

SOLVING LIVABILITY AND RAIN WATER ISSUES IN A MUTUALISTIC MANNER

COLOFON

Solving livability and rainwater issues in a mutualistic manner

Master thesis

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PREFACE

This report is written as my master thesis for MSc Architecture, Urbanism and Building Sciences, and carried out within the studio: The design of the urban fabrics. The design and recommendations as well as the process of getting there are explained in this report. This report is interesting for those who are interested in the current status of the Schilderswijk, as well as for those who have an interest in improving livability and rain water nuisances in a mutualistic manner. Although more broadly, the report also provides a basis on climate proofing dense neighbourhoods in a pleasant way for inhabitants as well as giving a basis in designing for highly multicultural and low livability neighbourhoods.

ACKNOWLEDGEMENTS

I wrote my thesis over the course of nine months, of which I can hardly remember a day that I felt stressed or was unable to find joy in the process. For this, I have to thank many of the wonderful people around me.

To Simon, my partner who proofread the whole report, listened to all my thoughts and actually went with me on my first site visit. To my parents who always called before every presentation to wish me good luck and after every presentation to hear how it went. To my friends with whom I have shared many thoughts, but especially lovely moments of relaxation, helping in keeping me balanced troughout the year. As far as relaxation goes, my cat who fiercefully demanded attention at the most inconvenient moments and got me to relax every single time was one of the main figures.

A very special thanks goes towards my mentors. Machiel is one of the kindest souls I have met. His support and positivism made my experience a very enjoyable one. He taught me a lot about environmental psychology, which always has been an interest of mine. Furthermore he taught me about designing for people, making career choices and making decisions in the path you choose to follow. Kristel I would like to thank for all the energy and positivism that surrounds her, as well as for challenging me when I needed it. She taught me a lot about designing and visualising ideas in an attractive way.

Laslty I would like to thank all the people that helped me with advice, information and feedback. This includes, but is not limited to, the municipality of The Hague and the Delta Futures lab.

MOTIVATION

Since being a little girl, I have always had a broad interest in the world around me. An interest in art, technology, (ancient) cultures and cities and nature. My mother visited countless art and history musea with me, where people would be surprised a girl this young was interested. My father took me to NEMO, to the deltawerken and to children's university days. Yet my favorite moments where the moments my father would come home from travels for work. He would tell me all about the different cultures, show me pictures and the things he brought.

My broad interest resulted in difficulties when having to chose one single study. Happily, in urbanism I can find the combination between social, cultural, technical and arts. This combination is also very present in my graduation topic. It does not have one very strong single focus. Instead it is about combining subjects and finding synergies for a more interesting and optimal result.



Figure 1: Zeelandic coast

RAINWATER:

I grew up in Zeeland, with water all around me. At a young age this showed me the force of the water, the threat, but also the beauty and the happiness it can bring to people. Having a father working on coastal ecosystems in combination with nature based flood defense solutions translated this into a fascination for water management. Rain water nuisances in cities are increasing in every sense. How to manage rain water more locally, and in a way it can add value for citizens is thus something I love working on.



Figure 2: Livability means different things for different inhabitants

LIVABILITY:

Everybody deserves a livable living environment. Not only does it have a positive influence on the future prospects of children, it also makes citizens happier. In my opinion everybody should contribute to society in his of her own way, in the best way possible. As I am learning to be an urban designer, I want to learn how to facilitate best to providing a livable environment for citizens. How to design, or redesign for a livable neighbourhood, to truly design for the end users.



Figure 3: Personal exploration of cultures

MULTICULTURAL:

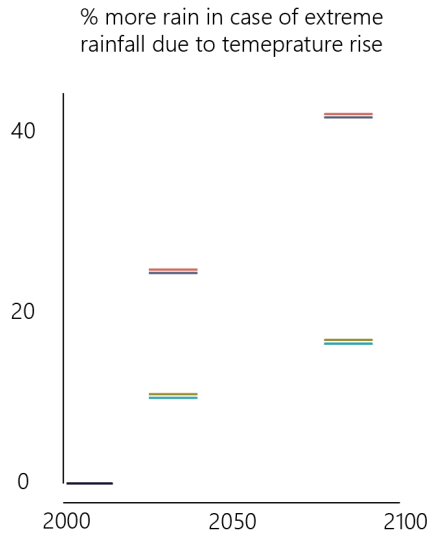
Different cultures fascinate me. It started by hearing travel stories, reading books and visiting European countries during family holidays. When I was in high school, I made my first trip outside Europe with my father, to Morocco, where I was awed by all the colours, smells and sounds. Later I went to travel China, Southeast Asia and to study in Singapore. Here I was amazed by how four different cultures visibly lived together, by clear appreciation and acceptance of the uniqueness of each culture, yet by also finding common values. The challenges but also the added value from designing in multicultural environments became somewhat clear to me, but the "How" was missing. This is something I want to explore during my graduation project. The Schilderswijk has a richness of cultures, yet it currently does not seem to be perceived as a quality of the neighbourhood, and that makes it a fascinating place to study for me.

SUMMARY

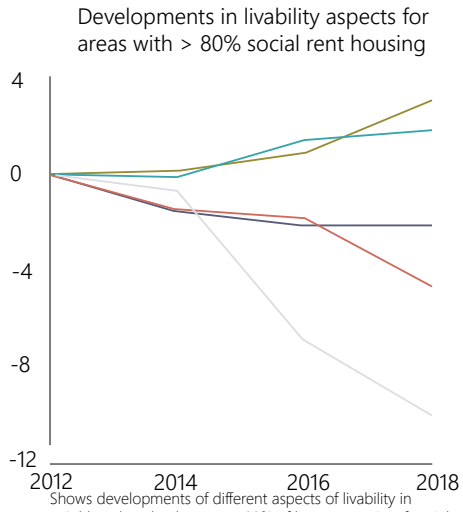
AIM

Fruitful combinations in solving livability problems and rain water nuisnaces are explored for the case study of the Schilderswijk. The importance of this combination is found in the importance of the two of them seperately. Climate proofing neighbourhoods is necessary when considering climate change which will only increase rain water nuisances.

Improving livability is important as it has an influence on people's and especially childeren's future prospects. Combining both measures in a fruitful way provides more financial means, is more sustainable and is more pleasant for inhabitants.



Shows the expected increase in rainfall due to temperature changes adapted from (Schaap, 2015)



Shows developments of different aspects of livability in neighbourhoods where over 80% of houses consist of social rent, adapted from (Leidelmeijer et al., 2020)

INTRODUCTION TO THE SCHILDERSWIJK

The Schilderswijk is and represents a multicultural, low income, low livability neighboorhood that is densely build and well located. Furthermore it has a reputaion bigger than itself that had to be dealt with. Qualities of the Schilderswijk are the diversity and multitude of small shops, as well as the closeness to the Haagse markt and city centre.



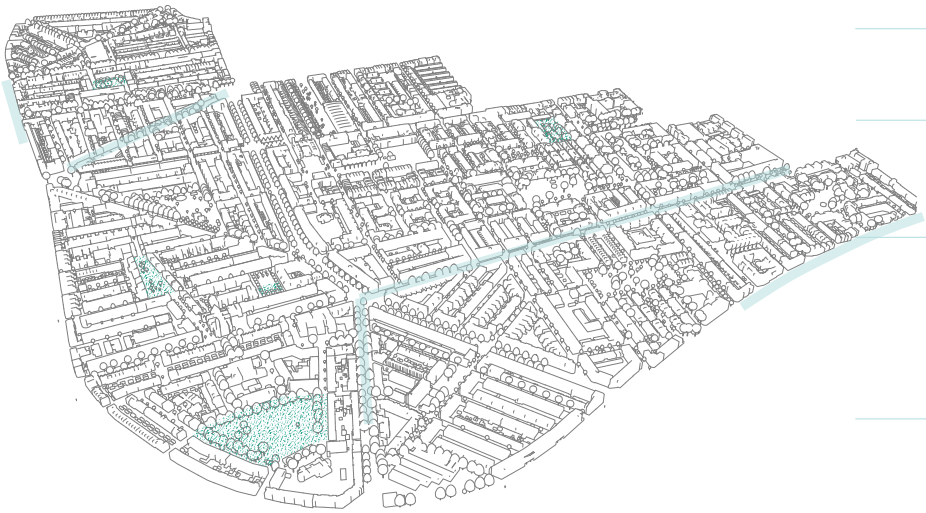
LIVABILITY RESEARCH

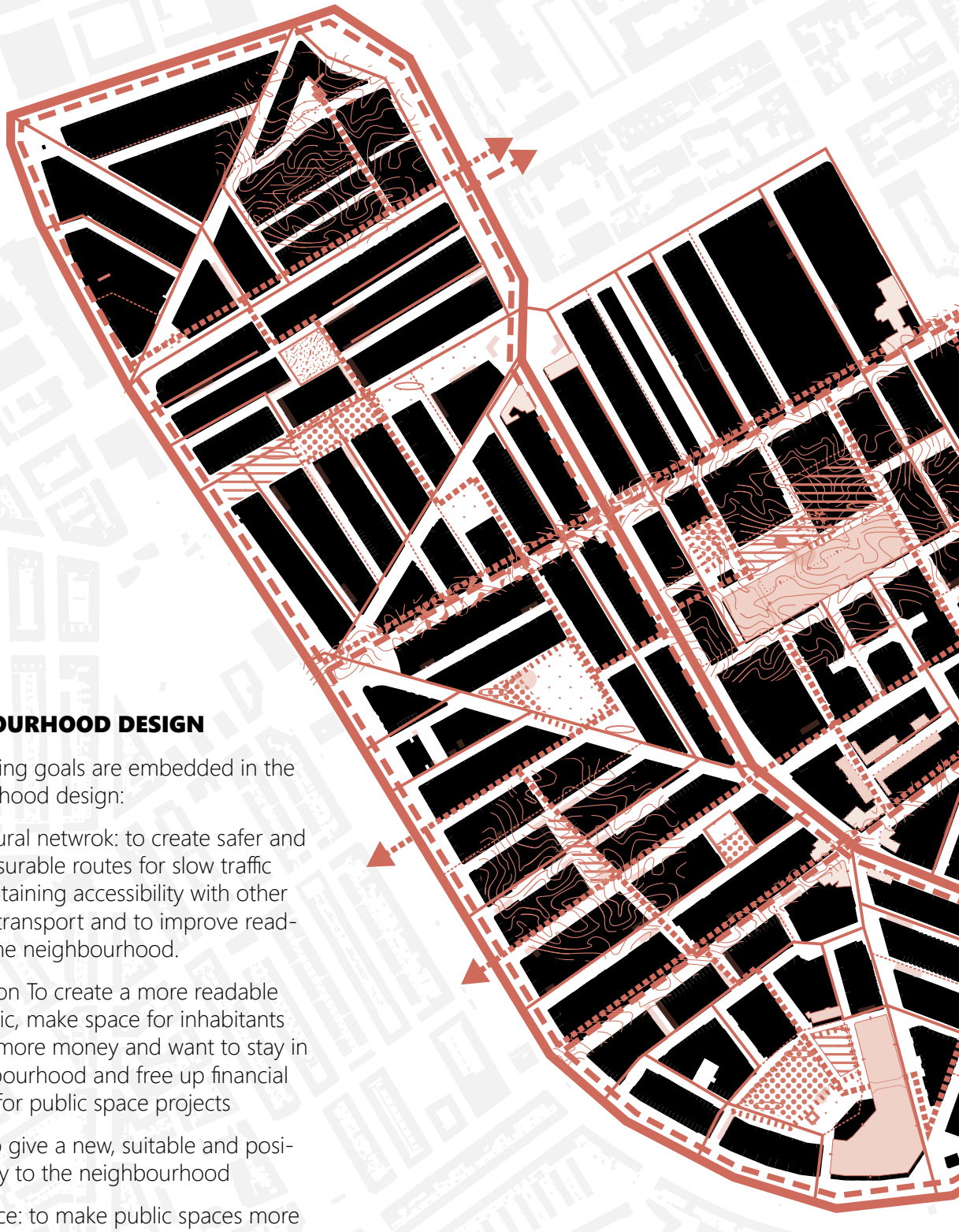
Livability is researched in a broad sense relying on a framework based on ecology in which three types of livabililty are distinguished: perceived livability, apparent livability and presumed livability (Dorst, 2012). Within these three types the following aspects are considered to measure livability: 1) Health and security/safety 2) Material prosperity, income inequality, inequality in happiness 3) Social relationships 4) Control on amount of social interaction and control on physical environment 5) Contact with nature. Livability is researched by looking at data and statistics, performing fieldwork in which behaviour was observed, mapping, literature and with the help of interviews. The main problems are found in the lack of high quality meeting places for all groups of inhabitants, the lack of readability in terms of direction and ownership/control and the poor reputation of the neighbourhood.



RAIN WATER RESEARCH

Rain water nuisances are researched by looking at data, literature, mapping as well as fieldwork in observing how they occur. Rainwater nuisances happen throughout the whole neighbourhood on a small scale in case of heavy rainfall, meaning a solution is best to be found in a network approach. Priority is given to public spaces, shopping streets and emergency roads.





NEIGHBOURHOOD DESIGN

The following goals are embedded in the neighbourhood design:

Infrastructural netwrok: to create safer and more pleasurable routes for slow traffic while maintaining accessibility with other modes of transport and to improve readability of the neighbourhood.

Densification To create a more readable urban fabric, make space for inhabitants who earn more money and want to stay in the neighbourhood and free up financial resources for public space projects

Identity: To give a new, suitable and positive identity to the neighbourhood

Public space: to make public spaces more attractive to a more balanced target group

Rain water: To reduce rain water nuisances



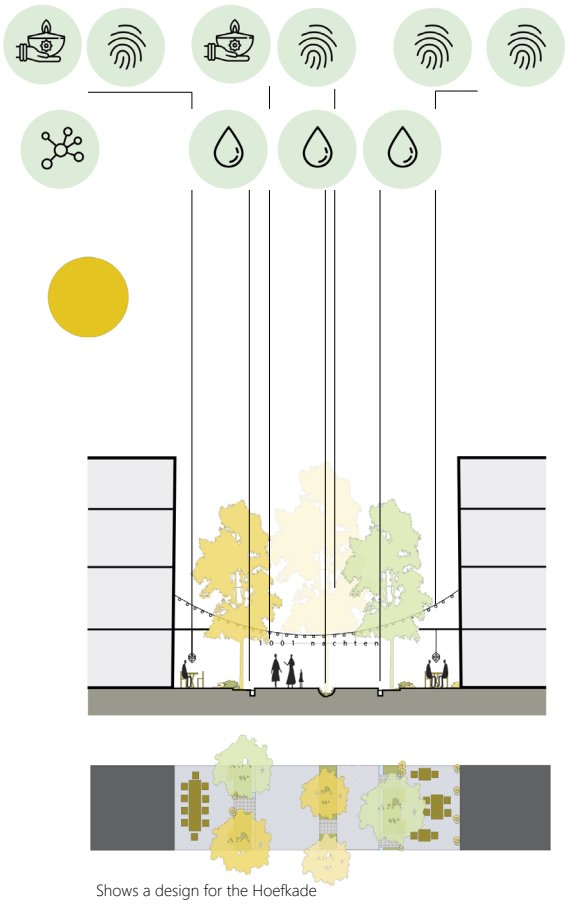
Legend

- Main car road
- Secondary car road
- Bicycle path
- Main pedestrian route
- Pedestrian street
- Strategic densification
- Strategic adding stories
- Densification
- Adding stories
- Passage/ walkway
- Direction of entrance
- Terrace
- Existing street art
- Potential street art
- Graffiti wall
- Themed place
- Covered public paces
- Playground
- Football field
- Other sports field
- Kitchen garden
- Mixed space
- New/renovated playground
- New/renovated football field
- New/renovated other sports field
- New/renovated kitchen garden
- New/renovated mixed space
- Wadi
- Trampoline with water storage
- Fountain
- Water square
- Water playground
- Infiltartion crates

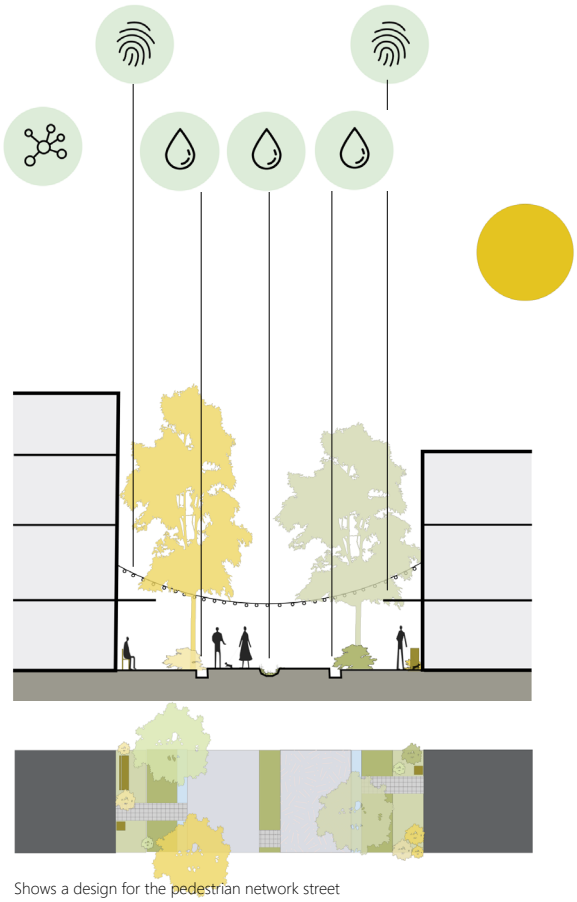
STREET PROFILES

With the introduction of a new infrastructural system in the Schilderswijk, new street profiles are necessary. The backbone of the new infrastructural system is the pedestrian route, a safe, child-friendly route connecting public spaces and shopping streets to each other. The network is made recognisable by materialisation, use of colour and attributes such as light strings. Other streets are either car free streets, which give back space to public life and rain water infiltration, or car accessible streets ensuring accessibility of the neighbourhood. Shopping streets have a special character as they are places to stay, discover and connect. They convey a theme suitable for the street, such as 1001 nights, or around the world, wich helps in attracting visitors.

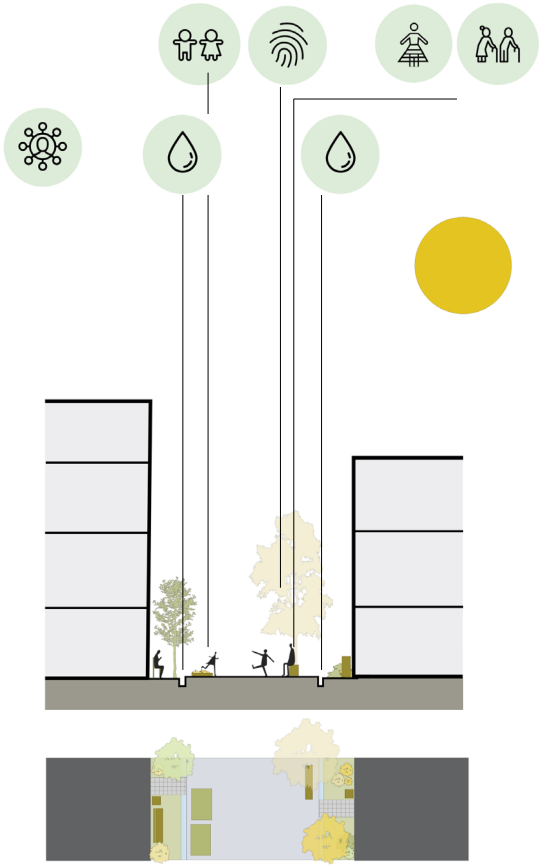
All new street profiles give more space to the pedestrians/slow traffic, allow for a smoother transition between public and private and increase the amount of infiltration space for rain water. Furthermore they have a positive effect on the microclimate as well as road safety, and increase the opportunities to sit down and socialise.



Shows a design for the Hoefkade



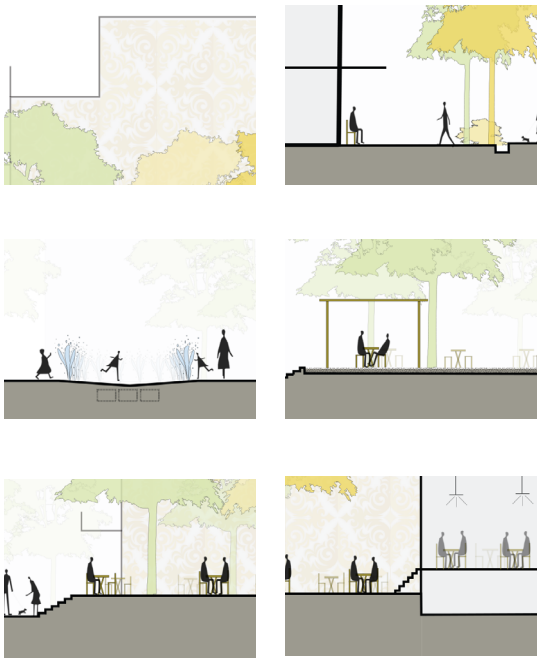
Shows a design for the pedestrian network street



Shows a design for the car free street

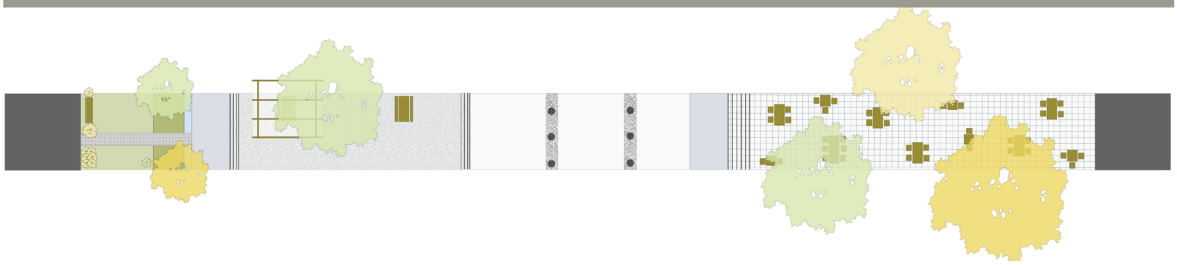
MUTUALISTIC SOLUTIONS APPLIED: THE TENIERSHOF

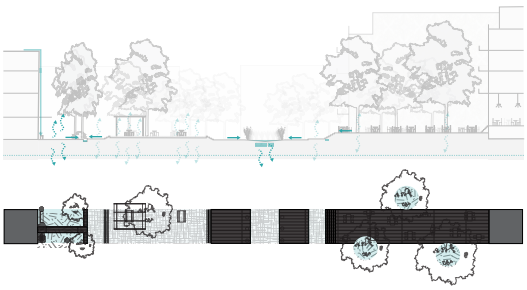
By using the Teniershof as a case study, examples of implementation of the proposed measures can be shown. In these sections, the application of car free streets, the addition of a fountain, the Delftste stoep and the ability to play with water are applied. In the Teniershof also application for water storage trampolines, a nature playground and a kitchen garden are found. On the right the design for the rain water is shown in both wet and dry periods, while the key design decisions for livability are shown in the cutouts above. By making the water visible and giving it a function, as well as combining rain water solutions with interventions thta improve livability, an example of the application of mutualistic solutions is shown.

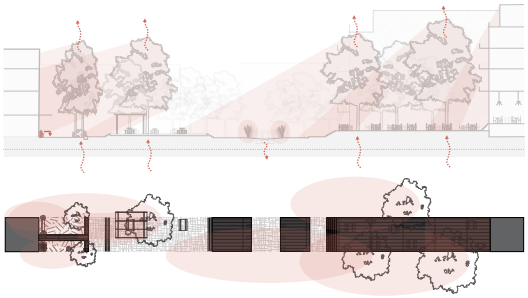












USER EXPERIENCE

The renders show how the Teniershof would function in terms of rain water on both sunny (dry) and rainy days. The user experience during the day as well as the evening is shown.

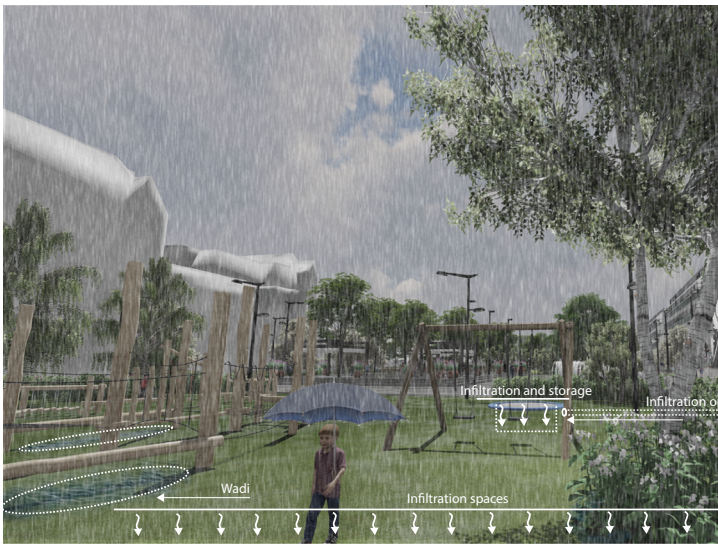


STREET ART

Street art serves as a way for inhabitants to express themselves as well as a community project and a means to change the reputation of the Schilderswijk. By playing with the name, it will give a new meaning to it, which is something the neighbourhood could really use. Street art has a positive effect on the livability of a neighbourhood as it increases tolerance and a sense of ownership.

- Along the pedestrian route: The story on the history and current situation of the neighbourhood and its inhabitants
- Around shopping streets and other theme assigned places: Street art that focusses on the specific appointed theme such a 1001 nights
- Crossing Vaillantlaan and Parralelweg: A graffiti wall where people can paint their own art
- Remaining street art locations: The first painting in a street is to be a modern remake of a work of art that the street is named after. Other works can have a variety of topics decided on in collaboration with the community. Creating (some) interactive street art would be a great opportunity to take into consideration.



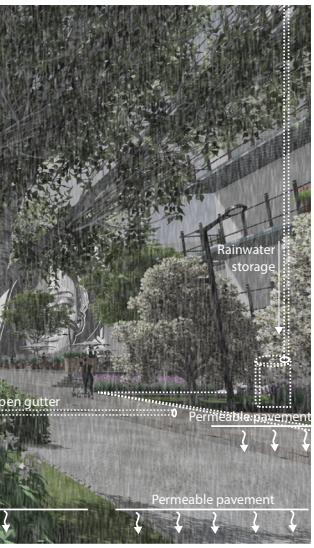


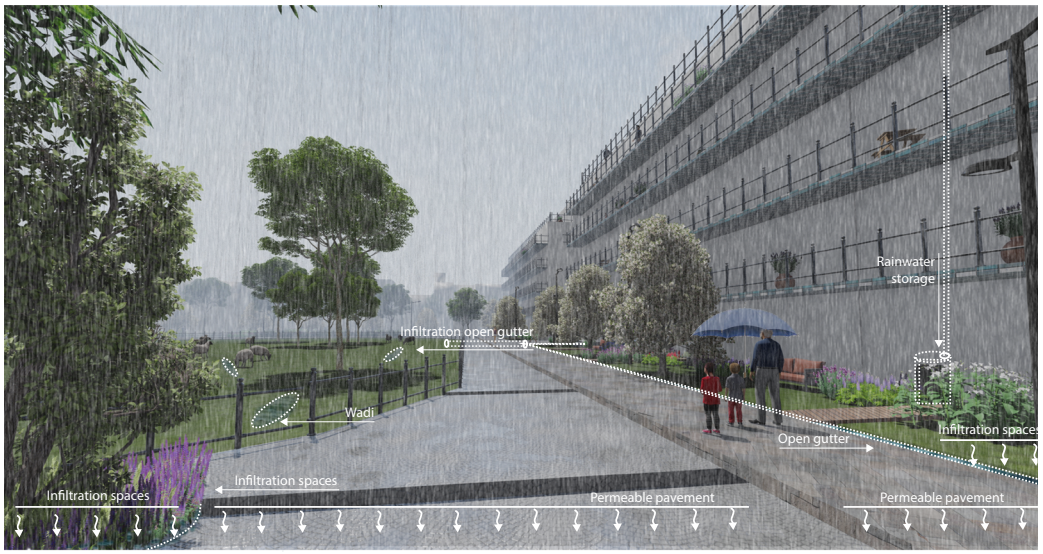

he streetart is so cool! I
m enthousiastic to con-
nue our streetart tour
fter lunch.


This place feels like home, so happy to live here and be a part of the community
Later today I will do a volun-teer shift at the wom-an-work cafe downstairs to improve my language skills and learn towards a job, while watching my childeren play simultaneously
The apple and nut trees are lovely, my childeren love picking the fruit and nuts


ice to be able to
a BBQ in the eve-
nd meet my
bours!


Rainwater infiltration
Only needs little water
Evaporation
Open gutter
Rainwater infiltration
Evaporation
Evaporation
Only needs little water

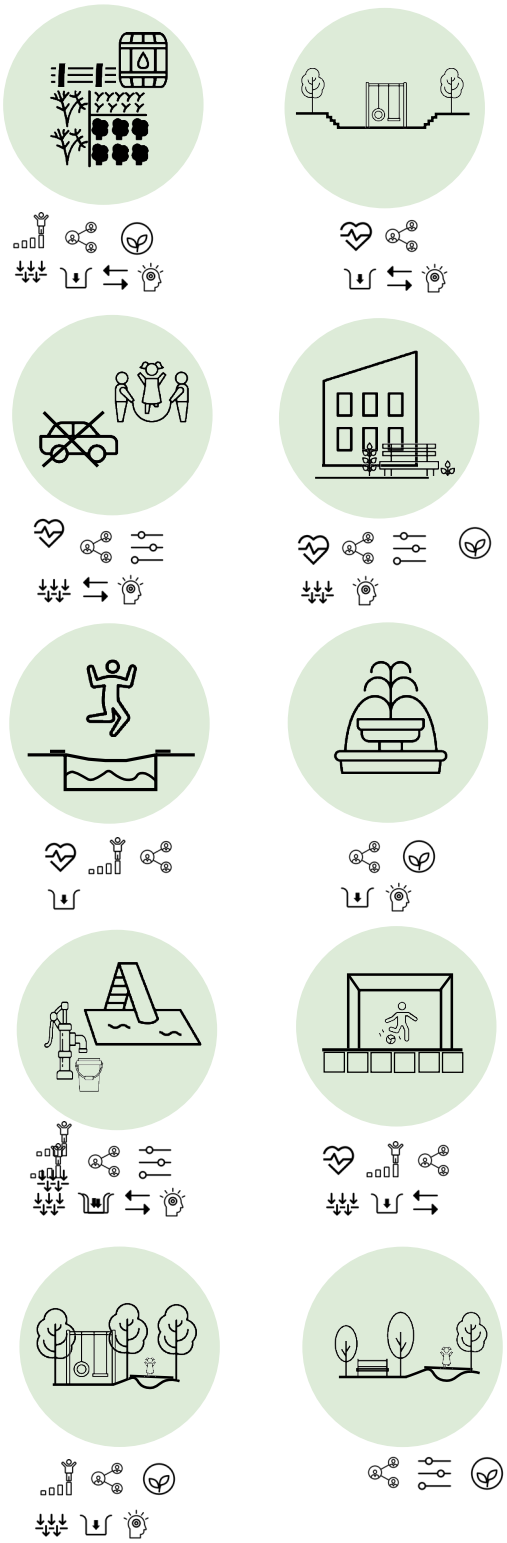

Rainwater storage
pen gutter
Permeable pavement
Permeable pavement


Infiltration open gutter
Wadi
Rainwater storage
Open gutter
Infiltration spaces
Infiltration spaces
Infiltration spaces
Permeable pavement
Permeable pavement

MUTUALISTIC SOLUTIONS

It was found that the following solutions have a positive effect or provide opportunities in creating positive effects on both livability and rain water nuisances in the Schilderswijk

- Kitchen gardens in combination with rain barrels
- Water squares in combination with sports or playgrounds
- Delftse stoep with the boundary condition of partly replacing paved surfaces by (semi)-permeable ones
- Car free streets where one can make space for greenery and activities such as playing or relaxing
- In built-in trampolines in playgrounds, the space underneath can act as a temporary water buffer
- Fountains can give identity to a place, create a more pleasurable micro climate and can partly be temporary water buffers.
- Water playgrounds provide a socializing place for children and parents, while at the same time the height differences can be temporary water buffers and educate children on water issues
- Sport fields with infiltration boxes underneath
- Nature playgrounds
- Park with added functions and zoning in terms of height differences



FURTHER REQUIREMENTS SCHILDERSWIJK

Specifically for the Schilderswijk, the reputation is one of the major issues. Solutions can be found in connecting the Schilderswijk more to the city center and train station, making a quality out of the unique retail offer by making themed shopping streets and giving a new swing to the name of the neighbourhood by introducing street art. Especially street art can also has an added positive effect on livability in a multicultural neighbourhood as it allows inhabitants to show of their culture and create places to be proud of.

TRANSFERABILITY

Boundary condtions

The transferability of the project largely depends on the boundary conditions being present. Firstly, one can think of the built environment: the density, existing street network (within the city), and the functions present. The Schilderswijk is dense, but only has low and middle high buildings, is located close to the city center and has lively shopping streets. Secondly the inhabitants and their cultural background are important. Design decisions in the Schilderswijk were made with the largely Moroccan, Turkish and Surinamese background in mind, as well as the relatively low income. Thirdly the current status of livability matters, as well as the origin of existing livability problems. Lastly the soil conditions, permeability, as well as being boezem or polder area matter. To give an example the soil conditions, density and cultural background made it nearly imposible to bring back open water which in many areas would have been a desirable and effective solution.

In case of similar conditions

In this case, the proposed solutions form a good starting point, which combined with analyses of the location can lead to a suitable solution. Especially for dense, low income neighbourhoods wihc are largely paved, almost direct implementation is possible.

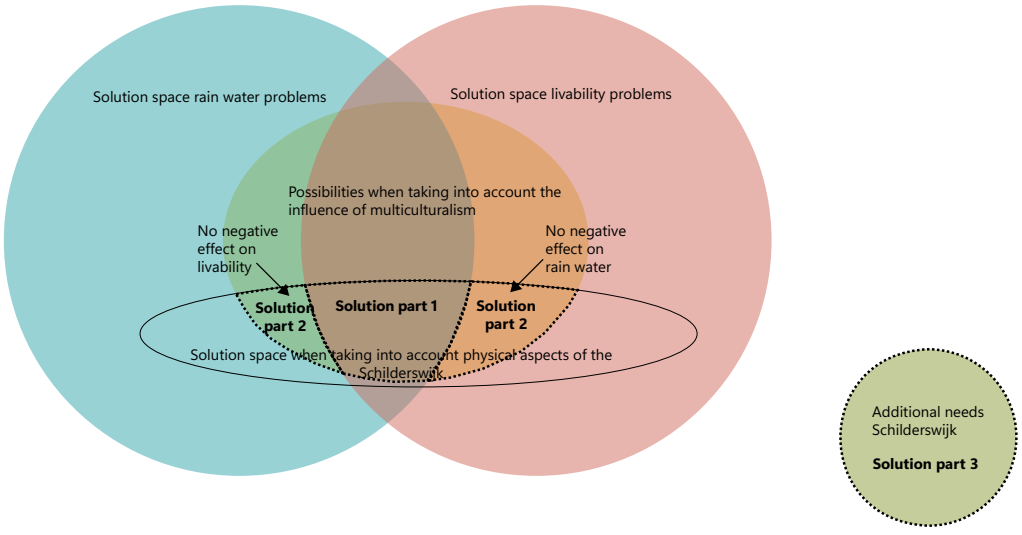
Examples would be: Transvaal (reserach needed with respect to culture) or Bospolder-Tussendijk.

In case of large differences

In case large differences exist between the Schilderswijk, and the neighbourhood of application, taking a step back and looking at the methods used might be the best way to approach the problem. One can use the pattern language to create sets of solutions. Personas can be used to look at inhabitants' perspectives and extreme scenarios will lead to resiliant future proof solutions. From these methods, the difference in approach that is needed will become clear.

Additional factors

Every neighbourhood, every place has its own story. It has specific qualities and problems to solve wich may not directly become apparent when only looking at mutualistic solutions for rain water problems and livability. These problems, or opportunities, present require extra attention and solutions that fall outside the scope of generally proposed solutions. Furthermore, it can be beneficial, and sometimes unavoidable to implement solutions a positive effect on either livabiliy or rainwater problems and a neutral or even negative effect on the other.



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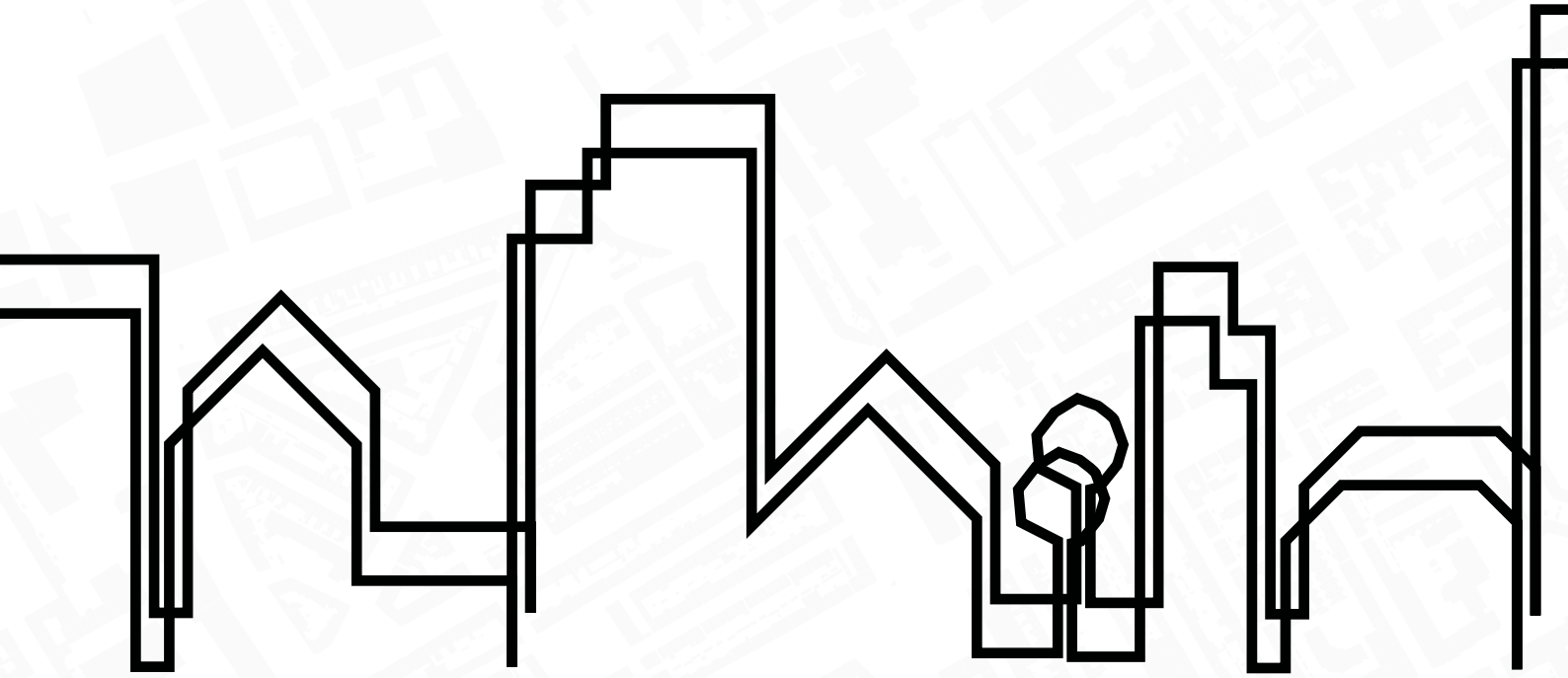
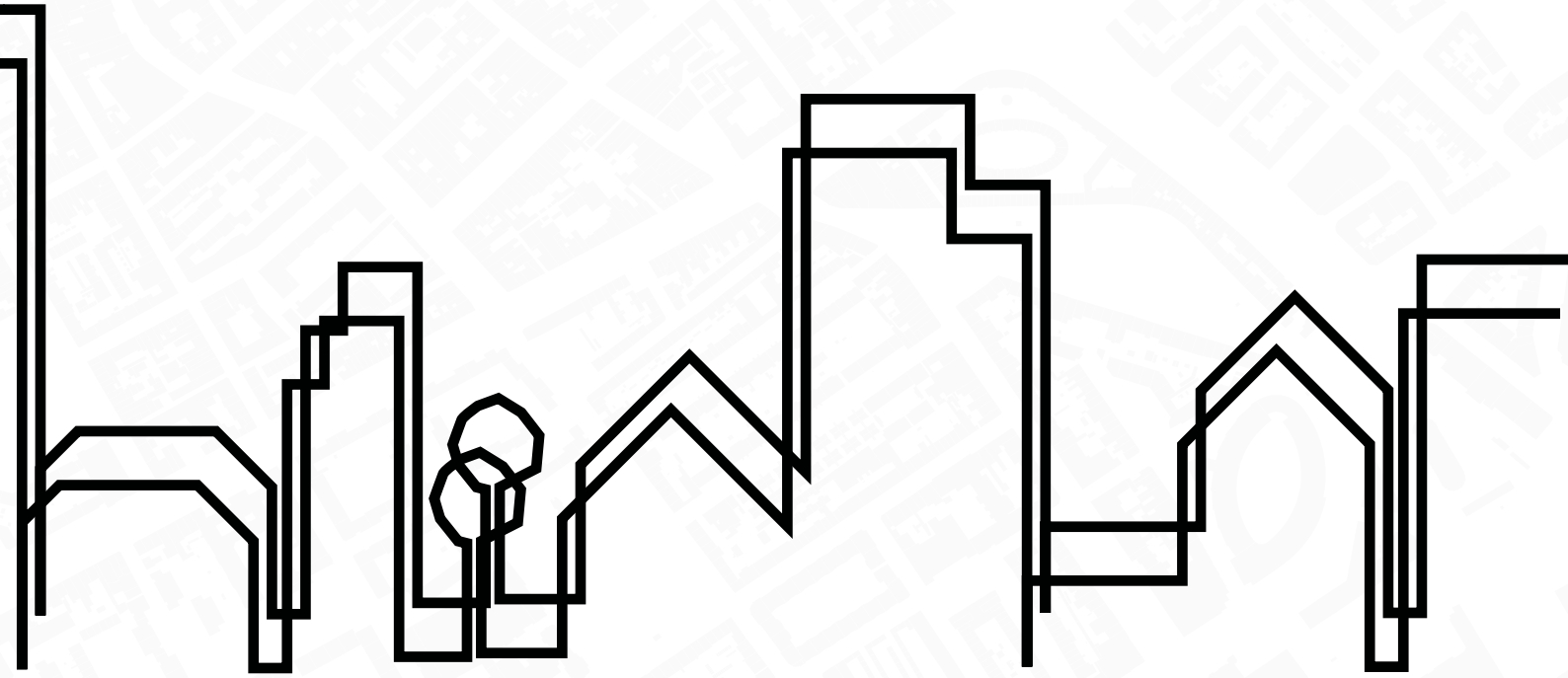


CHAPTER 1:



PROJECT DEFINITION

PROBLEM

PROBLEM FIELD

The problem definition can be split into two parts: rain water nuisances and livability problems. Although the problems can possibily be solved simultaneously, they are caused by different factors. A lower livability can partly be due to rain water nuisances, but this relation is one sided.

Rain water

Rain water nuisances occur when either too much or too little precipitation is present for a period of time. An excess of rain water can either be by having a normal amount of rainfall but for an abnormal high amount of time, or by having an abnormal high amount of rainfall in a normal amount of time. An shortage of rain water occurs when there is a too low amount of rain water over a period of time, when the amount is right, but it is too concentrated over a few days, or when the amount of rain is normal but the evaporation is unusually high.

Climate change: the influence on rainfall

Figure 5 shows the by the KNMI developed climate scenarios to give an prognosis on what the climate might look like in the future (Schaap, 2015).

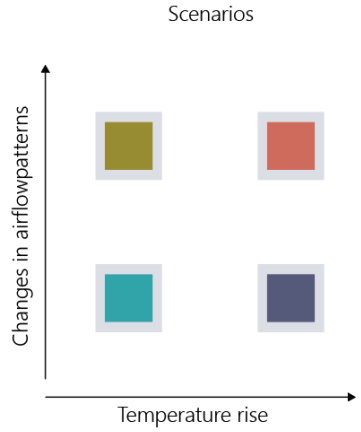


Figure 4: shows the climate scenarios as developed by the KNMI (Schaap, 2015)

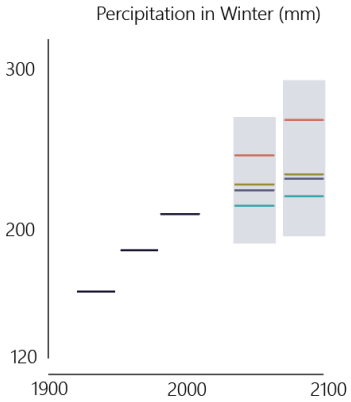


Figure 5: shows the expected rainfall in winter, adapted from (Schaap, 2015)

More rain is expected to fall in winter in all of the scenarios. In the more favorable scenarios this would not lead to too large problems. However, looking at the worst case scenario, more space will be needed to accommodate for the extra rainfall.

In summer the amount of rainfall will stay equal in the most favourable scenarios, and will decrease rapidly in the least favourable scenario. This would lead to droughts which has a negative impact on water quality, leads to salination, to failed yields and to damages in ecosystems. All of these lead to economic losses.

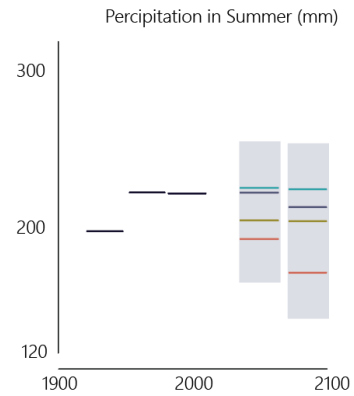


Figure 6: shows the expected rainfall in summer, adapted from (Schaap, 2015)

Due to the increase in temperature, more water vapour is in the air which leads to a higher amount of rain when heavy rainfall already occurs. This vastly increases the problems during periods when rain water nuisances are already experienced.

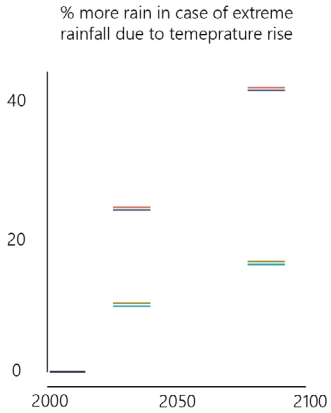


Figure 7: shows the expected increase in rainfall due to temperature changes, adapted from (Schaap, 2015)

The amount of days when heavy rainfall occurs is expected to increase in both summer and winter and will be most severe in coastal regions. This directly leads to more rain water nuisances due to an excess of rain. Local floodings can decrease the accessibility of places and lead to economic losses.

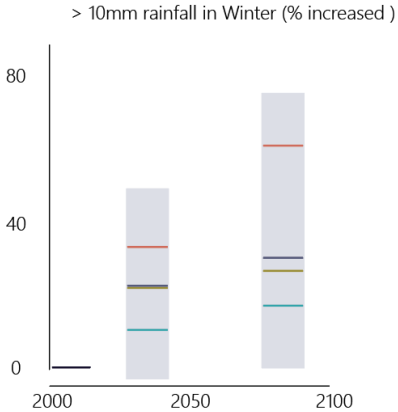


Figure 8: shows the expected amount of days of exceeding 10 mm rainfall in winter, adapted from (Schaap, 2015)

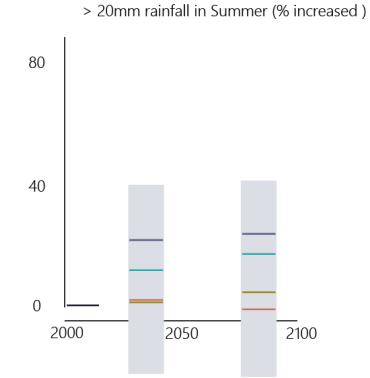


Figure 9: shows the expected amount of days of exceeding 20 mm rainfall in summer, adapted from (Schaap, 2015)



▲ Door de klimaatverandering valt er steeds meer regen in de stad. Dat zorgt voor overlast. © Peter Franken

Nooit eerder viel er zoveel regen in Den Haag: 'Bomen kunnen verdrinken'

Nooit eerder viel er in Nederland in één maand tijd zoveel regen als afgelopen februari. En ook deze maand blijft de regen met bakken uit de hemel vallen. Dit heeft grote gevolgen voor de grondwaterstand in Den Haag. Langdurige neerslag zorgt onder meer voor wateroverlast. Vooral in het veengebied is de situatie zorgelijk.

Ilah Rubio 11-03-20, 07:02 Laatste update: 11-03-20, 08:17

https://www.ad.nl/den-haag/nooit-eerder-viel-er-zoveel-regen-in-den-haag-bomen-kunnen-verdrinken~a4d42c5d0/

Voorburgs Dagblad



Flinke wateroverlast door hevige regen in Den Haag-centrum

22 augustus 2021, 14:25 uur

Den Haag & Regio

https://voorburgsdagblad.nl/Den%20Haag%20&%20Regio/flinke-wateroverlast-door-hevige-regen-in-den-haag-centrum



Bakfietsman redt reizigers van waterballet HS

VIDEO Den Haag heeft er vanmorgen enkele grachten bij gekregen. Ook in de tunnel bij Holland Spoor was het één groot waterballet. Gelukkig was er de 'bakfietsman' die uitkomst bood voor mensen die naar de overkant moesten.

Graziella Gioia 23-06-16, 10:59 Laatste update: 23-06-16, 11:43

https://www.ad.nl/den-haag/bakfietsman-redt-reizigers-van-waterballet-hs~a3ee3284/

west online tv radio

Nieuws Sport Team West Weer Dossiers

Straten in Den Haag en De Lier onder water door regenval: 'Het leek wel een zondvloed'

26 juli, 10:33 • 2 minuten leestijd



https://www.omroepwest.nl/nieuws/4430841/straten-in-den-haag-en-de-lier-onder-water-door-regenval-het-leek-wel-een-zondvloed

Figure 10: A collage of news articles showing the rain water problems in The Hague

The Schilderswijk

The Hague already suffers from rain water nuisances. These problems are most severe in the densely built city center. Here a high percentage of the area is paved, limiting the infiltration and evaporation capacity of the area. An example is the cyclist tunnel of train station The Hague Hollands Spoor, partly due to the its lower position. Droughts also take place, but the consequences are often felt less locally. If 70mm/2 hours rain would occur in The Hague, the damage would be 260 million euros (Municipality of The Hague, 2021)

Who: Inhabitants, Visitors, People traveling through the Schilderswijk

When: In case of a long period of rainfall or in case of heavy rainfall

Where: Mainly in lower lying areas and areas with a high percentage of paved surface

Consequences: Lower accessibility, economical losses, damage to personal property, negative effects on the public health.



Figure 11: A collage of news articles showing the livability problems in the Schilderswijk

Livability

The Schilderswijk:

The Schilderswijk has been in the news for its low livability and related problems (see articles above) which may result in feelings of unsafety and a stigmatization of the people living there. Multiple times riots have broken out in the neighbourhood as both a cause and a reaction towards the low livability. Solving the problem is complex as the neighbourhood deals with, sometimes personal, underlying problems and cultural differences increasing the complexity.

Who: Inhabitants, Visitors, People traveling through the Schilderswijk

When: Especially late at night, although it may be experienced troughout the whole day

Where: Everywhere, but especially in public spaces with relatively little eyes on the street

Consequences: Causes stress for inhabitants and has a negative consequence on children's futures

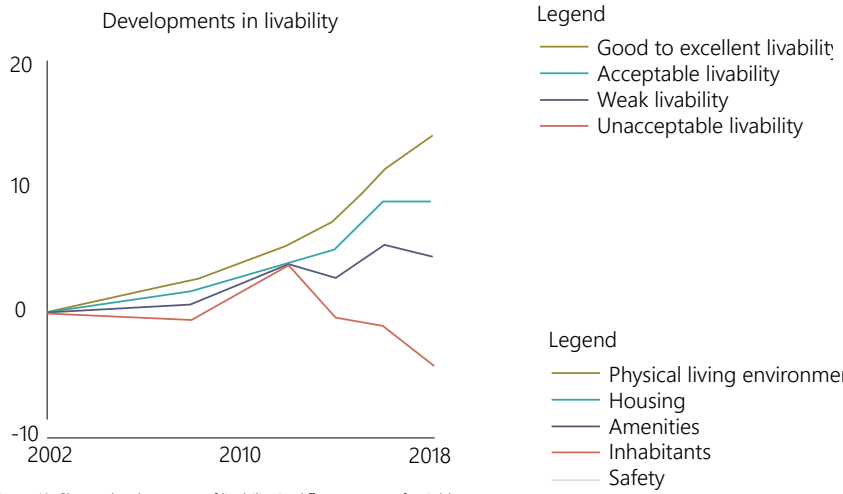


Figure 12: Shows developments of livability in different types of neighbourhoods, adapted from (Leidelmeijer et al., 2020)

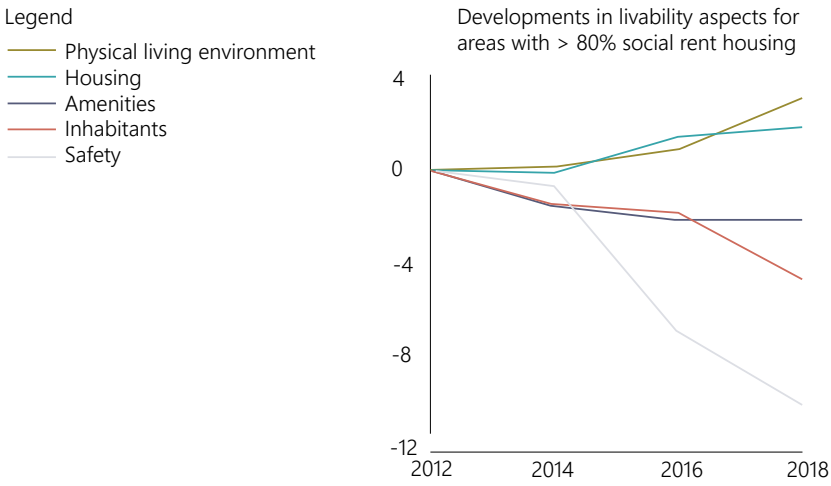


Figure 13: Shows developments of different aspects of livability in neighbourhoods where over 80% of houses consist of social rent, adapted from (Leidelmeijer et al., 2020)

Developments in livability

Livability has been improving over the past years in neighbourhoods scoring high on livability aspects. However, in neighbourhoods with unacceptable livability scores, livability has generally been decreasing. This is worrysome as it indicates how both the relative and absolute difference in livability between different neighbourhoods has been increasing, making the problem increasingly difficult to solve. If changes are not made, this trend is expected in remain the same in the future (Leidelmeijer et al., 2020).

When looking more closely at what aspects of livability are improving and deteriorating, we see that the physical living environment and housing are improving. These are qualities one can directly design for. However, the foster qualities such as amenities, inhabitants and safety are not developing in a positive way (Leidelmeijer et al., 2020). This is a complex problem to solve, as these are qualities one does not directly design for, yet are influenced by the urban design.

PROBLEM STATEMENT

Livability in the Schilderswijk is unacceptably low, and reports have shown livability in neighbourhoods such as the Schilderswijk has only been decreasing over the past couple of years (Leidelmeijer et al., 2020), (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, z.d.). This causes stress to the inhabitants and has a negative influence on children's future prospects. Simultaneously the Schilderswijk incidentally suffers from rain water nuisances. Due to climate change, rain water nuisances, both cases of excess rainfall and drought, are expected to increase. This leads to discomfort for residents, accessibility issues, leads to economic losses and has a negative effect on public health. Solving rain water and livability issues in public space is therefore necessary in order to provide inhabitants of the Schilderswijk with a pleasurable and safe living environment, now and especially in the future.

AIM AND FOCUS

FOCUS

Location: This project will focus on the Schilderswijk specifically. Areas outside the Schilderswijk are out of the scope of this project.

Topics: The focus on rain water will limit itself to rain water storage and infiltration in the public space. Private spaces such as gardens will not be taken into account, and also designing a new water system that deals with rain water in another manner would be out of the scope of this project. The focus on livability will mainly, but not solely, be on perceived livability.

Project: The focus of this project will be on designing in combination with technical solutions. The focus will not be on the implementation of the design such as co-creation, aligning stakeholders and marketing.

AIM

The aim of this project is to find design solutions that solve livability and rain water issues in a mutualistic manner within the Schilderswijk. This will result in a design for several key locations as well as a neighbourhood's scale design. Furthermore, a pattern language on how to design for livability, rain water issues and a multicultural neighbourhood will be produced. The specific focus on both rainwater and livability is chosen as they often compete for space and resources. Therefore solving related problems in a mutualistic manner would be highly relevant.

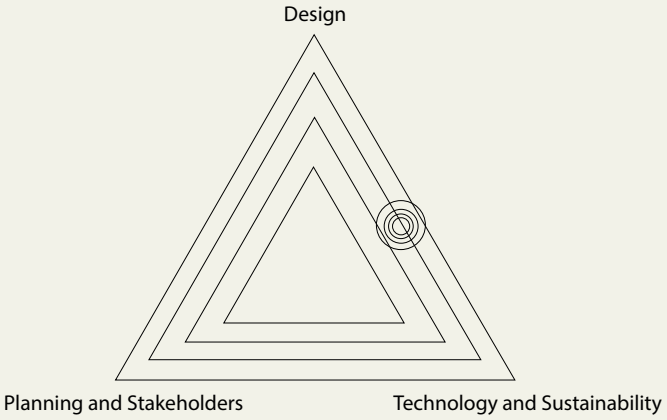


Figure 14: Shows the focus of the project

RESEARCH QUESTION

Definition sustainable: when the formal and informal processes; systems; structures; and relationships actively support the capacity of current and future generations to create healthy and liveable communities. (Partridge, 2014)

By which sustainable design solutions can rain wate manner, be improved in the Schilderswijk?

6.4, 8, 9, 10	- How to design for a multicultural neighbourhood?

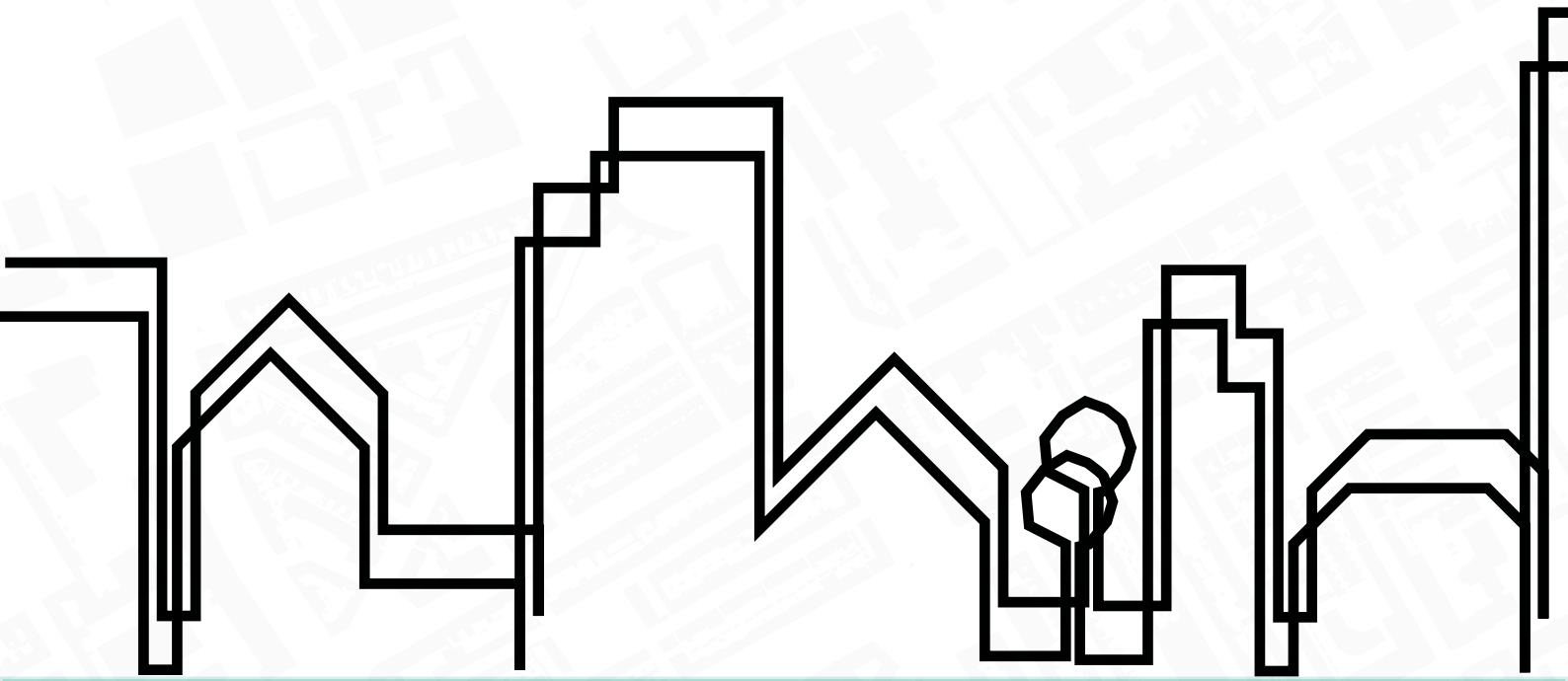
Figure 15: Shows the hierarchy of research questions

- How is livability defined and measured? - What is the current status of livability in the Schilderswijk? - How can livability be improved in the Schilderswijk?	4.1, 10 5.4, 10 6.3, 8, 9, 10

Definition mutualistic: When both benefit from each others presence.

r nuisances and livability, largely in a mutualistic

- Which rain water nuisances does the Schilderswijk suffer from and where? - How can rain water nuisances be limited in the Schilderswijk?	5.1, 10 6.2, 8, 9, 10



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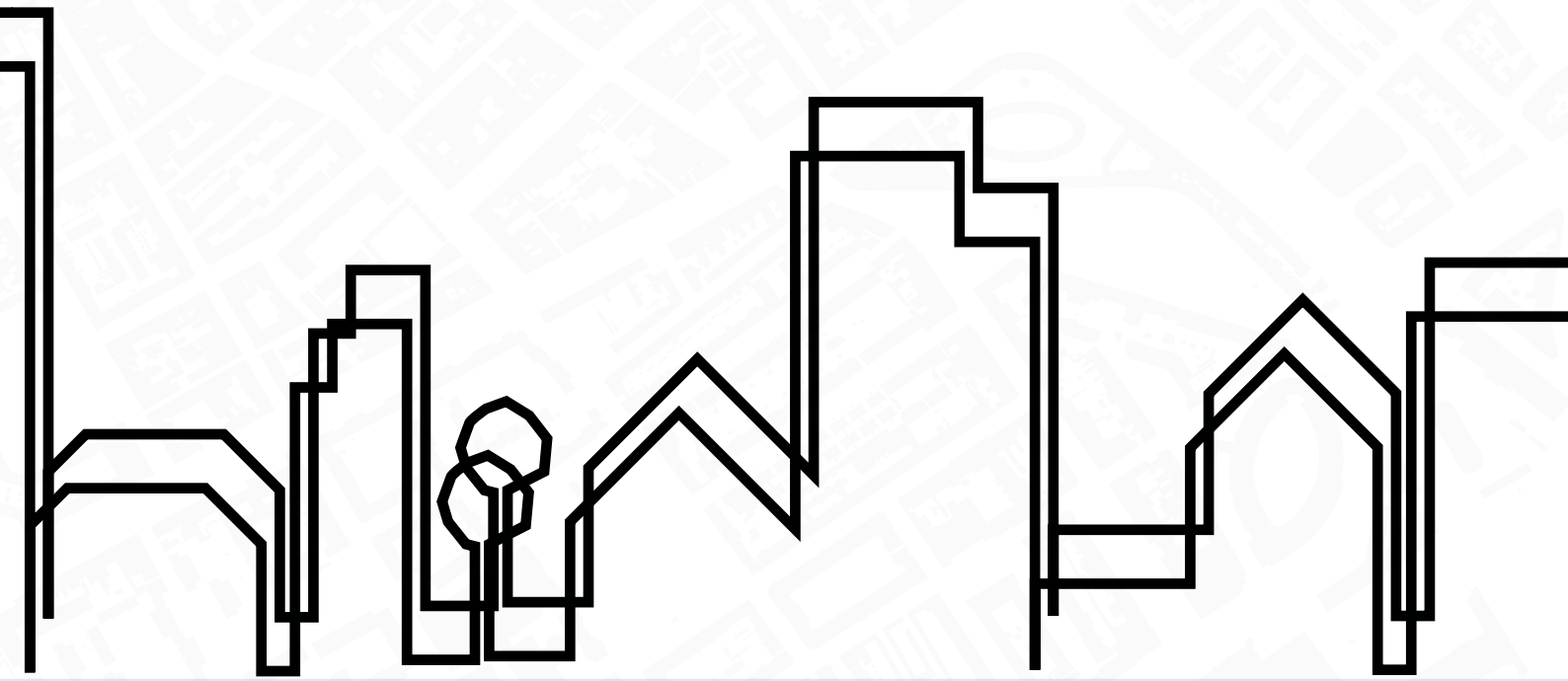


RELEVANCE

RELEVANCE

SOCIETAL RELEVANCE

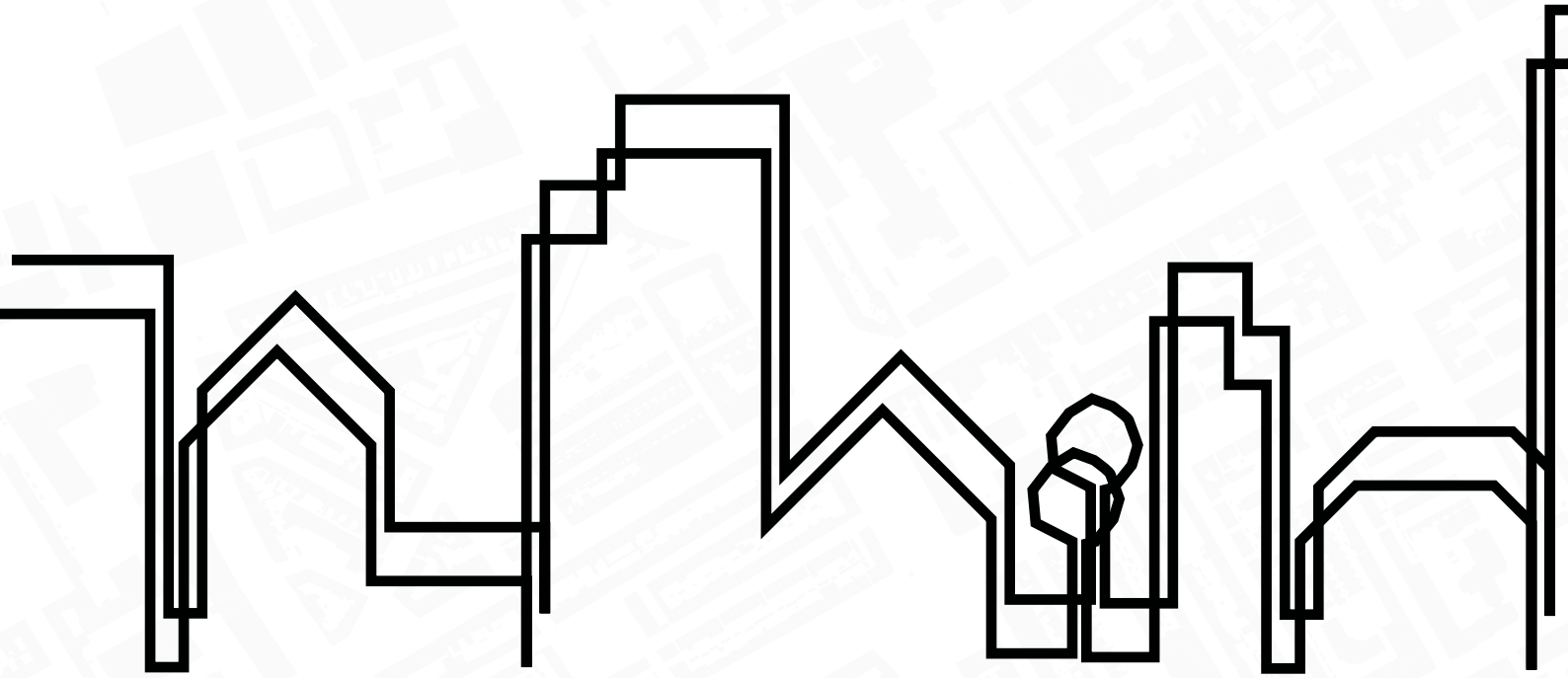
Growing up in low livability neighbourhoods has negative effects on children's future prospects (Van Ham et al., 2021). The lower (perceived) safety also causes stress, which has a negative effect on ones health and wellbeing. As a society we strive towards providing equal opportunities and healthy living environments meeting inhabitants needs for all inhabitants, and thus it is important to study how to achieve this. Especially in a multicultural neighbourhood such as the Schilderswijk, social systems may function differently and needs of the inhabitants can be different to some extent. How to deal with different cultures and needs, how to make them familiar, how to bridge the differences instead of amplifying them while respecting each cultural background is a more and more relevant question in a polarizing society such as the one we live in today. Simultaneously, the impact of climate change is being felt in the forms of summer heat waves and more days of extreme rainfall (Schaap, 2015). Heavy rainfall causes local floodings which cause health and safety issues and economic losses. As a society it is important to adjust and design the built environment in ways it can deal with the rainfall of the future. In the Schilderswijk, opportunities are present in solving both livability and rain water problems in public space, which would provide more funding then if they would be solved separately. In poorer neighbourhoods such as the Schilderswijk where a lot needs to be done and not that much money is present, combining solutions as to combine funding could come a long way in improving the neighbourhood.

SCIENTIFIC RELEVANCE

Sustainability is an increasingly urgent topic in the field of urbanism. Due to climate change, it is insurmountable things have to change in how we deal with our resources, but also in the built environment. Rainfall is becoming increasingly extreme, leading to more and more small floodings of streets (Schaap, 2015). Simultaneously, for a long time society has been struggling with low livability neighbourhoods and especially with the question how to improve them. While research is done on both solving livability issues and rain water nuisances in the built environment, little attention is thus far given to combining both. To what extent can solutions strengthen each other, and where are the conflicts? This is especially relevant as both issues can be, to a large extent, solved in public space. However, when not considered carefully together, they compete for space and resources, even at instances where a mutually beneficial solution could have been possible. This inefficient process can lead to a less sustainable solution as changes might need to be made later on the be both socially and environmentally sustainable. Thus research is needed on finding synergies between livability and rain water nuisance solutions.

ETHICAL CONSIDERATIONS

While the goal of the research; finding sustainable mutualistic solutions to rain water nuisances and livability problems, is ethical, the solution may have unwanted side effects. First of all it is important to consider whose livability is aimed to improve. The livability as the municipality measures it? Or the perceived livability of the current inhabitants? For the former, gentrification would not be problematic per se, for the latter it would be if it were to happen in large numbers. From an ethical standpoint, a large amount of gentrification might be undesirable as it pushes out current inhabitants. On the other hand, would it be more ethical to make a neighbourhood a less desirable place to live as to make sure it is unattractive for certain groups of people? In this project, a balance will be sought in designing for the current inhabitants primarily, yet without having a negative perception towards (some) gentrification. The aim would therefore be to improve both the perceived livability and the measured livability. A second ethical consideration would be a potential tension between designing for human needs or the needs of other organisms. Although by nature we consider ourselves, and our species, to be more important, it would be a difficult discussion as to say this is an ethical approach. Furthermore, we need other organisms for ecosystems to function properly, and thus it is of high importance in the long term. However, if a conflict arises between short term and long term benefits, which decision is more ethical? Given the time span of the project, it is needed to set boundaries on what will be considered. Therefore from a practical point of view, it is chosen to disregard the needs of other organisms and focus on the needs to the current generation when it comes to ecosystems, with the boundary of the design not having a negative effect on the current ecosystem.



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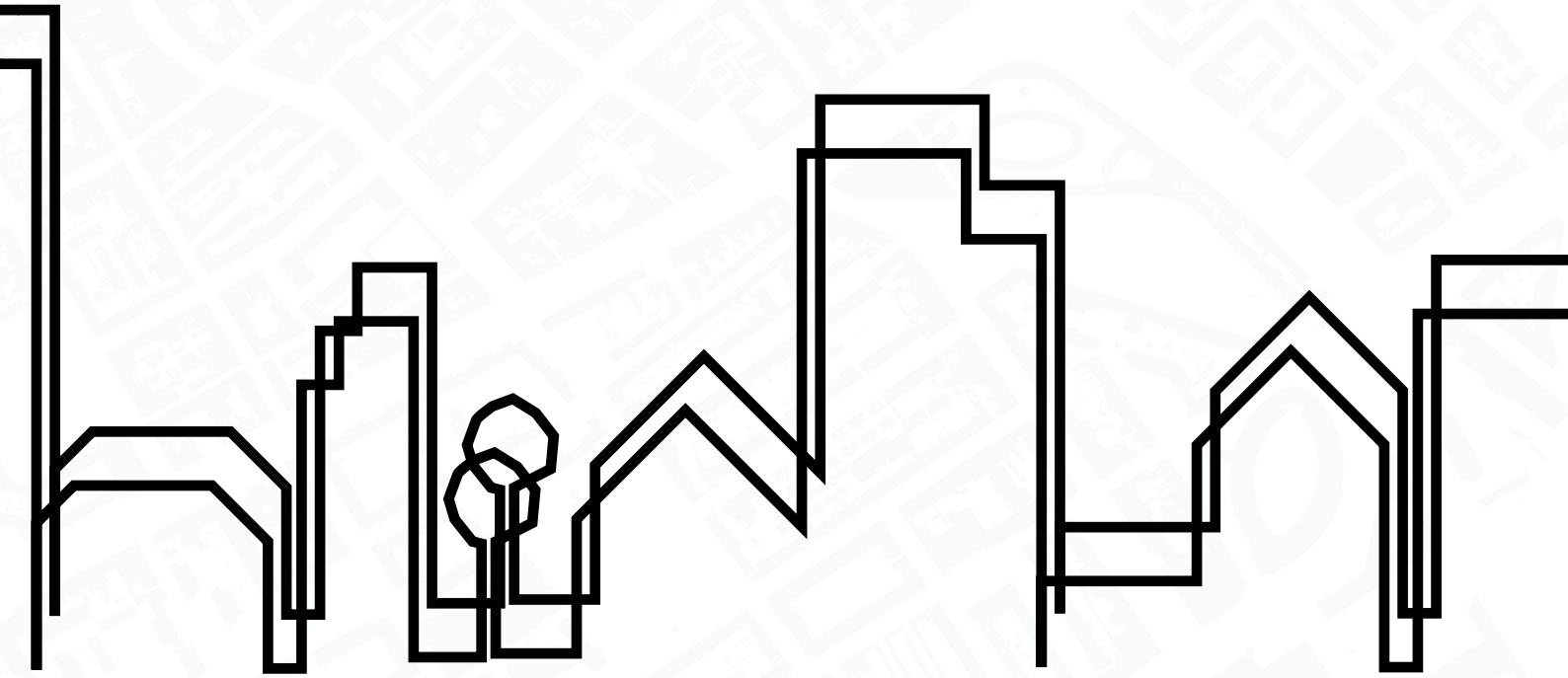


METHODOLOGY

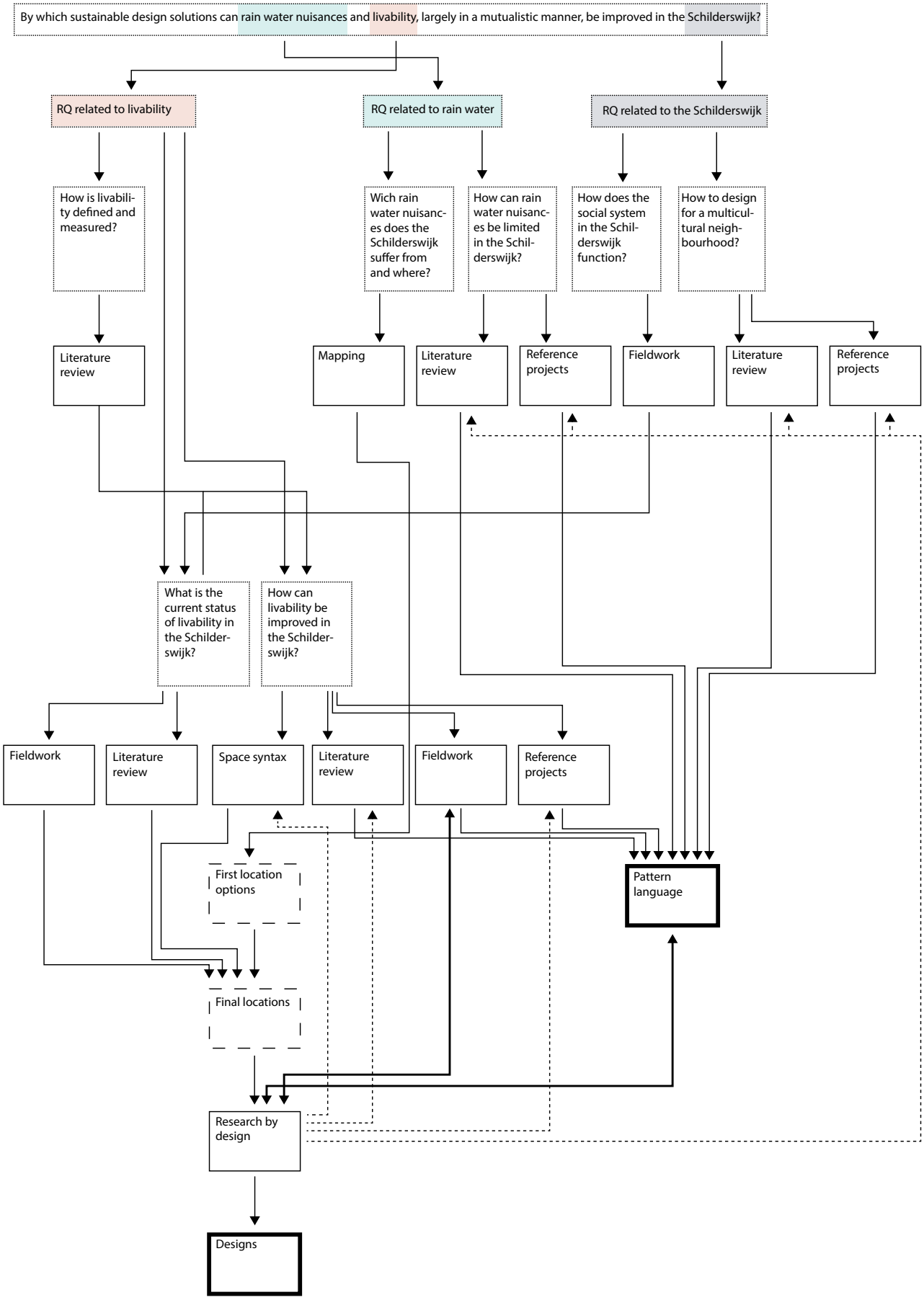


Figure 16: Shows the methodological framework

METHODOLOGICAL FRAMEWORK

In the theoretical framework it is explained by which methods the research questions will be answered. It shows how the different methods relate to one another and lead to the intended outcomes of this project. The first locations will be chosen based on where water nuisances occur. In a second iteration, livability problems will be taken into account leading to the final locations. For these locations, designs will be made by combining the pattern language that was found from research and performing research by design. As new insights will be encountered when designing, these insights will be linked back to the pattern language as well as be used as input to answer the more design related research questions. The methods are chosen to define a well rounded problem. Mapping makes the problem spatial. Data, modelling and statistics make sure the problem is proven, while fieldwork verifies that it is also visible in inhabitants' behaviour and in the built environment. Interviews are used to map the experienced problems, leading to a spatial, proven, visible in inhabitants' behaviour, and experienced problem.

METHODS EXPLAINED

LITERATURE RESEARCH:

Purpose: To find existing theoretical solutions to problems encountered in this project as well as finding information on the Schilderswijk and finding several definitions.

Procedure: Finding literature will be done by searching on Google Scholar using keywords, as well as looking through relevant literature and their literature list. Lastly advice is asked to the mentors regarding essential literature in their opinion.

MAPPING:

Purpose: Showing the spatial implication of larger scale phenomena

Procedure: First the right data is found, which is then interpreted. Data can be found online, in other maps or by performing fieldwork. The useful data will be extracted and mapped to show the spatial implication.

REFERENCE PROJECTS:

Purpose: To extract lessons on how to, or not to, design a public space in relation to solving livability and rain water nuisnaces and preferably both of them simultaniously. It can also be to validate solutions found in literature, or gain more information on their implementation.

Procedure: First, good reference projects need to be found. Projects will be selected on similarity of the locations, similarities in type of inhabitants, and similarity in the goals of the project. From the found case studies, design principles will be extracted as well as the boundary conditions needed for these design principles to work.

SPACE SYNTAX:

Purpose: To determine which places are central to the neighbourhood network as an indication of their potential to aid in improving the livability.

Procedure: The neighbourhood will be modeled in space syntax, after which models will be made on

sightlines as well as people's preferred movement patterns. Two runs will be done, one for people living in the place and going around in an efficient manner, and one for wandering around in a less efficient more relaxing manner.

FIELDWORK:

Interviews

Purpose: To find out what people do and do not appreciate in their neighbourhood

Procedures: A list of goals will be made with the specific information that is needed to be obtained. From this list, a combination of open and closed questions will be made and basic questions regarding gender, age etc. will be added. The data then will be interpreted.

Mapping

Purpose: To determine how a public space is used, and how this relates to the physical form of the public space.

Procedures: Map where people are located and what they are doing. Different symbols can indicate different activities and different types of people. Repeat this multiple times at different times of the day in different weather conditions.

Keeping a Diary

Purpose: To determine how and how intensive a public space is used, and how this relates to the physical form of the public space.

Procedures: This method is good for seeing all unique activities and interactions that you would not notice in a ten minute lookout, as you will stay for a longer time and note all behaviour taking place.

Photographing

Purpose: To show patterns in public space usage in a visual way.

Procedures: Both separate pictures as well as time lapse pictures will be taken.

RESEARCH BY DESIGN:

Scenario making

Purpose: To see what the spatial implications would be in case of one extreme possible future, which gives an indication of possibilities for less extreme scenarios.

Procedures: Develop possible scenarios. The scenarios can be either desirable, undesirable or neutral scenarios. The implications of the scenarios are to be worked out, and then translated into spatial implications. Upon seeing the results of the scenario, it is interesting to determine which aspects are desirable and undesirable, how they are caused and how they could be enforced or mitigated.

Design experiments

Purpose: To quickly see possible effects of decisions made.

Procedures: Can vary wildly. Quickly sketch out ideas and interpret the results, and to which extent they are desirable.

Maximalization method

Purpose: To find the best solution in combining multiple sometimes conflicting aspects.

Procedures: First make the best possible design for the different aspects separately. After optimizing each one of them without compromises, it's time to prioritize the different design decisions and needs of every aspect. Now one can start combining the designs in a final design where the needs of different aspects are balanced..

INTENDED OUTCOME

The project has three intended outcomes:

- A pattern language on livability and rain water in the Schilderswijk. This pattern language, although specific to the location, can also be used in other neighbourhoods, especially neighbourhoods with similar demographics.
- A design of the Schilderswijk on the neighbourhood scale, that shows how to improve livability and rain water nuisances troughout the Schilderswijk. Some implementations on the smaller scale (street or square) will be shown to give a feeling of how the design would be experienced on eye level.
- A set of measures that are fruitful combinations between solving livability and rain water problems that were found during the research and design process of the Schilderswijk.

TIME FRAME

The planning on the next pages shows the amount of time allocated for the preparation and writing of each chapter. Thereby it gives insight on the focus of the project. Furthermore, deadlines are shown as well as the official holidays. The time planning is made for the earliest P5 date possible to be sure everything will be done on time regardless of the universities planning

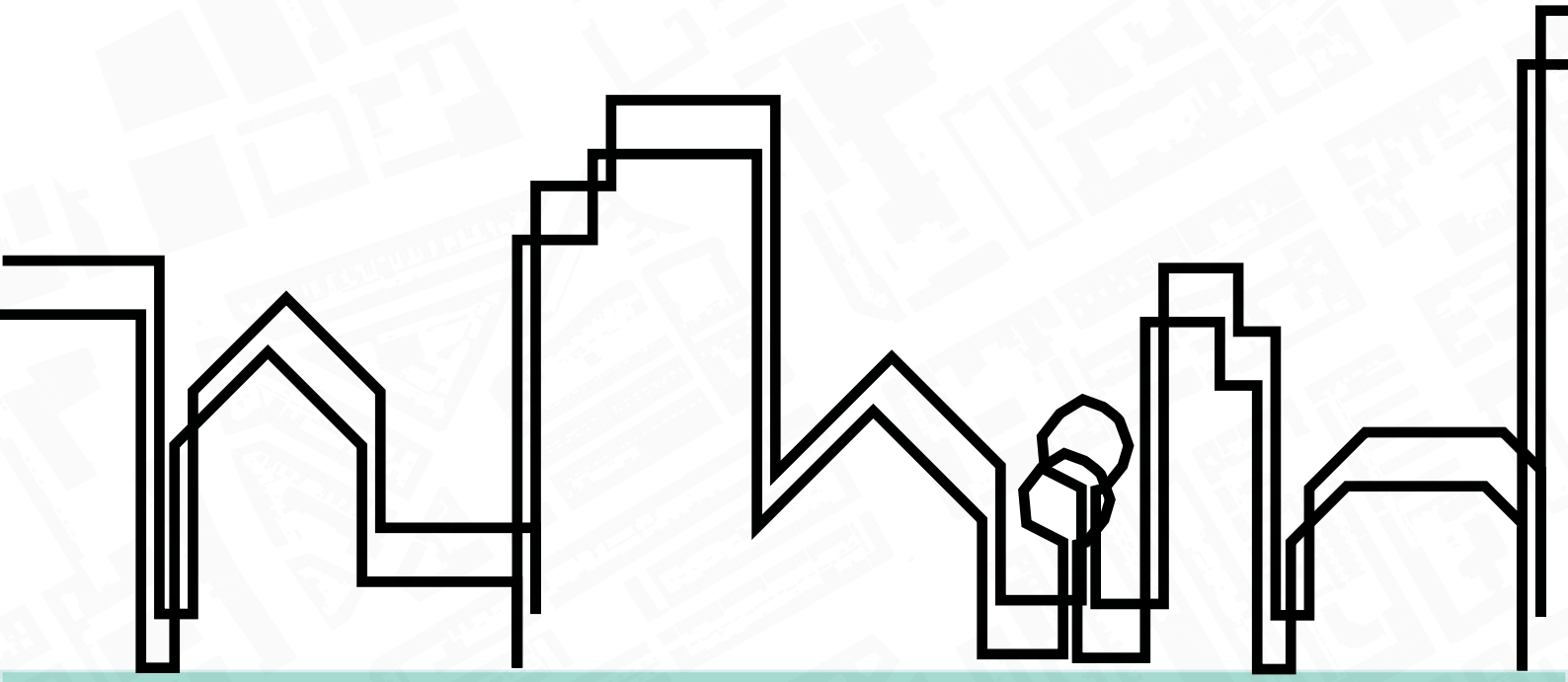
Dates	Monday	Tuesday	Wednesday	Thursday	Friday	Dates
18 - 21 jan	Work on R2	Form	emails perceived livability 5.4 health	Work on feedback R2	R2 FORM	11 - 15 apr
24 - 28 jan	Work on P2		5.4 livability	Work on P2	P2	18 - 22 apr
31 - 4 feb						25 - 29 apr
7 - 11 feb	Space syntax (ch5)		Fieldwork (ch5)			2 - 6 may
14 - 18 feb	Process fieldwork (ch5) Perceived livability (ch5)			Choose design locations		9 - 13 may
21 - 25 feb	Introducing design locations (ch7)			Patterns livability		16 - 20 may
28 - 4 mar		Patterns multicultural				23 - 27 may
7 - 11 mar	Patterns rain water	Work on R3		Work on feedback R3		30 - 3 jun
14 - 18 mar	R3 Patterns rain water + relations patterns	Work on P3				6 - 10 jun
21 - 25 mar						13 - 17 jun
28 - 1 apr	Design of the neighbourhood					20 - 24 jun
4 - 8 apr	Design of the neighbourhood					

Figure 17: Shows the planning until P5

Monday	Tuesday	Wednesday	Thursday	Friday
Schemes solutions that work well together				
	Schemes solutions that work well together			
Design location Schilderswijk			Design location Schilderswijk	
Work on R4				
	R4			
Work on P4		Feedback P4		
	P4			
Feedback P4				
Exibition				EXIBITION
Write conclusion		Write reflection and front matter		
Work on R5				R5
Work on P5				P5

Legend

- Deadline
- Working on career
- TU appointed holiday
- Studies
- Extra week for unforeseen circumstances



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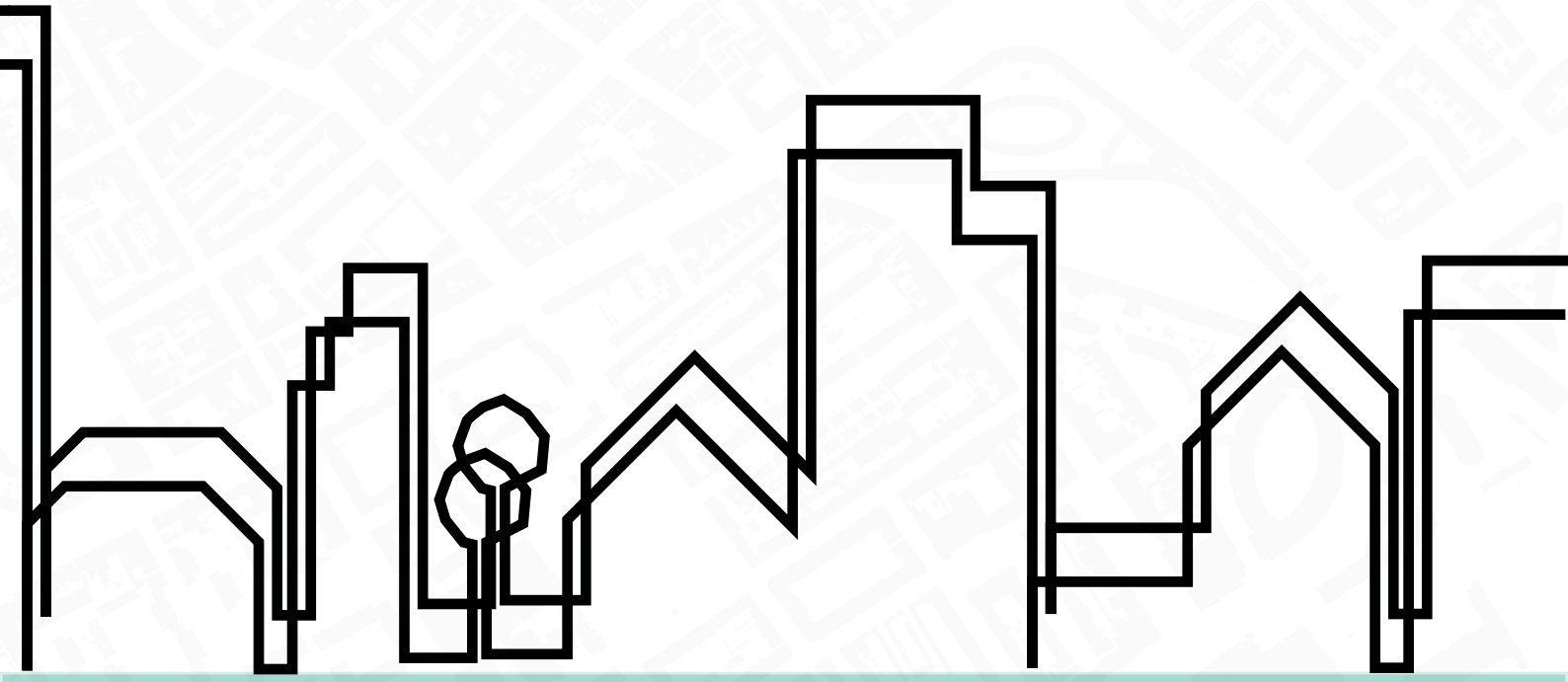


THEORETICAL FRAMEWORK

LIVABILITY

LIVABILITY IN ITS CONTEXT

When considering livability it is crucial to place it into context (Kaal, 2011). The following criteria should be considered:

- When: In which period of time was this definition of livability defined? This is important to consider as our ideas of livability have varied greatly over time (Balsas, 2004). Also, modernistic ideas and large scale remediation were defended as a means to increase livability, while nowadays the ideal accompanying these movements would not be considered to have a positive effect on livability (Kaal, 2011).
- Where: Cities in developing countries will most likely score unreasonably low on many livability rankings as they are often based on westernized and elite views on livability (Kashef, 2016). How one perceives livability is partly dependent upon the culture of a place and therefore it is wise to consider livability in relation to the location and its culture.
- Why: Throughout history livability has been used as a way to sell ideas. Sometimes a very specific intention was in place, for example decreasing the amount of low income homes in areas, and livability was used as the explanation for it (Kaal, 2011). Therefore it is important to consider why this is defined as livable and if there are ulterior motives.
- By whom: Is the person or instance defining livability gaining anything from it and is their definition objective? The way different groups of residents define livability of a place might vary widely, as well as the official instances definition of livability, especially when they have different objectives.

Adding to these considerations would be the factor of: what is the intention to measure livability of a place or of people?

TYPES OF LIVABILITY

From an ecological approach towards livability, three types of livability can be defined (Dorst, 2012):

- Perceived livability: Based on how individuals appreciate their environment. The data is thus gathered by means of a questionnaire.
- Apparent livability: How well the habitat matches the species' needs. It is measured by counting the number of years lived happily.
- Presumed livability: goodness of match between the living environment and the presumed condition necessary for livability.

Measuring the livability in these different ways may give different outcomes. Also defining one's habitat or living environment is difficult. Inside one's home it is clear, but in a neighbourhood it is more confusing. Yet we do have the need to have a clear habitat and feel attached to it.

DEFINITIONS USED FOR GOVERNANCE

Leefbaarheidsbarometer

The leefbaarheidsbarometer is an instrument used by the government to be able to decide how to make policies regarding livability in the built environment (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, n.d.). The definition of livability used here is as follows: livability is the goodness of fit between the demands and wishes of humans and their living environment. Livability is measured in the following way:

- Housing (18%)
  - Year of build
  - Type of house
  - Rental or owned
- Inhabitants (15%)
  - Country of origin
  - Family composition
  - Age
  - Number of moves
  - Dependent on government support
- Amenities (25%)
  - Infrastructure
  - Healthcare
  - Education
  - Catering
  - Shops

    - Culture
    - Sports
    - Vacancies
- Safety (24%)
    - Nuisances
    - Type of crime
- Living environment (18%)
    - Function
    - Nature closeby
    - Density
    - Noise and sight
    - Risks

Leefbaarheids circle Den Haag

The leefbaarheids circle is partly based on data, partly on conversations and questionnaires with residents (Municipality of the Hague, z.d.). The following factors are taken into account:

- Environment and sustainability:
    - Heat stress
    - Subsidence
    - Flooding
- Public space and amenities:
    - Distance amenities
    - Notifications on public space
- Social cohesion:
    - Scores by residents
    - Number of people moving
- Health and lifestyle:
    - Loneliness
    - Health and sports
- Crime:
    - Crime numbers
- Nuisances:
    - Nuisance notifications
- Inhabitants:
    - Education
    - Migration background
    - Type of household
    - Age
- Education:
    - School-leavers
    - Lagging in education

LIVABILITY AND SUSTAINABILITY

Livability and sustainable development are linked, yet they do not mean the same thing (Braithwaite et al., 2016). Even considering sustainability and livability together is a product of its time as livability has often been linked to concepts of importance during specific time periods (Kashef, 2016). The needs of current residents in a neighbourhood do not have to match the needs of future residents and may even negatively impact them (Dorst, 2012). Yet opportunities are present to design for both livable and sustainable neighbourhoods by making some compromises.

DEFINING LIVABILITY IN A USEFUL WAY

Livability can be defined and measured in many different ways and therefore it is important to choose one for this project that suits this specific project. One of the aims is to find a balance between perceived, apparent and presumed livability as they all have their unique qualities. Perceived livability will be determined based in interviews and research available on inhabitants' opinions. Presumed livability will be determined based on livability scores defined by the Dutch government and the municipality of The Hague. These models are developed for the whole country or city and therefore not very specific towards the specific needs of inhabitants actually living in the Schilderswijk. While it would be better to use a more specifically suitable framework, this would not be doable in practice. As the method is less accurate, the results will have to be considered with the known limitations of the method. Measuring apparent livability is difficult, but is aimed to be determined by observing inhabitants' behaviour and their living environment, as well as mapping the circumstances. The following broad framework is chosen as a point of reference: Needs for a livable neighbourhood (Dorst, 2012):

- Health and security/safety
- Material prosperity, income inequality, inequality in happiness
- Social relationships
- Control on amount of social interaction and control on physical environment
- Contact with nature

Not all of these needs are directly influenced by the built environment, and thus not all needs or not all parts of the needs can be influenced by a (re)design of the public space. As the project is carried out from the point of view of an urbanist and with the tools of an urbanist with a focus on the public spaces within an existing neighbourhood, not all needs can be met or improved or even influenced by this project.

