NEW HUMAN NATURE

A Plea for the Coherency of the DiverCity

- research report -

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Low-rise buildings in Hoptille

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STUDIO
New Heritage

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PROJECT TITLE
New Human Nature: A Plea for the Monotony of the Divercity

PROJECT LOCATION
H-buurt, Amsterdam Zuid-Oost, the Netherlands

DATE
06/07/2021

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Current front mid-rise building Hoptille

Mid-rise building Hoptille, current back

- introduction -

INTRODUCTION

This project is called New Human Nature: A Plea for the Coherency of the DiverCity. The project takes international (anthropologic global warming) and national context (housing shortage) as main drivers. Intrinsic values (historic continuity) will be a guide throughout the graduation trajectory and extrinsic and use values will be informers to the design process. The goal is to densify an 80's neighbourhood through nature and dwellings. Both will be explored simultaneously and design decisions will be informed by in- and extrinsic values found in the area.

The graduation lab from Heritage this year is called 'Adapting 20th century Heritage'. This theme will be explored through three different studios of which my studio is 'New Heritage'. As the name starts to suggest, the studio explores new towns and expansion areas from the 60's to 80's in the Netherlands in order to understand their values and challenges. The aim is to uncover qualities within these areas that maybe one day will become (new) heritage, even if the areas do not possess the usual rarity value. The design location is set in the H-buurt of Amsterdam Zuid-Oost and throughout the studio there will be collaborations with the municipality of Amsterdam and the housing corporation Ymere.

For this studio, two case studies were selected. The first one is Almere Haven. Almere Haven is the oldest part of the new city Almere, located in the south of Flevoland. The construction of Almere Haven started in 1975 and the first residents moved in by the end of 1976 (Ruijter, Huizinga, & Petit dit de la Roche, 2019, p.22-26). Almere Haven is the pilot case whereas the H-buurt in Amsterdam Zuid-Oost will act as the actual project location.

The project is located in the H-buurt in Amsterdam Zuid-Oost. The whole area is a new extension of Amsterdam due to the housing shortage after the Second World War (van Osch, n.d.). The part of the H-buurt to be researched consists of three different neighbourhoods, all with social housing owned by the housing corporation Ymere. These areas are Bijlmerplein, Hoptille, and Heesterveld. My project will be focussing on the neighbourhood Hoptille. Hoptille is in the middle of the three project locations and is made of mid- and low-rise buildings. Hoptille was built in 1980 as a reaction against the high-rise buildings in other parts of the Bijlmermeer. The neighbourhood also includes two large parking garages and several office buildings. All dwellings are social housing. It was commissioned by the Gemeentelijke Dienst Volkshuisvesting (Municipal Housing Service) of Amsterdam and designed by Sjoerd Soeters in commission of Pi de Bruijn (Bijlmermuseum, 2017).

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Underpass mid-rise building Hoptille

international context:
anthropogenic global warming

national context:
housing shortage

local situation:
values,
challenges & opportunities

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RESEARCH OBJECTIVE

"

The integration of **anthropogenic global warming** solutions and **densification** opportunities in order to revitalise **Dutch 80's neighbourhoods**.

"

11

DESIGN OBJECTIVE

"

The revitalisation of the neighbourhood Hoptille by the **diversification** of public space, housing types, and facades through the **addition of dwellings** while enhancing the **biodiversity**.
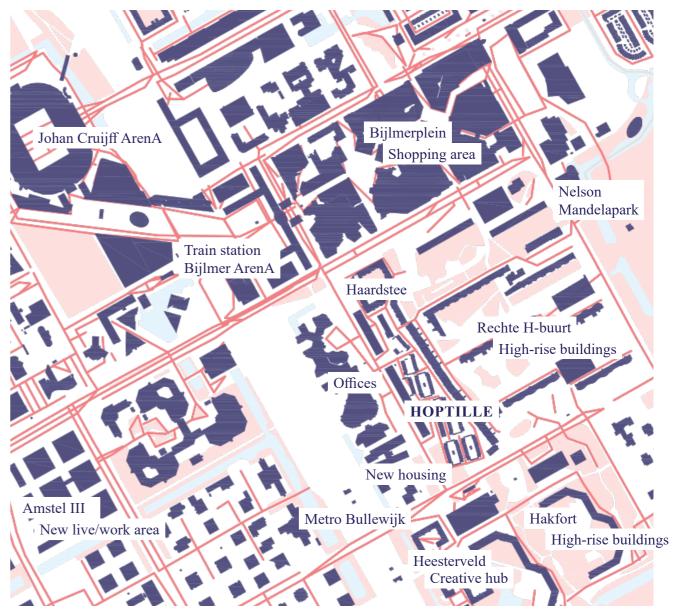
"

SITE - AMSTERDAM ZUID-OOST

SITE - HOPTILLE

Amsterdam, Amsterdam Zuid-Oost, H-buurt (1:10.000)   ↑N

Johan Cruijff ArenA

Bijlmerplein
Shopping area

Nelson
Mandelapark

Train station
Bijlmer ArenA

Haardstee

Rechte H-buurt
High-rise buildings

Offices

HOPTILLE

New housing

Amstel III
New live/work area

Metro Bullewijk

Hakfort
High-rise buildings

Heesterveld
Creative hub

H-buurt and surroundings (1:2.000)   ↑N

BACKGROUND INFORMATION HOPTILLE

LOCATION: AMSTERDAM ZUID-OOST

ARCHITECT: SJOERD SOETERS AND KEES RIJNBOUTT

YEAR: 1980

BUILDINGS:

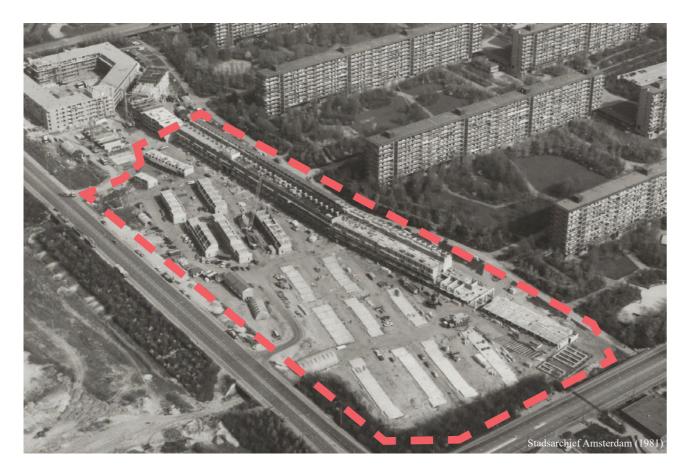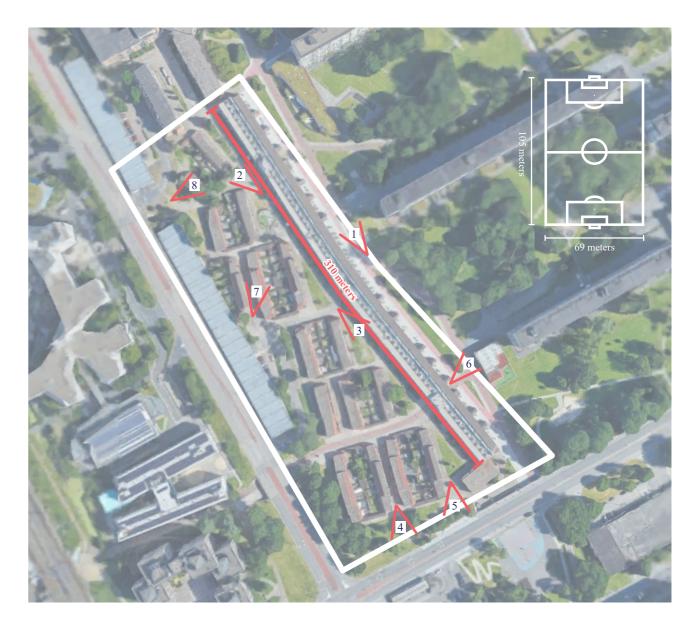**MID-RISE (5 LEVELS)**

LOW-RISE HOUSING (2-3 LEVELS)

PARKING GARAGE (2 LEVELS)

CONCEPT: REACTION AGAINST CIAM IDEALS (HIGH-RISE FLATS)

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Stadsarchief Amsterdam (1981)

MAP HOPTILLE

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Hoptille and surroundings (Google Afbeeldingen, 2021; Aerodata International Surveys, Maxar Technologies, Kaargegevens, 2021)
Soccer field for scale, according to KNVB measurements

↑N

PHOTOS HOPTILLE
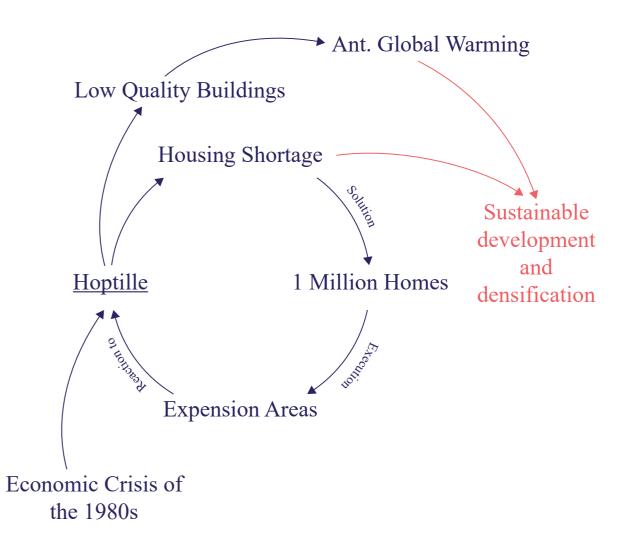

WHY HOPTILLE

The two topics, global warming and housing shortage, cumulate in one specific location, Hoptille. During the first research phase, it was discovered that the neighbourhood was a reaction to the expansion areas of the Bijlmermeer. By studying the reaction to earlier solutions to housing shortages, one can discover how to deal with this issue nowadays. More information acquired during the research revealed that the technical states of the buildings are quite bad. Due to the economic crisis of the 80's, buildings were constructed cheaply, resulting in technical issues today. These should be addressed to increase comfort and decrease energy usage. These aspects to Hoptille are shown in the image below.

Ant. Global Warming

Low Quality Buildings

Housing Shortage

Solution

Sustainable development and densification

Hoptille

1 Million Homes

Execution

Reaction to

Expension Areas

Economic Crisis of the 1980s

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- problem statement -

SDG Nederland, 2020

INTRODUCTION

According to research conducted by NASA, climate change started over 7,000 years ago. Through agricultural practices humans have changed the order of the ice ages and started the modern climate era (The Climate Centre, 2020). However, the industrialisation of the 19th century has accelerated these changes in the climate. Data shows an increase in CO2 emissions in the air from the begin 1800s. This results in a global increase of temperature (Ritchie & Roser, 2017).

In order to reverse the negative effects of our way of living, the Paris Agreement was established and entered into force on the fourth of November, 2016. Since then, 190 out of 197 countries in the world have ratified the agreement (Sauer & Apparicio, 2020).

The many figures and aspects to global warming make it a complex issue. Therefore, the focus of this graduation project will be based on the model shown on page 24. This diagram is based on the seventeen Sustainable Development Goals (SDG's) established by the United Nations in 2015 (United Nations, 2020). Stockholm Resilience Centre (Stockholm University) developed this diagram in order to reflect on and create relations between the SDG's. The diagram shows that the societal and economic goals are embedded in the biosphere and takes the latter as a priority. The biosphere is made up of 'Life on Land', 'Life below Water', 'Clean Water and Sanitation', and 'Climate Action' (Stockholm Resilience Centre, 2016; see page 24). Within my graduation project, I will do the same.

Additionally, the mind set towards the existing built environment has changed. Before, buildings could easily get demolished if they were not suitable anymore and did not have a heritage status. In recent years a shift occured in this attitude to that a building contains embodied energy which should be utilised. Embodied Energy is the total energy needed to construct a building, from the mining of materials to the transportation to the final assembly. It had an impact on the environment. By demolishing and building new, more stress is put onto the planet. It is not sustainable way to deal with a building. Since 2012, more and more non-listed buildings, mostly office buildings, were transformed due to this change in mindset (Centraal Bureau voor de Statistiek [CBS], 2019).

This means a new way of thinking within the Heritage and Architecture field. Embodied Energy becomes a value present in all buildings (see image right). It should then be further explored if and what additional values exist for each project. This approach of 100% Heritage encourages to explore and see value in the entire built environment. It explores the heritage of the common and ordinary, rather than just the unique. It thereby questions the traditional objectives of what heritage is. For this project, I am going to explore not just densification, but to use the existing fabric and structures, tangible and intangible, to its full potential while adding dwellings.
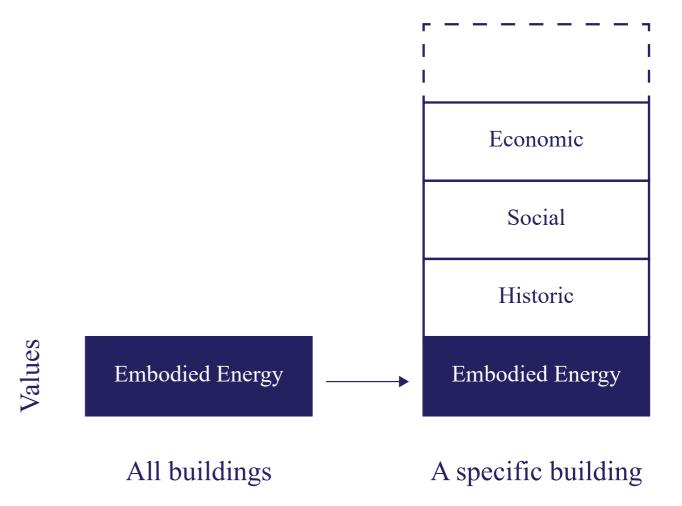
The research focusses on a part of the housing stock that is fairly unexplored from a Heritage perspective. As of 2020, 44,9% of the current housing stock is built between 1960 and 1989 (Rijksoverheid, 2020). These buildings tend to have a lower energy label and are in need of improvements (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2019, p.82). With pressing sustainability goals and clear consequences of global warming, the studio will look into the revitalisation of these neighbourhoods. This is almost half of the total housing stock and thus a great challenge for architects in the years to come. The goal of this challenge is to not only create a more sustainable living environment, but also to maintain and further develop the values present in these expansion areas.

METHOD

The pilar Ecological in the thought model (see Method, page 30) covers the biosphere related SDG's (Stockholm Resilience Centre, 2016). These are 'Life on Land', 'Life below Water', 'Clean Water and Sanitation', and 'Climate Action'. In order to take these goals into account for the project, they need to be incorporated into the concept as well, and not only drive the technical solutions or only come in play at the end of the design process.

The four SDG's are general for the whole world. For this project, so they can be related to the built environment. These topics mean biodiversity (including land and water), outdoor spaces/connections, water management, and energy performance (see page 25). These can now be incorporated into the urban and architectural concept. How the four goals can be integrated in the concept, will be researched through several case studies. The focus of the case studies will be on the concepts behind them and the principles used. Additional research provided input for the translation of the four goals. These are bundeled in the chapter Sustainable Development.

Other case studies will also be used to research materiality and detailing. This will be in addition to research into new sustainable developments, such as improvement in properties of certain materials. This will happen later in the design process once the concept has been developed. The case studies will then be measured against this design concept so the concept can be carried through into the small scale.
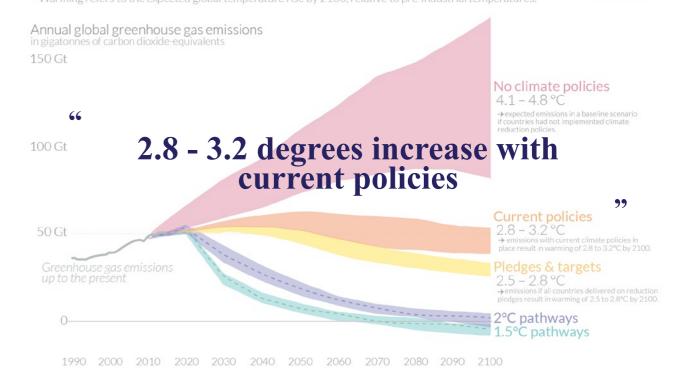

100% Heritage Scheme

INTERNATIONAL PROBLEM STATEMENT

international context:
anthropogenic global warming

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Global greenhouse gas emissions and warming scenarios

– Each pathway comes with uncertainty, marked by the shading from low to high emissions under each scenario.
– Warming refers to the expected global temperature rise by 2100, relative to pre-industrial temperatures.

Annual global greenhouse gas emissions
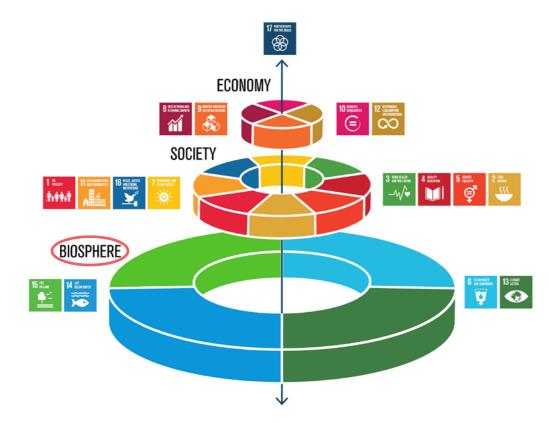in gigatonnes of carbon dioxide-equivalents

150 Gt

100 Gt

" **2.8 - 3.2 degrees increase with current policies** "

No climate policies
4.1 – 4.8 °C
→ expected emissions in a baseline scenario if countries had not implemented climate reduction policies.

50 Gt

Greenhouse gas emissions up to the present

Current policies
2.8 – 3.2 °C
→ emissions with current climate policies in place result in warming of 2.8 to 3.2°C by 2100.

Pledges & targets
2.5 – 2.8 °C
→ emissions if all countries delivered on reduction pledges result in warming of 2.5 to 2.8°C by 2100.

0

2°C pathways
1.5°C pathways

1990 2000 2010 2020 2030 2040 2050 2060 2070 2080 2090 2100

Ritchie & Roser, 2017.

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" **17,5% emmitted by buildings; 10,9 by residential** "

" **3% emmitted by the use of concrete alone** "

Ritchie & Roser, 2020. (Image: Getty Images/WangAnQi, n.d.)

Ritchie & Roser, 2020. (Image: Adobe Stock, n.d.)

SDG'S:
United Nations, 2020.

Sustainable Developlment Goals Scheme (Azote for Stockholm Resilience Centre Stockholm University, 2016)

ECONOMY

SOCIETY

BIOSPHERE

6 CLEAN WATER AND SANITATION → 6 WATER MANAGEMENT

13 CLIMATE ACTION → 13 ENERGY USAGE

14 LIFE BELOW WATER → 14 BIODIVERSITY

15 LIFE ON LAND → 15 QUALITATIVE OUTDOOR SPACES

24

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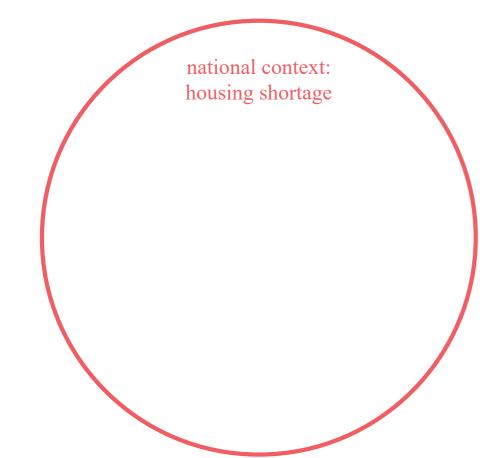
NATIONAL PROBLEM STATEMENT

national context:
housing shortage

" current shortage of 331.000 homes "

Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2020. (Image: Erasmus Magazine/Unit 20, n.d.)

" 845.000 new homes needed by 2030 "
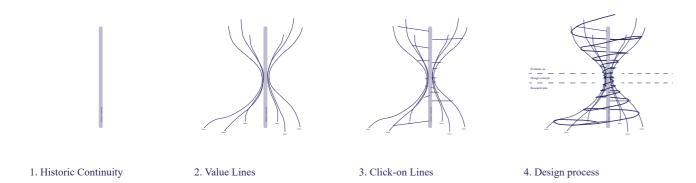
Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2020. (Image: Getty Images/iStockphoto, n.d.)

Current back of Hoptille mid-rise

- method -

1. Historic Continuity 2. Value Lines 3. Click-on Lines 4. Design process
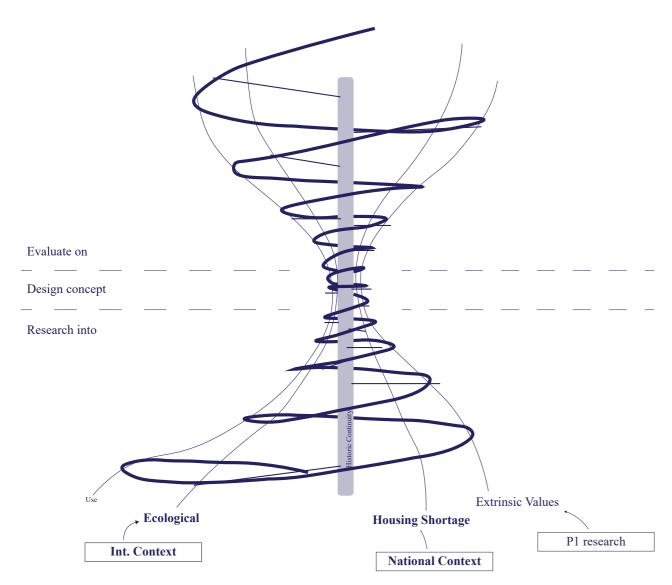
Steps to Structure of Thought Model of Job Roos (2007)

METHODS

In order to answer the main question, I will base my research on a thought model of Job Roos in 'Discovering the assignment' (2007). In his book, Roos explains an approach to dealing with the built environment based on values. He calls it 'the Spiral'.

The Spiral is set up of four elements, the historic continuity, value lines, click-on lines, and the design process (top image on the left). Historic continuity (1) is the first step of the thought model and ensures the respect of cultural historic values. Around this, there are six value lines (2). Each value line represents a specific aspect that challenges the historic continuity. In Roos' model the lines are the plan of requirement, future use of the building, economic value, the aesthetic value, the social function, and the ecology. The click-on lines (3) connect the values to the historic continuity and act as checks. Around all these elements, there is the design process (4). It circles and touches every theme, making the process iterative. As shown in image 8, the bottom half of the model starts out large and general and narrows towards the middle. During this phase, research on all different values is conducted leading to the design concept. After the development of the concept, the thought model widens again and the design is tested against the values surrounding it (Roos, 2007).

For my process, I will adapt this thought model to structure my methods (bottom image to the left). Just as Roos, I will take the historic continuity as a base. I will relate to history through a timeline, rather than preserving one specific moment in time. Since I state that values are extrinsic and contingent, they are subjected to change over time. Therefore, I will work with time layering. The historic continuity will also reveal intrinsic values. Furthermore, there will be four value lines instead of six. These will be based on the three themes, extrinsic values, SDG's, and densification, and one additional value, the use value. Use value is added due to the relation of the project to social housing. The practicality of this dwelling type should be taken into consideration throughout the process. The smaller number in value lines is explainable through the extrinsic value line. This value line will encompass multiple values.

The structure is used to combine all the themes simultaneous and will lead to a concept on the urban level (1:500) for the P2 presentation. After the presentation, one or two elements of the concept will be worked out to a detail level (1:5).
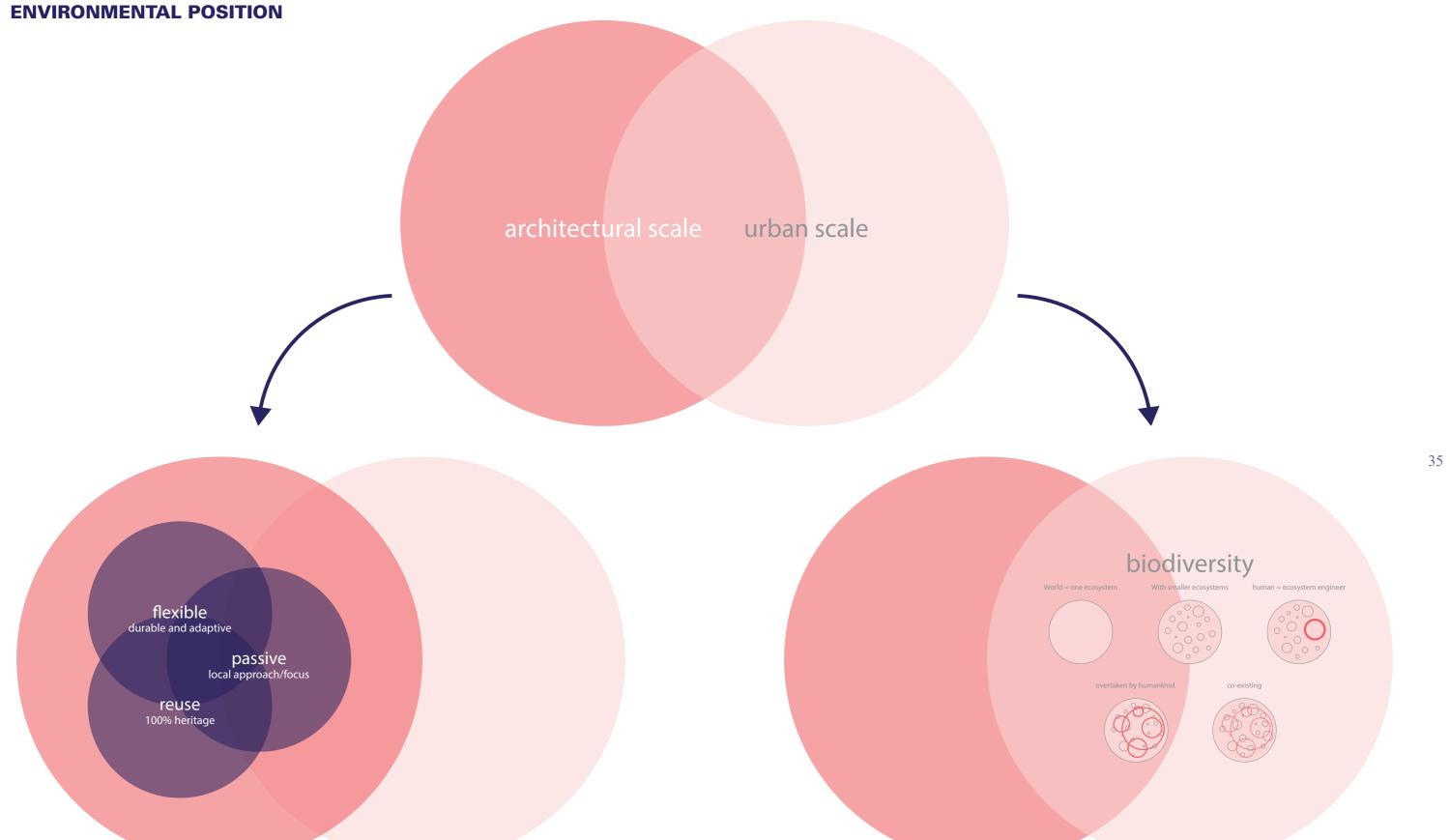
The collective methods used during the research will be explained in the chapter 'Research - collective research' starting on page 44. This chapter is followed by the urban and building analysis. Futher research in the historic context is next. Then the research into sustainable development is presented and eventually by the design process through sketches. The booklet will conclude with a reflection.

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Evaluate on

Design concept

Research into

Use

Ecological

Housing Shortage

Extrinsic Values

Int. Context

National Context

P1 research

Design Scheme (based on Job Roos, 2007)

Low-rise building hidden behind trees, Hoptille

- environmental position -

ENVIRONMENTAL POSITION

architectural scale   urban scale

flexible
durable and adaptive

passive
local approach/focus

reuse
100% heritage

biodiversity

World = one ecosystem   With smaller ecosystems   human = ecosystem engineer

overtaken by humankind   co-existing

architectural scale

urban scale

URBAN SCALE

BOOK: DARWIN IN DE STAD

Schilthuizen, 2019.

P.49: "Maar eilanden hebben een eigenaardige hebbelijkheid - hoe kleiner en geïsoleerder ze zijn, des te minder biodiversiteit vind je er."
     = The smaller and more isolated the island is, the less biodiversity it houses.
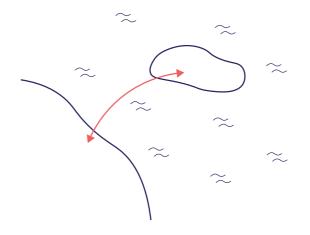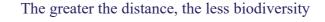
Biogeographic research by Edward O. Wilson and Robert MacArthur found:
Islands' biodiversity is dependent on size of the island (size of the population to resiliance to natural phenomenons) and the distance to mainland (likelyhood of a species to reach the island).
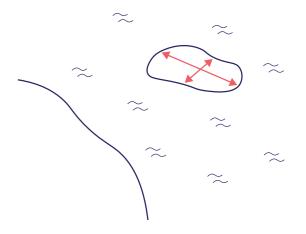
Mathematical equeation linked to this: 14 x the size of island = 2 x the amount of species.

ISLAND RULES OF THUMB

The greater the distance, the less biodiversity

14 x the size of island = 2 x the amount of species.

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MENNO SCHILTHUIZEN

Darwin in de stad

EVOLUTIE
IN DE URBAN
JUNGLE
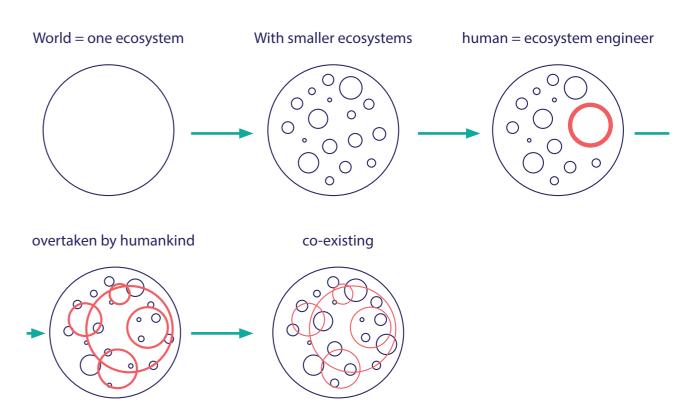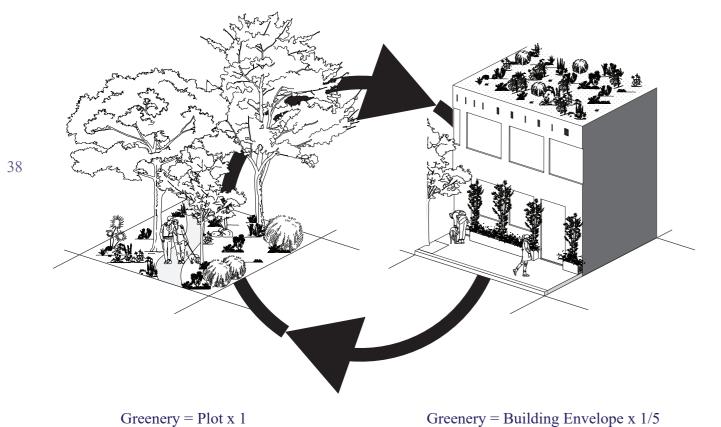
ENVIRONMENTAL POSITION: TOWARDS CO-EXISTING

World = one ecosystem   With smaller ecosystems   human = ecosystem engineer

overtaken by humankind   co-existing
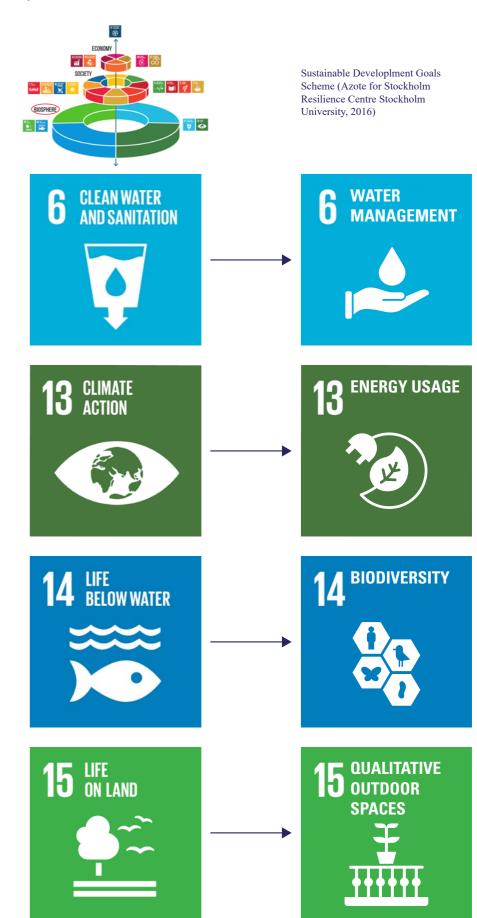
STRATEGY: EXCHANGE

Greenery = Plot x 1 = Building Envelope x 1/5
This way, no greenery is lost to new or existing homes

TRANSLATION OF SDG'S:
United Nations, 2020.

Sustainable Developlment Goals Scheme (Azote for Stockholm Resilience Centre Stockholm University, 2016)

Greenery = Plot x 1   Greenery = Building Envelope x 1/5

North side of Hoptille, begin 1980's (Stadsarchief Amsterdams, n.d.)

- research -

ECOLOGICAL		SOCIAL		ECONOMIC		AESTHETICAL		HISTORICAL	
M	O	M	O	M	O	M	O	M	O
G	U	G	U	G	U	G	U	G	U

HOMOGENIOUS GREEN
NO GARDENS
IMPORTANT BIKE ROUTE
LACK OF SOCIAL INTERACTION / LIVELY
OPEN AREA

TRAFFIC SEPERATION
LACK OF DIVERSITY IN GREENERY
VERTICAL NEIGHBOURHOODS
LACK OF PLAYGROUND
NICE NEIGHBOURHOOD
LACK OF SHOPS
VERTICAL NEIGHBOURHOODS
80s ARCHITECTURE

MID-RISE ACCESIBILITY

AESTHETICAL INCOHERENCE / LACK OF ATTRACTIVENESS
BEAUTIFUL MURALS / BUILDINGS LOOK OLD
BADLY ACCESSIBLE
POORLY MAINTAINED

PRESENCE OF ACTIVITIES
LACK OF ACTIVITIES
PRESENCE OF ACTIVITIES
LACK OF ACTIVITIES

LACK OF HUMAN SCALE
BORING AREA

SPACE FOR CRIME TO FESTER
INNER STREETS
ENOUGH SPACE
MESSY
BUILDING SHAPES
BAD ACCESSIBILITY

OPENNESS / ENOUGH SPACE / PRIVATE-PUBLIC TRANSITION
PRESENCE OF PLACES TO LINGER
RESIDENTS POSITIVE VISITORS NEGATIVE
CLEAN APPEARANCE / MESSY

PROBLEMATIC NEIGHBOURHOOD
DRUGS
GHETTO / BAD REPUTATION
HOMES ARE BEING RENTED OUT
DEMOLISH

NO SOCIAL CONTROL
PROBLEMATIC NEIGHBOURHOOD
LOW INCOMES
TWO WORLDS
BUILDING IS A MAZE INSIDE

IMPROVEMENT

INHOSPITABLE
DAY-NIGHT LACK OF SAFETY
CRIMINAL ACTIVITIES
BAD SMELL

Value Matrix - Photo 3 (Hoptille, current front)

- research -

collective research

INTRODUCTION

In addition to global and national context, other personal fascination within architecture have been from an anthropological and phenomenological point of view. During my theory thesis, I started to explore the appreciation for non-listed new heritage and where this appreciation could originate from. Therefore, I studied the connection humans built with their environment through experience and memory by taking a modern heritage case study as a starting point, the Bijlmermeer parking garages. My thesis explains that the connection can be established with any architectural element/building/urban element, not necessarily a listed building or aspect, by combining multiple theories including Massumi (1998, 2002, 2019), Kwinter (2007), Mallgrave (2019), and Jelić and Staničić (2019).

