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Design
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# The Nature-Inclusive Redesign

## The possibilities of nature-inclusive redesign in Dutch urban monumental buildings


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## Preface

I am writing this research for my graduation research in the Heritage & Architecture graduation studio as a completion of my master's in architecture, urbanism and building sciences at Delft University of Technology.

The research forms the basis of my graduation project. Parallel to this, there is a design process, in which the research is tested. The research is intended for interested parties, such as designers and owners of Dutch urban monumental buildings.

The research is about the nature-inclusive redesign of monumental buildings. This subject stems from my interest in working with greenery, such as designing, creating and maintaining gardens. I also enjoy watching and caring for animals. In addition, I am fascinated by monumental buildings, they tell a story and possess many cultural, social, architectural, technical and environmental values. A large number of these buildings are not or hardly used. I see it as a challenge to make such buildings part of society and let visitors experience these values. Finally, I am concerned with the problem of biodiversity and see the opportunity, as a future designer, to contribute to its solution through this research.

Robin Simons
Amsterdam, 1 January 2022

# CONTENT


**1 Analyses** **4**
- 1.1 Emotional analyses 5
- 1.2 Historical analyses 6
  - 1.2.1 Development of Haarlem and the location in the city 6
  - 1.2.2 Development of the building 7
  - 1.2.3 Original building plans and section 8
  - 1.2.4 Original building facades 9
- 1.3 Functional and spatial analyses 10
  - 1.3.1 Temporary building plans and section 10
  - 1.3.2 Courtyards 11
  - 1.3.3 Layout 11
  - 1.3.4 Circulation 12
  - 1.3.5 Masses 13
  - 1.3.6 Interesting spaces 14
  - 1.3.7 Site plan 15
  - 1.3.8 Street profiles 16
- 1.4 Facade analyses 17
  - 1.4.1 Composition 17
  - 1.4.2 Materialisation and colour 26
  - 1.4.3 Facade elements 27
  - 1.4.4 Facade layout monument 28
- 1.5 Technical analyses 29
  - 1.5.1 Structure 29
  - 1.5.2 Insulation, heating and ventilation 30
- 1.6 Urban analyses 31
  - 1.6.1 Demography 31
  - 1.6.2 Building age 32
  - 1.6.3 Topography 33
  - 1.6.4 Functions 34
  - 1.6.5 Infrastructure 35
  - 1.6.6 Public transport 36
  - 1.6.7 Cultural historic heritage 38
  - 1.6.8 Hofjes in Haarlem 39
  - 1.6.9 City skyline 40
  - 1.6.10 Urban masterplan and policy 41
  - 1.6.11 Zoning plan 42
- 1.7 Value assessment 44
- 1.8 Building essence 58

**2 Design** **61**
- 2.1 Vision 62
- 2.2 Functional layout and accessibility 63
- 2.3 Target groups 64
- 2.4 Requirements functions 65
- 2.5 Concept 66
- 2.6 Site plan 67
- 2.7 Functional layout and accessibility 68
- 2.8 Floorplans 69
- 2.9 Sections 75
- 2.10 Facades 77
- 2.11 3D-Views 83
- 2.12 Conceptpoint 1 85
- 2.13 Conceptpoint 2 89
- 2.14 Conceptpoint 3 98
- 2.15 Conceptpoint 4 101
- 2.16 Conceptpoint 5 103
- 2.17 Circulation 105
- 2.18 Typlogies 106
- 2.19 Structure 115
- 2.20 Climate 117
- 2.21 Facade build-up 120
- 2.22 Fragment 123
- 2.23 Details 128
- 2.24 Fireplan 131
- 2.25 Natureinclusiveness and heritage 136
- 2.26 Heritage approach 137

**3 Bibliography** **138**
- 3.1 Source list 139
- 3.2 Figures list 140

# 1 ANALYSES

This chapter deals with the analyses that determine the concept. The analyses concerning the nature-inclusive redesign are discussed in the research book ''The Nature-Inclusive Redesign: The possibilities of nature-inclusive redesign in Dutch urban monumental buildings''.

Figure 1: Hendrik, K. (1771). [The New diaconate house in Haarlem]. Noord-Hollandsarchief




Figure 2: Emotional map

# ANALYSES
## 1.2 Historical analyses

### 1.2.1 Development of Haarlem and the location in the city

The first time that Haarlem is mentioned was in the 10th century. It was only in 1245 that Haarlem received its city rights. Haarlem developed on the West bank of the river Spaarne. Haarlem was one of the most important cities in the Netherlands in the Middle Ages. The city developed industrially as a textile city and culturally as the city of painters. The case study location lies at the Northern border of the old city centre. A great value of this location is that it is surrounded by water on three sides. On the North side is the Nieuwe Gracht, on the East side the Spaarne and on the West side the Bakenessergracht. In the 17th century, the city moved Northwards. After the demolition of the defence work, the city quickly spread. (Gemeente Haarlem, z.d.)




Figure 3: Development of Haarlem and the location in the city: 1500, 1800, 1900 and 2000

# ANALYSES
## 1.2 Historical analyses
### 1.2.2 Development of the building

At the place where the Koudenhorn building is located nowadays, there was an ox market until 1756 (Figure ... image 1). In that same year, this market was moved to another part of the city. In 1768, the construction of a deacon's house started, which was completed in 1771. This currently listed building is a large building surrounding a courtyard with an adjacent annex (Figure ... image 2). The deaconry house housed 670 poor elderly, 150 poor children and 80 commensals. In the following years the building proved to be so large that in 1780 it was decided to house the city's poor as well. In 1810, the building became a barrack and its residents were transferred to another location in the city. It held this function until 1960. With an interruption between 1946 and 1950 when it was taken into use by the Allies. From 1960, the adjacent annex was demolished and the building housed a police department, artist and a jazz band (Figure ... image 3). In 1968, the non-monumental annex was built and the main building underwent a major renovation (Figure ... image 4). From that year onwards it became a police station, which it still is today. In 2004, there was another interior redesign. The new main function of housing goes back to the original function as a deaconesses' house. (Rijksmonumenten, 2020; Noord Hollands Archief, 2020)

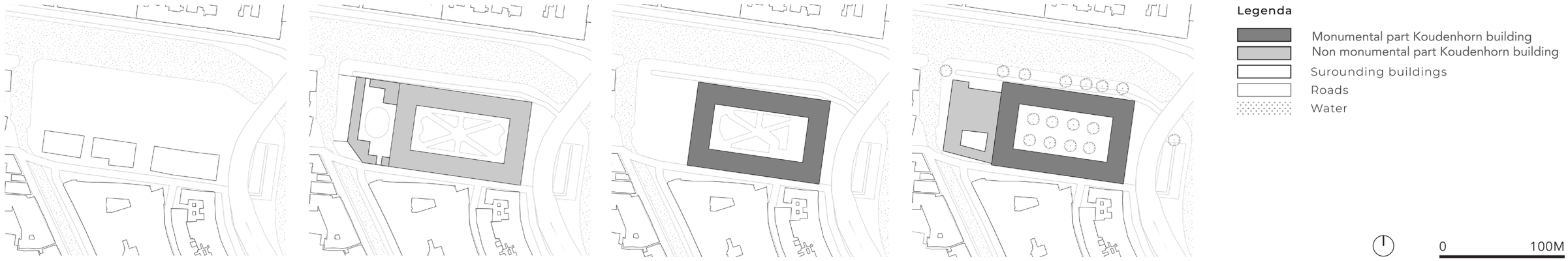


Figure 4: Situation plot: before 1768, 1771-1960, 1960-1968, 1968-2022



Figure 5: S.b.t. student group Technical University Delft. (2022, January 1). [Facade Koudenhorn building]

# ANALYSES
## 1.2 Historical analyses

### 1.2.3 Original building plans and section

The original building consisted of four wings surrounding a courtyard with an adjacent extension. The building had three floors. A high ground floor, a first and second floor. The main entrance was located in the East wing of the building. Next to it were the regents' rooms. In the North and South wing were the workrooms and sleeping quarters. In the Northern wing there were two additional entrances for the staff, residents and dependents. The dinning hall was located in the West wing of the building. The adjacent utilisarian building was intended for the storage of peat and grain. In Figure ... the original rooms that are still present are indicated. (Medema, 2014)



Figure 6: Original section

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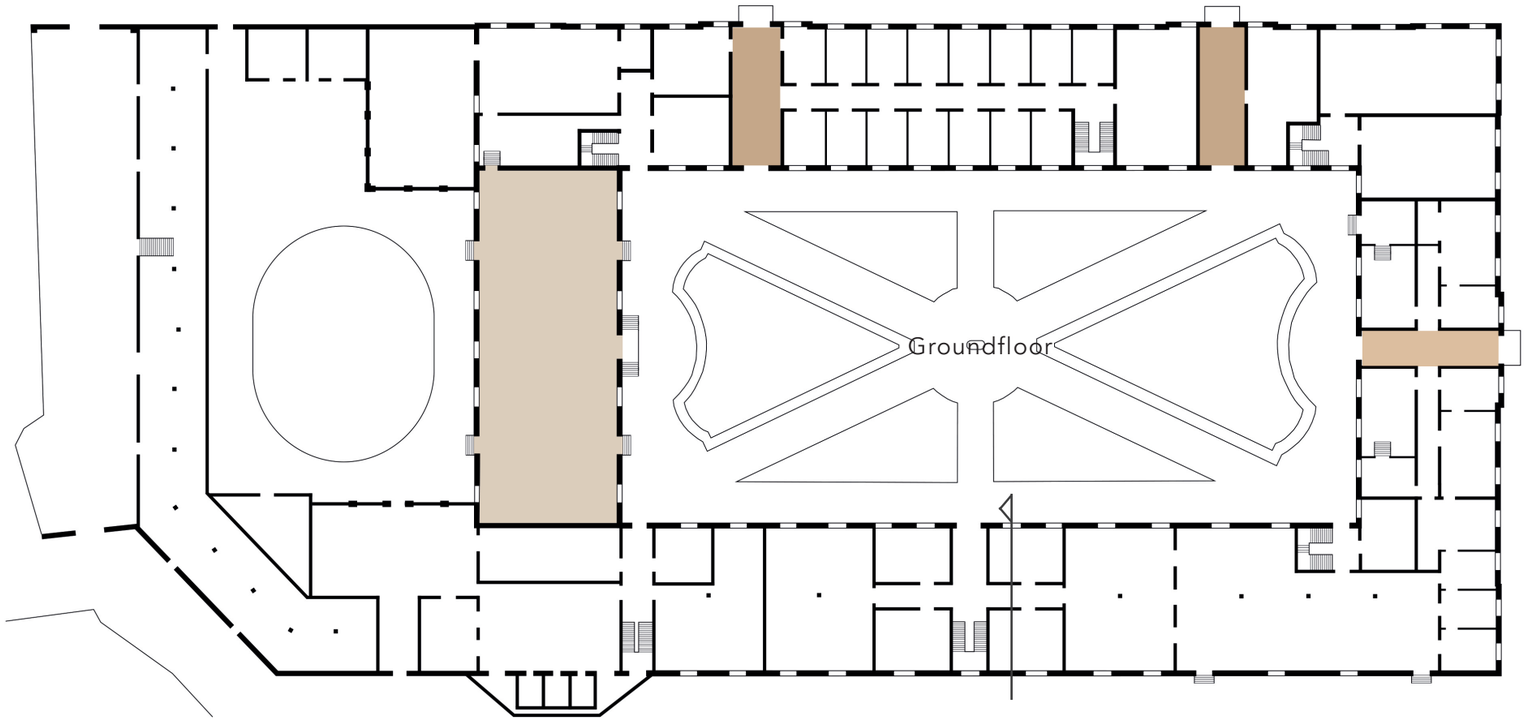


