood amenities. The weather is great, so Neela decides to walk. Mental and physical distances are short.



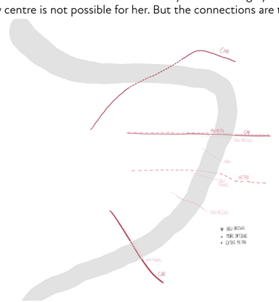
Everywhere people emerge from their doorsteps to go to schools, work, or amenities. She feels part of this vivid area. Even the youth behaves because the is social control.

At the supermarket she gets her groceries. She also needs wool for her knitting hobby. She can get this at Linkeroever, the increased density of people brought more amenities.

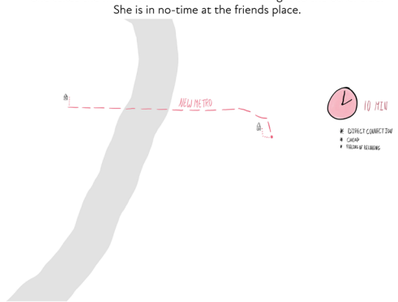


At this day of the week, the neighbours' children eat lunch with her while both parents are at work. She likes the company and it gives her purpose.

In the afternoon she wants to visit a friend in the city centre. Going by foot or bicycle to the city centre is not possible for her. But the connections are there.



She takes the new metro in front of her block to get to the other side. She is in no-time at the friends place.



They talk for a while bring back memories from the past.

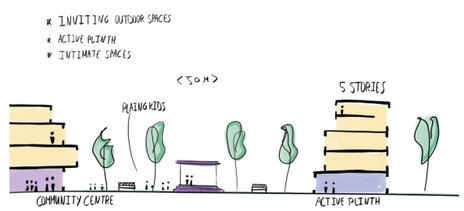
She also pays a visit to her bank, which does not have a location at Linkeroever. Fortunately, it is easy to combine and the people are friendly.

She takes the metro back and is happy that she has the opportunities and choices to go where she want whenever she want independently.

Back in her neighbourhood she decides to go to the community centre where young and old comes together.

Her she drinks a cup of thee, chats with some neighbours, knits, or plays a games with the children. She loves to come here.

The community centre is located at the edge of a small park. She like to watch the young generation play outside in the sun, like today.



She eats diner at her neighbours' place in return for taking care of the kids during lunch. After diner, she retreats in her own home. This is how she wants to grow old!

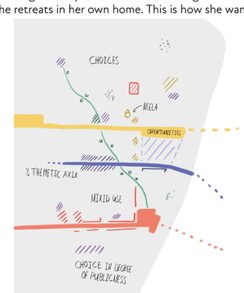


Figure 4.15 The future for Neela

Design elaboration

Based on an ideal day in the life of Neela, a redesign of her neighbourhood has been made. This design is a combination of multiple design alternatives, of which the best elements are combined.

In this neighbourhood design the high-rise buildings have been replaced by small-scale asymmetrical courtyards. This results in a neighbourhood in which Neela is more likely to go out and more likely to make social contact with her neighbours. Something important for Neela to overcome her social loneliness is a place where all generations can meet. The community centre is situated in a way that connects the schools, dwellings, and public spaces. There is a reason to go there for every generation. The walkable fabric and safe crossings make amenities within the district more accessible, while the new metro allows Neela to travel to the city centre comfortably. This design has everything Neela needs to counter her urban loneliness and even more.

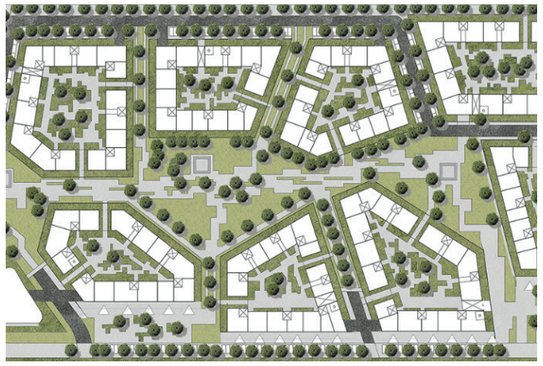


Figure 4.16 Asymmetrical courtyard (Szymanska, n.d.)

Figure 4.17 Intimate streets (Bureau SLA, 2017)

Figure 4.18 The area right now

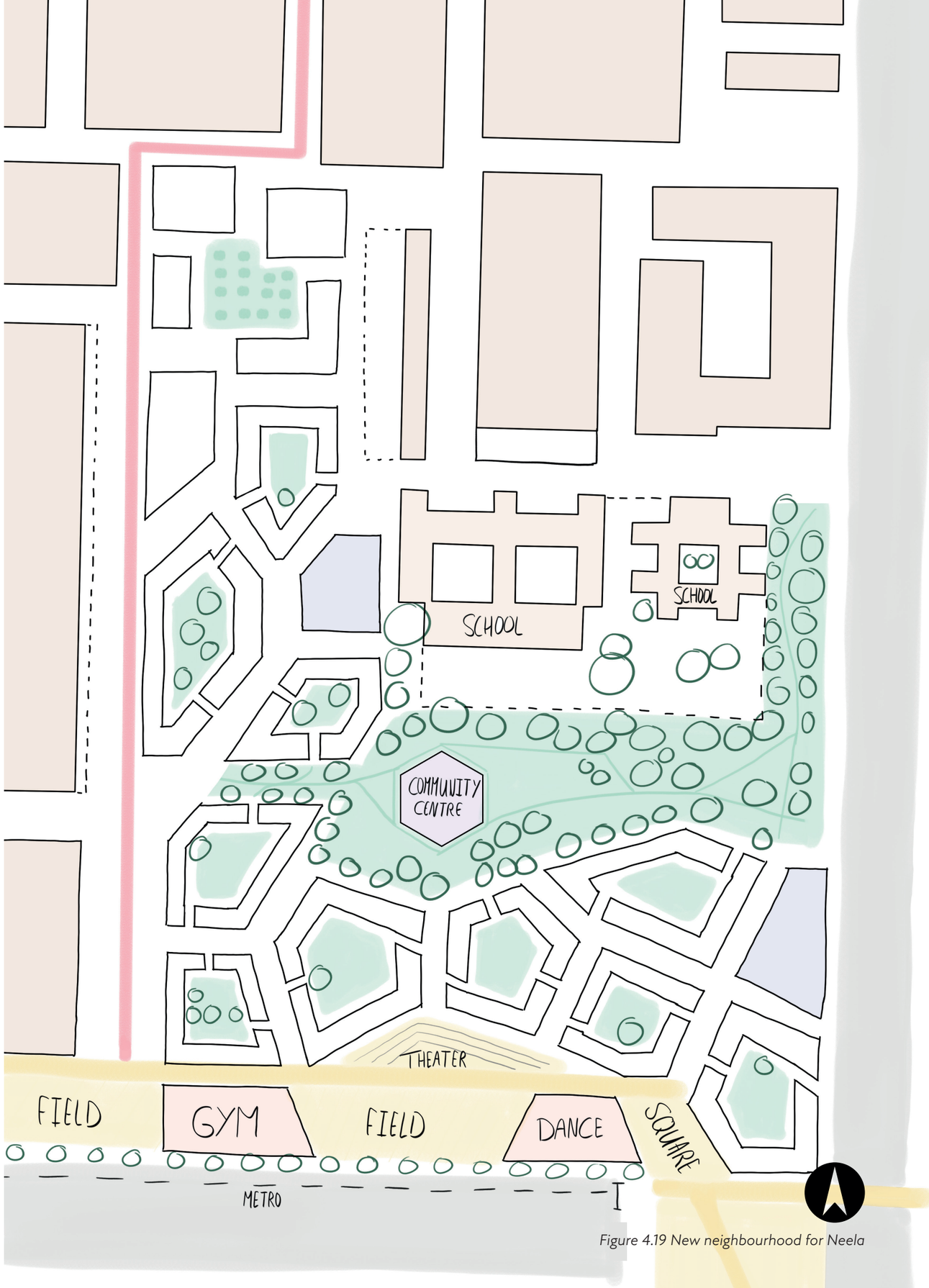


Figure 4.19 New neighbourhood for Neela

Essential elements

The essential elements of this design that help to counter urban loneliness are the following. Firstly, the most important **public space is shaped like a theatre**. When public space is clearly defined in stage and audience, like a theatre, it invites social interactions like people watching (Simões Aelbrecht, 2016).

Secondly, the building typology has changed according to suggestions by Sim (2019). The large slabs with no clear front or back have been replaced by courtyards which enclose space. Asymmetrical courtyards create a more **intimate and surprising urban fabric** resulting in more social cohesion and social control.

Collective allotment gardens can bring people together, create a sense of responsibility, and allow for appropriation. Moreover, they can also produce cheap and healthy food for the community. The allotment garden must be shared, located in an enclosed urban fabric, and not too big for social control.

Having a space where people from all generations can interact is beneficial for everyone. People can learn or help other generations. It is not easy to **bring generations together** as they have different interests. Therefore, it is important to embed such a space somewhere in the urban fabric where there is something attractive for each generation.

A final essential element of this design is the **relation between the inside and outside** of a public function. Social interaction should not only happen inside or outside but should be continuous. A hybrid zone could allow an indoor activity to spread outside. Making the relation between inside and outside clear and strong helps with the legibility of domains and avoids anonymous public spaces.

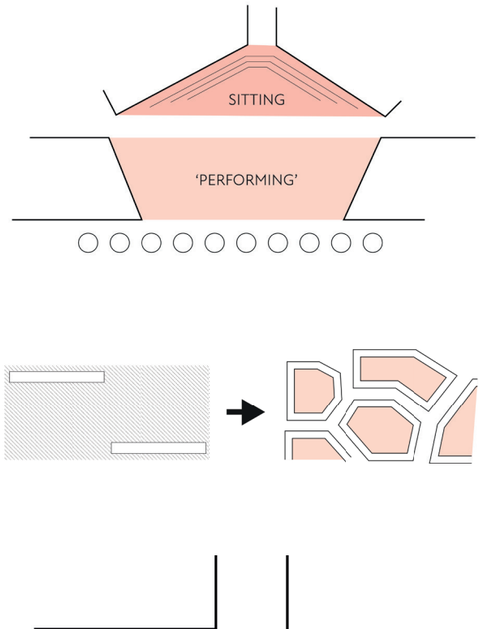


Figure 4.20 Essential elements of the design

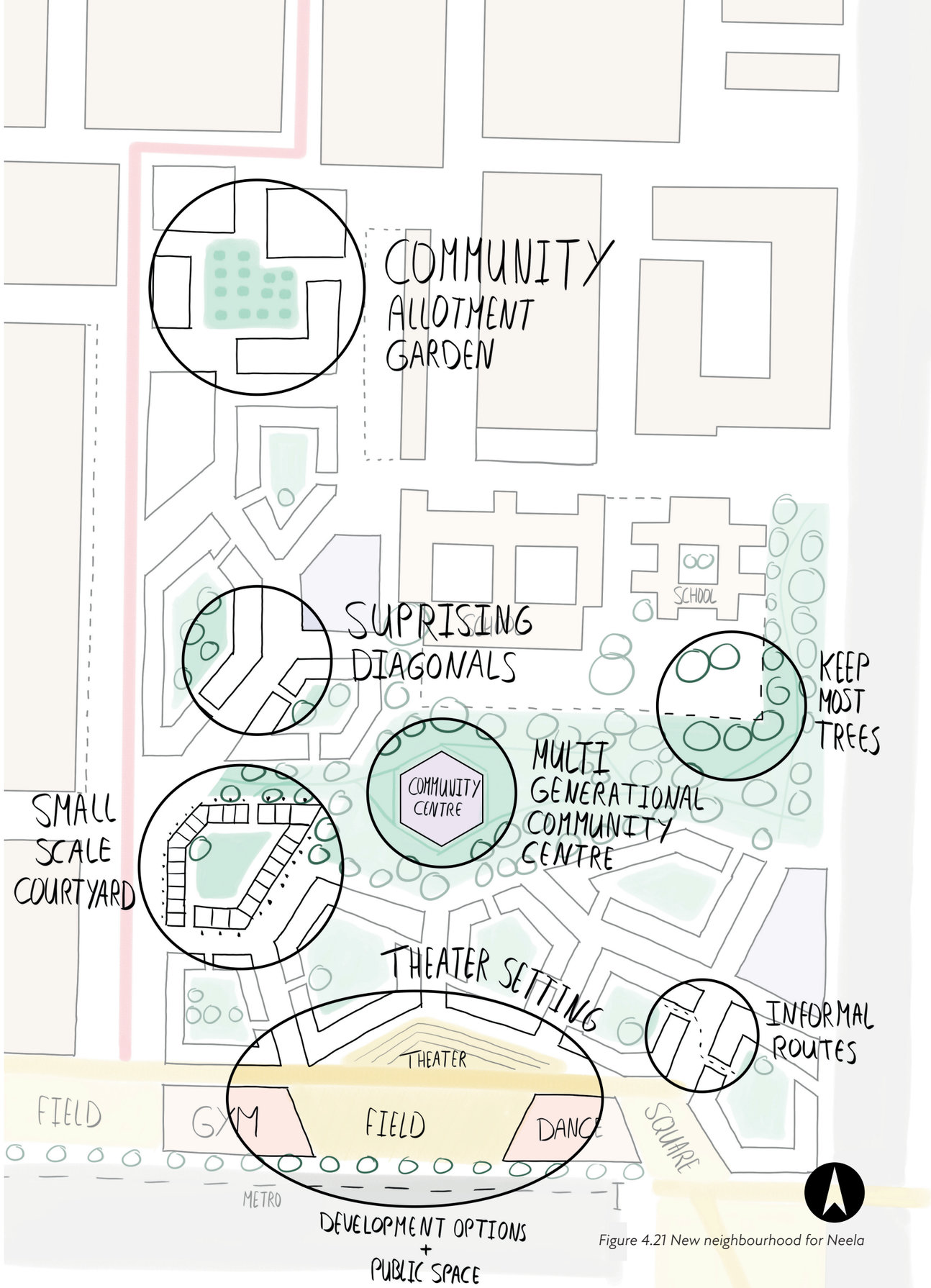


Figure 4.21 New neighbourhood for Neela

Design assessment

The design can be assessed using the previously created design framework. The results of this evaluation process help to point out some strengths and weaknesses of this design. Because this neighbourhood is far away from the bicycle and pedestrian bridge and lacks real urban functions and landmarks, it scores low on the synergy aspect. To make the area a bit more comfortable, extra attention should be paid to allowing natural sunlight in and resisting wind and rain. This design excels in the social parts. This is exactly what Neela needs to counter her urban loneliness.

Other weaknesses that are not part of the design framework include limited car access. The new streets are car-free, which is great for liveability but can be a limitation for elderly or other car-dependent people. There is also a big difference between the old and new world. They could be integrated better to form one urban fabric. Strong parts of this design are the walkability and green structure. Distances are short, amenities close, and there is an informal network resulting in interspaces for people. The green network has a restorative function and makes sure Linkeroever keeps its green character. Most trees are retained and the large useless patches of grass are transformed into a connected network of small natural areas.

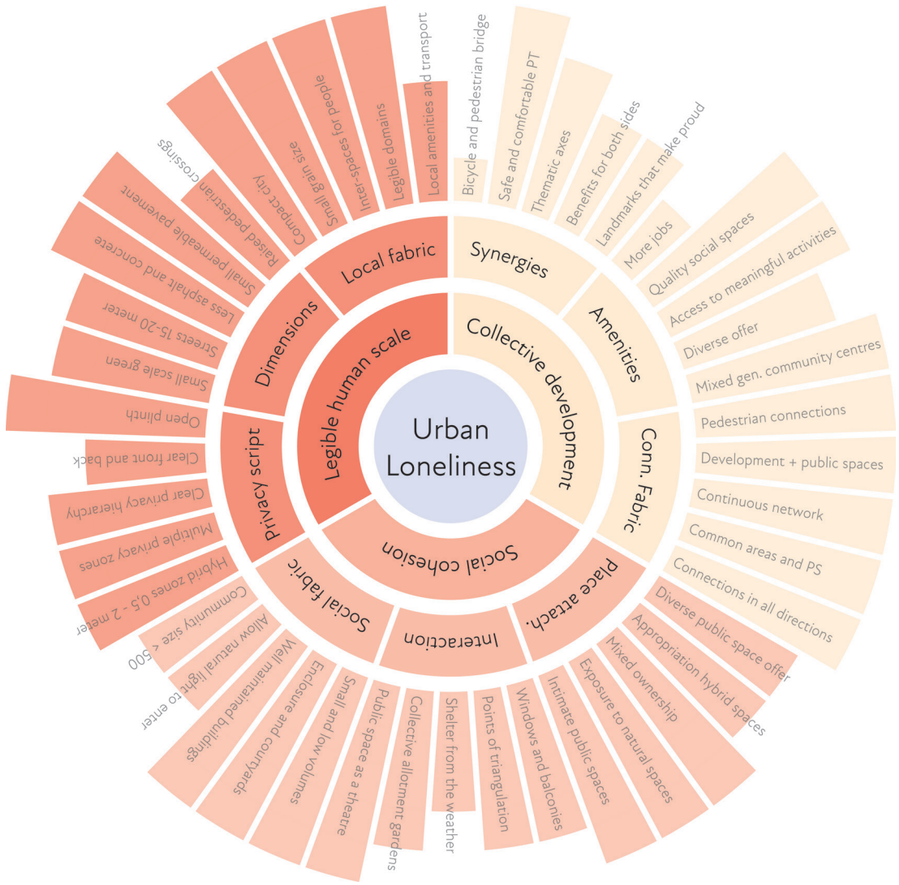


Figure 4.22 Design assessment

Figure 4.23 New neighbourhood for Neela at eye-level

4.2.3 Mr Maaznee

Mr Maaznee is the second persona created to redesign a part of Linkeroever. He lives in Belgium for fifteen years, of which ten were in Linkeroever. He suffers from existential loneliness, lack of purpose in life, since he cannot show his craftsmanship as a maker but must work in the harbour.

The next four pages will describe a typical day in the life of Mr Maaznee. First, a day will be presented like it is right now. After that, a similar day will be shown in a future context where everything is done to counter the loneliness of Mr Maaznee. Providing cheap and accessible spaces for entrepreneurs solves several problems by allowing them to start their own businesses, activating the plinth, and stimulating social interactions. An activated courtyard, better connections to the rest of the city, and welcoming community centres are other elements that help to counter urban loneliness for Mr Maaznee.

Mr Maaznee

Meet Mr Maaznee, he moved to Belgium 15 years ago and lives in Linkeroever for 10. In Morocco he used to work as a maker, here he works in the harbour . He rents an apartment on the Lode Zielenslaan where he lives with his wife and three young children. He loves to spend free time with his friends or with his kids in nature.

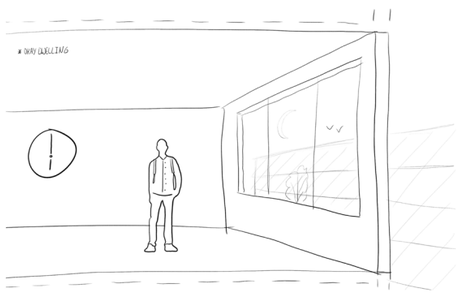
Existential loneliness

Mr Maaznee

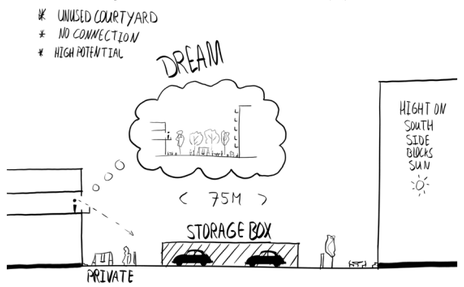
Meet Mr Maaznee, he moved to Belgium 15 years ago and lives in Linkeroever for 10. In Morocco he used to work as a maker, here he works in the harbour . He rents an apartment on the Lode Zielenslaan where he lives with his wife and three young children. He loves to spend free time with his friends or with his kids in nature.

Existential loneliness

Mr. Maaznee wakes up early to work in the harbour.

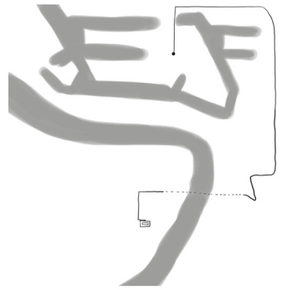


When he looks out of the window, he overlooks a courtyard currently used for storage boxes. He would love for his children to play here.

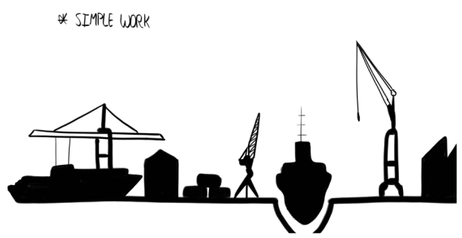


Even though he lives in a residential street, everything is asphalt.

He drives to work, for this the smooth asphalt is great.



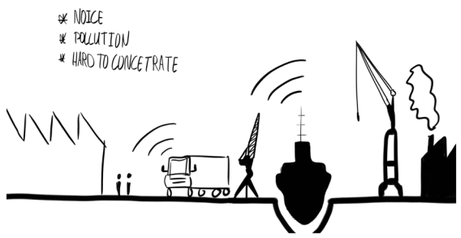
Mr. Maaznee works in the harbour. He is happy that he has a job, but would prefer to start for himself.



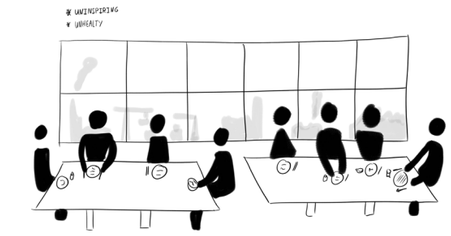
In Morocco he had his own makers place.
Unfortunately, he was forced to flee his country of birth.

In Antwerp he was offered a job in the harbour. Now that the is in Belgium for more than 15 years, he dreams of more.

His working environment is very loud en noisy.



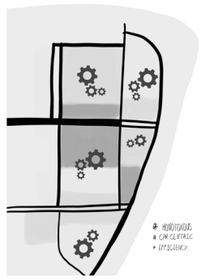
During lunch he sits down in the cafeteria with co-workers who are all from different backgrounds.



When he gets back home, his wife is making dinner. She works mornings in the local supermarket and takes care of the children.

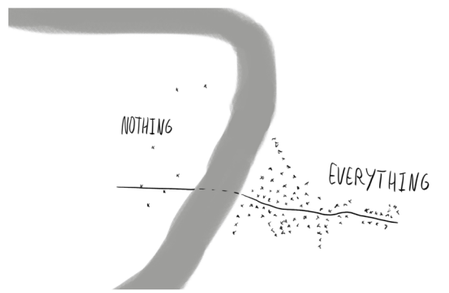
The weather is nice and his kids want to go outside. Now that mr. Maaznee is home, he can take them to the park near the river. It is not safe enough for the kids to go alone.

He enjoys the peace at Linkeroever. At the same time the district feels like a machine, just like the harbours.



After diner mr. Maaznee wants to meet with some friends who are also originally from Morocco.

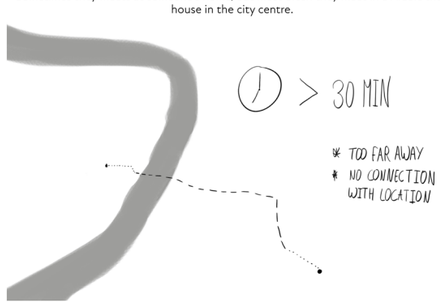
At Linkeroever there is no place for them. There are very limited third places.