I would like to explain this through Brian Massumi's text 'Sensing the virtual, building the sensible' (1998) and the chapter from Lara Schrijver 'Ugliness as aesthetic friction: Renewing architecture against the grain' in 'Architecture and Ugliness. Anti-Aesthetics and the Ugly in Postmodern Architecture' (2020). The other texts are incorporated in the annotated bibliography under Frame of Reference.

Massumi (1998) states that a building has two lives and in between those two is a threshold. The first life is the design process of a building, the virtual life. The construction of a building marks the threshold, after which the second life begins, the actual existence of the building. The completed built form should not be considered the end result, a static, but rather the start of a new process. Within this theory, a building is viewed as a living object exposed to daily life. According to Massumi, daily life consists of two acts related to the building, looking and dwelling. Looking is the exterior experience of the built environment, while dwelling is the interior occupation and use of a building. A building is looked at by the many, though a minority gets to dwell in a building. Both looking and dwelling are continues process throughout the life of a building.

In line with this thinking, Lara Schrijver (2020) describes the difference between architecture and art. A building, in contradiction to, for example, a painting or a sculpture, is meant to be used. Architecture has functional qualities to fulfil and with this sets itself apart. Both theories extend the building from the realm of the architect into society.

I would like to illustrate these theories with the topic of my thesis, the parking garages in the Bijlmer. These were valued by the residents in the neighbourhood through activities, memories, and represent a vision on new ways of living of the last century. The garages itself do not possess any specific or special architectural features for them to become this valued. However, the combination of human experience and memory and its historical context elevated the appreciation of the parking garages. To me, this shows that the built environment is for and from everyone.

The theories above imply an evolving and living built environment, meaning the values attached to it are as well. Heritage values have shifted from being 'found' by experts and intrinsic to the object itself to being produced by its context and interactions. This means values are contingent and extrinsic, too. Extrinsic values can only be understood when looking at the social, historic, and spatial context. This does not mean intrinsic values will never be present. Extrinsic values enlarge the definition of a value within architecture in order to fully understand the built environment (Mason, 2002).

METHOD

An important factor in the setup of the research method for this studio is the Faro Convention of 2005. The convention highlights the relation of heritage to communities and society. It states that objects and places are important because the people have given it meaning, values, and uses, not the objects and places in and of themselves. The convention encourages the involvement of citizens and communities in defining values and cultural heritage (Council-of-Europe, 2005). All stakeholders are important in defining what is essential and significant. The Faro convention is in line with the thought that values are extrinsic. It broadens the perception of heritage.

From this perspective, the method to interview different stakeholders was selected as a main source for this research. The stakeholders are based on the heritage markets by Howard (2003); Insiders, Outsiders, Owners, Academics, Makers, and Government. These were chosen so all the perspectives on the studio topic were covered. The research will focus on finding possible extrinsic values in the H-buurt.

Almere-Haven

The pilot research in Almere Haven is used as an experiment, before diving into the research in the H-buurt. During this experiment, the goal is to establish a frame of reference and to test research methods in order to extract the attributes and values from the opinions of in- and outsiders over the course of two weeks. The pilot research consists of two approaches, a media one and an on-site one. Both methods explore residents' experiences, memories, opinions and perceptions, as well as opinions of outsiders on social media. Due to the short timeframe, the focus of the pilot research was on Insiders and Outsiders. The research in H-buurt was more elaborate and attempted to cover all perspectives.

After this pilot research, the methods were discussed and the best methods were applied in the H-buurt research. These were social media research through Instagram, Facebook, and Flickr and photo-based interviews and questionnaires for street interviews.

H-buurt

To start the H-buurt research, the whole group divided into four smaller groups. Each was appointed a heritage market according Howard (2003) in order to cover the different perspectives in the area. The division was as followed: Insiders/Outsiders, Owners, Academics/Makers, and Government.

A collective strategy and method were developed to create comparable results across all groups. The strategy followed a weekly schedule with the same focus for each group per week. Within this, different methods were used by the groups to achieve this focus. The first week was for exploration and in the second week a similar method was used by all groups, photo elicitation. With the method photo elicitation, photographs are used to trigger reactions within the interviewee. Images tend to evoke deeper emotions. This can be photographs, paintings or other visual media (Harper, 2002). For this research, five photos were taken in the three neighbourhoods and shown to all interviewees along with a collective question. For most groups, the photo elicitation was part of an in-depth interview. These were set up according to Hennink, Hutter, & Bailey (2020a). The interviews started with an ice-breaker to gain the trust of the interviewee

Some of the interviewees participated in a physical narrative walk. While walking through the area, earlier mentioned values were confirmed and further specified. During the walk, photos will be taken of important elements to the interviewee and give more insight into their perspective

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45

(Gabrielle, 2005). The media research, from the pilot in Almere, was used for the users only.

These answers were then compared in week three. The fourth week was used to gather more in-depth information and/or the processing of the data. The method for processing of the data was equal for all groups. The program Atlas.it was used to code the data to be analysed later on. For coding, an inductive strategy is chosen. This approach requires reading the data and identifying codes throughout the process. It is not clear which codes will be included in the final code book beforehand. This ensures that the codes reflect the issues of importance from the interviewees, not the preconceived notions of the researchers (Hennink, Hutter, & Bailey, 2020b).

After gathering all this information, conclusions can be made. The group came together several times throughout the four weeks of research to deliberate on this. The results were compared through various methods.

The first is the value matrix. This is a well know tool in the heritage and architecture world. It is a matrix that shows the attributes on the y-axis and the values on the x-axis. The matrix connects the two. The groups have decided on using this tool in order to compare the responses to the collective photos. For each photo, there will be an analysis of the mentioned codes. The codes will be put onto a black and white version of the photo to show both the tangible and the intangible codes. These codes will be either red (no opportunity for change), orange (little opportunity for change), or green (lots of opportunity for change). By putting all the photos into the matrix, one can see which attributes and values are important relating to that particular photo.
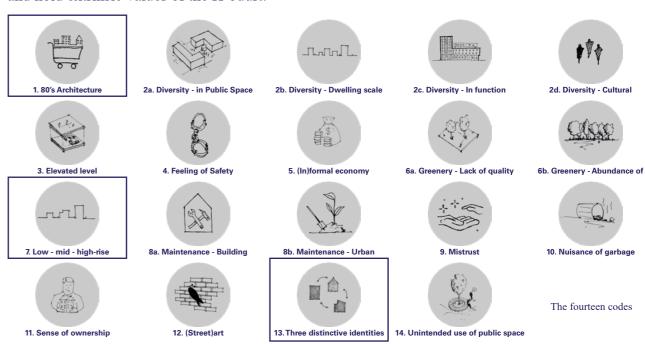
Once every group has made these analyses for their own interviewees, the images can be combined into one large value matrix. Here, the differences and overlaps can be seen easily between the different stakeholders. Conclusions and challenges can be made from these matrices.

The values and attributes were based on Tarrafa Silva and Pereira Roders (2012) and Brand (Clarke et al., 2019). The values mentioned by Tarrafa Silva and Pereira Roders were composed from several different value sets. The list gave a well-rounded view of values that could be present in the H-buurt and functioned adequately for a first value assessment. From the attributes of Brand focus on very much on the building scale. His set-up from large to small scale, however, provided a starting point. This was applied to the attributes for H-buurt. The value set was altered as well in order to fit the large scale of the case study. On the pages 48 and 49 two of the Value Matrices are shown related to Hoptille.

A second method is more quantitative. This is a table based on the previously mentioned value matrix, a value table so to say. For the table, all the attributes and values in each square of the photo is counted. These are put in the table for either attributes or values. The tables show how much a certain topic is mentioned and therefore reflects on the significance of this topic, for example, the value 'social' or the attribute 'scale'. The tables will be used to understand the general focus of each of the stakeholders.

Lastly, the codes of H-buurt will be determined based on the research by all the groups. The codes, in this case, are typical aspects of the H-buurt. They are specific for the three neighbourhoods and either cover a challenge or an opportunity. The codes were determined during a brainstorm and will be based on the two methods mentioned above. This led to a total of fourteen codes (see next page).

All stakeholder groups will reflect on the codes and define what it means to their target group. All codes will be translated into icons and colour coded by the opinion of that stakeholder. This will make it clear what the agreements and conflicts are. All the codes will all be put in the code book. This book will consist of an overview of all the icons and explanatory texts per stakeholder. The book will also conclude the first research phase. It will act as a summary of the stakeholder research and hold extrinsic values of the H-buurt.

| 1. 80's Architecture | 2a. Diversity - in Public Space | 2b. Diversity - Dwelling scale | 2c. Diversity - In function | 2d. Diversity - Cultural |

| 3. Elevated level | 4. Feeling of Safety | 5. (In)formal economy | 6a. Greenery - Lack of quality | 6b. Greenery - Abundance of |

| 7. Low - mid - high-rise | 8a. Maintenance - Building | 8b. Maintenance - Urban | 9. Mistrust | 10. Nuisance of garbage |

| 11. Sense of ownership | 12. (Street)art | 13. Three distinctive identities | 14. Unintended use of public space |

The fourteen codes

My personal interest lies in the codes 80's Architecture, Low – mid – high-rise, and Three distinctive identities. These codes are architectural and combine at Hoptille. This adds to the previously mentioned reason why the neighbourhood Hoptille was chosen as a case study.

The extrinsic values, however, are not the fourteen different codes. These lie in the positions of the different stakeholders to the code. The extrinsic values for Hoptille specifically will be determined in parallel to the research by design phase. This will be done through the analysis of the made value matrices and of the documentation of the four different stakeholder groups. The extracted values will be selected on their relation to the built environment and turned into architectural benchmarks to which the design must be compared.

The two collective photos related to the area Hoptille were analysed, quantitative and qualitative. First, I wrote down all the important aspects mentioned in the value matrices. What was mentioned multiple times? How strong was the feeling about this aspect and did multiple stakeholders mention this? Then, I counted all the positive and negative aspects in the matrices and came to a total number. This showed me that the current front of Hoptille is viewed way more negatively than the current back. I then combined these two methods on one sheet to get an overview of both approaches. This showed me the main challenges and opportunities in the neighbourhood. There were six in total: Lack of social control, lack of qualitative greenery, boring, aesthetic incoherence, building in bad technical state, and access.

This research shows that the area is viewed very negatively by many of the stakeholders and brings forth more challenges and opportunities than values. Values were mostly exclusively described by Makers and Academics.

PHOTO 3
Current front of Hoptille mid-rise

PHOTO 4
Current back of Hoptille mid-rise

ANALYSIS PHOTO 3
Current front of Hoptille mid-rise

ANALYSIS PHOTO 4
Current back of Hoptille mid-rise

Row labels (both charts, top to bottom): OTHER VALUES, POLITICAL, HISTORICAL, AESTHETICAL, ECONOMIC, SOCIAL, ECOLOGICAL

Column labels (both charts, left to right): SITE, SURROUNDINGS, STUFF, SURFACE, AMENITIES, SCALE, TYPOLOGY, SPACE, STORY, SOCIAL, SERVICES, VISION, ATMOSPHERE, PAST/PRESENT/FUTURE

Photo 3 — Current front hoptille

Photo 4 — Current back hoptille

SUMMARY PHOTO 3 AND 4

BACK
43 23 39

FRONT
20 26 52

Community

location

friendly

buffere

Gardens

→ messy (garbage)

well/no
maintenance

Scale
(human)

small
windows

no playground/
nice place to play

Ghetto

flip front/back

Non-Qualitative/functional
greenery

no seating

BRICK

first post War
family homes

diverse types

nice/non-nice
dividers

theft

clean

spacious

troubled
neighbourhood

high-rise

mid-rise
inner street

Ghetto
drugs

zandkasteel

trees

stairs

gallery ← ACCESSIBILITY

Crime

diverse
windows sizes

non-qualitative
greenery

Murals

only passing → bike route
activities

boring

Aesthetical
Incoherence

no human scale

PLINTH

TRASH CANS
Smell

unhospitable

dark corners

**EXTRINSIC VALUES LEAD TO
CHALLENGES AND OPPORTUNITIES**

CHALLENGES AND OPPORTUNITIES HOPTILLE
Extrinsic values

LACK SOCIAL CONTROL
Unsafe feelings, crime, differences day and night, no active plinth

AESTHETICAL INCOHERENCE
Brick, concrete, 'ornaments', lack of maintenance

LACK OF QUALITITY GREENERY
Lots of greenery, but it lacks quality, maintenance and activities

BUILDING IN BAD STATE
Lack of maintenance, complicated lay-out of the mid-rise, 80's architecture made in cheaply due to economic crisis

BORING
Only housing in the area, no activities

ACCESS
Change of access system (inner street) to stairwells on other side, later addition of extra staircases and gallery, blurs the views, creates small cornors, therefore unsafe feelings and crime

CULTURAL HISTORIC VALUES

These two tables show the cultural historic values in the H-buurt and in the neighbourhood Hoptille. These have been established in a group brainstrom on 19-12-2020 guided by Nicholas Clarke. The information is based on desk research and interviews with Makers and Academics from the first part of the collective research.

Cultural Historic Values (H-buurt)

Cultural Historic Values (Hoptille)

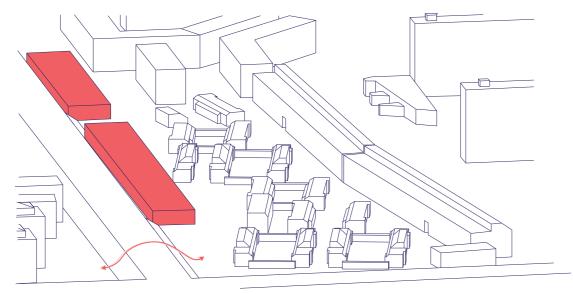# CULTURAL HISTORIC VALUES HOPTILLE

Image . Parking garages and elevated roads
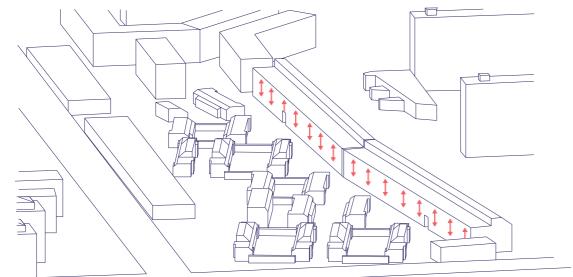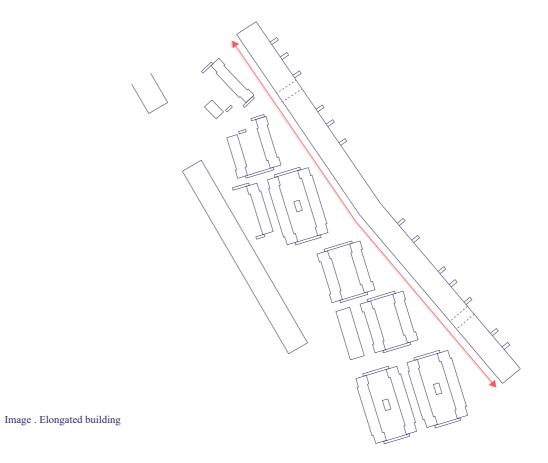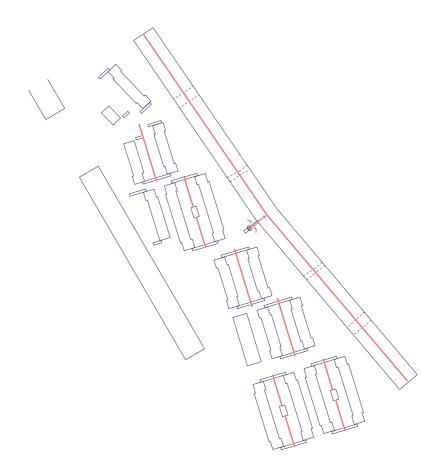
Image . High - mid - low-rise

Image . Verticallity in facade

Image . Elongated building

Image . Inner streets
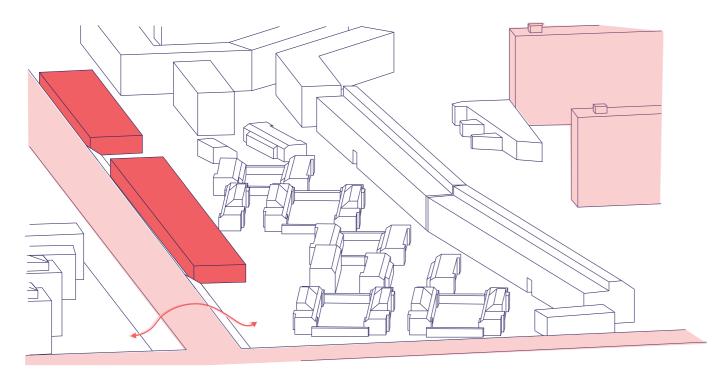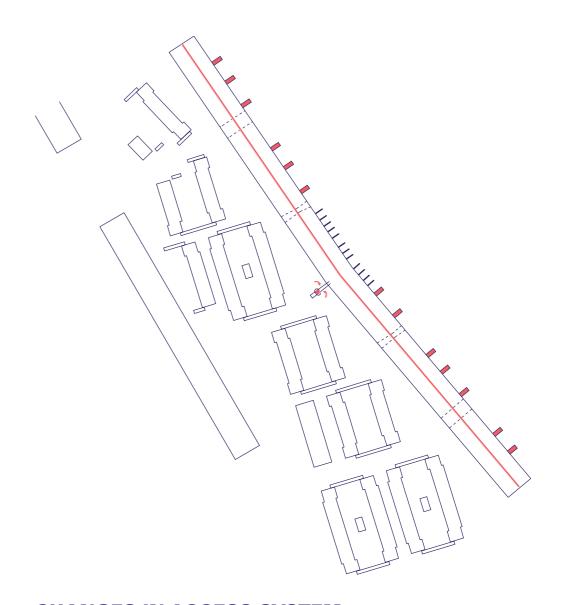
REACTION AGAINST BIJLMER IDEALS: HIGH-RISE, PARKING
GARAGES, AND ELEVATED ROADS

RELATION LOW-, MID-, AND HIGH-RISE

CHANGES IN ACCESS SYSTEM

CHALLENGES AND OPPORTUNITIES HOPTILLE

Collectively, multiple scenarios were tested in the three neighbourhoods within the studio. Many were thought of and some of these were tested against a risk assessment.

Below, an overview of the scenarios related to identity, densification, and ecology are shown.The whole set, related to these topics and Hoptille, can be found in Appendix 2.

Scenarios selected, here and in the Appendix, were chosen due to their influence on the design. This happened mostly as inspiration, but also helped to go outside the box during the design process.

Overlaying the Amsterdam canal identity over Hoptille

62

63

Addition of planting to enhance biodiversity

Replacement of parking garages with housing (towers)

'Buurtteam' currently in Hoptille

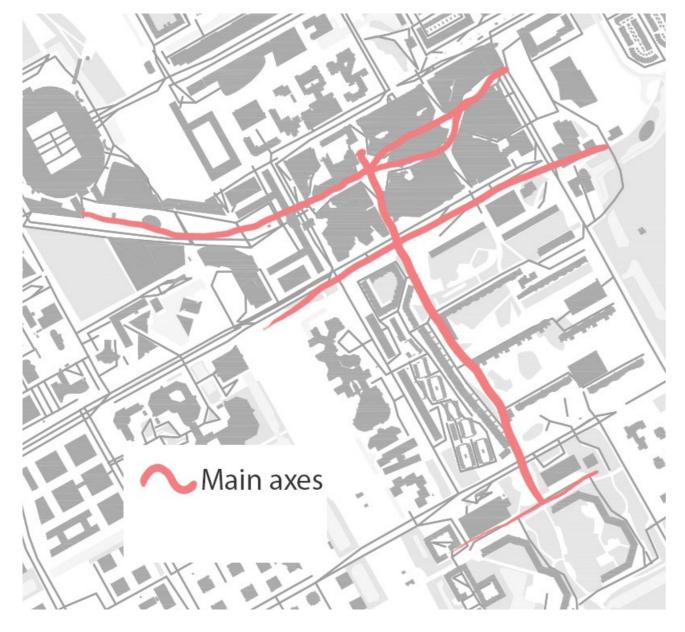# - research -
urban analysis

CONNECTION HOPTILLE TO ITS SURROUNDINGS

Based on site visit 22/02/2021
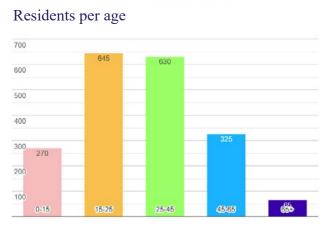
NEIGHBOURHOOD STATISTICS
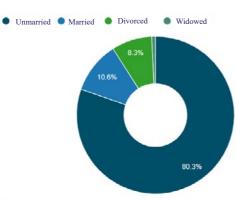AlleCijfers.nl, 2021 (translated partially from Dutch).

Numbers should not lead to direct conclusions, but intent to give an overall impression of Hoptille.

Residents per age

Bevolking, leeftijdsgroepen: aantal en percentage inwoners op 1 januari 2020 per leeftijdscategorie.
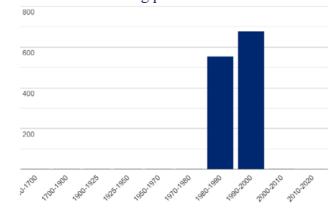
De download voor de gemeente Amsterdam bevat een Excel document met veel meer gegevens over het aantal inwoners naar leeftijd. Dit document bevat onder andere de gegevens over het aantal inwoners per levensjaar en een bevolkingpiramide als Excel grafiek.
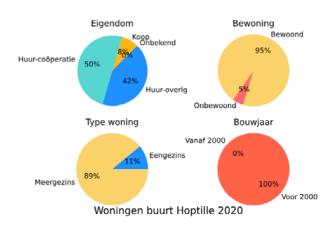
Marital status

Bevolking, burgerlijke staat: aantal en percentage inwoners op 1 januari 2020 naar burgerlijke staat.

Addresses: building period

Overzicht van het aantal panden naar bouwjaar op basis van de BAG.

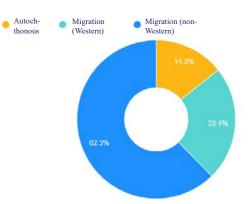## Aspects to the 900 dwellings in Hoptille

Percentages woning eigendom-, bewoning-, type- en bouwperiode.

68

69

Ethnicity of residents

Gebruik het filter om het jaar van de cijfers te selecteren en het verloop over de jaren te onderzoeken:
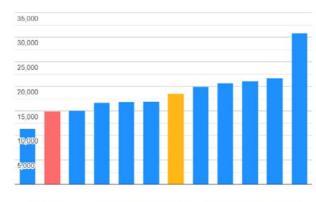
Jaar: 2020

Donut diagram met een verdeling van de bevolking in buurt Hoptille naar autochtoon, migratie westers en migratie niet-westers.

Average income per resident (€14.900)

Gemiddeld bruto jaarinkomen in buurt Hoptille.

Gemiddeld inkomen per jaar voor elke buurt in de wijk Wijk Bijlmer Centrum D F H (Hoptille is rood, andere buurten zijn blauw en wijk Wijk Bijlmer Centrum D F H is geel.)
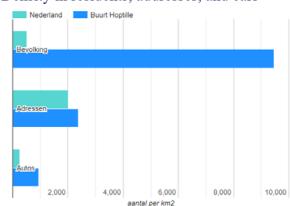
Addresses: functions

Aantal verblijfsobjecten per gebruiksdoel voor Buurt Hoptille.

Density in residents, addresses, and cars
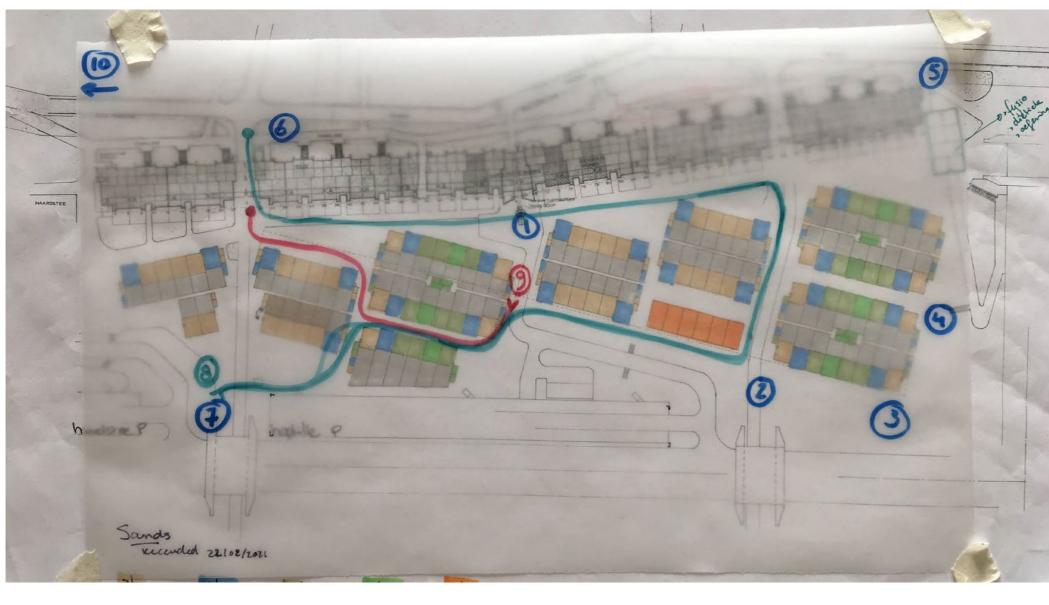
Omgeving: dichtheid van de bevolking-, adressen- en personenauto's per km2 oppervlakte in Nederland en buurt Hoptille voor 2020.

De grafiek toont het aantal inwoners-, adressen- en personenauto's per vierkante kilometer land. Dit geeft een beeld van "de mate van concentratie van menselijke activiteiten" in buurt Hoptille ten opzichte van het gemiddelde voor Nederland.

SOUNDSCAPE

Recorded during site visit 22/02/2021

Scan me

Link to a soundcloud playlist.

70

71

ACTIVITY IN PUBLIC SPACE

Non use and small community places.

Taken during site visit 22/02/2021.

72

73
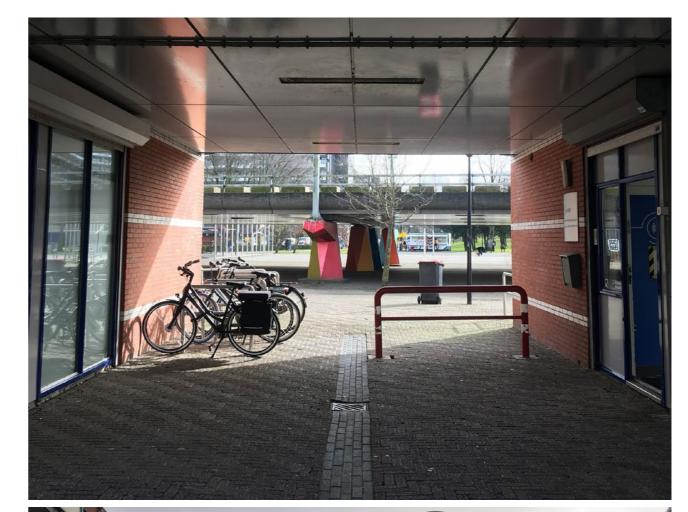
ACTIVITY IN PUBLIC SPACE

Passing and little staying.

Taken during site visit 22/02/2021.

74

75
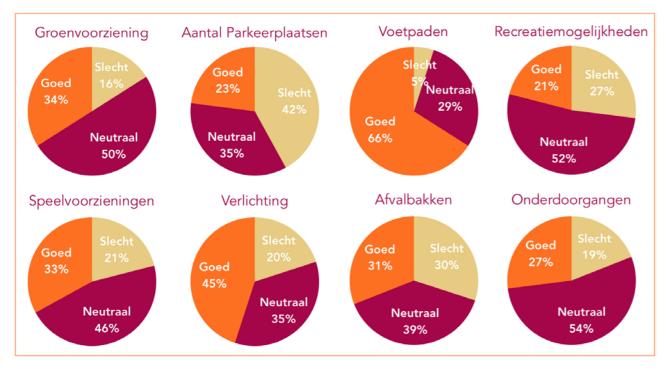
NEIGHBOURHOOD SURVEY
Performed by the municipality of Amsterdam.
Gemeente Amsterdam, 2020.
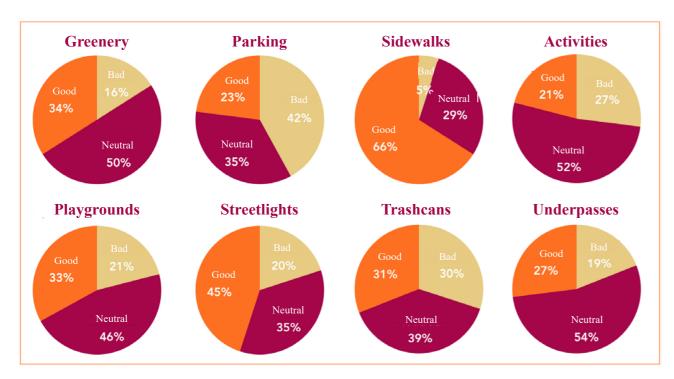
ADDRESS LOCAL ISSUES

What do you think about the current situation? (Dutch original)

Whishes and ideas (Dutch original)

What do you think about the current situation? (English translation)

Whishes and ideas (Englisch translation)

GOALS FOR (ADDED) FUNCTIONS

ADDRESS LOCAL ISSUES

<u>Daycare:</u>
- Integration indoor/outdoor
- Spatial regulations
- Based on existing daycare + little extra

<u>Community centre:</u>
- Variaty of activities for different target groups
- Multi functional main space
- Coffee corner and library
- Kid friendly
- "Livingroom of the Neighbourhood"
- Busy and vibrant
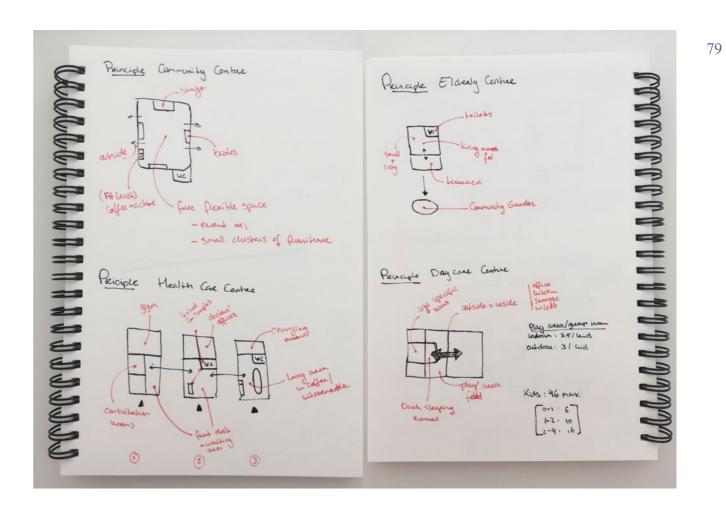
<u>Health centre:</u>
- Includes existing physiotherapist
- General practisiner
- Neighbourhood nursing station
- Close to elderly centre
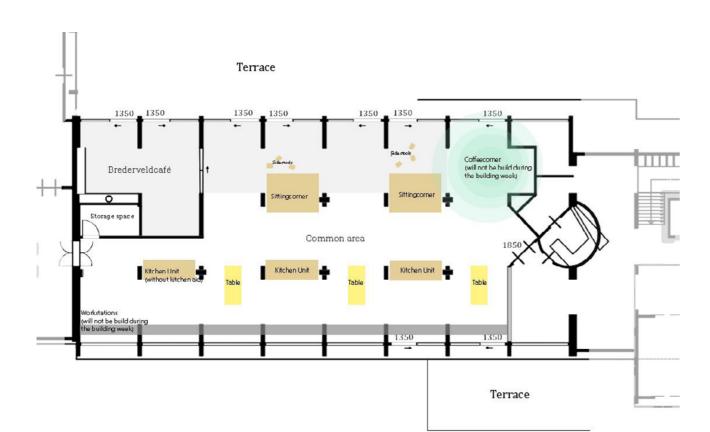
<u>Elderly centre:</u>
- Good and clean sanitation
- One intimate space for activities (bingo etc.) and coffee
- For low key and regular activities
- Calm and serene
- Good views outside

COMMUNITY CENTRE PRECEDENT: ABTSWOUDE BLOEIT

Photos from Abtswoudebloeit.nl and personal archive.

CASE STUDY: MY MONTESSORI GARDEN

Caballero, 2020.

SPATIAL DEMANDS DAYCARES
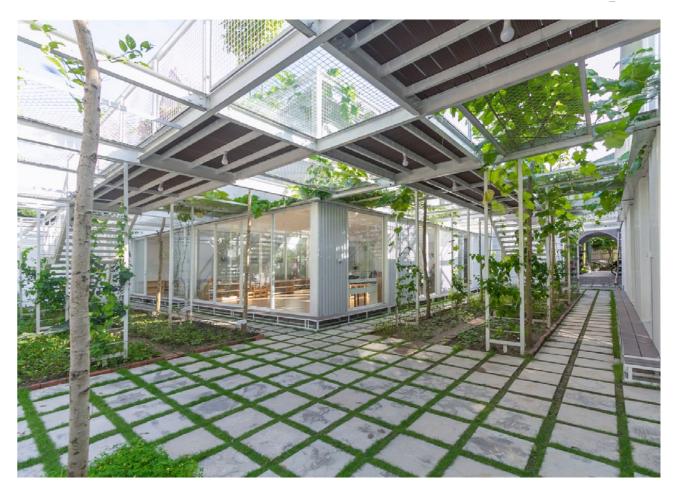
Spatially relevant rules for day care:
- Each tribe group has a separate fixed group space.
- There is at least **3.5 m2 gross surface area** in the group room available **per child**, including spaces suitable for play activities outside the group room.
- At least **3 m2 gross outdoor play space** is available **per child** present.
- The base group consists of a maximum of 12 children up to 1 year OR The base group consists of a maximum of 16 children from 0 to 4 years of which a maximum of 8 children up to 1 year.

(Overheid.nl, 2013)

Current daycare: Komplayt Kinderopvange
Place for 46 childeren (ICTU, 2020).