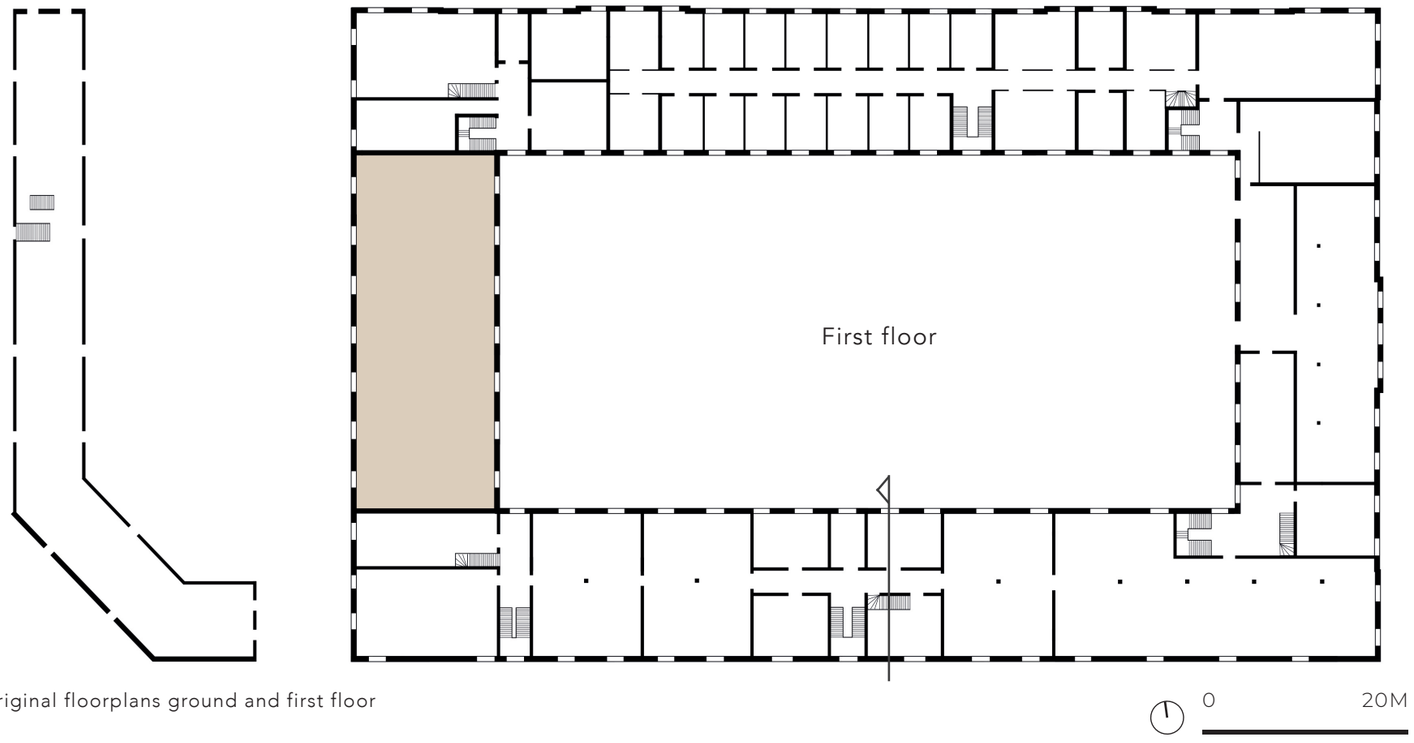




Figure 7: Original floorplans ground and first floor

**Legenda**

- Old main entrance
- Old North entrance
- Old dinning hall

# ANALYSES
## 1.2 Historical analyses
### 1.2.4 Original building facades

The original facades of the building were made in the neoclassical style. The facade consisted of red-brown brick and a grey-tiled roof. The window frames have a fine rod arrangement. In the current situation, the window frames have been replaced by windows with fewer rods, except at the monumental entrances. There were also more dormers that were more lavishly decorated. A large number of these dormers have disappeared and have been given a more functional appearance. There were also several chimneys, all of which have disappeared. In the East facade courtyard, the entrance to the dinning hall is visible, which has largely been preserved. Only the frame in the platform and the bell above the clock have disappeared over time.



East facade (Koudenhorn)



East facade courtyard (Bakenessergracht)

Figure 8: Original facades

0 25M

# ANALYSES
## 1.3 Functional and spatial analyses
### 1.3.1 Temporary building plans and section

There are five floors in the current building. An extra basement in the extension and a mezzanine between the ground and first floor in the main building. An attic has also been added locally in the main building. Of the original spaces, the old entrances and the dinning hall have been preserved. There are voids in these spaces, creating high rooms. The floors are at different heights. The ground floor in the South wing has been lowered, as has the first floor of the extension. This has created a large open space in the South wing of the extension. In the South wing, you can also find a cell complex that consists of a tight space division divided over two floors connected by voids.




Figure 9: Temporary floorplans basement, ground floor, entresol, first & second floor and section

# ANALYSES
## 1.3 Functional and spatial analyses

### 1.3.2 Courtyards

The inner city of Haarlem is known for its many courtyards, in which care was taken of the poor and deprived in society. Often, these were smaller courtyards in which this happened. The Koudenhorn building is therefore one of the largest courtyards in the city, which fits its former function as a deacon's house. Because of this, the courtyards provide historical value. Two courtyards are already visible in the old construction plans of 1771. A large rectangular courtyard enclosed by four flanks, in which a courtyard garden is located, and a smaller courtyard enclosed by utilitarian buildings. The rectangular courtyard is still visible in the later phase. However, the greenery has made way for paving. The smaller courtyard has been partially built up, as a result of which it has largely disappeared. The greenery here has also made way for paving. The courtyards are visible in numerous old drawings and photographs, and commemorate the former function of the building. At present, the courtyards are still completely enclosed, so that the effect is substantial.

### 1.3.3 Layout

If we look at the spatial layout of the original floor plans, we can see that the building had numerous entrances. In the main building, these entrances usually led to corridors or a space to which a group of other spaces were connected. In the annex, the spaces could be reached directly from the outside. There was no single continuous route. The rooms were generally quite large, both in terms of surface area and height. More entrances can be seen in the later floor plans. The routing is complicated and it is easy to get lost. In the main building, the entrances often lead to corridors to which the other rooms are connected. In the extension, the rooms can be reached directly from the outside or the different rooms are connected to each other. A single continuous route is still not present. A large part of the inner walls and floors were removed for the installation of concrete floors and an extra mezzanine between 1968 and 1971. In the years that followed, the spaces shrank considerably. As a result, little remains of the original spaces.

**Legenda**

- Courtyard
- Entrance
- Vertical circulation
- Routing

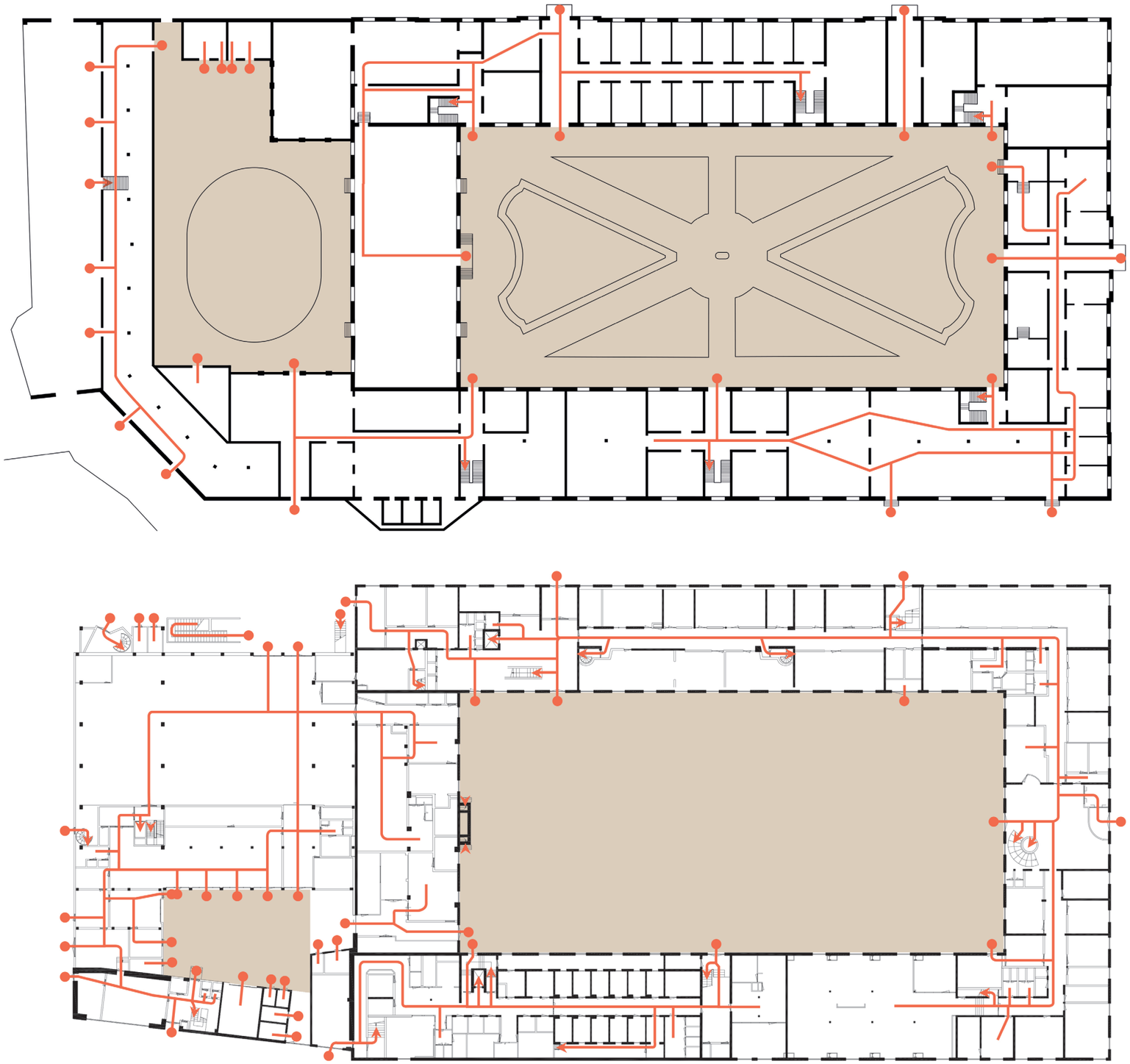
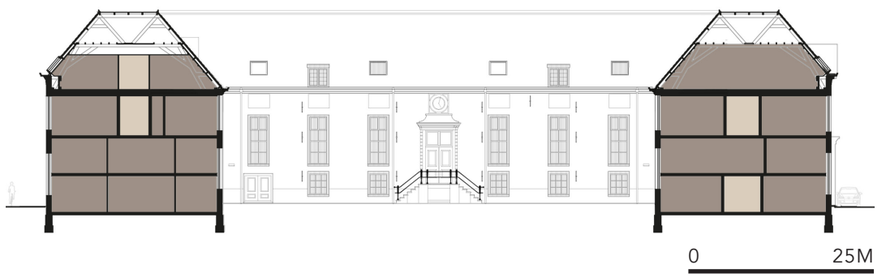
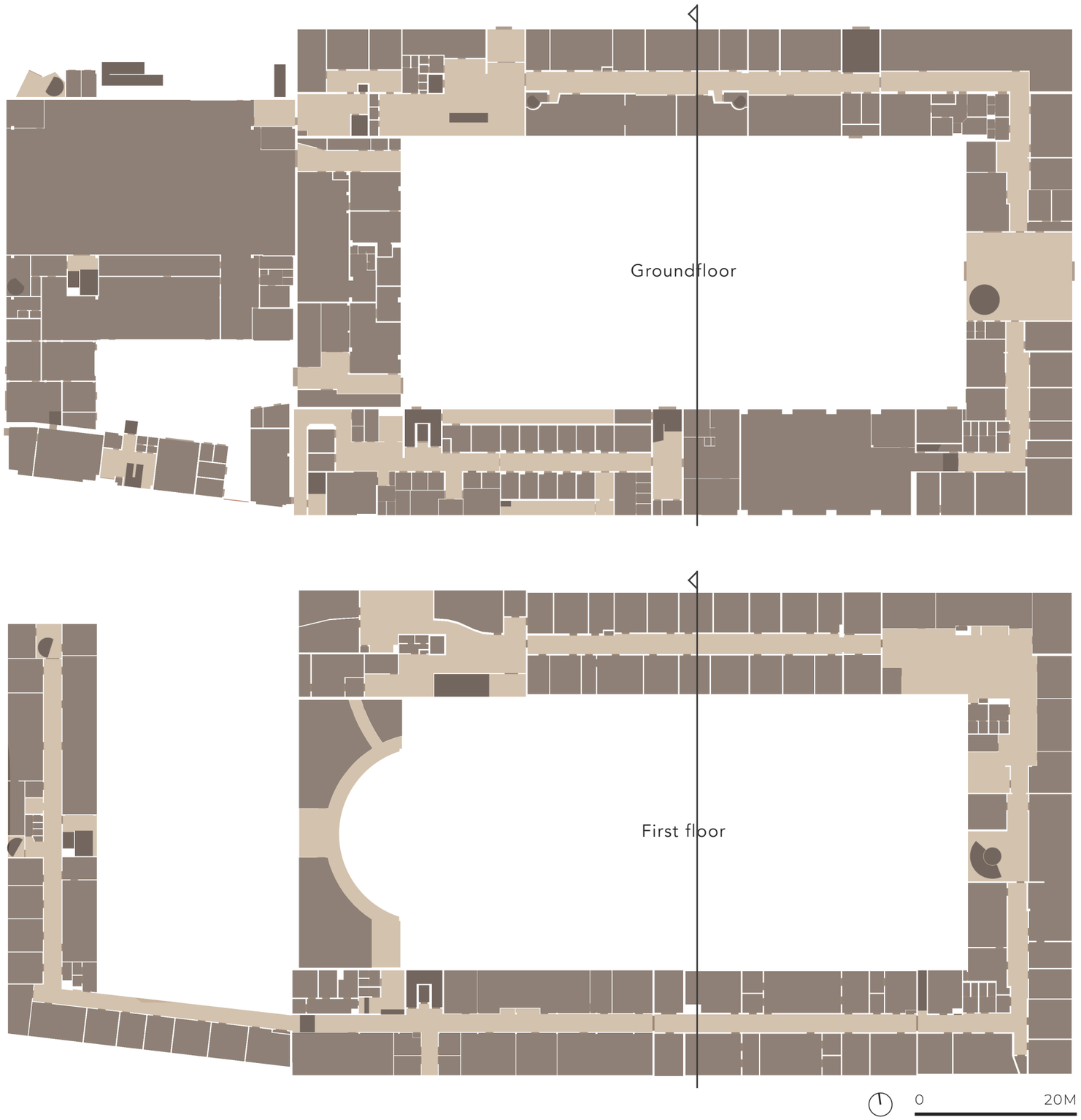