The following factors within livability are related to the design of the public space and therefore focused on:

- Health and security/safety
    - Road safety
    - Facilitation of sports
    - Mental health and social safety
    - Criminality
- Material prosperity, income inequality, inequality in happiness
    - A somewhat diverse group of inhabitants
- Social relationships
    - Tolerance between groups
    - Weak social ties
- Control on amount of social interaction and control on physical environment
    - Control on the amount of social interaction
    - Different zones of privacy
    - Clearly readable territories
    - Design for places where people can look for or find social interaction
    - Control on the physical environment
- Contact with nature
    - Accessible and high quality green in the neighbourhood

MULTICULTURAL

IMMIGRATION TO THE NETHERLANDS

Immigration to Europe started taking place on a large scale after the second World War. Three phases can be distinguished (Peach, 1997):

1. The 1st phase is characterized by people from former colonies moving to the Netherlands. Around 1953 a stream of 250 000 – 300 000 immigrant came from Indonesia, and around 1975 about 60 000 Surinamese came to the Netherlands. Furthermore, a stream of people from the Caribbean moved to the Netherlands.
2. The 2nd phase is characterized by workers coming to the Netherlands. Due to economic growth and an aging population, workers where welcomed between 1950 and 1973. Workers were originally from Turkey, Morocco, and southern and eastern Europe. The idea was for these workers to stay temporarily and return to their home country when finished. Because of this idea in combination with institutes facilitating in language barriers many immigrants barely learned any Dutch. However, as many often lived here for so long, they decided to stay and move their family to the Netherlands as well. This trend is visible form 1973 onwards. In 1990, about 0.8 million immigrants where living in the Netherlands (see figure 18).
3. The 3rd phase is characterized by the inflow of refugees

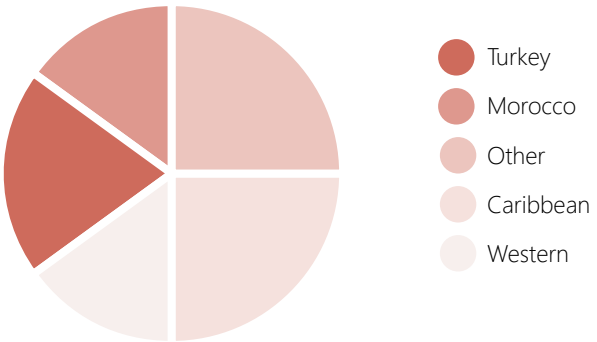


Figure 18: Shows the country of origin of immigrants living in the Netherlands in 1990

MALE FEMALE RELATIONS IN ISLAMITE CULTURE AND ITS CONSEQUENCES IN PUBLIC SPACE

Traditionally in Morocco women work in the house which is therefore primarily their domain, while men work outside of the house making it into their domain (Sadiqi & Ennaji, 2006) . Exceptions can be found in the countryside where due to poverty woman needed to work on the land as well. In the cities, women would only go out to go to the bathhouse, visit family and do groceries where interaction with males was to be kept to a minimum. From the 1960s onwards, this began to change. Woman started getting jobs and therefore where forced to go out more, but this was to be kept to the minimum necessary. In todays society these patterns in space usage are less relevant, yet have not disappeared especially with the for the more traditional islamitic citizens. Specific places such as cafes are clearly occupied with men, and entering as a woman alone is a taboo (Dorst, 2008). Men are encouraged to spend their time there, meet friends and family and do business. Woman spend significantly less time outside as next to working, the household and taking care of the children is their responsibility. Also on average Turkish and Moroccan woman stay closer to their houses than man would do. When they are outside, they can be found in playgrounds with other women taking care of their children. Often they cannot talk to men. It is rare to see a woman outside alone.

BEHAVIOR DIFFERENCES IN PUBIC SPACE

For Turkish, Moroccan and Surinamese people the following behavioral differences compared to Dutch people in public space can be observed (Dorst, 2008):

- They spend more time outside in general
- They spend more time outside with family: Therefore accessibility and amenities are important for them, more than the quality of the green. Parks and playgrounds in cities are popular. They spend less time in nature outside of the city.
- Popular activities are: Sporting, eating together, talking
- Going outside with the goal to meet people is more common. Meetings will generally be with people with the same ethnicity.
- Male youngsters spend more time being outside than their Dutch counterparts. It is a way to observe and get introduced to the life of a grownup before actually taking part in this system.
- Women stay closer to home, can often be found in playgrounds (for Moroccan and Turkish people)
- Going shopping in city centers or malls is more popular (for Moroccan and Turkish people)



Figure 19: Shows the urban water system in case of 200 mm/hour rainfall, based on (Langeveld, 2019).

WATER

EXPLAINING THE WATER SYSTEM

The water system in Dutch cities functions on different scales. First of all, on the city scale one can see a polder-boezem system, where water is transferred from the polder to the boezem and from there to the sea. The water quality is in the polder structure is generally higher than in the boezem. On a smaller scale one can see a part of the rain evaporates, a part infiltrates and the rest goes into the sewer system, of which during heavy rain a part overflows and gets dumped into the polder or boezem system (Langeveld, 2019).

STRATEGIES

Nature based or traditional

When suffering from water nuisances, one can look for nature based solutions, for traditional solutions or for a combination of both. Traditional solutions, such as a bigger capacity sewer system, work well and are well known. Yet with the increasing problems due to climate change, they become more and more expensive. Furthermore, they often do not offer additional spatial qualities and do have negative side effects. Nature based solutions are currently mainly used on the small scale but have the potential to be used on a bigger scale. Often the initial costs are higher, making it an less attractive solution on the short term. However when considering the long term costs and the additional benefits regarding spatial quality and livability nature based solutions can bring, these solutions becomes attractive (Kabisch et al., 2017).

Infiltration, storing or transferring

When rainwater falls it needs to either infiltrate, be stored or be transferred. The main benefit of letting the water infiltrate is that the problem is solved locally and does not put pressure on the bigger system. However, space is needed for the water to infiltrate. If there is not enough space available for infiltrating all water, one can also choose to store a part of it temporarily so it can infiltrate at a later time. This solution needs less space, and it is useful in dryer periods of time to have some water stored. Yet finding places where the water can be stored can be challenging and more expensive

to realize. Transferring (a part) of the water away puts pressure on the system at other places and therefore transfers the problem.

Strategy The Hague

The Hague focuses on the strategy of first infiltrating and storing the water as much as possible and as local as possible (Projectgroep ACC Klimaat, 2014). Only when no longer possible the water should be transferred to other places. In order to make this happen firstly they focus on doing interventions in the public space themselves which also improve the partial qualities and livability of neighbourhoods, as well as finding economic opportunities to go along. Secondly the municipality focuses on communicating with residents and other parties on how they can make the city more rainwater proof (Municipality of The Hague, 2015).

THEORETICAL FRAMEWORK

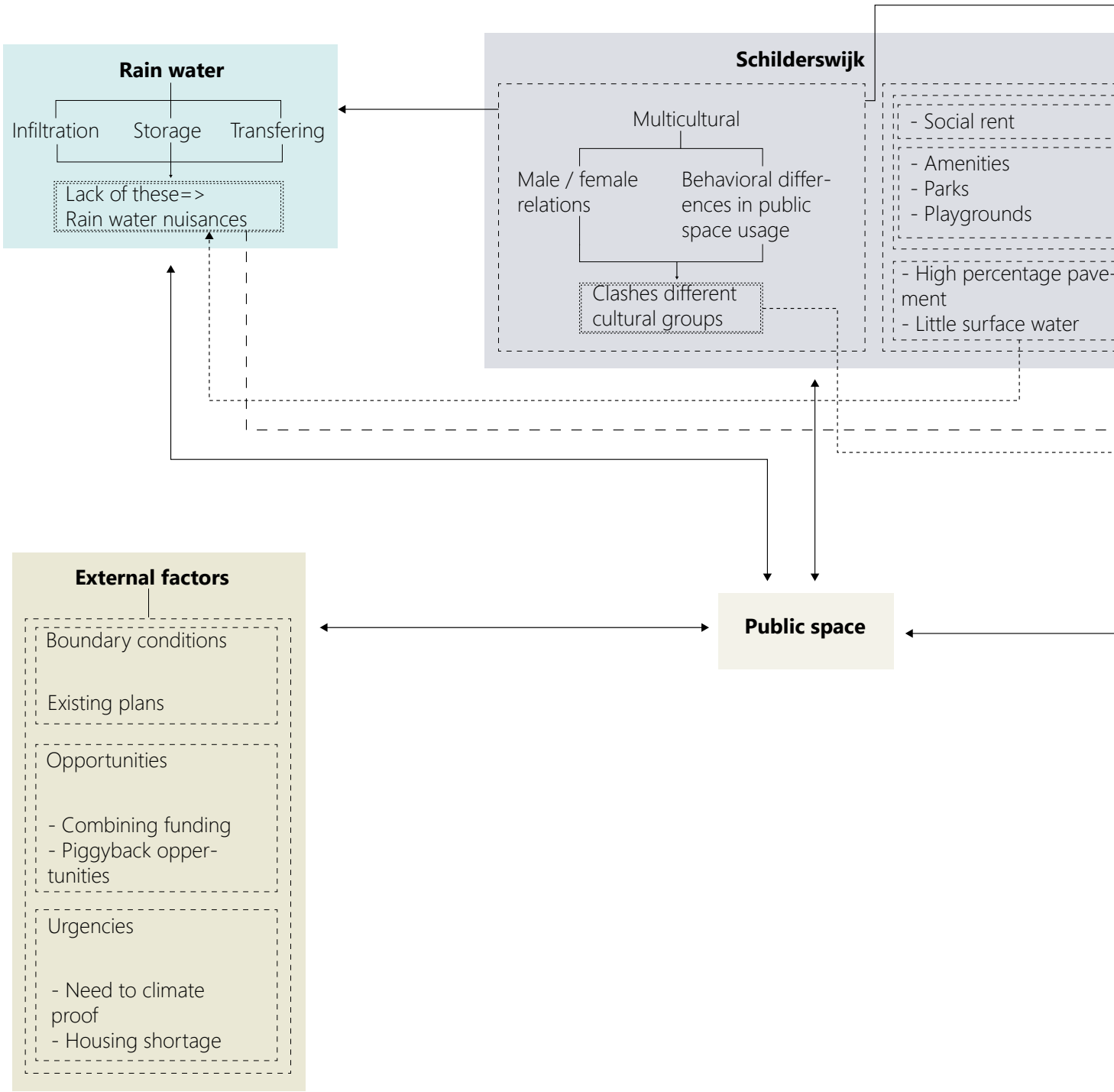
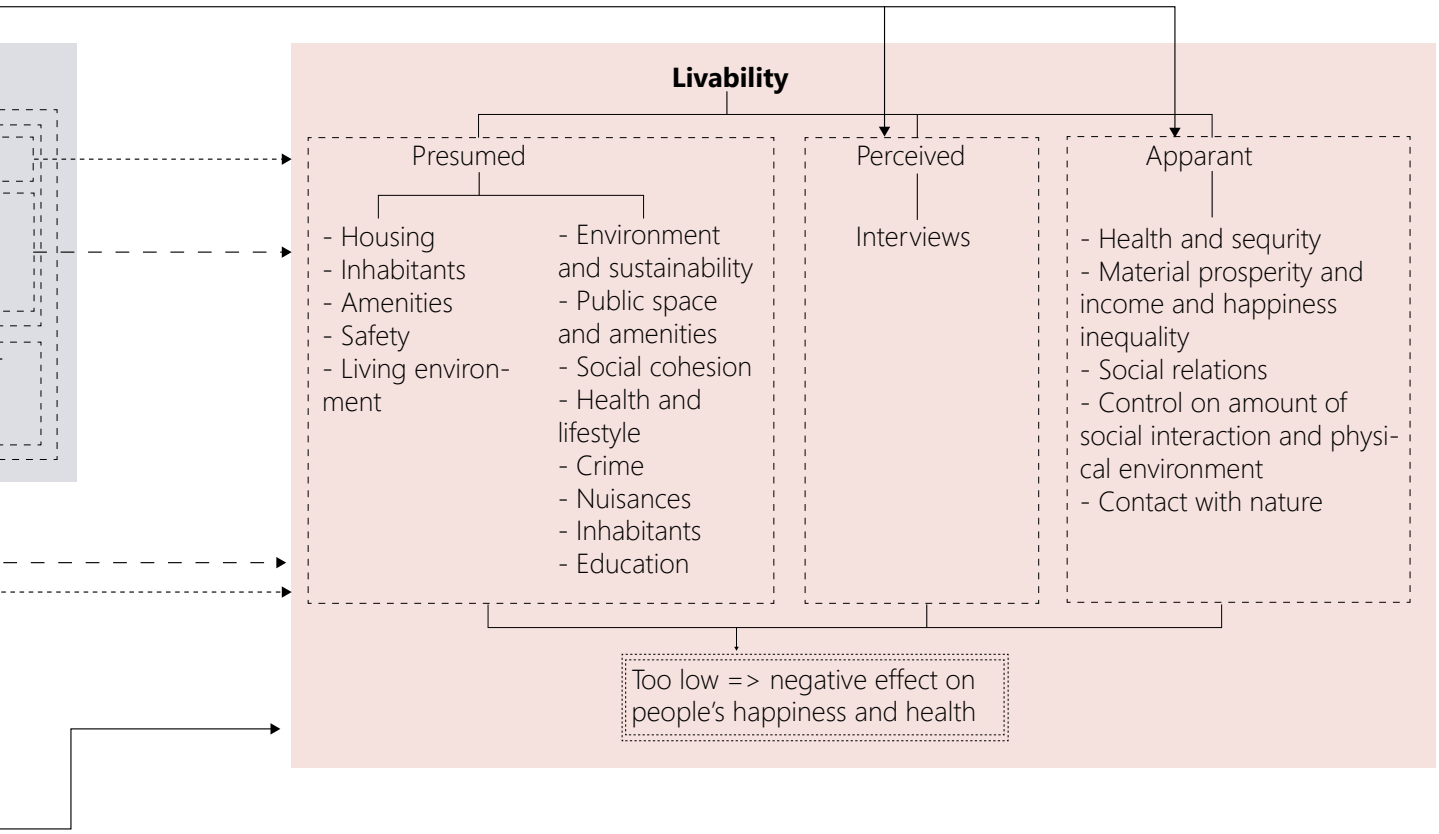
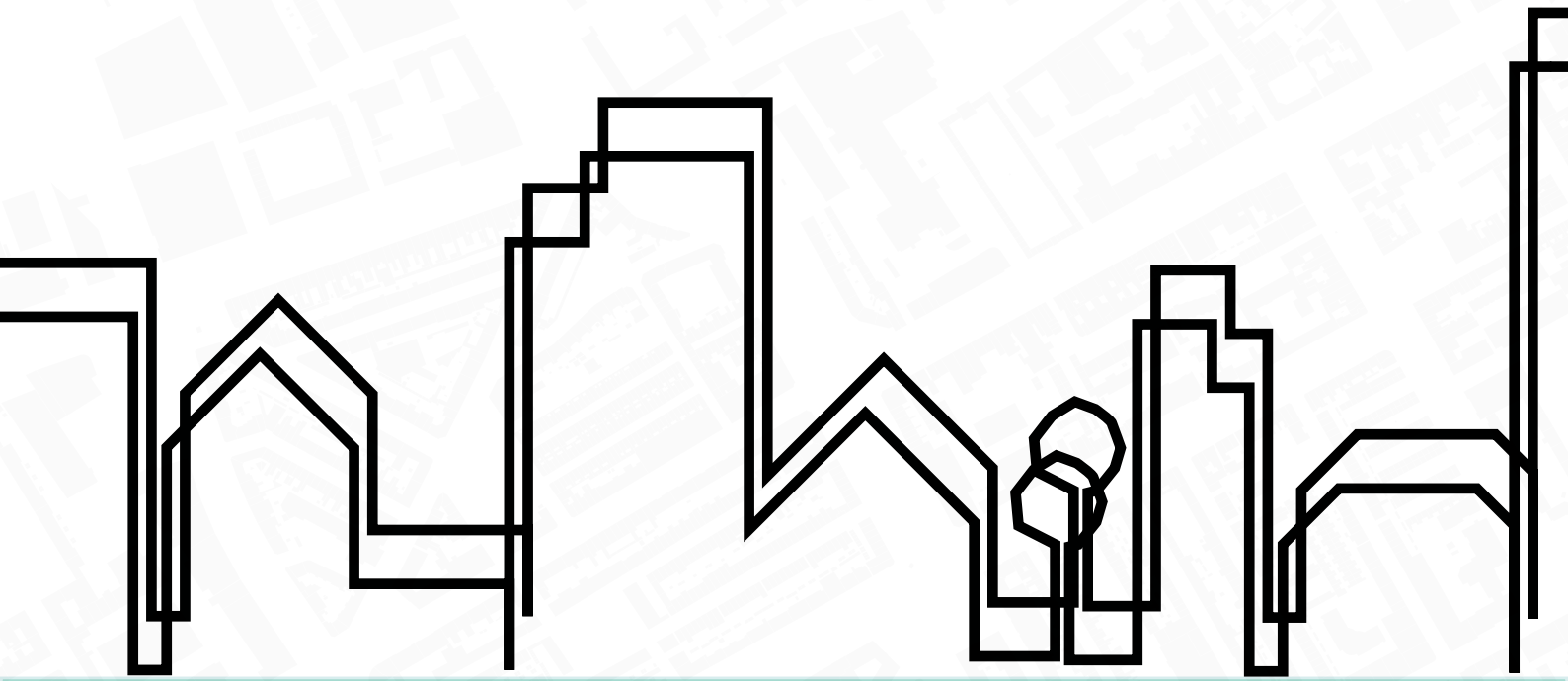


Figure 20: Shows the Theoretical Framework


Livability
Presumed
- Housing
- Inhabitants
- Amenities
- Safety
- Living environment
- Environment and sustainability
- Public space and amenities
- Social cohesion
- Health and lifestyle
- Crime
- Nuisances
- Inhabitants
- Education
Perceived
Interviews
Apparant
- Health and sequrity
- Material prosperity and income and happiness inequality
- Social relations
- Control on amount of social interaction and physical environment
- Contact with nature
Too low => negative effect on people's happiness and health



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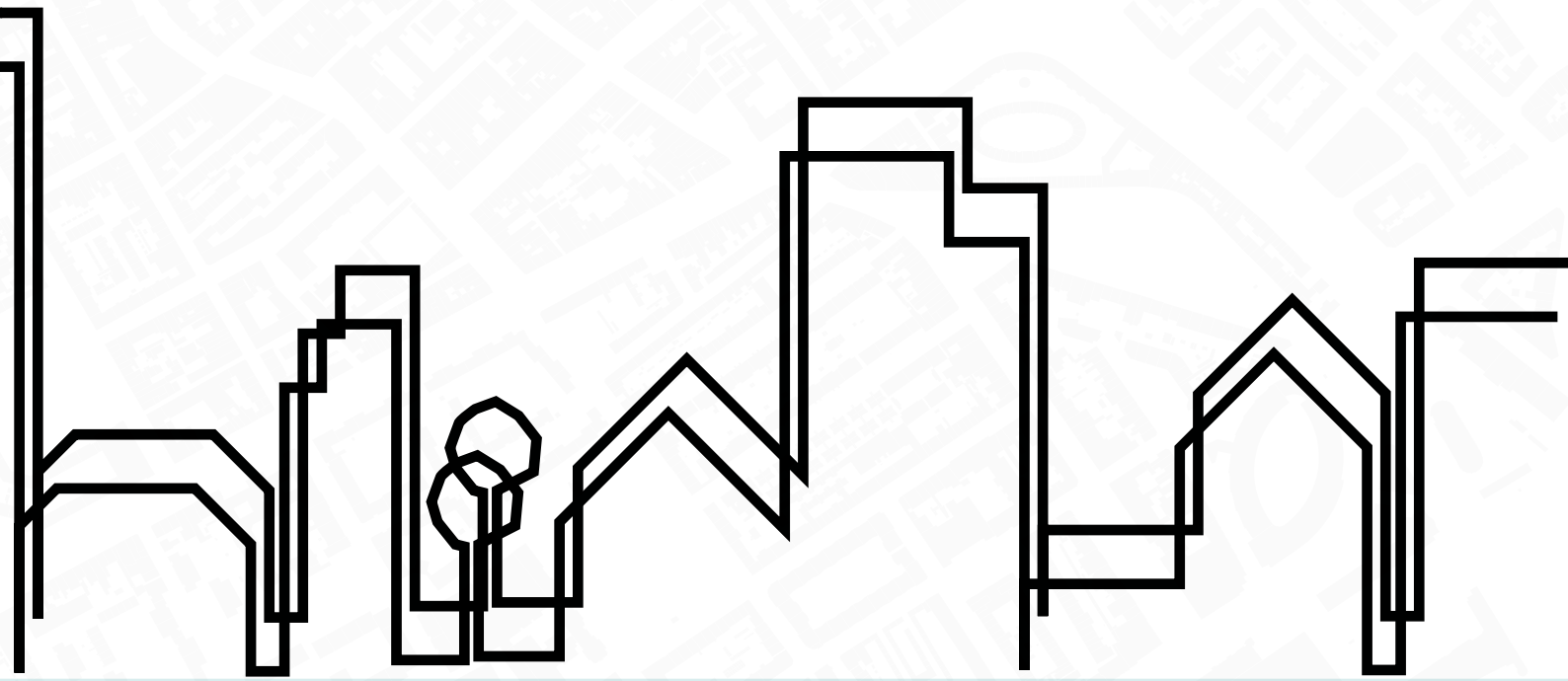


ANALYSING THE SCHILDERSWIJK

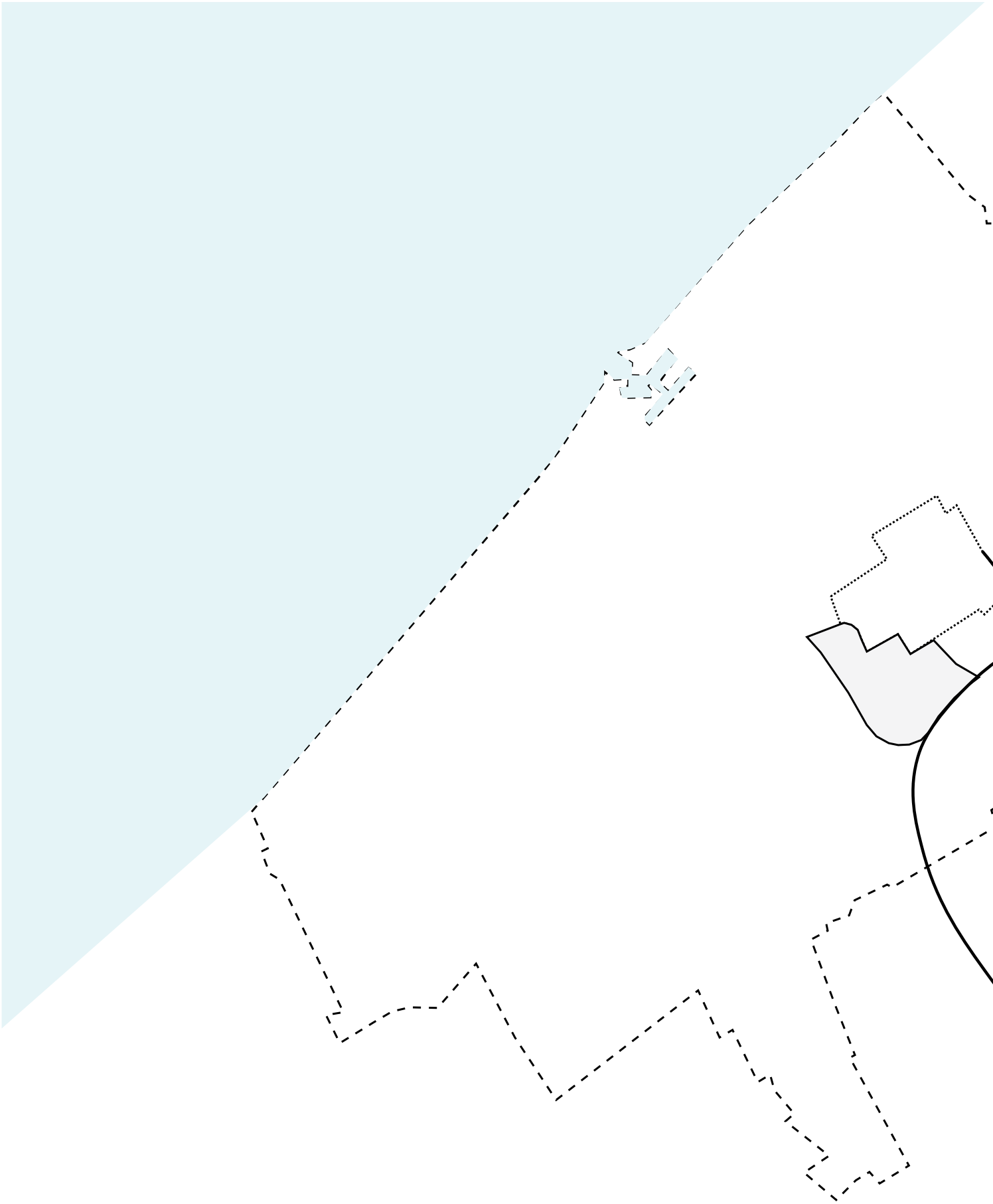


Figure 21: Shows the relation of the Schilderswijk to the city of The Hague

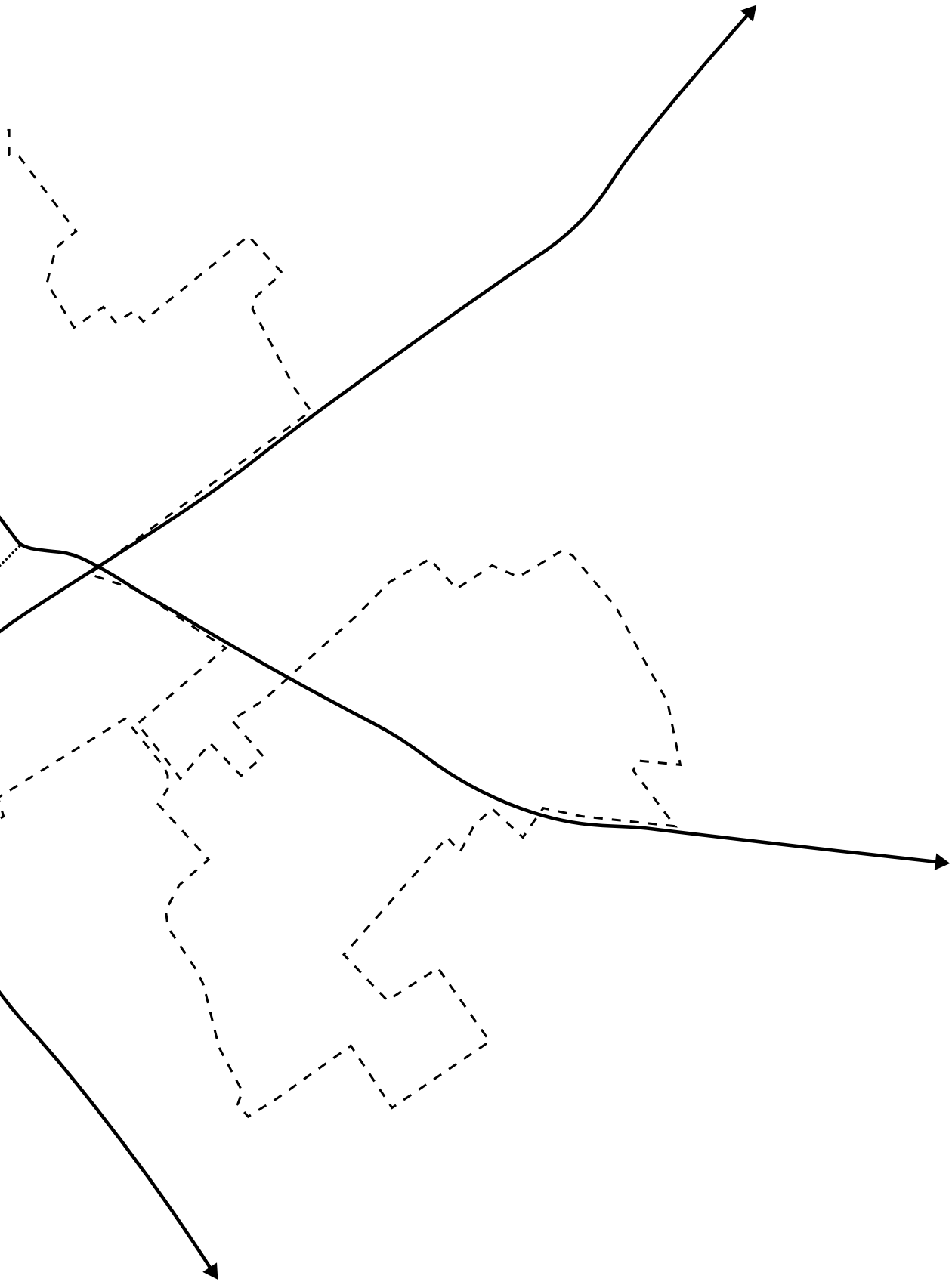
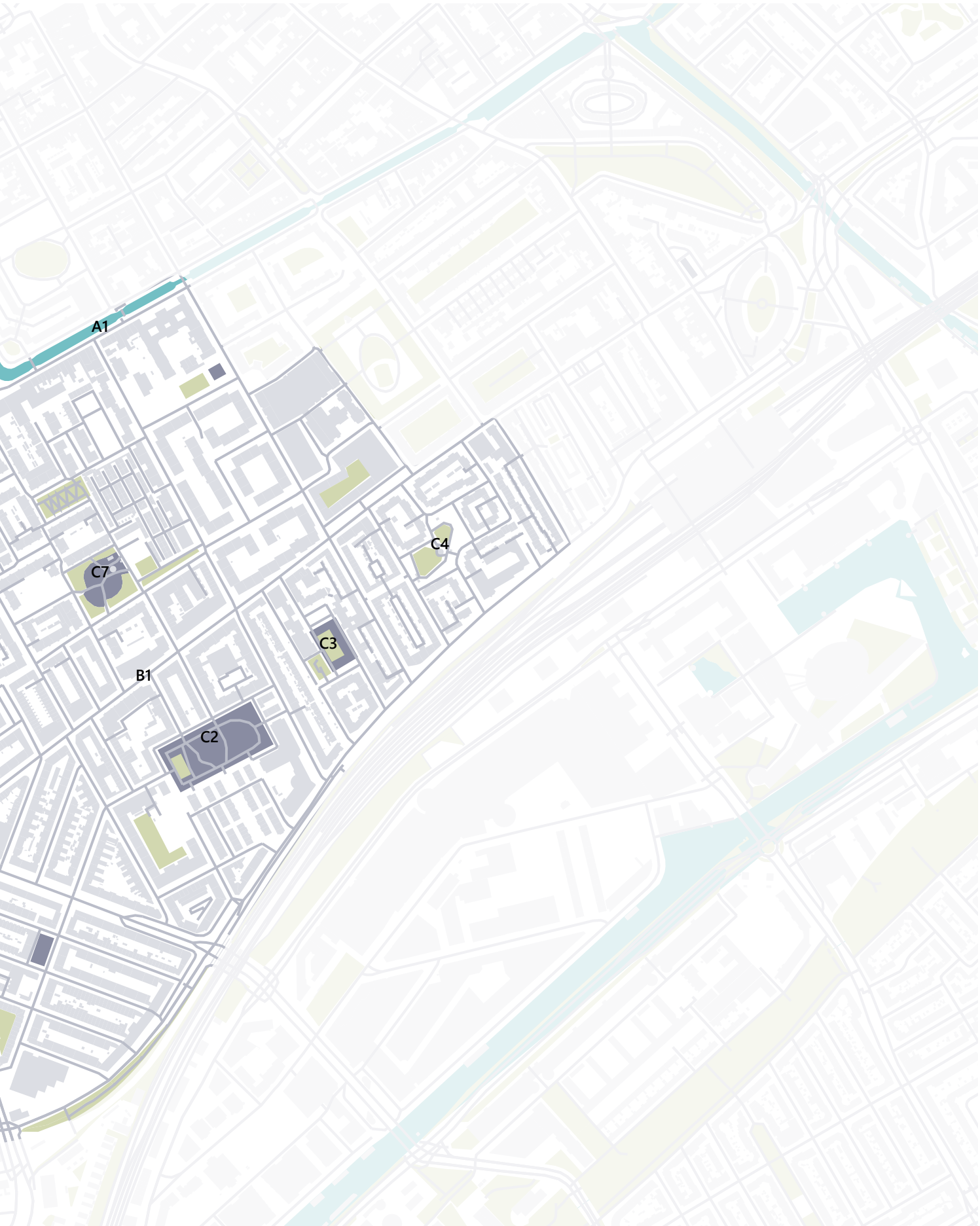




Figure 22: Shows the Schilderswijk


A1
C7
C4
C3
B1
C2



A1



B1



A2



B2



A3



B3



A4



B4

Figure 23: Pictures from the Schilderswijk, all pictures are retrieved from Google Maps



C1



C5



C2



C6



C3



C7



C4



C8

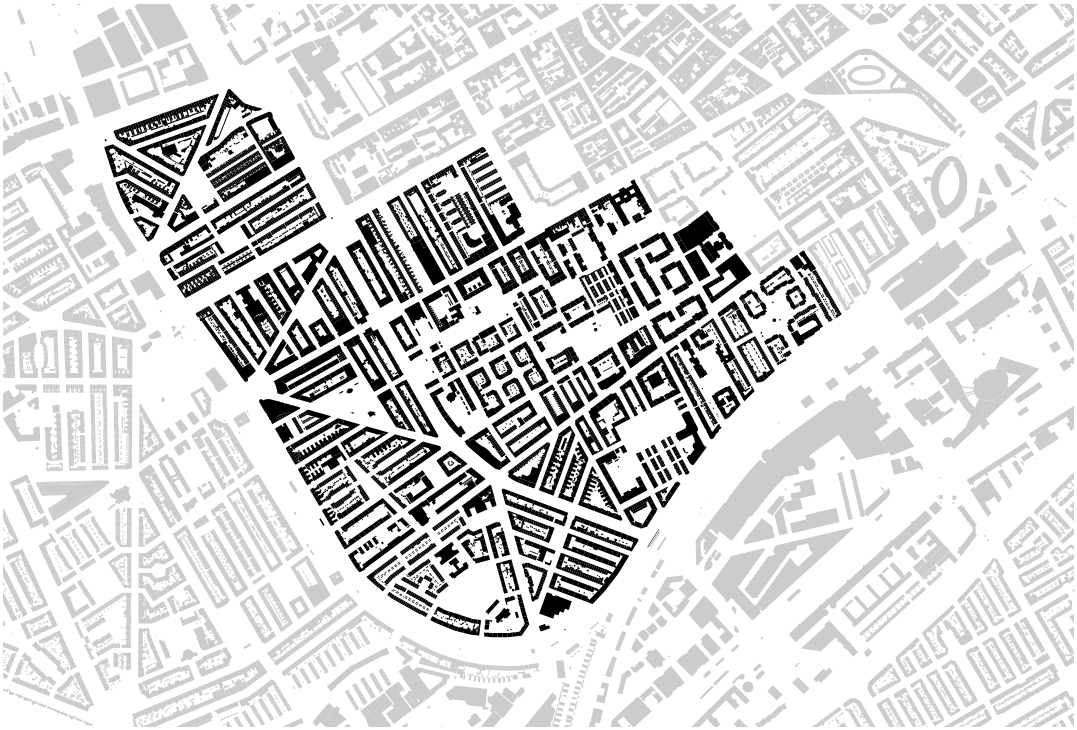


Figure 24: Figure ground of the Schilderswijk

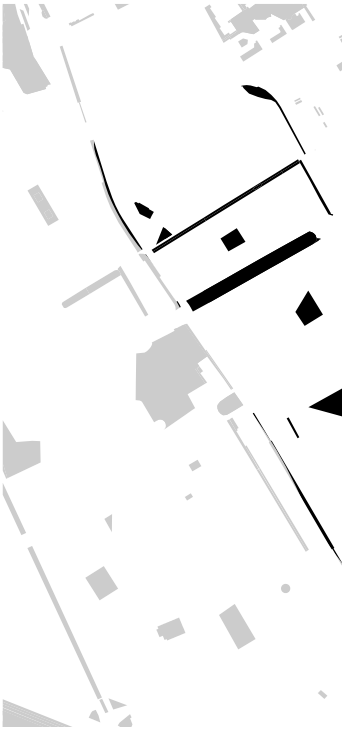


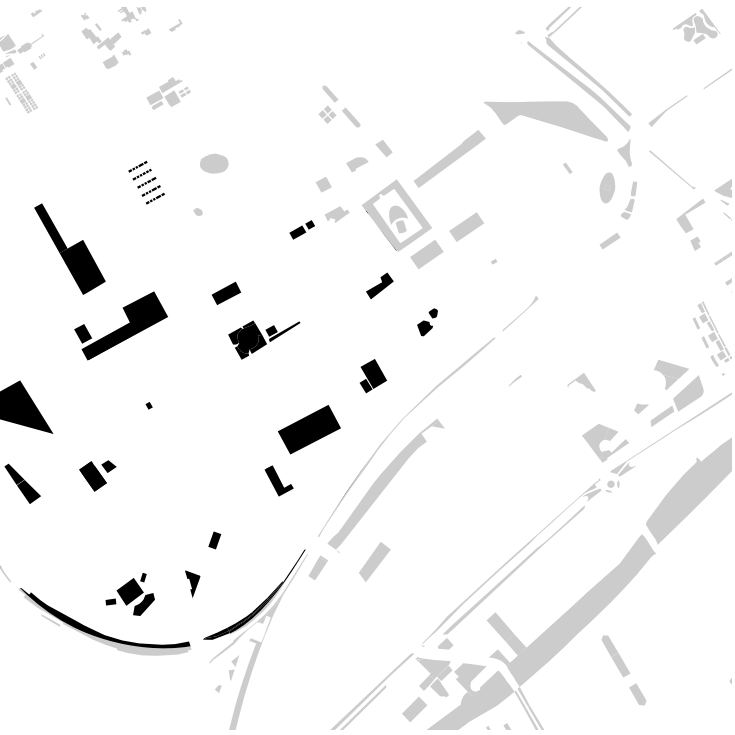
Figure 25: Shows greenery and public space in the



Figure 26: Shows the roads of the Schilderswijk



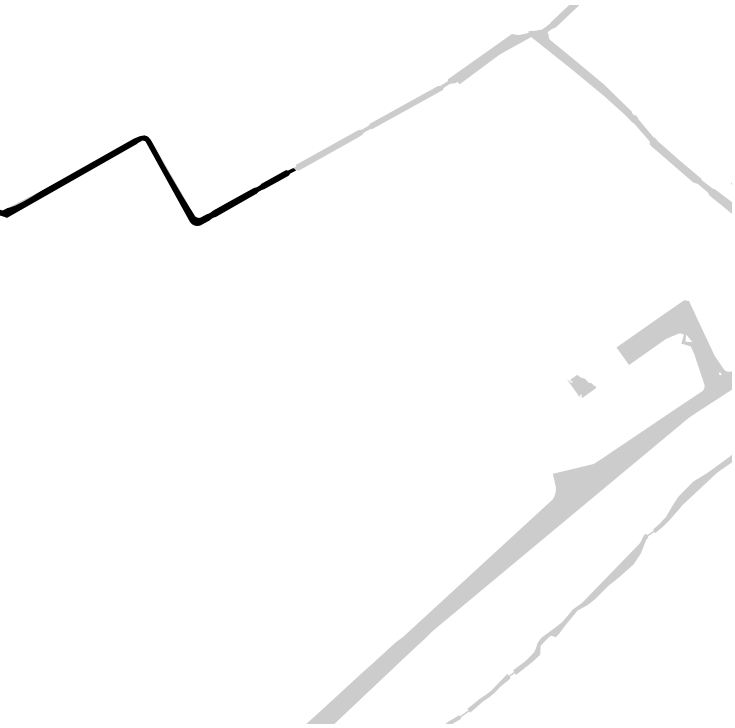
Figure 27: Shows water in the Schilderswijk



Schilderswijk

AN INTRODUCTION TO THE SCHILDERSWIJK

The Schilderswijk is the most dense neighbourhoods of the Netherlands. As one can see, little public space is present and moreover, the majority of it is paved. The build form mainly consists of apartment blocks of around four stories. The public spaces that are present are mainly playgrounds, fitting well the high percentage of children in the Schilderswijk. The Schilderswijk is centrally located, in between the city center and Station The Hague Hollands Spoor. A dense network of roads and public transport makes the location well accessible. In the Schilderswijk, little to no surface water is present. Also greenery is rare to be found.



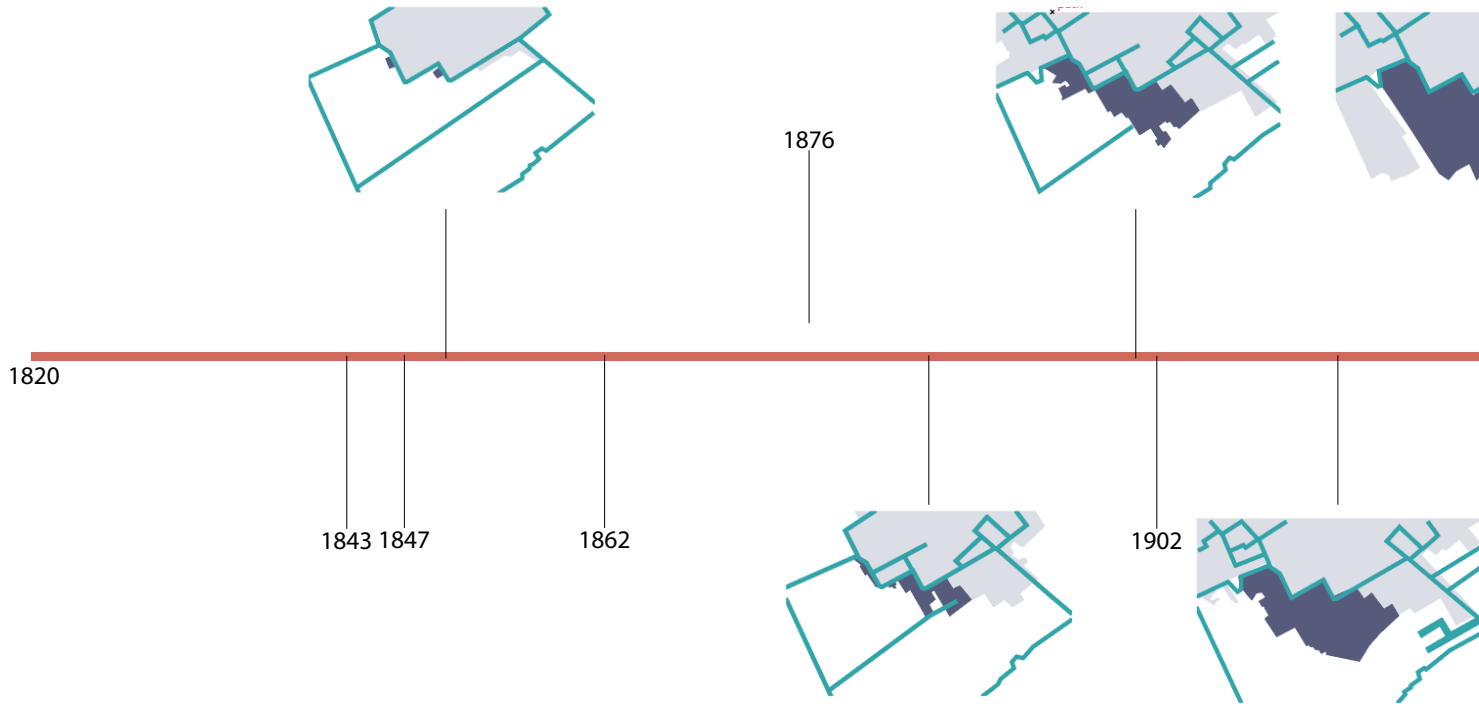


Figure 28: Shows the history of the Schilderswijk

HISTORY

Historic overview:

1843: Opening The Hague Hollands Spoor train station

1847: Train from HS to Rotterdam

1862: Decision municipality on development Schilderswijk

1876: Start building Schilderswijk

1902: First opportunities "woningcooperaties"

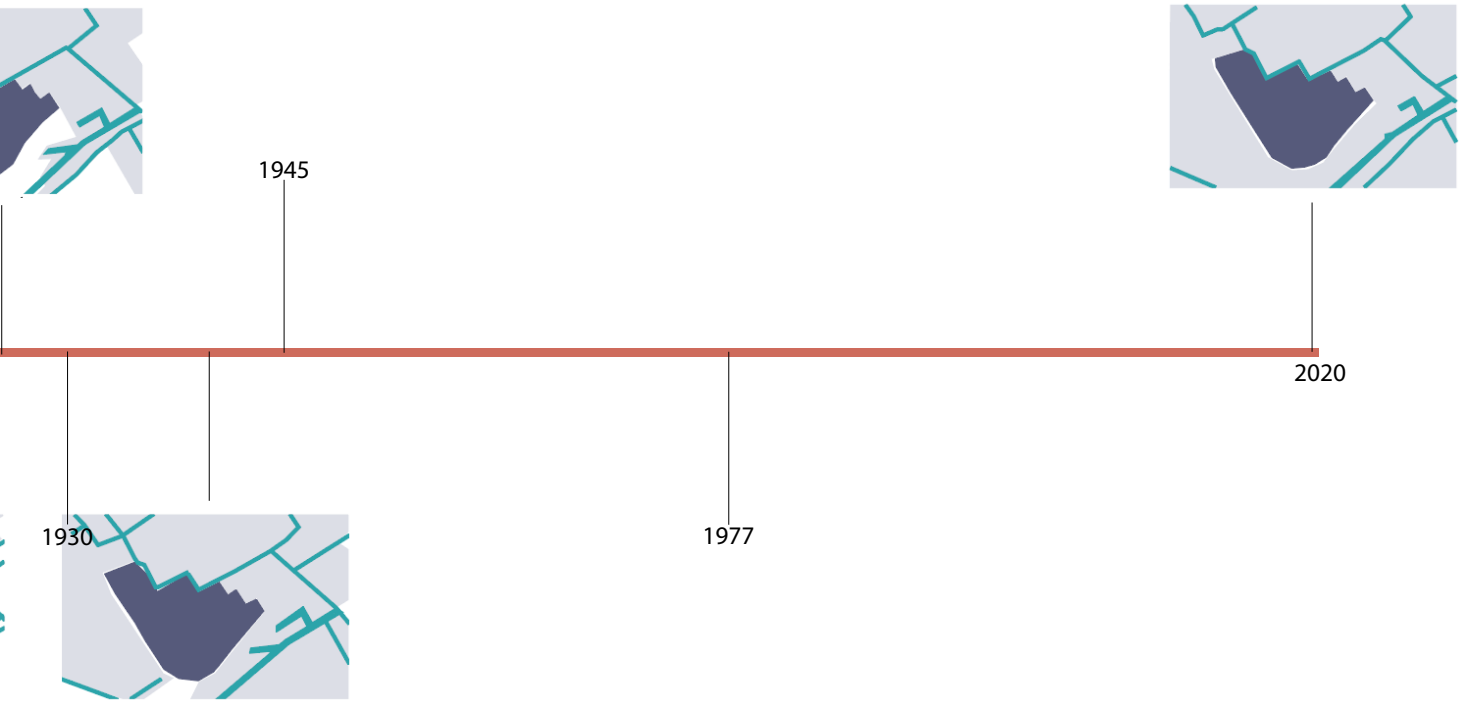
1930: Vacancies Schilderswijk

1945: Growth Schilderswijk

1977: Remediation Schilderswijk

Historic development:

The Schilderswijk is built in the Zusterpolder which was made dry in the 15th century. About 20 years after the construction of The Hague Hollands Spoor train station, the municipality decided to develop a new neighbourhood, intended for the richer people of the Hague. They, however, were worried about he peat soil, and thus mainly workers settled in the area. Only after 1900 the construction of social rent houses started. After a period of growth, de-growth started around 1930, and only after the second World War, the area started to grow again. The quality of housing, however, was not good, leading to large remediation projects around 1977 (Municipality of The Hague, 2011).



Inhabitants over the years:

Initially the Schilderswijk was designed for the more wealthy inhabitants of the Hague. This didn't take off and mainly working class people settled. While the neighbourhood started out as an average neighbourhood, around 1950 the neighbourhood already had a poor reputation. Due to the low quality houses and lack of maintenance, it wasn't a desirable place to live. The community that formed was centered inward, almost as an enclave inside The Hague. Characteristic was the strong social network, the urge to fit in in the neighbourhood and therefore a negative perception to those who wanted to study of move up. This could be because of the poor position inhabitants were in and lack of support from the municipality and government. After the remediation in the 1980's, more immigrants began to settle in the Schilderswijk, who generally speaking also have strong social networks, are centered inwards and have their own habits (Kranenburg, 2013).

Development canals:

The Hague originally had more canals than we can see today. Before the Schilderswijk was built, the Zusterpolder had many small canals, as any traditional polder has. The Hofdkade, nowadays called Hoefkade, used to be a waterway. During the construction of the Schilderswijk, the canal was closed off. The closing off of canals is to be seen throughout the whole city of The Hague. Originally it was done to make room for the expansion of the city as well as for hygienic reasons, e.g. preventing Cholera outbreaks.

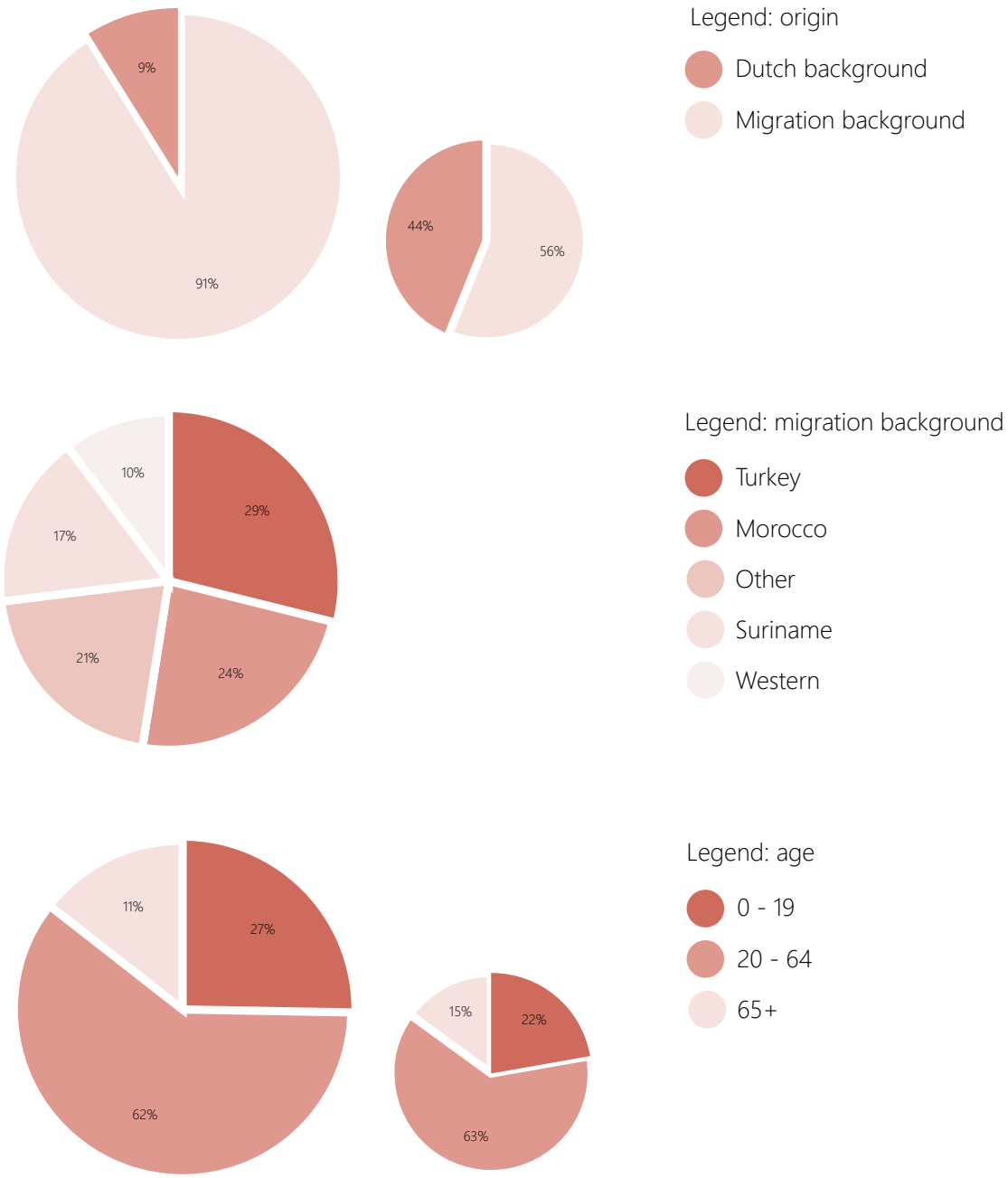
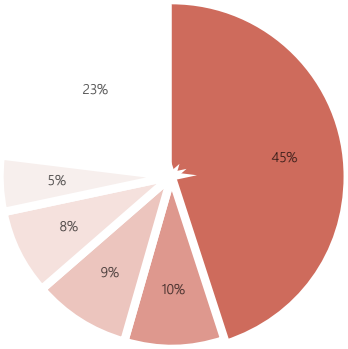
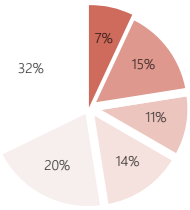


Figure 29: Data on the Schilderswijk, based on statistics from the municipality of The Hague (Municipality of The Hague, n.d.)

INHABITANTS

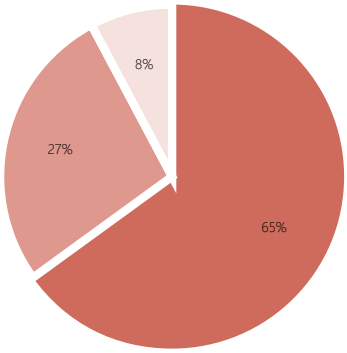
Over 90% of the Schilderswijk inhabitants has a migration background, in which a Turkish and Moroccan background is most common. Given the different cultural contexts, the Schilderswijk has a unique mix of cultures leading to a different social systems within the neighbourhood. Often different ethnical groups have limited interactions. The on average different beliefs in the neighbourhood are also observed in the voting results, which differs greatly from the average of the Hague. Also showing great deviations are income and education. Both the income and education level is significantly lower than the average in The Hague. Many young people are unemployed, and one fifth of the households has debts. Many institutions to solve social-economic problems are present in the neighbourhood, yet they all work separately and are often focused on a particular ethnic group. A difficult relation exists with authorities, mainly due to trust issues (Municipality of The Hague, 2015). Finally one notices the large amount of children living in the neighbourhood (Municipality of The Hague, n.d.).

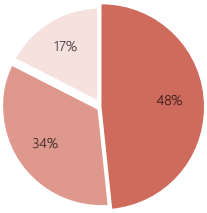




Legend: political preferences

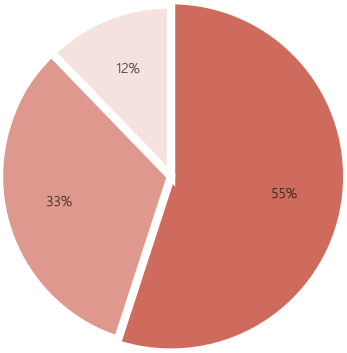
- DENK
- PVV
- GL
- D66
- VVD
- Other

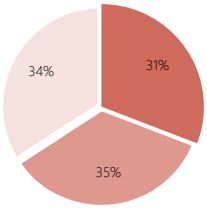




Legend: income

- Low income
- Middle income
- High income





Legend: education

- Low education
- Middle education
- High education









BUILD FORM

The Schilderswijk shows a wide variety of build form, from different periods in time. The majority of the housing is owned by social rent cooperations and is inhabited by inhabitants with a relatively low income. Most houses are apartments in buildings of around four stories high. Living spaces are suitable and spacious enough for families, yet often smaller than row houses and other types of single family homes. Highrises are not present in the Schilderswijk, thus the build height has little variation leading to a pleasant micro climate at most places. Few historic buildings are left in the Schilderswijk, which have completely different characteristics from the rest of the neighbourhood, both in terms of building style as the surrounding street system. Even though not all buildings in the Schilderswijk are in the best shape, or the most attractive by themselves, the variety in building styles makes it an interesting sight, and in that sense a pleasant area to discover. In the section on ownership, more attention will be given to the lifetime of buildings and whether or not they are in need of replacement.

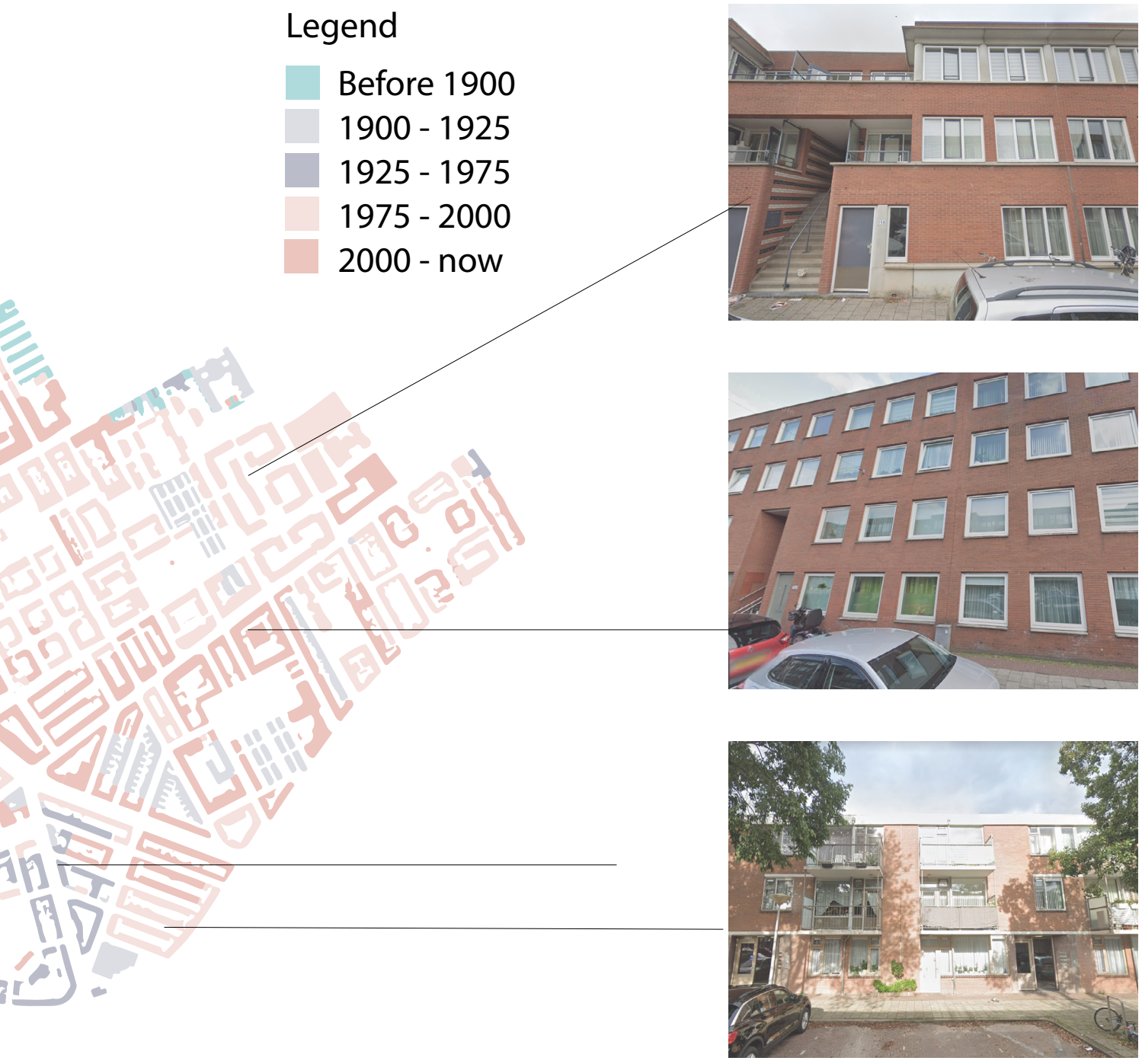


Figure 30: Shows the year of build. All images except for the map are retrieved from Google Maps



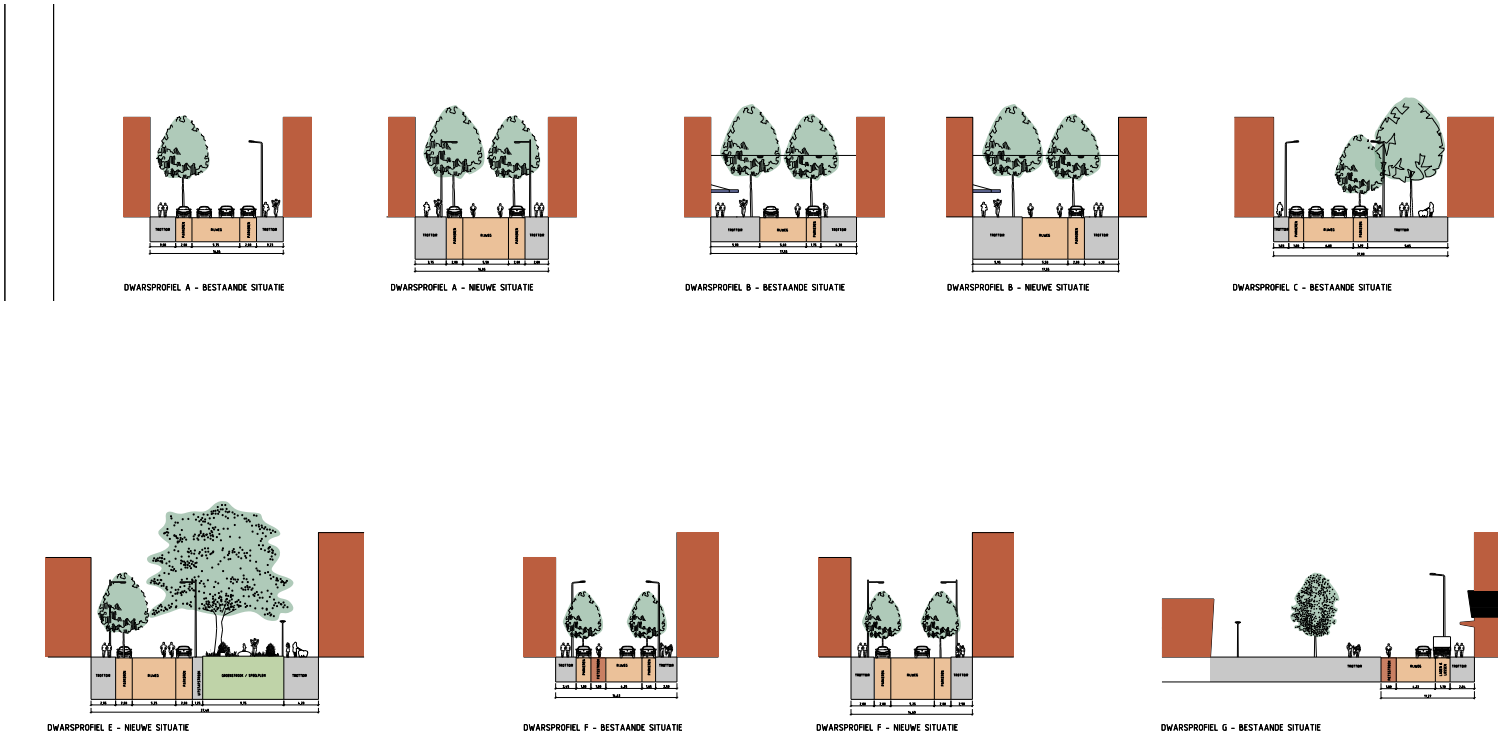


Figure 31: Shows the first design for the Hoefkade as ordered by the municipality of The Hague

EXISTING PLANS

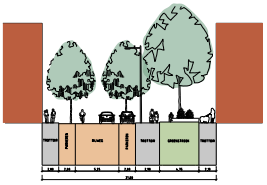
The Hoefkade

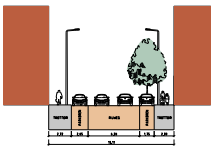
Currently plans exist for redeveloping the Hoefkade (FTB projectbegeleiding, 2021). The main reason for the plans of redevelopment is that the Hoefkade is an intergral part of the bicycle connections throughout The Hague. The following objectives were set by the municipality:

- More space for safer cycling and walking, as well as bicycle parking spaces
- New sewage system
- Maximum speed of 30km/h
- Improving the livability by: increasing amount of greenery, creating meeting places with different functions, terraces, facilitate shopping and making the place more climate proof.

The project will be done in participation with shop owners and inhabitants of the area, to create a suitable space for their wishes.




DWARSPROFIEL C - NIEUWE SITUATIE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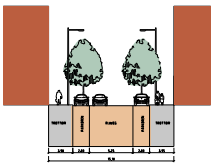
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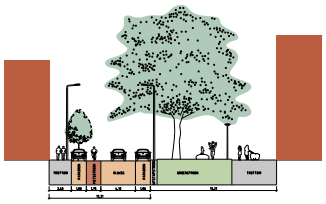
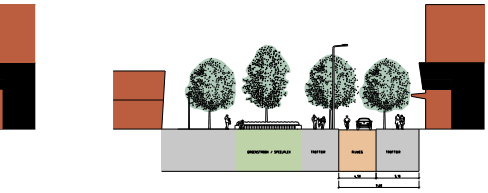
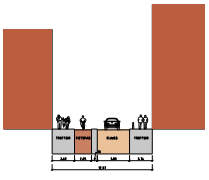
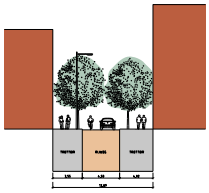

DWARSPROFIEL E - BESTAANDE SITUATIE


DWARSPROFIEL G - NIEUWE SITUATIE


DWARSPROFIEL H - BESTAANDE SITUATIE

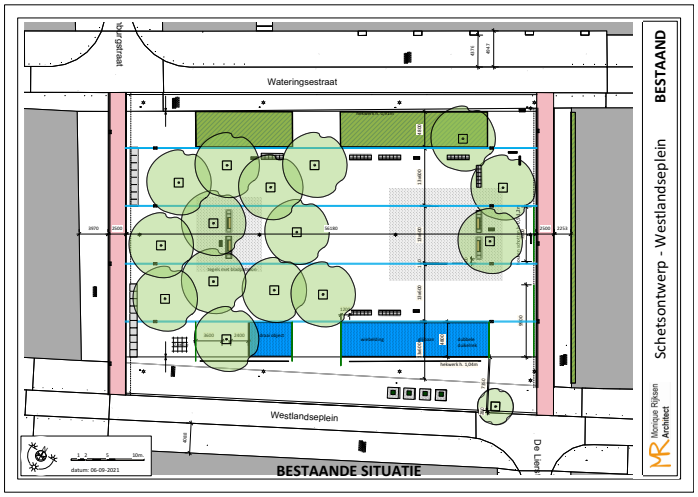

DWARSPROFIEL H - NIEUWE SITUATIE

Climate adaption for rain water nuisances

The goals of the municipality are the following (Municipality of the Hague, 2021):

- No damage from public space towards buildings
- Vital infrastructure must continue to function
- Routes and locations for emergency services must be available
- Drought is to be minimised due to sponge effect of the city
- There must not be any irreversible damage in case of droughts

Furthermore, every solution must be a green solution if possible, and make an improvement to the livability of the location.



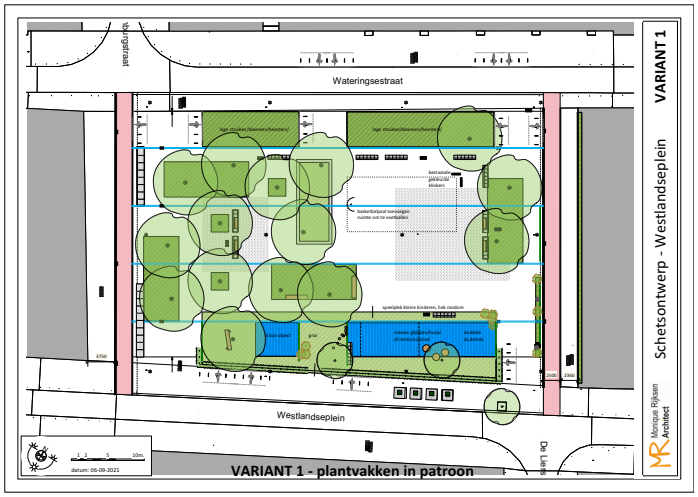




Figure 32: Shows the existing situation on the Westlandseplein. Drawing is made on behalf of the municipality of The Hague by Monique Rijksen, architect

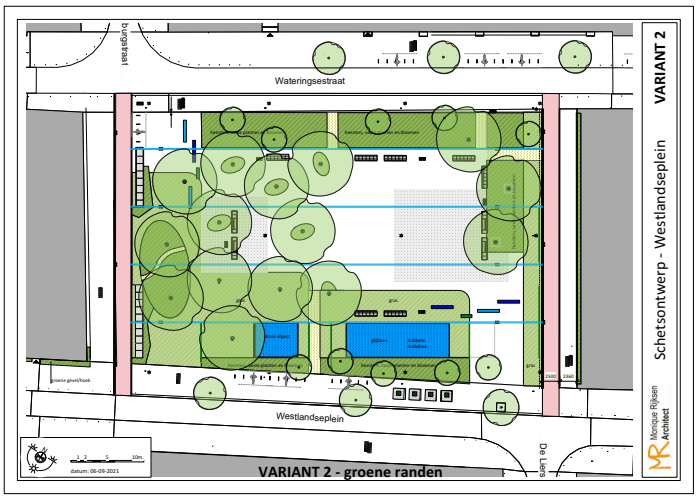


Figure 33: Shows two design options that were not prefered by the majority of residents living close to the Westlandseplein, Drawing is made on behalf of the municipality of The Hague by Monique Rijksen ,architect

The Westlandseplein

The Westlandseplein is in need of renewal. Currently the space is largely paved and mainly used by cyclists and scooters as a quick way of passing through. This leads to an unsafe feeling for parents who no longer dare to let their childeren play on the playground. The lack of usage leads to further neglect of the space, making it even more unattractive. The municipality made three designs for the Westlandseplein and let residents living close to the square choose which one they prefer. A majority prefered the third design, being the most green design presented. They gave the follwoing feedback:

- Appreciate that the square in this design is closed off for cyclists and scooters
- Picnic tables are highly appreciated
- There is a need for bycicle storage near the square
- Make sure the greenery stays green in winter
- Please arrange a more elaborate playground

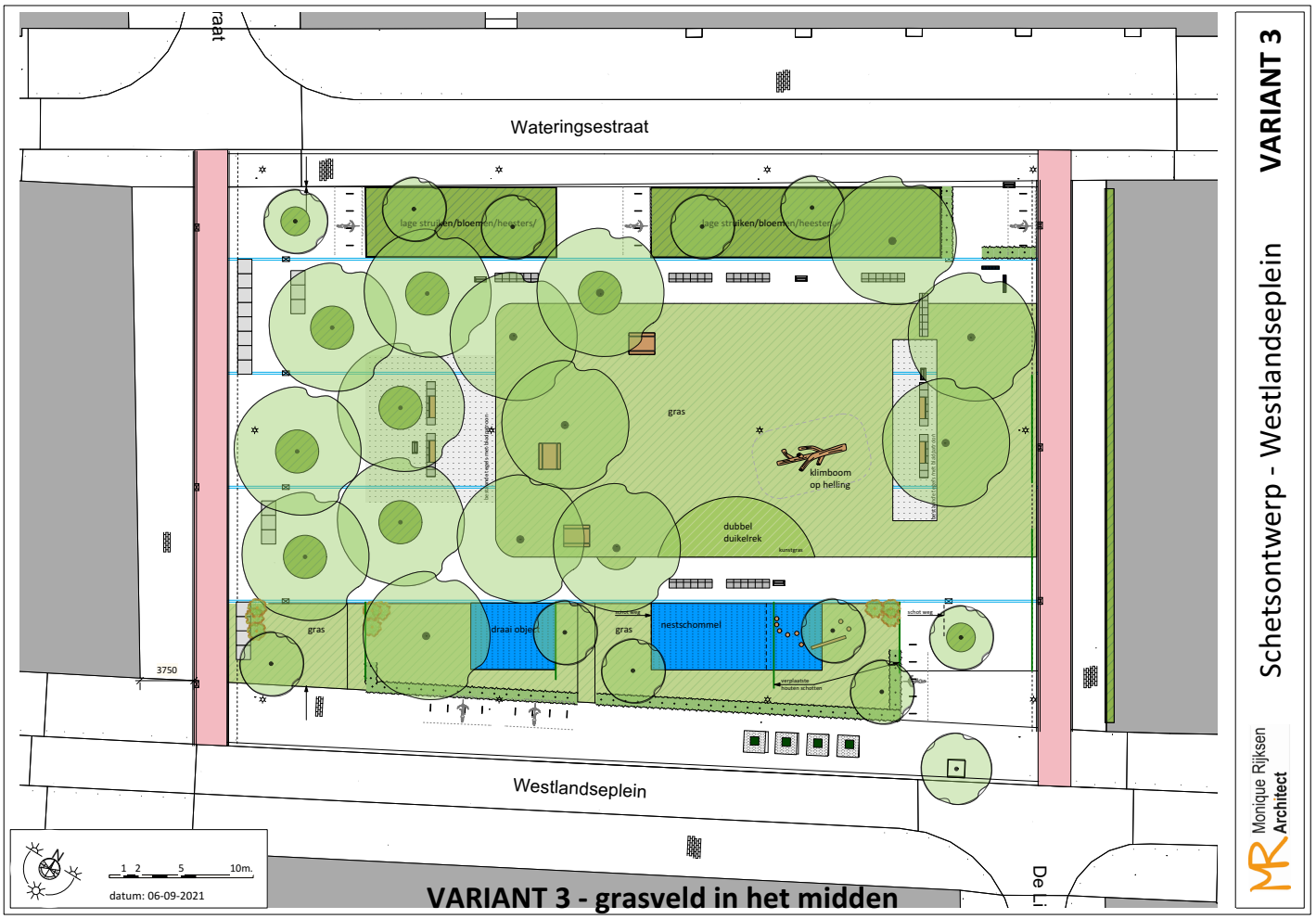


Figure 34: Shows the favorite option for the new design of the Westlandseplein according to residents living closeby, Drawing is made on behalf of the municipality of The Hague by Monique Rijksen, architect

- Do not understand why there is a height difference in the grass. Can it be removed?

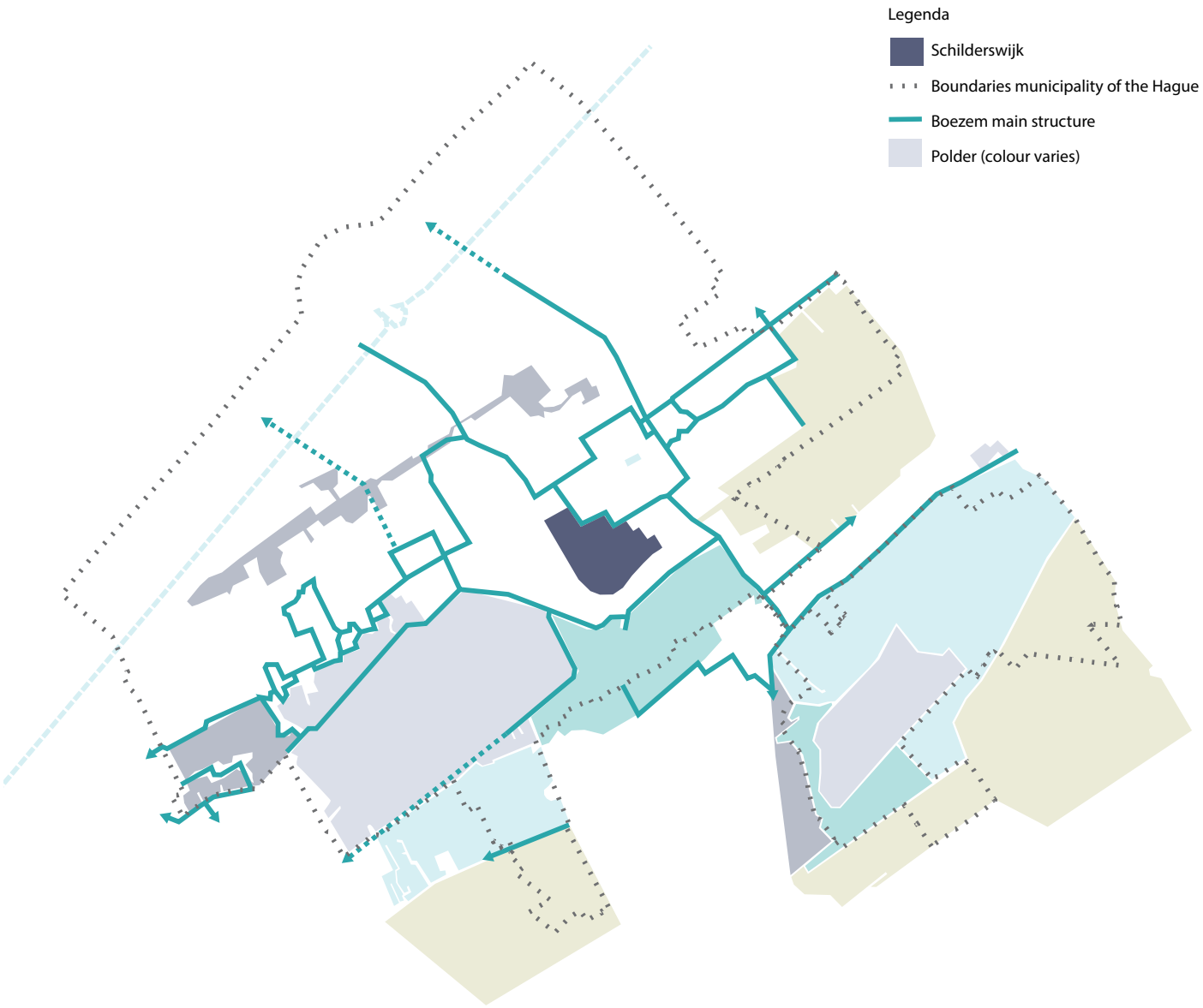


Figure 35: Shows the large scale water system in The Hague, based on (ArcGIS Web Application, z.d.), (Hoogheemraadschap Delfland, z.d.)

RAIN WATER

In this section the handling of rain water on different levels is discussed. Firstly attention is given to the Polder and Boezem system of The Hague. Then the amount of possible and current infiltration is investigated by mapping soil types as well as permeability capacity of the materials used on street level in public space. Lastly, maps on rain water nuisances will be shown as well as a model showing how rain water would move through the area of the Schilderswijk.

THE LARGE SCALE

The water system on a city scale consists of a polder and boezem system. Polders can be found in lower lying areas, as water would otherwise tend to accumulate here and cause nuisances. The Schilderswijk does not lie in a polder, and lies above NAP. The ground water level is -0.43m NAP, although it is often lower in summer (Hoogheemraadschap Delfland, z.d.). The polders in and outside The Hague are connected by a system of boezems, of which one forms the boundary between the Schilderswijk and the city center.



Figure 36: Shows the historic soil types in The Hague, based on (Kaart - Haagse Kaart: groeikaart van Den Haag, z.d.)

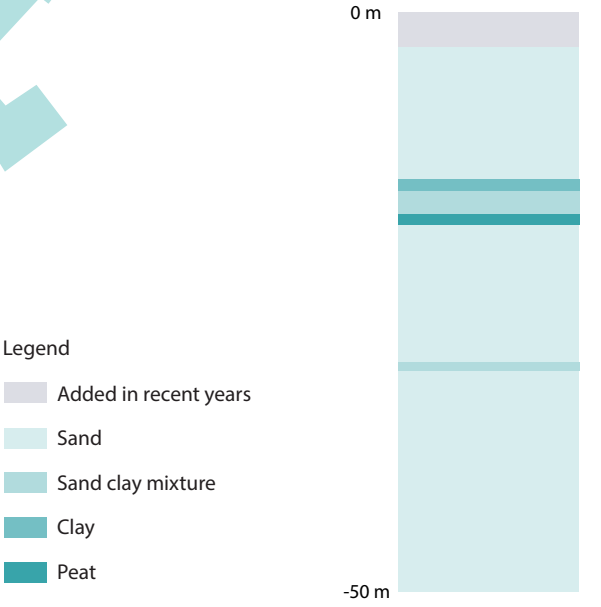


Figure 37: Shows a typical section of soil types in the Schilderswijk, based on (TNO, z.d.)

PERMEABILITY OF THE SURFACE

The Schilderswijk was originally built on a peat soil, as is the case with the majority of lower income neighbourhoods in the Hague. Over time the peat soil has been excavated, leaving a mainly sandy soil behind. In-between the sand thin layers of clay, clay-sand mixture and peat can still be found. The top layer consists out of a mixture of sand, clay, peat and other coarser material, which might make it necessary to perform ground quality improvements before infiltration is possible. Furthermore, given the high ground water level only a limited amuont of infiltration is possible, especially in winter. In summer the groundwater level is lower, and more opportunities are present.



Figure 38: Shows the underground of public spaces within the Schilderswijk

The majority of public spaces in the Schilderswijk are completely or largely paved. This is unexpected since the vast majority of public spaces have the function of a playground, where possibilities for less paved areas are ample. The reasoning behind the current usage of artificial grass is probably the intensive usage of the playground, and the fear of vandalism, as artificial grass is rather durable. However it does make rain water infiltration difficult leading to a higher pressure on the sewage system and rain water nuisances in case of heavy rainfall.



Figure 39: Shows the sewage system in the Schilderswijk, based on (PDOK, z.d.)

SEWAGE SYSTEM

The sewage system in the Schilderswijk consists of a combined sewage system with one push pipe going through the area. Furthermore several pump and overflow locations are present in the area. In case of overflow water is pumped into the canal at the North side of the Schilderswijk which is part of the boezem system. An separate rain water sewage system is not present. In the coming years only plans are present to renew the Hoefkade. Here it is chosen to not implement a seperate sewer system due to a lack of space (Municipality of the Hague, 2021b).



Figure 40: Shows the places with more than 30 mm water in case of 70mm/2 hours of rain, based on (Waterdiepte bij kortdurende hevige neerslag - Klimaateffectatlas, z.d.)



Figure 41: Shows the places with 30mm or more water in case of 70mm/2 hours of rain, based on (Waterdiepte bij kortdurende hevige neerslag - Klimaateffectatlas, z.d.)



Figure 42: Shows the places with 20mm or more water in case of 70mm/2 hours of rain, based on (Waterdiepte bij kortdurende hevige neerslag - Klimaateffectatlas, z.d.)



Figure 43: Shows the places with 10mm or more water in case of 70mm/2 hours of rain, based on (Waterdiepte bij kortdurende hevige neerslag - Klimaateffectatlas, z.d.)



Figure 44: Shows the places with 10 mm or more water in case of 70mm/2 hours of rain with buildings removed, based on (Waterdiepte bij kortdurende hevige neerslag - Klimaateffectatlas, z.d.)

RAIN WATER NUISANCES

When looking at the rain water nuisances, they are spread out over the whole area. Even when removing the buildings, street and building patterns are still visible due to the rain water nuisance pattern being so dense. The uniformity of the problem makes it a difficult one to solve at specific spots, and indicates that rather a broad solution for the whole area is needed. However, what is not visible from this analyses is what happens in the hours and days after the rainfall. Does it stay in the current spots or does it start moving due to height differences? Given a sewage system capacity of 20mm/hour expectations are the water will be absorbed quickly enough in most places to not expect movement of the water throughout large areas.

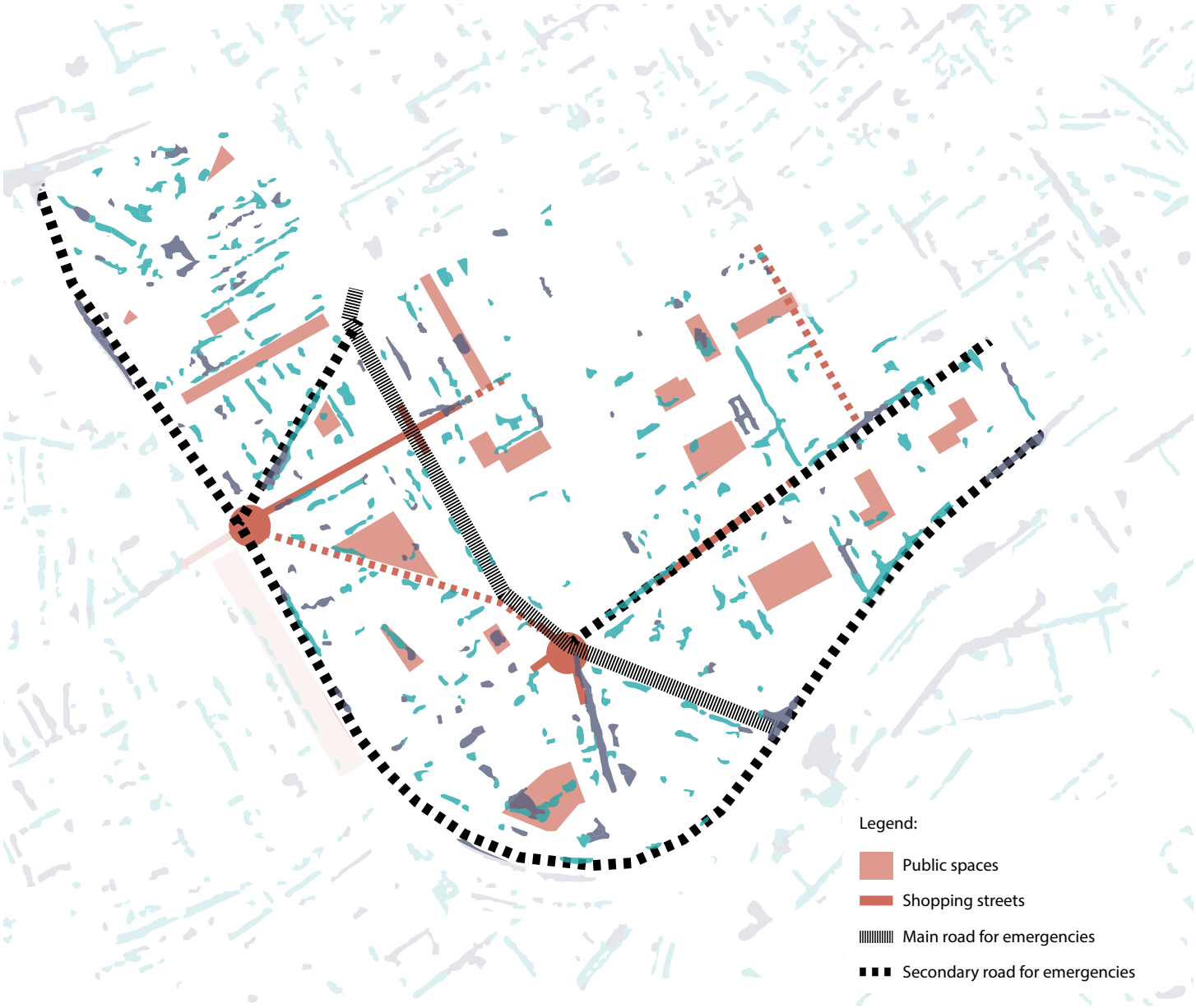


Figure 45: Shows the places most sensitive to rainwater nuisances, data used from (Weg netwerk nooddiensten, z.d.)

LOCATIONS WHERE NUISANCES ARE HIGHLY UNDESIRABLE

Having rain water on the streets is undesirable in any place, yet in some places it is a bigger problem than in others. To what extent rain water on the street is a nuisance depends on the function and intensiveness of usage. Having water in a location where one wants to stay longer, e.g. a shopping street is much more of a problem than having some water in a regular car street. However, some streets need to be accessible for emergencies at any given time, thus these streets would be prioritized as well in solving rain water nuisances.





Figure 46: Shows puddles in public space after normal rainfall.







Figure 47: Shows the conclusion map for rainwater nuisances in the Schilderswijk

CONCLUSION RAIN WATER



Emergency roads need to be free of rain water nuisances

Public spaces with the heaviest rain water nuisances have priority in fixing rain water nuisances

Public spaces with the most room for improvement and public spaces designed to stay for longer periods of time have priority in fixing rain water nuisances

As there are little problems all over the neighbourhood, a network of small solutions with some large water buffers in preferable

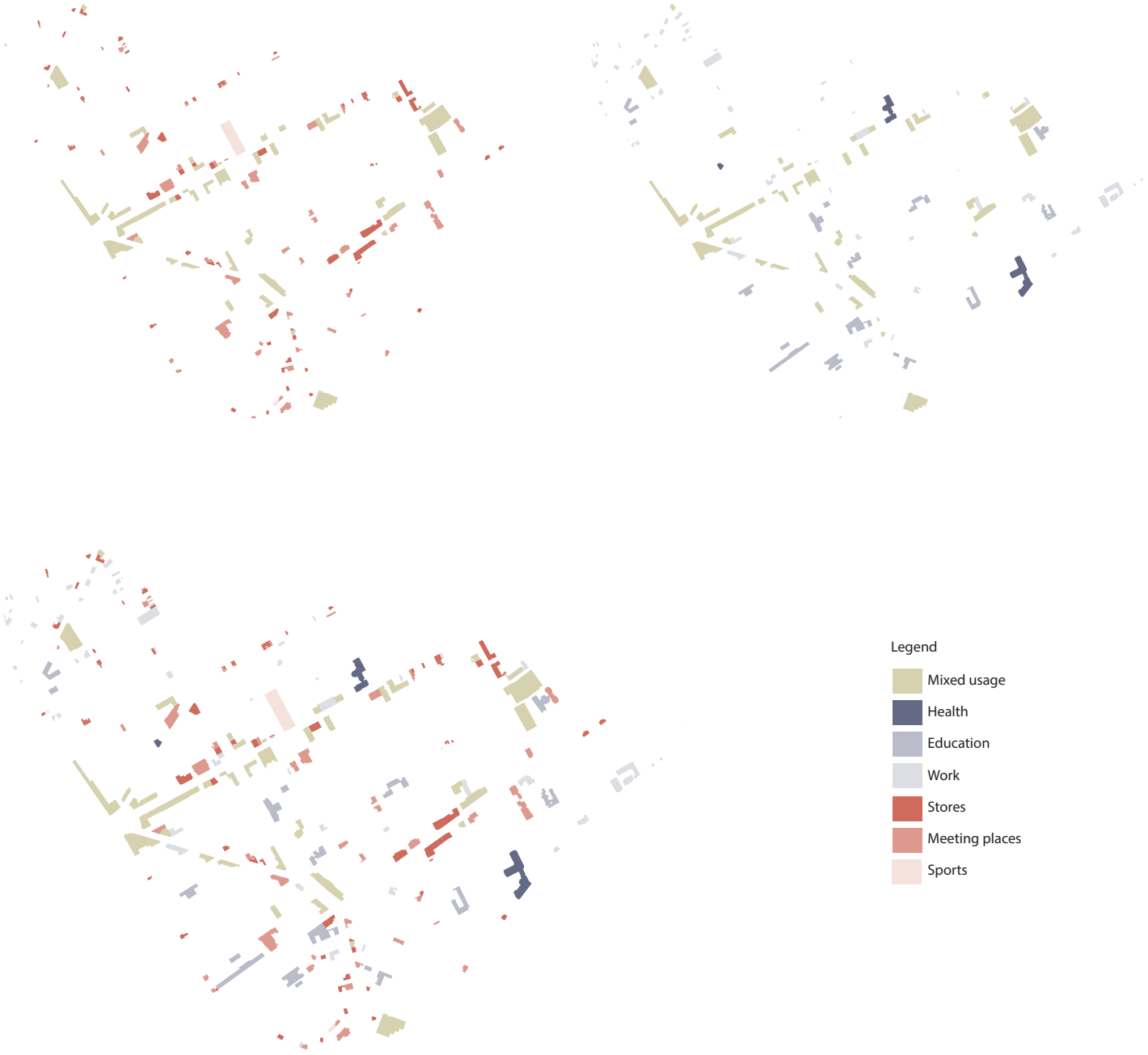


Figure 48: Shows the different functions in the Schilderswijk, based on PDOK data in QGIS

URBAN BOUNDARY CONDITIONS

In this section the urban boundary conditions are explored. These include functions present in the area, ownership and borders.

FUNCTIONS

A large variety of functions is present in the Schilderswijk. In many neighbourhoods, especially shops and restaurants are clustered strongly but also companies can be found in rough clusters. In the Schilderswijk, some clustering is present in local high streets, yet throughout the whole area amenities are present. Also, more than an average amount of community centers and religious buildings can be found. This strong network of meeting places is a strength of the neighbourhood. Yet it should not be forgotten that not all meeting places are used by and intended for all groups. When analyzing the shops in the area, it stands out no large supermarket chains, such as Jumbo, Lidl or Albert Heijn are present inside the area.



Figure 49: Shows the shopping areas within the Schilderswijk, based on observations

Instead, many relatively small local shops can be found, of which a large part are shops with a larger than usual offer in Moroccan, Turkish and other cultures' cuisines. The same trends can be observed for restaurants and cafés. Lastly, the presence of the Haagse markt is worthwhile to point out. It lies just outside the neighbourhood, yet is a popular shopping place for inhabitants of the neighbourhood as well as other visitors.

Although the Schilderswijk has an interesting and attractive offer in both shops and restaurants as well as access to the Haagse markt, it does not attract a great amount of outside visitors yet. Furthermore, outside visitors mainly consist of visitors of Turkish or Moroccan background who get groceries in the area they cannot find in their neighbourhood or village. However, foreign cuisines have become increasingly popular throughout the Netherlands, establishing a potential for the area to offer facilities for the city as a whole, the same way as Chinatown or the Amazing Oriental currently do when it comes to doing Asian groceries. This potential and the effects it has on livability is further explored at a later stage.



Figure 50: Shows the functions of public spaces in the Schilderswijk

The functions of public space in the Schilderswijk are monotonous: almost without exception public spaces are playgrounds and streets. While given the large amount of children in the area it makes sense to have many playgrounds, the lack of parks and therefore green is obvious and not positive. Also, not a single square is present in the Schilderswijk. The majority of streets are places to move, yet this changes when many amenities, especially restaurants and cafés are present. The abundance of these is one of the strong points of the area, making the public space, and the extension hereof a bit more varied.



Figure 51: Shows ownership by cooperations

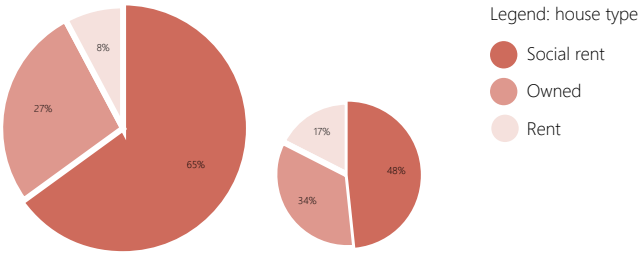


Figure 52: Shows division of housing ownership in the Schilderswijk



Figure 53: Shows publically owned space

OWNERSHIP

The majority of houses in the Schilderswijk is owned by social rent corporations. The houses are distributed more or less equally throughout the neighbourhood. Almost no private gardens are present in the neighbourhood, and only some communal gardens. This increases the pressure on the public space, which is indeed observed to be used extensively by the residents of the neighbourhood. A network of public spaces, owned by the municipality, is observed, which is connected by publicly owned streets. This is the space interventions within this project are proposed for. However, rain water also falls on private property and properties owned by social rent corporations. It would be inefficient and unrealistic to infiltrate all rain water in publicly owned places. Therefore it is assumed 30% of the rain water that falls within the Schilderswijk will be dealt with, in an equal share normalized by the amount of square meters property, by the owners of the respective property. The 30% is chosen as it should be a realistic and not too difficult to achieve scenario.











OWNERSHIP

Buildings have a lifespan that may vary widely. For social rent 50 years is the set time a building has to sustain. However in practice, a building often lasts much longer (Duurzaam gebouwd, 2011). Thus, for this analysis all buildings that are built more than 50 years ago and owned by social rent corporations are marked. Looking at these buildings, especially the older historic ones are in a good shape, and have historic value meaning renovation would be preferred over demolition. Looking at the buildings that don't have historic value, and yet are over 50 years old they are not all the most beautiful buildings, but seem to be in a decent state. Given the increasing importance of sustainability in our society, demolition of these buildings does not seem the best option for the coming years. In the area marked by a square, a renovation could be possible, but would be out of the scope of this project unless it turns out to be next to a public space of significant importance in solving livability and rainwater issues.







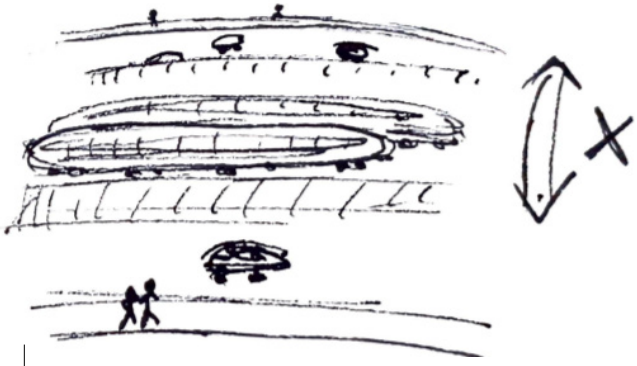




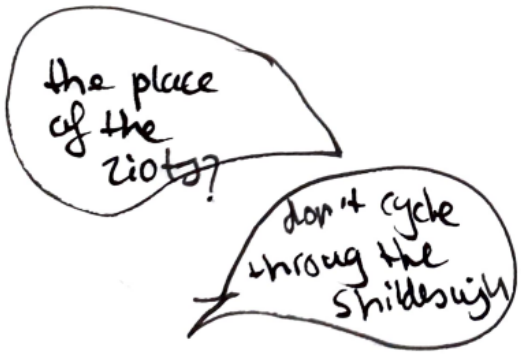
Figure 54: Shows older social rent homes that might be ready for renovation or replacement. All images, except for the map, are retrieved form Google Maps



Figure 55: Shows the different types of boundaries present in the Schildersiwjk









BOUNDARIES

The Schilderswijk is a place of boundaries. There are many, and in several different forms. Firstly there are purely physical boundaries, such as the train track, tram track, bodies of water, big roads and fences. These boundaries together manifest themselves almost surrounding the complete neighbourhood. Another noticable point are the fences around the public spaces which close after dark. This indicates safety problems in the area and may even cause an unsafe feeling by itself. Secondly, we see softer boundaries that do not necessarily have a physical manifestation. The Schilderswijk has a reputation which acts as a boundary for outsiders not to visit the area. This boundary is for example visible and amplified by the large differences in house prices between what is just in and just outside the Schilderswijk. Also one can think about language barriers which lead to communication issues and in the worst case isolation. Lastly, although no rule describes it, one can observe male and female places inside the neighbourhood and even inside public spaces. This is a soft boundary, determined by traditional cultural values of part of the inhabitants. Yet the feeling of not belonging in certain spaces as a woman was so strong when visiting the area on a fieldtrip that I didn't know if I could even enter the café, let alone order something. Café's/teahouses are typical male dominated spaces, while playgrounds are typically woman dominated.



