REDEFINING HISTORIC CENTRAL DISTRICTS

A GUIDE TOWARDS VITAL AND RESILIENT HISTORIC CENTRAL DISTRICT FOR ALL

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MURB
25-06-2023

MA+U

Fontys

COLOFON

REDEFINING HISTORIC CENTRAL DISTRICTS

A GUIDE TOWARDS VITAL AND RESILIENT HISTORIC CENTRAL DISTRICT DEVELOPMENT

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Master's thesis

Master Urbanism
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FOREWORD

In front of you lays my master's thesis about revitalizing and future-proofing historic central districts. This thesis has been written to complete the study Master of Urbanism at Fontys Academy of Urbanism and Architecture. I worked from September 2022 to June 2023 on researching and writing this thesis.

For this thesis I wanted to apply and enhance my capabilities as an urban designer, explore new research and design methods and, above all, learn how to operate in complex historic central districts. From working with old research methods by Kevin Lynch and testing what happens when turning them around to working with 3D model studies and learning how 3D printing works. This thesis gave me the opportunity to explore beyond the borders of urbanism, building a network and enabled me to let me come up with a future vision for 's Hertogenbosch, in particularly the location where I was born.

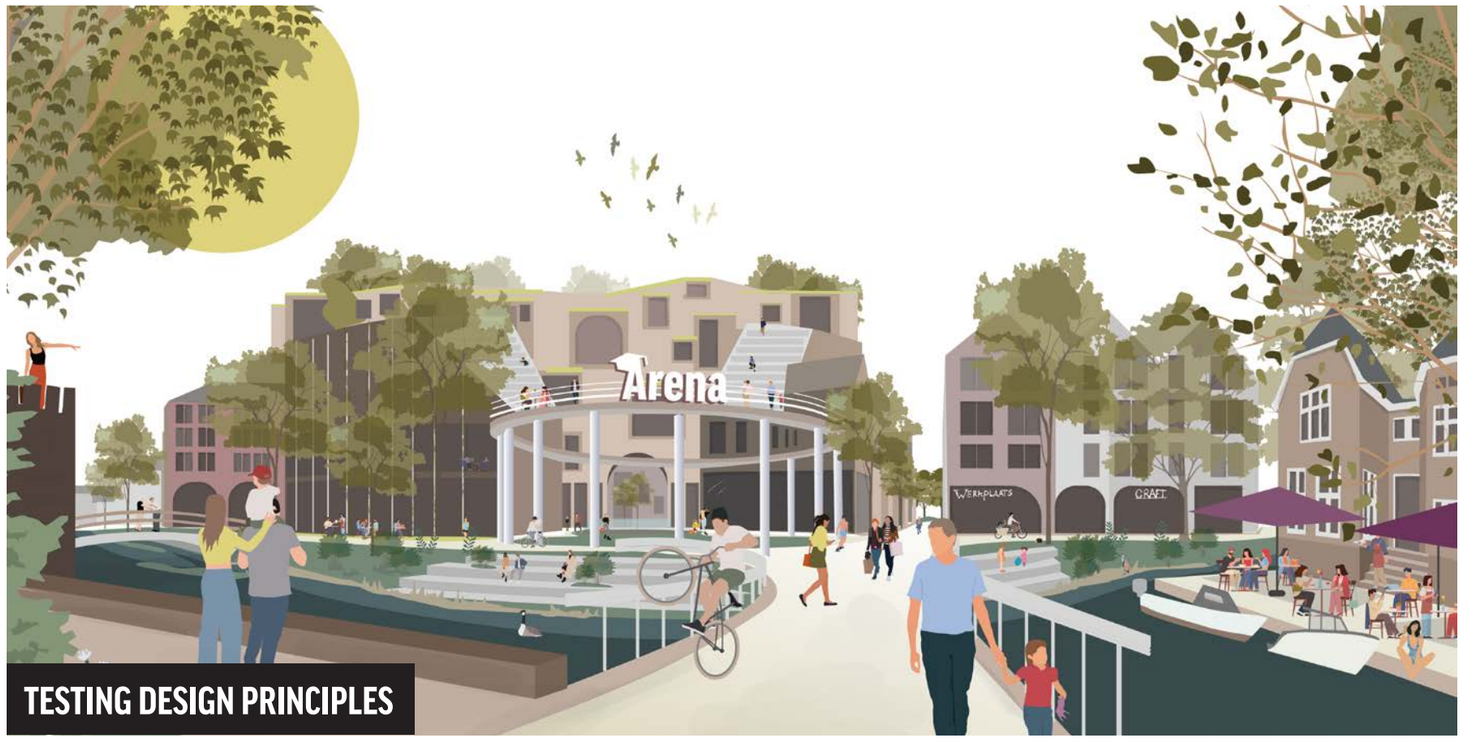
I would like to thank Jessica Tjon Atsoi and the company Urhahn for their invaluable guidance during this project,. Their expertise and support have played a pivotal role in elevating the quality of this thesis. I would also like to thank Remond Baselmans from and many other colleagues from CB5 for helping and guiding me trough this year of graduation. Furthermore, I want to thank my tutors from the Fontys Academy of Architecture and Urbanism, Pieter Feenstra and Jan Willem van Kuilenburg for their help, guidance and strong feedback that made this thesis.

Finally, I want to thank my family and friends in supporting me the whole year for being there for me during this process of graduation.

I wish you a pleasant reading experience.

ABSTRACT

CURRENT



TESTING DESIGN PRINCIPLES

This thesis will adress the topic of revitalizing historic central districts to create future-proof historic central districts for all. Historic central districts are currently functionally, socially and economically unsustainable. These districts have damaged unlegible fabrics, are monofunctional, car dependend and are vulnreable to climate change, overall not a future proof situation.

The research question to this thesis is:
How can historic central districts be transormed into vital, future-proof urban environments for all?

This research investigates the next urban trends on historic central districts and comes up, and tests four design principles for a sustainable future in ‘s Hertogenbosch. The principles are:

1. Creating a permeable interconnected and legible district as its foundation with a variety of interconnected lines, nodes, edges, landmarks and sightlines.

2. Diversify the district by creating a walking economy, densifying in flexible adaptive merchant blocks, and live locally.

3. Decelarate movement by reposition cars in mobility hubs, slow, shared- and public transportation as main modes through the city, and placemaking to hold people in location and stimulate social interaction.

4. Building relationships with the climate by enhancing and charging its green/blue networks, de-paving as much as possible, open old waterways to use as rain barrels, cool down the city by greening, using the sun and stimulating air flow.

These combined will offer a solution towards vital future-proof historic central districts to become socially, economically and functionally sustainable.

ESSAY

“THE PRESSING SUSTAINABILITY CHALLENGES *of climate adaptation, transitioning to alternative modes of transportation, housing transformation and assignment, coupled with the shifting landscape of shopping and leisure due to the rise of online retail,* **CREATE A UNIQUE OPPORTUNITY TO REDEFINE AND REVITALIZE** *historic central districts* **AS ECONOMICALLY, FUNCTIONALLY, AND SOCIALLY SUSTAINABLE** *areas.”*

CITY TO BUY, IS BYE CITY - BREAKING THE (POST) MODERNIST WHEEL OF CITY PLANNING

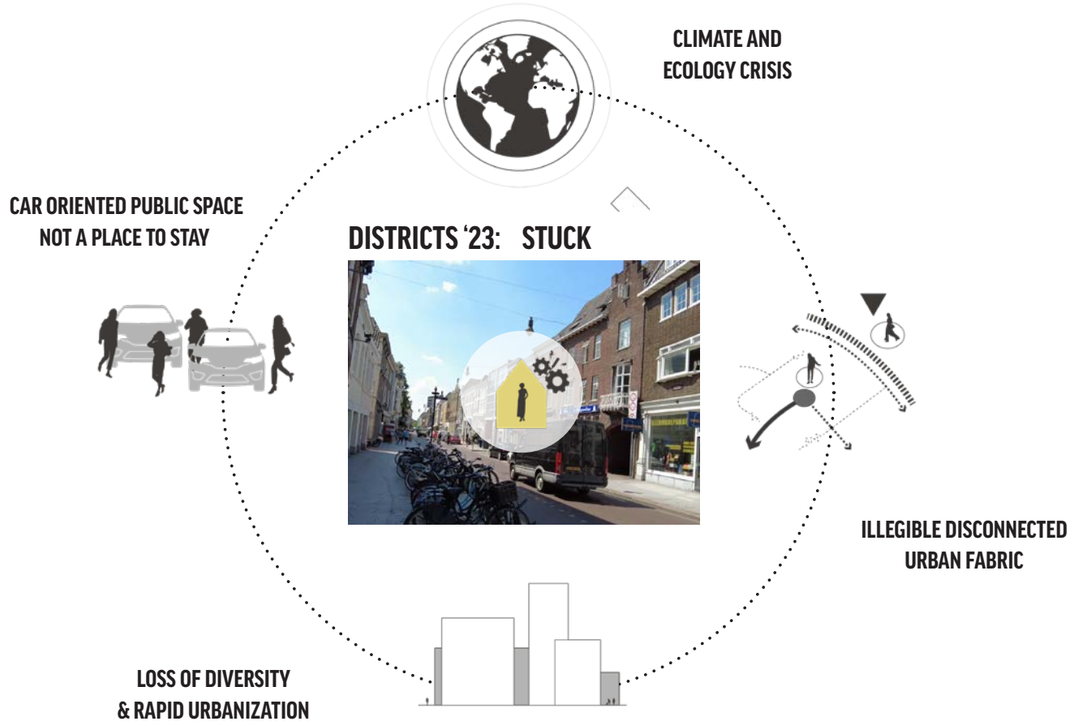
Historical inner cities, currently solemly used as places to buy and as a leisure domain, are performing under their potential as places of economical, social and cultural development.

HISTORIC CENTRAL DISTRICTS ARE STUCK IN A (POST) MODERNISM GRIP THAT IS SOCIALLY, ECONOMICALLY, AND FUNCTIONALLY UNSUSTAINABLE.

These districts are unable to deal with climate change and deterioration of natural life in general. The districts are dominated by cars, monofunctional and one-dimensional, resulting in an inflexible situation. It is currently not a place where social and cultural life can be explored and developed to new needs.

Historic city centers have the potential to contribute much more to a sustainable society than they currently do. The aim is to transform these historic city centers into vibrant places where people can grow up and grow old. It should be an area where people not only shop but also work and learn. This has the potential to create a sustainable society by promoting a close integration of living and working spaces. To achieve this, the city center needs to be brought back into harmony with nature and adapt to the changing climate in order to become more resilient. It should be a place for people to meet and live, free from the dominance of cars. Additionally, the historic city center is an ideal location for urban densification, which can help address the housing crisis without encroaching on green areas outside the city.

The historic city center holds immense potential; however, it is currently underutilized. It is time to reveal the urban trends of the future and establish a vision for this promising location to grow towards in the coming years.



PAST URBAN TRENDS

TRADING SETTLEMENTS AND FORTRESSES

1000

SHRINKING CITIES
DEURBANIZATION

1700

MODERNISM AND POST WAR RECONSTRUCTION

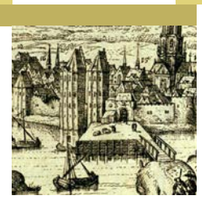
1950

LEISURE, SHOPPING, TOURISM
URBANIZATION

2000

500

SMALL SETTLEMENTS

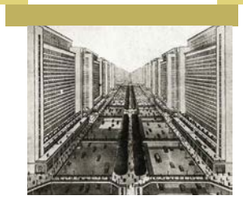


1500

GOLDEN AGE
CULTURE, EDUCATION, TRADE

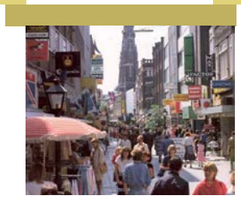
1880

INDUSTRIALIZATION
LIFTING FORTIFICATIONS



1980

SUBURBANIZATION AND
CITY RENEWAL



>2008

ECONOMIC CRISIS
CORONA CRISIS
ONLINE SHOPPING

CURRENT SITUATION

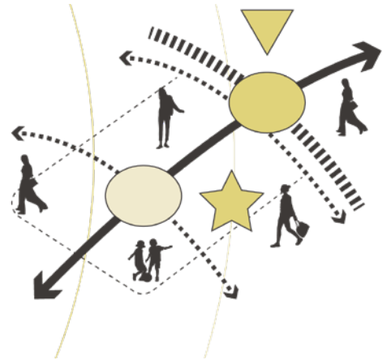
CLIMATE CRISIS
ECOLOGY CRISIS
VACANCY CRISIS
HOUSING CRISIS

2023

TARGET FOR UPCOMING YEARS

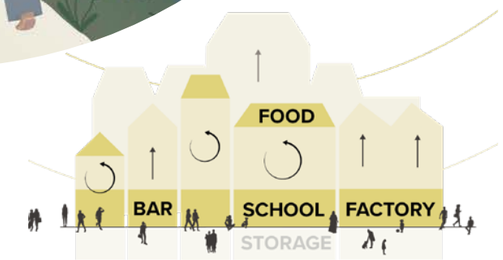
SUSTAINABILITY: CHARGE AND CONNECT AVAILABLE GREEN SPACES, REACH ENERGY NEUTRALITY AND DESIGN BASED ON THE ELEMENTS SUCH AS WIND, RAIN AND SUN

MOBILITY TRANSITION RELOCATE CARS, DECELARATE MOVEMENT AND PLACE-MAKING FOR PLACES TO STAY AND INTERACT



PERMEABLE AND LEGIBLE
INTERCONNECTED FABRIC BY MAKING USE OF LINES, EDGES, NODES, LANDMARKS AND SIGHTLINES

INCREASE DIVERSITY BY DENSIFYING IN ENCLOSED MERCHANT BLOCKS AND LIVE LOCALLY



DESIGN PRINCIPLES FOR THE FUTURE

1. THE FABRIC *of these districts, which is important for movement through the city, safety, and legibility, is currently malfunctioning.* **CREATING A PERMEABLE INTERCONNECTED AND LEGIBLE DISTRICT AS ITS FOUNDATION WITH A VARIETY OF INTERCONNECTED LINES, NODES, EDGES, LANDMARKS AND SIGHTLINES.**

2. *These districts should become DIVERSE place to live local, creating a larger variety of functions and residents.* **DIVERSIFY THE DISTRICT BY CREATING A WALKING ECONOMY, DENSIFYING IN FLEXIBLE ADAPTIVE MERCHANT BLOCKS, AND LIVE LOCALLY.**

3. *Cars currently take up all the space which can be used for the sustainable transformation and work negatively on safety and health of inhabitants.* **DECELARATE MOVEMENT BY REPOSITION CARS IN MOBILITY HUBS, SLOW, SHARED- AND PUBLIC TRANSPORTATION AS MAIN MODES THROUGH THE CITY, AND PLACEMAKING TO HOLD PEOPLE IN LOCATION AND STIMULATE SOCIAL INTERACTION.**

4. *Lastly, Climate is changing fast putting a heavy wage on these historic districts that are almost completely paved. Building relationships with the climate by* **ENHANCING AND CHARGING ITS GREEN/BLUE NETWORKS**, **DE-PAVING AS MUCH AS POSSIBLE, OPEN OLD WATERWAYS TO USE AS RAIN BARRELS AND COOL DOWN THE CITY BY GREENING AND STIMULATING AIR FLOW**, *will not only create a healthier pleasant place to stay which is climate adaptive, but will also save money in the end.*

SUSTAINABLE HISTORIC NEIGHBOURHOOD OF THE FUTURE

ARGUMENTS

When densifying the historic central district with hybrid 'merchant' blocks, the central district becomes livelier and more multifunctional. Distance between working and living decreases, resulting in less traffic and a more sustainable living style of people. Secondly, the housing shortage can be partly solved without building in outer green zones.

According to Jane Jacobs (1961), high density is a crucial element for vibrant and thriving cities. The analysis of urban spaces indicates that there is ample room for further densification in the historic central district, particularly in areas currently allocated for parking. The Pijp district's design demonstrates that densifying a single neighborhood in the northern part of the city can increase housing capacity by one-third of the amount of homes the city comes short, partially addressing the citywide housing shortage without encroaching on green outskirts.

By densifying in enclosed blocks with integrated and diverse merchant buildings, we can accommodate higher density while preserving the human scale and character of historic central districts (Sim, 2019). These merchant buildings can serve various purposes, including education, industry, and retail. Densifying in this manner provides a sustainable approach to increasing density and positively transforming the lifestyles of residents. Since historic central districts are conveniently located near train stations, accessible public transportation is readily available. Merchant blocks enable the integration of workspaces, reducing the distance between living and working environments.

Overall, densifying the historic central district with merchant blocks for local residents will help alleviate the housing shortage, reintroduce new functions, foster diversity, and promote sustainable lifestyles centered around proximity, car-free living, and convenient access to train stations.

Building relationships with the climate by making de-paving as much as possible, open old waterways to use as rain barrels and cool down the city by greening and stimulating air flow, will not only create a healthier pleasant place to stay but will also save money in the end.

climate change is according to the UN, one of the main threats to vital historic districts. In recent years, the expansion of urban areas and the growth of urban populations have heightened the vulnerability of historic cities to various climate impacts, including heatwaves, flooding, and droughts (UN, 2023). Looking ahead, the ongoing expansion of urban areas, population growth and concentration in cities, along with an aging population, will further increase the vulnerability of cities to the effects of climate change (EU, 2023). An example of the impacts of climate change on a historic central district is the flood of Valkenburg in 2021 where the Geul flooded the central district with 400 million euros damage as a result (Trouw, 2021). To compare it, to open a waterway like the Catharijnesingel in Utrecht, which protects the area and creates a pleasant environment, costed 14 million euros (CoBouw, 2022). To conclude, climate adaptive measures are not solely creating a pleasant place, they are protecting the city and its inhabitants and, in the end, saving money.

(Eliason, Baugruppen: Proactive Jurisdictions, 2014)- Tuebingen - Bottum up developing

Restored Catherijnesingel Utrecht (OKRA, 2020)

A shift from car-oriented travel towards human oriented travel with decelerating movement, creating a pleasant place to stay will not only created safer streets but will stimulate inclusivity and social cohesion as well.

Current state of the historic central districts is a car dominated city scape, resulting in dangerous situations as the historic fabric is not built for cars. Research by the TU Delft shows that chance collisions with serious injury is much higher in historic districts than in other cities (Delft, 2021).
the focus should be to decelerate movement in the district. No longer viewing transportation as something to travel from 'A' to 'B'. As David Sim mentions: "The time spent in between buildings in active mobility exposes people to other people in everyday encounters, simply seeing other people and noting how they behave, sitting next to strangers on the bus, overhearing conversations about unfamiliar topics, seeing the same people again and again, noddling to say hello and slowly developing broader acquaintances. These countless experiences and unexpected social opportunities, the frequent exposure to difference, the serendipitous and spontaneous can make daily life more interesting. More importantly, the experiences can help build understanding and tolerance between different people and contribute to a more cohesive society" (Sim, 2019).

counterargument:
"Online shopping already emptied the city partly. Cars combined with parking lots in the district, make the historic central district accessible. Without these cars and their much needed parking spaces, shops will completely disappear resulting detrimental to the local economy."

In contrary, a car free historic central district doesn't mean an inaccessible district. When ensuring good connectivity by mobility hubs at the edges, well organized public transport and stimulate shared mobility, the city will stay connective. Historic central districts are usually small of scale and designed to walk from A to B. Take 's Hertogenbosch for example, walking from the outer wall of the district towards the central market is only 400 metres. This flow of people from the outside towards the inside through approach streets offers opportunities to create extra functions that where continues flow of visitors pass by.
Creating this car free place to stay, interact and where people move slowly boosts the economy as well. research conducted at the Erasmus University reveals that individuals who travel to the city centre on foot, by bicycle, or by public transportation tend to spend more on average than those who use cars. "This is likely due to the fact that they visit more frequently or because they enjoy their time there in a pleasant manner. In short, it is not true that car-free cities are detrimental to the local economy" (Bornioli, 2022).

counterargument:
"Transformation in the historic central district is extremely expensive thus building outside the city offers a better solution."

While it may appear that densifying in historic central districts is prohibitively expensive compared to building outside the city, there are factors that need to be considered. The analysis conducted by Decisio and Metafoor, comparing the costs and benefits of urban and suburban construction projects in Purmerend and Haarlemmermeer, revealed that building in the city actually yields significantly higher positive effects (Maas, 2023).

it is essential to broaden the perspective beyond the immediate project costs. When considering additional expenses known as "above-plan costs," such as widening existing roads to accommodate increased traffic from the new residential area, the costs of a suburban residential development can surpass those of an urban project for the municipality. Furthermore, the long-term maintenance costs for streets, parks, and sewage systems in suburban areas are significantly higher than in urban projects. The municipality cannot pass these higher costs onto the project or the residents through local taxes.
In terms of overall welfare effects, building in the city center offers greater benefits. Further densification of the city contributes to the economy and employment opportunities. Infill projects often lead to improved building quality, and the traffic effects are more positive, as residents of urban homes rely less on cars compared to those in suburban areas (Maas, 2023).

Finally, densifying the historic central district doesn't have to go the traditional way by project developers. Buildings can be developed in new forms as collectives like in the neighbouhood Tuebingen. Tuebingen's building groups resulted in costs that were 10-20% lower compared to typical developer models, while also fostering higher levels of diversity and ownership among younger families. The buildings were constructed collectively, resulting in an adaptive, flexible, high-density densification that is future-proof and promotes strong social cohesion. This kind of approach to development not only saves money but also fosters inclusivity, social cohesion and protects against gentrification (Eliason, 2014).

CONCLUSION

In conclusion, these arguments validate the statement that Historic central districts are stuck in a (post) modernism grip and are not economically, socially, and functionally sustainable. And that that this can be solved by densifying in blocks and living locally, decelerating movement creating a pleasant place to stay, building relationships with the climate making the district resilient. It is not only necessary to create healthy, sustainable, and vital historic districts but it will also save money.

It is time to break the wheel of modern city planning in the historic central districts and start the transformation towards a socially, economically and functionally sustainable district.

CONTENT

1. INTRODUCTION

1.1 CAUSE

As I walk through different historical city centres its difficult to see their authenticity through the **sameness of shopping streets**, paved unsocial roads and parking lots. These districts used to be important for the economy, society, and culture, driving innovation. They where flexible places that evolved based on the wishes and needs of its time. But now, they are filled with similar shops, restaurants, and tourist attractions. After the shops close, the districts become empty, which leads to **social unsafe situations**. The central district is mainly used for buying things, while working, education, and living are located outside the district.

The districts are **car dependend** but not built for it. It creates dangerous situations and waste of space.
Large parking lots are scattered throughout the historic center to accommodate the needs of a **segregated sprawled** city. Protected heritage buildings in combination with large parking lots have as a result that **space is scarse**.

Expensive ground prices partly due to scarsity of space make it diffecult to develop buildings, and this while there is a large housing crisis. Only the extremely rich can afford to build within the city, leading to **exclusion** and the displacement of local communities.

The **climate is changing**, and these areas with lots of pavement and with a lack of trees, are more prone to heat islands and flooding (UN, 2023).

Even shop owners recognize this problem and believe that due to the changing shopping climate (online shopping), the city should be transformed **from a place to buy to a place to be** (Nauta, 2022). The once flexible and evolving nature of these districts is now stuck in a state of post-modernism.

's Hertogenbosch 2023 - finding the only bit of shade during a hot day

Dordrecht (Bert van der Schaar, 2020)

's Hertogenbosch 2023 - empty shopping streets

Middelburg (Ruben Oreel, 2023)

1.2 PROBLEM STATEMENT

Small to medium-sized historic central districts in Europe, with a population of fewer than 500,000 inhabitants, are currently facing significant challenges. These districts are trapped in a state of post-modernism, which hinders their ability to adapt and thrive. They are particularly vulnerable to the impacts of climate change, experiencing floods and heatwaves that put the lives of vulnerable individuals at risk. It is worth noting that over half of the world's urban population lives in historic towns and cities of fewer than 500,000 inhabitants and three-quarters of population growth will be concentrated in these small- to medium-sized historic cities (UN, 2008).

Furthermore, these districts suffer from lifeless cityscapes characterized by segregation and exclusion, leading to social unrest and unsafe situations. Car dependency has become rampant, occupying all available space and limiting other essential activities. Additionally, there is a shortage of space, resulting in exclusionary practices and, in some cases, a severe housing shortage, as observed in the Netherlands (Vis, 2022).

The once dynamic and evolving historic central districts are now stagnant, lacking social, economic, and functional sustainability. It is crucial to address these issues and transform these districts into sustainable future-proof and vital environments.

1.3 GOAL

The goal of this thesis is to demonstrate how the historic central districts can be transformed into a sustainable future-proof and vital environments for all.

1.4 RESEARCH QUESTION

How can historic central districts be transormed into vital, future-proof urban environments?

Sub-questions include:

- What is vitality?
- What is a vital urban environment?
- What are historic central districts and what is their importance?
- What are the biggest threats to a historic central district?
- How to solve the biggest threats to a historic central district with urban transformation?

1.5 HYPOTHESIS

The pressing sustainability challenges of climate adaptation, transitioning to alternative modes of transportation, transforming housing, and more, coupled with the shifting landscape of shopping and leisure due to the rise of online retail, create a unique opportunity to redefine and revitalize historic central districts as economically, functionally, and socially sustainable thriving areas.

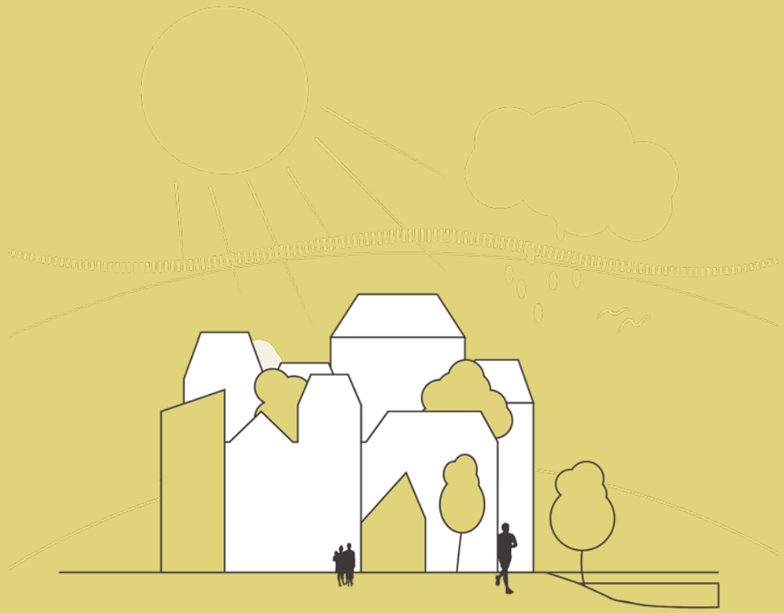
1.6 METHOD

The research will be conducted through a combination of literature review, case study of 's Hertogenbosch with urban analysis combined with a design-oriented approach and input from experts,

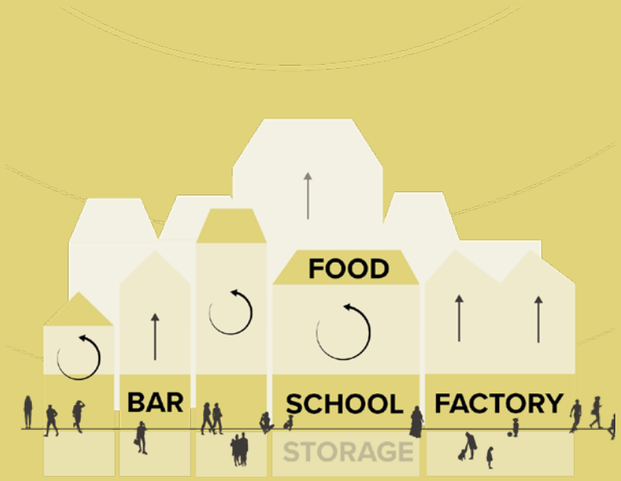
1.7 READER

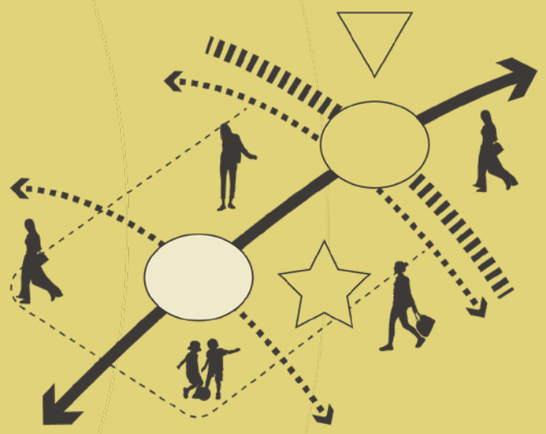
This thesis is structured as follows: Chapter 1 provides an introduction to the topic, Chapter 2 presents the theoretical framework, Chapter 3 outlines the methodology employed, Chapter 4 delves into the urban analysis, Chapter 5 incorporates insights from experts and stakeholders, Chapter 6 presents the conclusions, Chapter 7 initiates a discussion, and finally, Chapter 8 offers recommendations based on the findings.

"Ideal cities are very much the product of their own ages. Designed as complete urban statements, they bear the unmistakable imprint of their own culture and world view in every street and building. And yet to be successful, a city has to be open to continuous development, free to evolve and grow with the demands of new times. Like science fiction accounts of the future, ideal cities quickly become outmoded. (P.D. Smith)"



THEORY





2. THEORY

This chapter focuses on a theoretical study aimed at creating vital, future-proof (historic) central districts. The purpose of this study is to establish a theoretical framework that will guide further research on the urban development of these districts.
The most important theories used to answer the research questions are:

- Levende stad om te leven by Elma van Beek (Beek, 2011)
- Image of the city by Kevin Lynch (Lynch, 1960)
- Hybrid city, hybrid factory by Rappaport (Rappaport, 2022)
- Death and life of great American cities by Jane Jacobs (Jacobs, 1961)
- Soft city by David Sim (Sim, 2019)
- City at eye level by Jeroen Laven (Jeroen Laven, 2017)
- City of the future by Hans de Boer (Boer, 2019)
- Neighbourhoods of the future by Maarten Hajer (Maarten Hajer, 2020)

2.1 ANSWERS TO THE SUB QUESTIONS

2.1.1 What is vitality?

“Energy and strength”

Vitality refers to the energy and strength that a person or organization possesses. It can also refer to the power or life-force that is inherent in living things. In the context of a person, vitality might be described as their physical or mental energy and strength. In the context of an organization or community, vitality might be described as its strength, resilience, and ability to thrive and grow (Oxford, 2023).

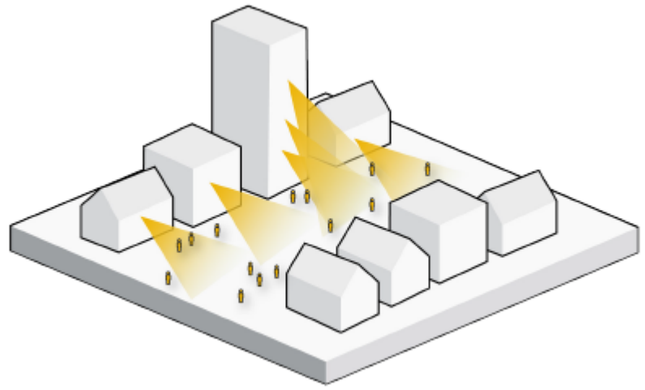
2.1.2 What is a vital urban environment?

To answer the question of what vital urban environments are several sources from different time periods are used. Jane Jacobs wrote in 1961 in the book ‘The Death and life of great American cities’ about a healthy ‘sidewalk ballet’ as a vital urban environment:

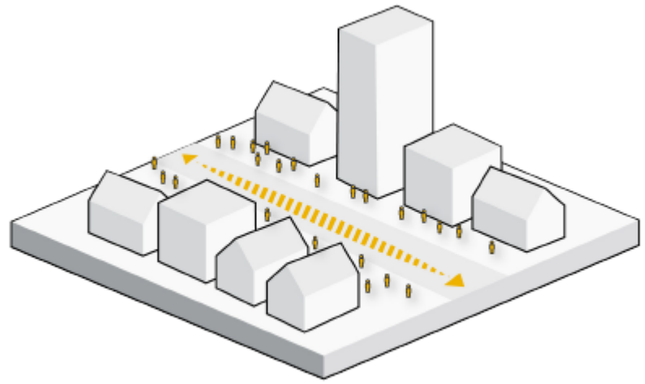
“Under the seaming disorder of the old city, wherever the old city is working successfully, is a marvelous order for maintaining the safety of the streets and the freedom of the city. It is a complex order. Its essence is intricacy of sidewalk use, bringing with it a constant succession of eyes. This order is all composed of movement and change, and although it is life, not art, we may fancifully call it the art form of the city and liken it to the dance--not to a simple-minded precision dance with everyone kicking at the same time, twirling in unison and bowing off en masse, but to an intricate ballet in which the individual dancers and ensembles all have distinctive parts which miraculously reinforce each other and compose an orderly whole. The ballet of a good city sidewalk never repeats itself from place to place, and in any one place is always replete with new improvisations” (Jacobs, 1961).

Jacobs stated that a vital urban environment is an environment with a constant presence of pedestrians throughout the day. According to her, an urban vitalism means people on the streets which leads to eyes on the street, which then again provides social safety.

A more recent study by Elma van Beek (2012) emphasizes this theory from Jacobs and calls a vital city a ‘pedestrian bustling environment’.



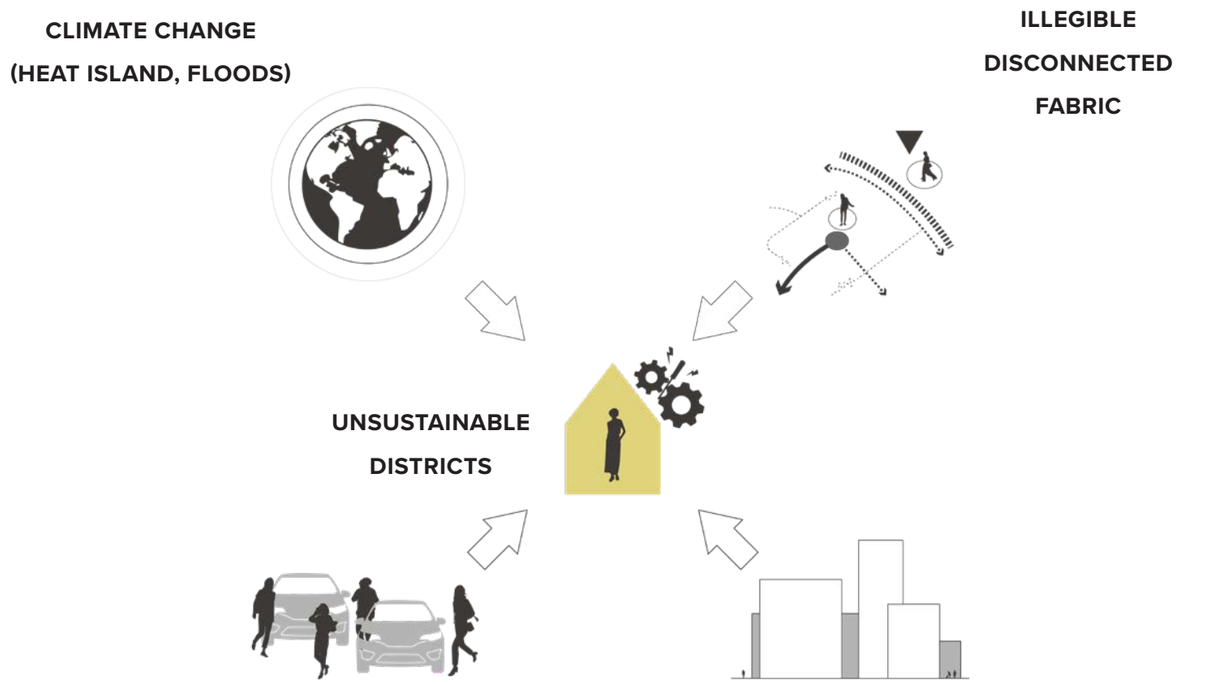
Eyes on the street



Continues flow of pedestrians

Elma van Beek-Vlaanderen Oldenzeel, gives a theory about how to examine a city's vitality. In her book she mentions the importance of a vital city according to the Maslow theory of the hierarchy of needs: "a bustling city may give people a feeling of identity, purpose, and self-actualization from a psychological standpoint" (Beek, 2012).
Van Beek says: "A vital and living city system is characterized by growth, development, and evolution. Part of this process involves the ability to adapt to disruptions and changing circumstances. In this way, a living system (such as a city) can provide space for activities and developments that were previously unforeseen or that respond to the changing needs of its users (Beek, 2012)."
That vitality is characterized by development and evolution is emphasized by Nina Rappaport in her book Hybrid city, hybrid factory. Rappaport argues that "a vital city is a hybrid city that encompasses a diverse range of functions (Rappaport, 2022)."

In conclusion, a vital urban environment is a bustling environment full of pedestrian life. An environment with (as Jane Jacobs would call it) a healthy sidewalk ballet and an environment that is characterized by growth development and evolution with a diverse range of functions.