Figure 10: Courtyards and layout of the original groundfloor plan 1771 and plan 1970

# ANALYSES
## 1.3 Functional and spatial analyses
### 1.3.4 Circulation

The circulation in the building consists out of a central corridor, to which the other rooms are connected. There are also sections in which the spaces are linked to each other. The circulation is not a single continuous route, but is interrupted in several places. The circulation is also unclear in some places because of the many corridors, interconnected spaces and staircases. Another value of the building is the presence of four lifts. These are located in the main entrance, the cell complex, in the North wing and centrally in the extension. In addition, there are numerous stairs that could be reused in the design.




**Legenda**

- Spaces
- Doors
- Horizontal circulation space
- Veritcal circulation space

Figure 11: Circulation plans and section

# ANALYSES
## 1.3 Functional and spatial analyses

### 1.3.5 Masses

The building can be divided into two building masses. First, there is the clear volume of the main building, which consists out of four wings surrounding a courtyard. The wings are not of equal length, which results in a rectangular volume. The roof is slanted on both sides and has a flattened top. There are three breakfronts with pediments in the North and East facade of the building. The second mass is the complex volume of the extension, which consists of various sizes of linked and stacked blocks. A flat roof is found here. The mass of the extension stands in stark contrast to that of the main building. Because the volume of the extension is placed directly against the main building, it detracts from the clear volume of the monument. The extension also blocks the view of the monument from the important walking route to the west of the building. As well as the view from the monument to the environment.

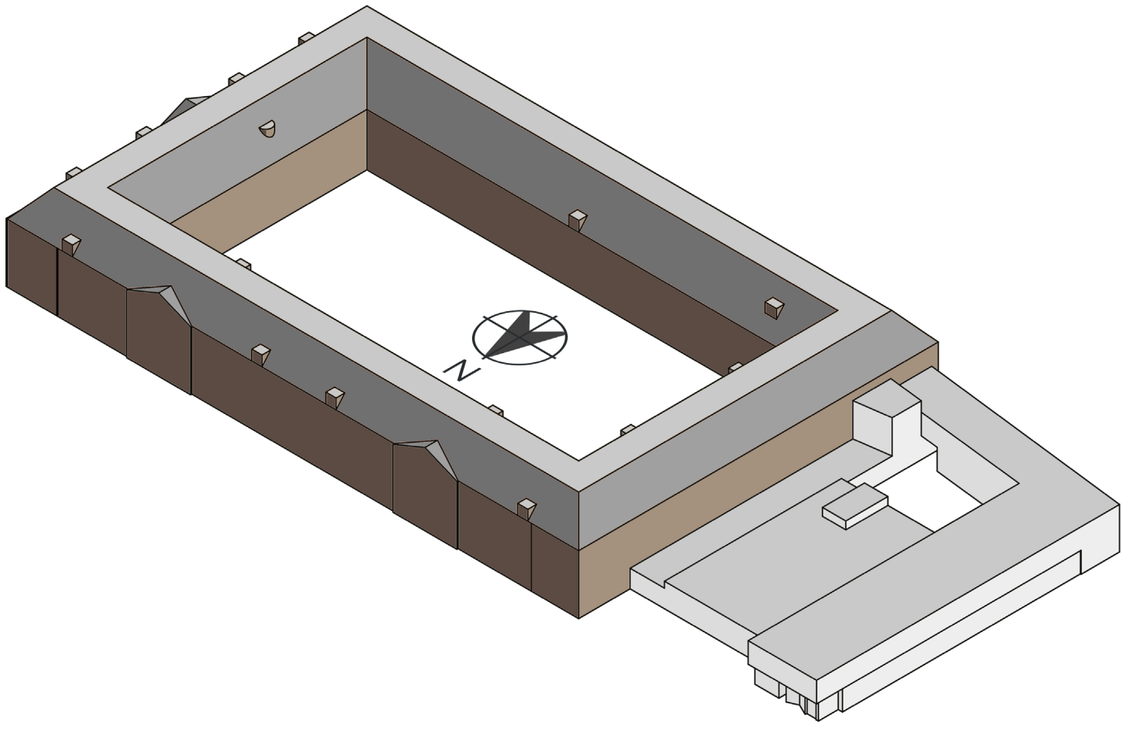



Figure 12: Mass study

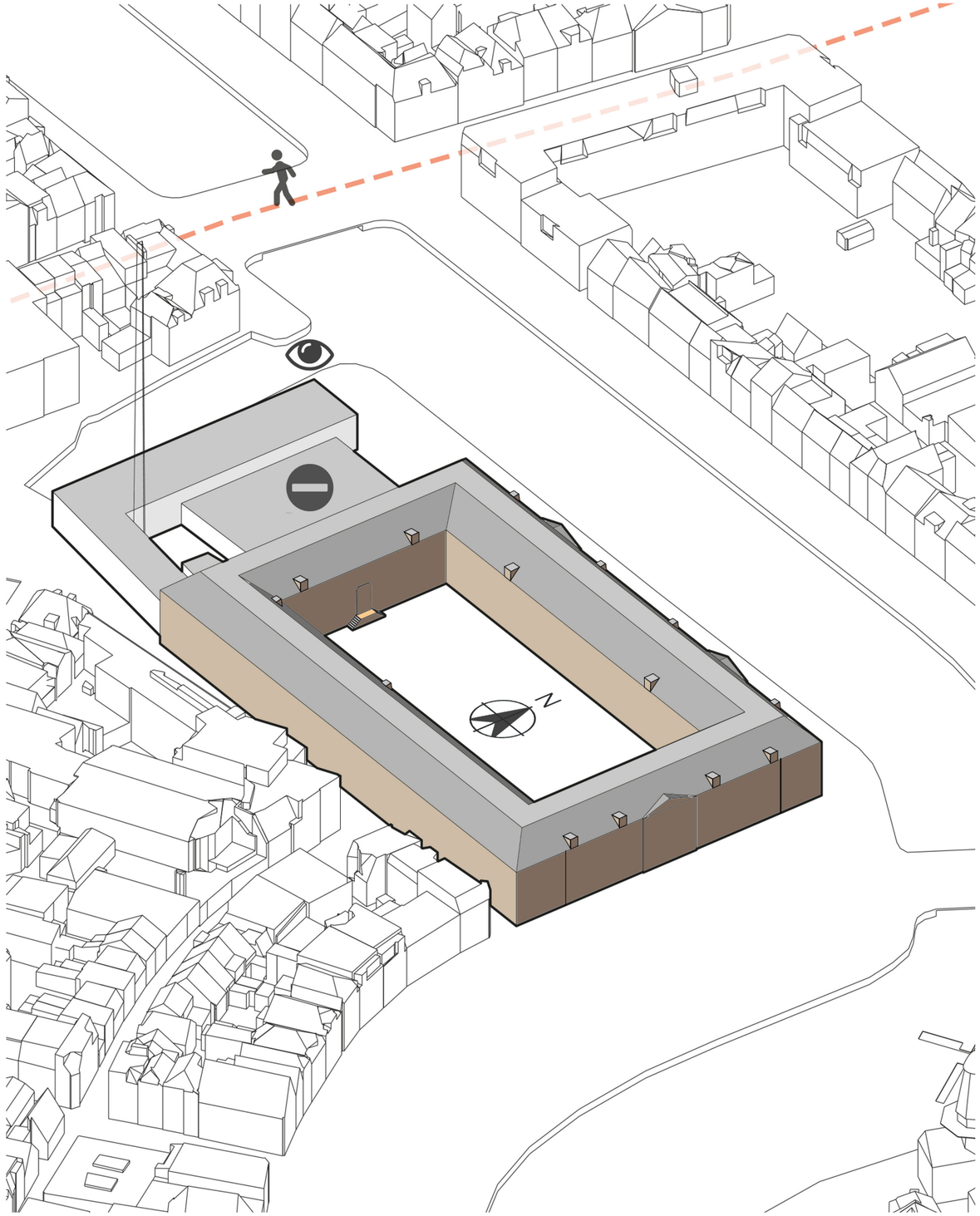



Figure 13: Mass study birds eye

# ANALYSES
## 1.3 Functional and spatial analyses

### 1.3.6 Interesting spaces

In the exploded view, the different colours indicate the position of the valuable rooms in the building, such as the old main entrance in the ground floor of the East wing. The old North entrances in the ground floor and mezzanine of the North wing. The old open dinning hall with void in the mezzanine and first floor of the West wing. The cell complex with thick concrete walls and voids in the ground floor and mezzanine of the South wing. The high open space again in the ground floor and mezzanine of the Southern wing and finally the open spaces with visible wooden roof construction in the entire second floor. These spaces are interesting spaces to use in the design.