Figure 56: Shows the conclusion map for the boundary conditions including multiculturalism in the Schilderswijk



Main shopping roads would benefit from being better connected

Cherish the small shops and their cultural diversity

Connect the Schilderswijk with the Haagse markt and the city center

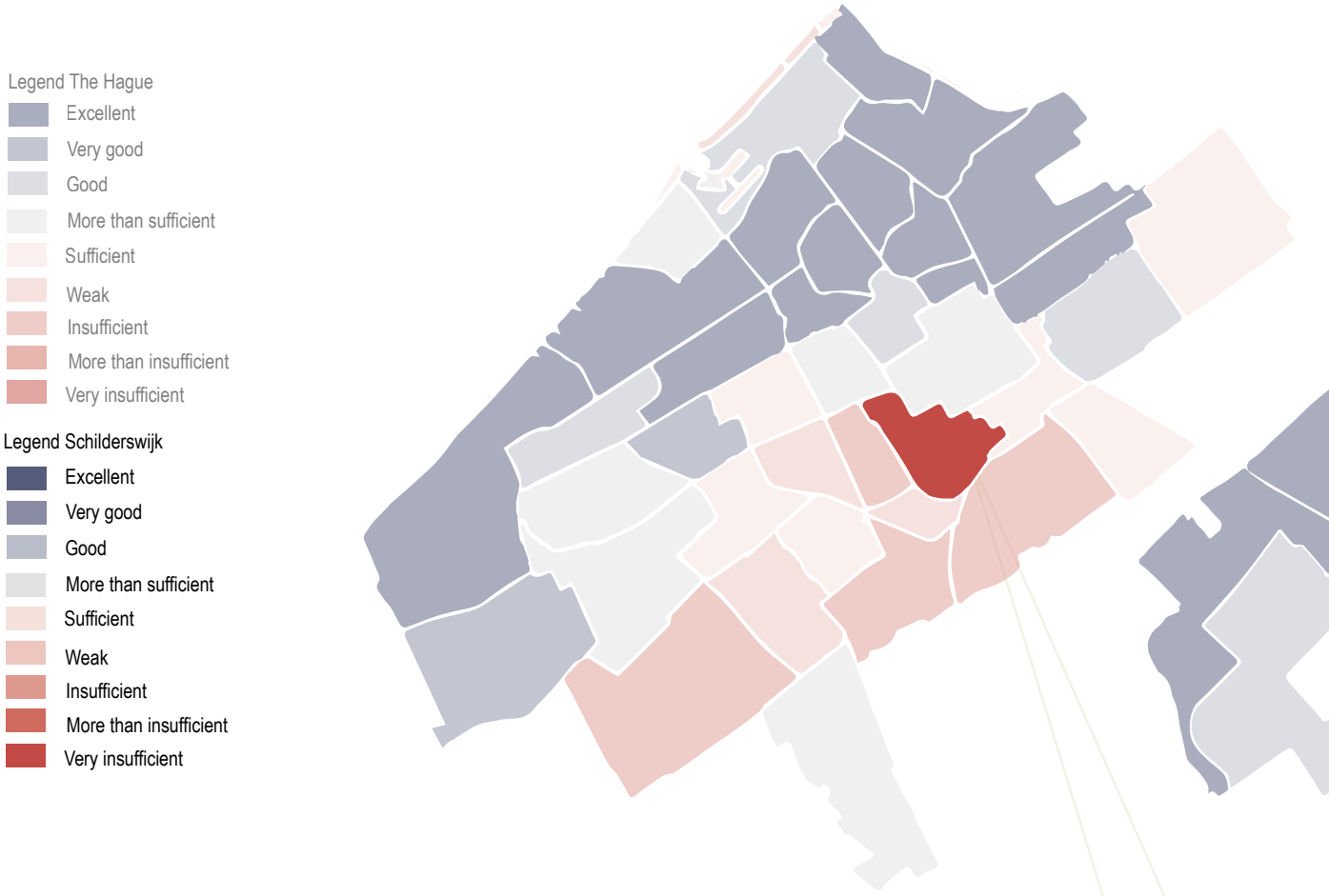


Figure 57: Shows the different livability of The Hague based on the leefbaromter, with data from (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, z.d.)



Figure 58: Showsthe liv
landse Zaken en Konin

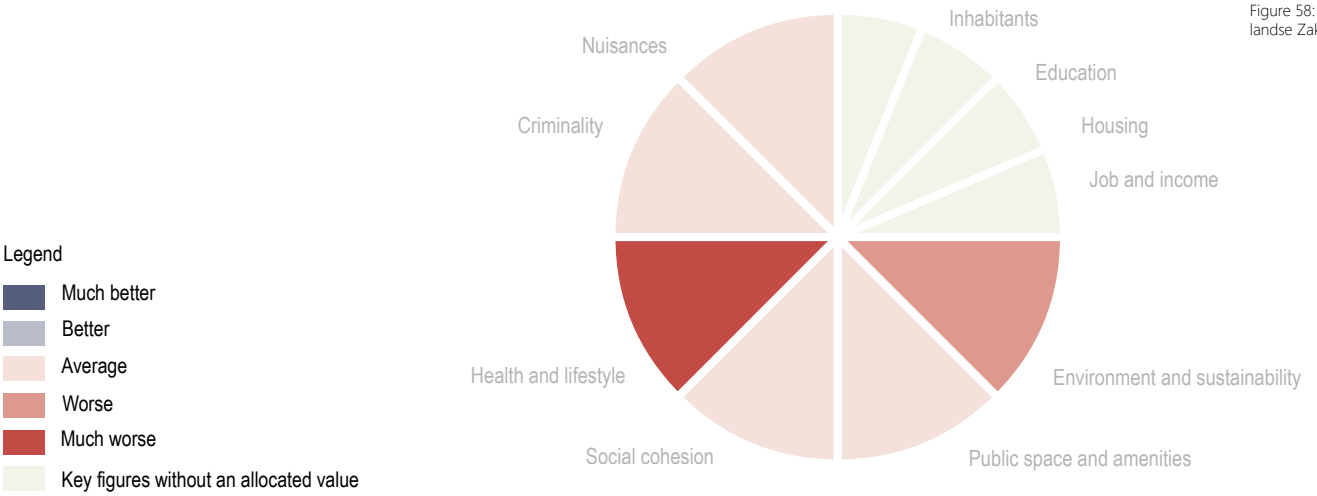
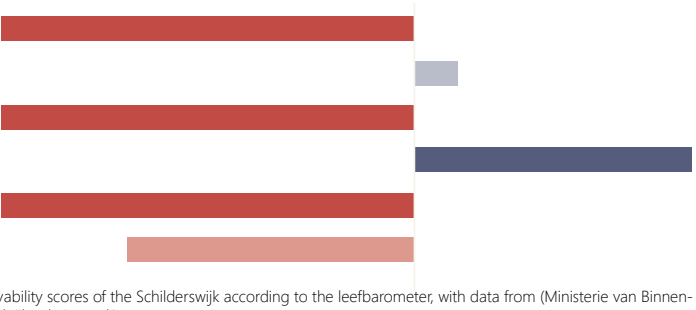


Figure 59: Shows the different livability of the Schilderswijk according to the leefbaarheids circle, with data from (Municipality of the Hague, z.d.)





vability scores of the Schilderswijk according to the leefbarometer, with data from (Ministerie van Binnen-
krijksrelaties, z.d.)

LIVABILITY

In this section the presumed, apparent and perceived livability is described by analysing the Schilderswijk in different manners, from different viewpoints.

PRESUMED LIVABILITY

Presumed livability describes the goodness of match between the presumed conditions necessary for livability and the presumed conditions of the neighbourhood. It is usually measured with the use of a framework which contains set variables on livability. For the Schilderswijk the leefbaarheidsbarometer and the leefbaarheids circle are used.

The leefbaarheidsbarometer shows the Schilderswijk is the poorest scoring neighbourhood of The Hague (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, z.d.). The weak points are safety, inhabitants and living environment. Amenities are above average and housing is acceptable. Within this project it is aimed to improve the living environment, which should have an indirect but positive influence on the safety. It is not necessarily desirable to change the score in population, as this might improve the presumed livability, but is likely to have a negative effect on the perceived livability of groups of the current inhabitants.

According to the leefbaarheids circle (Municipality of The Hague, z.d.), health and lifestyle is the main weakness followed by sustainability and the environment. Noticeably no single aspect scores above average, indicating a livability problem, as was also observed from the leefbaarheidsbarometer. Improving health and lifestyle would indirectly align with the goals of this project. Improving social cohesion is also desirable, even though the score is not extremely low, it could be a lot better.

In conclusion, the presumed livability of the Schilderswijk is low, which in itself is problematic. However these scores may differ from perceived or apparent livability meaning not all aspects will have to change. Furthermore, several aspects fall out of the scope of this project as the problems in not solvable through (re)design of the public space.

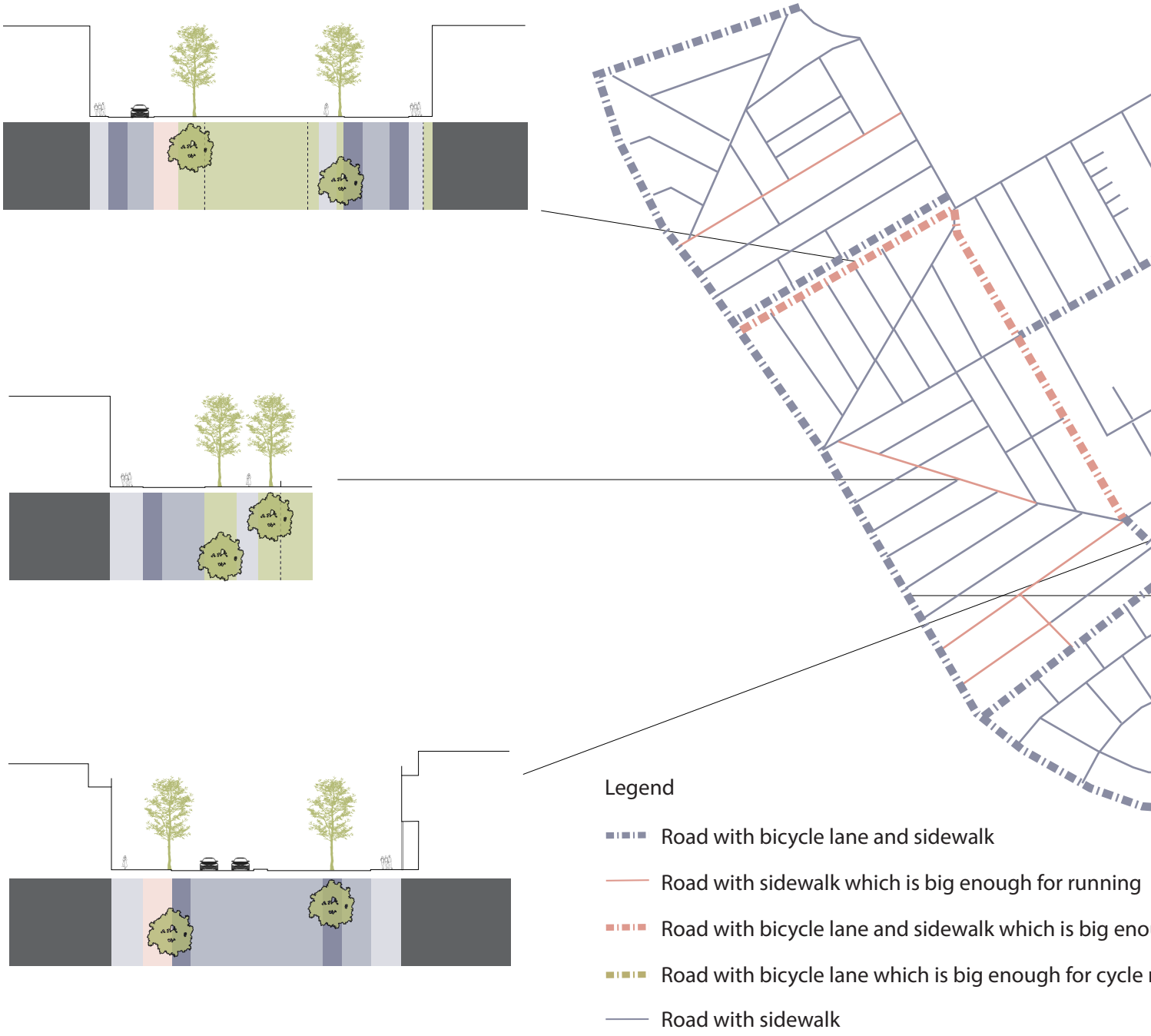


Figure 60: Shows a map with the type of roads and the possibilites for sporting outside, surounded by several street profiles and pictures showing examples of typical streets

APPARENT LIVABILITY

Apparent livability measures the goodness of match between species and environment. This is difficult to measure. For this research it is measured by observing the environment and how humans relate to it and behave. This method was chosen as it is doable in the given time and rather accurate.

Health and security

Health and security encompasses: mental health, physical health and safety. For this research the focus will be on the parts that can be influenced by the design of the public space. Thus the following subjects were chosen: Road safety, sporting facilities (indoor and outdoor), facilities helping inhabitants with mental problems or underlying factors and perceived safety.









ugh for running

racing and sidewalk

Opportunities for sporting in the streets

A rather minimal bicycle network runs trough the Schilderswijk making it a difficult place to cycle. Adding to this is the clear car dominance. Cycle racing is not possible as the bicycle lanes are too narrow. Broad or multiple sidewalks, ideal for running are present in some parts of the Schilderswijk. The network, however, is limited, making it difficult to find a suitable route. Furthermore, often the sidewalk itself has a decent size but obstacles are present which makes the size too small at certain points constantly disrupting a continuous run, making it unattractive. When performing fieldwork in the Schilderswijk at the end of summer, it was indeed observed that no runners where spotted during several days and times. The same is true for cycle racing. Although this is partly due to the poor circumstances, cultural factors also influence these outcomes. Nevertheless an improvement could, and should be made.



Figure 61: Shows sporting facilities

Sporting facilities

Plenty of outdoor sports facilities are available. These facilities are almost solely basketball of football fields. One outdoor gym can be found. Although the amount of sporting facilities is a positive aspect of the neighbourhood, more variation is needed in order to appeal to a broader group of residents. Not only personal preferences but also age is an important factor to consider. Football and basketball are both high impact sports that are more challenging when getting older.

Badminton, jeu de boules, chess or an outdoor gym would be more suitable sports for these age groups. Younger groups, especially males, do use the facilites intensively, both as a place to play sports and to socialize. Females, however, rarely use these spaces, which is partly culturally defined. Facilitating different sports might create more female oriented places, which would be benificial for the health of the citizens of the Schilderswijk. Indoor sport facilities are present throughout the area, and of sufficient quality.

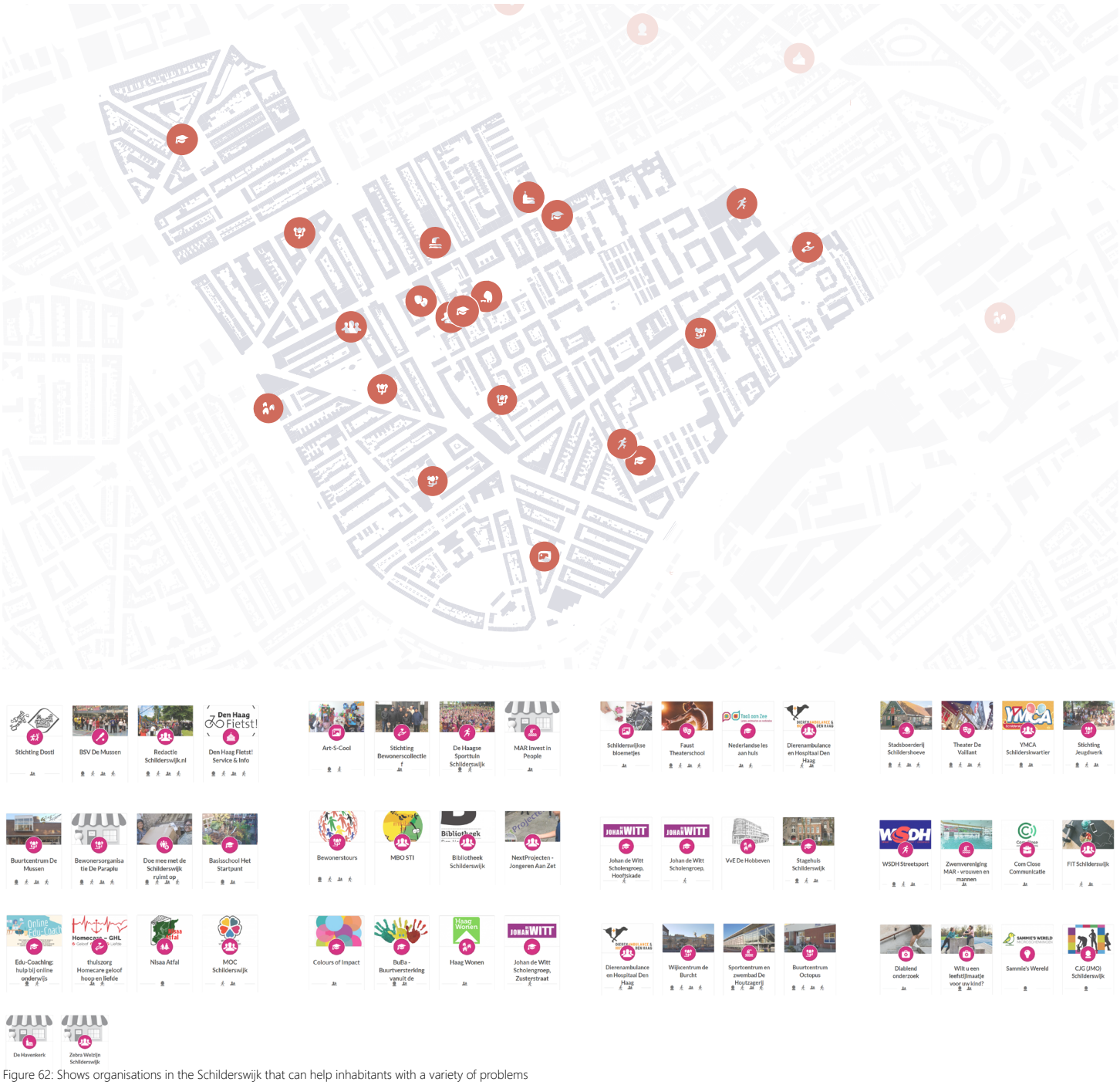


Figure 62: Shows organisations in the Schilderswijk that can help inhabitants with a variety of problems

Mental health

An extensive network of organisations is present in regards to mental health and its underlying factors in the Schilderswijk. Some organisations have programs for specific groups of people, such as: age groups, gender or cultural. Other organisations support in a broad context. The abnormally high amount of organisations can be explained by the reputation and social problems of the neighbourhood.







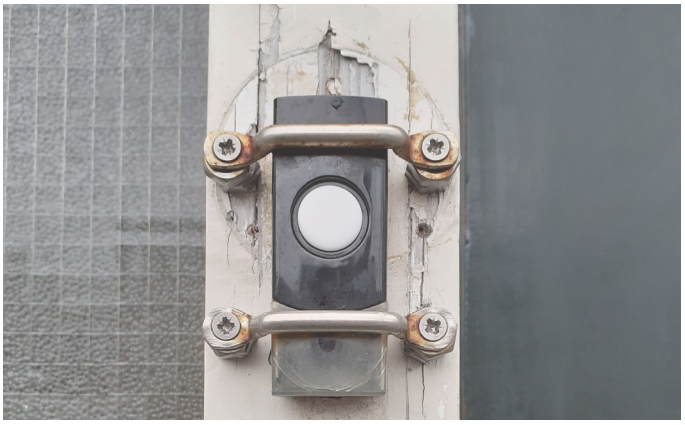






Figure 63: Shows signs of what gives people unsafe feelings in public space:

Traffic and perceived safety

Traffic is chaotic. Cars will stop to talk to people walking by. Cars will also park on the road with blinking lights on when one partner does groceries if no parking space is available, which blocks the street. Sometimes traffic situations are confusing, especially as a cyclist. Crossing streets is also not always easy. Finally, on the smaller roads there is too little space for a big car and cyclists to pass each other comfortably.

When visiting the Schilderswijk the amount of fences and locks is something that stands out and can give an unsafe feeling as one can assume they are there for a reason. Also signs of vandalism as well as trash on the streets amplify this unsafe feeling

Material prosperity and inequality

The material prosperity in the Schilderswijk at an individual level is below average. However, plenty of organisations are present to offer help, as well as a variety of shared facilities. An example would be the shared toys which can be freely rented at several playgrounds compensating for the individual lack of material prosperity.

Inequality in welfare is limited as the majority of the inhabitants has a below average income and lives in social rent housing. Home prices do not show large variations. Variations can be found in the types of shops present, yet the prices vary little and are on the low side. However, research has shown inhabitants do not necessarily want to move out when their income increases, providing opportunities to make the neighbourhood more varied.



https://architectenweb.nl/nieuws/artikel.aspx?ID=23083



https://www.staedion.nl/nieuws/tips-en-advies/2021/lekker-spelen-op-het-plein-met-haagse-hopjes-trans?locale=nl





Figure 64: Shows shared amenities in the Schilderswijk in the top two pictures, the bottom two pictures show the lack of variation in shop types

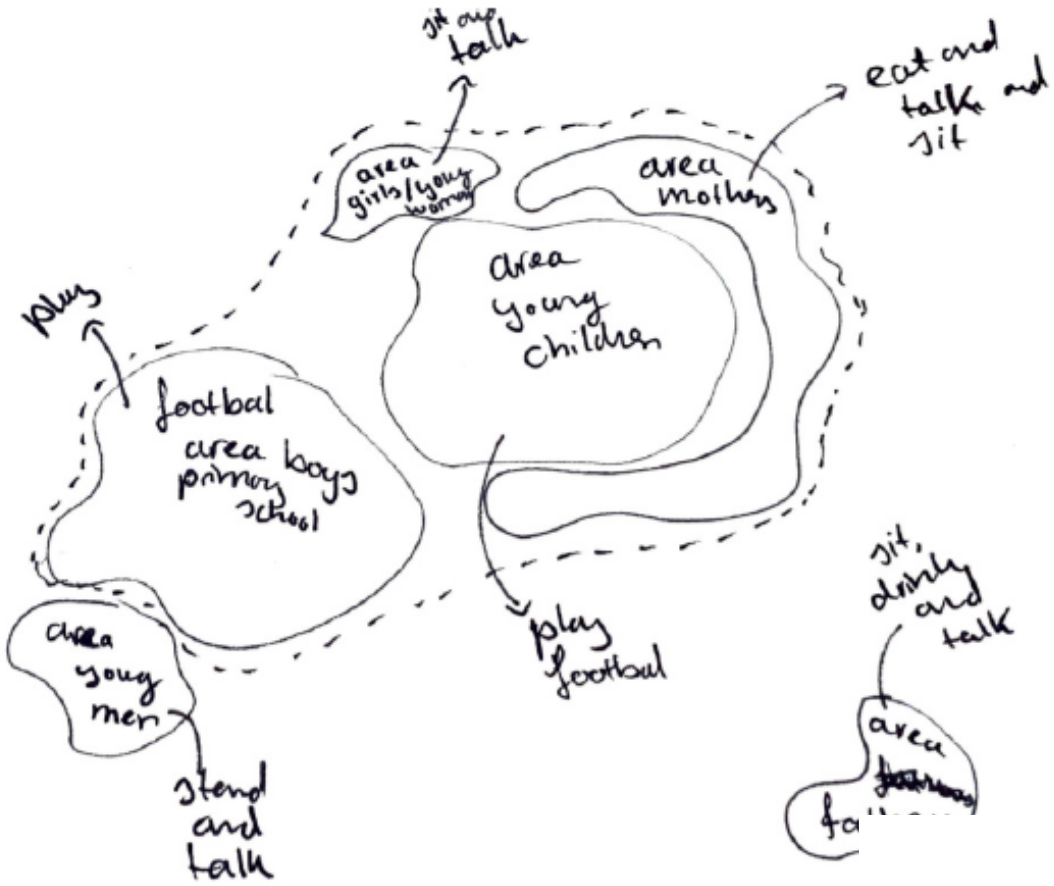


Figure 65: Shows the social system in and around the playground



Figure 66: Shows the social system in and around the shopping street



Social relations

Inhabitants of the Schilderswijk form groups based on different characteristics. Grown-ups form groups mainly based on etnicity and gender. Childeren form groups mainly based on age, gender and physical closeness. One of these characterstics is highly visible in the way public space is used, namely gender. First, one sees a diagram describing how different groups use the playground. For women it is a place to socialise with other moms. Small childeren will play together in the playground, while male adolescents group around the soccer fields. Fathers are nowhere to be found in the playground. Instead they gather at local cafés.

When analysing shopping streets similar patterns are found. While some shops are mixed, some shops are strictly male or female oriented, e.g. barbers or female clothes shops. Small playgrounds are again women's and children's domain. Cafes and bars are the places where man gather. Lastly, groups of man hang out on the streets, in front of local cafés or shops, claiming this space. It can be observed this sometimes gives females unsafe feelings judging by the distance some take when walking around them.

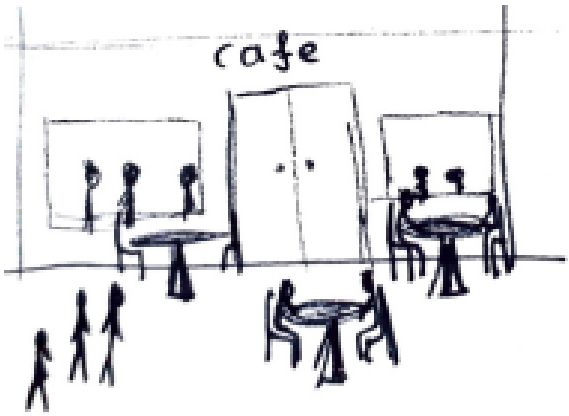
In these examples, one can see how men have more and more clearly defined spaces than women. Especially spaces for female adolescents, or women without childeren are missing.



Location: Playground

People: Woman, children, some female adolescents

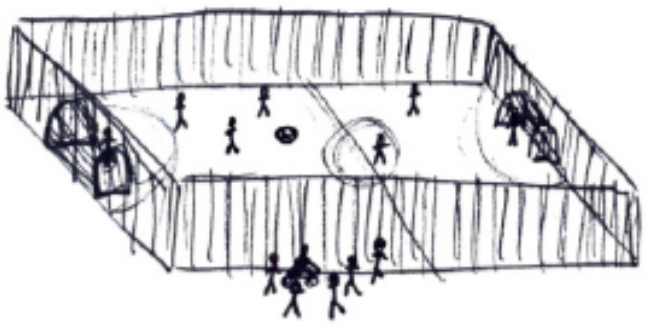
Activities: Woman socialise and eat together, children play and male children practise sports



Location: Café

People: Males

Activities: socialising and drinking tea



Location: Football field or cage

People: boys, male adolescents

Activities: boys are playing football while male adolescents watch and socialise



Location: Inside and around shops

People: All kinds of people

Activities: Shopping and socialising

Figure 67: Shows the different types of meeting places in the Schilderswijk

Location: In the streets

People: All kinds of people

Activities: Cars will stop to talk to pedestrians they know, usually shouting is involved given the distance.



Location: Buurthuis

People: All kinds of people

Activities: Socialising while participating in the organised activities varying form sports to cooking and language education



Location: Religious buildings

People: Religious people of all ages

Activities: Socialising and praying together. Depending on the religion males and females are seperated



Location: In front of shops and cafeé

People: Men

Activities: Socialising





Figure 68: Shows the semi-public and private spaces in the Schilderswijk

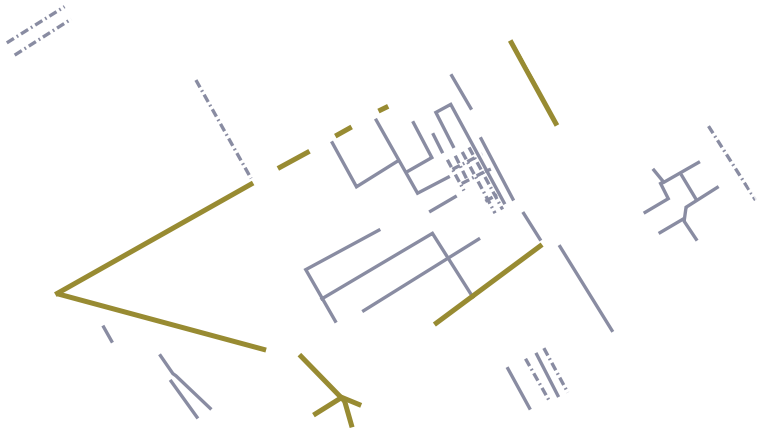


Figure 69: Shows the type of border between properties and the public space

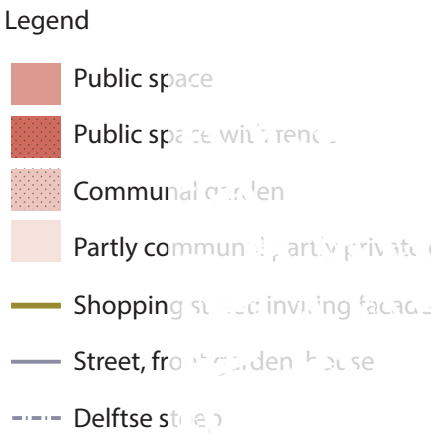
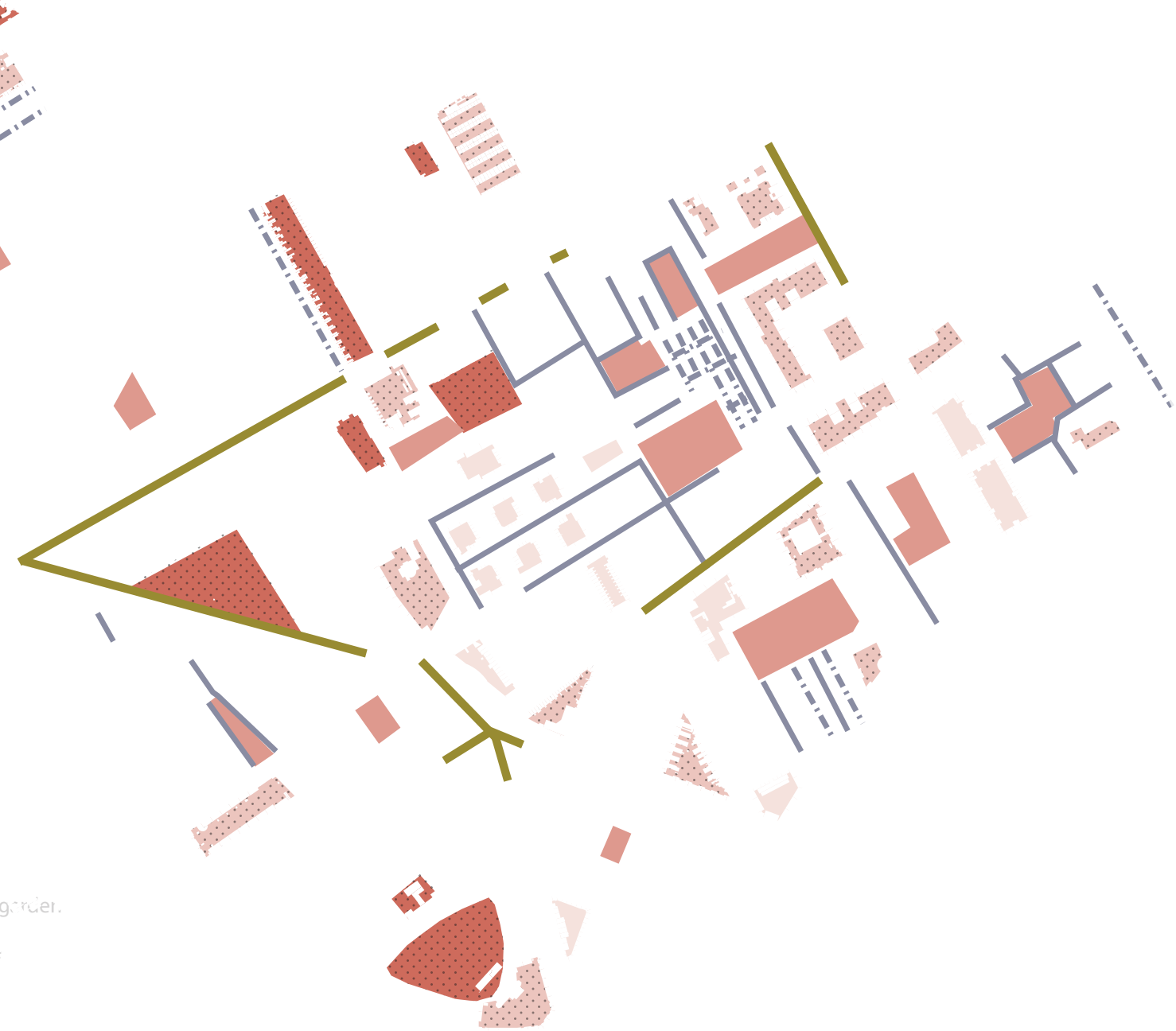


Figure 70: Shows the perceived publicness of spaces

Control on environment and amount of social interaction

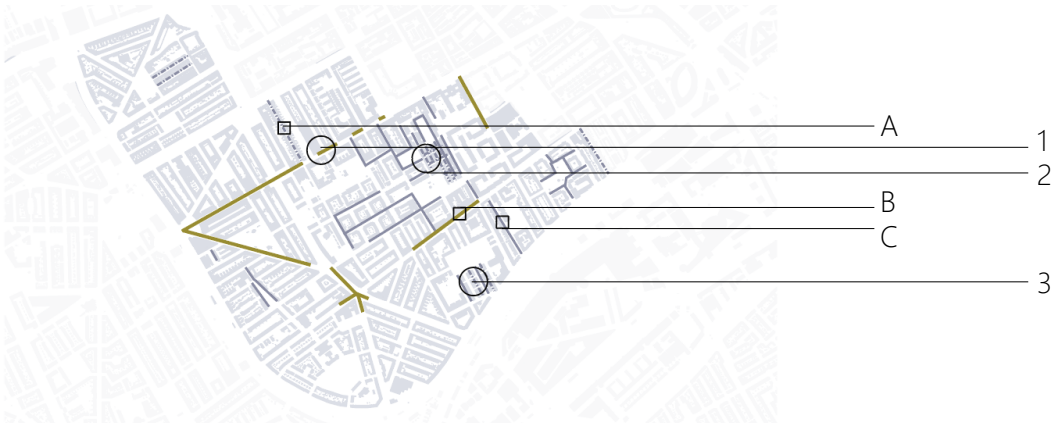
A dense network of public, semi public and private space is present in the Schilderswijk. Private outdoor space is mainly found on ground floors meaning only a small amount of residents have access. Communal gardens are a solution, and can also strengthen social networks within the neighbourhood. This, however, is if it is well designed. Another way of overcoming this problem is making gardens partly private, partly communal, which also has a positive effect on social interaction and gives people control on the amount of interaction they desire.

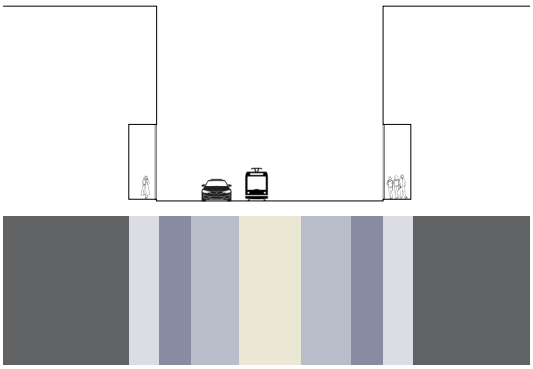
The type of distinction between public and private has a large effect on the amount of spontaneous social interactions. In the worst case scenario, the sidewalk borders housing immediately, without any space for a bench or some plants. Better is the Delftse stoep, where inhabitants have some space in front of their house to place a chair and plants. This encourages small talk when the weather is pleasant and people are outside. Even better



is when front gardens border the streets. The most ideal situation for social interaction would be the shopping streets, with open facades inviting people in. In the Schilderswijk, a large amount of shops are present, but not a lot of front gardens and Delftse stoepen. This is partly due to the housing type limiting the space and money for front gardens. However, some residents started claiming small parts of the pedestrian pathway, as well as adding personal expressions to the outside of buildings. Thus, a Delftse stoep would be possible at more places. The high criminality rates however will make it more difficult as benches may get stolen or trashed. On the next page pictures and sections of the Schilderswijk and the different types of distinctions can be found.

The complete network of public, semi public and private spaces is extensive and covers the middle and southern part of the neighbourhood to a large extent. The network in the northern part is less dense and could be strengthened.





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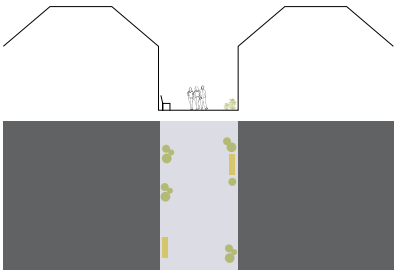
A



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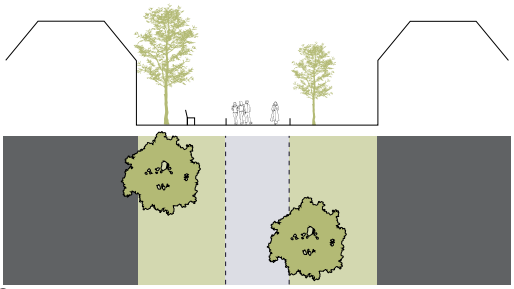
B



3



C

Figure 71: Shows different types of streets as examples of different amounts of publicness

















Figure 72: Shows places where citizens have taken ownership of a place



Figure 73: Shows the visibility analysis, where red means a high visibility

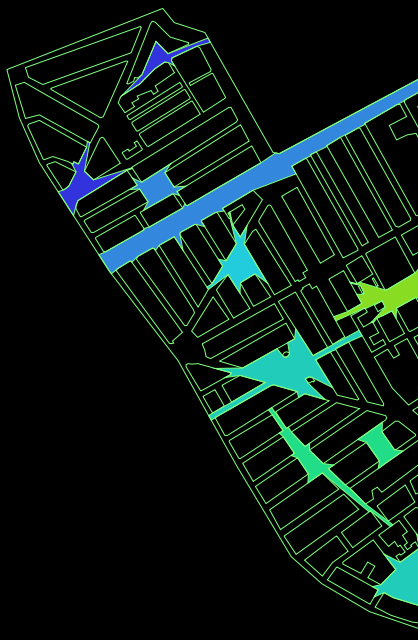


Figure 74: Shows the field of sight from the middle of the public spac

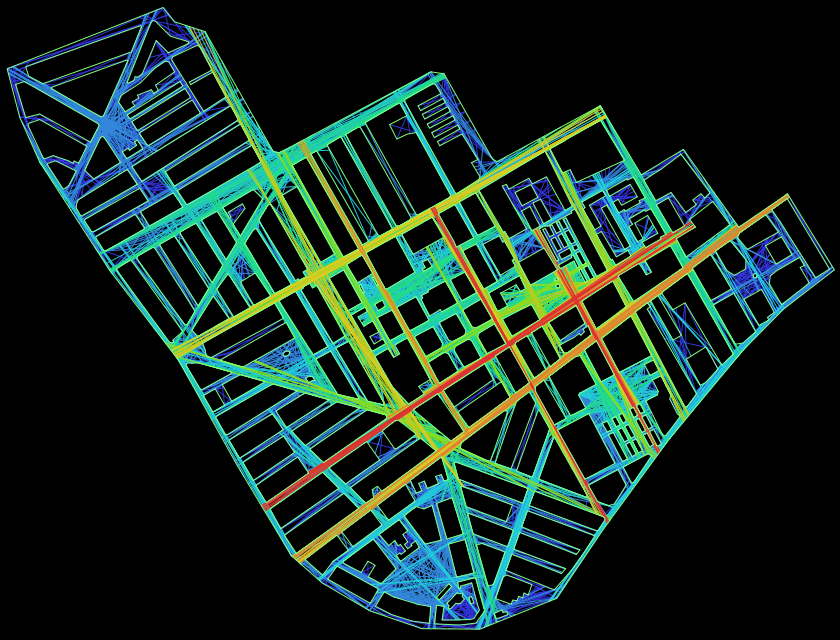


Figure 76: Shows the connectivity, where red stands for high connectivity

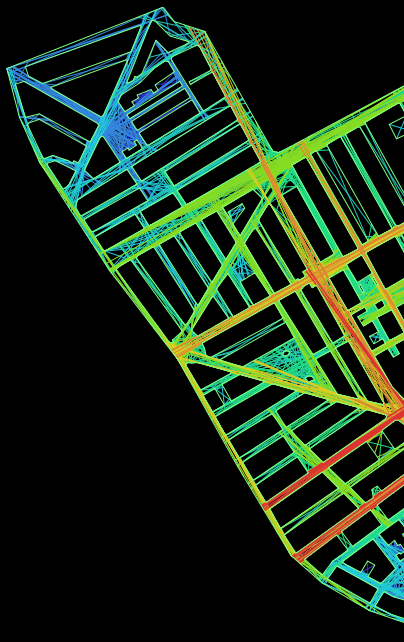


Figure 77: Shows the intergration within the network, where red stan

Space syntax

By using space syntax the street network as well as fields of sight can be analyzed. This gives an indication for how people are likely to walk through an area based on the layout. It can show where connections might not be obvious and need further strengthening. Figure ..... shows the sight lines in the area, showing that most shopping streets have an adequate visibility, as well as the bigger public spaces. The broad street in the northern part of the Schilderswijk would have the potential for identity making elements as it has both the space and visibility. When looking further in the sight fields form public spaces one can notice that from one public space usually no others can be seen. Also many of them are not visible from the main roads, making spontaneous encounters rare. One has to look for it to find the public space. When looking at movement through the area, one street stands out at being red. This street currently is mainly attractive for cars,



es

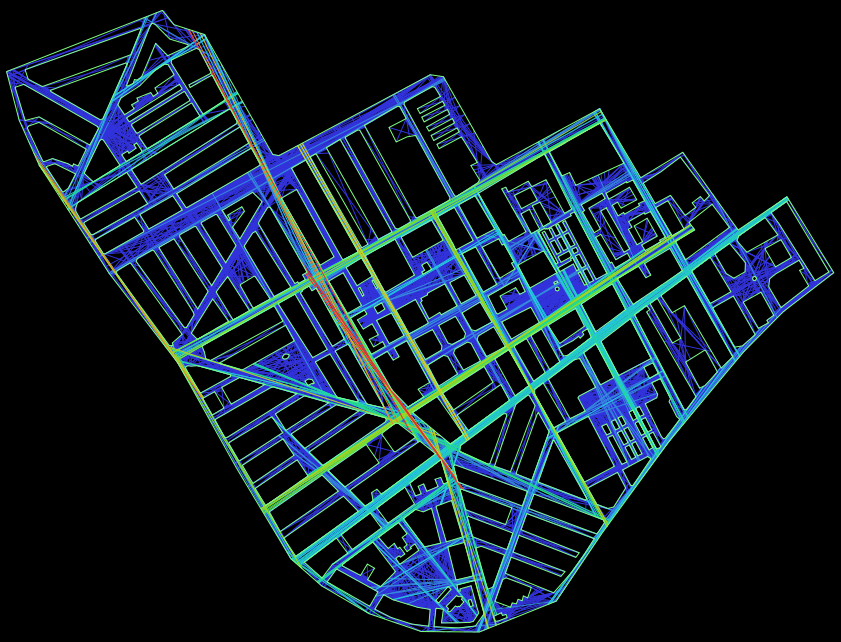


Figure 75: Shows how often a street is passed when going from a to b, where red means often



ds for a highly intergrated place

however given how it is a natural way to move through the area, it could be beneficial to make it more pedestrian and bicycle friendly. When it comes to integration and connectivity. The main streets perform well, including most shopping streets .













Figure 78: Shows instances where the space is easily readable, and in the bottom right corner an unreadable territory.

Readable territory

Generally territories are readable in the Schilderswijk. Fences clearly mark private property as well as limited access for motorised traffic. Furthermore, signs indicate expected behaviour and the function of places. One example where a space is not readable is the Westlandseplein which you see in the lower right corner. Here cyclists would continuously cross the square without being careful for children playing. It almost felt as a wide cyclist path given the usage. There were no height differneces to indicate the square having a different function than the surroundings. Not only is it dangerous, it leads to people to stop using the square as intended, further encouraging other behaviour.

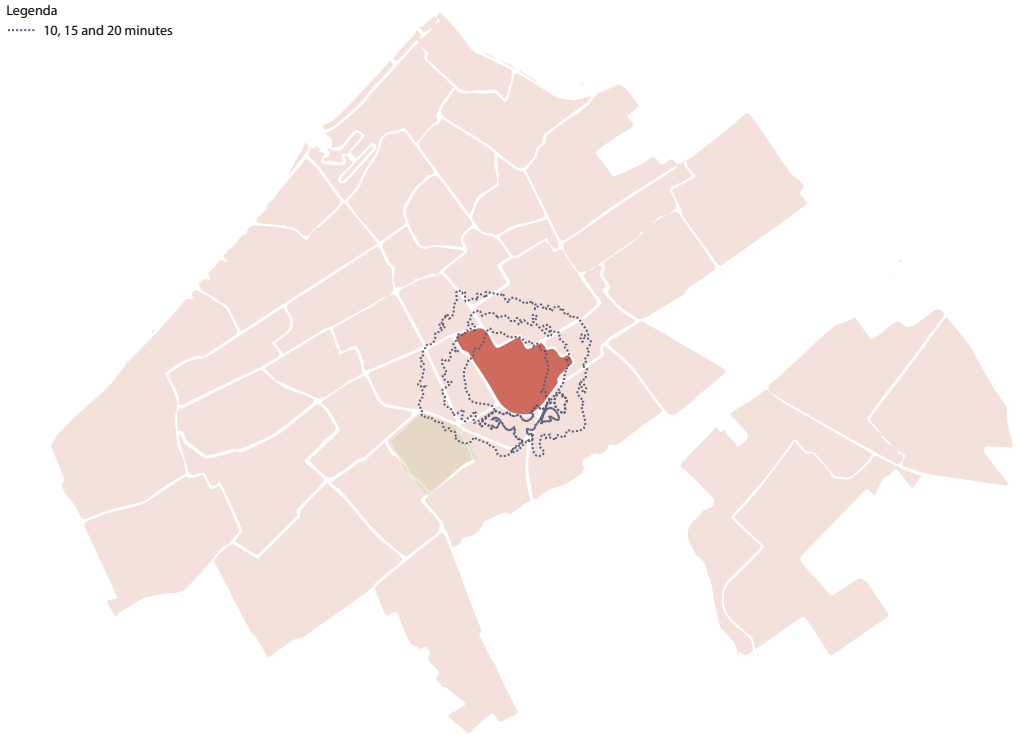


Figure 79: Distance that can be reached by foot in 10, 15 and 20 minutes and nature/greenery such a yourney would be worthwhile to. Made with data from (TravelTime Maps, z.d.)

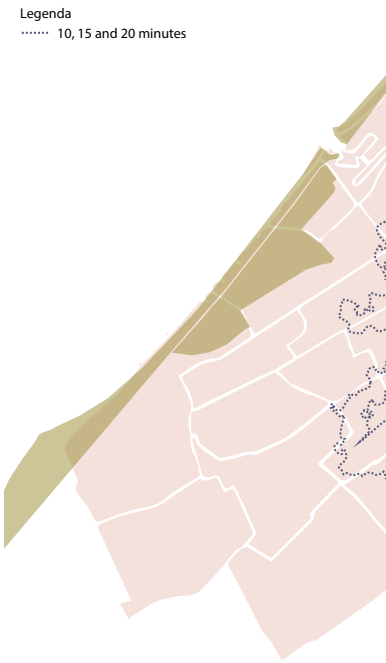


Figure 81: Distance that can be reached by public strans
with data from (TravelTime Maps, z.d.)

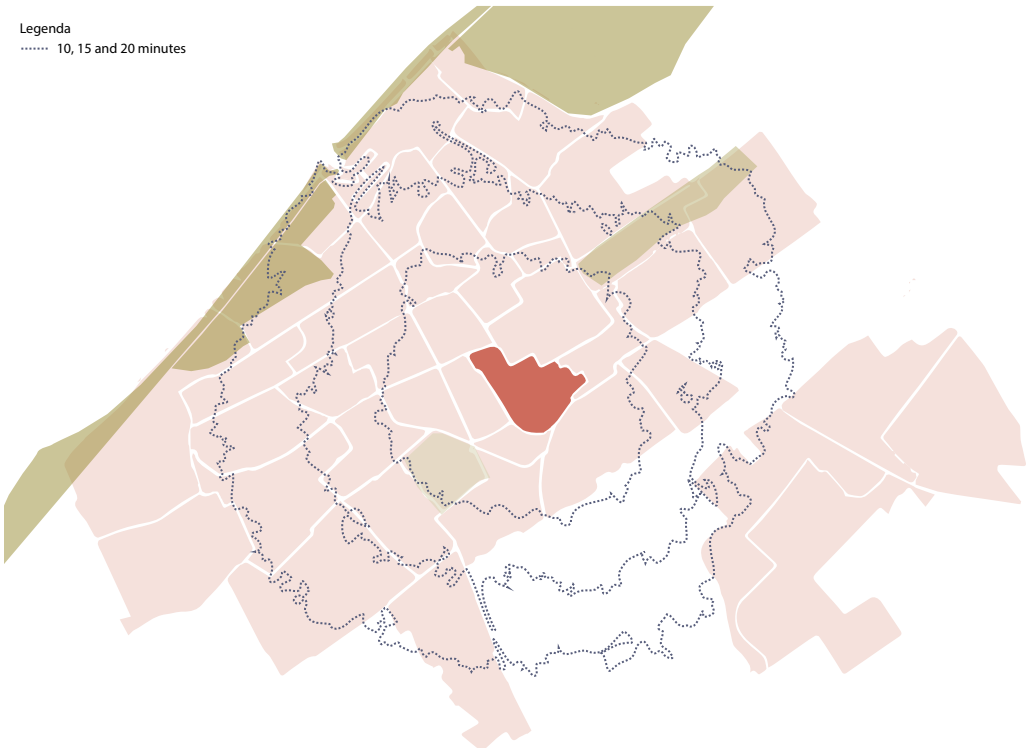


Figure 80: Distance that can be reached by bicycle in 10, 15 and 20 minutes and nature/greenery such a yourney would be worthwhile to. Made with data from (TravelTime Maps, z.d.)

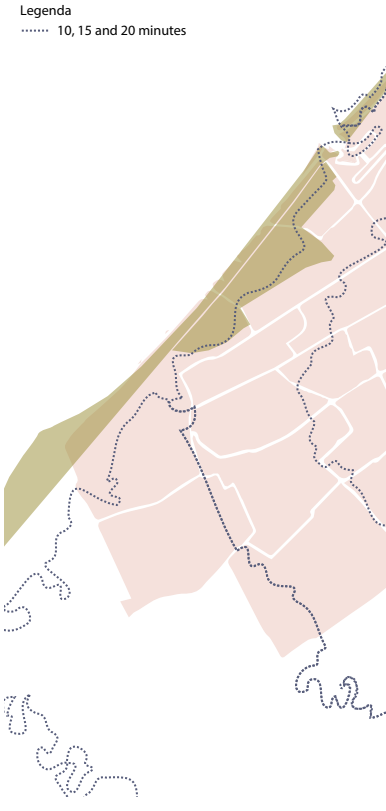
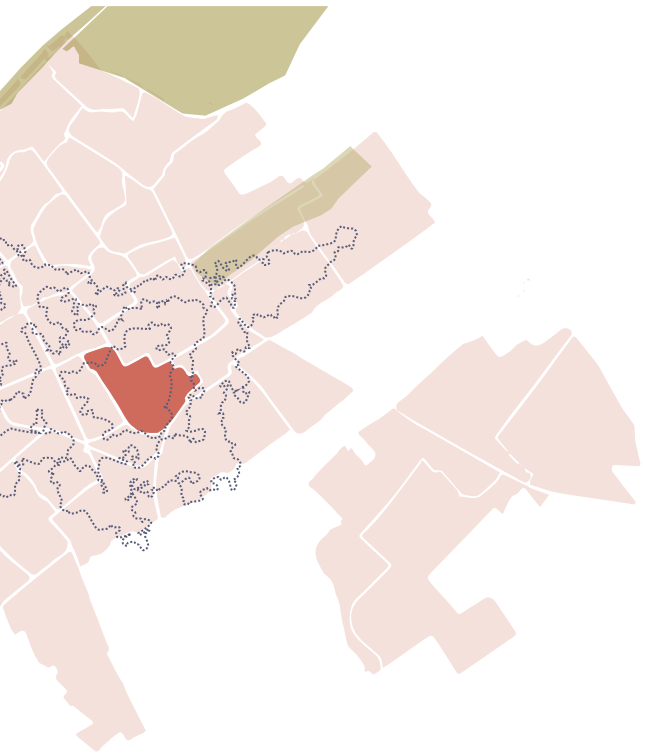
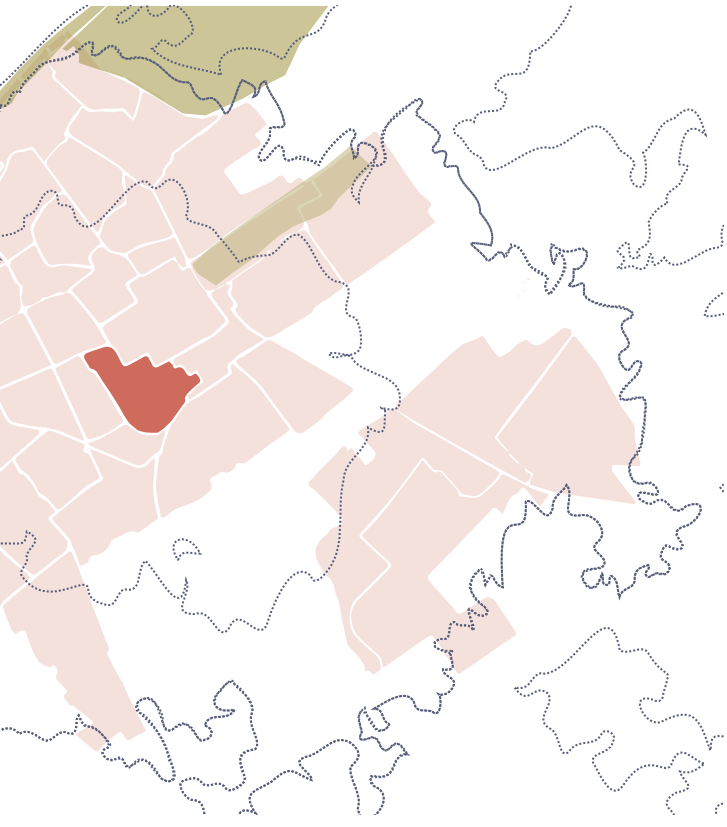


Figure 82: Distance that can be reached by car in 10, 15 a
from (TravelTime Maps, z.d.)



port in 10, 15 and 20 minutes and nature/greenery such a yourney would be worthwhile to. Made



nd 20 minutes and nature/greenery such a yourney would be worthwhile to. Made with data

Contact with nature

Distance to nature

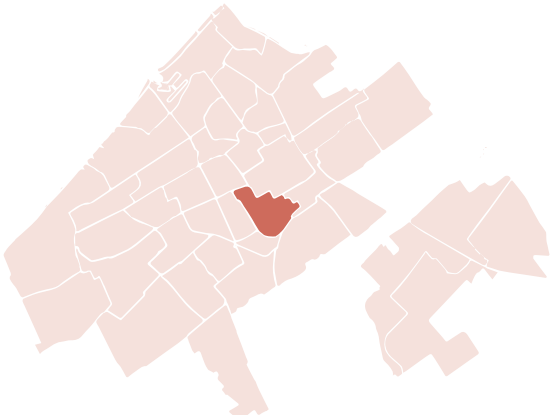
By foot it is not possible to reach a park of adequate size within 20 minutes. This has a negative effect on livability as it makes it difficult to take a short walk in a green space to clear one's head. Greenery available within the 20 minutes walking distance is small and of low quality.

By bicycle one can reach parks, forestry, dunes and the beach in 20 minutes. This is better than average as not only the areas are easy to reach, there is also a variety in types of areas available to choose from.

Reaching nature by public transport is doable, but difficult in 20 minutes. However if one would want to go to the beach by public transport it would take 30 – 45 minutes which is still better than at most places and therefore not problematic

Plenty of natural areas can be reached by car in 20 minutes. Both the quality and the variety are high.

Concluding: the amount of nature and greenery that one can reach by bicycle, public transport and car is sufficient. However, nature or greenery that is reachable by foot is lacking.

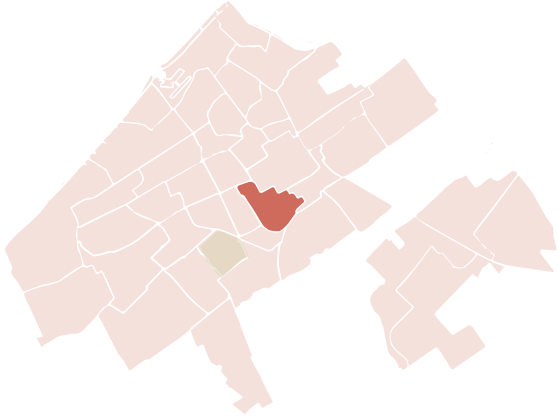


Soundscape
Visually secluded
Ammenities
Size





Figure 83: Shows an analysis of the parks within the Schilderswijk. All photos are retrieved from Google Maps



Soundscape
Visually secluded
Ammenities
Size



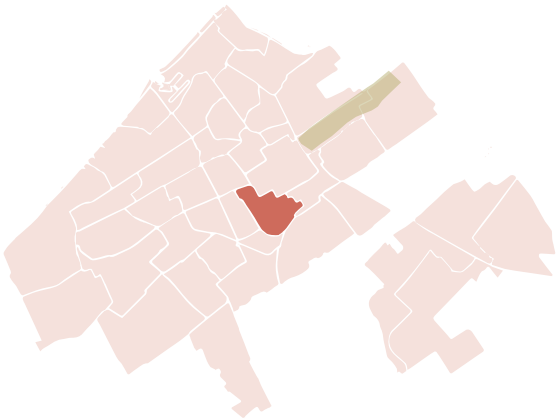


Figure 84: Shows an analysis of the parks close to the Schilderswijk. All photos are retrieved from Google Maps

Quality of nature

The greenery within the Schilderswijk is small and of low quality. One will hear the sounds of cars, screaming children as well as other non-natural noises. Next to hearing city noises, one will also see buildings at all times. Positive are the amount of amenities present, especially for children. The quality of green areas in the Schilderswijk likely leads to a lower apparent livability.

The Zuiderpark is the park closest to the Schilderswijk. It has many amenities, a good size and one will not be able to hear city noises or see the city when being in the middle of the park. Around the edges this is different. The quality of the Zuiderpark likely has a positive effect on the apparent livability of the Schilderswijk.



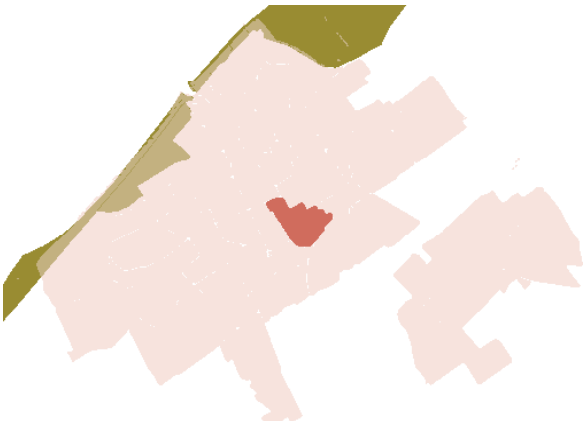








Figure 85: Shows an analysis of the forests in/around The Hague. All photos are retrieved from Google Maps



Figure 86: Shows an analysis of the beaches and dune areas in/around The Hague. All photos are retrieved from Google Maps

The Haagse Bos is the closestby forest. It is sufficient in size to take a nice stroll, feels secluded in the middle, yet very urban around the edges. Amenities are low, especially for children. The quality of the Haagse Bos likely has a small but positive effect on the apparent livability of the Schilderswijk.

The dune and beach areas are big enough to take a several hour long walk. Especially the dune areas feel secluded and provide soundscapes. Basic amenities are present in dune areas, while plenty of amenities are present close to the beach. The quality of the dune and beach area has a positive effect on the apparent livability of the Schilderswijk.

PERCEIVED LIVABILITY

In order to measure the perceived livability, questions will be asked to professionals working in the Schilderswijk in community centers and other help organisations. The questions will be about the behaviour and perception of the inhabitants. Where possible it will be asked to make the answers spatial by drawing them on a map.

Preparations, what to bring:

- Printed interview
- Notebook
- 5 printed maps
- Pen
- 5 different colour markes
- Sticky notes

Questions:

General:

- What is you current occupation?
- What were your previous occupations?
- Do you live in the Schlderswijk?
- What is your age?
- What is your, and your parents' nationality?
- As which gender do you identify?

Health and security

- Are inhabitants of the Schilderswijk able to find your and other organisations that can help them when needed?
- Do people walk, run and cycle in the streets? Are there specific places you could indicate on the map and explain why it does or does not happen?
- Do people do sports in their free time, and if so, is this sufficient to have at least 30 minutes a day of physical exercise?
- Are there specific groups who do or don't exercise? Could you explain why?
- Are the streets generally safe? Are there any problem areas you could indicate on the map?
- Do people feel safe in the Schilderswijk? What are problems related to safety and how do they maifest spatially? could you draw it on the map? Why do these spaces feel unsafe?

Material prosperity and inequality

- Is there poverty in the area and does it exclude people from participating in social life? e.g.

children not being able to do sports

- Are sufficient initiatives present that help inhabitants with their material prosperity? e.g. debts
- Are there big differences in material prosperity?
- Are people generally happy?

Social relations

- People tend to hang out in groups, what are these groups based on? (Are these groups mainly based on gender, cultural heritage, age, hobbies, education level or all of the above?)
- Is there sufficient tolerance between different groups?
- Could you indicate specific places on the map where specific groups hang out?
- Are there strong informal networks within the Schilderswijk?
- Do people have friends and acquaintances in the neighbourhood?
- Is there a lot of social control in the neighbourhood?
- How are male female relations in the neighbourhood?

Control

- Do inhabitants have control on what their neighbourhood looks like? Does the municipality listen to their ideas?
- Is there a good balance between public and private space?
- Are there sufficient meeting places in the Schilderswijk?
- Do inhabitants have enough control on the amount of social interaction they have during the day? Can they have a quiet day if required? Are people lonely or do people find it too busy in the neighbourhood?
- Do the public spaces meet the needs of inhabitants? Could you indicate on the map which do and which don't and explain why?
- Is it possible for inhabitants to adjust public spaces to their needs if required?

Contact with nature

- Do inhabitants visit nature in and around The Hague? If so, which nature do they appreciate and why do they or don't they appreciate which nature?
- Are the parks in the neighbourhood experienced to be of a sufficient quality? If not, which parks should be improved and what should be improved?

Public space design:

- Are there any problems you could indicate on the map that I have missed?
- Could you indicate qualities on the map?
- Are there needs in public space that are currently not met?
- What kind of identity would be appreciated by residents for the area? How does this work with respect to cultural differences?

- Is there anybody else you would recommend me to interview?

Analysing observations from the Schilderswijk moeders have led to the following conclusions (Schilderswijk moeders, 2020):

Health and security

- Inhabitants are sometimes afraid to go towards official help organisations as they do not have sufficient trust in them. Semi-formal networks are found which can help bridge the gap between those in need of help and official organziations.
- An increase in domestic violence concerning both males and females is observed

Material prosperity and inequality

- Residents do not always understand how to manage their money and which funds are available for them. This is partly due to language barriers

Social relations

- Social networks are partly based on ethnicity
- Some groups are overrepresented in their ask for help, especially Ghanese, Syrian and Somalian women. This corresponds to the image on the streets where these groups are hardly visible.

From the research towards residents' wishes when re-designing the Hoefkade the following was found (FTB projectbegeleiding, 2021):

Health and security

- Residents would like the social saftey to improve. Problems are men sitting on streets and benches as well as junks and drugs dealers. Intimidation is especially felt by women.
- Too much waste is on the streets attracting rats and antisocial behaviour
- At some places there is so much placed on the sidewalk people feel the need to walk on the road instead
- More pedestrian crossings are needed to cross the streets safely
- Cycling is not perceived to be safe throughout the whole Schilderswijk. This should be improved. when encouraging cycling think about places to park the bicycles as well
- Better lighting is needed
- Criminal activity makes residents feel unsafe.

Social relations

- Shops all work on their own instead of working together towards a shared identity for the shopping street, even though the need for a clear identity of shopping streets is desired by shop owners as well as residents
- On the Hoefkade more meeting places and small playgrounds are required, where playgrounds also serve as meeting places for mothers
- More places for kids in ages 10 - 15 are needed, preferably seperated for boys and grils
- Allow for games on the street, for childeren, grown-ups and the elderly
- Connect shopping areas within and just outside neighbourhood with each other

Control

- Ceramics as a material for benches would be nice as it allows to express an identity
- Some distance between sidewalk and homes would be prefered to have a softer boundary
- More colour in the neighbourhood to express identiy
- Walls that childeren can draw on are wished for
- Give the same "terrasvergunning" to all restaurants to allow for a uniform feeling as well a continued path for pedestrians

Contact with nature

- Residents would like more greenery: both plants and flowers and a diversity of both while allowing for a uniform style
- Preventing heat stress as well as other climate adaptive measures need to be taken

General:

- Works as wijkmaganer Schilderswijk for the municipality of The Hague
- Worked before on stadsdeel Haagse Hout for the municipality of The Hague
- Lives outside The Hague
- Between 40 and 60 years old
- Dutch
- Male

Health and security

- Inhabitants can find unofficial and voluntary organisations, usually not the official organizations due to language barriers
- People rarely run and cycle in the streets mainly due to cultural background, some people ask to improve possibilities
- Childeren and youngsters often practise sports, grown-ups do not.
- Streets are not always safe. problem areas are: Vaillantlaan, Hoefkade, Heemstraat, Hobbemastraat
- People generally feel safe in the Schilderswijk, not always at the Hoefkade due to men being there doing nothing.

Material prosperity and inequality

- Income is low, cilderen are sometimes excluded form social activities due to income. People do have unofficial jobs, but not enough to make income significantly higher
- Sufficient initiatives are present to help inhabitants
- Some differences are present in prosperity, but not a lot
- People live there happily, comfortable that they do not have to speak Dutch

Social relations

- People form groups based on ethnicity, age and gender. Less strict for kids and youngsters
- Inhabitants experience there is sufficient tolerance between different groups
- Moroccans are dominant group in streets and organisations. Turkish people live more in Transvaal and around the Tenierplantsoen
- There are strong informal networks based on ethnicity, family and religion
- People have many friends and acquaintances living in the neighbourhood.
- There is strong soical control within groups and informal networks
- Often males are dominant within Moroccan and Turkish communities, which is not experienced to be a negative thing by inhabitants

Control

- Inhabitants often feel like the municipality does not listen well to inhabitants
- As the population density is extremely high, there is a high pressure on public space. However, semi-public spaces are not used often
- There are sufficient meeting places in the Schilderswijk
- Inhabitants cannot have a quiet day, they will always run into someone
- Public spaces partly meet inhabitants' needs as inhabitants are demanding when it comes to public space. They want everything to be close and with many amenities, while already many amenities are present. Paticipation is difficult as residents do not make the effort to do so. The Delftselaan was recently updated to meet inhabitants' needs, and they are pleased with the result. The Hobbemaplein is a place that mainly entrepeneurs are unhappy about.
- People can make changes to public space by means of participation

Contact with nature

- Inhabitants rarely visit nature in and around The Hague
- Residents are happy with most parks as they mainly care about the amenities. While the municipality also appreciates empty spaces as they are multifunctional, the inhabitants would like more

playgrounds or sport facilities. An example where this field of tension becomes visible is the Jacob van Kampenplein

Public space design:

- Inhabitants want more parking spaces, while municipality want less car dominance. Inhabitants do not like to cycle and sometimes also cannot cycle. Furthermore, waste on the streets is a problem perceived by both residents and municipality.
- Strong points are the location, availability of public transport and the rich cultural heritage of inhabitants
- Inhabitants want a different image of the neighbourhood. One of the reasons that this image is so strong is that all problems in the Centrum district are projected onto the Schilderswijk by media. Also media often takes Schilderswijk as an example if problems are taking place throughout the Netherlands. The neighbourhood is actually warm and welcoming. For the Hoefkade there is an interest in a 1001 night theme. However there currently is a problem with male dominance, partly due to male functions such as barbers or coffee houses, which makes females feel unsafe.

General:

- Senior opbouwwerker by buurtcentrum de Octopus
- Participatiemedewerker at buurtcentrum de Octopus
- Does not live in The Hague, did grow up close to the Schilderswijk
- between 20 and 35
- Parents are Dutch and Capeverdian
- Female

Health and security

- Inhabitants are able to find help organisations
- Men sometimes fast-walk on the streets as a way to get exercise
- Woman sport inside, man do fitness, (male) children sport outside. People do get 30 minutes of practise just by completing daily tasks.
- Streets are generally safe but this could be better. Car dominance is clearly visible
- Inhabitants feel safe in the Schilderswijk
- Inhabitants are not happy with changes to the car accessibility of the Hoefkade
- Diabetes is a problem

Material prosperity and inequality

- Inhabitants have a low income that may lead to exclusion
- Inhabitants can find organisations that can help them, furthermore, activities at buurthuizen are free for everyone
- Little differences are present in material prosperity
- Inhabitants are generally happy

Social relations

- Groups that inhabitants hang out with are based on age, language and in some cultures gender. For childeren it is mainly based on physical closeness, cultural heritage and age.
- Inhabitants feel there is sufficient tolerance between different groups
- Strong informal networks exist based on hobbies, religion, schools and interests
- Inhabitants have lots of friends and acquaintances within the neighbourhood
- There is social control within the neighbourhood but not when it comes to waste on streets

Control

- Municipality listens to inhabitants but because processes at the municipality go so slow, inhabitants do not see results quickly enough and have the feeling of not being listened to
- There is sufficient public space present in the Schilderswijk
- Inhabitants always run into someone, it is not possible to go outside and have a quiet day
- Inhabitants often ask for more greenery and sometimes amenities
- Inhabitants do not feel able to adjust public spaces to their needs

Contact with nature

- Youngsters visit nature in and around The Hague, but these visits are relatively rare
- Parks within the Schilderswijk are experienced to be sufficient in quality

Public space design:

- The largest problem in the Schilderswijk are prejudices
- Qualities of the Schilderswijk are: the location, the inhabitants' kindness and willingness to help, participation, amenities and the Haagse markt.
- A new identity for the Schilderswijk could focus on all qualities that its inhabitants posess, they are kind, helpful, hospitable and willing to participate. Cultural richness is also a quality, but it would not be helpful to make the identity about a specific culture
- You could also interview Driss from mosque El

Islam.

- Westlandseplein is in urgent need of a renovation. the municipality started on the project but it goes slow, and funding is problematic. Residents are not happy with the long wait.

General:

- Voluntary work at the MOC at the Voedselbank
- Voluntary work at the MOC at the creative women's café
- She lived in the Schilderswijk until 3 years ago
- Around 50 years old
- She was born in Morocco and lived there until the age of three
- Woman

Health and security

- People can find organisations when needed
- People go to Zuiderpark to run and walk. People do not sport on the streets in the Schilderswijk. Also especially women prefer indoor sports
- People with the exception of elderly get enough daily exercise
- Streets are not always safe as they are very busy
- Criminality is a problem in the Schilderswijk and makes people at times feel unsafe
- Many people suffer from diabetes

Material prosperity and inequality

- Organisations offer many activities for childeren in the neighbourhood for free or small prices. It used to be more which was better, but what is there is still appreciated
- There are no big differences in material prosperity within the neighbourhood
- People generally are happy. First generation immigrants love to live in the Schilderswijk as they can live there without speaking Dutch fluently and all their contacts are closeby. Younger generations would sometimes prefer to live in other places.

Social relations

- How social groups are formed is dependent upon the age of the inhabitants. For first generation inhabitants social groups are mainly based on gender, and language. They know people from the mosque, family and neighbours. For the younger generation they mainly know people from work or school.
- There is sufficient tolerance between different groups, although there can be problems as times as you see within the whole society
- There are strong informal networks within the Schilderswijk
- Inhabitants have friends and acquaintances within the Schilderswijk
- Men and women meet each other at different places. Woman do not go to cafés, while men usually are not found in playgrounds. Women tend to meet in the mosque, playground (also when children are older), restaurants and community centers

Control

- The municipality asks neighbours for input, yet they did not seem to listen very well in the past
- No complaints about the amount of public space available
- It is always busy in the Schilderswijk, a having quiet day is nearly impossible
- The Vermeerpark is an example of a highly appreciated public space. Some other public spaces are less appreciated wich has to do with rubbish being dumped there, disturbances from scooters and assigning unsuitable functions to public spaces for inhabitants living closeby. Part of the rubbish problem comes from people "feeding" bread to the birds as it is culturally inappropriate to throw it away
- It can be difficult to make changes to public space if desired as the process is too complicated for inhabitants

Contact with nature

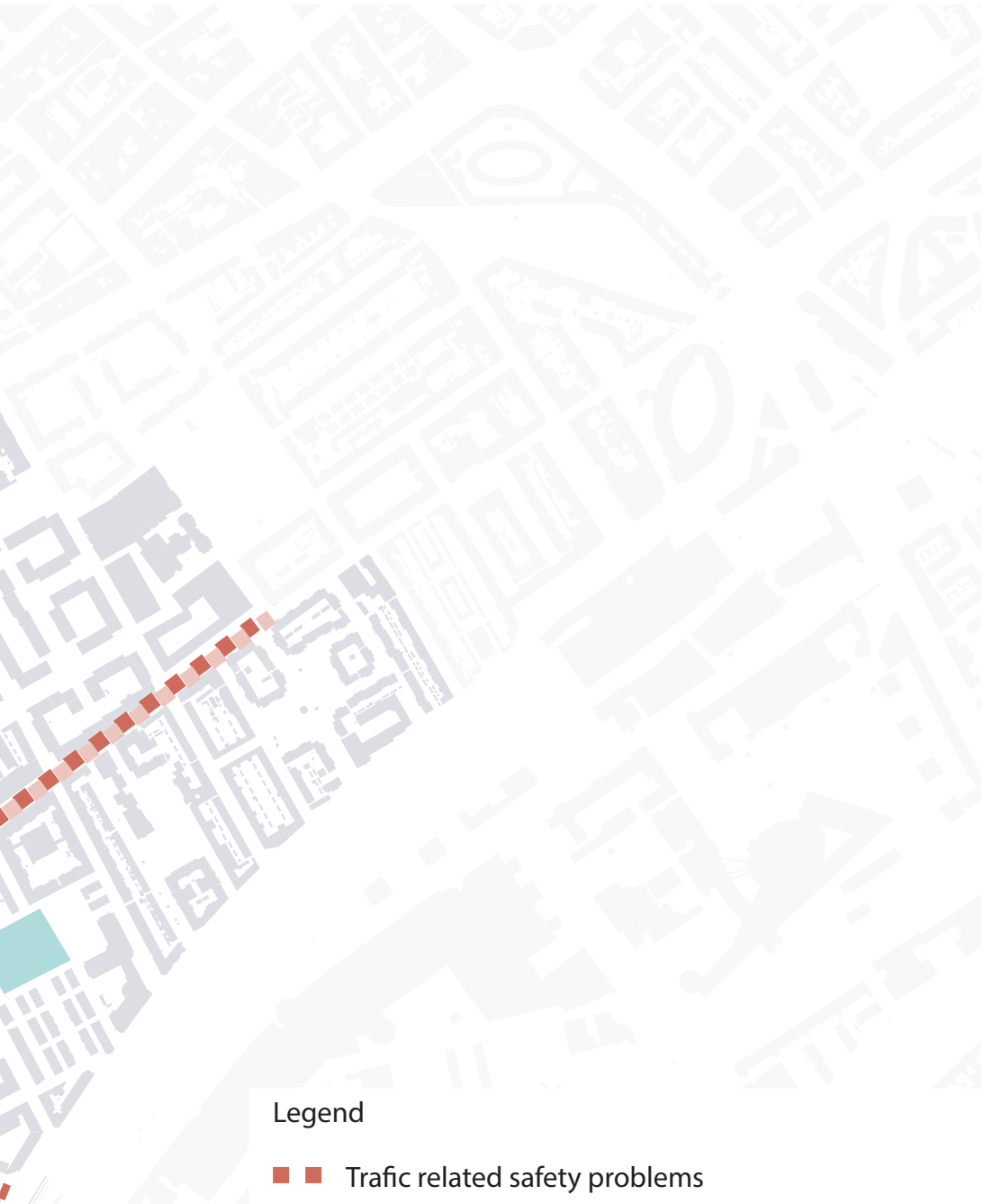
- Inhabitants visit the Zuiderpark
- There is a lack of greenery in the Schilderswijk. Trees and plants are desired to give some more colour to the place. Other means of giving colour such as painting benches or walls would also be appreciated. The parks within the Schilderswijk are okay.

Public space design:

- Qualities of the Schilderswijk are that it is centrally located and lots of amenties are present
- Weaknesses are that it is too busy and does not attract people.
- The reputation is a problem as it does not match reality. When telling people you live in the Schilderswijk they have assumptions about your personality and living condition. A more suitable reputation would be hospitality and the possibility to get a taste of different cultures.



Figure 87: Shows the places the interviewee pointed out during the interview



Legend

- Trafic related safety problems
- Social safety problems
- Public spaces with low appreciation of inhabitants
- Public spaces with high appreciation of inhabitants
- Area where mainly people from Dutch heritage live
- Area where mainly people from Hindu heritage live
- Area where mainly people from Turkish heritage live

Remaining are areas where mainly people from Moroccan heritage live



Figure 88: Shows the conclusion map for livability in the Schilderswijk

CONCLUSION LIVABILITY



The road safety should be impoved and more space should be made for slow traffic

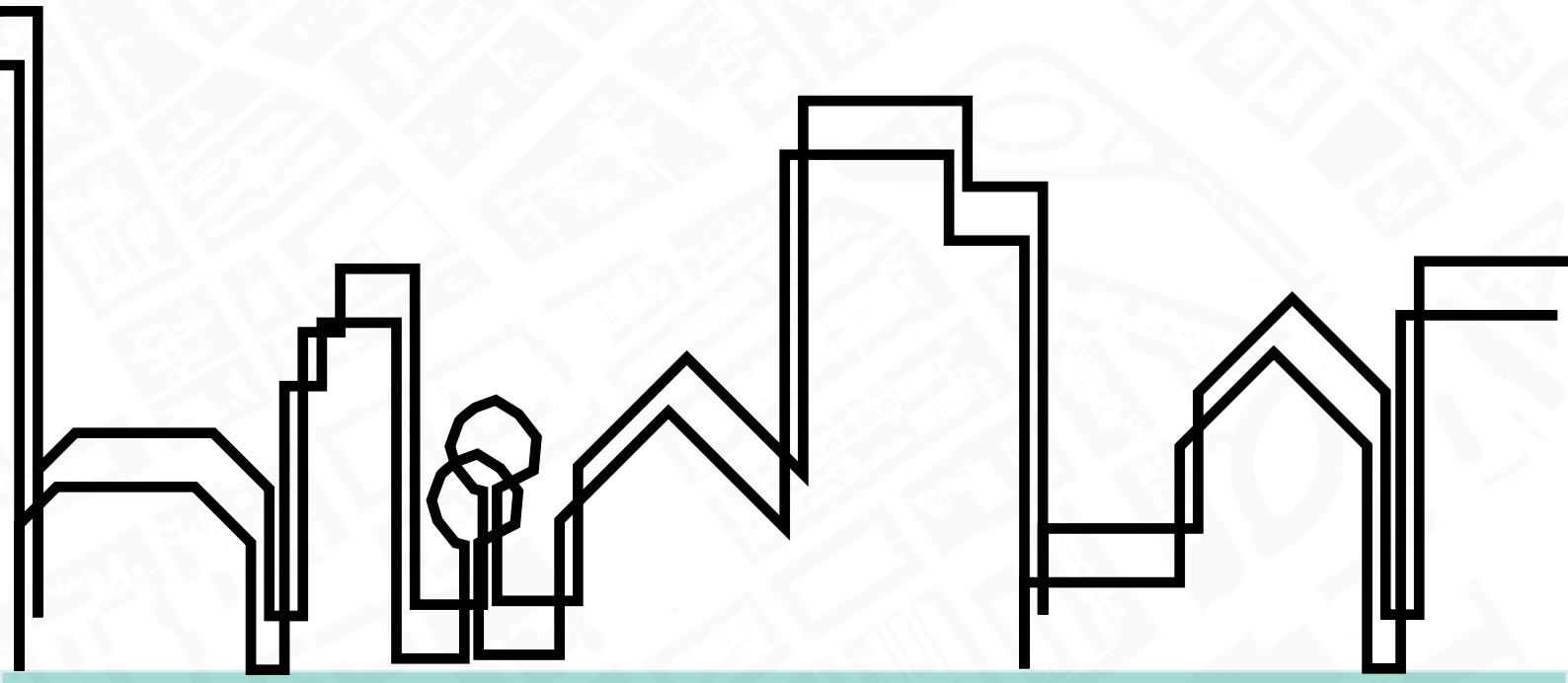
Facilitate high quality meeting places for all different groups of inhabitants

Make spaces more readable in terms of direction and owner-ship and give residents some more control

The reputation of the Schilderswijk is in need of improvement



CHAPTER 6:



RESEARCH BY DESIGN

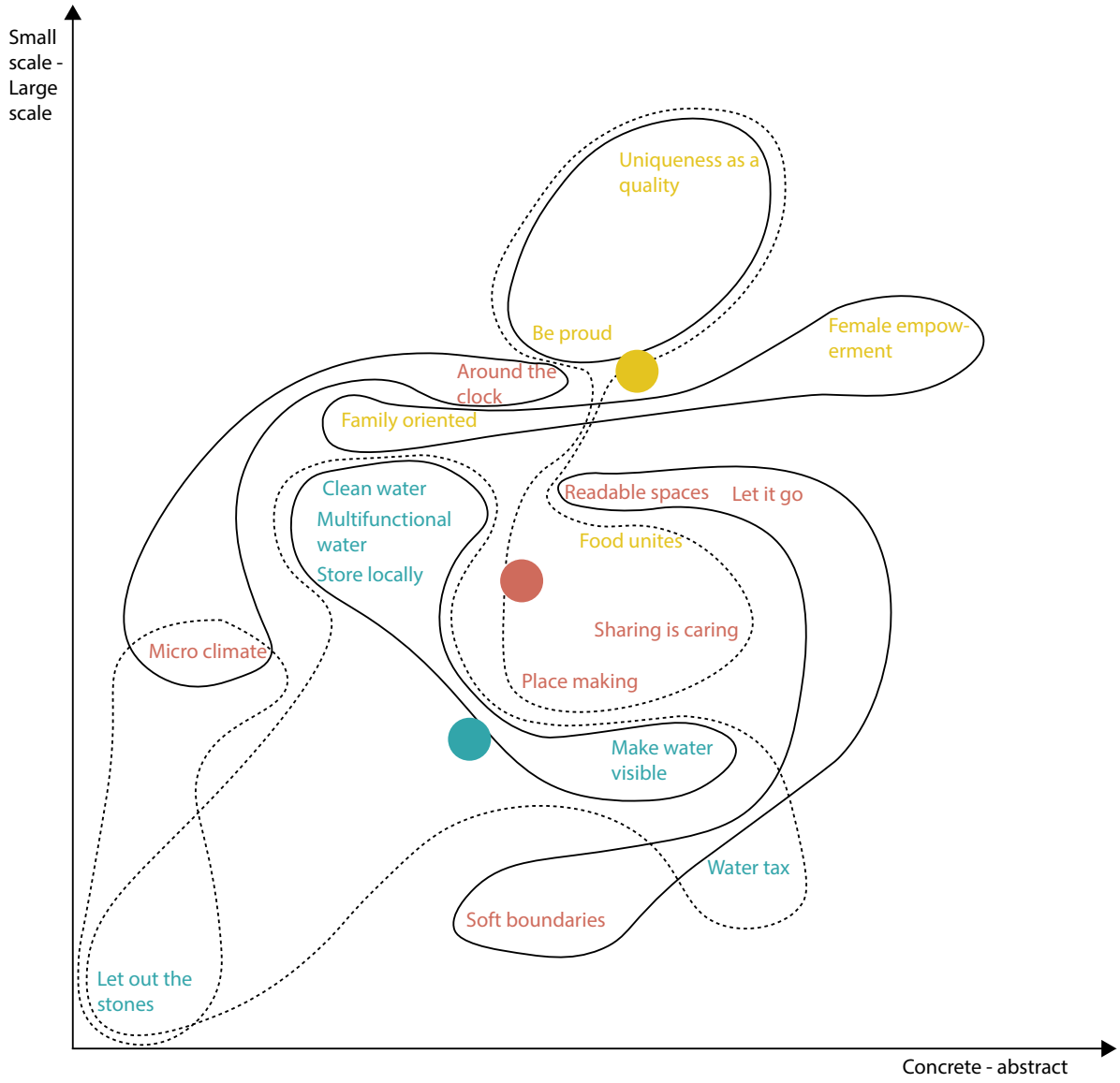


Figure 89: Shows the relation between the different patterns

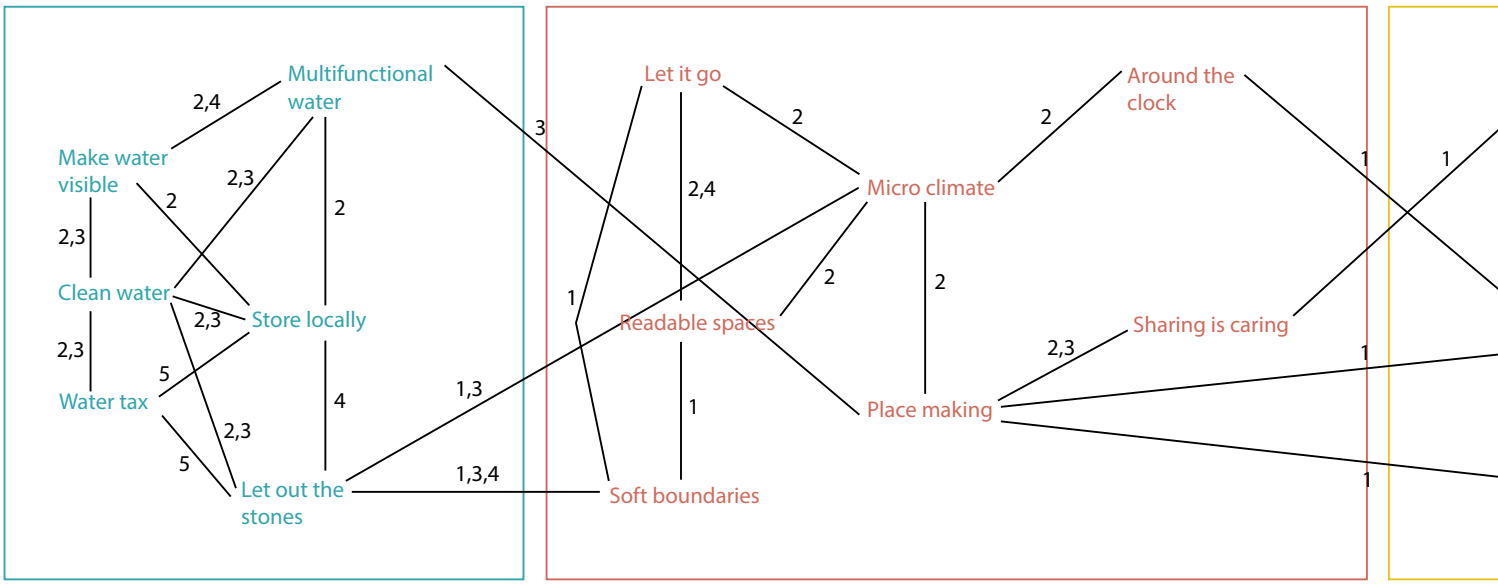


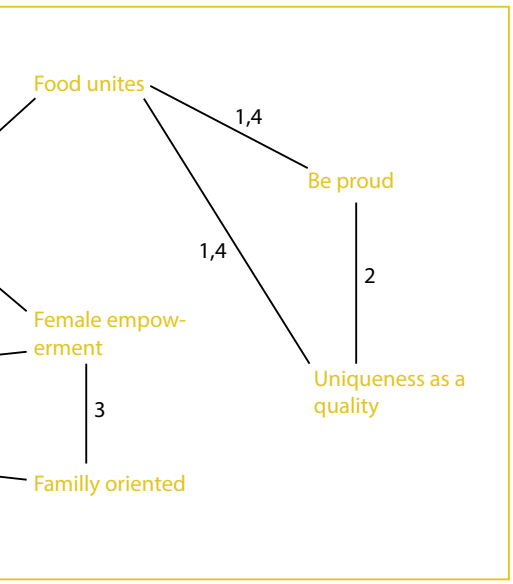
Figure 90: Shows the relation between the different patterns

PATTERN LANGUAGE

A pattern language is a way of classifying information into a systematic way making the information easily accessible and thereby aiding in the design process (Rooij & Dorst, 2020) . Going further it could be considered a design tool, where it helps in making a first design, which can later be made more detailed by means of other methods. This is the way in which the pattern language is used within this thesis. Strong points of the pattern language include: the ordered approach, readability for others and the possibility to use it directly in other projects, the concreteness of solutions you have to think about. Weak points are that it can limit one is his or her creativity, as it has to fit the format and is based on actual research of the current situation.

Patterns can be related based on the scale on which they apply, their level of concreteness, the topic they cover or the way they interact with other patterns when applied in the same space.

The complete set of patterns can be found in appendix A



Legend:

1) One pattern contains or generalises another pattern
2) Two patterns need each other for completeness
3) Two patterns solve different problems that overlap and coexist on the same level
4) Two patterns solve the same problem in alternative, equally valid ways
5) Distinct patterns share a similar structure thus implying a higher level of connection

PATTERN/HYPOTHESIS

LIV-01: Intentionally design a suitable space for every target group, do not expect all groups to use the same space automatically

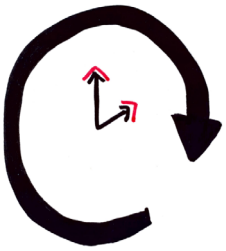


RELATIONS

LIV-03, LIV-07, CULT-03, CULT-05, WAT-03

PATTERN/HYPOTHESIS

LIV-02: Design a neighbourhood to be livable at every hour of the day.



RELATIONS

LIV-07, CULT-05

PATTERN/HYPOTHESIS

LIV-03: Design in a way that encourages and supports shared experiences



RELATIONS

LIV-01, CULT-04

PATTERN/HYPOTHESIS

LIV-06: Design for a pleasant microclimate, this will make people use public space more intensively

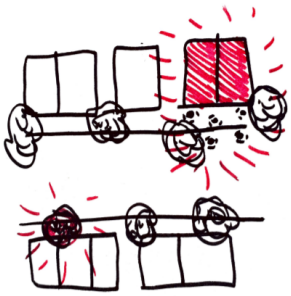


RELATIONS

LIV-01, LIV-02, LIV-05, LIV-06

PATTERN/HYPOTHESIS

CULT-01: Make the things that residents are proud of or identify with clearly visible

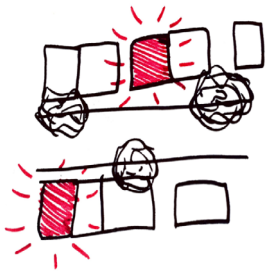


RELATIONS

CULT-02, CULT-04

PATTERN/HYPOTHESIS

CULT-02: Approach unique aspects of a neighbourhood as much as possible as a quality

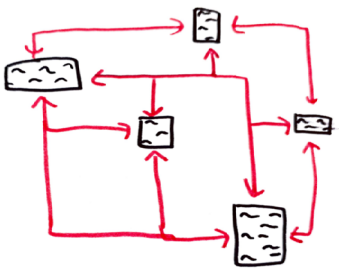


RELATIONS

CULT-01, CULT-04

PATTERN/HYPOTHESIS

WAT-01: Design a network of temporary water storage locations



RELATIONS

WAT-02, WAT-03, WAT-04, WAT-05

PATTERN/HYPOTHESIS

WAT-02: Design water management in such a way that it is at least partly visible above ground

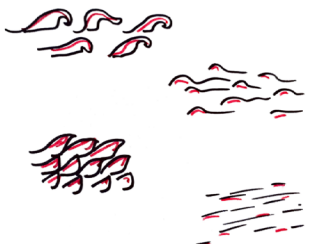


RELATIONS

WAT-01, WAT-03

PATTERN/HYPOTHESIS

WAT-03: Give water in the urban environment as much as possible a function that people appreciate next to the function of water storage



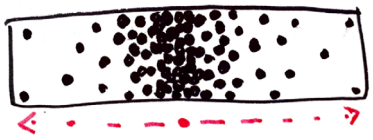
RELATIONS

WAT-01, WAT-02, LIV-01

Figure 91: Shows a compact version of the patterns

PATTERN/HYPOTHESIS

LIV-04: Design for a soft transition between private spaces/properties and public spaces.

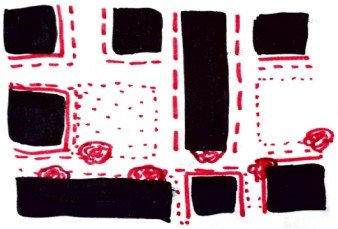


RELATIONS

LIV-05, LIV-06, WAT-04

PATTERN/HYPOTHESIS

LIV-05: Design spaces to be readable in a way that they give direction on how to move and what to do and what to expect.



RELATIONS

LIV-04, LIV-06, LIV-07

PATTERN/HYPOTHESIS

LIV-06: Design spaces with flexibility and the possibility for personal expression giving control to users of the space



RELATIONS

LIV-04, LIV-05, LIV-07,

PATTERN/HYPOTHESIS

CULT-03: When designing, always design with a whole family in mind

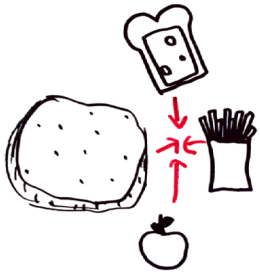


RELATIONS

CULT-05, LIV-01

PATTERN/HYPOTHESIS

CULT-04: Design in a way food sharing takes a central place in the social system of the neighbourhood



RELATIONS

CULT-01, CULT-02, LIV-03

PATTERN/HYPOTHESIS

CULT-05: Design for female empowerment, it will not happen automatically

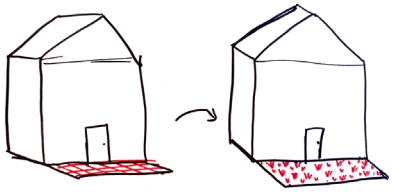


RELATIONS

CULT-03, LIV-01, LIV-02

PATTERN/HYPOTHESIS

WAT-04: Where possible remove paving and replace it by something more permeable

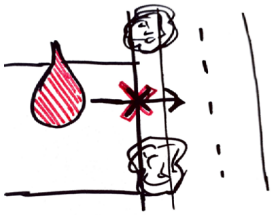


RELATIONS

WAT-01, WAT-05, LIV-04

PATTERN/HYPOTHESIS

WAT-05: A water tax should be introduced stating that every household is reponsible for rainwater that falls on their own property in normal circumstances

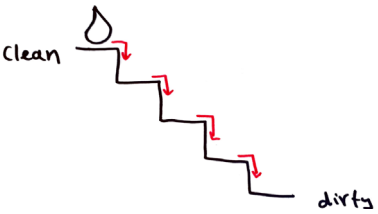


RELATIONS

WAT-01, WAT-04

PATTERN/HYPOTHESIS

WAT-06: Water should be transported troughout the area in a way that it transfers from clean to dirtier in every step, and not the other way around.