82

83
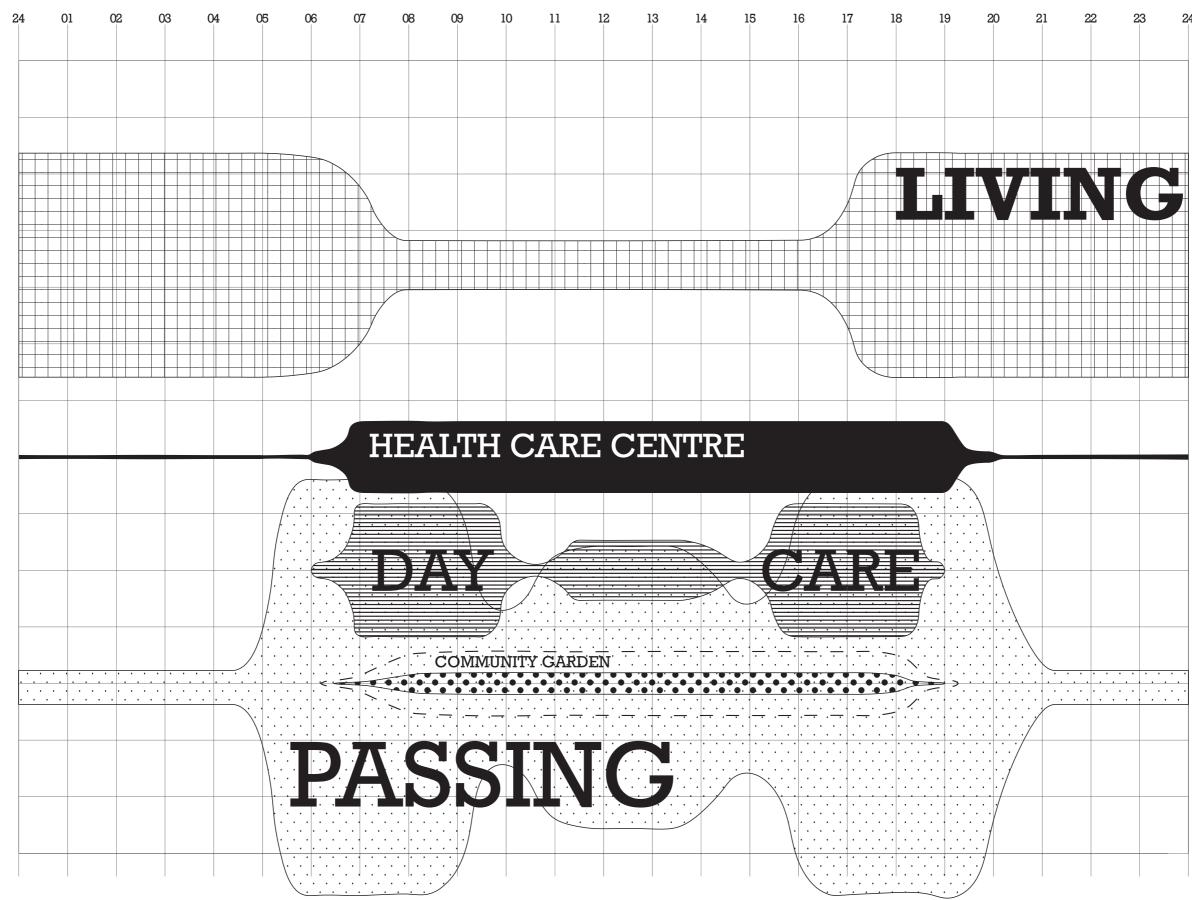
USE PUBLIC SPACE: CURRENT SITUATION

ADDRESS
LOCAL ISSUES

24 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

LIVING

HEALTH CARE CENTRE

DAY

CARE

COMMUNITY GARDEN

PASSING
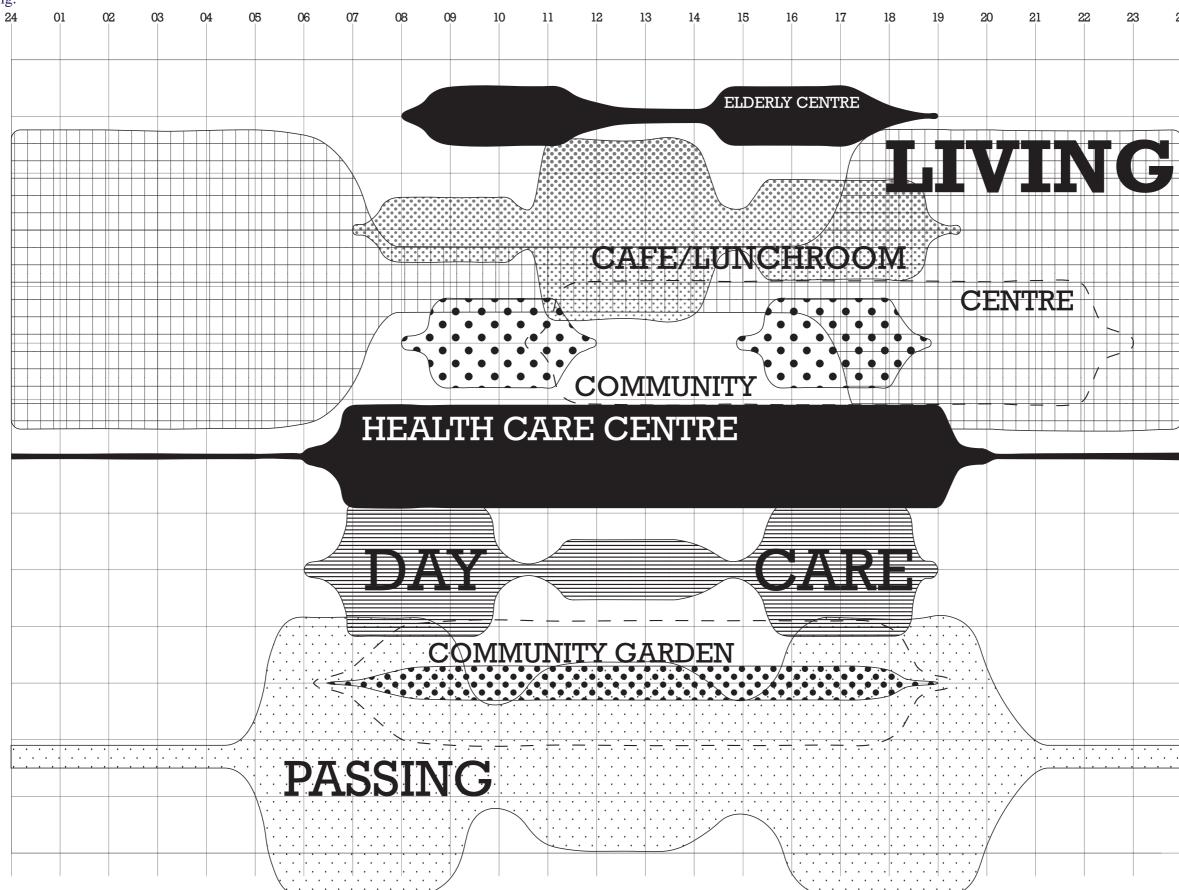
USE PUBLIC SPACE: NEW SITUATION

By adding functions and dwellings, the neighbourhood will become busier and therefore safer and less boring.

ADDRESS
LOCAL ISSUES

24 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

ELDERLY CENTRE

LIVING

CAFE/LUNCHROOM

CENTRE

COMMUNITY

HEALTH CARE CENTRE

DAY   CARE

COMMUNITY GARDEN

PASSING

Stadsarchief Amsterdams (1991)

- research -

building analysis

BUILDING ANALYSIS

Here, one can find the highlights of the buildings analysis, the parts most relevant to the overall design and design process. The large overview of all research can be found in Appendix 3: Building Analysis. This appendix is an overview of analyses made of the mid-rise as well as the low-rise buildings of Hoptille. It covers the urban scale to the details. This research was done by Marije de Ruijter, Nurhadi Nugraha, Stefan Lichtenveldt, Cornee Louwerens, Jonathan Verhoef, Rebwar Obeid, Sophie Vrisekoop, and Anneloes Tilman.
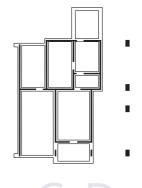
Besides collective research, individual information and drawings were also added, here and in the appendix.

BUILDING LAY-OUT MID-RISE

E A A C D A A A B A A   A A B A A A C D A A E

A   B   E   C-D

BUILDING LAY-OUT LOW-RISE

N

43 **Two story family houses with 3 rooms**

26 **Two story family houses with 4 rooms.**

21 **Three story family houses with 5 rooms.**

7 **Three story family houses with 6 rooms.**

6 **Three story atelier/resident units with 4 rooms.**
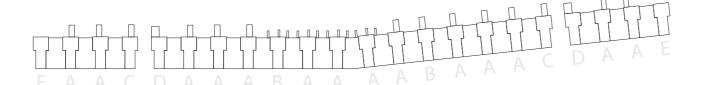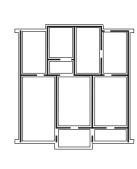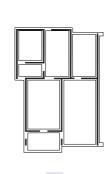**Now a daycare**

	Opp	aantallen
Segment (A)	60,3x2(bg) 60,7x2 - 85,5x1(1) 31x3 - 52x1 - 44,35x1(2) 63,45x1 - 31x1 - 40x1 - 22x2(3) 45 x2(4) total: **785.3 m2**	2(bg) 3(1-2) 2(2) 3(3-4) 2(3) 12 dwellings
Segment(B)	60,3x1 - 74x1(bg) 60,7x2 - 85,5x1(1) 85,6x1 - 62,5x1 - 31x1(2) 65,5x1 - 68,2x1 - 62,6x1(3) 44x1 - 22x2(4) total: **804.6 m2**	2(bg) 3(1-2) 3(3-4) 8 dwellings
Segment(C)	60.3x1(bg) 60,7x1 - 85,5x1(1) 31x3 - 21.5x1 - 52x1(2) 63.4x1 - 31x1 - 39.9x1 - 22x2(3) 44x1 - 22x2(4) total: **639.3 m2**	1(bg) 2(1-2) 3(2) 2(3) 3(3-4) 11 dwellings
Segment(D)	60.3x1(bg) 60,7x1 - 69x1(1) 31x3 - 21.5x1 - 44,5x1(2) 63.4x1 - 31x1 - 39.9x1 - 22x2(3) 44x1 - 22x2(4) total: **615.3m2**	1(bg) 2(1-2) 3(2) 2(3) 3(3-4) 11 dwellings
Segment(E)	60.3x1(bg) 60,7x1 - 69,6x1(1) 31x2 - 44,45x1(2) 31x2 - 22x2(3) 22x2(4) total: **447 m2**	1(bg) 2(1-2) 1(2) 2(3) 2(3-4) 8 dwellings
Garageboxes	62.1(ABC) of 47.8(D+E) m2	

STRUCTURAL DIAGRAMS MID-RISE
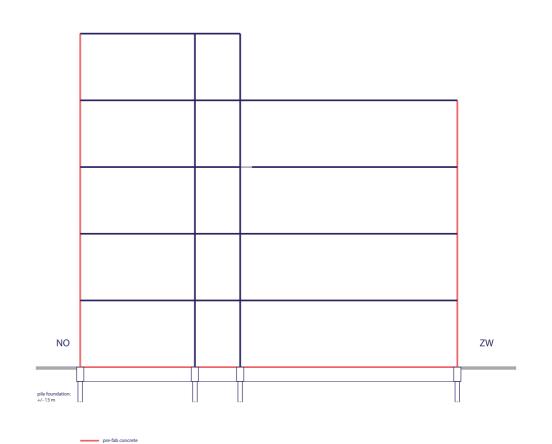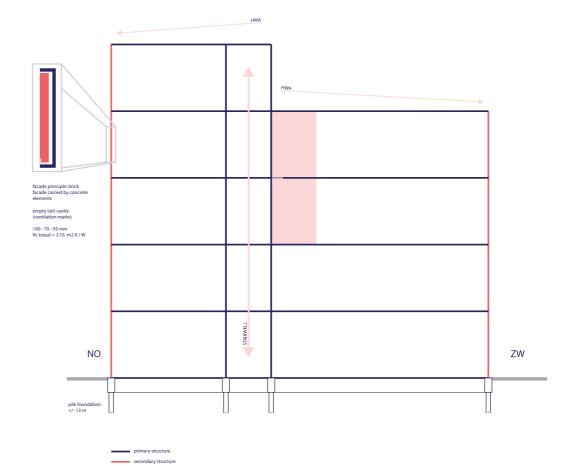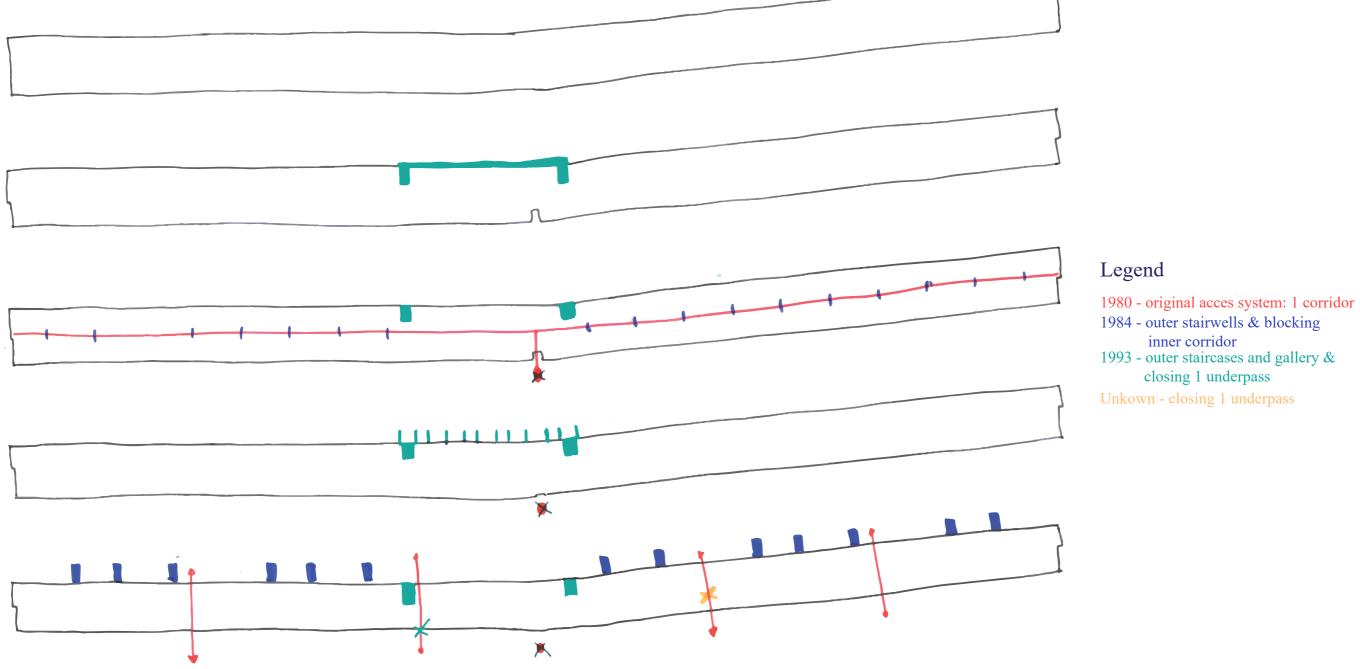
— primary structure
— secondary structure

— primary structure
— secondary structure
▦ main corridor and utilities

— primary structure
— secondary structure
▦ utilities

NO

ZW

— primary structure
— secondary structure
▦ living and sleeping areas

NO   ZW

pile foundation:
+/- 13 m

— pre-fab concrete
— in situ concrete

HWA

HWA

facade principle: brick
facade carried by concrete
elements

empty (air) cavity
(ventilation marks)

100 - 70 - 95 mm
Rc totaal = 3.16 m2 K / W

STAIRWELL

NO   ZW

pile foundation:
+/- 13 m

— primary structure
— secondary structure

↖N

MID-RISE: CHANGES IN ACCESS SYSTEM

94

95

Legend

1980 - original acces system: 1 corridor
1984 - outer stairwells & blocking
        inner corridor
1993 - outer staircases and gallery &
        closing 1 underpass

Unkown - closing 1 underpass
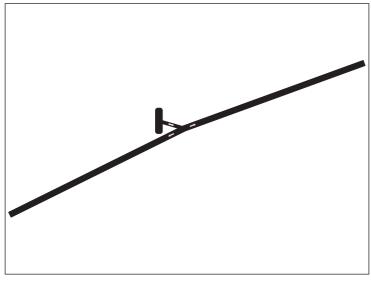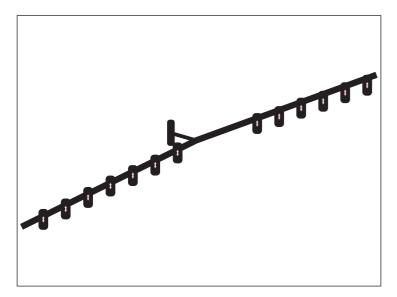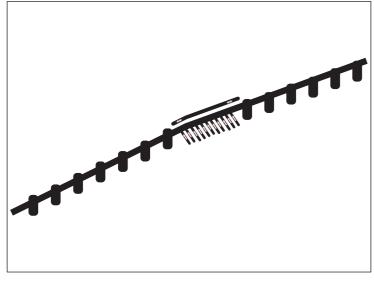
MID-RISE: CHANGES IN ACCESS SYSTEM
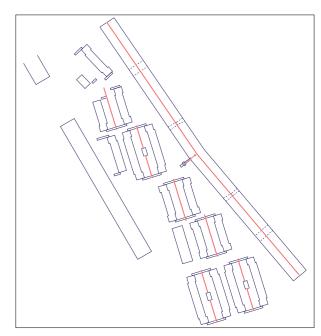
1980
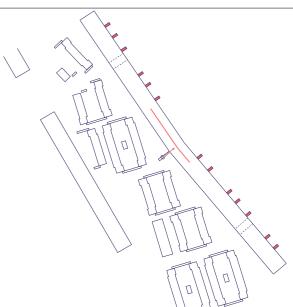
1984
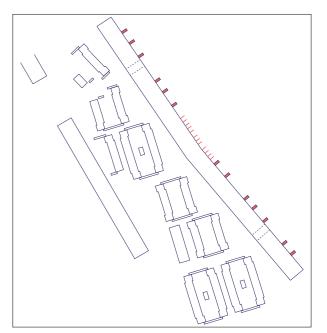
1993

1980 - Inner corridor

1984 - Outer stairwells

1993 - Outer staircases and stairwells

96

97

MID-RISE: CHANGES IN FACADE DUE TO ACCESS SYSTEM

1980

Randal Scobie (1982)

1984

Stadsarchief Amsterdam / L.R.R. (n.d.)

1980

Stadsarchief Amsterdams (1991)

1980

Stadsarchief Amsterdams (n.d.)

1993

Anneloes Tilman (2021)

2021

Anneloes Tilman (2020)

2021

Anneloes Tilman (2021/2020)

FACADES MID-RISE
Taken by author, 03-01-2021

FACADES LOW-RISE
Taken by author, 03-01-2021

CASE STUDY LONG BUILDINGS: CORVIALE

"Nuovo Corviale is a 1 km long "linear city", designed in 1972 by the architect. Mario Fiorentino commissioned by IACP. The single body in reinforced concrete is 9 floors high and is divided into five lots, separated by stair towers. Extremely long internal balconies give access to the floors, which integrate - at least in the original project - residences, community spaces and services. The first houses were delivered in 1982. Occupations, abandonment, decay and a long difficult path of redevelopment follow. Corviale is today the symbol of the contradictions of Rome, but also of a possible redemption.
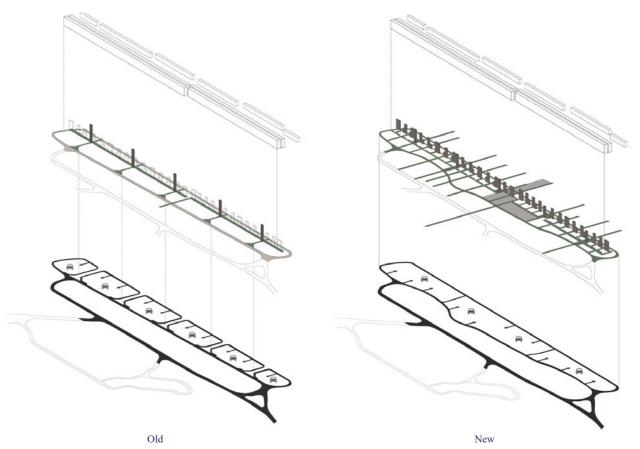
The first houses are arranged as best they can and delivered to the tenants without the management units having entered service. The first assignments are characterized by a chaotic phase, immediately accompanied by irregularities and waves of occupations. The occupations continue in successive waves, throughout the 1980s and 1990s. 1200 are the official apartments , which are flanked by the other houses built illegally in the common areas. The situation quickly precipitates into abandonment and decay.

A sense of disheartening helplessness envelops the Serpentone: the idea takes hold that the Serpentone is doomed to unmanageable the moment it was designed." [Translated from Italian]

(Anappo, 2016).

Photos: Xavier De Jauréguiberry (2009), Laura Peretti Architects (2015)

Old   New

Redesign: Addition of more vertical access points (Laura Peretti Architects, 2015)

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CASE STUDY LONG BUILDINGS: PARK HILL

"The complex is made up of a series of interconnected blocks constructed using concrete frames, which were left exposed and infilled with yellow, orange and red brick. Built over one of the city's seven hills, it replaced an assortment of back-to-back housing, tenement blocks and waste sites, creating nearly 1,000 new homes.

These three-metre-wide communal walkways – the "streets in the sky" promoted by Le Corbusier's Unité d'Habitation and many of the unbuilt projects by Alison and Peter Smithson – were designed as a modern replacement for the cobbled terraces of the former slums.

To foster a sense of community spirit, families re-housed in Park Hill were put next to their original neighbours, and the streets around the site were named after the original roads the project was built over. As well as homes, the complex accommodated pubs, schools, doctor and dental clinics, plus an assortment of shops that included a butcher, baker, pharmacy, newsagent, and fish and chip shop.

Unfortunately, the collapse of the steel industry – Sheffield's biggest income provider and employer – in the 1980s brought the radical ideals of Park Hill to an end. As money ran out, pubs were boarded up and the labyrinth of passages and decks became the perfect place for antisocial behaviour, vandalism and crime.

The fortunes of the complex changed in 1997 when Park Hill was granted a Grade II listing by English Heritage, making it the largest listed building in Europe. Property developer Urban Splash took over the building and commissioned architects Hawkins\Brown and urban designers Studio Egret West to renovate its dilapidated interiors." (Frearson, 2014).

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Photos: Architectural Press Archive/RIBA Library Photographs Collection (n.d.), Hawkins\Brown (n.d.)

CASE STUDY LONG BUILDINGS: HOUSE OF ATOMISTS

"This housing complex is 400 meters long and has 16 stories. The construction was completed in 1986, although first construction plans existed as early as 1970. The planning was initially carried out under the direction of Leonid Cherikover who also constructed the renowned Dynamo Stadium Moscow. However, the design work was later transferred to Vladimir D. Badad

The house, built on a spacious terrain with low-rise buildings around, was almost white (at the time of construction, now it is gray), looked like a cruise ship floating on the sea, hence the name the House-Boat.

The building has nine entrances and nearly 1,000 apartments. Bachelors were given one-bedroom apartments ("House of Bachelors"). Several materials were used for construction; stone, concrete slabs and beams as well as brickwork. It is said that some of the features of the design were to protect against Soviet nuclear reactors in case of a nuclear war, which explains the nickname "House of the Nuclear Scientists". For example, to increase its seismic stability, angles are not at 90, but at 87 and 93 degrees.

At the beginning this project was highly innovative, but 20 years later and after a myriad of changes and adjustments, the building has become incredibly complicated. Water supply has to be shared between several apartments. There are unused rooms with windows, with no meaningful access to existing apartments or public areas. Astonishingly the upper two floors were planned as duplex apartments with floor space of up to 200 square meters. The government demanded its demolition because they were too spacious and did not fit with the Soviet era idea of social housing. After a long fight they were finally accepted as "technical floors"." (Residential Complex Bolshaya Tulskaya., n.d.).

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Photos: Richard Anderson (2009), Doug Hall (n.d.), Krazin (n.d.)

CASE STUDY LONG BUILDINGS: SQUARE DES SPORTS

"The Square des Sports is a complex of linear blocks from the 60s built with the blocks laid out at 60º to each other, something common at the time. This layout enables a large landscaped space to be enclosed, creating an island cut off from traffic where the facilities can be located.

The project involves renovating the facades and improving the facilities and the thermal treatment of the 526 dwelling units distributed into several blocks, which were shared out between three architects to carry out a common project. Apart from these technical and environmental aspects the client requested a radical change of image for the whole complex." (Fernández Per, Mozas & Arpa, 2011.)

Photos: Ateliers Lion Associés (n.d.), GaP studio (n.d.)

108

109
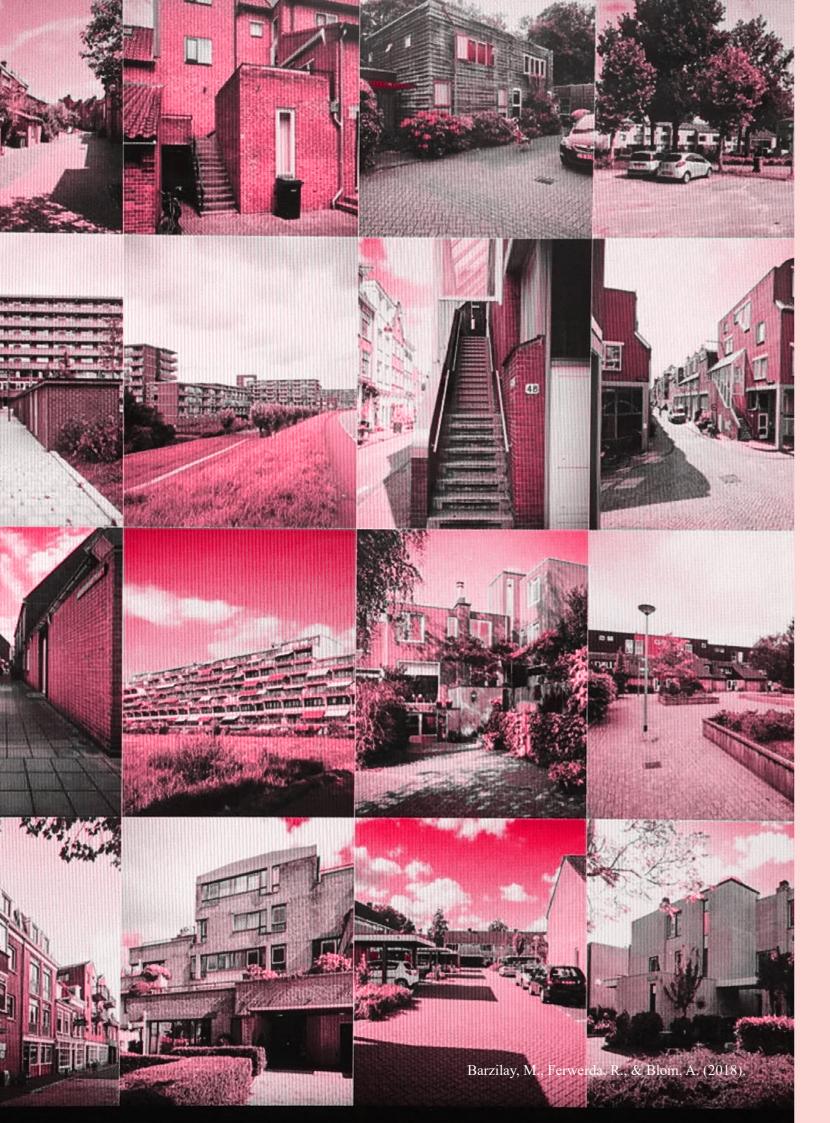
- research -

historic lessons

Barzilay, M., Ferwerda, R., & Blom, A. (2018).
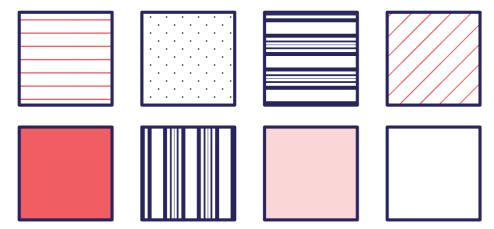
HISTORIC CITIES
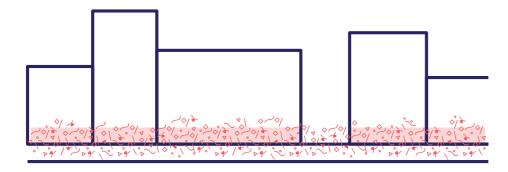
Images and rules based on:
Gibbons, 2016.
The School of Life, 2015.

ADDRESS
LOCAL ISSUES
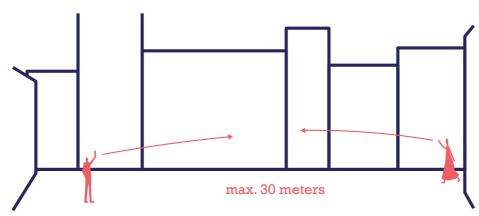
1. Balance order & chaos

2. Visable life

112

3. Compact city

max. 30 meters
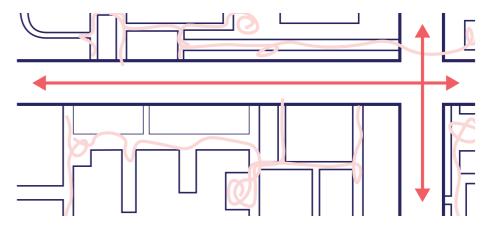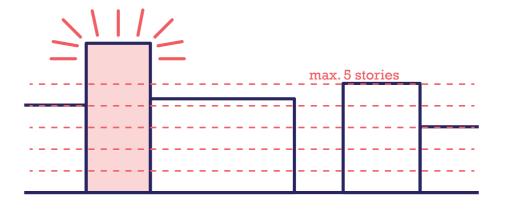
4. Orientation & mystery

5. Scale

113

max. 5 stories

6. Make it local

POST '65 REFLECTION

" **25% of housing stock (NL)** "

" **40-50 years; approaching end of life** "

Barzilay, Ferwerda, & Blom (2018).
Somers (2020).
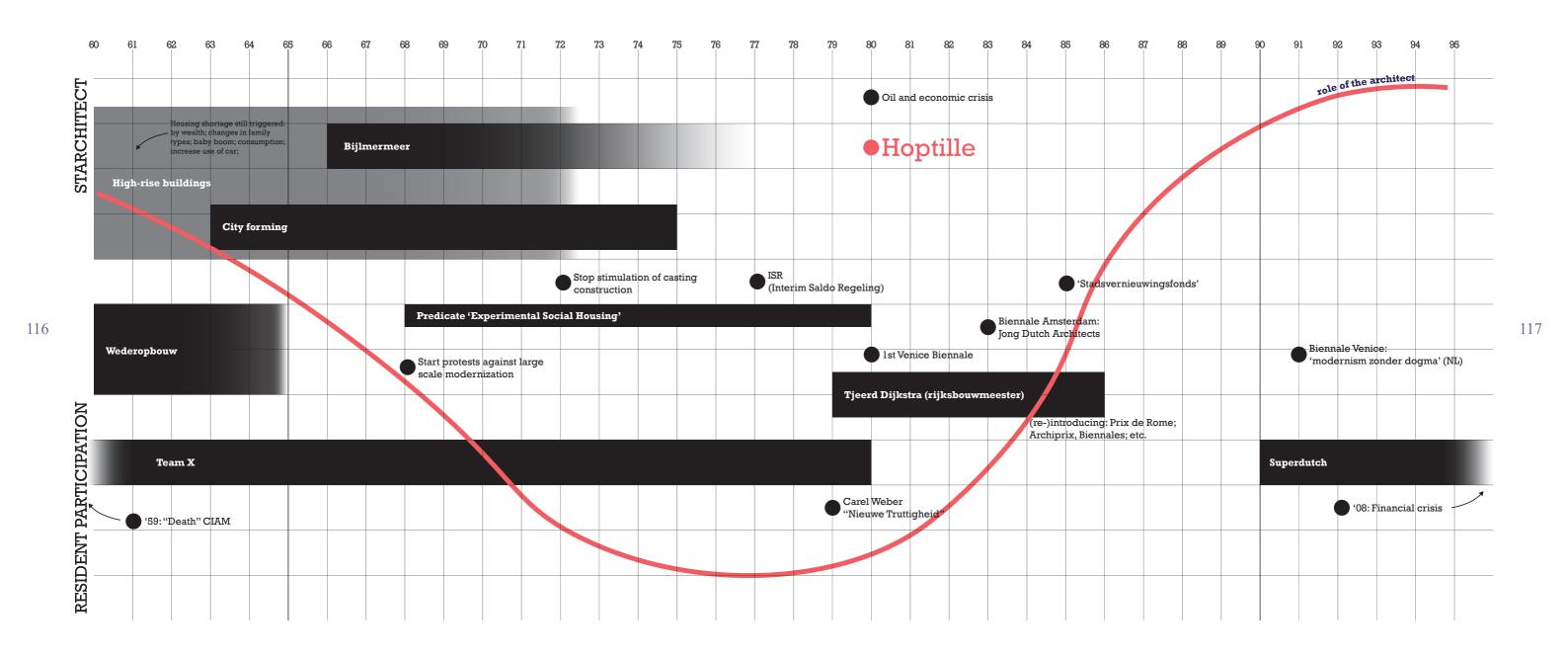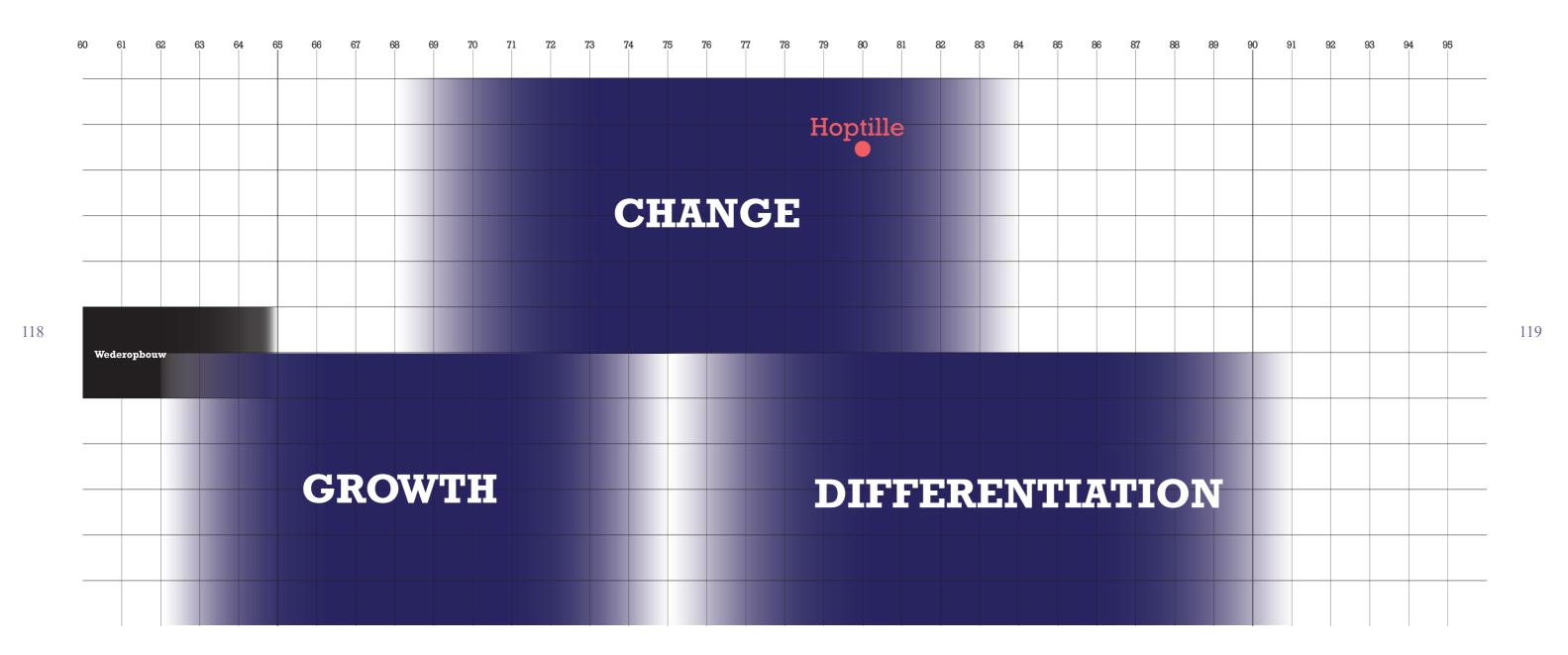
TIMELINE: RELEVANT EVENTS SURROUNDING THE 70's/80's NEIGHBOURHOOD AND HOPTILLE

| 60 | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 |

STARCHITECT

● Oil and economic crisis

role of the architect

Housing shortage still triggered: by wealth; changes in family types; baby boom; consumption; increase use of car;

Bijlmermeer

● **Hoptille**

High-rise buildings

City forming

● Stop stimulation of casting construction

● ISR (Interim Saldo Regeling)

● 'Stadsvernieuwingsfonds'

Predicate 'Experimental Social Housing'

● Biennale Amsterdam: Jong Dutch Architects

Wederopbouw

● 1st Venice Biennale

● Biennale Venice: 'modernism zonder dogma' (NL)

● Start protests against large scale modernization

Tjeerd Dijkstra (rijksbouwmeester)

(re-)introducing: Prix de Rome; Archiprix, Biennales; etc.