2.1.3 Historic central districts and what is their importance?

These districts are socially and cultural centres according to UNESCO (2008), historic central districts are spaces where social transformations occur rapidly. These districts often represent the entire city and can serve as laboratories for promoting cultural diversity and fighting poverty. They contribute to the development of cultural identity and the overall living environment for residents, while also guiding the regional development of the city and its surrounding areas.

The International Council on Monuments and Sites (ICOMOS, 1987) further emphasizes the significance of historical city centres. They are defined as the embodiment of a city's historical characteristics, encompassing both physical and spiritual elements that shape the image and urban layout. This includes the street network, zoning, and associated relationships. The architectural importance of the centre is reflected in its unique features, while the planning, streets, and buildings demonstrate a clear expression of the urban fabric and the aspects of life within it. Despite undergoing transformations and facing challenges, historical centres continue to serve as vital urban nodes, maintaining their authenticity to this day. They often host residential, economic, and cultural activities, particularly in densely populated areas. These centres represent the identity of the city and house significant monuments and historically important buildings.

Historic central districts have an important priming function for attracting visitors (Boussa, 2010). Visitors often takes longer (83 minutes compared to 60 minutes in a regular central district) (Nijman, 2018). The demand from businesses and employees for inspiring, mixed work environments is growing. Inner cities can fulfil this demand and provide space for office-like companies, flexible workspaces (working outside of traditional offices but within the neighbourhood), facilities for start-ups, spaces for the sharing and platform economies, small manufacturing businesses (crafts), tourism and recreation, culture, the creative sector, as well as practical spaces for education and the labour market. These functions often contribute to enhancing vibrancy (Kruger, sd).

2.1.4 Threats to historic central districts

Jacobs wrote in her book The death and life of great American cities, that the biggest threat to vital cities is the absent of a good flow of people, resulting in less eyes on the street, and thus a social unsafe and non vital place. This flow of people can be disrupted by an **illegible disconnected fabric** according to

Kevin Lynch in his book Image of the city (Lynch, 1960). Elma van Beek emphasizes this and adds that one of the biggest threats to vital urban environments is a malfunctioning and illegible fabric. When networks and subsystems are not working properly and the fabric is not legible, people not flowing through the city properly, making urban environments desolate.

Another threat to vital urban environments is **the loss of diversity in combination and accelerated by the housing shortage.** According to Jane Jacobs, a key ingredient for a vital urban landscape is diversity. Jacobs states: “The district must mingle buildings that vary in age and condition, including a good proportion of old ones so that they vary in the economic yield they must produce. This mingling must be close-grained. The district and needed as many of its internal parts as possible, must serve more than one primary function: preferably more than two. These must ensure the presence of people who go outdoors on different schedules and are in the place for different purposes, who are able to use many facilities in common (Jacobs, 1961).”

At the moment historic central districts are losing its diversity. Online shopping and a change in mindset is putting stores vacant. The current housing crisis is resulting in vacant shops being filled in quickly by residential housing, which ten again makes the district even more monofunctional (Maarten Hajer, 2020).
High ground prices make it more expensive to built within the historic central district, resulting in only that only the rich can afford to live in the district, resulting in loss of diversity of inhabitants of the district and exclusion (Sim, 2019).

Thirdly, one of the primary causes for the decline of pedestrian activity are **car oriented public spaces, congestion, and unpleasant place to stay** according to Laven and Sim, 2019. Historic central districts are car depended with large parking lots and roads for cars to travel quickly from A to B. Historic districts are not built for cars and this results in dangerous situations, as research by the TU Delft shows that chance collisions with serious injury is much higher in historic districts than in other cities (Delft, 2021). Public space in most historic central districts are not pleasant places to stay according to Laven. Public space is car orientated, lacks variation and eyes on the street which provides social safety (Jeroen Laven, 2017).

Finally, **climate change** is one of the main threats to vital historic districts. In recent years, the expansion of urban areas and the growth of urban populations have heightened the vulnerability of historic cities to various climate impacts, including heatwaves, flooding, and droughts. This is partly due to the decrease of green, water and the embedding of cars with large paved parking lots and roads over the last hundred years. Examples of extreme events like the 2002 flooding of the river Elbe , The 2011 urban drainage flood in Copenhagen and the floods of the Geul in Valkenburg, highlight the cities’ susceptibility to severe weather conditions. Looking ahead, the ongoing expansion of urban areas, population growth and concentration in cities, along with an aging population, will further increase the vulnerability of cities to the effects of climate change (EU, 2023).

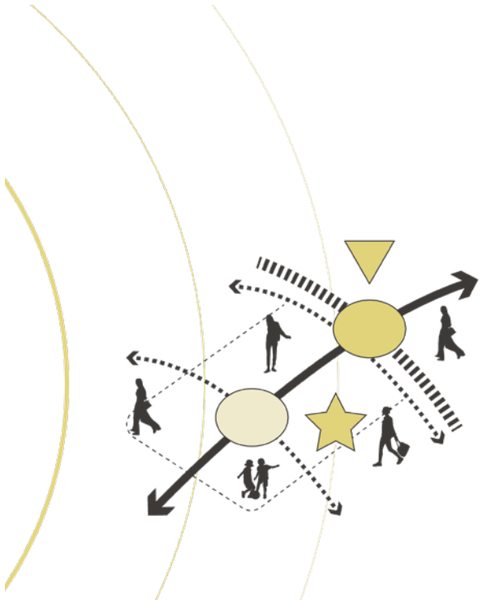
In conclusion, the biggest threats to vital urban environments are a malfunctioning fabric, rapid urbanization leading to exclusion and homogeneity of cities, congestion and segregation and finally global warming. These threats should be top priority to create vital future proof historic central districts.

2.1.5 How to solve the biggest threats to historic central districts with urban transformation?

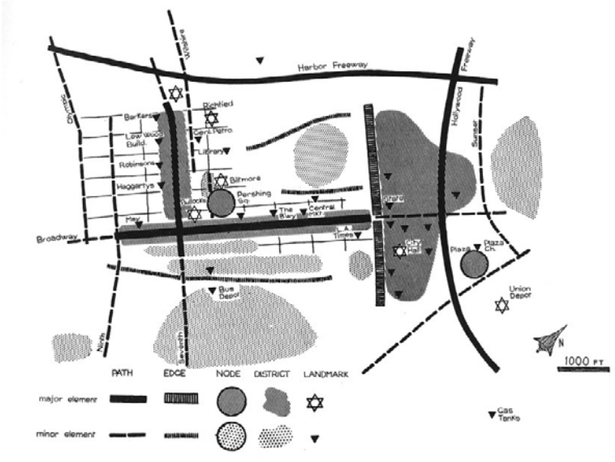
To ensure a vital future-proof historic central district, the main threats need to be dealt with. The upcoming text will provide answers on these biggest threats.

1. Permeable interconnected and legible urban fabric as its foundation: ***a diversity of interconnected lines, nodes, edges, landmarks and sightlines.***

According to Elma van Beek in her book Living cities to live (Beek, 2011), the urban fabric is a system just like a human body. When networks are not connected or legible, the flow of nutrients



HEAL AND LEGIBILITIZE FABRIC



The image of the city (Lynch, 1960)

(people in cities) isn't working properly. Secondary networks are just as important to connect and stimulate as primary networks, to transport a larger variety of people, creating eventually a more fordable urban environment. Elma van Beek states that a proper working system like that of a historic central district, should have good communication with its surrounding systems (surrounding neighbourhoods). This communication is done through interactive elements towards surrounding systems such as gates, bridges, connective networks and landmarks. Finally, a properly working system as the historic central district should be, has a functioning shell, to distinct itself from surrounding subsystems.
The networks of the city will be used by people only properly when the legibility is on a high level according to Kevin Lynch (1960) in his book 'The image of the city'. A legible city, Lynch argued, is one that utilised patterns of recognisable symbols, those that are at once easily identifiable and grouped logically. Lynch defined the elements that make up these symbols as paths, edges, districts, nodes and landmarks. In relation to this theory, In conclusion, to create a vital future proof historic central district, the system of the district should work properly to be fordable and legible. Networks need to be healed and connected, a variety of different categories of networks should connect the city, providing the wishes and needs larger variety of people and creating a more fordable environment. The system of the historic central district should have interactive elements through surrounding neighbourhoods such as gates and bridges. And finally, the fabric of the city should be legible, by using elements defined by Kevin Lynch (Lynch, 1960) such as paths, edges, districts, nodes and landmarks.

2. Increase diversity: ***Building merchant blocks, living locally***

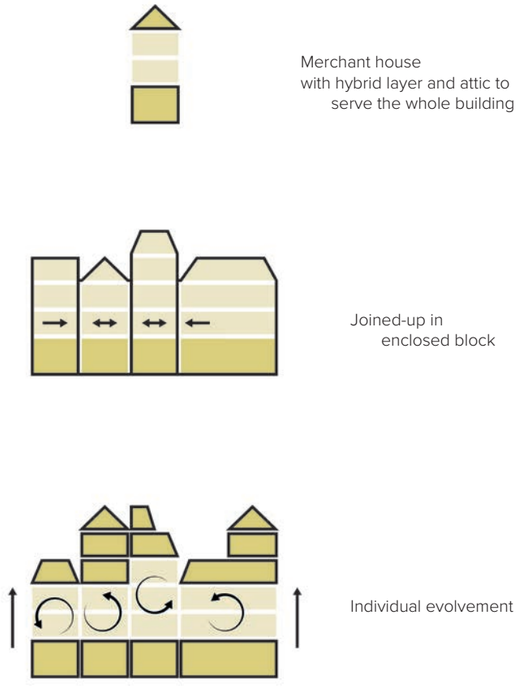
The solution to the rapid urbanization and exclusion lays in building enclosed hybrid blocks. Jane Jacobs (1961) called for densification in short blocks with a clear demarcation between public and private. This way no isolating effect is created, and people get concentrated at the public space. David Sim emphasizes building in blocks and says that enclosed blocks with independent, joined-up, and layered buildings can accommodate density and a diversity of uses while maintaining the human scale. He says: "This pattern can be repeated over and over again to allow cities to grow, adapt, and change over time. It is the robustness of the urban framework of blocks that makes for resilience, accommodating the larger components of public life-department stores and supermarkets, schools and offices, institutions and sports facilities-alongside the small scale of private life with its homes and gardens, workshops and studios" (Sim, 2019).

The short blocks can be scaled up and combined, making this typology to be the solution to the rapid urbanization and to create vital historic central districts (Sim, 2019).
In the book Hybrid city hybrid factory, Rappaport sees not only enclosed building blocks as the solution to the rapid urbanization and the homogeneity of the city, but specifically hybrid blocks. Rappaport (2022) argues that a vital city is a hybrid city that encompasses a diverse range of functions. To achieve this diversity, she proposes hybrid buildings as the solution. Hybrid buildings are a mix of different programs at the building scale, resulting in new hybrids that are grafted and morphed into a new holism.
Hans de Boer (2019) emphasizes these hybrid buildings blocks and calls for hybrid buildings which he refers to as merchant houses. He states: "The merchant house is a strong element for the construction of liveable streets. They include room to work on the ground floor, places to dwell on the floors above and attics that are used in the interest of the whole building, for example for energy or food production" (Boer, 2019).

As architect Bernard Tschumi asserts: "the morphology of a city is a complex blend of physical, ephemeral, human, and organic elements" (Tschumi, 2022). Tschumi argues against artificial separations between singular uses, which result in sterile and isolated spaces. He highlights the importance of randomness, interstitial spaces, nooks, crannies, and informal textures in attracting and inspiring people. Tschumi suggests that places have the "potential to generate the condition for events to take place, and the events create the conditions for spaces" (Tschumi, 2022). One of these events is the making of things. Therefore, if all uses, especially workspaces, are accessible and interwoven rather than distant and sequestered, a reintegration and understanding of their place in the city can be achieved.

Rappaport envisions a factory hosting smaller, cleaner, quieter, non-polluting production, and advanced technologies combined with community uses and activities, including housing, healthcare facilities, museums, parks, public spaces, and social services. She suggests that these innovative hybrids can be seamlessly integrated with the urban fabric (Rappaport, 2022).

According to the authors of the book neighbourhoods for the future (Maarten Hajer, 2020), The best urban blocks are those where people share some sort of ownership over the public



Enclosed merchant housing block

domain. Hajer states: “Cities often have a ‘parochial’ collective space; this is not entirely public, and not entirely private either, but it allows for safe encounters of a different kind” (Maarten Hajer, 2020). The author states that part of creating vital well functioning neighbourhoods is placemaking aimed at precisely creating such nodes of collective space in a building block. To avoid ‘wrong’ shops or services taking over these collective and hybrid spaces, particular legal provisions such as associates, cooperatives, or clubs may enable creating and upkeeping a well-functioning public domain. If real estate for retail is put in an association or cooperative, this can be a way to avoid some of the negative effects of gentrification, as certain functions are driven out because the rets become unaffordable, according to the author (Maarten Hajer, 2020).

In conclusion, the solution to the rapid urbanization and loss of heterogeneity of historic central districts can be solved by densifying in hybrid blocks, with independent, joined-up, and layered buildings that can accommodate density and a diversity of uses while maintaining the human scale. Blocks with ‘merchant houses’ as de Boer would call it. To accommodate density and diversity, hybrid spaces are needed, that can host a large variety of functions like a building block with a combination of factories, housing, healthcare, education, museums, parks, public spaces, and social services. To make the blocks work best and to avoid gentrification, the blocks will have a ‘parochial’ collective space and will have collective ownership and are built as a collective. This typology of hybrid blocks brings a solution to the rapid urbanization and loss of diversity of historic central districts.

3. Mobility transition: ***by decelerate movement, relocating cars and do placemaking to create a place to stay***

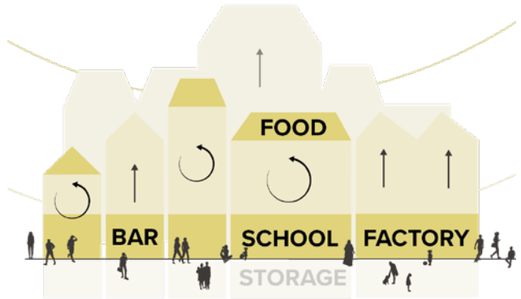
The Threat congestion and segregation of the historic fabric can be solved by decelerating movement. As David Sim mentions in his book Soft city: “Urban mobility requires a holistic approach, accommodating a wide range of mobility options in the same space. At the same time, it is about considering how the smallest and shortest trips connect and feed into the larger and longer ones. Accommodating a diversity of mobility means making more options available, making it easier to get about in different circumstances and spontaneously change plans, making hybrid or multi-modal trips possible (Sim, 2019)”.

According to Sim, despite the availability of the internet and other means of communication, innovation thrives best when people are in close proximity to one another, facilitating the exchange of ideas. Consequently, urban environments must be designed as pleasant and inviting spaces that encourage people to stay and interact. The quality of these places is crucial in fostering a vibrant and vital urban atmosphere.

Decelerating movement is all about walking, meeting, experiencing and no longer about making things as easy as possible with the car as the City at eye level calls for action on human centered mobility (Jeroen Laven, 2017). Research by the Brookings institute agues that we should no longer think in terms kilometres but in terms of steps. The benefit from designing the human dimension in mobility is according to David Sim that walkability can make for sociability. Sim states: “we need to recognize that walkability is in every single step and every built relationship, in every building where people live and work, and even in the smallest spaces in which people move” (Sim, 2019).

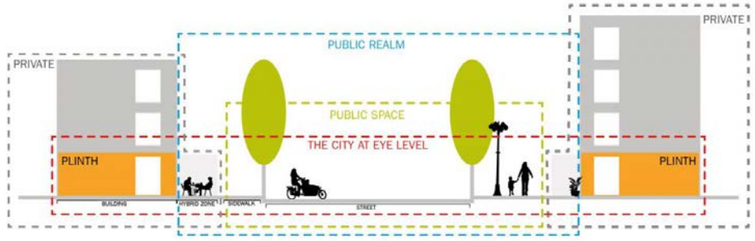
Similar to walking, cycling is non-polluting and healthy, as well as an extremely convenient and sometimes pleasurable way to get around. Like pedestrians, cyclists come in many forms and have different abilities and behaviours. All the different users (e bikes, e scooters, recreational cyclists, commuting cyclists, etc.) need to be accommodated into the street. The solution is to create dedicated cycle lanes and well organized parking for the soft mobility according to Sim.

Street based public transport is also a solution for human centered mobility, resulting in people interacting with the environment. People have more opportunities to experience and connect with



DENSIFY IN MERCHANT BLOCKS, LIVE LOCALLY

DECELERATE MOVEMENT, CREATING A PLACE TO STAY

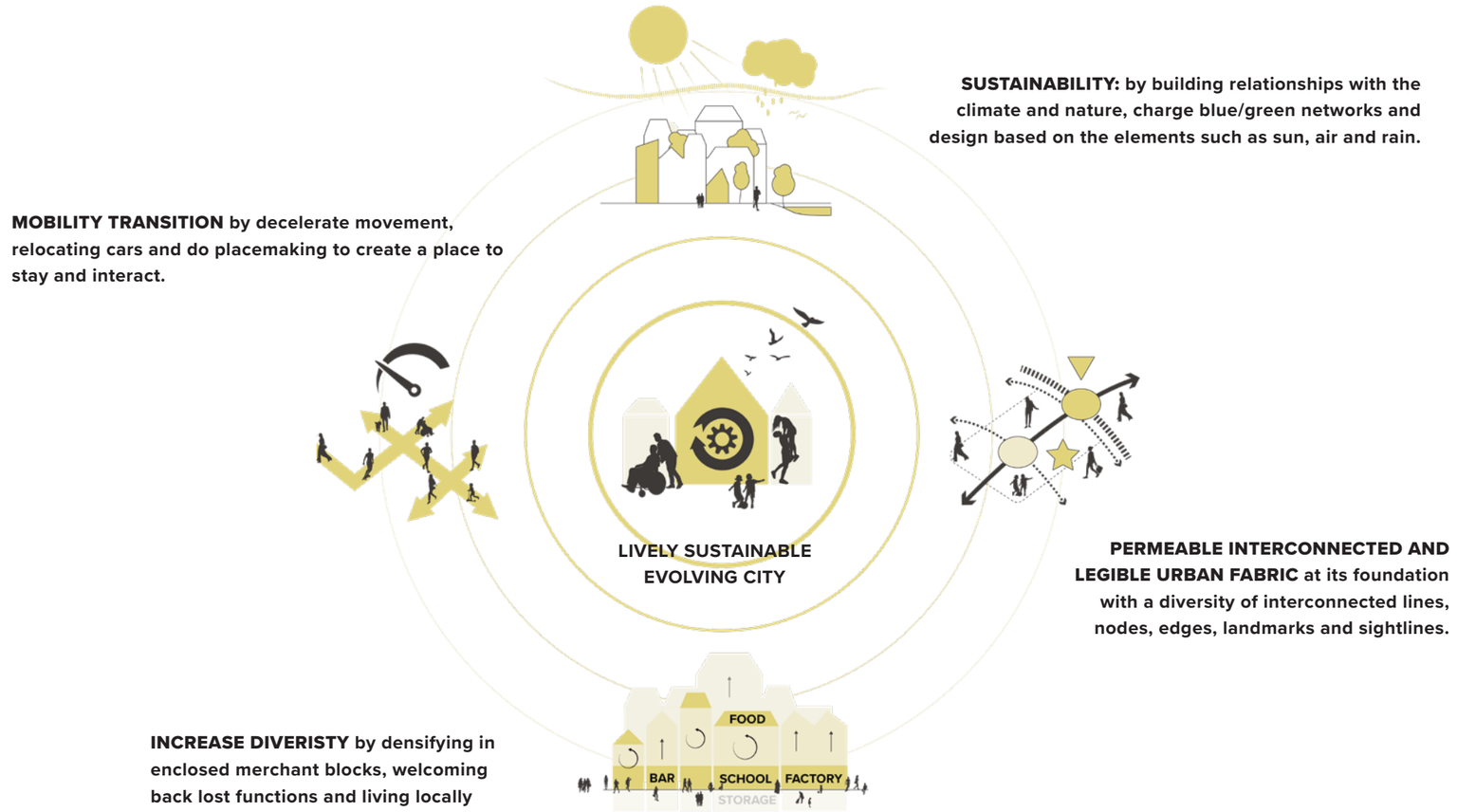


(Jeroen Laven, 2017)

their surroundings when moving along as part of the street. Even inside a tram or a bus, you are moving at street-level, frequently stopping, seeing what's around you and getting a sense of actual distance. Street based public transport makes getting about easier and better connects you to a place. People can more easily orient since they can always see where they are in relation to other people and activities, the things, and places that people know and use. Public transport should be part of the city and should not be hidden. Best is to have public transport literally a few steps from a shopping trip or church service, a dentist appointment, or a visit to the bank. With for example access to different modes of transportation under a distinct glazed roof, which also gives weather protection without shutting out daylight or views to the surroundings (Sim, 2019).

By decelerating movement, the historic central district will embrace the informal according to The city at eye level. The spaces between the buildings and the public space called 'hybrid zones' in the book take account of 80% of informal contact between neighbours.
Decelerating movement will work at its best according to The city at eye level (2017) when public space provides safety with sufficient number of people keeping an eye on things. Furthermore, variation from eye level with sufficient doors, open plinths, variation in facades, etc. and it should be an interesting place to stay with comfortable seating to watch green, architecture and most importantly people (Jeroen Laven, 2017).

In conclusion, to create a vital and future proof historic central district, the focus should be to decelerate movement in the district. No longer viewing transportation as something to travel from 'A' to 'B'. As David Sim mentions: "The time spent in between buildings in active mobility exposes people to other people in everyday encounters, simply seeing other people and noting how they behave, sitting next to strangers on the bus, overhearing conversations about unfamiliar topics, seeing the same people again and again, noddling to say hello and slowly developing broader acquaintances. These countless experiences and unexpected social opportunities, the frequent exposure to



difference, the serendipitous and spontaneous can make daily life more interesting. More importantly, the experiences can help build understanding and tolerance between different people and contribute to a more cohesive society" (Sim, 2019). This in combination with a 'pleasant place' as the City at eye level names it with eyes on the street, hybrid spaces, variation at eye level and places to stay (Jeroen Laven, 2017), are key ingredients for vital historic central districts.

4. SUSTAINABILITY: ***by building relationships with the climate and nature, charge blue/green networks and design based on the elements***

The third and final principle for vital cities is building relationships with the weather. According to Sim, living with the weather is about recognizing how the design of the built environment can influence our behaviour, making it easy to move between inside and out, and making it comfortable to spend more time indoors. At the same time, by taking small steps, people can move more toward living in harmony with the forces of nature in a time of climate change.
By building enclosed spaces as courtyards and well as in consistent lower building heights, protection is created from wind while enabling the sun to penetrate. This together with asymmetrical layout of building blocks, sloping roofs and smaller volumes will help to generate a pleasant local microclimate according to Sim (2019).
The book future cities recommend to use as little pavement as possible and to make space to let the water fluctuate in the city: "Use every drop of water" (Boer, 2019) to create resilient historic central districts. Stack green ground levels for water buffering,

evaporation and a healthy environment. Make sure to develop nature in urban areas like forestation and peat developments, Boer (2019) continues.
David Sim states that every city comes with its own set of climate challenges. But weather does not only have to be something that we endure. It is also possible to design outside conditions through designs to create better, simple details-such as the shape and massing of buildings and the spaces in between-that have the potential to create more comfortable microclimates. By letting the sun in, and sometimes keeping it out, by sheltering from the wind and rain, we have the potential to make our own weather, or at least to extend the time we can spend outdoors. Low-tech, Low-cost interventions such as shutters and stairs, balconies and arcades can bring people out of their normal indoor comfort zones into a closer, more satisfying relationship with the natural and social environments outside.
a future proof vital historic central district is a district that has a pleasant microclimate which is resilient to climate change. Such as district is a place where its users can live with the weather and in harmony with nature. A historic central district that has a relationship with the natural and social environment outside.

2.1.6 How can historic central districts be transormed into vital, future-proof urban environments?

1. Permeable interconnected and legible urban fabric as its foundation: *a diversity of interconnected lines, nodes, edges, landmarks and sightlines;*

2. Increase diversity: *Building enclosed merchant blocks, living locally;*

3. Mobility transition: *Decelerate movement, relocating cars and do placemaking to create a place to stay;*

4. SUSTAINABILITY: *By building relationships with the climate and nature, charge blue/green networks and design based on the elements such as air, sun and rain.*

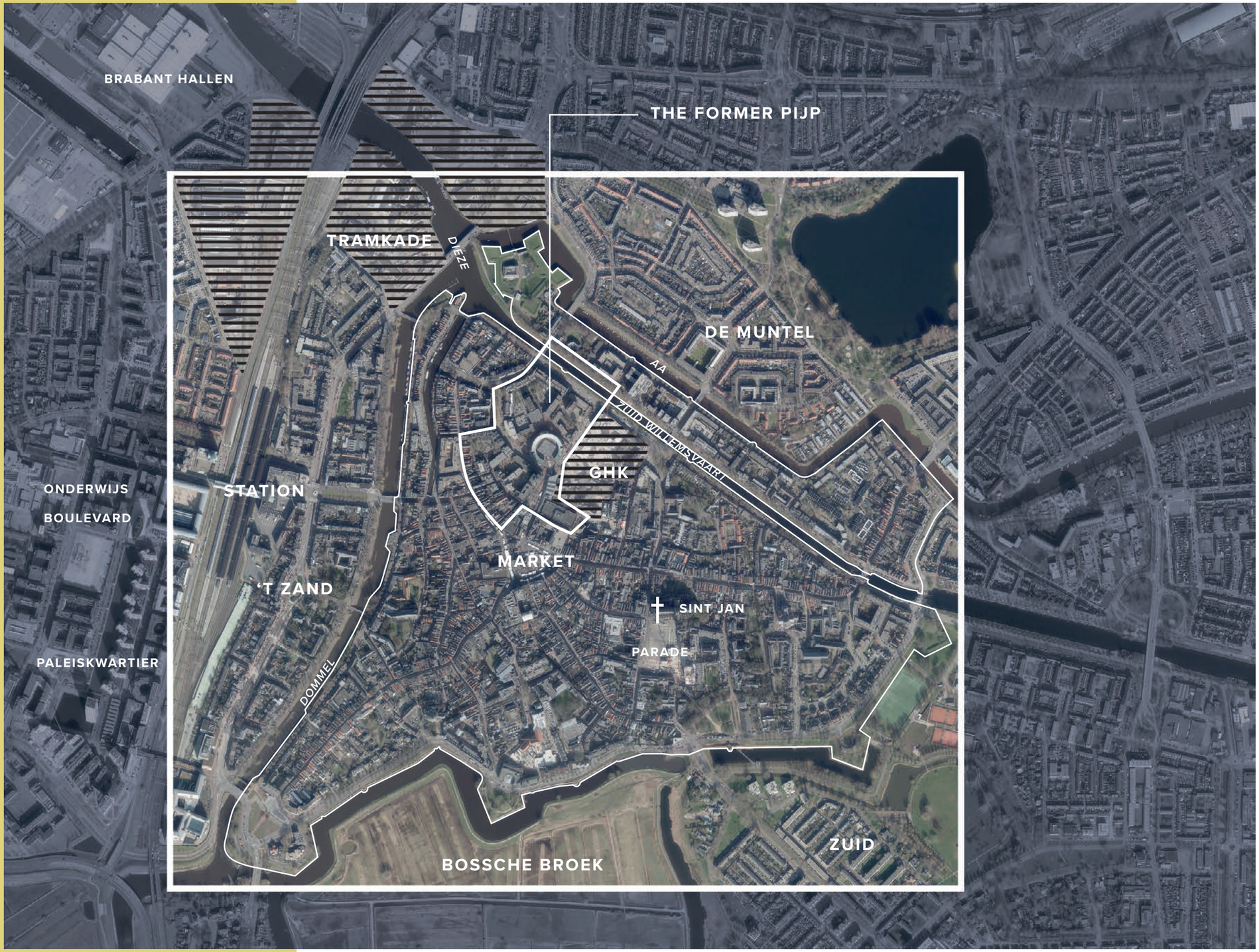
3. METHODOLOGY

The research in the next chapter consists out of an urban analysis of ‘s Hertogenbosch, and in specific the neighbourhood of the old Pijp. The urban research looks for strengths, weaknesses, threats, and opportunities based on the theory about how to create vital future proof historic central districts. The analysis will consist out of a historic, morphologic, fabric, mobility, functional, water/green, climate and a legibility analysis.

Next to the urban analysis, interviews and work sessions with experts are part of the research, drawing conclusions with interviews with people from different work fields such as the municipality, the province of North Brabant, Waterschap and a project developer.

It is important to note that this research is conducted independently and is not influenced by any party. The urban analysis, observational research, and interviews serve to validate the theoretical framework and provide practical tools for designing the future of historic central districts. The methodology employed in this research aligns with the approaches endorsed by esteemed architects and urbanists like Kevin Lynch (Lynch, 1960), further establishing its validity and credibility.

4. URBAN ANALYSIS



CASE ‘s HERTOGENBOSCH - THE PIJP

PROJECT AREA: ‘THE PIJP’

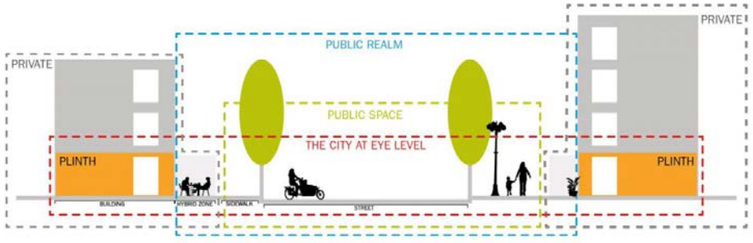
In the northeastern part of ‘s Hertogenbosch’s historic central district, there is a specific location known as ‘The Pijp’ by the local residents. This area consists of large apartment blocks built after the Second World War, a shopping street, and is notable for the Arena, a shopping mall designed in the shape of an Italian Arena, built in the 1990s. Towards the east of the project area, you’ll find the former hospital site, which is currently undergoing transformation into the Gasthuiskwartier, a residential neighborhood development. Some parts of the old hospital building, along with the Maria pavilion, are still preserved. The outer edge of the district is characterized by a canal named the Zuid Willemsvaart. While this canal is no longer used for shipping, it remains an important waterway that provides a valuable blue-green connection throughout the city.

FIRST OBSERVATIONS - THE PIJP

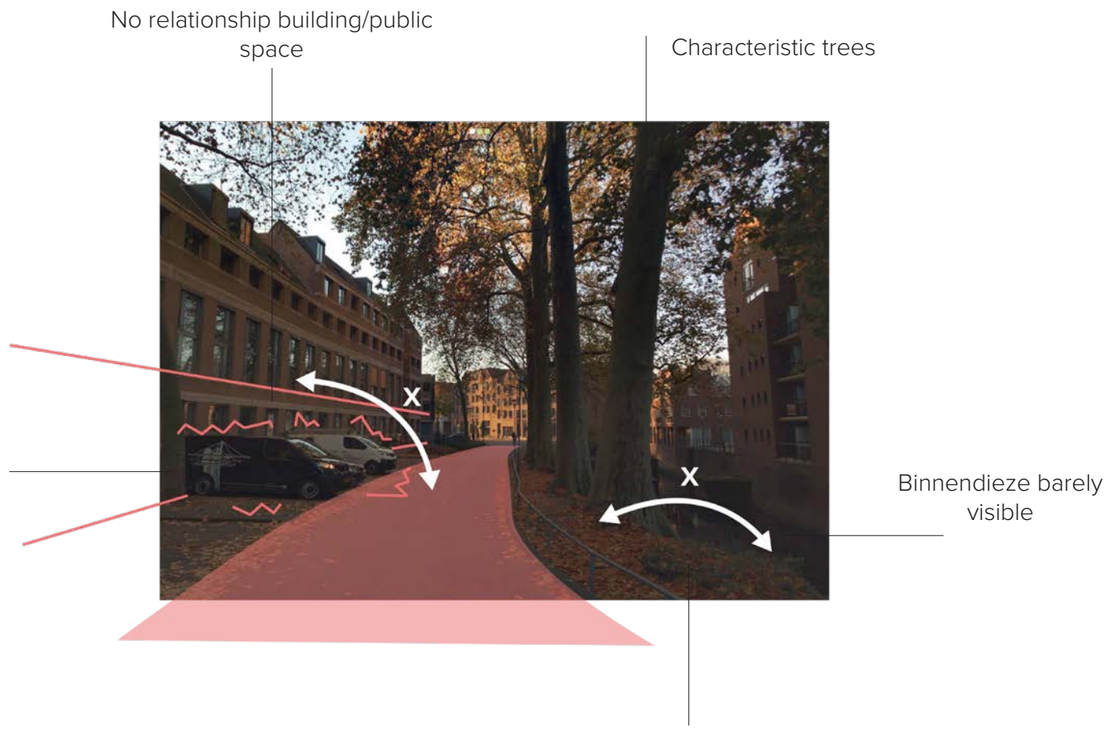
CONCLUSION CITY AT EYE LEVEL - THE PIJP

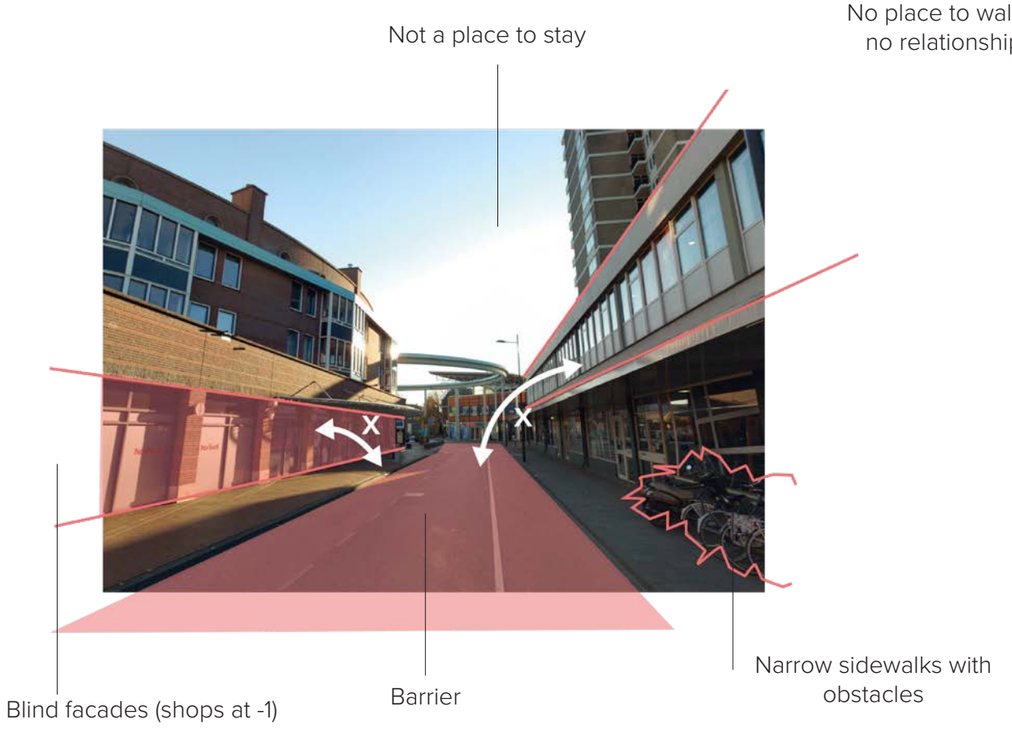
The city at eye level is the essence of how people perceive and engage with urban spaces. To ensure the creation of enjoyable environments, the primary emphasis should be on establishing safe places with active surveillance from nearby inhabitants. Additionally, incorporating variation is essential, encompassing diverse elements such as public spaces, architectural styles, and more. Moreover, it is crucial to provide inviting spaces for people to stay, offering amenities such as benches, shade, and interesting architectural features, along with opportunities for social interaction.

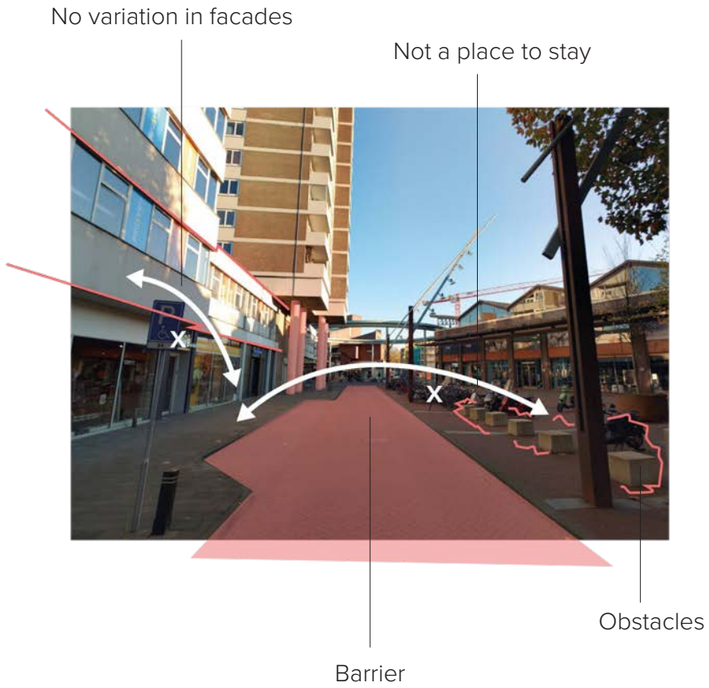
This analysis will focus on the neighborhood of the Pijp, applying the theory of the city at eye level to evaluate its urban characteristics and dynamics.