In the Catholic or social-renters community centres he does not feel welcome as a Muslim who rents in the private sector.

Because of this they sometimes decides not to meet at all.

Sometimes they meets at someone's home, but most often they meet in a Arabic thee house in the city centre.



When he gets home, he wonders if his kids can sleep peacefully and if there would be a better future for them on Linkeroever.

Mr. Maaznee lacks purpose in life. Besides his kids, there is nothing that inspires him. He also does not feel connected with the neighbourhood he lives in.

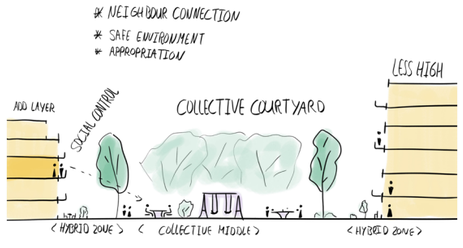
Figure 4.24 A day in the life of Mr. Maaznee

Mr. Maaznee

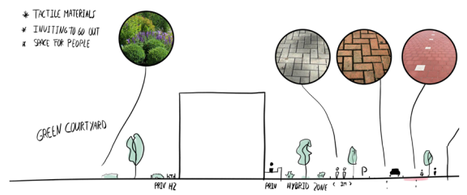
Meet mr. Maaznee, he moved to Belgium 15 years ago and lives in Linkeroever for 10. In Morocco he used to work as a maker, a profession he is proudly continuing here . He rents an apartment on the Lode Zielenslaan where he lives with his wife and three young children. The courtyard is one of his favourite places and plays an important role in the social life of the neighbourhood.

Mr. Maaznee wakes up early to work in his own makers place.

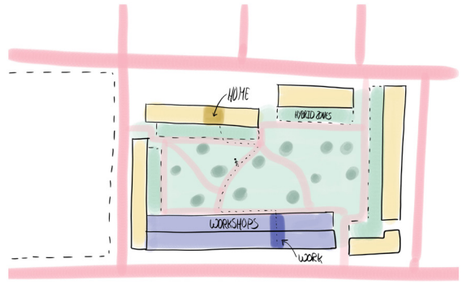
When he looks out of the window, he overlooks a courtyard where his kids like to play and on which his company space is attached.



On the front side is a residential street that used small scale materials and on the back side a green courtyard.



He walks through the courtyard to his work place.

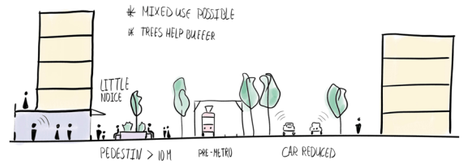


Mr. Maaznee is happy that he has his own company where he can show his craftsmanship.

In Morocco he had his own makers place. He can now continue that in Belgium.

He is in Belgium for more than 15 years and feels connected to the place and people. He has many customers who come from diverse backgrounds.

His working environment is lightly industrial, but fits well in the Highstreet where living and working is combined.



During lunch he sits down in the pocket park attached to the Highstreet. Here he enjoys lunch together with other entrepreneurs.

His wife helps in the shop after she has brought the kids to school.

After school the kids can play in the courtyard. The environment is safe and there is a lot of social control.

He enjoys the peace at Linkeroever. At the same time the district feels a lively organism.

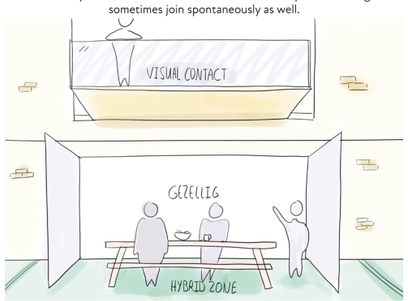
After diner mr. Maaznee wants to meet with some friends who are also originally from Morocco.

At the Highstreet there is a Arabic thee house where they like to meet.

The also like to come together in the neighbourhood centre where all cultures are welcome and come together.

There is always a place to go. There are sufficient options to choose from.

Sometimes they meets at someone's home or in the courtyard. Here neighbours sometimes join spontaneously as well.



Everything he needs is close, therefore there is more time left to spend with his family. This makes him happy.

Mr. Maaznee does not feel lonely. He has a purpose in life that motivates him every day and he feels part of the local community.

Figure 4.25 The future for Mr. Maaznee

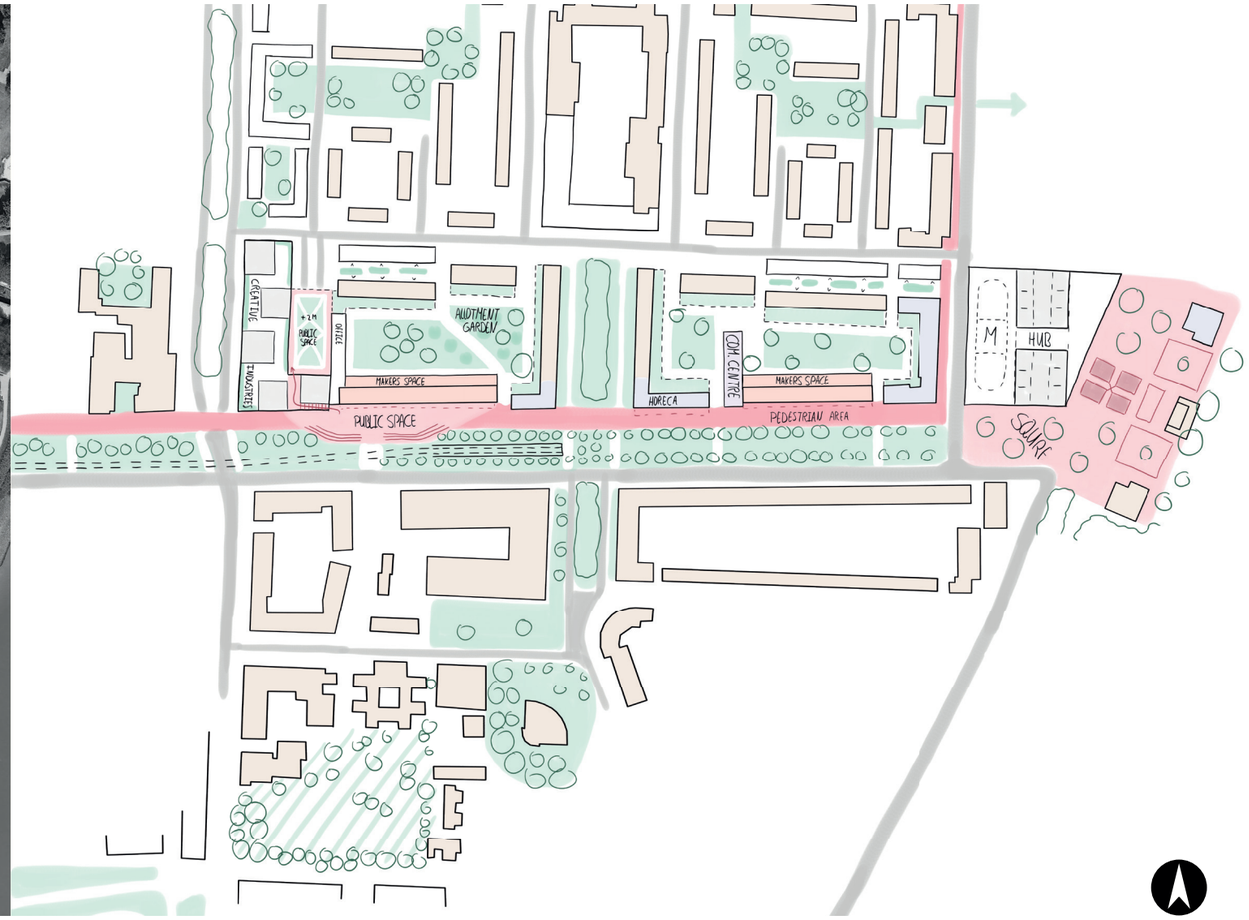


Figure 4.26 The area right now

Figure 4.27 New neighbourhood for Mr. Maaznee

Design elaboration

Based on an ideal day in the life of Mr Maaznee, a redesign of his neighbourhood has been made. This design is a combination of multiple design alternatives, of which the best elements are combined.

In this neighbourhood, punctual interventions are envisioned to counter urban loneliness. Linkeroever gets a real mobility hub at the location of the current metro stop. This hub is connected to the pedestrian tunnel and should make the people prouder and help with a sense of belonging. For Mr Maaznee this means that he can get to the city faster and that his business is more accessible for customers. Something that is very important for Mr Maaznee to overcome his existential loneliness, is a place where can be a maker and entrepreneur. Extending the ground floor of some of the buildings makes this possible and helps with activating the plinth. To make the Highstreet a success, the street is split, with a part for pedestrians and a part for cars with the metro in between. The courtyards are repurposed for the people and therefore help with social interactions between neighbours. This design has everything Mr Maaznee needs to counter his urban loneliness and even more.

Figure 4.28 Collective courtyard (FORA & Beth Hughes, 2013)

Figure 4.29 Makers street (ADEPT & Karres+Brands, 2018)

Essential elements

The essential elements of this design that help to counter urban loneliness are the following. Firstly, there is a **diverse offer of public spaces** along the axis with different levels of publicness. According to Peters et al. (2010), this diverse offer should make more people feel attached to the place and therefore help with social cohesion.

Secondly, according to Sim (2019), an **active plinth** helps with social interaction, control, and cohesion. In this design, an active plinth is achieved by opening the ground floor to makers and building an arcade in front to protect it from the elements. Pedestrianising the street helps with activating the plinth and generating traffic for businesses.

A **community centre can bring people together**. Situating inside a courtyard and sticking out into the public street, it attracts a diverse group of people. Placing it inside the courtyard means that the collective space and community centre can strengthen each other. Activities can happen inside and outside.

An **informal green network** connects smaller public spaces and gives the interspace purpose for people. This network is full of fourth spaces and points of triangulation, which invite people to interact (Simões Aelbrecht, 2016).

A final essential element of this design is giving the courtyards back to the people and making them less big. Right now, the courtyards are used for storage. If these would be transformed into collective gardens, they would be too big for the collective domain and appropriation. **Dividing the courtyards** by a building or pavilion helps with legibility and makes it more suitable for social events.

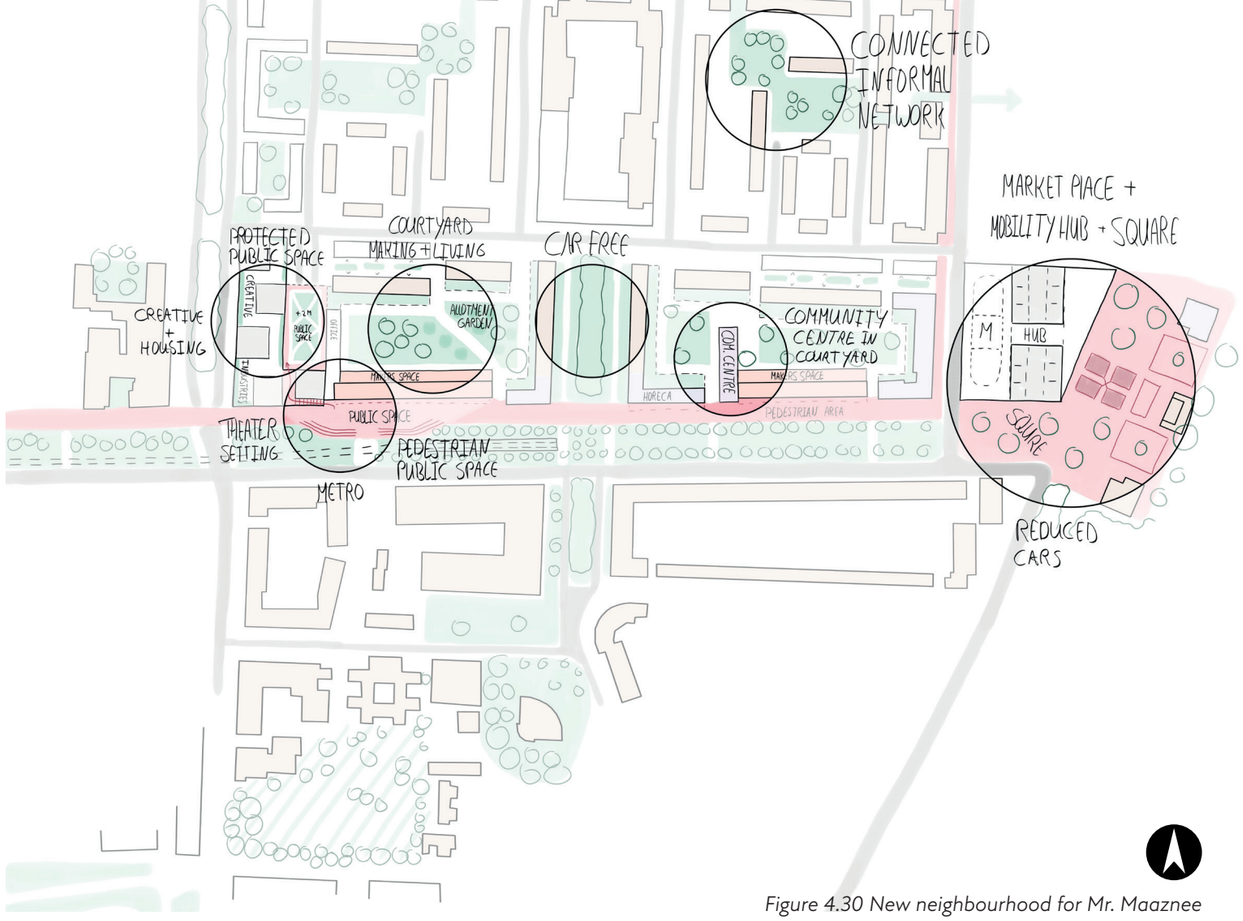
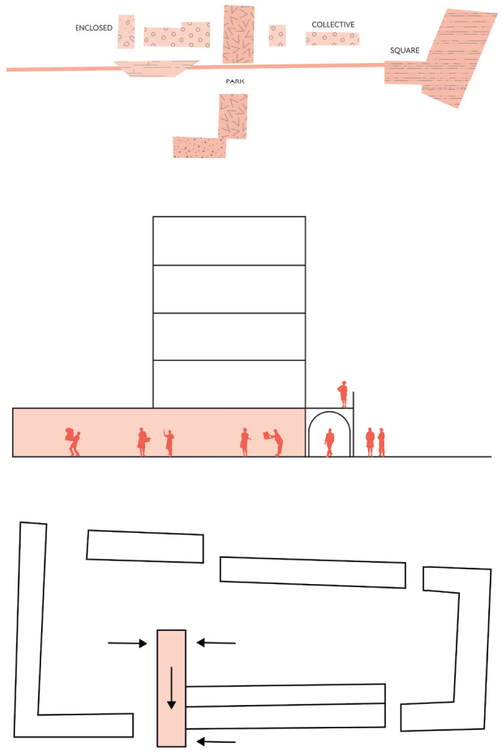


Figure 4.30 New neighbourhood for Mr. Maaznee



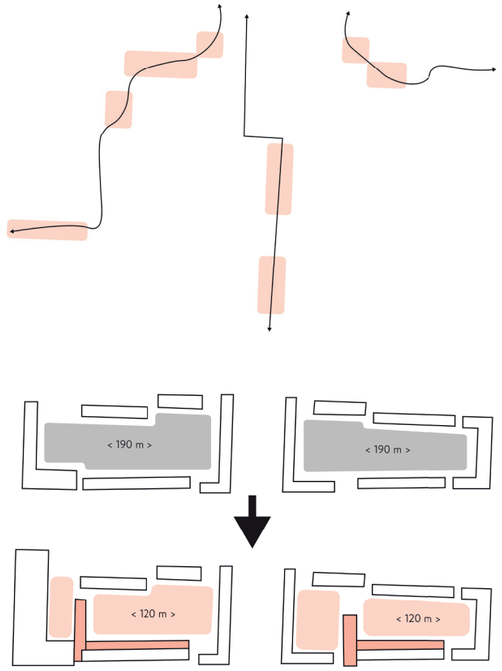


Figure 4.31 Essential elements of the design

Design assessment

The design can be assessed using the previously created design framework. The results of this evaluation process help to point out some strengths and weaknesses of this design. This design is quite strong, scoring well on most points. However, the street is still wide and there are few non-commercial options for personal and collective development. On the other hand, this neighbourhood excels at being part of the synergy. It has great connections and has something to offer to the other side. All in all, this is a strong design.

Other weaknesses that are not part of the design framework include the limited new housing options. There are a few extra buildings, but is this densification enough to justify the extra amenities? The car-free north-south connection is maybe too simple. It could be better integrated into the informal network. Strong parts of this design are the feasibility and the job creation. This design is relatively easy to implement as the changes are minimal and punctual. Only a few buildings need to be replaced and the street redesign is not super challenging. Small changes can have a big impact here. The programmatic plan also allows for more jobs in this area. Not just for the makers and entrepreneurs but also for creative industries with multiple employees.

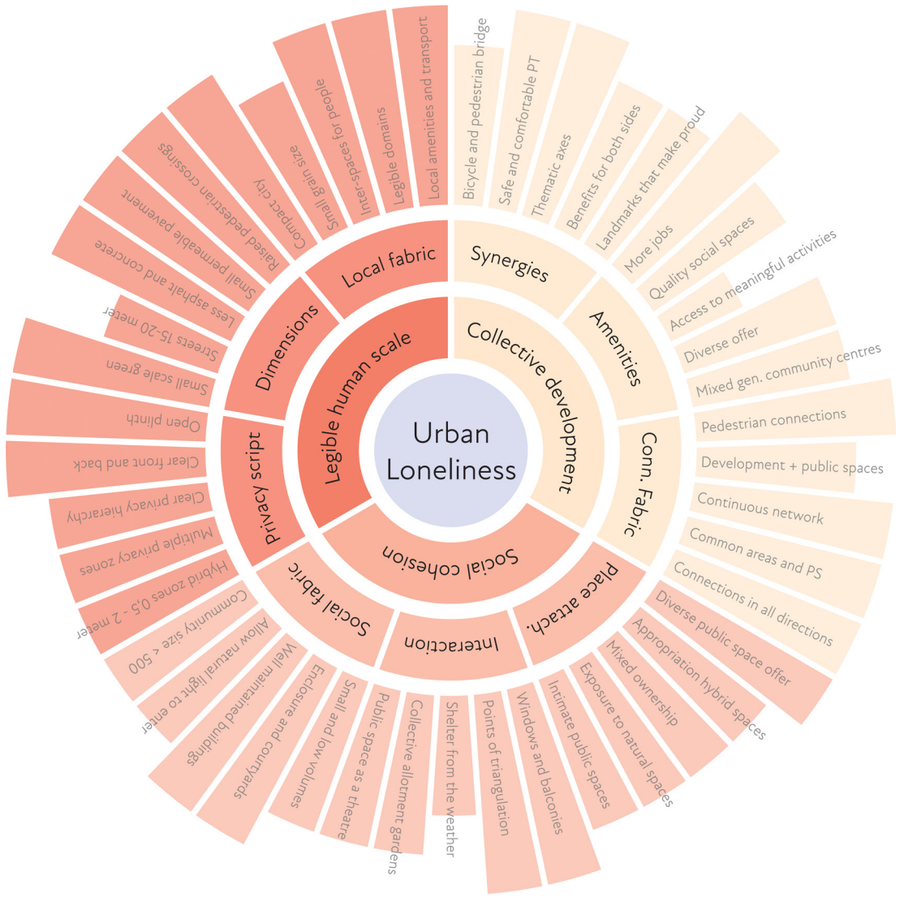


Figure 4.32 Design assessment

Figure 4.33 New neighbourhood for Mr. Maaznee at eye-level

4.2.4 Enola

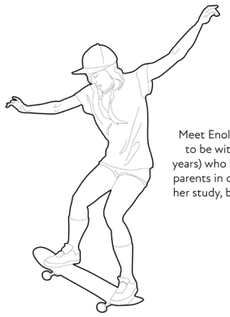
Enola is the final persona created to redesign a part of Linkeroever. She is 18 years old and lives with her parents and sister in one of the garage-type row houses. She suffers from emotional loneliness, the quality of her social interactions is below expectation because she has no place to go for social activities and personal development in Linkeroever.

The next four pages will describe a typical day in the life of Enola. First, a day will be presented like it is right now. After that, a similar day will be shown in a future context where everything is done to counter the loneliness of Enola. Providing a program with sufficient amenities and public spaces for young people solves several problems by giving them locations for development, stimulating valuable interactions, and reducing nuisance for other people. A bicycle bridge, open plinths, and smaller streets and public spaces are other elements that help to counter urban loneliness for Enola.

Enola

Meet Enola, an 18 year old who loves sport and likes to be with her friends. She has a younger sister (8 years) who likes to dance. Together they live with their parents in on of the garage type row-houses. She likes her study, but misses places where she and her friends can go after school.

Emotional loneliness



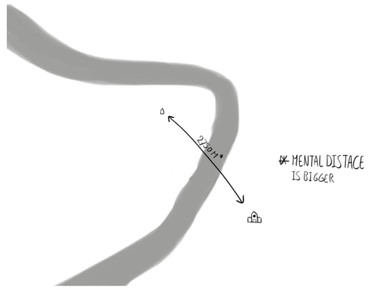
Enola

Meet Enola, an 18 year old who loves sport and likes to be with her friends. She has a younger sister (8 years) who likes to dance. Together they live with their parents in on of the garage type row-houses. She likes her study, but misses places where she and her friends can go after school.

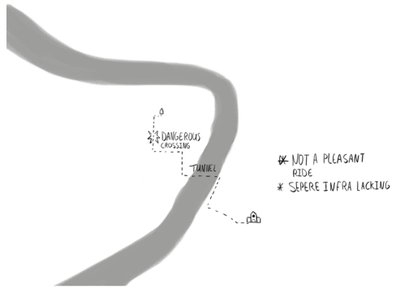
Emotional loneliness

It is a school day and Enola wakes up in her parents dwelling, a garage type row-house.

Her study to become a personal trainer is located just south of the city centre.



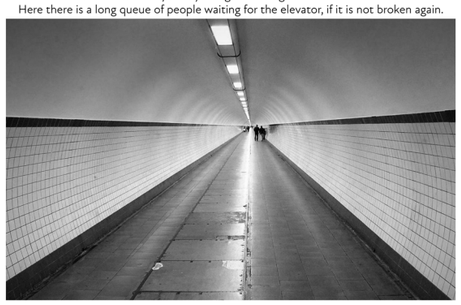
She is sporty and like to cycle between home and school.



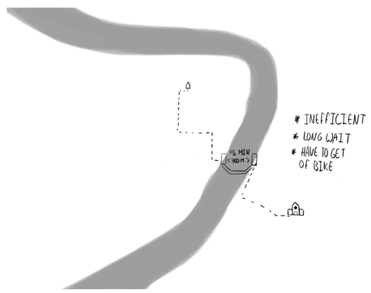
On her way to school, she drops off her little sister at school.
It is not safe enough for her to go by herself. There are too many cars.

She cycles through anonymous streets and drops of her sister.

She continuous her journey and goes through the Sint-Annatunnel.
Here there is a long queue of people waiting for the elevator, if it is not broken again.

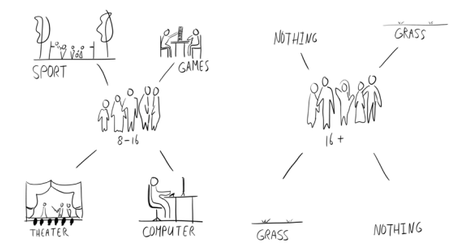


After 15 minutes, she finally arrives on the other shore and continues here way to school.