RESIDENT PARTICIPATION

Team X

Superdutch

● '59: "Death" CIAM

● Carel Weber "Nieuwe Truttigheid"

● '08: Financial crisis

Based on:
Barzilay, Ferwerda, & Blom (2018).
Somers (2020).

**TIMELINE: THREE MAIN TRENDS FROM 1965 TO 1990
(GROWTH - CHANGE- DIFFERENTIATION)**

60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95

Hoptille

CHANGE

118

119

Wederopbouw

GROWTH   DIFFERENTIATION

Based on:
Barzilay, Ferwerda, & Blom (2018).
Somers (2020).

TIMELINE: ROLE OF THE ARCHITECT FROM 1965 TO 1990

Based on:
Barzilay, Ferwerda, & Blom (2018).
Somers (2020).

VALUES OF THE 70's/80's NEIGHBOURHOOD

CHALLENGES OF THE 70's/80's NEIGHBOURHOOD
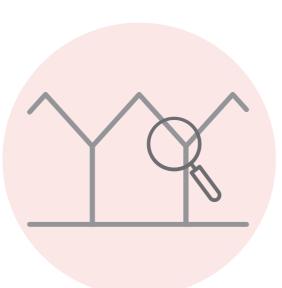
**KID FRIENDLY /
CAR FREE**
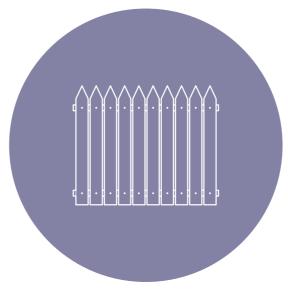
**NEW TARGET GROUPS /
DIFFERENTIATION DWELLING
TYPES**

**FRAGMENTATION OF GREENERY
/ CREATION OF FENCES**
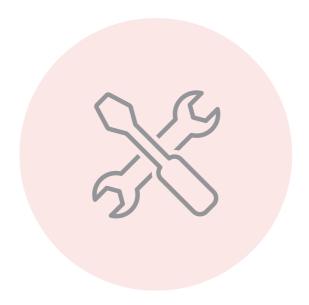
UNPROUD RESIDENTS

122

123

**BALANCE BETWEEN PRIVATE
AND COLLECTIVE/PUBLIC**

**EXPERIMENTAL DWELLING
CONFIGURATIONS**

**DETERIATION OF PUBLIC
SPACE / LACK OF MAINTENANCE**

**FROM SOCIAL TO PRIVATE
OWNED HOMES**

**OPPORTUNITY HOPTILLE: STILL
SOCIAL HOUSING**

Barzilay, Ferwerda, & Blom (2018).
Somers (2020).

HOTEL

MINIMISATION OF WASTE

Green Building Envelope
(Arup, 2016)

- research -

sustainable development

SUSTAINABLE DEVELOPMENT GOALS FOR HOPTILLE

This chapter will go through the four different aspects one by one. Each page is labeled to make sure the relation to the specific goal is clear.

Not all information related to a topic is collected here. For example, precedents that had more influence on access systems than the outdoor spaces are placed in according chapters. The label will be shown there as well.

6 WATER MANAGEMENT

3. WATER MANAGEMENT

13 PASSIVE HOUSING

4. PASSIVE HOUSING

14 BIODIVERSITY

5. BIODIVERSITY

15 QUALITATIVE OUTDOOR SPACES

6. OUTDOOR SPACES

APPROACH: FROM SMALTO EXTRA LARGE

14 BIODIVERSITY

" Cities need green sizes

S, M, L, & XL

otherwise the ecosystem is incomplete "

Gil Peñalosa, CEO "8-80 Cities" quoted in "Happy Cities" by Charles Montgomery (2013)

EXISTING GREENERY SPOTS
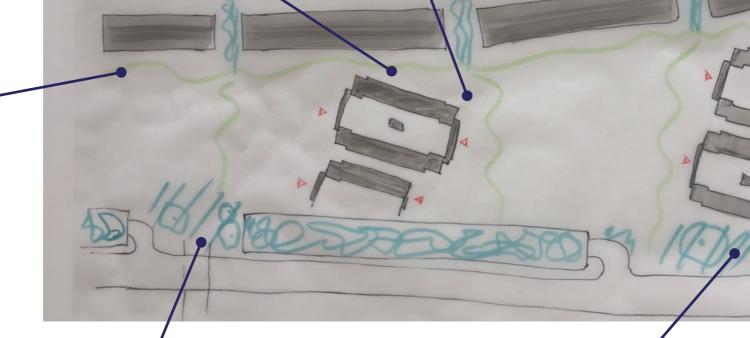
Site visit 22/02/2021
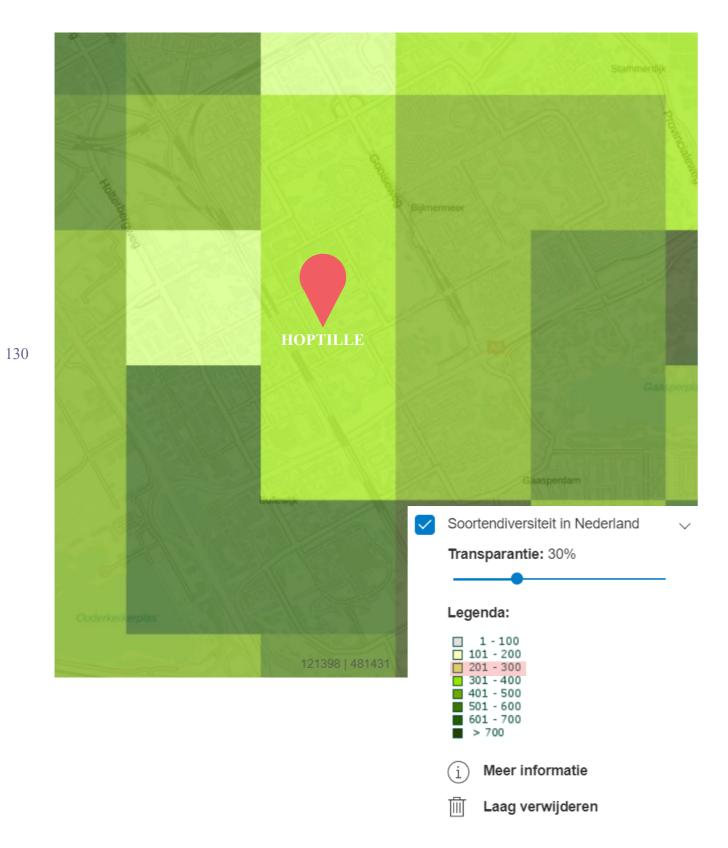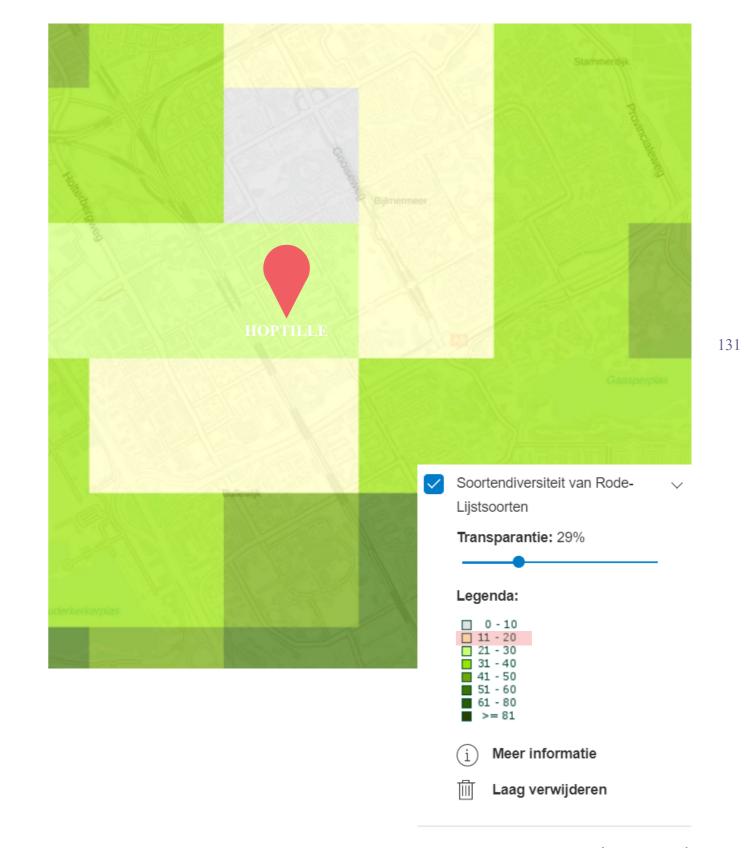
BIODIVERSITY HOPTILLE

Atlas Leefomgeving & Geodan (2019).

Both maps show low biodiversity, mostly as low or lower than surrounding areas.

14 BIODIVERSITY

CITIES ALIVE: GREEN BUILDING ENVELOPE (BY ARUP, 2016)

Green Building Envelope

1. Urban farm
2. Greenhouses
3. Vertical farming
4. Beehives and highways
5. Wildlife corridors
6. Integrated habitat creations
7. Flood residence
8. Water storage
9. Sustainable urban drainage
10. Bioremediation
11. Green wall - top down
12. Green wall
13. Modular plant walls
14. Seeded living walls
15. Moss walls
16. Tree façade
17. Bioreactive façade
18. Green roofs
19. Wildlife roofs
20. Wet roofs
21. Urban vegetation
22. City gardens
23. Photovoltaic roofs
24. Wind turbines and micro-generation

CITIES ALIVE: GREEN BUILDING ENVELOPE (BY ARUP, 2016)

14 BIODIVERSITY

System 1/4

Urban farm

As space becomes scarcer in cities and people yearn for the pleasures of 'growing their own', the use of roof space can provide space for 'sky allotments'. Raised beds provide ease of cultivation and lower structural loads. They often become community spaces that help to keep people active and encourage social interaction.

Greenhouses

Commercial urban farming requires controlled conditions. Cities like New York already have examples of commercial greenhouses on roofs growing high-value crops such as basil. It is then sold in the shops below thus closing food circuits and making use of available space.

Vertical farming

As flat areas like roofs are utilised, vertical façades are left. Through the use of double-skin façades and new mechanical systems, plants can now be grown vertically. Building owners could start generating new revenue from their buildings or providing 'home-grown' supplies to their own office canteen.

Beehives and highways

Bees are essential to a healthy ecosystem. 40% of the planet's food production requires bees for pollination as part of the food chain. Well managed colonies of bees distributed across cities help support all green infrastructure around them as well as offering a tasty, locally produced delicacy. A 'bee highway', a network of rooftop pollination and habitation spaces, can provide rest and feeding spaces for bees.

Wildlife corridors

Historically, cities have had a wealth of wildlife, helping to support natural ecosystems and enriching city life. Strategic green corridors can be developed by green roofs or façades that connect parks and green spaces across cities by prioritising green infrastructure along these routes.

Integrated habitat creation

Buildings produce great habitats for supporting wildlife with lots of nooks and crannies for sheltering birds and bats. Insect hotels and bird and bat boxes can easily be incorporated in the architectural design, often without visible signs from the exterior, except to the discerning visitor…

Benefits: (1) Benefits: (2) Benefits: (3) Benefits: (4) Benefits: (5) Benefits: (6)

System 3/4

Modular plant walls

Modular plant walls can provide instant greenwall solutions where trays can be grown off-site or installed in situ directly from seed. This provides robust greenwalls that are less manicured. Robust plant choices and less manicured walls are essential to minimise maintenance. They provide instant beneficial effects and also help provide habitat for insects and wildlife.

Seeded living walls

Greenwall systems can be provided that are grown in situ directly from seed. This provides robust greenwalls that are less manicured, but perfect for seed mixes such as wildflowers. They provide a perfect habitat for insects and wildlife and are cheaper than mature plant systems.

Moss walls

Moss walls provide attractive wall coverings that help support insect life. Walls that are shaded with minimal wind and can easily be kept moist are ideal. Rough surfaces that moss can adhere to are required. Proprietary systems can also help with sound absorption.

Tree façade

Trees provide enormous capacity to absorb CO_2 and fine particles and provide cities with lungs. Façades of buildings can be covered in trees by placing planters across the façade. Careful selection of tree type can maximise effect with minimal root requirements and therefore support.

Bio-reactive façade

High-value micro-algae can be grown efficiently on the façades of buildings, absorbing CO_2 as well as reducing the energy demands of traditional cultivation. Grown in transparent tanks very similar to double-glazed windows, they can provide a source of revenue for building owners by being utilised as an industrial raw material.

Green roof

As cities become denser, access to green space will become more competitive. Alternative spaces for workers and residents to interact foster a sense of community by creating new meeting places. They also offer recreational space and the potential for 'alternative' meeting rooms.

Benefits: (13) Benefits: (14) Benefits: (15) Benefits: (16) Benefits: (17) Benefits: (18)

System 2/4

Flood resilience

City aquifers are becoming depleted and city drainage systems are reaching their limits, resulting in regular flood events. Rather than building larger sewers, a cheaper solution would be to stop concreting over cities. Use façades, roofs, pocket parks, urban water features and floodable spaces to manage extreme weather events locally.

Water storage

Reducing the time between precipitation and discharge could make the difference between a city flooding and a barely noticeable rain event. Water storage tanks can be created within recreational spaces at minimal cost compared to huge city drainage schemes.

Sustainable urban drainage

Swales and habitats can be built alongside busy thoroughfares, slowing down the drainage of water into mains sewers, as well providing absorbent conditions, habitats for plants and animals and recreational space for people. They can also create value for local businesses by encouraging people to dwell longer.

Bio-remediation

Ponds with reed beds can be used to clean grey water coming off new developments at both ground and roof level. Not only reducing the burden on existing city services, they can also help to store and slow water as part of a sustainable urban drainage system.

Green wall - top down

Hanging climbers can be grown in balcony boxes / planters and allowed to drape covering walls below. These plants help produce attractive wall coverings at low cost, with the planter also being able to be used for vegetation at balcony level.

Green wall - ground up

Climbers placed on optimal orientations can grow fast, covering walls with the help of stainless steel or other meshes that provide support and help train the plants. This is a low-cost alternative with climbing plants growing in the ground or in planters at the base of walls.

Benefits: (7) Benefits: (8) Benefits: (9) Benefits: (10) Benefits: (11) Benefits: (12)

System 4/4

Wildlife roofs

These are perfect spaces that can offer views of Nature for people who overlook them as well as spaces for insects and birds to utilise as part of green corridors. These can either be under and around rooftop plants or on non-accessible ledges. They can also help reduce temperatures around PV units.

Wet roofs

Wet roofs can reduce temperatures in office buildings, helping to cut the cooling loads which are the highest energy load in many of them. They can also slow the effects of rainfall by providing temporary storage. The water can be released more slowly into city drainage systems or stored and used elsewhere on buildings, e.g. in toilet flushing or vegetation irrigation.

Urban vegetation

During the masterplanning of new developments the integration of trees as part of the setting of a building can provide significant micro-climatic improvements including shade and cooling for occupants and visitors. Vegetated buffers not only provide attractive backdrops to new developments but also help absorb stormwater.

City gardens

New park and recreation spaces for people are difficult to create in our already hyper-dense cities. A distributed network of city gardens utilising roof space and obsolete infrastructure can provide local recreational spaces for city inhabitants, as well as spaces that provide biodiverse habitats, making our cities far richer in their composition.

Photo-voltaic roofs

Cities have huge potential for creating energy. Lots of building surfaces remain unused. As the efficiency of photovoltaic units improves and their costs decline, their adoption will only increase. Surrounding green vegetation on roofs and façades helps to reduce local temperatures, thus increasing their efficiency.

Wind turbines and micro-generation

Micro-generation through wind has enormous potential in cities that are highly exposed to wind. With other energy sources such as solar and geothermal, it can provide part of a reliable renewal energy mix. In combination with vegetated building envelopes it can also provide an attractive addition to urban architecture.

Benefits: (19) Benefits: (20) Benefits: (21) Benefits: (22) Benefits: (23) Benefits: (24)

CITIES ALIVE: GREEN BUILDING ENVELOPE (BY ARUP, 2016)

14 BIODIVERSITY

Beehives and highways

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Benefits:

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Green roof

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Benefits:

S   **M**

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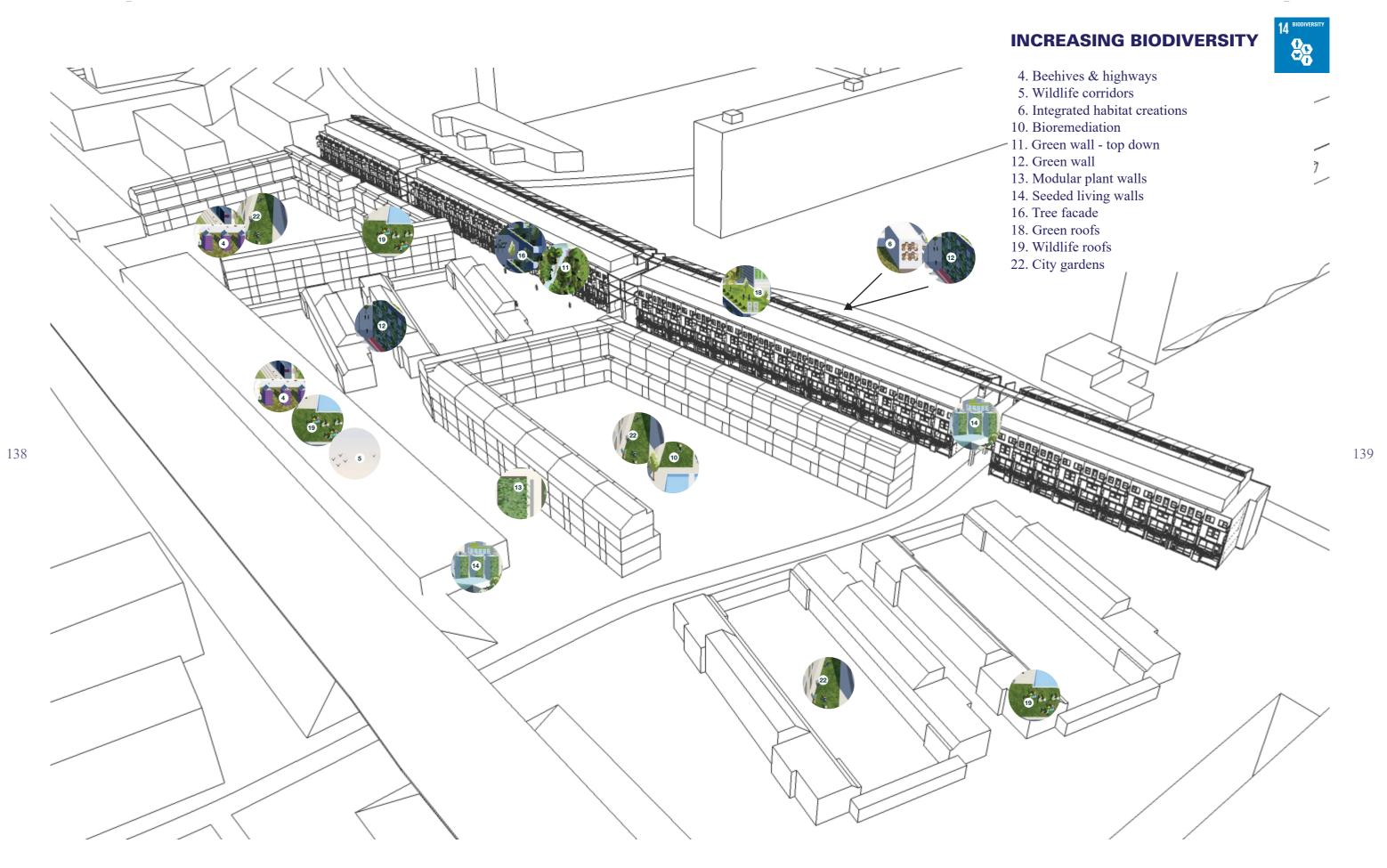

Benefits:

L   **XL**

INCREASING BIODIVERSITY

14 BIODIVERSITY

 4. Beehives & highways
 5. Wildlife corridors
 6. Integrated habitat creations
10. Bioremediation
11. Green wall - top down
12. Green wall
13. Modular plant walls
14. Seeded living walls
16. Tree facade
18. Green roofs
19. Wildlife roofs
22. City gardens

BEE FRIENDLY PLANTS TROUGHOUT THE YEAR

SOME INDIGENOUS DUTCH FLOWERS AND GRASSES

Planten van hier (2021).

| Weideklokje | Geel walstro | Avondkoekoeksbloem |

| Gewone bermzegge | Koninginnekruid | Gewoon reukgras |

SOME INDIGENOUS DUTCH TREE AND SHRUB SPECIES

Kemenade & Maes (2019).

| Wilde iep | Wilde appel | Zwarte populier |

| Oud beukenhakhout | Gladde iep | Zomereik |

HET HELE JAAR BLOEMEN VOOR DE BIJTJES
KALENDER VOOR EEN BIJVRIENDELIJKE TUIN

	jan	feb	mrt	apr	mei	jun	jul	aug	sep	okt	nov	dec
Winterheide	❄	❄	❄	✿								❄
Winterkamperfoelie	❄	❄	❄									❄
Judaspenning				✿	✿	✿						
Lavendel					✿	✿	✿	✿				
IJzerhard						✿	✿	✿	✿	✿		
Vlinderstruik							✿	✿	✿			
Koninginnekruid							✿	✿	✿			
Hemelsleutel							✿	✿	✿	✿		
Herfstaster								✿	✿	✿		
Klimop									✿	✿	✿	

Bees sleeping, plants needed in case of early wakening

❄ Bloeitijd en bijen in winterslaap. Bloeiende planten zijn wel nodig voor als ze vroegtijdig wakker worden

✿ Bloeitijd en actieve bijen.

CASE STUDY BLUE INFRASTRUCTURE: BLOCK 6

Jan Rave, Josef Paul Kleihues, Rolf Rave, Christoph Langhof
Berlin, Germany.
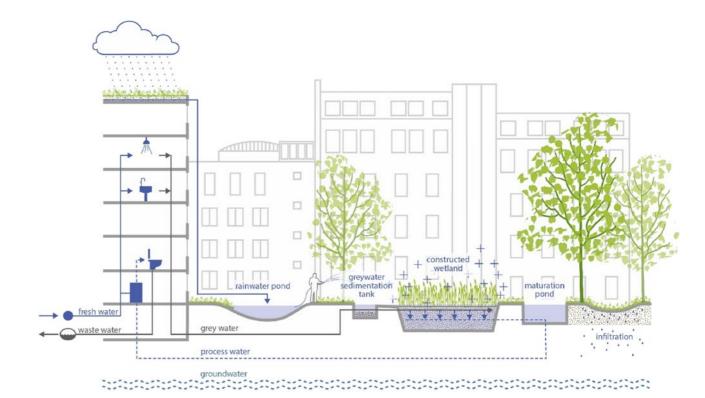
Zahara (2020)

Photo: ib-kraft.de, 1990
Schemes: Well & Ludwig, 2020.
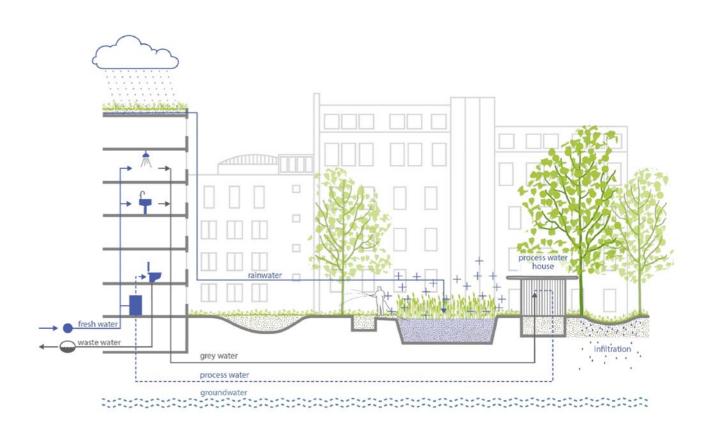
Focus: Green and water systems

Planned green-blue system

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143

Executed green-blue system

CASE STUDY BLUE INFRASTRUCTURE: TAINAN SPRING

Location: Taiwan
City: Tainan
Year: 2020
Architect: MVRDV
Budget: 4.700.000
Surface: 54600 m²
Client: Tainan City Government

MVRDV (2020).

Photos: Daria Scagliola, 2020.

Focus: Water systems as social activity

144

145

THE INDOOR GENERATION
Velux & YouGov (2018).

WE SPEND 90% OF OUR TIME INDOORS.
However, we believe that it is only 66%. In the Netherlands, this is how much time we believe to spend indoors:

    0-14 hours/day = 51%

    15-18 hours/day = 24%

    19-20 hours/day = 16%

    21-24 hours/day = 9%

24h

DAYLIGHT CAN BOOST YOUR CHILDREN'S LEARNING ABILITIES BY UP TO 15%.
6-12% increased performance by call centre employees with better view and more daylight. Also, the lack of daylight makes 15% of us SAD (Seasonal Affective Disorder, or winter depression).

8 OUT 10 ARE UNAWARE THAT INDOOR AIR CAN BE UP TO 5 TIMES MORE POLLUTED THAN OUTDOOR AIR.
Living in damp and mouldy homes increases the risk of asthma by 40%. And kids' bedrooms are often the most polluted room in the house.
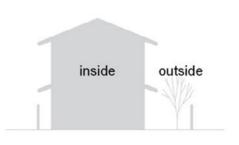
CASE STUDY OUTDOOR/INDOOR: N-HOUSE
Project by Sou Fujimoto.
Oita, Japan.

Saieh (2011).

Focus: Qualitative outdoor spaces/blending indoors and outdoors

inside   outside
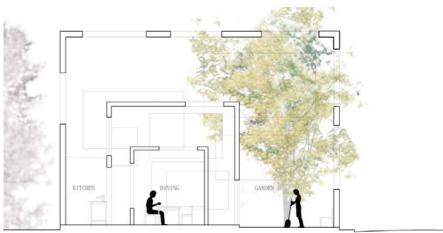
inside & outside

Conventional House

Future House !

KITCHEN   DINING   GARDEN
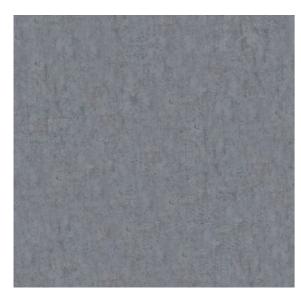
CONSTRUCTION MATERIAL OPTIONS

Textures from Textures.com.
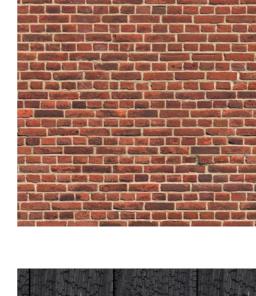
CONCRETE.

Structure and foundation.
Can be used for long periods of time, stable structure, and good for foundation poles on peat (sand).
Can be as good as wood as main frame material in a Carbon Capture and Storage (CCS) scenario (Nässén et al., 2012).
Recycling of concrete provides no benefits to new concrete in terms of emissions. It does contribute to lessening of landfill. In the Netherlands, concrete is usually recycled to road fill (Schilperoort, 2016).

BRICK.

Facade cladding

+ easy maintenance/

- CO2 from processing/

TIMBER.

Structure.
Renewable material source, 45% less emissions and 28% less primary energy than concrete. Especially if sourced with sustainable methods (Sathre & Gustavsson, 2009).
Can be equal to concrete as main frame material in a Carbon Capture and Storage (CCS) scenario (Nässén et al., 2012).

(Texture: Flexible wooden furniture concept 'Chidori' by Kengo Kuma and Associates, n.d.)

CHARRED WOOD FACADE.

(Shou sugi ban/yakisugi) Facade cladding

+ repels insects/greater fire resistance/strengthening/ aesthetics/more durable/'recycable' with natural oils/ true cost low (€/m²/year)/

- CO_2 during processing/no leading against it/dark so heats up/air circulation needed at installing/

RAMMED EARTH (LEEM).

Structure

Nässén, Hedenus, Karlsson & Holmberg (2012).

Renew (2019).

Sathre & Gustavsson (2009).

Schilperoort (2016).

Williams (2020).

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REFERENCE: BC ARCHITECTS AND STUDIES/
BC MATERIALS

Project 1: Fort V (Regional House), Edegem/Belgium (2015-2017)
Photos: Thomas Noceto (2017)

Project 2: Library of Muyinga, Muyinga/Burundi (2012)
Photos: BC Architects, n.d.

Project 3: Preschool Ouled Merzoug, Ouled Merzoug/Morocco (2016)
Photos: BC Architects, n.d.

Focus: use of biobased materials/urban mining

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PROJECT 1

PROJECT 2

PROJECT 3
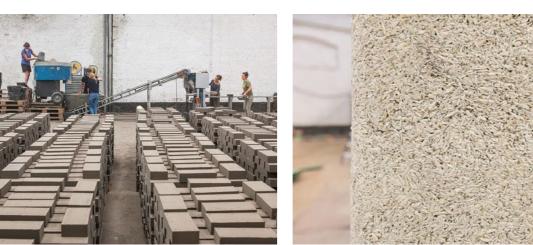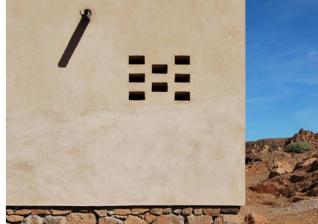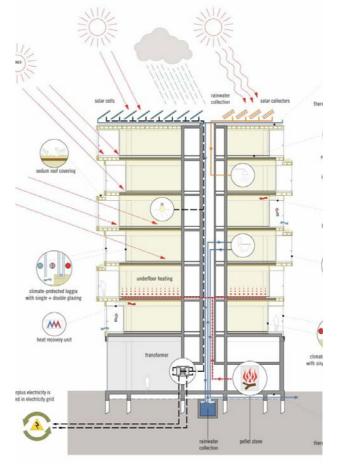
REFERENCE: PATCH 22

Buiksloterham, Amsterdam, The Netherlands

(FRANTZEN et al architects., 2017)

Focus: climate systems

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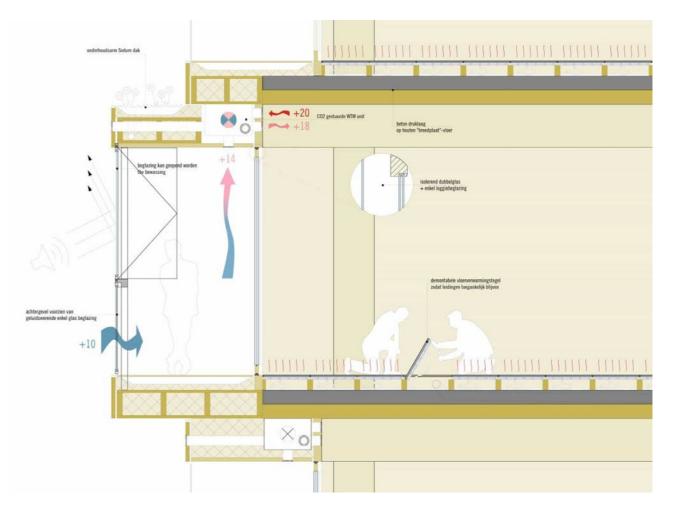
CASE STUDY: KLEE HOUSING
Residential development Klee Mühlackerstrasse, Affoltern Zurich

Competition: 2006 / start of construction 2008 / move in 2011
Project team: Knapkiewicz & Fickert (Caviezel Marco, Wirz Thomas, Grahammer Thomas, Künzle Thomas)
Competition: Caviezel Marco, Mikavica Dejan, Zweifel Hannes
Cost planner / construction management: GMS Partner AG
Client I: Building cooperative Hagenbrünneli, http: // www .wohnenzuerich.ch / Client
II: GMBZ, http://www.gbmz.ch/
Images: Ruedi Walti, Basel / Axka

Focus: Facades and shared facilities

von Graevenitz & Adam (2015).

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ENERGY LABEL HOPTILLE

Mileu Centraal (n.d.).

TYPICAL 80'S DWELLINGS

1. moderately insulated concrete floor
2. moderately insulated cavity wall
3. moderately insulated roof
4. double glass // natural / mechanical ventilation
5. central heating
• estimated energy label: D

WoonWijzerWinkel (2018).

Some general steps to improve the energy label for a corner house of 55 m² from 1955 (Mileu Centraal, n.d.).

Improvement opportunities for housing 1975-1982 (WoonWijzerWinkel, 2018).

LOW-RISE

For the low-rise, the energy label varies from D to C. This is most likely due to individual improvements in installations.

Mileu Centraal (n.d.).

MID-RISE

For the low-rise, the energy label varies from D to C. This is most likely due to individual improvements in installations. Some specific homes have energy label A. This is most likely incorrect. Label A is achieved with high insulation, high performance installations, and solar panels. This is probably not the case. Nonetheless, it is not representative of the whole building.

Mileu Centraal (n.d.).
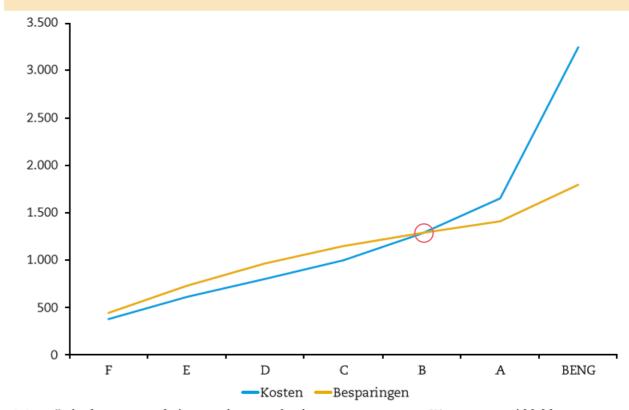
ENERGY LABEL: INVESTMENT V.S. SAVINGS

Figuur 2   Gemiddelde energiebesparing per labelstap, in € per woning per jaar

Figuur 1   Investeringskosten per woning van verschillende stappen richting energieneutraliteit, in €

Bron: ECN / EIB

Bron: ECN/ EIB

Figuur 3   Jaarlijkse kosten[1] (bij 6% rente en levensduur van 25 jaar) en besparingen om tot hogere energieprestaties te komen, in € per jaar en per woning

1 Annuïtaire kosten van de investeringen op basis van een rente van 6% en een gemiddelde levensduur van 25 jaar

Bron: EIB

Stichting Economisch Instituut voor de Bouw (2018).

ENERGY/HEAT PRODUCTION

SOLAR PANELS

<u>Per household (average):</u>
Your annual power consumption is 3000 kWh.
Your supplier offers 290 Wp solar panels.
You then need 3000 x 1.1 = 3300 divided by 290 = 11.4.
Due to unreliable sun exposure <u>12 panels per household</u> are needed.