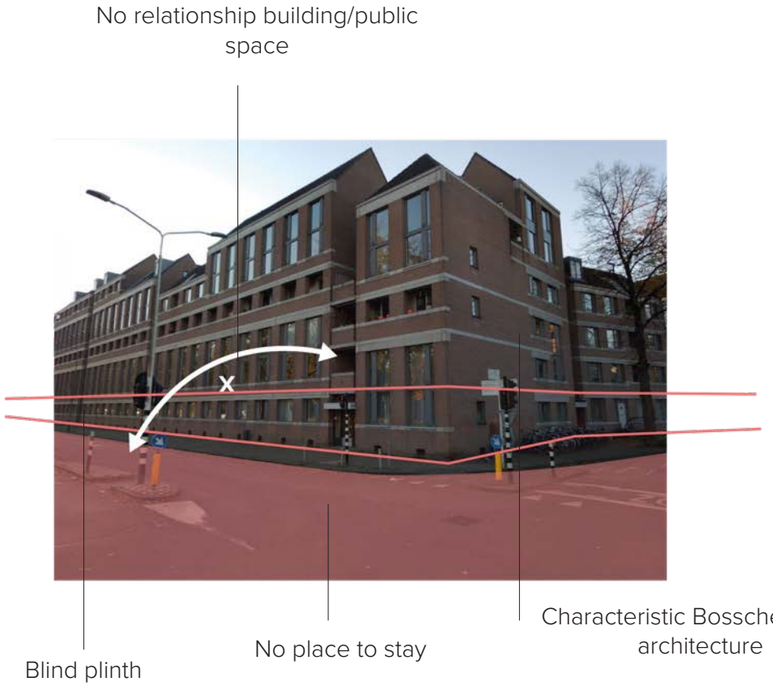


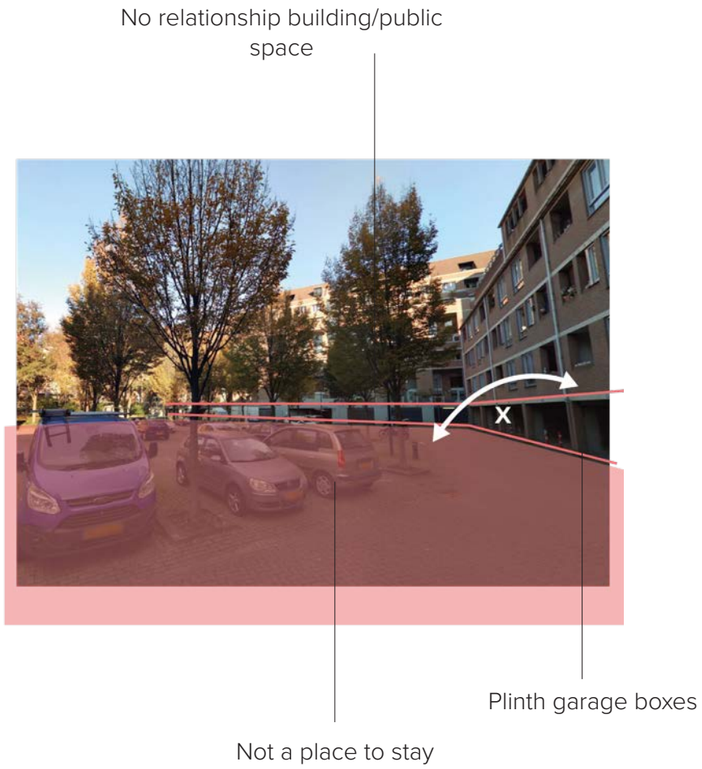
(Jeroen Laven, 2017)

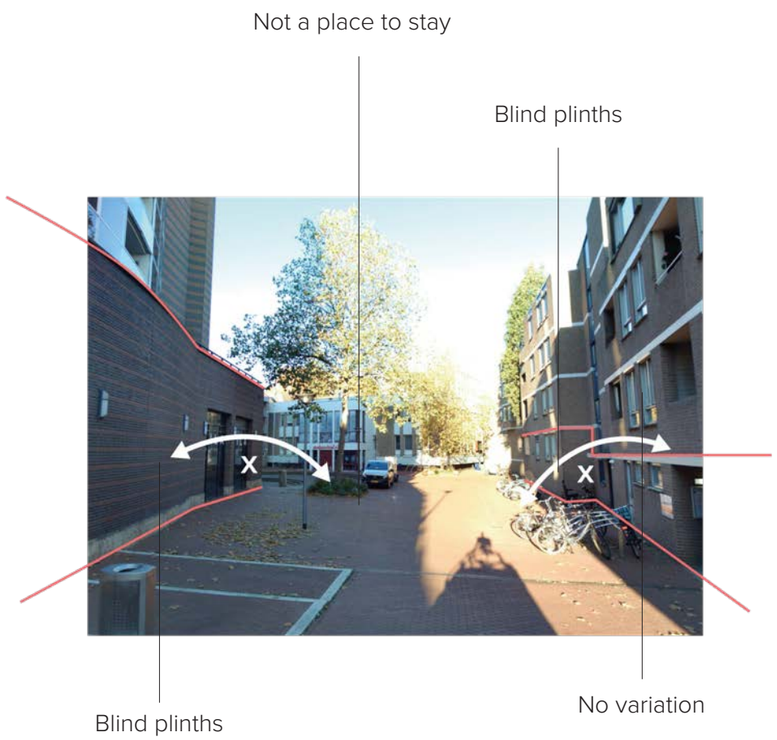












In summary, the concept of the city at eye level is not effectively implemented in the Pijp neighborhood. There is a lack of diversity in building facades and public spaces, which predominantly cater to car-centric environments. The existing public spaces do not provide a conducive environment for people to linger or engage with one another, and most importantly, the absence of people on the streets creates a sense of social insecurity. To address these issues, it is crucial to redesign the area by incorporating the principles of the city at eye level. This approach will help create a pleasant and inviting environment at street level, encouraging social interaction and enhancing the overall experience of the neighborhood.

HISTORY OF ‘s HERTOGENBOSCH

Besiegement of the city (‘s Hertogenbosch, 2020)

Lakenmarkt (Anonymous, ca. 1530, Het Noordbrabants Museum)

Central district ‘s Hertogenbosch (Brabants dagblad, 2020)

HISTORY OF ‘S HERTOGENBOSCH

In 1100, ‘s Hertogenbosch was founded as a fortress in a strategically important location. The fortress was built on a sand hill, surrounded by a forest and a swamp. Monasteries and churches were constructed near the fortress, but outside the city wall, much like the Sint Jan Cathedral.

During the 1300s, the city thrived through trade, prompting the expansion of the city walls towards the Aa and Dieze rivers. As a result, the monasteries and churches became part of the city. ‘s Hertogenbosch gained a reputation for its emphasis on education, flourishing art scene, and religious freedom, ultimately becoming one of the most significant cities in the region with a population of 25,000. However, during the 80-year war, the city was captured by Protestants, leading to a lengthy occupation that limited the freedom of its people.

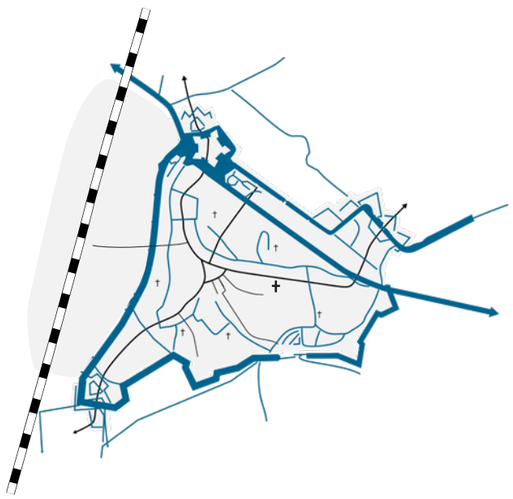
In the 1800s, after Napoleon freed ‘s Hertogenbosch from Protestant rule, the city began to flourish once again with restored religious freedom and the construction of the Zuidwillemsvaart canal for trade. This development stimulated the building of several warehouses and industrial harbor blocks. The fortifications of the city were strengthened with modern bastions, raveleinen, and glacis, providing the best protection of that time using water as a defense.

After the fortifications were dismantled in 1874, ‘s Hertogenbosch experienced rapid expansion. New industries were established outside the city, allowing for growth and development. Schools, offices, and housing left the overcrowded and unsanitary city center, which had been plagued by disease. The advent of automobiles transformed gardens and squares into parking lots, and even essential services like hospitals relocated. However, in the 1990s, the city underwent a transformation into a leisure-focused destination, revitalizing the city with shops and restaurants. ‘s Hertogenbosch once again became an appealing place to live, leading to a trend of reurbanization that continues to this day.

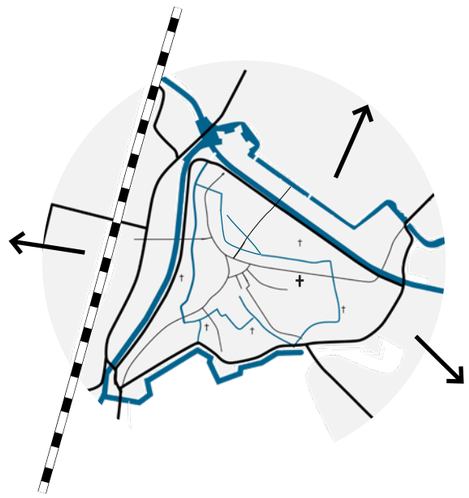
's Hertogenbosch 1100

Afbeelding 02: 's Hertogenbosch 1500

's Hertogenbosch 1800



's Hertogenbosch 1900



's Hertogenbosch 1960

s Hertogenbosch current

HISTORIC DEVELOPMENT

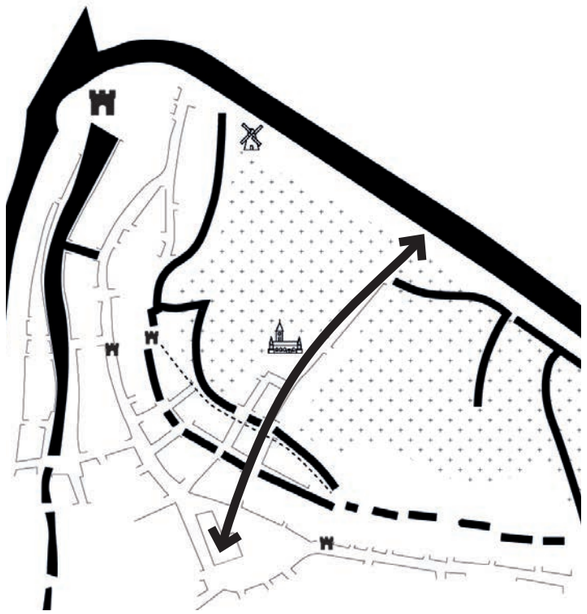
Originally, the city began as a strategic fortress situated on a hill within a swampy area prone to frequent flooding. The city's layout consisted of a central marketplace, with the fortress (known as the Moriaan) connected to the city gates by several ribbons of roads.

Surrounding the city, numerous monasteries and churches enjoyed the protection of the fortress. In 1385, as the city walls were expanded to accommodate the growing number of inhabitants and traders, the monasteries and churches, including the iconic Sint Jan, became integrated into the fabric of the city. With each subsequent expansion, the ribbons of roads expanded accordingly, forming new defensive rings equipped with different types of walls and gates. The evolution of the city's defenses progressed from medieval stone walls and gates to more sophisticated fortifications such as glacis, ravelins, and bastions.

Due to the city's expansion into the surrounding swamp, the swamp itself became an integral part of 's Hertogenbosch's essence. Some of the waterways from the original swamp still exist today and are referred to as the 'Binnendieze'.

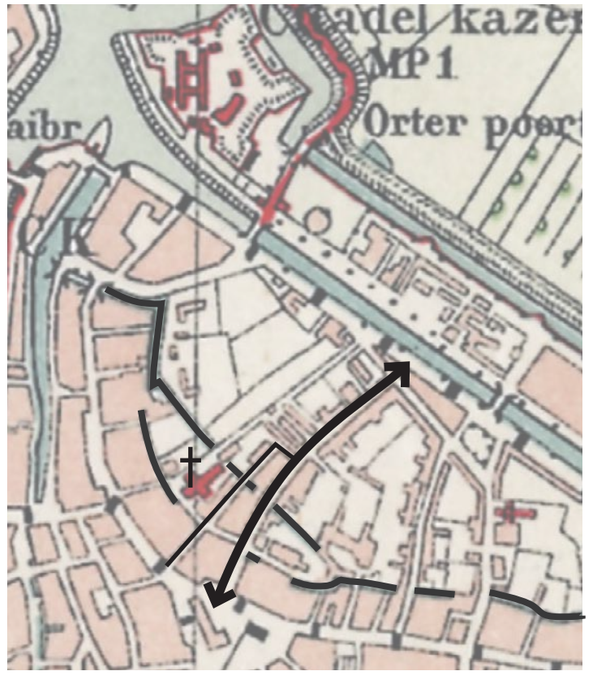
The distinctive character of 's Hertogenbosch lies in its clear layout, characterized by a central marketplace, ribbons extending from it to the outer walls, the presence of multiple defensive rings, the monasteries, and the 'Binnendieze'. These features are still visible today and contribute to the city's unique identity.

HISTORY OF THE PIJP

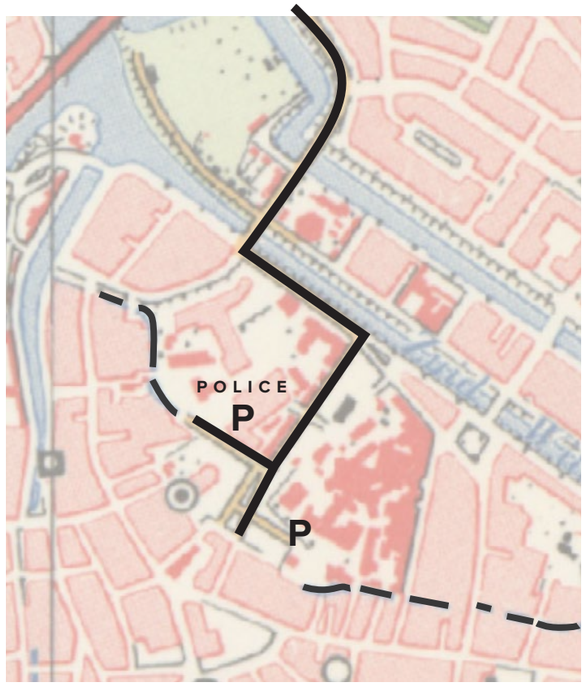


de Pijp 1500

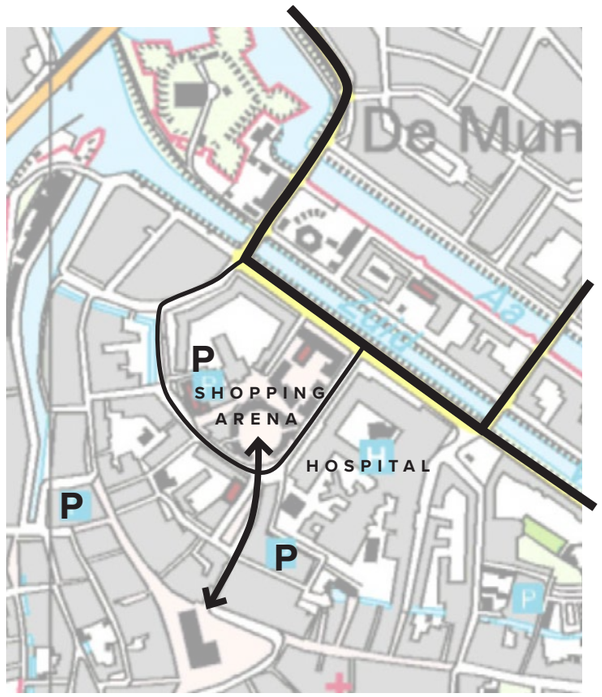
de Pijp 1900



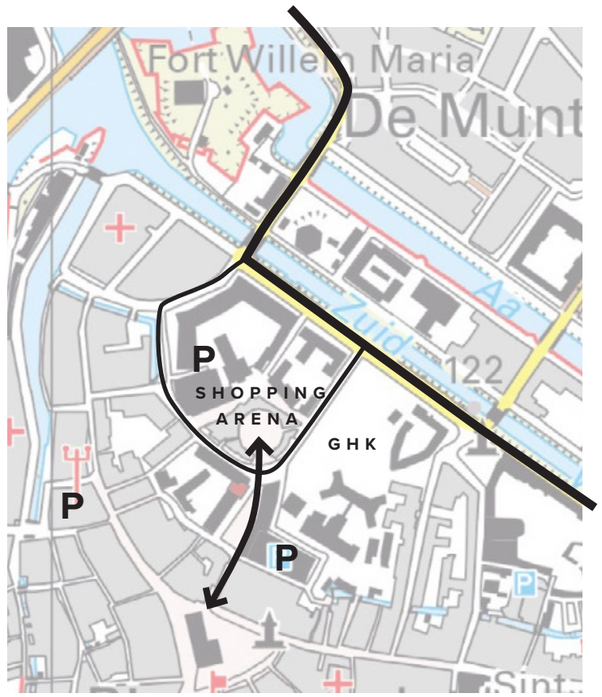
de Pijp 1950



de Pijp 1970



de Pijp 2000



de Pijp 2022

TRANSFORMATION OF THE PIJP

In the northern part of ‘s Hertogenbosch’s historic central district, lays the old neighborhood known as the Pijp. The layout of this neighborhood was quite straightforward, consisting of a main road called the Lange Tolbrugstraat and a secondary road called the Korte Tolbrugstraat. These roads crossed the Binnendieze, a series of waterways, multiple times and extended all the way to the river Aa.

Behind the buildings along these roads, there used to be an undevelopable swamp until 1960. On the western side of the main road, there was an important monastery, which later transformed into an army camp called Bloemenkamp. On the opposite side of the main road, there was a hospital until 2017.

Over time, the neighborhood underwent changes that affected its original characteristics of clear roads, water crossings, and distinctive buildings. These changes resulted in the dominance of car-oriented loops. In 1990, the Lange Tolbrugstraat was redirected to lead into the new shopping mall called the Arena, effectively shortening the road to one-third of its original length. The developments that took place in the last century transformed the neighborhood into a fabric that is almost unrecognizable and has lost its unique identity associated with ‘s Hertogenbosch.

de Pijp (Bossche encyclopedie)

Burgermeester Loeffplein 1970 (Bossche encyclopedie)

Loeffmanplein with in the background the Arena 2023

IDENTITY OF THE PIJP

The Pijp neighborhood underwent significant changes in both its physical appearance and identity. Originally, the Pijp was a neighborhood primarily inhabited by workers. It had narrow streets filled with workshops, schools, monasteries, and a hospital for the poor. Unfortunately, the area also gained a reputation for prostitution, which intensified when an army camp was established there.

By the 1960s, the buildings in the neighborhood had deteriorated, and the area had a negative image. As a result, the neighborhood underwent a complete transformation to create a modernist community centered around cars. This involved ‘sanitizing‘ old structures and replacing them with new ones, including a new hospital and social housing blocks like the Carolushof. The Binnendieze, a network of waterways that ran through the neighborhood, was drained to make way for new motorized connections. The Tolbrugstraat, which used to be a traditional road, was redesigned as a motorized thoroughfare.

In 1990, the area underwent further redevelopment with the construction of a new shopping mall called the Arena. This led to the transformation of the Tolbrugstraat into a primarily pedestrian square situated between the Market and the Arena. Until 2017, the neighborhood was also home to a large hospital called the Groot Zieken Gasthuis, which brought a significant number of people to the area during the day. However, the hospital was demolished in 2017 to make room for a new residential neighborhood known as the Gasthuiskwartier.

Today, the identity of the Pijp is still defined by its role as a square between the market and the Arena. However, the neighborhood has lost much of its historic fabric and distinctive character. Relics from the past can still be found, although they may be hidden behind buildings or underground.

In conclusion, the Pijp neighborhood has experienced a significant loss of its historic fabric and identity. It has transformed from a unique and characteristic neighborhood in ‘s Hertogenbosch into a less recognizable and generic leisure area.

MORPHOLOGY

Morphology

MORPHOLOGY

On the left side of this page is a visual representation of the morphological structure of the city of ‘s Hertogenbosch. The image shows the clear layout of the market and its surrounding ribbons, which still exist today. However, the fabric in the northern part of the city has been completely lost. In this area, the fabric is not compact and contains large open spaces that could be utilized for densifying the urban structure.

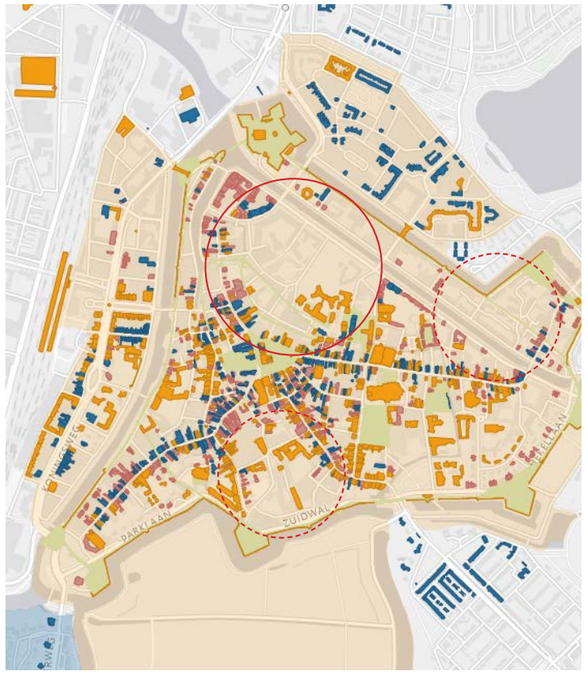
Moreover, the size of the buildings in the northern area does not harmonize with the rest of the historic fabric. While the historic fabric features some larger-scale structures like monasteries, they are surrounded by smaller-scale buildings.

In conclusion, the fabric in the northern part of the city, formerly known as the Pijp, does not align with the rest of the historic fabric. It exhibits large open spaces and buildings that are too large in scale. These open spaces could be effectively developed to increase the density of the historic central district.

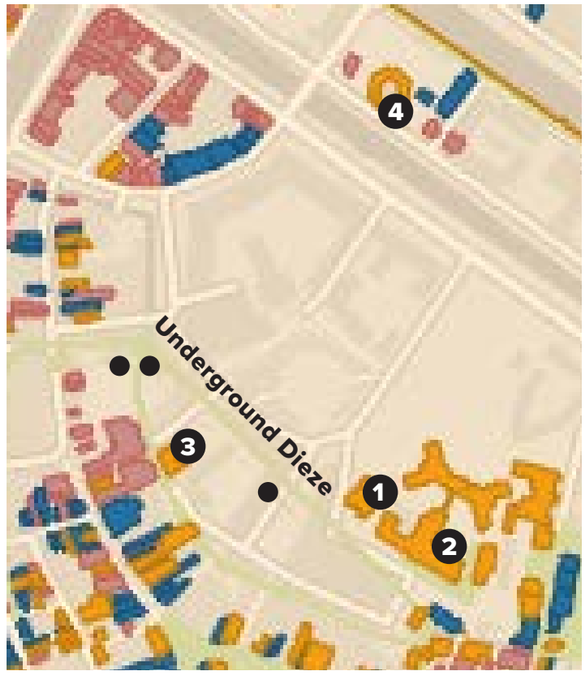
Buildings

Open space

HERITAGE



Heritage (municipality 's Hertogenbosch, 2023)



Heritage (municipality 's Hertogenbosch, 2023)

Maria paviljoen

Former hospital

Former rectory

Kruithuis

HERITAGE BUILDINGS

Regarding the city's overall heritage, it mainly centers around the markets and the old ribbons. However, there is a noticeable gap in the heritage map at the northern point where the Pijp experienced significant changes. This presents opportunities for large-scale redevelopment within the historic fabric of this area.

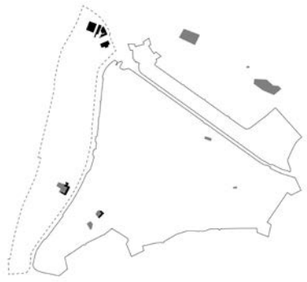
When zooming in on the northern point, several remaining heritage relics can still be observed. The Mariapavilion and the old chapel of the hospital are still standing, although they are currently concealed. Additionally, there is an old refuge home situated between the old Binnendieze routes, but it is surrounded by parking lots.

Across the Zuid Willemsvaart, one will find the Kruithuis, an old ammunition depot that used to be located on its own fortified work. Although it is presently separated from the neighborhood, ongoing renovations will transform it into an important attraction hotspot.

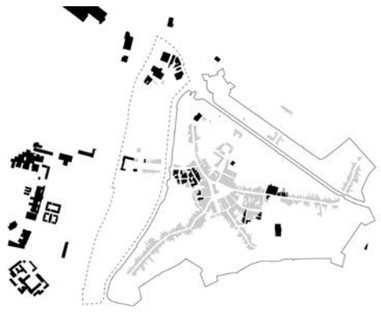
In conclusion, due to the limited number of heritage sites, the site in the northern point has the potential for significant densification. Remnants of the past, although hidden, can play a prominent role in shaping the neighborhood's image and hold substantial value for its revitalization.

FUNCTIONS

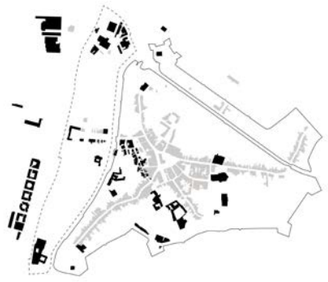
Function map: seggregated homogenous function clusers



0-15 years old



15-30 years old



30-50 years old

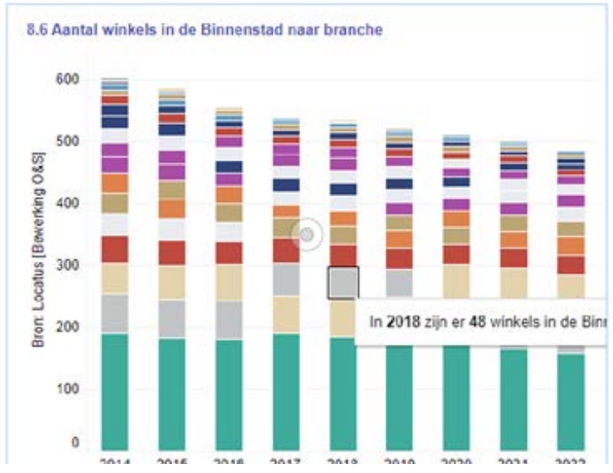
50+ years old

FUNCTIONS

Creating a lively and dynamic 24/7 district requires a diverse range of functions. As the number of shops decreases, there are opportunities to introduce new activities and functions to breathe life back into the area. The presence of 40,000 students offers a significant potential for revitalizing the historic district. Additionally, the disappearance of Tramkade, which was designed with the next generation in mind, presents another opportunity for rejuvenation. Leveraging this knowledge can contribute to the revival of the district. However, it is important to note that currently, the area has a MXI (Function Mix Index) of 75, indicating a poor balance of functions, which adversely affects the vibrancy of the place.

The function that's keeping the Pijp alive is the supermarket positioned in the Arena. This supermarket should be maintained for vitality of the area.

To ensure a thriving historic central district, it is essential to make space for incorporating new non-residential functions, such as establishing industries or educational facilities.



Decreasing amount of shops ('s Hertogenbosch, 2023)

MERCHANT BLOCK ‘s HERTOGENBOSCH

Merchant block birds eye view

Merchant block top view

Merchant block front view

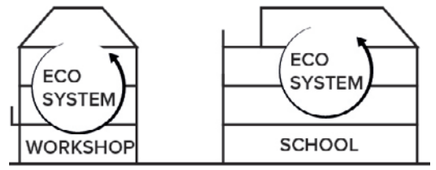
BLOCK TYPOLOGY ‘S HERTOGENBOSCH - BOSSCHE MERCHANT BUILDING BLOCK

According to David Sim’s book ‘Soft City’ (Sim, 2019), combining enclosed building blocks with a hybrid layer, as suggested by Nina Rappaport in her book ‘Hybrid City Hybrid Factory’ (Rappaport, 2022), offer a solution to the challenges posed by rapid urbanization. In the historic central district of ‘s Hertogenbosch, the building blocks consist of multiple merchant homes enclosed within a larger hybrid layer. This hybrid layer serves as the first layer, with residential spaces located on top. The merchant buildings have attics that can be utilized for various purposes such as energy or food production.

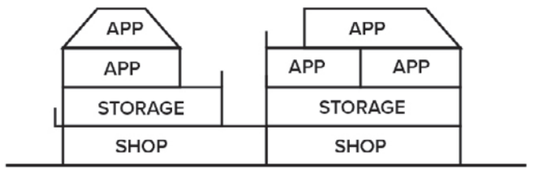
Over time, the blocks in ‘s Hertogenbosch have demonstrated their flexibility and adaptability due to the individuality and subdivision of buildings within each block. These building blocks are characterized by their small size, typically measuring around 40m x 70m, and are composed of multiple buildings with vertically articulated facades. The minimum height of the first floor is 4m, allowing for a variety of functions to be accommodated. The buildings also feature sloped roofs with attics. The overall height of the building block ranges from 12 to 18 meters.

In conclusion, the typology of enclosed blocks with separate merchant houses, each owned by different individuals, offers a solution to the challenges posed by rapid urbanization.

These building blocks in the historic central district of ‘s Hertogenbosch demonstrate their flexibility and adaptability while preserving the distinct characteristics of the city.



Old merchant blocks as ecosystems



Current state merchant blocks with seggregation

EVOLVING BLOCKS

BLOCK DEVELOPMENT

The evolution of historic building blocks provides valuable lessons for future urban densification. These blocks have developed from separate parcels of land with different owners, resulting in the creation of individual interconnected buildings instead of treating the entire block as a unified entity. This approach has made redevelopment easier and less complex. In the past, during medieval times, the ground floors of buildings were designed as shops or workshops, requiring taller ceilings with a minimum height of 4-4.5 meters. This design choice allows for the continued use of these spaces to accommodate present-day functions. Additionally, above these hybrid ground floor layers, gardens for residents or extra space for densification have been incorporated.

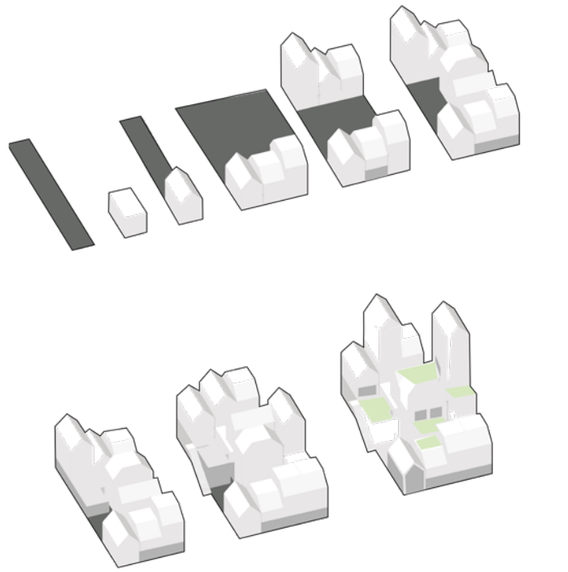
These building blocks have maintained their flexibility over time, with the parcels still being owned by multiple individuals. This makes it easier to further develop several buildings within the blocks. Looking ahead, these building blocks can be expanded even further by constructing taller individual buildings with gardens on top for the residents.

A modern example of this approach is the concept of building as a collective, known as “Baugruppe” in Germany. An instance of this can be found in Freiburg, Tuebingen, where self-built parcels were allocated. The rules required a minimum ground floor height of 4.5 meters to accommodate various functions. Competitions were organized, with individual lots being sold to the building groups with the best concepts. Cars were kept at the periphery of the development, following the example of Freiburg’s Vauban district. Zoning laws were bypassed, and instead, building groups were required to allocate the ground floor for non-residential use and focus development on the block periphery, leaving ample space for semi-private courtyards.

Tuebingen’s building groups resulted in costs that were 10-20% lower compared to typical developer models, while also fostering higher levels of diversity and ownership among younger families. The buildings were constructed collectively, resulting in an adaptive, flexible, high-density densification that is future-proof and promotes strong social cohesion. This kind of approach to development offers several benefits (Eliason, 2014).

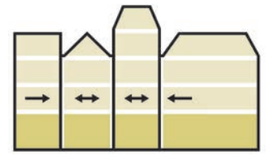
In conclusion, the evolution of building blocks can be attributed to individual parcels with separate ownership, giving rise to interconnected buildings. It is crucial to establish important development rules, such as ensuring that the ground floor is a hybrid space with a tall height of at least 4-4.5 meters to accommodate a variety of functions, and ensuring that the design of the buildings aligns with the characteristics of the historic central district. Developing in a collective way, following the example of Freiburg’s Vauban district, is a potential solution for the rapid urbanization and densification of the historic central districts.

(Eliason, Baugruppen: Proactive Jurisdictions, 2014)-



Afbeelding xx: voetnoot

Merchant house with ‘workspace’ and attic



Joined-up in enclosed block

Individual evolvement as ecosystems

Afbeelding xx: voetnoot

EXISTING BUILDINGS - THE PIJP

Carolushof inner court building in bad condition and should be demolished; X

Archive is big box with blind facades and should be removed for social safety of the location. X

Loef building is blocking prominent routes and sightlines. Building is in bad condition; X

Old hospital building ‘Zusterflat‘ is empty and should be redeveloped; X

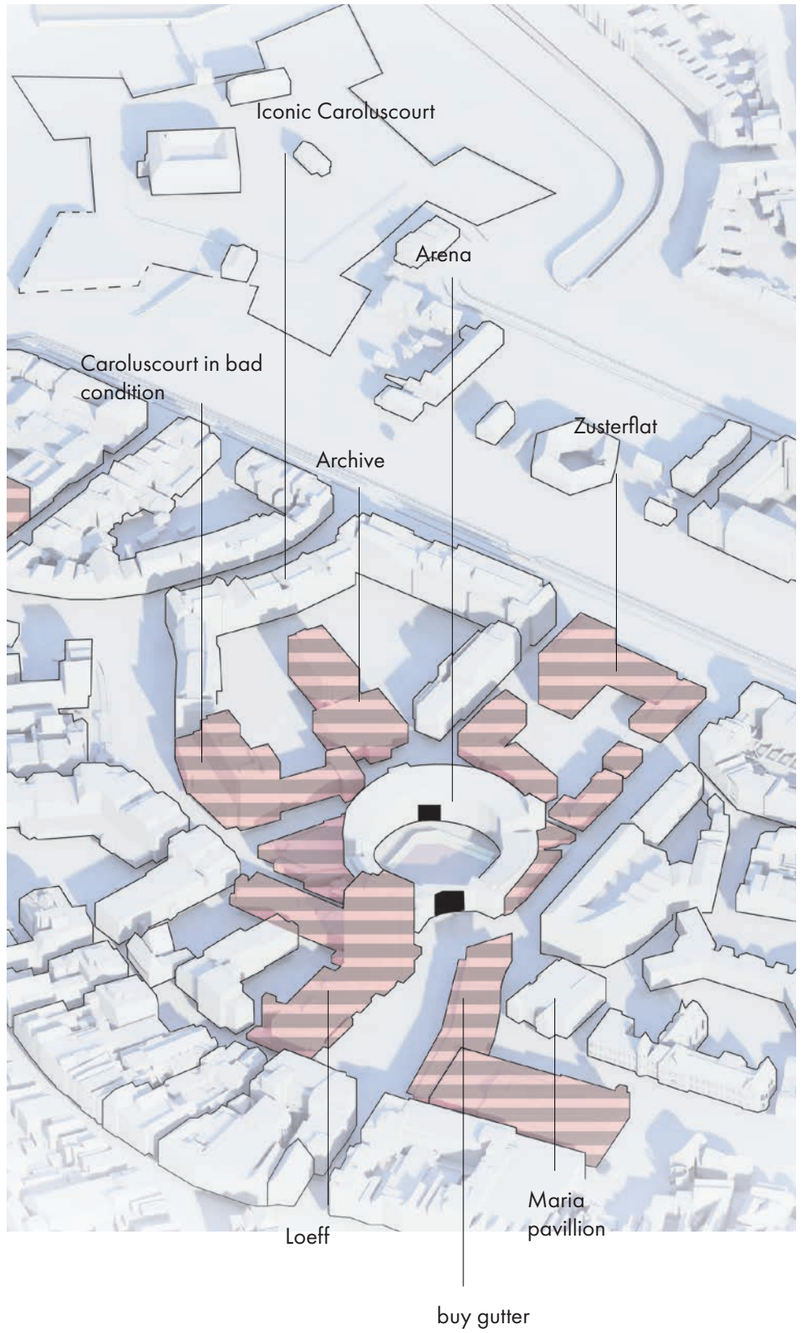
Buy gutter has a hard time to find shops. Is blocking sightlines and iconic buildings; X

Maria pavillion is the hidden pearl of the location. This building should get a more prominent role;

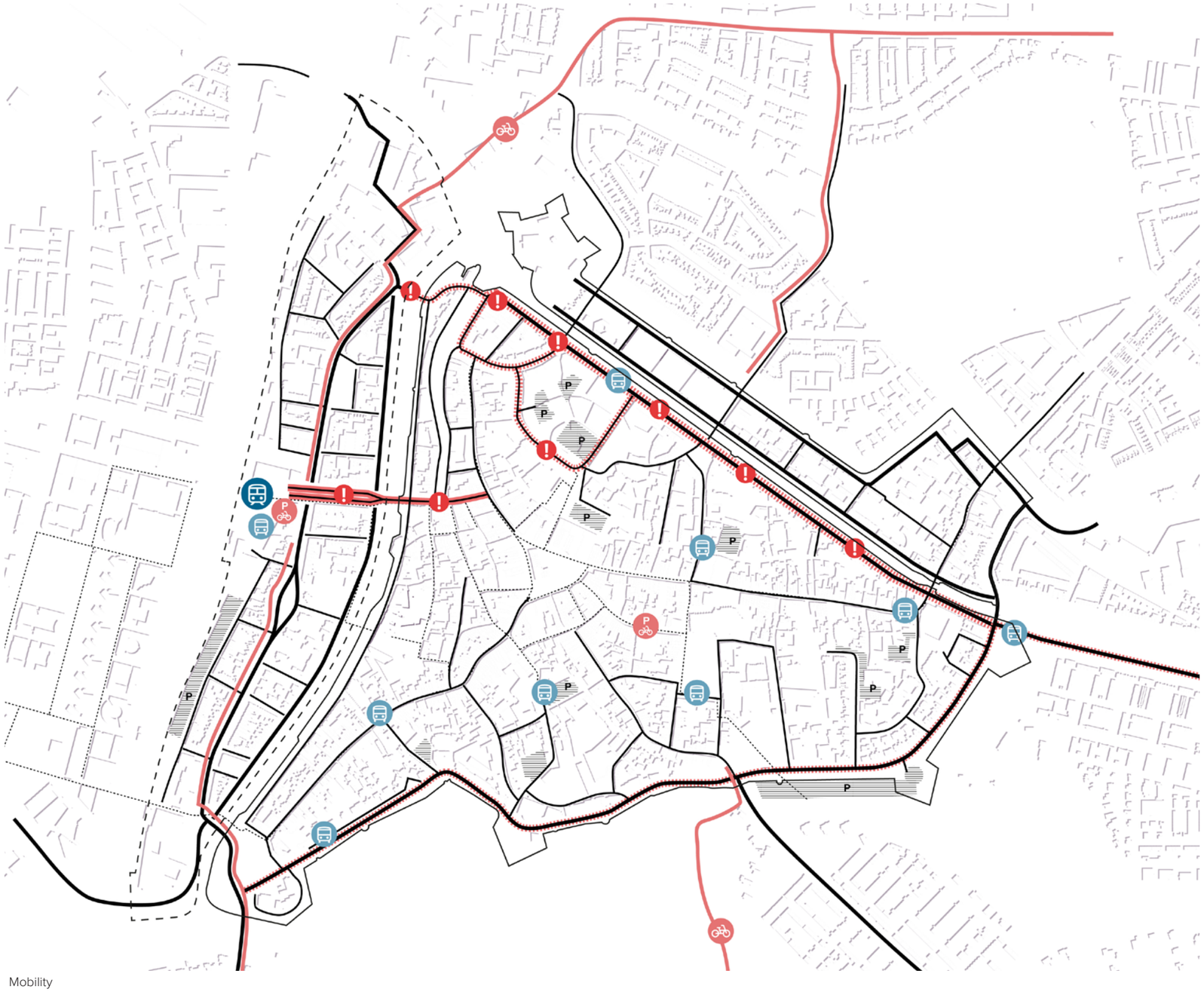
Carolushof as icon of Bossche school with a strong community. Building should be maintaned but redesigned to have a better relationship between public space and building (plinths);

Old hospital location hidden and should get a more prominent role in the area;

Arena as icon of the ‘leisure‘ decades. Building is an icon in the city and should be maintained. However some malfunctionings in the building should be fixed.