RELATIONS

WAT-01, WAT-02, WAT-03, WAT-04, WAT-05

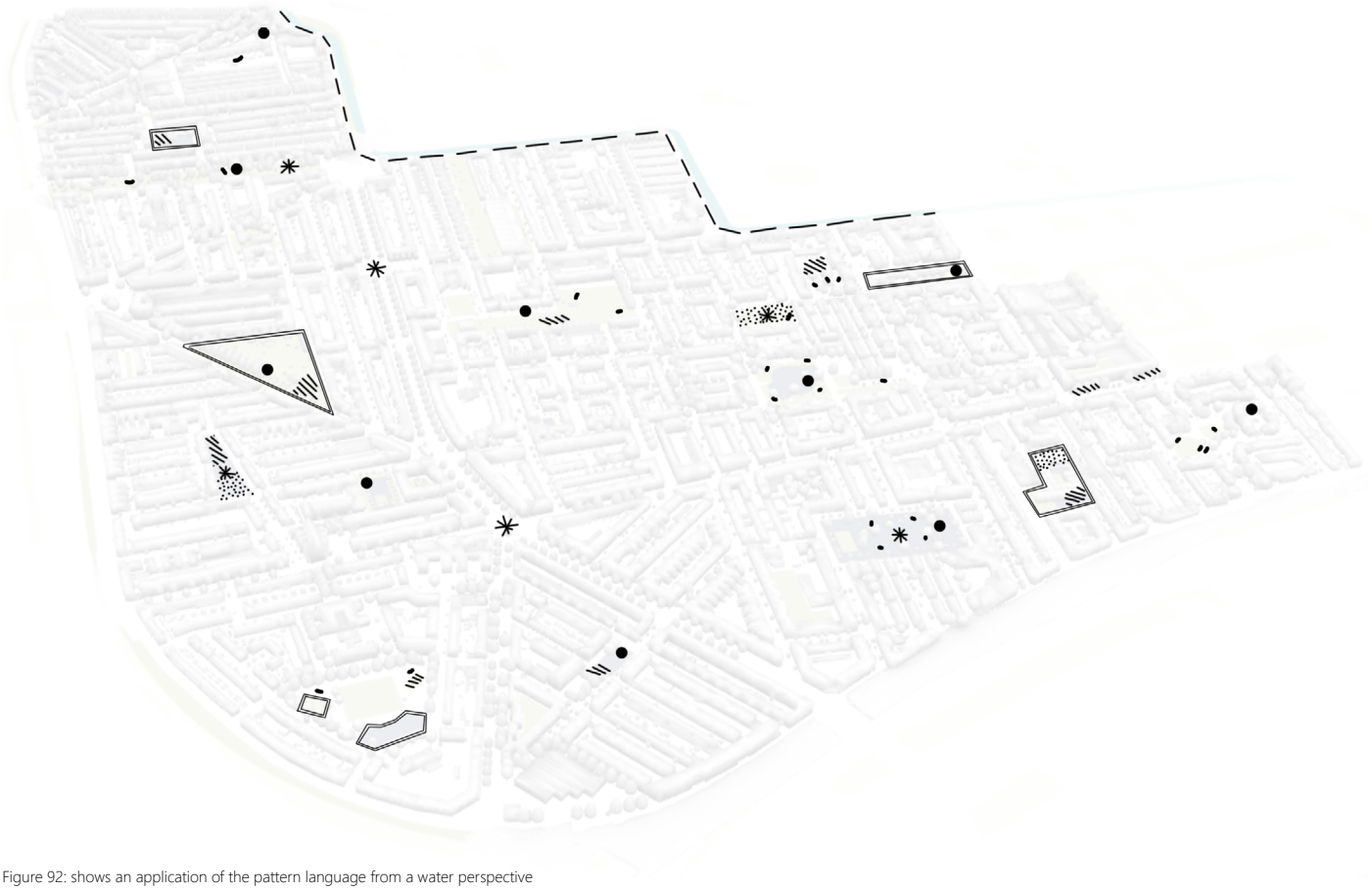


Figure 92: shows an application of the pattern language from a water perspective

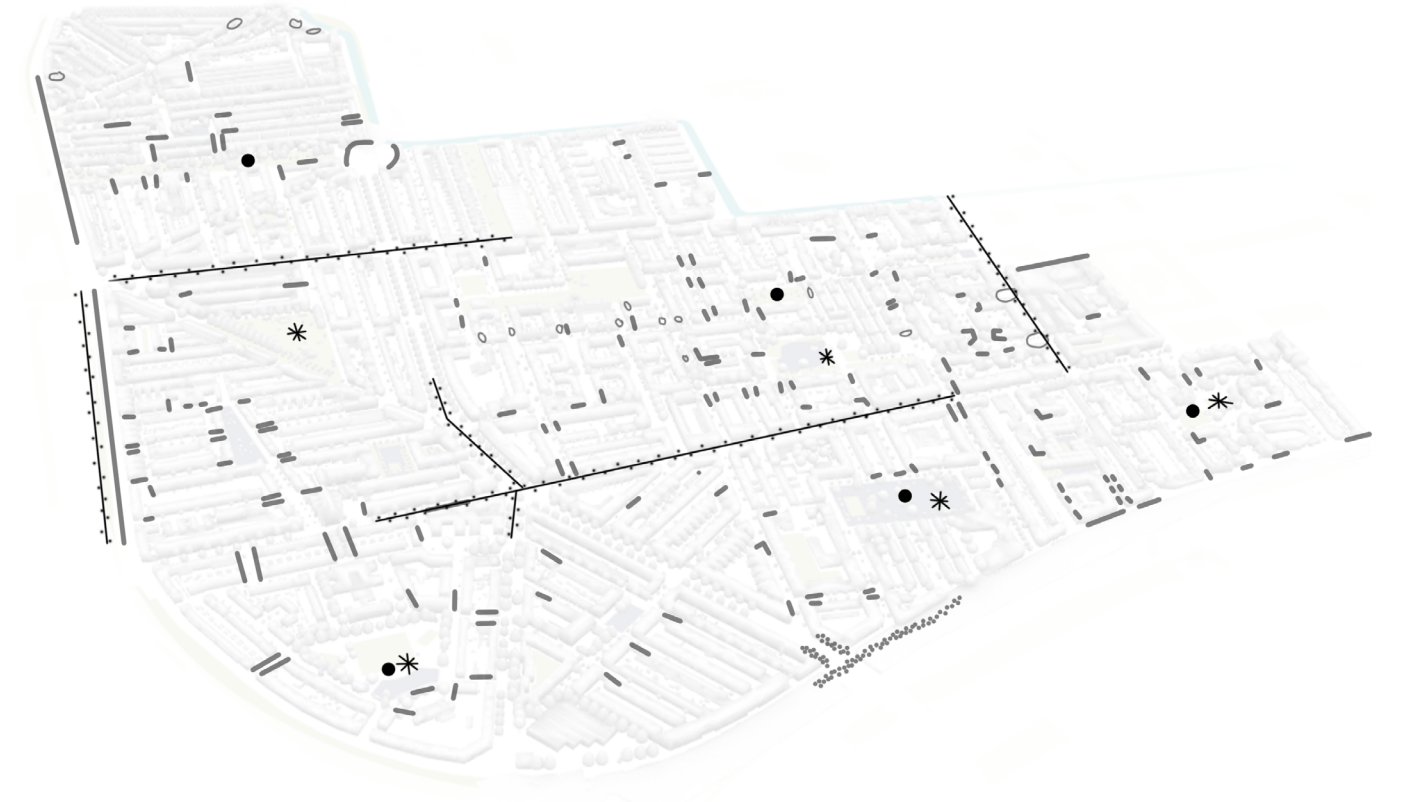
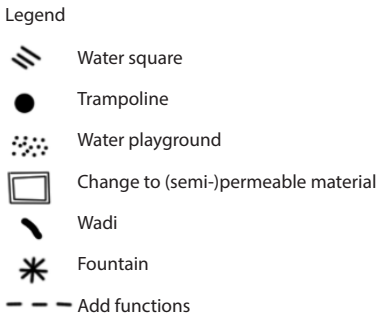
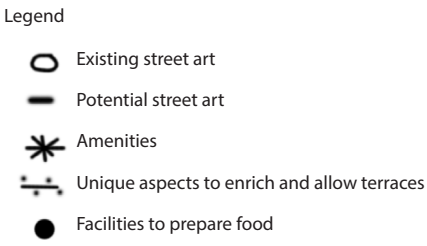


Figure 93: shows an application of the pattern language from a multicultural perspective

PATTERN LANGUAGE APPLICATION

Applying the pattern language to the area is a way to make it more spatial by investigating which pattern can be located where. Given the used patterns, the experimentation led to rather realistic outcomes. It is important to realise that not every pattern is to be found on the maps. This is as some patterns work more on a more local level and in a more detailed design. Therefore, their application will be shown in the design process of the specific locations.





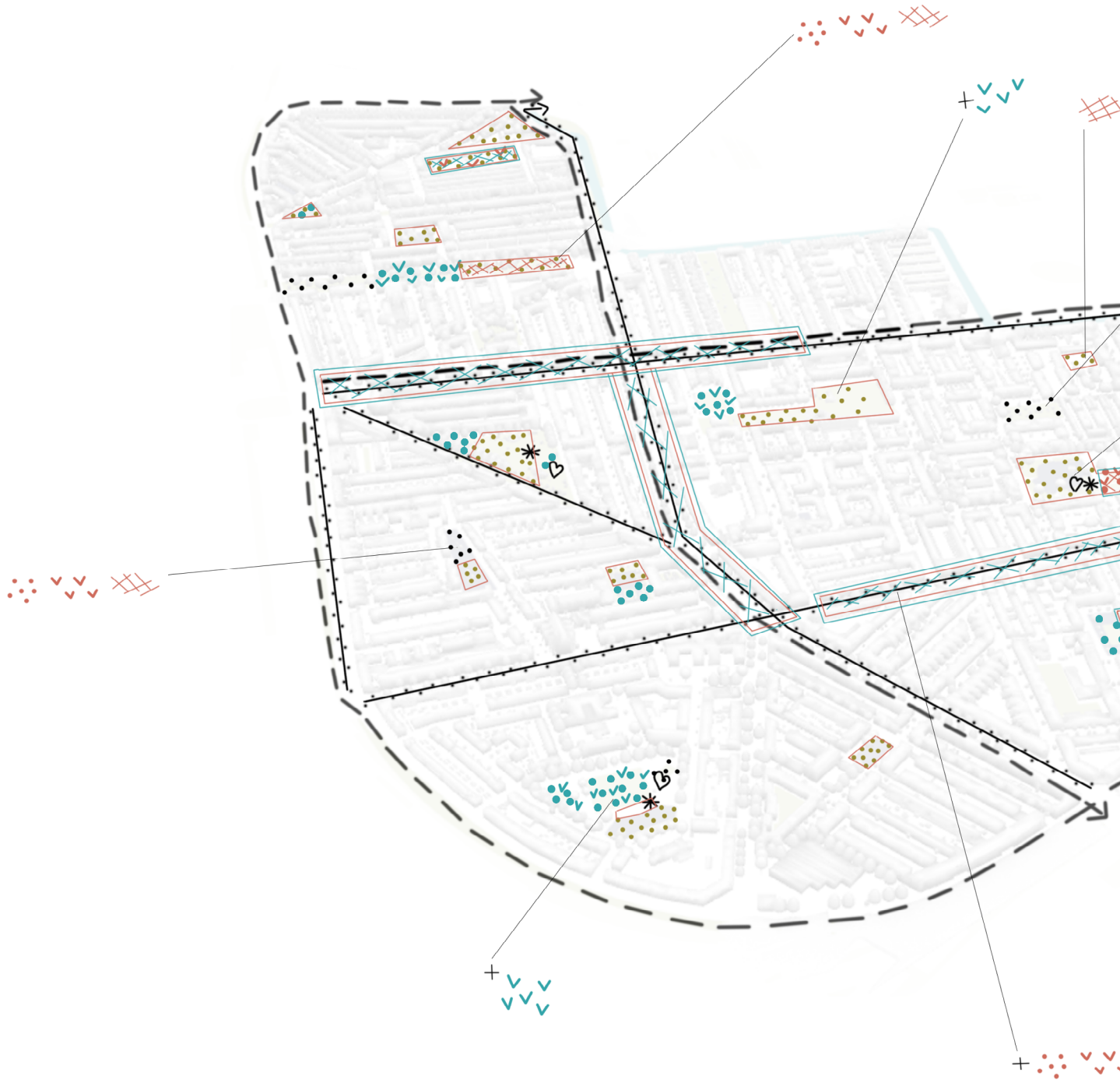


Figure 94: shows an application of the pattern language form a livability perspective

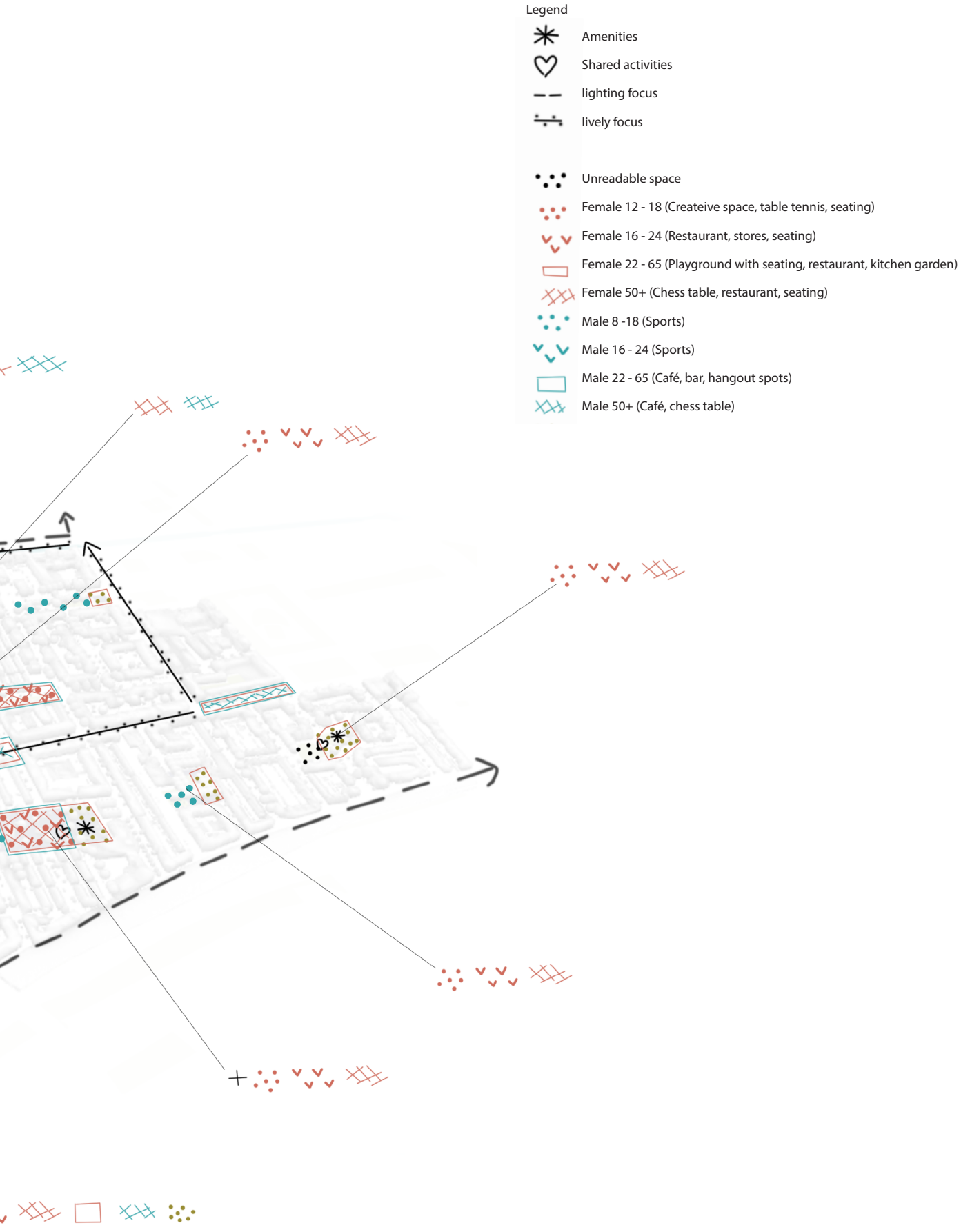

Legend
Amenities
Shared activities
lighting focus
lively focus
Unreadable space
Female 12 - 18 (Createive space, table tennis, seating)
Female 16 - 24 (Restaurant, stores, seating)
Female 22 - 65 (Playground with seating, restaurant, kitchen garden)
Female 50+ (Chess table, restaurant, seating)
Male 8 -18 (Sports)
Male 16 - 24 (Sports)
Male 22 - 65 (Café, bar, hangout spots)
Male 50+ (Café, chess table)



Figure 95: shows the combined map of the application of the pattern language



Ammenities
Shared acitivities
lightning focuss
lively focuss

Unreadable space
Female 12 - 18 (Createive space, table tennis, seating)
Female 16 - 24 (Restaurant, stores, seating)
Female 22 - 65 (Playground with seating, restaurant, kitchen garden)
Female 50+ (Chess table, restaurant, seating)
Male 8 -18 (Sports)
Male 16 - 24 (Sports)
Male 22 - 65 (Cafe, bar, hangout spots)
Male 50+ (Cafe, chess table)
Child 12- (Playground)

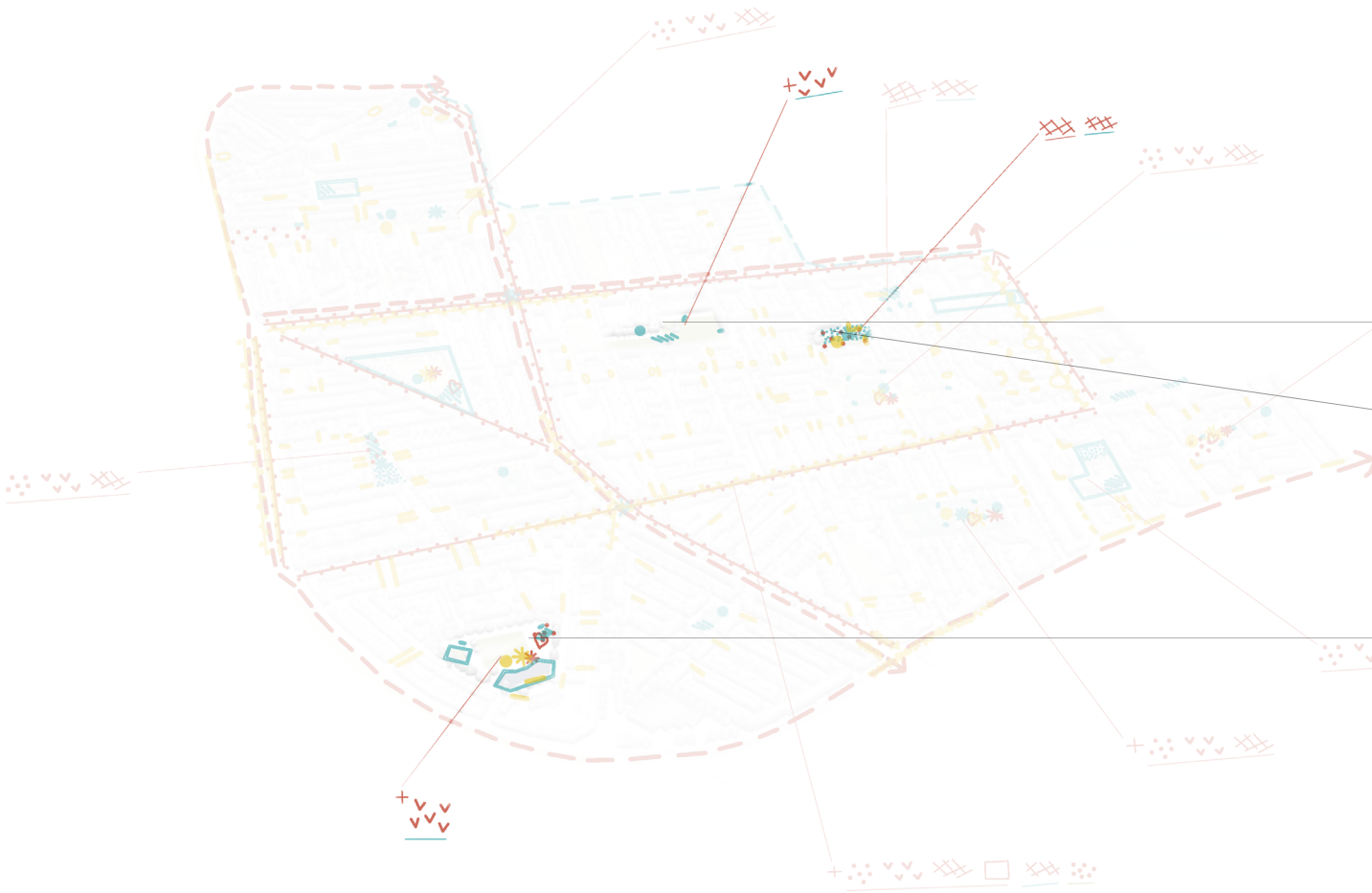


Figure 96: shows the conflicts in the combined map of the application of the pattern language

Lively places can be well combined with better lightning, more space for outdoor seating for restaurants and a stonger identity provided by street arts.

Amenities, places to prepare and eat food outdoors as well as places designed for shared activities go well together, and suit a variety of target groups as well

Water related measures often go well together with playgrounds for children and therefore also rather well with most female target groups

Attracting male youngsters does not always go well together with rain water related goals as youngsters prefer paved sport spaces, while for rain water unpaved, or semi-paved would be better

A water playground and a pleasant space for elderly does not go well together

Childeren and youngsters have different needs, wich can be combined if sufficient space is available, but it becomes more challenging when also space is needed for rain water retention

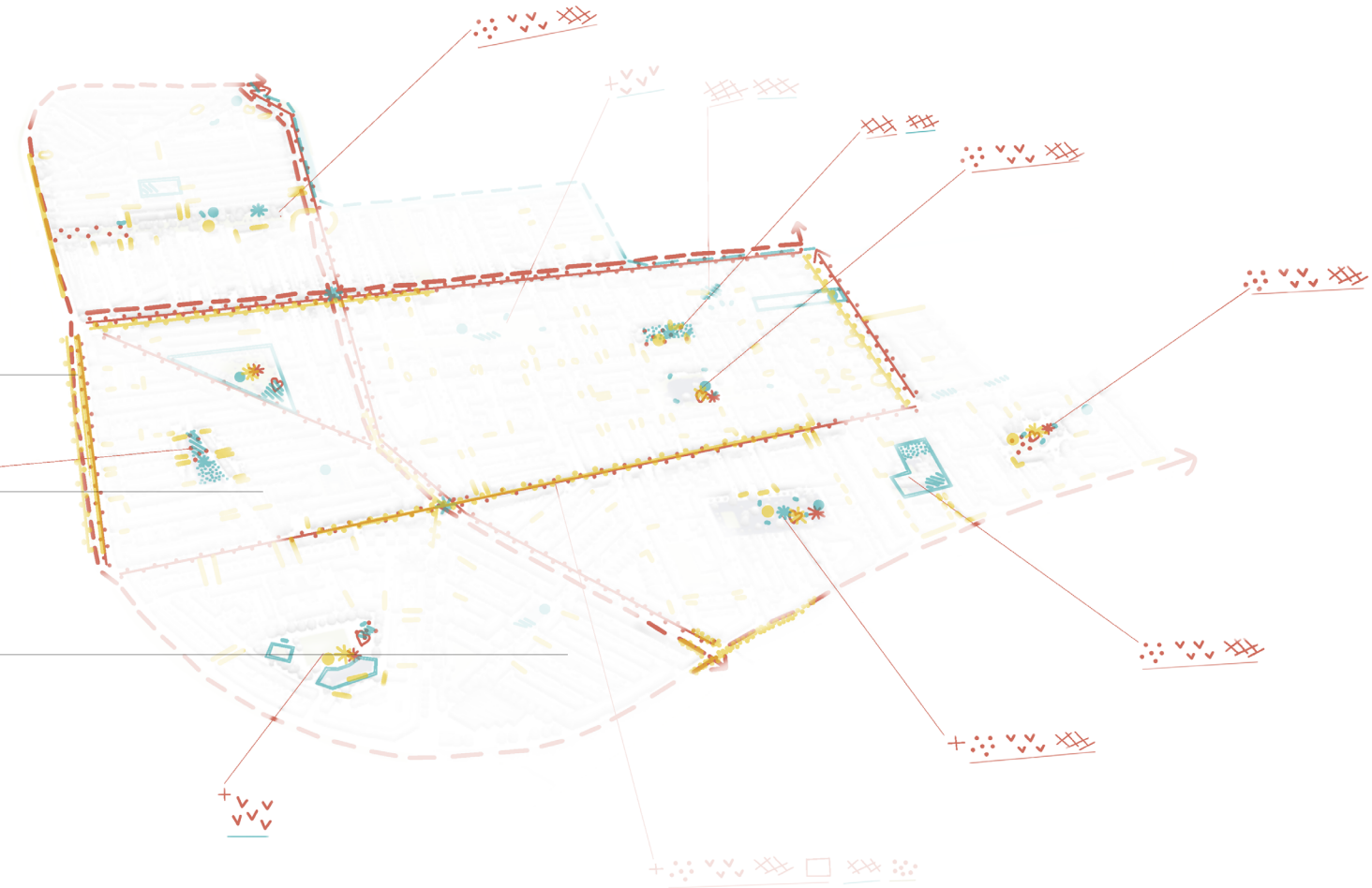


Figure 97: shows the opportunities in the combined map of the application of the pattern language

Legenda



Water square

Trampoline

Water playground

Change to (semi-)permeable material

Wadi

Fountain

Add funtions



Existing street art

Potential street art

Ammenities

Unique aspects to enrich and allow teracces

Facilities to prepare food



Ammenities

Shared acitivities

lightning focuss

lively focuss



Unreadable space

Female 12 - 18 (Createive space, table tennis, seating)

Female 16 - 24 (Restaurant, stores, seating)

Female 22 - 65 (Playground with seating, restaurant, kitchen garden)

Female 50+ (Chess table, restaurant, seating)

Male 8 -18 (Sports)

Male 16 - 24 (Sports)

Male 22 - 65 (Cafe, bar, hangout spots)

Male 50+ (Cafe, chess table)

Child 12- (Playground)

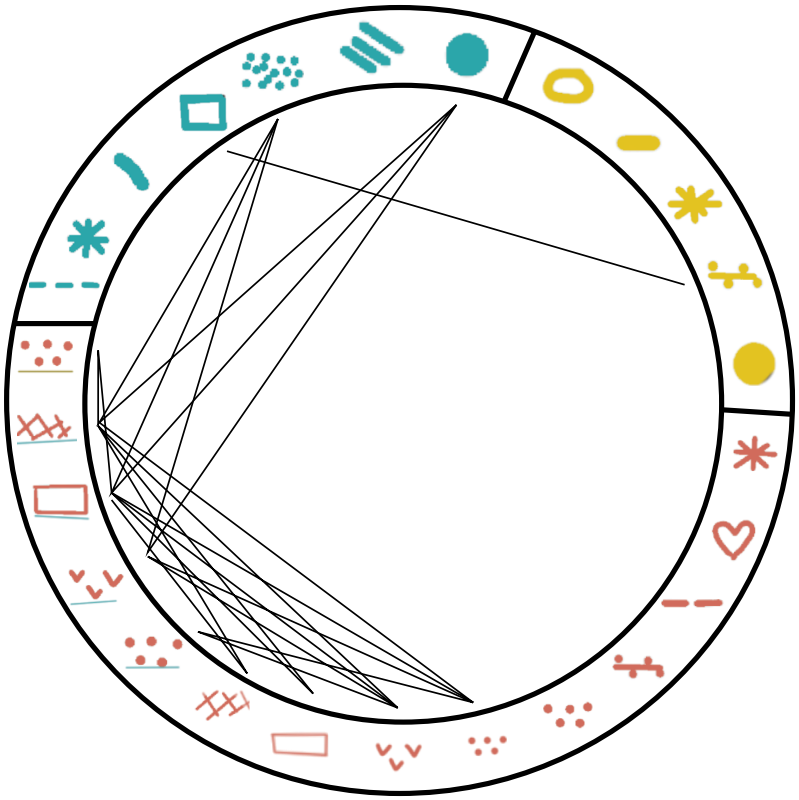


Figure 98: shows the conflicts in the combination of the application of the pattern language

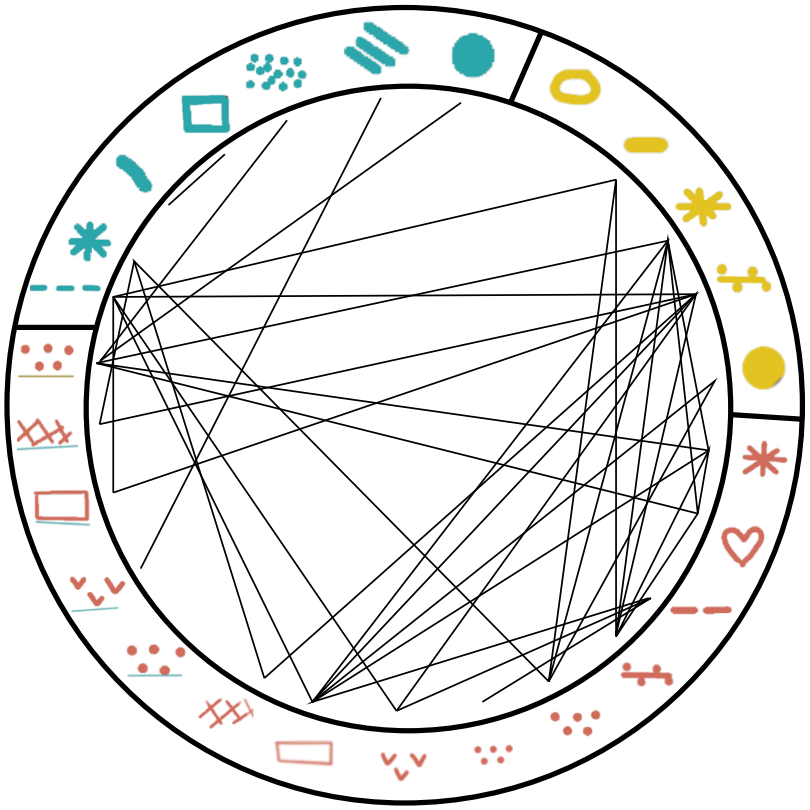


Figure 99: shows the opportunities in the combination of the application of the pattern language

MAXIMALISATION

The method of maximalisation is used to optimize towards one aspect before automatically making compromises. The reasoning behind is that when going to compromises often similar solutions are immediately found as we tend to go into patterns that we are used to. The first steps therefore are to maximise to the extreme one aspect, disregarding boundary conditions such as politics or financial concerns. In this section a maximalisation will be made the following way:

- Rain water: Focuses on eliminating rain water nuisances while adding extra infiltration capacity for surrounding neighbourhoods as well
- Multicultural: Focuses on designing for the needs of a multicultural neighbourhood, where the multiculturality takes center stage in the identity of the neighbourhood.
- Livability:
    - Identity: Focuses completely on improving the reputation of the Schilderswijk
    - Social life in the streets: Focuses completely on providing maximum opportunities for social life in the streets for the Schilderswijk and therefore is rather pedestrian oriented as well
    - A new network: Focuses completely on designing a new network for the Schilderswijk, where the network makes a division between different types of traffic and people.

WATER

On the right the map on the maximazation for eliminating rain water nuisances can be seen. Here a water structure will be implemented in the Schilderswijk, as well as a network of water squares and wadis. Furthermore, a park with surface water with a helofyte filter will be constructed as well. To increase the amount of interactions with water, water playgrounds are installed throughout the neighbourhood. Laslty, the general street profile would change to allow for more rain water infiltration space. An impression of the Hoefkade is visible on the next page.

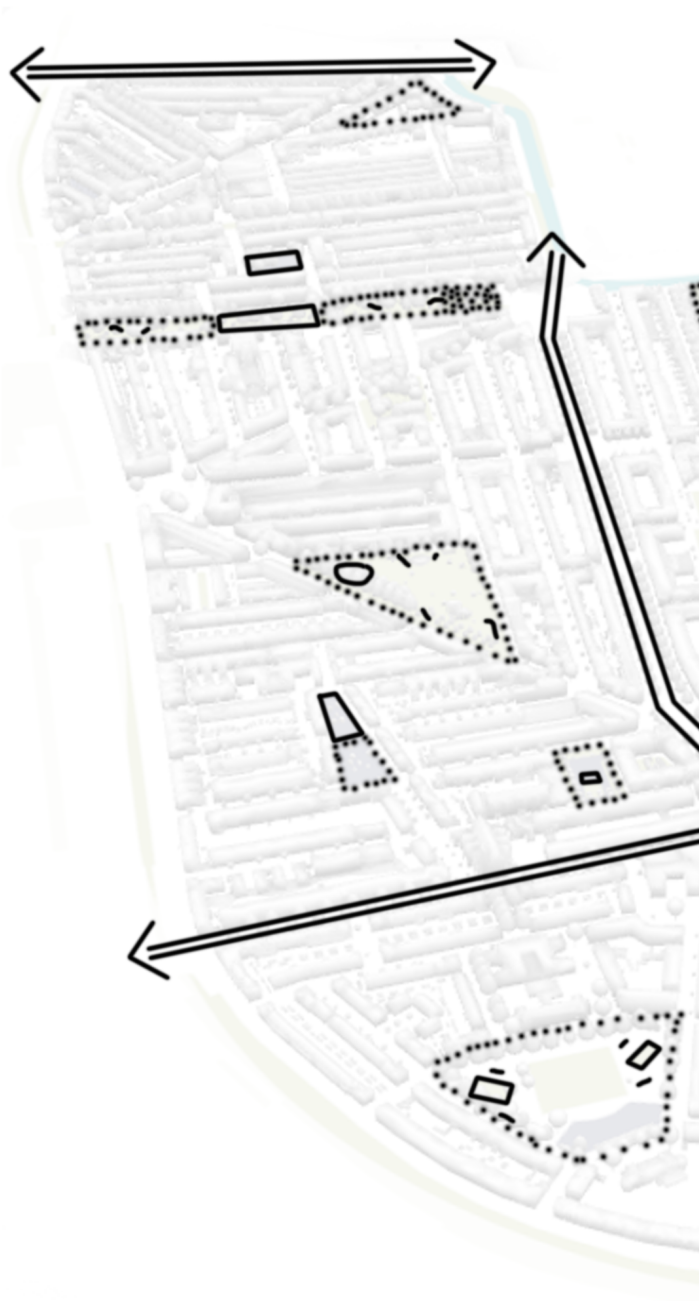
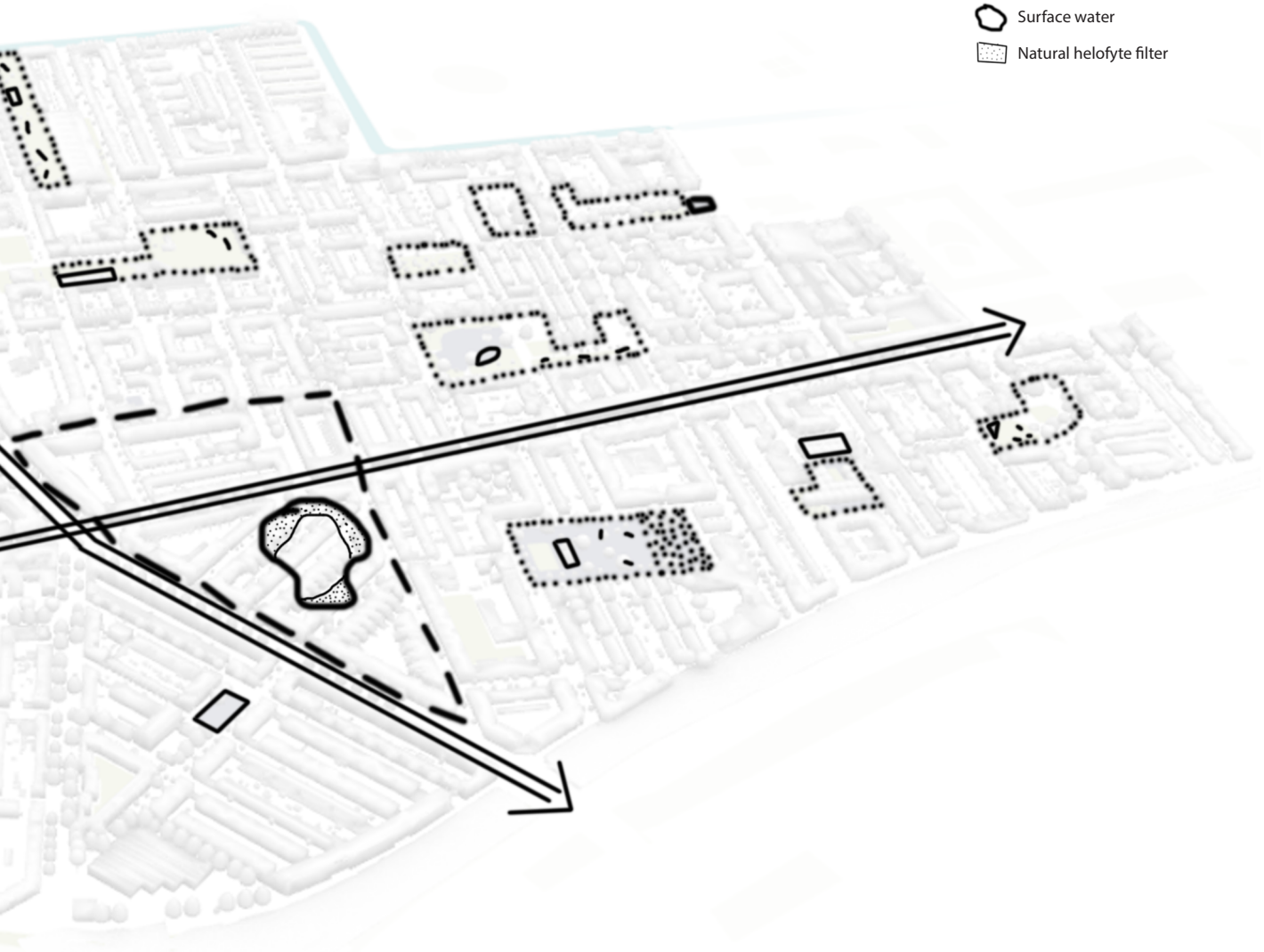


Figure 100: shows the maximalisation from a water perspective


Legend
Canal
Water square
Wadi
Water playground
Grass
Park
Surface water
Natural helofyte filter

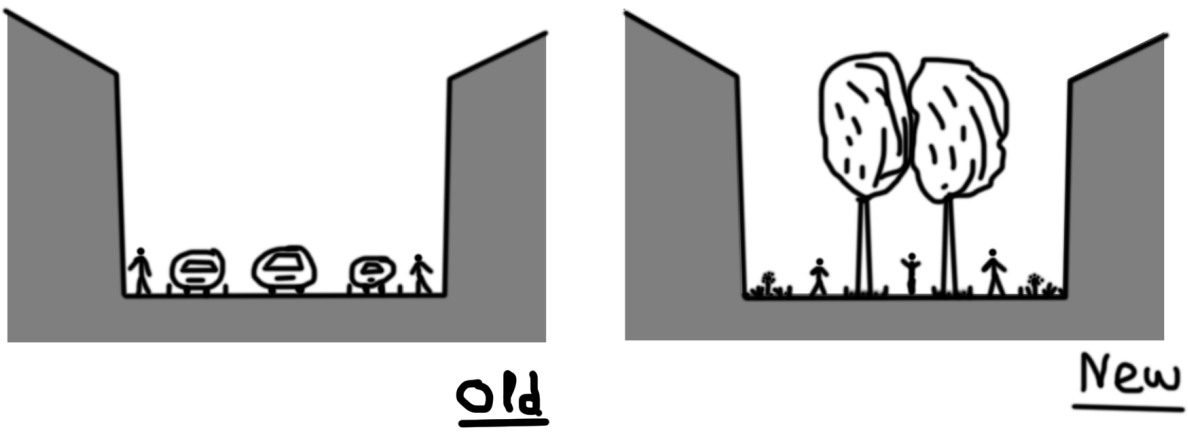

old
New



Figure 101: shows an impression of the Hoefkade from the maximalisation from a water perspective



MULTICULTURAL

On the right the map on the maximazation for a multicultural neighbourhood can be seen. First of all the wide variety in shops will be highlighted and allowed the space to arrange outside seating area. This way food can be an even more intergral and especially shared part of life in the Schilderswijk. To reach this goal, the connection with the Haagse markt will also be improved. Furthermore, facilities to be able to cook and eat outside are to be installed in several public spaces throughout the Schilderswijk. Adding to this are facilities such as drinking water, a toilet and toy sharing. Lastly, inhabitants will be provided the opportunity to express their culture more visibly in public spaces by means of murals/street art as well as other art forms. An impression on how the Hoefkade would look like in this scenartio is visible on the next page.

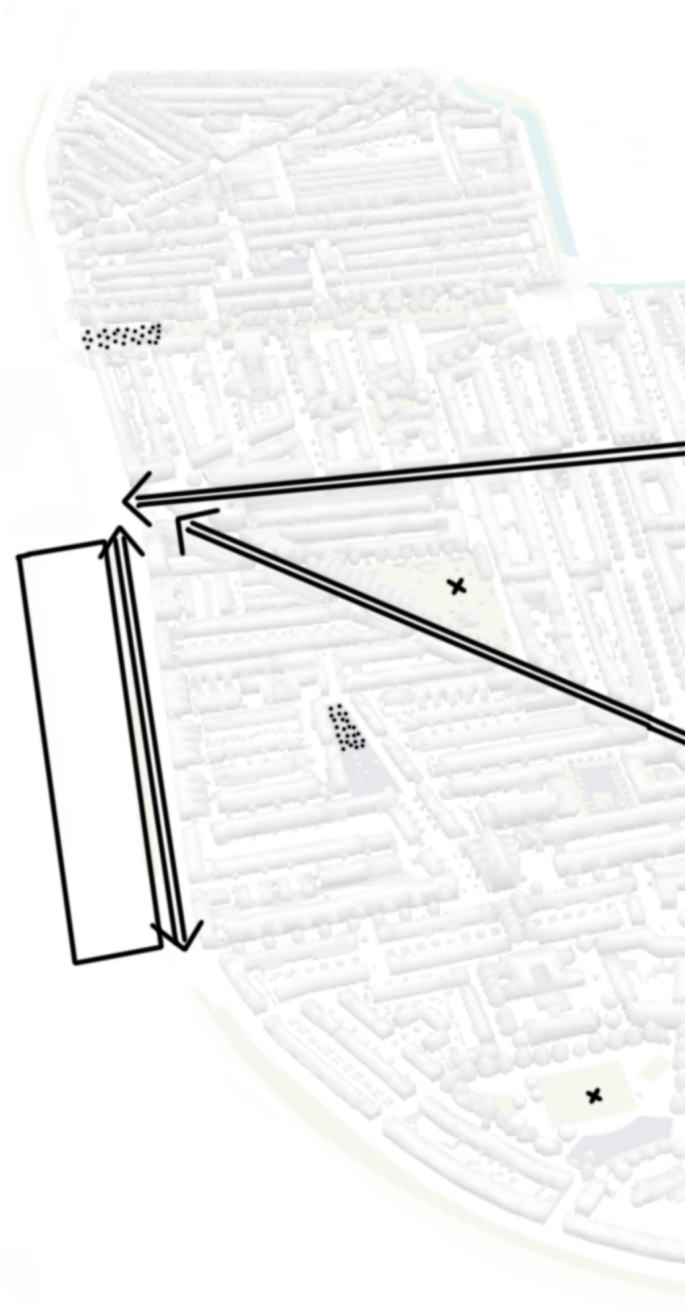
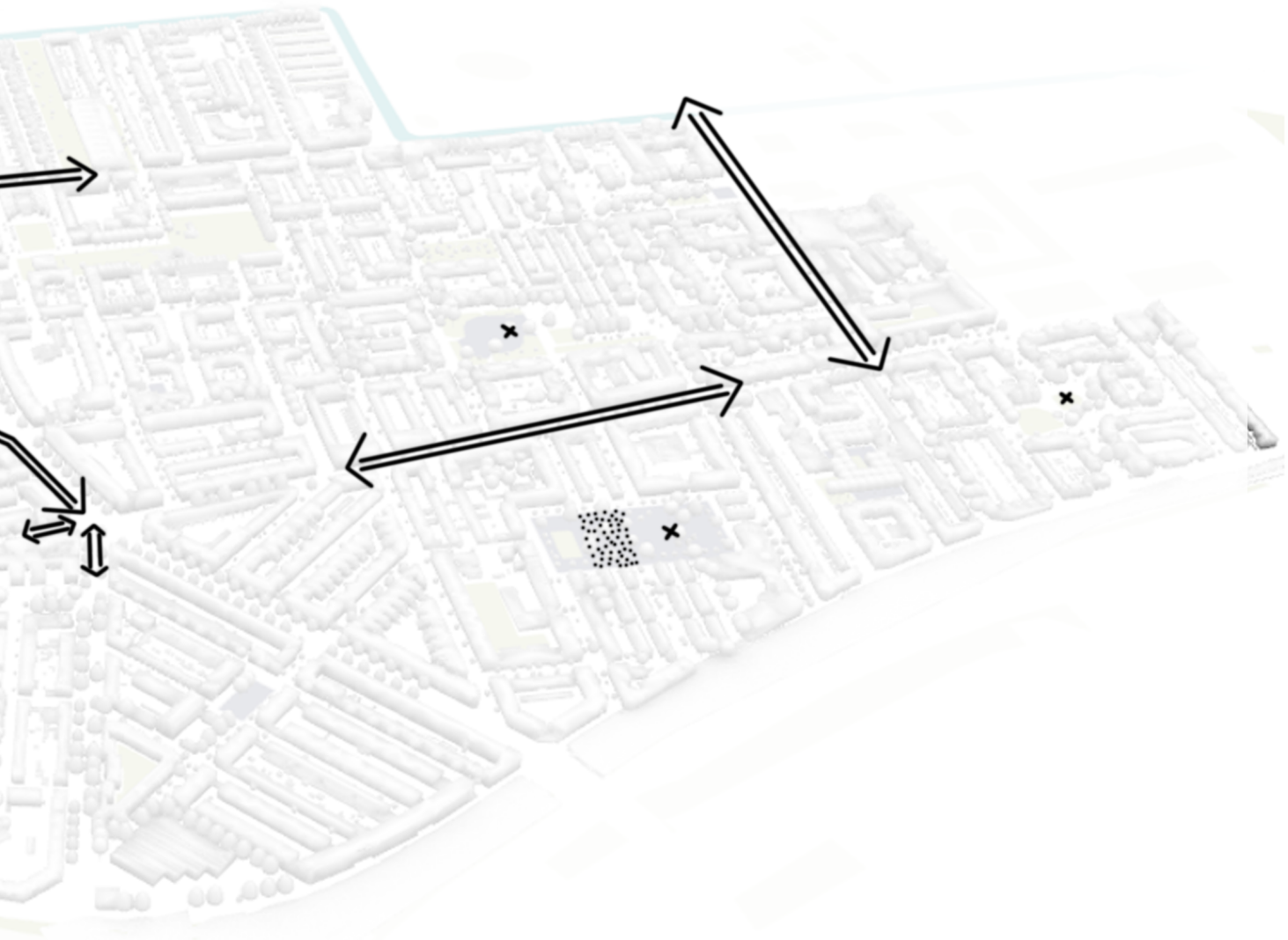


Figure 102: shows the maximalisation from a multicultural perspective

Legend

- Terrace
- Outdoorcookign and eating place
- Facilities such as toilet, toys sharing and drinking water
- Haagse Markt



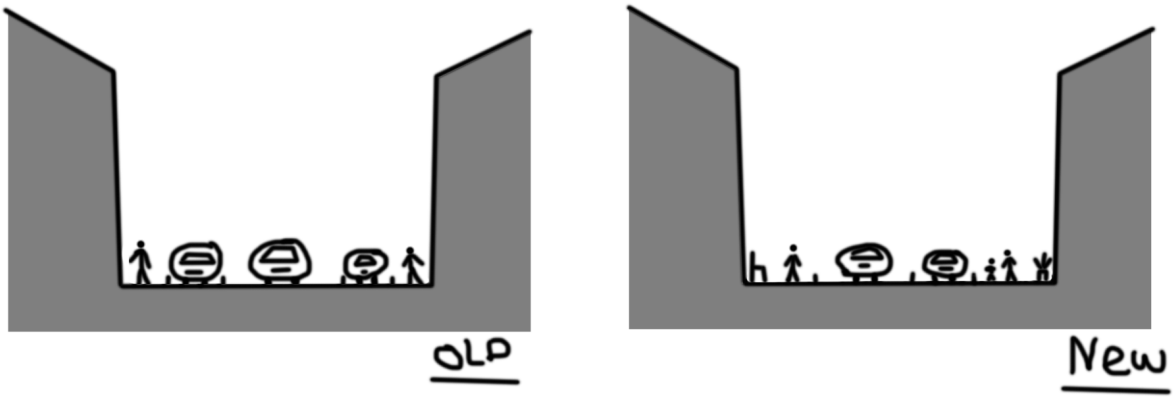




Figure 103: shows an impression of the Hoefkade from the maximalisation from a multicultural perspective



LIVABILITY

For livability the following three scenarios are developed:

- Identity: Focuses completely on improving the reputation of the Schilderswijk
- Social life in the streets: Focuses completely on providing maximum opportunities for social life in the streets fo the Schilderswijk and therefore is rather pedestrian oriented as well
- A new network: Focuses completely on designing a new network for the Schilderswijk, where the network makes a division between different types of traffic and people.

The reason for choosing this particular three scenarios is that they all focus on one aspects that according to residents strongly impacted their perception of livability of the neighbourhood. The first one deals with identity. Because of the poor reputation of the Schilderswijk, prejudice exists concerning the type of person one has to be to live in the Schilderswijk as well as on the social-economic situation of the individual. The second scenario focuses on the social life as residents tend to be outside a lot and experience a lack of public space as well as difficulty to find peaceful places. The last scenario focuses on this partly but more on road safety as well as ownership of a space.

Identity

On the right the map on the maximisation with an focus on a new identity can be seen. First of all the shopping streets will have space for terraces and will get a new identity. The Hoefkade and Hobbemastraat will get a "1001 nights" identity while the Haagse markt and Koningstraat will have an "around the world" theme. The connection with the Haagse markt will be strengthened by providing new entrances at the Schilderswijk side. Furthermore, densification will take place both on strategic locations where it will become landmarks and strengthen the urban fabric as well as in other places where it mainly serves the goals of diversifying the population in terms of income. Lastly, street art will become a central part of the identity, refering to the name of the Schilderswijk.



Figure 104: shows the maximalisation from a livability perspective with an focus on identity

Legend

- Terrace
- Haagse markt
- Densification to diversify inhabitants
- Newly introduced street art
- Existing street art
- Street art related to theme of street (1001 night or around the world)
- Gravity / street art wall
- Densification to create landmarks / strengthen urban structure



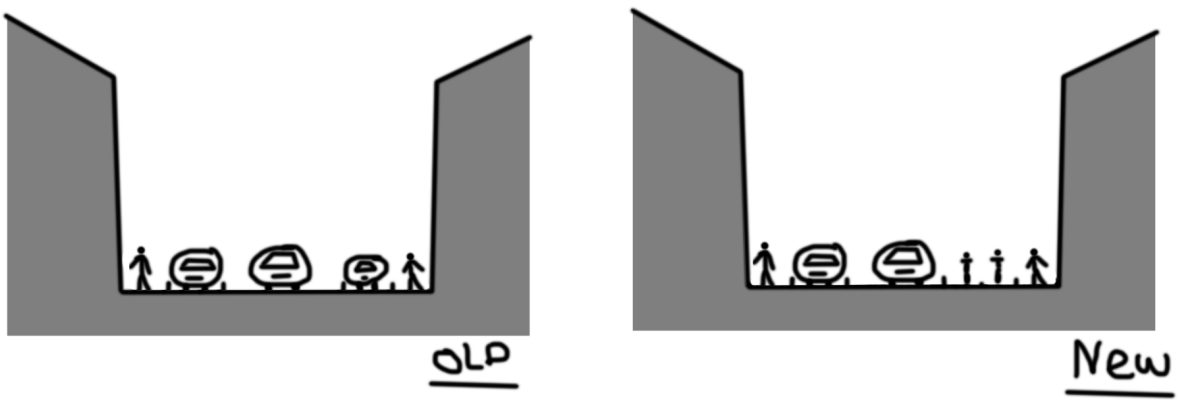




Figure 105: shows an impression of the Hoefkade from the maximalisation from a livability perspective with an focus on identity


NACHTEN

Social life in the streets

Social life in the streets: Focuses completely on providing maximum opportunities for social life in the streets of the Schilderswijk and therefore is rather pedestrian oriented as well. There is a main street network which serves people driving through the neighbourhood. An impression of such a street can be found at the top left of the next page. A secondary network for local cars exists (bottom left next page). The other roads are reserved for pedestrians and inhabitants as meeting places. To facilitate the needed parking spaces densification will take place at strategic locations, giving the opportunity to include parking garages in the new buildings.



Figure 106: shows the maximalisation from a livability perspective with an focus on social life in the streets

Legend

- Main route for cars
- Secondary route for cars
- Local route for cars
- Densification with parking garage



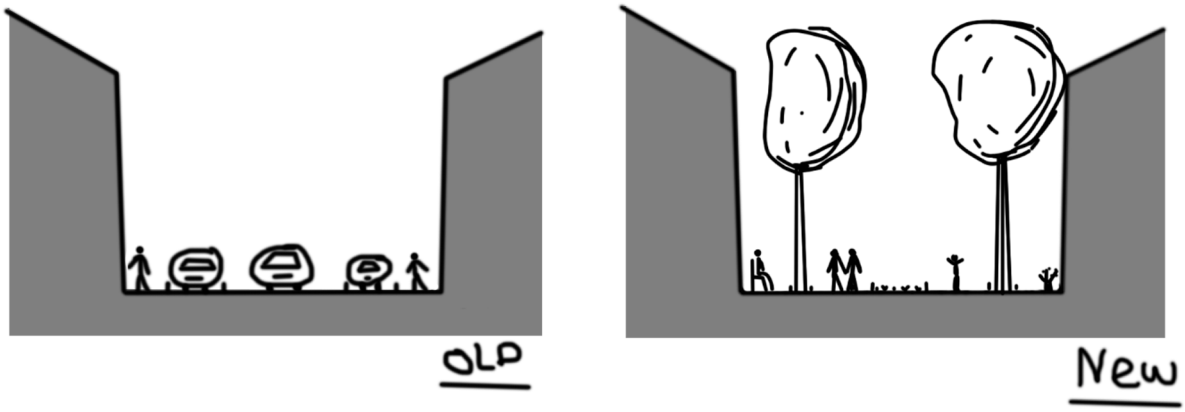




Figure 107: Gives an impression of a main road for car traffic

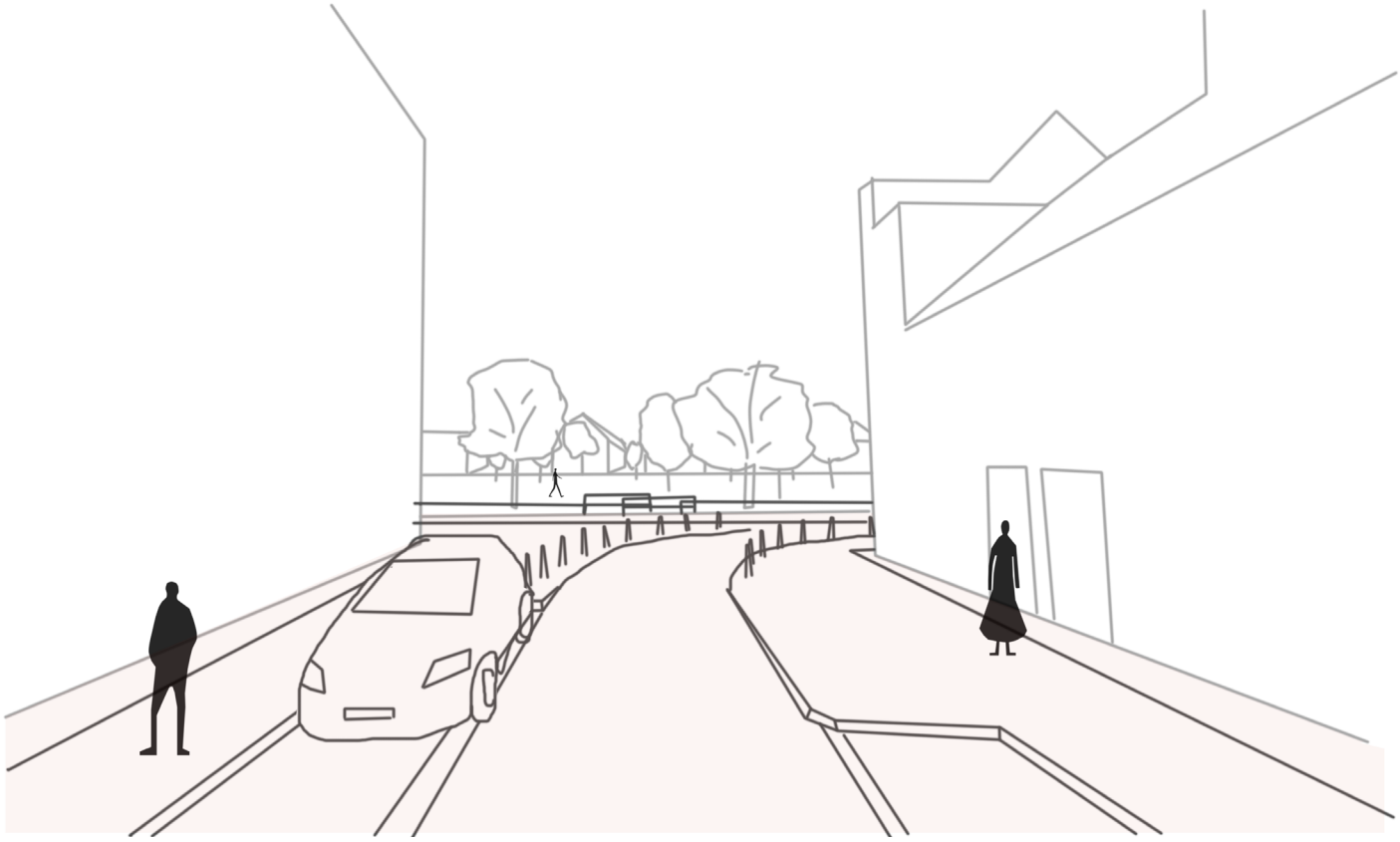


Figure 108: Gives an impression of a secondary road for car traffic



Figure 109: Gives an impression of the remaining roads which are for pedestrian and serve as an extension of public space.

A new network

A new network: Focuses completely on designing a new network for the Schilderswijk, where the network makes a division between different types of traffic and people. There is one network designed for visitors which mainly consists of people who go shopping in the neighbourhood. A secondary network exists for residents (with a special focus on childeren) connecting the public spaces. All other streets stay rather similar as to how they currently look and function. To strengthen the visitors network, densification will take place on strategic places, giving direction and creating local landmarks. Furthermore, the aesthetics of the street will also be guiding in recognising the different street types.

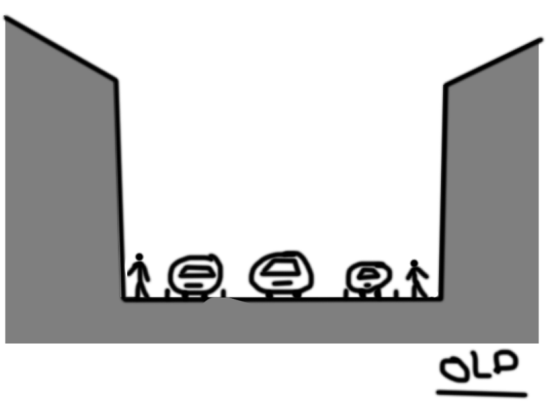


Figure 110: shows the maximalisation from a livability perspective with an focus on a new infrastructural networ

Legend

- Public route
- Inhabitans route
- Densification locations
- Public spaces connected to inhabitants route
- Connection to city center





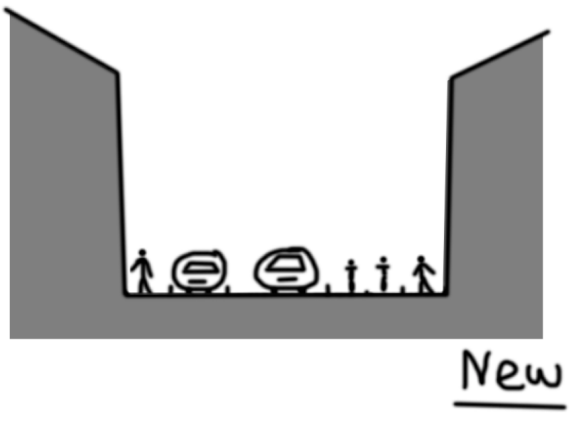




Figure 111: Gives an impression of a road that is part of the visitors network



Figure 112: Gives an impression of a road that is part of the local residents/children's network

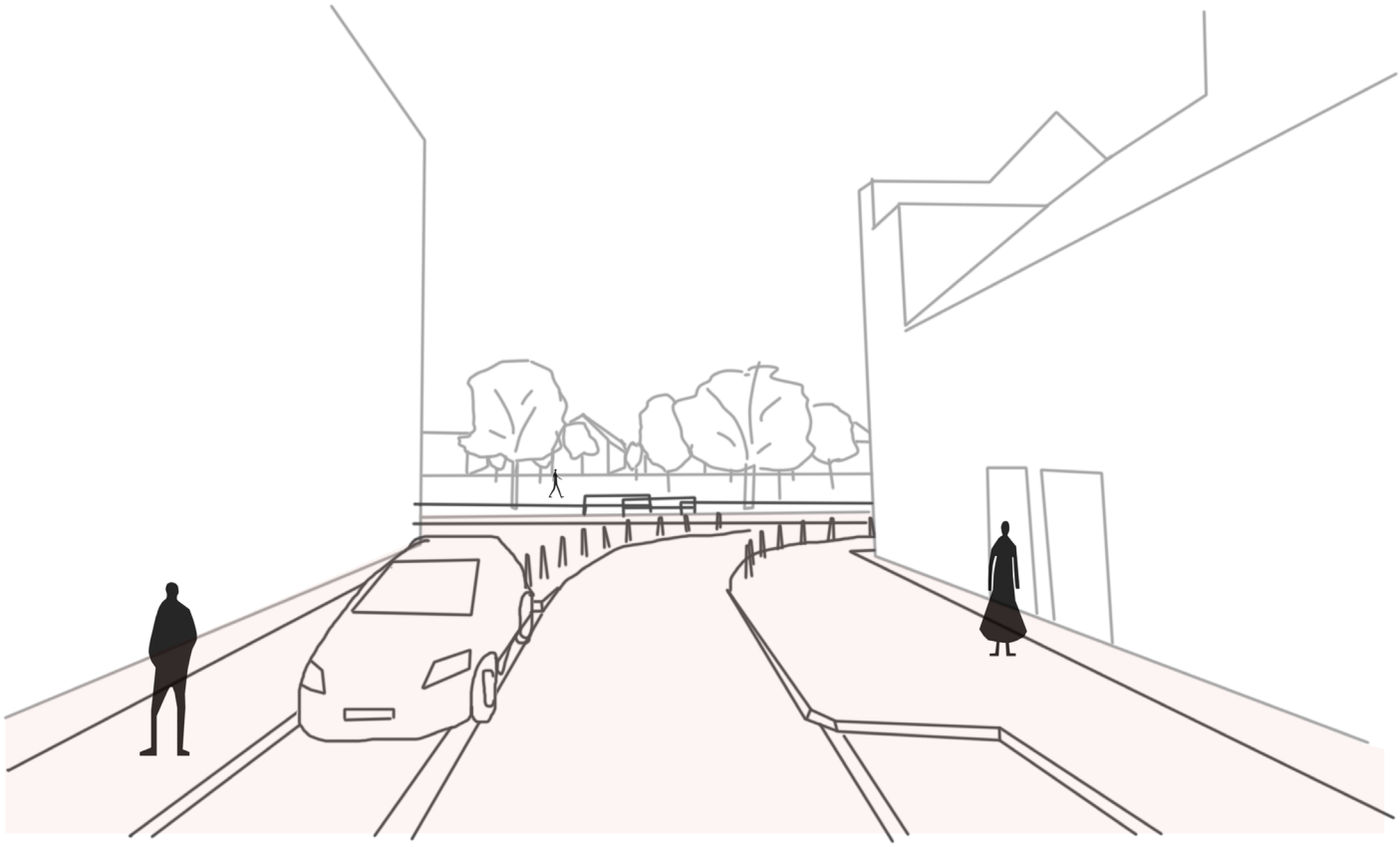


Figure 113: Gives an impression of a general road

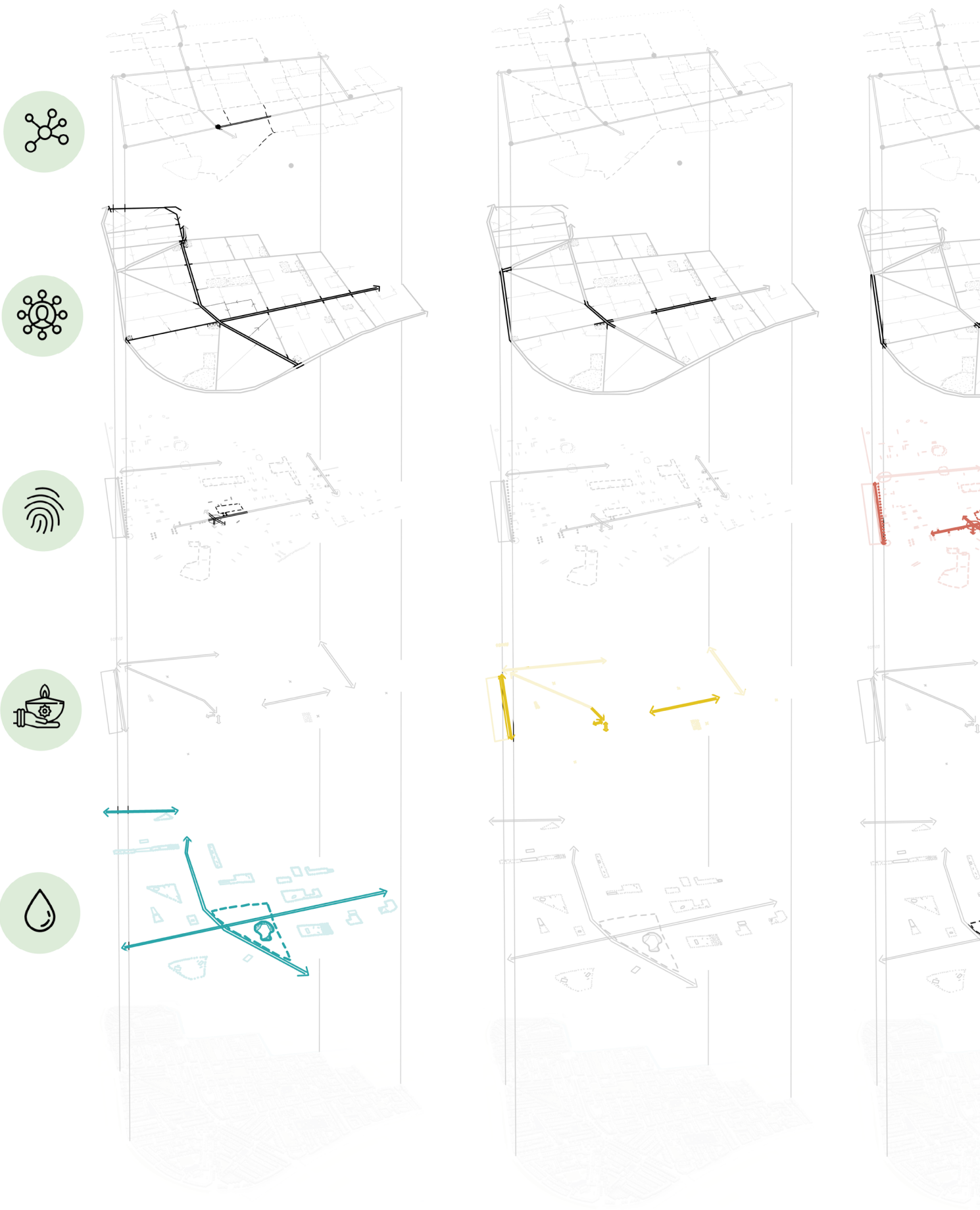
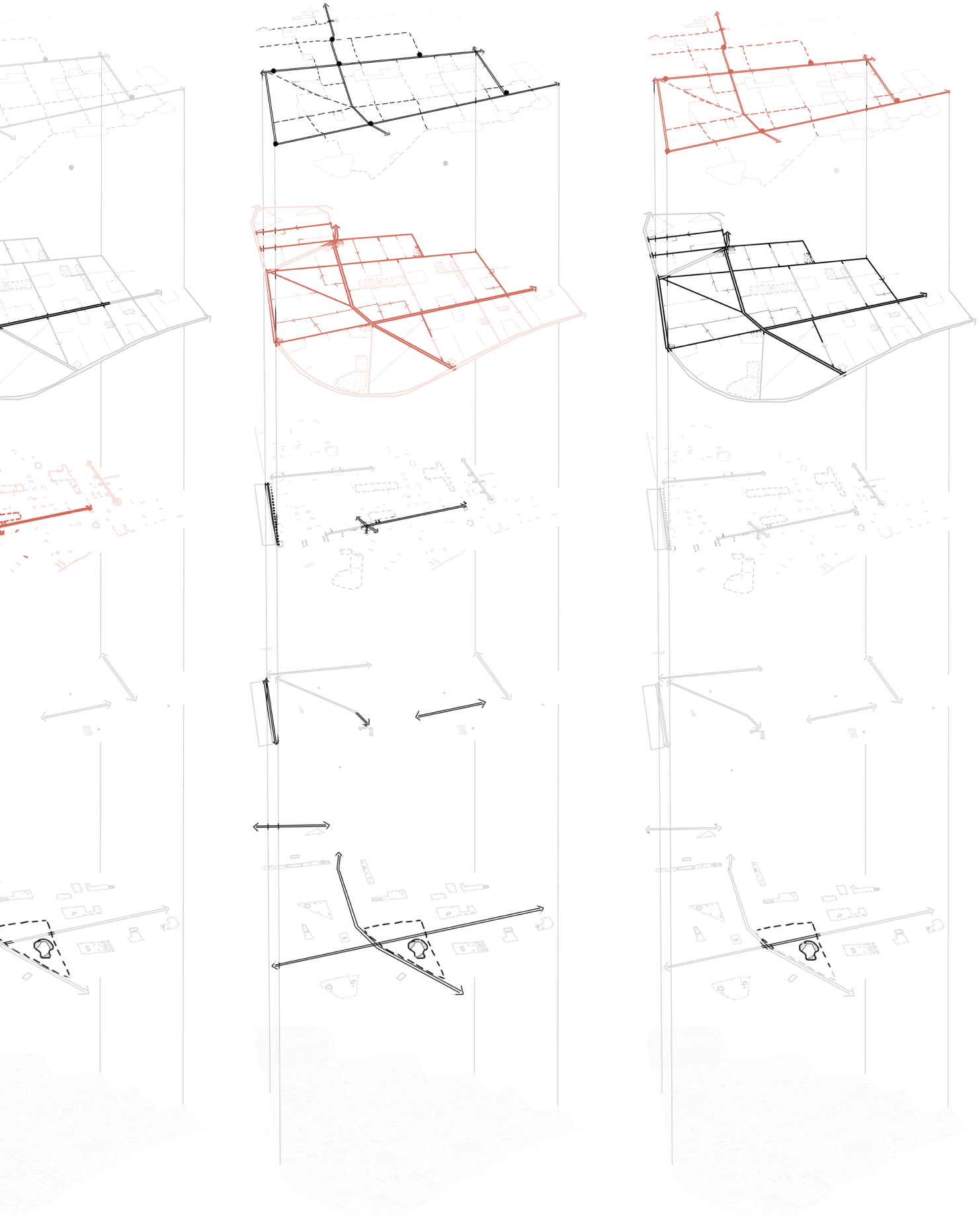


Figure 114: shows the conflicts in the combined version of the maximalisation maps



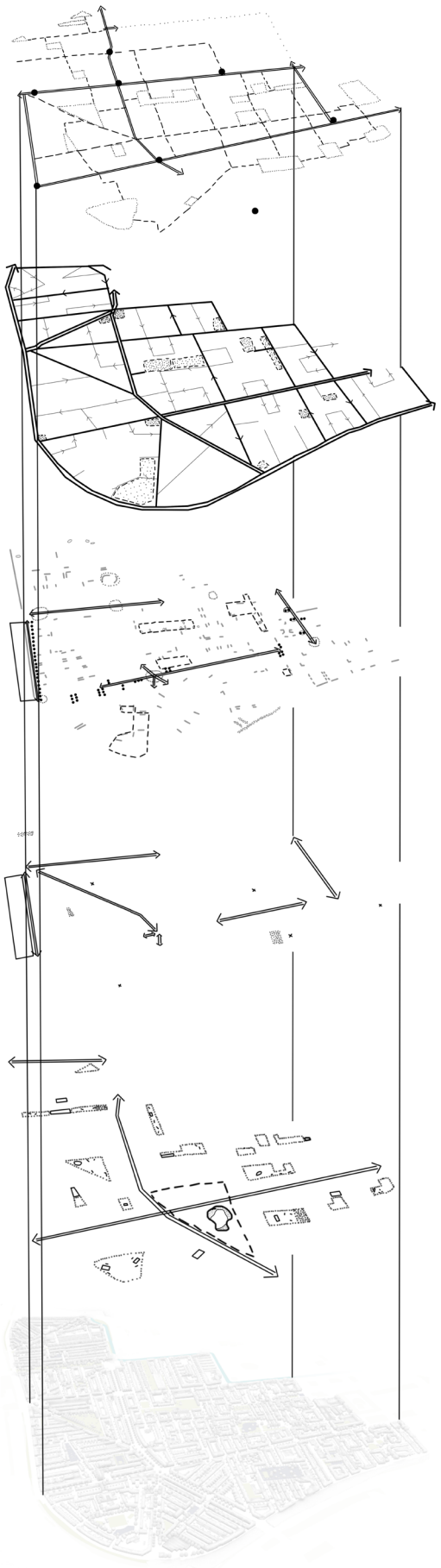


Figure 115: shows the combined version of the maximalisation maps

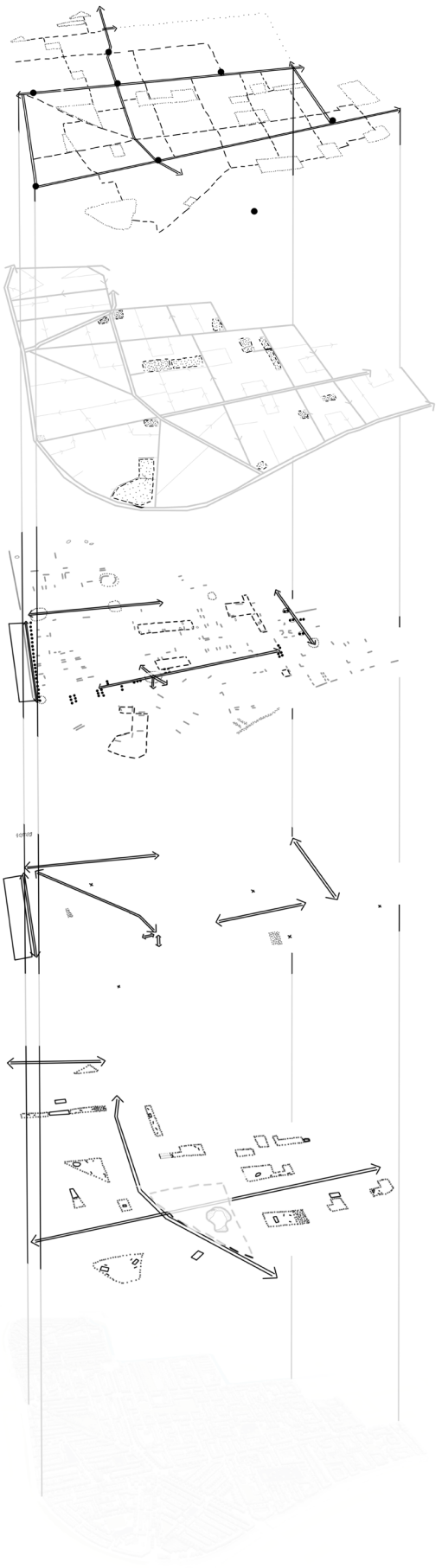


Figure 116: shows the opportunities in the combnined version of the maximalisation maps











CONCLUSION

The main opportunities lie in strengthening the shopping streets in a way that makes them more lively, adding facilities to existing public spaces and making more clear distinctions between different types of streets meant for different kind of users. Furthermore, rain water related interventions provide opportunities in improving streets and public spaces in a way that also improved livability. Thus opportunities in the field are mainly found in financial opportunities of combining.

Conflicts between the different maximalisations arise on many points, of which the main ones are how to design the infrastructure network and implementing a large scale water structure. From a water perspective, implementing canals as well as creating a huge new park are difficult, both when looking at combining them with the other maximalisations as well as when looking at the costs to create them. This is mainly due to the area being densly built already, leaving little space in the subsurface for such measures. Another huge conflict is how to organise the infrastructural system. It is clear that creating a network that makes larger differences between different kinds of space would be beneficial. However, what would be the best approach is more difficult to determine.

PERSONAS

In this section a design experiment with personas is shown. The objective of this experiment is to investigate how needs of specifics groups would look spatially. When immediately making a design for all groups combined, needs of specific groups may be forgotten. In this case the follwoing personas where chosen: children, female youth, male youth, female grown-up, male grown-up, female and male elderly couple. As well as differences in their age, they also have different cultural backgrounds such as: Dutch, Moroccan, Turkish and Hindu.

For each persona a conversation/thought process is worked out based on a typical day. For this potential design interventions are distilled. Those interventions are then applied to a street in the Schilderswijk to visualise what it could look like in practice. Another layer of rain water interventions suitable for the persona is then added in a second drawing of the same perspective.

In the end, the designs for the different personas are to be combined for the final design.

CHILDEREN'S PERSPECTIVE

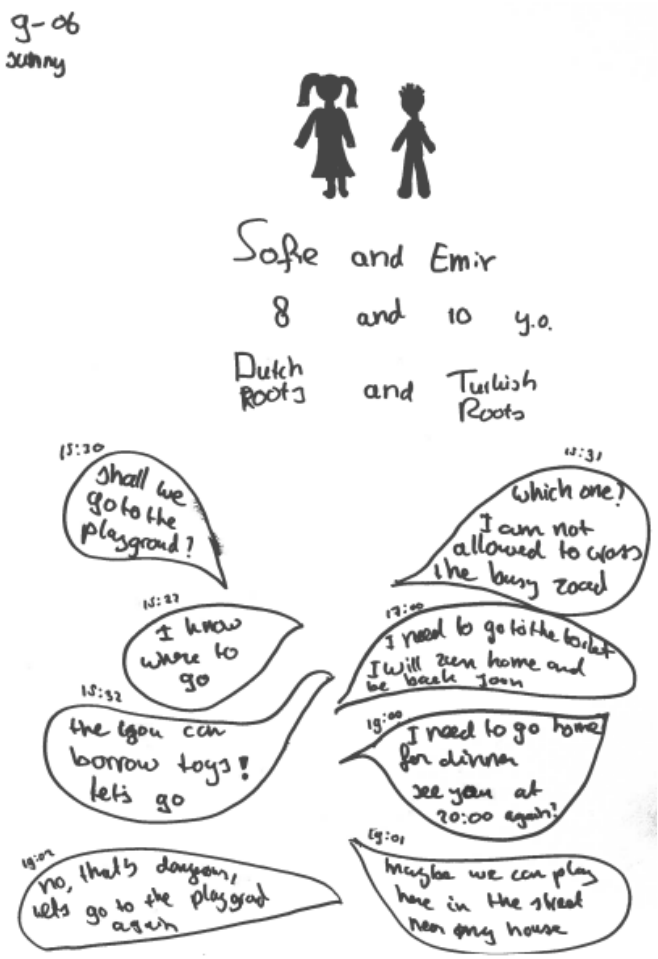
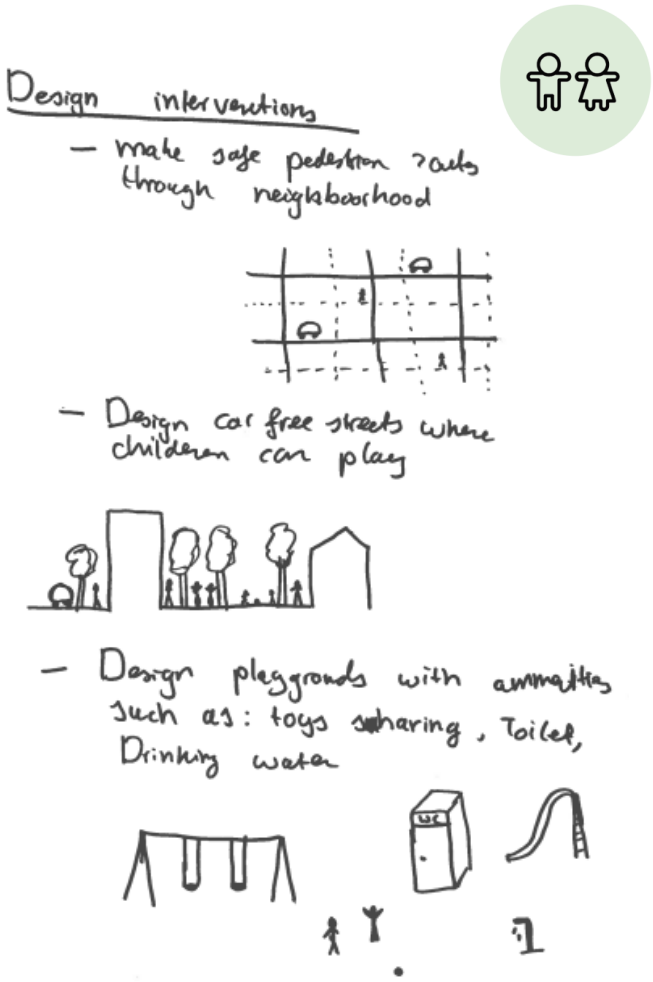


Figure 117: shows the needs of children



added amenities in the park such as a playground and drinking water

Created a more pleasant environment by placing trees which also give shade in summer

Created a place for mothers to sit while watching the children

Created a safer and larger pedestrian way

Created safer streets to play on

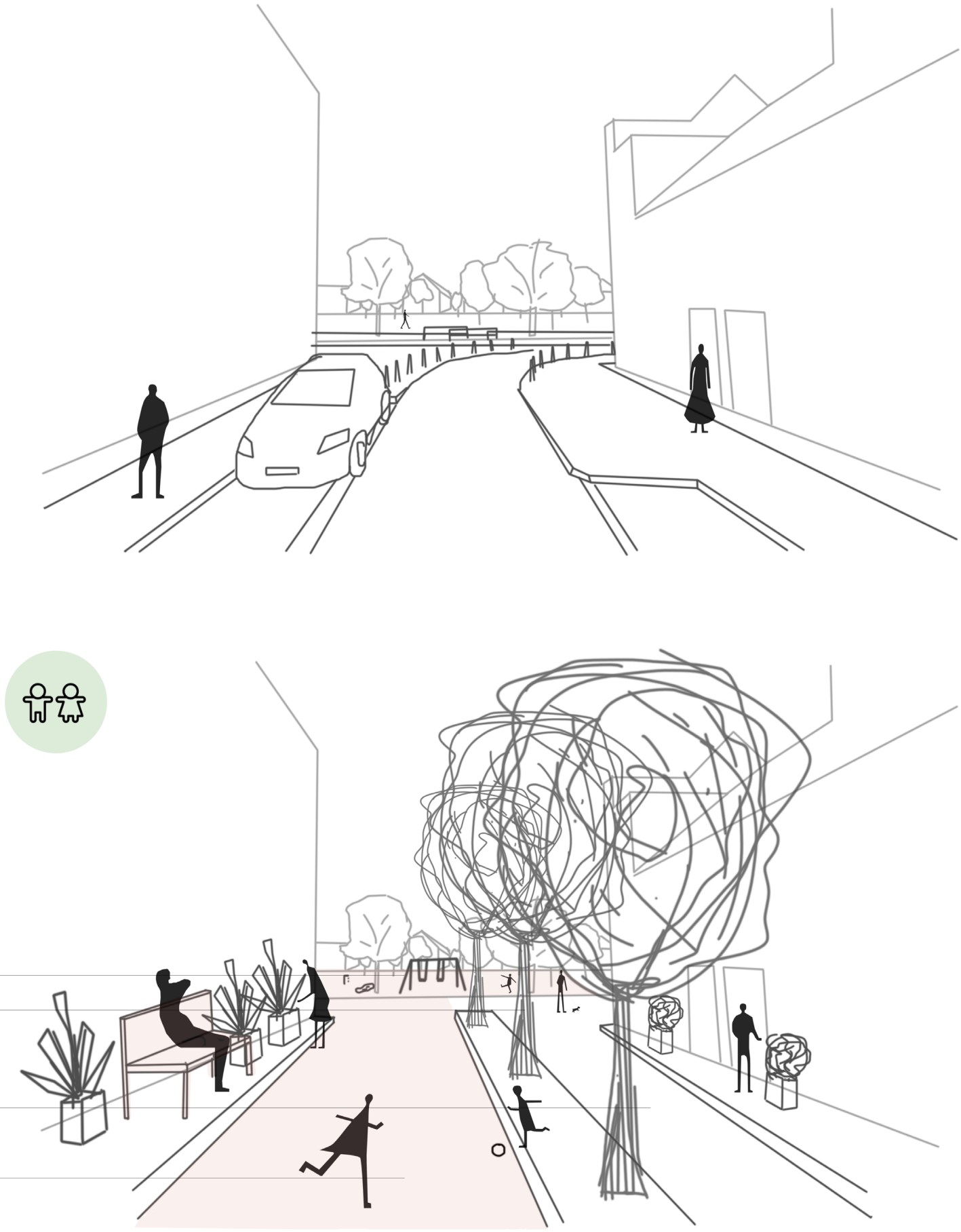


Figure 118: shows the comparision between the street originally and adjusted to the respective needs from a livability perspective

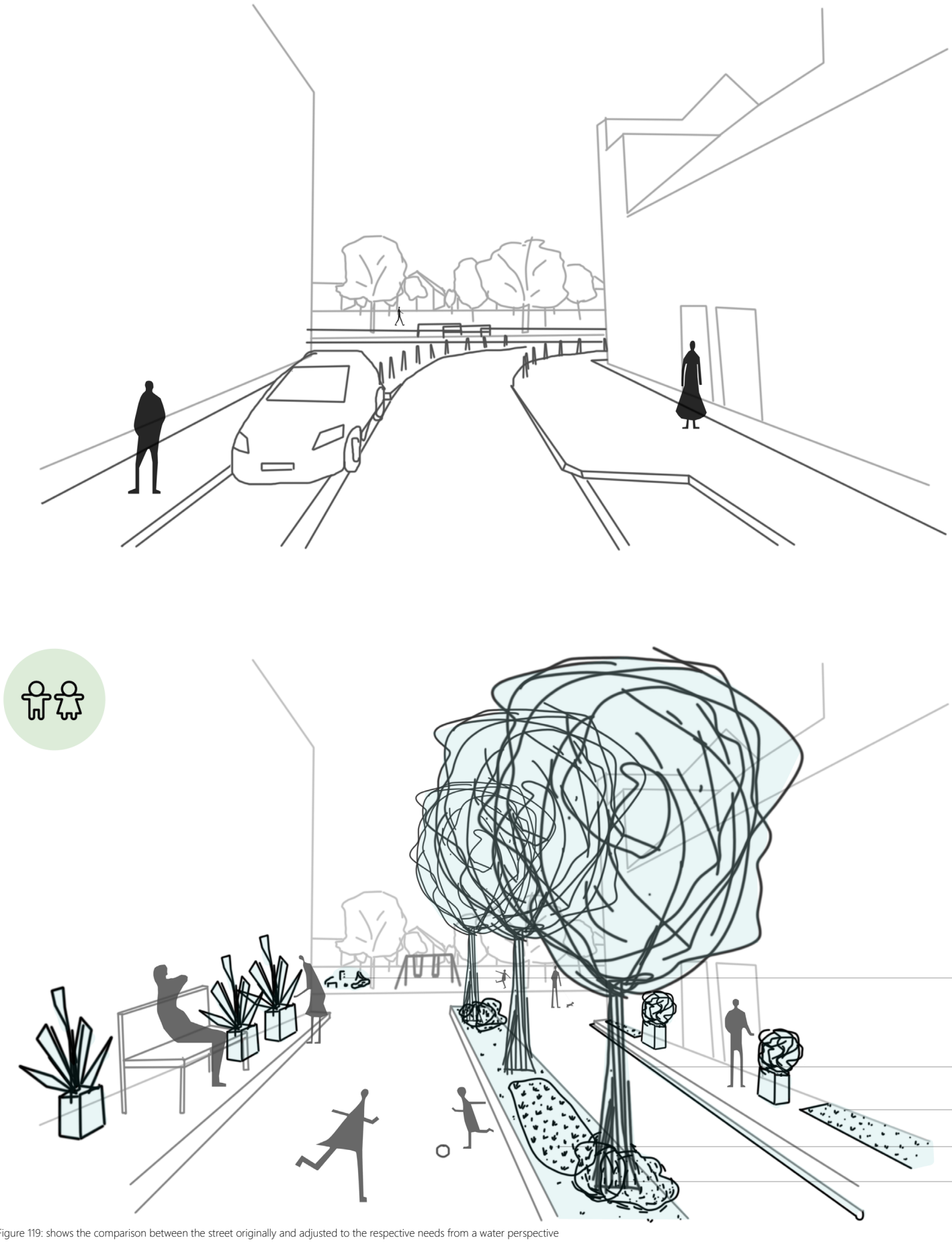


Figure 119: shows the comparison between the street originally and adjusted to the respective needs from a water perspective

Create a water playground

Add open gutters

Remove first few tiles on sidewalk

Add wadis

Add greenery, trees and plants

MALE ADOLECENT'S PERSPECTIVE

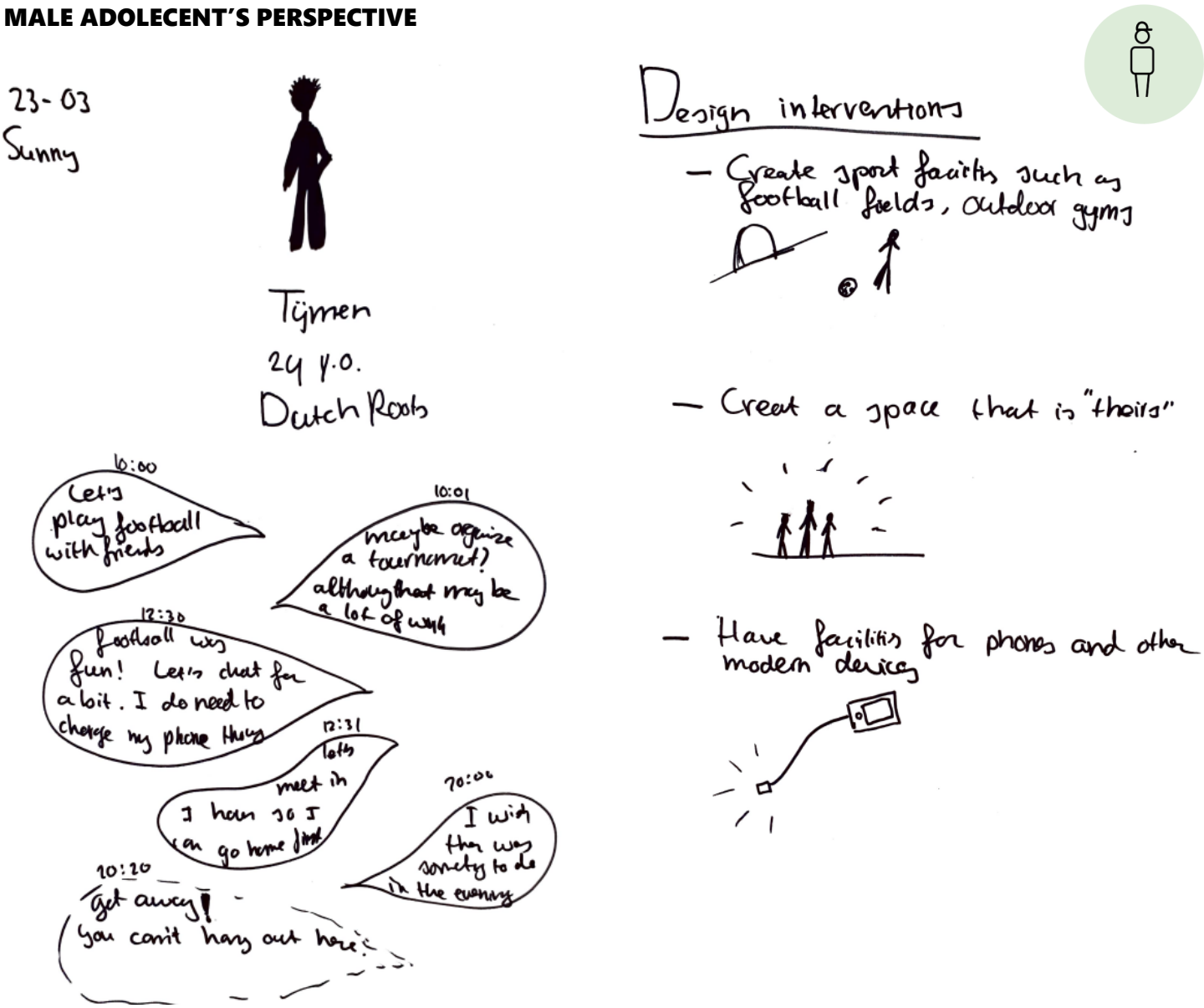


Figure 120: shows the needs of male adolescents

In the Schilderswijk problems are experienced by some inhabitants with loiterers. This is an complex issue as young people need a place to hang out, which often is not given to them in public space as they are sent away everywhere. This causes irritation for the youngsters who at some point may become less polite. It is crucial to find and design places for youngsters where they can stay without being sent away. The place needs enough space or acoustic dempening so no noise nuisances occur for surrounding houses, good lighting is needed to provide a safe feeling for other inhabitants and lastly the place needs to provide the facilities youngsters appreciate. This could mean a mixture of open space and some built structure.