<u>Total neighbourhoud:</u>
Number of households: 402
402 x 12 = <u>5.112 solar panels needed total</u>

van der Wilt (2019).

ALGEA BIO-REACTIVE FACADE

Placed on facades facing South-West and South-East (Hamburg, Germany):
"SolarLeaf provides around one third of the total heat demand of the 15 residential units in the BIQ house."

"The system can be operated all year round. The efficiency of the conversion of light to biomass is currently 10% and light to heat is 38%. For comparison, photovoltaic systems have an efficiency of 12-15% and solar thermal systems 60-65%."

More Than Green (2020).

SOLAR COLLECTORS

Plate or vacuum tube.

Plate: cheaper but less reliable.
Vacuum tube: +/- 33% more expensive, but more reliable.

Both systems can save up to 50% of energy used for warm water per household.
Savings per year €100,- to €200,- a year.

Both systems can save up to 15-25% of energy used for heating the home per household. This lower yield is due to the fact that solar collectors have less heat yield on days with less sun. These happen to be the days when more heating is needed.

Zonneboiler-advies (2020).

STADSVERWARMING

In district heating, we use the residual heat that is released when generating electricity or burning waste. The heat goes to your home or business via an underground pipe network. District heating is a sustainable alternative to separate gas boilers (Vattenval, n.d.). It is already present in mid-rise building.

It is, however, more suitable for very poorly insulated buildings. District heating produces a lot of heat for the home, that is not needed for well insulated buildings so it should be used for historic buildings etc. (van Zoelen, 2020).

Large image: Vattenval (2021). Image below: Energiewereld.nl (2019)

WIND ENERGY

Conditions:
• At least 20 meters high; or twice as high as its surroundings
• Average windspeed of 5,5 m/s at the location. For the Netherlands, this is in the coastal areas.

A small wind turbine can provide clean electricity at a relatively low price per kWh. However, due to the high purchase costs, the investment is not earned back within the technical lifespan.

Milieu Centraal (n.d.a).

HEAT PUMPS

See next page.

ENERGY/HEAT PRODUCTION: HEAT PUMPS
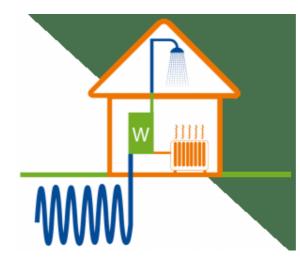

13 PASSIVE HOUSING

AIR - AIR

Easy to install and a cheap options. Can also be used for cooling.

Netherlands: usually placed in hotels where there is no continious use.

Not sufficiant with more extreme wheater.

Less comfortable due to draft and noice.

AIR - WATER

Same as the air - air system.

Gives heat to (existing) radiators or under floor heating.

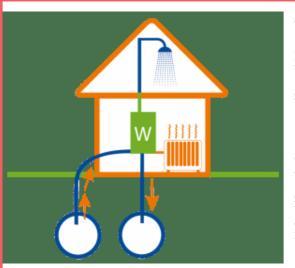Can also be connected to mechenical ventialtion for heat recovery.

GROUND - WATER

Highest investment costs, but is most reliable and efficient.

Either placed vertically or horizontally.

Used in new build structures or homes with gardens (enough outdoor space).

Cooling is nearly free with this system.

HYBRID

Usually conected to air - air heat pump.

Heat pump provides heat throughout the year, only with extre wheather the HR-boiler is used.

No additional requirements needed.

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WATER - WATER

Highest investment costs, but is reliable and efficient. Placed for large utility buildings or large scale housing projects.

Closed system with bottom heat exchanger
50-80 % of energy use can be covered with this system.
   Volume with water: 4,5 x 4,5 x 4,5 meter per household.
   Volume with magnesium sulfate: 4,5 x 4,5 x 0,45 meter per household.
Can be installed in crawl spaces underneath the house. Magnesium sulfate offers a good option for dense living situations.

Open system
Use of ground water. Usually at 100 meters below ground level, new systems can go to 500-600 meters.
More prone to failure and dependant of local situation.

Warmtepompplein (2021).

de Vree (n.d.).

WATER STORAGE: WATERBAGS FOR RAIN WATER REUSE

13 PASSIVE HOUSING

Rain water collection systems can be very large or require ground work for installation. This is doable for larger projects were ground work is already going to be done. However, for the renovation of the low-rise buildings, this might be too invasive. Instead of these larger systems, rain water collection bags can be chosen and installed per home. The bags vary in size, so for all homes a correct one can be chosen. These bags are then installed in the crawl space, basement, or attic. The installation is so easy, theoretically the residents themselves could do it. It should be executed by the housing corporation. The bags are low in maintenance. The water in the bags can be used for flushing the toilet, the washing machine and for watering plants in and around the house (GEP, n.d.).

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GLAZING: DIFFERENT OPTIONS

13 PASSIVE HOUSING

Kind of glazing	Price per m² incl. BTW and placement	Yearly savings per dwelling per 20 m² of glass	
Standard double glazing	€ 115	€ 140 per jaar	
HR	€ 120	€ 180 per jaar	
HR+	€ 125	€ 220 per jaar	
HR++	€ 130	€ 260 per jaar	
HR+++	€ 170	€ 280 per jaar	Homedeal (2021).
Vacuum glazing	€130-150	€280 per year	OfferteAdviseur (2021).

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Vacuum glazing seems the best option. Together with its low weigth, it's a good option for the renovation of window frames and offers a good quality of daylight and comfort. However, it is a fairly fragile glazing OfferteAdviseur (2021). Therefore, vacuum glazing will be used for the homes and a double glazing for the other functions and flexible plinth of the mid-rise. Double glazing is chosen due to the price quality balance Homedeal (2021) for windows and doors that will probably be opened a lot throughout the day.

USE OF BRICK

CLICK-BRICK
cradle to cradle certified.
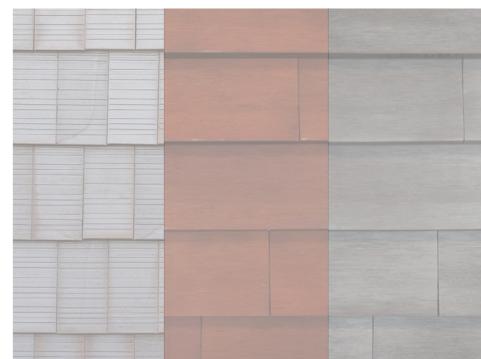
Wienerberger (2019)

FIXBRICK

FixBrick (n.d.)

KERAMIC PANELS
cradle to cradle, prefab

Architile (2021)

USE OF BRICK

CLICK-BRICK
cradle to cradle certified.

Wienerberger (2019)

Producten

Meer informatie, waaronder technische specificaties over de sorteringen en referenties vind je op de individuele productpagina's.
Hier kun je ook direct monsters aanvragen!

Marziale HV ClickBrick

Timm-Antiek HV ClickBrick

Menton HV ClickBrick

Andalucia HV ClickBrick

Blauwrood Genuanceerd HV ClickBrick

Rhone Exclusief HV ClickBrick

Zwart HV ClickBrick
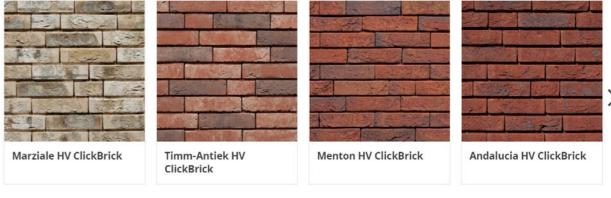
CLICK-BRICK PURE
same product, traditional aesthetic

Wienerberger (2021)
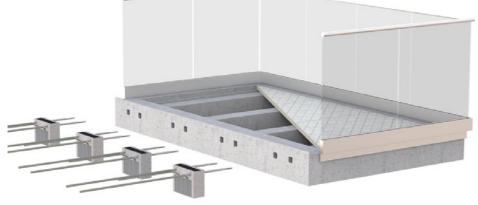
BALCONIES: DIFFERENT OPTIONS
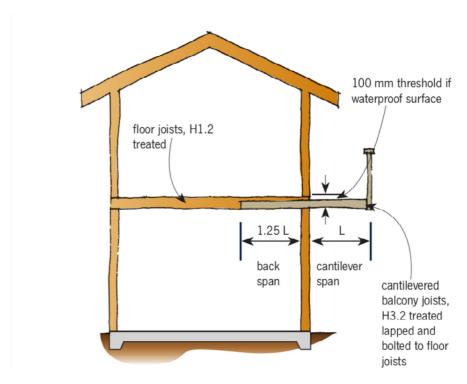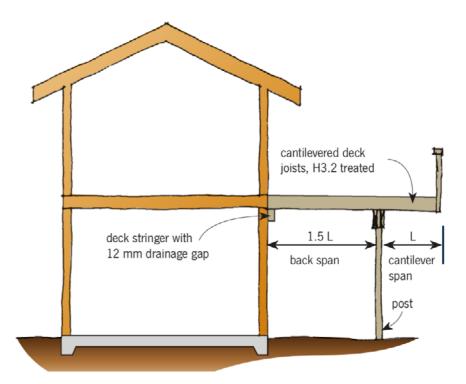
BALQOON
Concrete balcony; efficient material use

(Balqoon, n.d.)

BALCONIES: DIFFERENT OPTIONS

100 mm threshold if waterproof surface

floor joists, H1.2 treated

1.25 L — back span

L — cantilever span

cantilevered balcony joists, H3.2 treated lapped and bolted to floor joists

cantilevered deck joists, H3.2 treated

deck stringer with 12 mm drainage gap

1.5 L — back span

L — cantilever span

post

WOODEN

Extra support needed: undersirable for Hoptille due to blocking of sightlines.

(Shelton, 2011)

BALCONIES: DIFFERENT OPTIONS

CAVITY INSULATION: FACADE

SUPAFIL BLOWN-IN WOOL.

Recycled glass (70%): € 17,50 p/m incl. btw and placement

λ(U)-waarde= 0,034 W/m2K

"Sustainable product, with 70% recycled glass
No added chemicals
Less CO2 emissions
Good constant insulation values
Energy and cost savings
Masonry and exterior of the house remain intact
Moisture resistant, both inwards and outwards
Good distribution in the cavity without collapsing
Quick and easy to process"

UNIDEK EPS PEARLS.

HR++ pearls, 2 - 5 mm: 17,50,- p/m² incl. btw and placement

Rc value = 1.82 m²K / W at 6 cm thickness
So, λ-waarde= 0,033 W/m2K

Simple installation (usually in 1 day)
Ecological and 100% recyclable, consisting of 98% air
Warm in the winter, cool in the summer
Vapor permeable and moisture resistant / regulating insulation
High insulation value

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HR ++ NEOPIXELS EPS PEARLS.

EPS, graphite: 23,- p/m2 incl. btw and placement

λD waarde 0,033 W/m2K

Warm in the winter and cool in the summer
Short payback period
Breathable
Moisture resistant
Flame retardant
Environmentally friendly and recyclable
Contributes to sound insulation from the outside
Isolation within one day

STEEL STRUCTURES

Extra support needed for Hoptille renovation: undersirable for Hoptille due to blocking of sightlines.

(Balconette, n.d.)

WoonWijzerWinkel (2021).

INSULATION: HIDDEN EMBODDIED ENERGY

INSULATION: LAMBDA V.S. EMBODDIED ENERGY

Energy demand		
Year space heating energy demand	390,845	kWh
Year space cooling energy demand	37,925	kWh
	428,770	kWh

Existing Condition

Rc Wall: 0.27 m2K/W
Rc roof 1.19 m2K/W

Energy demand		
Year space heating energy demand	185,649	kWh
Year space cooling energy demand	72,140	kWh
188,769 kWh / year	240,001	kWh

Energy demand		
Year space heating energy demand	137,294	kWh
Year space cooling energy demand	80,179	kWh
211,618 kWh / year	217,473	kWh

Renovation - Code

Rc Wall: 1.30 m2K/W (5,701 Kg EPS)
Rc roof 2.00 m2K/W (8,772 Kg EPS)

Renovation - HIgher insulation

Rc Wall: 8.00 m2K/W (35,088 Kg EPS)
Rc roof 8.00 m2K/W (35,088 kG EPS)

EPS Embodied energy
90 MJ/kg= 35 kWh/kg

Energy cost of material
14,473 kg EPS = 506,555 kWh

Energy saved by material
188,769 x 50 years = 9,438,450 kWh

Energy saved by material total
9,438,450 - 506,555 = **8,931,895 kwH**

Energy cost of material
70,176 kg EPS = 2,456,160 kWh

Energy saved by material
211,618 x 50 years = 10,580,900 kWh

Energy saved by material total
10,580,900 - 2,456,160 = **8,124,740 kWh**
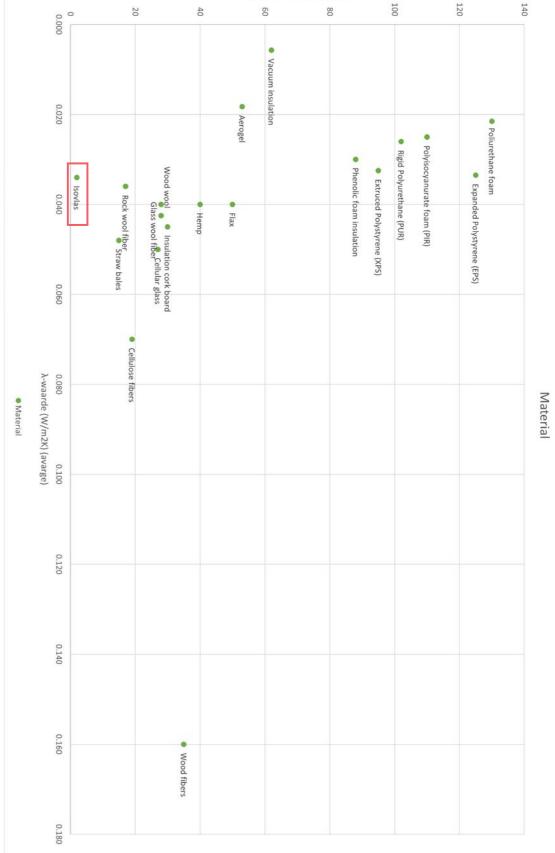
Less use of material is more energy saved
after 50 years; this triggers an awareness
for the materials we put into our buildings,
assuming this is all good. A environmental
friendly insulation should be chosen.

Isovlas (2021).

Embodied Energies of materials: Asif, Hamoud, Ashraf, Khan, Mobeen, M., Hassan & Dehwah, (2017).
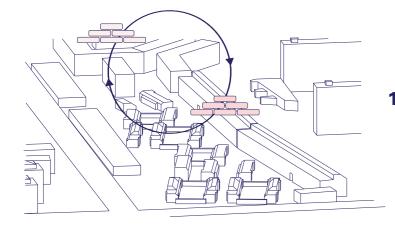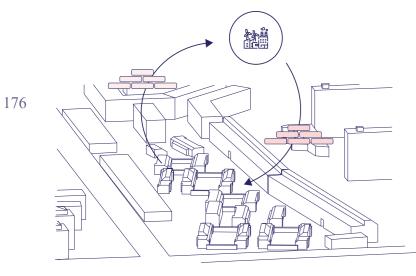
MATERIAL REUSE STRATEGIES
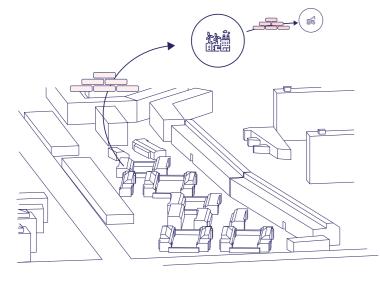
1. REUSE ON SITE

2. ALTERATIONS OFF SITE, THEN BACK

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3. ALTERATIONS OFF SITE, USE OTHER LOCATION

MATERIAL REUSE STRATEGIES: MATERIAL SELECTION

The project aims to reduce, reuse, and recycle (Petzet, 2012). However, while making improvements, materials are removed in order to enhance existing values or to solve challenges. During the design process, as much material as possible is solved, such as the concrete slabs in the facade of the mid-rise. All material that is removed should be reused or recycled.

For the reuse or recycling of materials, three strategies will be used. In order to apply these, material specific solutions must be found. Six main materials were selected that are demolished most during the project. These six are concrete, brick, glass wool, ceremic roof tiles, glass, and (wooden) window frames.

Petzet, M. (2012). Introduction: Architecture as a Resource. In M. Petzet & F. Heilmeyer (Eds.), *Reduce Reuse Recycle: Rethink Architecture - German Pavilion 2012* (pp. 9–11). Hatje Cantz Pub.
  Muck Petzet is a German practicing architect. This text by Petzet is the introduction to the German Pavillion for the thirteenth International Architectural Biennale in Venice in 2012. The pavilion has the topic 'Reduce, Reuse, Recycle' and consist of sixteen projects with different strategies and approaches. If one only looks at energy consumption, the best way to improve a building would be through minimal intervention. Because energy consumption is not the only factor in architecture, a hierarchy is made: First reduce, then reuse, and lastly recycle. Petzet describes the reason for the theme; a surplus of architecture in Germany and a shift in focus to transform the old, rather than building new. The study for the biennale focusses on the ordinary within architecture. The entire project calls for one thing: Valuing what already exists. This thinking is in line with the notion of 100% heritage. It shows different approaches on how to deal with the existing built environment.

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Top left: Textures.com, n.d.
Bottom left: Isolmec, n.d.
Bottom right: Textures.com, n.d.

REUSE: CONCRETE (STRATEGY 1)

Lotfi, Deja, Rem, Mróz, van Roekel, & van der Stelt. (2013).

REUSE: BRICK (STRATEGY 1 AND 3)

Roughly **2.447 m²** of brick removed of which roughly 200 white, other red.

1.310,2 m² of removed insulation due to transformation (mid-rise)

Brick needed: 8.831 m² new facade x 60% = **5.178 m²**
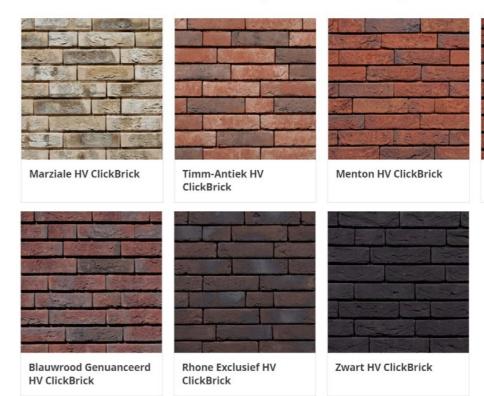
CURRENT FACADES

Producten

Meer informatie, waaronder technische specificaties over de sorteringen en referenties vind je op de individuele productpagina's.
Hier kun je ook direct monsters aanvragen!

Marziale HV ClickBrick

Timm-Antiek HV ClickBrick

Menton HV ClickBrick

Andalucia HV ClickBrick

Blauwrood Genuanceerd HV ClickBrick

Rhone Exclusief HV ClickBrick

Zwart HV ClickBrick

CLICK-BRICK PURE
cradle to cradle certified, traditional aesthetic.

Wienerberger (2021).

REUSE: GLASS (STRATEGY 2)

DeBrincat & Babic (2018).

Facades now: 30% window openings.

Existing panels: dubbel glazing (4 - 4 - 4 mm)
New panels: 1. Vacuum glazing (3 - 0.1 - 3 mm)
               2. Triple glazing (4 - 12 - 4 - 12 - 4 mm)
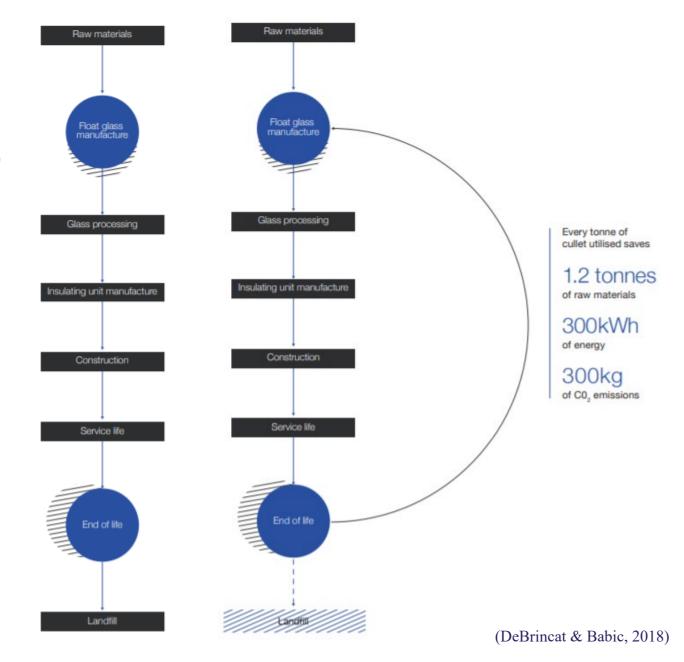
Total dubbel glazing panels removed: 647,5 m^2
Total volume of glazing removed: 5,18 m^3
       > to be upcycled to vacuum or double glazing panels.

Other windows removed to be upcycled to vacuum or double glazing panels.

REUSE: GLASS WOOL (STRATEGY 2 OR 3)
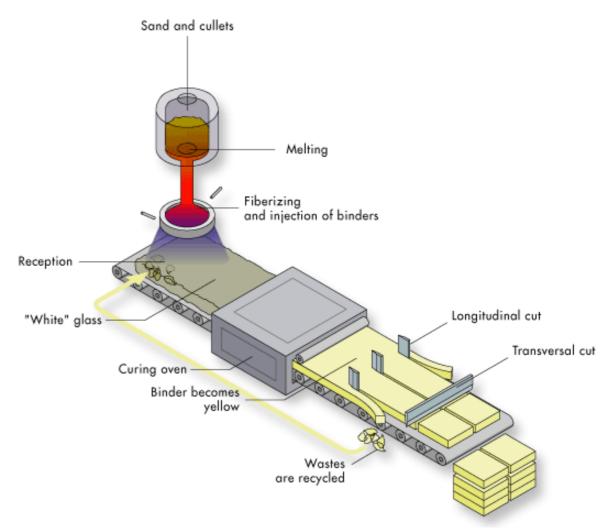
3053 m^2 roofscape with glass wool insulation

2.447 m^2 of removed insulation due to demolishment (low-rise)

1.310,2 m^2 of removed insulation due to transformation (mid-rise)

How glass wool is made:

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(DeBrincat & Babic, 2018)

(Eurima.org, n.d.)

REUSE: CEREMIC TILES (STRATEGY 1 OR 3)

931 m² of ceremic roof tiles removed due to demolishment (low-rise).

Within the project there are little to no sloped roofs to be tiled. Therefore, the tiles can be reused in a different project or in another creative way:

Top left: Cortesía de Fabián Montecinos, 2016.
Top right: Nicholas Worley, 2017.
Bottom left: Qilin Zhang, 2019.
Bottom right: Leonardo Méndez, 2018.

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REUSE: WINDOW FRAMES (STRATEGY 1)

Typical reuse/recycle methods (clean wood):
- Processed in, among other things, chipboard
- used as a (sustainable) fuel in power plants

Additional options:
- Reuse of wooden frames, doors and timber frame construction units after disassembly
- Recycling of wood for new elements, such as (interior) cladding
- Upcycled to interior design pieces
- Reuse of wooden sheet piling or piles in civil engineering
- Reuse of wood products from civil engineering in (bridge) constructions

Perschier & Stichting Stimular, 2019.

PRECEDENT: UPCYCLE STUDIOS / LENDAGER GROUP
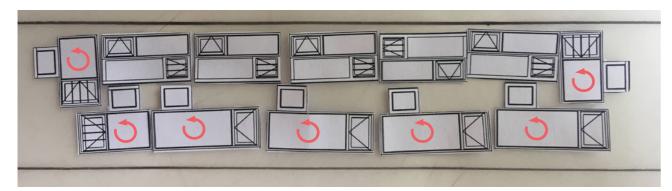
Photo: Rasmus Hjortshøj for COAST, 2019

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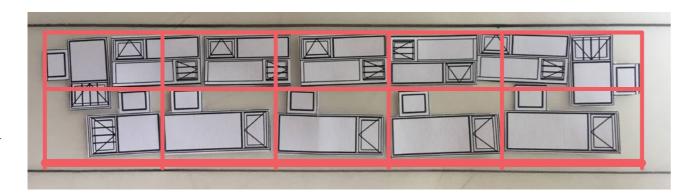
REUSE: WINDOW FRAMES (STRATEGY 1)

Window frames reused for Community Centre: 36 out of 245.
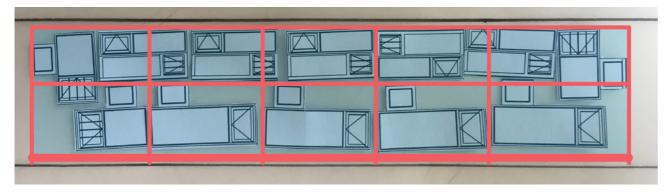
Proposed set of 12 window frames:

↺ Turned from original position

── Support system

▢ External glazing

STREET SIDE - NIGHT

STREET SIDE - ELEVATION

REUSE: WINDOW FRAMES (STRATEGY 1) - EVALUATION

What are the negatives and positives of this reuse strategy of window frames?

POSITIVE ASPECTS OF REUSE:

NEGATIVE ASPECTS OF REUSE:

DIRECT REUSE OF MATERIAL: NO LOSS OF MATERIAL IN ALTERATIONS OR IN VALUE

MORE EFFORT TO REMOVE: ADDITIONAL COSTS (WITHOUT ENVIRONMENTAL IMPACT)

IDENTITY KEPT THROUGH THE ATTRIBUTES: GENIUS LOCI

ADDITIONAL MATERIAL NEEDED TO ACHIEVE ESSENTIAL REQUIREMENTS (WATER TIGHT ETC.)

NO NEED FOR TRANSPORT OF MATERIALS: EMBODDIED ENERGY STAYS ON SITE

SDG'S: DEMANDS PER GOAL
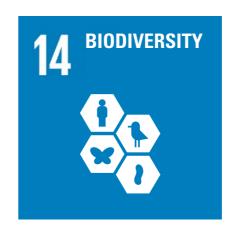
6 WATER MANAGEMENT

13 PASSIVE HOUSING

WATER MANAGEMENT

Rain water collection; reuse of grey water; water as cooling element in public space

PASSIVE HOUSING

Insulate buildings (passive), outer blinds/curtains, natural ventilation, energy label A/B, use of lower impact/biobased materials (wood in stead of concrete), reuse existing materials

14 BIODIVERSITY

15 QUALITATIVE OUTDOOR SPACES

BIODIVERSITY

Enhancement of biodiversity through Green Pockets and collective gardens, use of green roofs and facades on parking garages and cuts in mid-rise building

OUTDOOR SPACES

Private semi-enclosed outdoor spaces for each dwelling; all count for point system (at least 2 by 2 meters); wintergardens, balconies, and collective gardens

Image sketch of neighbourhood relations

- design process -

ADDITIONAL GOALS FOR HOPTILLE

This chapter will go through the design process, which was informed by research collected earlier in this booklet. Besides the sustainable development goals, there are two additional goals important for Hoptille: The addtion of dwellings and addressing local issues.
Small icons of these two goals will be visible on relevant pages. Both goals were informed by the problem statement and reseach mentioned earlier.

ADDITION OF DWELLINGS

ADDRESS LOCAL ISSUES

1. DWELLINGS

Type: walk-ups (ground bound homes and same level apartments); mostly 60-100 m2, several 40-60 m2; social housing & low segment free rent

Increase: 50% extra

2. LOCAL ISSUES

Addition of social and commercial amenities, cutting mid-rise building in four pieces, change access system of mid-rise building, address and improve technical state of buildings, transform and renovate the facades

SUSTAINABLE DEVELOPMENT GOALS FOR HOPTILLE

6 WATER MANAGEMENT

13 PASSIVE HOUSING

3. WATER MANAGEMENT

Rain water collection; reuse of grey water; water as cooling element in public space

4. PASSIVE HOUSING

Insulate buildings (passive), outer blinds/curtains, natural ventilation, energy label A/B, use of lower impact/biobased materials (wood in stead of concrete), reuse existing materials

14 BIODIVERSITY

15 QUALITATIVE OUTDOOR SPACES

5. BIODIVERSITY

Enhancement of biodiversity through Green Pockets and collective gardens, use of green roofs and facades on parking garages and cuts in mid-rise building

6. OUTDOOR SPACES

Private semi-enclosed outdoor spaces for each dwelling; all count for point system (at least 2 by 2 meters); wintergardens, balconies, and collective gardens

URBAN PLAN - DESIGN SKETCHES AND MODELS
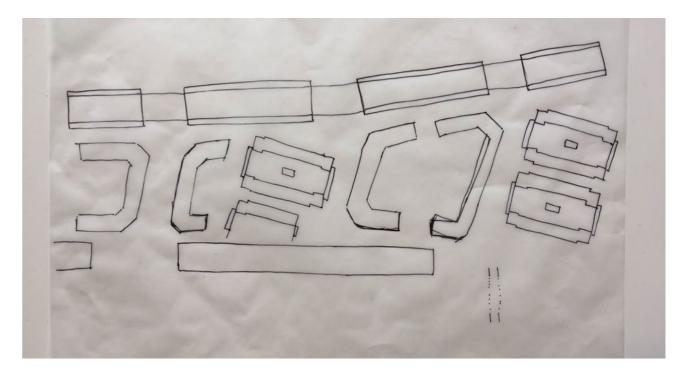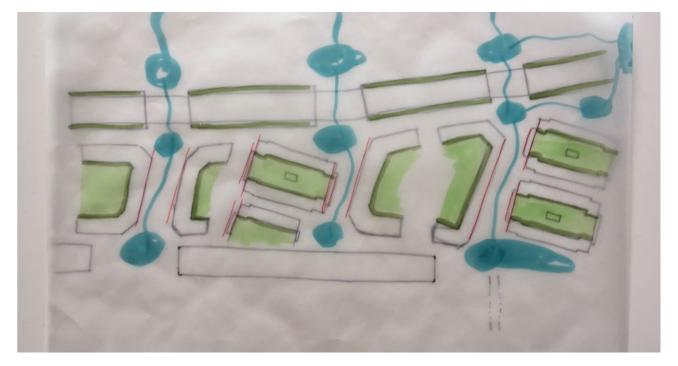
URBAN ANALYSIS

URBAN PLAN (SCHEMATIC)

URBAN PLAN (SCHEMATIC)

URBAN PLAN (SCHEMATIC)

URBAN PLAN SKETCHES

ADDITIONAL FUNCTIONS
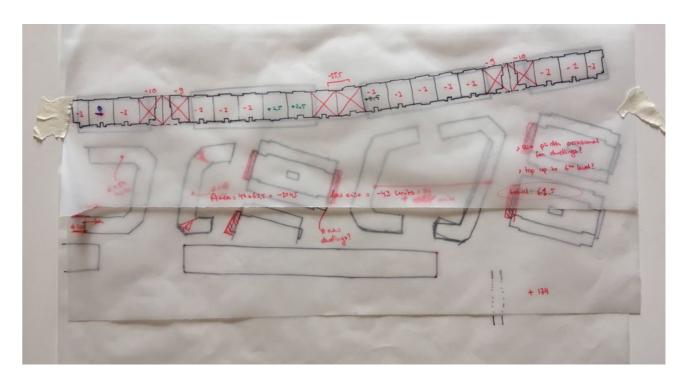
SUSTAINABLE DEVELOPMENT INTERVENTIONS

ADDITIONAL FUNCTIONS
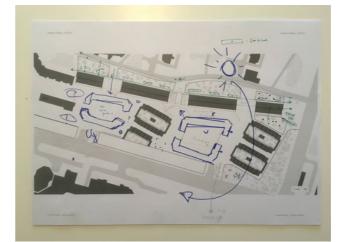
FIRST CALCULATION DEMOLISHED/NEW
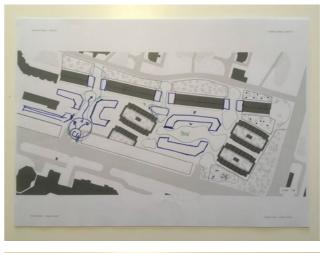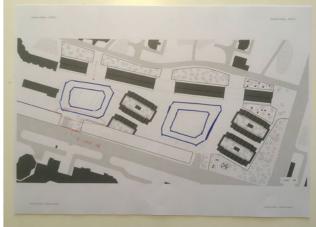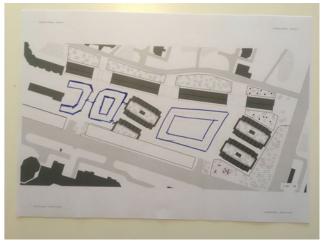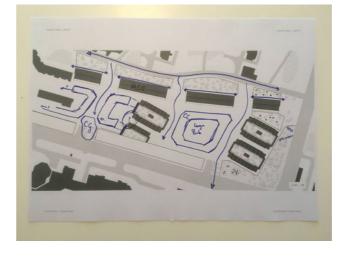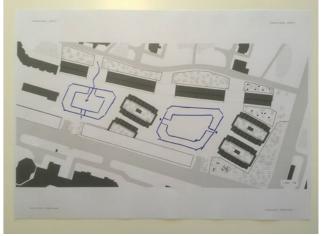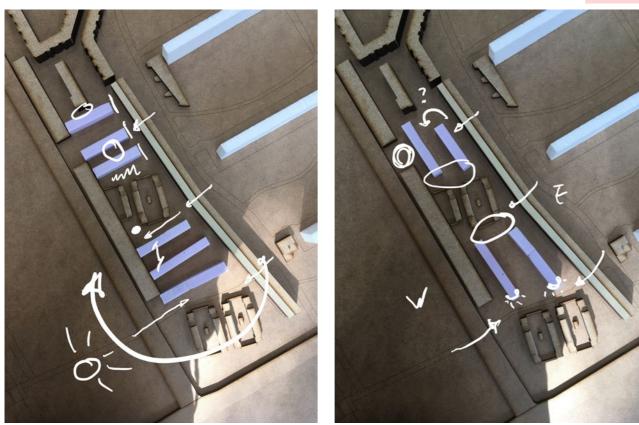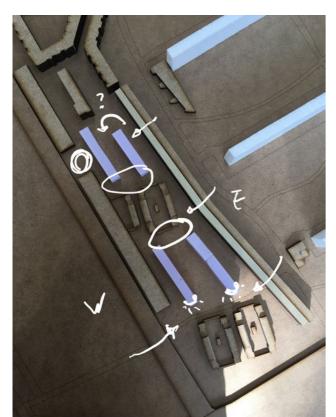
URBAN PLAN SKETCHES
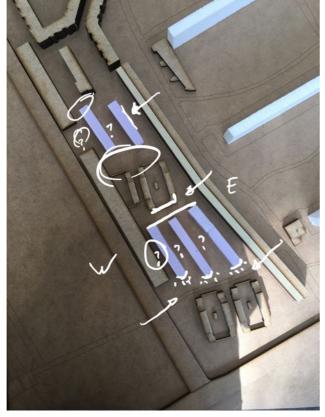
URBAN PLAN MODEL OPTIONS (1:1000)
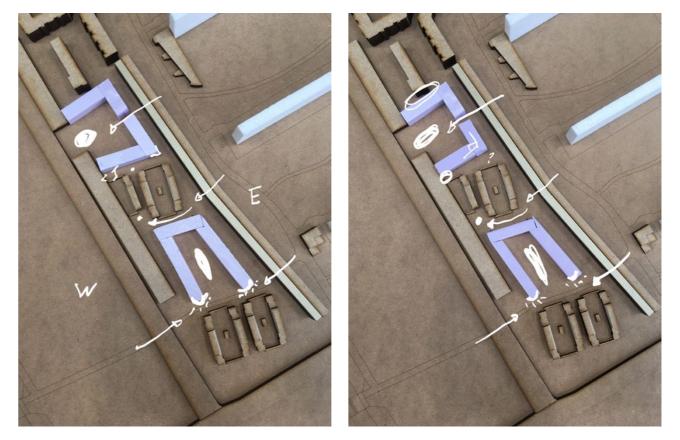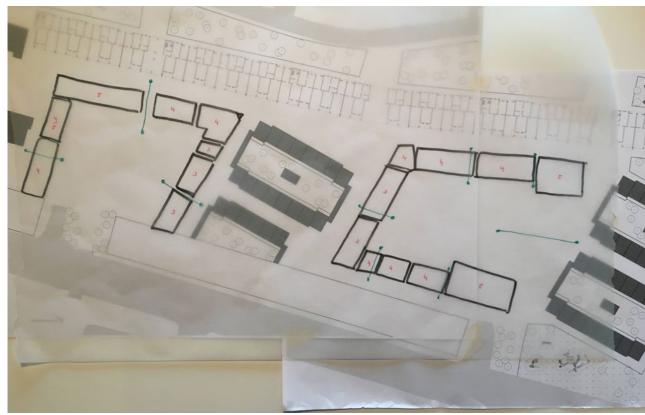
SMALL VARIATIONS OF CHOSEN OPTION (1:1000)