MOBILITY



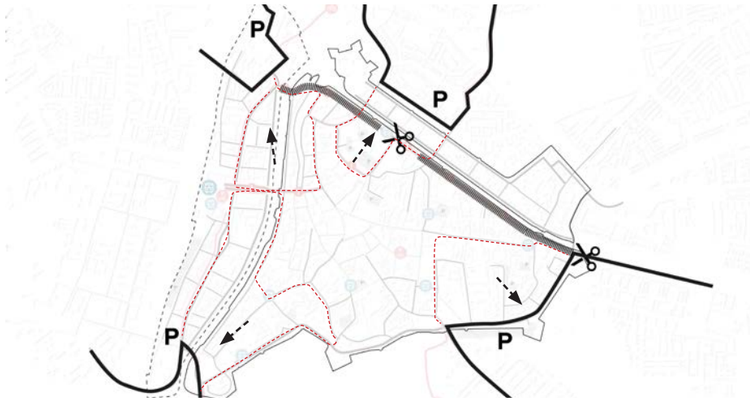
Mobility

MOBILITY ‘S HERTOGENBOSCH

The district benefits from good connectivity through public transportation, with a nearby train station and several bus stops. Additionally, the city is easily accessible by bicycle. However, one major problem is the lack of adequate bike parking facilities, which hinders the smooth functioning of the mobility system.

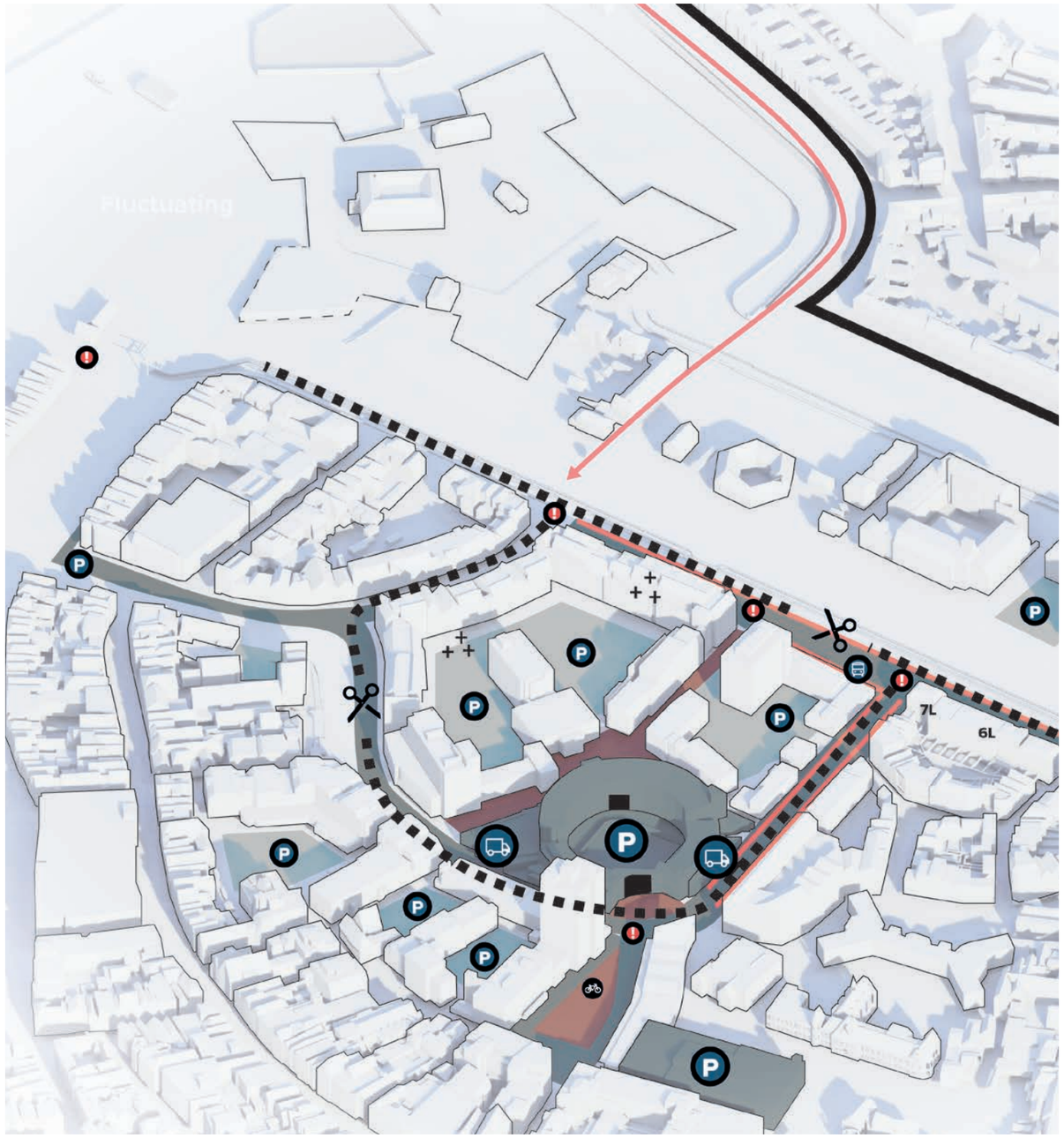
Despite the positive aspects, the presence of cars still holds significance in the city, even though it may not be necessary for its vibrancy. To address this, it is important to address the issue of dangerous roads that act as barriers. Downgrading these roads and transforming them into circulatory loops on the outskirts of the historic district, accompanied by a mobility hub, can help mitigate the problem.

In summary, while the historic central district of ‘s Hertogenbosch has good public transportation connections and bike accessibility, the absence of proper bike parking facilities and the reliance on cars pose challenges to the mobility system. To improve the situation, attention should be given to enhancing bike parking options and reconfiguring dangerous roads into circulatory loops with the inclusion of a mobility hub.



Pushing infrastructural car loops even further away from central district

MOBILITY IN THE PIJP



Burg. Loeffplein

Tolbrugstraat

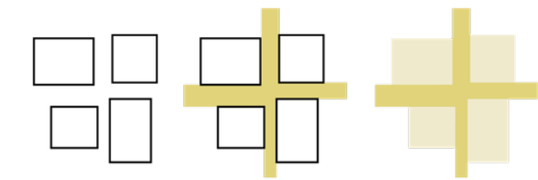
Zuid Willemsvaart

MOBILITY THE PIJP

In order to ensure a vibrant historic central district with a constant flow of people, it is essential to prioritize the walkability of the area. This involves having wide sidewalks without any obstacles, providing spaces for people to linger, and incorporating a diverse range of public spaces and buildings (Jeroen Laven, 2017).

When examining the project area from street level, the section between the Market and the Arena (1) is walkable and offers various points of interest, but it lacks spaces for people to stay and engage with. On the other hand, other locations within the district have roads that are dominated by cars, creating barriers and monofunctional islands rather than providing a cohesive and interactive environment. The sidewalks are often too narrow, lacking variation, and devoid of areas for people to rest or engage with the surroundings.

A suggested approach is to transform the public space by shifting the focus from car-dominated roads to creating an interconnected and interactive environment. This concept, referred to as a “zipper” in the book Future Cities by Boer (2019), emphasizes the creation of a connective carpet-like experience while decelarating mobility. This “carpet” should include areas for people to stay, interact, walk, and bike, while also incorporating a variety of visually engaging elements such as diverse facades and street features.



Seggregated monotonous blocks

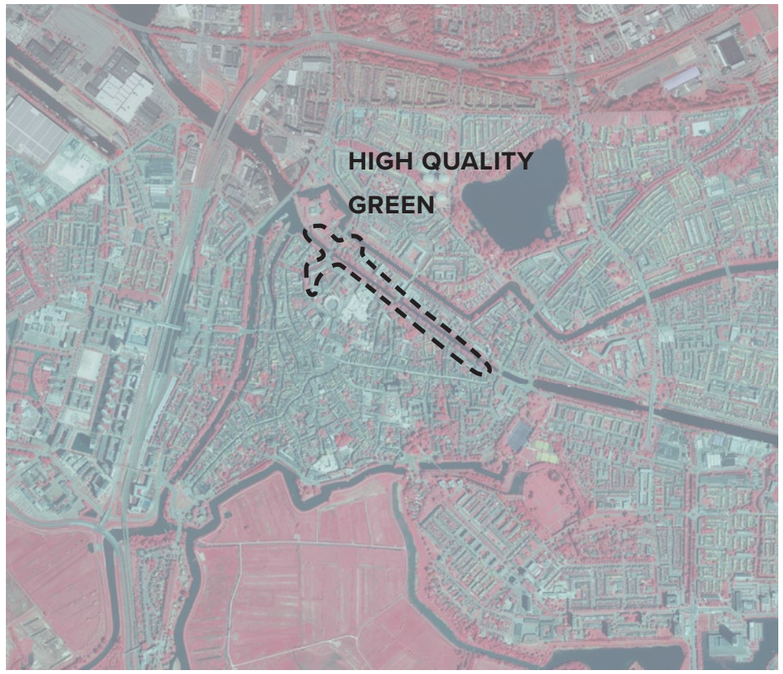
Zipper

Strong urban fabric (Boer, 2019)

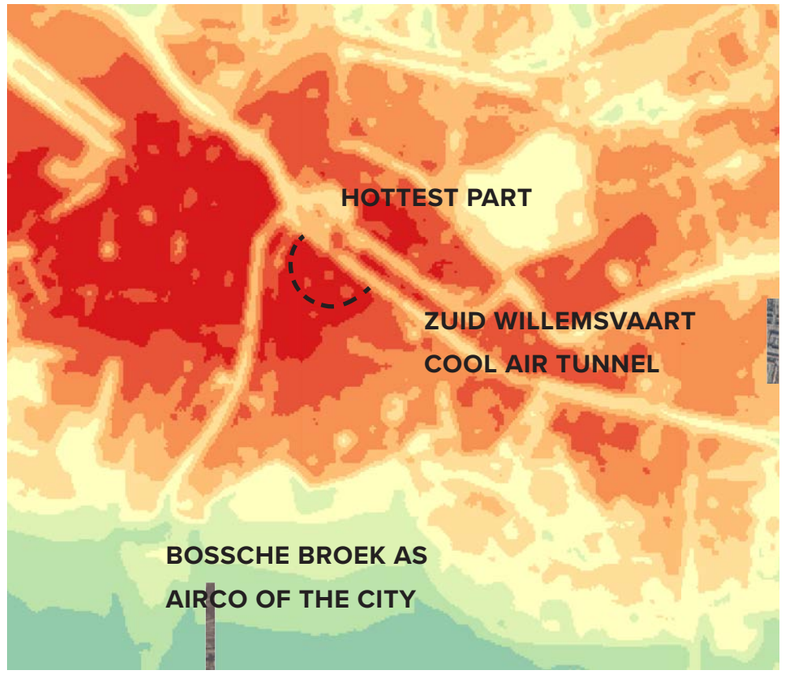
CLIMATE CHANGE

Effect peak rain (Klimaatatlas, 2023)

Heights (Klimaatatlas, 2023)



High qualitative green (Klimaatatlas, 2023)



Urban heat island effect (Klimaatatlas, 2023)

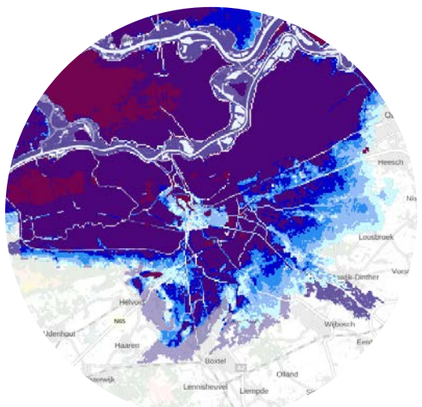
IMPACT CLIMATE CHANGE

Climate change will have a significant impact on historic central districts worldwide, as these districts were not originally designed with consideration for the changing climate. Therefore, changes need to be implemented to address these challenges.

In the case of the historic central district of ‘s Hertogenbosch, one of the primary issues is the risk of flooding during periods of heavy rainfall. To mitigate this risk, a solution involves introducing more green spaces and implementing water storage facilities within the district.
Another problem faced by the district is the urban heat island effect, which leads to health concerns, particularly for vulnerable individuals. The heat map indicates a potential solution. The presence of the Bossche broek, a large green area in the southern part of the city, currently acts as a natural cooling system. Expanding green spaces throughout the district can serve as “air conditioning” for the city. Additionally, reducing the amount of pavement, creating shaded areas, and facilitating the flow of water can contribute to cooling down the city and alleviating the heat island effect.

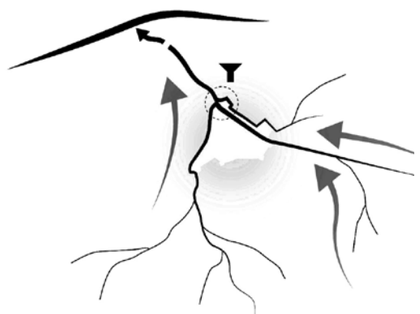
In conclusion, the historic central district of ‘s Hertogenbosch is not yet fully adapted to the changing climate and is particularly vulnerable to flooding and the urban heat island effect, with the project area of the Pijp being of particular concern. It is essential to implement measures that involve buffering water in the area, along with greening initiatives, shade provision, and the establishment of a continuous flow of water to address these challenges effectively.

WATER SYSTEM



Water bomb effect on ‘s Hertogenbosch

‘s Hertogenbosch flood in 1995 (Brabants dagblad, 1995)



‘s Hertogenbosch as delta

‘S HERTOGENBOSCH AS BATH TUBE OF BRABANT

The map on the left illustrates the water system of ‘s Hertogenbosch.

Located at the convergence of three rivers that flow into the river Maas, ‘s Hertogenbosch is often referred to as the “Bathtub” of Brabant. This nickname stems from the city’s position at the funnel-like opening where these rivers meet. However, this geographical feature poses a challenge when the water level in the river Maas rises excessively. During such high-water events, the rivers flowing from the south are unable to discharge their water into the Maas, resulting in a rise in water levels and the potential for flooding throughout the region. This phenomenon is commonly referred to as a “water bomb.”

The issue is not a matter of if such an event will occur, but rather when it will happen. **To address this problem, the city’s locks need to be closed during periods of high tide. This action would require the city to manage its own water levels independently. During peak rainfall coinciding with high tides, ‘s Hertogenbosch should have the capacity to store all the water within its city walls while safeguarding the outer areas from the impact of the elevated tide. Consequently, the historic central district of the city needs to have a significant water storage capacity and protective infrastructure to prevent flooding.**

OLD WATERWAYS

Historic waterways

POTENTIAL ORIGIONAL LANDSCAPE

This map depicts the historic waterways that were once present in the central district of the city. In 1385, when the outer walls of the city were expanded, a significant portion of the surrounding swamp became incorporated into the city itself. This swamp acted as a large water reservoir, effectively draining and retaining water. It served as an exemplary form of climate adaptation during that time.

In order to ensure adequate water storage for the city and maintain water reserves during periods of drought, reintroducing the concept of a swamp into the urban fabric is a viable solution. By reintegrating a swamp-like environment into the city, not only can water storage be efficiently managed, but it will also contribute to cooling down the city and promoting biodiversity.

In conclusion, a solution to address the impact of climate change on the city is to reintroduce the original landscape feature, namely the swamp, back into the urban environment. This approach will facilitate effective water drainage during heavy rainfall, retain water during dry spells, contribute to the city's cooling, and foster biodiversity. Ultimately, it will create a better microclimate, positively impacting the vitality of the historic central district.

Afbeelding xx: voetnoot

- Historic waterway
- Current visible waterway

WATER AND GREEN

Current water and green networks

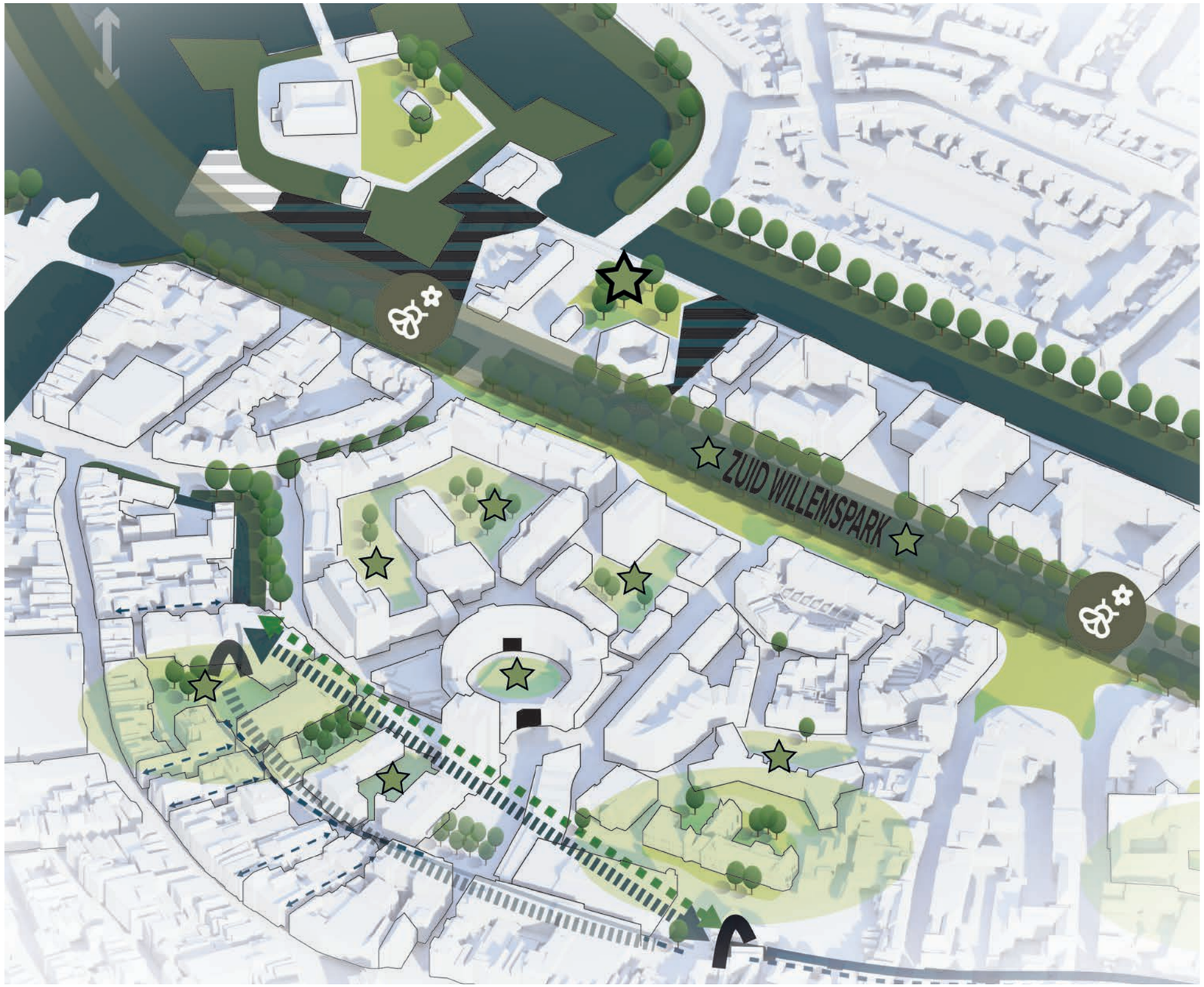
WATER AND GREEN - CITY LEVEL

The image on the left depicts the green spaces and water structures in the historic central district of ‘s Hertogenbosch. The old fortifications of the city serve as the primary framework for the green and water structure, with an important ecological corridor running alongside the Dieze River and the Zuid Willemsvaart Canal, which should be preserved.
The Binnendieze, a network of canals, is currently fragmented and needs to be connected and revitalized to enhance its climate adaptability. Additionally, the Binnendieze should have the capacity to accommodate occasional flooding, as it did when it was a natural swamp.Along the Binnendieze, there are small pocket parks that act as precious gems within the city. It is crucial to maintain these green oases, make them hold water as well and create more of them.

The fortifications play a significant role in the green and water structure of the district and should be preserved and further improved to provide protection against high tides. The natural corridor, formed by the Dieze and Zuid Willemsvaart, should be maintained in the new design. Efforts should be made to reconnect the fragmented Binnendieze and allow it to experience occasional flooding, resembling its original swamp-like state. The pocket parks along the Binnendieze should be preserved and expanded to enhance the district’s overall greenery, climate adaptation and recreational spaces.

Park
Water
Nature
Tree
Ecologic corridor
Swampify
Potential creating pocket park

WATER AND GREEN - THE PIJP



Current water and green networks the Pijp

- Connection Binnendieze (currently underground)
- Connection needed nature friendly border
- Water body creation within character
- Water
- Ecology friendly water border
- Park
- Important tree
- Tree of minor importance
- Upgrade pocket park
- Potential creating pocket park

WATER AND GREEN - NEIGHBOURHOOD

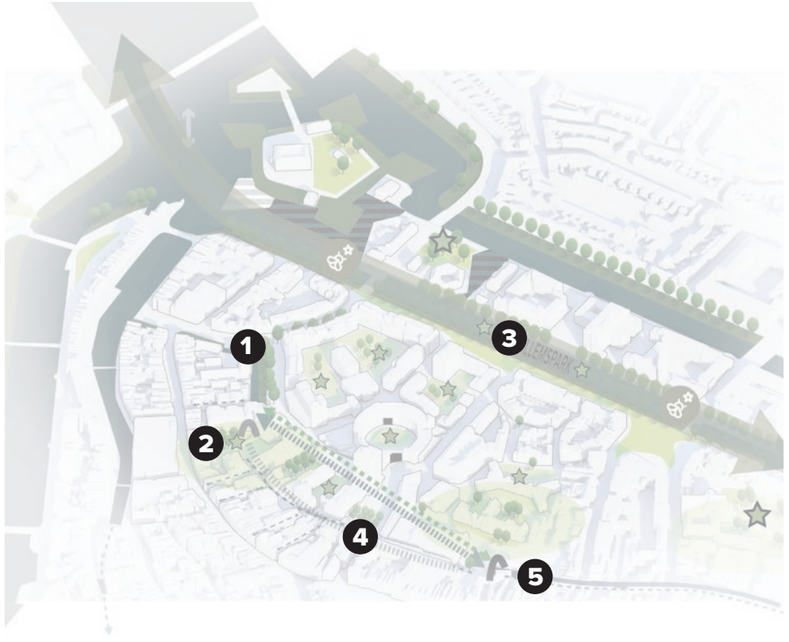
The project area is encompassed by fortification structures with abundant green and water elements. To enhance the water storage capacity within the city's character, additional water storage can be incorporated around the Citadel and the Kruithuis.

The Zuid Willemsvaart, a prominent waterway, forms a blue-green connection along the edge of the project area. It features an essential ecological connection and a tree-lined pathway that should be preserved.

The Binnendieze intersects the project area at the Southern water gate and runs underground towards the northern side. This presents an opportunity to open up the Binnendieze, creating additional water storage space while strengthening the area's identity and relationship with the water.
Several green pockets along the Binnendieze have the potential to be upgraded into fully-fledged pocket parks.

In conclusion, the project area is surrounded by robust water and green networks that can be further enhanced. The blue-green networks of the historic central district currently stop at the project area and go underground, but there is an opportunity to open them up to improve climate adaptation and enhance the area's legibility.
Small green pockets and parking lots should be transformed into pocket parks to augment the green spaces within the project area.

VEGETATION



Vegetation of importance

Binnendieze with ecologic border with trees that need to be maintained and extended.

Barbaraplaats trees need to be maintained and possibility pocket park

To maintain trees Zuid Willemsvaart

Trees at Loeffmanplein

Point where Dieze dives underground (Southern watergate)

IMAGE OF ‘s HERTOGENBOSCH

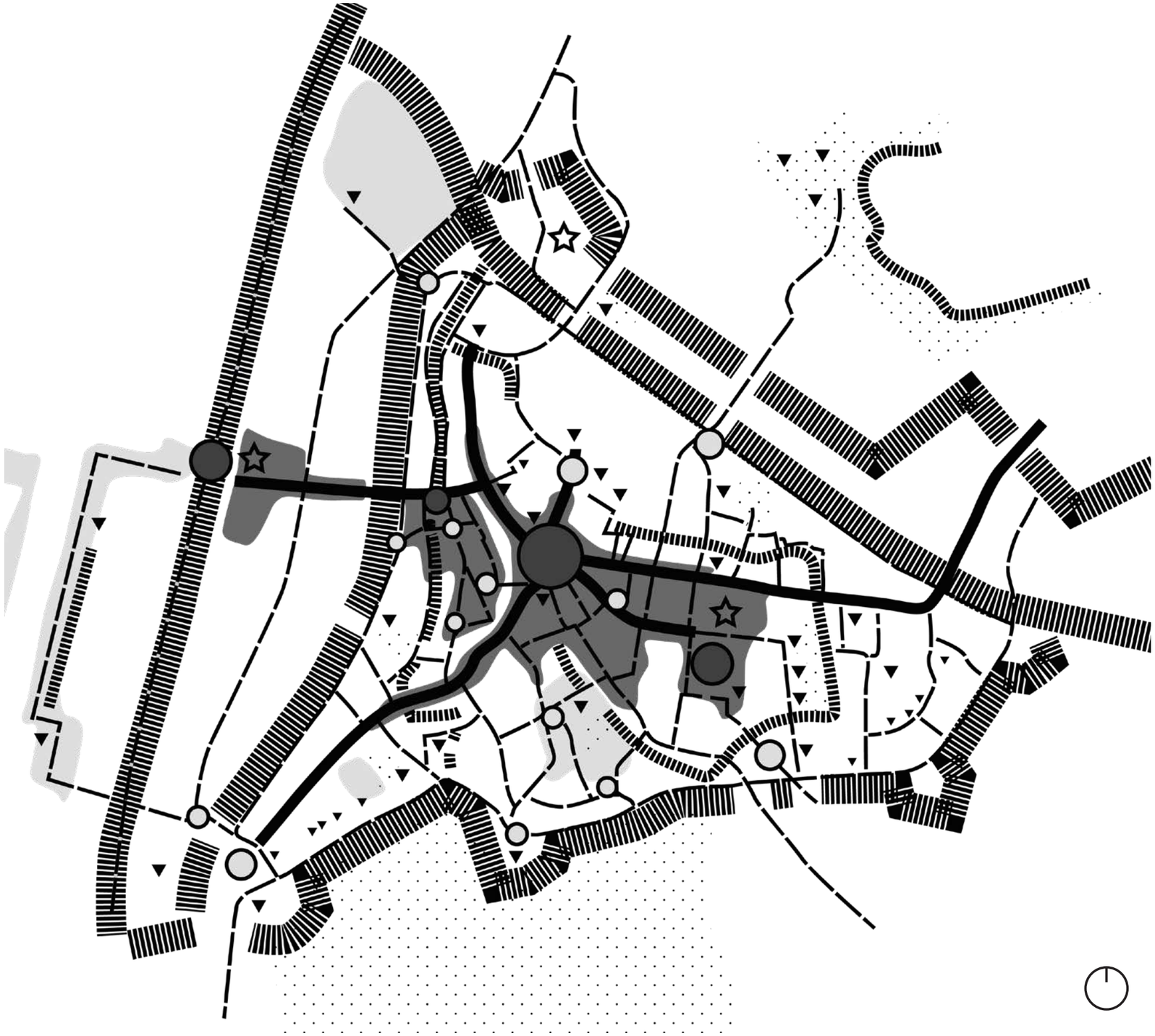
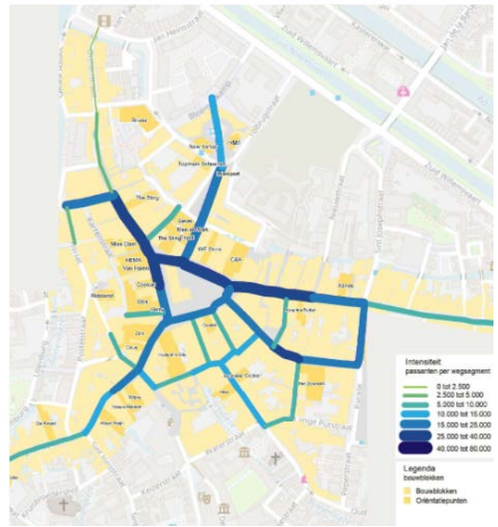


Image of ‘s Hertogenbosch according to Lynch analysis

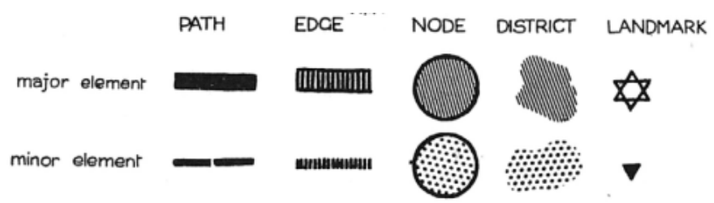
IMAGE OF ‘S HERTOGENBOSCH

Kevin Lynch stated in his book ‘The image of the city’ (Lynch, 1960) the importance of legibility of spaces. Legible spaces make vibrant/vital spaces.

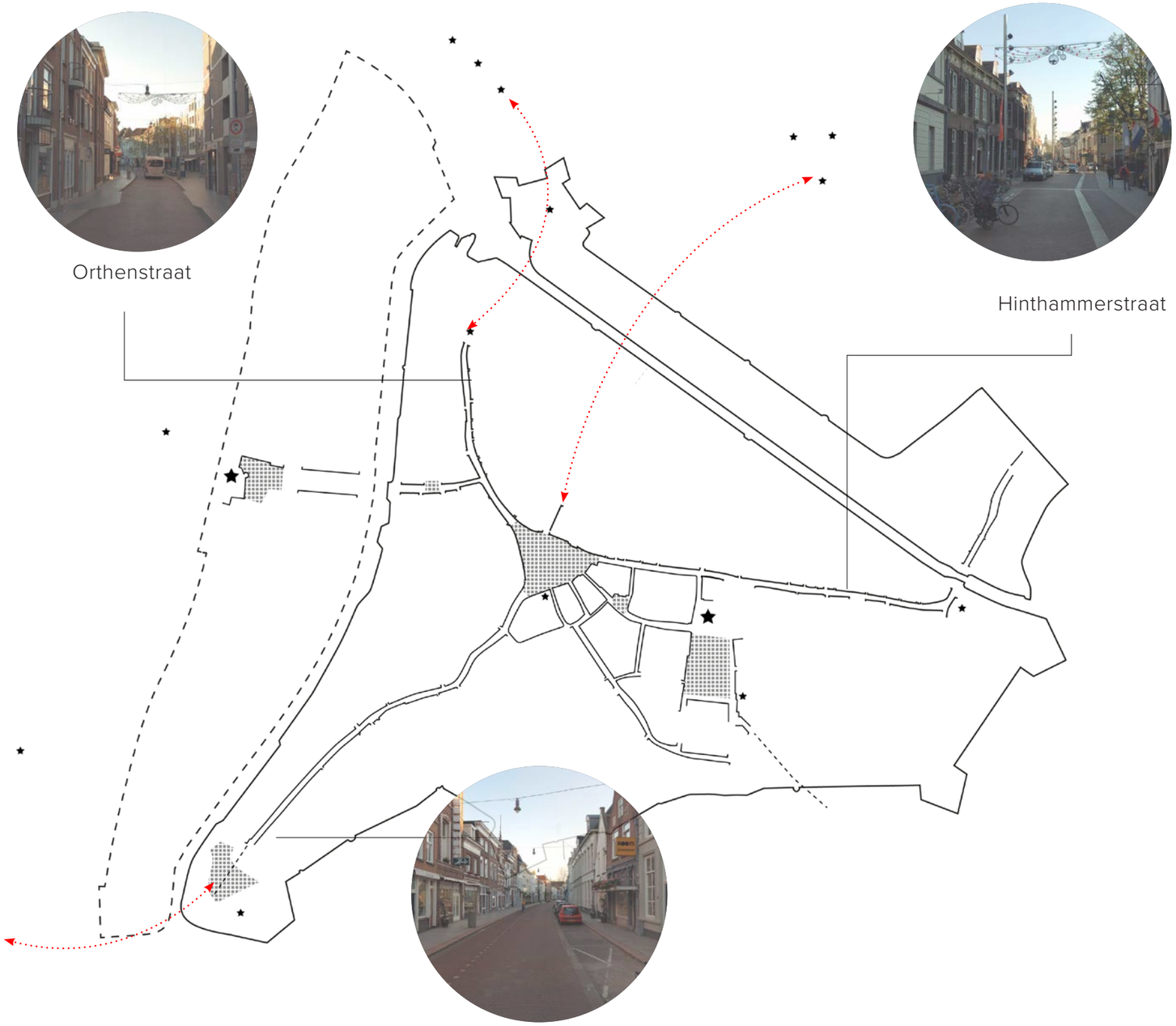
Mapping the historic central district of ‘s Hertogenbosch according to this theory shows that the city is overall very legible. The part that is lacking legibility is the north/eastern part. This part should be legibilitized by designing new lines, nodes, barriers and landmarks to create a fully functioning legible district.



Pedestrian flows in the city (‘s Hertogenbosch, 2022)



EXTENSION AND MAINTENANCE RIBBONS NEEDED



Current situation

FABRIC: MAIN LINES - RIBBONS

The history of ‘s Hertogenbosch dates back to its establishment in 1100, and an important aspect of the city’s layout are its ribbons. These ribbons serve as the lifeblood of the city, connecting different areas together.