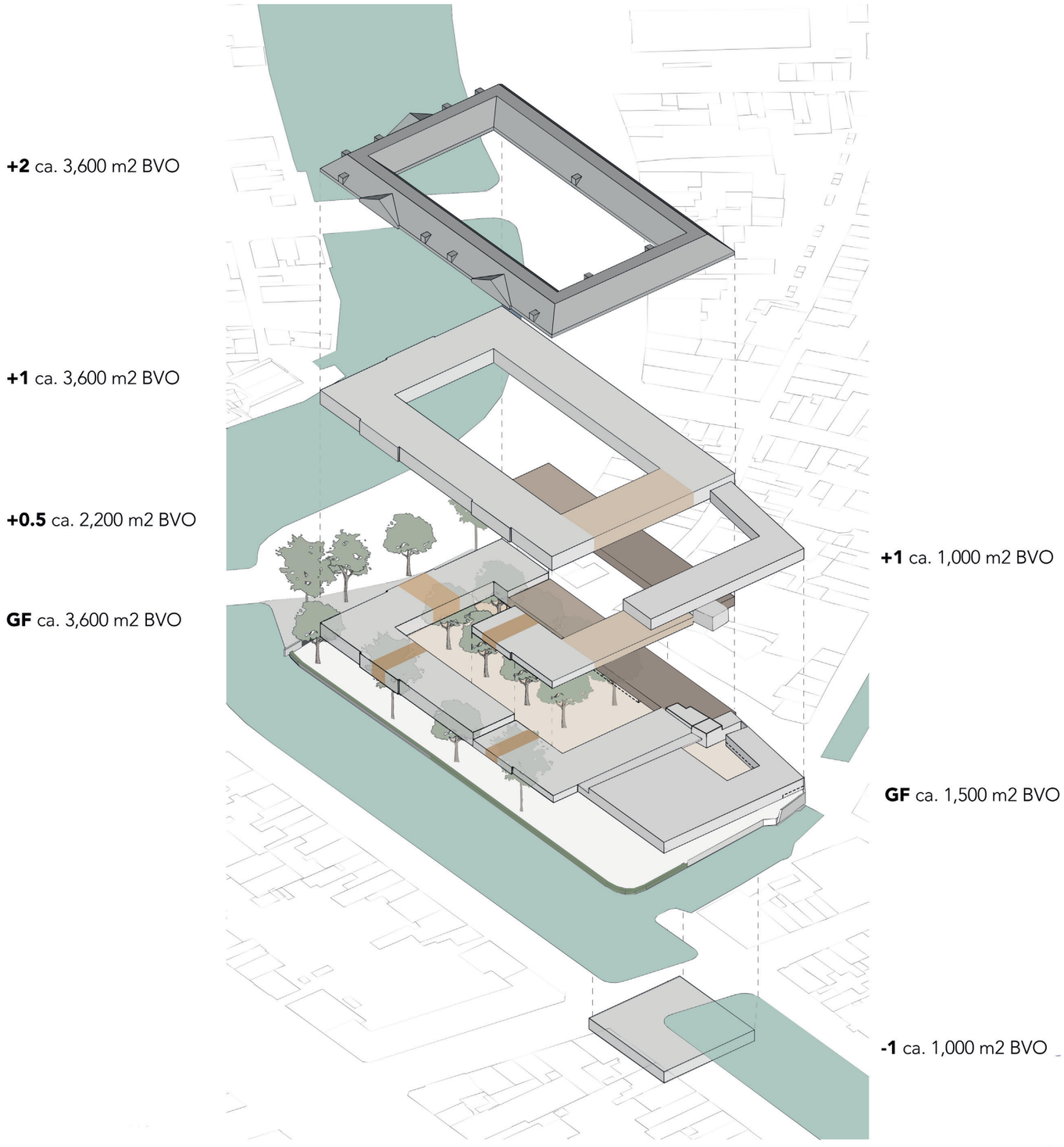



Figure 14: Exploded view spatial layout

**Legenda**

- Old main entrance
- Old North entrance
- Old  open dinning hall with vide
- High open space
- Cell complex with heavy concrete walls and vides
- Open spaces with visible wooden roof structure

# ANALYSES
## 1.3 Functional and spatial analyses

### 1.3.7 Site plan

The current situation is visible on the side. There is little greenery on the plot itself. Only a low quality green border near the water. The exact location of the trees is indicated. Also if it concerns a normal or monumental tree. The size of the tree reflects its actual size. It can be seen that there are a number of large trees on the plot, three of which are monumental. There is another monumental tree in front of the East façade. On the plot itself, a road runs along the North side of the building, on which a large number of parking spaces are located. The courtyard in both the main building and the extension is completely paved. On the West side of the plot is a bicycle shed that is a visual barrier. With the exception of the Koudenhorn, there are all one-lane roads around the building, some of which are one-way streets. This must be taken into account in the design. There are a large number of entrances in the building. This is mainly the case with the extension. The main building has no entrance on the Zakstraat. A bus stop is located at a short distance on the other side of the Koudenhorn, which increases the accessibility of the building. The number of electric charging points is limited. In addition, there are sufficient waste disposal points located at a short distance from the case study.

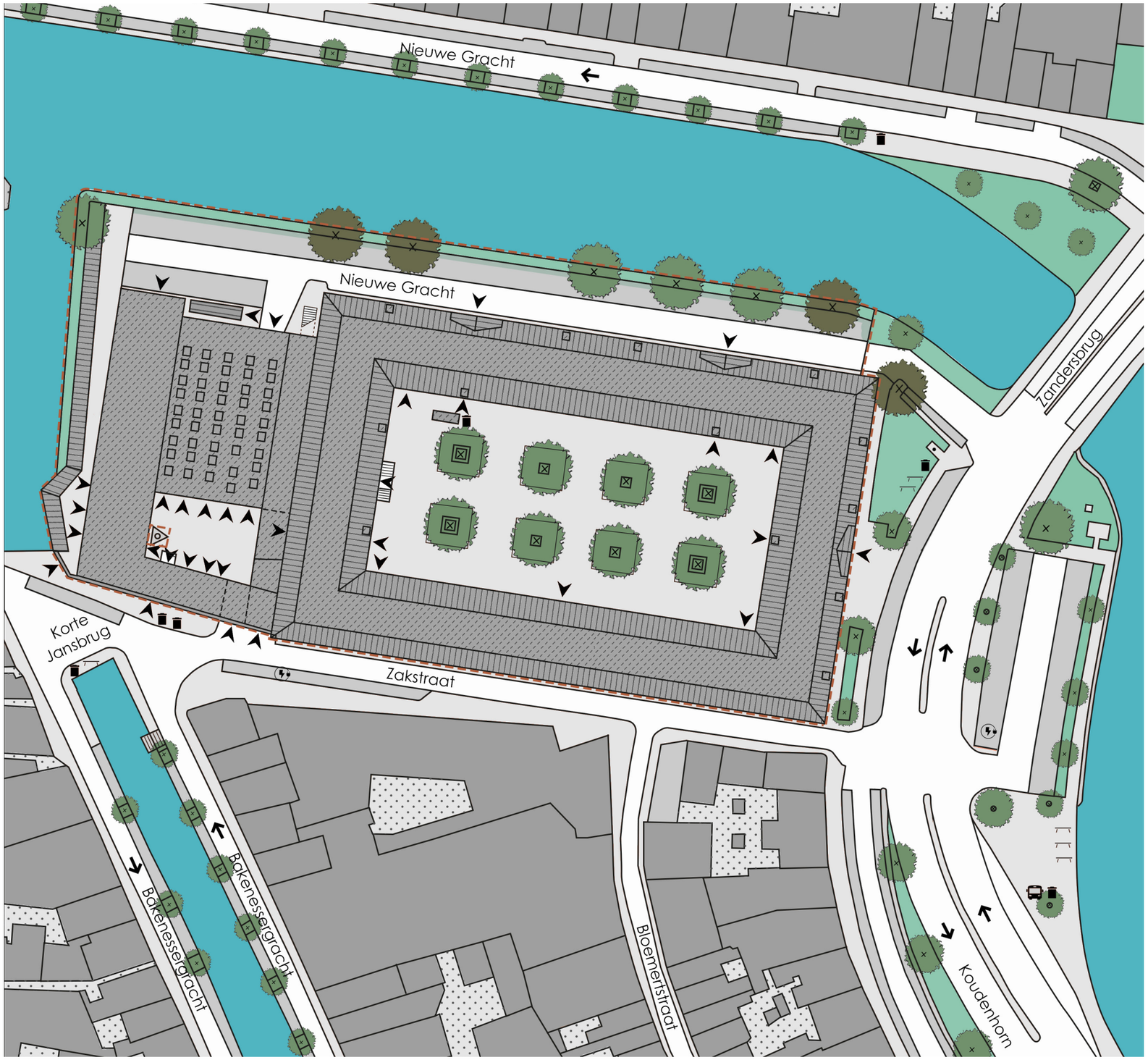
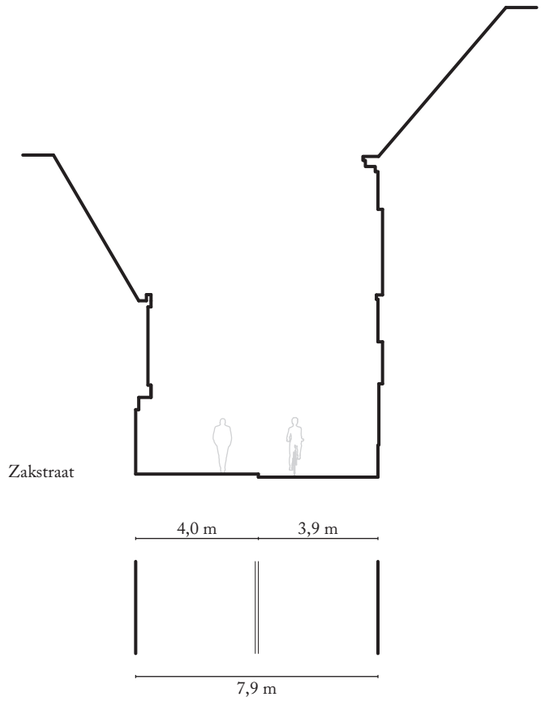
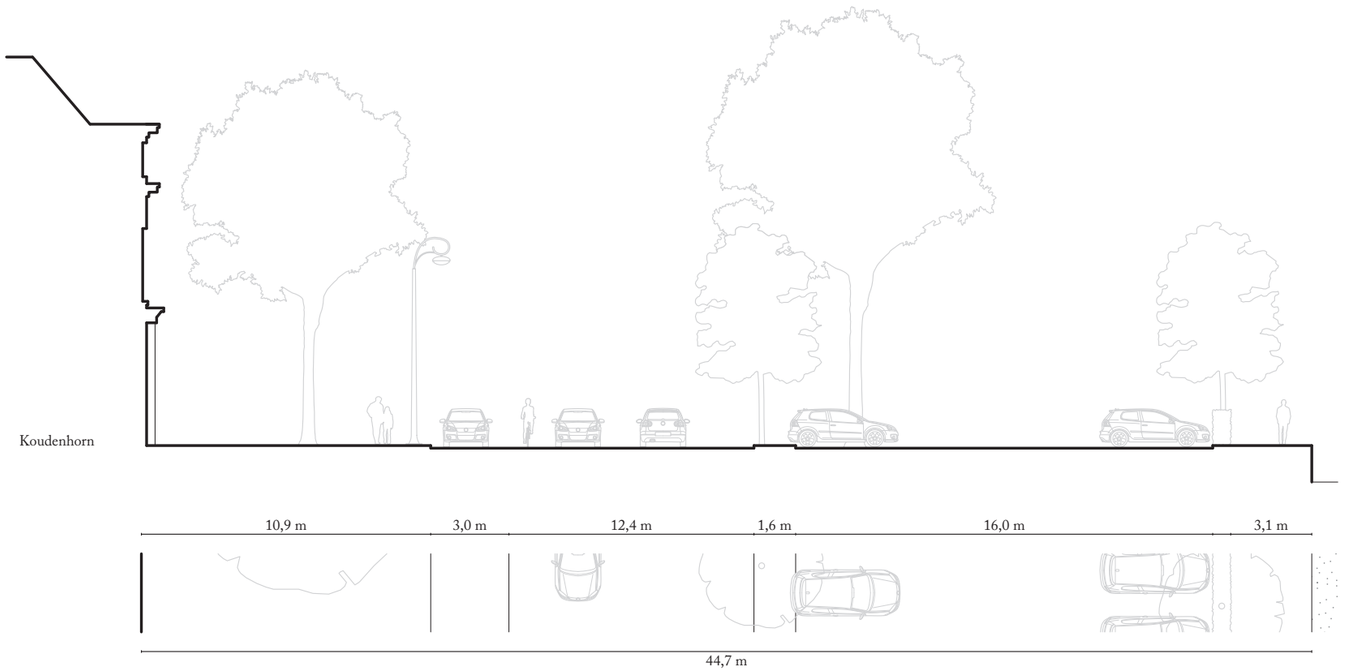



Figure 15: Site plan

# ANALYSES
## 1.3 Functional and spatial analyses
### 1.3.8 Street profiles

On the wide bank is a sidewalk in front of the building's main entrance, the Koudenhorn road which is part of one of the main motorized traffic arterties of the city and a small parking area. To the North the plot is defined by the wide canal of the Nieuwe Gracht. Along the quay, which is used by the police for parking, there are lush trees and bushes. There is no functional connection to the water. The Zakstraat at the Southern side of the building is quite narrow in relation to the height of the surrounding buildings. In combination with their closed character this gives the Zakstraat the appearance of an alley.