URBAN PLAN SKETCHES
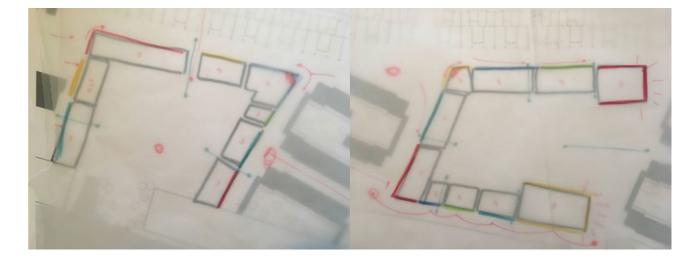
PRECEDENT:
VAILLANTLAAN,
JO COENEN

Den Haag, 1993
(Melet and Melis, 1993)
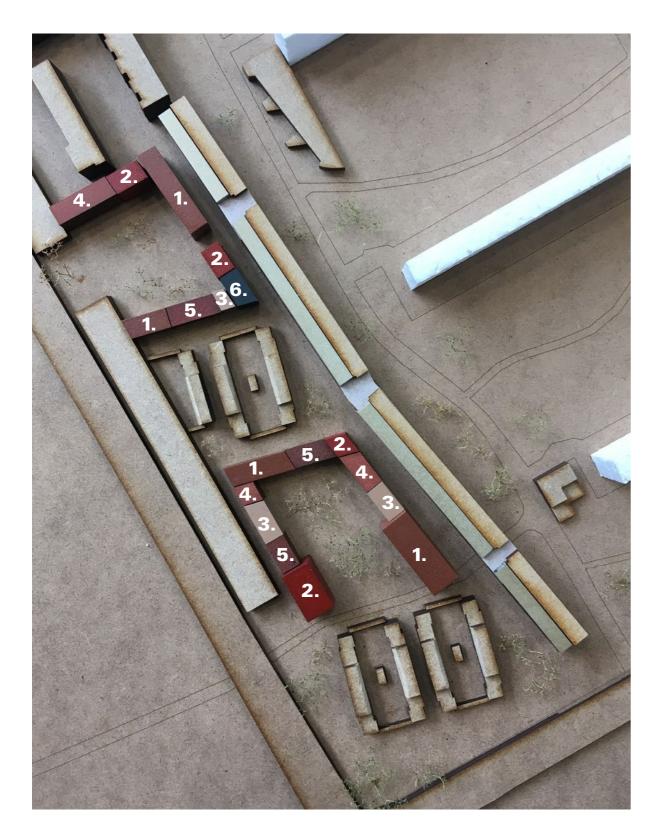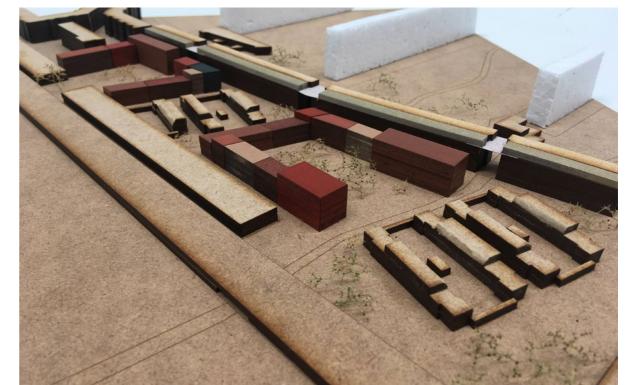
URBAN PLAN - MODEL (1:1000)
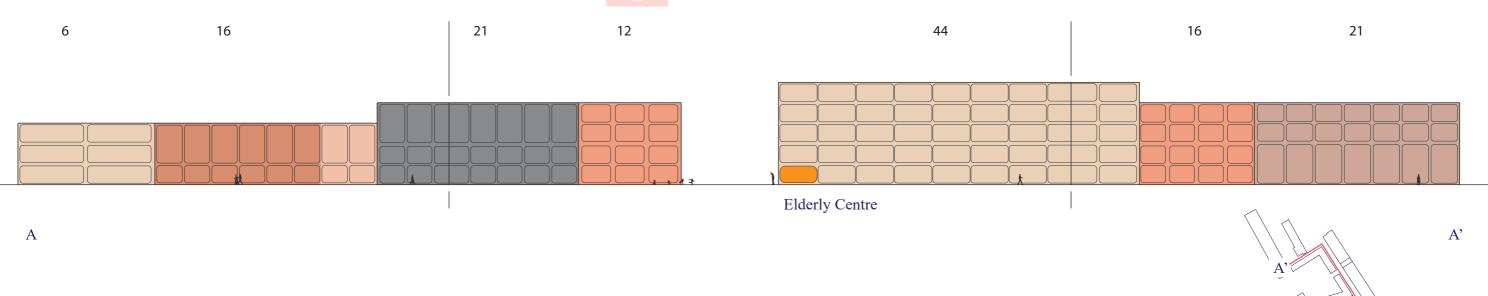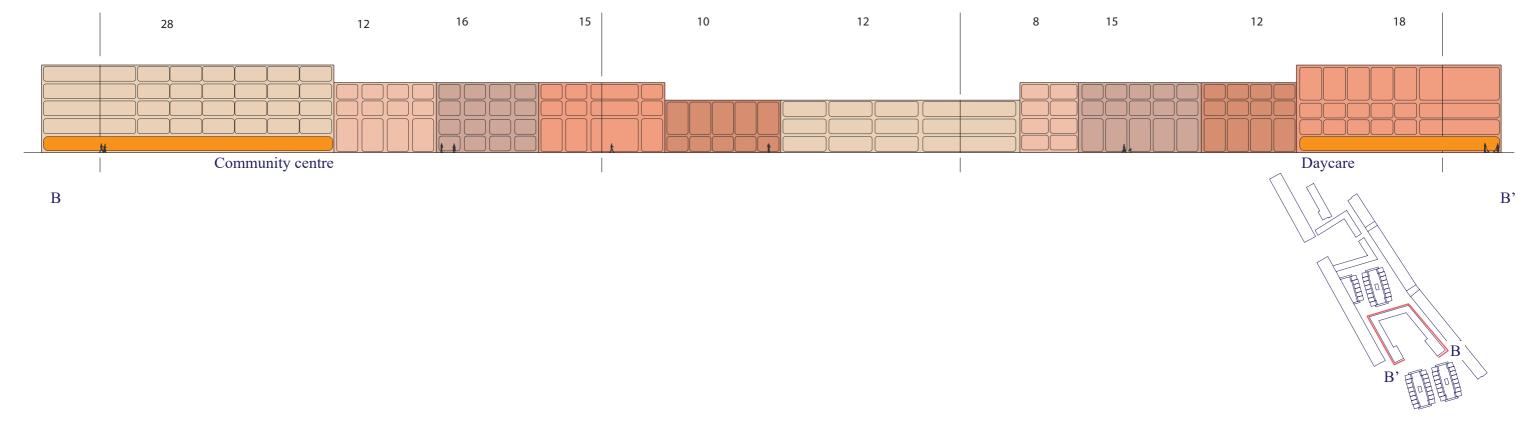
DIVISION OF DWELLINGS NEW (ESTIMATE)

ADDITION OF
DWELLINGS
+

| 6 | 16 | 21 | 12 | | 44 | 16 | 21 |

Elderly Centre

A   A'

A'

A

| 28 | 12 | 16 | 15 | 10 | 12 | 8 | 15 | 12 | 18 |

Community centre   Daycare

B   B'

B

B'

DEVELOPMENT URBAN SPACES

URBAN ANALYSIS PLAN - PUBLIC TO PRIVATE

ZONES IN URBAN PLAN
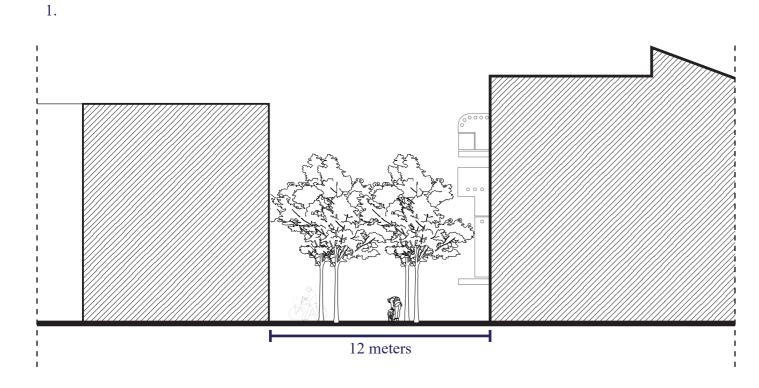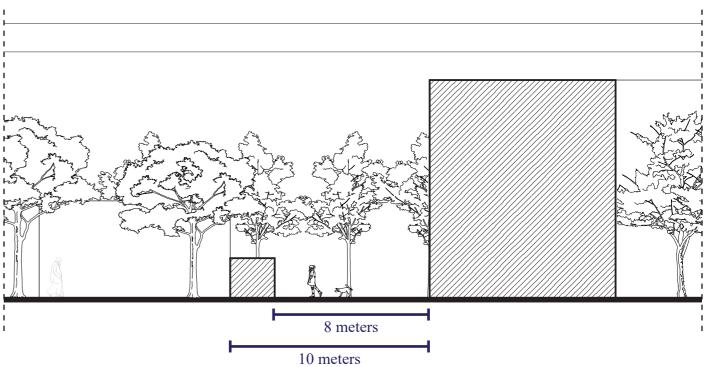
PRIVATE

SEMI-PRIVATE

SEMI-PUBLIC

BUFFER

PUBLIC

1:2000

206

207

STREET SECTIONS

1.

3.

12 meters

8 meters

10 meters

2.

8 meters

1.

3.

2.

↑N

1. STREET - PASSING SLOW

Water

Social pocket
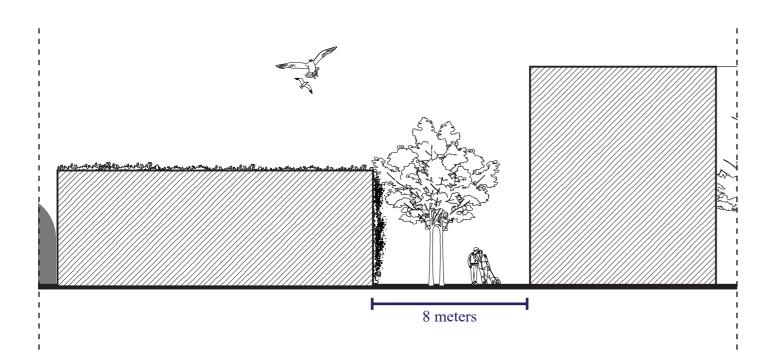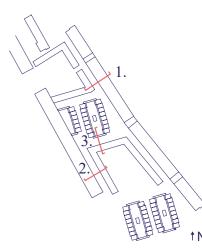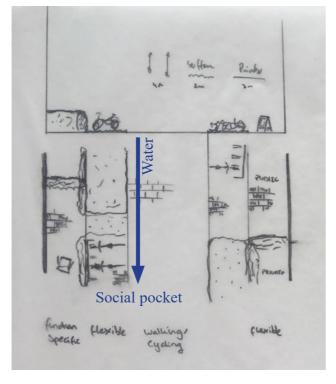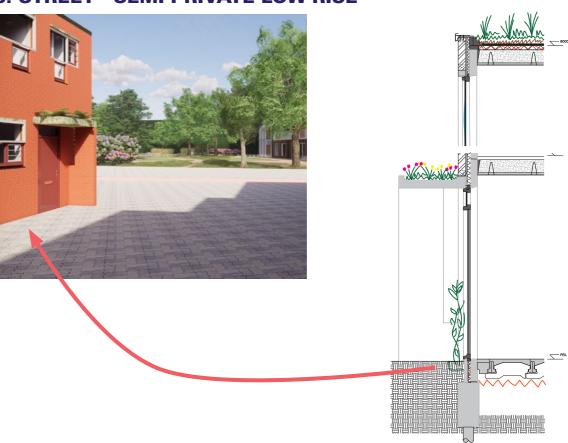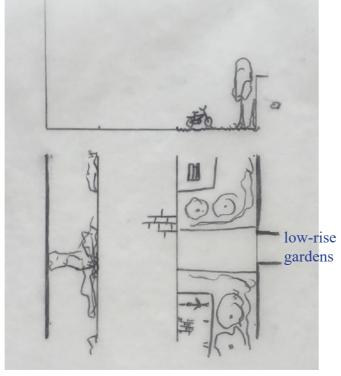
function specific   flexible   walking/cycling   flexible

2. STREET - SEMI-PRIVATE

low-rise gardens

garden   street   greenery and utilities

3. STREET - SEMI-PRIVATE LOW-RISE

4. BUFFER - GATES

Existing community garden, current location is expanded.

Photos:
Top left: Olga Rafaeva, n.d. Top right: Park Plaza Wallstreet Berlin Mitte, 2010. Bottom left: Thomas Chen, 2015. Bottom right: Nicolas Gzeley, n.d.

5. POCKET SOCIAL - WATER FEATURE

Mias Arquitectes: Banyoles (Photos: Adrià Goula)

7. POCKET - COURTYARD (REST)

Jardin du Luxembourg (Paris, France).

Photo: Lina, 2017.

Place des Vosges (Paris, France).

Photo top: Andrea Martins, 2019. Photo bottom: Cristine Anne, 2012.

6. POCKET ACTIVE - SPORTS' FIELD

Existing playgrounds (north and south of Hoptille; addtional to sports' field)

Use of flexible and modular court tiles (Flexcourt.eu, n.d.)

Megabudka Architectural Bureau: Yard project in the city of Vyksa

8. COURTYARD - COMMUNITY GARDEN

Existing community garden, current location is expanded

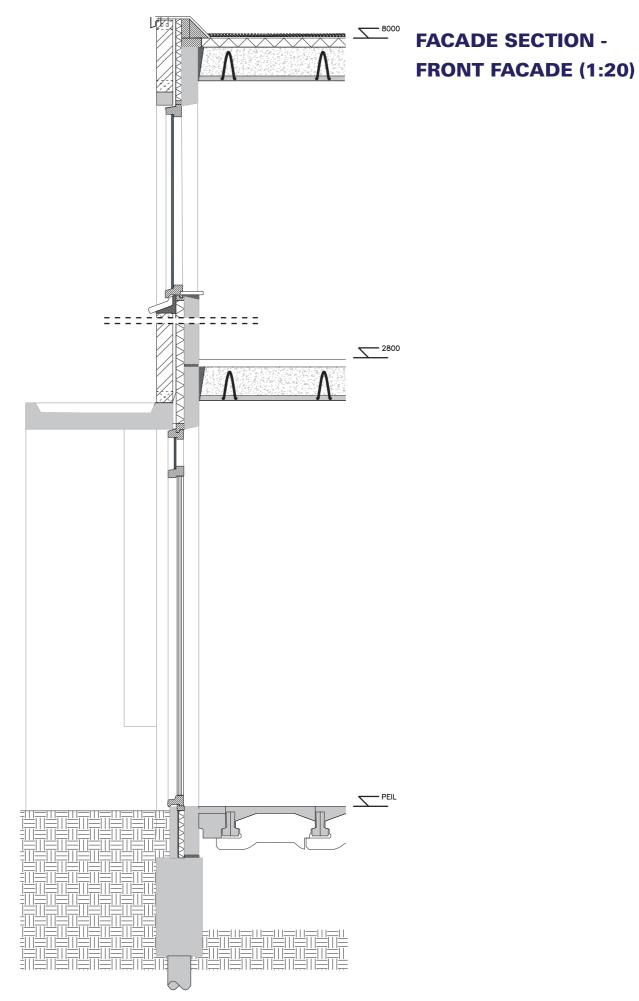⟶ All finished renders with location can be found in the drawing set.

LOW-RISE - DESIGN CHANGES

CURRENT SITUATION

FACADE SECTION - FRONT FACADE (1:20)

214

215

|	EXISTING			
	WALL		2,47	
	Material	**Thickness (mm)**	**Lambda**	**Rc-value**
Outside	Brick wall	100	0,55	0,181818182
	Cavity	20	0,024	0,833333333
	Insulation (glass wool)	50	0,036	1,388888889
	Concrete	90	1,4	0,064285714
	ROOF		1,89	
	Material	**Thickness (mm)**	**Lambda**	**Rc-value**
Outside	Gravel	20	0,7	0,028571429
	Bitium	8	0,18	0,044444444
	Insulation (glass wool)	60	0,036	1,666666667
	Concrete	210	1,4	0,15
	FLOOR (GF)		0,19	
	Material	**Thickness (mm)**	**Lambda**	**Rc-value**
Outside	Concrete	270	1,4	0,192857143

CURRENT R$_C$-VALUES BUILDING ENVELOPE
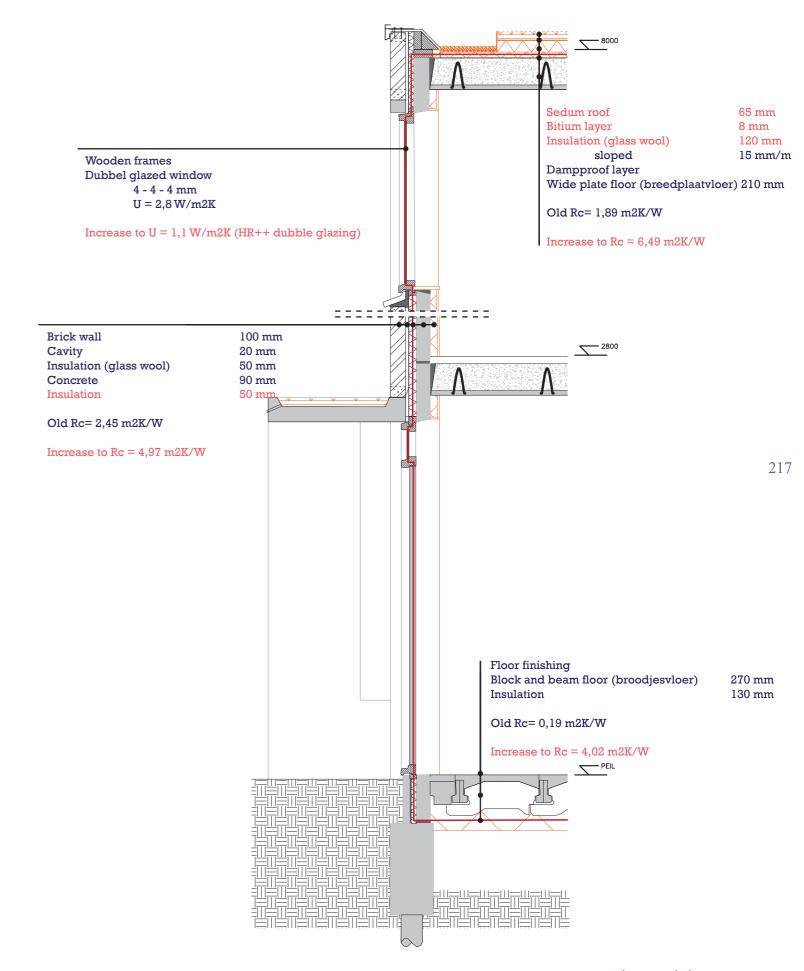
LOW-RISE OPTION 1: FACADE CHANGES 1:20

Situation in the 80's (Stadsarchief Amsterdams / L.R.R., n.d.)
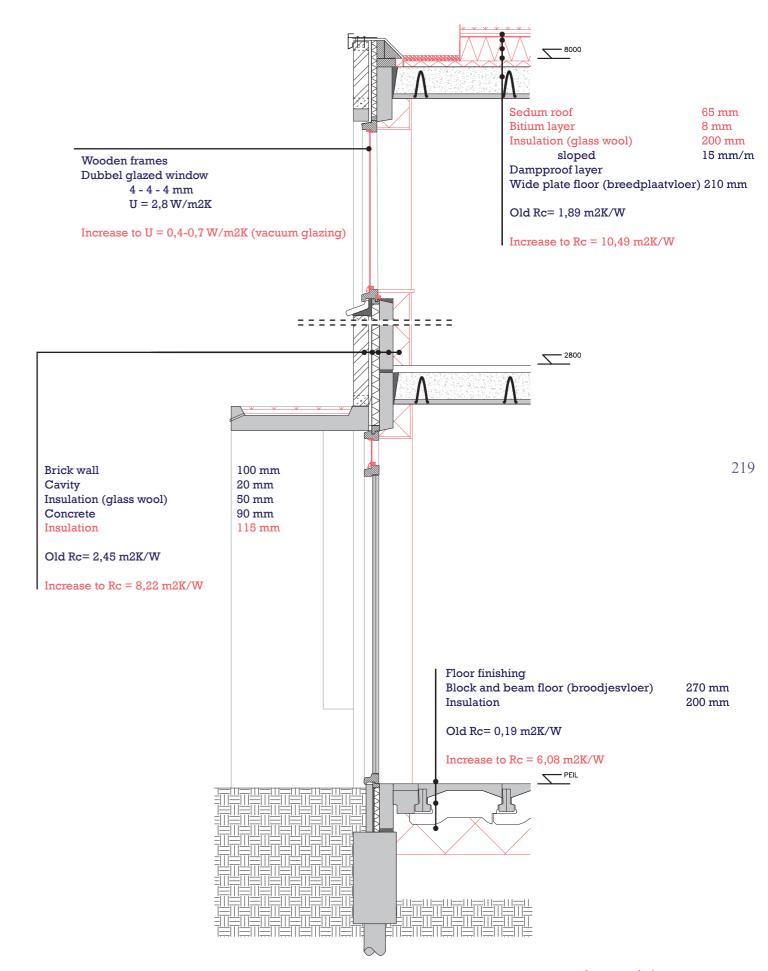

Current situation (Anneloes Tilman, 2020)
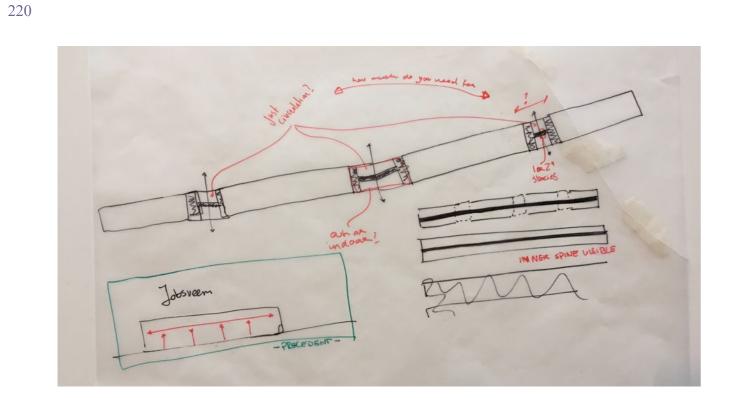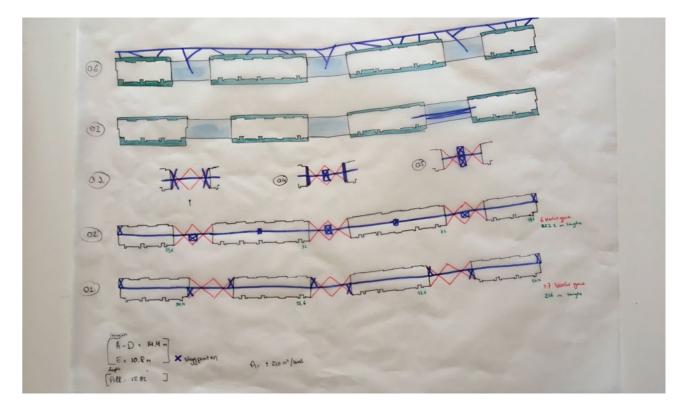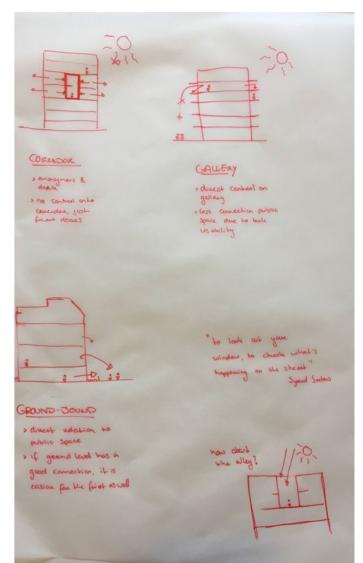
Wooden frames
Dubbel glazed window
4 - 4 - 4 mm
U = 2,8 W/m2K

Increase to U = 1,1 W/m2K (HR++ dubble glazing)

Sedum roof   65 mm
Bitium layer   8 mm
Insulation (glass wool)   120 mm
              sloped   15 mm/m
Dampproof layer
Wide plate floor (breedplaatvloer) 210 mm

Old Rc= 1,89 m2K/W

Increase to Rc = 6,49 m2K/W

Brick wall   100 mm
Cavity   20 mm
Insulation (glass wool)   50 mm
Concrete   90 mm
Insulation   50 mm

Old Rc= 2,45 m2K/W

Increase to Rc = 4,97 m2K/W

Floor finishing
Block and beam floor (broodjesvloer)   270 mm
Insulation   130 mm

Old Rc= 0,19 m2K/W

Increase to Rc = 4,02 m2K/W

216

217

LOW-RISE OPTION 2: FACADE CHANGES 1:20

218

Situation in the 80's (Stadsarchief Amsterdams / L.R.R., n.d.)

Current situation (Anneloes Tilman, 2020)

8000

Wooden frames
Dubbel glazed window
4 - 4 - 4 mm
U = 2,8 W/m2K

Increase to U = 0,4-0,7 W/m2K (vacuum glazing)

Sedum roof   65 mm
Bitium layer   8 mm
Insulation (glass wool)   200 mm
    sloped   15 mm/m
Dampproof layer
Wide plate floor (breedplaatvloer) 210 mm

Old Rc= 1,89 m2K/W

Increase to Rc = 10,49 m2K/W

2800

219

Brick wall   100 mm
Cavity   20 mm
Insulation (glass wool)   50 mm
Concrete   90 mm
Insulation   115 mm

Old Rc= 2,45 m2K/W

Increase to Rc = 8,22 m2K/W

Floor finishing
Block and beam floor (broodjesvloer)   270 mm
Insulation   200 mm

Old Rc= 0,19 m2K/W

Increase to Rc = 6,08 m2K/W

PEIL

MID-RISE - DESIGN PROCESS

SKETCHES NEW ACCESS MID-RISE
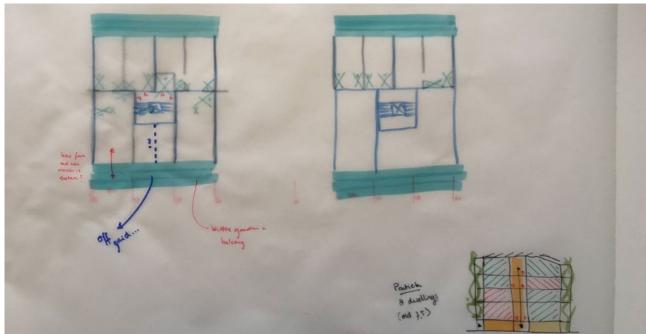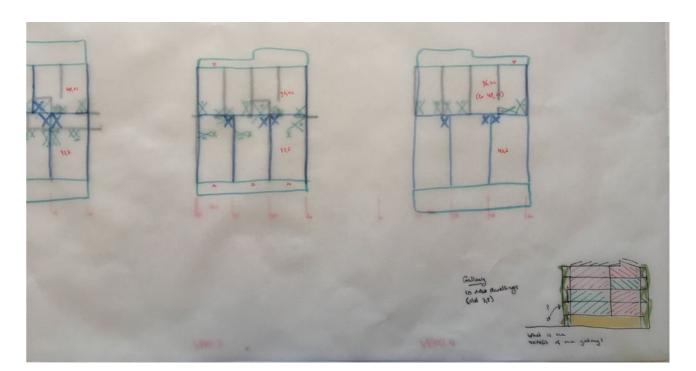
220

221

PORTIEK/WALK-UP

GALLERY

222   # CORRIDOR   223
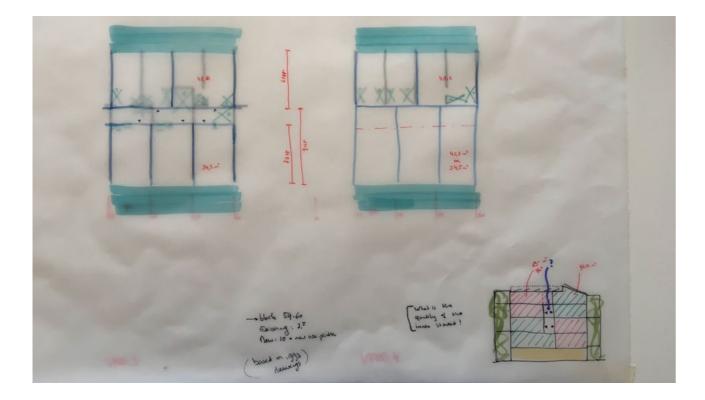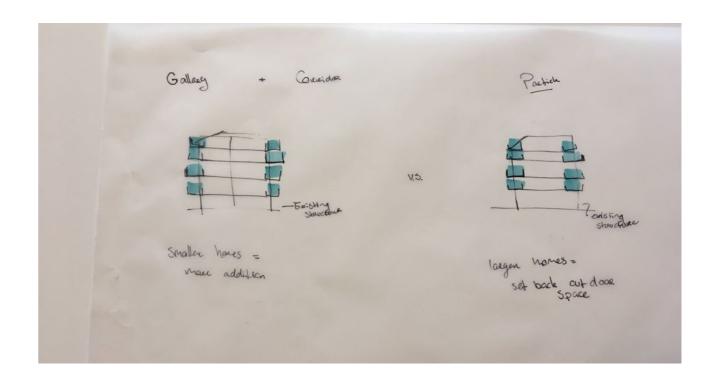
CASE STUDY 3: SALTHOLMSGADE
Project by WE Architecture & JWH Arkitekter
Aarhus, Denmark
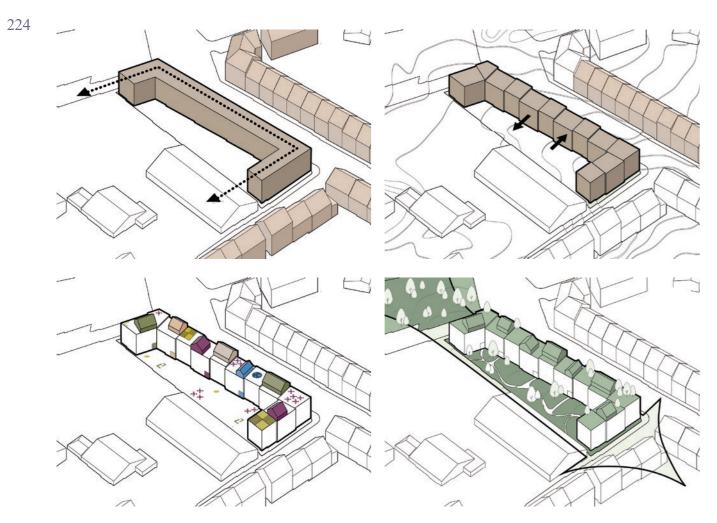
Bari (2017).
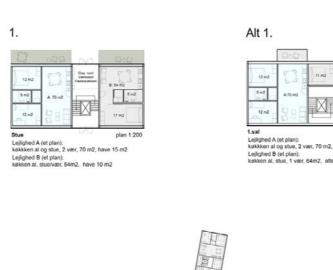
Images: WE Architecture

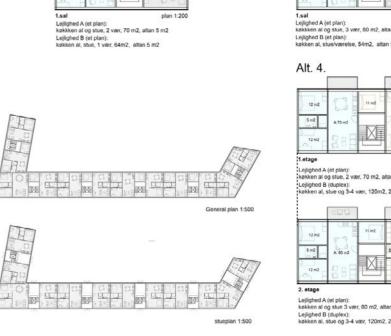Focus: Access system

224

225

CASE STUDY 4: JOBSVEEM
Project by Mei Architects and Planners.
Rotterdam, NL.