The ribbons of ‘s Hertogenbosch act as the primary road system, spanning from one square to another, with the bustling market at its heart. Each section along these ribbons possesses its own distinct urban features, such as towers or special landmarks, which imbue significance to the surrounding area. Furthermore, every ribbon culminates with an urban accent, like a tower or a gate. These ribbons have played a pivotal role in the city’s infrastructure since its early days, offering a pathway for movement and commerce, with an avarage width of 10.5 meters and 3-5 story tall buildings. To regain vital connections with the northern and eastern parts of the city, extending these ribbons becomes imperative. By doing so, ‘s Hertogenbosch can enhance its accessibility and new approach routes towards future mobility hubs are created.

In conclusion, ribbons should be maintained and should be extended for legibility and connectivity.

Sketch of a ribbon in ‘s Hertogenbosch

AMOUNT OF ALLEYS NEED TO INCREASE

Example: Ruissche poort

Alleys and portals along the ribbons

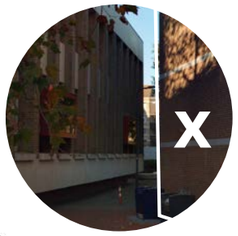
FABRIC: ALLEYS AND PORTALS

The drawing on the left displays the alleys and portals that run alongside the main roads in ‘s Hertogenbosch. These alleys and portals play a vital role in the city’s overall structure. According to the head of urban planning in the municipality of ‘s Hertogenbosch, these pathways “supply” the main roads with people. They enable the construction of buildings in a concentrated manner along these main roads, achieving a high population density as well as functioning as cool air tunnels. Furthermore, these alleys and portals serve as gentle transitions from the bustling main streets to the adjacent areas. They create a smooth connection between these prominent thoroughfares and the next zones, ensuring a seamless progression.

The alleys and portals are crucial elements that contribute to the city’s densification, vitality, legibility, and overall experience. To optimize these factors, it is essential to integrate this aspect of the city’s layout in combination with the main roads, effectively utilizing them as tools for promoting densification and enhancing legibility.

Ruissche poort

INFORMAL ROUTES - IN NEED OF PERMEABILITY FIXES



Secondary routes

FABRIC: SECONDARY LINES - CITY STREETS

On the left side of the map, we can observe another significant component of the city's historical layout: the secondary routes. These pathways serve as informal connections throughout the city. They were commonly used by children traveling to school or by residents seeking to avoid the crowded main streets.

The secondary roads in 's Hertogenbosch possess a more informal and green character, featuring larger hybrid spaces in front of the buildings that can be personalized by the residents. This design encourages better legibility, strengthens the district's identity, and promotes an informal atmosphere. However, in the historic central district of 's Hertogenbosch, several of these secondary routes are currently blocked or disconnected, making it challenging to navigate the district peacefully.

In conclusion, it is crucial to establish better interconnections among these informal secondary routes. By doing so, a more consistent flow of people can be achieved throughout the district, creating a more inclusive and informal environment for everyone.

Sketch of a informal route in 's Hertogenbosch

LANDMARKS AND SIGHTLINES MAINTAINED AND INCREASED

Landmark grown in by smaller buildings

Testing sightline Sint Jan from Mariapavillion which is currently hidden.

Test new sightline to guide towards Zuid Willemspark

FABRIC: LANDMARKS AND SIGHTLINES

‘s Hertogenbosch boasts a variety of landmarks, and the Pijp location is no exception, as it is home to two significant landmarks: the Arena and the old hospital. It is crucial to preserve these landmarks to maintain the identity and recognizability of the area. In ‘s Hertogenbosch, many landmarks were initially constructed as prominent structures within open spaces and later surrounded by smaller buildings, which is a characteristic feature of the city’s historical fabric.

The fabric of the city also exhibits a diverse range of sightlines, contributing to its legibility. Historical sightlines in the city were often oriented towards important buildings like the Sint Jan and the Moriaan. Preserving and enhancing these sightlines is important for maintaining and improving legibility. In the case of the Pijp, there has always been a prominent sightline towards the Sint Jan, allowing its users to easily position themselves within the city. Restoring this sightline is necessary to enhance legibility.

To further enhance the district, a new landmark should be created along the Zuid Willemsvaart as a stepping stone towards the new Zuidwillemspark and the Muntel. This new landmark should have a significant height to guide sightlines towards the park and also interact with the Amazone towers at the Muntel.

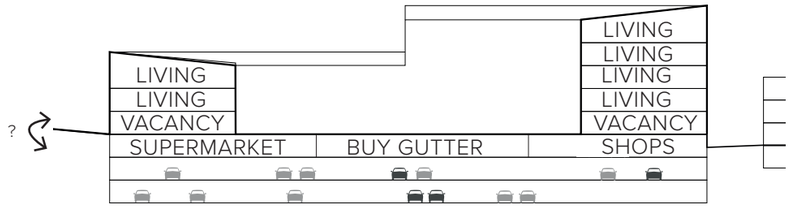
In conclusion, it is essential to preserve existing landmarks and consider densification by adding smaller buildings to them. Sightlines should be maintained and expanded, particularly towards the Sint Jan. Additionally, creating a new landmark along the Zuid Willemsvaart will improve legibility and contribute to the identity of the new park.

THE ARENA - UNDERGROUND FUNCTIONS NEED TO BE BROUGHT UP

Side view of the arena with blind facades

Plaza in front of the Arena with Balcony

-1 of the Arena



Section of the Arena

LANDMARK OF THE NEIGHBOURHOOD: THE ARENA

The Arena, constructed in 1998, is the most prominent landmark within the project area. It encompasses a vast shopping center spanning 12,000 square meters, an underground parking facility with 475 parking spots, and residential housing in the form of gallery apartments on top.

The building features Italian arena-style architecture, characterized by its round shapes and a square area with a large, inaccessible round balcony that surrounds it. In the center of the square stands a bull statue. Most of the shopping activities take place on the -1 level, which is accessible through various entry points via staircases. It is worth noting that the Arena was built on the grounds of a former monastery and army camp. As a well-known landmark, it holds significance for all those familiar with ‘s Hertogenbosch.

The ground floor is most of the time vacant and large logistics wings at ground level, causing the plinths to appear inactive. Additionally, there are concerns about social safety at the site, leading residents to feel unsafe during the closing hours of the shops, the entire area is even fenced off during the evening.

Another significant problem is the building’s lack of climate adaptation. The -1 floor frequently experiences flooding due to its design resembling a gutter. Addressing this issue is crucial to ensure the building’s sustainability and resilience in the future.

Despite its challenges, the Arena holds immense potential for the city. It serves as a recognizable landmark and offers ample space within the historical fabric for potential future uses, along with substantial underground facilities.

In conclusion, the Arena serves as a notable landmark in the city with its distinctive architecture and substantial space. However, improvements are necessary to activate the vacant first floor, address the issue of blind facades, enhance the social safety of the surrounding area, and ensure climate adaptation.

BINNENDIEZE SHOULD BE REOPENED AND CONNECTED

Buildings directly in the water

One side as natural zone

Missing link

Current situation

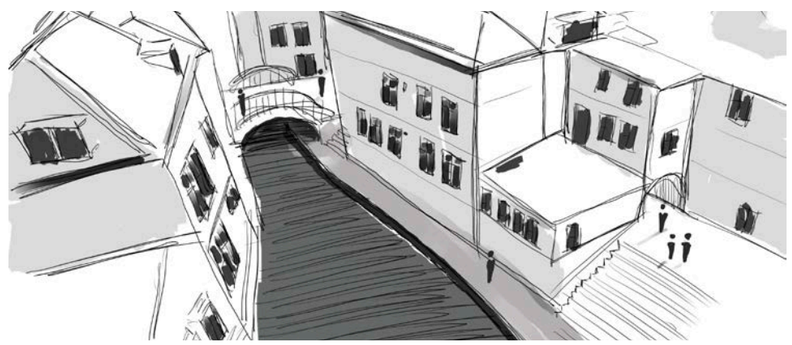
Binnendieze edge

FABRIC: BINNENDIEZE EDGE

On the left side of the map, we can see the current fragmented border along the Binnendieze river in ‘s Hertogenbosch.

The Binnendieze river came into existence in 1385 when the city walls expanded, encompassing a significant portion of the surrounding marshland with multiple water flows. This river became the lifeblood of the city, supplying water to support a diverse range of functions. Periodic flooding of the Binnendieze became a part of the residents’ way of life, and they adapted to the fluctuating water levels, which also fostered a variety of ecological life. The Binnendieze served as a vital water source, facilitated climate adaptation, and supported a diverse ecological system. It represents a medieval example of harmonious coexistence with water, where one side of the river featured the old city and the other side featured the new city, blending with the surrounding swamp.

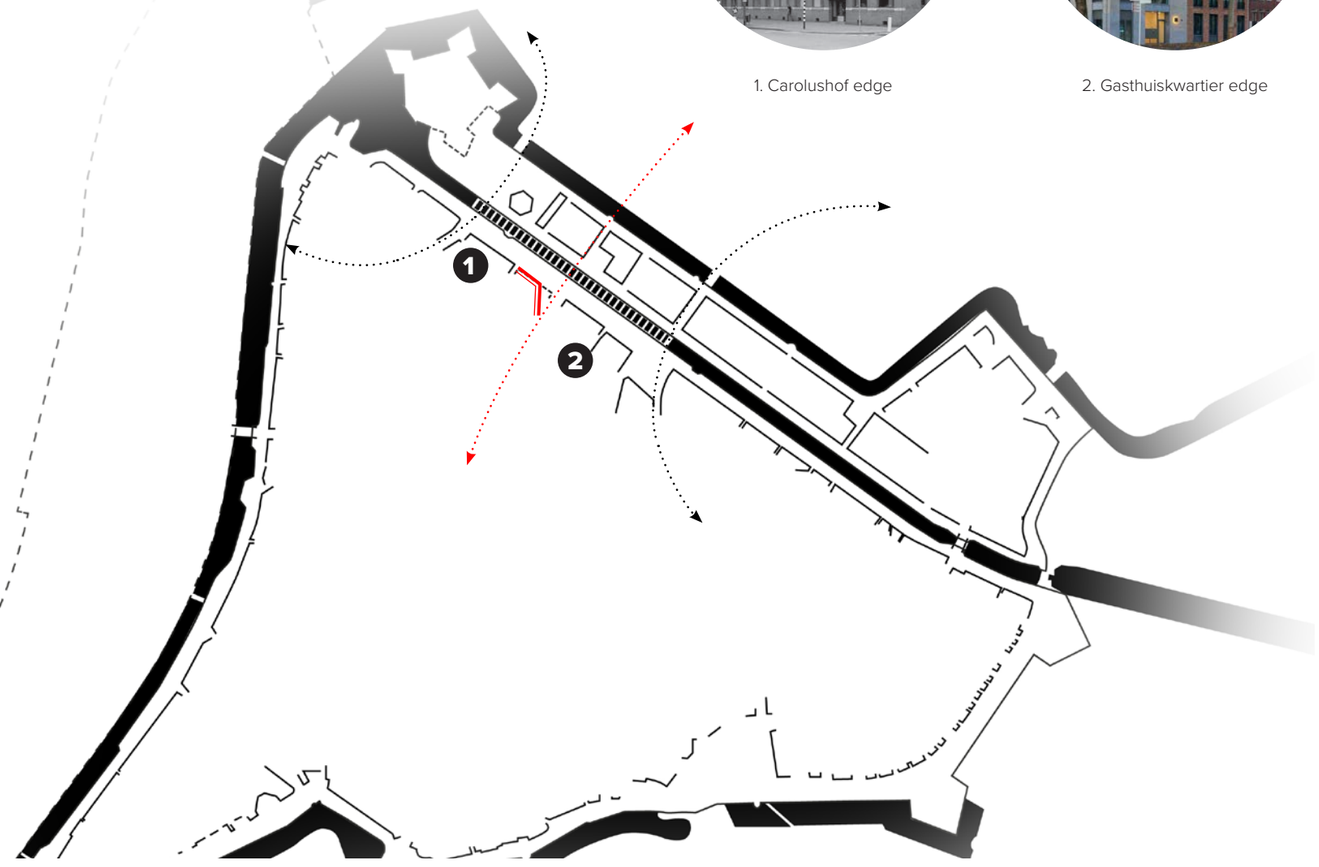
The Binnendieze river provides climate adaptation, ecological diversity, legibility, and a strong appreciated identity —precisely the elements that are currently lacking in the part missing the Binnendieze. Therefore, it is necessary to reestablish a strong connection of the edge of the Binnendieze river.



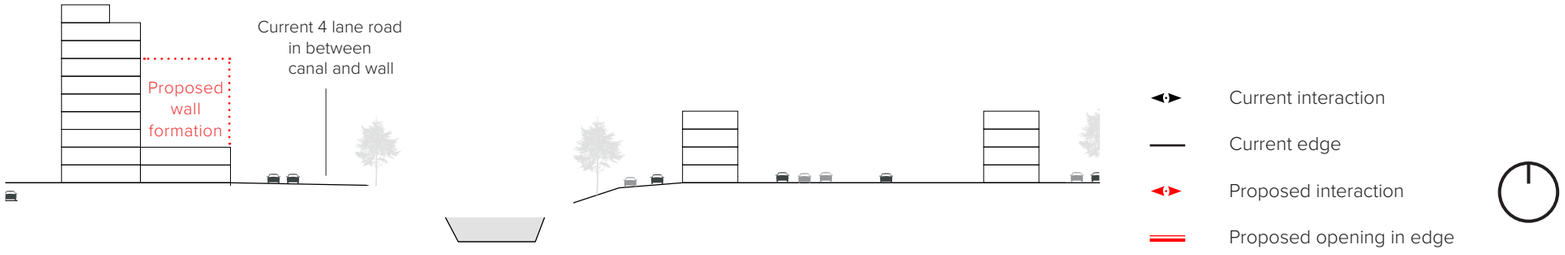
ZUID WILLEMSVAART - NEW EDGE AS WELCOMING GESTURE TOWARDS FUTURE PARK

1. Carolushof edge

2. Gasthuiskwartier edge



Outer edges of the historic central district

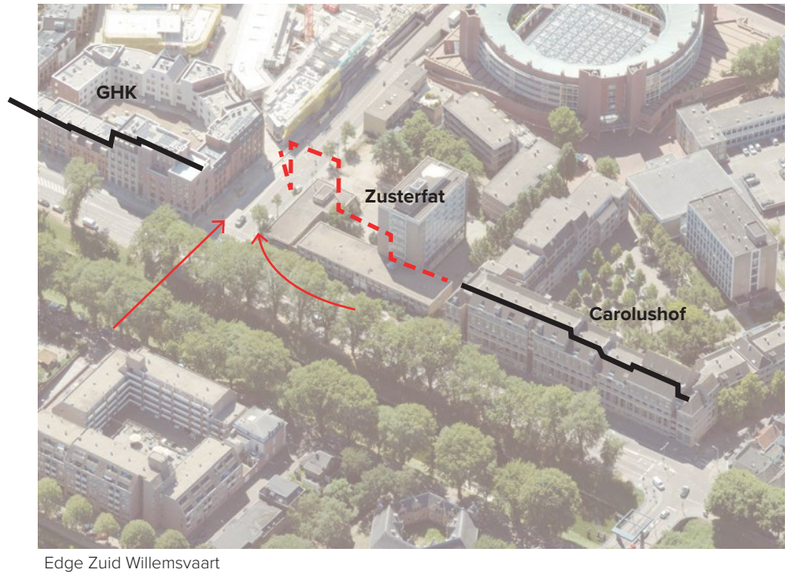


Section Zuid Willemsvaart current situation

FABRIC: OUTER EDGE / SHELL
(ZUID WILLEMSVAART)

For more than two centuries, the Zuid Willemsvaart has served as a significant boundary of the city. Although the canal is no longer actively used, it continues to define the edge of the city. In the historical fabric, the Zuid Willemsvaart can be viewed as a water and green area, almost resembling a park. The buildings situated along the canal exhibit a diverse range of architectural styles, ranging from monastic-inspired designs of the Bossche school to more industrial-looking structures. The vertical wall formation of these buildings opens up at bridge locations, creating plazas and inviting spaces.

Considering this context, when constructing a new bridge at the site of the Zusterflat, it is crucial to design the wall formation in a way that opens up and incorporates a plaza. This opening of the wall formation should symbolize a gesture of welcoming the Zuid Willems park to the city, while connecting the wall formation of the Carolushof and that of the Gasthuiskwartier.



Edge Zuid Willemsvaart

EDGE ARCHITECTURE ZUID WILLEMSVAART: BOSSCHE SCHOOL

Bossche school (van der Laan, 1990)

Carolushof (Bossche encyclopedie, 2000)

EDGE ARCHITECTURE: BOSSCHE SCHOOL

The Carolushof stands as the defining structure along the north-western boundary of the project area. Functioning as a large-scale building block for social housing, it embodies the characteristic architectural style of the Bossche school. The building's distinctive character arises from the amalgamation of the Bossche school style with vertical façade articulation. However, despite these unique qualities, the design of the building's plinth was primarily intended to border a busy road. Consequently, when the road undergoes a transformation into a park, the current façade of the building is incompatible with the new setting. Hence, it becomes imperative to reconsider and redesign the plinth of the building while preserving its distinctive character.

Additional characteristics Bossche school:

The Bossche School is a name given to the buildings that were created under the influence of the theories and thoughts of architect and Benedictine monk Dom Hans van der Laan (1904-1991).

According to Hans van der Laan, building was a matter of carefully assembling and arranging blocks, beams, and plates. The plastic number with the proportions 1:1, 3:4, 4:7, 3:7, 1:3, 1:4, 3:16 and 1:7 is considered as a three-dimensional implementation of the golden ratio in the Bossche School. Derivative ratios, such as 3:8, also belong to the plastic number.

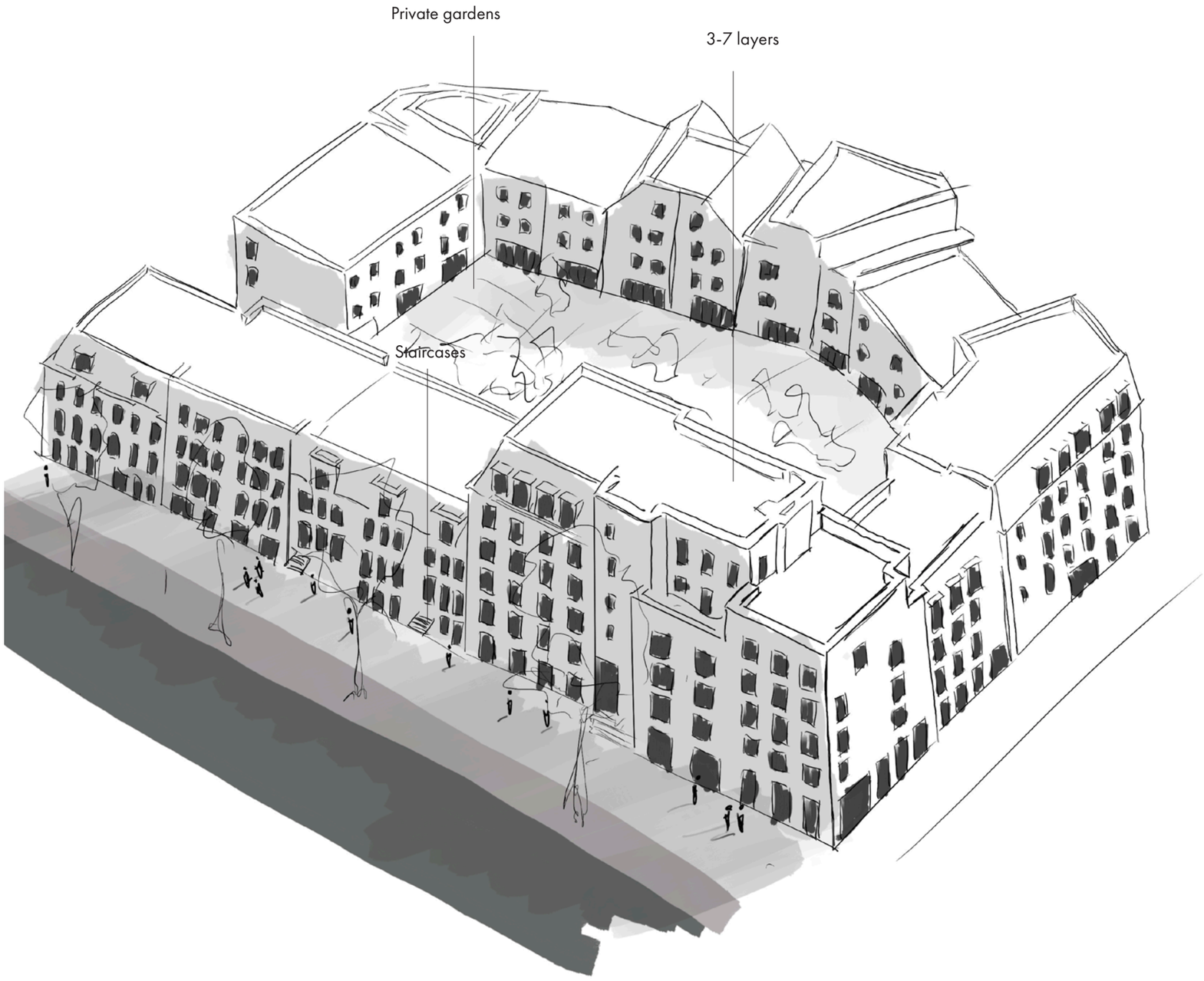
The measurement system (ideal ratios as the basis of order and harmony)

A fixed rhythm (the resemblance between the architecture of Van der Laan and the "liturgy of recurring monastic masses"; through repetition, you do not stray from your goal)

Three-dimensional proportions.

A quote from a lecture on the Bossche School: "The space of nature has three aspects, which we do not know how to deal with: it is unbounded, it is formless, and it is immeasurable. Architecture is nothing other than what needs to be added to that space to make it habitable, visible, and measurable (Hans van der Laan 1980)."

EDGE ARCHITECTURE ZUID WILLEMSVAART: GASTHUISKWARTIER



Sketch Gasthuiskwartier

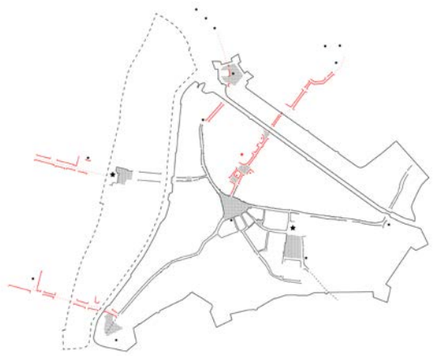
EDGE ARCHITECTURE: GASTHUISKWARTIER

The Gasthuiskwartier has reached completion for a portion of its architectural structure. This design showcases a combination between industrial looking buildings at the Zuid Willemsvaart and medieval looking buildings at the central district side. However, there are certain drawbacks to this development. The buildings lack the capacity to accommodate large functions, and the garden within the inner court is privately owned and divided into separate parcels with gardens, limiting its flexibility for future use. Additionally, the housing type in the area is exclusive and luxurious, which hinders inclusivity.

The Gasthuiskwartier incorporates a industrial character on the edge of the Zuidwillemsvaart and a more medieval character on the historic side. The height varies from 3 layers at the medieval side to 7 layers at the corners of the Zuid Willemsvaart. The plinth of the building is not activated and overal building lacks flexibility.

Gasthuiskwartier (Bedeaux de brouwer, 2022)

SUMMARY INTERVENTIONS

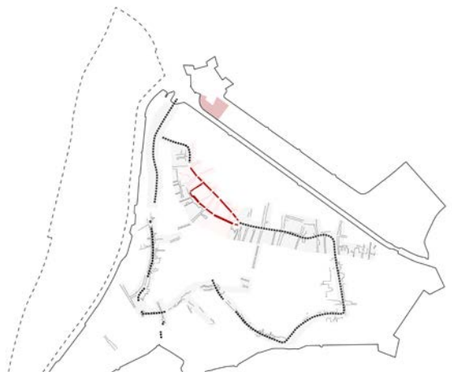


Maintenance and extention of the main lines (Ribbons)

Increase the alleys and portals along the ribbons for densification and transitions

Increase capacity and interconnect secondairy road system

Maintain and create sightlines and landmarks for legibility



Reconnect the inner edge of the Binnendieze

Connect wall formation and open up at new bridge with plaza

HEALING INTERVENTIONS NEEDED FOR LEGIBILITY AND FLOW OF PEOPLE

In order to enhance the legibility, social safety, and vitality of the historic central district, a series of targeted interventions is necessary. These interventions involve a careful approach and focus on various aspects. They include the maintenance and extension of the existing ribbons, utilizing alleys and portals to promote densification and create smooth transitions. Additionally, there is a need to enhance and connect the secondary road system, both by preserving existing routes and establishing new connections. The creation and preservation of landmarks and sightlines are also crucial aspects of these interventions. Furthermore, it is essential to reconnect the Binnendieze and make appropriate adjustments to the wall formations and outer edges, such as the Zuid Willemsvaart.

When combined, these surgical interventions serve as the foundation for the development of the project area, playing a vital role in establishing a sustainable future proof vital environment.

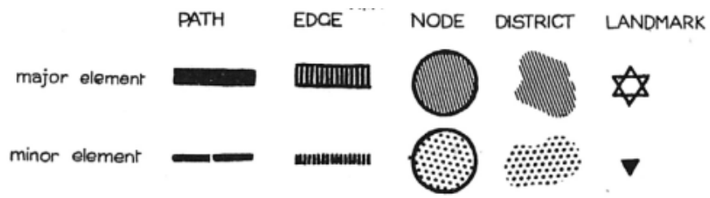
NEW IMAGE OF ‘S HERTOGENBOSCH

Image of the city with surgical interventions

SURGICAL INTERVENTIONS TESTED

The map on the left, created in the style of Kevin Lynch, presents a visual representation of the city’s image, incorporating Lynch’s theory and the implemented surgical interventions. According to Lynch’s theory, the project area of the old Pijp demonstrates greater interconnectedness and legibility. Through the establishment of new main lines, secondary lines, nodes, and edges, the area aligns with the distinctive characteristics of ‘s Hertogenbosch while enhancing its legibility and sustainability. This improved legibility and connectivity will result in a steady flow of people, increasing the presence of eyes on the streets and promoting the vitallity of the area.

Current image of the city of ‘s Hertogenbosch



CONCLUSIONS URBAN ANALYSIS ‘s HERTOGENBOSCH

CONCLUSIONS OF ANALYZING ‘S HERTOGENBOSCH

Historically city with **clear fabric** consisting out of a market with stretching from it several ribbons connecting towards the outer walls.

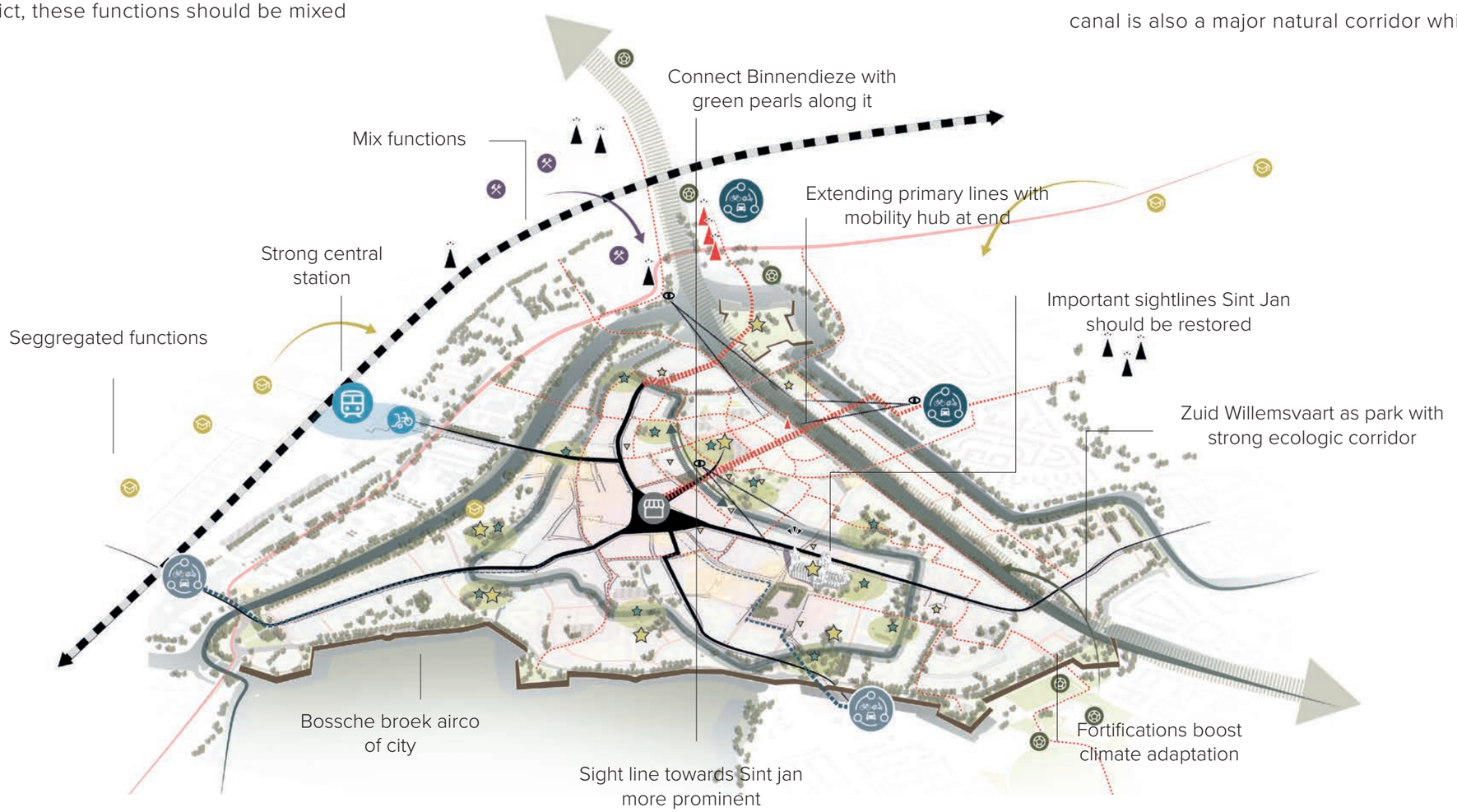
The fabric is in some parts (especially the northern part) **not legible**. Main lines should be extended, secondary roads and the Binnendieze should be more interconnected, Intersections should create extra nodes and landmarks need to be maintained added.

Functions in ‘s Hertogenbosch are **segregated** with a separate school district, business district and shopping area. To create a vital historic central district, these functions should be mixed more and lost functions such as the making industry should be intergrated once again into the city.

The fabric is **car orientated** but steps have been made to reduce this by making car loops in the city with parking lots. This reduction should be increased even further with new loops at the outer edge of the district in combination with mobility hubs. Facilities for bike parking and stalling of shared mobility are scarce and should be added. The public space of the historic central district should become a place to be and interact with each other in stead of only a place to travel from A to B.
‘s Hertogenbosch is called the **‘Bath tube’** of Brabant because its position at the funnel (delta) where rivers flow into the Maas. This will cause major floods in the future and the city should be made resilient to this by strengthening the fortification structure and using the Binnendieze as Rain barrel.

The city is facing an **urban heat island** effect and measures need to be taken to reduce this. This can consist out of depaving, using cool air, let water flow through the city and using green to create shade and evaporation. The existing pocket parks can play a major role in this and extra pocket parks should be added.

The Zuid willemsvaart is no longer in use as a transportation canal and has the possibility to become a new park. This old canal is also a major natural corridor which should be maintained.



CONCLUSIONS OF THE NEIGHBOURHOOD

The Pijp's identity of an old workers neighbourhood with swamps at the edges has shifted the last 60 towards in the first place a modernist area with larger functions such as a hospital and police station towards a **post modernism shopping domain**. All the time periods have left iconic marks and not all should be demolished.

The Pijp has buildings in a different scale then the rest of the city, making it stand out. **The airy buildings** are not efficiently built and should be densified and transformed to blend in with the city, have connection with the public space, host variety of functions and **increase the urban payload.**

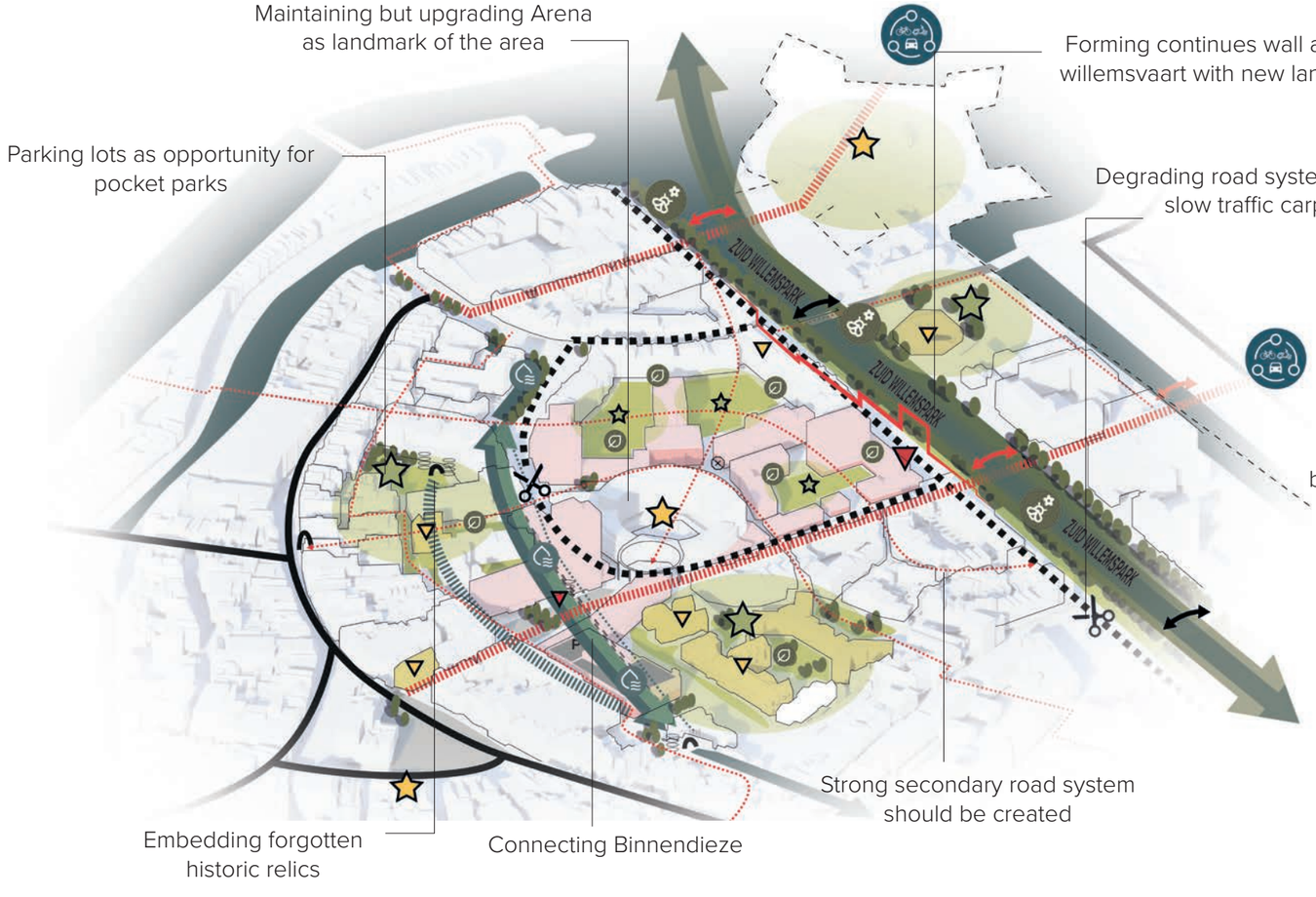
The old characteristic fabric of the Pijp is currently **not legible**. Measures need to be taken to make the area legible again by extending the ribbons, create a fordable environment with secondary routes, create and maintain nodes and landmarks , interconnect the Binnendieze as internal edge and redesigning the edge at the Zuid Willemsvaart. The old sightline towards the Sint Jan, revealing the Maria pavilion is a possible solution for a more legible district.