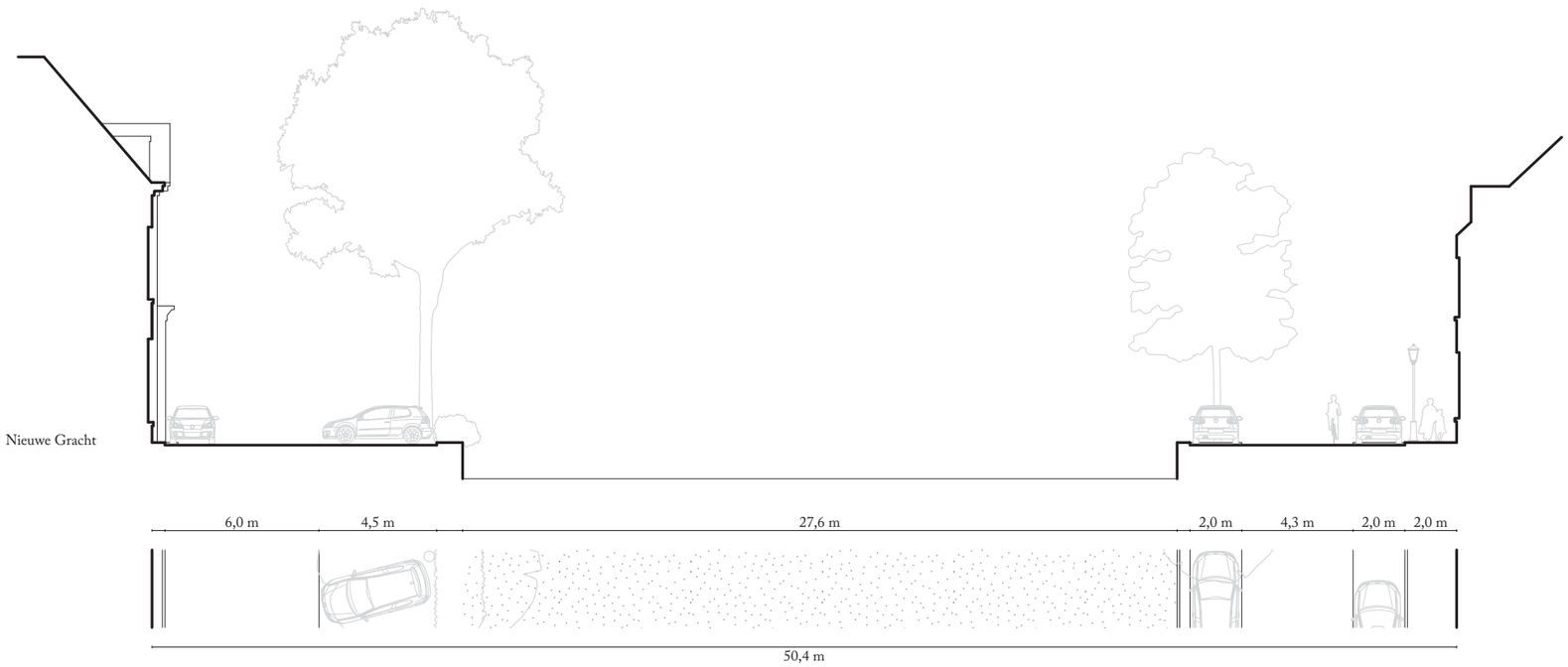
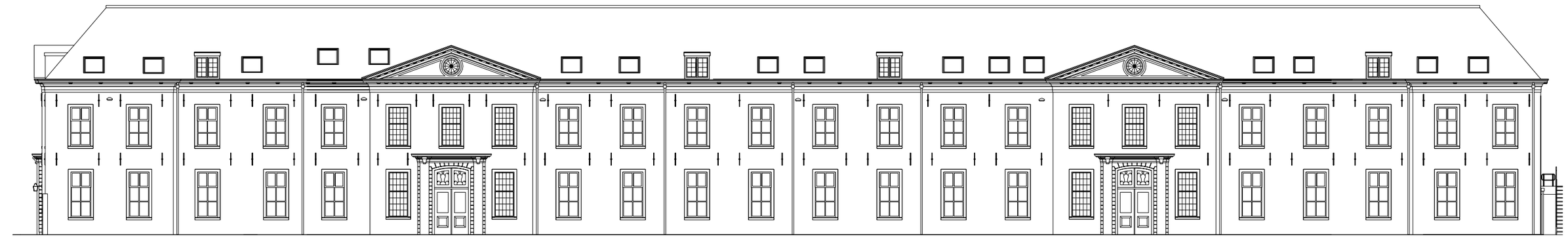



Figure 16: Student group Technical University Delft. (2022, January 1). [Street profiles]

# ANALYSES
## 1.4 Facade analyses
### 1.4.1 Composition



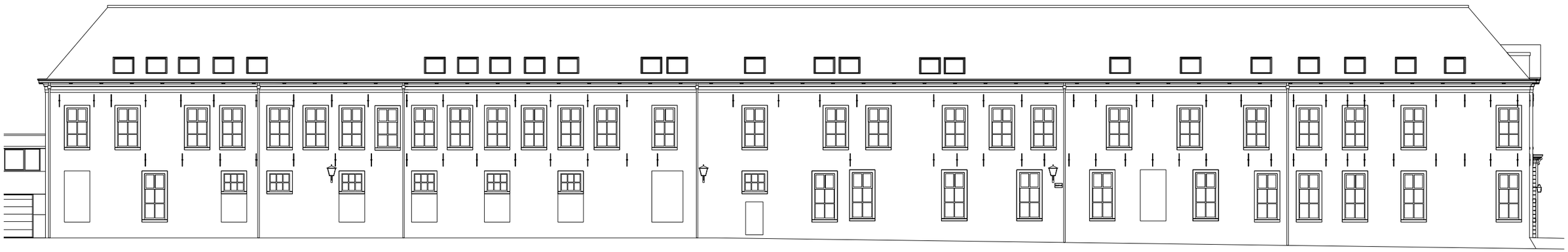


Figure 17: Facade main building Nieuwe Gracht (above) & Zakstraat (beneath)

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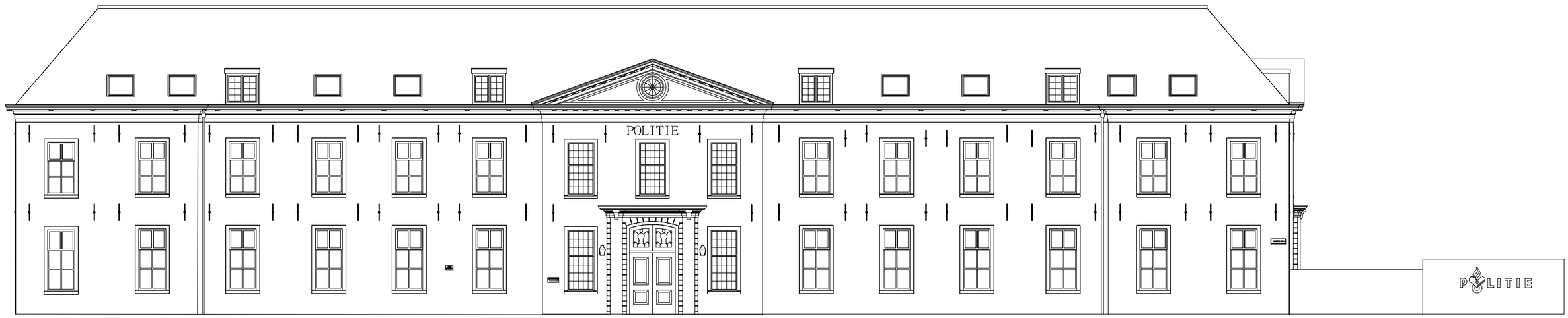


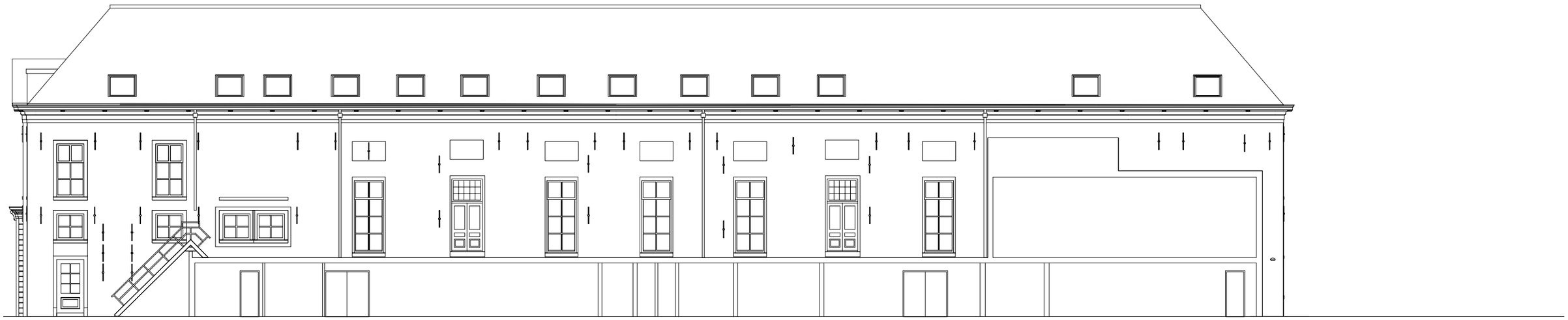

Figure 18: Facade main building Koudenhorn (above) & Bakenessergracht (beneath)

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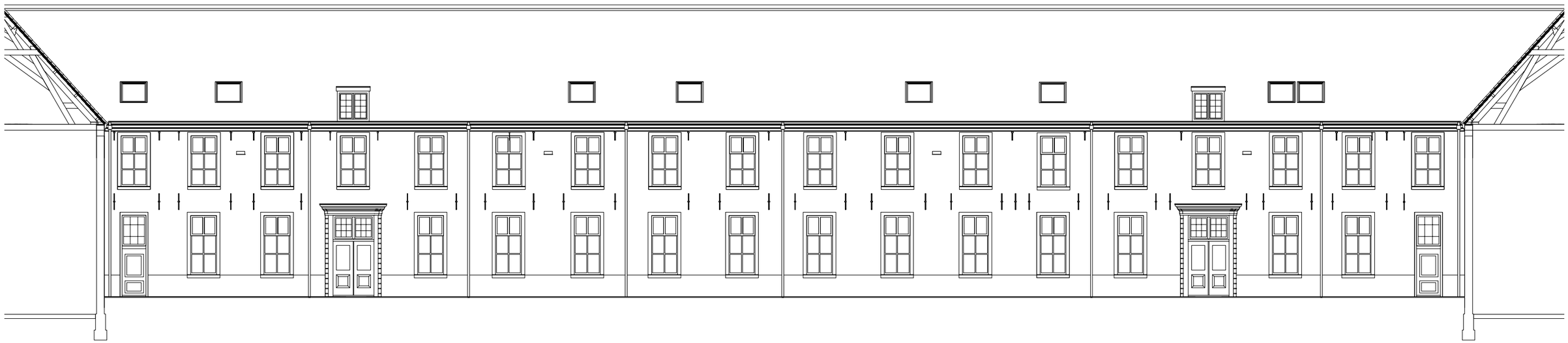



Figure 19: Facade main building courtyard side Nieuwe Gracht (above) & courtyard side Zakstraat (beneath)