Add sport facilities

Add murals/street art

Add a place to meet

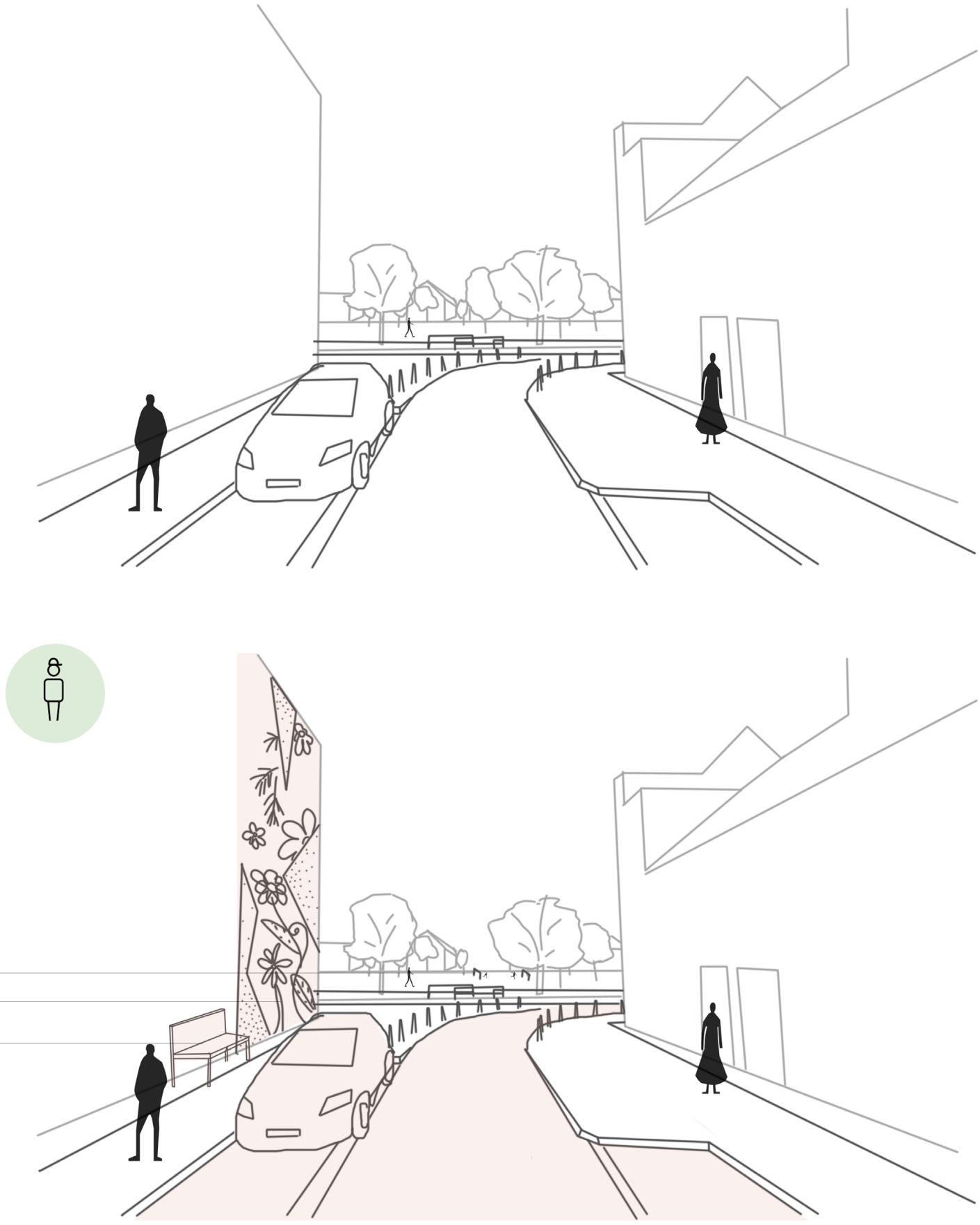


Figure 121: shows the comparison between the street originally and adjusted to the respective needs from a livability perspective

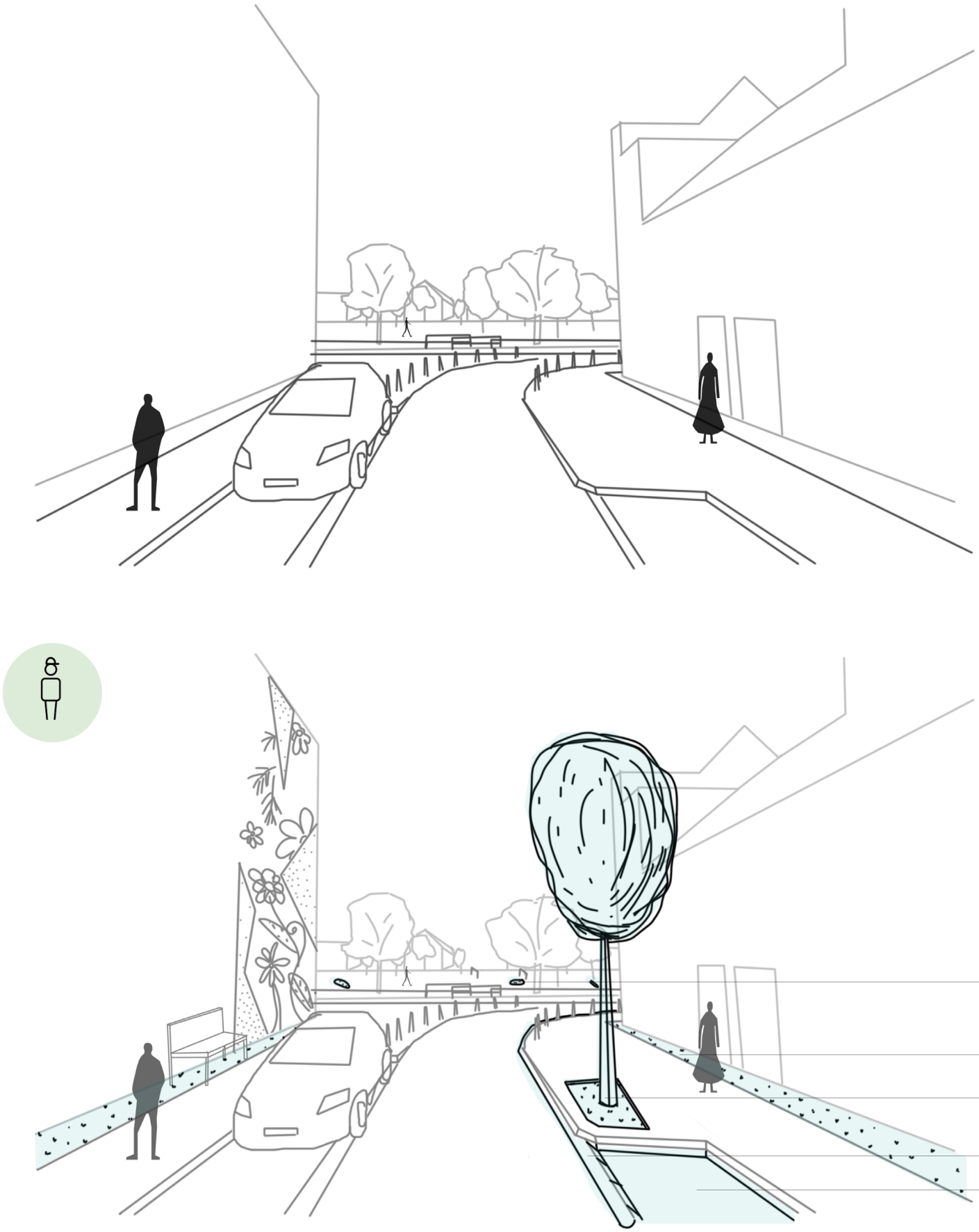


Figure 122: shows the comparison between the street originally and adjusted to the respective needs from a water perspective

Add wadis

Remove first few tiles on sidewalk

Add greenery, trees and plants

Add open gutters

Create temporary water storage in parking spots

FEMALE ADOLECENT'S PERSPECTIVE

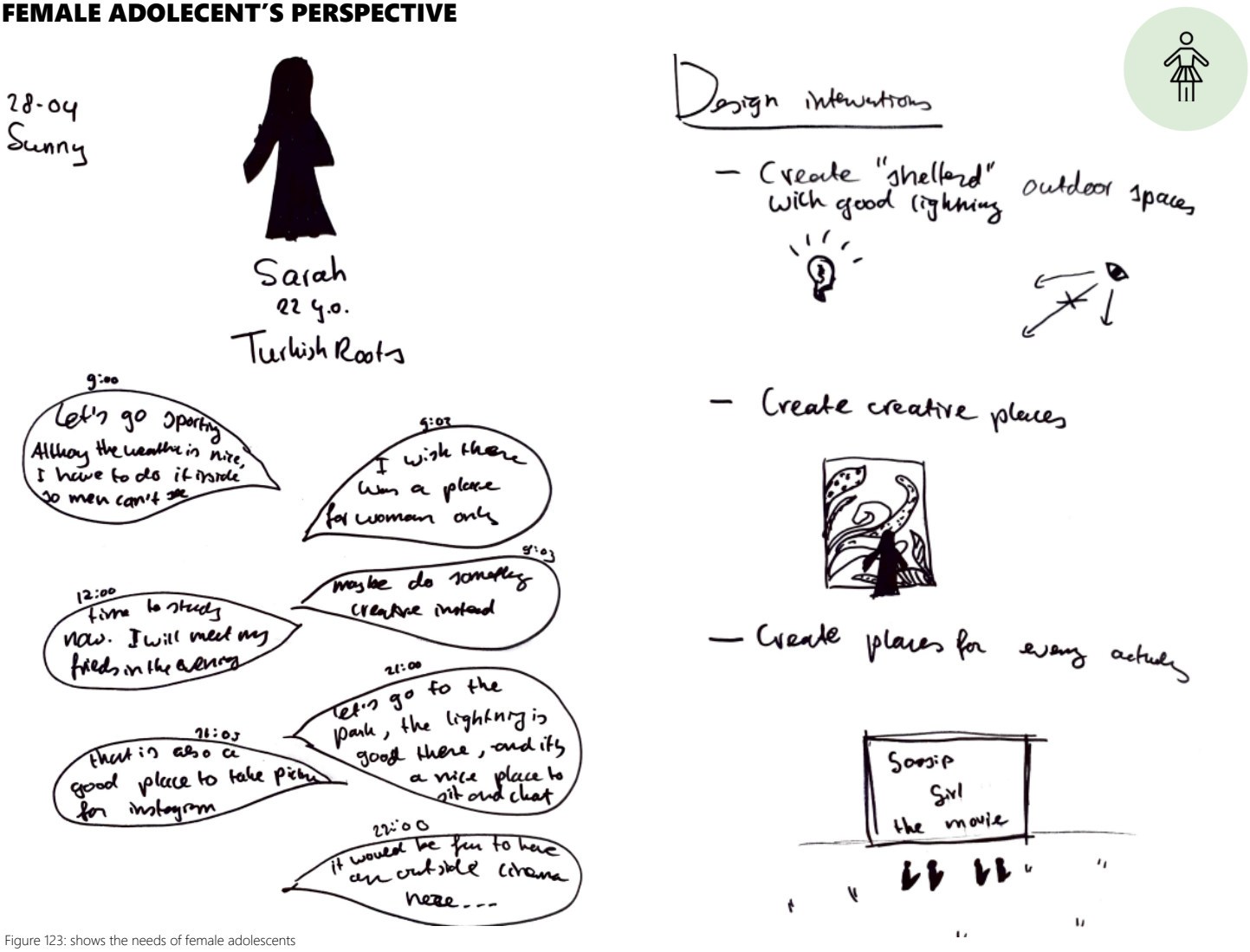


Figure 123: shows the needs of female adolescents

Add murals/street art

Add extra streetlights for a safe feeling

Create more eyes on the streets

Created a more pleasant environment by placing trees wich also give shade in summer

Created a safer and larger pedestrian way

Add a kitchen garden

Create bicycle paths

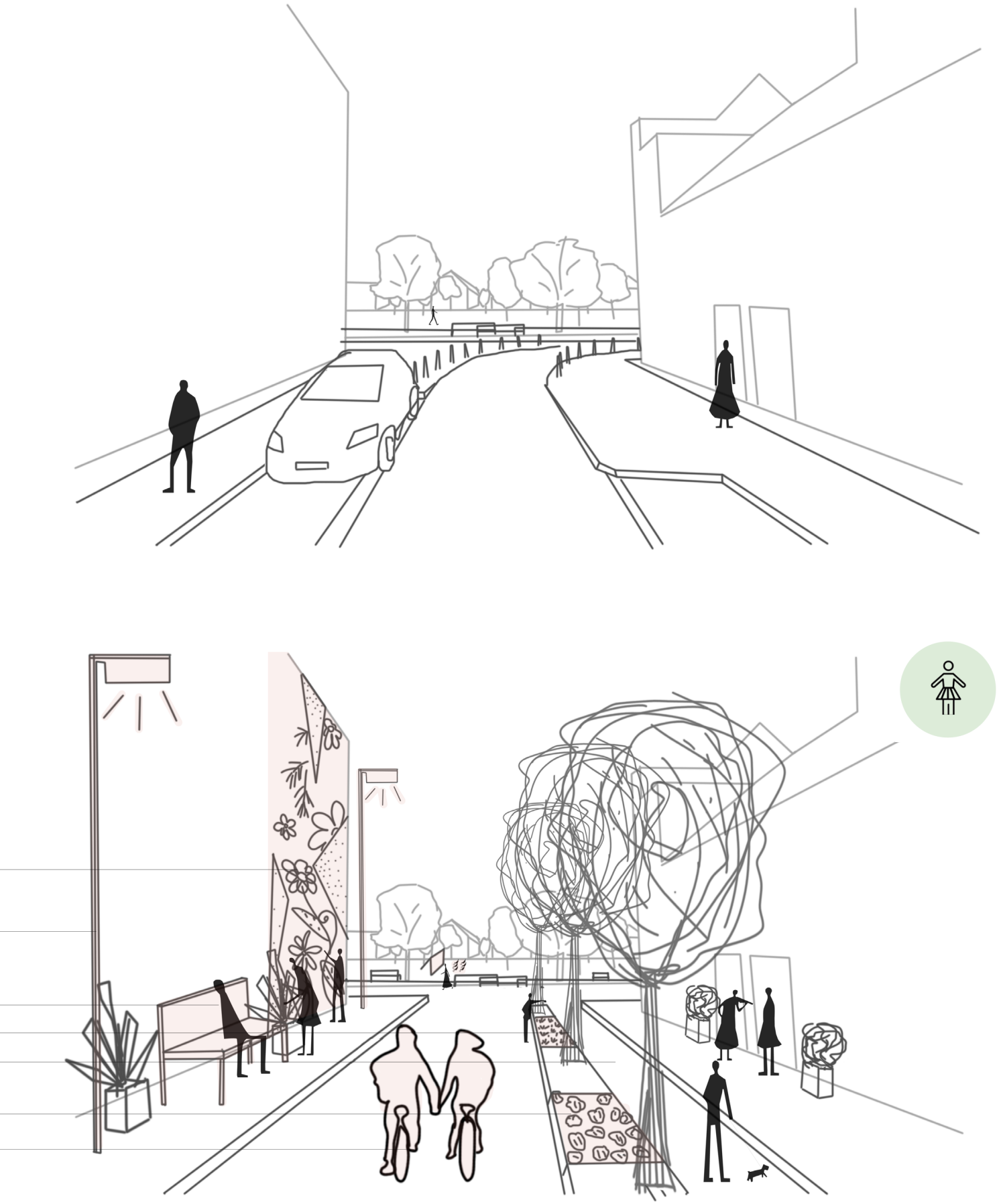


Figure 124: shows the comparison between the street originally and adjusted to the respective needs from a livability perspective

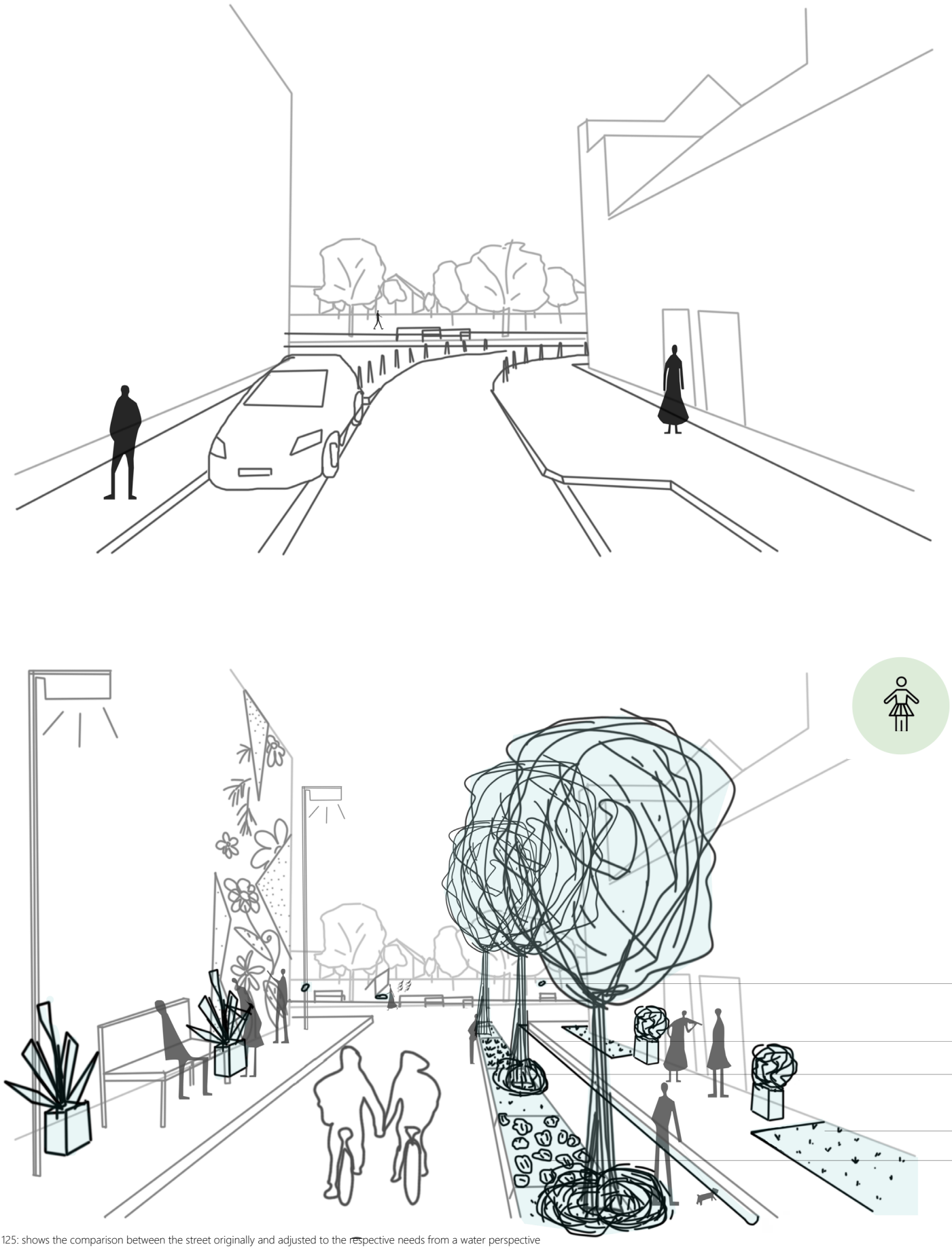


Figure 125: shows the comparison between the street originally and adjusted to the respective needs from a water perspective

Add wadis

Add open gutters

Add greenery, trees and plants

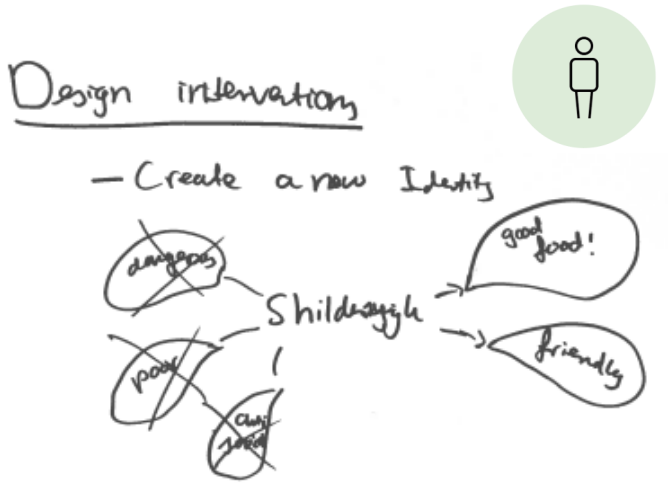
Remove first few tiles on sidewalk

Add a kitchen garden

GROWN UP MALE'S PERSPECTIVE



Figure 126: shows the needs of male grown-ups



Add murals/street art

Keep parking spots

Keep space for cars

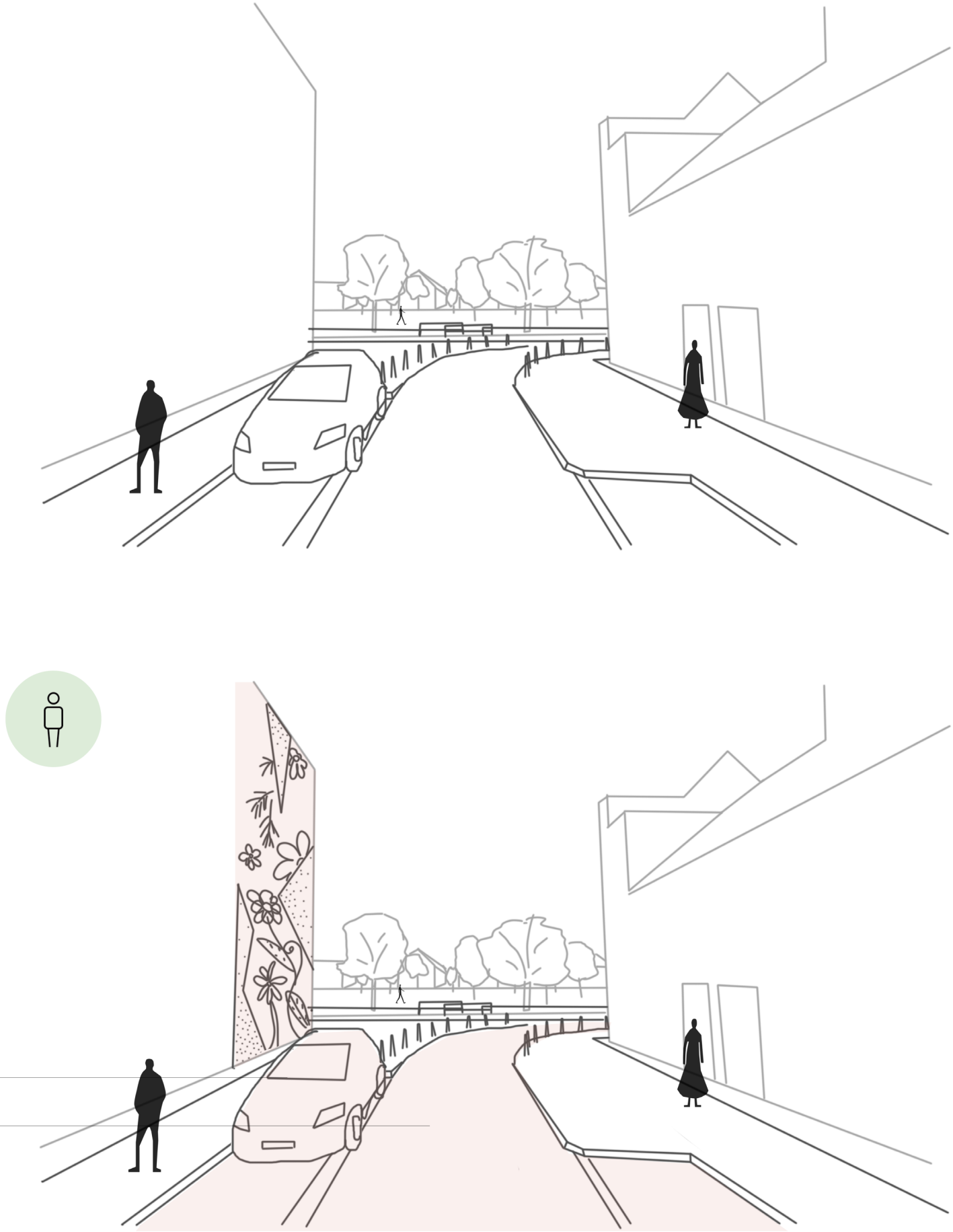


Figure 127: shows the comparison between the street originally and adjusted to the respective needs from a livability perspective

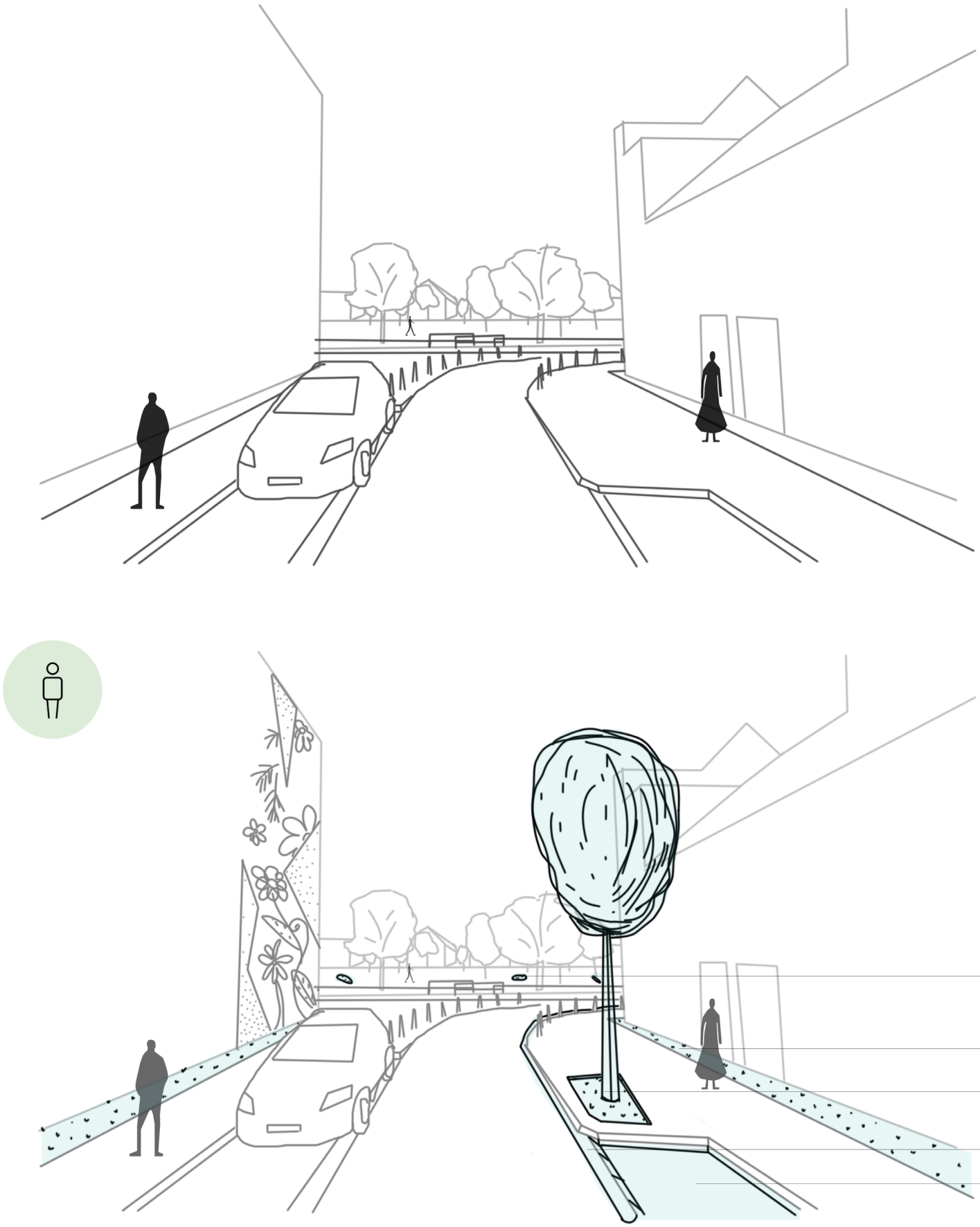


Figure 128: shows the comparison between the street originally and adjusted to the respective needs from a water perspective

Add wadis

Remove first few tiles on sidewalk

Add greenery, trees and plants

Add open gutters

Create temporary water storage in parking spots

GROWN UP WOMAN'S PERSPECTIVE

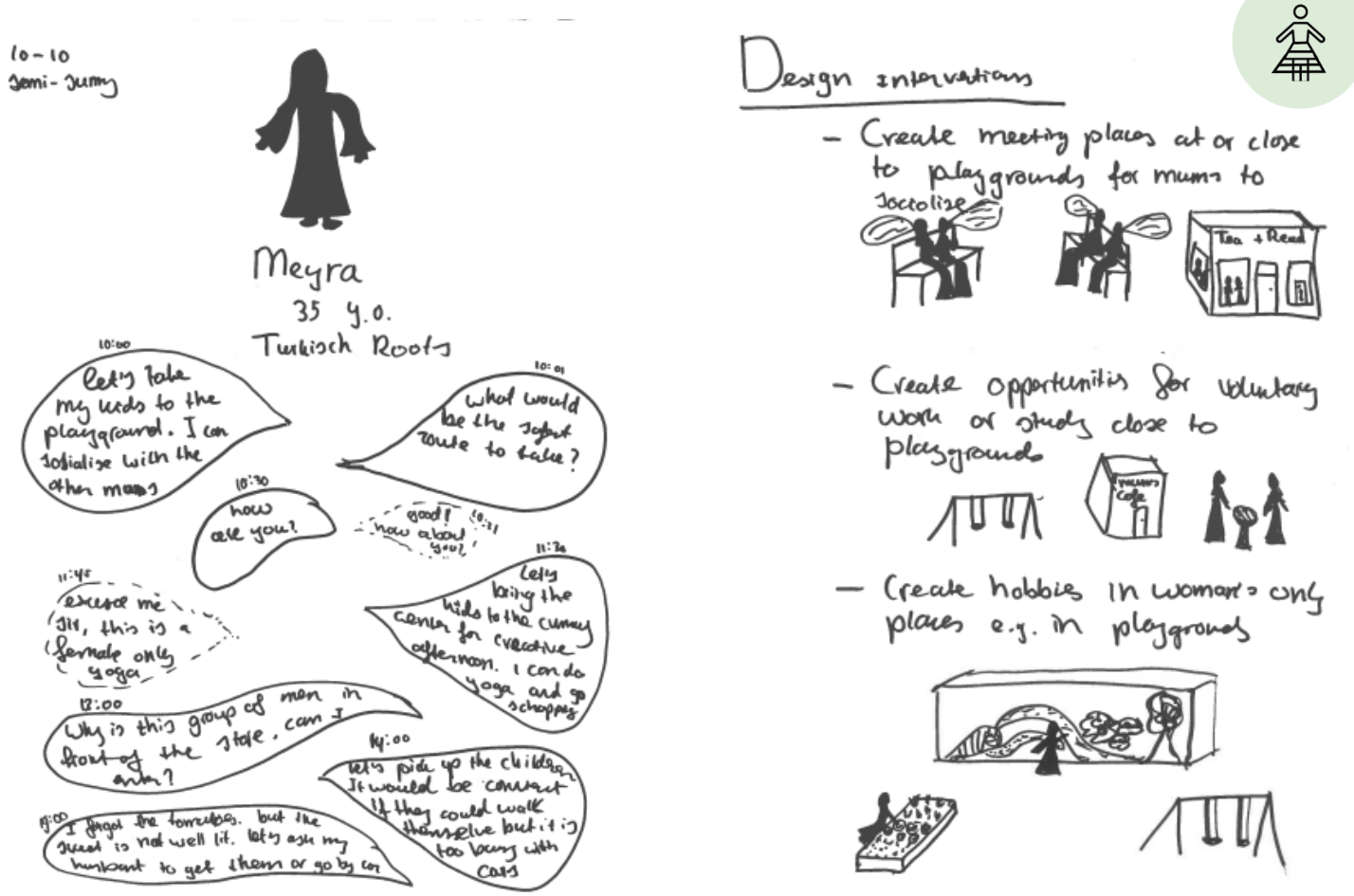


Figure 129: shows the needs of female grown-ups

Add murals/street art

Add a place where one can study, read or have a cup of tea

Created a place for mothers to sit while watching the children

Created a more pleasant environment by placing trees wich also give shade in summer

Created a safer and larger pedestrian way

Add a kitchen garden

Keep space for cars

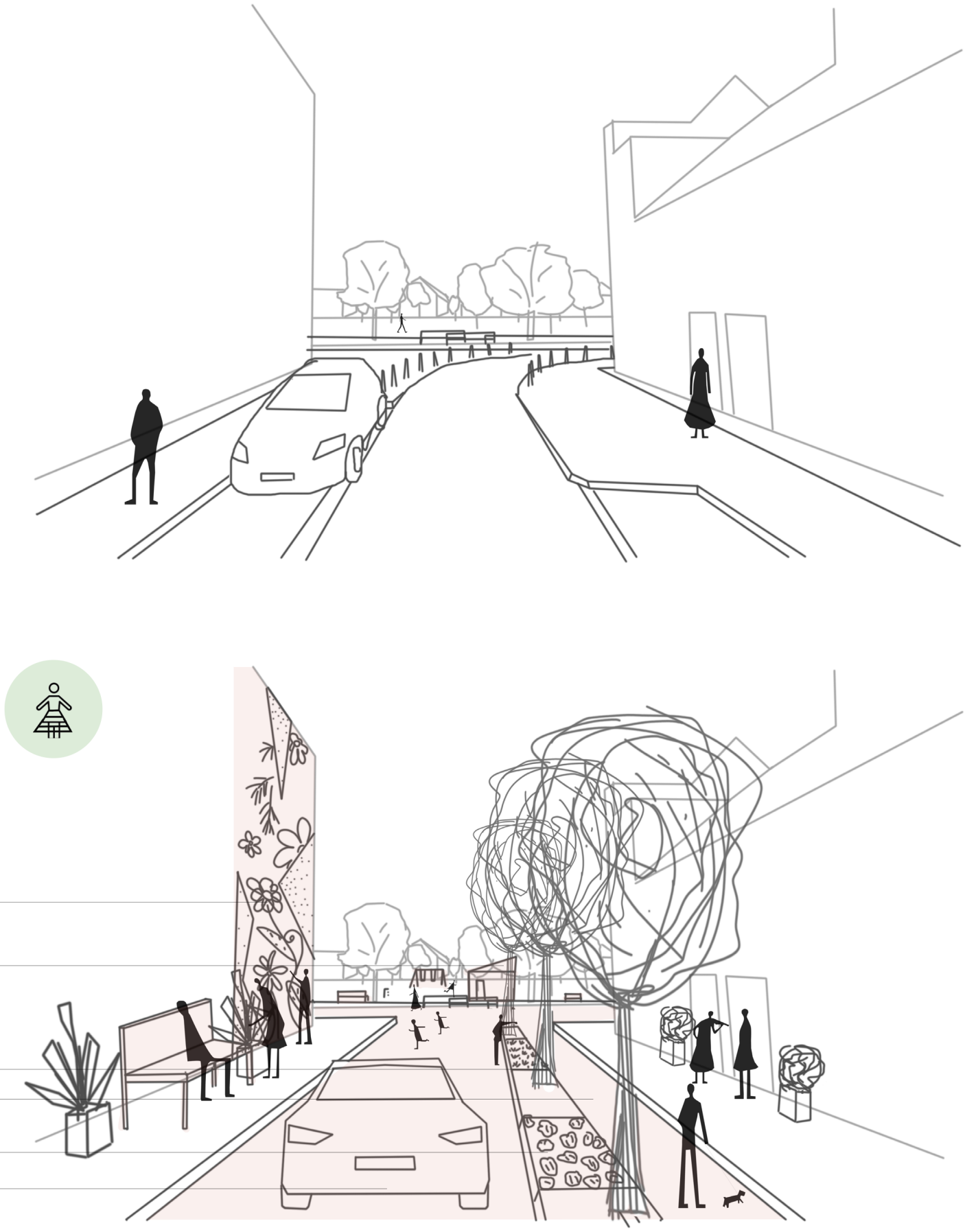


Figure 130: shows the comparison between the street originally and adjusted to the respective needs from a livability perspective

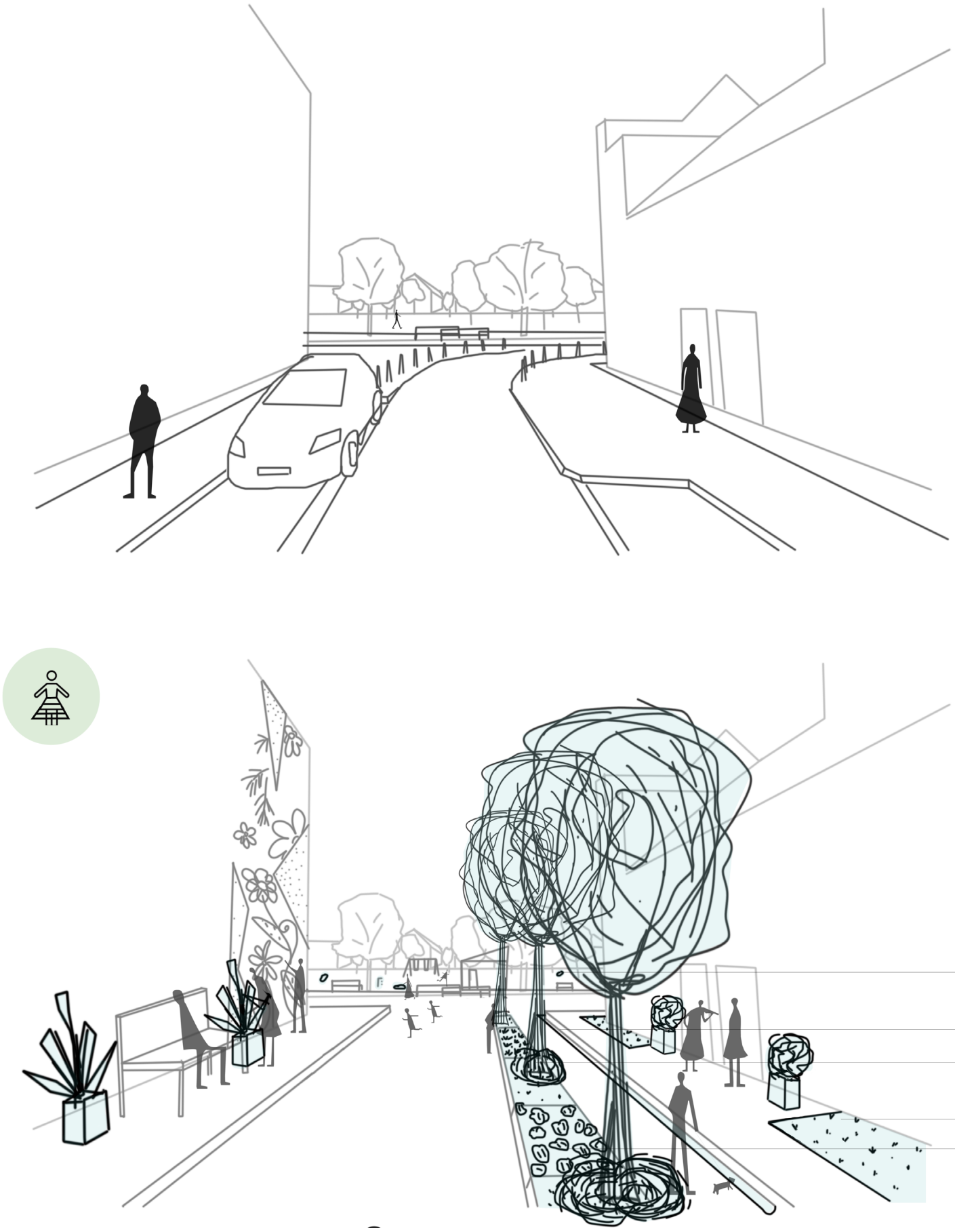


Figure 131: shows the comparison between the street originally and adjusted to the respective needs from a water perspective

Add wadis

Add open gutters

Add greenery, trees and plants

Remove first few tiles on sidewalk

Add a kitchen garden

ELDERLY'S PERSPECTIVE

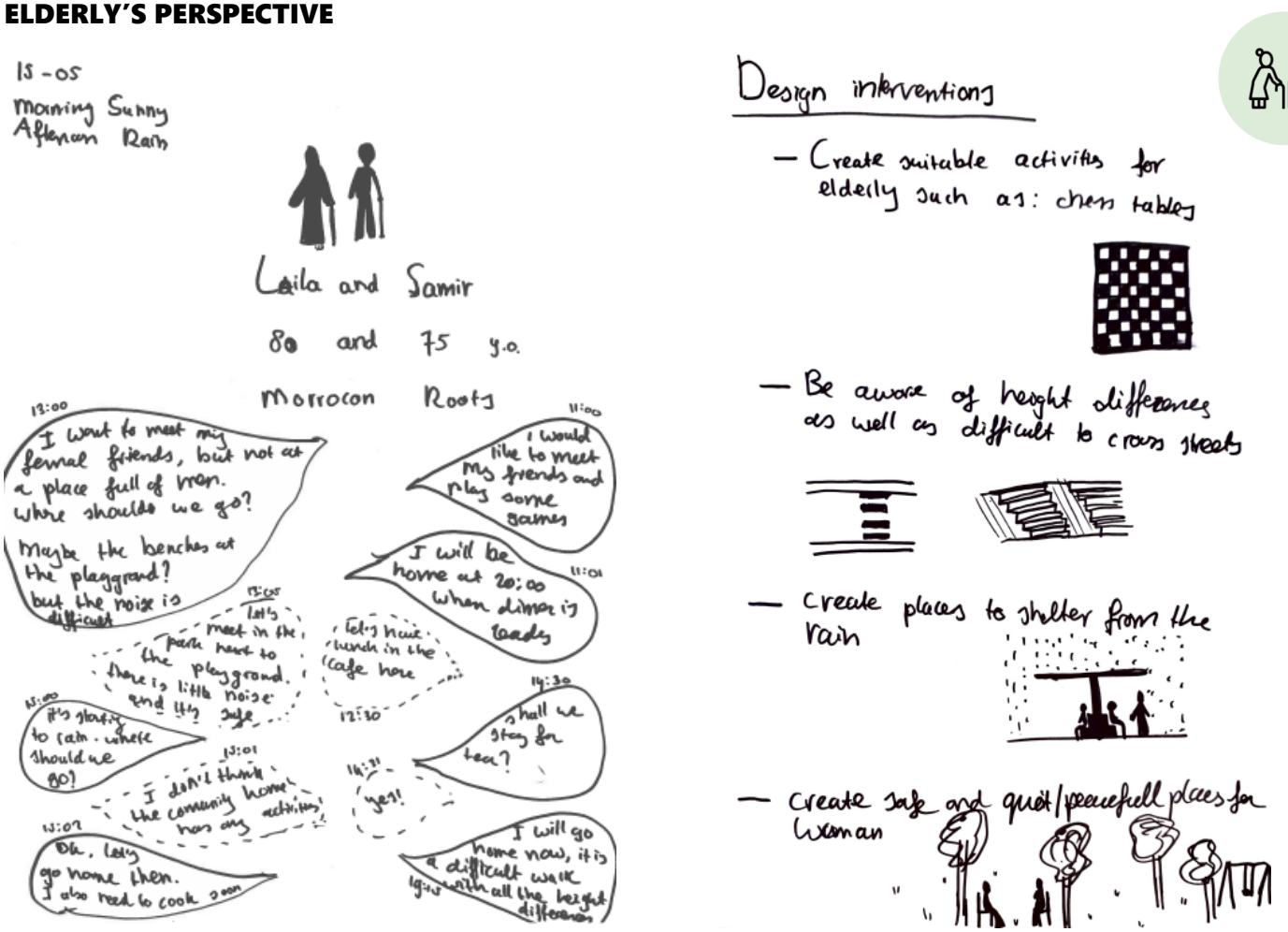


Figure 132: shows the needs of two elderly

Create places to shelter from rain
Create a place to sit in the park

Add a pedestrian crossing
Create a place to sit in front of the house

Add a chess table

Keep space for cars

Created a more pleasant environment by placing trees wich also give shade in summer

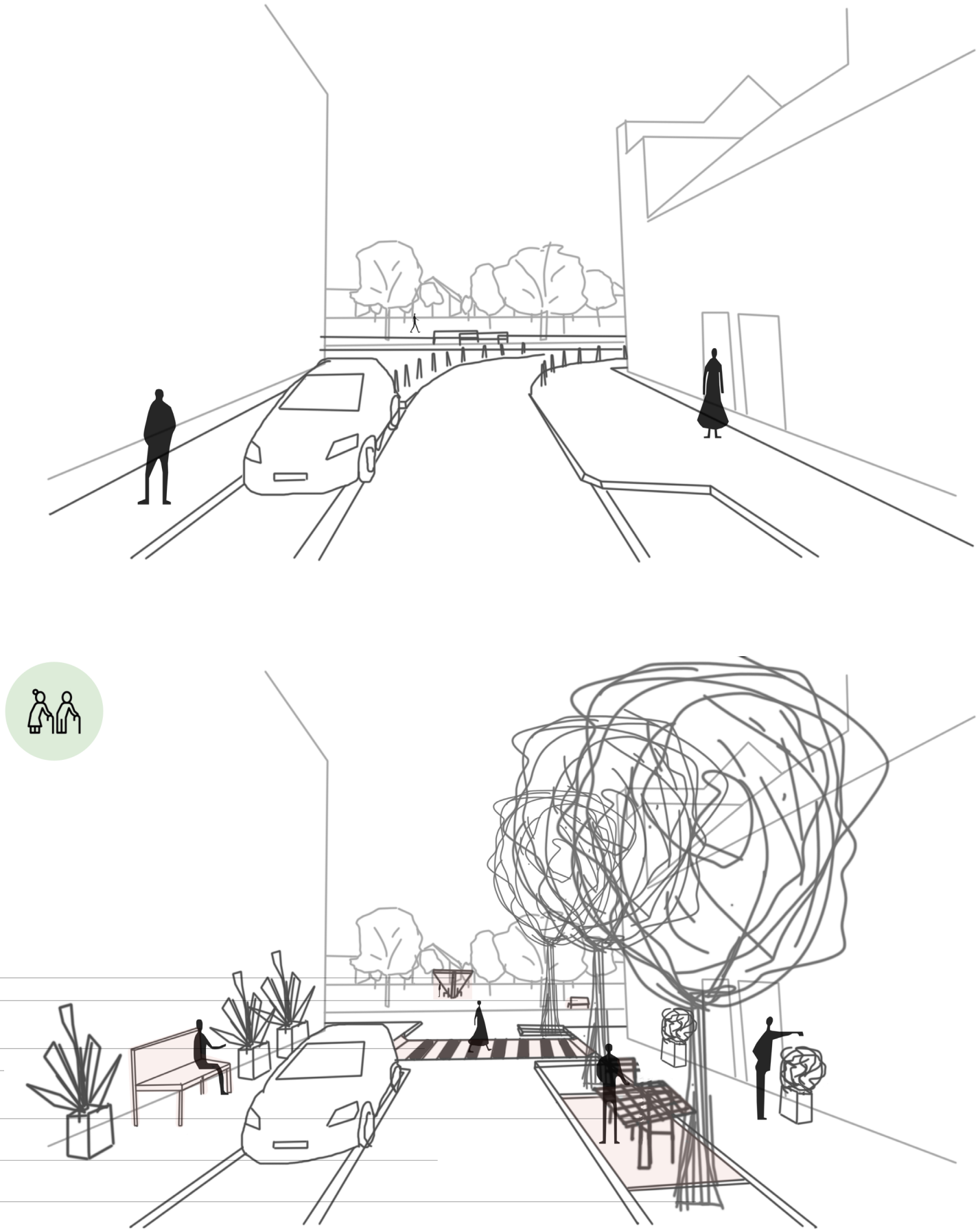


Figure 133: shows the comparison between the street originally and adjusted to the respective needs from a livability perspective

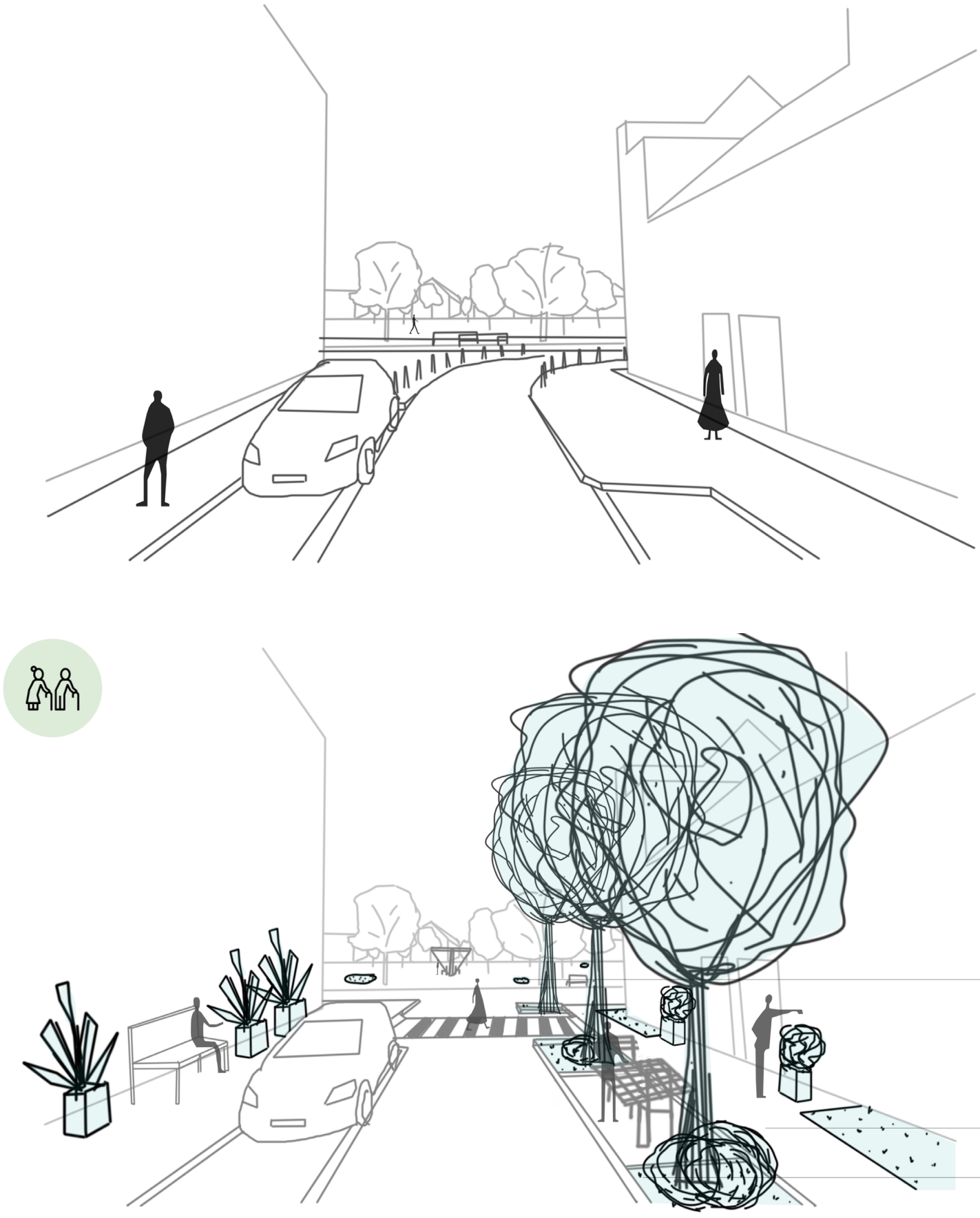


Figure 134: shows the comparison between the street originally and adjusted to the respective needs from a water perspective

Add wadis

Remove first few tiles on sidewalk

Add greenery, trees and plants

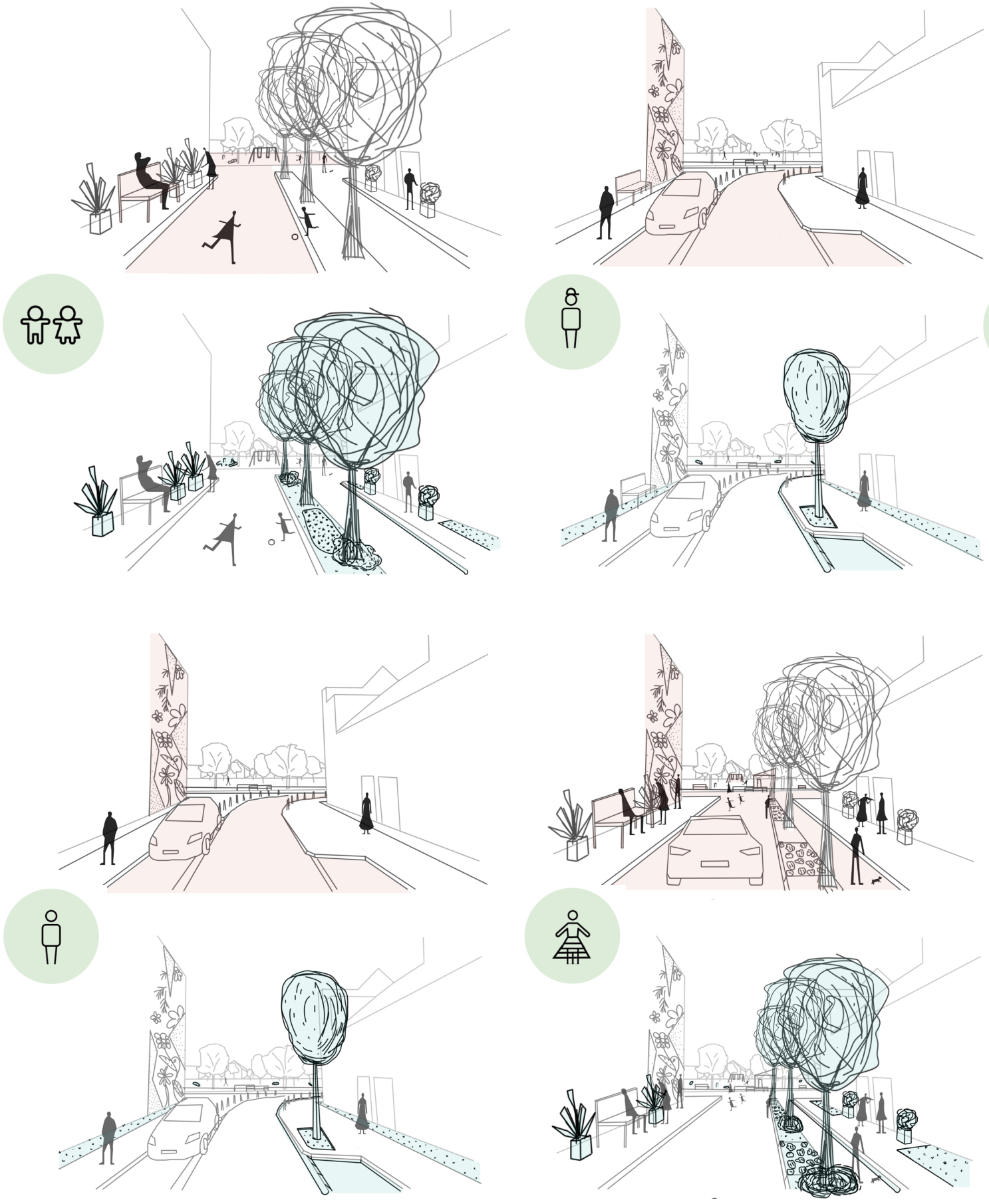
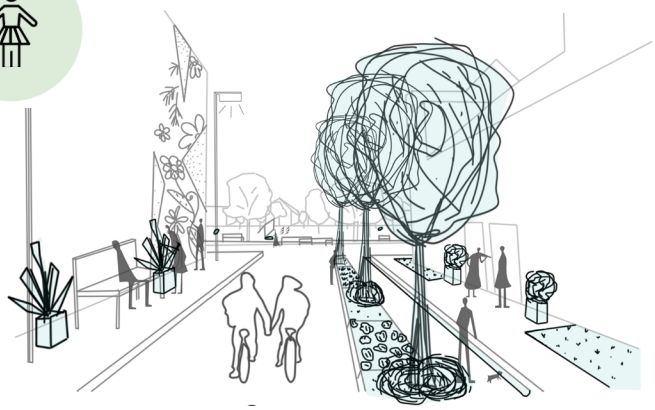
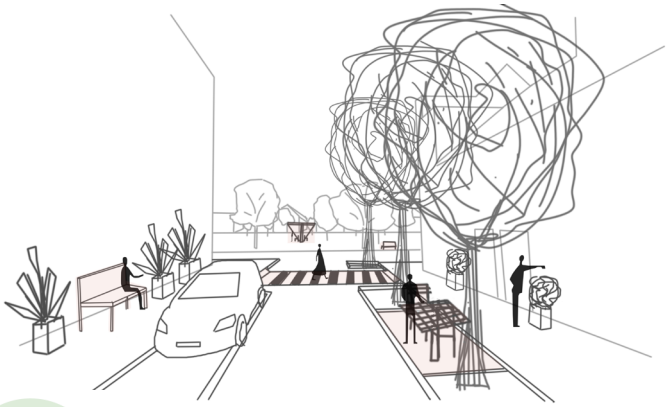
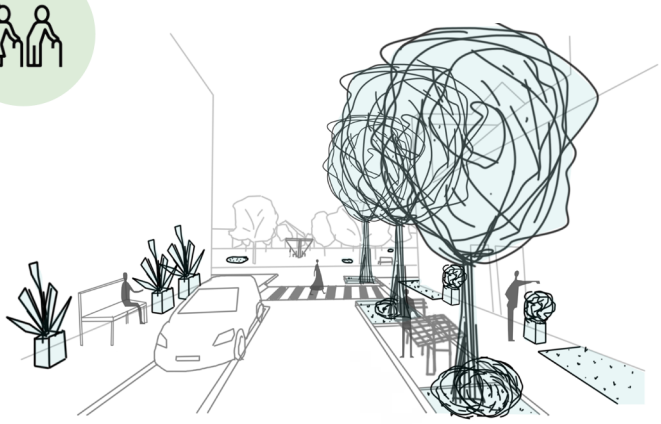


Figure 135: shows an overview of the different personas and their preferences









CONCLUSION

The biggest conflict between different users is on how much space to give to the car. If cars would have less space, to a large extent consent exists on what the space could be used for. Slower traffic is easier to combine with spaces with the qualities to let people stay and use the space. Opportunities exist here in combining functions that attract different groups of people. Furthermore, the possibility of rain water related measures also depends to a large extent on the space reserved for cars. Within the different preferences between groups, little conflicts are predicted on the street scale.

DENSIFICATION POSSIBILITIES

Although the goal of the project is not to densify, densifying can at times be done as a means to reach other goals, such as creating landmarks, diversifying the population or for gaining financial means for their neighbourhood improvements. In the map on the right, the possibilites for densification are shown. The following boundary conditions are used:

- No netto negative effects on livability due to densification
- Historic buildings will not be densified, at most renovation can take place



Figure 136: shows possibilities for densification

Legend

- Densification because there is space
- Densification because the building is old
- Densification because the energy label calls for improvement
- Desnification to create better flow trough the neighbourhood
- Adding stories to an existing building
- Either densifying or adding storries to create better flow through the
- Not in ownership of a social rent organisation





Figure 137: Shows the infrastructural netwerk of The Hague



INFRASTRUCTURE ON THE LARGER SCALE

As the majority of conflicts lie in the approach towards the infrastructural system, an analysis on the larger scale was necessary. Here one can see the Vaillantlaan is one of the major infrastructural axes going through the Schilderswijk, while also being important on the city scale. Therefore it would at this point in time be unrealistic to make this a car free road. The same goes for the roads surrounding the Schilderswijk. In contrast, the Hoefkade and the Hobbemastraat are not of great importance for the infrastructural network on city scale meaning more changes could be made there.

When discussing the future of the infrastructural network in The Hague, it is necessary to investigate the future of the car in comparison to shared mobility systems. The municipality of The Hague recognises that the pressure on the space in the city is increasing, and therefore the space dedicated to parking should be discussed (Muncipality of The Hague, May 2021). In the future they intend to limit parking spaces to the first car only if the pressure is too high. Furthermore, residents of neighbourhoods where large scale densification will take place no longer are guaranteed a parking spot on the street and instead will have to use parking garages. This trend of depending less on the car will can be expected to only become more obvious in the future. Also given the increase in shared transport modes, and the need for a transition to a more sustainable future. In conclusion, it is expected the future can be designed on less car dependence and therefore less parking spots.

CONCLUSION

PROBLEMS, OPPORTUNITIES AND ACTIONS

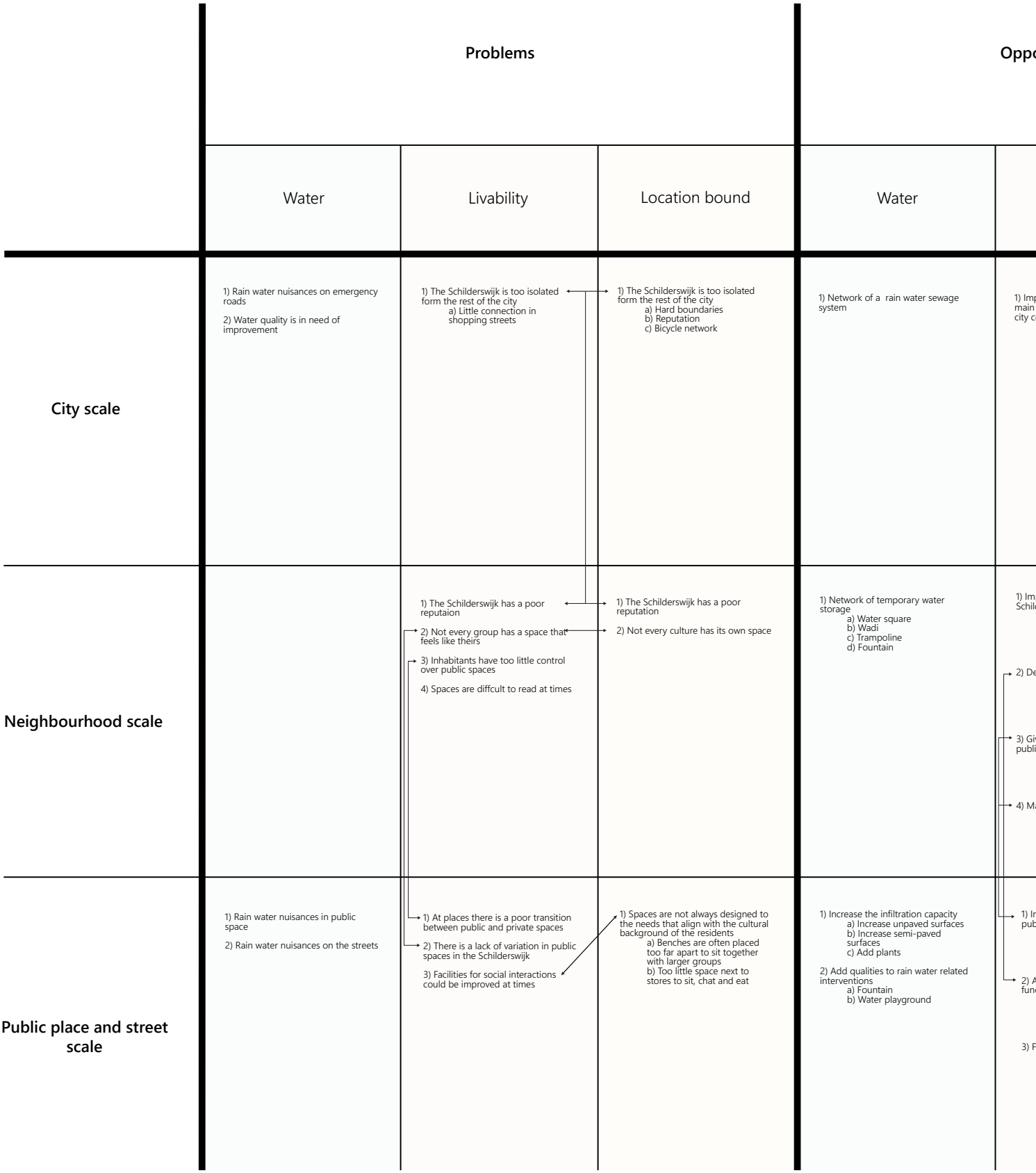
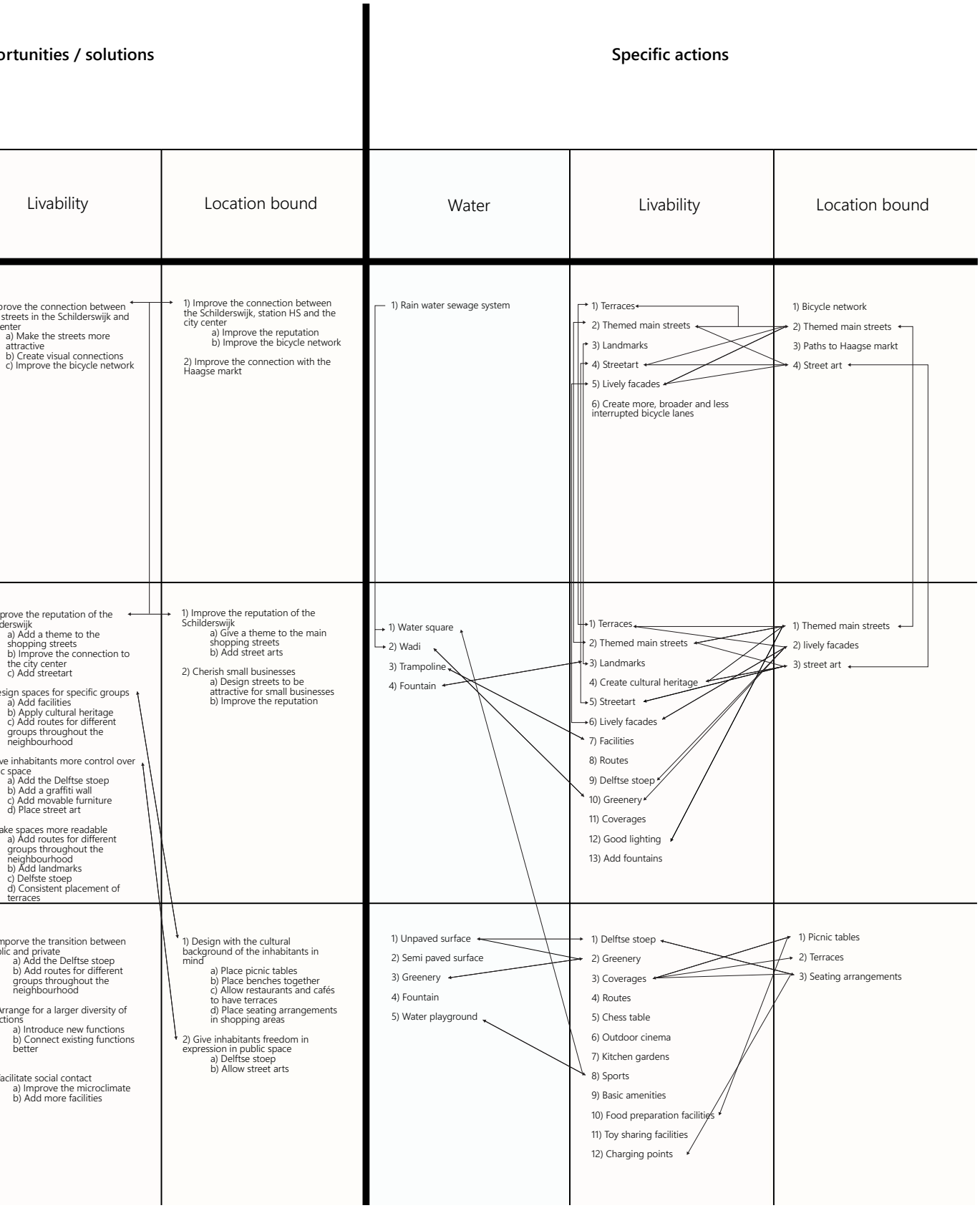


Figure 138: Shows the found solutions and their corresponding topic and scale


ortunities / solutions
Specific actions
Livability
Location bound
Water
Livability
Location bound
prove the connection between streets in the Schilderswijk and enter
a) Make the streets more attractive
b) Create visual connections
c) Improve the bicycle network
1) Improve the connection between the Schilderswijk, station HS and the city center
a) Improve the reputation
b) Improve the bicycle network
2) Improve the connection with the Haagse markt
1) Rain water sewage system
1) Terraces
2) Themed main streets
3) Landmarks
4) Streetart
5) Lively facades
6) Create more, broader and less interrupted bicycle lanes
1) Bicycle network
2) Themed main streets
3) Paths to Haagse markt
4) Street art
prove the reputation of the derswijk
a) Add a theme to the shopping streets
b) Improve the connection to the city center
c) Add streetart
sign spaces for specific groups
a) Add facilities
b) Apply cultural heritage
c) Add routes for different groups throughout the neighbourhood
ve inhabitants more control over c space
a) Add the Delftse stoep
b) Add a graffiti wall
c) Add movable furniture
d) Place street art
ake spaces more readable
a) Add routes for different groups throughout the neighbourhood
b) Add landmarks
c) Delfste stoep
d) Consistent placement of terraces
1) Improve the reputation of the Schilderswijk
a) Give a theme to the main shopping streets
b) Add street arts
2) Cherish small businesses
a) Design streets to be attractive for small businesses
b) Improve the reputation
1) Water square
2) Wadi
3) Trampoline
4) Fountain
1) Terraces
2) Themed main streets
3) Landmarks
4) Create cultural heritage
5) Streetart
6) Lively facades
7) Facilities
8) Routes
9) Delftse stoep
10) Greenery
11) Coverages
12) Good lighting
13) Add fountains
1) Themed main streets
2) lively facades
3) street art
mporve the transition between blic and private
a) Add the Delftse stoep
b) Add routes for different groups throughout the neighbourhood
rrange for a larger diversity of ctions
a) Introduce new functions
b) Connect existing functions better
acilitate social contact
a) Improve the microclimate
b) Add more facilities
1) Design with the cultural background of the inhabitants in mind
a) Place picnic tables
b) Place benches together
c) Allow restaurants and cafés to have terraces
d) Place seating arrangements in shopping areas
2) Give inhabitants freedom in expression in public space
a) Delftse stoep
b) Allow street arts
1) Unpaved surface
2) Semi paved surface
3) Greenery
4) Fountain
5) Water playground
1) Delftse stoep
2) Greenery
3) Coverages
4) Routes
5) Chess table
6) Outdoor cinema
7) Kitchen gardens
8) Sports
9) Basic amenities
10) Food preparation facilities
11) Toy sharing facilities
12) Charging points
1) Picnic tables
2) Terraces
3) Seating arrangements

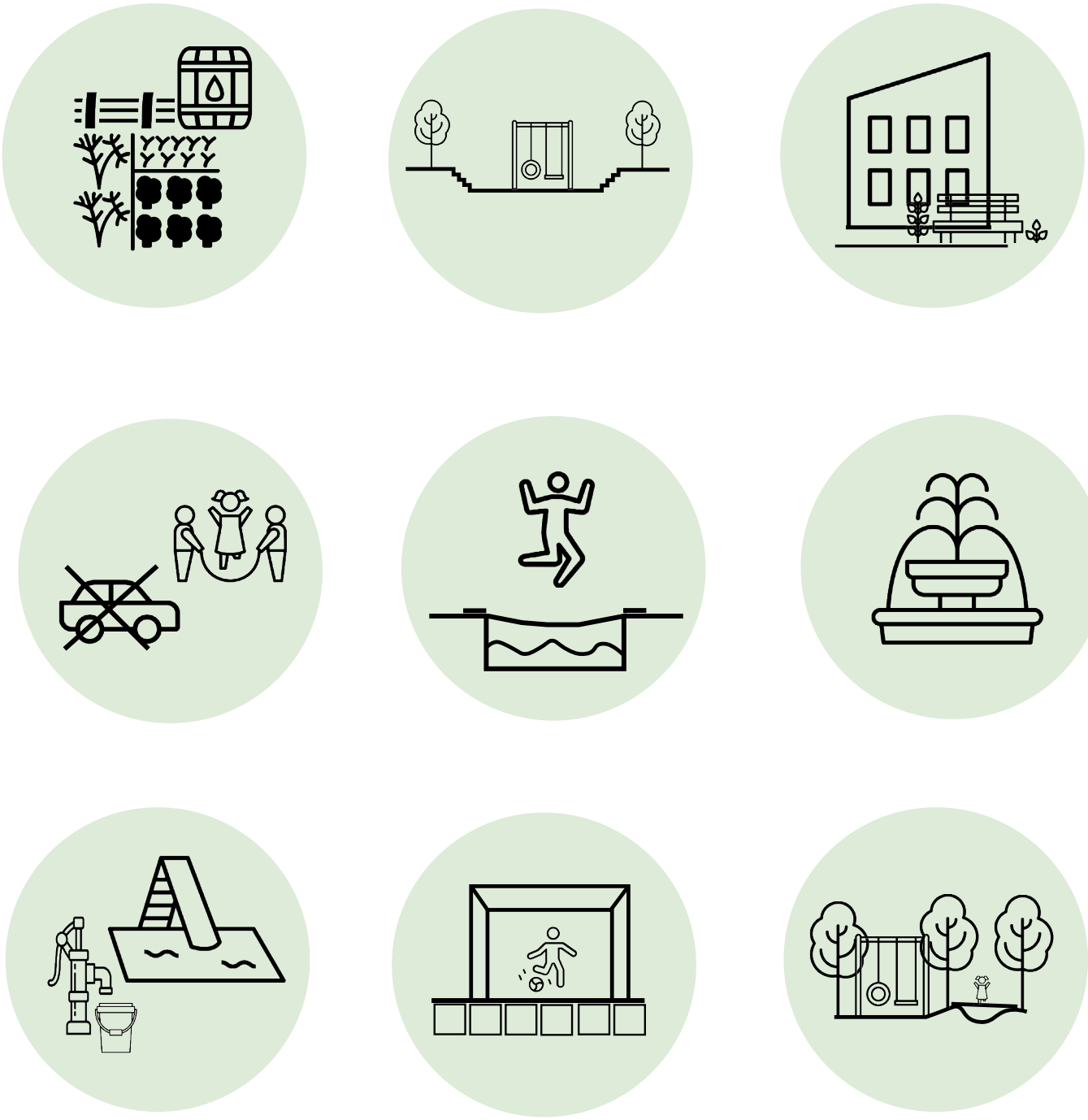
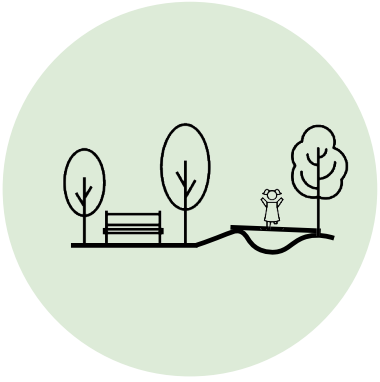


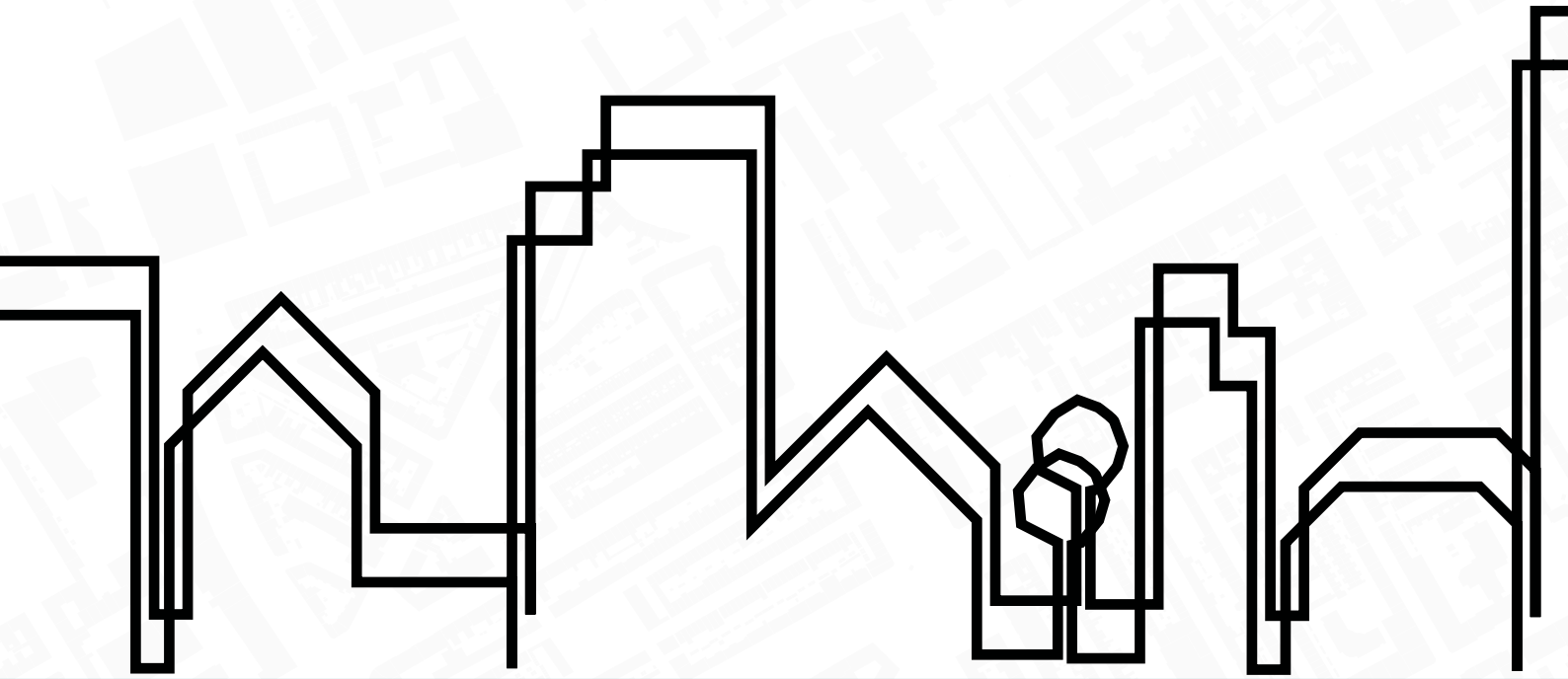
Figure 139: Shows a set of mutualistic solutions for rain water nuisances and livability problems

MUTUALISTIC SOLUTIONS

The following solutions have a positive effect or provide opportunities in creating positive effects on both livability and rain water nuisances in the Schilderswijk

- Kitchen gardens in combination with rain barrels
- Water squares in combination with sports or playgrounds
- Delftse stoep with the boundary condition of partly replacing paved surfaces by (semi-)permeable ones
- Car-free streets where one can make space for greenery and activities such as playing or relaxing
- Built-in trampolines in playgrounds, the space underneath can act as a temporary water buffer
- Fountains can give identity to a place, create a more pleasurable microclimate and can partly be temporary water buffers.
- Water playgrounds provide a socializing place for children and parents, while at the same time the height differences can be temporary water buffers and educate children on water issues
- Sport fields with infiltration boxes underneath
- Nature playgrounds
- Park with added functions and zoning in terms of height differences





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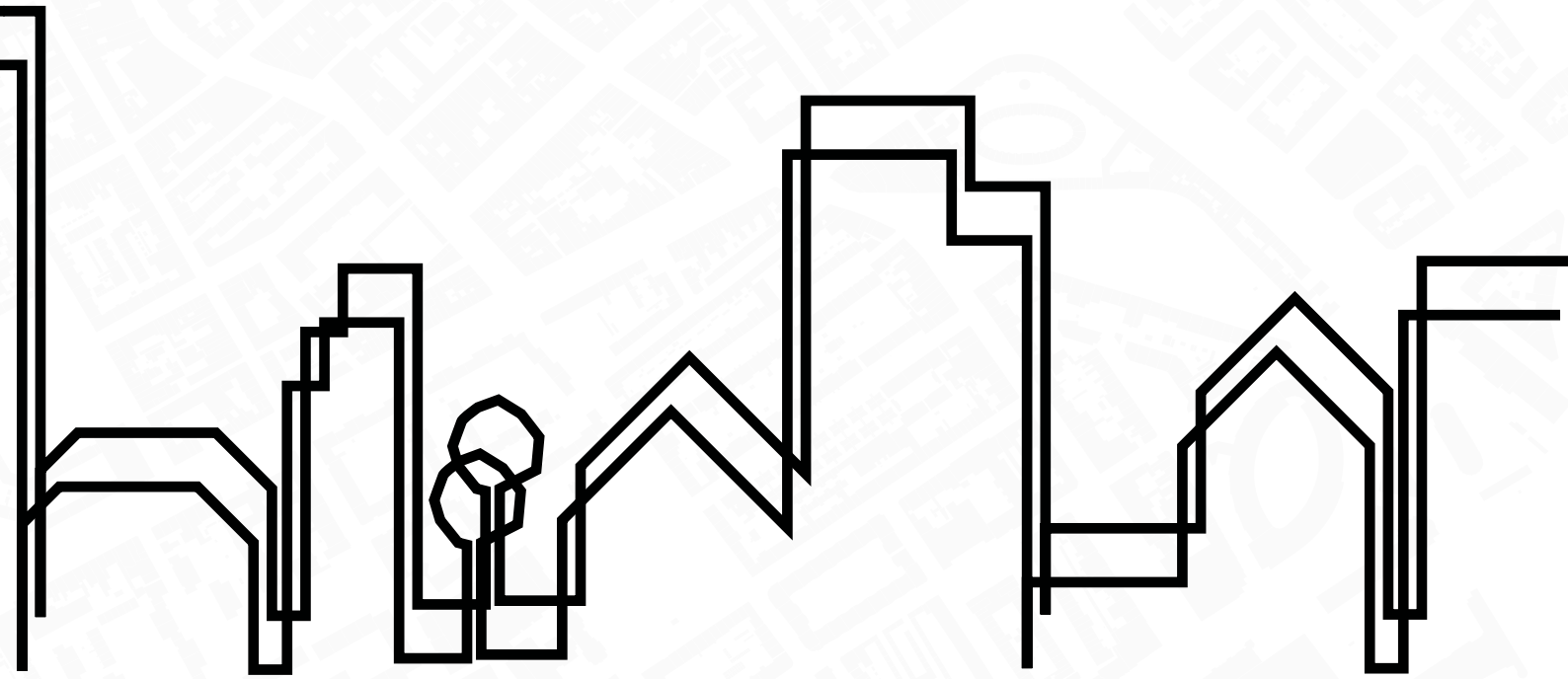


DESIGN OF THE NEIGHBOURHOOD

DESIGN OF THE NEIGHBOURHOOD

The following goals are embedded in the neighbourhood design:

- Infrastructural network: To create safer and more pleasurable routes for slow traffic while maintaining accessibility with other modes of transport and to improve readability of the neighbourhood
- Densification: To create a more readable urban fabric, make space for inhabitants who earn more money and want to stay in the neighbourhood and free up financial resources for public space projects
- Identity: To give a new, suitable and positive identity to the neighbourhood
- Public space: To make public spaces more attractive to a more balanced target group
- Rain water: To reduce rain water nuisances

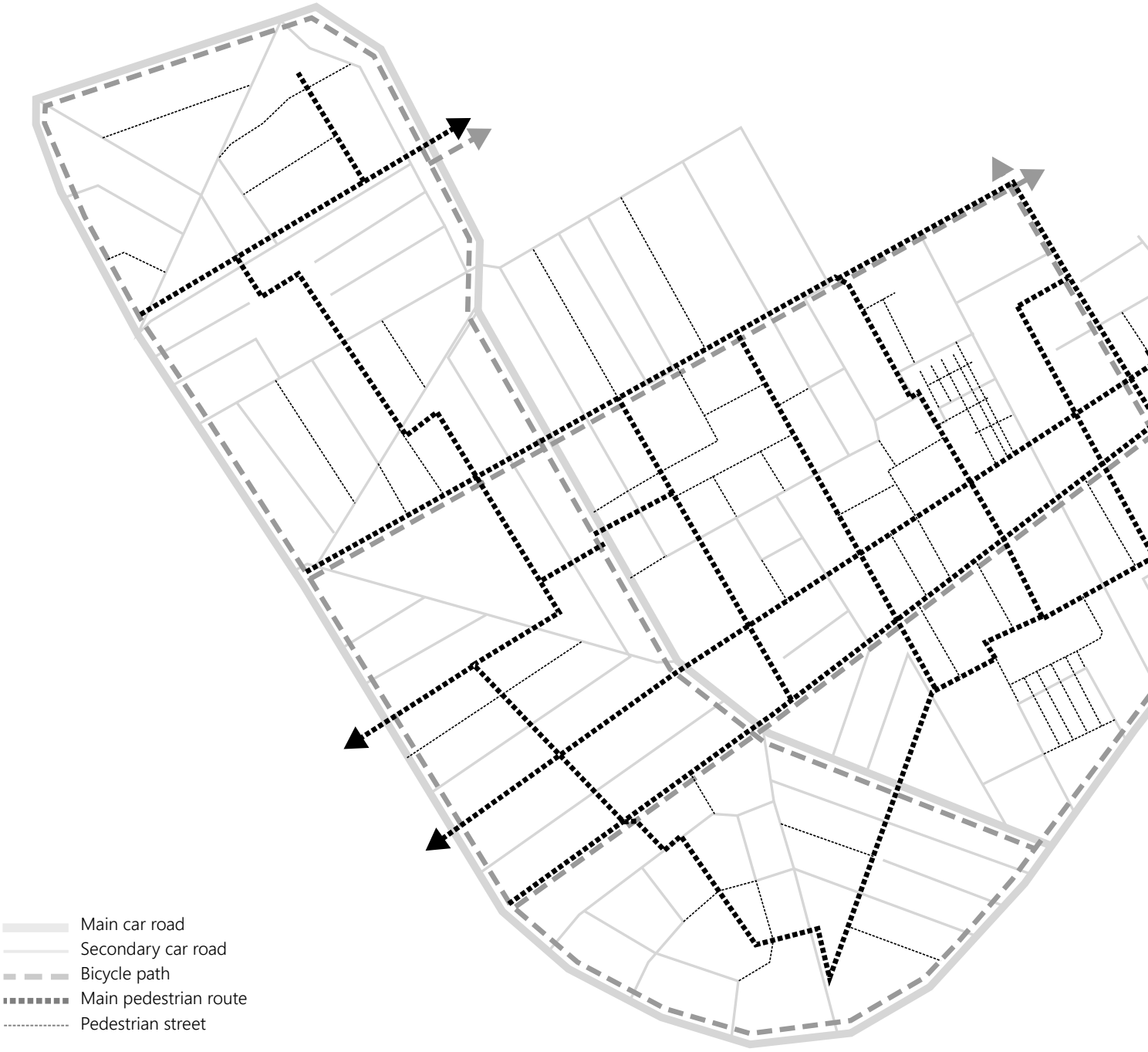
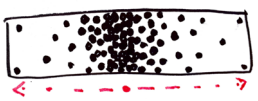


Figure 140: Shows the design for the infrastructural network of the Schilderswijk

PATTERN/HYPOTHESIS

LIV-04: Design for a soft transition between private spaces/properties and public spaces.



RELATIONS

LIV-05, LIV-06, WAT-04

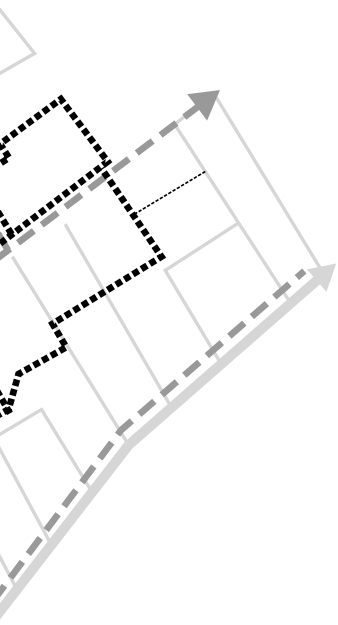
PATTERN/HYPOTHES

LIV-05: Design spaces to
in a way that they give di
how to move and what t
what to expect.



RELATIONS

LIV-04, LIV-06, LIV-07



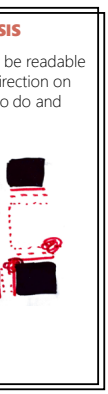
INFRASTRUCTURAL NETWORK

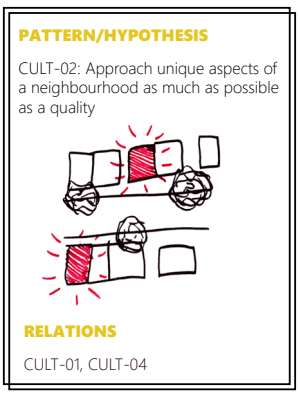
Goal: Create safer and more pleasurable routes for slow traffic while maintaining accessibility with other modes of transport

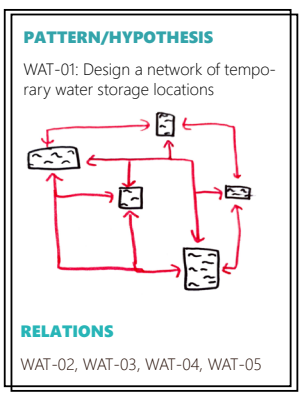
Design priciple: Design different networks for different modes of transport

Rules:

- Have one main route for cars (50 km/h)
- Have one main route for visiting pedestrians and cyclist which at least covers the main shopping streets
- Have a network of streets leading from public space to public space where no cars are allowed and pedestrians can go first in case of a crossing
- Connect the two pedestrian networks with one another
- Design a secondary car and bicycle network (30 km/h)
- Give some streets back to the inhabitants in the form of public space









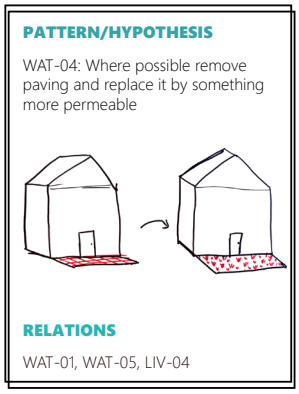
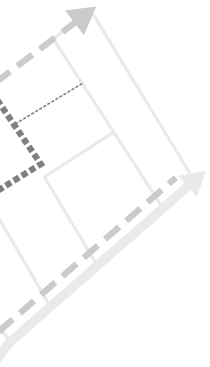




Figure 141: Shows the design of the densification strategy of the Schilderswijk



DENSIFICTAION

Goal: Create a more readable urban fabric, make space for inhabitants who earn more money and want to stay in the neighbourhood and free up financial resources for public space projects

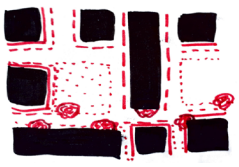
Design priciple: Densify at strategic places where land-marks are needed as well as places where the urban form would be improved with a bit more height or different shaped building

Rules:

- Only densify when it improves the neighbourhood for the inhabitants currently living there
- When densifying allow old inhabitants to move back for a similar rent
- Ground floor facades need to be active and open and provide at least a single public function. Higher floor facades should be detailed and contain depth
- The block and building size has to be similar to the surounding buildings, the height can be no more than 1.5 times the height of the highest surrounding building
- Needed passages, entrances and the maximum building line are indicated on the map

PATTERN/HYPOTHESIS

LIV-05: Design spaces to be readable in a way that they give direction on how to move and what to do and what to expect.



RELATIONS

LIV-04, LIV-06, LIV-07

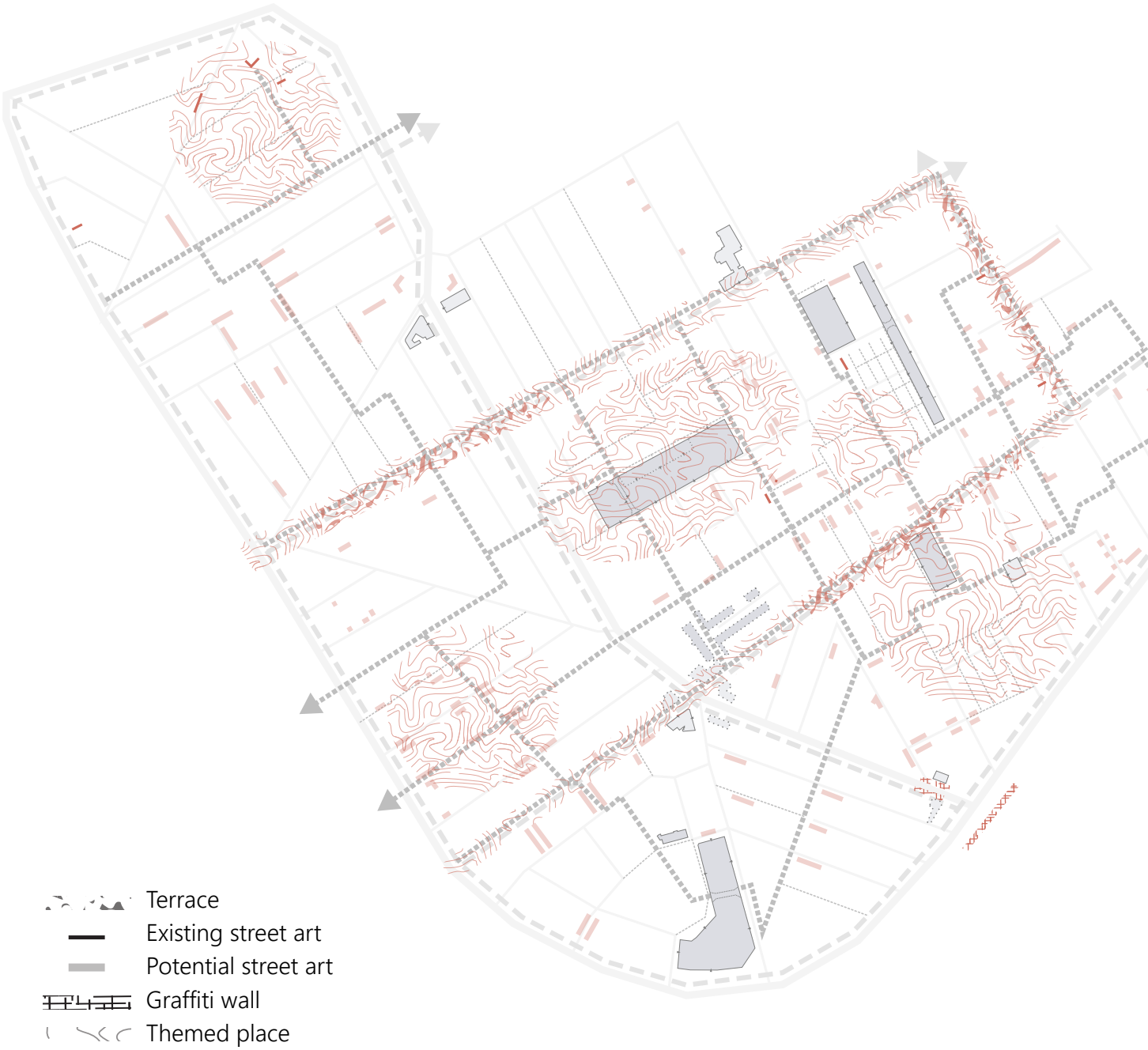


Figure 142: Shows the design for social aspects of the streets of the Schilderswijk

PATTERN/HYPOTHESIS

LIV-01: Intentionally design a suitable space for every target group, do not expect all groups to use the same space automatically



RELATIONS

LIV-03, LIV-07, CULT-03, CULT-05, WAT-03

PATTERN/HYPOTHESIS

LIV-03: Design in a way that encourages and supports shared experiences



RELATIONS

LIV-01, CULT-04

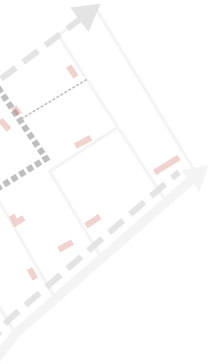
PATTERN/HYPOTH

CULT-02: Approach u a neighbourhood as as a quality



RELATIONS

CULT-01, CULT-04



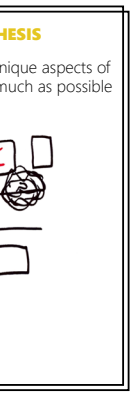
IDENTITY

Goal: Give a new identity to the neighbourhood

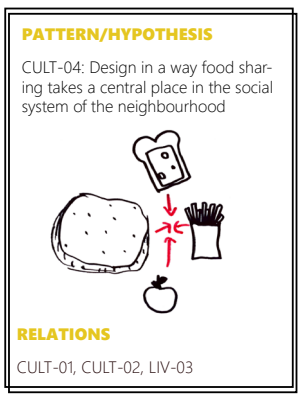
Design priciple: Enlarge positive and unique aspects of the neighbourhood

Rules:

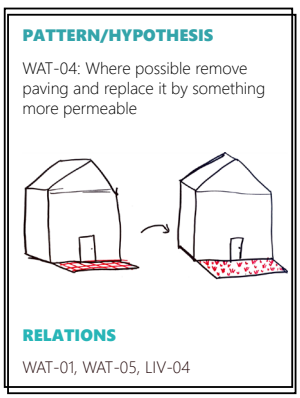
- Give a new spin to the name of the Schilderswijk by adding street art
- Add themes to the shopping street to make them recognisable and emphasise the unique offer of the Schilderswijk
- Create more liveliness in shopping streets by giving out terrace permits where possible











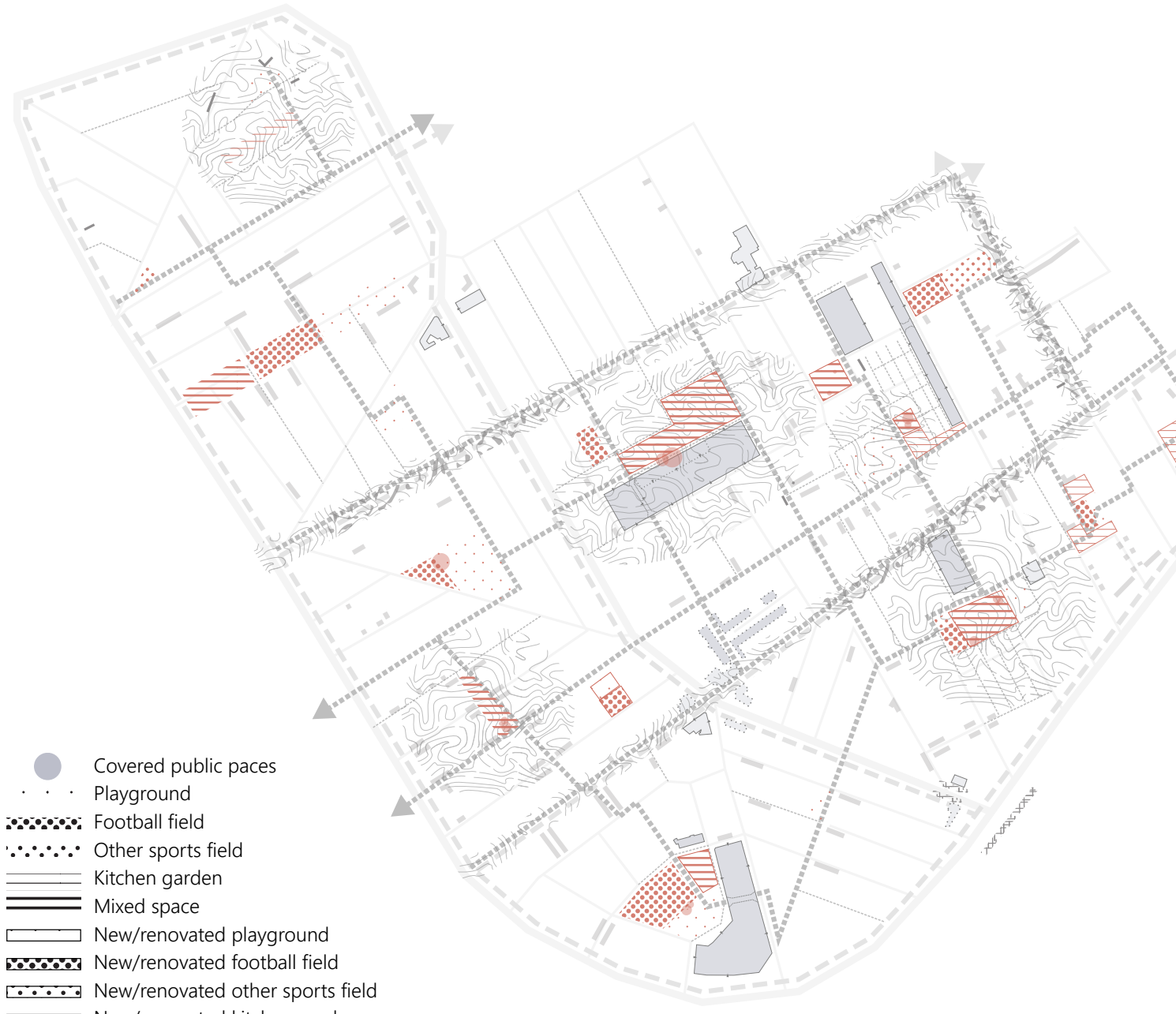


Figure 143: Shows the design for the public space of the Schilderswijk

PATTERN/HYPOTHESIS

LIV-01: Intentionally design a suitable space for every target group, do not expect all groups to use the same space automatically



RELATIONS

LIV-03, LIV-07, CULT-03, CULT-05, WAT-03

PATTERN/HYPOTHESIS

LIV-03: Design in a way that encourages and supports shared experiences



RELATIONS

LIV-01, CULT-04

PATTERN/HYPOTH

CULT-02: Approach u a neighbourhood as as a quality



RELATIONS

CULT-01, CULT-04

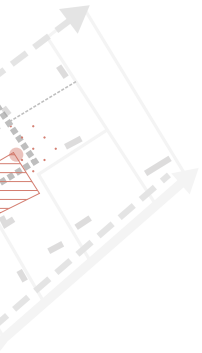
PUBLIC SPACE

Goal: Make public spaces more attractive to a more balanced target group

Design priciple: Design with all groups of inhabitants in mind

Rules:

- Add facilities and pleasant places for mothers next to playgrounds
- Give youth a space where they can hang out and organise acitvities
- Design places for elderly, such as chess tables or jeu de boules
- Design for places to eat together
- Offer a variety of sports to attract a larger target group
- Design more sheltered spaces where women can meet without being visible to the public eye at all times
- Have covered places in case of bad weather



HESIS

nique aspects of
much as possible



PATTERN/HYPOTHESIS

CULT-03: When designing, always design with a whole family in mind

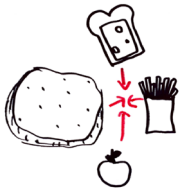


RELATIONS

CULT-05, LIV-01

PATTERN/HYPOTHESIS

CULT-04: Design in a way food sharing takes a central place in the social system of the neighbourhood



RELATIONS

CULT-01, CULT-02, LIV-03

PATTERN/HYPOTHESIS

CULT-05: Design for female empowerment, it will not happen automatically

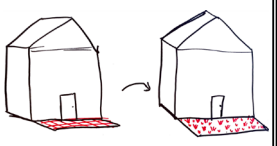


RELATIONS

CULT-03, LIV-01, LIV-02

PATTERN/HYPOTHESIS

WAT-04: Where possible remove paving and replace it by something more permeable



RELATIONS

WAT-01, WAT-05, LIV-04

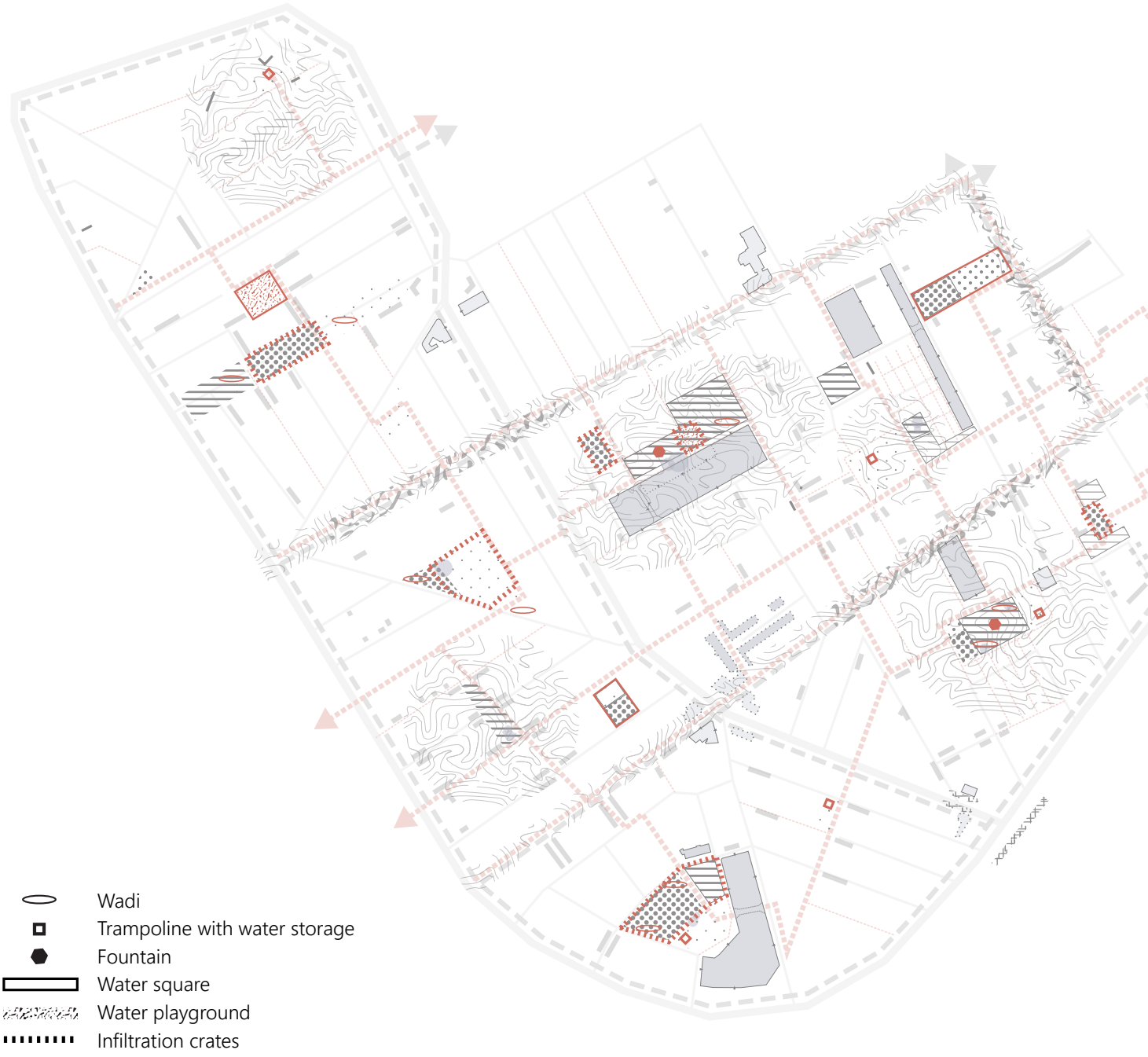
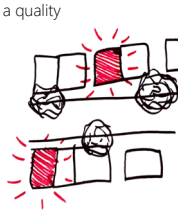


Figure 144: Shows the design for the rain water related interventions

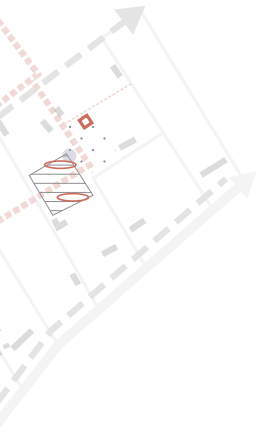
PATTERN/HYPOTHESIS

CULT-02: Approach unique a
a neighbourhood as much a
as a quality



RELATIONS

CULT-01, CULT-04



RAIN WATER

Goal: Reduce rain water nuisances

Design principle: Infiltrate as much as possible, and if not possible temporarily store rain water.