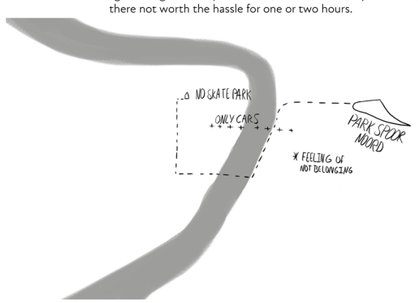
After school she returns to Linkeroever.

For her sister there are some after-school activities in the youth centre, but for Enola and her friends there is nothing to do.

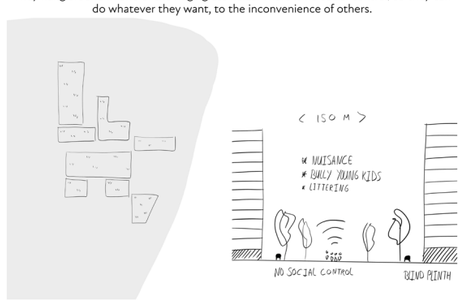


They feel that they do not belong

The would love to go skating at Park Spoor Noord, but it is not easily accessible and there not worth the hassle for one or two hours.



They hang around in one of the huge grass fields. There is no social control, so they can do whatever they want, to the inconvenience of others.

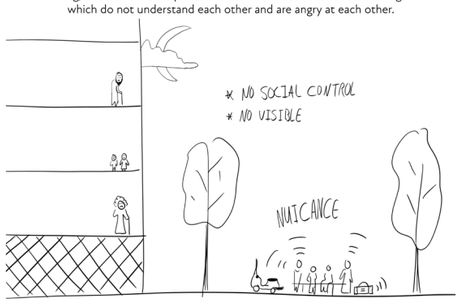


They dream of a place where they can develop themselves, instead of hanging around without a purpose.

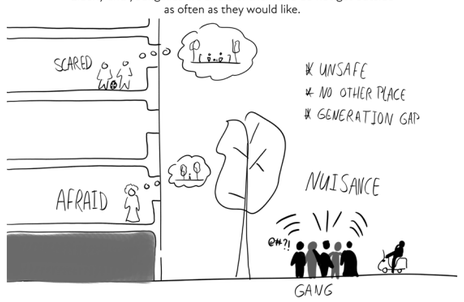
After dinner, she meets up with her friends again.

She cannot see of they wait for her in the street as there are no windows on ground level.

In the evening, Enola and friends produce even more nuisance. This results in generations which do not understand each other and are angry at each other.



Elderly and young kids are afraid of them and do not get outside as often as they would like.



Their nuisance mains that a lot of young kids have trouble sleeping.

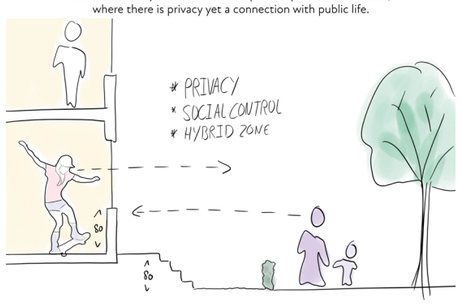
Enola is fed up that she has no way to better connect with her friends after school.
Are these even real friends?

Figure 4.34 A day in the life of Enola

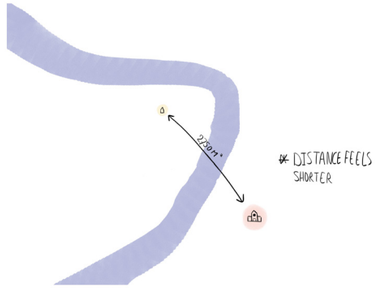
Enola

Meet Enola, an 18 year old who loves sport and likes to be with her friends. She has a younger sister (8 years) who likes to dance. Together they live with their parents in a recently renovated maisonette. She likes her study, enjoins sporting with her friends, and loves the opportunities she has to develop.

It is a school day and Enola wakes up in her parents maisonette, where there is privacy yet a connection with public life.



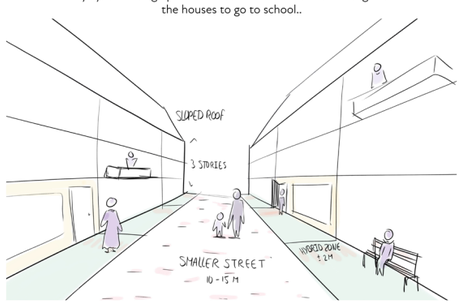
Her study to become a personal trainer is located just south of the city centre.



She is sporty and like to cycle between home and school.

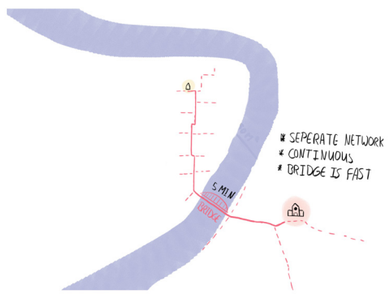
On her way to school, she drops off her little sister at school.
They cycle together for company, but it is safe enough for her to cycle independently.

They cycles through pleasant streets where other kids emerge from the houses to go to school..



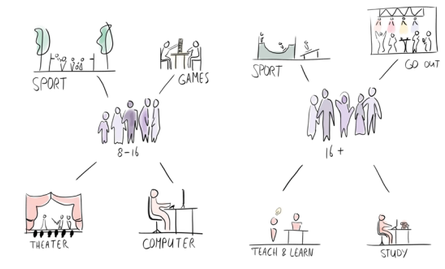
She continuous her journey and rides across the new bicycle bridge to the other shore.

The ride is fast and smooth, thanks to the bridge and connected bicycle infrastructure.



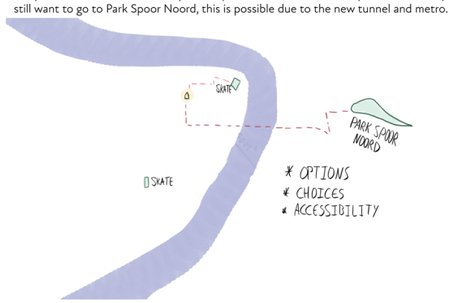
After school she returns to Linkeroever.

For her sister there are plenty after-school activities in the youth centre. For Enola and her friends there are sufficient spaces where they can study, sport, or develop her interests.

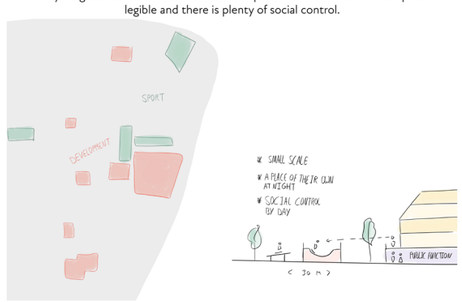


They feel at home in Linkeroever and part of the city.

They can skate in the new skate park or sport in one of the diverse sport fields. If they still want to go to Park Spoor Noord, this is possible due to the new tunnel and metro.



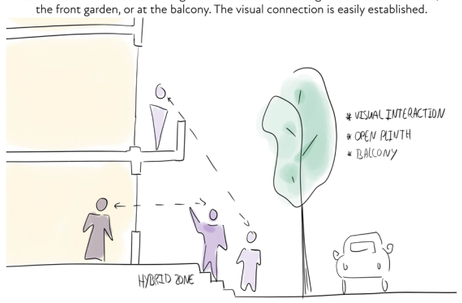
For the young adolescents there are sufficient spaces for their needs. These spaces are legible and there is plenty of social control.



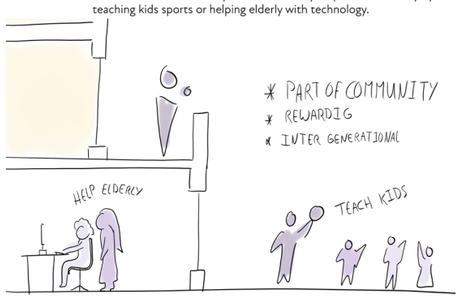
They have access to places where they can develop themselves, relax, and disturb no-one.

After dinner, she meets up with her friends again.

Most of them live in the same neighbourhood and are waiting in front of the window, in the front garden, or at the balcony. The visual connection is easily established.



Enola and her friends do not bother anyone. Instead they help the community by teaching kids sports or helping elderly with technology.



Everyone likes to go outside, even in the evening.

Because they have their own sport, their nuisance does not cause trouble.

Enola can grow in Linkeroever and is part of a community with a bright future.

Figure 4.35 The future for Enola

Design elaboration

Based on an ideal day in the life of Enola, a redesign of her neighbourhood has been made. This design is a combination of multiple design alternatives, of which the best elements are combined.

In this neighbourhood design the high-rise buildings have been replaced by asymmetrical courtyards and more amenities. The new buildings are arranged along a new pedestrian diagonal, which also connects the amenities. For Enola, the skate park and the adjacent youth club are qualitative places where she and her friends like to go. This helps to counter her emotional loneliness. The youth club is buffered from the rest of the neighbourhood to reduce nuisance. The dwelling Enola lives in also changes. Right now, it is a drive-in home with nothing but a garage on the ground floor. The idea is to open the ground floor as shown in figure 4.37 and add a fourth layer to the building, so it contributes to a higher density. This design has everything Enola needs to counter his urban loneliness and even more.

Figure 4.36 Youth in courtyard (3XN/GXN et al., 2022)

Figure 4.37 Transformed garage (de Wit, 2014)

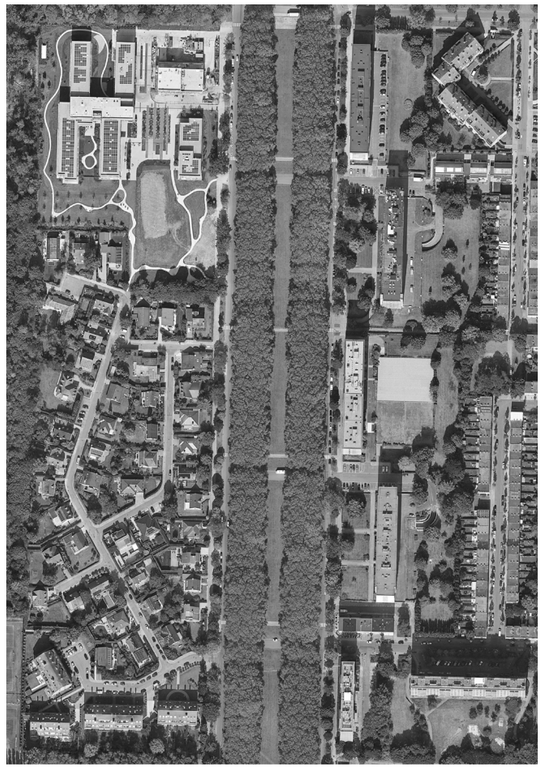


Figure 4.38 The area right now

Figure 4.39 New neighbourhood for Enola

Essential elements

The essential elements of this design that help to counter urban loneliness are the following. Firstly, the introduced **diagonal** offers a divergent direction in the urban fabric. This change of perspective offers and interesting environment and connects functions.

Secondly, according to Sim (2019), an **active plinth** helps with social interaction, control, and cohesion. In this design, an active plinth is achieved by opening the ground which was previously garage boxes. Doing this on both sides of the streets results in a safe street where visual interaction is possible and social connections are more naturally.

Brining nature into the neighbourhoods can help with place attachment by bringing people and nature closer together (Peters et al., 2010). Linkeroever has multiple natural areas with specific characteristics. These can be brought into the urban fabric and strengthen the informal network in the interspaces. The landscape should be brought in by using species and elements that are typical for the natural area. Nature can also help to recover the mind in an attempt to counter urban loneliness.

Everyone needs a place where they can develop themselves. For the youth, including Enola, it is therefore important that they have some kind of **youth club** where they can socialize and discover themselves. Connecting the place to an outdoor space like a skatepark is great if possible. It is important it is buffered from residential functions but still part of the urban fabric.

A final essential element of this design is the **underground parking that is reused as a courtyard**. There are several underground parking garages in Linkeroever, which is great. However, there is currently nothing on top of them. There is a fence around a large slab of concrete. This design proposes to hide them by using their tops as collective courtyards and by building housing around them.

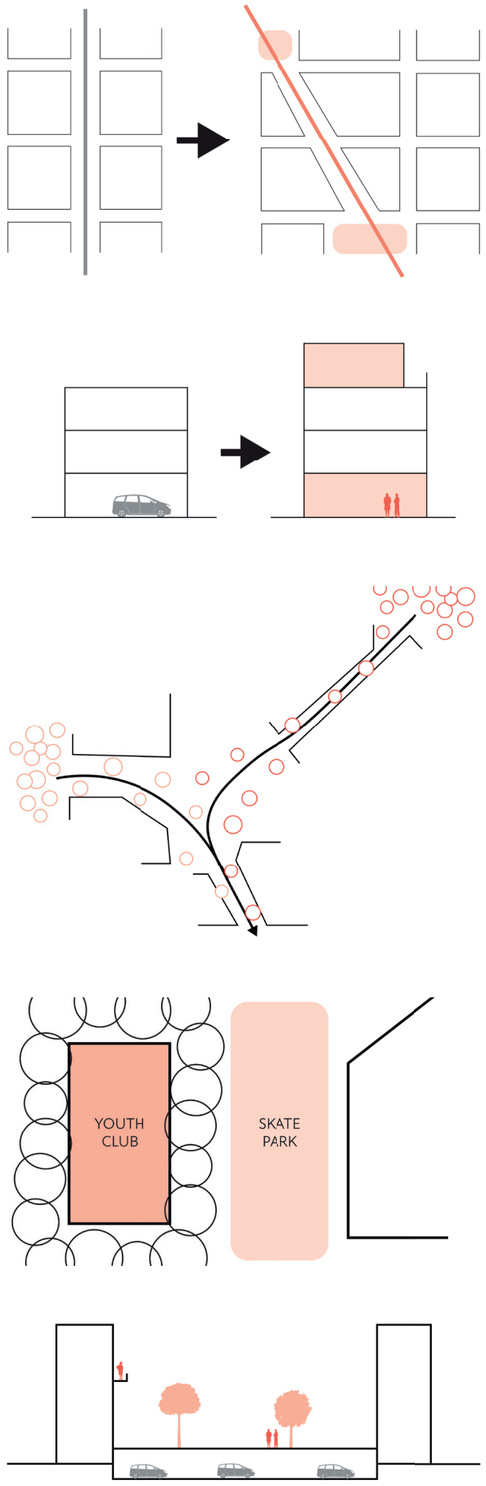


Figure 4.40 Essential elements of the design

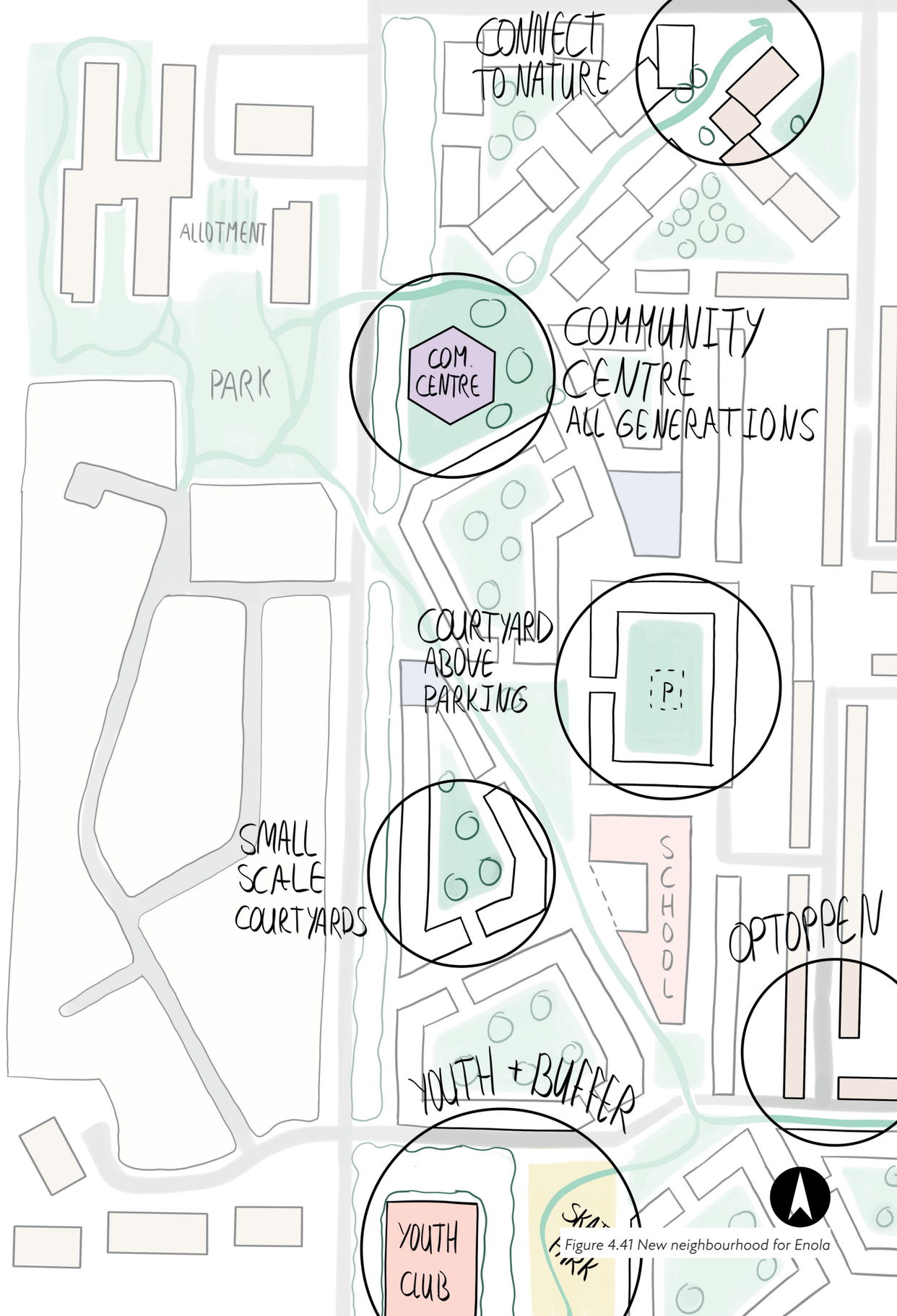


Figure 4.41 New neighbourhood for Enola

Design assessment

The design can be assessed using the previously created design framework. The results of this evaluation process help to point out some strengths and weaknesses of this design. This design is quite strong, except on the topic of synergies. This Neighbourhood is far away from the river and has not a lot to offer to the rest of Antwerp. This is fine as that is not the main task of this area. On the other hand, it performs well in connecting people and functions and doing this on a legible human scale. People are likely to go outside and find their way. This means that people can easily find what they need to counter their urban loneliness.

Other weaknesses that are not part of the design framework include the challenges that come with transforming privately owned houses and making the connection between different typologies. The latter is an especially big challenge in this neighbourhood. There are already three typologies, garages, luxe apartments, and villas. By adding the asymmetrical courtyards, this could become a mess of different worlds. A strength of this design is the density, achieved through heightening existing buildings and making use of the wide and open spaces.

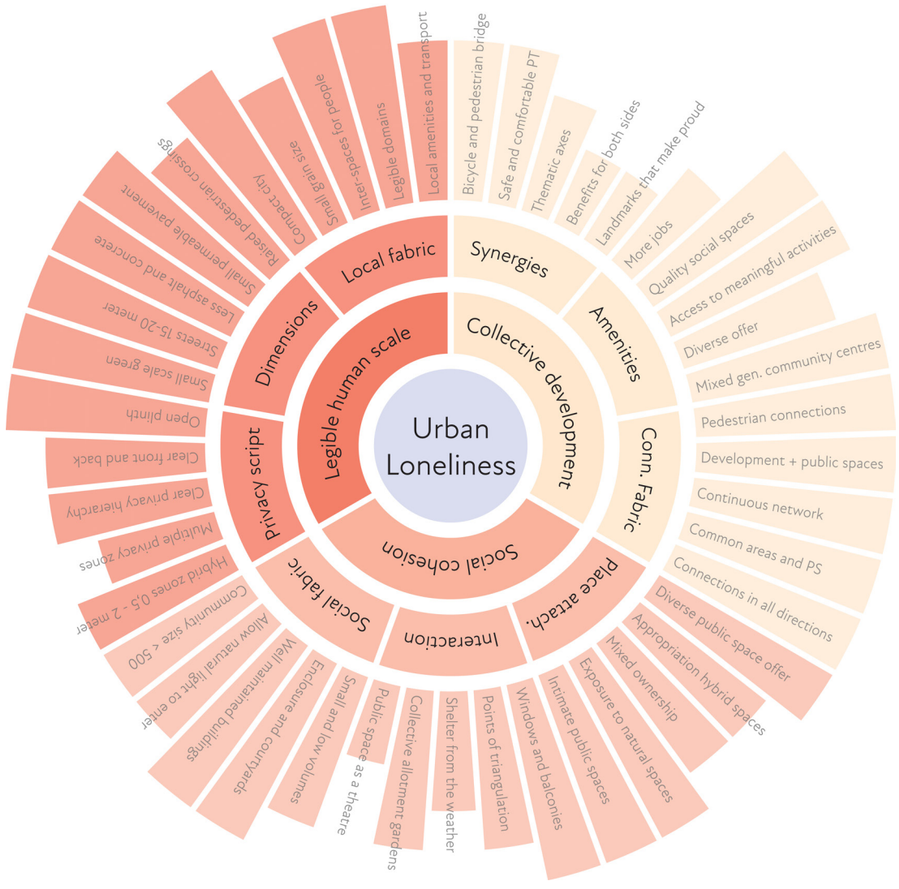


Figure 4.42 Design assessment

Figure 4.43 New neighbourhood for Enola at eye-level

4.3 A LONELY CITY

4.3.1 City as a machine

Segregation

The city of Antwerp is a lonely city. The urban fabric is disconnected by both the ring road and the Scheldt river. There are plans in progress to mitigate the border effect of the ring road. However, for the river, there are no real plans to solve this issue. The urban fabric of the city is very different on both sides and roads often start or end at the river but rarely continue. For Linkeroever this arrangement of the urban fabric results in a feeling of not belonging. It is not part of the city and misses out on a lot that Antwerp has to offer. The rest of Antwerp is lonely in a different way. They have all the amenities and a buzzing life. However, they lack a place where they can calm down, escape the turbulence, and enjoy nature. So, Antwerp is lonely due to segregation.