Mei Architects and Planners (2018).
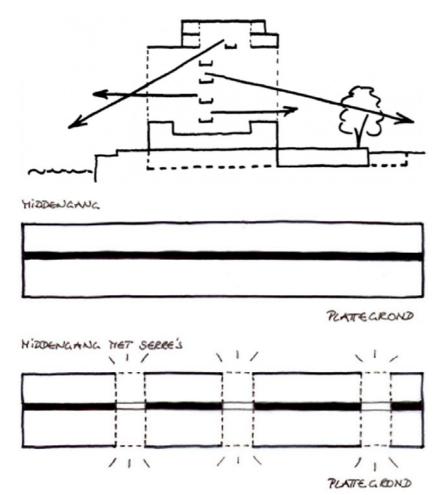
Image top: Jeroen Musch
Image below: Peter Kooijman
Diagrams: Mei Architects and Planners
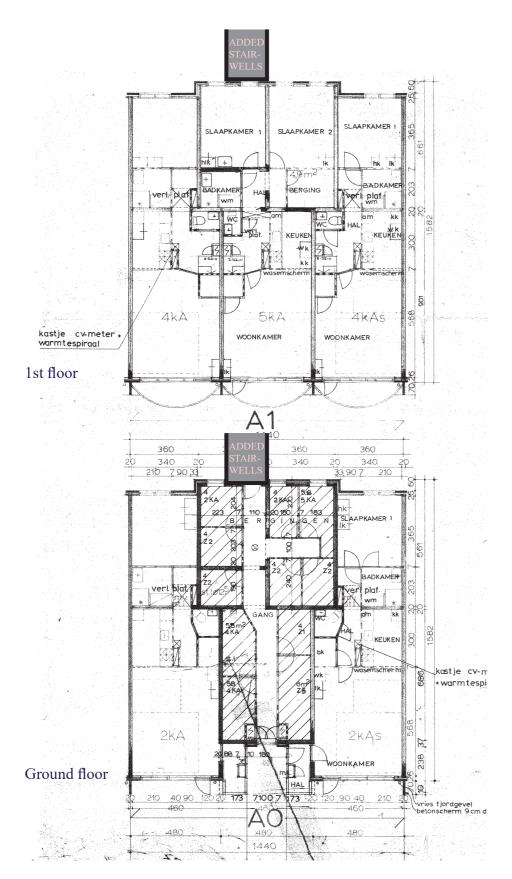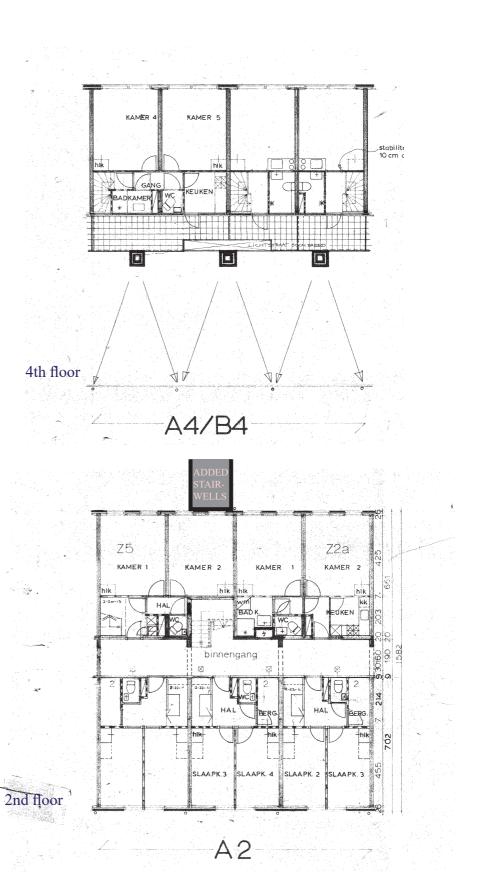
Focus: Qualitative outdoor spaces & access system

226

227

MID-RISE: CURRENT ACCESS SYSTEM
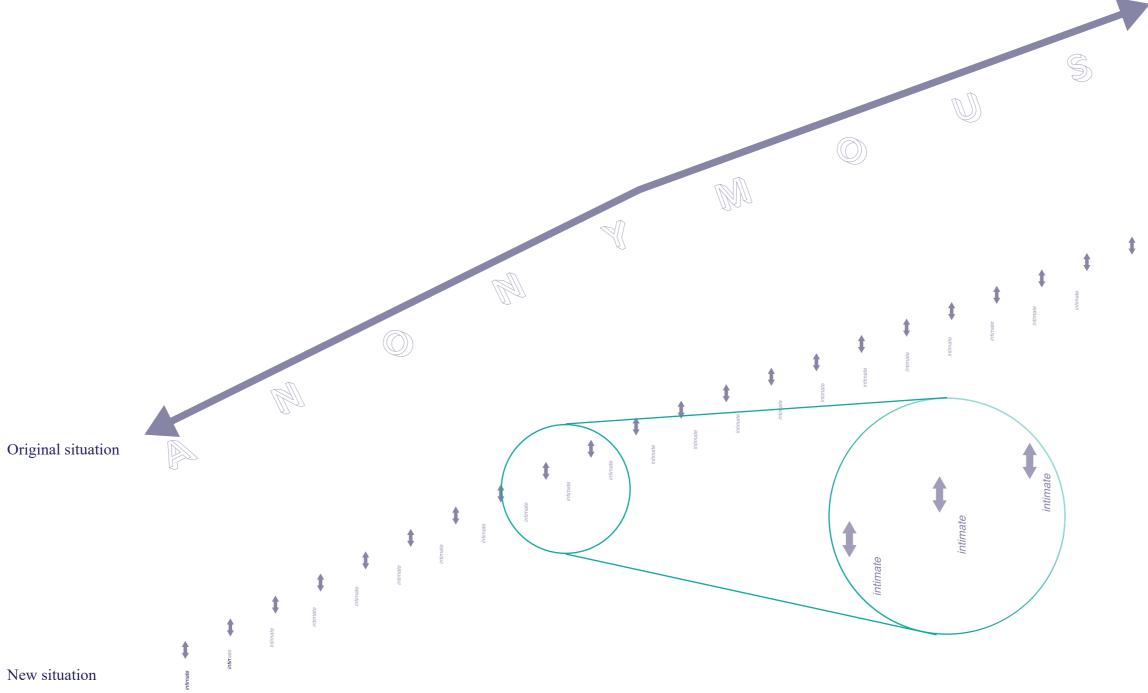
MID-RISE: CONCEPT ACCESS SYSTEM

ADDRESS
LOCAL ISSUES

230

231

Original situation

New situation
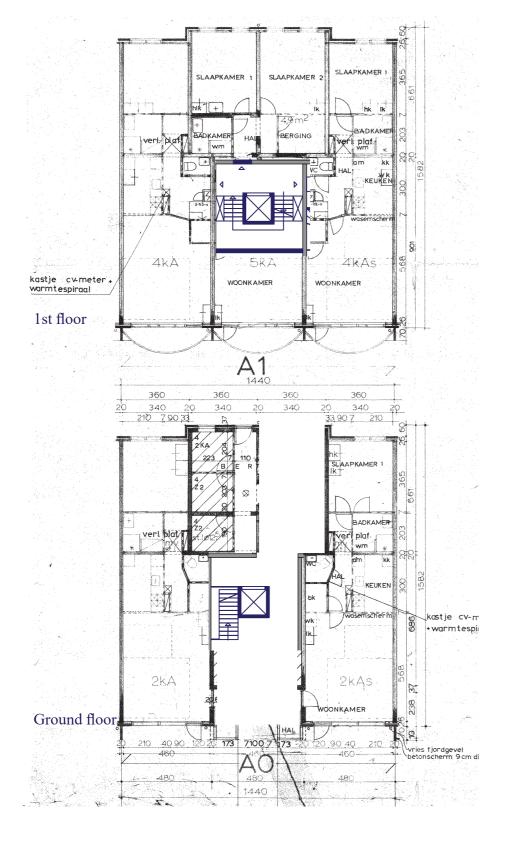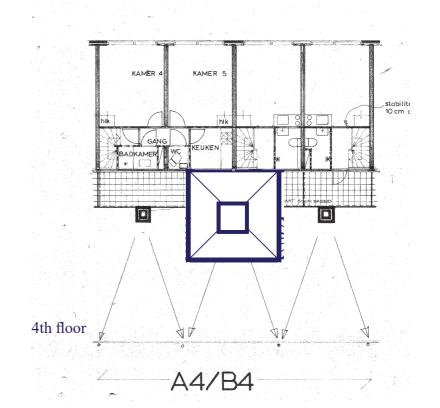
From horizontal to vertical shared traffic spaces: smaller communities
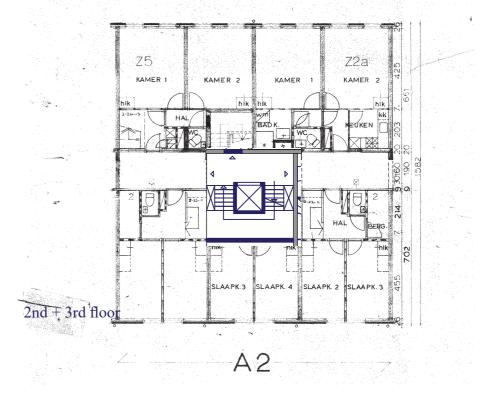
MID-RISE: NEW ACCESS SYSTEM (WALK-UP)

ADDRESS LOCAL ISSUES

SLAAPKAMER 1   SLAAPKAMER 2   SLAAPKAMER 1

49 m²

verl. plaf.   BADKAMER   BERGING   verl. plaf.   BADKAMER

wm

VC   HAL

KEUKEN

wasemscherm

4kA   5kA   4kAs

kastje cv-meter + warmtespiraal

WOONKAMER   WOONKAMER

1st floor

A1
1440

232

SLAAPKAMER 1

BADKAMER

verl. plaf.   verl. plaf.   wm

KEUKEN

2kA   2kAs

kastje cv-m + warmtespi

WOONKAMER

Ground floor

HAL

vries fjordgevel betonscherm 9 cm di

A0
1440

KAMER 4   KAMER 5

stabilite 10 cm

GANG
BADKAMER   WC   KEUKEN

4th floor

A4/B4

233

Z5   Z2a

KAMER 1   KAMER 2   KAMER 1   KAMER 2

HAL   BAD K.   WC   WC   KEUKEN

HAL   BERG.

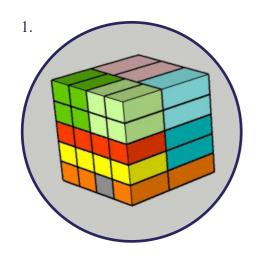SLAAPK. 3   SLAAPK. 4   SLAAPK. 2   SLAAPK. 3
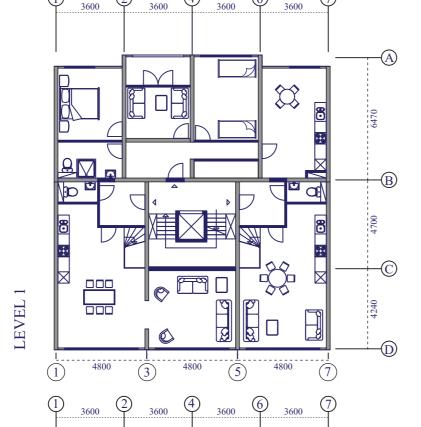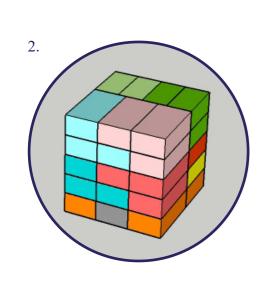
2nd + 3rd floor

A2

existing
new

1:200   N

ADAPTION OF MID-RISE: EIGHT NEW DWELLINGS + FLEXIBLE GROUND LEVEL

1.

234

2.

LEVEL 1

GROUND FLOOR

SECTION

existing
new

1:200   N

SECTION

235
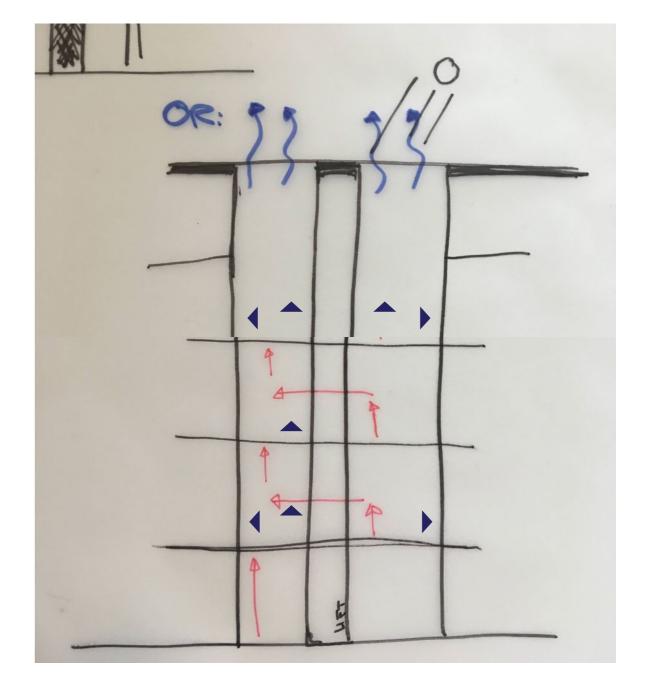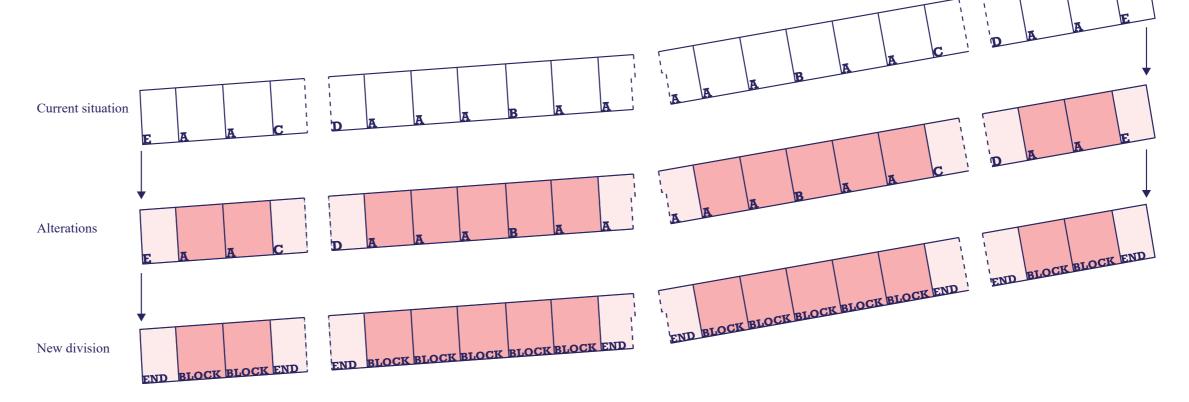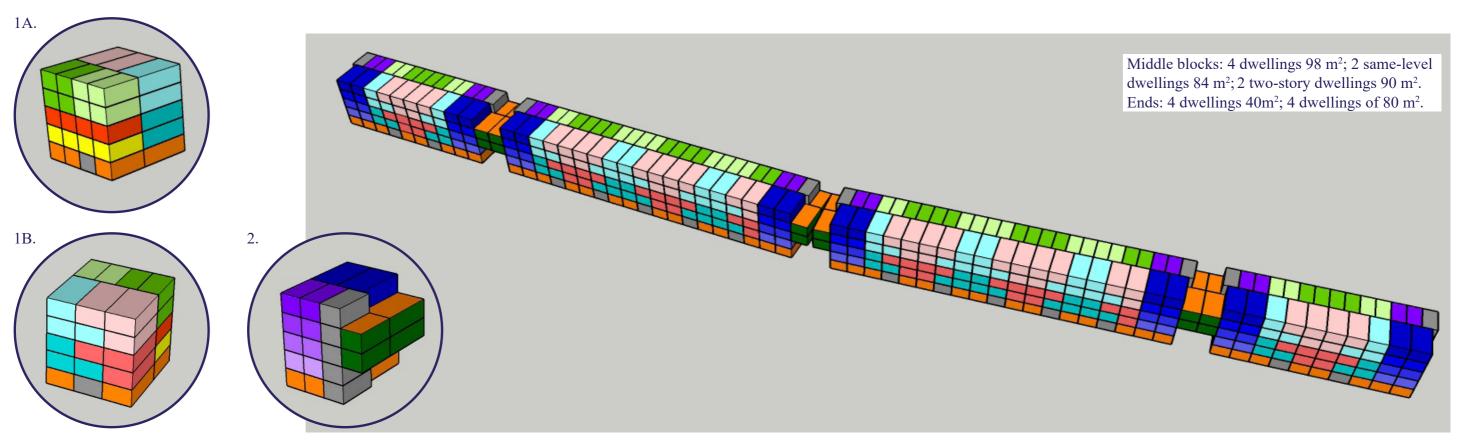
ADAPTION OF MID-RISE: OVERVIE

Current situation

Alterations

New division

236

237
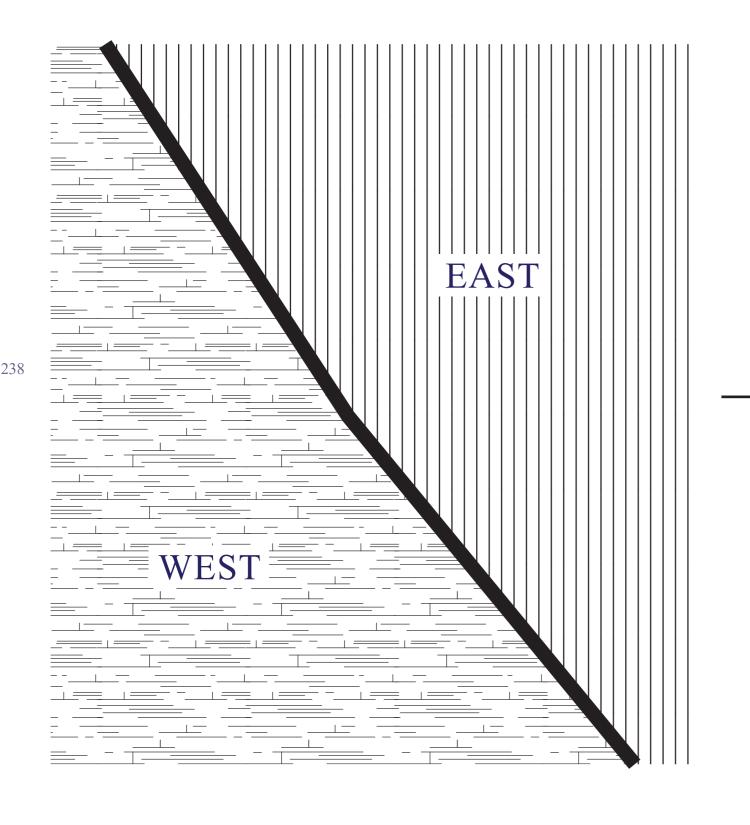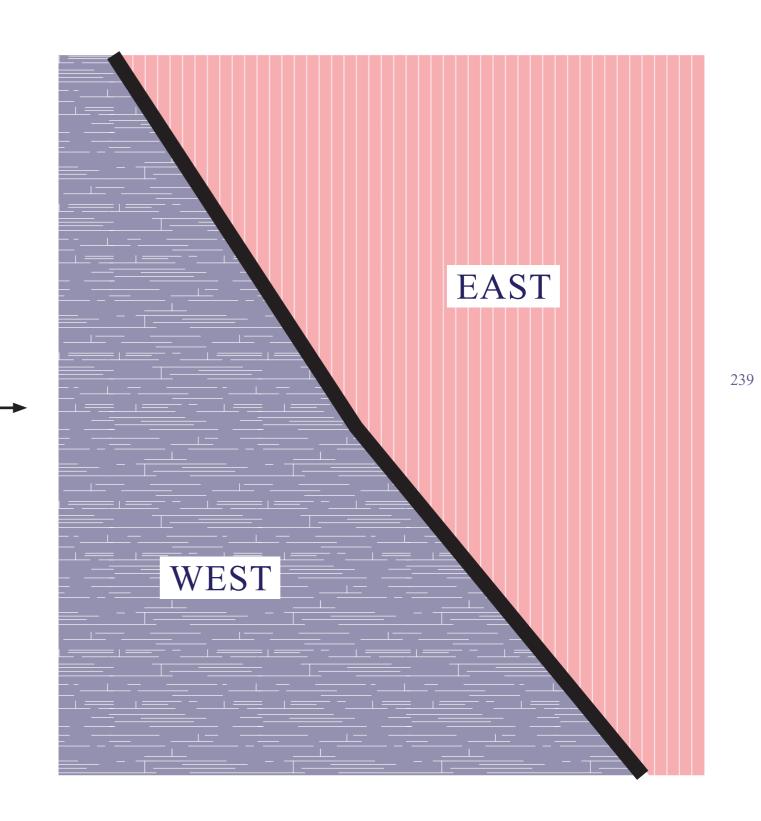
NEW DWELLING TYPES: OVERVIEW

1A.

1B.

2.

Middle blocks: 4 dwellings 98 m²; 2 same-level dwellings 84 m²; 2 two-story dwellings 90 m².
Ends: 4 dwellings 40m²; 4 dwellings of 80 m².

FACADE CONCEPT: REVITALISE ORIGINAL DESIGN

FACADE OPTIONS: WEST FACADE

PRECEDENT: CITÉ DU GRAND PARC

Project by Christophe Hutin architecture, Frédéric Druot, Lacaton & Vassal. Bordeaux, France.

Pintos (2019).

Images: Philippe Ruault, Lacaton&Vassal & Hutin & Druot

Focus: Qualitative outdoor spaces

1. NEW ADDITION

240

241

FACADE OPTIONS: WEST FACADE

New elements

WHOLE NEW
MESH
ELEMENT
-OR-

ADDED
MESH
ON SIDE
(SOUTH)

③ Tree +
new balcony

square

④ New cladding
(re-)

re-instal

re-instal

242
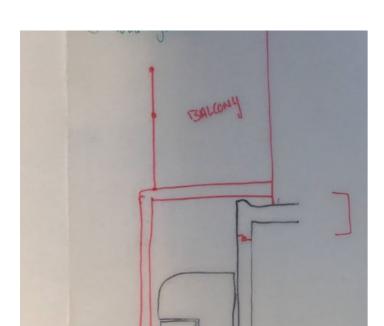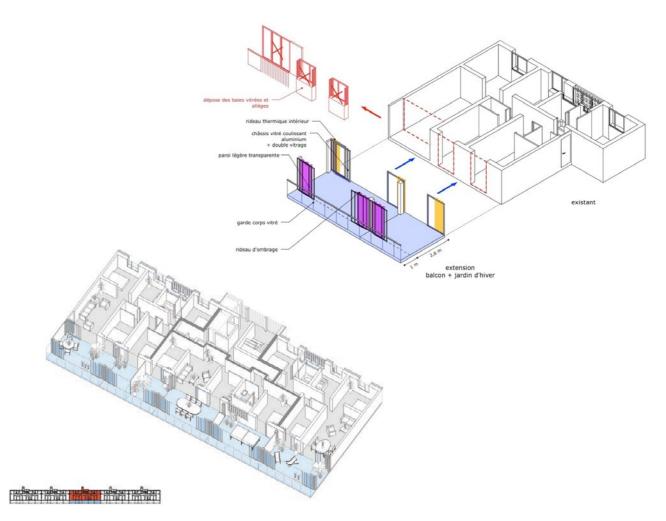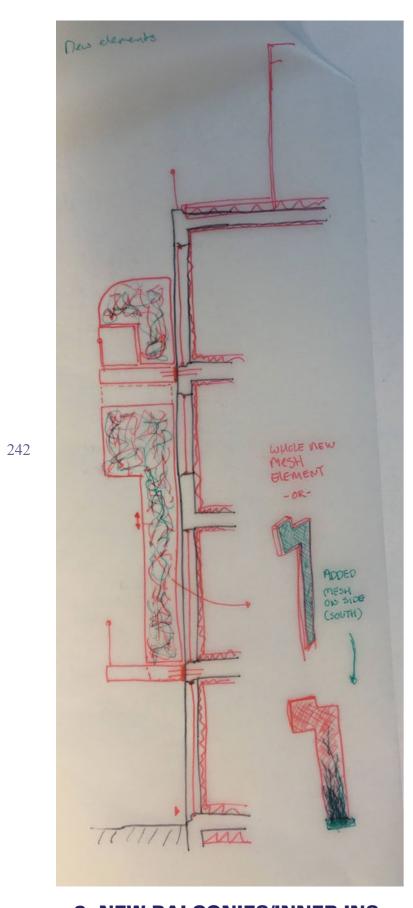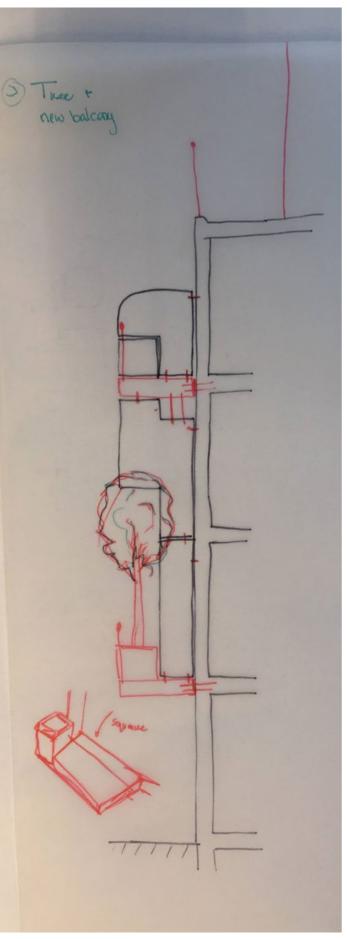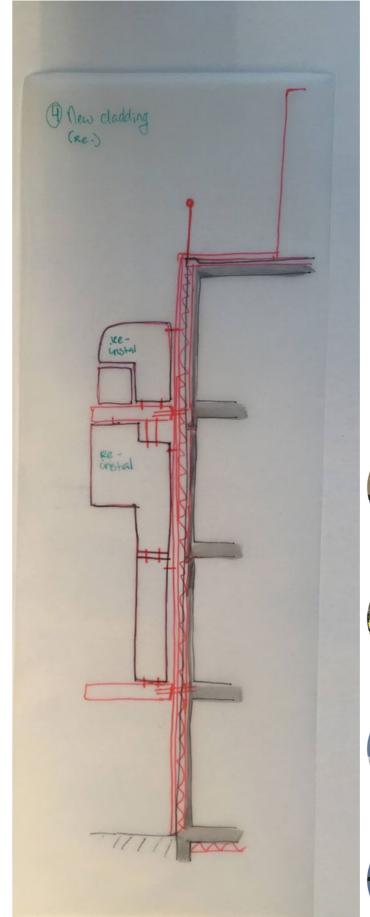
OPTIONS BY ARUP (2016)

1. URBAN FARMING
herbs and flowers

11. GREEN WALL - TOP DOWN
green climbers going down

12. GREEN WALL
green climbers going up

16. TREE FACADE
planters for larger vegetation

2. NEW BALCONIES/INNER INS.   **3. NEW BALCONIES/TREES**   **4. OUTER INSULATION**
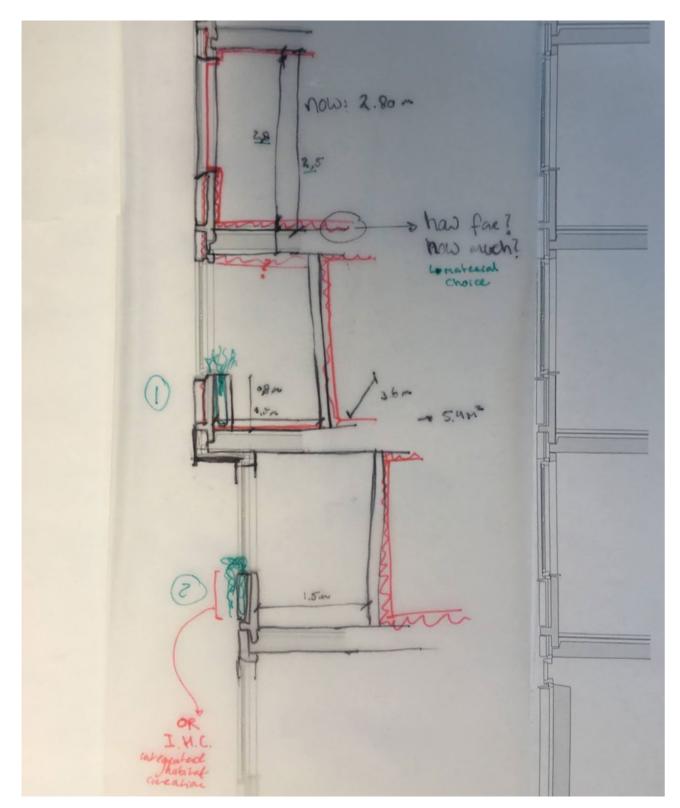
FACADE OPTIONS: EAST FACADE

PRECEDENT: TRANSFORMATION OF OFFICE BUILDING TO 90 APARTMENTS

Architects: MOATTI-RIVIERE; Year: 2016; Photographs: Michel Denancé; City:Charenton-le-Pont; Country:France

Coupe porte fenêtre   ech: 1/20

244

245

PRECEDENT: CHEESE WAREHOUSE GOUDA

Architects: Mei architects and planners; Year: 2017; Photographs: Ossip van Duivenbode, Jeroen Musch; City: Gouda; Country: The Netherlands

FIRST TESTS FOR THE CUTS

ADDRESS
LOCAL ISSUES

246

247

Option 1: Top structure & staircase

Option 2: Top structure; no staircase
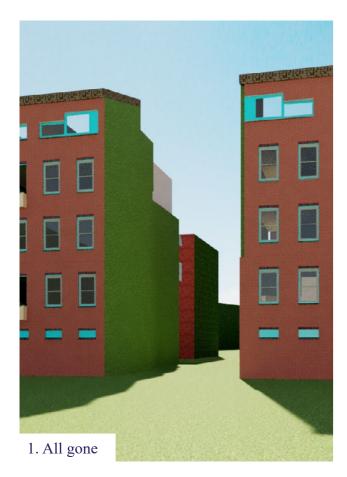
Option 2: No top structure; no staircase
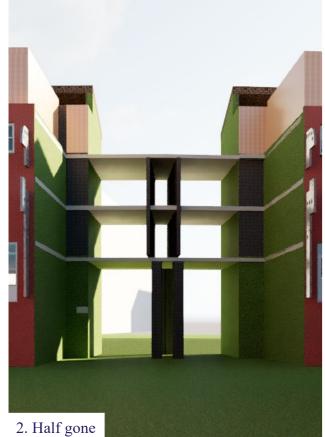
OPTIONS FOR THE CUTS

ADDRESS LOCAL ISSUES

1. All gone

2. Half gone

3. Top layer

4. Stepped
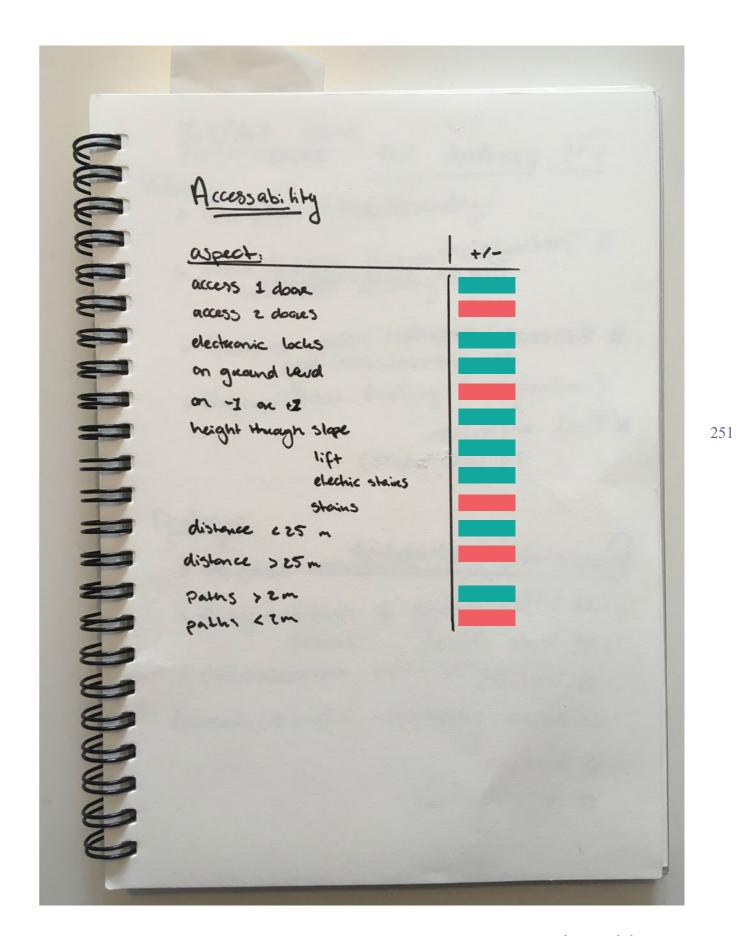
BIKE PARKING AND STORAGE UNITS

Municipality of Amsterdam (2015).

Basisbrief Amsterdam

Communal bike parking residential buildings

m²	bike parking (#)	Storage (m²)
< 50	2	-
50 - 75	3	2,7
75 - 100	4	2,7
> 100	5	2,7
> 125	6	2,7

Can be resolved behind front door

Good accessability required

03/2015

Accessability

aspect:	+/-
access 1 door	
access 2 doors	
electronic locks	
on ground level	
on -1 or +2	
height through slope	
lift	
electric stairs	
stairs	
distance < 25 m	
distance > 25 m	
paths > 2m	
paths < 2m	
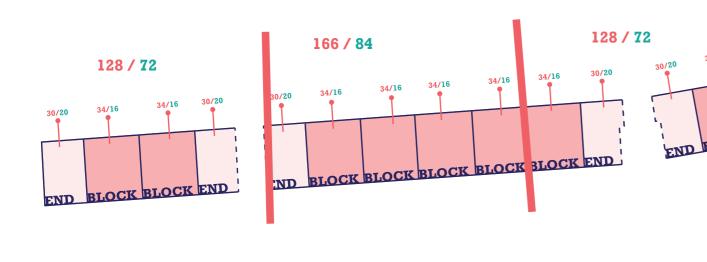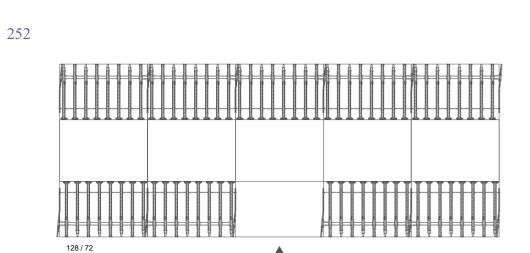
BIKE PARKING OPTION 1
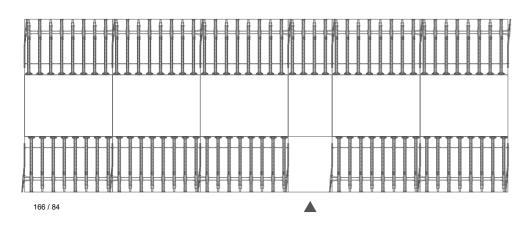
Bike parking option 1
Total parking spots / spots connected to ground level
Bike stands from VelopA.