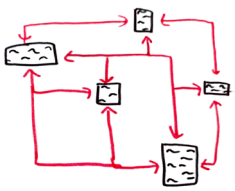
Rules:

- Unpave as much public space as possible and preferably add plants: e.g. Kitchen gardens
- Add a rain barrel to all buildings bordering a kitchen garden to irrigate the garden with
- Increase the amount of water storage by adding for example: Water squares, water playgrounds, trampolines
- Add functions to water to make it a more intergral part fo daily life: e.g fountains or water playgrounds
- Add at least one wadi to every park
- Free up parts of the road network for water infiltration

aspects of
s possible

PATTERN/HYPOTHESIS

WAT-01: Design a network of temporary water storage locations



RELATIONS

WAT-02, WAT-03, WAT-04, WAT-05

PATTERN/HYPOTHESIS

WAT-02: Design water management in such a way that it is at least partly visible above ground

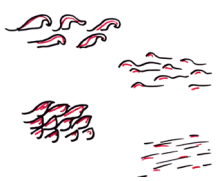


RELATIONS

WAT-01, WAT-03

PATTERN/HYPOTHESIS

WAT-03: Give water in the urban environment as much as possible a function that people appreciate next to the function of water storage

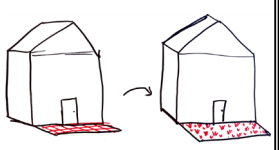


RELATIONS

WAT-01, WAT-02, LIV-01

PATTERN/HYPOTHESIS

WAT-04: Where possible remove paving and replace it by something more permeable



RELATIONS

WAT-01, WAT-05, LIV-04

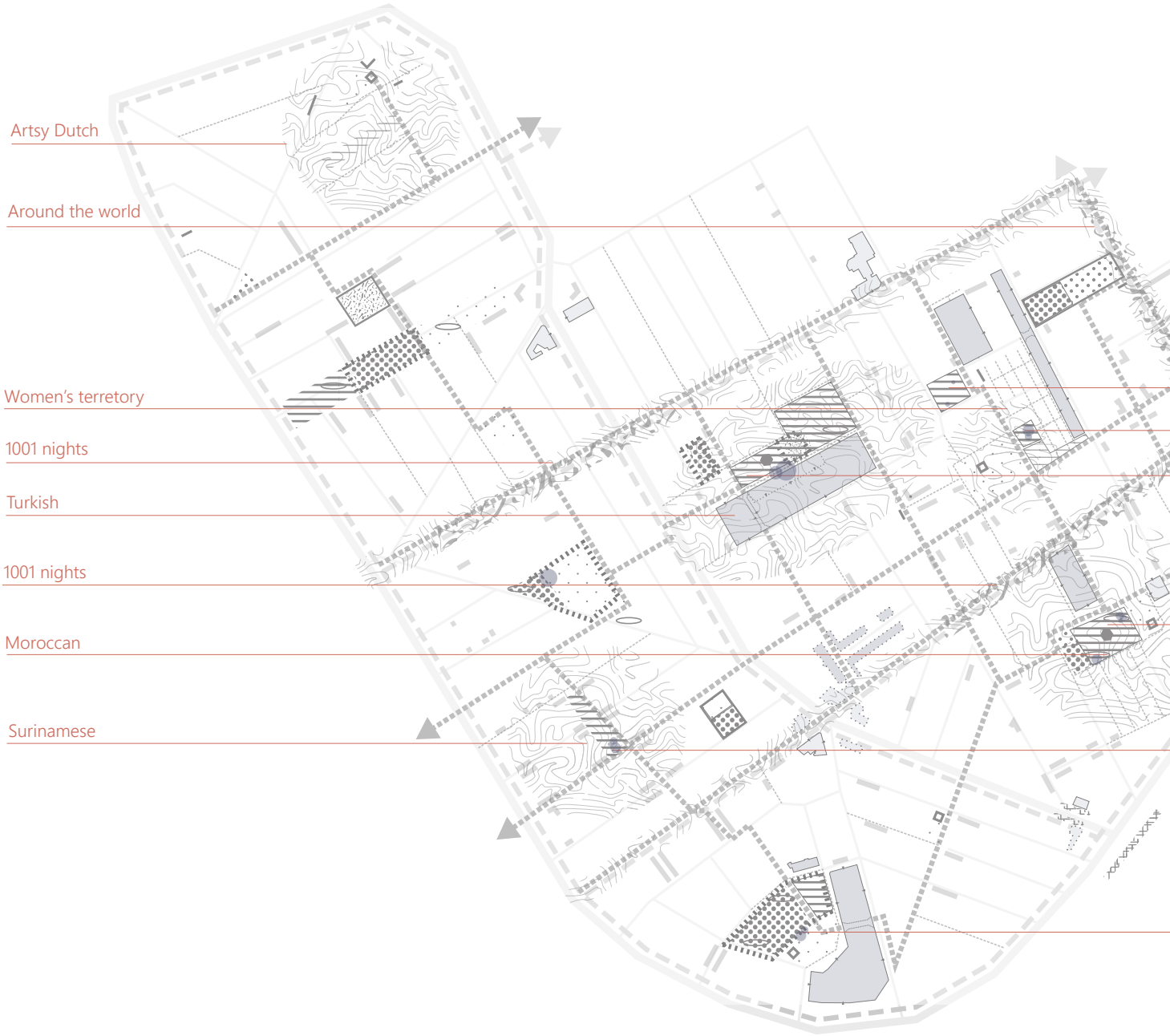


Figure 145: Shows the design of the themes and public space functions within the Schilderswijk

THEMES AND RELATED FUNCTIONS

Here the proposed themes and functions of public spaces with mixed function are explained. It gives an indication of how the design principles and rules could be applied to a coherent design



Climbing playground / park combination with treehouses

Women's center

Square with outdoor cooking and eating facilities

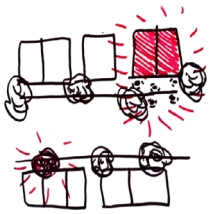
Park with outdoor cooking and eating facilities, outdoor cinema, jeu de boule and phone charging and toy sharing facilities

Chess tables and seating

Playground, football, volleyball, badminton, table tennis, jeu de boule, phone charging and toy sharing facilities

PATTERN/HYPOTHESIS

CULT-01: Make the things that residents are proud of or identify with clearly visible



RELATIONS

CULT-02, CULT-04

PATTERN/HYPOTHESIS

CULT-03: When designing, always design with a whole family in mind



RELATIONS

CULT-05, LIV-01

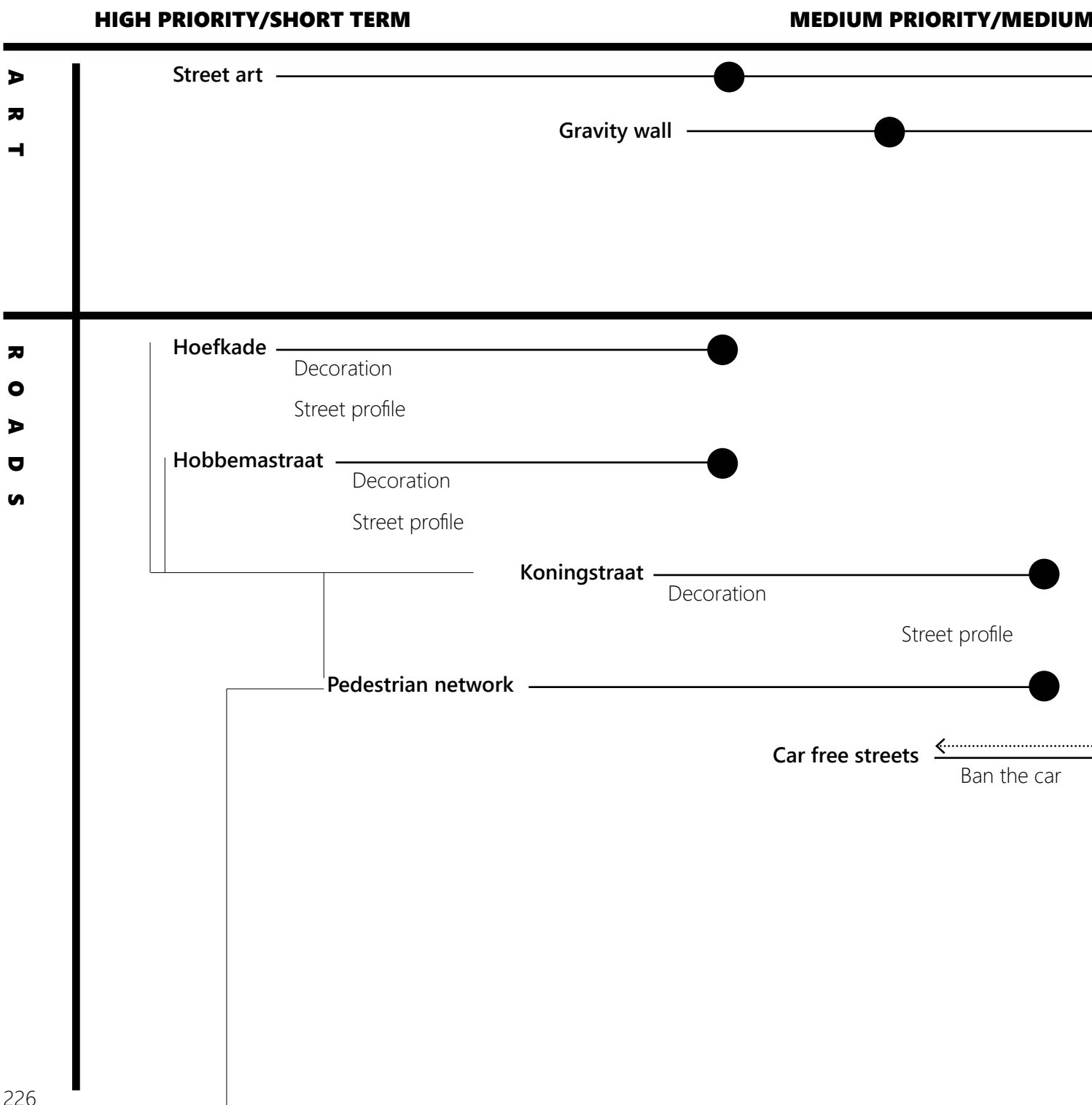


Figure 146: Shows the design for the Schilderswijk



PLANNING

The planning shows on which term and with which priotity interventions could take place. Also it shows the moments of celebration, where a project is ready to be shown to the public. This planning is an indication for the proposed design, not a rigid structure that is to be followed without any change.



TERM **WHEN RENOVATION IS NEEDED/LONG TERM**

New streetart

+ Garage door street art
+ Front door street art
+ Childeren's street art project

☐ When work on the road or to the pipes needs to be done

Adjust the street profile

+ Replace pavement with half-pavement
+ Remove the first tiles along houses
+ Replace pavement on tram lines with grass
+ Replace some parking places with wadis

Teniersplantsoen

Intergrating in society café + acompanying kitchen garden upg

Fountain

BBQ place

Theme

Renovation playground

Creating covered spaces

Jacob van Kampenplein

BBQ place + accompanying covered spaces

Facilities for outdoor cinema

Jeu de boules

Fountain

Theme

Toy sharing facility

Hannemanplantsoen

Women's centre

Plein Troostraat

Theme

Chess tables

Wijkpark Schilderswijk

Construction

+ Increase the amount of car free streets

rades

☐ Is already in need of renovation at this point

Wadis city farm

Trampoline

Wadis

Expansion of the kitchen garden

Trampoline

Wadis

+ Add height differences to make it partly into a water square

☐ Is already in need of renovation at this point

of the park / nature playground

Plein Van Bassenstraat

Kitchen garde

Renovation p

Calisthenics park

Construction watersquare

Vermeerpark

Constructi

Creating c

en northen part

layground

Is already in need of renovation at this point

Kitchen garden southern part

Is already in need of renovation at this point

Construction watersquare

Is already in need of renovation at this point

Westlandseplein

on new sportfield north east

overed places

Trampoline

Wadis

Sport fields Waterloostraat

Playground Naaldwijksestraat

All other public spaces

Small adjustments when renovation takes place

+ Add infiltration crates below playgrounds

+ Place more wadis

+ Make paths of a more permeable material

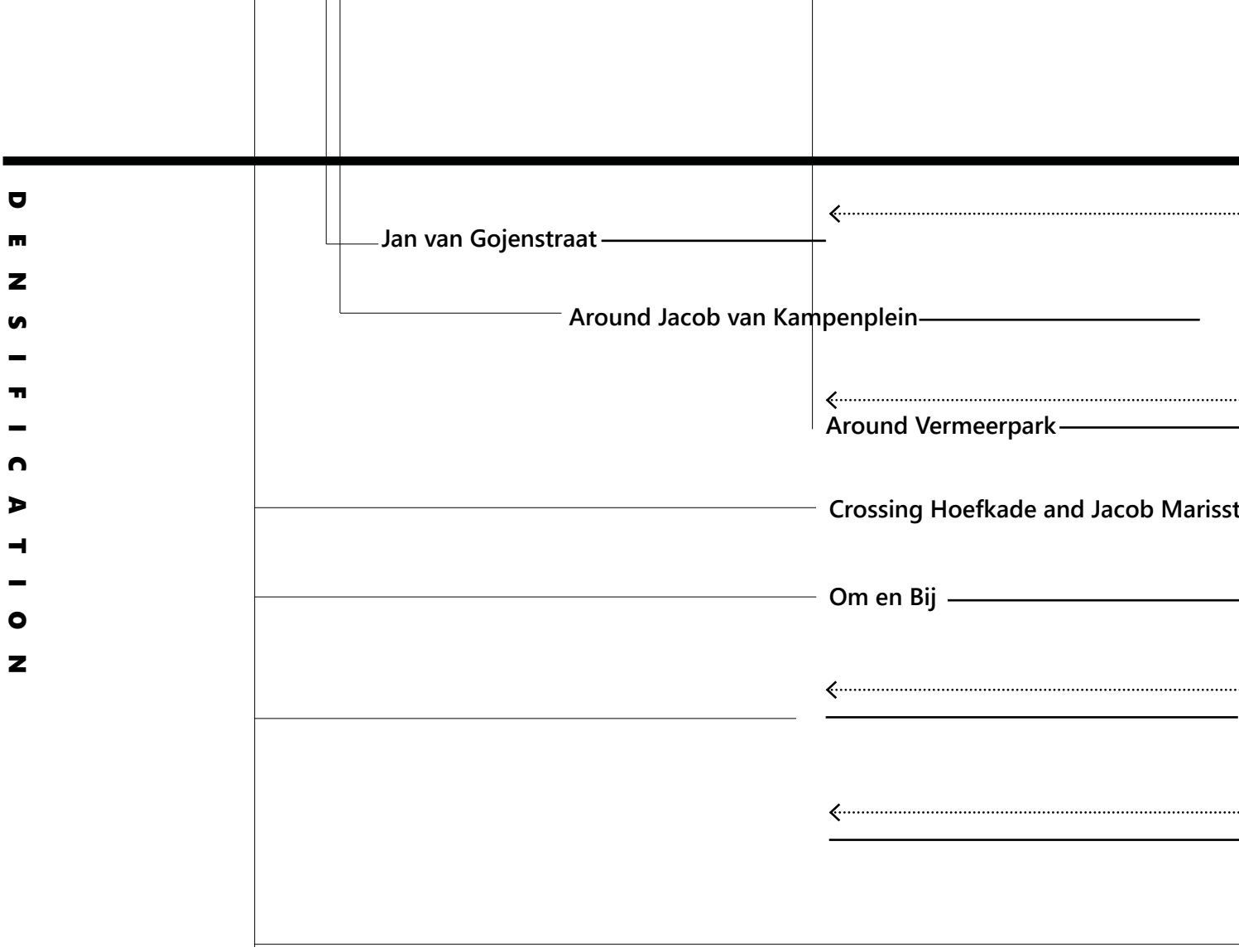
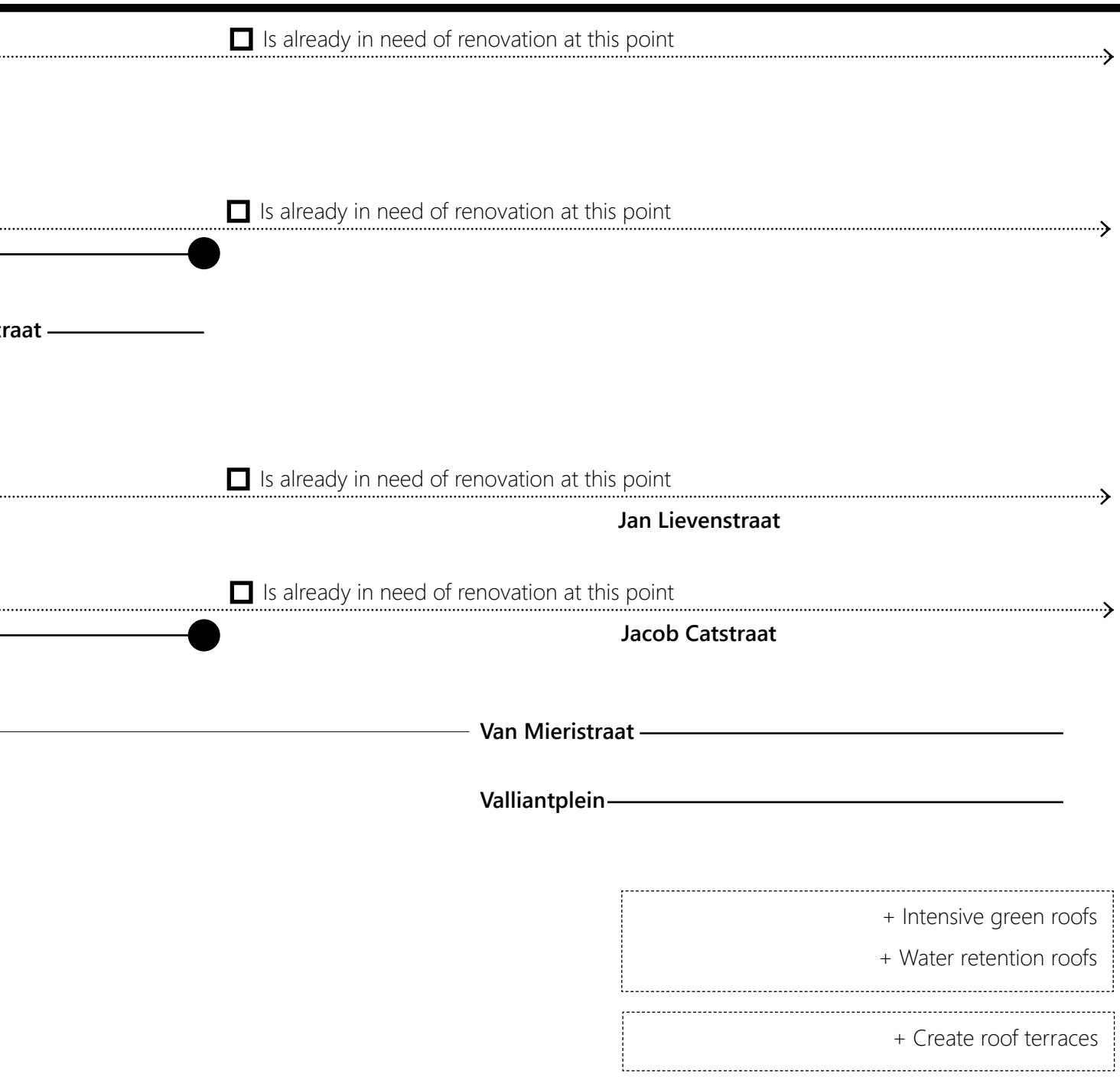


Figure 147: Show the proposed planning for the interventions in the Schilderswijk


Is already in need of renovation at this point
Is already in need of renovation at this point
traat
Is already in need of renovation at this point
Jan Lievenstraat
Is already in need of renovation at this point
Jacob Catstraat
Van Mieristraat
Valliantplein
+ Intensive green roofs
+ Water retention roofs
+ Create roof terraces

DESIGN OF THE STREETS

STREET PROFILES

With the introduction of a new infrastructural system in the Schilderswijk, new street profiles are necessary. This is the case for the pedestrian network as well as the car free streets and the shopping streets. For the shopping streets design can be found on the next page. The car friendly streets can largely remain as they are currently designed and built. For the pedestrain network streets two main options are designed depending on the with of the street. For a two lane street a minimum of 10.4m is necessary. If there is too little space for this, a one way street can be implemented which only needs 6.7m as a minimum. As not every street attracts the same amount of visitors, has the same width or provides the same opportunities for performing well on other aspects, 6 design options for every street type are made. They are in order based on the following:

- Standard and balanced option
- Minimum width
- With a focus on water infiltration
- With a focus on water storage and awareness
- With a focus on large amounts of pedestrians
- With a focus on inhabitants' pleasure and preferences

All new street profiles give more space to the pedestrians/slow traffic, allow for a smoother transition between public and private and increase the amount of infiltration space for rain water. Furthermore they have a positive effect on the microclimate as well as road safety, and increase the opportunities to sit down and socialise.

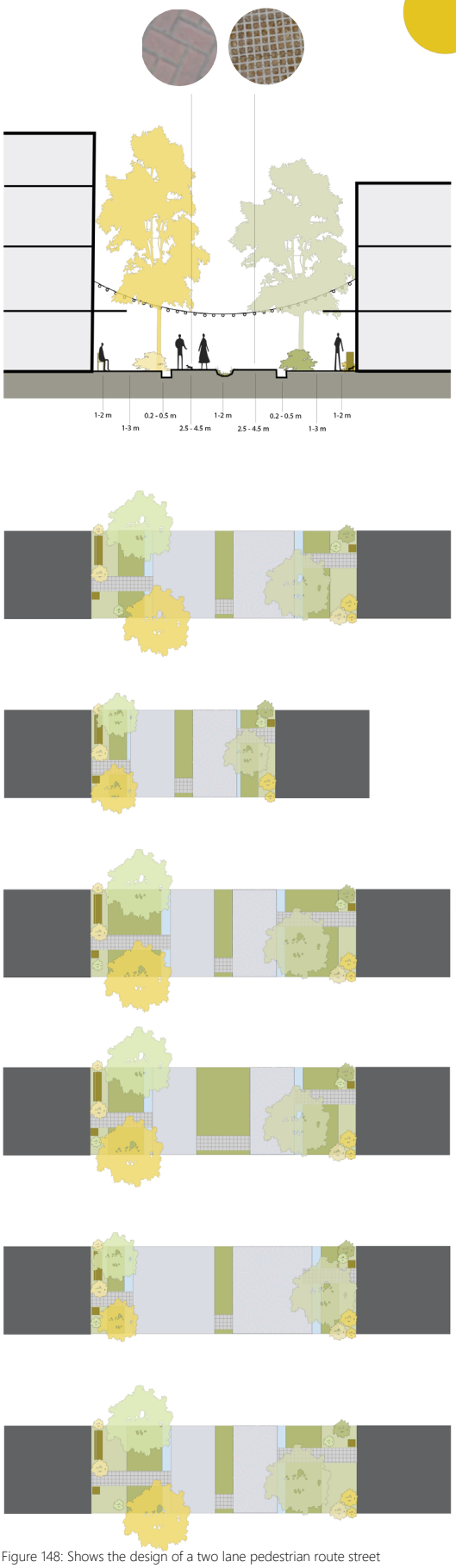
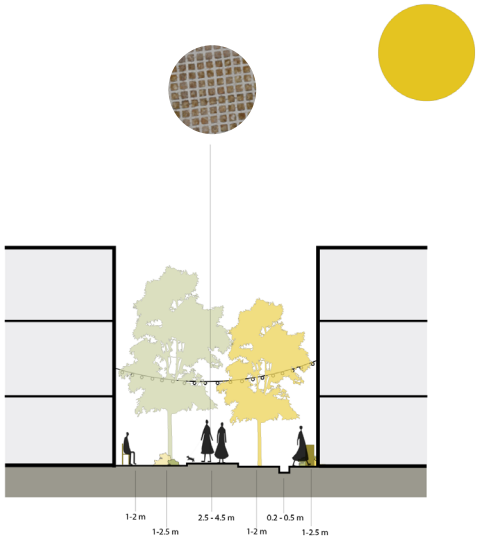
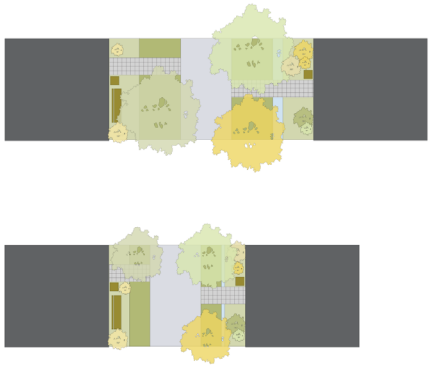


Figure 148: Shows the design of a two lane pedestrian route street











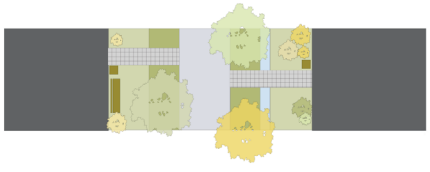
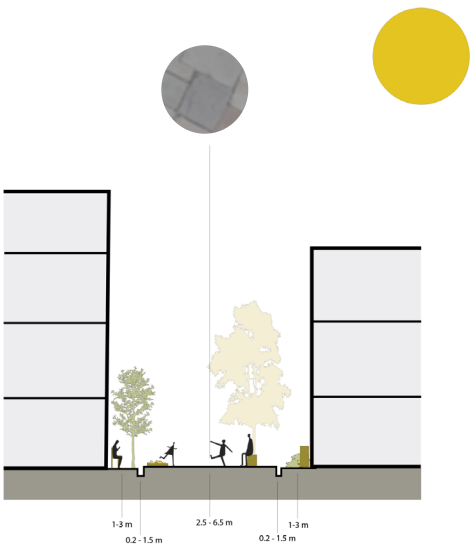
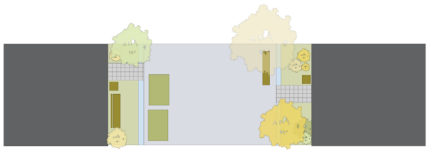
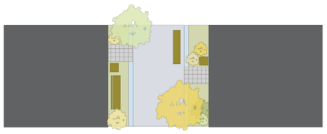
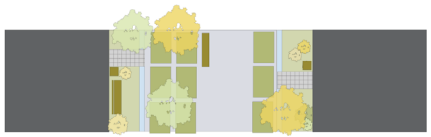


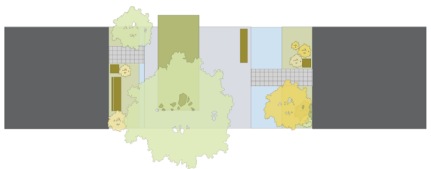
Figure 149: Show the design of a one lane pedestrian route street













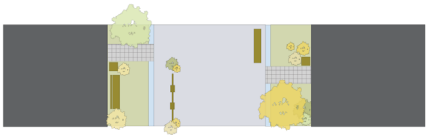
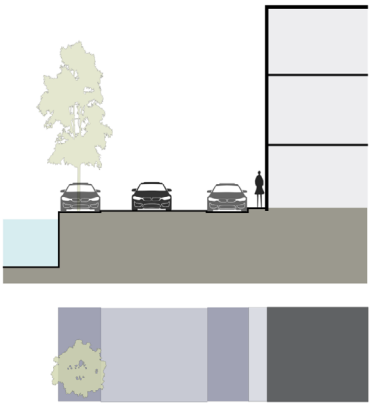


Figure 150: Show the design of a local car free street

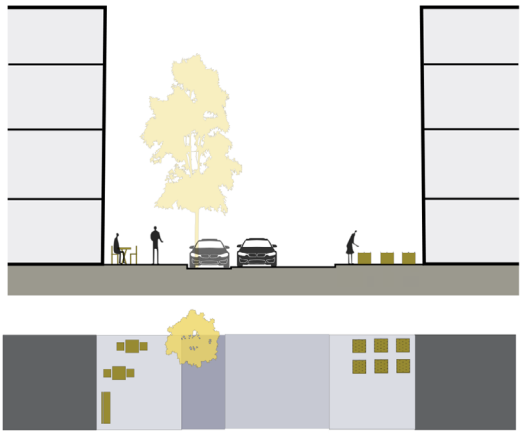


A

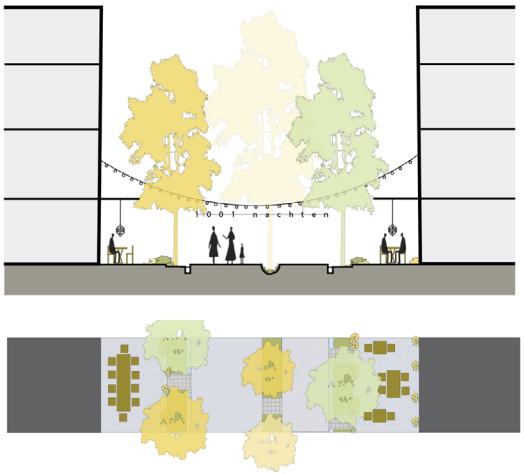


B

Figure 151: Show the design of the Hooftskade, where A is the old situation and B is the new situation



A



B

C

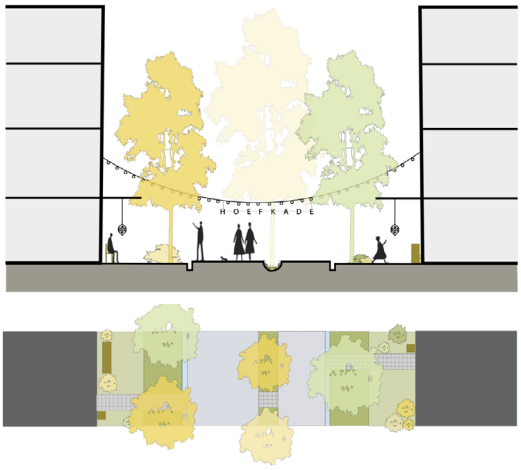


Figure 152: Show the design of the Hoefkade, where A is the old situation and B is the new situation in the busy shopping area, and C the new situation in the more residential area



Figure 153: Show the design of the Koningstraat, where A is the old situation and B is the new situation in the busy shopping area, and C the new situation in the more residential area

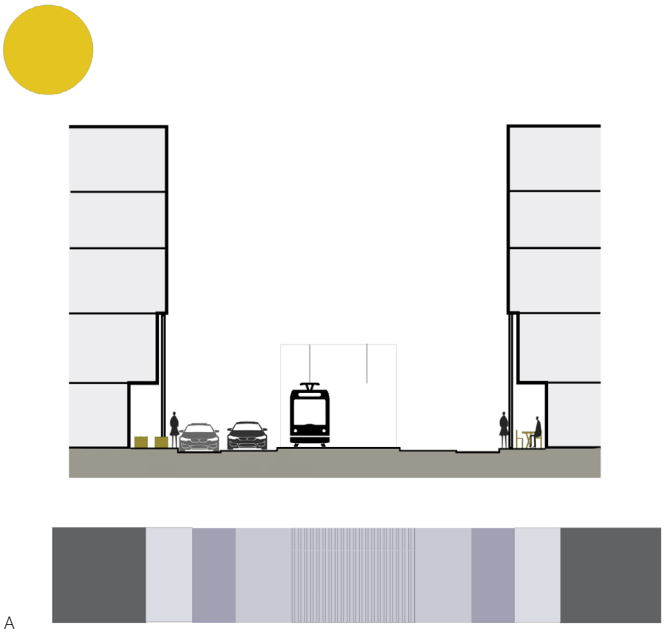


Figure 154: Show the design of the Hobbemastraat, where A is the old situation and B is the new situation in the busy shopping area, and C the new situation in the more residential area

RAIN WATER IN THE STREETS

Infiltration

To create sufficient infiltration opportunities, unpaved front gardens as well as green strokes are placed. A pavement is to be used for the roads that allows more infiltration than usual, as several have been developed over time.

Storage

Temporary water storage opportunties are created in the open gutter as well as in the wadi and the rain barrels. The rain barrels can hold the water for longer periods of time to water the front yard in dry periods.

Awareness

Both the open gutter as well as the wadi and rainwater barrel make inhabitants more aware on both a shortage and a surplus of water.

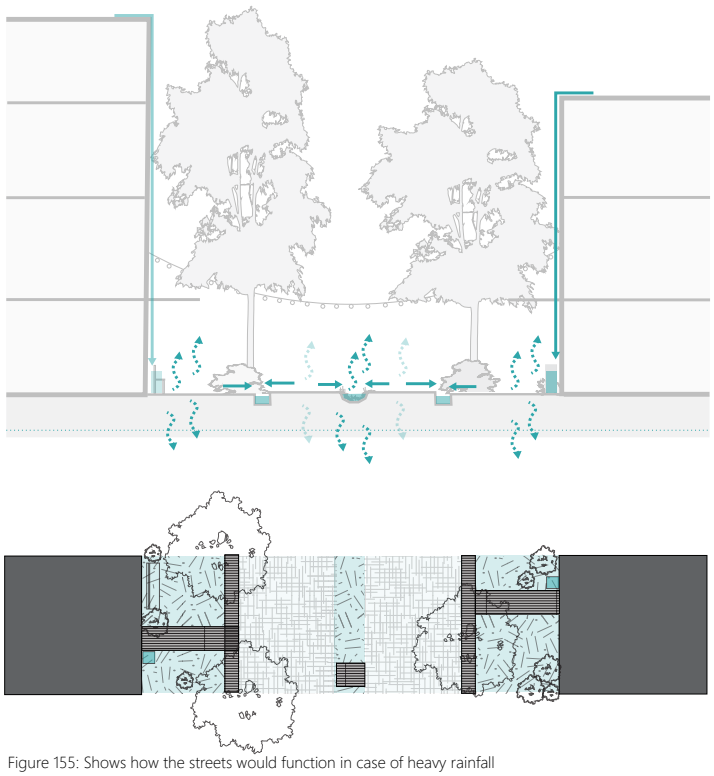


Figure 155: Shows how the streets would function in case of heavy rainfall

Droughts

Trees provide shadow in summer wich limits the amount of evaporation. Furthermore, as trees have deeper roots they can use deeper lying ground water to sustain themselves. Rain barrels are used to store water in winter and to water plants in periods of drought. Lastly plants in planters are chosen to be heat resistant as to require less water in dry periods.

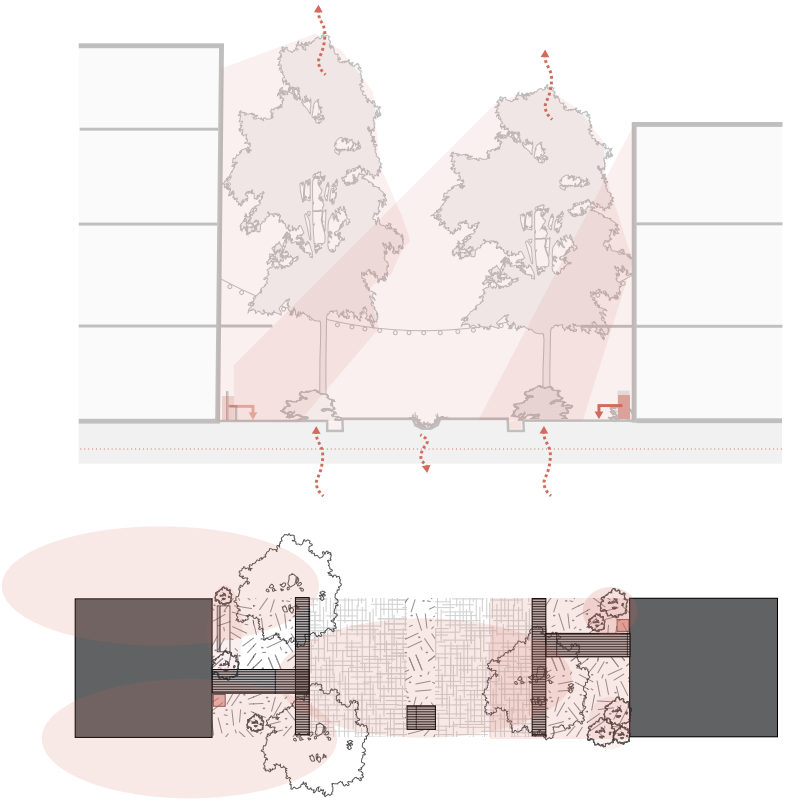
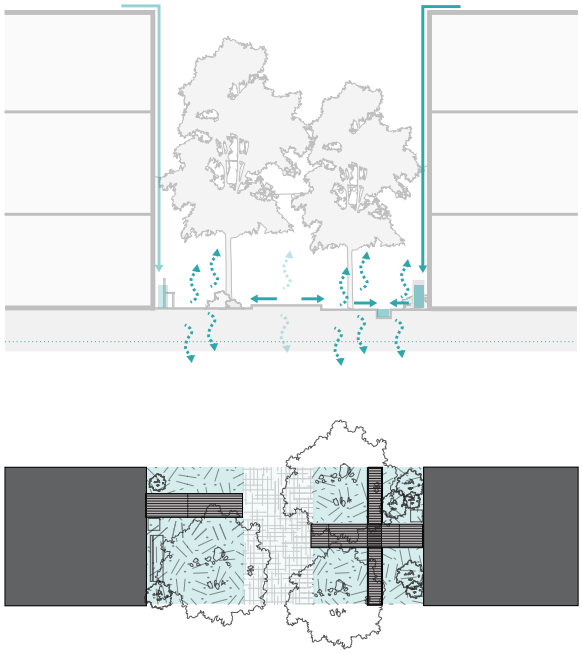
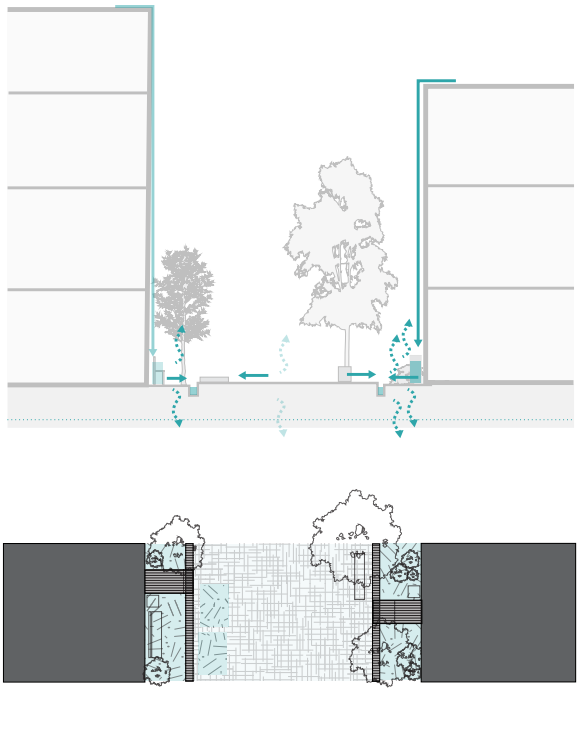
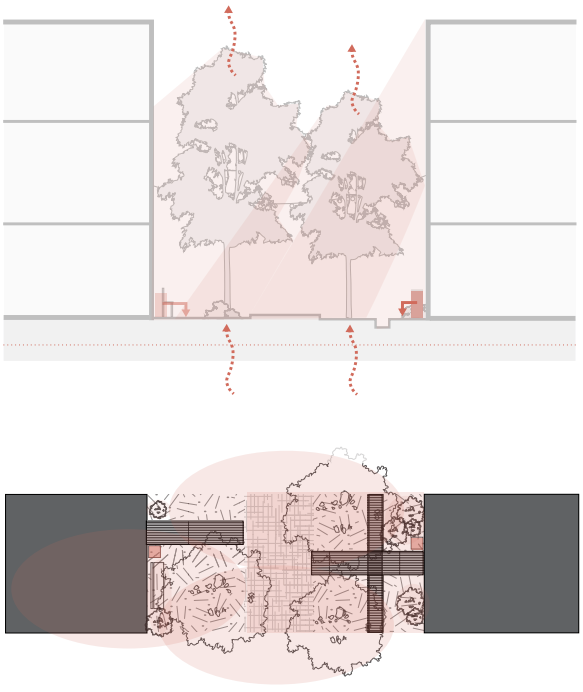
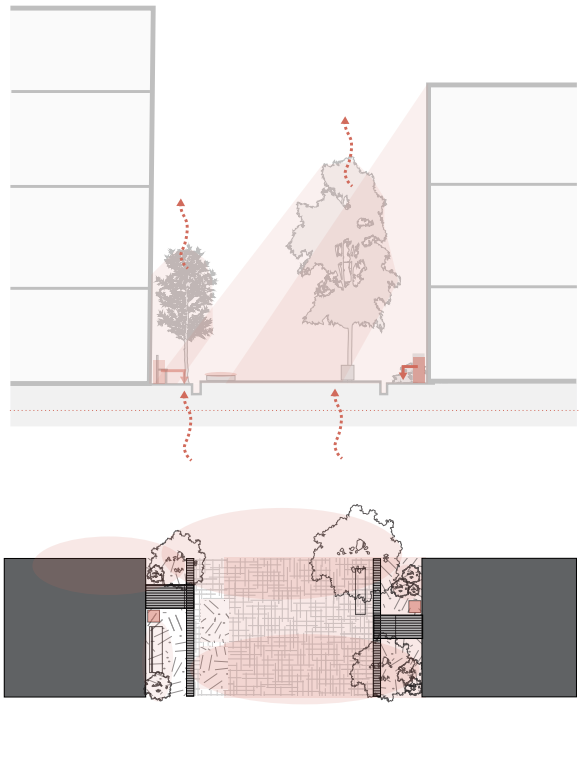


Figure 156: Shows how the streets would function in case of droughts







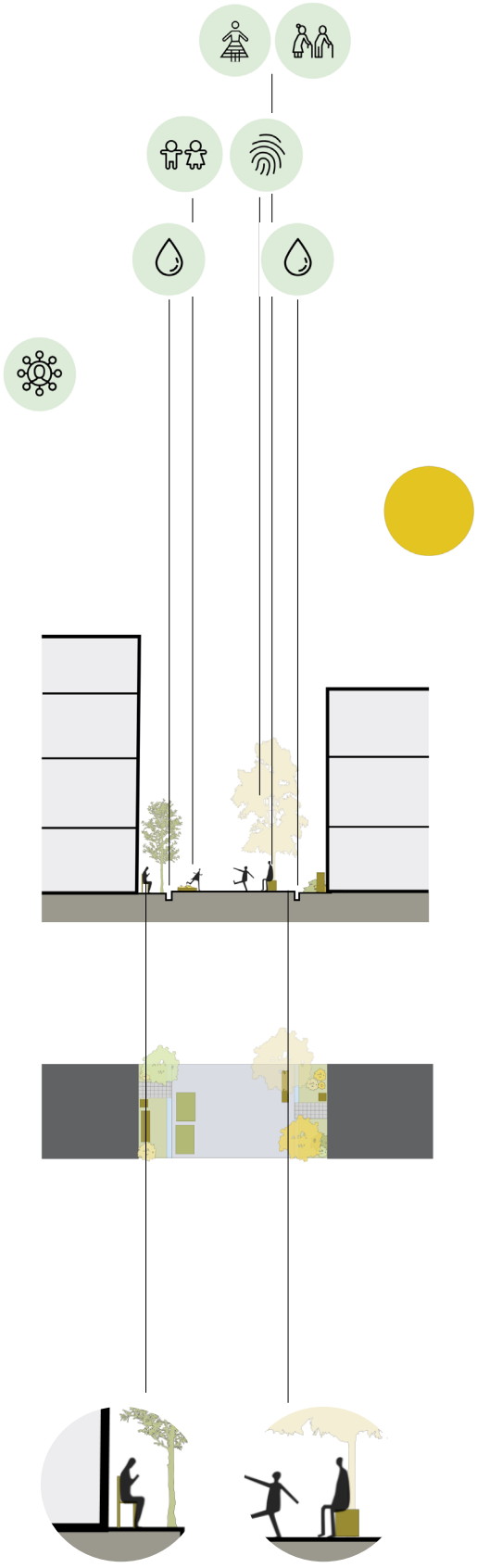


KEY ELEMENTS IN THE STREET DESIGN

The different type of street profiles have different characteristics and qualities. When looking at a street that is part of the pedestrian network it is important to make it recognisable, for example by light strings and chosing a different colour or materialisation for the street. Also the soft transition between private and public is essential for the street to function well. Lastly the space for water infiltration is a large quality of this street type. In case two lanes are present, one lane can be used as a bicycle lane in the future if desirable. For a car free street having a soft transition between public and private as well as having public seating or other interesting functions is most important. When looking at the shopping streets, manifesting a clear identity is key. This can be done with light strings with text above the street, but also murals or decorating elements are possibilities. The trees will give a cozy feeling to the place. Lastly to make it a lively area providing opportunties for cozy terraces or stalling products in front of the store are beneficial. For this a clear lines needs to be chosen for it not te interfere with other functions.



Figure 157: Explains the designs of the streets by showing the essential elements as well as where they come fr





RAIN WATER SOLUTIONS

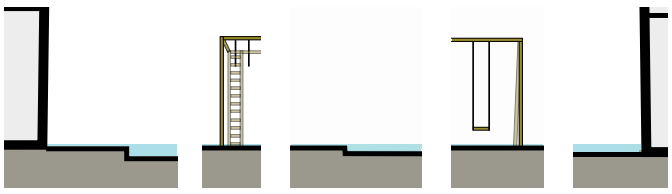
CALCULATIONS

In order to do calculations on the effect of the measures against rainwater nuisances, first the material and amount of square meters of all spaces needs to be determined. In the conclusion table one can see how the pedestrian oriented roads lead to an increase in directly infiltratable space (grass), and that this leads to an average percentage of infiltration space of 18% over all roads in the Schilderswijk. For the pedestrian network a more porous stone is to be used wich allows for more infiltration. Furthermore it is shown how the new design leads to a higher percentage of grass and artificial grass in public spaces compared to the original. Doing the calculations show the rain water problems in public space significantly decrease in case of extreme rainfall and are completely solved under more normal circumstances. Furthermore with the new design the distribution of the rainwater that in public spaces in improved, minimizing nuisances, as can also be seen in the drawings below.

Note: the following main assumption is done, based on the water tax pattern in the pattern language: All rain water that falls on private property is managed on private property. Thus the model includes only the rain water that falls on public space (includes streets, squares, parks etc.) and what the effect of the measures in public are. Curiosity of the author made that also calculations were done on what would happen if the built environment was to be included (although it being out of the scope of the project), which shows that improvements would still be considerable.

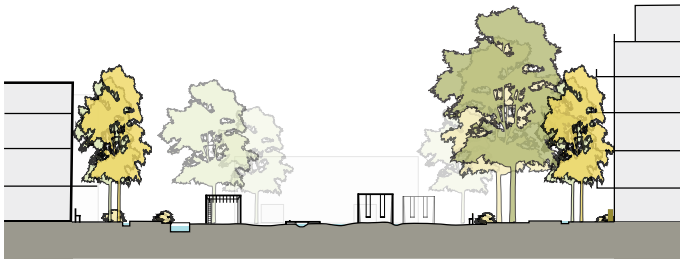


Entire section

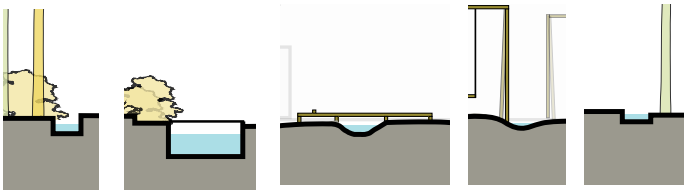


Flooded areas

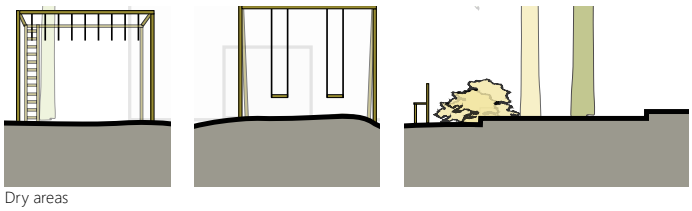
Figure 158: Show how the current playground in the Teniershof would look like after an 1 hour 70mm rainshower



Entire section



Flooded areas



Dry areas

Figure 159: Show how the newly designed playground in the Teniershof would look like after an 1 hour 70mm rainshower

Conclusion tabel

Infiltration

streets

type of street	% of direct infiltration possibilities
Mian car road	0
Secundary car road	0
Pedestrain route (1 lane)	70
Pedestrain route (2 lanes)	40
Car free street	37
Average over all roads in the Schilderswijk	18

public space

old	
% grass	47
% artificial grass	21
% paths and stones	33
nieuw	
% grass	49
% artificial grass	24
% paths and stones	27
Toename	
% grass	6
% artificial grass	13
% paths and stones	-17

Storage

Total (m3) of storage added	12886

Conclusion tabel 2

without buildings

mm/hour	hours	% improvement	water on street old scenario (cm)	water or street new scenario (cm)
35	2	87	4,5	0,6
70	1	67	5,3	1,7
20	3	problem completely solved: in new scenario more storage capacity than needed	2,8	0

With buildings, no improvements

% improvement	water on street old scenario (cm)	water or street new scenario (cm)
32	7,7	5,3
26	8,5	6,2
36	5,7	3,7

With buildings, with improvements

% improvement	water on street old scenario (cm)	water or street new scenario (cm)
60	7,7	3,1
45	8,5	4,4
68	5,7	1,85

Figure 160: Show the conclusions from the calculations for the rainwater model

STREET ART

Street art can fulfill multiple functions. It can be a way for inhabitants to express themselves as well as a community project. This has a positive effect on the livability of a neighbourhood as it increases tolerance and a sense of ownership. It can also be a way to change the reputation of a city or neighbourhood, and of attracting more tourists, as was done in Georgetown, Malaysia. For the Schilderswijk all of the above mentioned are reasons to introduce street art, as well as the relation to the name of the neighbourhood. By playing with the name, it will give a new meaning to it, which is something the neighbourhood could really use. To find the right balance in achieving the different goals the following layering of street art is proposed:

- Along the pedestrian route: The story on the history and current situation of the neighbourhood and its inhabitants
- Around shopping streets and other theme assigned places: Street art that focuses on the specific appointed themes such as 1001 nights
- Crossing Vaillantlaan and Parallelweg: A graffity wall where people can paint their own art
- Remaing street art locations: The first painting in a street is to be a modern remake of an work of art that the street is named after. Other works can have a variarity of topics decided on in collaboration with the community. Creating (some) interactive street art should would be a great opportunity to take into consideration.



Figure 161: Shows an example of street art telling the story of Georgetown. retrieved from https://www.wander
ang



Figure 162: Shows an example of streetart showcasing elements of different cultural backgrounds. retrieved fro
pore-feb-2020/



ingstus.com/11-street-art-murals-not-to-miss-in-georgetown-pen-



Figure 163: Shows and example of a modern interpetation of a clasic work of art. retrieved from https://nos.nl/artikel/2000191-banksy-maakt-meisje-van-vermeer



m: https://sethlui.com/shake-shack-new-menu-neil-road-singa-



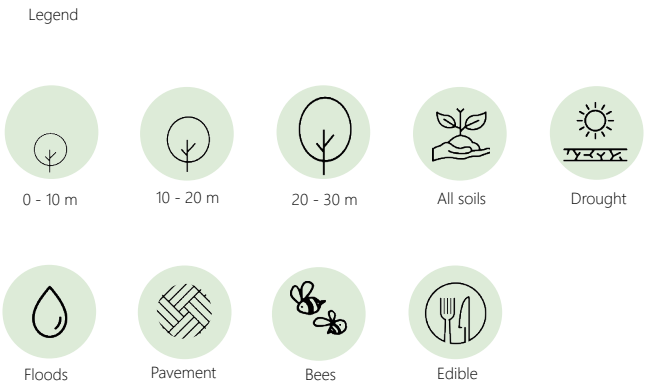
Figure 164: Shows an example of interactive street art. retrieved from https://www.wanderingstus.com/11-street-art-murals-not-to-miss-in-georgetown-penang

GREENERY

TREES

For different functions in and around the project, different trees are suitable. All information on tree properties is retrieved from Van den Berk (Specialist in medium tot zeer grote maten bomen en struiken | Van den Berk Boomkwekerijen, z.d.).

- Along the car friendly streets: Trees along car friendly streets cannot cover the whole road as it would trap unhealthy gasses and heat. Therefore smaller trees would be best. To give a pleasant ambiance trees that do not lose their leaves in winter are suitable. The trees currently placed around these roads are rather suitable and thus can be kept.
- Along the slow traffic centered and shopping streets: Trees along the slow traffic streets can be a bit bigger than those along car friendly roads as there are no problems with unhealthy gasses and usually more space is available as well. Still trees should not cover the entire street, but should provide some coverage and a cozy feeling. Trees that lose their leaves in winter but are rather full in summer would be ideal. This gives a pleasant microclimate. The following trees would be suitable: Tilia tomentosa 'Silver Globe' (silver linden), Carpinus betulus 'Frans Fontaine' (Haagbeuk cv), Acer platanoides 'Cleveland' (noorse esdoorn cv)
- On the squares: On and along the squares placing edible trees is interesting as it plays into the food culture present in many countries inhabitants have relations to. Furtermore it encourages a feeling of ownership of the place. Especially in the Moroccan and Turkish culture nut trees are popular, while also being relatively easy in maintenance. The following trees are suitable: Apple tree (e.g. hoogstam elstar or hoogstam granny smith), Juglans regia (gewone walnoot), Corylus avellana (gewone hazelaar), Castanea sativa 'Lyon' (Tamme kastanje)
- On the terraces: On terraces trees that provide a roof for the terrace are interesting as it gives a cozy feeling. At the same time trees should lose some leaves in winter to also assure a pleasant microclimate in winter. The following trees would be suitable: Platanus ×hispanica (gewone/londen plataan)
- On the playgrounds: On the playgrounds a more transparent tree would be more suitable for the atmosphere. Also colourful trees would go well with childerens needs. Lastly trees with edible nuts or fruits would be of added value. The following trees would be suitable: Aesculus hippocastanum (witte paardenkastanje), Aesculus hippocastanum 'Pyramidalis' (zuilvormige paarden kastanje), Castanea sativa 'Lyon' (Tamme kastanje), Betula pendula 'Zwitsers Glorie' (ruwe berk cv), Juglans regia (gewone walnoot), Corylus avellana (gewone hazelaar)




Tilia tomentosa 'Silver Globe' (silver linden),


Carpinus betulus 'Frans Fontaine' (Haagbeuk cv)

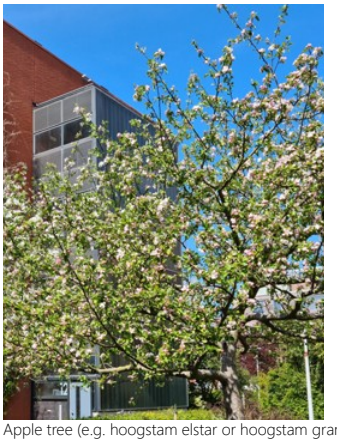
Figure 165: shows all proposed trees and their properties. Retrieved from https://www.vdberk.nl/ and https://g



Acer platanoides 'Cleveland' (noorse esdoorn cv)



Castanea sativa 'Lyon' (Tamme kastanje)



Apple tree (e.g. hoogstam elstar or hoogstam granny smith)



Platanus ×hispanica (gewone/londen plataan)



uglans regia (gewone walnoot)



Aesculus hippocastanum (zuilvormige paarden kastanje) (witte en zuilvormige paardenkastanje)



Corylus avellana (gewone hazelaar)



Betula pendula 'Zwitsers Glorie' (ruwe berk cv)

wl-terrein.nl/2021/06/05/rijke-voorjaarsbloesem/

PLANTS

For different functions in and around the project, different plants are suitable.

- Along the slow traffic centered streets: Here sufficient space is present to place a variety of plants in terms of species and height. Plants should however not be higher than hip height to prevent the plants from feeling like a barrier and blocking the view of people sitting in the front yard.
- Along the shopping streets: Along all shopping streets, the same plants should be placed to add to the identity of the place. Colourful plants with a nice smell would be ideal as smell can be powerful tool to create and remind people of memories. Plants should not be higher than knee height to prevent people from experiencing them as a barrier.
- In the front yards: A variety of plants could be placed, yet it would be preferable if they would have a positive effect on biodiversity.
- On and around squares: On and around squares partly the same plants could be used as in shopping streets as again the ambience is crucial as well as making memories. For example lavender would be suitable to place in planters as it is resistant to droughts. When it comes to plants to plant directly in the soil, resistance in humid or wet conditions is far more important.
- Around playgrounds: Around the playgrounds plants can mainly be chosen based on biodiversity, soil conditions and maintenance preferences. Having a variety in height creates a playful look. The height is limited in the sense that sightlines for grownups should not be blocked.



Figure 166: Shows how the green space in between trees could look like in slow traffic streets, retrieved from: https://www.toronto.ca/services-payments/streets-parking-transportation/enhancing-our-streets-and-public-realm/green-streets/



Figure 167: Shows lavender, retrieved from: https://groeneparadijs.nl/lavandula-ang-dwarf-blue-lavendel.html



Figure 168: shows an example of an intensive green roof, retrieved from: https://www.roofer-scoffeeshop.com/post/the-living-roof-series-intensive-green-roofs

ROOFS

The design of the roofs is outside the scope of this project. However if the infiltration and storage capacity for rain water is to be improved either an intensive green roof or a water retention roof would be recommended. From a biodiversity perspective, depending on the height of the roof, different species would be prefered. Lastly from a livability perspective roofs could be made into accessible public space if the pressure on public space increases.



Figure 169: Shows ans example of a water retention roof, retrieved from: https://www.urbangreenbluegrids.com/measures/water-roofs-2/

POSITIVE SIDE EFFECTS

MICRO CLIMATE

Heat stress/temperature

Heat stress is becoming more and more of a problem, leading to more and more health problems related to it especially amongst the elderly. The placement of moving water (fountains) creates a lower perceived temperature. Also trees that lose their leaves in winter can provide shade in summer without depriving places of sun in winter. This decreases heat stress.

Sounds

People perceive loud and unnatural sounds often as unpleasant. Fountains produce the water sounds which are pleasant to listen at, and mask some of the car sounds. Furthermore, the removal of cars in some streets will provide a place with different, more pleasant sounds.

Rain

In many public places, a small part of the space will be covered to allow people to take shelter for the rain, wich leads to a more pleasantly perceived micro climate.

Wind

Strong winds are experienced as unpleasant. In the new design no places with strong winds are created. Given there are currently no problems with wind, there also will not be any after the implementation of the design.

HEALTH

Decreasing the amount of cars in the area will lead to cleaner air, which has a positive effect on health. Furthermore, the increase in amount of greenery has a positive effect on people's happiness and mental health as it is know to decrease stress levels. An indirect effect of the increased road safety for slow traffic will be more people walking and cycling, which makes for more exercise on a day. Furthermore, by diversifying sports opportunities new groups may start exercising.

(ROAD) SAFETY

By making more pedestrian focused and friendly roads and providing future opportunities to implement bicycle lanes at part of the pedestrian network, walking (and cycling) will be safer and more pleasant. Furthermore crime rates are expected to go down as there will be more eyes on the street due to the soft transition between public and private space.

EDUCATION

The project provides opportunities for education in multiple areas. Firstly making multiculturalism visible teaches both inhabitants and visitors about different cultures, which leads to more tolerance between groups of people. Secondly the construction of kitchen gardens provides opportunities to learn about food, and where it comes from. The same goal is reached by planting trees with edible fruits at appointed places. Thirdly by making rain water measures visible, as well as constructing water playgrounds teaches childeren about water. Lastly by providing women with suitable places next to playgrounds, it gives them the opportunity to read and learn about a variety of topics while taking care of the children.

BIODIVERSITY

Design principles

Creating more green spaces provides opportunities to increase biodiversity in the area. The combination between larger green spaces and smaller green inside the road structure is interesting as they form a network of patches. This allows animals to move through the area, and more locally provides opportunities for smaller species such as bees when the right plants are chosen. For the chosing of plants it is important to have at least some native species, and to choose plants in such a manner that there is a variation in height and scale (Stiphout & Mathias, 2020). This creates sufficient shelter as well as places to find food.

For the management of the greenery it is important to have a varied sceme as this allows for more height differences and therefore biodiversity

When it comes to the (newly built) buildings in the area biodiversity can be increased by designing some porous spaces. Small holes in stones used in buildings give insects places to breed and rest. Larger holes or nest boxes give spaces to birds, and an irregular porous facade design is ideal for climbing plants. Different animals prefer nesting at different sides of the building, wich should be taken into acount in the deisng of the building as can be seen in figure 170

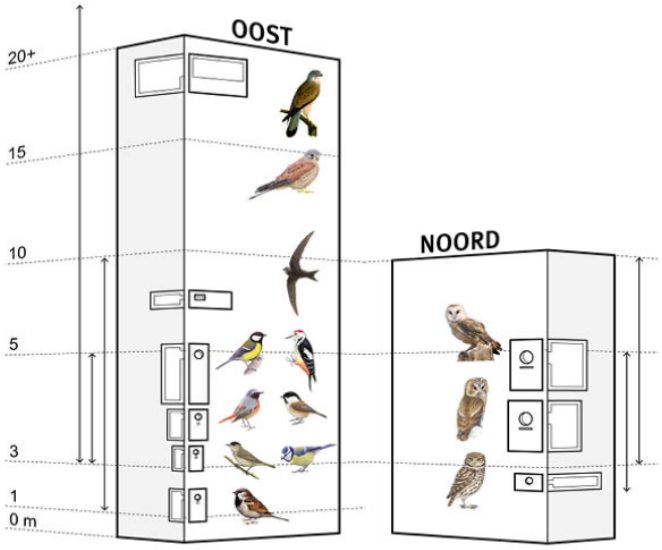


Figure 170: Shows the prefered places in building facades of different animals, retrieved from Stiphout & Mathi

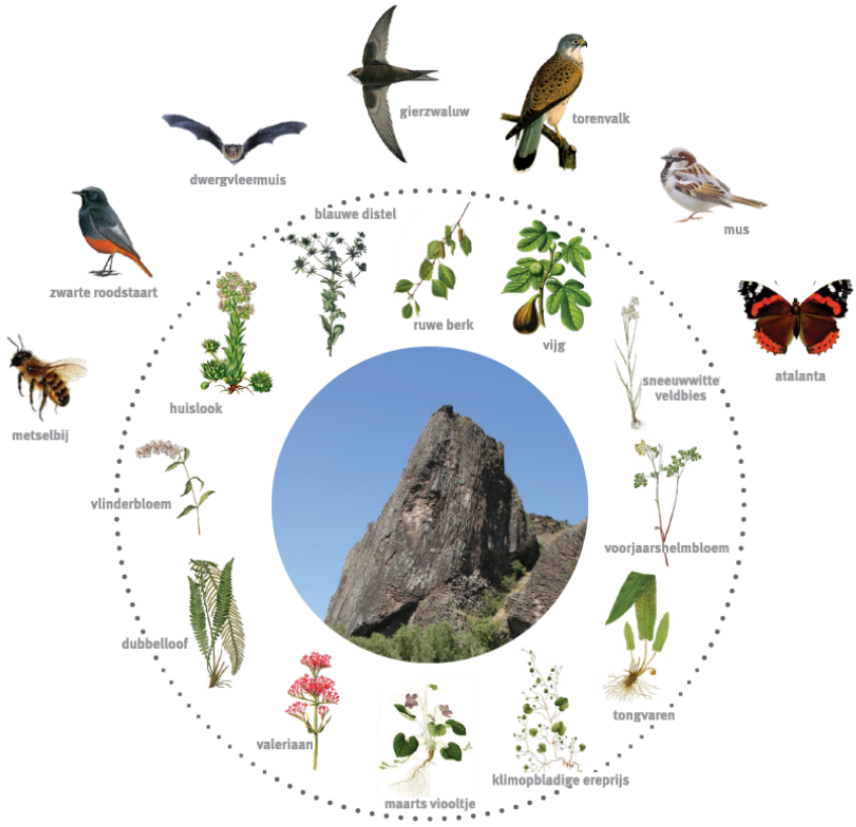
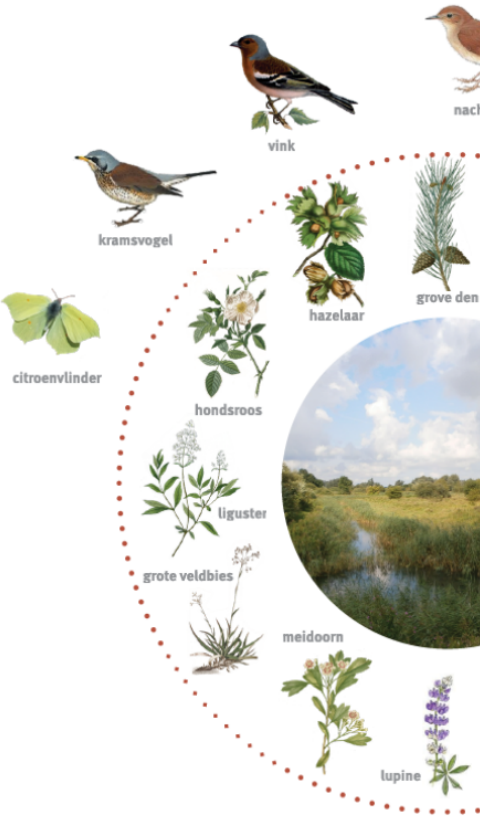


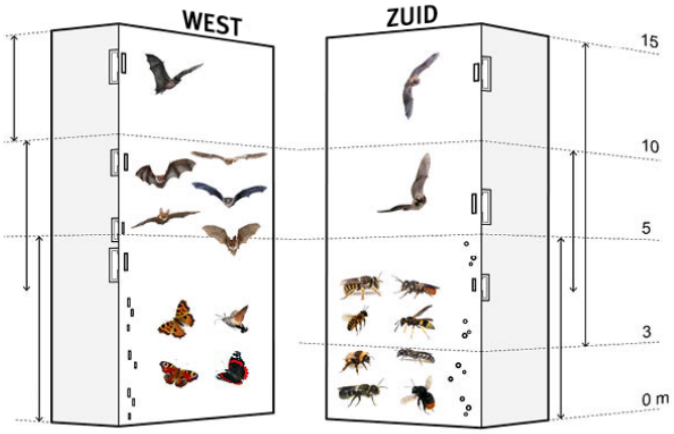
Figure 171: Shows the rock biotope, retrieved from Stiphout & Mathias, 2020



Fi

Biotopes

Different biotopes can be created to enhance biodiversity in the area (Stiphout & Mathias, 2020). Newly built buildings of around six stories high can function as a rock biotope. The walls can give space for insects and birds, while the roof does not need any special attention for the birds to feel like a rock biotope. On the roofs of the lower (existing) buildings in the area, a small scale form of a bretten biotope could easily be created when the measure of having green and blue roofs would be necessary to take care of the rainwater on private property. Although measures on private roofs are outside the scope of the project, when actions are taken it would be benefical to consider the needs in terms of biotopes. Finally, the garden biotope is to be introduced in the newely created front yards and green space between the front yard and the road. This could be achieved if the municipality temporarely gives the space for the front garden to the inhabitants for an agreed amount of time with the condition of no pavement and suitable species in the front garden, which could be extended to the greenery next to it. For the public space the garden biotope would be most suitable as implementing bodies of open water is difficult in the Schilderswijk.



as, 2020



figure 173: Shows the garden biotope, retrieved from Stiphout & Mathias, 2020



Figure 174: Shows the location of the Teniershof

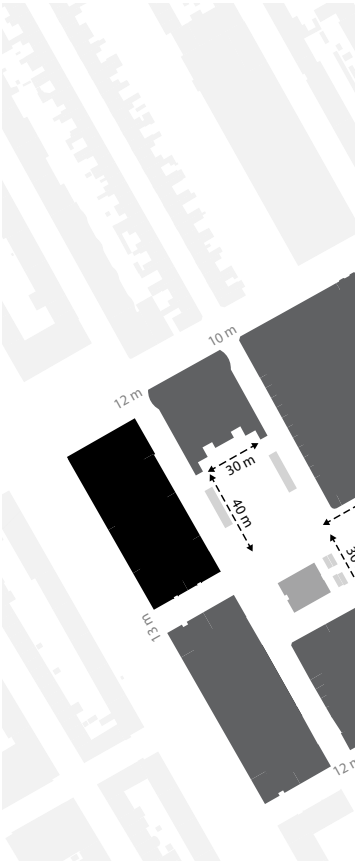


Figure 176: Shows the dimensions of the Teniershof



Figure 175: Shows the current layout of the Teniershof

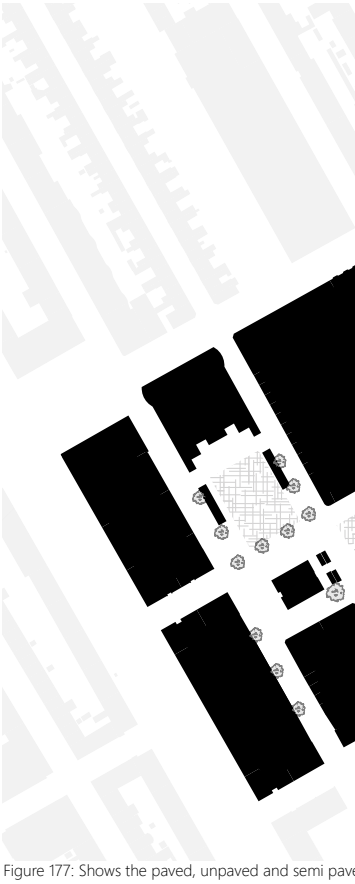


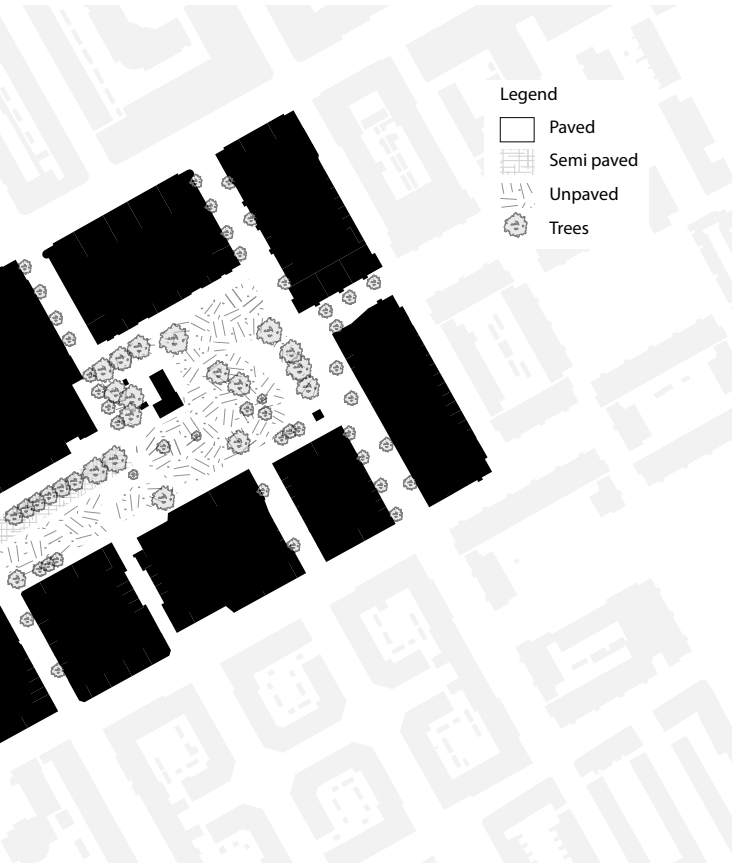
Figure 177: Shows the paved, unpaved and semi pave



DESIGN OF THE TENIERSHOF

ANALYSING THE DESIGN LOCATION

The chosen design location is the Teniershof. It is located in the center of the Schilderswijk, and surrounded by houses, a school and a mosque and a neighbourhood center. The school uses the playground during break, the football field is used by youngsters, who also tend to hang around nearby. The remaining space is occupied by a city farm, where mainly mothers with young childeren take a look. Most buildings are 3 to 4 stories high, and the surrounding streets are part of the local infrastructure network. Sufficient infiltration space for rain water is present. Temporary storage however is lacking.



ed surfaces

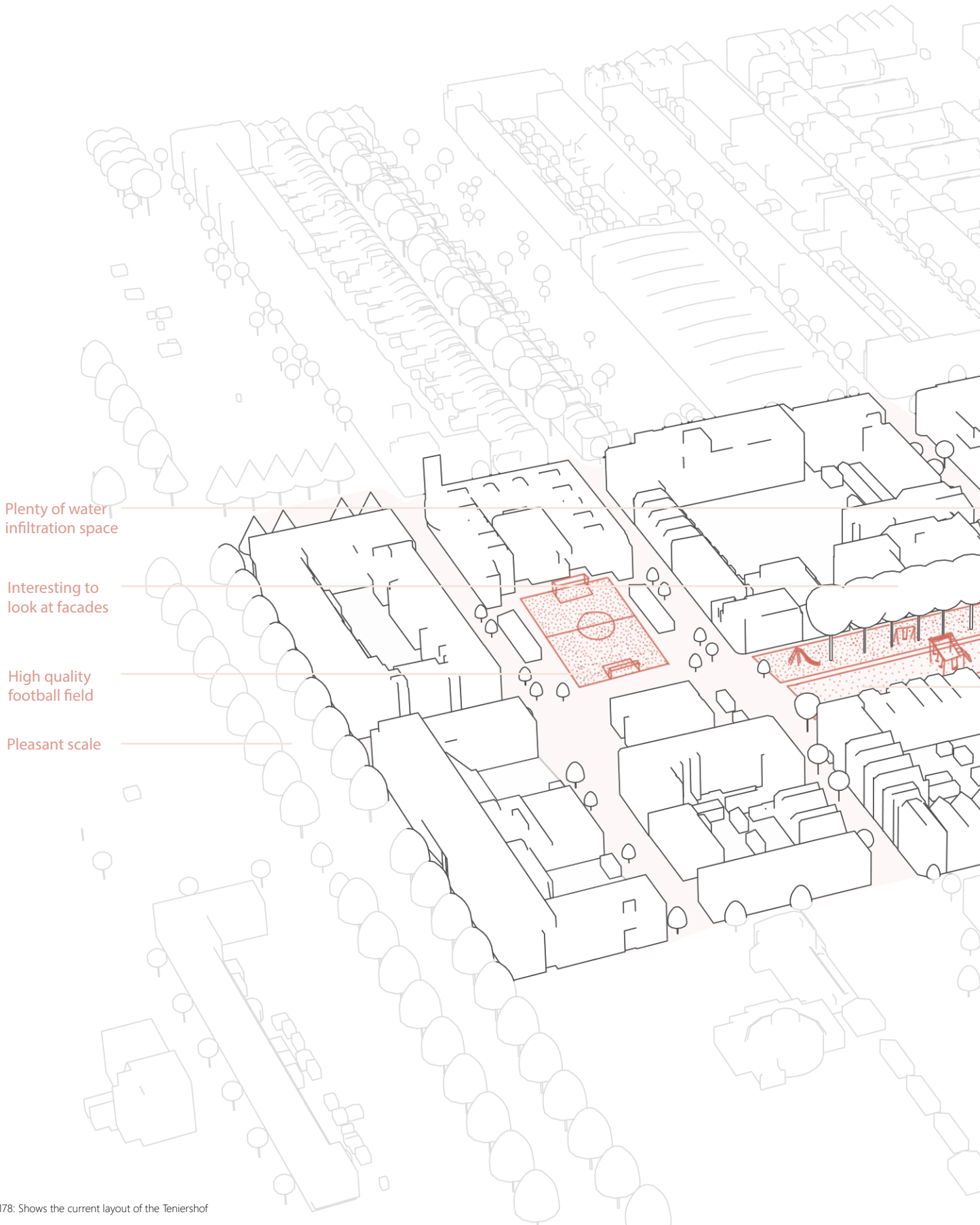


Figure 178: Shows the current layout of the Teniershof

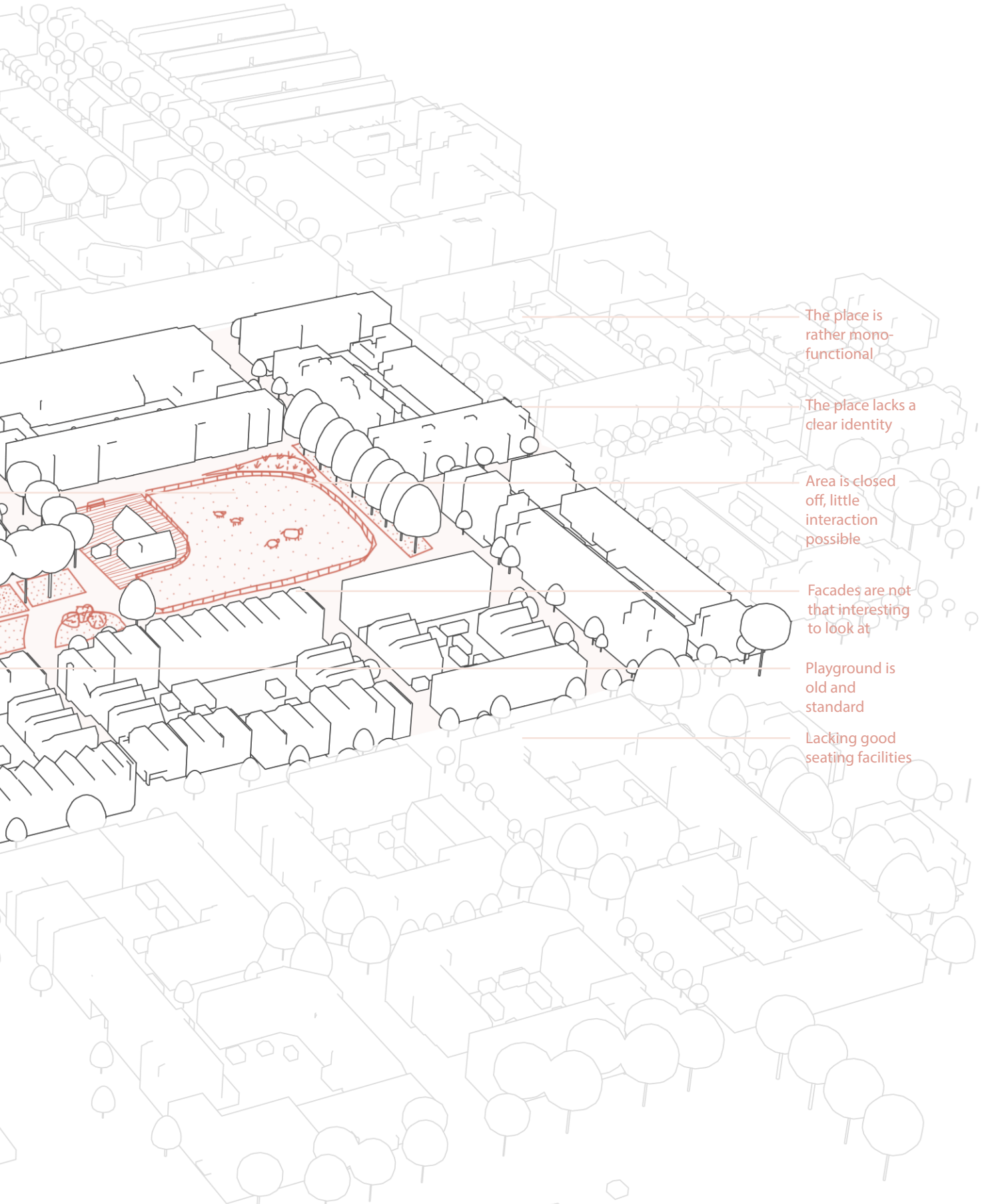

The place is rather mono-functional
The place lacks a clear identity
Area is closed off, little interaction possible
Facades are not that interesting to look at
Playground is old and standard
Lacking good seating facilities










Figure 179: Shows Teniershof

DESIGN ON THE NEIGHBOURHOOD SCALE

On the neighbourhood scale a function for each public space was decided as well as the local infrastructure. The infrastructure around the square is mainly focused on slow traffic, which is suitable for the user group. Furthermore, some buildings will be renewed, and in the process the square will be enlarged. The new facades should be detailed and attractive as well as providing space for street art. In the plint a public function will be present, and the new building height will be equal to or less than 1.5 times the currently highest building surrounding the square. On the square, space will be present for a fountain, an interactive water module or water playground as well as a normal playground, a terrace and some covered spaces. The city farm will be kept, although small changes are not objected. The football field will be kept intact, and (a) wadi(s) wil be added to increase the amount of temporary water storage. On the next page, a table is shown with the new and current functions and their sizes.



Figure 180: Shows the street designs of the Teniershof



Figure 181: Shows building designs of the Teniershof

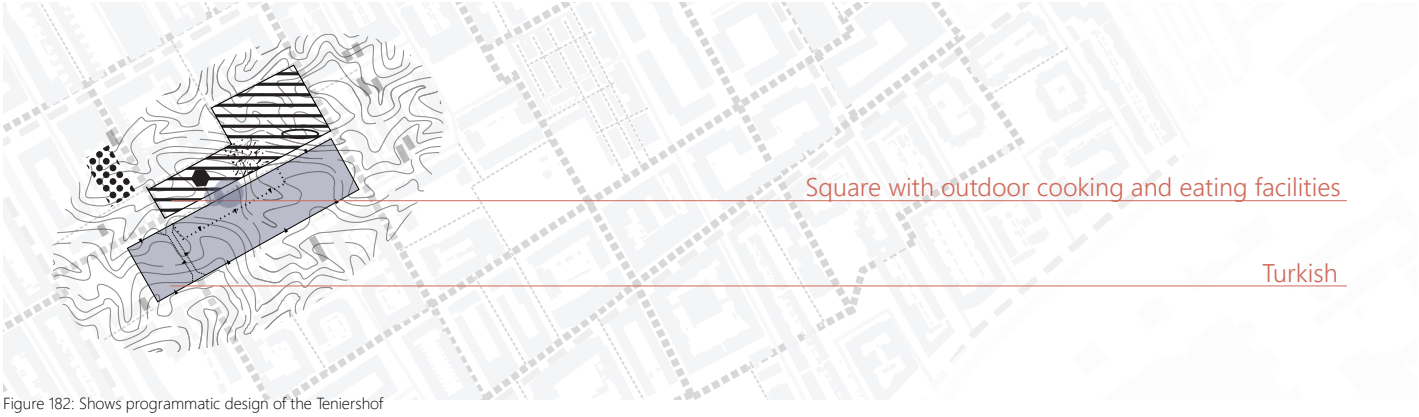


Figure 182: Shows programmatic design of the Teniershof

	Existing	Current size (m^2)	Needed size (m^2)	Relations
City farm	Yes	5250	no change - 5250	
Sports/football field	Yes	1080	no change - 1080	
Playground (also used by the school)	Yes	1400	750 - 1250	- Water playground: share a function - Horeca + outdoor cooking: Sightlin
Terrace/horeca	No		250	- Covered places: overlap in space - Playground and waterplayground : needed - Street art: makes facades interesting
Place to prepare and eat food	No		200	- Covered places: overlap in space - Playground and waterplayground : needed - Covered places: overlap in space
Fountain	No		100	- Could be related to waterplaygroun share a function)
Street art	No			- Terrace: needs interesting facades to
Water playground	No		300	- Water playground and fountain : (p share a function - Horeca + outdoor cooking: Sightlin - Terrace and outdoor cooking: overl
Covered place	No			

Figure 183: Shows programmatic design of the Teniershof

	Opportunities	Restrictions	
	- Produce products for the restaurant - Design for senses of taste and smell	- Privately owned so difficult to change anything	
		- Functions well and is invested in recently: changing a lot does not make sense	
e is needed		- Preferably close to the school	
Sightline is g to look at			
Sightline is	- cooking together is an opportunity to share cultures and be proud of your own		
nd (potentially	- Pleasant sounds - Can give an identity		
o look at	- Can give a new identity and reputation - It is a way to appreciate and express cultures	- Little space for street art on the existing buildings surrounding the square	
otentially) e is needed ap in space	- Potential to combine it with an interactive fountain		
	- Make spaces usable year round by providing a more pleasant microclimate		

REFERENCES

References are used to look at successful solutions, as well as what made them successful and how to make them transferable to the chosen design location.

City farm



Figure 184: retrieved from https://www.gwlfruitbomen.nl/nieuws/

GWL Terrein (Amsterdam):

Fruit trees are managed by inhabitants, once a year they bake apple pie with the whole neighbourhood

- A feeling of control by inhabitants
- It is clear who is responsible and takes the lead
- Everyone is involved and sees the results
- The trees are of a fruit that is widely used by inhabitants of the neighbourhood

Transferability:

- Involve neighbourhood organisations
- Plant nut and fig trees

Sport fields



Figure 185: retrieved from https://nl.pinterest.com/pin/504614333219693321/

Youngsters enjoy watching sports and socialising next to sport fields and should be given the place to do so. One good addition to facilitate this would be to add seating area where phone charging is possible, there is a Wi-Fi hotspot as well as some coverage in case of bad weather

- Add facilities
- Give youngsters a place of their own

Food preparation places

Stads BBQ (Antwerpen):

- Concrete with iron BBQ: Strong and too heavy to move
- Picknick tables surrounding BBQ
- Project has been terminated by the municipality because of food safety and nuisances, even though the BBQs were popular with the inhabitants



Figure 186: retrieved from https://www.mo.be/reportage/de-stad-als-achtertuin

BBQ plaats Zuiderpark (Den Haag)

- BBQ is allowed and facilitated in the sense of suitable trash cans
- Everyone brings their own BBQ



Figure 187: retrieved from https://www.flickr.com/photos/74659394@N04/7280595056

Transferability

- Facilitate BBQ by placing suitable trash cans and picnic tables

Playground

Vermeerpark (The Hague):

- 60 * 20 => 1300m2
- Large and original playground equipment
- Toys lending point
- Seating area for grownups
- Clear zoning between different age groups and types of activities



Figure 188: retrieved from https://indebuurt.nl/denhaag/gids/speeltuin-vermeerpark/

Vennepark (The Hague):

- 6825 m2 in total of which 640 is effectively dedicated to playing
- Toy sharing point
- Clear zoning between different age groups and types of activities
- Seating area for grownups



Figure 189: retrieved from https://driehoekmakelaardij.nl/property/van-der-vennestraat-115/

Speeleiland (Goes):

- 3000 m2 fo which 750 m2 effectively dedicated to playing
- Playground equipment is intergrated with height differences



Figure 190: The slide looks almost identical to the one in Goes of whihc no photo could be found. retrieved from https://go-kids.nl/alkmaar/erop-uit/Natuurspeeltuin-Sint-PancrasAlkmaar

Transferability:

- Play with height differences
- Create a seating area for grownups
- Aim for a size between 750 - 1250 m2
- Create a clear zoning between different age groups and types of activities

Terraces / Cafés

Beestenmarkt (Delft)

- 53 * 68 => 3600 m2, of which one terrace is about 250 m2 excluding space in between and around
- Trees provide roof, and a cozy feeling
- Facades are interesting to look at as well as all the people passing by
- Terrace is a bit higher than the surrounding road
- Cozy lighting in the evening



Figure 191: retrieved from https://www.ad.nl/delft/geluidsnorm-maakt-van-delft-een-slaapstad~ac50abb4/

The Hangout (Delft)

- 20 * 11.5 = 230 m2
- Benches border the terrace wich makes it feel more intimate



Figure 192: retrieved from https://indebuurt.nl/delft/gids/the-hangout/

Grote Markt (Delft)

- 110 * 60 = 6600 m2 for the whole square
- Facades are interesting to look at as well as all the people passing by
- Differentiation in material makes the space readable



Figure 193: retrieved from http://erikoverdiep.nl/project/grote-markt-in-delft/

Transferability:

- Make interesting facades and make sure life happens around the terrace
- Frame the space by height differences, a differentiation in material and/or something that serves as "a roof"
- Design for effective and cozy lighting during the evening
- One terrace is around 250 m2
- Keep it simple, there does not need to be a lot of drama

Fountain and water playground

Moroccan fountain Noorderplein (Rotterdam):

- Makes a reference to the cultural background of some of the inhabitants
- Adds colour and movement to the place



Figure 194: retrieved from https://fonteinen-amsterdam-rotterdam.nl/rotterdam/overzicht-fonteinen/136-marokkaanse-fontein

Fountain Oaseplein (Rotterdam):

- Makes a reference to the cultural background of some of the inhabitants
- Adds movement tot the place as well as a clear center of the square



Figure 195: retrieved from https://fonteinen-amsterdam-rotterdam.nl/rotterdam/overzicht-fonteinen/102-oaseplein

Fountain Dakpark (Rotterdam):

- The fountain can be a water playground in summer and just a plain square or stairs in winter

Fountain Liberty Square (Budapest)

- 15 * 20 = 300 m2
- The fountain is interactive
- Doubles as a water playground in summer
- Also grown ups enjoy the dynamics in summer
- Blocks out surrounding sounds



Figure 196: retrieved from https://fonteinen-amsterdam-rotterdam.nl/rotterdam/overzicht-fonteinen/106-fonteinen-en-watertrap-in-het-dakpark



Figure 197: retrieved from https://commons.wikimedia.org/wiki/File:Liberty_Square_Interactive_Fountain_(02).jpg

Turkish sebil/sabil:

- Makes a reference to a cultural background
- Provides drinking water in public spaces
- Goves a clear focus point in public space

Transferability:

- Adding cultural heritage to a fountain can add value
- There is an oppertunity to combine the fountain with a water playground in summer
- A fountain where the water falling makes a sound that blocks out others
- A fountain can provide drinking water

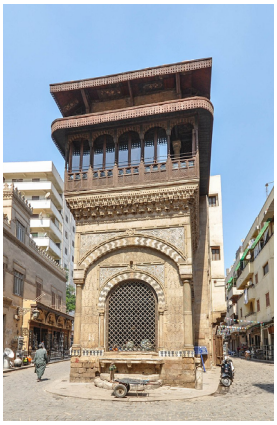


Figure 198: retrieved from https://string-fixer.com/nl/Sabil-Kuttab_of_Katkhuda



Figure 199: retrieved from https://archaeotravel.eu/sabil-or-sebil-a-drinking-fountain-in-islamic-cities/

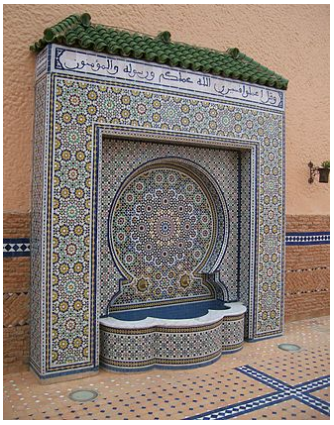


Figure 200: retrieved from https://en.wikipedia.org/wiki/Sebil_(fountain)



Figure 201: retrieved from https://www.flickr.com/photos/imrefarago/4548859286

Street art

Street art (Georgetown, Malaysia)

- Started from a competition on how to make the city a living museum: first iron sculptures were added explaining the history of the city
- Street art became the image of the city, attracts many tourists each year (UNESCO world heritage site)
- The street art is interactive / designed to take pictures with
- Inhabitants participated in the project in later stages

No Cruzeiro favela (Brazil)

- The painting was done in collaboration with local residents, making it a community project
- The neighbourhood is now well known for its street art
- It was used as a way to give an impulse to the neighbourhood and to fight prejudice against slums
- Huge surface
- Part is done in mosaic as it is more durable

Transferability:

- Design and create street art in collaboration with residents
- Create either a huge surface, or many small ones
- Let the art tell something
- Use it to attract visitors and boost the place's reputation





Figure 202: retrieved from https://www.wanderingstus.com/11-street-art-murals-not-to-miss-in-georgetown-penang



Figure 203: retrieved from https://www.kunsthal.nl/en/plan-your-visit/exhibitions/favela-painting/

Covered spaces

Covered public space (Larabetzu, Spain)

- Semi open facade
- Matching materials inside and outside
- Covered space

Proposal for new Sydney plaza (Australia)

- Cover is attached to the building, making it one space
- There is sufficient height to make it still feel like part of the whole space instead of seperate territory
- The scale matches the surroundings

Proposal for glass covered park (Stockholm):

- The shape matches the function
- The glass lets through light but improves the micro climate on cold or rainy days

Transferability:

- Make sure the scale matches the scale of the surroundings
- Let the material match the material of the place/ surroundings



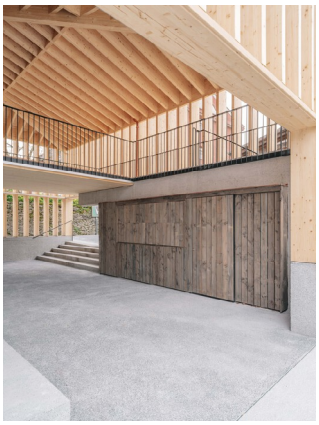


Figure 204: retrieved from https://www.archdaily.com/968483/last-chance-for-a-slow-dance-covered-public-space-behark



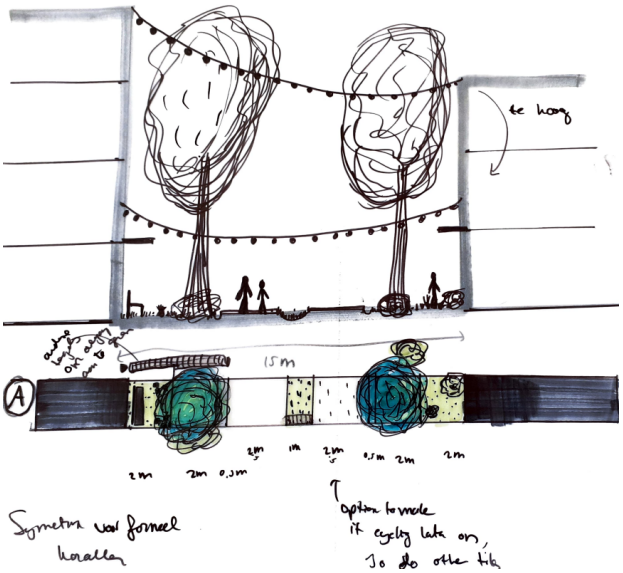
Figure 205: retrieved from https://www.dezeen.com/2019/12/12/david-adjaye-sydney-plaza-aboriginal-paintings/

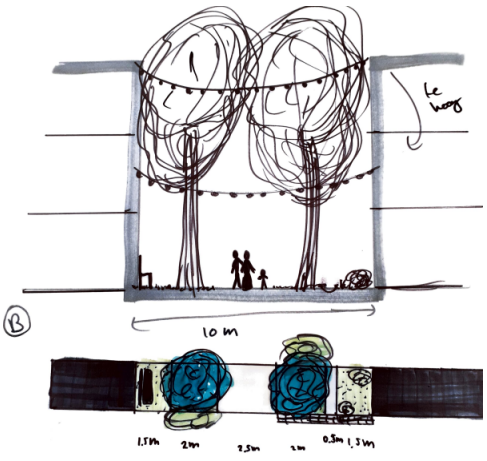


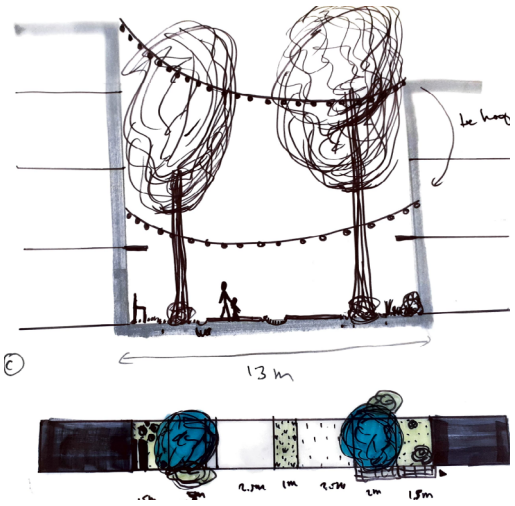
Figure 206: retrieved from https://www.archdaily.com/867450/utopia-arkitekter-proposes-public-park-in-stockholm-shrouded-in-glass

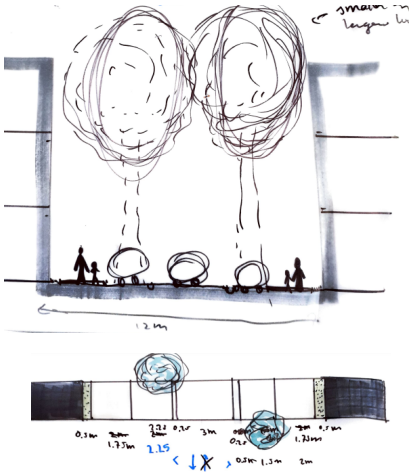
INQUIRY BY DESIGN

In order to make a design for the Teniershof, first design options are produced to explore the possibilities, as well as their advantages and disadvantages. First, variations are made based on a feeling without taking into account exact measurements. The second batch is made with the measurements in mind. Thridly, street profiles are designed.