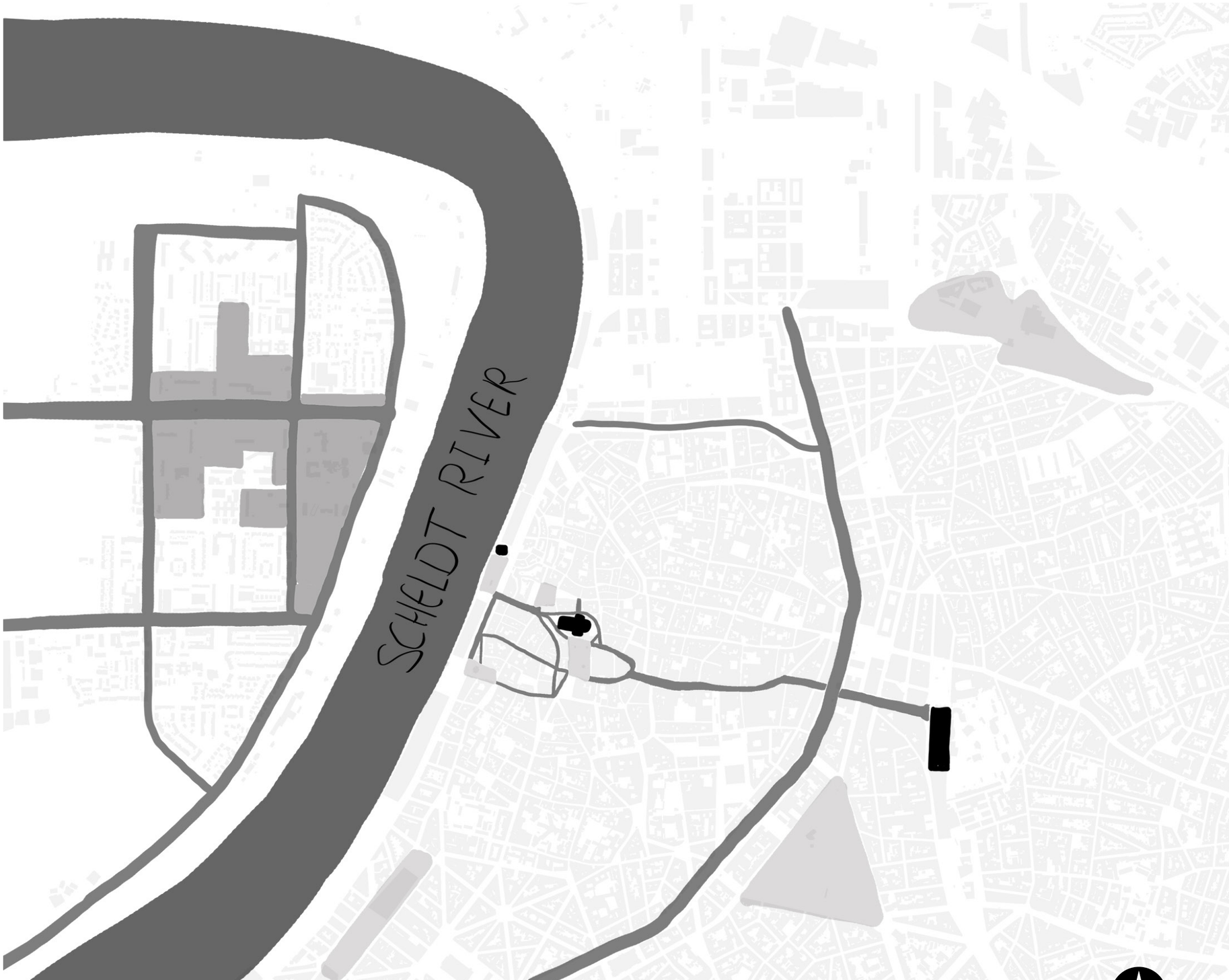


Figure 4.44 The fabric of a lonely city

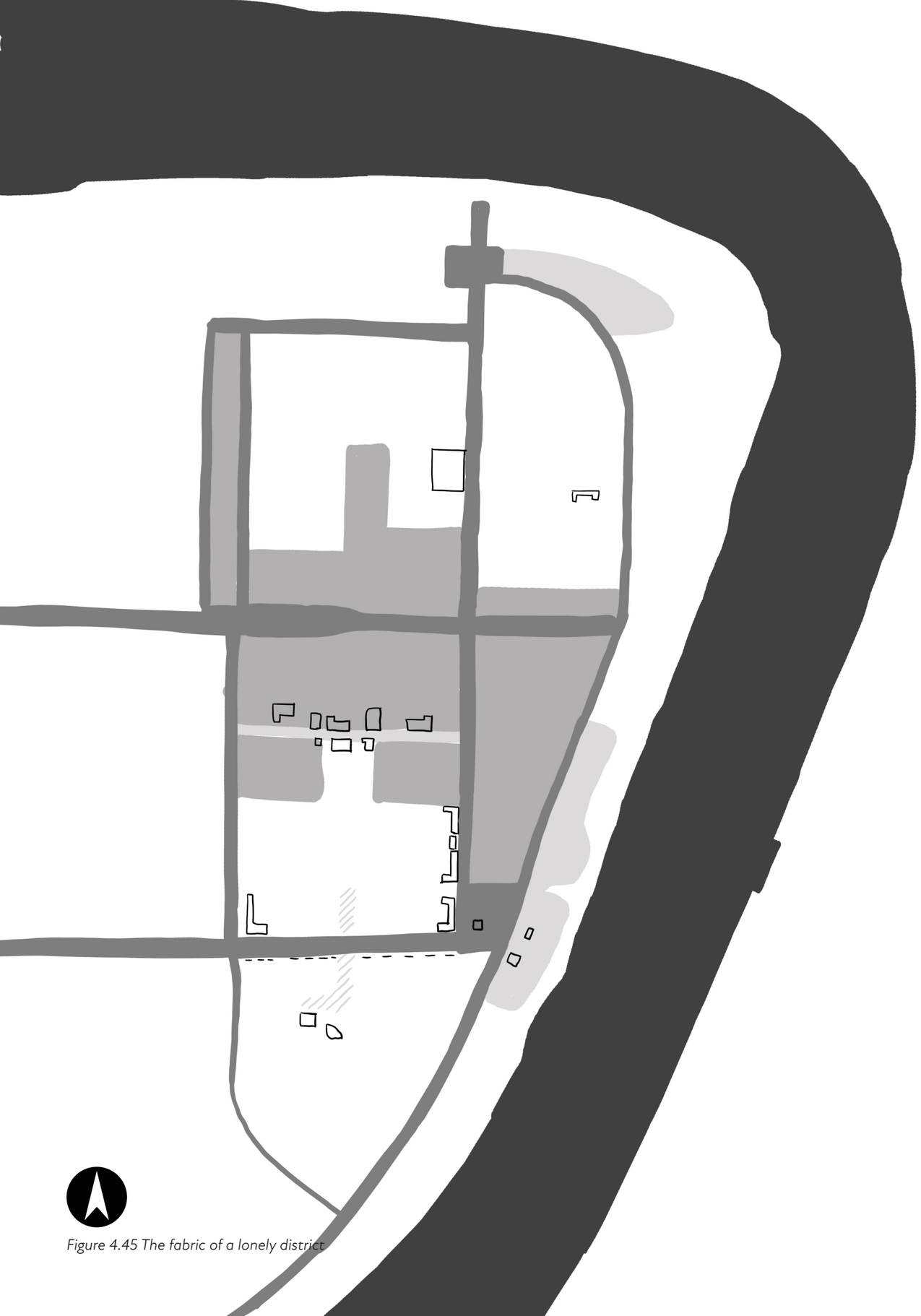


Figure 4.45 The fabric of a lonely district

Monotony

Linkeroever itself is also lonely. The district often feels like an island and is monotonous in every way. The infrastructure is catered to the car, neighbourhoods look the same, everything has a residential function, public spaces are wide grass fields, and amenities are scarce. Linkeroever feels like a machine where people only reside, can efficiently leave by car to go to work, and where there is no place for fun or social activities. Linkeroever is just like a lonely person, focused on efficiency, lacking (social) connections, and looking grey and sad.

Meek

Linkeroever is meek. Meek is the opposite of proud. People in Linkeroever have nothing to be proud of. The district looks flush and lacks amenities. Moreover, it lacks landmarks. Landmarks can make people feel proud and with establishing a local identity and positive feeling. People in Linkeroever look with envy at the other side of the river where a castle, the MAS museum, and beautiful churches decorate the shore. Linkeroever does not have any of that, just a lot of high-rise slabs that al look the same. Linkeroever has nothing to be proud of. Linkeroever is meek.

Figure 4.46 Looking jealous at the landmarks on the other side

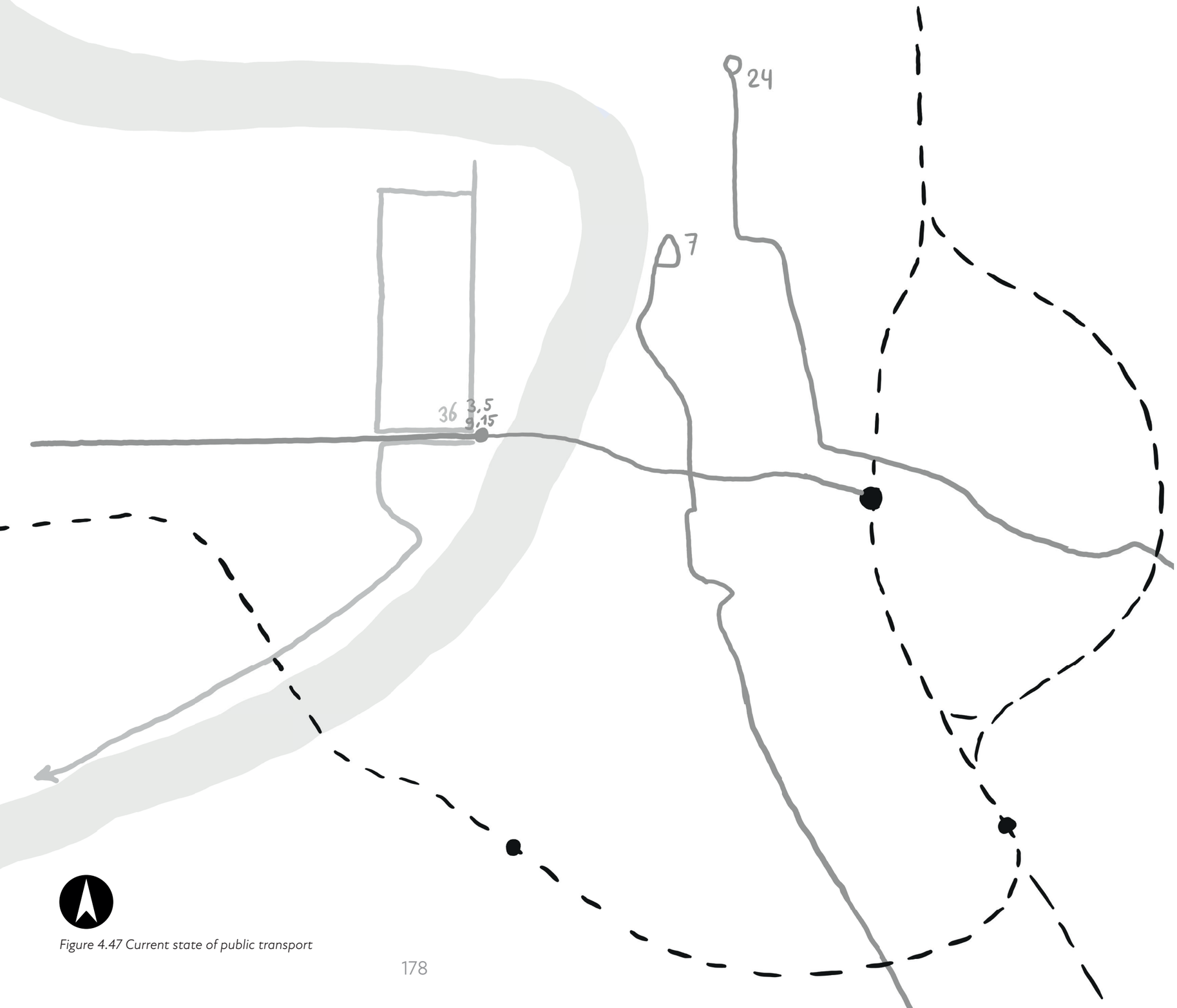


Figure 4.47 Current state of public transport

Public transport

The lack of public transport contributes to the lonely city as well. It does not connect both sides of the river very well. There is only one point of connection, which makes the metro less accessible for half of the population. The only bus line does not go through the Louis Paul Boon street, which means several important amenities are less accessible. The bus stop that used to be here is out of order due to economic cuts. The stripping down of the already not impressive public transport network evokes a sense of not mattering and not belonging.

4.3.2 City as an organism

Synergies

To counter urban loneliness a lot needs to happen to move away from the lonely city towards a city that behaves like one organism and behaves organically. As discussed, Linkeroever is currently segregated from the rest of the city. As the theory about personal and collective development has taught us, synergies can play an important role in creating unity and improving accessibility. For synergies two ingredients are necessary, physical connections and two sides which have something unique to offer.

For Antwerp, I envision three synergy axes. The northern axis is focused on sport and culture. Linkeroever has the space to offer great sport and recreation options while the right shore has plenty museums and cultural venues like MAS and het Sportpaleis. The middle and southern axes are both connected to the city centre on the right side. The middle axis is mainly focused on neighbourhood amenities. This means that the synergy is a bit weaker here from the perspective of the city centre. The southern axis is a Highstreet. This offers cheaper places than the city centre where makers and creatives can settle. It offers something different from the big chains in the city centre and is well connected. In the end, these synergies have something to offer for people from both sides and provide them with new choices. In Linkeroever, these synergies help with creating a sense of belonging as well.

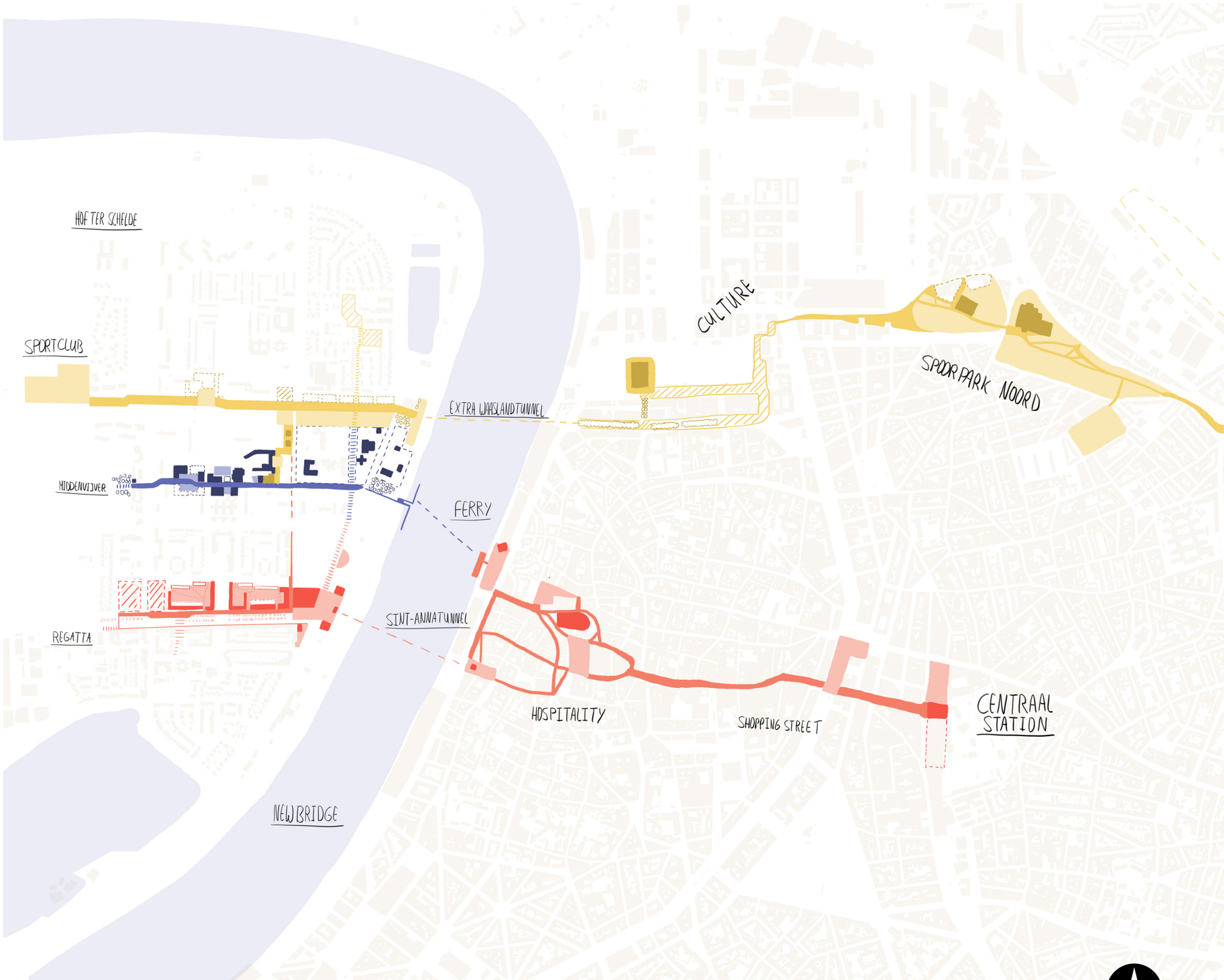


Figure 4.48 The fabric of a connected city

Axes

On the scale of Linkeroever as a district, the axes are clearly visible. The axes are the most public spaces and hierarchically the most important. Even though the axes stretch from east to west, they are not a boundary in the other direction. A boundary would imply an edge which separates and where nothing happens. These axes, on the other hand, attract people from all sides and become the most lively places in the district.

The axes offer program and choices to the people of Linkeroever. They offer places for personal and collective development, they provide an environment in which it is easier to find social interactions, and they are legible public domains organised in a straight line. All these characteristics help to counter urban loneliness.

Because every axis has a different theme, they promote diversity and choices. This means that every individual can find a place on one of these axes that accommodates their preferences and needs. The theme sets the dominant function of an axis but other functions are mixed in as well. These axes extend their branches into the neighbourhoods, offering a range of privacy zones and integrating living with leisure. In the end, the axes help to counter urban loneliness by providing choices.

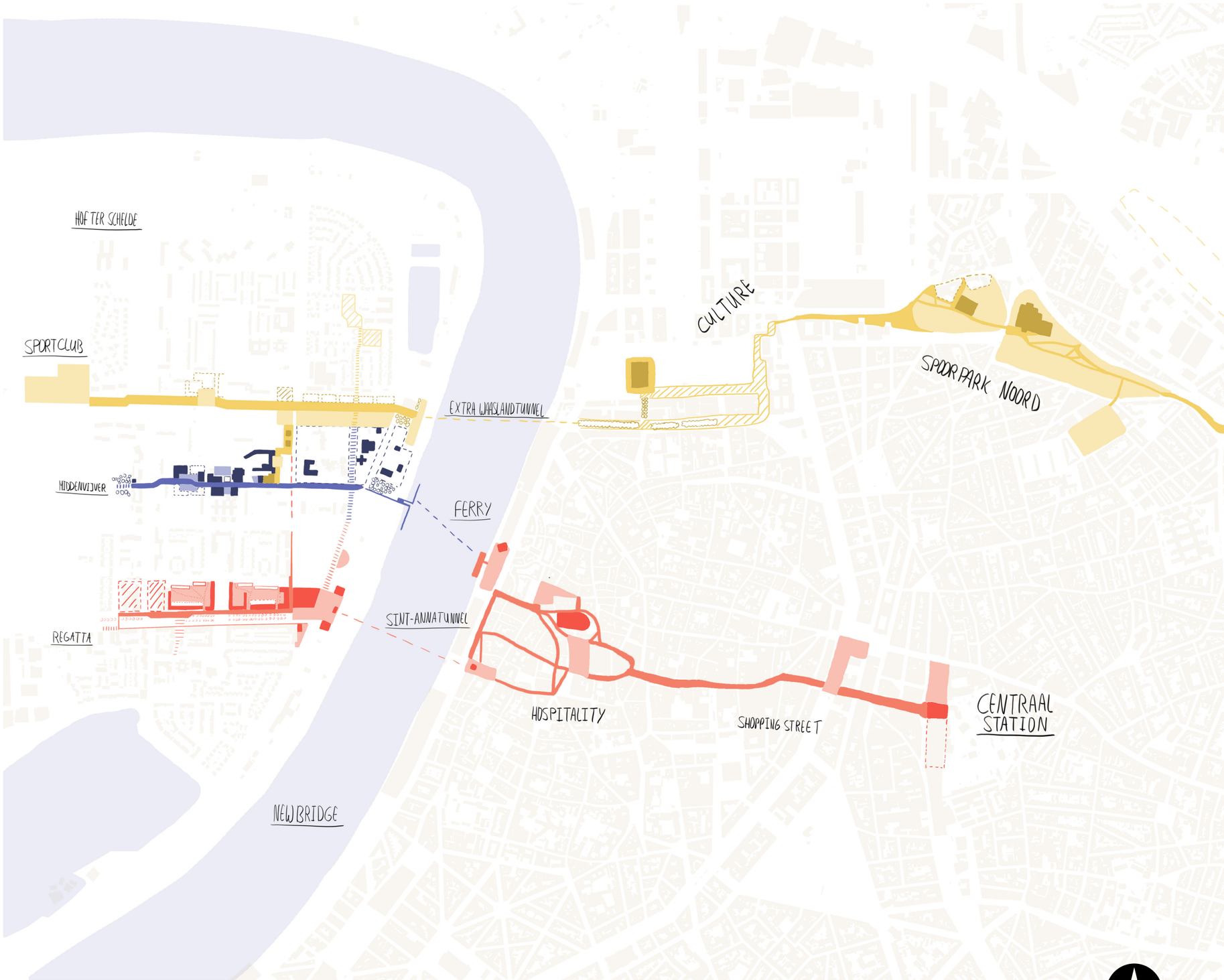


Figure 4.49 The three axes

Informal landscape network

To better connect the axes with each other and with the neighbourhoods, something extra is needed. From an urbanist perspective, the urban fabric can be divided into three layers: the urban, the landscape, and the people. In the context of Linkeroever, the axes are the urban, and the people are the neighbourhoods. The landscape layer could be the missing link between the two.

Linkeroever is surrounded by four different landscapes: a river shore, a lake, a heath/sand landscape, and a forest. The goal is to bring these four landscapes inward and use them to connect the neighbourhoods and axes through an informal network. The informal network will use vegetation related to the closest big natural area. This informal network will grow through the district like the veins of a leaf. The main arteries are diagonal to add some surprise to the orthogonal grid. The side branches will follow the grids to maintain legibility. The four diagonals come together in the middle where they bring people to the heart of the neighbourhood, where all neighbourhood amenities are located. Where the diagonals meet, a relatively large park is created as a green oasis in the middle of the build-up district. The informal network brings people together and closer to nature, all contributing to counter urban loneliness.