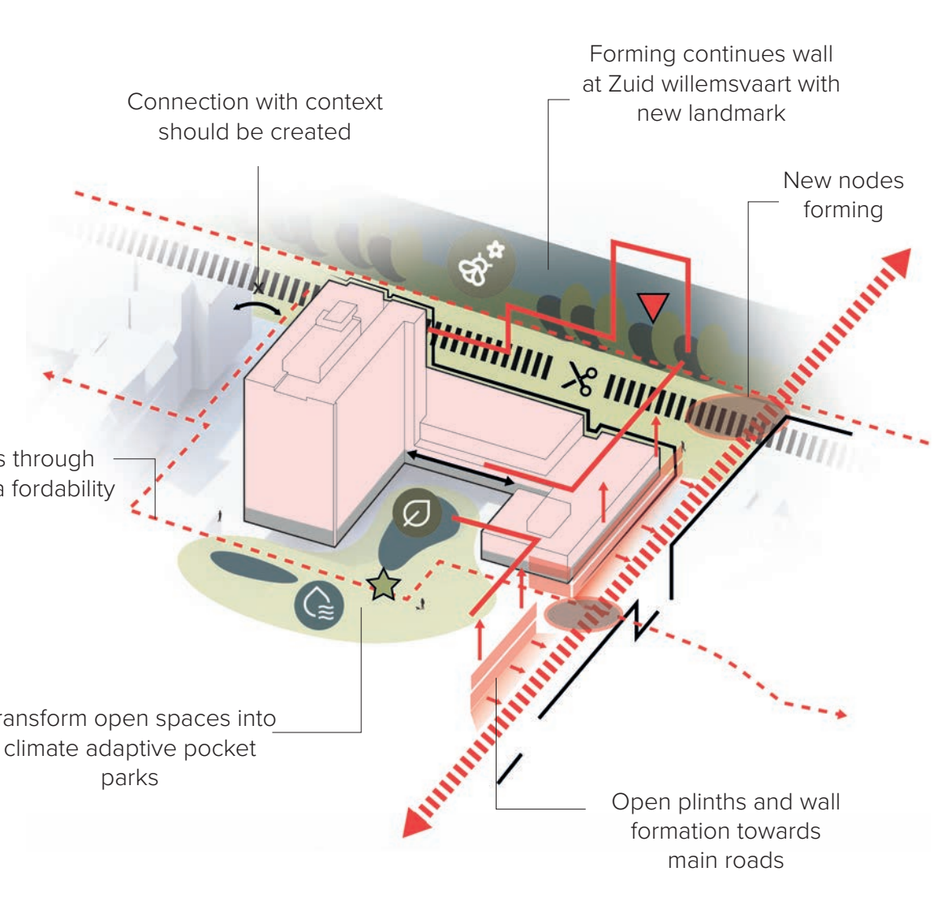
The district is **monofunctional** with shopping and living. The main driver of the area is the Supermarket at -1 in the Arena, resulting in blind facades at ground level at the Arena and well functioning shops at -1. This is why the arena should be flipped with functions at ground level, making room for new functions at -1.

New functions should be welcomed back to create a more heterogenous area, possible functions are education, a new library and making industry.

The area is **car dominated** with an abundance of space for parking, making it not a pleasant place to stay. The district should be transformed into a pedestrian domain which is a pleasant place to stay with new bike/shared mobility parking facilities.

The Pijp is facing floods, droughts and heat due to climate change. Solution for this problem lays partly in **interconnecting the Binnendieze (as a swamp)** and making it function like the rain barrel and airconditioner of the area. This together wit the creation of pocket parks, green layered buildings, trees, green facades and depaving of the area will make the area resilient to climate change and boosts its identity.



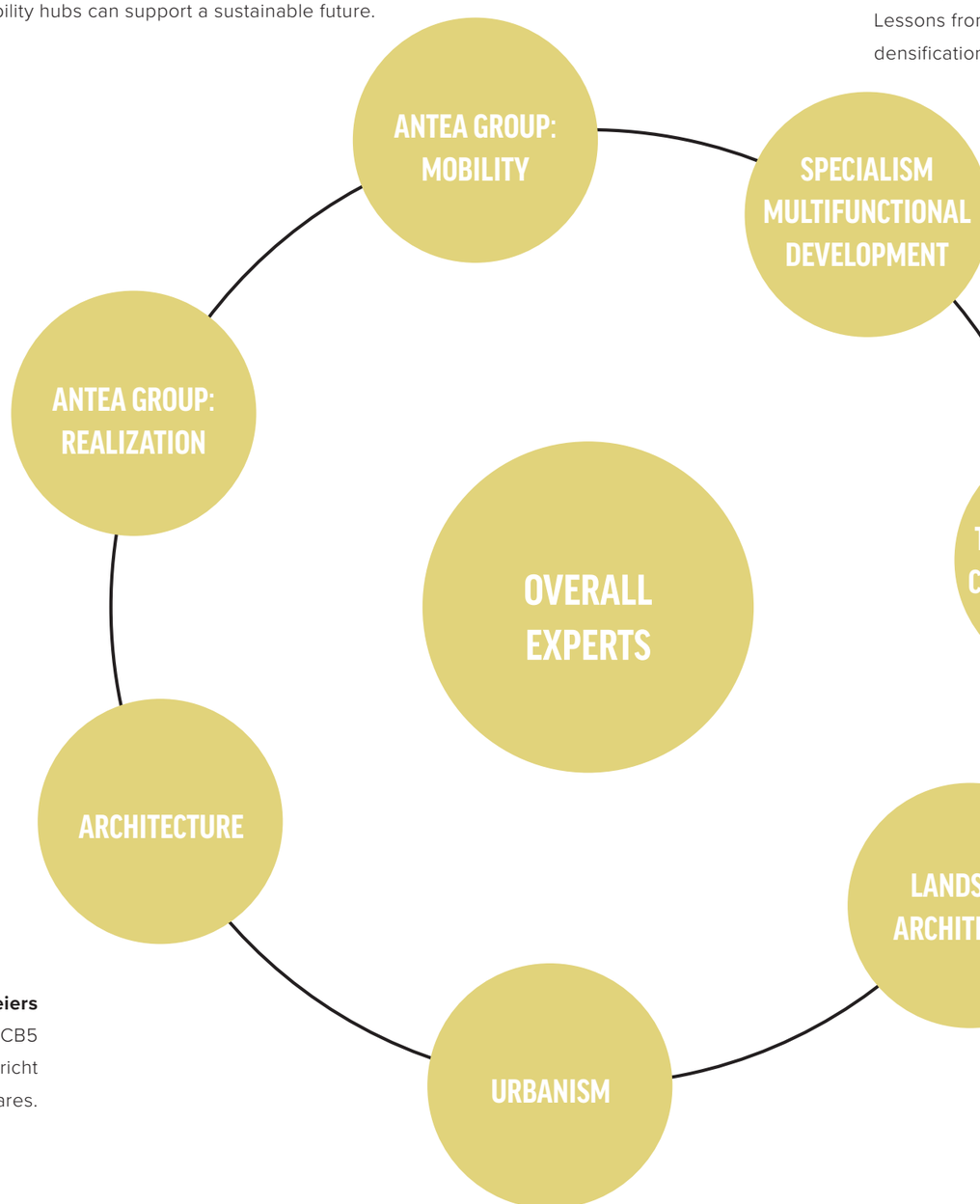


5. EXPERTS & STAKEHOLDERS

Over the past year, I conducted interviews, held multiple work sessions, and presented my research and design to various experts from diverse fields, including landscape architecture, architecture, and mobility. These interactions provided me with valuable insights and perspectives from experts specializing in different areas. The experts I collaborated with played a crucial role in testing and validating my ideas, research, and design. Additionally, engaging with these experts allowed me to expand my professional network and connect with individuals from various disciplines.

Art Damen
Advisor mobility from Antea Group
Lessons for the mobility transition, the upcoming problems with bicycling in historic cities and how mobility hubs can support a sustainable future.

Bob van Hoven
(Former) Urban designer Mei Architects
Lessons from Kabeldistrict, multifunctional densification and developing.



Jolien Hermans
Urbanist CB5 - specialized in field between architecture and urbanism (Binnenstadsvisie Beek/Valkenburg/Nederweert)

Leon Verhoeven
Data and realization Antea group

Fido Melskens Architecture student
Knoweledge on adaptive architecture. Can the ever evolving city become a modular city. Dimensions (4m wide for loading on trucks), how does it technically work and more.

Jessica Tjon Atsoi
Urbanist Urhahn Mentor

Marco weiers
sr. Architect CB5
Knoweledge on densifying historic central districts: Looiershof Maastricht
Design based on sightlines, continue fabric of alleys, urban streeets and squares.

David Huijben & Thijs Verschuren
Landscape architects CB5
Lessons about the landscape, how to develop a swamp, urban parks and lessons about nature inclusivity and climate adaptation.

Wietse Oostra
Urbanist CB5 - specialized in urban transformation, designing based elements such as rain, wind and sun (Smariuskade)

Remond baselmans
Expert Urbanist CB5
Lessons about ‘Camouflage urbanism‘
Lessons on how to create climate adaptive neighbourhoods

Hans van Engen
Landscape architect Waterschap Aa en Maas +
Province of North Brabant
Lessons and workshops about ecology, water system design, creation of public parks and climate adaptation

Marion Greinadus
Urbanist Province of North Brabant
Urbanization strategies, demographics changes, role of historic central districts.

Students of 's Hertogenbosch
Testing out ideas and sketching together.
Interviewing why they do not use the historic central district.
Students don't go to central district because schools are located too far away and everything in the city is 23+.

Reinout Crinze
Head of urbanism historic central district
Municipality of 's Hertogenbosch
Workshops about Dieze park, urban fabric, densification, Zuid Willemspark, and more.

Marion van Lier
HoWaBo 's Hertogenbosch
Lessons on the water system, what are the needs and wishes for a sustainable future.
What can the historic central district mean for this large water problem.

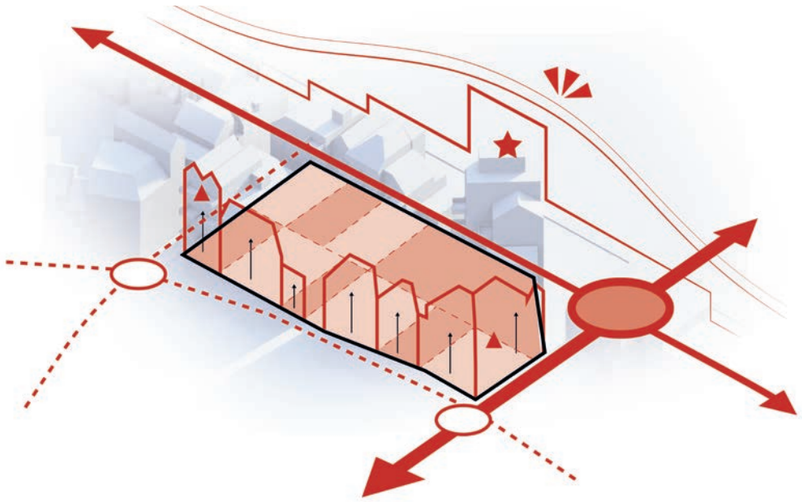
Ewout Visser
AM vastgoed
Developer Gasthuiskwartier
How to develop within historic central districts, opportunities and threats.

Employers tourism agency in the city
History and together in search for Bloemenkamp monastery

In order to develop a credible research and design for the 's Hertogenbosch case study, I contacted several stakeholders and organized meetings. These interactions included presentations and cycling activities with the Province of North Brabant, meetings in the historic central district with the head of urbanism at a local bar, a sketch session with the landscape architect from Waterschap regarding climate adaptation and nature inclusivity, and discussions with the project developer of the Gasthuiskwartier. Through these experiences, my network in and around 's Hertogenbosch expanded, allowing me to connect with a diverse range of individuals involved in the project.

6. DESIGN RESEARCH - PERMEABLE INTERCONNECTED AND LEGIBLE URBAN FABRIC

as its foundation with a diversity of interconnected lines, nodes, edges, landmarks and sightlines.



Block level

Blocks consist out of parcels with sizes being increased based on importance of location;

Heights of new blocks are based on existing buildings in context;

Landmarks and urban accents on prominent places at nodes for legibility and to give identity to a place;

Buildings parcelated and wall formation vertically accentuated according to historic tissue.

Neighbourhood level

At intersections of important lines a large node arises as a square with an important landmark;

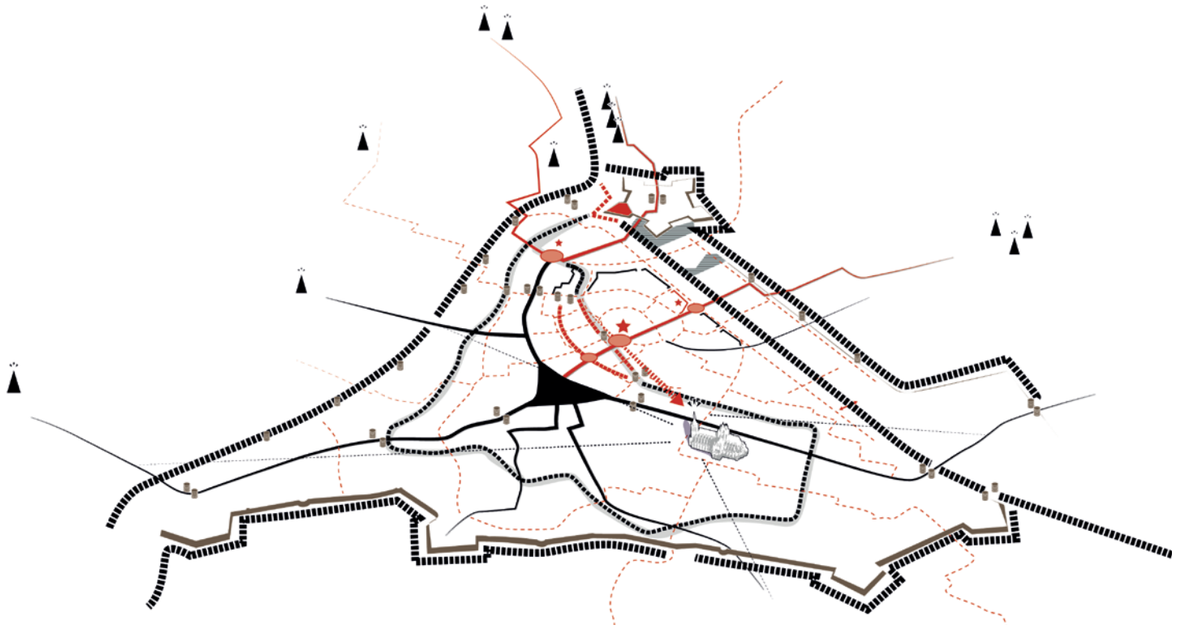
At lesser important intersections of lines smaller squares with smaller ubran accent arise;

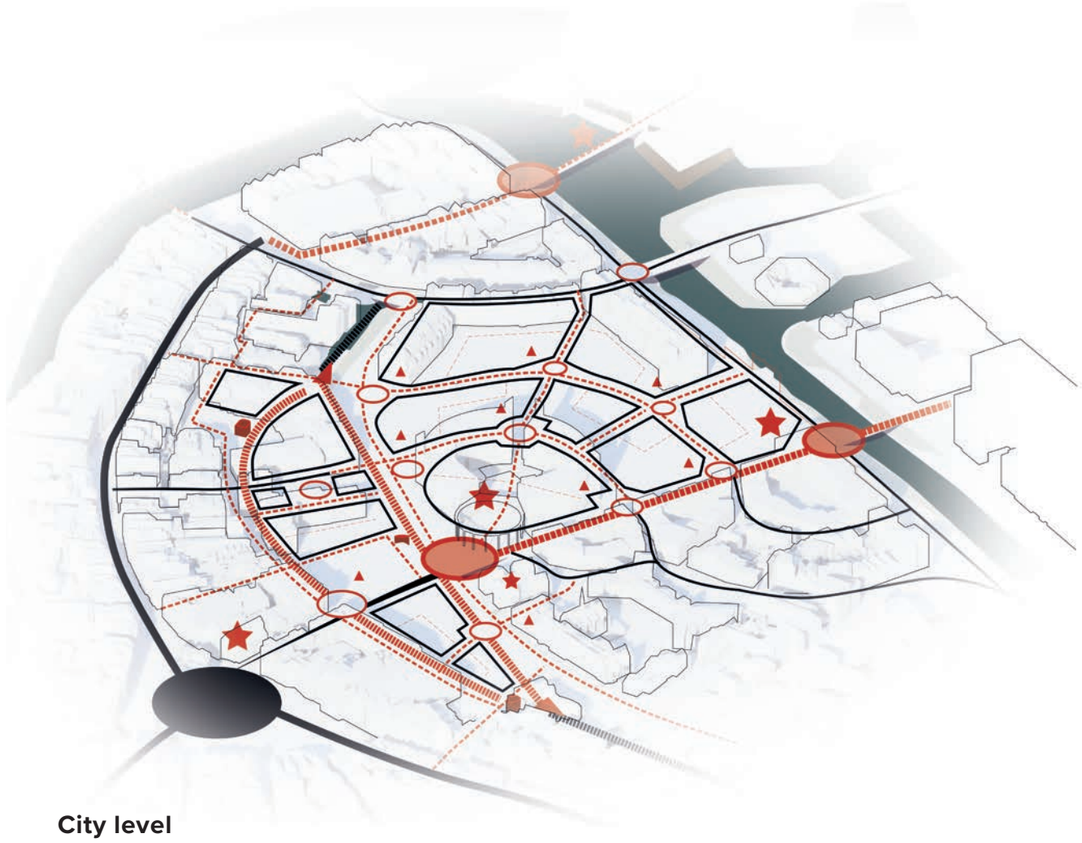
Reconnect edges in fabric of the city to restore legibility and foster identity;

Embed historic relics in new fabric for legibility and use priming function for vitallity;

Create a strong network consisting out of primary, secondary and tertiary lines for permeability;

Interconnected lines, edges and nodes structure forms the base the building blocks.





City level

Maintain and extend main lines towards outer areas to increase connectivity towards surrounding areas;

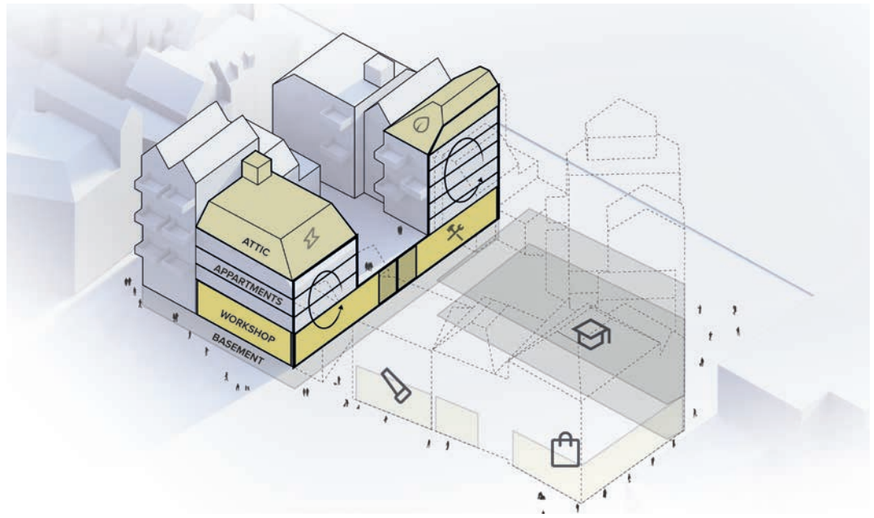
Create a strong permeable network next to main lines to give users alternatives to travel;

Create nodes at intersections. Important nodes get landmarks, lesser important nodes get smaller urban accents;

Create clear -and connect edges for legibility and identity.

INCREASE DIVERSITY AND THE URBAN PAYLOAD

by densifying in enclosed, joined-up merchant blocks, welcoming back lost functions and living locally



Block level

Densify in enclosed blocks that are consisting out merchant houses, joined-up and layered with functions.

The building blocks will get a underground basement for storage (hidden layer);

First two layers (6m) consist out of hybrid layer for embedding workshops, factories, storage rooms or shared communal functions.

Attic which is in service of the whole building, for example for energy and food production;

Blocks consist out of a variety of housing, from student and elderly housing towards family homes and expensive penthouses to stimulate diversity on block level;

Developed as a collective or coorporation as mean against gentrification, stimulate communities and foster inclusivity.

Neighbourhood level

Densify the blocks created within the main and secondary lines;

Provide space to welcome back lost functions, like a stacked multifunctional business area.

Spread clustered functions (especially underground ones) throughout function routes and nodes;

Put extra design effort in the places created at intersections of function lines to create places that stimulate social interaction and spontanious encounters to foster inclusivity;

Design not only lively areas but also quieter areas for a more inclusive city.

City level

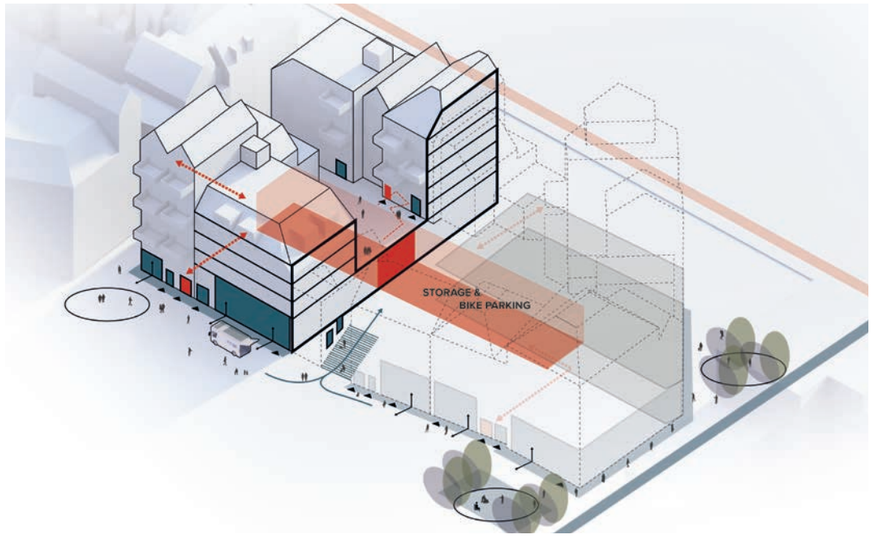
Create a walking economy by connecting functions through lines;

At intersecting nodes create function hubs within character of lines such as an educative/cultural hub;

Welcome back functions lost over time such as factories, education and workshops.

TRANSITION IN MOBILITY: HUMAN CENTRED PUBLIC SPACE

Decelerate movement, relocating cars and do placemaking to create a place to stay



Block level

Bike parking and storage is shared withing dark space within building;

At least every 20 metres a shared entry door from street level to ensure presence of people and interaction at streets;

Buildings can also be entered from parochial domain (inner courtyard);

Active facades with tall plinths (at least 4,5m) for variety and a proper city at eye level;

Hybrid spaces such as Delfts sidewalks (min 1m) around buildings that can be personalized to stimulate social interaction and create identity;

Human scale in blocks: street level height of max 5 layers excl roof, around parks and squares there are exceptions.

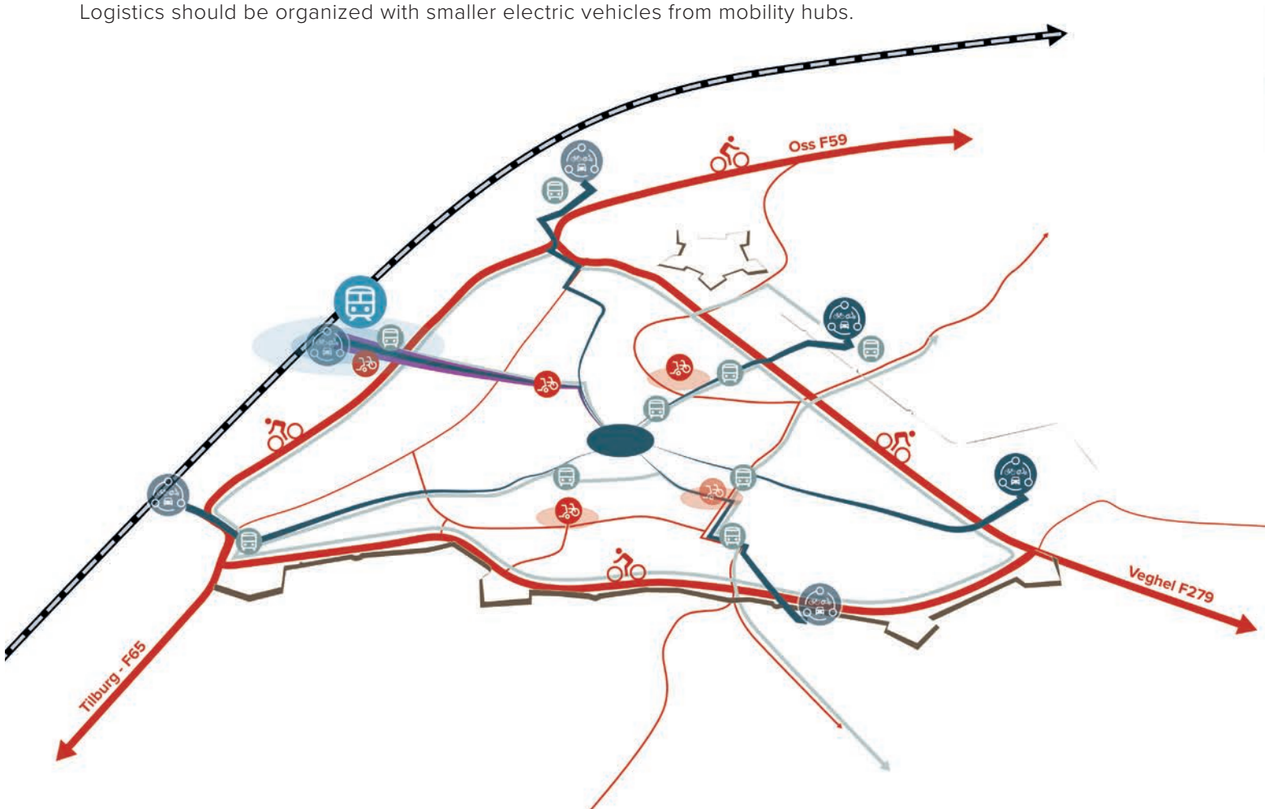
Neighbourhood level

Improve approach streets towards mobility hubs with shading, variety and eyes on the street;

Attach to fast bike lane and add secondary loop with at the end a parking facility;

Intergrate bus/tram stops at main nodes and remain public transport at street level;

Logistics should be organized with smaller electric vehicles from mobility hubs.



City level

Phase out cars from the central district to provide safety and regain space;

Use mobility hubs for logistics, car parking, shared mobility but also as functional hub;

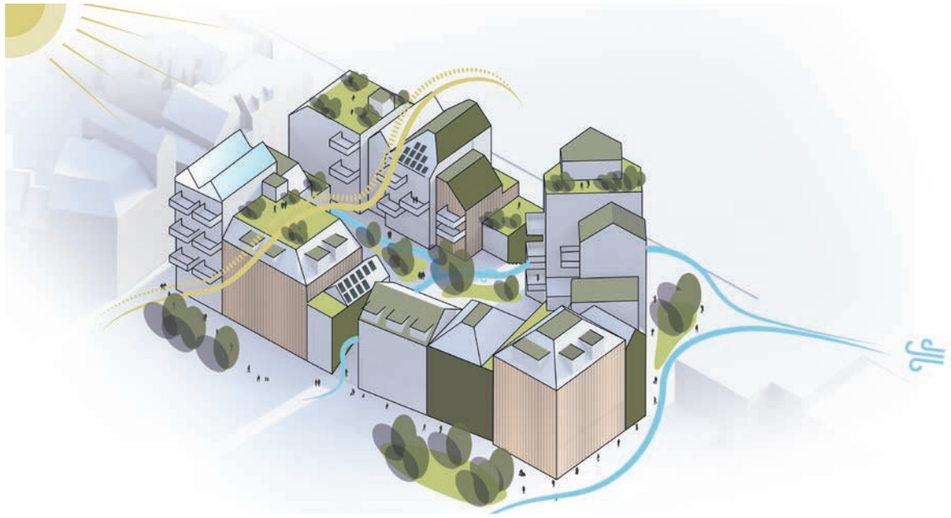
Strenghten slow traffic to become dominant form of transportation with extra high speed bike lanes and bicycle routes towards the district with proper parking facilities;

Maintain and stimulate approach streets towards train station;

Maintain and increase capacity public transport and make sure its street based.

SUSTAINABILITY: BUILDING RELATIONSHIPS WITH THE CHANGING CLIMATE AND NATURE

Charge blue/green networks and design based on the elements such as sun, air and rain



Neighbourhood level

Restore old waterways and make space to expand for water storage during peak rains;

Use air flow of prominent green space to cool down the rest of the district;

At least 40% green and water in the area and at least 10% of pavement space needs to be water storage;

Transform parking lots and other open space into city oases and connect to main green/blue networks;

Layered green throughout the whole area such as on roofs, balconies and facades.

Block level

Asymetric building layout for optimal air flow and creation of shade;

air south east air flow with openings to cool down building blocks during hot days and close blocks at other locations for blocking cold wind during cold days;

Use the sun as much as possible by desiging multiple height levels and orientation of blocks;

Layered green through the block on all levels for evaporation, holding water and create pleasant place for nature;

Sustainable materials usage like wood and green roofs;

Take in account the energy transition with for example solar panels and connections on city warmth net;

City level

Charge and interconnect green/blue network;

Use and add extra fortification rings as nature inclusive and climate adaptive defence rings;

Maintain and increase of city oases as steppingstones for people and ecology;

Make the historic central district take care of its own water household by creating ‘rain barrels‘ within the city;

Use green in combination with (south-east) airflow to cool down the city during hot days.

7. CONCLUSION

Caused by the unvital, unsustainable and stuck appearance of historic central districts this research sought answers about how to transform historic central districts into **vital, future-proof environments**. This thesis found several solutions based on redeveloping historic districts based on theory, urban analysis, and design research

The results about what vitality and what a vital urban environment are that a vital urban environment is a bustling environment full of pedestrian life. An environment with (as Jane Jacobs would call it) a healthy sidewalk ballet with a constant flow of people and eyes on the street. A vital urban environment is one that is characterized by growth development and evolution with a diverse range of functions and residents.

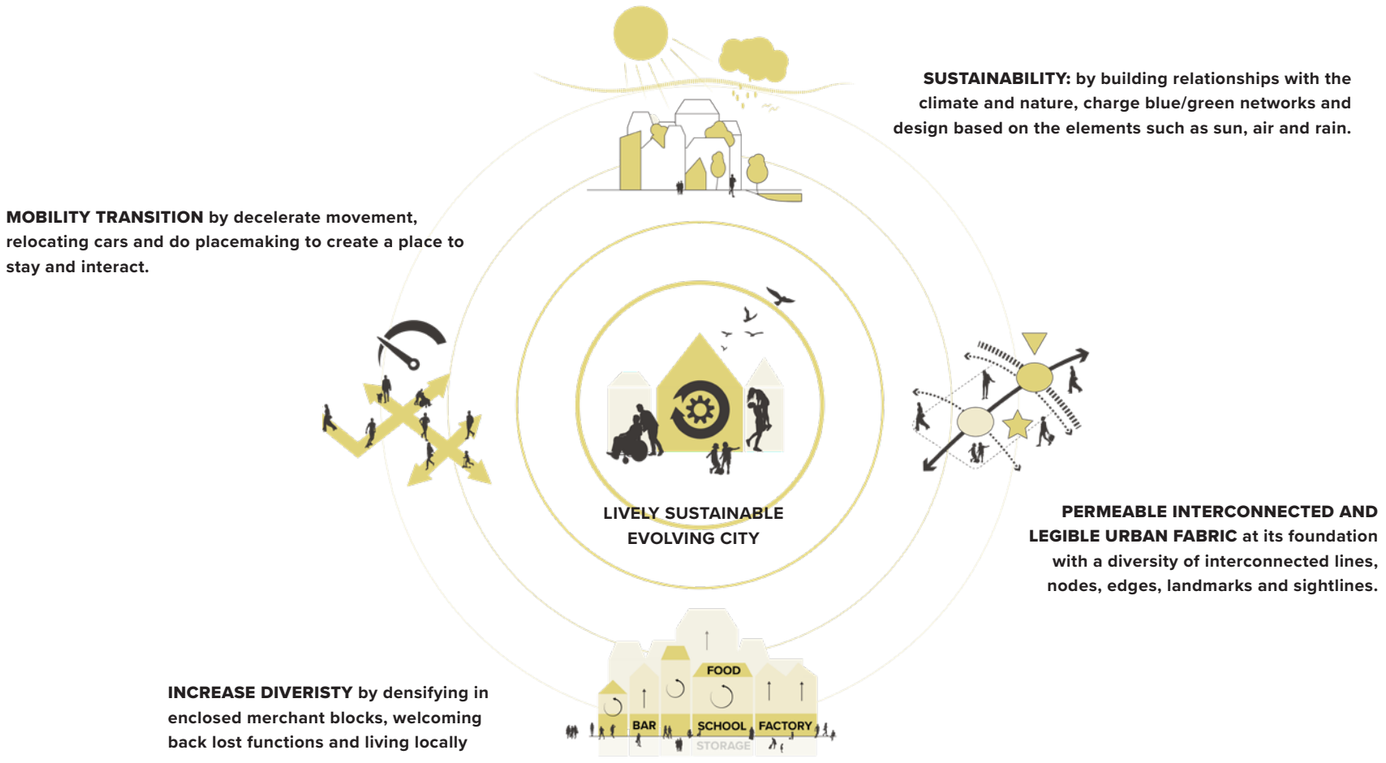
Analysis shows that the **biggest threats** to historic central districts are an illegible disconnected fabric, climate change, car dependency and loss of diversity causing a socially, economically, and functionally unsustainable historic district.

This thesis shows that by decelerating movement and creating a place to stay with the use of mobility hubs, boosting slow traffic and using principles of the city at eye level, not only a pleasant place is created but also a lot of space comes available to redevelop. Densifying in merchant blocks to live locally forms a solid solution to one the one hand creates a bigger urban payload and on the other hand creating a multifunctional district that has the possibility to evolve by building in separate parcels with collectives in combination with a hybrid space at base level. Tackling climate change by interconnecting and charging blue/green networks, create rain barrels and design based on the elements such as rain, wind and airflow. Last, to strategically bind these solutions, the fabric should be healed, interconnected, and made legible. By using the elements from Kevin Lynch such as lines, edges, nodes, landmarks and sightlines, and strenthen these, it binds legibility, functionality, development, and resilience together to a complete design strategy, creating a framework that is future proof and holds the core ingredients for a vital environment that can evolve over time.

The hypothesis posits that the pressing sustainability challenges of climate adaptation, transitioning to alternative modes of transportation, transforming housing, and more, coupled with the shifting landscape of shopping and leisure due to the rise of online retail, create a unique opportunity to redefine and revitalize historic central districts as economically, functionally, and socially sustainable thriving areas.

Through an examination of ‘s Hertogenbosch, it becomes evident that this hypothesis holds true. The multiple sustainability challenges coupled with the shift from a place to buy to a place to be create a unique opportunity to revitalize historic central districts. The time is now to act and transform the district step by step to make it resilient towards the future. Research shows that if not acting quickly, it might be too late, and these potential districts bleed out and perish in climate catastrophes and extinguish by the loss of diversity.

The design principles and their exemplative solutions tested on ‘s Hertogenbosch offer solutions to create vital future-proof historic central districts for all. The principles can be seen as guide into the right direction for other historic central districts to create a resilient economically, functionally and socially sustainable future.



8. DISCUSSION

This thesis is a valuable contribution to the field of urban planning and design, as it provides insights into the challenges faced by historic central districts and proposes solutions to create livelier and future-proof urban spaces. The research was conducted with great care and involved collaboration with stakeholders such as the municipality of ‘s Hertogenbosch, the Province of North Brabant, and experts from various disciplines. The use of actual scientific data in combination with theory from renowned urbanists adds credibility to the research and makes it a reliable source for further studies.

The results of the research confirm the expectations about the malfunctioning fabric, the lack of resilience and its socially, functionally and economically unsustainability.

The research has limitations, such as the focus on only one city, ‘s Hertogenbosch. Further research should be conducted in other cities based on the same principles to reveal new insights and to re-evaluate the proposed solutions.

To conclude, this thesis provides a significant contribution to the urban planning field by identifying the challenges faced by historic central districts and proposing solutions to create vital, future-proof, and sustainable historic central districts.

Further research can be conducted to validate the proposed solutions and to adapt them to different cities based on the same design principles, and studies on different fields such as landscape architecture, architecture and project development.

9. RECOMMENDATIONS

9 LESSONS FOR THE TRANSFORMATION TOWARDS VITAL FUTURE-PROOF HISTORIC CENTRAL DISTRICTS

1. See the historic central district as a ideal place for densification. Densify in merchant houses, joined-up existing and new buildings in enclosed blocks with a hybrid layer underneath to ensure high density multifunctional districts.

2. Heal and legibilitize fabric. Create a fordable legible environment by extending primary lines, create a strong secondary road system and edges, make nodes at intersections and give meaning to them by landmarks.

3. Develop in parcels in stead of blocks with collectives and coorporations in stead of by project developers to reduce cost, prevent gentrification and come up with creative development solutions.

4. Think in hybrids and welcome back lost functions such as the making industry, factories, offices and education.

5. Decelarate movement in the district by designing in steps rather than in kilometer an hour, creating walking economies together with public space as a place to stay and interact with each other.

6. Build relationships with the climate, make it as comfortable as possible to go outside no matter what type of weather by orientateing and designing streets and blocks based on the sun and air flow.

7. De-pave ground levels, make room for water level fluctuations and use every drop of rainwater

8. Stack green levels for water buffering, evaporation, and healthy living spaces

9. Dont fix or restrict individual building layout or appearance, let inhabitants personalize the blocks and let it evolve over time.