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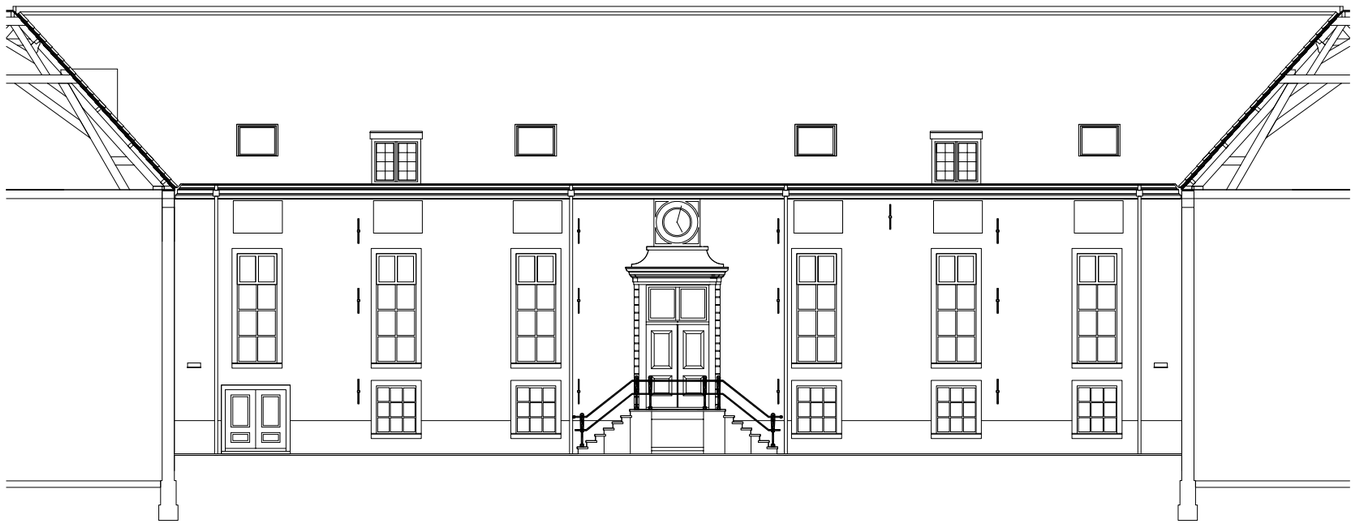

Figure 20: Facade main building courtyard side Koudenhorn (above) & courtyard side Bakenessergracht (beneath)

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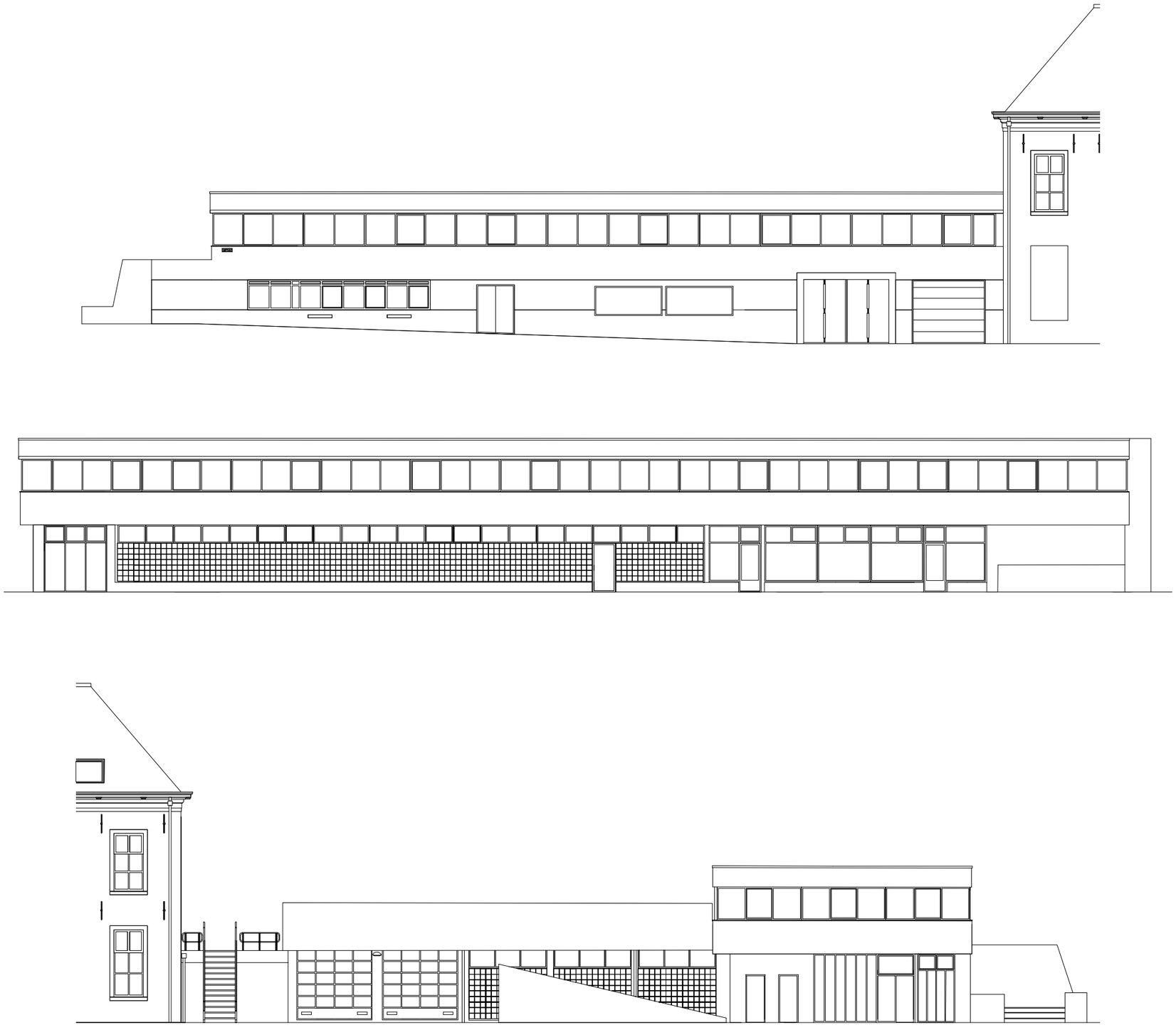



Figure 21: Facade extension Zakstraat (above), Bakenessergracht (middle) & Nieuwe Gracht (beneath)

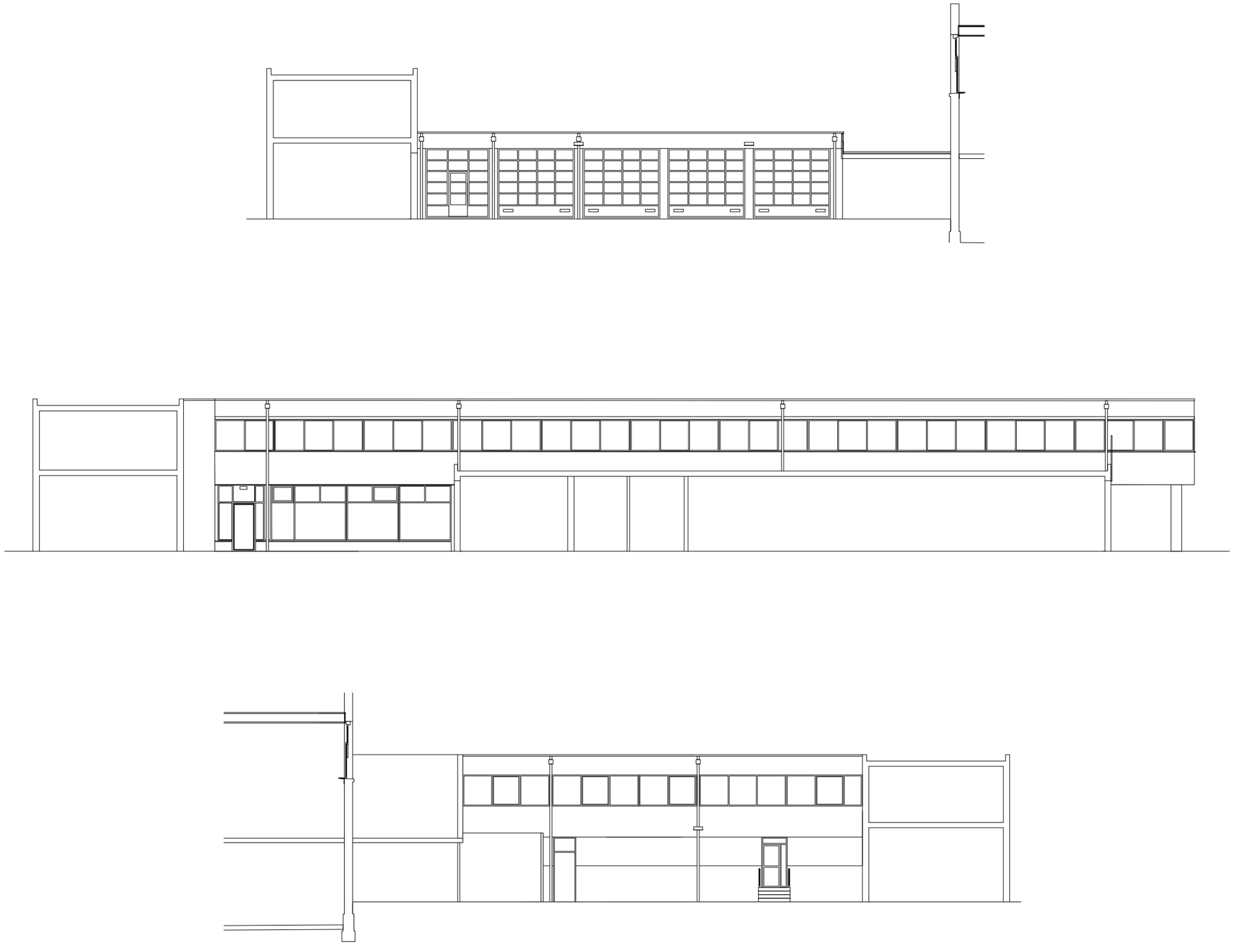


Figure 22: Facade extension courtyard side Nieuwe Gracht (above), courtyard side Bakenessergracht (middle) & courtyard side Zakstraat (beneath)

0 25M

# ANALYSES
## 1.4 Facade analyses



East facade main building



North facade main building



Figure 23: Exterior facades main building South facade main building



West facade main building

# ANALYSES
## 1.4 Facade analyses



West facade courtyard main building



East facade courtyard main building



South facade courtyard main building



North facade courtyard main building

Figure 24: Courtyard facades main building

# ANALYSES
## 1.4 Facade analyses



South facade extension



West facade extension



North facade extension

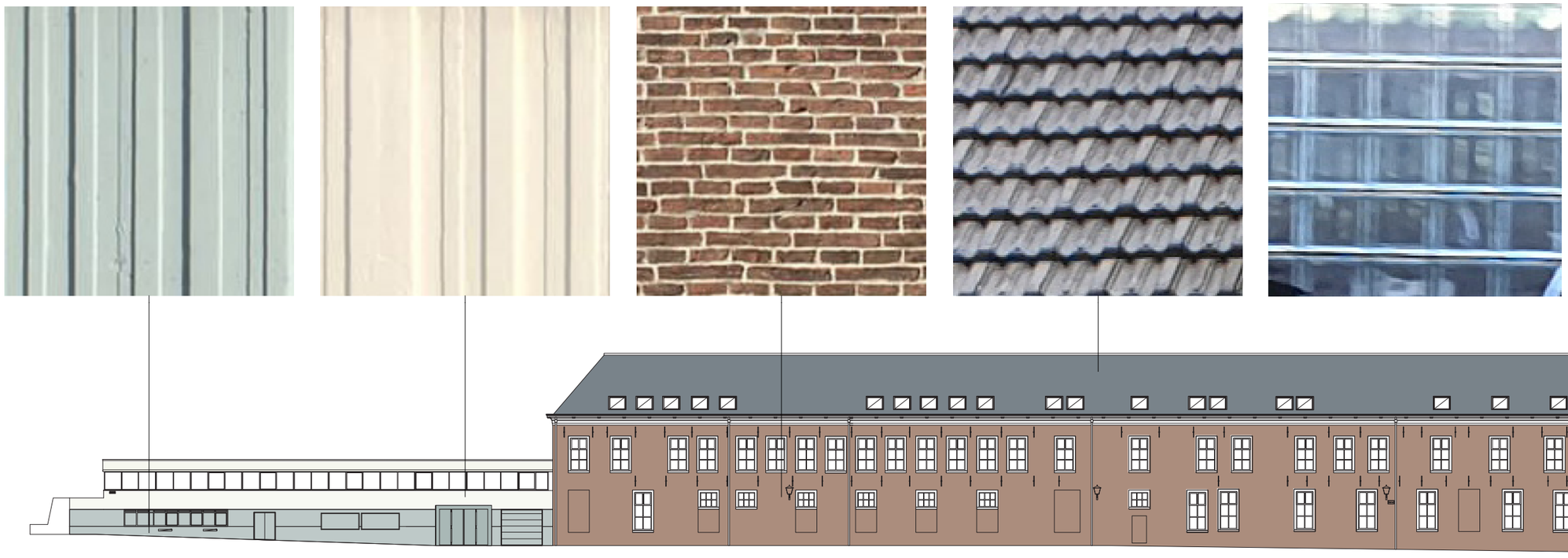


Courtyard facades extension

Figure 25: Facades extension

# ANALYSES
## 1.4 Facade analyses
### 1.4.2 Materialisation and colour

There is a strong contrast between the two parts of the building, partly due to the materialisation and colour. In the main building, the façade consists out of red-brown brickwork in a horizontal direction and a grey tiled roof. In the extension, the façade consists out of white-green concrete panels provided with a profiling in vertical direction. Some facades are also fitted with blue transparent glass blocks. The roof is covered with gravel and black bitumen.