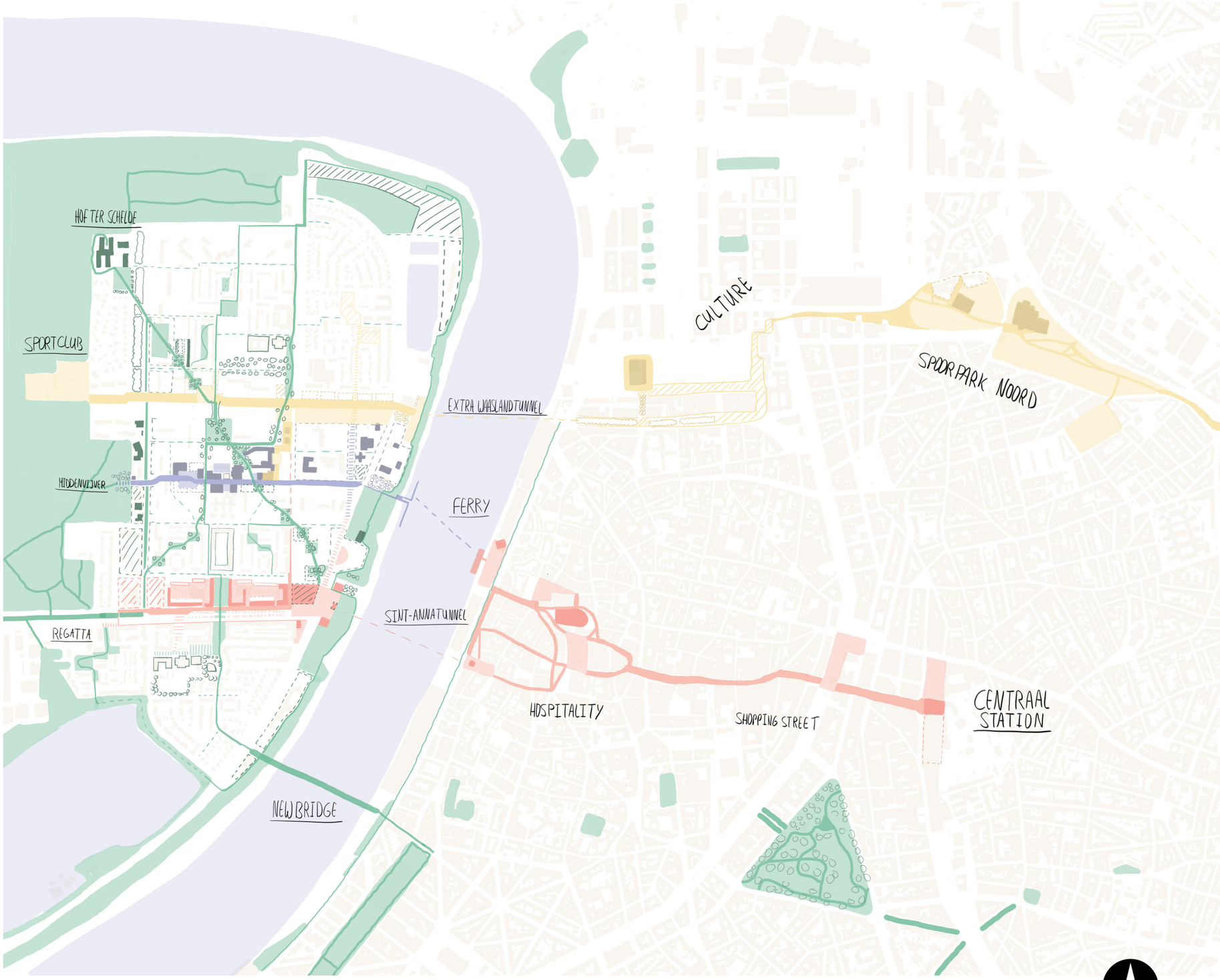


Figure 4.50 The informal landscape network

Proud

Being proud of your city, district, or neighbourhood helps with establishing identity and improving place attachment. In this way, it can help to counter urban loneliness. Landmarks can be elements that stimulate a proud feeling. Right now, there is not a lot to be proud of in Linkeroever. On the contrary, when people look at the right side of the river, they see a lot of landmarks. This can result in a feeling of not belonging and jealousy. Fortunately, Linkeroever has a big potential as it has a lot of open space that could be used for landmarks that do not even fit on the other side.

On the north sport and culture axis, a **sports museum** could be the counterpart of the MAS on the other side. Part of the museum could be open to the public and allow people to take part in sports. In the museum, the sports achievements of Antwerp could be displayed that make people proud of their city. It can also function to educate about sports and stimulate a healthy lifestyle which helps to counter loneliness.

A **maritime campus** can stimulate development and emphasise the connection with the water. Striking architecture can help to bring attention to maritime education and make the students feel proud of their careers.

A **natural waterfront** helps to connect people and water. It also gives people on the right side something to desire, they are stuck with an artificial quay. This can bring people from the right side over to recreate on Linkeroever.

An **iconic mobility hub** can transform an entire area. To emphasise that Linkeroever is a well-connected part of the city, a beautiful building is necessary. The mobility hub should be an entrance to be proud of.

In the south, an **iconic bridge** will connect the cycling networks on both sides. Like the Erasmus bridge in Rotterdam, this should be an icon of the city that bring people from both sides together. Something that both sides can be proud of.

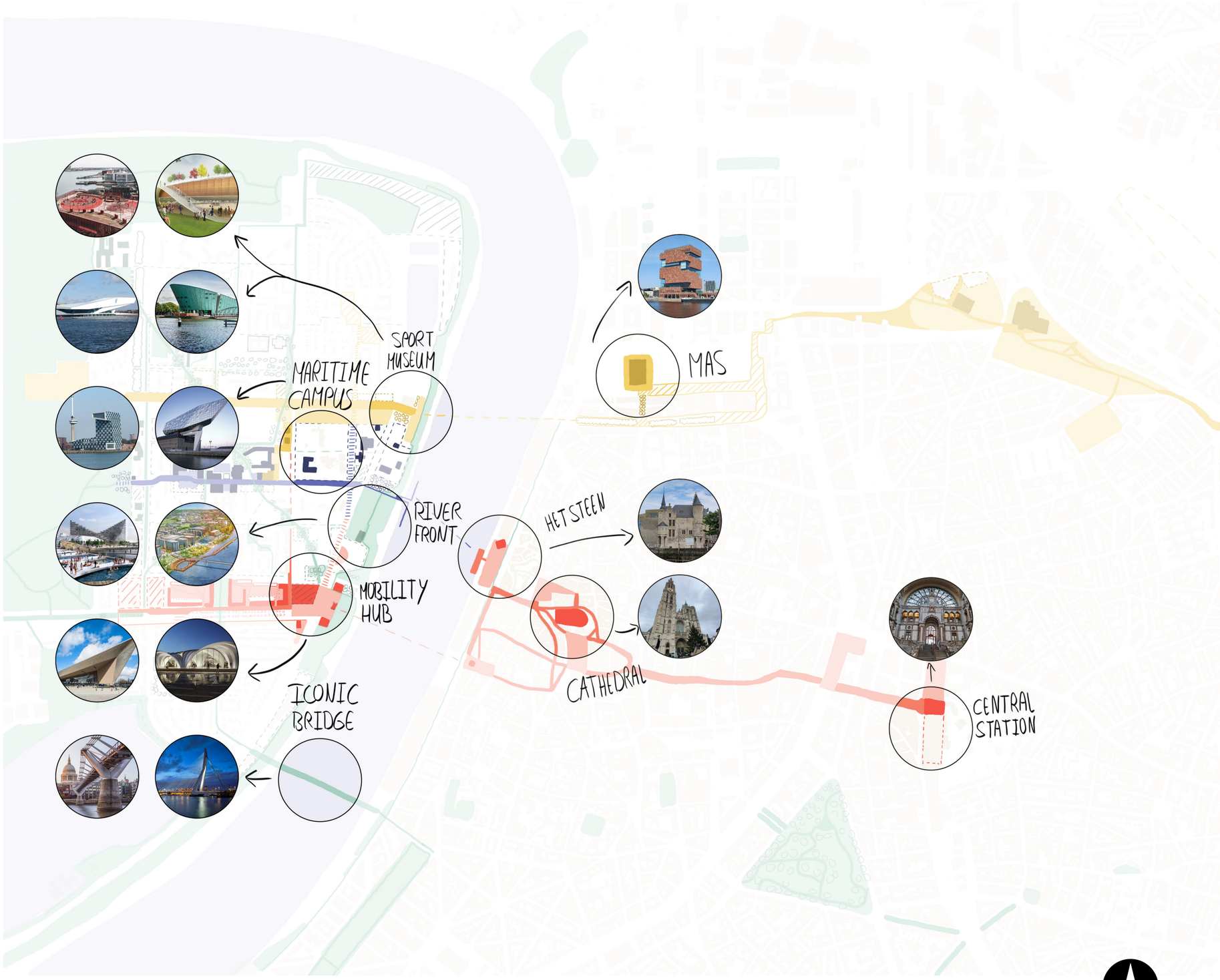


Figure 4.51 Landmarks to be proud of

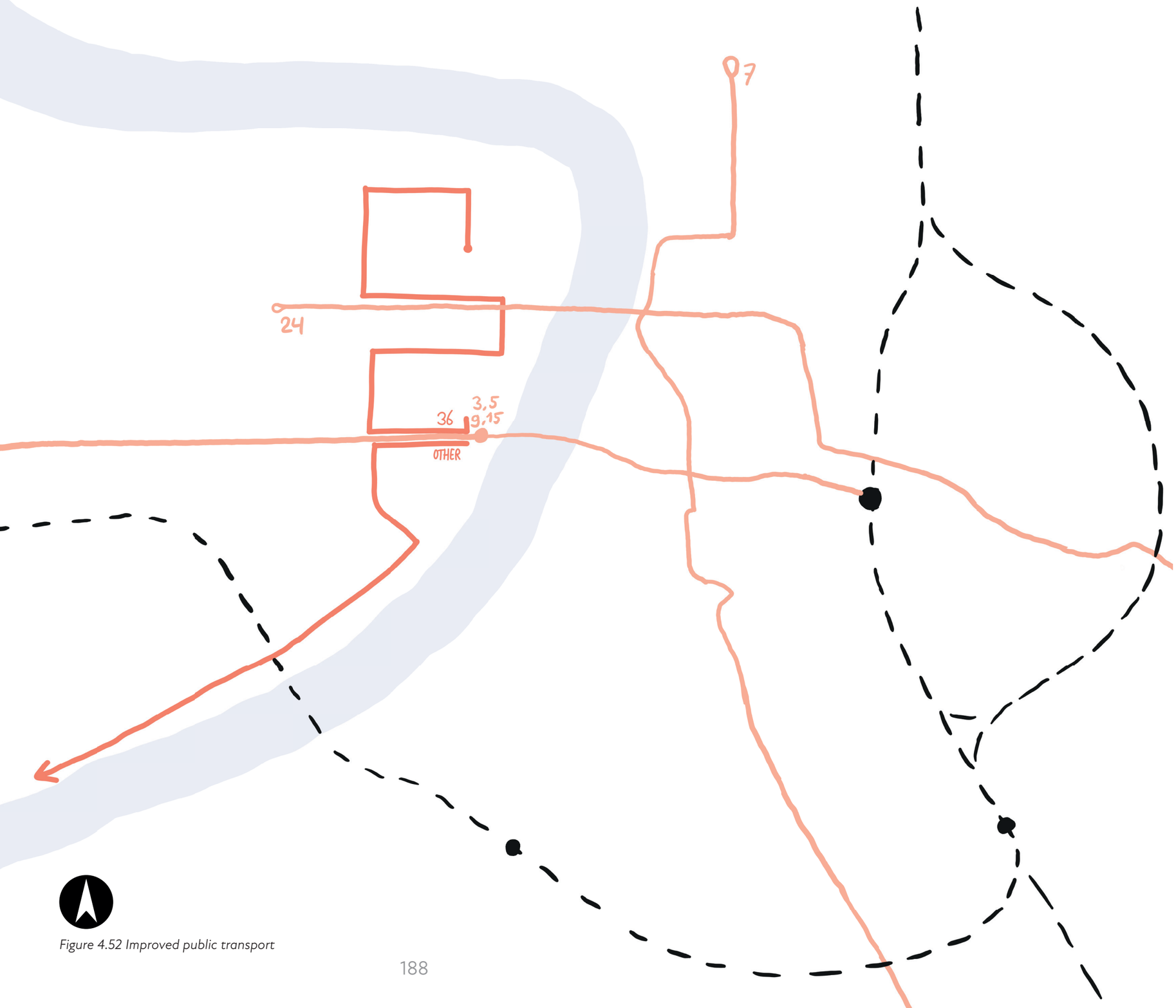


Figure 4.52 Improved public transport

Public transport

Improving the public transport accessibility on Linkeroever is the last step to move away from a lonely city. By introducing a new metro line in the north and rerouting the bus, all amenities and choices become more accessible. I propose to continue tram line 24 towards the northern part of Linkeroever. It should be turned into a (pre-)metro and connect the northern axis with the city. Line seven will run the route of line 24 in the area Het Eilandje, this way no stop disappears. The bus will follow a new route along all axes in a zig-zag pattern. This might not be the most efficient route, but it connects all main amenities and reduces walking distances. This is important for the elderly as they depend more on public transport and have more trouble walking. The bus makes it easier for vulnerable elderly to go out and take part is the social life of the city. This helps to counter urban loneliness.

4.4 LIVE TOGETHER

4.4.1 Integral design

Combined perspectives

A design to counter urban loneliness has been explored from the top-down and bottom-up perspectives. To make the chance of success as big as possible, bot designs need to be integrated into one integral design for Linkeroever. The first step in this process is to place the designed neighbourhoods into the framework, as shown in figure 4.54. This is not enough. The drawing shows some clear issues where both perspectives meet. Therefore, it is essential to perform multiple design iterations to fix the problems step by step. How do the neighbourhoods relate to the bigger urban fabric? Is the balance between areas of peace and areas of activity right? What is the relation between old and new? These are all questions that must be answered critically to improve the design.

Some of the conflicts are apparent immediately. The difference in scale of the courtyards in the northern neighbourhoods is big. The landscape diagonals are not continuous everywhere. The difference between old and new seems to be too big. Furthermore, the white area in the middle needs to be filled in. This needs to be a connecting neighbourhood where all personas can come together. On the next pages, these issues and more will be tackled, and an integral design will be constructed.

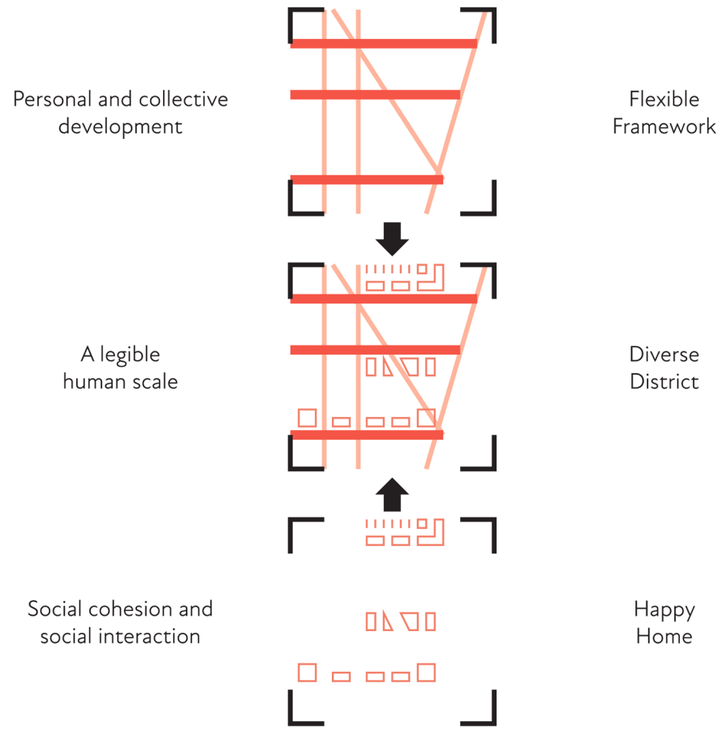


Figure 4.53 Combining top-down and bottom-up

Figure 4.54 Design put together

Integration improvements

The first design iterations resulted in a framework in which the landscape diagonals are better integrated and where the scale of the courtyards is more continuous. The axes are also better fitted with the new neighbourhoods. In the south, the public space has changed shape to mark the edge of the neighbourhoods, the community centre sticks out into the street to connect public and collective, and the north-south park is more detailed and characteristic.

The old and new still do not match and the square along the sport axis has a weird shape, while the tunnel to cross the road next to this axis is not ideal and does not follow the diagonal. Many studies and iterations have been performed to solve these issues. For the crossing situation, bridges, tunnels, and a car-free road have all been considered. Something still missing, is the neighbourhood in the middle. Alternatives for this place have been. The result of these studies and many more will be shown on the next pages.

Some changes have been made already. To give some idea about the campus a water square and landmark building have been added. The water square is something that the people I spoke with liked. They saw its potential as a place to sit, watch, and interact as well as expressing a feeling of being proud of something like this. I also moved the youth club from Enola's neighbourhood to the east part of the sports and culture axis. Here it is further away from residential buildings. This reduces the nuisance.

Furthermore, this way of drawing suggests a rigid masterplan. However, the intention is to design a flexible spatial framework. So, besides solving the integration issues, the design on the next pages will also be visualised to represent what is important and what is more flexible.

Figure 4.55 Water square as part of the maritime campus (Urbanisten, 2013)

Figure 4.56 Boardwalk in restored wetland to connect city with Middenvijver (Turenscape, 2010)

Figure 4.57 Reference (Google Earth Studio, n.d.)

Figure 4.58 Design integration

Framework against loneliness

In figure 4.59, the spatial framework that I propose to counter loneliness in Linkeroever is shown. This is a flexible spatial framework, not a rigid masterplan. Not everything is drawn and most of the buildings are suggestions. The more important elements are accentuated more to give them the attention they need, and some areas are left black intentionally so they can be filled in later based on the same principles.

To improve the relation between old and new in the north, asymmetrical courtyards have made space for inverted courtyards. This typology fits better with the existing strip constructions while maintaining qualities like intimate streets and collective spaces. The second big change is the removal of cars from the Waaslandtunnel. The connection between this road (N49a) and the ring road will close in the summer of 2023. Therefore, it is questionable if this connection is still valuable for cars. I propose to reuse it for the metro and bikes. This makes a level crossing of the landscape diagonal possible and the sport and culture axis less noisy. Finally, I designed a neighbourhood in the middle where all personas can come together along the neighbourhood axis. This neighbourhood combines the form and quality of all surrounding areas. This design is a framework and not a masterplan.

To ensure the success of the design some essential elements form the basis of the design on this scale. These essential elements work together with the principles on a neighbourhood level to counter urban loneliness in Linkeroever.

To ensure **continuity between old and new**, the form of the buildings should not differ too much. For example, in the north, the orthogonal strips change a bit to form inverted courtyards. The changes are small, but the impact is big. The human scale is brought back, the streets are more enclosed, and there is space for common green. These small changes in the urban fabric help to counter urban loneliness.

The **landscape layer brings everything towards the heart of the district**. Through four diagonals, which all have their own robust identity related to adjacent natural areas, people are directed to the heart of the district. The diagonals extend orthogonally into the neighbourhoods and therefore have a big reach as an informal network.

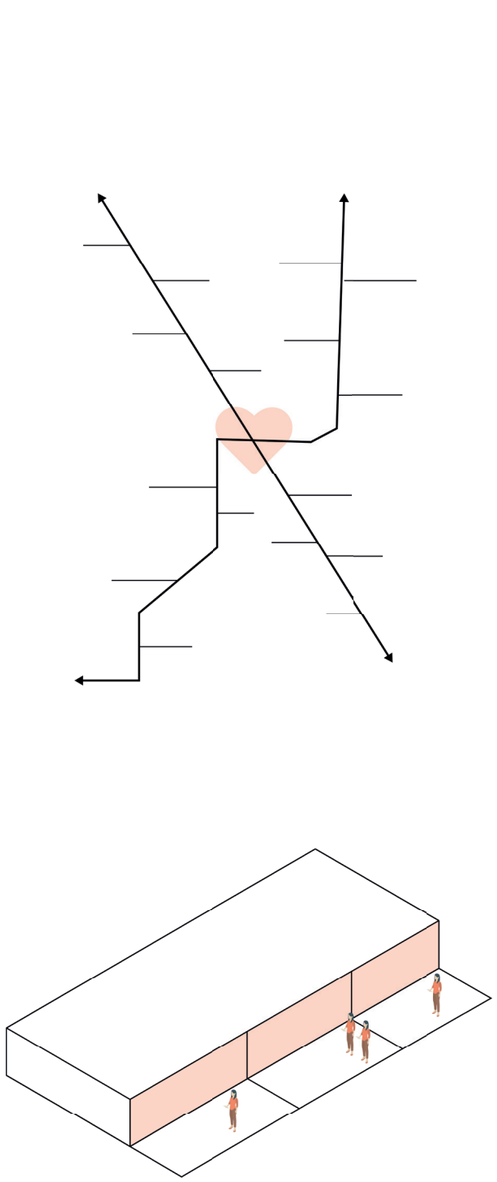
The diagonals also offer a welcome change to the orthogonal fabric of Linkeroever. They provide **a reason to change the orientation of buildings**, resulting in asymmetry. This change in form creates intimate spaces and invites people out to discover the surprising fabric. More people outside and intimate spaces can stimulate social interaction and therefore help to counter urban loneliness.

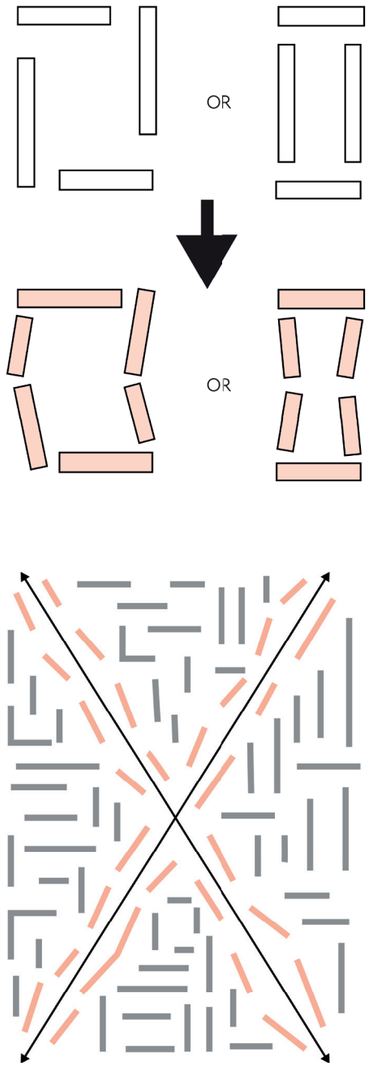
The axes are part of the synergy between both sides of the city and have a **recognisable start and end** on Linkeroever. They have a landmark on the water side and a special connection with nature on the other side. The middle axis ends with a boardwalk across a restored wetland.

Finally, the **plinths need to be activated**, especially along the axes and diagonals. This can be done with public functions as well as with dwellings and hybrid zones. An active plinth is essential for visual interaction and social cohesion. It also brings some liveliness to the neighbourhoods that desperately need it.

The next pages will zoom in on the three axes and related neighbourhoods. After that, some impressions will show how the future of Linkeroever will look on eye level and with less loneliness.