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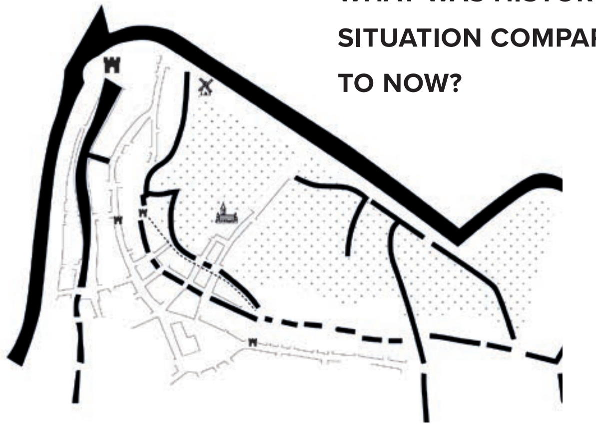
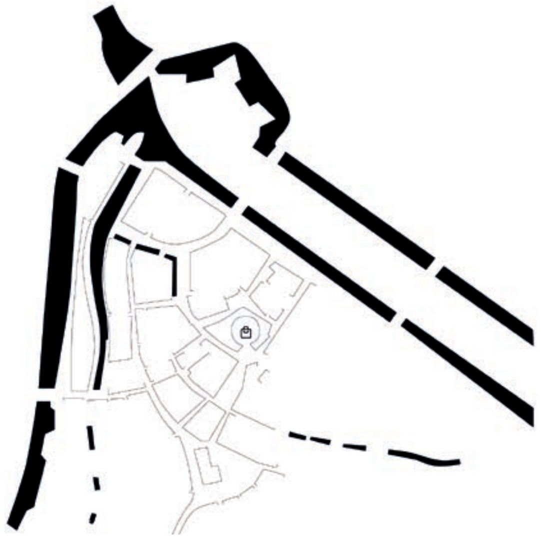
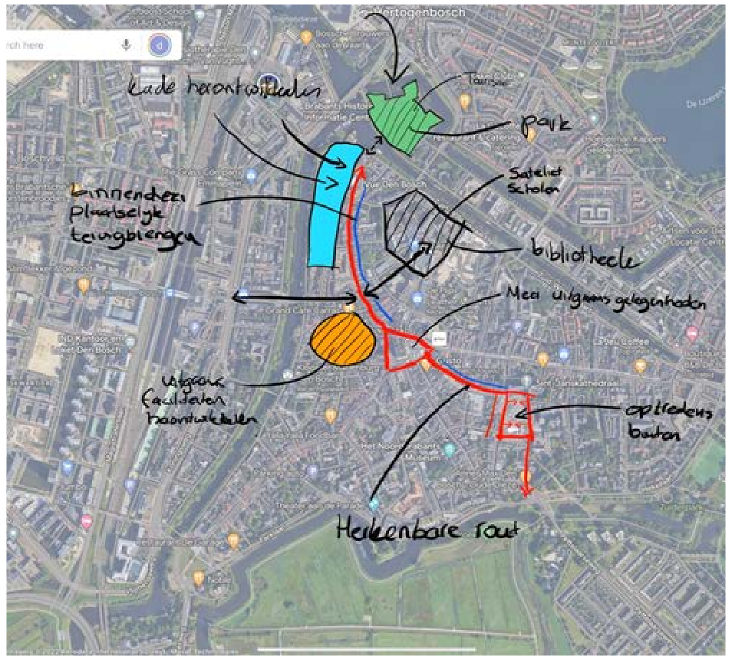
11. EVOLVEMENT OF THE DESIGN: LOGBOOK

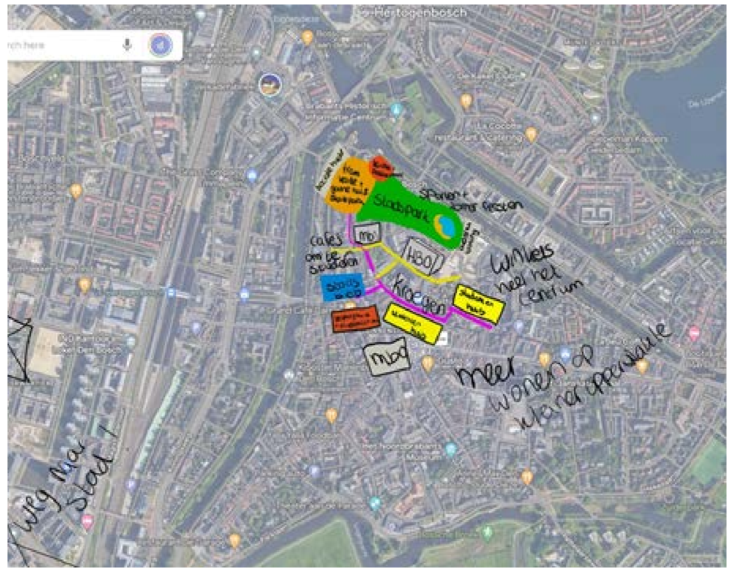




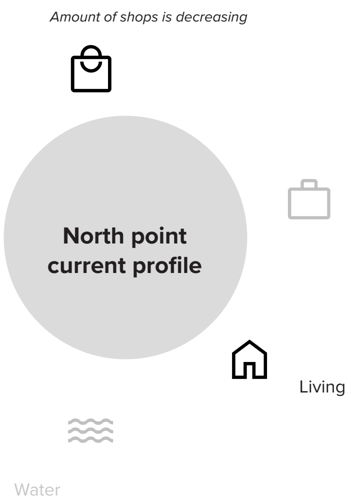
WHAT WAS HISTORIC SITUATION COMPARED TO NOW?

SWAMP/DIEZE/MONASTERY/CLEAR STRUCTURE

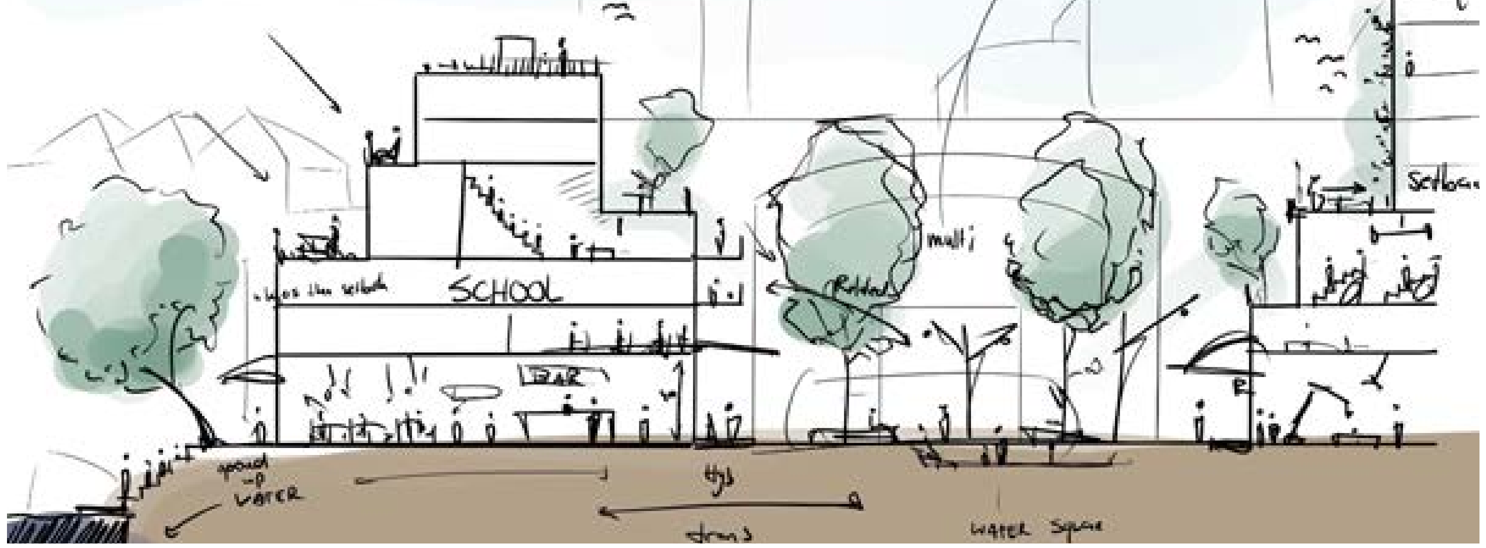




LETTING STUDENTS FROM HAS/AVANS SKETCH THEIR NEEDS/WISHES/USES



COMPLETE CITY: MAKING, EDUCATION, FABRICATION, LIVING.

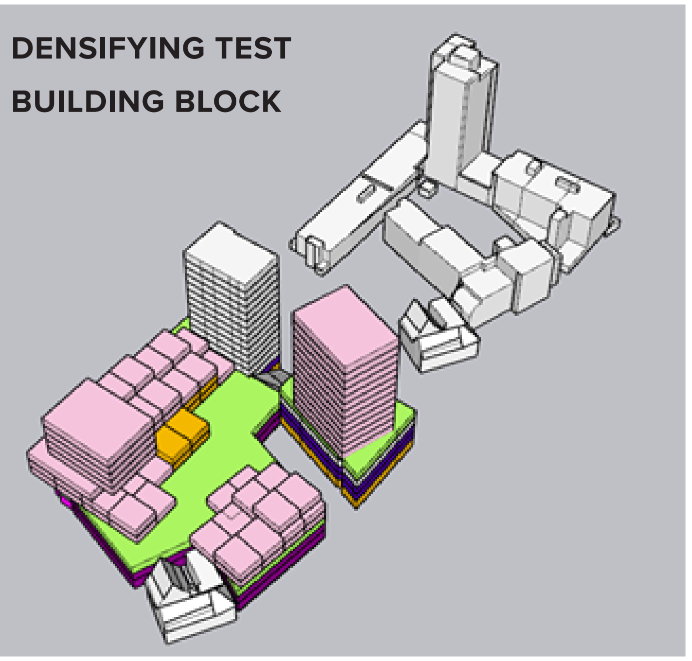


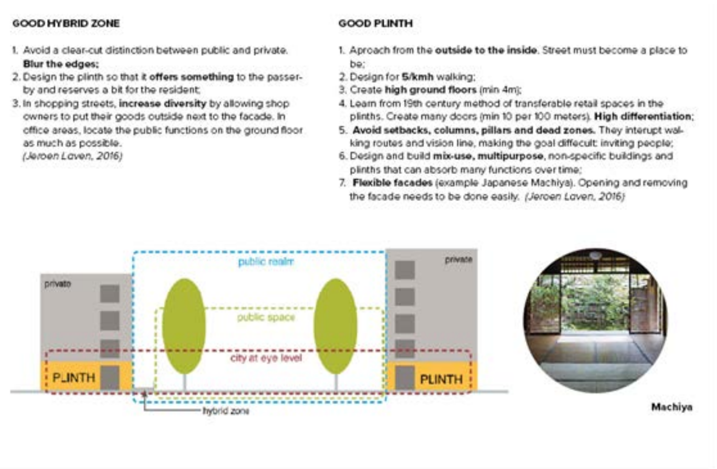
GAINING KNOWELEDGE FROM THEORY

HISTORIC FABRIC LOST ITS DIVERSITY WHY? HOW?

DRAWING PRINCIPLES TO VISUALIZE NEEDS OF 'SIDEWALK BALLET '

DENSIFYING TEST BUILDING BLOCK



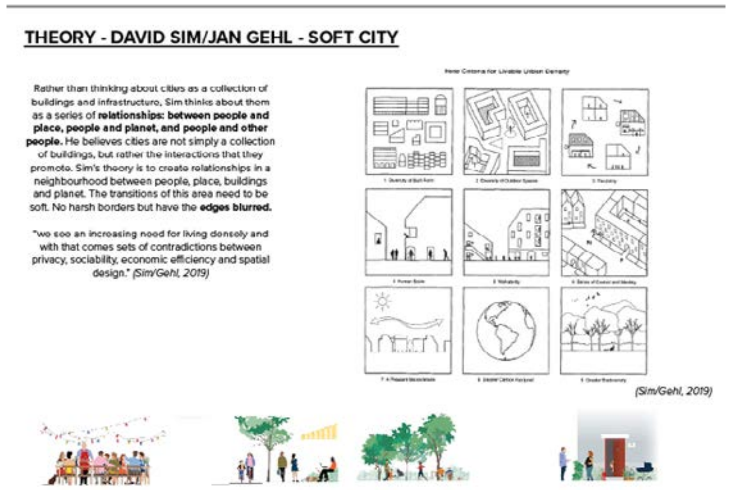


GOOD HYBRID ZONE

1. Avoid a clear-cut distinction between public and private. **Blur the edges;**
2. Design the plinth so that it **offers something** to the passer-by and reserves a bit for the resident;
3. In shopping streets, **increase diversity** by allowing shop owners to put their goods outside next to the facade. In office areas, locate the public functions on the ground floor as much as possible. *(Jeroen Laven, 2016)*

GOOD PLINTH

1. Aproach from the **outside to the inside**. Street must become a place to be;
2. Design for **5/kmh** walking;
3. Create **high ground floors** (min 4m);
4. Learn from 19th century method of transferable retail spaces in the plinths. Create many doors (min 10 per 100 meters). **High differentiation**;
5. **Avoid setbacks, columns, pillars and dead zones.** They interupt walking routes and vision line, making the goal difficult: inviting people;
6. Design and build **mix-use, multipurpose**, non-specific buildings and plinths that can absorb many functions over time;
7. **Flexible facades** (example Japanese Machiya). Opening and removing the facade needs to be done easily. *(Jeroen Laven, 2016)*

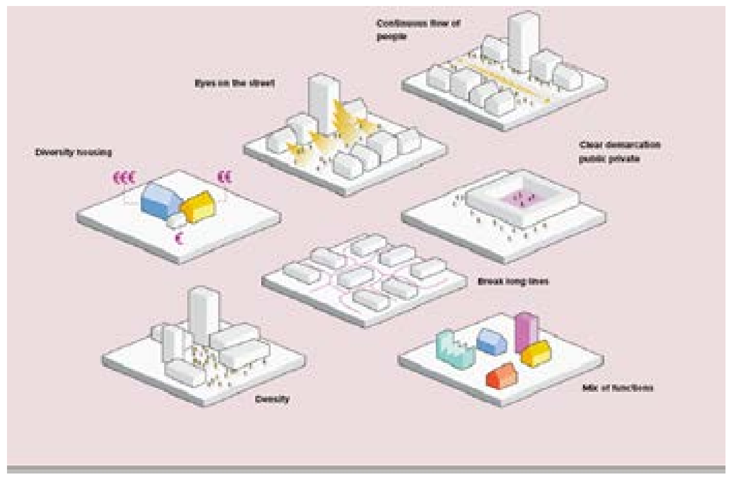


THEORY - DAVID SIM/JAN GEHL - SOFT CITY

Rather than thinking about cities as a collection of buildings and infrastructure, Sim thinks about them as a series of **relationships: between people and place, people and planet, and people and other people.** He believes cities are not simply a collection of buildings, but rather the interactions that they promote. Sim's theory is to create relationships in a neighbourhood between people, place, buildings and planet. The transitions of this area need to be soft. No harsh borders but have the **edges blurred.**

"we see an increasing need for living densely and with that comes sets of contradictions between privacy, sociability, economic efficiency and spatial design." *(Sim/Gehl, 2019)*

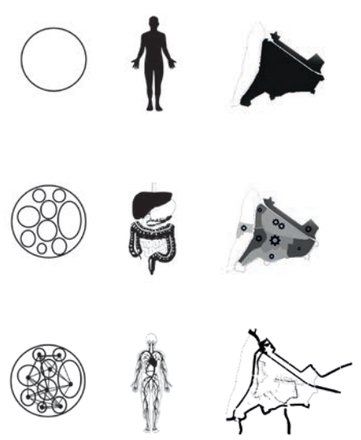
(Sim/Gehl, 2019)



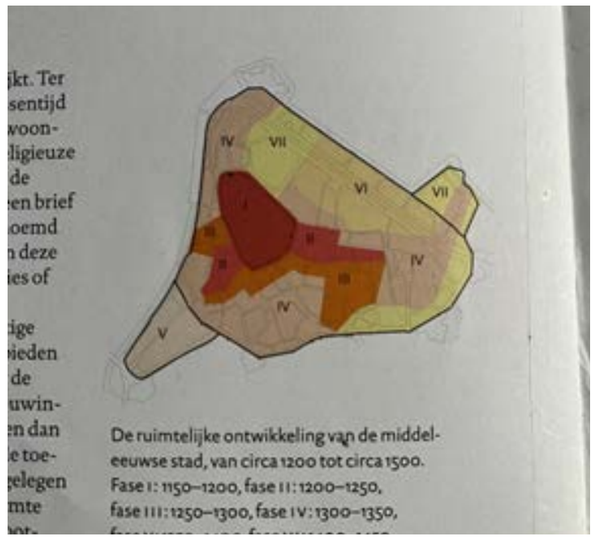
BIKE TOUR AND PRESENTATIONS FROM PROVINCE AND WATERSCHAP. FUTURE THREATS TO HISTORIC CITIES...

DELTA METROPOLE ‘S HERTOGENBOSCH?

PAST: INTERWOVEN WITH WATER

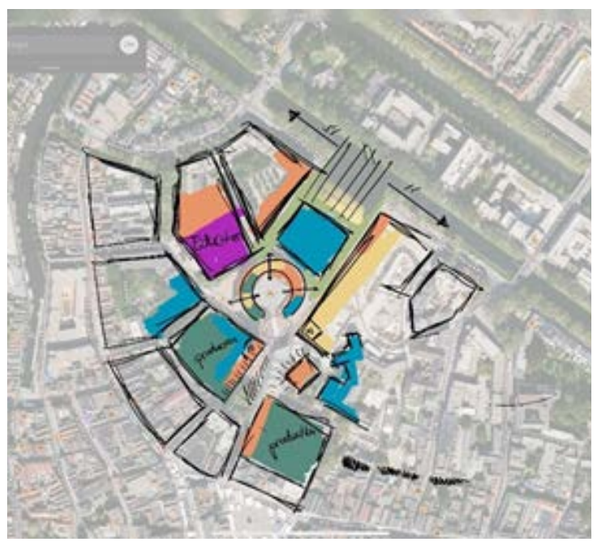


CITY IS SYSTEM LIKE HUMAN BODY?



WHAT SHOULD FUTURE HISTORIC CENTRAL DISTRICT BE TO BE INCLUSIVE AND DIVERSE?

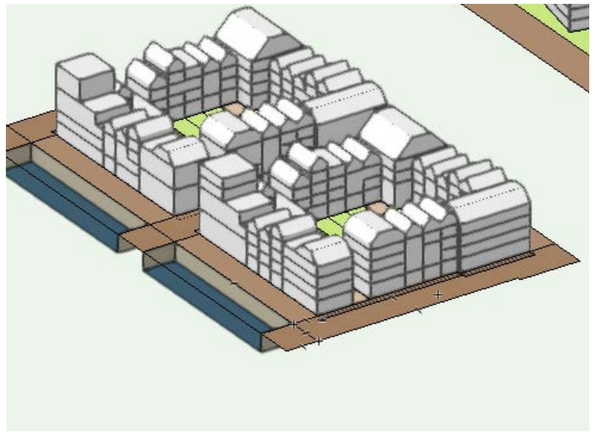
FLIPPING THE VIEW TO ANALYSE. THIS IS HOW IT FUNCTIONS FROM NEW DEVELOPMENTS



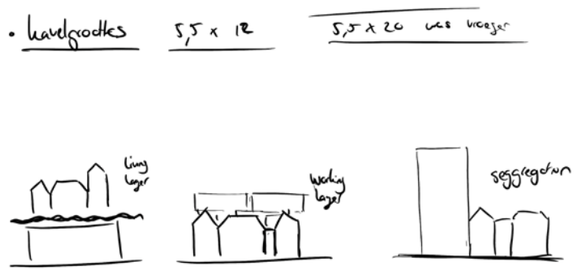
TESTING STRUCTURES AS MODELS

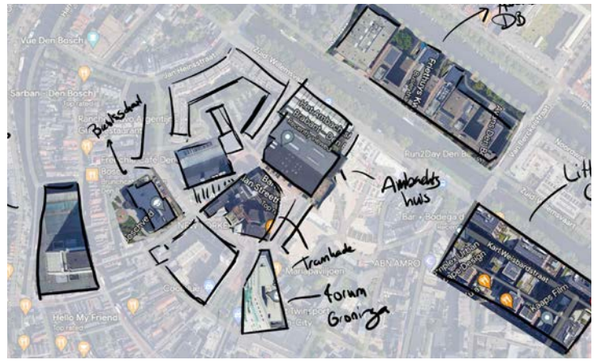
UNDERSTANDING HISTORIC FABRIC

INCREASE URBAN PAYLOAD IN WHICH BLOCK?

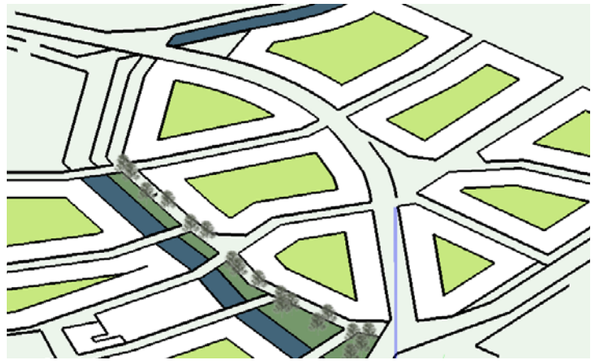


PARCELLATION ‘S HERTOGENBOSCH TEST

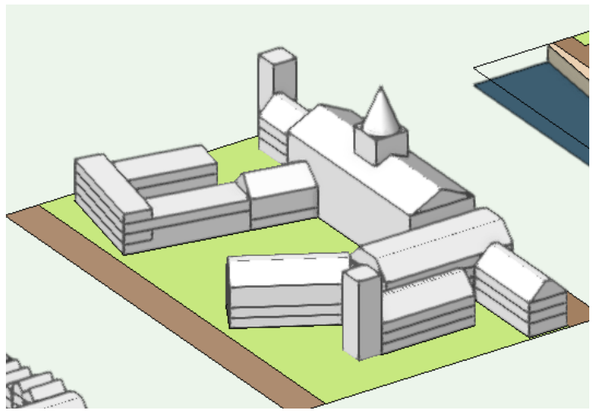




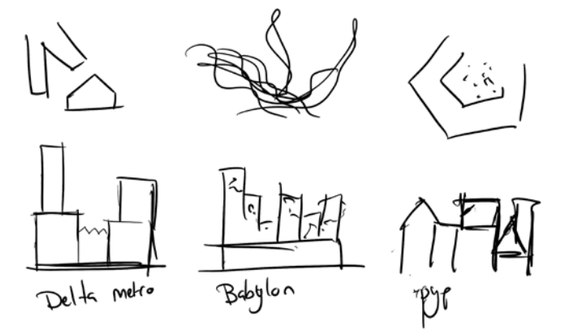
SIZE COMPARISON WITH FUNCTIONS THAT COULD BE EMBEDDED (HOUSE OF PROVINCE, CRAFTS HOUSE, FORUM).



TESTING CAPACITY RESTORING MOSAIC OF THE CITY



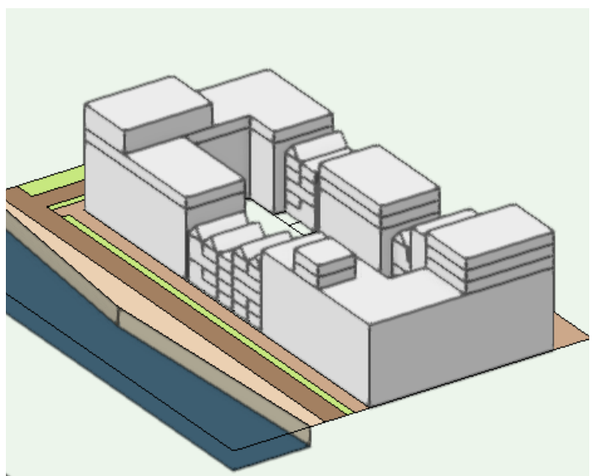
WHAT IS A MONASTERY BLOCK



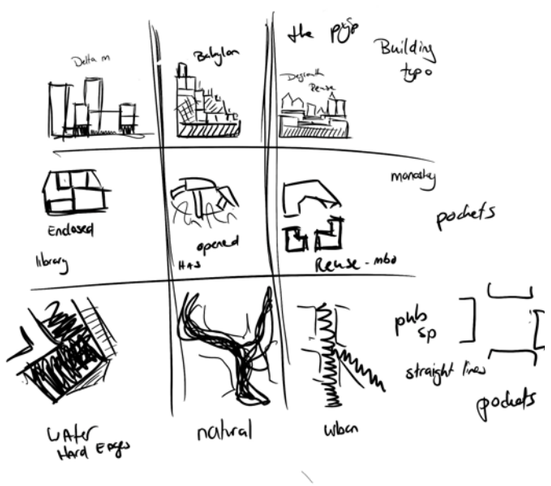
TESTING SCENARIOS

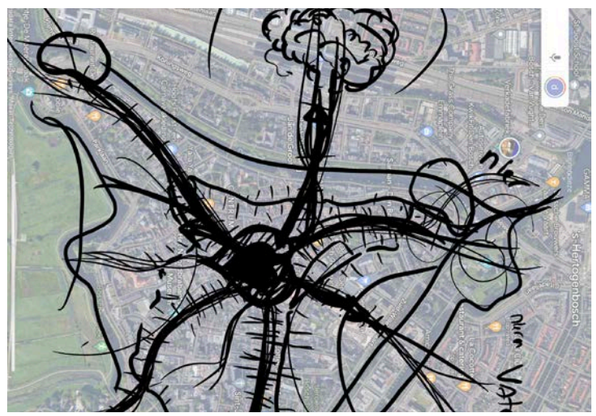
MAKE CITY - INNOVATION DISTRICT WITHIN HISTORIC CENTRAL DISTRICT

TESTING EVOLVEMENT BASED ON PARCELS/ MODULAR BLOCKS AND HYBRID SPACES

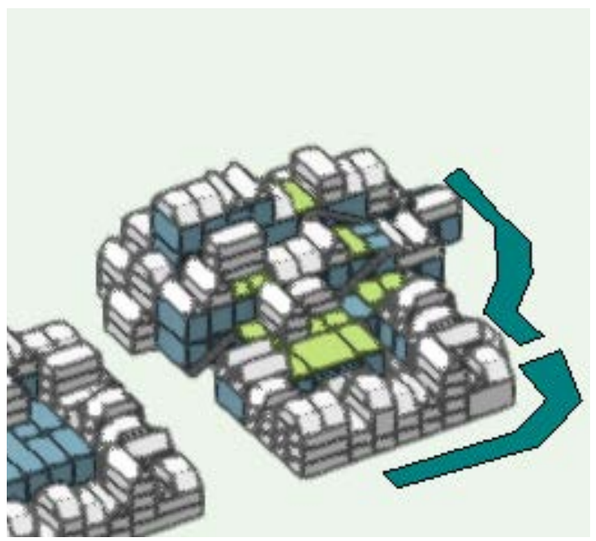


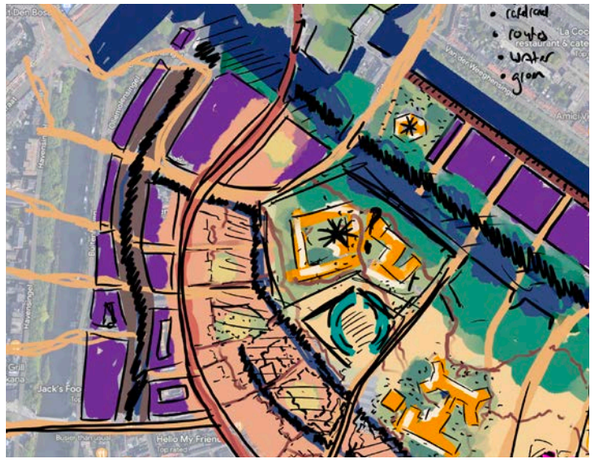
WHAT IS A HARBOR BLOCK





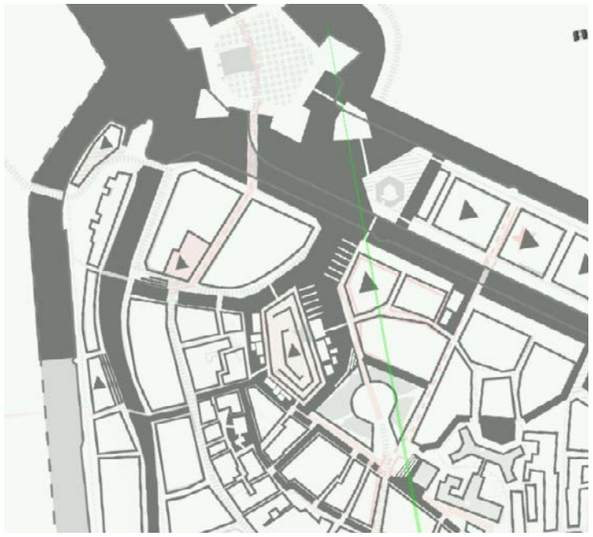
CITY IS LIKE A SYSTEM LIKE HUMAN BODY WITH NETWORKS, SUBSYSTEMS, ETC. ALL NEED TO WORK PROPERLY TOGETHER.



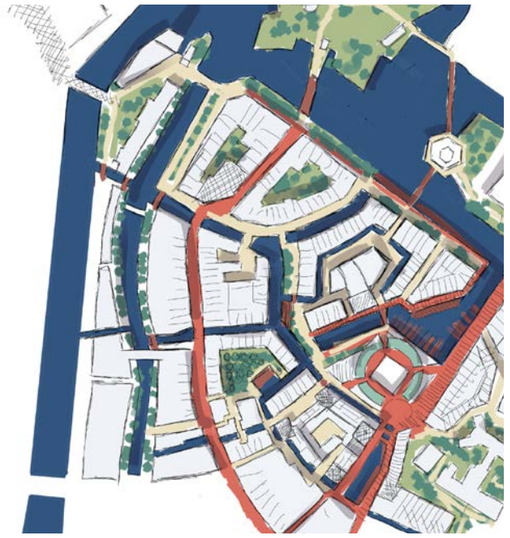


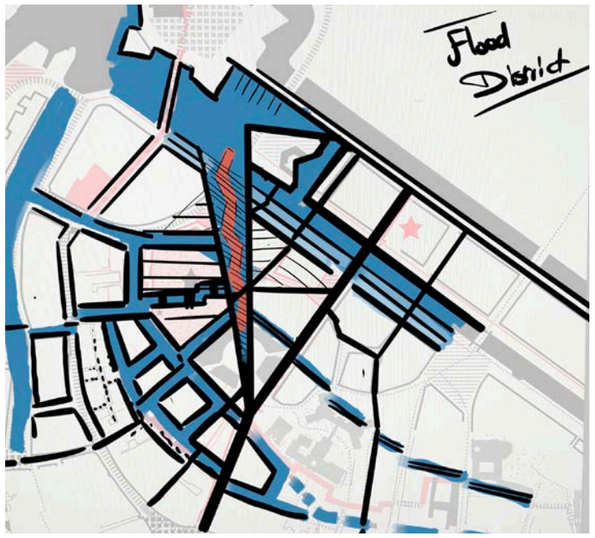
BUILDING FORWARD ON EXISTING FABRIC

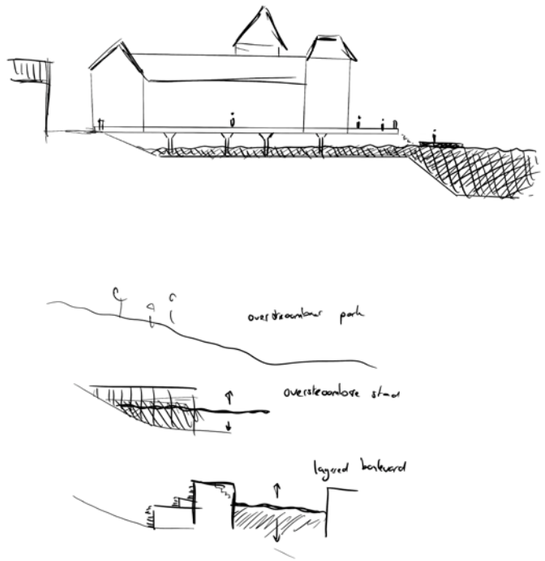
HARBOR CITY - DOES HARBOR MAKE SENSE?

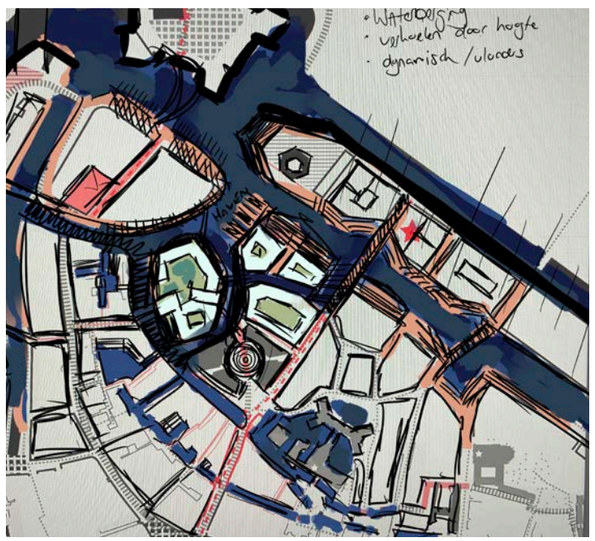


MANHATTEN OF ‘S HERTOGENBOSCH?

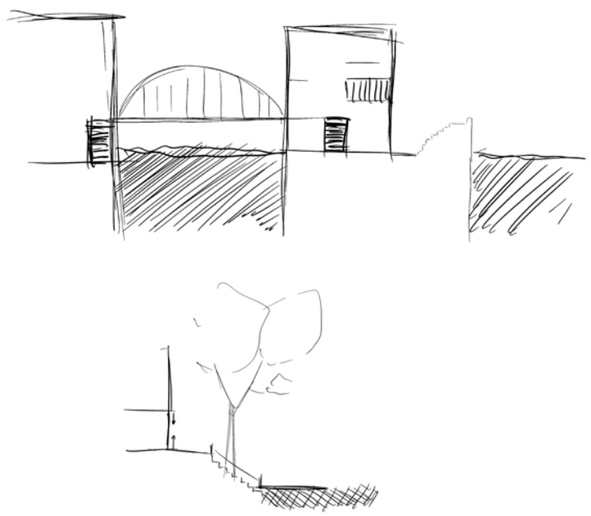






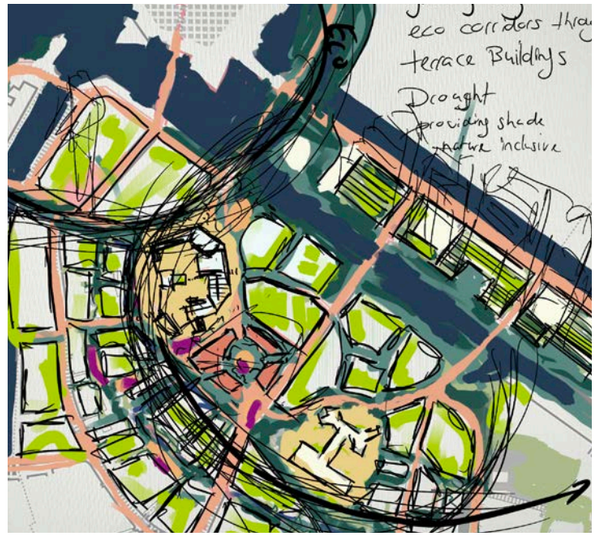


CITY NEEDS BE ABLE TO FLOOD...
RELATIONSHIP WITH WATER SHOULD BE RESTORED. CITY AS RAIN BARREL?



FUTURE CITY SHOULD BE LIKE A GARDEN...

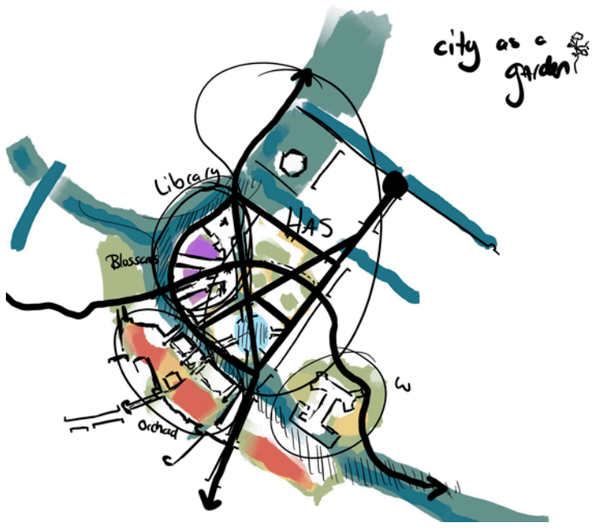
A GARDEN OF LIFE LONG LEARNING.



BRINGING BACK THE SWAMP?

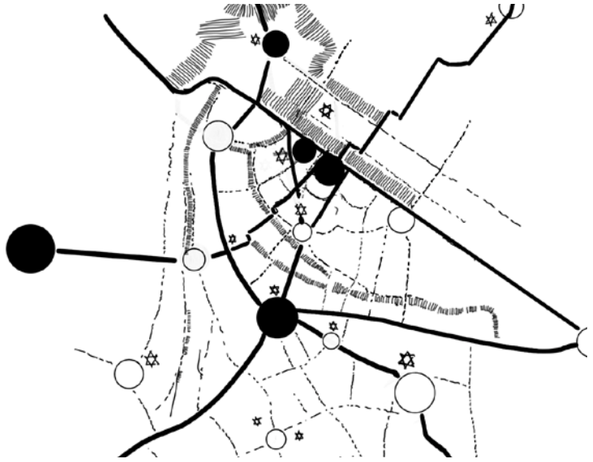
FROM SHOPPING TO LIFE LONG LEARNING

OLD RIBBON OF THE PIJP BROUGHT BACK



EDUCATIVE GARDEN - CAMPUS

NOT SPECTACULAR ENOUGH.....