128 / 72

30/20   34/16   34/16   30/20

END   BLOCK BLOCK   END

166 / 84

30/20   34/16   34/16   34/16   34/16   30/20

END BLOCK BLOCK BLOCK BLOCK BLOCK END

128 / 72

34/16   30/20

BLOCK END

166 / 84

30/20   34/16   34/16   34/16   34/16   30/20

END BLOCK LOCK BLOCK BLOCK BLOCK END

128 / 72

30/20   34/16   34/16   30/20

END BLOCK BLOCK END

252

253

128 / 72

166 / 84
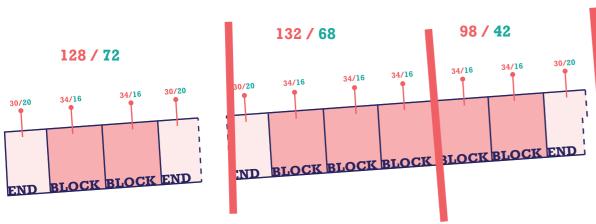
BIKE PARKING OPTION 2

Bike parking: option 2
Total parking spots / spots connected to ground level
Bike stands from VelopA.
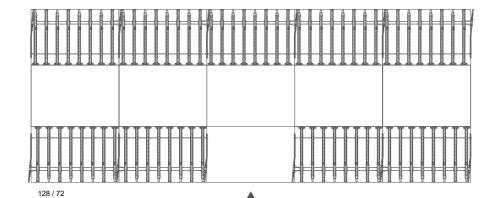
128 / 72

30/20   34/16   34/16   30/20

END   BLOCK   BLOCK   END

132 / 68

30/20   34/16   34/16   34/16

END   BLOCK BLOCK BLOCK

98 / 42

34/16   34/16   30/20

BLOCK BLOCK END

98 / 42

30/20   34/16   34/16   34/16

END   BLOCK BLOCK BLOCK

132 / 68

34/16   34/16   34/16   30/20

BLOCK BLOCK BLOCK END

128 / 72

30/20   34/16   34/16   30/20

END   BLOCK BLOCK END

254

255

128 / 72

132 / 68

98 / 42
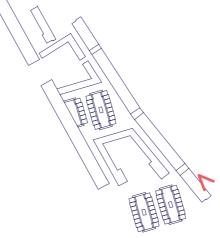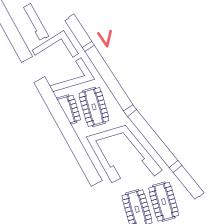
BIKE STORAGE: IMPRESSIONS
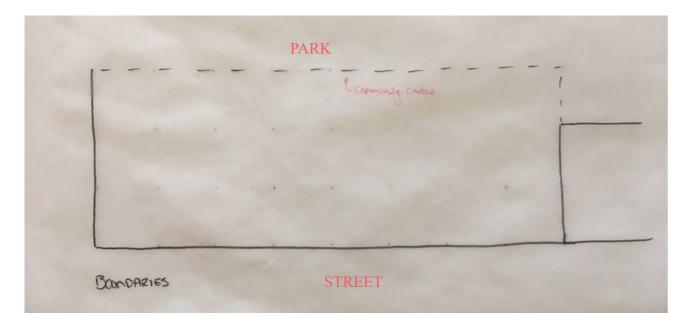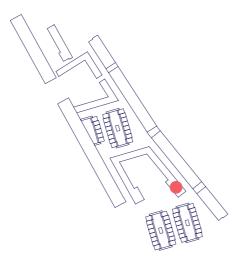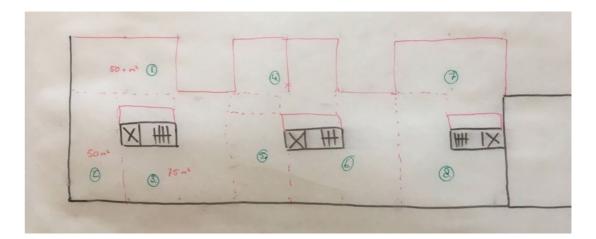
NEW BUILD - DESIGN PROCESS COMMUNITY CENTRE
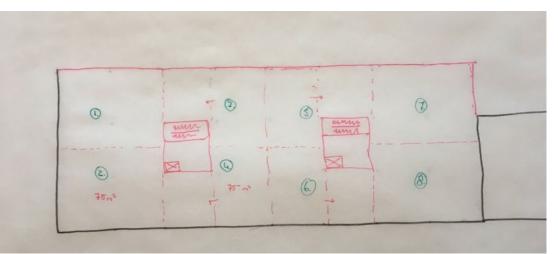
ACCESS OPTIONS FOR COMMUNITY CENTRE AND DWELLINGS

258

259
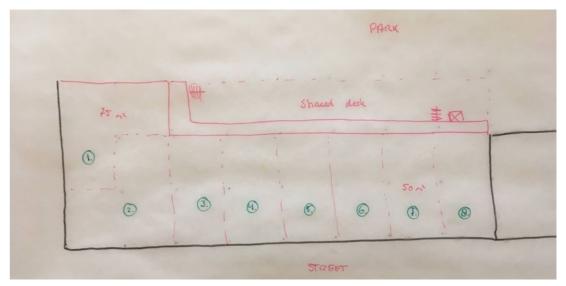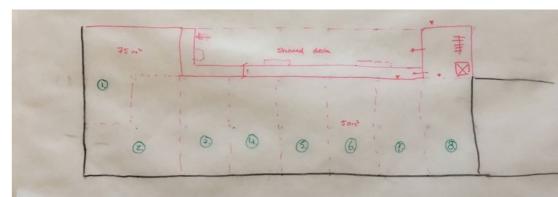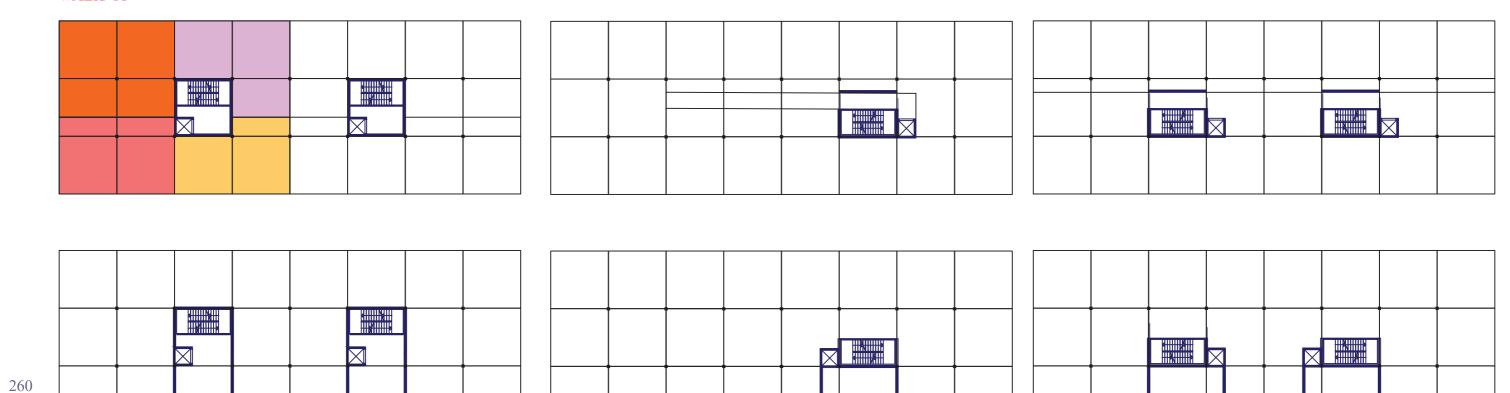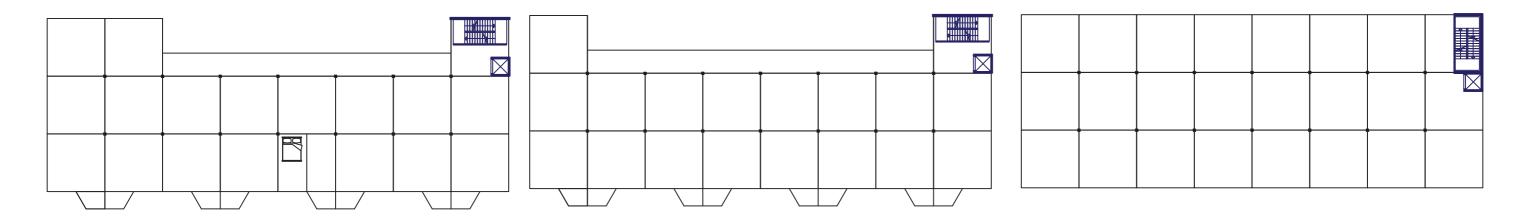
DIGITAL SKETCHING

WALK-UP

BACKSIDE GALLERY
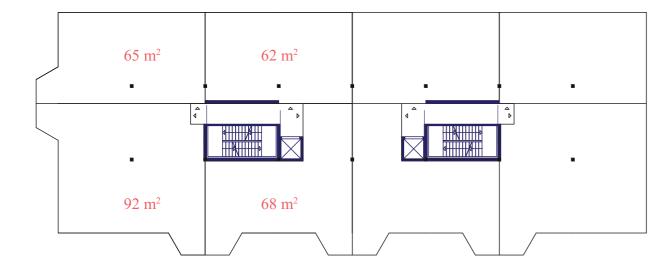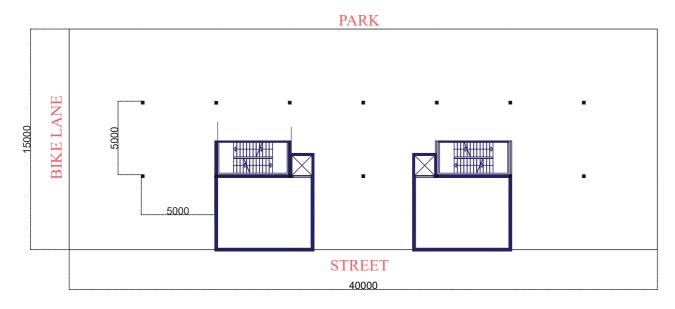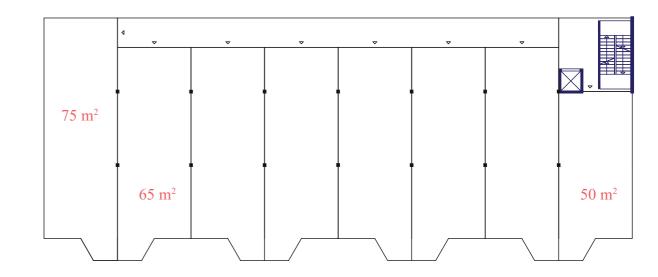
OPTION 1: WALK-UP WITH *WOKKELTRAP*

OPTION 2: GALLERY

65 m² 62 m²

92 m² 68 m²

75 m²

65 m² 50 m²

262

263

PARK

BIKE LANE

15000

5000

5000

STREET

40000

PARK

BIKE LANE

15000

5000

5000

STREET

40000
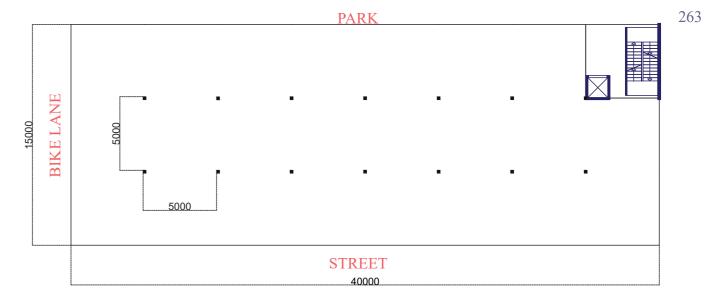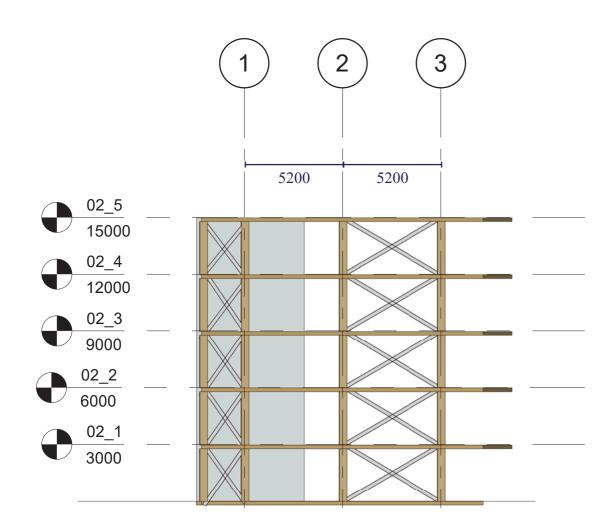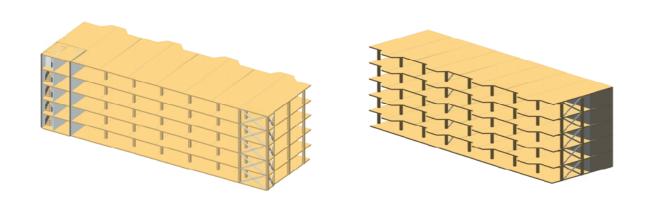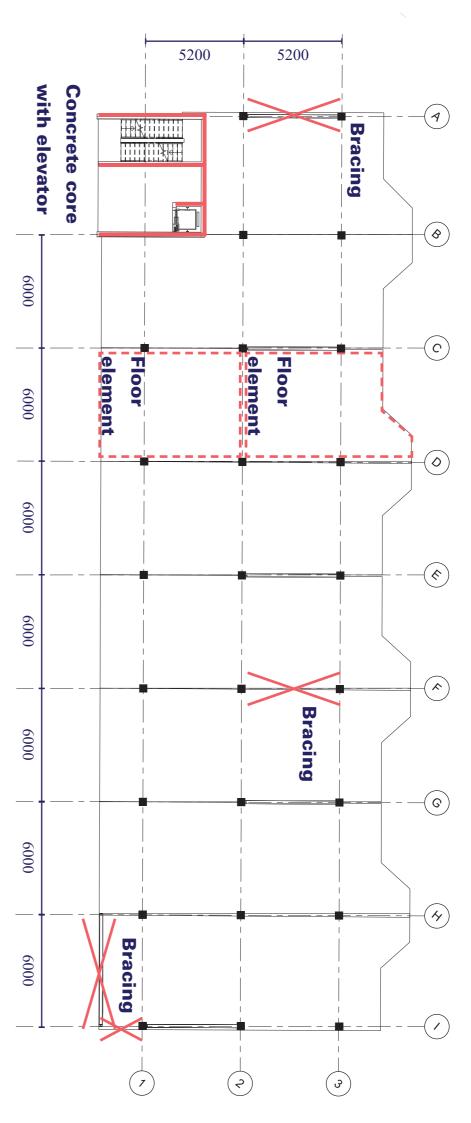
STRUCTURAL ELEVATION (1:200)

① ② ③

5200 5200

02_5 / 15000
02_4 / 12000
02_3 / 9000
02_2 / 6000
02_1 / 3000

STRUCTURAL 3D

264

265

STRUCTURAL PLAN (1:200)

5200 5200

Concrete core with elevator

Bracing

A B C D E F G H I

6000 6000 6000 6000 6000 6000 6000

Floor element Floor element

Bracing

Bracing

1 2 3
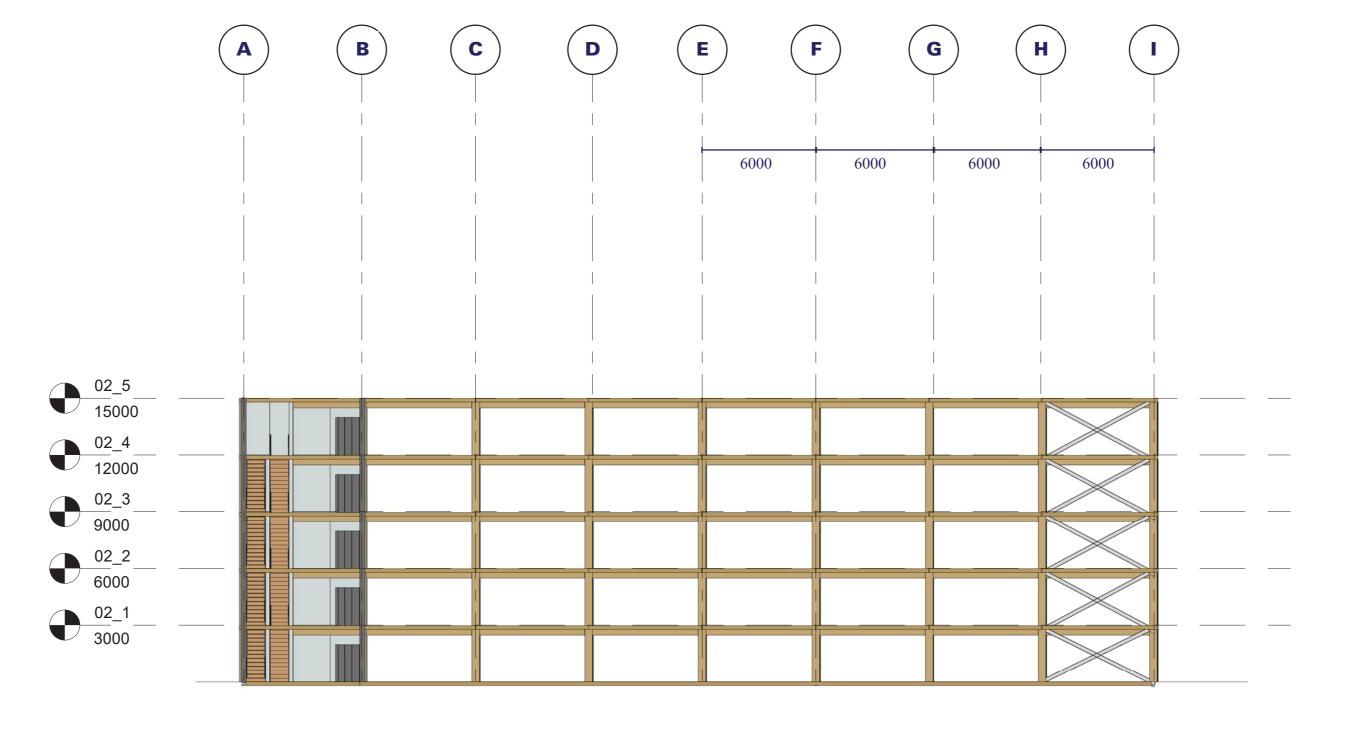
STRUCTURAL SECTION (1:200)

A　B　C　D　E　F　G　H　I

6000　6000　6000　6000

02_5
15000

02_4
12000

02_3
9000

02_2
6000

02_1
3000

PRECEDENT: CADIX
Project by Happel Cornelisse Verhoeven Architects.
Antwerp, Belgium.

HCVA (n.d.).

Images: Karin Borghouts
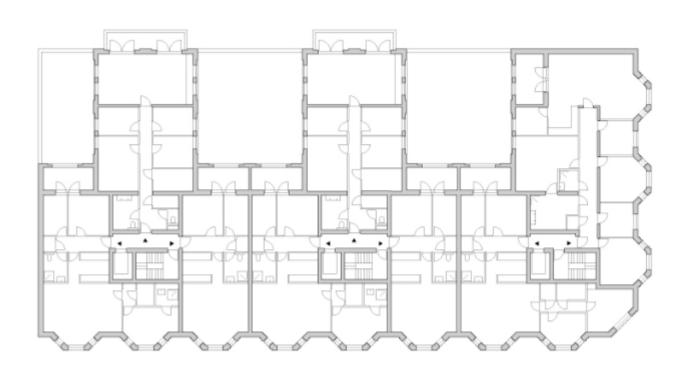
Focus: Facades/use of brick

268

269

FACADES (1:200)

SOUTH FACADE (1:200)

WEST FACADE (1:200)

270

271
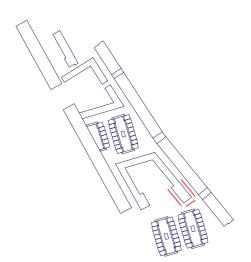
EAST FACADE (1:200)

- research -

precedents elaborated from design process
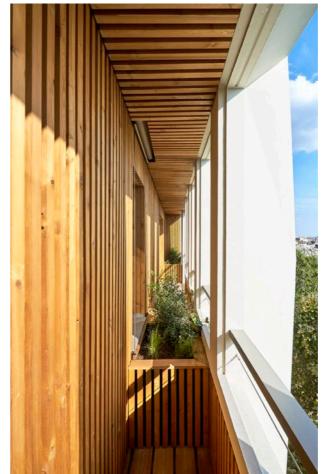
Transformation office to
dwellings by
MOATTI-RIVIERE (2016)

PRECEDENT: TRANSFORMATION OF OFFICE BUILDING TO 90 APARTMENTS

Architects: MOATTI-RIVIERE
Year: 2016
Photographs: Michel Denancé
City: Charenton-le-Pont
Country: France

https://www.archdaily.com/800178/transformation-of-office-building-to-90-apartments-moatti-riviere

Rojas (2016).
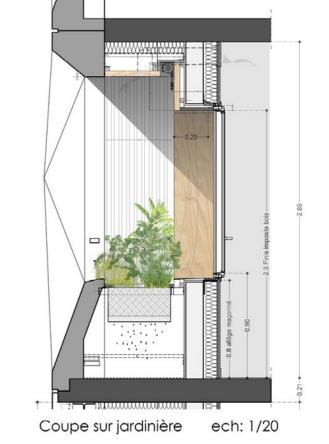
Focus: Transformation - creation of outdoor spaces

Coupe porte fenêtre   ech: 1/20

Coupe sur jardinière   ech: 1/20

PRECEDENT: CHEESE WAREHOUSE GOUDA
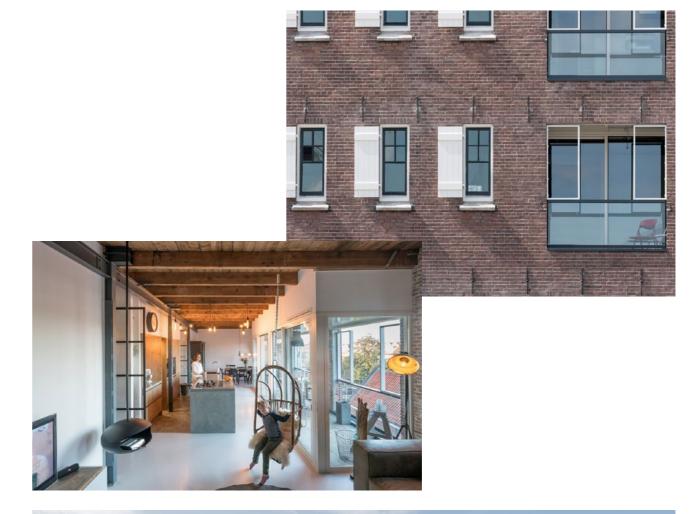
Architects: Mei architects and planners
Year: 2017
Photographs: Ossip van Duivenbode, Jeroen Musch
City: Gouda
Country: The Netherlands

Rojas (2017).

Focus: Transformation - creation of outdoor spaces

276

277

PRECEDENT: CITÉ DU GRAND PARC
Project by Christophe Hutin architecture, Frédéric Druot, Lacaton & Vassal.
Bordeaux, France.

Pintos (2019).

Images: Philippe Ruault, Lacaton&Vassal & Hutin & Druot

Focus: Qualitative outdoor spaces

dépose des baies vitrées et
allèges

rideau thermique intérieur

châssis vitré coulissant
aluminium
+ double vitrage

paroi légère transparente

garde corps vitré

rideau d'ombrage

existant

extension
balcon + jardin d'hiver

Rendering of project
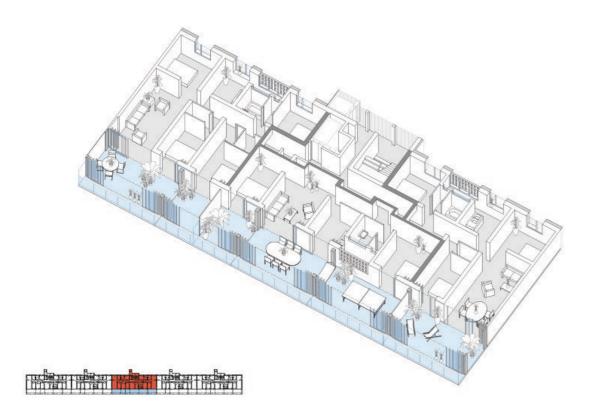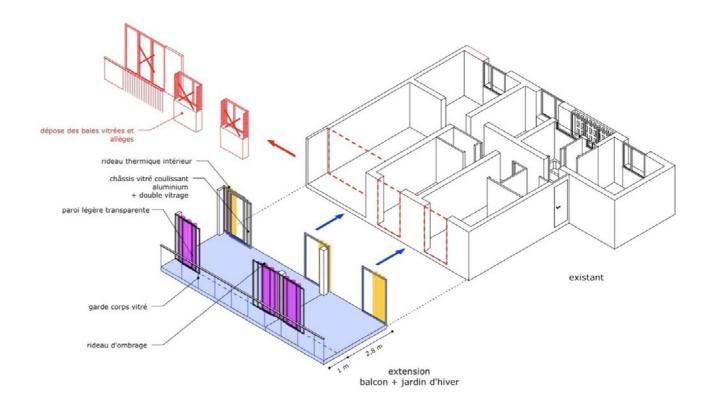
- reflection -

ASPECT 1. THE RELATIONSHIP BETWEEN RESEARCH AND DESIGN.

The relationship between research and design should be really strong. Decisions should be made based on evidence, so to say. A design needs to meet the needs of future residents/users, the current surroundings, and (inter)national needs and developments. Without research, this cannot be fully understood and therefore reacted to. The project takes the latter as starting point. By taking the national and international context as a main source and motivation, the local situation can be addressed.

Image 1. Structure of the seventeen development goals (Azote Images for Stockholm Resilience Centre, Stockholm University, 2016)

The housing shortage in the Netherlands (national) and the anthropogenic global warming (international) are taken as the context for this project. Especially the sustainable development of the built environment started to take a leading role at the start of the process. Based on a model from Stockholm University (image 1), the biosphere of the Sustainable Development Goals was taken as a foundation for the design. This consists of 4 goals that were then translated to the built environment as seen in image 2. The main influence on the project was Biodiversity. Research on greening the city from Arup (2016) was used to explore different ways of integrating biodiversity enhancing solutions in an urban context. This created the possibility to design the neighbourhood Hoptille as a lab, continuing the research into the actual design.

Additionally, within Heritage a design should also be values-based. This is more of a challenge, considering the nature of the studio; New Heritage. Here, an unexplored part of the building stock is researched through a new lens to uncover potential values. This means values could also not be present.

Throughout the MSc3, the whole area was explored, as well as adjacent neighbourhoods. It was found that these 70's and 80's neighbourhoods do not have any rarity value, since they make up one quarter of the total housing stock in the Netherlands (Rijksdienst voor Cultureel Erfgoed, 2020). Furthermore, stakeholder research gave great insight into the neighbourhoods but rather led to challenges and opportunities than values.

However, specific elements still give character to the neighbourhood. It was also learnt that the main unique element, a 300 meter long building, does have rarity value, it also has a negative effect on its surroundings. This balance between negative and positive outcomes created a large part of the base for the design.

Image 2. Translation of Sustainable Development Goals (United Nations, 2020)

ASPECT 2. THE RELATIONSHIP BETWEEN YOUR GRADUATION (PROJECT) TOPIC, THE STUDIO TOPIC (IF APPLICABLE), YOUR MASTER TRACK (A,U,BT,LA,MBE), AND YOUR MASTER PROGRAMME (MSC AUBS).

Within Heritage & Architecture, the H-buurt was analysed from a 100% Heritage perspective. This perspective takes the whole building stock as heritage based on embodied energy. From this, additional values can be discovered (image 3). When looking to preserve any building, one needs to look closer at the existing. During this, values can be uncovered. This research forces the creation of a solid base as input for the design.
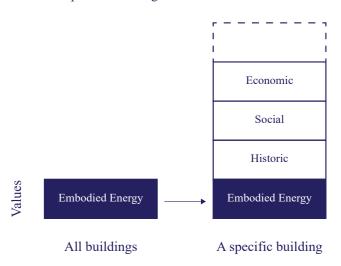
Image 3. 100% Heritage Scheme

Due to this, the project fits well within the studio topic. It looks at the area from this 100% Heritage perspective, to try and uncover if its architecture is New Heritage. It places the buildings and urban plan in a timeline where it relates to its origin and life time. This is respected while adapting the area to current needs and standards, regarding technical and social sustainable development.

The project aims to revitalise an 70's/80's neighbourhood, which make up 25% of the current Dutch housing stock (Rijksdienst voor Cultureel Erfgoed, 2020). Through this, the project relates itself to international (anthropologic global warming) and national context (housing shortage) while finding a way to incorporate local challenges and opportunities when dealing with such large subjects (image 4). This is needed due to the urgency of the international and national context, both great challenges for the whole Architecture community.

The whole project taught me many lessons. It combined many different topics, from sustainable development to local values and challenges, from building new to renovation and transformation. Within the project, I got to explore these many aspects to Architecture and experience its complexity fully, within my studies for the first time. This was mostly due to the amount of time we get to spend on our graduation project. During the past year, I kept enjoying the project and the design process itself. Every week had a different focus and I would learn something new. I hope this project has made me a better architect once I step foot into the real world, outside of academia.

ASPECT 3. **ELABORATION ON RESEARCH METHOD AND APPROACH CHOSEN BY THE STUDENT IN RELATION TO THE GRADUATION STUDIO METHODICAL LINE OF INQUIRY, REFLECTING THEREBY UPON THE SCIENTIFIC RELEVANCE OF THE WORK.**

Several methods were used to explore and analyse the neighbourhood Hoptille throughout the project. Besides drawing, mapping, and volume studies, two approach were important for the research, the stakeholder research and the value/risk assessments.

Both were executed collectively where the stakeholder research was the first step of the whole graduation trajectory. The group was divided over several heritage markets (Howard, 2003; see image 5). Through these perspectives the different neighbourhoods were analysed. There were many results to be processed, but this was still impacted by the COVID-19 restrictions. For example, there were less people on the streets to be interviewed and no larger meetings could be organised on site. It is possible more information could have been gathered. The information that was acquired though, was of large value. I got to learn about the locations through the eyes of those who actually use it, rather than through articles or mapping. It gave a quick and real impression of the challenges and opportunities in the H-buurt.
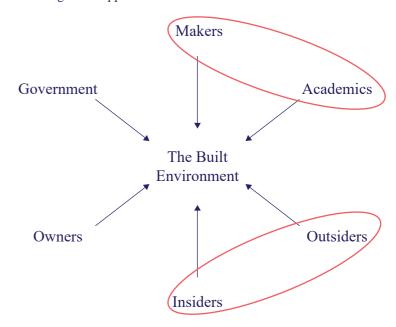
Image 5. Heritage markets (Howard, 2003), adapted for the collective research

After finalising the stakeholder research, the group noticed a lack of connection with Heritage and its methods. So, small groups were again formed to analyse the four areas (the three neighbourhoods and the region H-buurt). With the knowledge from the stakeholder research, value matrices (image 6, see next page) were made, creating an overview of values and attributes per area. These were tested in a Heritage Impact Assessments. Due to the distinct characteristics of each neighbourhood, the outcomes were very diverse but also showed surprising similarities.

This is interesting, since this housing stock is already 40 years old. The neighbourhoods from the 70's and 80' all approach a time where elements reach their end of life and renovations are needed. Together with the goals to improve the building stock in order to fight global warming, it is important to understand how these buildings can be improved. Common ground between very differently seeming neighbourhoods can help with a larger strategy for sustainable development while keeping and/or enhancing specific identities.

Image 4. Different scales within the project.

For my project, the main lesson would be diversity. At the start of the design process, diversity for nature was the main design driver. However, around the P3, I realised I focused too much on biodiversity. While working on other aspects, I noticed that diversity also took on a role for the other goals and aspects of the design. It served as an inspiration for the new buildings, the public space, and redesign of the mid-rise building. Historic cities and the 70's/80's neighbourhoods showed this monotony of diversity, organised chaos, and variation in scale and spaces. As humans, we enjoy these kinds of places (The School of Life, 2015; Gibbons, 2016). The urban setting of the neighbourhoods of the 70's and 80's with the attention to the eye level perspective and the human scale is an important lesson to learn from this.

Image 6. Cultural Historic Values (Hoptille)

ASPECT 4. ELABORATION ON THE RELATIONSHIP BETWEEN THE GRADUATION PROJECT AND THE WIDER SOCIAL, PROFESSIONAL AND SCIENTIFIC FRAMEWORK, TOUCHING UPON THE TRANSFERABILITY OF THE PROJECT RESULTS.

As of 2020, there is a housing shortage of 331.000 homes in the Netherlands. By 2030, 845.000 new homes need to be built in order to resolve the current shortage (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2020). This is a huge task for an already dense country as the Netherlands.

Additionally to this, the built environment is a big polluter of greenhouse gas emissions. 17,5% of all emissions comes from energy use in buildings, of which 10,9% just residential. More emissions come from construction sites, the processing of materials, and transport of these materials. Just 3% alone is emitted by the production and use of cement (Ritchie & Roser, 2020). With numbers like these, the built environment has many opportunities and challenges to take on.

My project attempts to tackle both of these large problems. This lead to the following design question:

How can the Dutch 80's neighbourhood be densified in terms of housing and nature while enhancing and preserving in- and extrinsic values (if present) by taking the neighbourhood Hoptille as case study?

The neighbourhood Hoptille was chosen for various reasons. First, it is in a reaction to one of the expansion areas from the 1960's. The neighbourhood can teach us lesson on how to densify in the Netherlands again. Hoptille was also constructed during the economic crisis of 1980. This means a lower quality in construction, contributing to anthropogenic global warming. At first, I was convinced Hoptille was not your typical 80's neighbourhood, but more complex. If solutions work for Hoptille, this should be alright for other places, too. During the research and design process, I discovered that Hoptille is not that different. Yes, the 300 meter long building is not common, but the ideals and urban set-up are. Characteristics such as a car-free neighbourhood and the combination of materials (for example, brick and concrete) are typical for those decades (Rijksdienst voor Cultureel Erfgoed, 2020). Hoptille proved itself to have been a good case study for these (inter)national challenges.

That said, the project does aim to be a testing ground, a way to explore possible solutions. The aim is not to be built exactly like that, but rather choose elements and/or lessons from the design to improve the area. The project is an exploration of the adaptation of the 70's and 80's neighbourhood that (hopefully) can help and inspire positive change for other similar areas in the Netherlands.

ASPECT 5. **DISCUSS THE ETHICAL ISSUES AND DILEMMAS YOU MAY HAVE ENCOUNTERED IN (I) DOING THE RESEARCH, (II, IF APPLICABLE) ELABORATING THE DESIGN AND (III) POTENTIAL APPLICATIONS OF THE RESULTS IN PRACTICE.**

Several ethical issues were suspected to appear during the research phase, most of these relate to the method and approaches used. First there was the concern of promising or alarm interviewees, especially insider and outsiders, of any made decisions or changes. The graduation project is in a studio setting, the goal of the research is to gather information, not to execute the demolition or adaptation of homes. However, during interviews this was quite clear. The researchers were able to clearly communicate the purpose of the interview. The problems arose while taking photos of the neighbourhood. Several times passers-by would ask questions on why photos were taken. This was not anticipated to happen to such an extent.

It was also suspected that a stronger choice needed to be made by researchers between conflicting results. This was due to the research methods, the interviewing of the various stakeholders. The results however, were fairly aligned among stakeholders related to Hoptille. The results were therefore easily separated from the stakeholder to create one larger conclusion from the research.

Lastly, the measurements against COVID-19 hugely impacted the research and design process. For the research, several methods could not be used, such as a meeting in a community space, and extra measurements had to be taken in order to operate safely, for example, the use of gloves and adapting methods to 1,5 meters distance. The measurements also prevented a site visit inside the buildings. This extended the time spend on the building analysis and prevented the internal experience of the buildings. A visit inside a building should always be a part of any design process.

During the design process, the realisation was made that it is very elaborate and therefore could become quite expensive. If the project is to be carried out, the perception of the H-buurt will change for the better. However, this can also cause influxes in property values and alter the demographics of the residents, pushing out long-term tenants with lower incomes. This gentrification of an area can lead to social exclusion and neglect social diversity (Mehdipanah et al., 2017). This is guaranteed to happen when an expensive project is realised. For Hoptille, this is not a desirable outcome due to the large number of social housing in the area. Additionally, there is a huge shortage of specifically social and low-segment housing (Sitton, 2020). The current residents need a place to live, too. Throughout the project, design decisions were made that could cut cost. Design choices, such as repetition of elements, pre-fabrication, and limited use of infrastructure such as elevators in the new buildings, were made to lower potential building costs. It stays difficult to grasp what the costs would be and does not always make the decisions easier. A bio-based insulation might be better of the environment, but could also be more expensive and have a longer payback period.

Besides gentrification, other consequences arise from implementing the design. More practical issues arise such as temporal re-homing of residents and nuisance from construction with residents that can stay. The design also states the reuse of materials as much as possible. In practice, this can be a lot harder to realise. Even though the project states its approach to be 100% Heritage, a lot of material is extracted from the neighbourhood that, in practise, still this could result in a high loss of embodied energy.

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Images: Images and schemes are made by the author, unless stated otherwise.

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Render of south passage

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Images: Images and schemes are made by the author, unless stated otherwise.

APPENDIX 3
TNO. (n.d.) *Ondergrondgegevens*. DINOloket. https://www.dinoloket.nl/ondergrondgegevens.

ICONS
All icons, that were not made by the author, were found on The Noun Project.com. These either have been used or altered to fit the graphic style of the project.

- Balcony: tezar tantular
- Biodiversity: Nithinan Tatah
- Bored face: Vicons Design
- Leakages: Ben Davis
- Aesthetical Incoherence: ochre7
- Staircase: Afra Khautsar
- Passive housing: Tomas Knopp
- Water management: Symbolon
- Car: Ladalle CS
- Bird: Public Domain
- Kid playing: parkjisun
- Plane: art shop
- Confetti: Cak Badrun
- Pha That Luang by József Balázs-Hegedüs
- Le Ministere des mines by József Balázs-Hegedüs
- De Gooyer Windmill by József Balázs-Hegedüs
- Metropolitan Cathedral by József Balázs-Hegedüs
- Umayyad Mosque by József Balázs-Hegedüs