Figure 4.59 Integrated flexible spatial framework





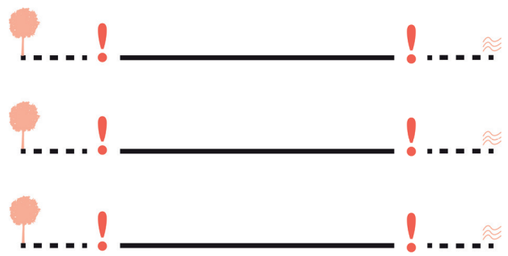
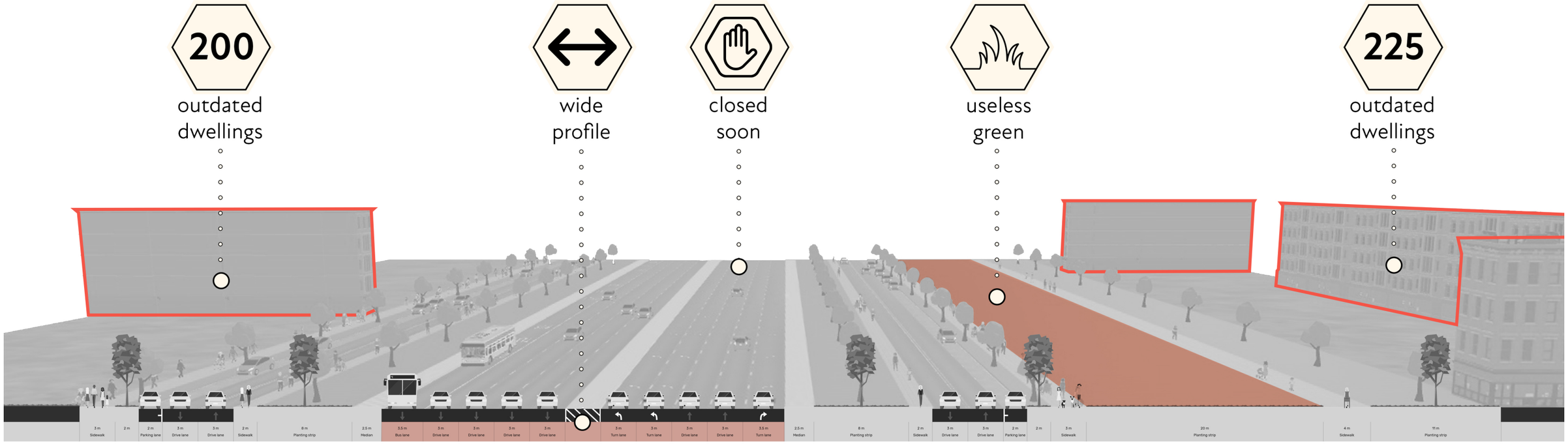


Figure 4.60 Essential elements of the design

Figure 4.61 Integrated design plan

Figure 4.62 Sport and culture axis



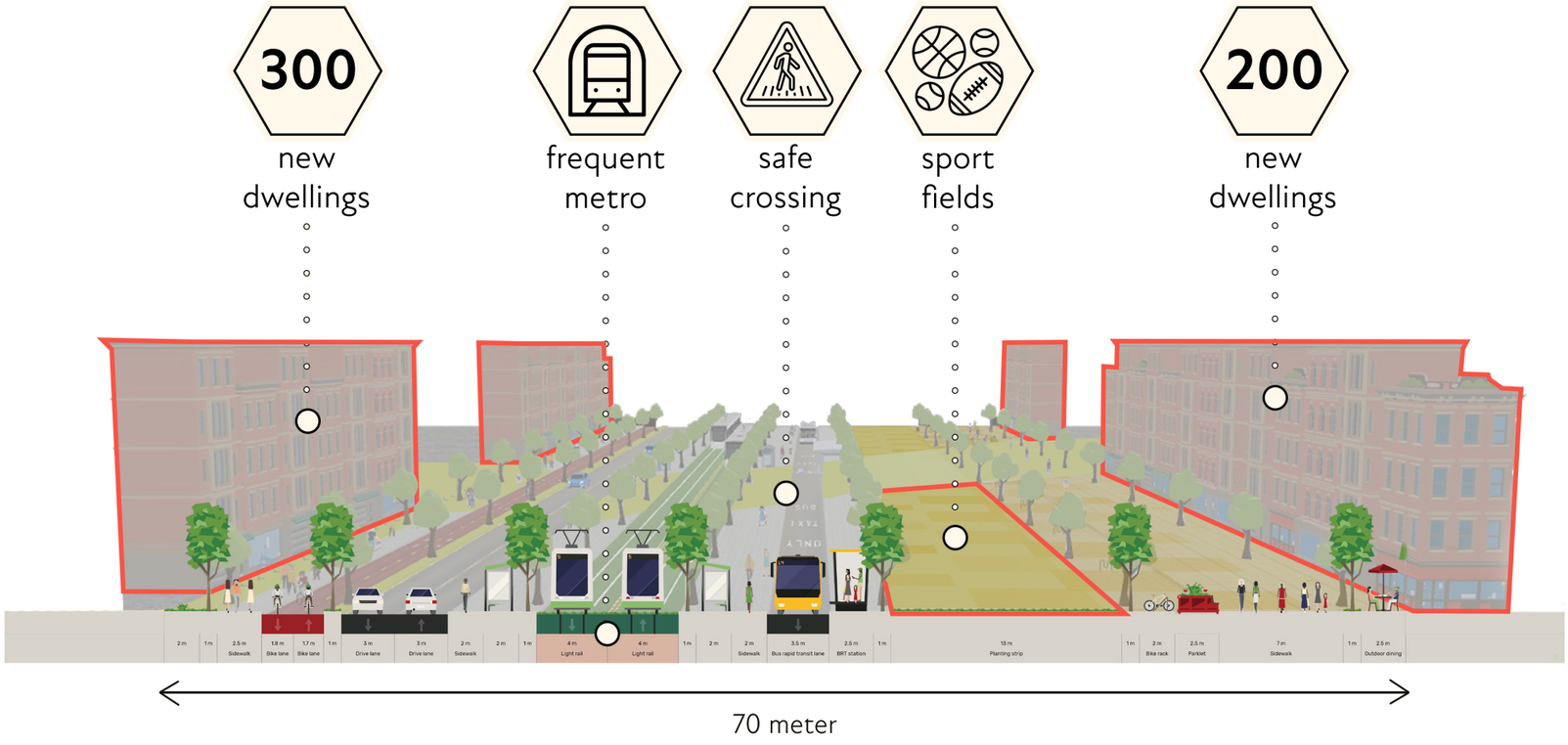


Figure 4.63 Section sport and culture axis

Figure 4.64 Eye-level informal diagonal

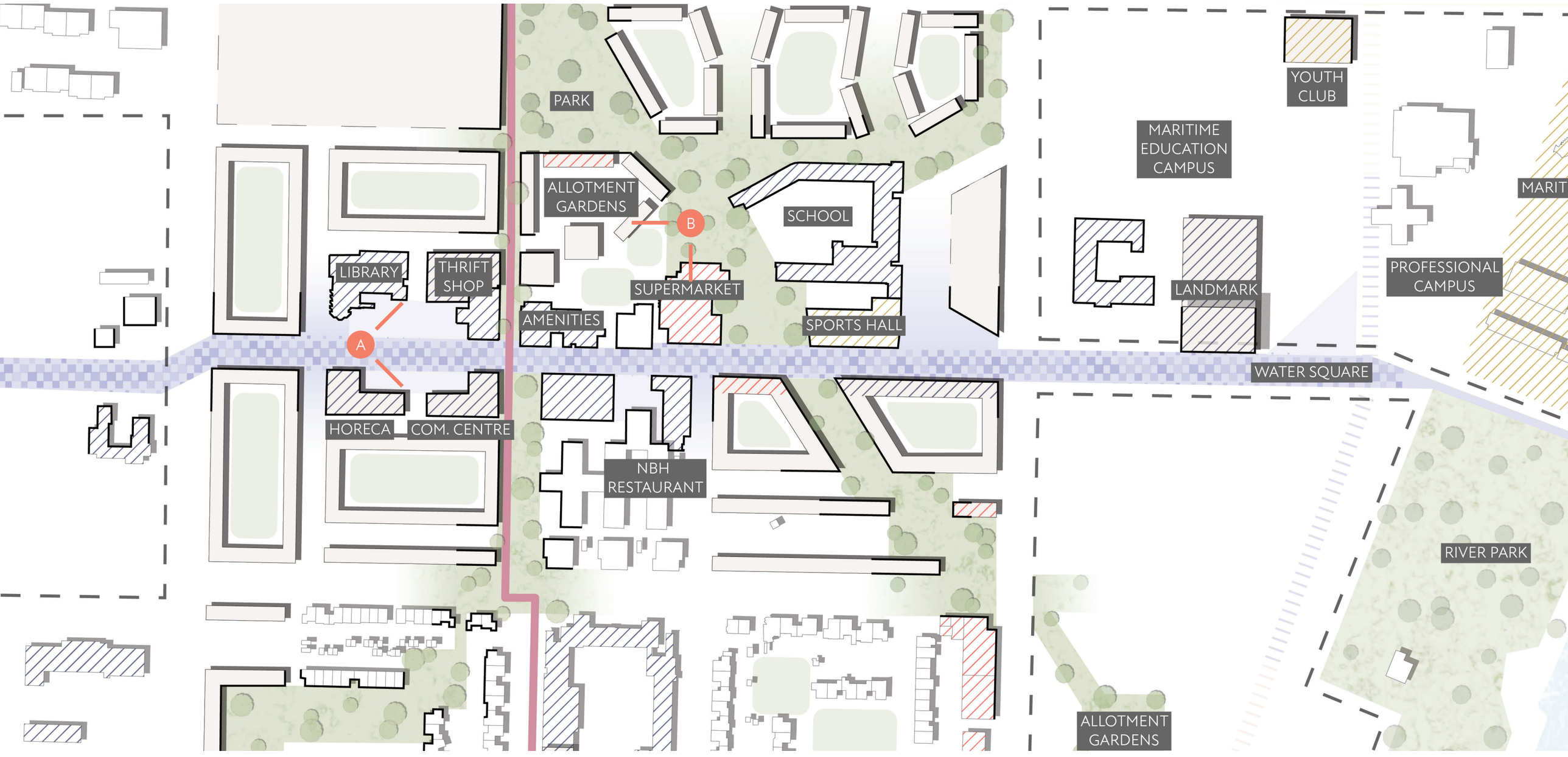


Figure 4.65 Neighbourhood axis

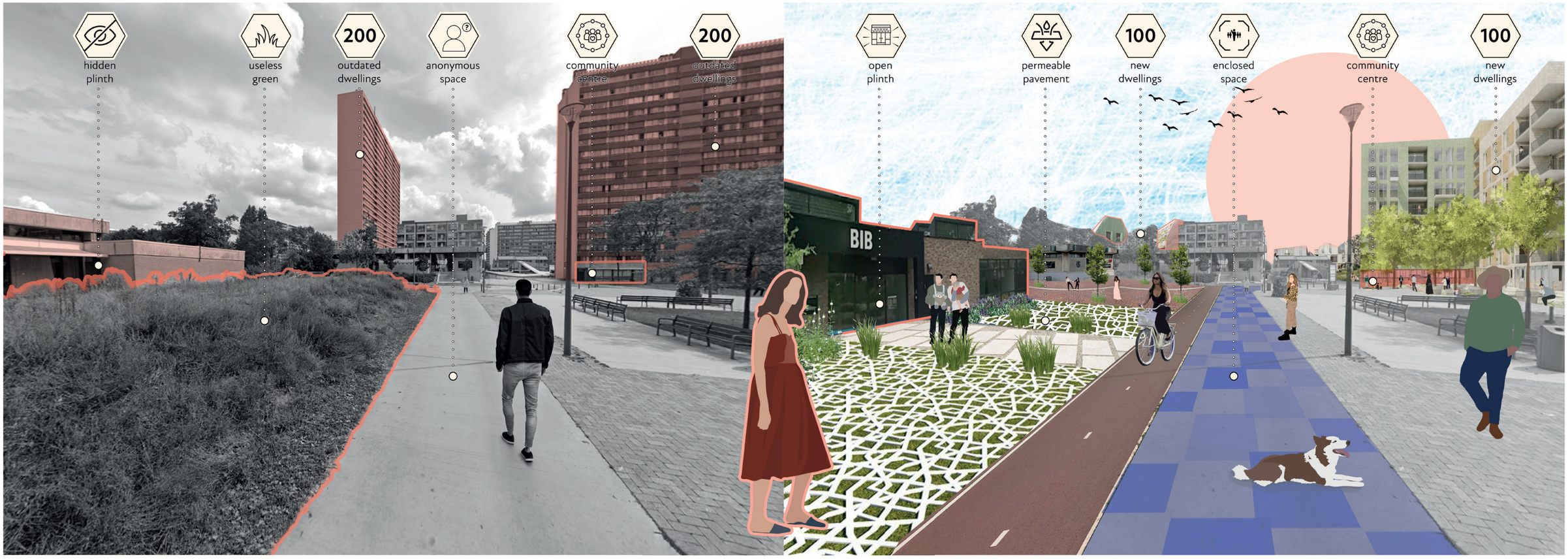


Figure 4.66 Eye-level neighbourhood axis

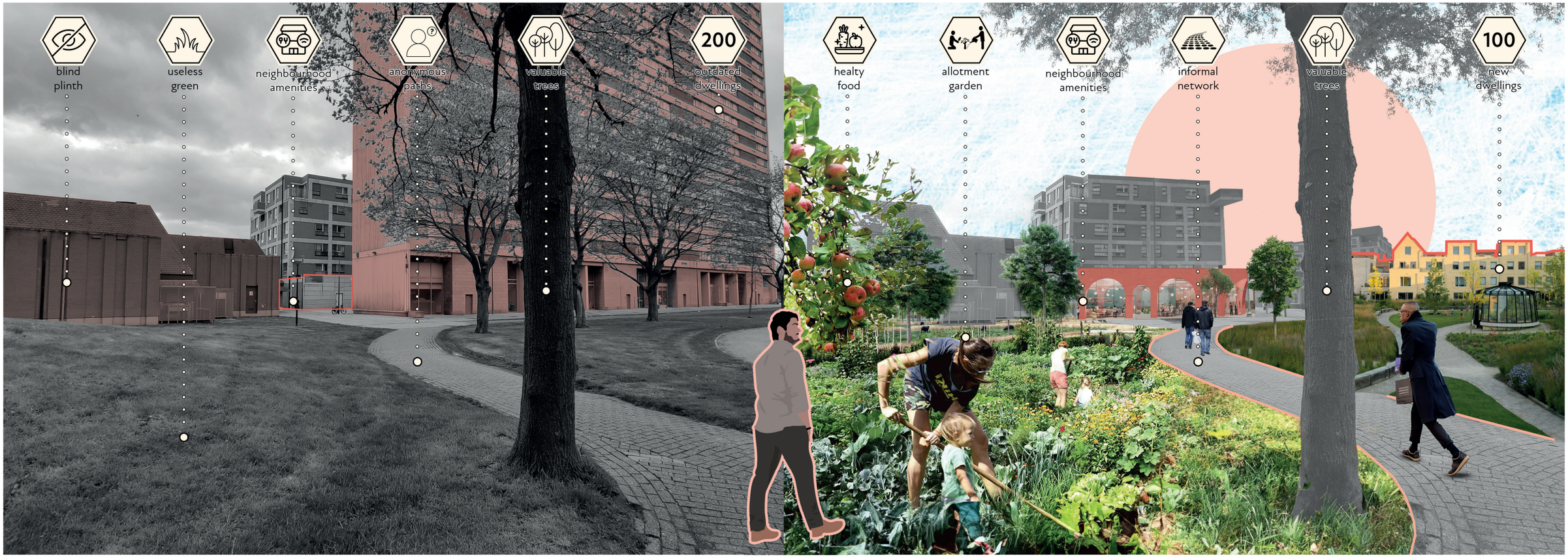


Figure 4.67 Eye-level collective domain

Figure 4.68 Highstreet axis

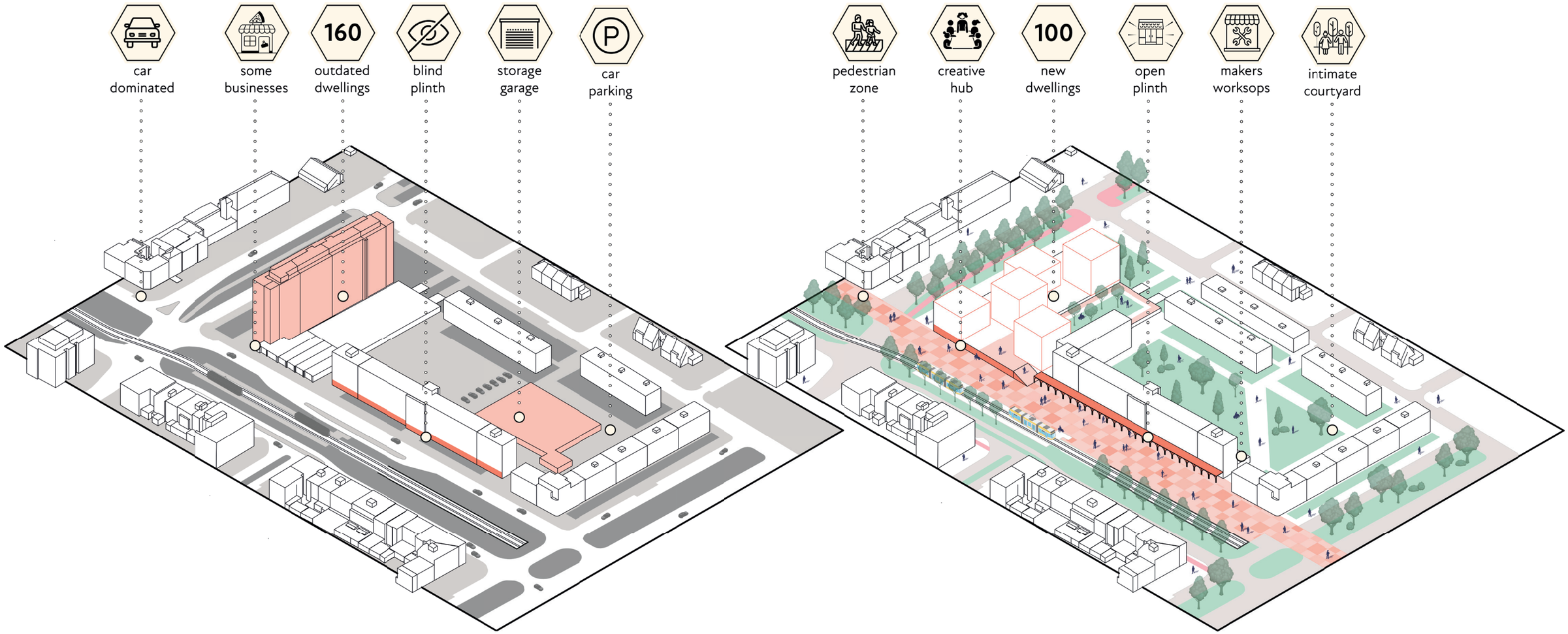


Figure 4.69 Axonometric view Highstreet axis

Figure 4.70 Eye-level inside the courtyard

Figure 4.71 Axonomectic view of flexible spatial framework

4.4.2 Phasing

Countering urban loneliness through spatial and programmatic interventions in Linkeroever is complicated. The design has many different aspects that all help to counter a specific part of urban loneliness. Not all projects can be executed at the same time as they are dependent on different contexts. The most important reason, besides money and risk, to phase this project is the relocation of most people living in social housing. All high-rise slabs will be demolished, and new buildings will arise, when this would be done all at once, thousands of people would have to relocate. When this is done bit by bit, people can move within Linkeroever to one of the new projects. In this sub-chapter, a phasing plan is proposed that makes sure people can stay within Linkeroever. This is a first step towards a future with less urban loneliness.

Synergies

Improving tthe connections between both sides of the city should have priority to give Linkeroever a sense of belonging. The bridge is currently planned to be finished by the end of 2028 but a kilometre over to the south. The adaptation to the new location will take some time, but the bridge and related bicycle network should be finished in 2030.

The other connection that needs to change is the Waaslandtunnel. The tunnel is currently used for car traffic but will be used for a new metro connection and maybe even for cycling. This new use is only possible when there is an alternative for the cars. This alternative is the Oosterweelverbinding, which will be completed in 2030. From then the tunnel can be renovated and prepared for its new use. The metro should be available in 2035.

To create synergies between both shores, not only connections are needed but each side should have something to offer that the other side lacks. For Linkeroever this means three thematic axes. The middle one is partly there already. The axis will be extended to the river and more program will be gradually added to make it into a real neighbourhood centre. The physical continuation of the street can be done within a year and finished in 2026. Adding amenities will take more time as the surrounding neighbourhoods develop. The most important functions should be added by 2030, while the axis reaches its final form ten years later.

For the southern axis, it is important to change the street profile as soon as possible, while cars can still take alternative routes. This will start in 2025 and will be finished within one year. In 2025 the build of the new mobility hub can also start. The station square will follow a year later when the new profile of the Blancefloerlaan is accessible to cars again. From 2026 onwards the plinths and courtyards will also start to transform. The Highstreet will be operational in 2030. Replacing the social housing and building the creative cluster will take till 2035 as new social housing must be built elsewhere first.

The sport and culture axis in the north will be divided into two phases. The eastern part can be transformed immediately, from 2025 to 2030. The western part has to wait till the Waaslandtunnel is closed for car traffic. This happens in 2030. This part of the axis will be completed in 2035. All axes will be operational in 2035. This year the synergies are completed and Linkeroever fully belongs to Antwerp.

Neighbourhoods

Beside the interventions on a city level, the neighbourhoods need to be transformed as well to counter urban loneliness on a more local and personal level. It is not possible to do this all at once, so phasing is important. Before transformation can start, the renovation of the high-rise slabs must stop immediately, as these will all be demolished to counter urban loneliness.

In the first phase, the three most eastern neighbourhoods will be transformed. The neighbourhood above the new metro hub is mainly a grass field where building can start quickly. The only difficult part is the relocation of the people from the two flats on the northern edge of this neighbourhood. The campus area just above has almost no residential function and can also start transformation right away. Right above the eastern part of the sports axis, a few new apartment buildings are planned. This could be built at the same time as the axis. This first phase 1A will be executed from 2025 to 2035, with most buildings in the north and south finished by 2030.

At the same time transformations will happen around the Highstreet. Because this is more of a transformation, it will happen at a slower pace. In the first years, the street profile and north-south park will be realised. In the years after, the courtyards and plinths will be transformed. This project ends with the new creative cluster and residential units. Phase 1B will also run from 2025 to 2035.

From 2030 to 2040 phase two will happen. In this phase, the neighbourhoods north and south of the Louis Paul Boon street are addressed. This will start by building in the open parts before replacing the high-rise slabs. Everything will happen step by step, so people can be relocated within Linkeroever. The public buildings as part of the axis will already be built before 2030 and the start of the residential parts.

Phase three is the final phase to complete the redevelopment of Linkeroever to counter urban loneliness. In this phase, new buildings will be built in the neighbourhoods above the sports axis. First, in the south, the high-rise slabs will be replaced with new typologies. After, the development continues north with the transformation of the garage typologies. This phase ends in the north with building more luxury apartments. This all will be executed from 2040 till 2050.

Natural layer and materials

The layer that will connect the axes and the neighbourhoods is the natural layer. Through four diagonals with orthogonal branches, the axes will be connected. The centre of this informal network is the middle axis which is focused on neighbourhood amenities. These diagonals will be developed alongside the axis and neighbourhoods, with materialisation and vegetation that belongs to an adjacent natural area.

The diagonal from the middle to the southeast is already part of the current urban fabric, but not profound enough. This diagonal can be transformed at the same time as the axes and first neighbourhoods, there are no buildings that need to be demolished. This diagonal will be realised between 2025 and 2030.

The diagonal from the middle to the northeast is less diagonal and less natural compared to the others. Most of this line can be developed straight away (2025 – 2030). The part closest to the middle will need to change when this neighbourhood is transformed.

The diagonal from the middle to the southwest can be mostly done between 2025 and 2030. Except where it cuts through some social housing blocks as they will be replaced and finished by 2035.

The fourth diagonal is the most challenging as it crosses the N49a in an inconvenient place. So, in 2030 a temporary diagonal can be made to connect the existing fabric in this area. However, between 2040 and 2050 this neighbourhood will transform and only then the diagonal will take its final shape.

Besides the materials and vegetation related to the natural diagonals, there is one other important change of materials. The streets will be repaved with small-scale pavers. This will happen gradually as a street is due for maintenance or when a neighbourhood is transformed. For the streets that are not repaved by 2040, a plan will be made to repave them before 2050. In 2050 the project is finished and Linkeroever can counter urban loneliness.