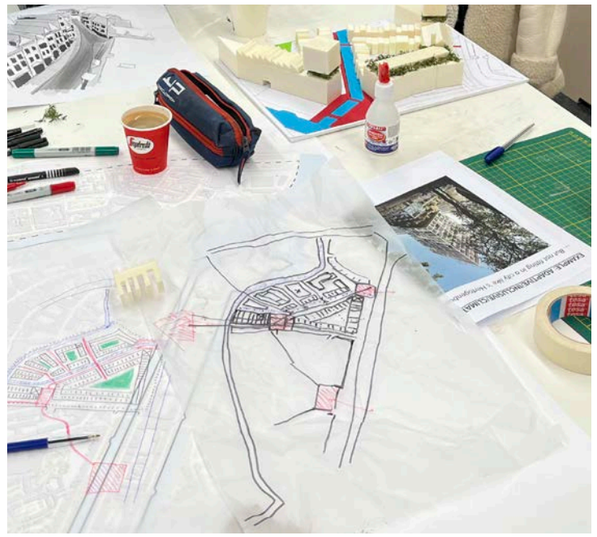


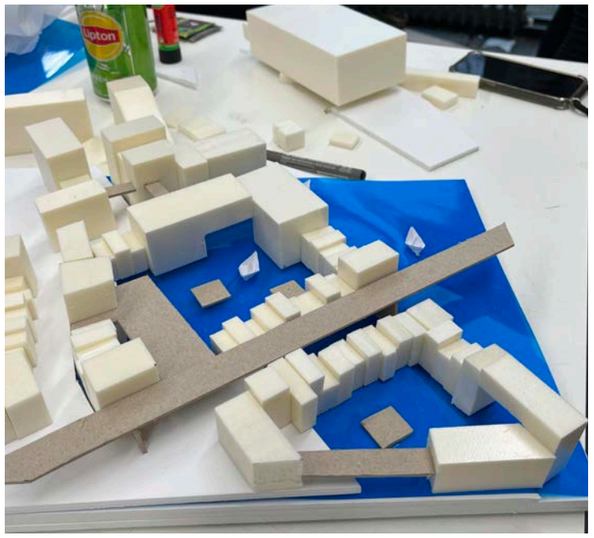
KEVIN LYNCH ANALYSIS (LEGIBILITY)

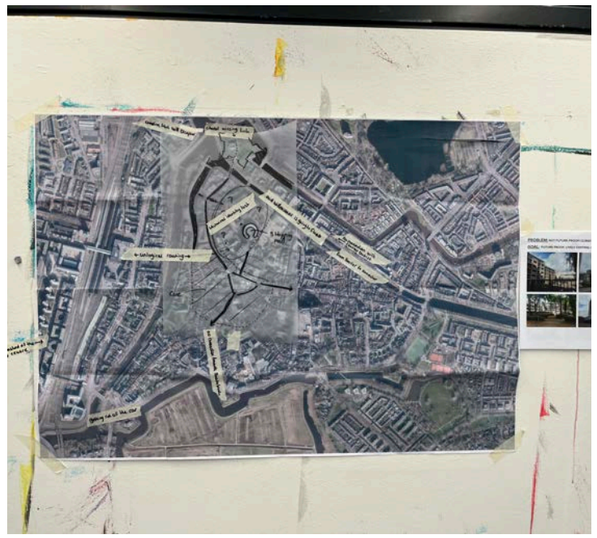
CAN KEVIN LYNCH ANALYSIS BE USED AS FUNCTION STRATEGY?

WORLD SCHOOL - 3 SCENARIO'S:

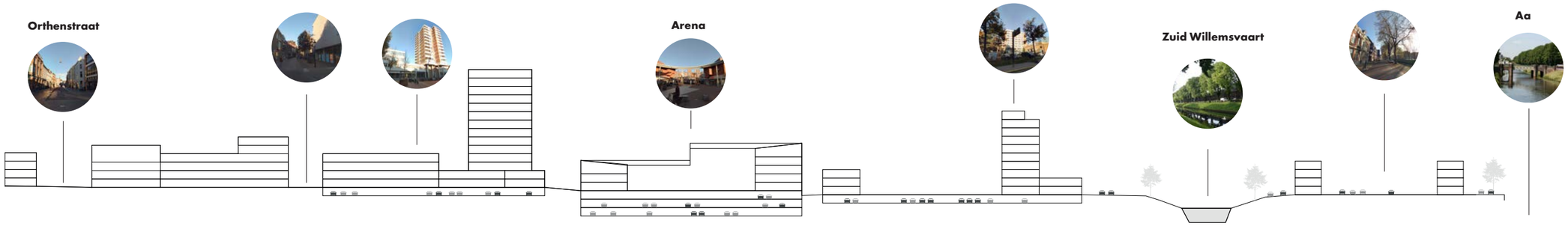
1. GARDEN OF LEARNING - 2. SWAMP DRAGON UNLEASHED - 3. REVITALIZING THE PIJP

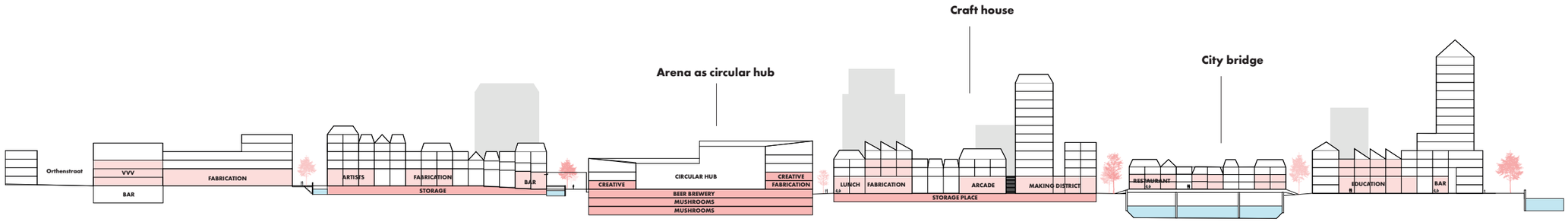


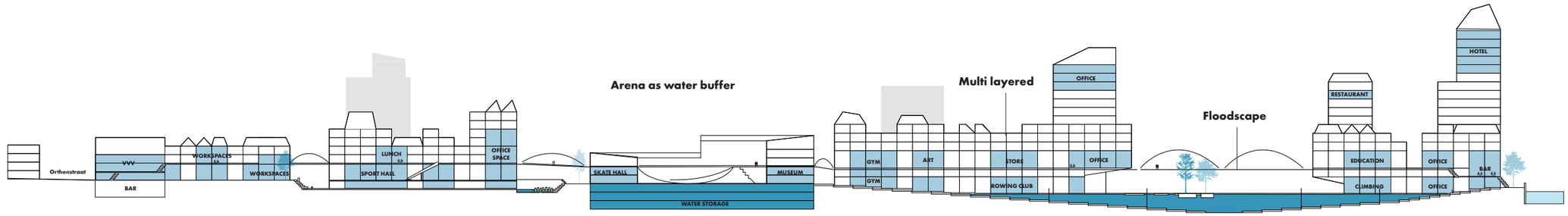




VISION? DOES FORTIFIED PARK MAKE SENSE?



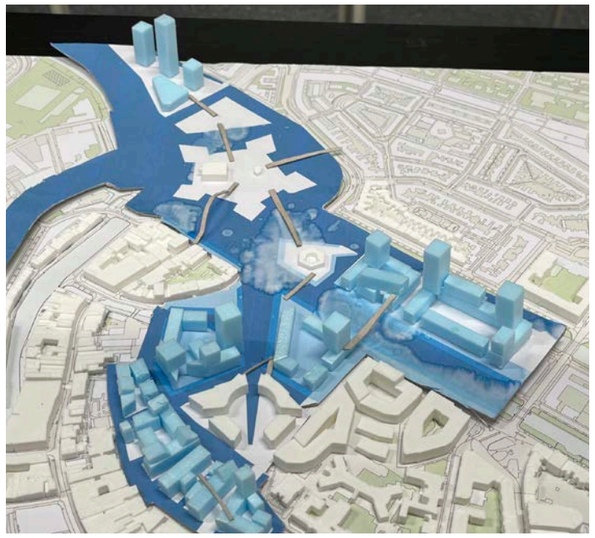




3 SCENARIOS WORKED OUT AS SECTION (SHOULD BECOME A COMBINATION OF THESE THREE).

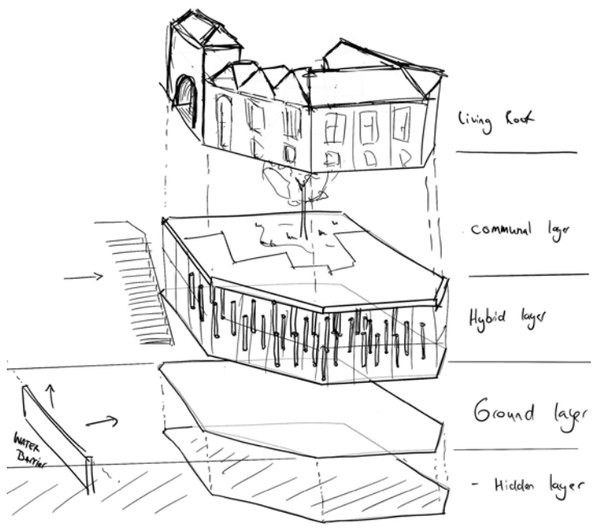
DISCUSSING MODELS WITH MUNICIPALITY:

ADVISE: DISTRICT SHOULD INDEED BE ABLE TO PARTLY FLOOD. HARBOR DOESNT MAKE SENSE

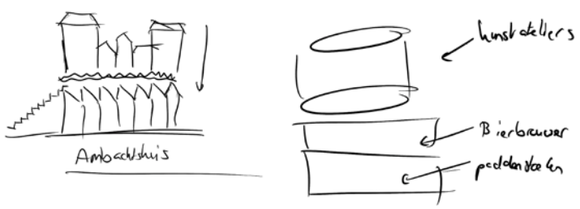


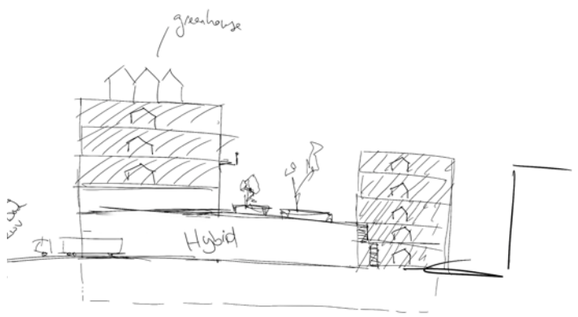
DIEZE PARK TOWARDS MARIA PAVILION

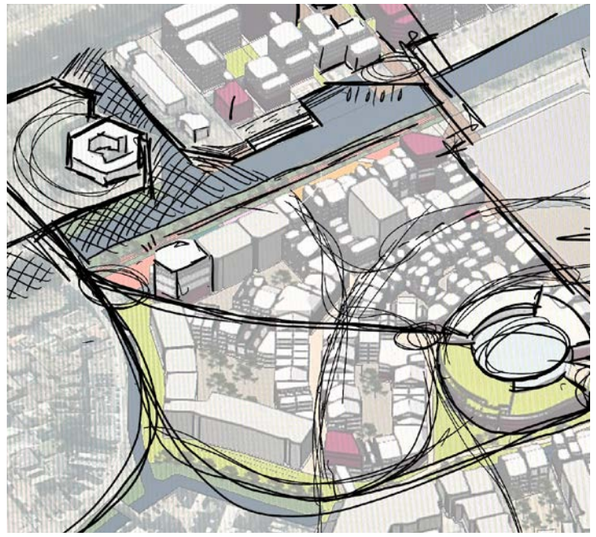
PREFERRED MODEL AS SKETCH MODEL



IN COMBINATION WITH HYBRID BLOCKS? TO LIVE LOCAL?



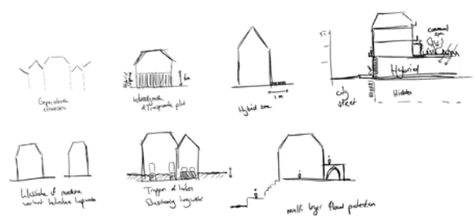




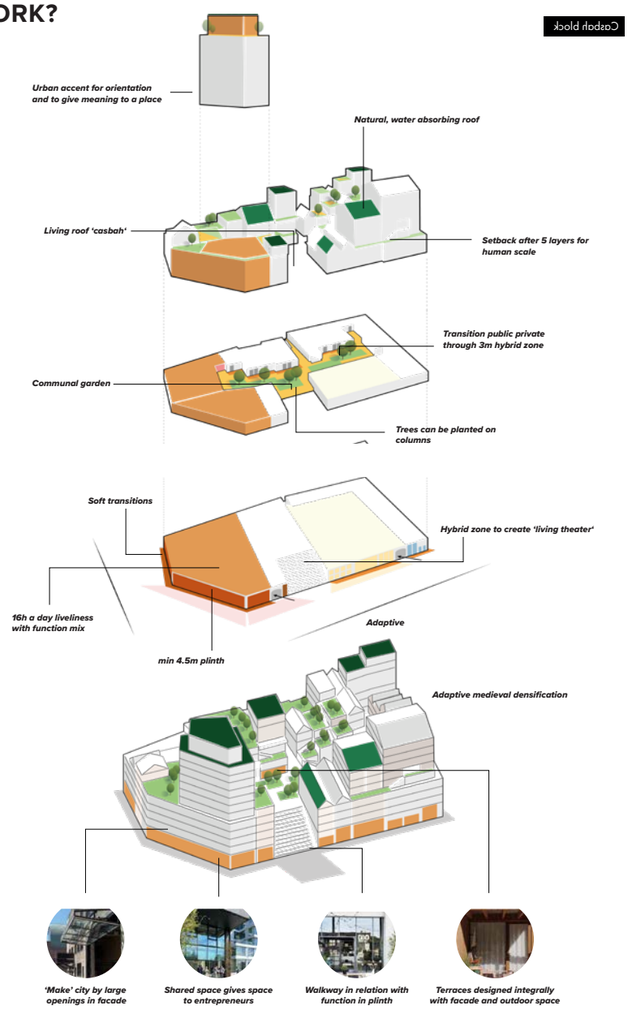
CONTINUES LINES (PERMEABILITY)

DIEZE PARK?

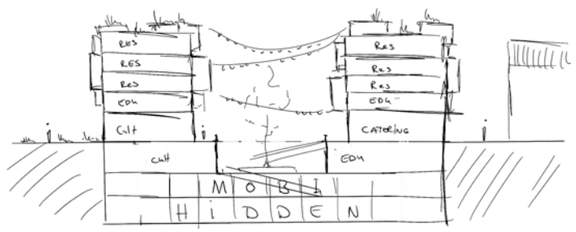
ARENA JOINING THE PARK?

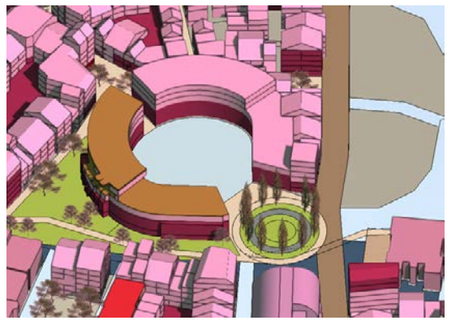


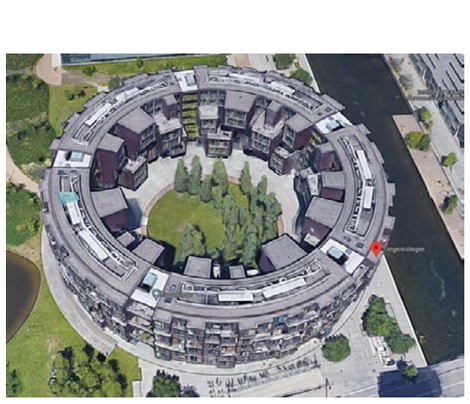
EXPLODED VIEW - HOW DOES IT WORK?

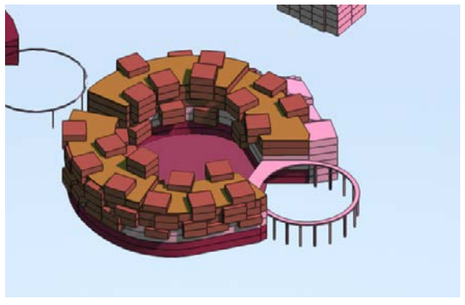


WORKING AND FUNCTIONING OF HYBRID BLOCK

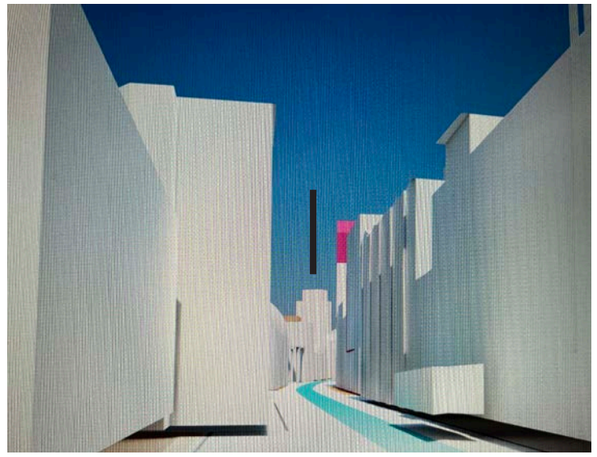




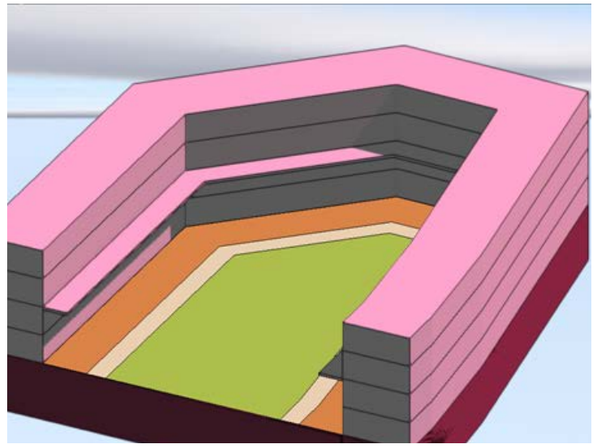




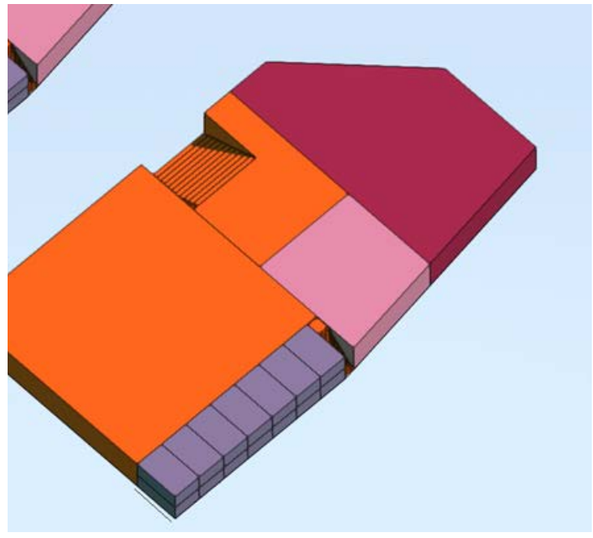
ARENA TRANSFORMATION TOWARDS EDUCATIVE/CULTURAL HUB?

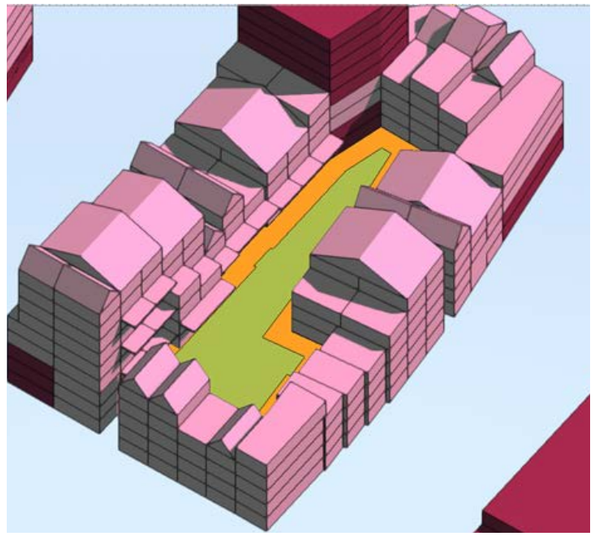


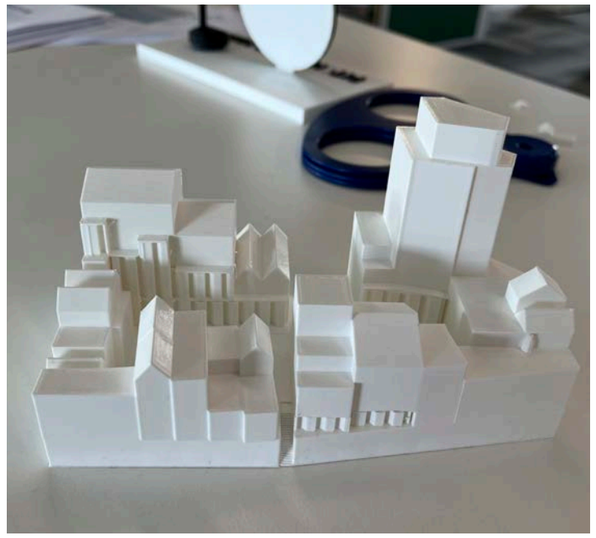
SIGHTLINES TESTING IN 3D WITH CERTAIN HEIGHTS



HYBRID BLOCKS TEST



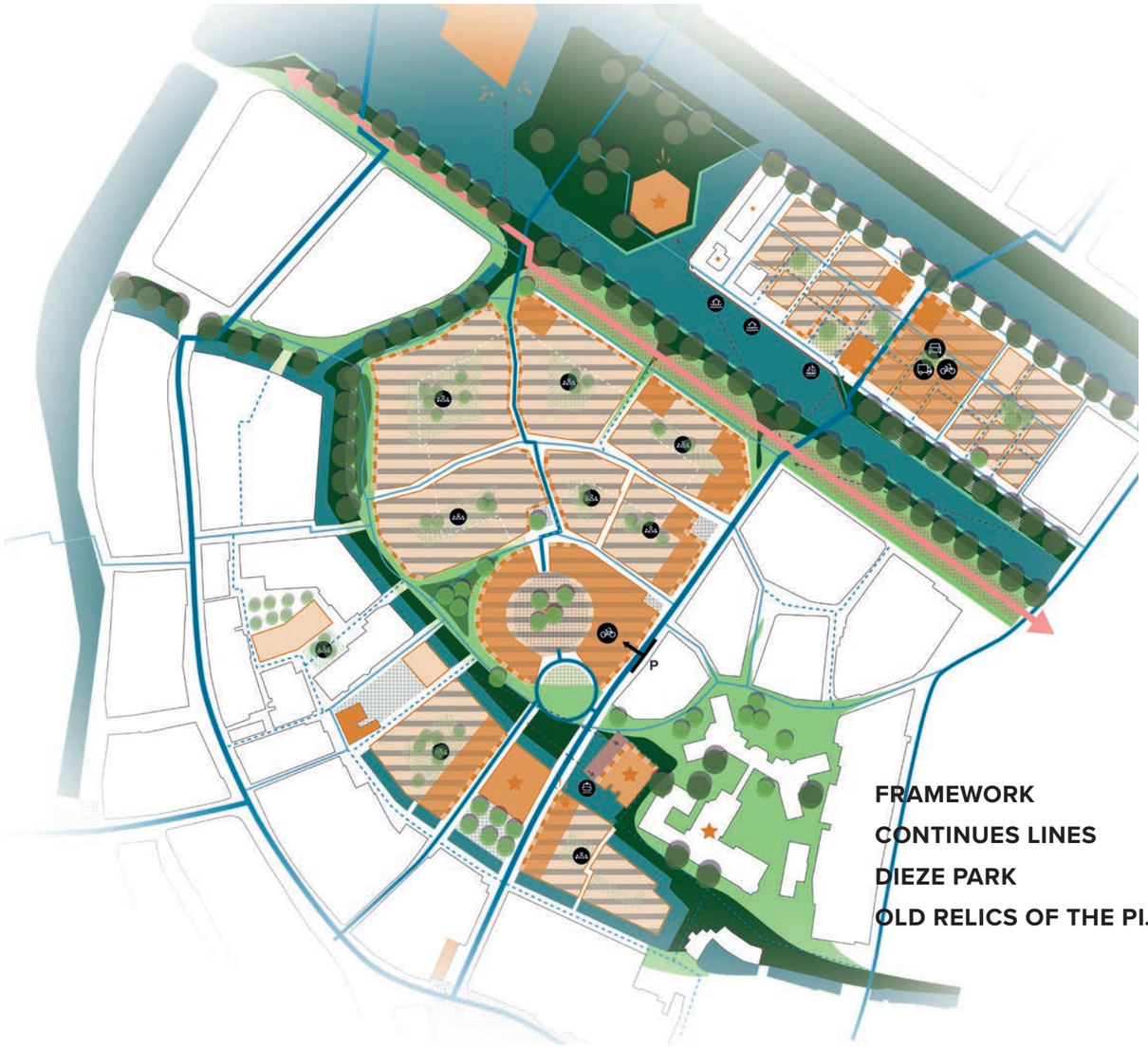




STILL NOT HAPPY WITH HEIGHTS,
DIMENSIONS AND SPACES YET....

MANHATTEN STILL IN
MAKES PLAN LESS STRONG

TESTING SPECIFIC HEIGHTS AND
FRAMEWORK IN 3D



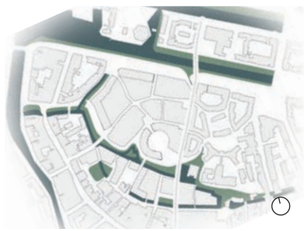
FRAMEWORK
CONTINUES LINES
DIEZE PARK
OLD RELICS OF THE PIJP

CURRENT

Demolished when poor quality, not fitting location, making location unreadable, is going in against core principles of future proof cities.

HEALING

Ddensifying

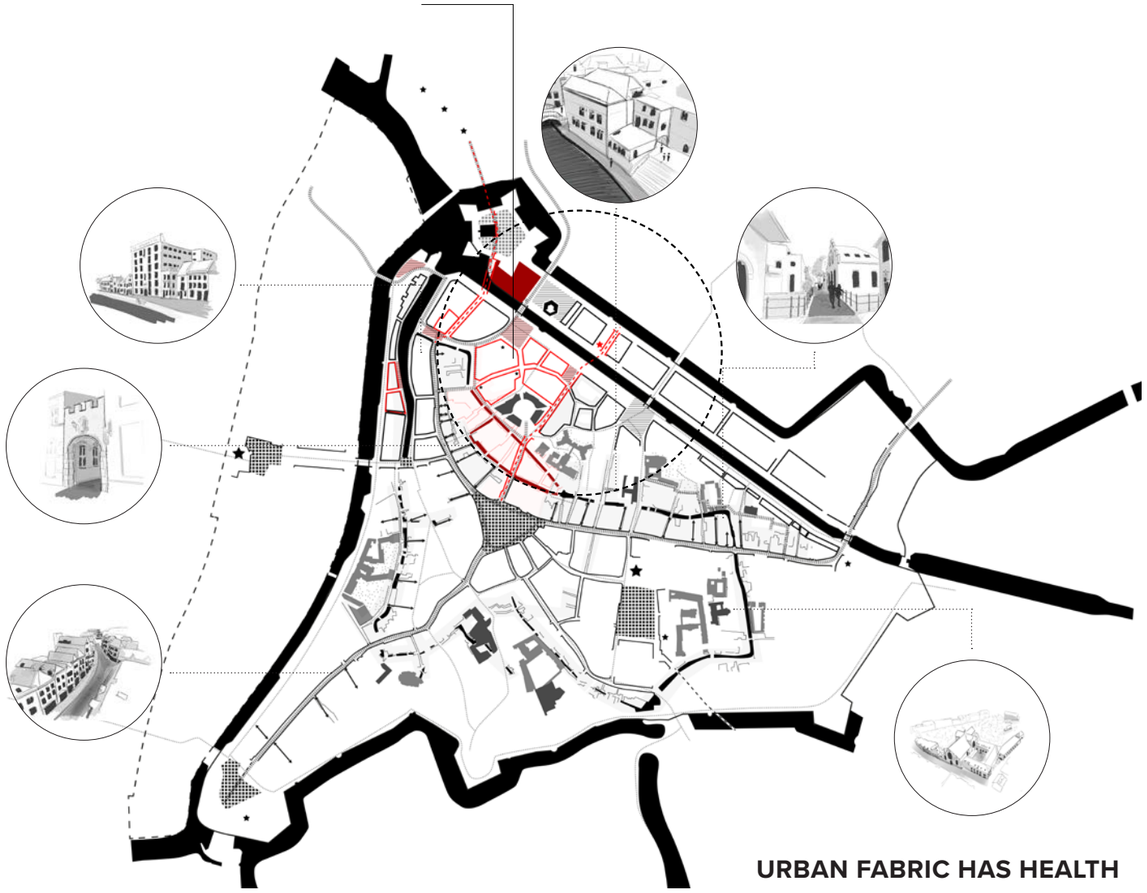


FLOOD SCAPES

NATURAL LAYER

PLACES AND SPECIAL

CHARACTERISTICS OF THE CITY



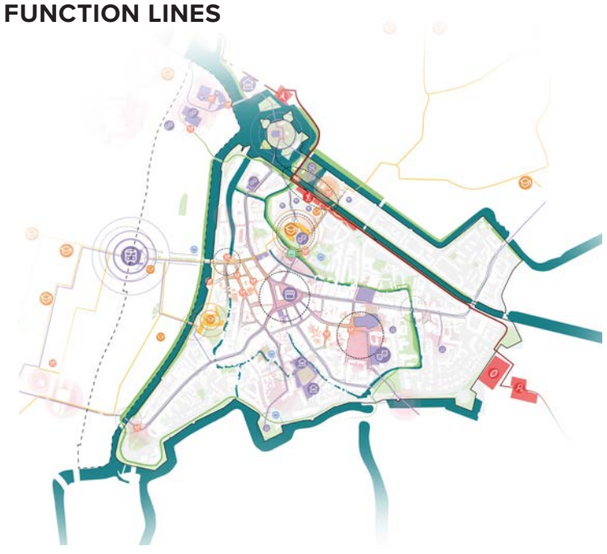
URBAN FABRIC HAS HEALTH PROBLEMS (NEED CURE)

TECHNICALLY WORKING OUT PROJECT AREA... BECOMING STUCK

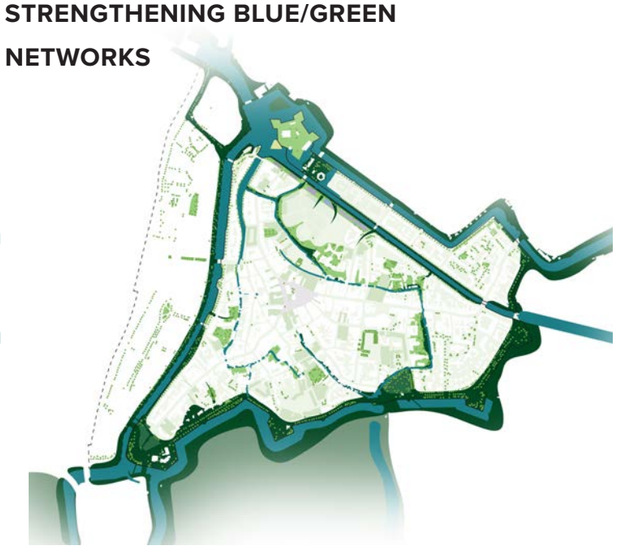
EXAMPLE: INDUSTRIEGEBOUW - HYBRID BLOCK

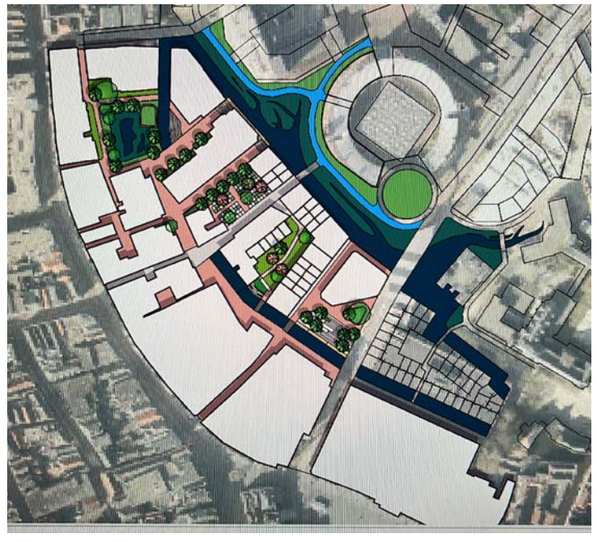
DIEZE SHOULD BE LIKE A SWAMP ENTERING AND EXPANDING INTO NEIGHBOURING AREAS

FUNCTION LINES



STRENGTHENING BLUE/GREEN NETWORKS





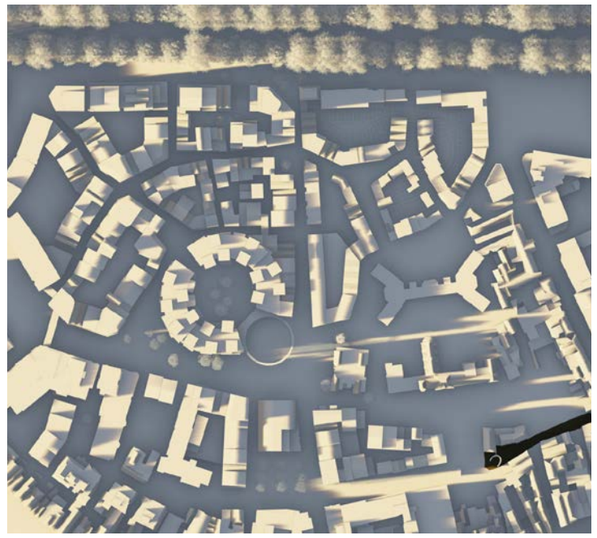
VISITING GROENE KAAP (HYBRID BLOCK)

BLOCKS NOT FINE ENOUGH

TESTING THE DESIGN IN 3D. CONSTANTLY REMODELLING, RESHAPING, PRINTING.

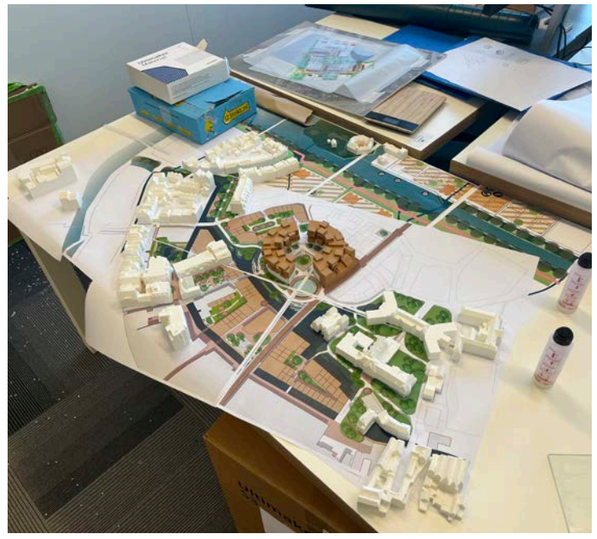
A CONTINUES PROCES THAT TOOK MORE THEN 3 WEEKS ONLY TO PRINT. THEN HAD TO REPRINT ALMOST EVERY BLOCK DUE TO WRONG HEIGHTS, TOO MUCH SHADOW IN CERTAIN PLACES OR BECUAUSE IT DIDNT CONNECT TO THE CONTEXT.

I DID NOT NOTICE THESE FLAWS IN 3D SOFTWARE

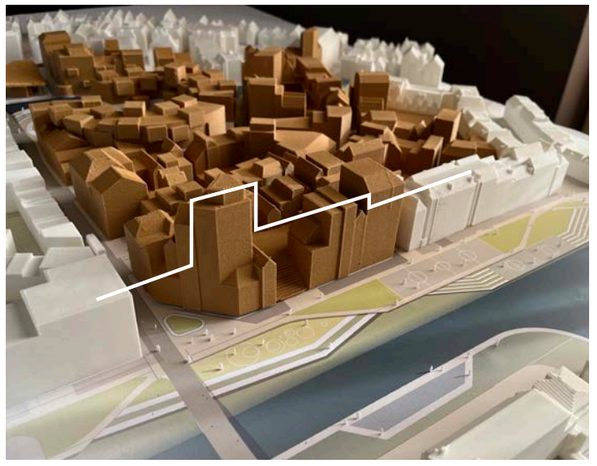


SUN/SHADOW RESEARCH

I SHOULD DROP THE EAST BANK...
WILL NOT STRENGTHEN MY STORY



TOO LARGE FOR LOCATION



BLOCKS SHOULD BETTER CONNECT
TO CONTEXT