South facade (Zakstraat)

Figure 26: Student group Technical University Delft. (2022, January 1). [Colour and materialisation South facade]

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# ANALYSES
## 1.4 Facade analyses
### 1.4.3 Facade elements

In both building sections, a large number of different building elements can be found. In the main building, the windows have a rod division, except for the skylight. This is out of place and also dangerous for birds. The building elements have simple decorations. The materials used are mainly wood and glass. Some elements are made of metal. In the extension, the elements have no decoration and are functionally designed. The materials used are metal and glass. The building elements of both building parts are in strong contrast to each other.

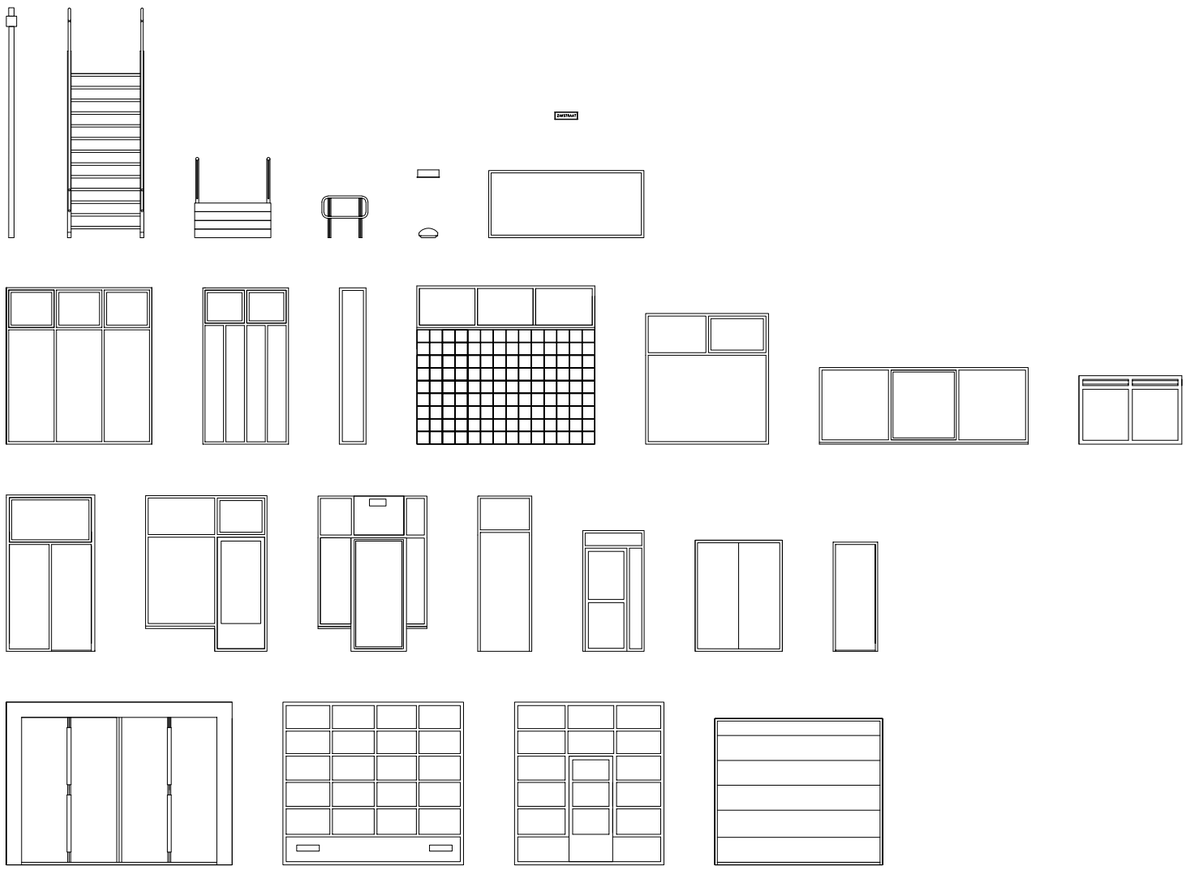


Figure 27: Building elements in the facades of the extension

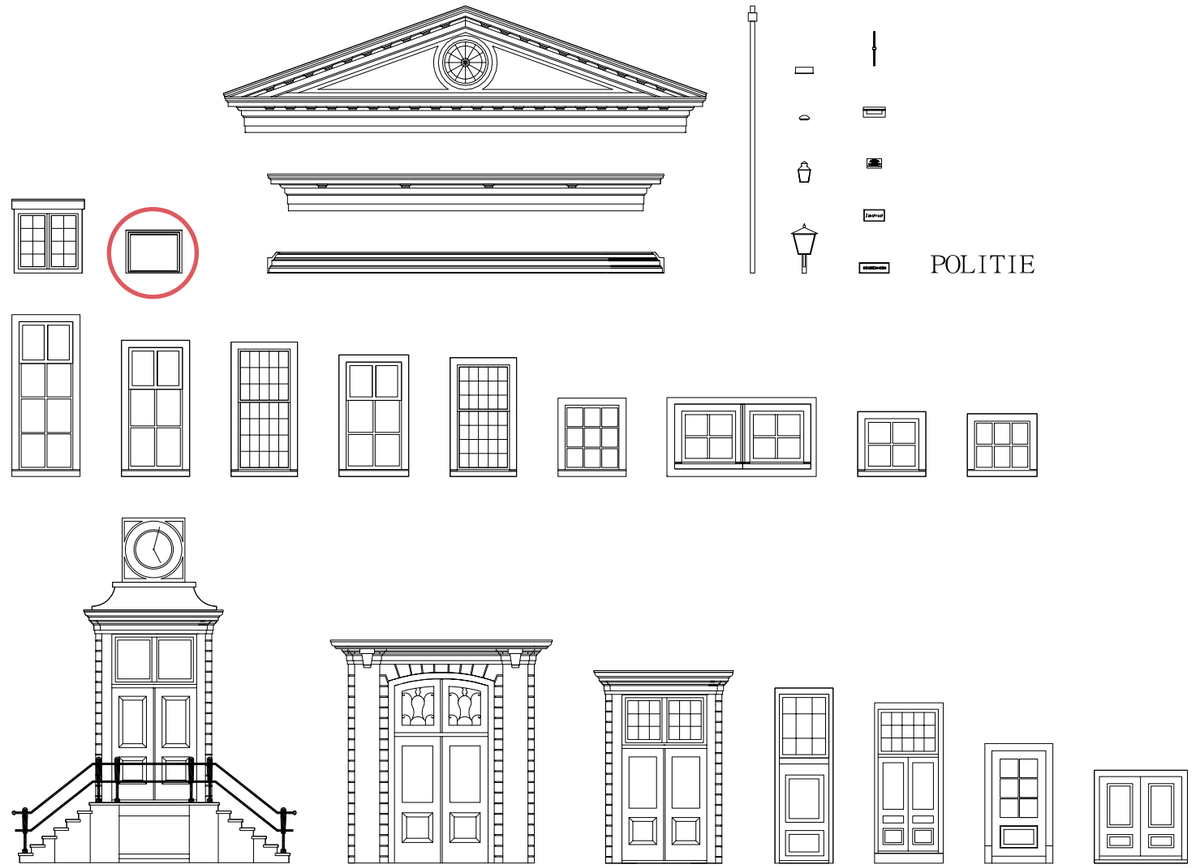



Figure 28: Building elements in the facades of the main building

0 10M

# ANALYSES
## 1.4 Facade analyses

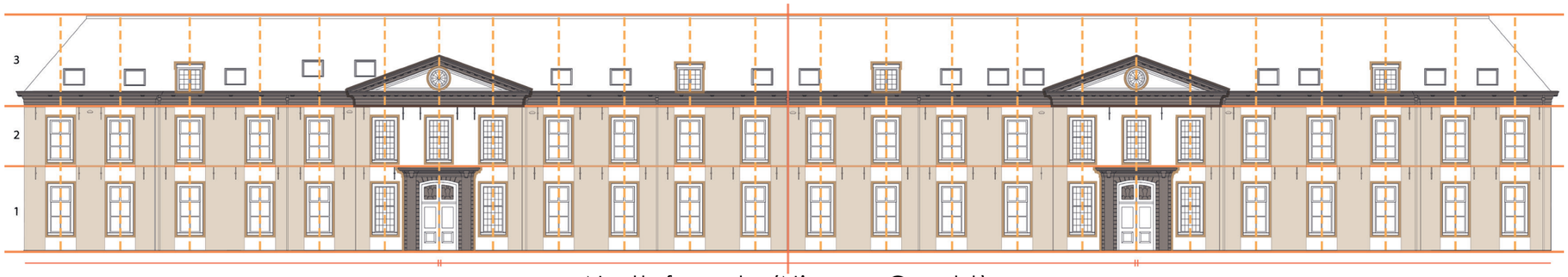
### 1.4.4 Facade layout monument

The main building was built in the neoclassical architectural style. This style is known for the symmetry, hierarchy and rhythm in the facades, with the most important being positioned centrally in the facade. The closed parts seem to indicate a columnar arrangement. The harmony between the facade elements is also important. Pediments are often used in the façades, and the building is restrained in its ornamentation.

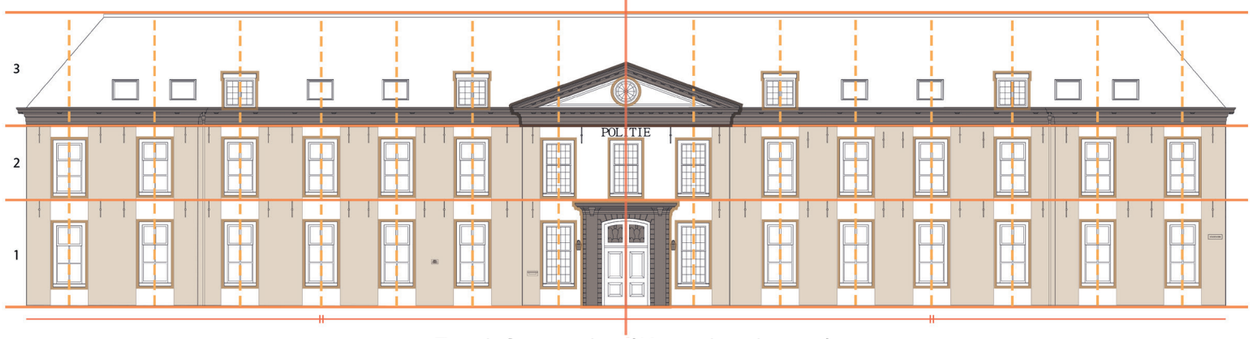
On the side is shown the degree to which the facades connects to neoclassicism. Symmetry and centrality can be found in all façades except for the Southern façade. A clear hierarchy is present everywhere. There is rhythm in the North and East façades and in the courtyard façades, and partial rhythm in the West façade and limited rhythm in the South façade. The same applies to the column arrangement. In the Northern façade, two pediments are visible and in the Eastern façade, a single one. The ornamentation is restrained in all facades. In general, the facades of the building fit in reasonably well with the neoclassicism, except for the South and West facades. For this reason, these facades detract from the building and therefore have an indiffent art value. The South and West façades and the West façade of the courtyard have been greatly modified over time. The other facades follow the layout of the original design. The stylistic features are reminiscent of the building, which gives it an unintentional commemmorative value.