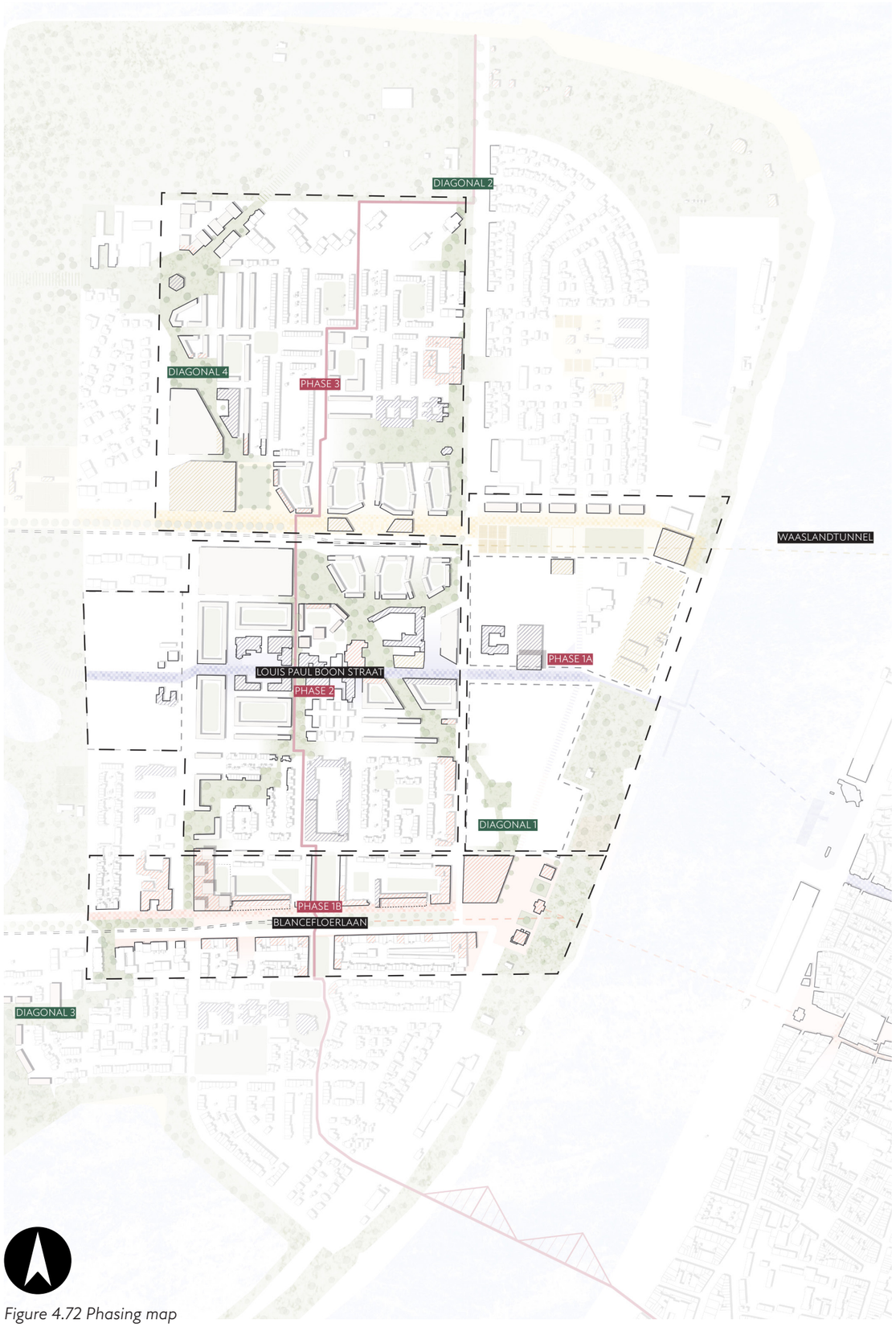


Figure 4.72 Phasing map

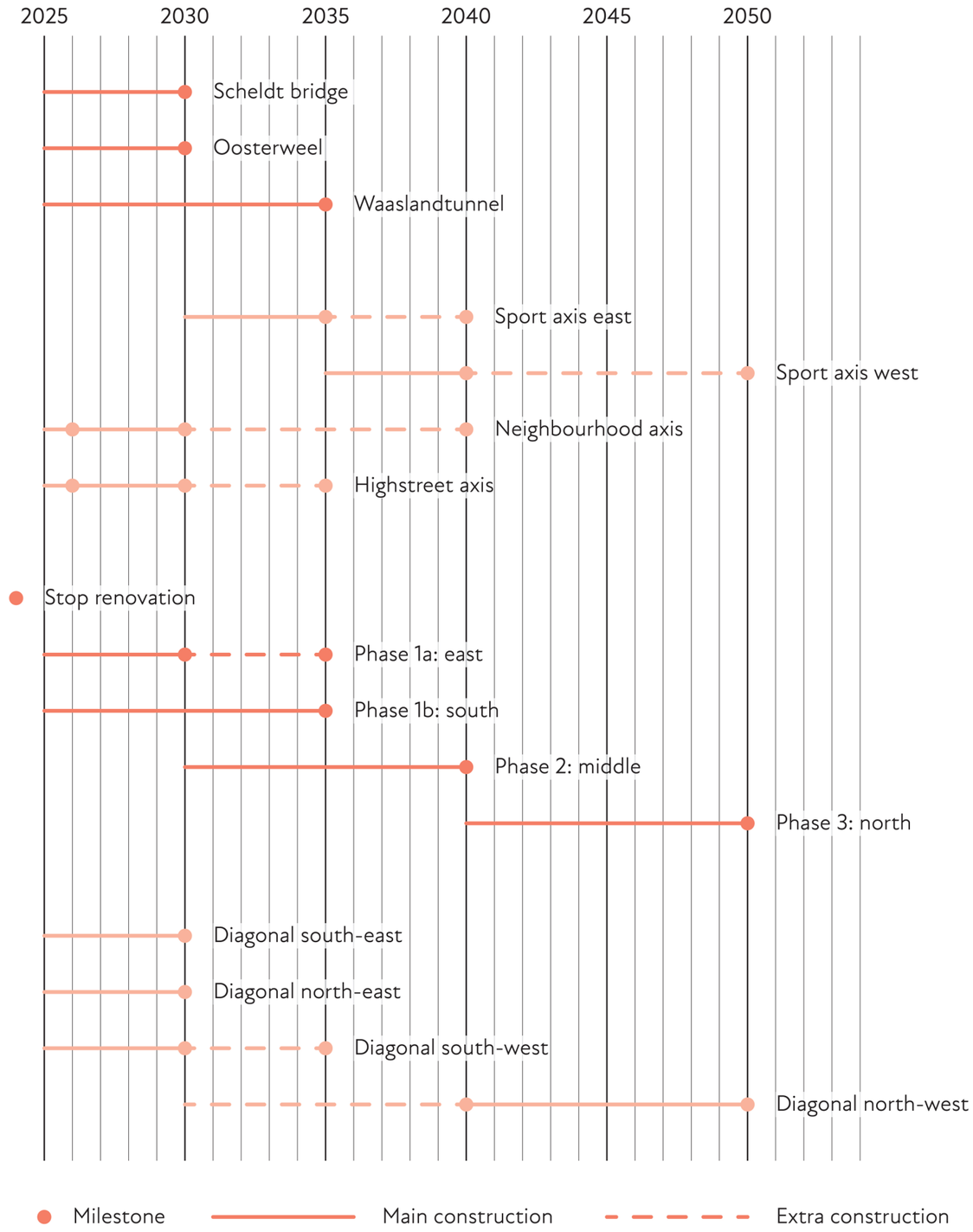


Figure 4.73 Phasing timeline

4.4.3 Collaboration

It is not only important what is designed and when certain parts of the project are built, but also with who the different elements are built. The residents are important stakeholders to collaborate with if the goal is to do something about their loneliness. The ability of the environment to counter urban loneliness depends on personal preferences. Collaboration with residents is an opportunity to establish place attachment, neighbour relationships, and a feeling of responsibility and pride. All these help to counter urban loneliness.

Baugruppen and ownership

Baugruppen is a form of collective development where a group of households develop an urban block together without a formal developer. They develop their own house and together take care of communal spaces and facilities. Baugruppen is a more affordable way of developing because no developer makes a profit. According to Sim (2019), baugruppen allow for different dreams and different needs. Van den Berg et al. (2021) add that baugruppen contribute to social cohesion and help to counter urban loneliness. With baugruppen people build what they need, are more proud and involved, and know their neighbours better.

Involving residents from the start like through baugruppen is great. However, baugruppen are not possible for social housing. Only developing through baugruppen would create an imbalance of ownership and people. For a strong neighbourhood, mixed ownership is vital. It results in diversity and an environment where the more vulnerable are part of a community with stronger people in it who can help or take more responsibilities. Concentrating the vulnerable like it is right now, is not just. Fortunately, there are successful examples of social housing projects where residents are involved from the beginning like Strijp-S in Eindhoven.

Small plot development is also a strategy Sim (2019) proposes. Dividing one big block or plot into smaller plots allows for more competition, diversity, and different costs. A small apartment building and a single-family home could be part of the same block.

From design to maintenance

Not only the indoor environment needs to be designed and realised but also the outdoor environment. This is a bit harder as it is often not private property but rather collective or public property. Courtyards are an example of collective outdoor environments. These spaces can be designed together with the residents who make up the collective. They might pay for it through an association as well. When people are involved in the design process, they can decide what is important to them specifically. If they are involved, they are more likely to use it, appropriate it, form place attachment, and take responsibility for maintenance.

For public spaces, this is not so easy, as it is often public money and public use. However, involving residents can result in public spaces that better accommodate their needs. They might be more proud of the result, form stronger place attachments, and go there more often. Involving residents, even in public projects, is important to counter urban loneliness.

Figure 4.74 No collaboration

Figure 4.75 Baugruppen to collaborate (Arch.id, 2012)

05 CONCLUSION AND REFLECTION

5.1 Countering urban loneliness by design

5.1.1 Impact of design on urban loneliness in Linkeroever 226
5.1.2 Generalization & transferability 227
5.1.3 Other necessary measures 227

5.2 Conclusions

5.2.1 Design evaluation 228
5.2.2 Thesis answers 229

5.3 Reflection

5.3.1 Methods 232
5.3.2 Theory 234
5.3.3 Societal relevance 234
5.3.4 Scientific relevance 235
5.3.5 Graduation process 236
5.3.6 Limitations & recommendations 237

In this chapter, the impact of my design on urban loneliness will be analysed, the conclusions will be presented, and I will reflect on my graduation process. To begin, urban design does not create social cohesion and collective development, it can just facilitate or complicate it. It is hard to estimate the true impact of my design. Although, the environment is only responsible for 52% of the feeling of loneliness, I believe that I did everything possible to make the impact as big as possible as backed by theory and personas. Social cohesion and social interaction, personal and collective development, and a legible human scale play important roles in countering urban loneliness. Designing against urban loneliness is a delicate process with many tools and options. A lot is possible, but it is most important to design for the (vulnerable) people and involve them whenever possible.

Figure 5.1 A moment to reflect seen from Linkeroever

5.1 COUNTERING URBAN LONELINESS BY DESIGN

5.1.1 Impact of design on urban loneliness in Linkeroever

To what extent is my design able to counter urban loneliness? To begin, urban design does not create social cohesion and collective development, it can just facilitate or complicate it. However, as stated previously, the social environment contributes 52% to the feeling of loneliness (Cacioppo, 2008). So, while it still depends on how an individual reacts to the environment, it could be said that urban design can have a significant impact.

Besides the limitations of the urban environment, it is also important to keep in mind that loneliness is a very personal issue. Loneliness is a personal process in which a person weighs up their existing relationships against their own wishes and social expectations (van Tilburg, 2021). This design aims to help as many people as possible by offering choices and taking all three types of loneliness into account. While it is a common understanding that more social relations will decrease loneliness, this is not the case for everyone, as some lack intimacy or purpose. This design takes those people into account as well.

How big this impact of my design would be is hard to tell, as it is not possible to measure the decrease in loneliness, by simulating the design for example. It is only possible by building it and reviewing the impact in the years after it is built. This takes too much time for this graduation project. The slow feedback loop of urban design in general is one of the weaknesses of the profession. Therefore, most projects are currently designed to be flexible and adaptable, just like mine.

While it might be impossible to measure the impact, I can make strong arguments for success based on theory. From the literature, we know that some tools work or do not work, as described in chapter three. Even though I make use of the tools provided by literature, it is uncertain how they will perform in the context of Linkeroever.

Besides theory, I have used personas to show how my design could have an impact. These are just three fictive people, but they are based on real conversations I had. In general, it is good that people have choices in the types of activities and levels of privacy. This will reduce loneliness. I have also reflected on the impact of my design with the host of the community centre, she knows the people and their preferences well. She liked the personas I showed and what their new life would look like. She sees the potential of the interventions and would love to give them a try. She especially thinks that improved mobility and local entrepreneurs can have a big impact on loneliness. On the other hand, she is hesitant about the willingness of some people to change. Limiting cars and building communal courtyards might not work for everyone. I translated these comments into a design which connects old and new worlds better, to make an impact for everyone.

In the end, it is hard to estimate the true impact, but I believe that I did everything possible to make the impact as big as possible within the given boundaries of the urban environment.

5.1.2 Generalization & transferability

Loneliness is prevalent in most cities. Therefore, it would be great be great if the lessons learned and proposed design alternatives could be used in other cities. I think that general lessons like improving social cohesion and social interaction, stimulating personal and collective development, and providing a legible human scale are applicable in every city that aims to fight loneliness. How to achieve these goals might vary per city and culture. In some cultures, people might desire more interaction outdoors, while others desire more intimate interactions indoors. This goes back to what makes people feel lonely in the first place, their expectations which are not met. Therefore, it is always good to provide people with choices and opportunities catered to them.

Having landmarks around that make people proud, tell a story, built an identity and give people a sense of belonging could be beneficial in most cities. However, what makes people proud or what the identity should be, varies. Improving connections between both sides in a city that is divided will always help with a sense of belonging. However, how these connections are shaped and what program is attached determines the impact on social life. So, often the goal is clear but the execution depends on the specific location.

More specific physical solutions include courtyards, clear front and back sides, hybrid zones, aesthetic materials, building up to five stories, arcades, and better mobility connections. Elements like these, are applicable in most cities in one way or another. However, density plays an important role here. For example, suggesting a maximum of five stories in Manhattan to counter loneliness there is absurd. Specific physical solutions might not be possible everywhere, but mixing top-down and bottom-up approaches should always be the goal. This method makes sure that the city improves as a whole and that individuals have a say in what they need to counter their loneliness issues. In the end, most ideas are transferable but the more the location differs from Linkeroever the more attention must be paid to how the ideas are implemented.

5.1.3 Other necessary measures

Even if my design would be perfect, it cannot solve urban loneliness completely. The environment we live in contributes just 52% to the feeling of loneliness (Cacioppo, 2008). Other aspects of life like the psychological state of someone's mind, financial stability, and other social-economic aspects are important as well. There seems to be a relation between social-economic status and loneliness, as shown in the example of Linkeroever in sub-chapter 2.2. The two might even strengthen each other. Addressing social-economic issues and providing help is therefore essential to counter urban loneliness.

Just implementing urban design cannot solve urban loneliness, other pieces of the puzzle are needed. A great urban environment however makes it also easier to make changes in other aspects. With or without the help of a specialist, it is easier to change habits or behaviour in an environment that offers opportunities and choices instead of an environment that emphasises the disadvantages.

5.2 CONCLUSIONS

5.2.1 Design evaluation

Even though it is hard to estimate the impact of my design, it is possible to evaluate and assess the integrated design by using the design framework established in sub-chapter 3.4. This could give an insight into the extent this design complies with the principles extracted from theory. It should not be a surprise that the design scores well on most points of the framework, as the literature and principles were the foundation on which the design was built. However, there are some important nuanced differences. According to the framework, this design excels in connecting people and places, stimulates place attachment, and provides a legible privacy script. The design could benefit from a stronger and more specific program to make clearer how it will stimulate personal and collective development and how it will provide social hangout spots. It also lacks detailing on the building and street level to make the human scale more visible. I would also have loved to do a bit more with hybrid zones. The connection between inside and outside fascinates me but is underdeveloped in this design.

The design itself has qualities and weaknesses that go beyond what is described in the literature and the framework. There are elements of the design whose importance was only discovered during the design phase. For example, the fact that this design provides so many choices to all different people is an amazing quality for which the inspiration came not directly from literature. The same goes for the landscape layer with the diagonal axes. These bring something interesting to the urban fabric and give a reason for shapes to be asymmetrical. On the other hand, density is not part of the design framework and therefore a bit overlooked. In Appendix A, I present a quick study that looks into the numbers behind the design, including density and demography. There are 30,5% more dwellings in the new situation, while almost all the high-rise is gone. This density should be able to support the new amenities. However, more density and number forward thinking could have helped.

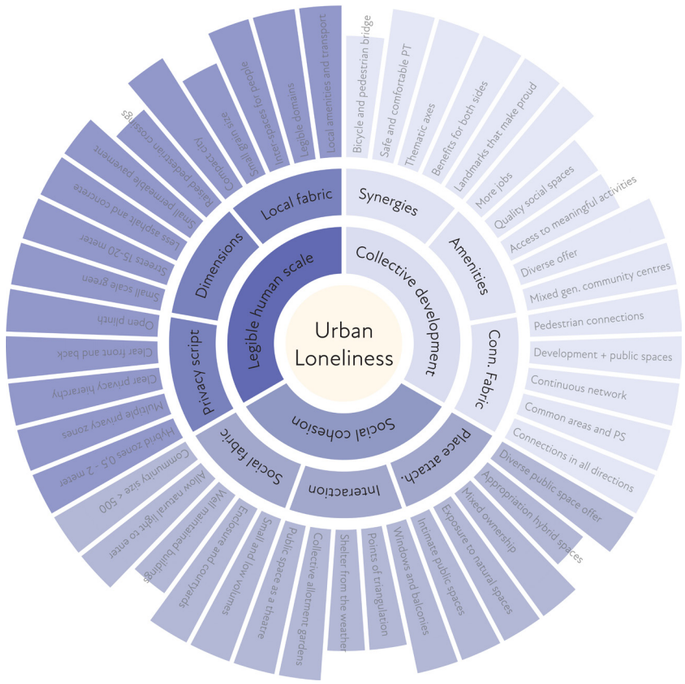


Figure 5.2 Final assessment

5.2.2 Thesis answers

What is the context shaping urban loneliness in Linkeroever?

Urban loneliness is a growing problem, especially in cities. This has negative effects on mental and physical well-being as well as on the economy. Loneliness "is the outcome of a process in which a person weighs up their existing personal relationships against their own wishes and social expectations with regard to relationships" Van Tilburg (2021, pp. 335–336). If not met, this result is a negative feeling of distress and dissatisfaction. Urban loneliness, as I define it, is a type of loneliness that is caused, facilitated, or strengthened by the characteristics of the social and physical urban environment. Many people think that feeling lonely is an internal issue caused by genetics and social skills. However, the environment we live in contributes 52% to the feeling of loneliness. The environment has a social and physical component. The physical environment facilitates the social environment. As urbanists, we can shape the physical environment and therefore play a significant role in countering urban loneliness.

One of the areas where urban loneliness is present and change is desired, is Linkeroever in Antwerp. In this disadvantaged neighbourhood are low-income, deprivation, and non-Dutch-speaking families some of the social-economical elements that amplify urban loneliness. The monotony in typology and function, lack of qualitative amenities, insufficient collective development options, and the absence of the human scale are spatial and programmatic aspects that result in anonymity. Together with poor connections, this results in urban loneliness. Moreover, the statistics show that urban loneliness in Antwerp is most apparent in Linkeroever. This is on top of the 10 – 20 per cent extra loneliness in cities compared to the countryside. The context consists of understanding what loneliness is and how it can be caused on the one hand, and dissecting the social-economical and physical conditions of Linkeroever that amplify urban loneliness on the other hand.

How to design against urban loneliness?

From theory, three main topics arise to counter urban loneliness in the social-physical environment. Social cohesion and social interaction can counter urban loneliness by stimulating new and better relationships. Personal and collective development can give people meaning in life and opportunities to grow as a person. A legible human scale is supporting the former two by making it more attractive to go outside and easier to reach destinations. Linkeroever is lacking behind on all these three topics.

Based on the three topics a design framework has been established. This design framework is built by using literature and by research for and through design. The design framework consists of 45 design principles that can be used to counter urban loneliness on multiple scales. The framework can be used as a starting point for design but also as a tool for reflection and assessment throughout the process.

Synergies can help to establish a sense of belonging, amenities and public functions attached to public space stimulate purposeful interactions, and connecting these spaces for slow traffic makes them more accessible for everyone. Hybrid zones, mixed ownership, and natural public spaces improve a feeling of place attachment. Organising public space as a theatre allows for simple visual interaction and social control and low and small building forms result in manageable community sizes where contact with neighbours happens more naturally. Hybrid zones, open plinths, and a clear hierarchy help with establishing a clear privacy script where it is easy to choose more or less social interaction. Smaller streets with small-scale materials make it more attractive to go outside. All these specific spatial and programmatic interventions should help to counter urban loneliness according to theory.

How to redesign Linkeroever?

The site analysis, literature, and field trips have informed and inspired the redesign of Linkeroever. The redesign consists of top-down and bottom-up approaches that are combined into one design through the scales.

The top-down design process resulted in a robust yet adaptable framework which better connects Linkeroever to the rest of Antwerp. The synergies along three thematic axes bring something extra to both sides. This framework can grow like an organism and provides people with plenty of choices and opportunities. It is not forcing anyone to participate in social interactions, but it provides everyone with choices and opportunities to do so and feel less lonely. The landmarks make people proud and help to establish an identity and a connection with the district.

The bottom-up design process is all about three personas who represent shared interests and characteristics. They give a great insight into what elements of Linkeroever make them lonely and how spatial and programmatic interventions could help to counter this. These stories help to design improved neighbourhoods. Important elements from these stories include intergenerational community centres, intimate streets, workplaces, collective courtyards, a bicycle network, and spaces for sport and development.

These neighbourhoods are connected to the larger framework. Both must adjust a bit to bring it together. This is possible because of the flexible nature of both. The landscape layer in between also helps to connect the neighbourhoods and axes. The diagonals that bring the different landscapes into the city come together in the middle axis, the area that will function as the heart of the district. This results in a design that is more detailed, more robust, has more character, and most importantly helps to counter urban loneliness.

To what extent do spatial and programmatic conditions affect urban loneliness?

It is not possible to measure the impact of my design on urban loneliness. However, is it known that the environment is 52% responsible for this negative feeling. Therefore, we can assume that a good design can have a significant impact. My design not only stimulates social interactions but deals with all three kinds of loneliness to have an impact that is as big as possible. Based on theory and by using the personas I would argue that my design is a significant improvement over the current situation.

It is important to note that urban design does not create social cohesion and collective development, it can just facilitate or complicate it. Therefore, the extent to which the design affects urban loneliness depends also on the people and if they make use of the opportunities and choices presented. On the other hand, urban design does not have a direct impact on 48% of the feeling of urban loneliness. Other pieces of the puzzle, like changes in social-economic aspects are necessary. However, I can imagine that it is easier to work on your internal struggles in an environment that is providing you with options and comfort rather than an environment which emphasises the disadvantages.