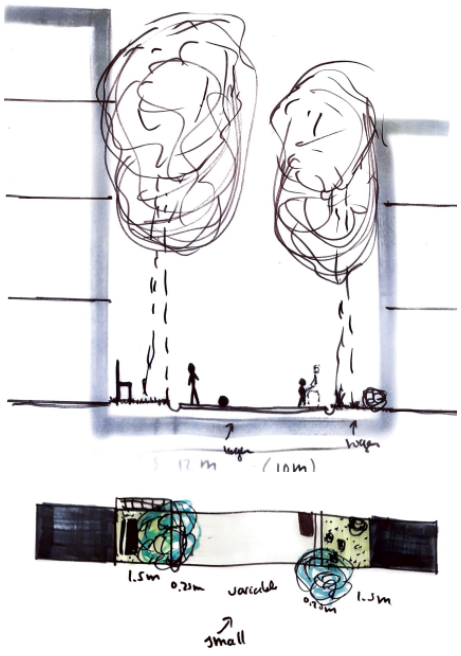


Figure 207: Shows the sketches of the street sections surounding the Teniershof

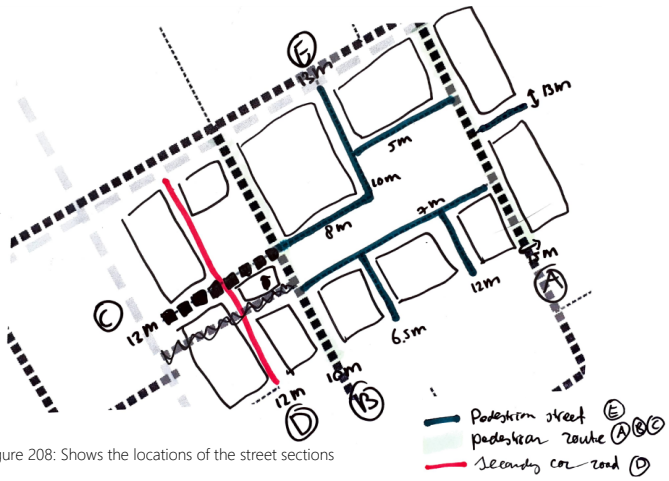


Figure 208: Shows the locations of the street sections

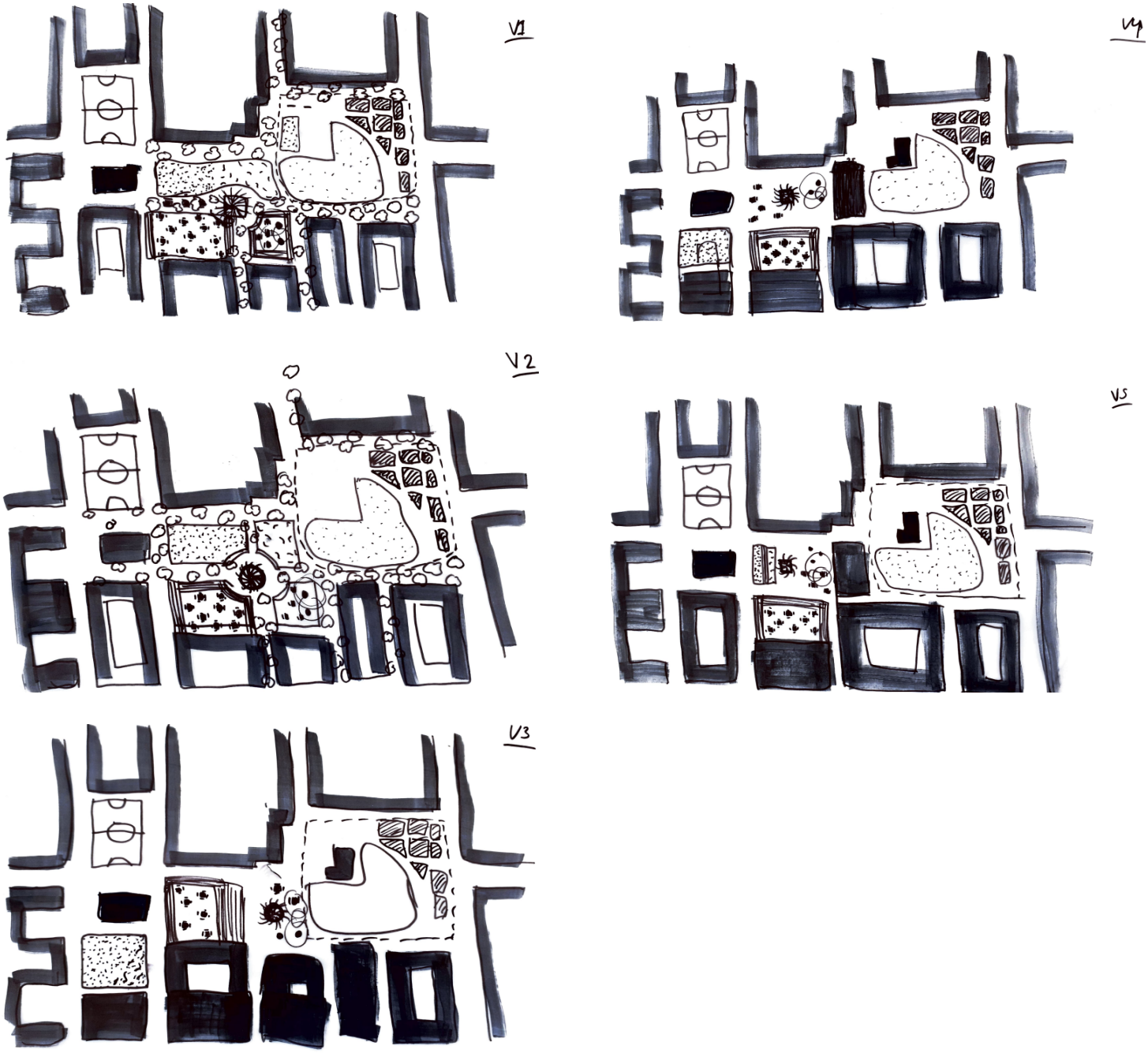
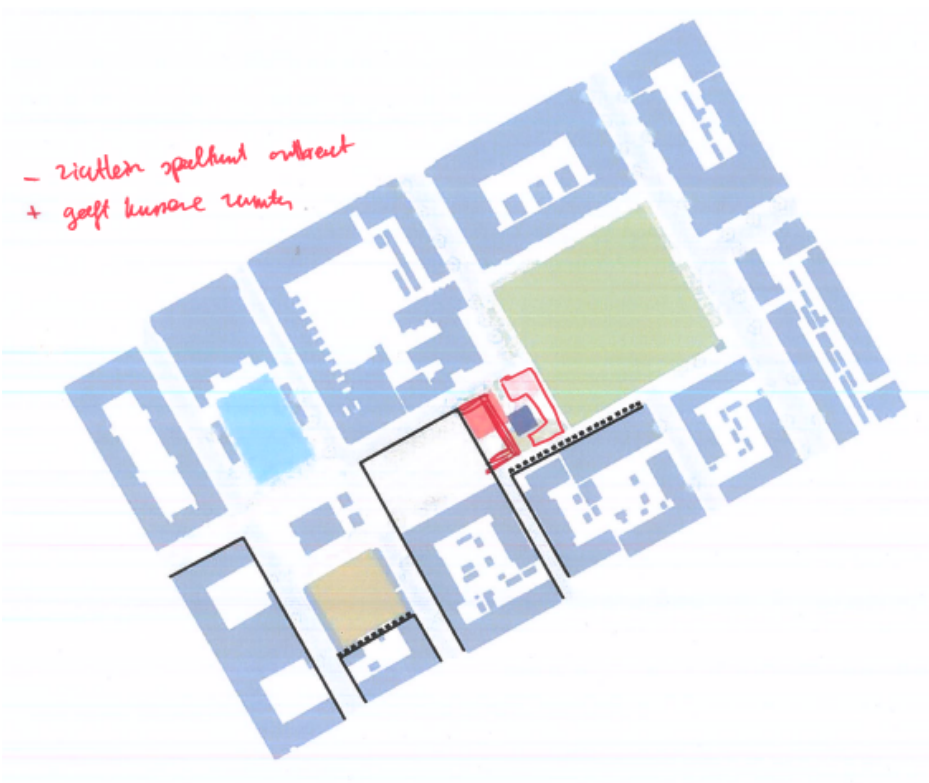
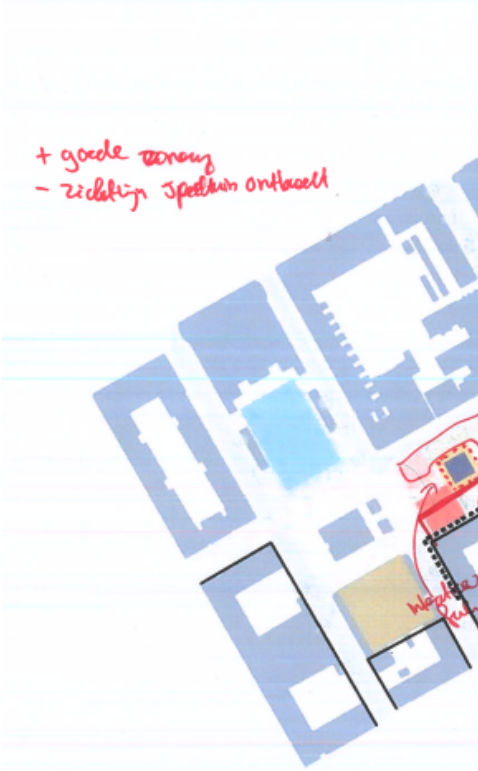


Figure 209: Shows sketches of the design of the Teniershof





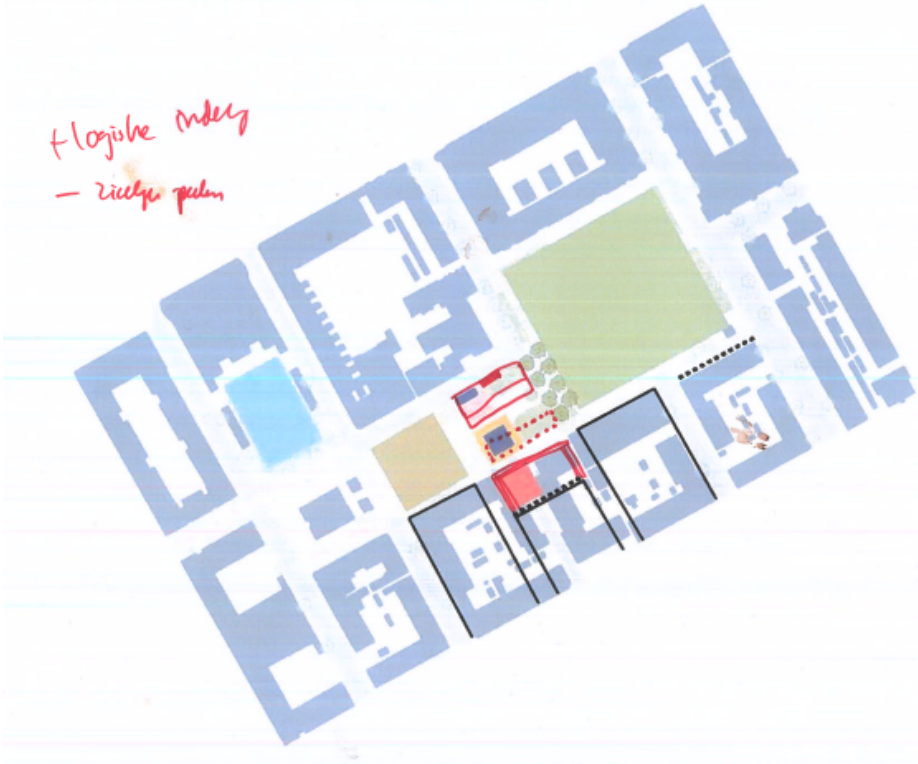
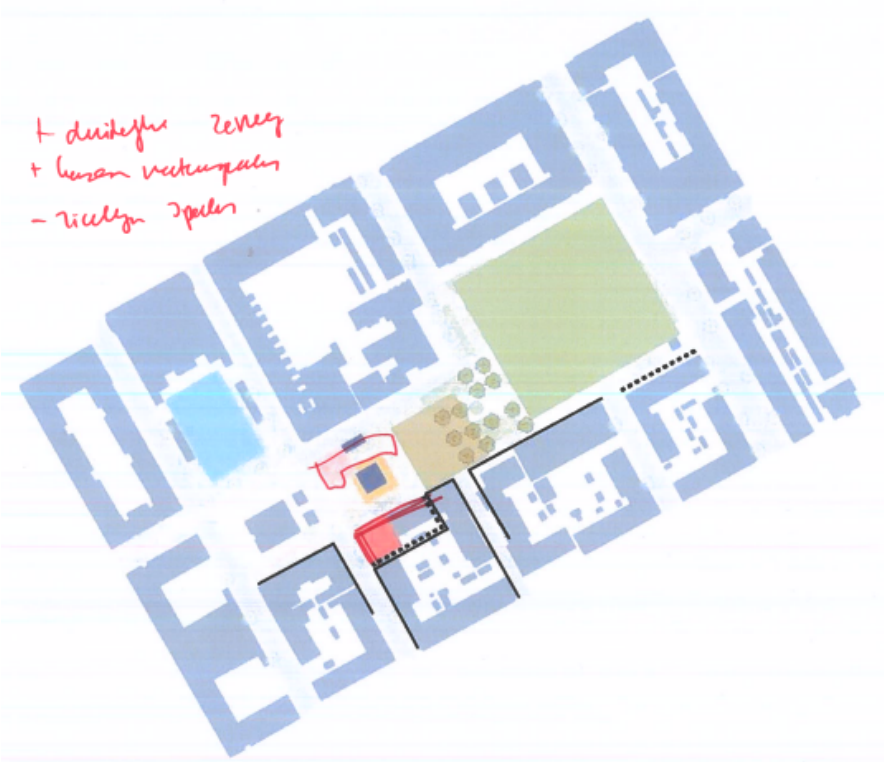
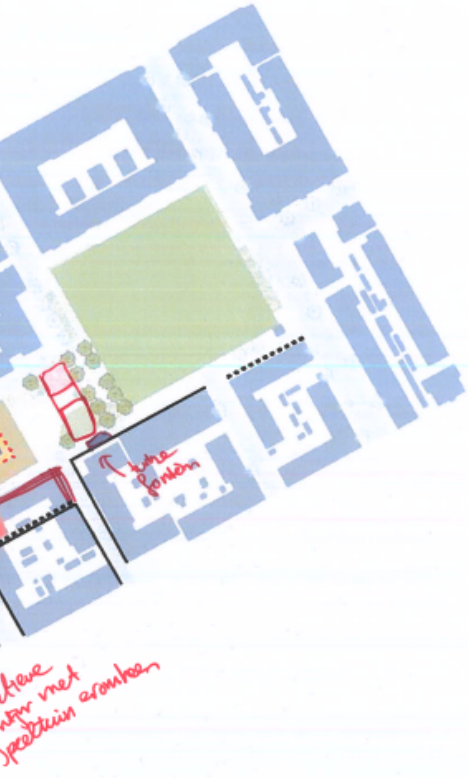




Figure 210: Shows the sketches of the design of the Teniershof based on the required sizes of each function




+ duidelijke zeweg
+ kansen natuurspeelen
- zichtlijn speelen




+ bied kansen semi natuur
speelkuil / hoogteverschillen
+ goede indeling
- straat komt gek uit
op speelkuil

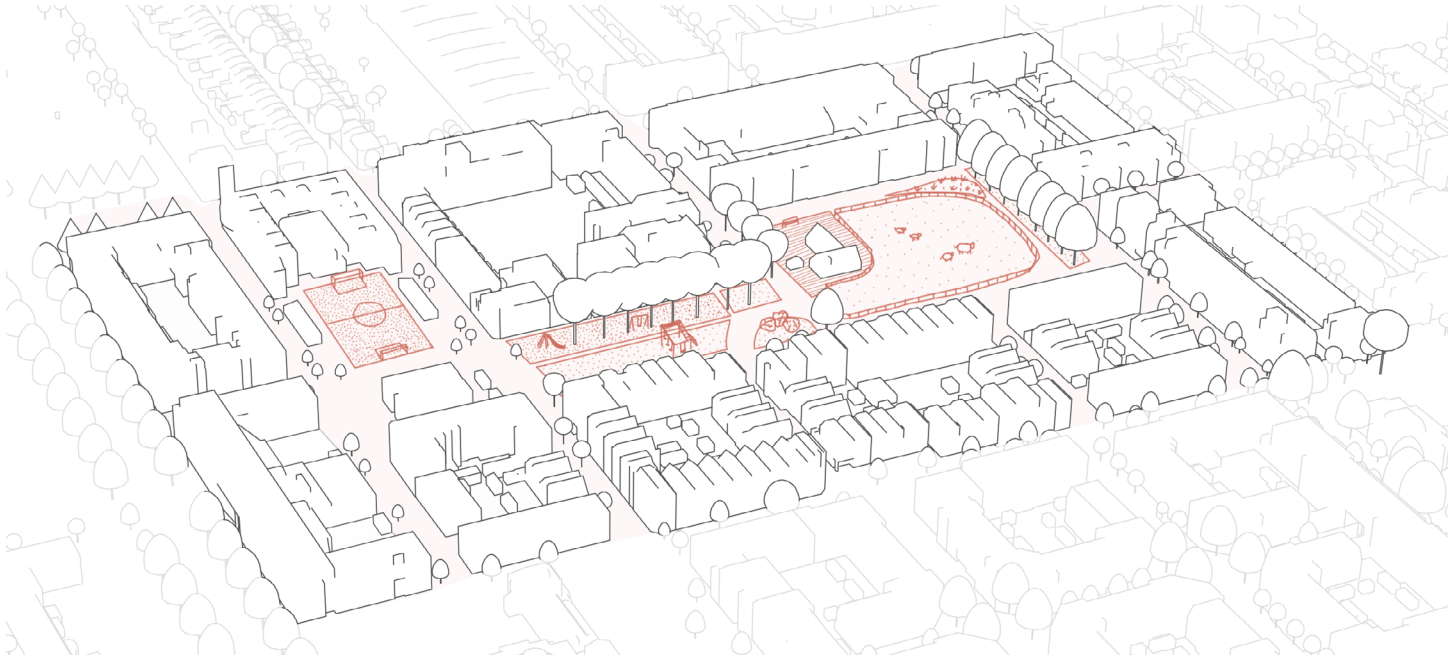
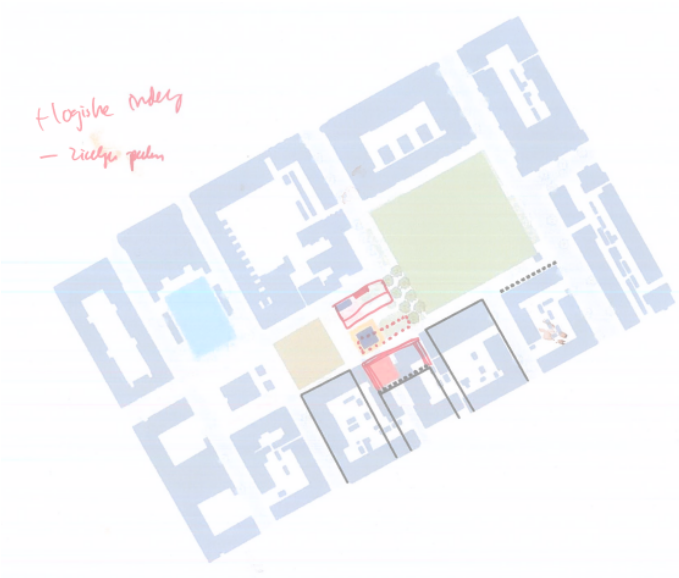


Figure 211: Shows the current situation of the Teniershof



Advantages of this design:

- Playground is close to the school
- Logical flow of the spaces

Disadvantages of this design:

- Playground is not visible form every place on the terrace

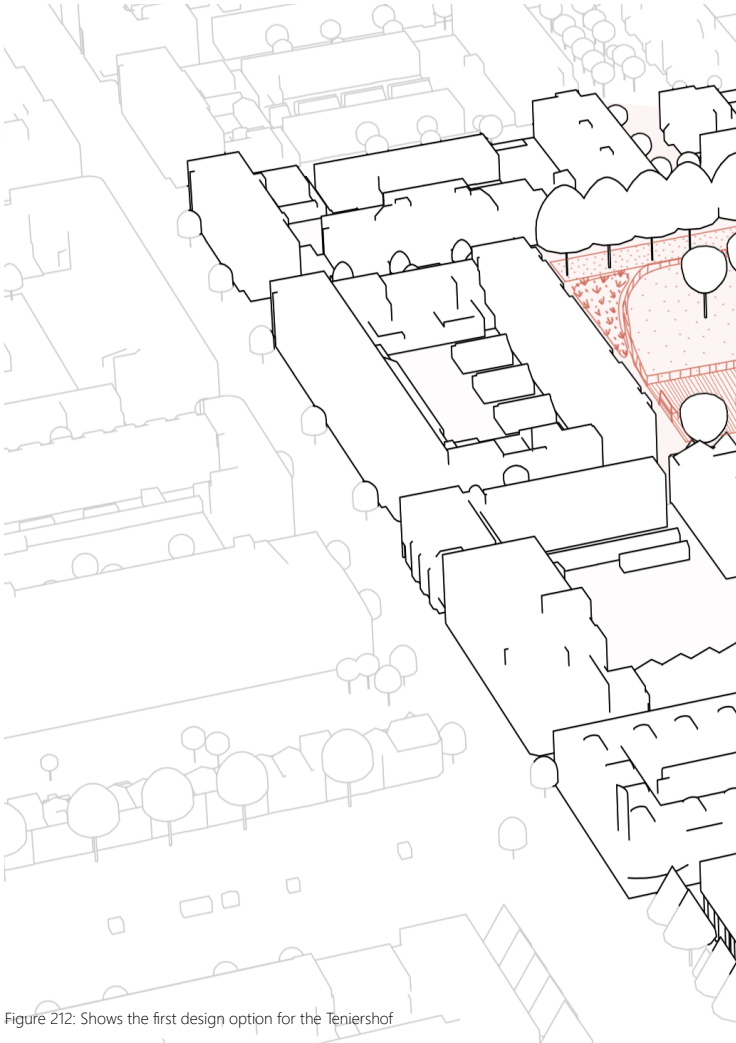


Figure 212: Shows the first design option for the Teniershof

Old:

Qualities:

- Some interesting facades
- Plenty of water infiltration
- Pleasant scale
- High quality football field

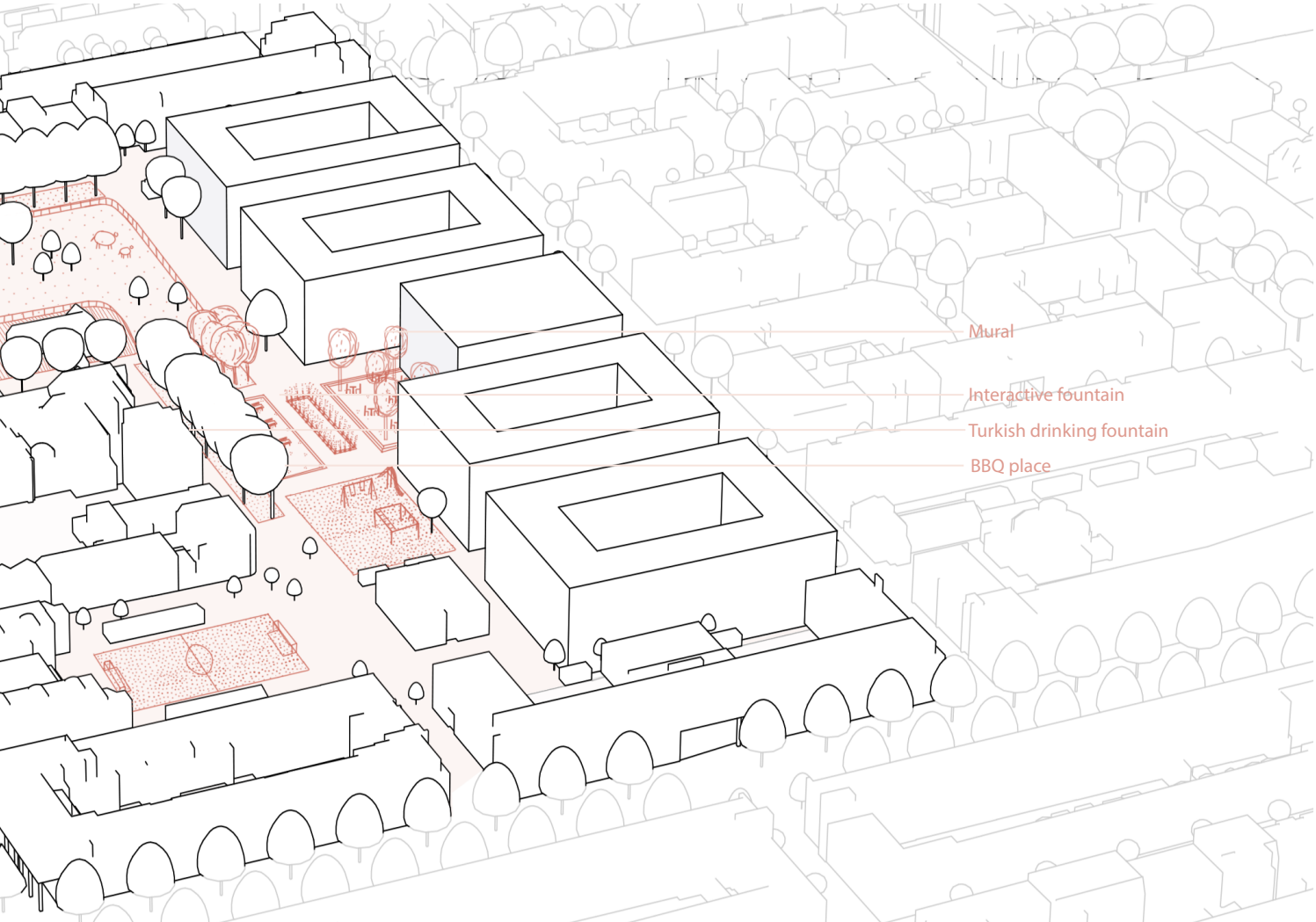
Negatives:

- Lacks a clear identity
- Parts of the area are rather closed off
- Some facades are monotonous
- The playground is old and rather basic
- The place is rather monofunctional
- Lacks comfortable seating area

New:

- Interesting facades are preserved
- Plenty of water infiltration is still present
- Pleasant scale is kept due to limited height of the added buildings
- High quality football field is left unchanged

- Identity is added by the Turkish drinking fountain, the interactive fountain and the murals
- Parts of the area are still rather closed off
- Monotonous facades are replaced by new buildings
- The playground is renewed
- The place becomes multifunctional by adding terraces and a seating plus outdoor cooking place
- Seating is added



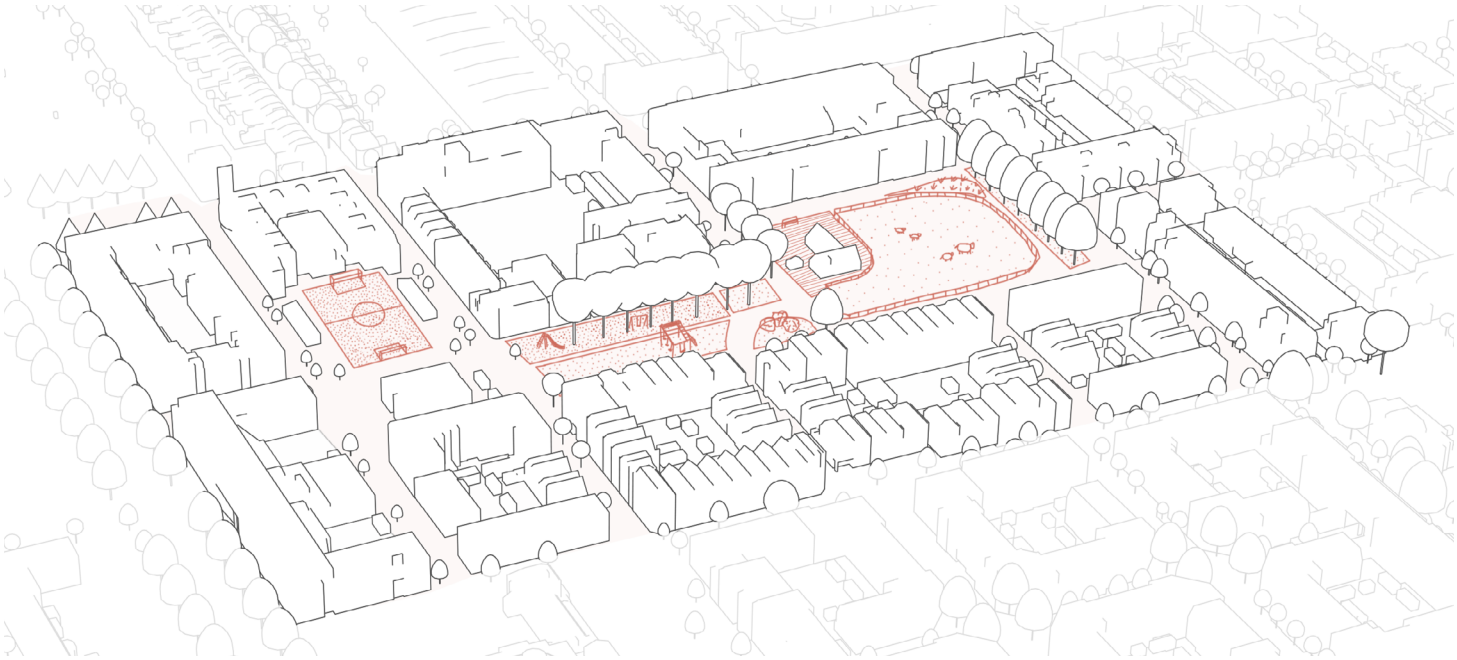


Figure 213: Shows the current situation of the Teniershof



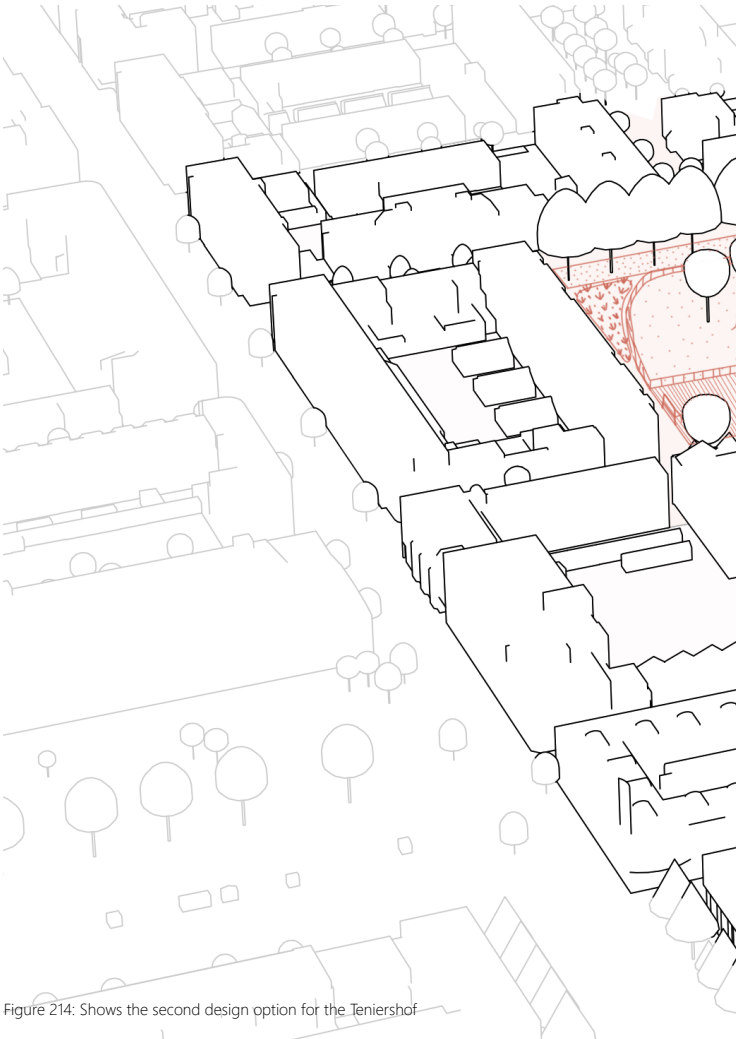


Figure 214: Shows the second design option for the Teniershof

Advantages of this design:

- Playground is close to the school
- Playground is visible form every place on the terace and seating area

Disadvantages of this design:

- The fountain in the middle of the playground does not make the most logical flow of spaces

Old:

Qualities:

- Some interesting facades
- Plenty of water infiltration
- Pleasant scale
- High quality football field

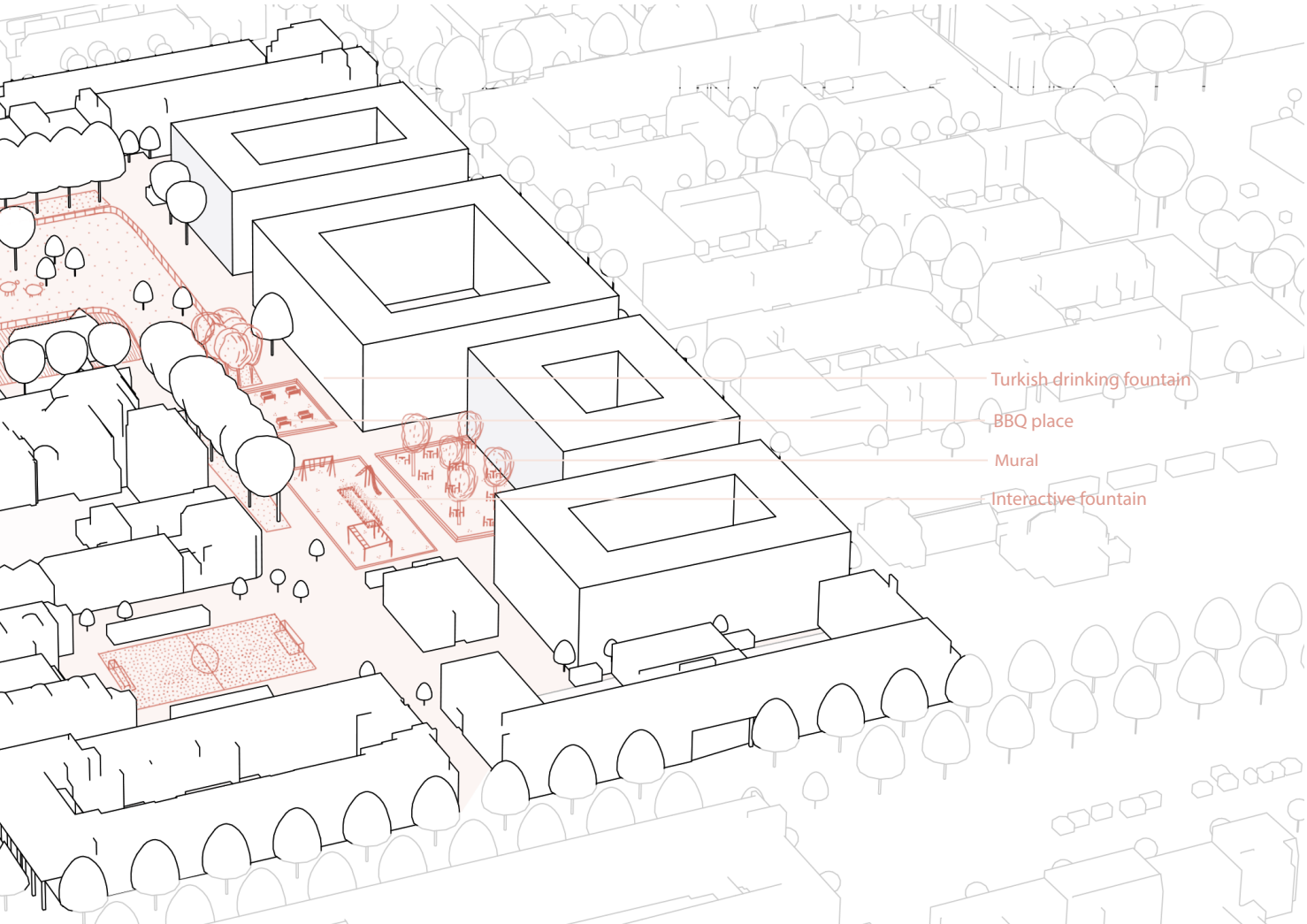
Negatives:

- Lacks a clear identity
- Parts of the area are rather closed off
- Some facades are monotonous
- The playground is old and rather basic
- The place is rather monofunctional
- Lacks comfortable seating area

New:

- Interesting facades are preserved
- Plenty of water infiltration is still present
- Pleasant scale is kept due to limited height of the added buildings
- High quality football field is left unchanged

- Identity is added by the Turkish drinking fountain, the interactive fountain and the murals
- Parts of the area are still rather closed off
- Monotonous facades are replaced by new buildings
- The playground is renewed
- The place becomes multifunctional by adding terraces and a seating plus outdoor cooking place
- Seating is added



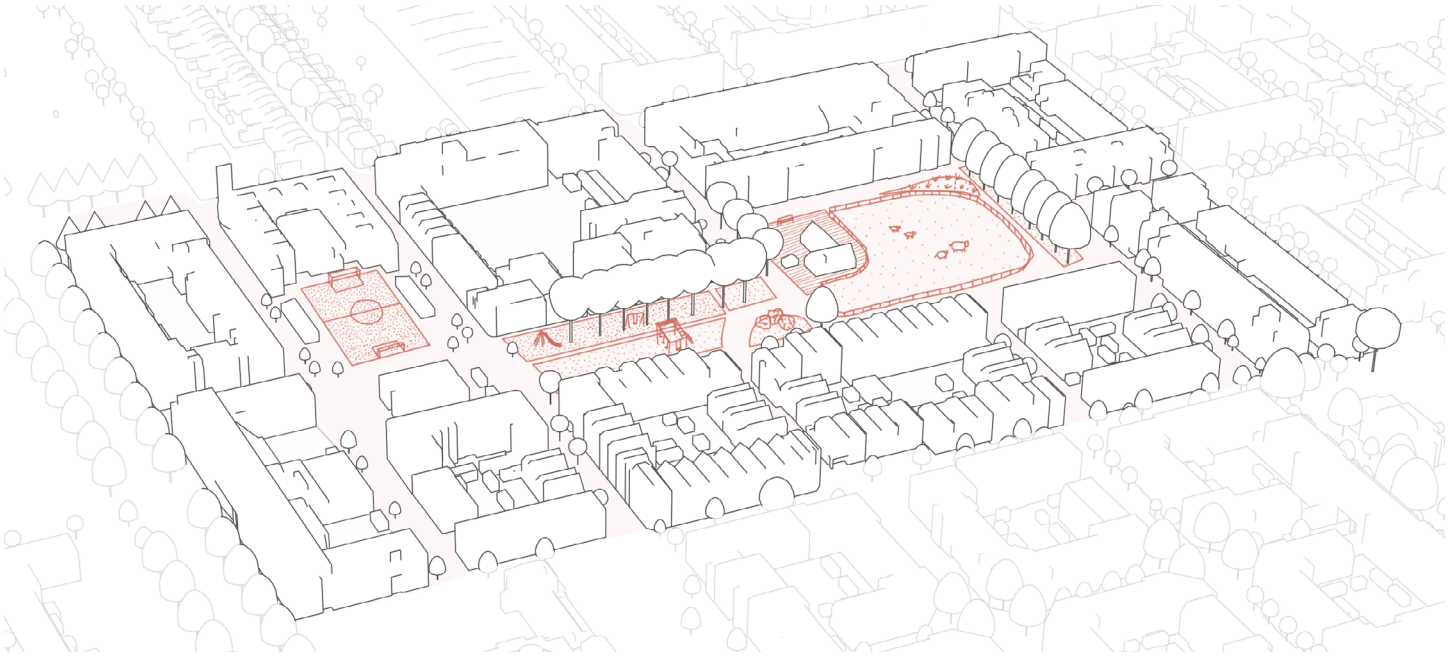


Figure 215: Shows the current situation of the Teniershof



Advantages of this design:

- Allows for a playground with natural height differences
- Logical flow of spaces

Disadvantages of this design:

- Playground is not next to the school

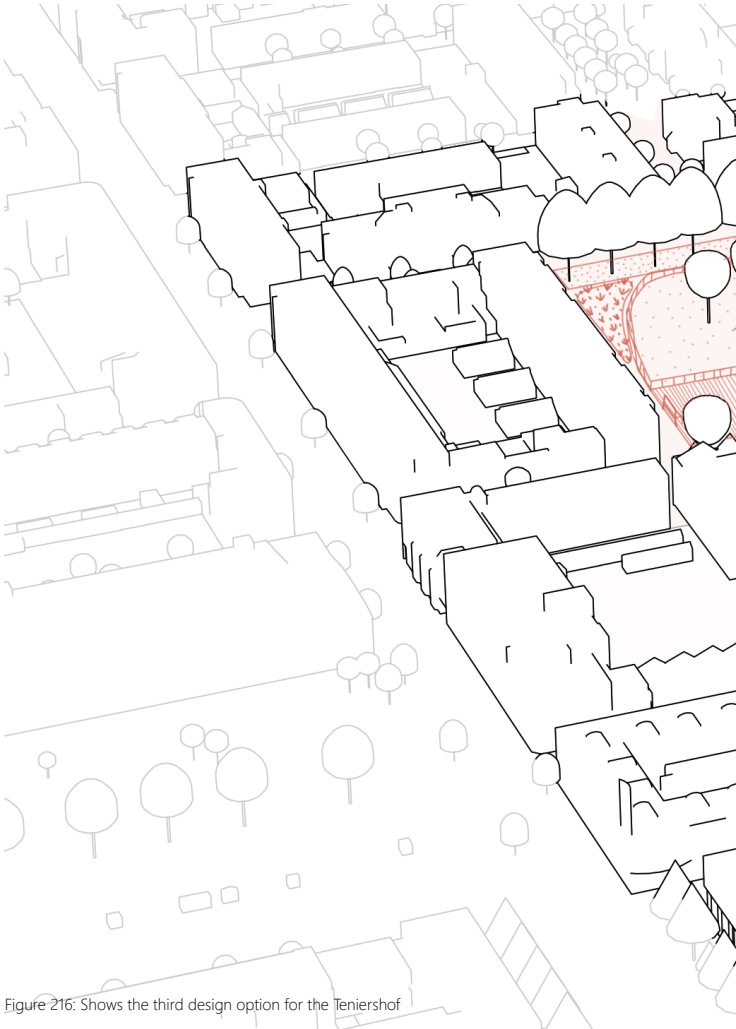


Figure 216: Shows the third design option for the Teniershof

Old:

Qualities:

- Some interesting facades
- Plenty of water infiltration
- Pleasant scale
- High quality football field

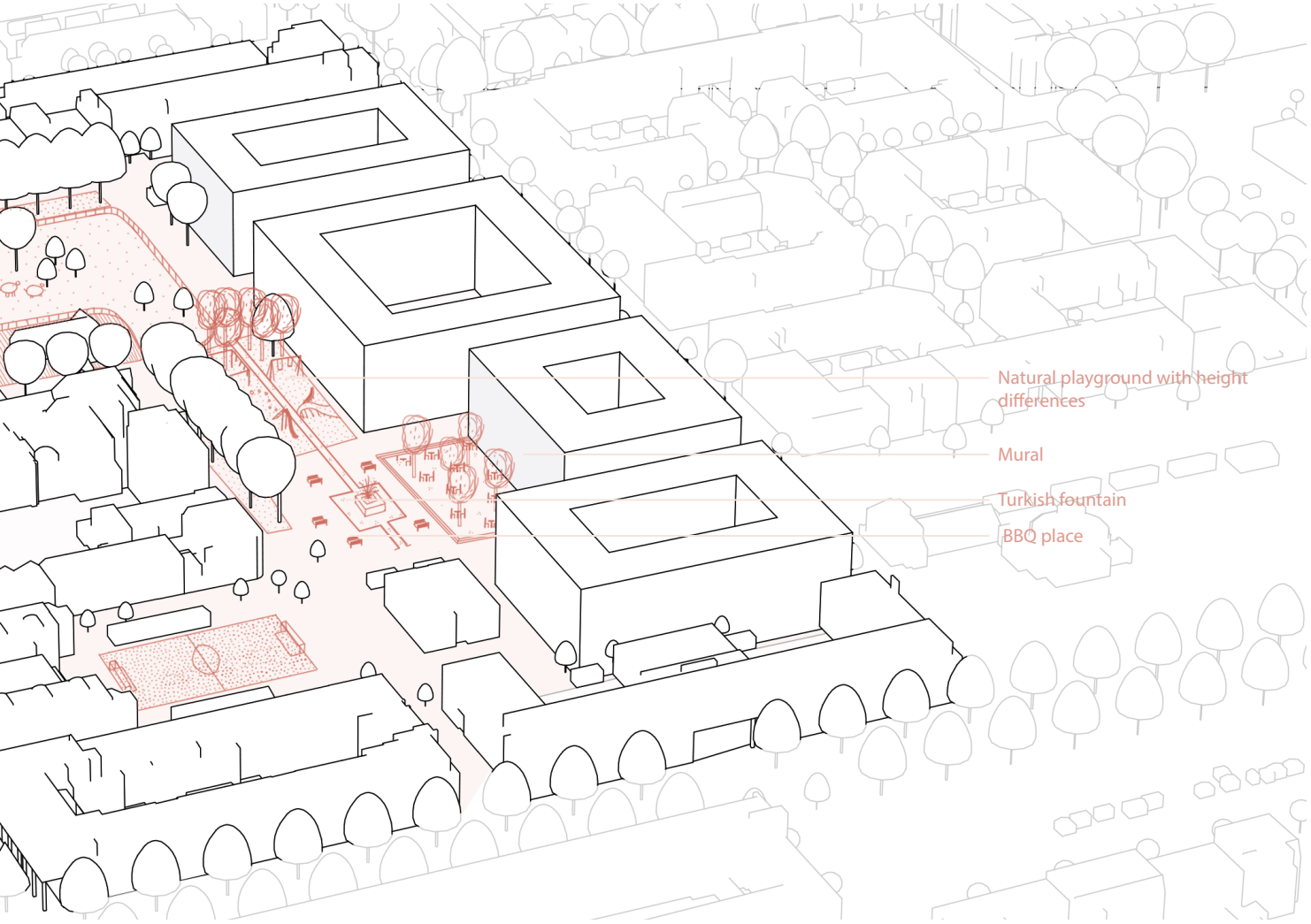
Negatives:

- Lacks a clear identity
- Parts of the area are rather closed off
- Some facades are monotonous
- The playground is old and rather basic
- The place is rather monofunctional
- Lacks comfortable seating area

New:

- Interesting facades are preserved
- Plenty of water infiltration is still present
- Pleasant scale is kept due to limited height of the added buildings
- High quality football field is left unchanged

- Identity is added by the Turkish fountain and the murals
- Parts of the area are still rather closed off
- Monotonous facades are replaced by new buildings
- The playground becomes a natural playground
- The place becomes multifunctional by adding terraces and a seating plus outdoor cooking place
- Seating is added



THE DESIGN

In this section the final design of the Teniershof is shown. The design is based on design option one as showed previously.



Figure 217: Shows the design for the Teniershof





Figure 218: Shows the design for the Teniershof


A

STREET SECTIONS

Sections of the streets are shown, in which one can see the softer borders between public and private as well as the roads designed to prioritise slow trafic. It also gives a first impression of the pedestrian network that is to be implemented throughout the neighbourhood.



Figure 228: Shows the section of the road at location A



Figure 230: Shows the section of the road at location C



Figure 231: Shows the section of the road at location D



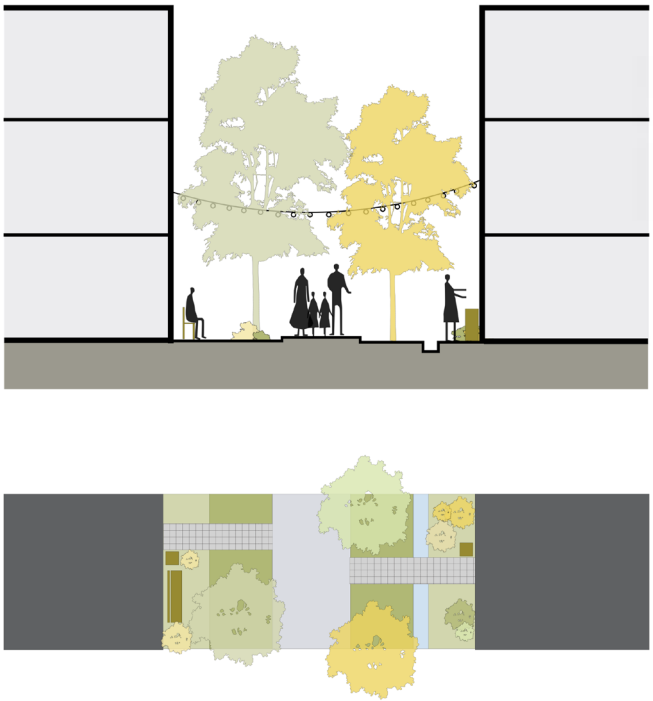
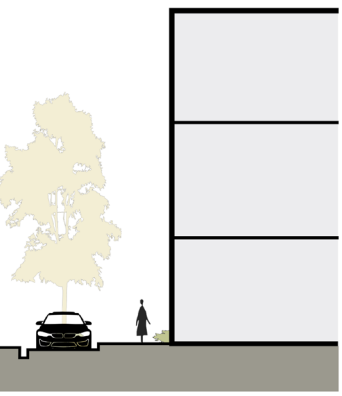
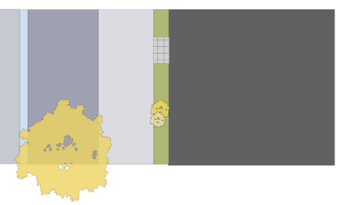


Figure 229: Shows the section of the road at location B







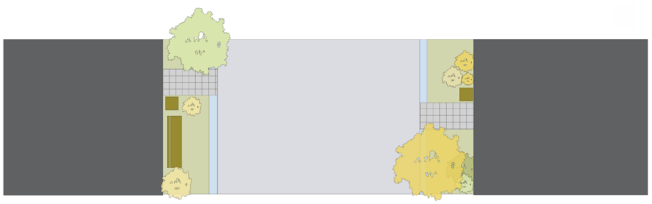


Figure 232: Shows the section of the road at location E

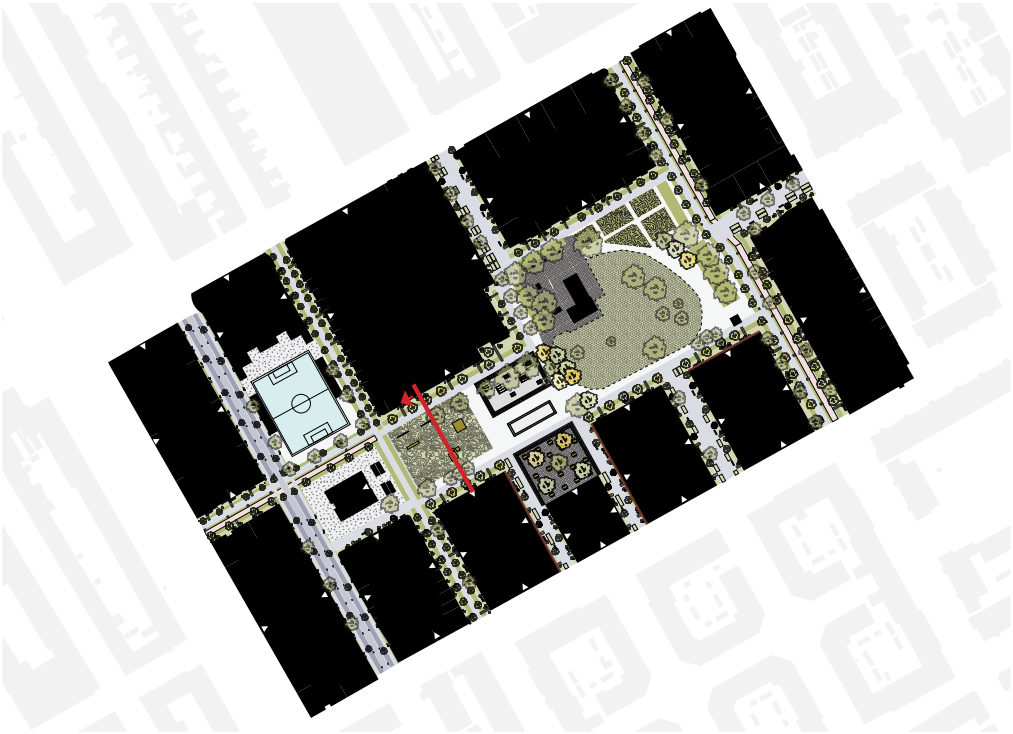
SECTIONS



Figure 219: Shows a section of the new design of the Teniersplantsoen

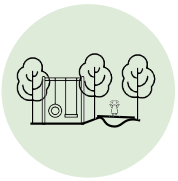
















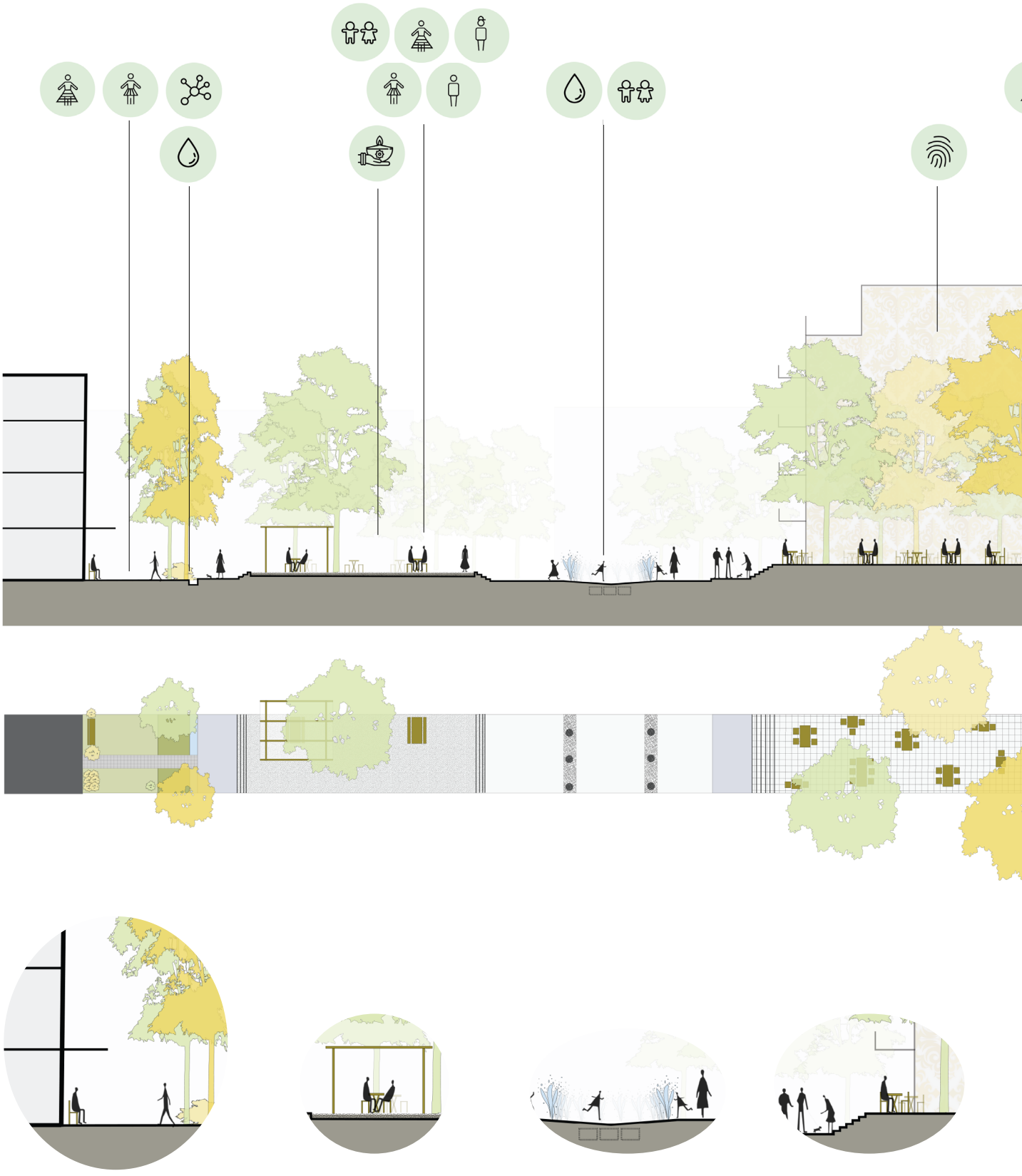
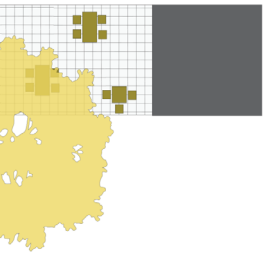


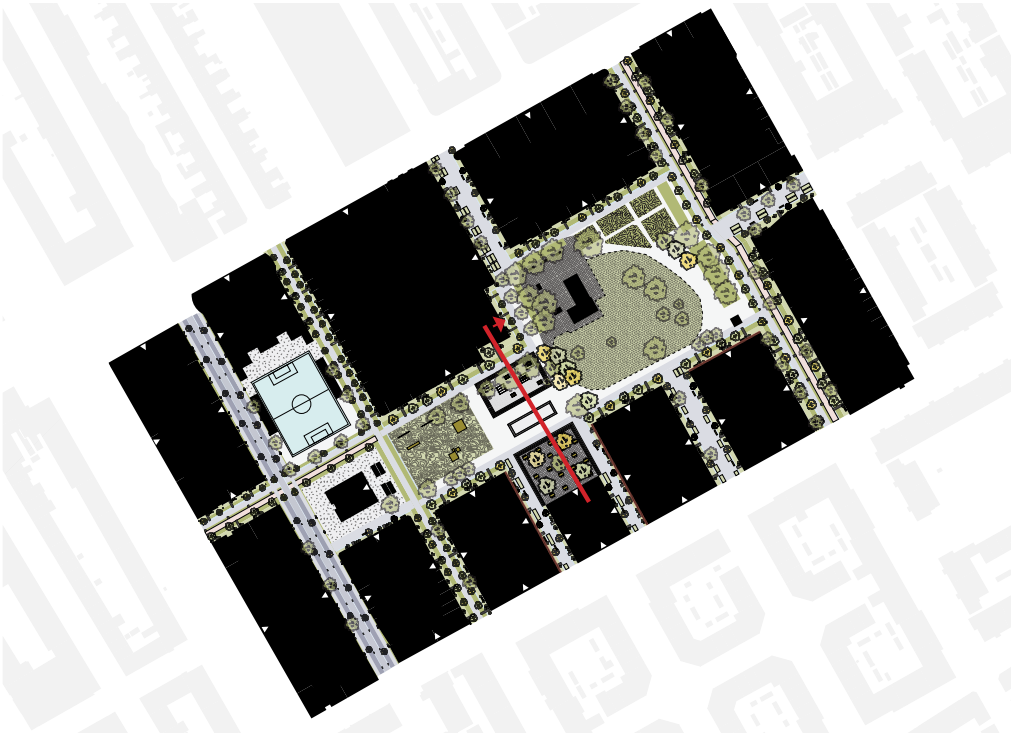
Figure 220: Shows a section of the new design of the Teniersplantsoen



















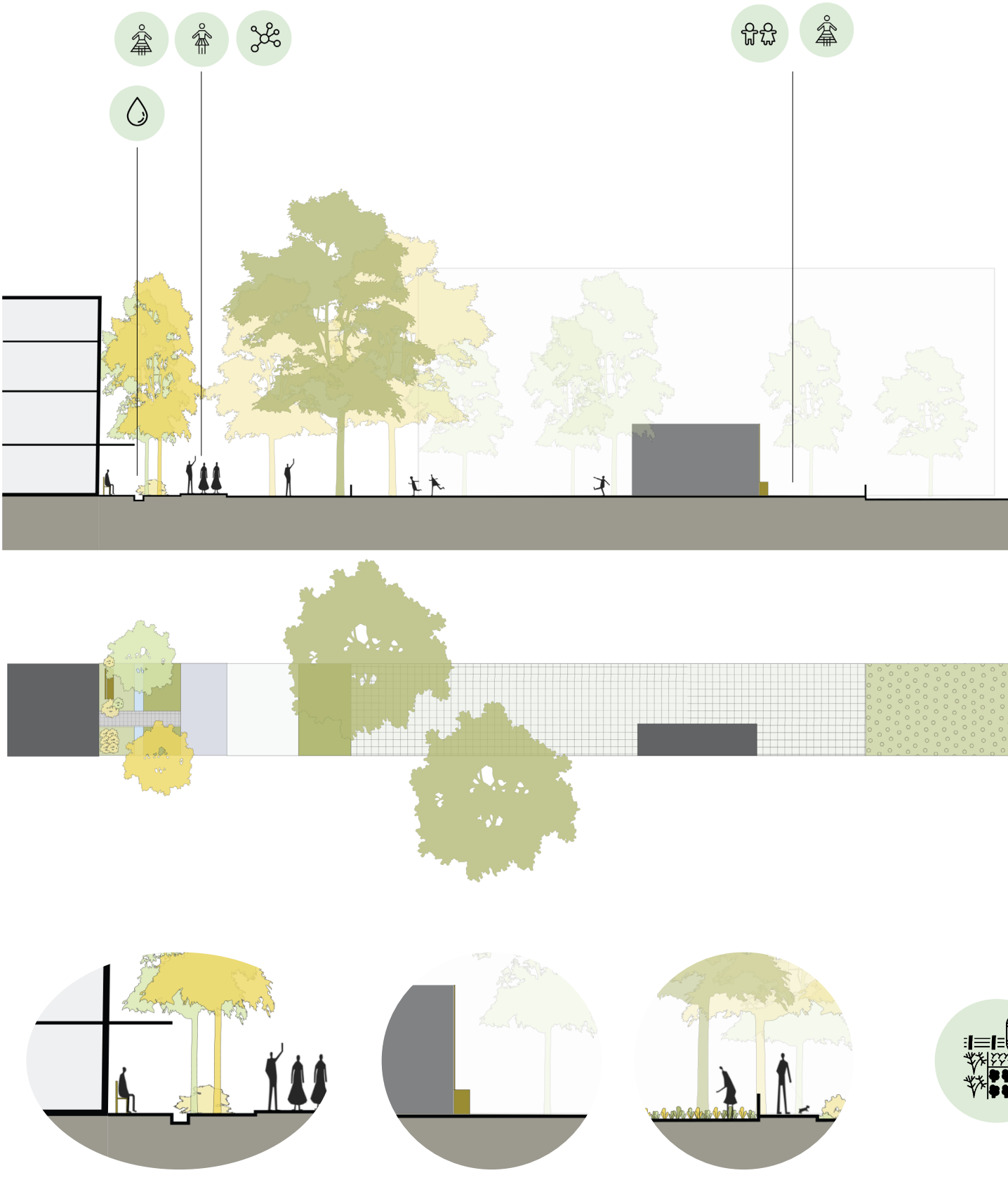
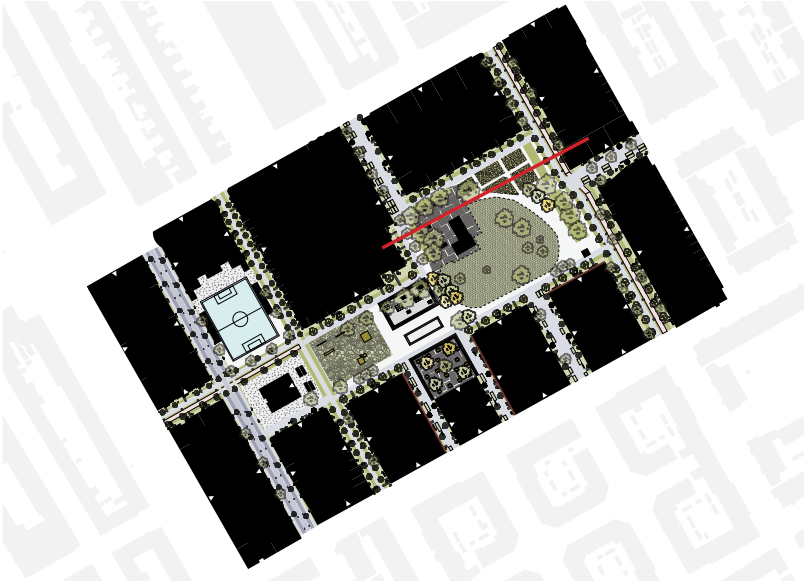


Figure 221: Shows a section of the new design of the Teniersplantsoen









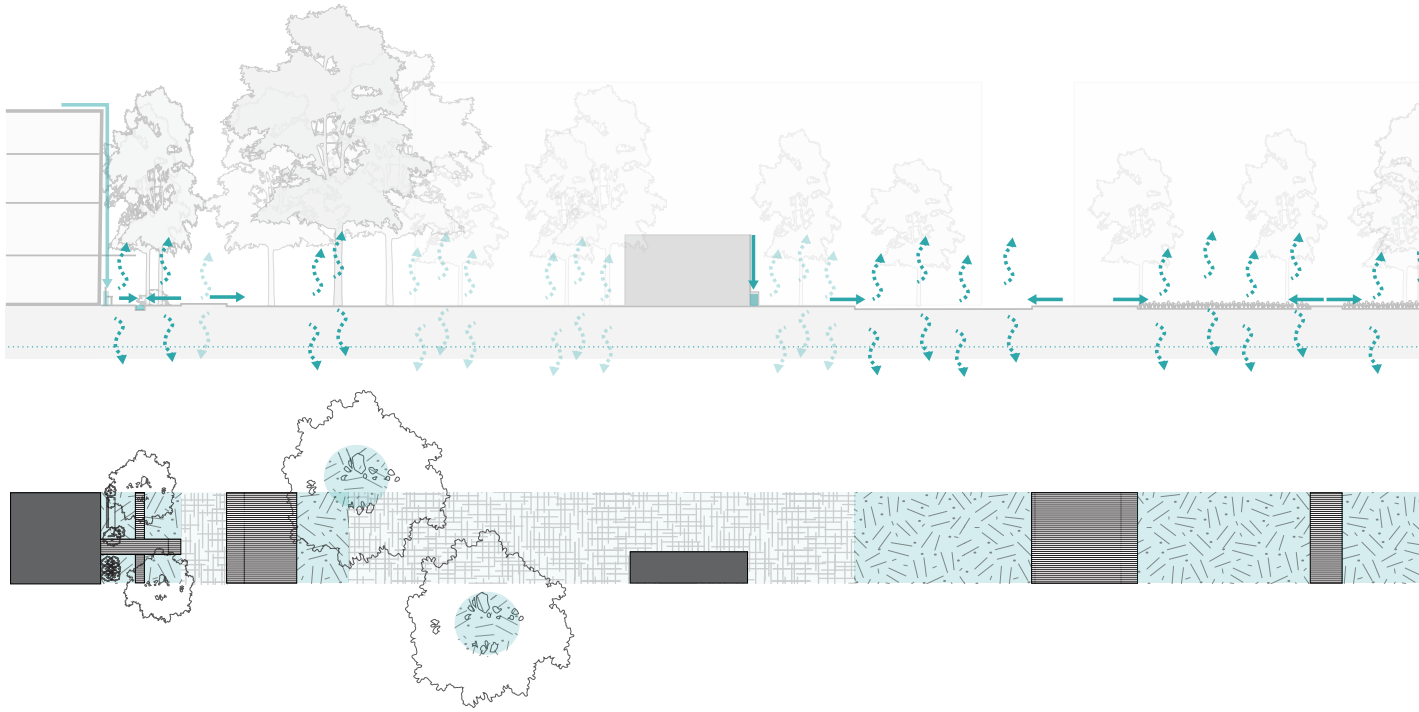


Figure 122: Shows how it would function in case of heavy rainfall

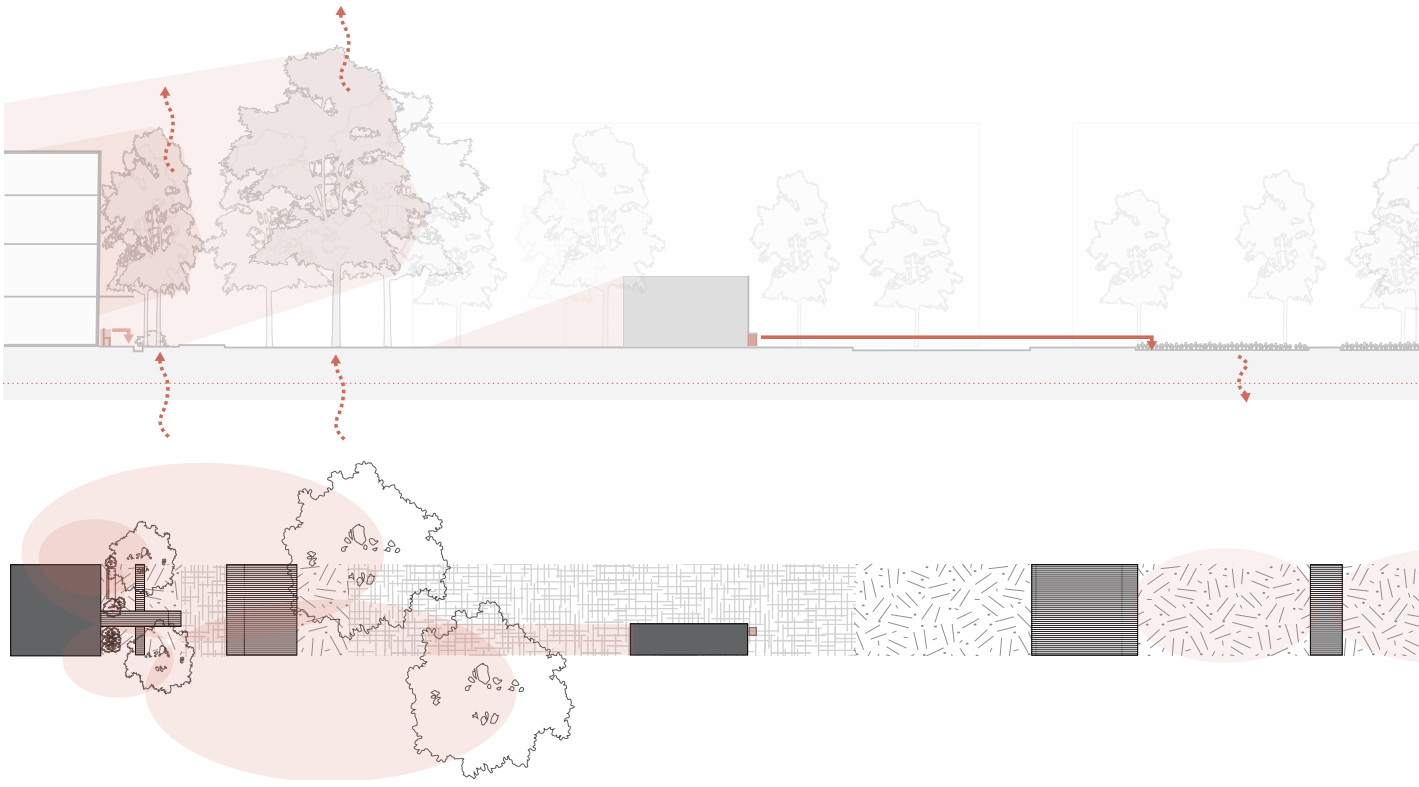
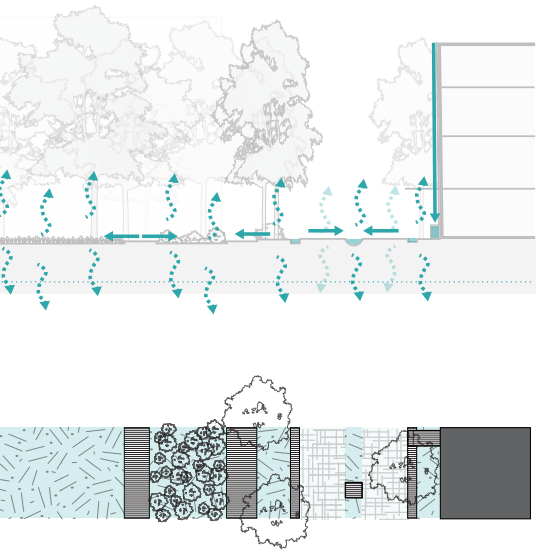
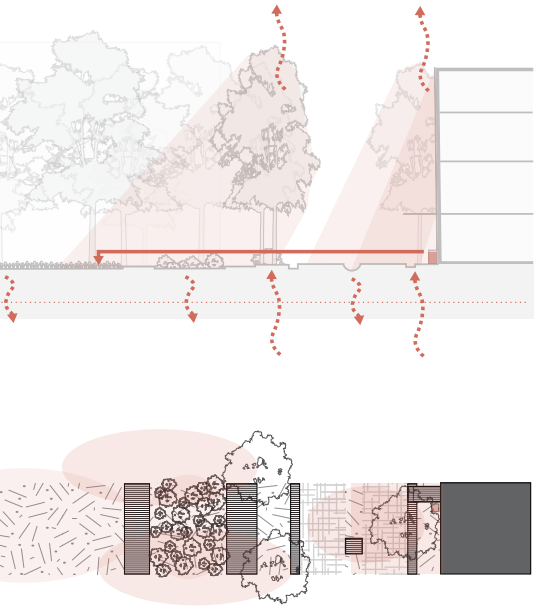


Figure 223: Shows how it would function in case of droughts

Sections rain water infiltartion





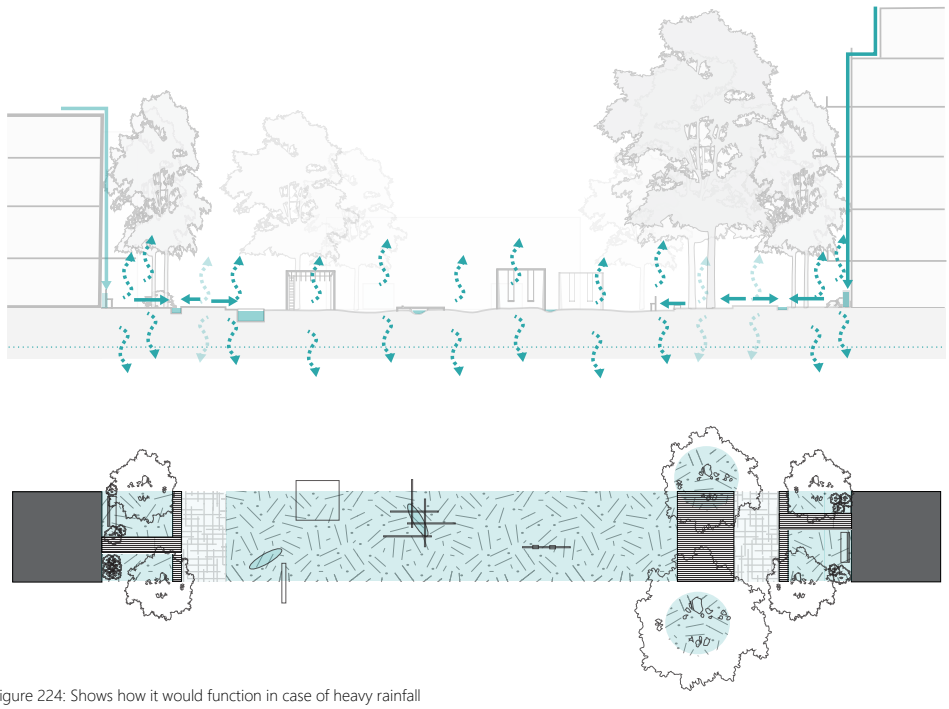


Figure 224: Shows how it would function in case of heavy rainfall

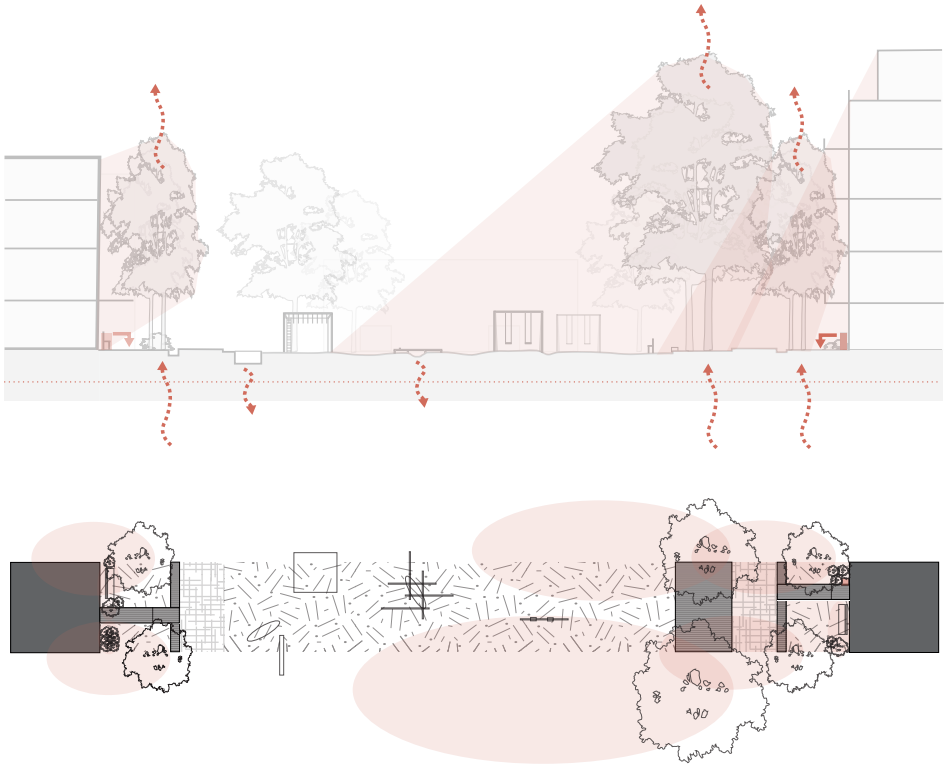
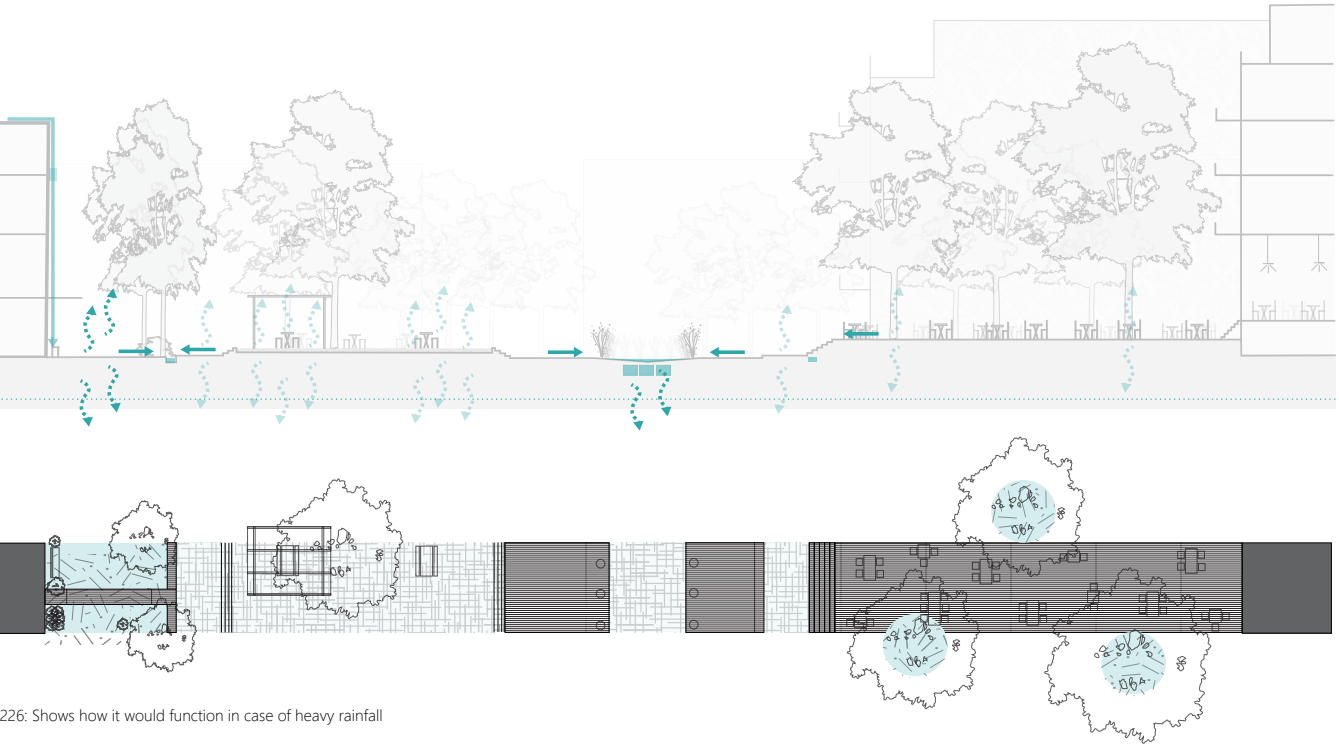
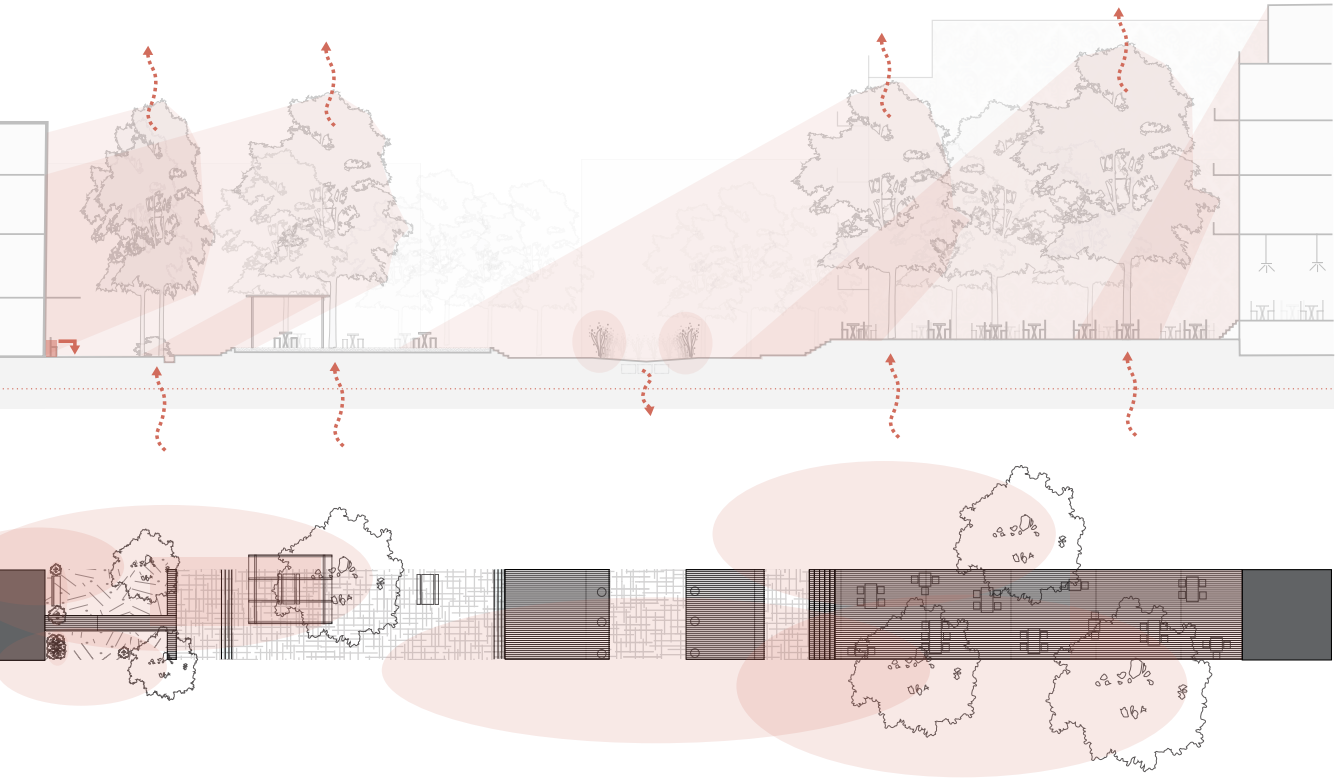


Figure 225: Shows how it would function in case of droughts



226: Shows how it would function in case of heavy rainfall



227: Shows how it would function in case of droughts



Figure 233: Shows an impression of the terrace during the day and evening



Figure 234: Shows an impression of the BBQ place during the day and evening





IMPRESSIONS

The impressions of the Teniershof show how the different areas function, also during different weather conditions and times of the day.







Figure 235: Shows the user experience of the terrace during the day and evening



Figure 236: Shows the user experience of the BBQ place during the day and evening


This place is so cozy!
I never would have guessed but the Teniershof is such a nice place to visit, I love all the dfifferent foods that I can not buy at the city centre!


The lightening makes it safe for my children to play outside in the evenings
The smell of the lavender reminds me of last summer when I was playing here with my friends
It is nice to be able to have a BBQ in the evening and meet my neighbours!



Figure 237: Shows an impression of the balcony view during the day and evening

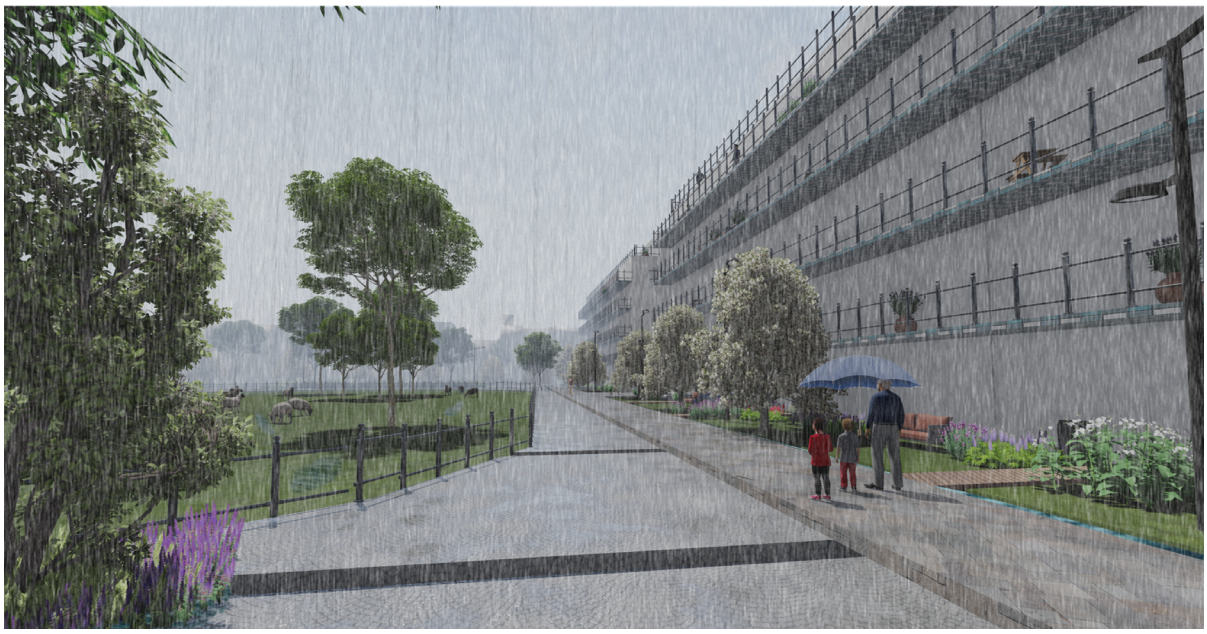
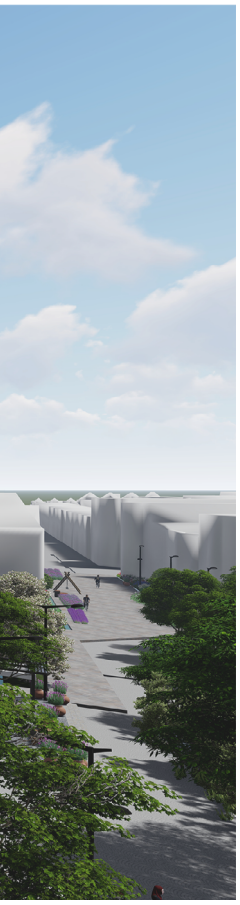




Figure 238: Shows an impression of the City farm during a sunny and a rainy day







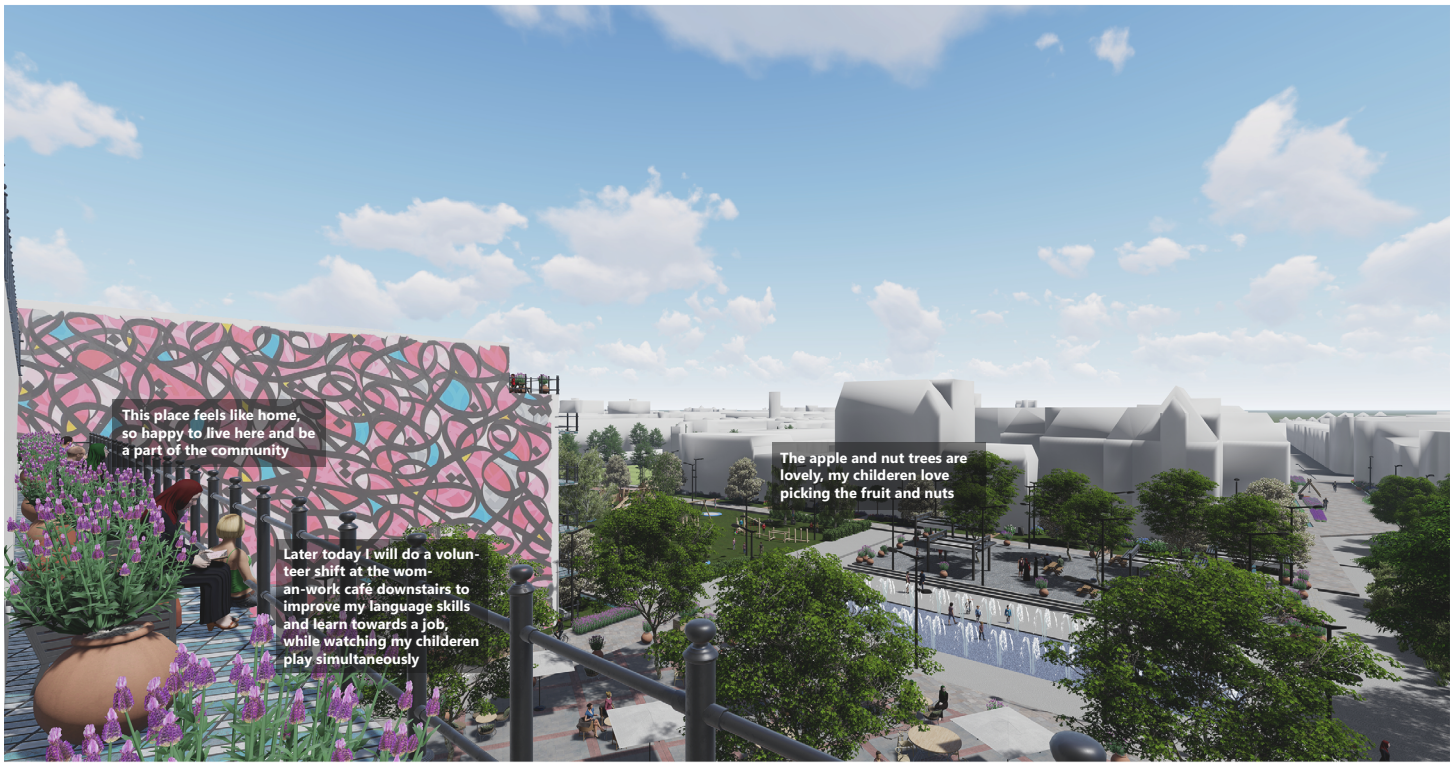


Figure 239: Shows the user experience of the balcony during the day and evening



Figure 240: Shows how the city farm functions in terms of rainy and dry days


I love to sit on my balcony in the evening and watch life on the streets unfold
It makes me happy that I can play outside while my mum watches me from the terrace and studies

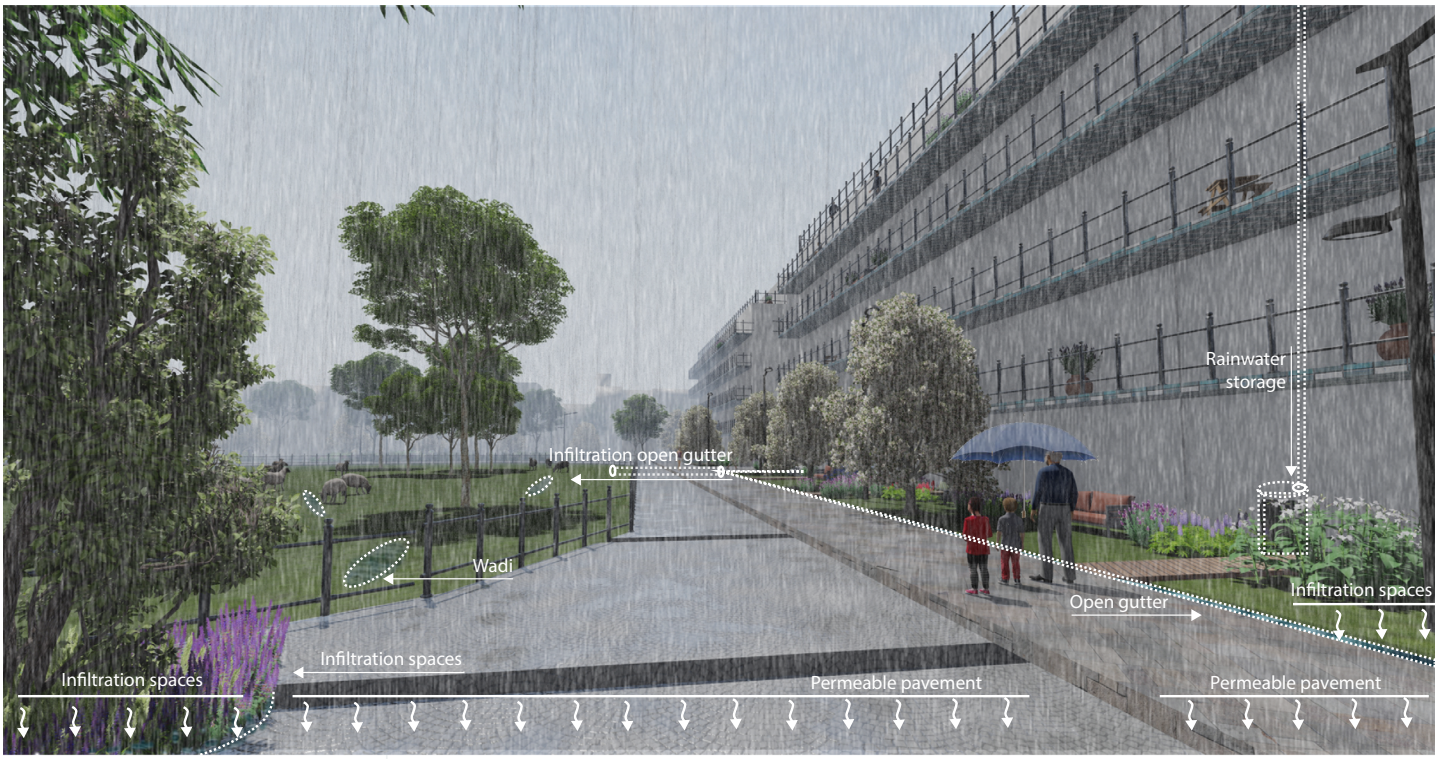

Rainwater storage
Infiltration open gutter
Wadi
Open gutter
Infiltration spaces
Infiltration spaces
Infiltration spaces
Permeable pavement
Permeable pavement



Figure 241: Shows an impression of a pedestrian street during a sunny and rainy day



Figure 242: Shows an impression of the playground during a sunny and a rainy day







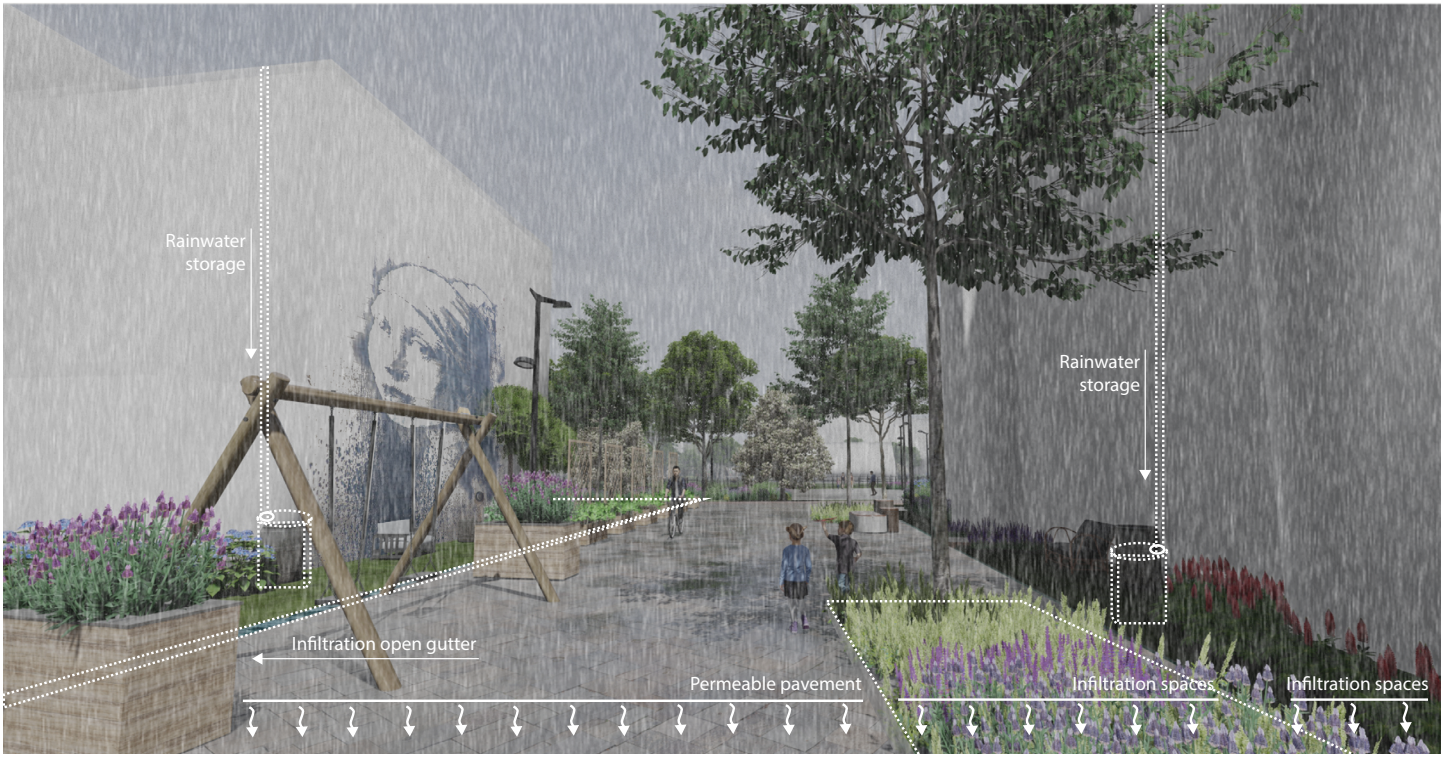




Figure 243: Shows how the pedestrian street functions in terms of rainy and dry days



Figure 244: Shows how the playground functions in terms of rainy and dry days


Rainwater storage
Rainwater storage
Infiltration open gutter
Permeable pavement
Infiltration spaces
Infiltration spaces


Rainwater storage
Infiltration and storage
Infiltration open gutter
Permeable pavement
Wadi
Infiltration spaces
Permeable pavement

TRANSFERABILITY

BOUNDARY CONDITIONS

The transferability of the project largely depends on the boundary conditions being present. Firstly, one can think of the built environment: the density, existing street network (within the city), and the functions present. The Schilderswijk is dense, but only has low and middle high buildings, is located close to the city center and has lively shopping streets. Secondly the inhabitants and their cultural background are important. Design decisions in the Schilderswijk were made with the largely Moroccan, Turkish and Surinamese background in mind, as well as the relatively low income. Thirdly the current status of livability matters, as well as the origin of existing livability problems. Lastly the soil conditions, permeability, as well as being boezem or polder area matter. To give an example the soil consitions, density and cultural background made it nearly impossible to bring back open water which in many areas would have been a desirable and effective solution.

IN CASE OF SIMILAR CONDITIONS

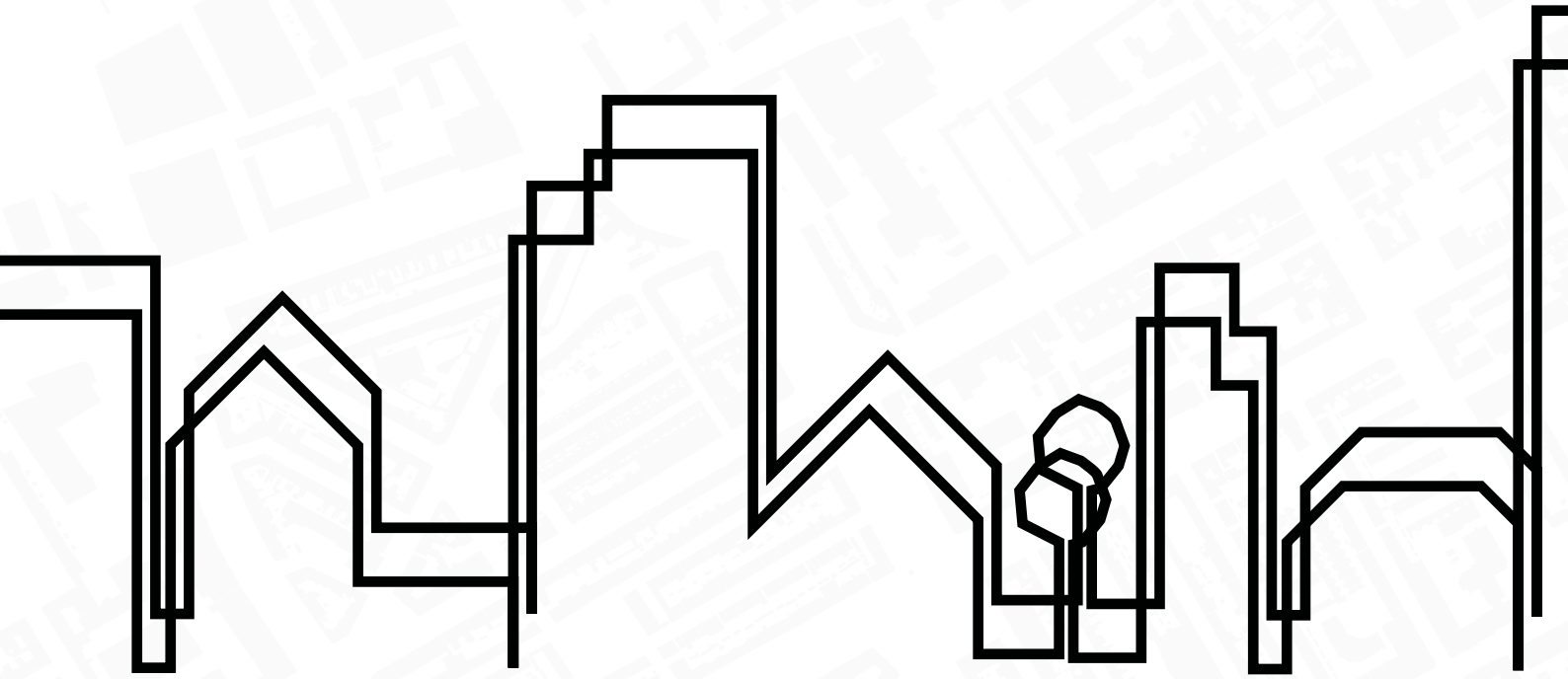
In this case, the proposed solutions form a good starting point, which combined with analyses of the location can lead to a suitable solution. Especially for dense, low income neighbourhoods which are largely paved, almost direct implementation is possible. Examples would be: Transvaal (research needed with respect to culture) or Bospolder-Tussendijk.

IN CASE OF LARGE DIFFERENCES

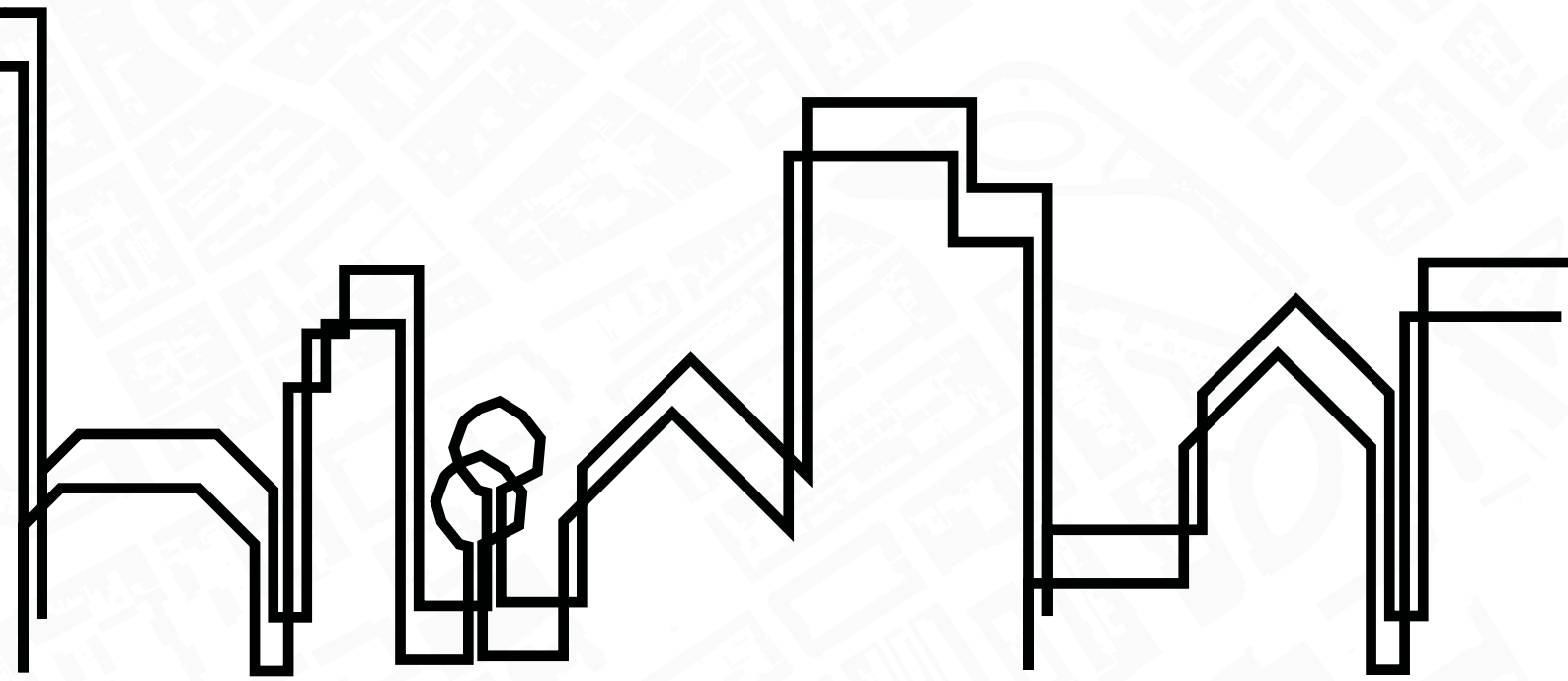
In case large differences exist between the Schilderswijk, and the neighbourhood of application, taking a step back and looking at the methods used might be the best way to approach the problem. One can use the pattern language to create sets of solutions. Personas can be used to look at inhabitants perspectives and extreme scenario's will lead to ressiliant future proof solutions. From these methods the difference in approach that is needed will become clear.

ADDITIONAL FACTORS

Every neighbourhood, every place has it's own story. It has specific qualities and problems to solve wich may not dirrectly become apparent when only looking at mutualistic solutions for rain water problems and livability. These problems, or opportunities, present require extra attention and solutions that fall outside the scope of generally proposed solutions. Furthermore, it can be beneficial, and sometimes unavoidable to implement solutions with a positive effect on either livabiliy or rainwater problems and a neutral or even negative effect on the other.



CHAPTER 10:



CONCLUSION

CONCLUSION

In this chapter, the research questions will be answered, which will result in the conclusion of the research.

HOW IS LIVABILITY DEFINED AND MEASURED?

Livability can be defined and measured in many different ways, and different ways may give different outcomes. From an ecological approach towards livability, three types of livability can be defined (Dorst, 2012):

- Perceived livability: Based on how individuals appreciate their environment. The data is thus gathered by means of a questionnaire.
- Apparent livability: How well the habitat matches the species' needs. It is measured by counting the number of years lived happily.
- Presumed livability: goodness of match between the living environment and the presumed condition necessary for livability.

This framework can be used as ways to approach livability from different perspectives. In order to measure livability in the neighbourhood the following framework was found suitable (Dorst, 2012):

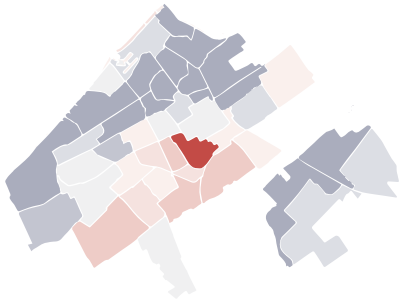
- Health and security/safety
- Material prosperity, income inequality, inequality in happiness
- Social relationships
- Control on amount of social interaction and control on physical environment
- Contact with nature

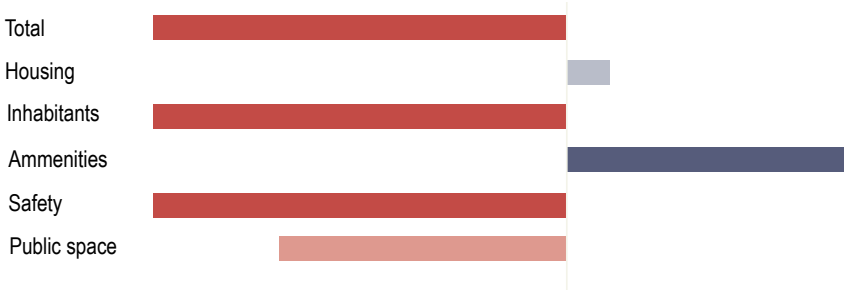
WHAT IS THE CURRENT STATUS OF LIVABILITY IN THE SCHILDERSWIJK?

The presumed livability in the Schilderswijk is the poorest of The Hague according to the Leefbarometer (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, z.d.). According to the Leefbaarheids circle (Municipality of the Hague, z.d.), health and lifestyle is the main weakness of the Schilderswijk followed by sustainability and the environment. Noticably no single aspect scores above average, indicating a livability problem as well.

The perceived livability shows a slightly different image. Inhabitants appreciate the kindness of other inhabitants, the location, public transport and the amenities present in the neighbourhood. The main problems in their opinion are poverty, (road) safety problems and the poor reputation.

The apparent livability shows a problem with road safety, especially for slow traffic. Also safety problems in the evening arise. The income of residents generally is low, and differences are little. However, good facilities are in place to partly compensate for this. Inhabitants have sufficient social contacts, although some groups such as youngsters (both male and female) as well as especially female elderly lack a place in public space. Furthermore, some cultures do not have a place to express themselves and call their own. Residents have little control over the physical environment and boundaries between private and public space are often too hard. Furthermore, some spaces are difficult to read, encouraging anti-social behavior. Lastly, a good amount of greenery is present outside the neighbourhood, within the neighbourhood the quantity but especially the quality could be improved.





HOW CAN LIVABILITY BE IMPROVED IN THE SCHILDERSWIJK?

The following measures could be taken to improve livability in the Schilderswijk:

- Improve the connection between main streets in the Schilderswijk and the city center
    - Make the streets more attractive
        - Terraces
        - Themed main streets
        - Street art
        - Lively facades
    - Create visual connections
        - Landmarks
        - Themed main streets
        - Street art
    - Improve the bicycle network
        - Create more, broader and less interrupted bicycle lanes
- Improve the reputation of the Schilderswijk
    - Add a theme to the shopping streets
    - Improve the connection to the city center
    - Add street art
- Design spaces for specific groups
    - Add facilities
    - Apply cultural heritage
    - Add routes for different groups throughout the neighbourhood
- Give inhabitants more control over public space
    - Add the Delftse stoep
    - Add a graffiti wall
    - Add movable furniture
    - Place street art
- Make spaces more readable
    - Add routes for different groups throughout the neighbourhood
    - Add landmarks
    - Delfste stoep
    - Consistent placement of terraces
- Improve the transition between public and private
    - Add the Delftse stoep
    - Add routes for different groups throughout the neighbourhood
    - Arrange for a larger diversity of functions
    - Introduce new functions
    - Connect existing functions better
- Facilitate social contact
    - Improve the microclimate
        - Add coverages
        - Add greenery, especially trees that lose their leaves in winter
        - Add fountains
        - Improve lighting
    - Add more facilities



WHICH RAIN WATER NUISANCES DOES THE SCHILDERSWIJK SUFFER FROM AND WHERE?

Rain water problems occur throughout the whole Schilderswijk on a small scale in case of heavy rainfall. Currently problems are overseeable, yet when heavy rainfall occurs on average 8 cm of water will be in the streets, which in reality varies from dry places to places with over 30 cm of water.

Something becomes a nuisance not only when a problem is present, but especially when it is experienced that way. Therefore puddles in public spaces and shopping streets are worse than on a road. Adding to that, specific functions such as emergency roads need to be accessible in every scenario. Therefore although puddles occur on throughout the whole neighbourhood, the most severe rain water nuisances are found in shopping streets, emergency roads and largely paved public spaces.

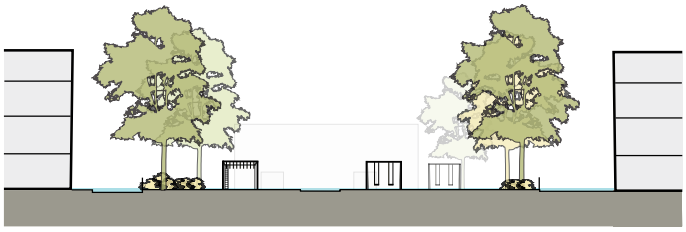


HOW CAN RAIN WATER NUISANCES BE LIMITED IN THE SCHILDERSWIJK?

The following solutions would be suitable for the Schilderswijk to limit rain water nuisances.

- Network of a rain water sewage system (although this might be difficult to implement, especially on the short term given the limited amount of space in the underground)
- Network of temporary water storage
    - Water square
    - Wadi
    - Trampoline
    - Fountain
- Increasing the infiltration capacity
    - Increase unpaved surfaces
    - Increase semi-paved surfaces
    - Add plants
- Add qualities to rain water related interventions
    - Fountain
    - Water playground

The priority in application should go towards emergency roads, shopping streets and public spaces. When only taking into account public space, as was the limitation set at the bgeinning on the project, rain water nuisances decrease around 80%, and in case of normal rainfall will be solved completely. When taking into account the built environment without any changes, an improvmenet of 30% is found, while 60% can be achieved when green roofs and less pavement in private spaces are implemented.



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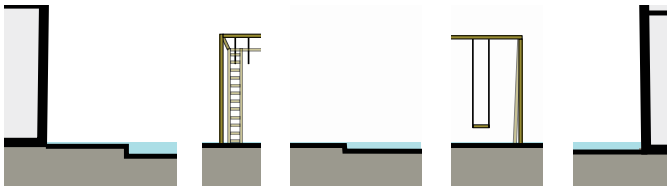
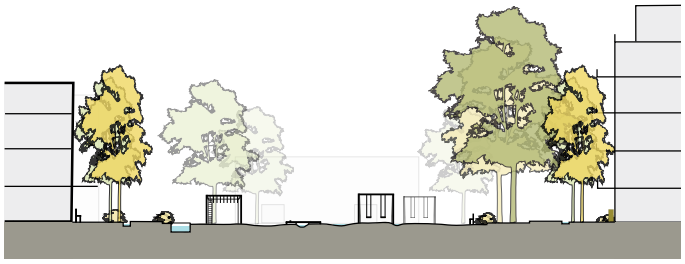


Flooded areas

Shows the before situation in case of an 1 hour 70mm rainshower



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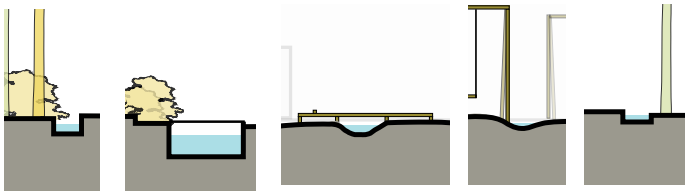
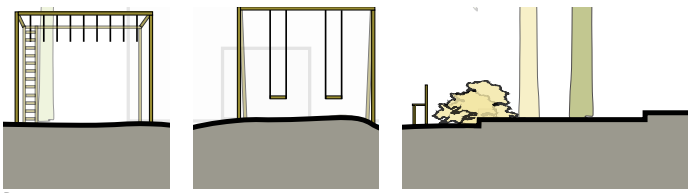


Flooded areas



Dry areas

Shows the after situation in case of an 1 hour 70mm rainshower

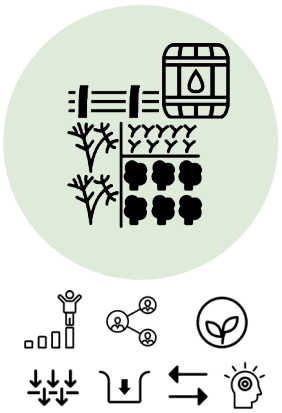
HOW TO DESIGN FOR A MULTICULTURAL NEIGHBOURHOOD?

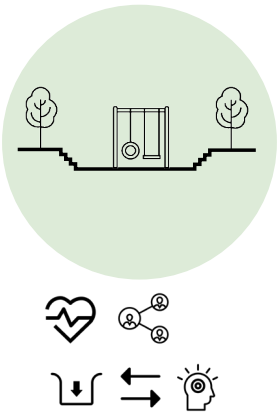
For following should be taken into account when designing for a multicultural neighbourhood (which consists mainly of people of Turkish, Moroccan and Surinamese origin):

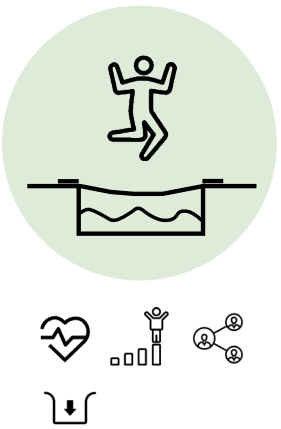
- Focus on public spaces as they tend to spend more time outside in general
- They spend more time outside with family: therefore accessibility and amenities are important for them, more than the quality of the greenery. Parks and playgrounds in cities are popular. They spend less time in nature outside of the city. Thus focus on parks closeby, make them easily accessible and add amenities for sporting, eating together, sitting and practical matters
- Going outside with the goal to meet people is more common. Meeting will generally be with people with the same ethnicity. Therefore provide meeting places scattered around the neighbourhood where larger groups of people could sit or stand together. Make sure that every group has a place that they can be proud of and feel free to express themselves in.
- Male youngsters spend more time being outside than their Dutch counterparts. It is a way to observe and get introduced to the life of a grownup before actually taking part in this system. Design places where they are allowed to do so without disturbing others.
- Women stay closer to home, can often be found in playgrounds. Therefore design for sufficient seating arrangements in playgrounds
- Going shopping in city centers or malls is more popular. Therefore design shopping streets to be places to stay, have a meal and meet others.

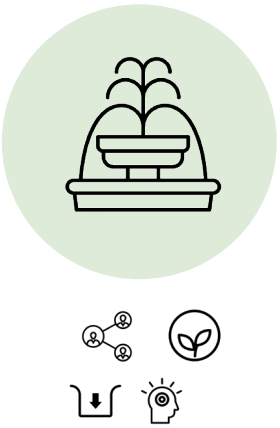
BY WHICH SUSTAINABLE DESIGN SOLUTIONS CAN RAIN WATER NUISANCES AND LIVABILITY, LARGELY IN A MUTUALISTIC MANNER, BE IMPROVED IN THE SCHILDERSWIJK?

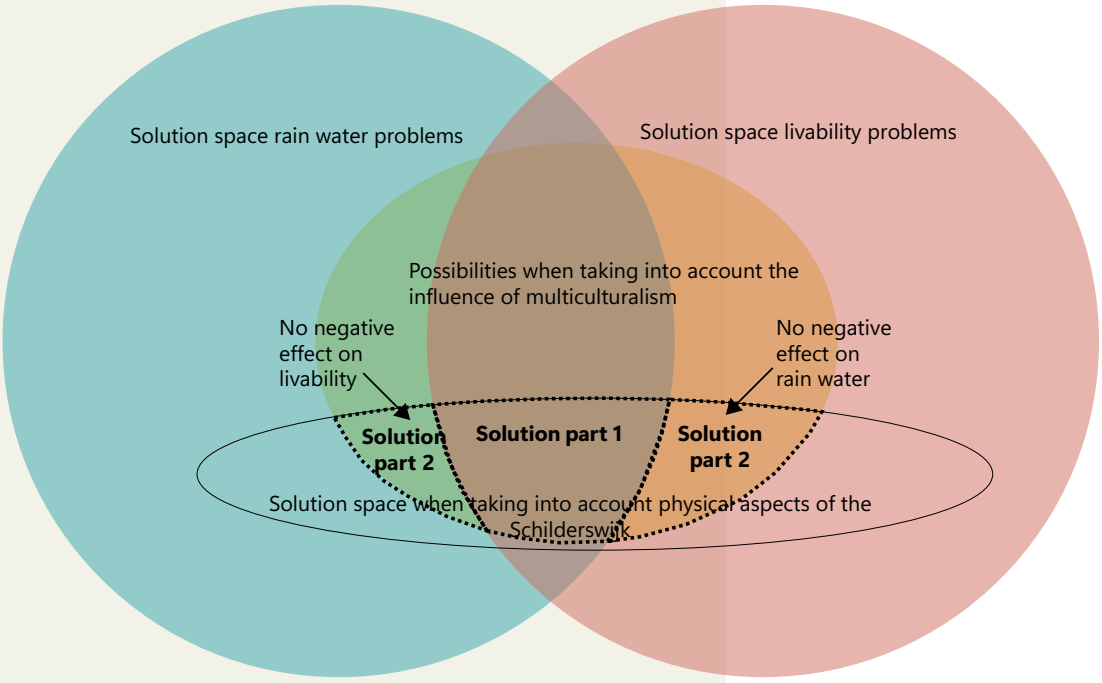
The solution space for rain water and livability problems partly overlaps, which is the first place to look for mutually beneficial solutions. When taking into account the Schilderswijk, two factors are added: The different preferences based on multiculturalism as well as te built environment of the Schilderswijk. The main effect of the multiculturalism is having different preferences when it comes to the social system of the neighbourhood as well as having more concerns on water safety and prefering neatly paved spaces. Large scale water interventions, featuring natural looking solutions or large bodies of water are less appreciated. The built environment of the Schilderswijk limits the options in terms of space, the existing structure as well as soil conditions. The solution space includes all measures that improve livability and rain water nuisances in a mutualistic manner in the Schilderswijk. The second part of improving the Schilderswijk will be to implement measures that do not harm either livability or rain water nuisances, while having a positive effect on the other. A great example is streetart, which does a lot for livability but nothing for rain water related problems. The final part of the solution in improving the Schilderswijk in a broad sense would be to implement solutions for other problems present.





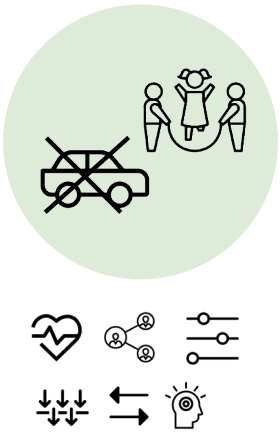




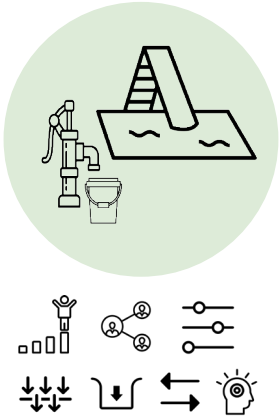


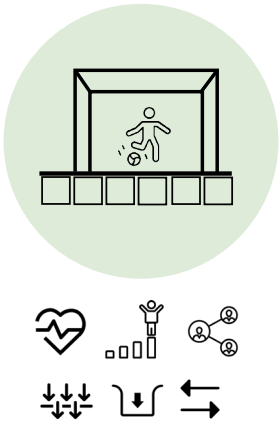
Additional needs Schilderswijk

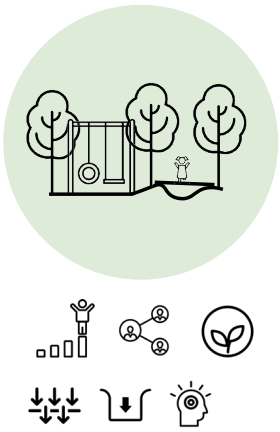
Solution part 3

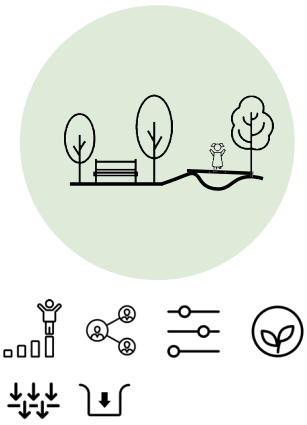












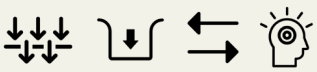
The following solutions have a positive effect or provide opportunities in creating positive effects on both livability and rain water nuisances in the Schilderswijk

- Kitchen gardens in combination with rain barrels
- Water squares in combination with sports or playgrounds
- Delftse stoep with the boundary condition of partly replacing paved surfaces by (semi-)permeable ones
- Car-free streets where one can make space for greenery and activities such as playing or relaxing
- Built-in trampolines in playgrounds, the space underneath can act as a temporal water buffer
- Fountains can give identity to a place, create a more pleasurable microclimate and can partly be temporal water buffers.
- Water playgrounds provide a socializing place for children and parents, while at the same time the height differences can be temporal water buffers and educate children on water issues
- Sport fields with infiltration boxes underneath
- Nature playgrounds
- Park with added functions and zoning in terms of height differences

Legend:



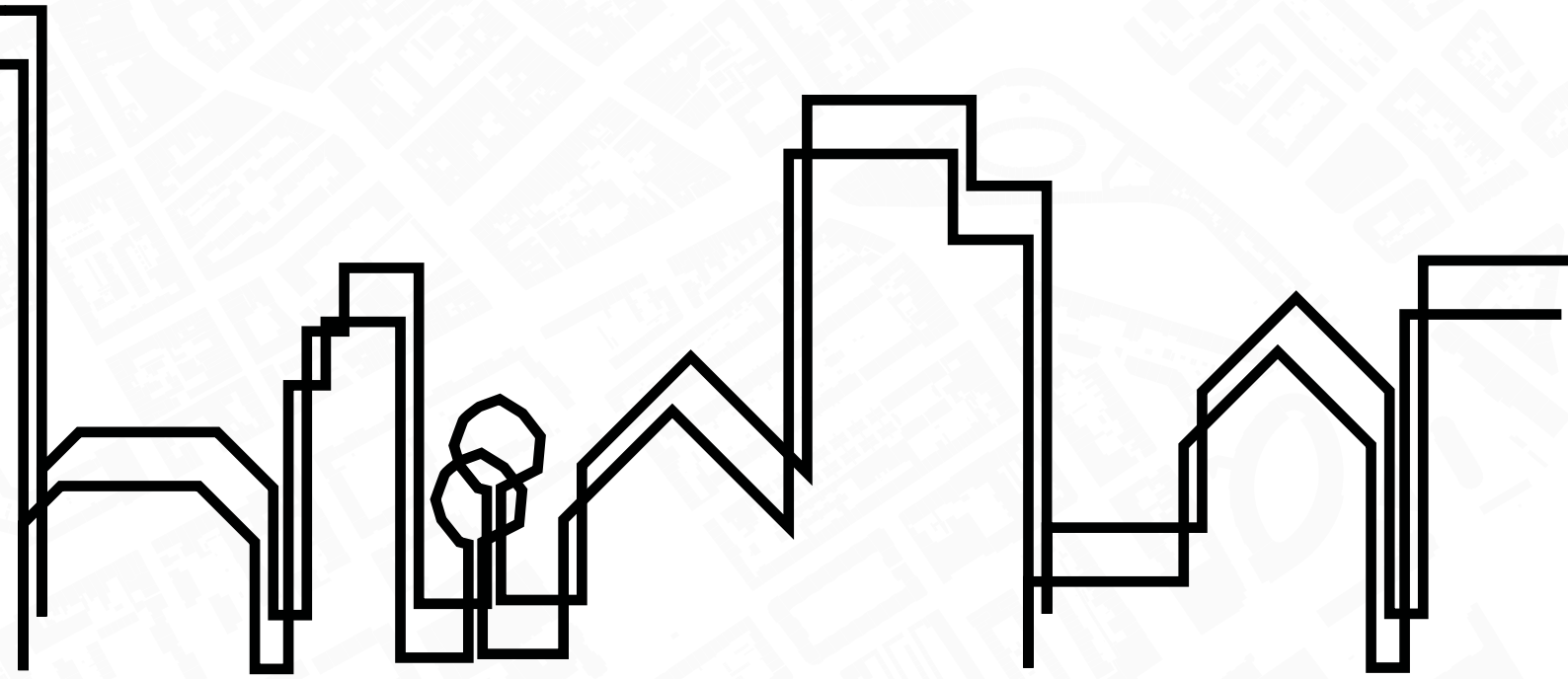
Health and security, Porsperity and inequality, Social relationships, Control, Contact with nature



Infiltration, Storage, Transfer, Awareness



CHAPTER 11:



REFLECTION AND DISCUSSION

REFLECTION

Over time my ideas on the project have changed quite a bit. As the focus changed or sometimes became more flexible, the approach that was needed also changed. Methods became more fluid in their usage and were applied in a more loose manner than they were introduced at first. An example of this is that, in the maximalisation: three designs for one aspect were made since there were so many possibilities that contradicted each other, even within the same topic. Consequentially, a final design was not made as the second stage of maximalization. Instead, just the potentials and conflicts were analysed without assigning a value to them. This only happened later on when the results of all methods were put together.

My mentors gave feedback on many things on many different topics. What has helped me most is the feedback on how to proceed when one part is done and the step to the next one has to be made, as well as feedback on visualisation. One of the biggest changes in my project happened when the first part of analysing was coming to an end. I was planning on choosing locations for detailed design interventions, but from the analyses a more network centered approach instead of place centered approach appeared to be better. My mentors helped me in making the decision to create a neighbourhood design first, and do it more detailed than I had originally planned on doing. In the visualisation of that design my mentors were a great help as well. The effect that colour and patterns have on the visualisation is something I continue to learn.

During this year I learned a lot, starting with the amount of joy it brings me to do research. Analysing the neighbourhood, investigating literature and other projects for possible solutions as well making them applicable for my location was something that has not yet managed to bore me. Designing on the small scale as well as designing the booklet was more of a struggle. Liking the creation of the concept more than realising it has always been in my character, yet the way it manifests itself is always different. To my surprise I improved a lot on visualisation, and as an even bigger surprise came the joy of that process. Graduating has offered me a clearer view on what I would like my future career to look like.

This project started from a social and scientific relevance, to design for people and provide them with a more pleasant living environment as well as bridging the gap in combining for livability and changing rainwater intensities due to climate change in a mutualistic manner. The analysis and design were both started form the specific location, which brings up the question on how transferable the outcomes of the project are. The solutions are transferable up to some extent as they will need to be tweaked for the specifics of a place. Here one can think about the build form, the infrastructural network, but also the soil or the inhabitants living there. Not every solution will be possible at every place, yet some will directly be applicable. Important here is to start with a place based analysis of what the neighbourhood needs, and how proposed solutions could fit in and what is needed to be added to this. For the Schilderswijk, an additional imago change was needed for which the place specific solution of street art was proposed. Place specific in the sense that it refers to the name of the neighbourhood and provide chances for inhabitants to show off and be proud of their neighbourhood.

DISCUSSION

In this thesis it is investigated how livability problems and rain water nuisances can be solved in a mutualistic manner in the Schilderswijk. Several fruitful combinations where found, as well as others that only aid in solving one of the problems, or are even effective in one area and counterproductive in the other. These findings are important as this gives guidelines to designers on how to manage both, seemingly very different, objectives simultaniously. Designing spaces to be suitable for both makes for more cost-effective and sustainable measures. Furthermore, the project gives ideas on how to design for a multicultural neighbourhood.

Limitations of the research can be found in it being place specific. Not every solution can be transferred, and especially not without thinking about the boundary conditions of the specific place. Differences in the water system, inhabitants and built environment may require adjustments. Also, what to focus on when designing for a multicultural neighbourhood is partly similar for all, while also partly different depending on the specific ethnicity of the inhabitants living there. It is important to consider that solving livability and rain water problems may require extra (place specific) measures that may not be a fruitful solution for both challenges.

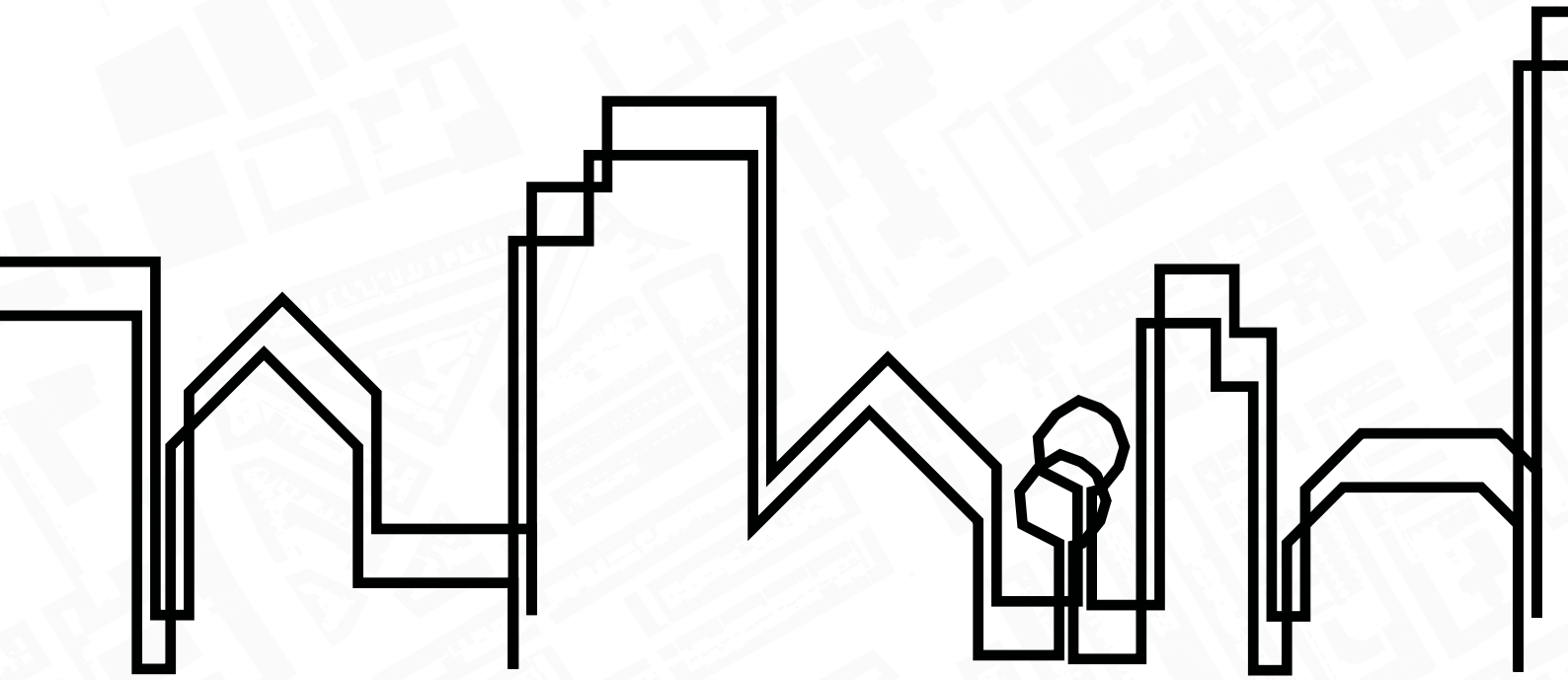
Not taken into account in this thesis is the effect of the pandemic and any long lasting effects it may have. Fieldwork was performed in the weeks no lockdown was present and Covid related rules where relatively loose, yet it still had an effect on people's behaviour.

Furthermore, it should be noted that every person has an implicit bias, which especially has an influence on research that is done by obeservation as well as by interviewing. As I am fascinated by cultures, especially the ones with Arab roots it is likely I romantisize some of the aspects of those cultures, while failing to recognise others. Therefore it is important to peer review the research done and compare it to research in similar areas.

What is to be done with the outcome of the research can also be a point of discussion. While designing specifically for the people that are living in a neighbourhood has a positive effect on livability, it might not be desirable from the municipalities point of view. It could make the living environment more attractive to certain groups while being less attractive to others. Adding to that, depending on a persons views on migration policies, designing while taking into account the cultural background of inhabitants might be undesirable altogether.

When it comes to the outcomes of the research with regards to rain water nuisances it is interesting to see how the balance of the effect of measures in public and private space is. It is up to the municipality to determine how measures should be balanced, and who is responsible for implementing and financing them.

Follow up research could be dedicated to quantifying the effectiveness of the proposed set of measures when it comes to livability. Another option would be to investigate more neighbourhoods and with those results make a more complete set of measures for different circumstances. Lastly it would be interesting to start involving other factors, for example looking at the effect of heat stress and air quality.



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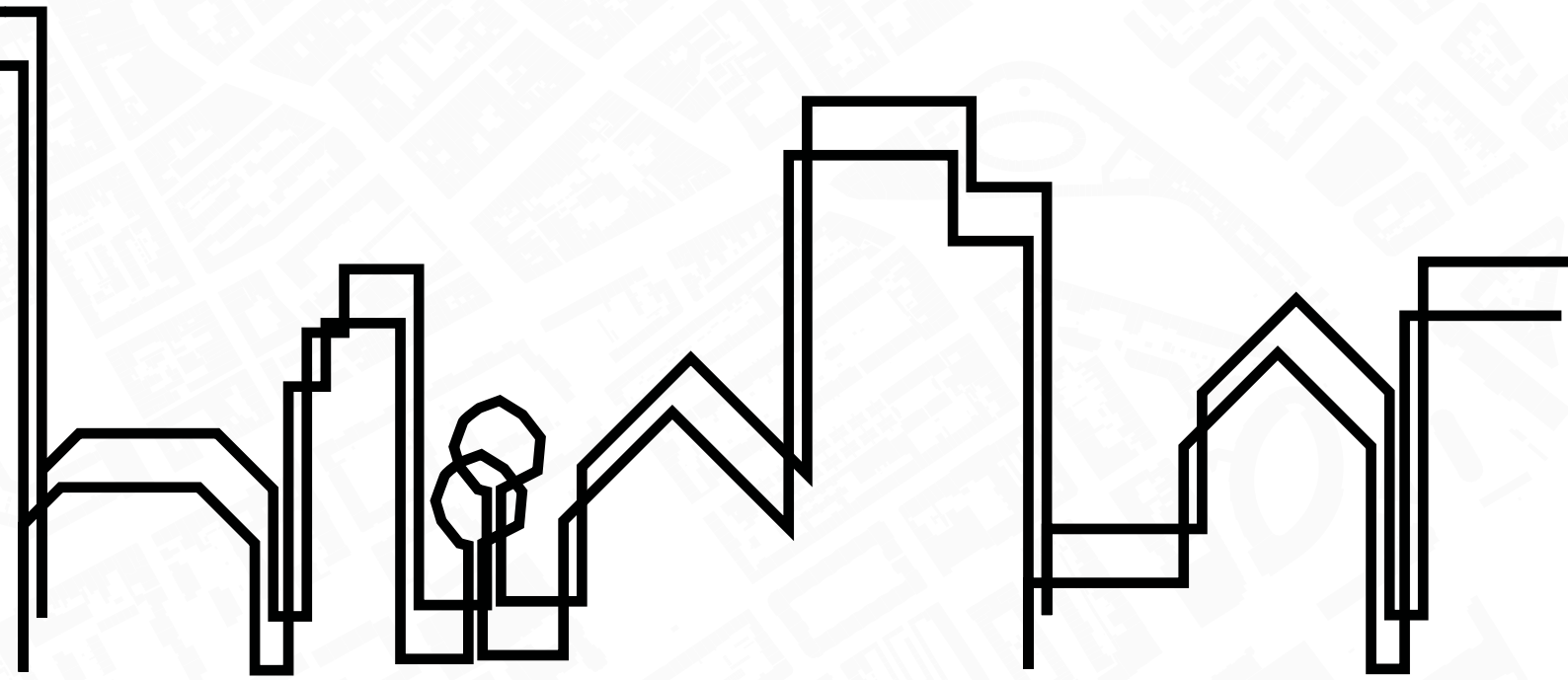

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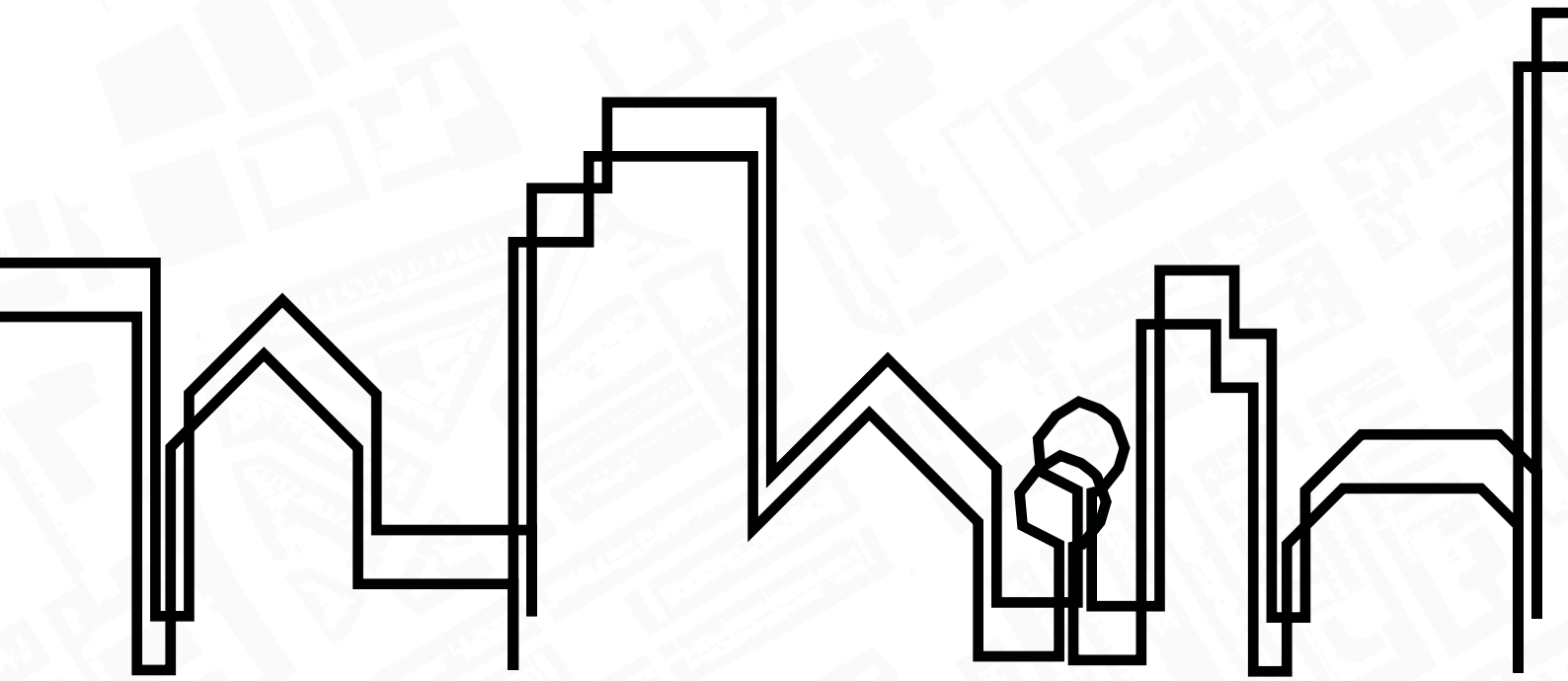
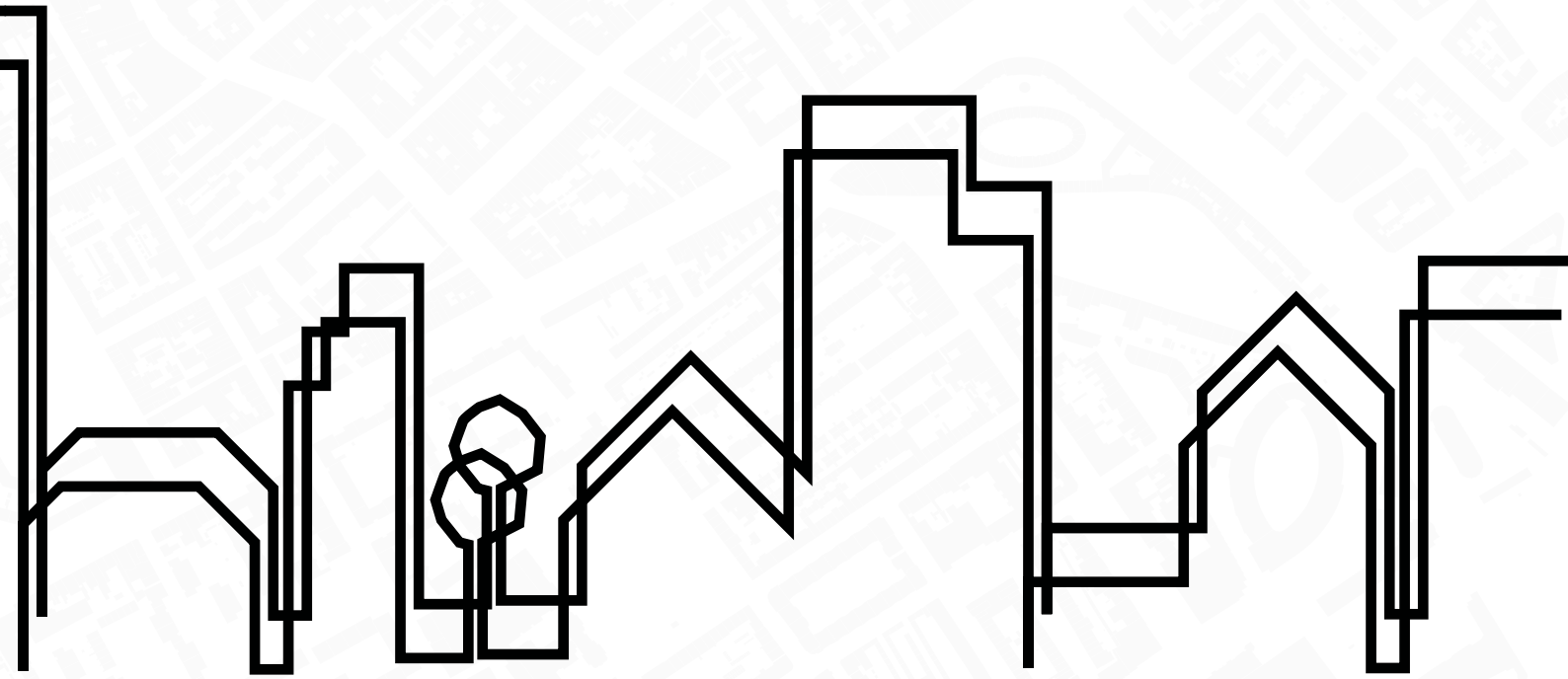
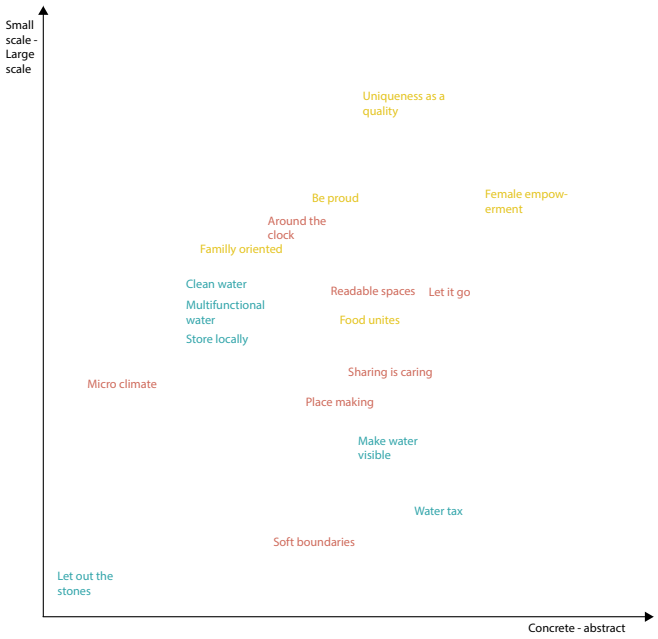


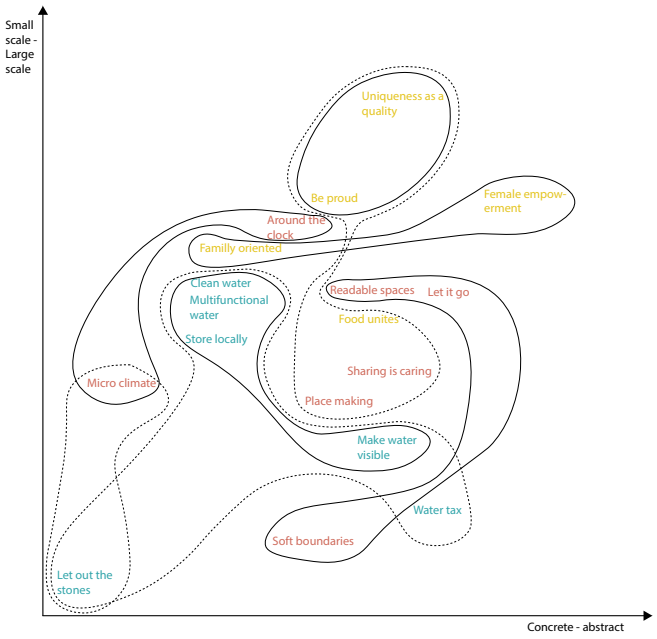
APPENDICES

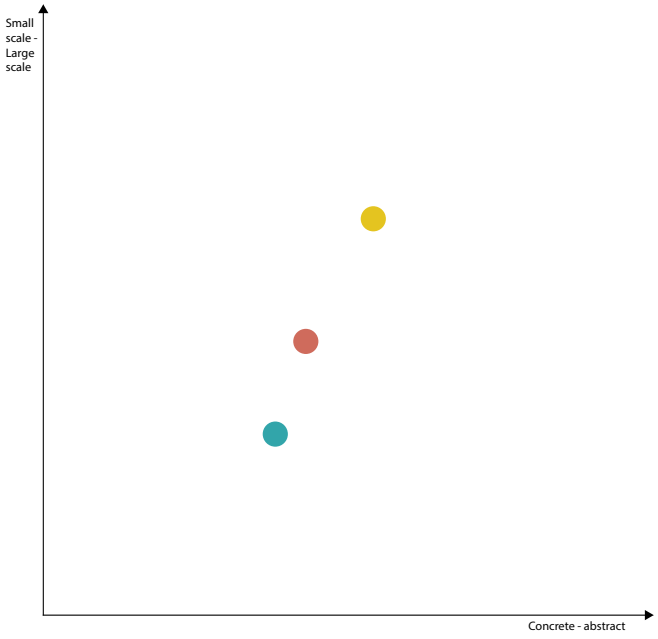


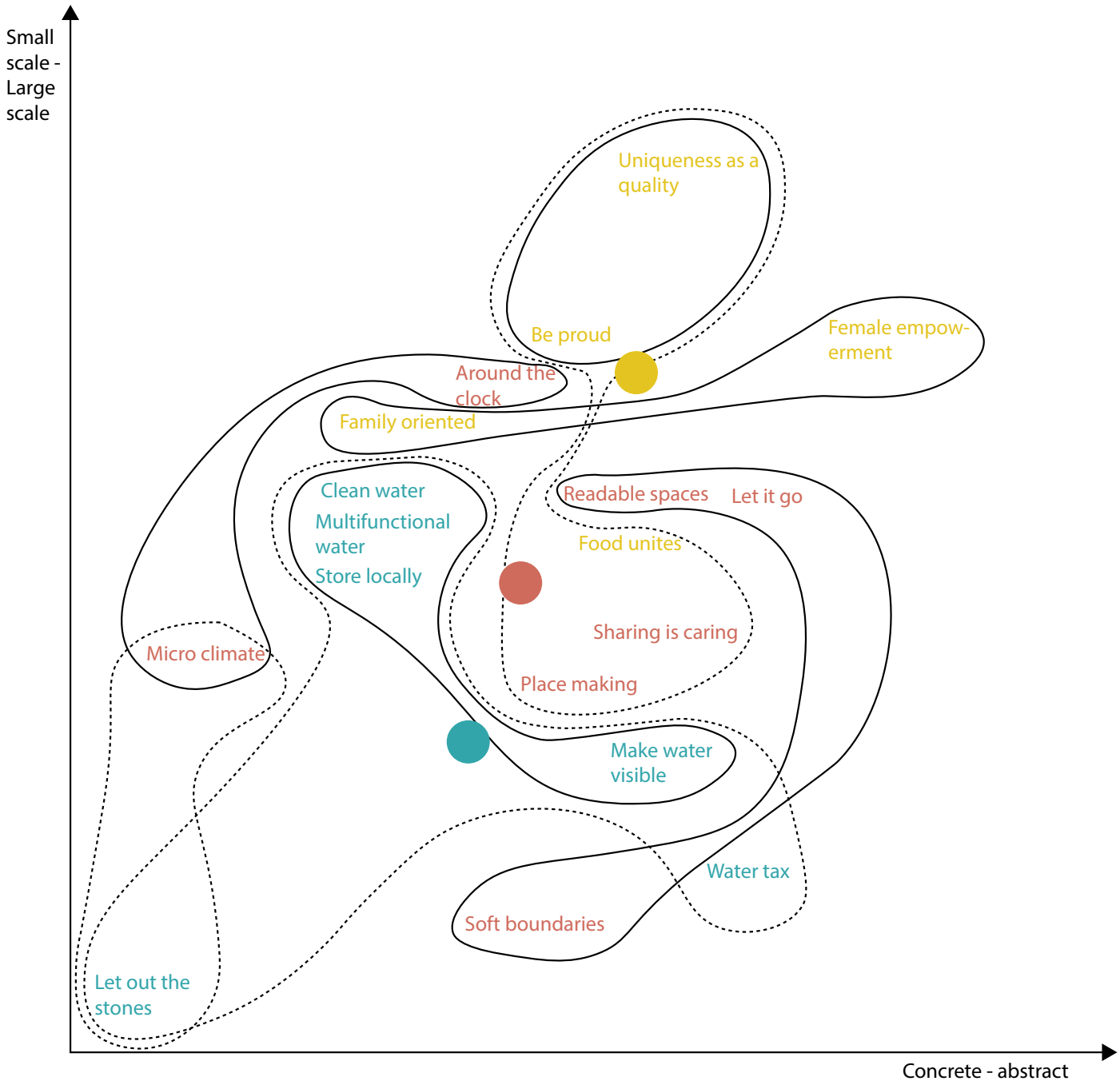
APPENDIX A: THE PATTERN LANGUAGE

RELATIONS

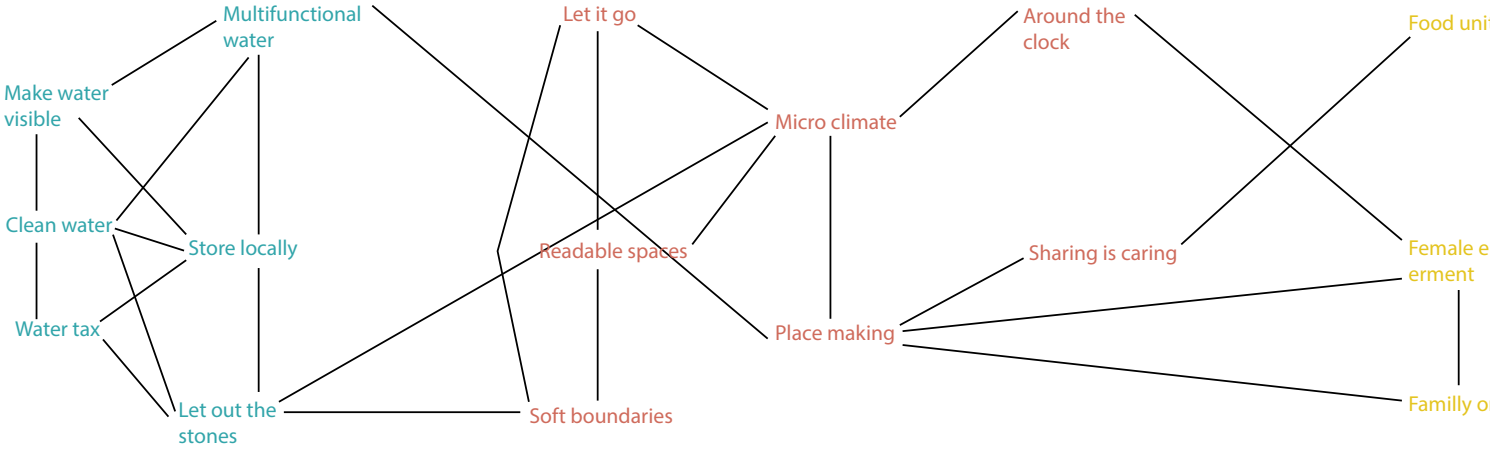







Small scale - Large scale
Uniqueness as a quality
Be proud
Female empow-erment
Around the clock
Family oriented
Clean water
Multifunctional water
Store locally
Readable spaces
Let it go
Food unites
Sharing is caring
Micro climate
Place making
Make water visible
Water tax
Soft boundaries
Let out the stones
Concrete - abstract

RELATIONS


Multifunctional water
Make water visible
Clean water
Store locally
Water tax
Let out the stones
Let it go
Micro climate
Readable spaces
Soft boundaries
Around the clock
Food uni
Sharing is caring
Female e
erment
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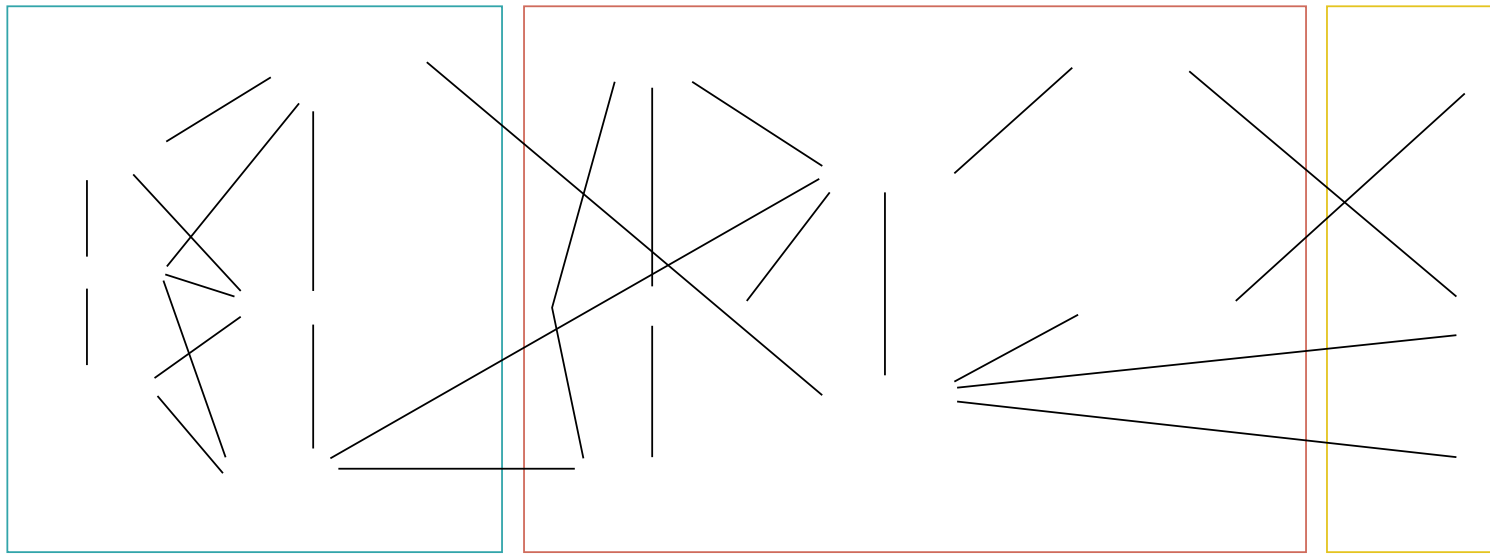

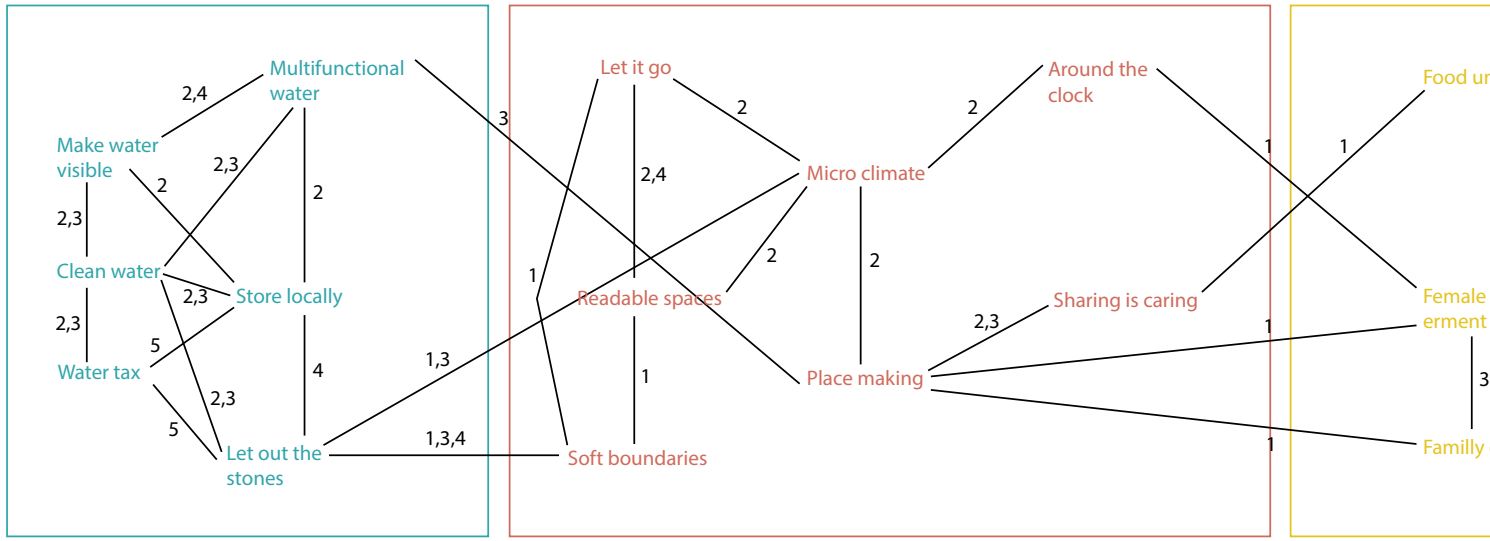
Multifunctional water
2,4
Make water visible
2,3
2
2
2,3
Clean water
2,3
Store locally
2,3
5
Water tax
4
2,3
5
Let out the stones
1,3
1,3,4
Let it go
2
3
2,4
Micro climate
2
2
1
Readable spaces
1
Soft boundaries
Around the clock
2
1
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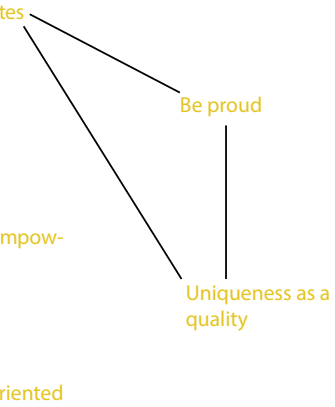
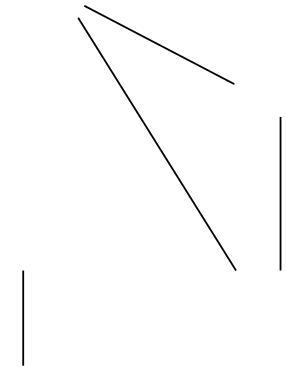
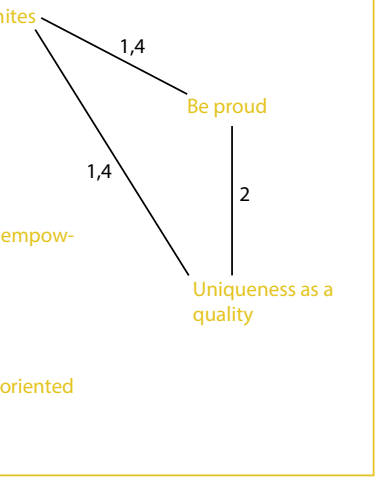




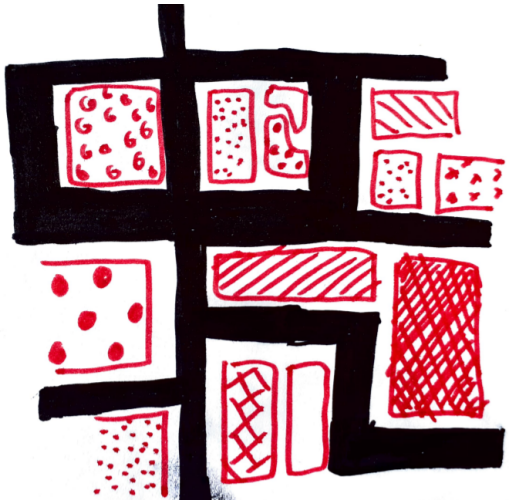


Legend:

1) One pattern contains or generalises another pattern
2) Two patterns need each other for completeness
3) Two patterns solve different problems that overlap and coexist on the same level
4) Two patterns solve the same problem in alternative, equally valid ways
5) Distinct patterns share a similar structure thus implying a higher level of connection

PLACEMAKING

[LIV-01]



PATTERN/HYPOTHESIS

Intentionally design a suitable space for every target group, do not expect all groups to use the same space automatically

THEORETICAL BACKUP

The reason that in some situations many small groups are visible on the streets is that they all have a difference with the other groups and therefore will not stand together and share the space up to that extent. An example of a difference can be a cultural background. A second reason is that different groups have different needs, and want to undertake different activities. While the swings are great for an eight year old, an eighty year old might prefer a chess table. One needs to think carefully about which different groups are present, and what their respective needs are to be able to design a neighbourhood with a place for everyone.

PRACTICAL IMPLICATION

- Keep in mind the needs of different age groups
- Keep in mind the needs of different genders
- Keep in mind the needs of different cultures
- Co-creation to give people ownership and an clear understanding of a place

RELATIONS

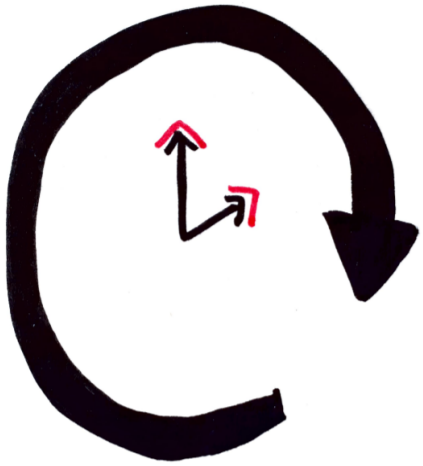
LIV-03, LIV-07, CULT-03, CULT-05, WAT-03

REFERENCES

Dorst, J. M. (2008, 02). Multicultureel gebruik van de buitenruimte. Provincie Zuid-Holland.

AROUND THE CLOCK

[LIV-02]



PATTERN/HYPOTHESIS

Design a neighbourhood to be livable at every hour of the day.

THEORETICAL BACKUP

Cities look and feel different at different times of the day. During different times, different functions take the overhand and attract crowds. Furthermore, traffic changes dramatically over the day. All of these and lighting conditions have a significant impact on people feeling safe during the night. At the same time having all streets busy all the time can cause nuisances and is therefore undesirable as well. Therefore having a main network of streets that are busy and have eyes on the street at every moment in combination with good lighting in every street provides inhabitants with comfortable ways of coming home at night.

PRACTICAL IMPLICATION

- Design for adequate lighting
- Design for eyes on the street. e.g front gardens, balconies, functions that attract people
- Combine functions with different opening times to have liveliness during all hours in main streets

RELATIONS

LIV-07, CULT-05

REFERENCES

Gehl, J., & Rogers, R. (2013). Cities for People. Amsterdam University Press.

SHARING IS CARING

[LIV-03]



PATTERN/HYPOTHESIS

Design in a way that encourages and supports shared experiences

THEORETICAL BACKUP

People bond over having shared experiences, making a neighbourhood more likely to have social cohesion. It also encourages participation less dependent on monetary needs as it does not require going to places where it is required to spend a lot.

PRACTICAL IMPLICATION

- Design for activities that one can do together: e.g. playgrounds, sport facilities, shared toys
- Support people in doing activities in pubic space: e.g. place picnic tables, benches, space for kitchen gardens
- Make it easier by providing multifunctional spaces as well as spaces with a clear intention
- Design for basic amenities: e.g. drinking water, toilet

RELATIONS

LIV-01, CULT-04

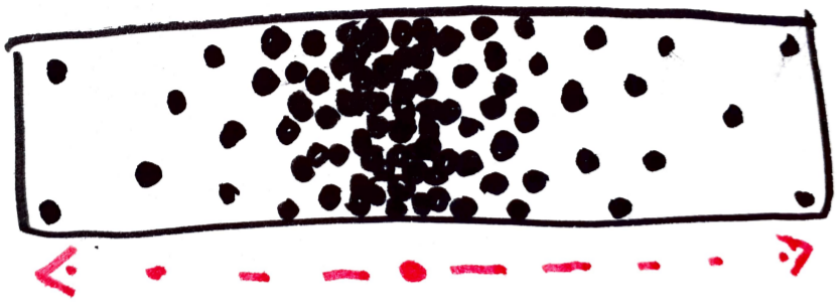
REFERENCES

Gehl, J., & Rogers, R. (2013). Cities for People. Amsterdam University Press.

Sim, D. (2019). Soft City. Amsterdam University Press.

SOFT BOUNDARIES

[LIV-04]



PATTERN/HYPOTHESIS

Design for a soft transition between private spaces/properties and public spaces.

THEORETICAL BACKUP

The possibility of having social interaction has a positive effect on safety and social cohesion and thereby on the livability of a neighbourhood. Social interaction is well stimulated by providing people spontaneous opportunities to meet, and a reason to start a small conversation. Furthermore, when there is little to no visual contact between private and public spaces, while they do border each other, the public space may feel unsafe.

PRACTICAL IMPLICATION

Using a small zone between facades and public space (sidewalk) for greenery and seating arrangements by the residents improves the livability of the neighbourhood (Delftse stoep): The sidewalk needs to be designed with sufficient width so enough space is left when one places plants or a small bench. Furthermore, one may encourage residents by placing some plants before the house already, so it will feel more natural to use the space inbetween how they please.

A soft transition between backyards (or frontyards) and public spaces has a positive effect on livability of the neighbourhood: Fences could be replaced by lower fences or by different types of green which are more porous and feel like less of a border.

RELATIONS

LIV-05, LIV-06, WAT-04

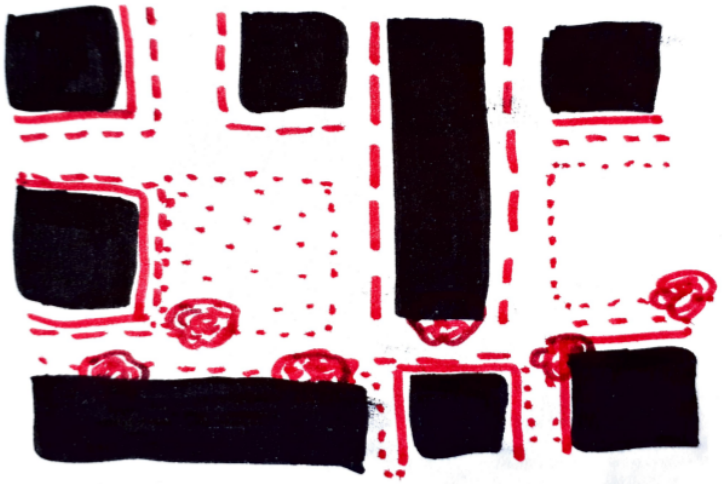
REFERENCES

Sim, D. (2019). Soft City. Amsterdam University Press.

Dorst, M. (2012, 01). Liveability. In (p. 223-241). doi: 10.1007/978-94-007-1294-2 8

READABLE SPACES

[LIV-05]



PATTERN/HYPOTHESIS

Design spaces to be readable in a way that they give direction on how to move and what to do and what to expect.

THEORETICAL BACKUP

Designing public spaces for flexible usage is a good practice. However, when people are unsure what to use a space for, they may not use it at all. Therefore indicating at least one way the public space can clearly be used increases the chances of people using it. For streets it is important that they give direction and show you something about important destinations along the route. Lastly on the bigger scale a neighbourhood may be recognisable as one by having a shared characteristic. The character of a neighbourhood may be felt and seen when being in it.

PRACTICAL IMPLICATION

- Having at least one clear function for a public space makes people more comfortable in using it: by adding benches, a playground, horeca with outdoor seating areas, urban farming or anything that clearly indicates a certain function that can harldy be interpetated any other way.
- Having visual indications in streets to show what they lead to: e.g. street art, trees, sightlines
- Add characteristic elements troughout the neighbourhood to make it recognisable: e.g. street art, water elements, tiles, benches

RELATIONS

LIV-04, LIV-06, LIV-07

REFERENCES

Sim, D. (2019). Soft City. Amsterdam University Press.

Dorst, M. (2012, 01). Liveability. In (p. 223-241). doi: 10.1007/978-94-007-1294-2 8

LET IT GO

[LIV-06]



PATTERN/HYPOTHESIS

Design spaces with flexibility and the possibility for personal expression giving control to users of the space

THEORETICAL BACKUP

- When nobody feels partly responsible for a place, the place will often start to look bewildered and it might be uncertain for people if they can use the public space how they please. This will result in the place not being used as often.
- By observation one can see people often use informal seating places if they have a preferred location or arrangement. Also people bring their own seating arrangements (picnic blanket, towel, foldable chair etc.) to public spaces when they would like to either sit together with a bigger group or utilise a different place. Furthermore, on a sunny day, with a pleasant temperature, more seating places are needed than if it rains. Therefore a flexible amount of seating places is required to fulfill the high demand in summer, without it looking empty in winter.
- When people can use a space to meet with other for activities they would like to organise, they are more likely to use the space and encounter other inhabitants increasing social cohesion in the neighbourhood.
- Giving people the opportunity to express themselves, they feel more valued and listened to. They can also experience a stronger connection to the neighbourhood which will increase social cohesion as well as safety.

PRACTICAL IMPLICATION

- Making someone responsible for semi public spaces adds value to the place for its users:
    - Make it private: The space could be divided in several private gardens
    - Make it into a community project: It could be a communal urban farming project, or have another function that neighbours themselves will organise.
    - Ensure direct sightlines from homes to the space: By having eyes on the place, people feel more safe and

welcome to use the place, as well as it ensures the people that have a view on it will feel more responsible on the way it looks and is being used.

- People will use a public space more happily and intensively if they have some degree of freedom over their seating arrangement:
    - Implement different seating forms (facing / non facing seats, small / large group, formal / informal). One can also place movable furniture
    - Designing informal seating areas, that can function as such in summer, while having another function on a cold windy day would be an appropriate solution. Examples of informal seating areas are: Stairs, some types of planters, grass, some types of fountains etc.
- Design for flexible spaces where people can organise their own activities
    - Design for empty spaces
    - Provide amenities needed: e.g. drinking water, toilet, shared sports or sound equipment
- Create places where people can express their thoughts and creativity:
    - Places for wall art and posters

RELATIONS

LIV-04, LIV-05, LIV-07,

REFERENCES

Whyte, W. H. (2001). The Social Life of Small Urban Spaces (8th ed.). Project for Public Spaces.

Sim, D. (2019). Soft City. Amsterdam University Press.

Dorst, M. (2012, 01). Liveability. In (p. 223-241). doi: 10.1007/978-94-007-1294-2 8

MICROCLIMATE

[LIV-07]



PATTERN/HYPOTHESIS

Design for a pleasant microclimate, this will make people use public space more intensively

THEORETICAL BACKUP

- People dislike strong winds, as it lowers the perceived temperature by disturbing the boundary layer around their body.
- People prefer sitting on surfaces that have a pleasant temperature (not too hot in summer, not too cold in winter). Furthermore, people dislike sitting on wet surfaces, meaning that the quicker a material dries, the quicker the seat can be used again. Lastly, materials that leave stains are never preferred.
- When the outside temperature is low, people enjoy sunny places as it provides a more pleasant microclimate. In summer, when temperatures are high, on can prefer a shadow-filled place to lower the local temperature to achieve a more pleasant microclimate.
- Sounds wich are too loud or associated with activities that cause stress are unpleasant for visitors.
- People don't enjoy being in the rain, and therefore will barely use public space when it rains

PRACTICAL IMPLICATION

- Design public places in a way that limits the wind speeds by:
  - Placing trees
  - Designing a square such that : square surface / average building height * 2 < 6
  - Limit (large) openings to the square in the prevailing wind direction
  - place windscreens
- The materials seating places are made of need to have a pleasant temperature irrelevant of the weather, they

should dry easily and not leave stains on clothing:

  - Materials with a low thermal conductivity
  - Materials with a high density / low porosity

- Design public spaces such that they have sunny places, but in summer also places with shadow should be provided for:
  - To provide sunny places, on should limit the building height around public spaces. Furthermore, one should limit the amount of trees that keep their leaves in winter.
  - to provide shadow in summer, one can place trees. Especially trees that will lose their leaves in winter are pleasant. Furthermore, one can place a built construction providing shade.
- Natural and not too loud sounds make public spaces more pleasant:
  - Choose the activities surrounding a public space wisely so they don't cause too much noise
  - Design moving water as it makes a pleasant sound
  - Implement greenery to absorb some of the noise
  - Implement greenery that attracts birds and small animals
- Design places where people can stay for a while while it rains
  - Make a part of the public space covered.

RELATIONS

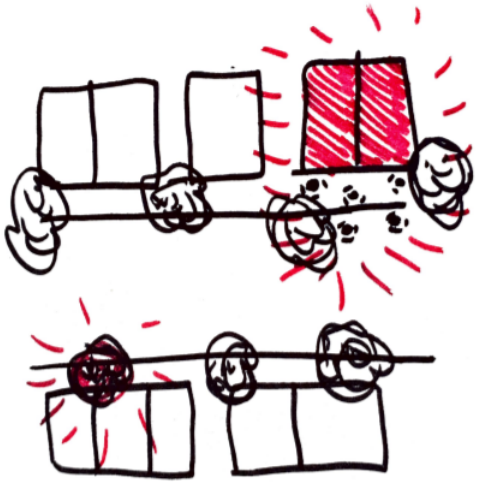
LIV-01, LIV-02, LIV-05, LIV-06

REFERENCES

Lenzholer, S. (2015). Weather in the City - How Design Determines the Urban Climate (1ste ed.). Macmillan Publishers.

BE PROUD

[CULT-1]



PATTERN/HYPOTHESIS

Make the things that residents are proud of or identify with clearly visible

THEORETICAL BACKUP

It gives residents the feeling of belonging and appreciation when things they are proud of, such as their cultural heritage are visible in the neighbourhood. If all groups are visibly accepted in this way, there will be less tensions between different groups.

PRACTICAL IMPLICATION

- Give space for arts
- Give space for typical architectural elements
- Give space for typical activities and events

RELATIONS

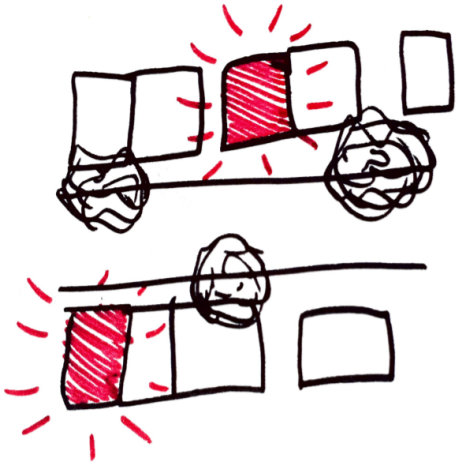
CULT-02, CULT-04

REFERENCES

Dorst, J. M. (2008, 02). Multicultureel gebruik van de buitenruimte. Provincie Zuid-Holland.

UNIQUENESS AS A QUALITY

[CULT-2]



PATTERN/HYPOTHESIS

Approach unique aspects of a neighbourhood as much as possible as a quality

THEORETICAL BACKUP

Unique things about a neigbourhood can often be interpreted in multiple ways as they have positive and negative sides. When actively promoting the upsides, people will see the opportunities in the uniqueness instead of trying to hide the aspect in which case people might make more negative assumptions.

PRACTICAL IMPLICATION

- Advertise unique things that one can buy in the neighbourhood such as ingredients, home decoration, clothes
- Advertise unique things to try such as bakeries, restaurants, sports etc.

RELATIONS

CULT-01, CULT-04

REFERENCES

FAMILY ORIENTED

[CULT-3]



PATTERN/HYPOTHESIS

When designing, always design with a whole family in mind

THEORETICAL BACKUP

People with a multicultural background on average spend more time with their families and therefore find it more important that acitivites and public spaces are suitable for all age groups.

PRACTICAL IMPLICATION

- Design for amenities such as a toilet, drinking water
- Design smooth and easily accessible paths for strollers and wheelchairs
- Design for childeren entertainment on the side of places intended for adults to hang out

RELATIONS

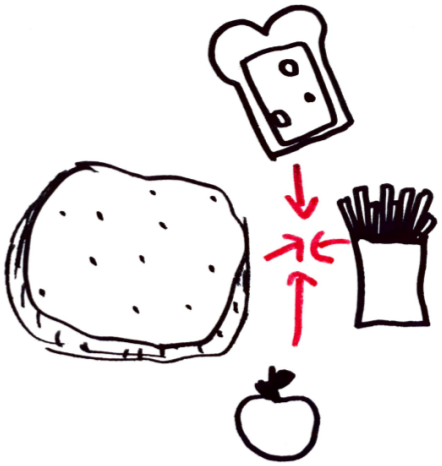
CULT-05, LIV-01

REFERENCES

Dorst, J. M. (2008, 02). Multicultureel gebruik van de buitenruimte. Provincie Zuid-Holland.

FOOD UNITES

[CULT-4]



PATTERN/HYPOTHESIS

Design in a way food sharing takes a central place in the social system of the neighbourhood

THEORETICAL BACKUP

In many cultures, food is an essential part of the identity. Sharing food is a way of connecting, making friends. Opportunities to taste different foods and share are opportunities to grow towards one another, be more tolerant appreciating and welcoming. This can increase social cohesion.

PRACTICAL IMPLICATION

- Allow terraces for shops that sell fresh foods
- Design public spaces in a way it is a suitable place to eat: e.g. picnic tables
- Design places where people can prepare foods in summer: e.g. barbecue places

RELATIONS

CULT-01, CULT-02, LIV-03

REFERENCES

Symons, M. (1994). Simmel's gastronomic sociology: An overlooked essay. Food and Foodways, 5(4), 333–351. https://doi.org/10.1080/07409710.1994.9962016

FEMALE EMPOWERMENT

[CULT-5]



PATTERN/HYPOTHESIS

Design for female empowerment, it will not happen automatically

THEORETICAL BACKUP

Male female relationships differ per culture as wel as from person to person. Woman feel intimidated, unsafe or unwelcome far too often in every neighbourhood. This problem, however, tends to increase at places where males live who do not believe men and women to have equal rights and can interact with one another without restrictions. In these areas it is extra important to also design places where females feel safe and welcome, a space that will not be taken by males.

PRACTICAL IMPLICATION

- Design places where females feel safe, e.g.: adequate lighting, eyes on the streets
- Design places where they feel welcome: e.g. seating areas in playground, sport facilities for predominantly female practised sports.

RELATIONS

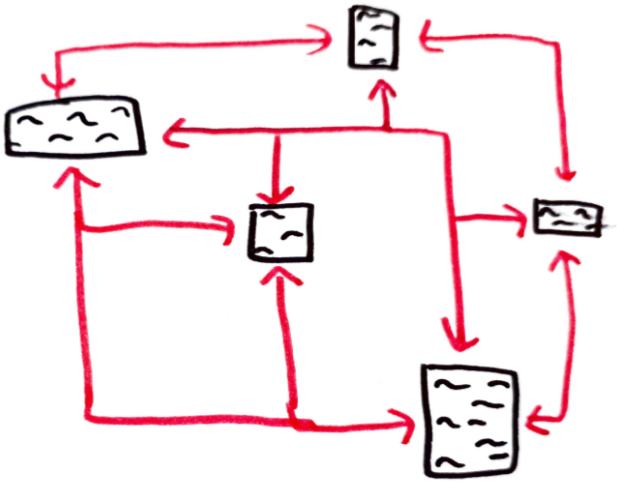
CULT-03, LIV-01, LIV-02

REFERENCES

Sadiqi, F., & Ennaji, M. (2006). The Feminization of Public Space: Women's Activism, Family Law, and Social Change in Morocco. Journal of Middle East Women's Studies, 2(2), 86–114. https://doi.org/10.2979/mew.2006.2.2.86

STORE LOCALLY

[WAT-01]



PATTERN/HYPOTHESIS

Design a network of temporary water storage locations

THEORETICAL BACKUP

When a part of a space is designed to be temporary water storage, the water nuisance will only take place in this part instead of making the whole space unusable. When many small storage spaces exist, water is stored locally and it limits rain water nuisances at other places.

PRACTICAL IMPLICATION

- Design football or basketball fields to be water squares
- Design wadis when designing greenery (minimal 2m wide, slope maximum 1:3 for maintenance reach)
- Some parking spots can designed to be temporary water storage
- Infiltration boxes can be placed underneath paved surfaces
- More open water with a flexible water level can be created

RELATIONS

WAT-02, WAT-03, WAT-04, WAT-05

REFERENCES

groen blauwe netwerken. (n.d.). wateropgave. retrieved from groen blauwe netwerken voor veer-krachtige steden: https://nl.urbangreenbluegrids.com/water/ harrison, l. j., white, p. c., & odell, s. (2016). connectivity and ecological networks: technical information note 01/2016

MAKE WATER VISIBLE

[WAT-02]



PATTERN/HYPOTHESIS

Design water management in such a way that it is at least partly visible above ground

THEORETICAL BACKUP

The saying goes: out of sight, out of mind. Therefore, to make people aware of water management struggles it is important to make the water visible. Especially if you want citizens to participate to some extent.

PRACTICAL IMPLICATION

- An open gutter system to transport water to places it can be stored temporarily or be infiltrated
- Temporary above ground rain water storage: e.g. water square or wadi
- Increase amount of surface water
- Add moving water elements such as fountains
- Create water playgrounds

RELATIONS

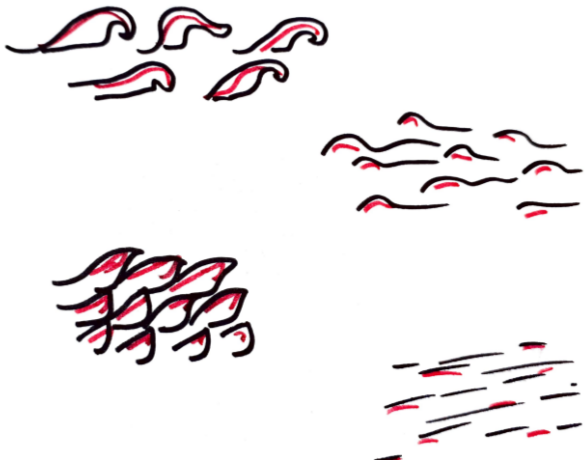
WAT-01, WAT-03

REFERENCES

groen blauwe netwerken. (n.d.). wateropgave. retrieved from groen blauwe netwerken voor veer-krachtige steden: https://nl.urbangreenbluegrids.com/water/ harrison, l. j., white, p. c., & odell, s. (2016). connectivity and ecological networks: technical information note 01/2016

MULTIFUNCTIONAL WATER

[WAT-03]



PATTERN/HYPOTHESIS

Give water in the urban environment as much as possible a function that people appreciate next to the function of water storage

THEORETICAL BACKUP

Water in the urban environment can be a great quality. People enjoy the coolness and sound of a fountain in summer, walking along a canal, swimming in surface water etc. When water has a clear function for people in a recreational purpose, they will appreciate it more and therefore it will be more justified to spend money on it.

PRACTICAL IMPLICATION

- Make surface water swimming water quality
- Add functions along canals and design the urban space in such way one can enjoy taking a stroll
- Add moving water elements such as fountains

RELATIONS

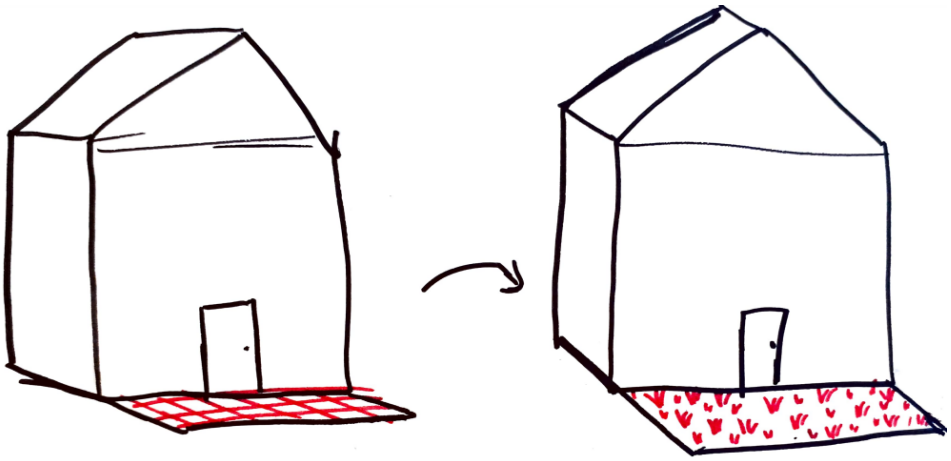
WAT-01, WAT-02, LIV-01

REFERENCES

groen blauwe netwerken. (n.d.). wateropgave. retrieved from groen blauwe netwerken voor veer-krachtige steden: https://nl.urbangreenbluegrids.com/water/ harrison, l. j., white, p. c., & odell, s. (2016). connectivity and ecological networks: technical information note 01/2016

LET OUT THE STONES

[WAT-04]



PATTERN/HYPOTHESIS

Where possible remove paving and replace it by something more permeable

THEORETICAL BACKUP

Water can hardly infiltrate in a paved surface. Therefore to let more water infiltrate it would be better to replace paved surface by (semi-)permeable surface.

PRACTICAL IMPLICATION

- Replace paved material by (semi-)permeable material
- Replace paved surfaces by surfaces that are partly paved but leave room for infiltration as well
- Plant plants to increase evaporation of water

RELATIONS

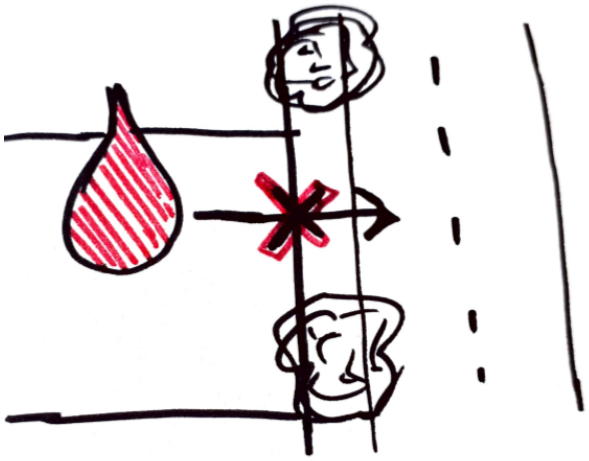
WAT-01, WAT-05, LIV-04

REFERENCES

groen blauwe netwerken. (n.d.). wateropgave. retrieved from groen blauwe netwerken voor veerkrachtige steden: https://nl.urbangreenbluegrids.com/water/ harrison, l. j., white, p. c., & odell, s. (2016). connectivity and ecological networks: technical information note 01/2016

WATER TAX

[WAT-05]



PATTERN/HYPOTHESIS

A water tax should be introduced stating that every household is reponsible for rainwater that falls on their own property.

THEORETICAL BACKUP

It is challenging and undesirable to manage all rainwater that falls on private property in public space. Making rental cooperations and citizens responsible for the water that falls on their property makes it doable to deal with the rest in public space, also in events of more extreme rainfall.

PRACTICAL IMPLICATION

A law must be made that enforces homeowners to take responsibility for rain water that falls on their property under normal circumstances.

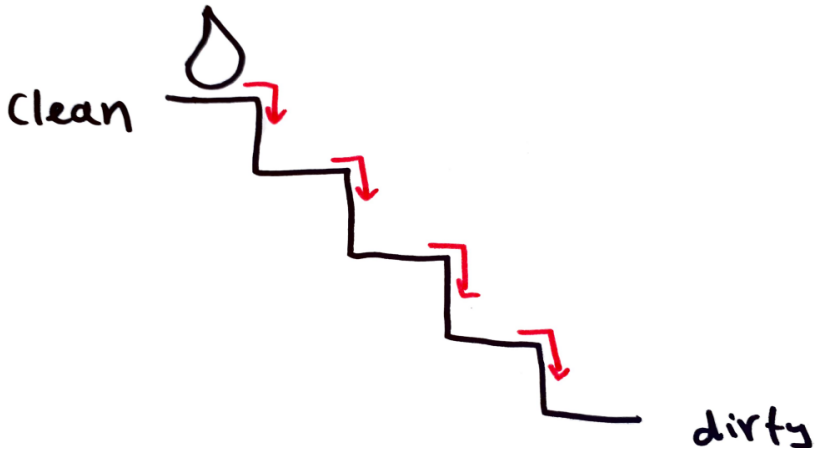
RELATIONS

WAT-01, WAT-04

REFERENCES

CLEAN WATER

[WAT-06]



PATTERN/HYPOTHESIS

Water should be transported throughout the area in a way that it transfers from clean to dirtier in every step, and not the other way around.

THEORETICAL BACKUP

In the urban system, different kinds of water exist wich all have their own asociated level of cleanliness. Yet also similar types of water may differ on this aspect. Rainwater that fell on a busy road will be less clean when it flows away than water that fell on a playground. Furthermore letting dirty water flow to surface water can lead to unacceptably high concentrations of specific substances. Thus the water system needs to be designed in a way that water flows from clean to dirtier.

PRACTICAL IMPLICATION

- Let relatively clean water flow to surface water if infiltration is not possible
- Let water that is not clean enough for the surface water, yet not dirty enough to typically let it go into the sewer system infiltrate locally
- Let dirty water flow to the sewer system

RELATIONS

WAT-01, WAT-02, WAT-03, WAT-04, WAT-05

REFERENCES