How to improve spatial and programmatic conditions in Linkeroever that stimulate social cohesion and collective development, countering urban loneliness?

Social cohesion and social interaction, personal and collective development, and a legible human scale play important roles in countering urban loneliness. Providing choices and opportunities gives everyone the possibility to do something about their lonely feeling. Having landmarks that make people proud, tell a story, or built identity gives people a sense of belonging. These are programmatic solutions that can have a big impact on a city or district. More specific and local physical solutions include courtyards, clear front and back sides, hybrid zones, tactile materials, building up to five stories, arcades, and better mobility connections. Scale is the keyword to counter urban loneliness in Linkeroever. The current scale is too big, a more human scale is necessary. The in-between scale is also important as it can be the connection between someone's home, the neighbourhood, the district, and the rest of the city. The program is also relevant on the in-between scale as it can give people a reason to get out of their houses and participate in their neighbourhood or district. Designing against urban loneliness is a delicate process with many tools and options. A lot is possible, but it is most important to design for the (vulnerable) people and involve them whenever possible.

5.3 REFLECTION

5.3.1 Methods

Research and design

Research and design were intertwined from the start. In the beginning, research was more dominant (research for design). The research was the inspiration for design experiments and analyses resulting in more topics to research. In the second phase, research and design went hand in hand (research by design). Design experiments led to new questions for research and new findings from research led to changes in design. In phase three, design was most dominant (research through design). The design process produced some new questions which were researched or analysed along the way. The phase of reflecting on the impact of my design was research on design. Where the design itself is the topic that is researched and critically assessed. Research and design went hand in hand during this graduation, but their relationship changed as the project matured.

From this research and design process, I learned that starting to design while doing mostly research helps to sharpen the scope. When I focussed only on research, the bucket of information was growing and growing. I was lost in the quantity of information. When I started to integrate design and performed little design exercises based on theory, I started to find my way through literature and the pieces of the puzzle dropped into place.

As presented in my methodological framework, the first three sub-questions formed one big Analysis-Design-Present-loop (ADP-loop). The idea was that quick iteration between analysis, design, and present would happen at a rapid pace. Because the topic was complex it took some time to get started. Only in December, the ADP-loops were at full pace. In the end, the big ADP-loop worked out and I am happy with their quality. Making quick alternatives helped to generate ideas. I learned during this process that reflecting on the design is also important to this process. By reflecting on my design and extracting the essential elements in the form of diagrams I was able to improve the design.

Through the scales

The aim was to design through the scales. For this, the story is similar. Until December I was stuck on the district scale and trying to understand that scale. After that, different themes developed on different scales, and only when I started to combine top-down and bottom-up design methods, in February, the design really started to go through the scales. This method included a top-down approach to public space identity, synergies, and choices as one tool. The other tool was bottom-up, where personas with similar interests and characteristics were used to find problems and solutions in the daily life of people. Combining these two ways of designing resulted in a design process that went through all scales. The design was mainly represented in plan views. Most of the design on eye level happened as I analysed and designed the days in the lives of the personas. The results from this were translated into plan view neighbourhoods. I am more comfortable and experienced with plan views compared to for example eye level perspectives. From this, I take away, that it could be beneficial for my process to practice more one eye level and incorporate it sooner and more often in the process.

Design framework

The design framework was another method I used. It helped me to conclude what I had learned from literature, analysis, and design experiments. It also functioned as an inspiration for design and an assessment tool. The success of this method is debatable. It helped me to summarise the large amount of knowledge gained from literature but at the same time excludes a lot of other important factors in urban design. Is the selection I made the best one? Does it limit creativity? I also used it to evaluate my designs along the way. The results were never very confronting as the ingredients for design were the same as the elements for assessment. It links literature and design and is an inspirational starting point but not the best assessment tool.

Site visits and personas

Site visits were one of the most important methods I used during my graduation. The six days I spend in Antwerp inspired me, gave me insight into the local communities, and revealed a lot through observations. Understanding the people who live there helped to design something that will work for the inhabitants. I discussed problems, possible design solutions, and wishes with people in the neighbourhood centre and youth centre. The site visits were not perfect as the group of residents I spoke with was rather small (<10) and because these talks are not a scientific method of information enquiry. Nevertheless, the site visits were informative and inspiring for me. During the talks, I visualised in my head what a new Linkeroever could look like based on what the people told me and felt the urge to make adjustments and alternative designs as soon as I got home.

Based on the people I spoke to, I developed three personas. Designing based on personas was an experiment for me. An experiment that turned out well. The personas helped me to visualise the resident perspective and to think about the smaller scale. Even though personas are biased and arbitrary, I think my design would have been less strong without them.

Evidence-based design

The literature research, analysis, and site visits helped me to create an evidence-based design. The density and demographic statistics presented in Appendix A, also help to make the design more explicit. Together with the continuity of design elements and design language through the scale, this results in a design that is realistic and convincing.

In figure 5.3 I show the methods that I have used in my design process over the past year and how I would make use of these methods when I look back at it with my current knowledge and experience.

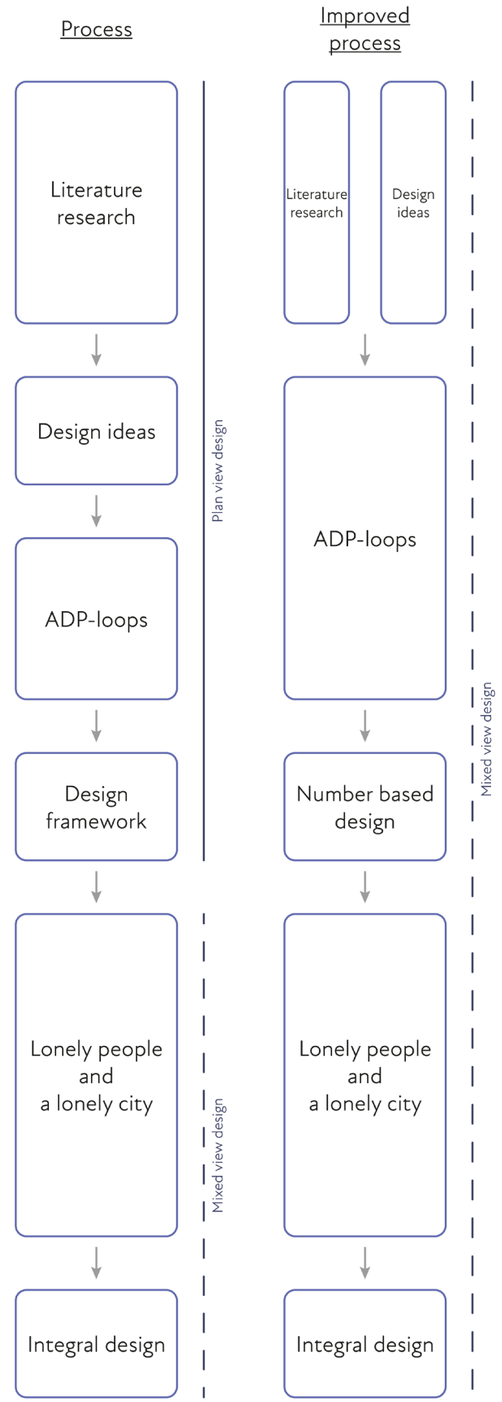


Figure 5.3 Reflection on methods and process

5.3.2 Theory

The literature and theory formed the basis of this thesis. The result of a thesis like this depends on the literature used and found. There are few articles written about the topic of urban loneliness. Most articles only talk about loneliness in the psychological realm. Others are about the urban environment and related topics like social cohesion. It was my task to find pieces of literature that often talked about one specific element and combine these into one overview of the relationship between the urban environment and loneliness. This process was challenging, and I selected pieces to make the puzzle. However, this puzzle tells far from the complete story. There are many more relevant theories and articles that tell something new. Within my chosen borders, the three topics of social cohesion, collective development, and legible human scale, I have gathered sufficient significant literature to construct this thesis.

The sub-chapter about synergies has little scientific backing as I found it hard to find literature about this. Despite this, the chapter seems valid and logical partly because it is based on thorough analysis. This points out a problem I experienced during my graduation. The line between logic based on previously gained knowledge and literature-backed ideas is sometimes thin. The story I tell is based on literature but also on my reasoning and own ideas. Therefore, I see this thesis as a logical and strong story about urban loneliness mostly backed by theory but sometimes based on my own reasoning.

5.3.3 Societal relevance

This thesis draws attention to the growing societal problem that is urban loneliness. Urban loneliness is a silent epidemic that is a real threat to society. By publishing this thesis, I hope to inspire policymakers, designers, and residents to think about urban loneliness. My thesis not only draws the attention that this topic deserves but also provides real solutions that can have an impact on the people in Linkeroever. They liked the conversations with me and are inspired by the possibilities. For them, it would be great if the municipality of Antwerp would acknowledge the issues and if they would be inspired by my viewpoint. The societal problem not only needs urban interventions but also social ones, as discussed earlier. This means that the societal relevance is greater when it is combined with social-economic interventions. The extra benefit of my project is that it not only makes the environment better for people who feel lonely, but for everyone.

I have chosen to demolish most of the modernist high-rise slabs in Linkeroever. This decision can have a big impact on the society of Linkeroever. These buildings currently characterise the district and represent the modernist values of light, air, and calmness. However, these buildings have never been maintained and are detrimental to urban loneliness. Too many people are put in one monotonous building with a blind plinth and small circulation spaces. So, with my interventions, I counter loneliness and change the identity, but is the impact of this not too big for the society of Linkeroever? Moreover, demolishing the buildings is not the most sustainable option and achieving the same density is hard. It would be valuable to do more architectural research on the possibilities of transforming these buildings. Solutions could include a reduced height, an open plinth, circulation spaces that allow for interactions, more dynamic façades and floorplans, and vertical community spaces.

5.3.4 Scientific relevance

Scientific education

Like the studio 'Design of the Urban Fabric,' my topic deals with the dynamics and interplay between the physical and social environment. The question of the studio is, how will the future city look and work, and how will we live together? My thesis focuses on how the city will look and work and how we will live together if we shape the environment in a way that counters urban loneliness. Our way of living together and the fabric of the city must change if we want to fight loneliness in cities. I have aimed to counter urban loneliness by design and experiment, one of the methods presented by the studio. This design thesis ties in with my master's programme (AUBS) and the track of urbanism because it has resulted in an integral design on an urban level. The result combines technology, design, and a social perspective into one integral but flexible plan for the district of Linkeroever. The design tackles mobility, urban renewal, and densification challenges, which are central topics in the urbanism track. The main issue discussed in this thesis is urban loneliness. For me, this topic is what urbanism is about, people and space.

Scientific field

There is little research done on the relationship between loneliness and practical solutions in the built environment. Therefore, this thesis aims to bridge the gap between the existing theories about loneliness and the practical applications of these in the built environment of Linkeroever. I hope that this thesis can provide tools to design neighbourhoods that help to counter urban loneliness.

This thesis contributes to the scientific field by linking social and psychological theories with the built environment. Research in this field is still limited but has also grown recently. During this thesis, multiple articles on similar topics were released, like Bower et al. (2023). What is special about this thesis compared to most research is that it makes the tools and interventions concrete and applies them in one real location. These design principles can be helpful to urban designers, architects, policymakers, and landscape architects.

I think that the scientific community could benefit from more collaboration between theoretical and practical fields. For example, more collaboration between psychology and urban design, as I tried in this thesis. It could help the psychology field by preventing psychological problems, such as loneliness, through urban interventions. On the other hand, it could help urban designers to come up with plans that better suit the needs of society. Interdisciplinary collaboration between theoretical and practical sciences could benefit all.

5.3.5 Graduation process

One year of graduating is long. It was sometimes hard to work on one single project all the time. Furthermore, because it is an individual project, I spend a lot of time with just myself and my thoughts. I needed to talk about what was going on at least twice a week with peers at the faculty to not get lost in my thoughts. The group sessions, in the beginning, were nice, and lectures in the second half were good breaks.

During this year I was mentored by my two mentors Robber Jan van der Veen and Machiel van Dorst. In the end, this combination worked well for me. Robbert Jan helped to push the design while Machiel helped a lot with the process and methods. This combination helped to create a design that is powerful and well-grounded in evidence. Their feedback helped me to get through rougher periods of the design process. For example, just before the Christmas break, I was lost in literature and their tips to apply this to the location helped with making the project tangible. Their feedback was often small steps that I could do before the next meeting, this kept the flow going. In the beginning, I had less (design) to show, and the feedback was less concrete, but the more I started to design the more valuable feedback I got.

During this year of graduating, I learned that urbanism is as much about people as it is about space. I learned the value of fieldwork. Fieldwork helped me to come up with new inspirations or to give me new motivation when the project was struggling a bit. I sharpened my design skills. I was more comfortable with my design scales on an architectural scale and when designs were more concrete and complete. I learned that urban design is always more flexible and often incomplete. Making alternatives and design iterations is therefore more important to explore the options and come to a rich design. What to design and visualise and what not is something I have improved but still struggle with sometimes. I experienced that reflecting on design is essential to make the most of your design. It is sometimes important to take a step back and describe the core of the design in a few words and schemes. The most important thing is that you design for a cause or for people that motivate you, only then you can have the power and endurance to come up with the design that is the best of your capacities.

You do not learn without making mistakes. There are some things I would have done differently with the current knowledge. For example, I would have liked to make the topic a bit more specific and dive in a bit deeper. Because of the complexity and plurality of the topic, I had to gather a lot of information and could not dive deep into one specific fascination. Something else I would have done differently is the perspective of design. I designed a lot from a plan view, except for the personas. Using eye-level perspectives, sections, and axonometric views more often could have benefited my design.

Finally, I also grew as a person. Besides improving my design skills, I also became more comfortable with the urban scale. With my architecture background, I was used to making designs that are very detailed, finished, and not flexible. Urban design plans are often more flexible and less concrete. There are important rules and parts of the design that are more developed. There is often not a fully developed 1:1 plan that can be implemented as it is. I had trouble adapting to this and finding the balance between detail and flexibility. I think I am now more comfortable with this. I also stepped out of my comfort zone with the field trips. Talking to strangers is not my strong point, but it was essential to this project. I am happy with my development in this aspect. Finally, I improved my planning skills further. I like to work in a rhythm where I know my goals and what to do. I am organized and good at planning, but doing this for a project that takes a whole year was challenging even for me. I learned to allow space to discover and experiment. Now, I am even more confident in my planning and organizing skills.

5.3.6 Limitations & recommendations

Besides the obvious time limit, there are more limitations to this thesis. First of all, I am limited by my own designer bias. As an urban designer, I am convinced that I can help to counter urban loneliness through design. Therefore, I will search for articles that confirm this and help me in this task. I might have overlooked the limits of urban design in countering loneliness and did not look for literature that contradicts theories that were useful to me.

A second limiting factor is the number of residents I spoke to and how often. For a real design process, it would be desirable to consult a more diverse group of residents more often. This is also a recommendation for others who want to do something similar, talk, talk, talk.

More iterations would also improve this design. Time is the limiting factor here. Because a design is never finished and an extra iteration will always improve it, the question always is, when do you stop? What is the optimum regarding time and quality? For this graduation process, the answer is simple, there is a deadline from the university. However, in practice, this question becomes more relevant. If the goal is the best possible, designing it will take forever and cost too much money. Compromises must be made to create a design at an affordable price. The question is if the biggest improvements have been made before the project ends or if significant improvements would have been made afterwards that save money in the long run.

All things considered, I have produced a thesis that convincingly shows how to counter urban loneliness in Linkeroever, even though it has its limits.

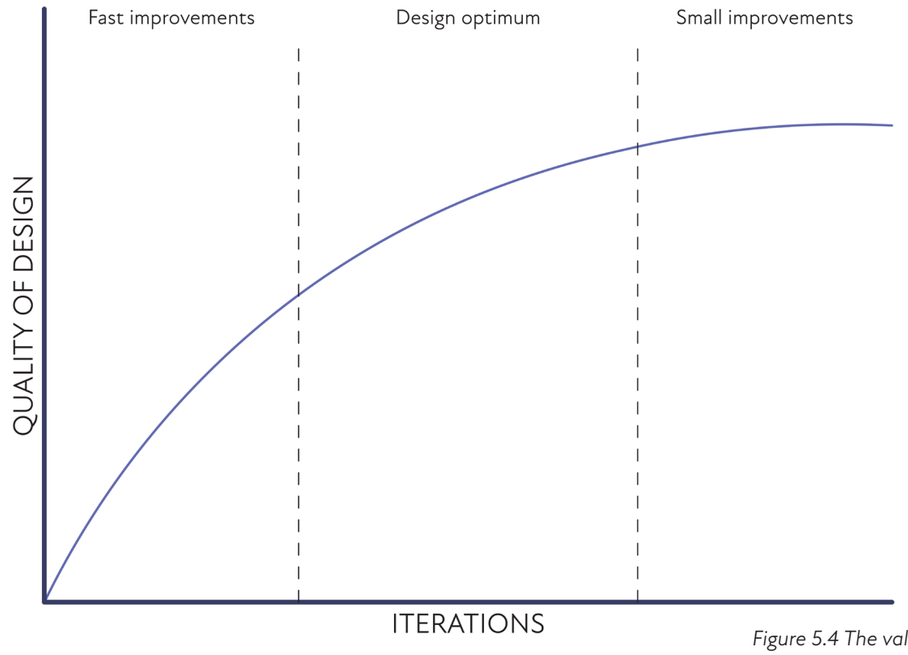


Figure 5.4 The value of design iterations

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APPENDICES

APPENDIX A: DESIGN IN NUMBERS

In this appendix, I present a summary of the most important statistics related to density and demographic. The data for the current situation comes from (Stad Antwerpen, n.d.) and the data for the future situation is based on the design presented in this thesis.

A.1 Building density

Current situation

At this moment there are 9.200 dwellings on Linkeroever, of which 8.200 are in my project area and 1.000 in the new neighbourhood Regatta. In total, there are 4.000 social housing units. These are all located in my project area.

Goals

When Regatta is complete, it will count 2.100 dwellings. My project area will grow to a total of 9.900 dwellings. In total, this means that Linkeroever will have 12.000 dwellings by 2050. This is an addition of 30,5%. Linkeroever has a record high of 44,4 social housing. The goal is to keep the absolute number of 4.000 social dwellings but reduce the percentage by building more private dwellings.

Demolition

As mentioned before, most high-rise buildings will be demolished. This means that 3.700 dwellings will be demolished. Because the high-rise slabs mainly offer social housing, this means that 3.300 social houses will be lost and 400 private dwellings.

New development

In Regatta 1.100 new private dwellings will be built according to plans. In my project area, 3.300 social dwellings will be built to bring the total back to 4.000. Furthermore, 2.100 new dwellings will be built of which 100 are student housing units and 150 are achieved by adding layers to existing buildings.

A.2 Demographic

Number of residents

What does this densification mean for the number of residents? At this moment, Linkeroever has 17.670 inhabitants. This is almost 2 people per dwelling. In sub-chapter 2.3 it was made clear that despite a global increasing trend, the number of single-person households is decreasing. Through my interventions, I also stimulate interaction and relationships, which should result in fewer people living alone. So, for the future of Linkeroever, I predict a population of 24.000 living in 12.000 dwellings by 2050.

Age groups

At this moment the 65+ age group is overrepresented in Linkeroever with 4.490 people (over 25%) compared to the city average of just over 16%. There are also 3.850 people under the age of 18 and the other 9.330 people are between 18 and 64. Through the strategic use of typologies, the goal is to restore the balance. In 2050, the population should be 5.500 people under 18, 5.000 people over 65, and 13.500 in between those age groups.

Households

Right now there are 8.750 households in Linkeroever (surprisingly 450 less than the number of dwellings). In 2050 this will be 12.000, the same as the number of dwellings. The current and future composition of households is visualised in figure A.1. The composition does not differ that much but there is less space for single-dwellers, as I hope to reduce this type of household through my interventions. The household composition is important to see of the housing typologies match the demographic.

A.3 Typologies

In the new situation, three main typologies make up the 12.000 dwellings. There will be 1.900 ground flour apartments/maisonettes, all of these will be new construction in my project area. There will also be 3.500 single-family homes. There are already 2.500 of these dwellings in my project and 500 in Regatta. An additional 100 will be constructed in my project area and 400 in Regatta. The final typology is the apartment. There will be 6.600 apartments of all kinds and shapes in Linkeroever. After demolition, there are 2.000 apartments left in my project area and 500 in Regatta. In my project area, 3.400 new apartments will be built in my area and 700 in Regatta.

	2023	2050
Single dwellers	3.600	4.700
Single parents	900	1.200
Couples	1.750	2.400
Families	1.500	2.400
Collectives	800	1.200
Other	200	100

Figure A.1 Current and future household compositions

12.000
DWELLINGS
24.000
INHABITANTS
6.500
NEW HOMES
33%
SOCIAL HOUSING
30.5%
DENSIFICATION
45 DW/HA

Figure A.2 Key numbers

APPENDIX B: LETTER OF RECOMMENDATIONS

Dear urban designers, planners, and policymakers,

More and more people in cities feel lonely nowadays. Urban loneliness establishes itself as a true silent epidemic that threatens the mental and physical health of our citizens and harms a city's economy. Let's give urban loneliness the attention it deserves and make an effort through design, planning, and policy-making to counter urban loneliness now!

Through my graduation process over the last year, I have learned a lot about urban loneliness. I want to share with you the ten most important lessons. These range from notions to think about to more specific spatial and programmatic solutions.

1. Urban loneliness is not one problem with one solution, the feeling of loneliness is very personal. Therefore, we should provide people with choices, so they can pick what they need to counter their specific loneliness. For example, public spaces should be diverse, so people can pick a spot that suits them. This results in more place attachment and interactions with like-minded.

2. People need a home away from home that is accessible. Second and third spaces can give people a place to meet others or develop their skills.

3. Each neighbourhood deserves a community centre. A community centre can be an accessible place for people to meet each other. Especially in neighbourhoods with more vulnerable people, a community centre can be a place to help each other and socialise free of charge.

4. Connections are vital to bringing people to destinations, like social hangouts or spaces for personal development. A city needs great public transport and infrastructure for cyclists and pedestrians to improve accessibility for everyone.

5. Limit high-rise buildings. High-rise buildings cause loneliness. Instead, build typologies that are up to five stories high, have small parcel sizes, have a sloped roof, are joined up, and preferably have courtyards. When high-rise is necessary, take an open plinth, circulation spaces that allow for interactions, more dynamic façades and floorplans, and vertical community spaces into account.

6. Every district should have a landmark that helps to build a common identity and helps with wayfinding as well. Most importantly, landmarks can create a proud feeling that contributes to place attachment.

7. Every building should have an active plinth with hybrid zones. This allows for visual interactions and social control. An active plinth can be commercial or residential. A hybrid zone helps to make the transition between public and private more defined and smoother. A hybrid zone should be between 0,5 and 2 meters deep to allow for interaction as well.

8. A legible human scale helps people to feel safe in the public space and allows them to navigate to more public or more private areas as well as to destinations. A legible human scale together with aesthetic materials creates an inviting environment that stimulates people to go out.

9. Create an informal network in the interspace of the urban fabric. The spaces between buildings should be available to be used and appropriated by people and should form a continuous network. This is a network where people can easily meet. It can be combined with a green network.

10. Finally, people are the most important aspect when it comes to urban loneliness. It is important to involve them and talk with them to discover what causes their loneliness. Involving them can help with place attachment and helps to establish connections between neighbours. Giving them the responsibility of designing and maintaining a courtyard, for example, can test their commitment and makes them active residents.

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