**Legenda**

- Symmetry and centrality
- Hierarchy
- Rhythm
- Column arrangement
- Harmony of building elements
- Pediment
- Ornamentation




North facade (Nieuwe Gracht)




East facade (Koudenhorn)




South facade (Zakstraat)




West facade (Bakenessergracht)

Figure 29: Facade layout main building

0 25M

# ANALYSES
## 1.5 Technical analysis

### 1.5.1 Structure

The exterior walls and certain interior walls are founded on a masonry foundation beam that lies directly on the sand. In addition, there are concrete foundation beams here, under which steel piles have been placed. Under most of the extension, the concrete basement floor lies directly on the sand. At the other places, there is a concrete foundation beam. The construction of the building consists out of a combination of different structural systems. In the extension, concrete walls, columns and beams are used, on which the concrete floors rest. This construction creates a flexible open space on the ground and first floor. The facade of the extension is not load-bearing. In the main building, the original exterior and interior masonry walls support the concrete, steel and wooden columns and beams. The concrete and wooden floors of the floors above lie on top. The presence of many columns allows for a fairly open layout. The wooden floors can be found in the mezzanine floor of the old dinning hall and the largest part of the second floor. In the cell complex, the thick concrete walls in a fixed grid form an interesting space. The wooden roof construction is also craftsmanship and greatly enhances the value of the space.

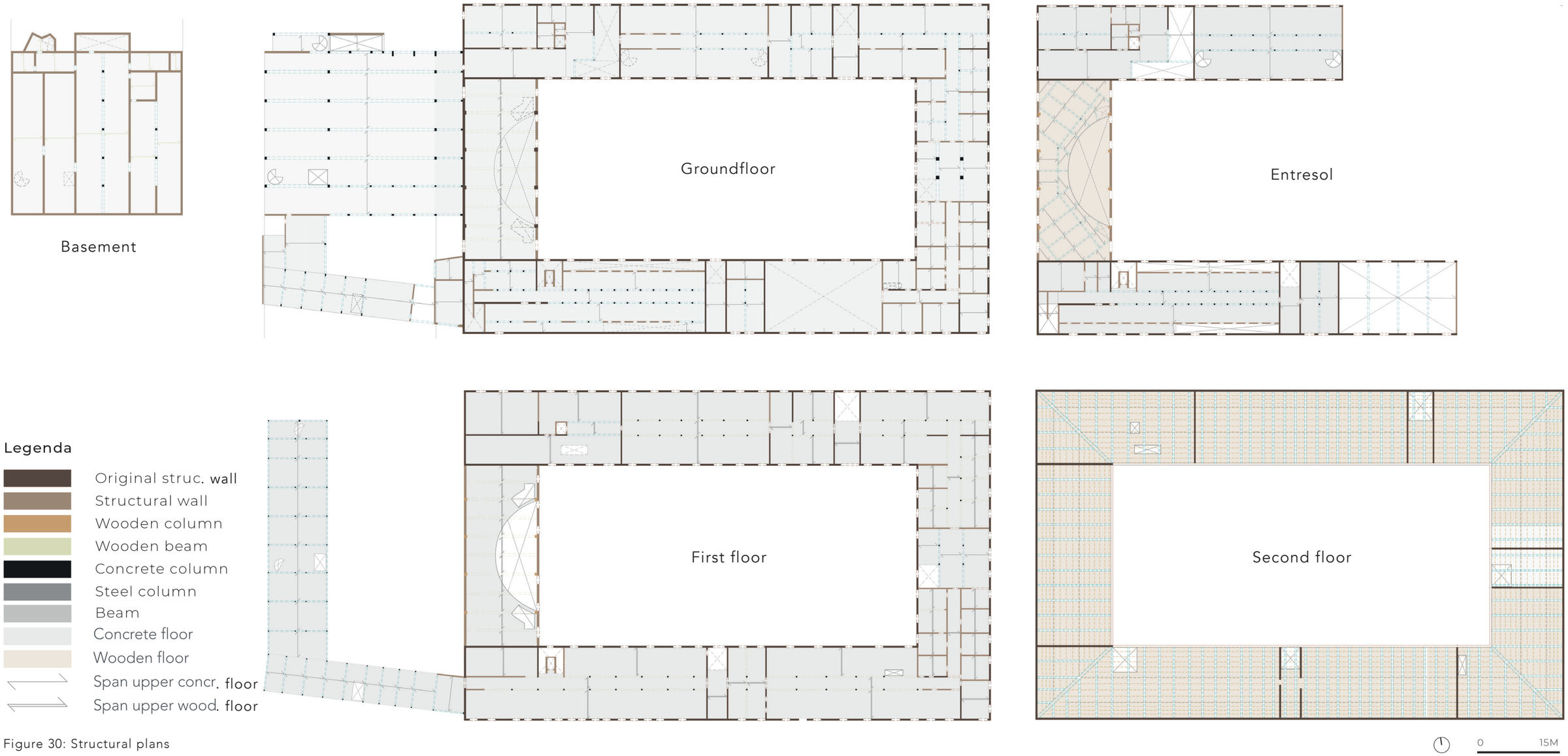
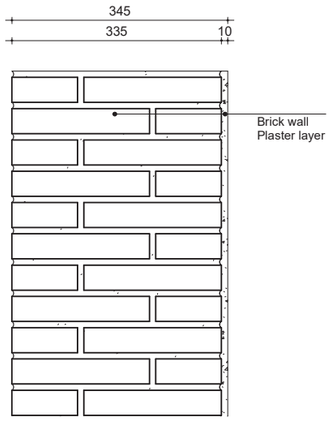



Figure 30: Structural plans

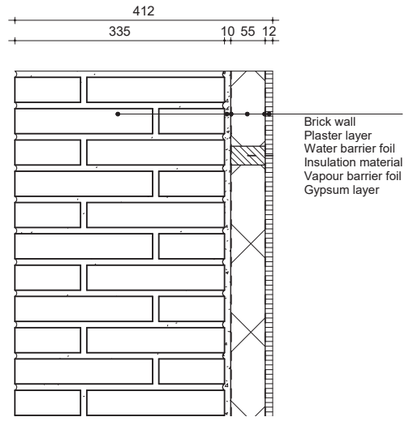
# ANALYSES
## 1.5 Technical analyses
### 1.5.2 Insulation, heating and ventilation

At the moment, the building is poorly insulated and has energy label G. This is because the ground floor and the roof are not insulated and some walls are, but do not meet the current standard. The windows are fitted with rear windows. However, this limits the view and is difficult to use in combination with windows that can be opened. A value of the building is the presence of radiators, openable windows and a mechanical ventilation system.




Existing exterior brick facade uninsulated

Rc = 0.330 < 1.300 m²*K/W



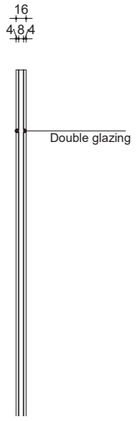

Existing exterior brick facade insulated

Rc = 1.857 > 1.300m²*K/W



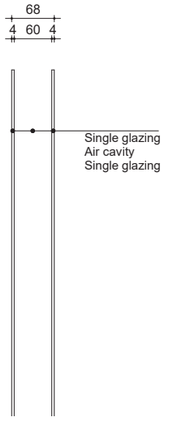

Existing single glazed surface

Rc = 5.800 m²*K/W



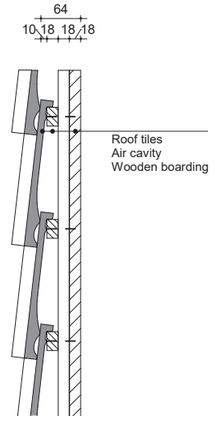

Existing double glazed surface

Rc = 2.800 m²*K/W



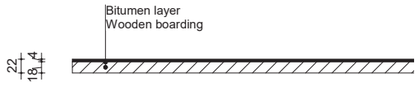

Existing and new insulated glass surface

Rc = 2.800 m²*K/W



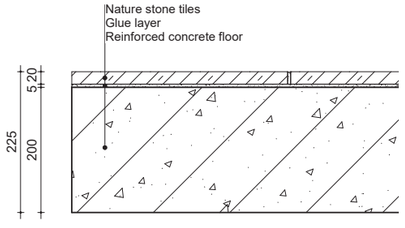

Existing tile roof

Rc = 0.095 < 2.000 m²*K/W



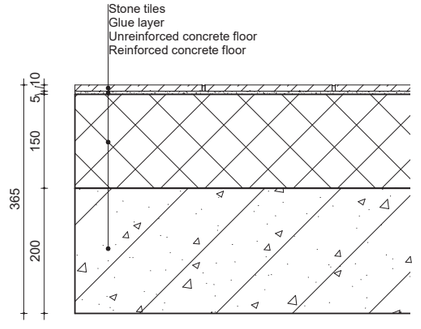

Existing bitumen roof

Rc = 0.109 < 2.000 m²*K/W




Existing ground floor

Rc = 0.101 < 2.500 m²*K/W




Existing ground floor cell complex

Rc = 0.208 < 2.500 m²*K/W

Figure 31: Facade build-up main building

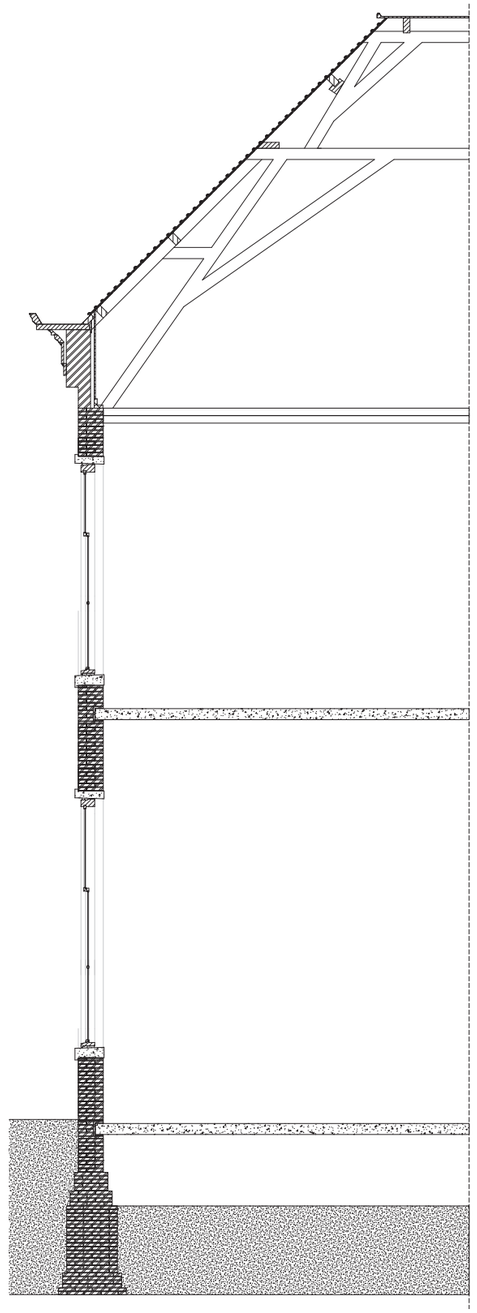


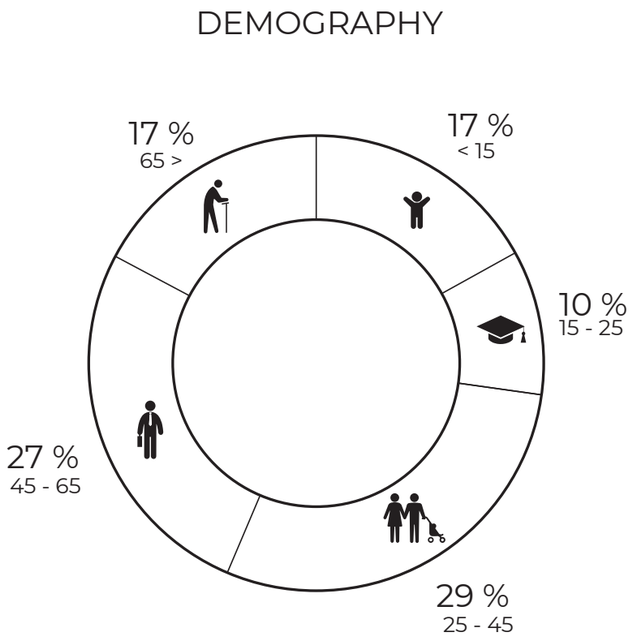
Figure 32: Student group Technical University Delft. (2022, January 1). [Facade section]

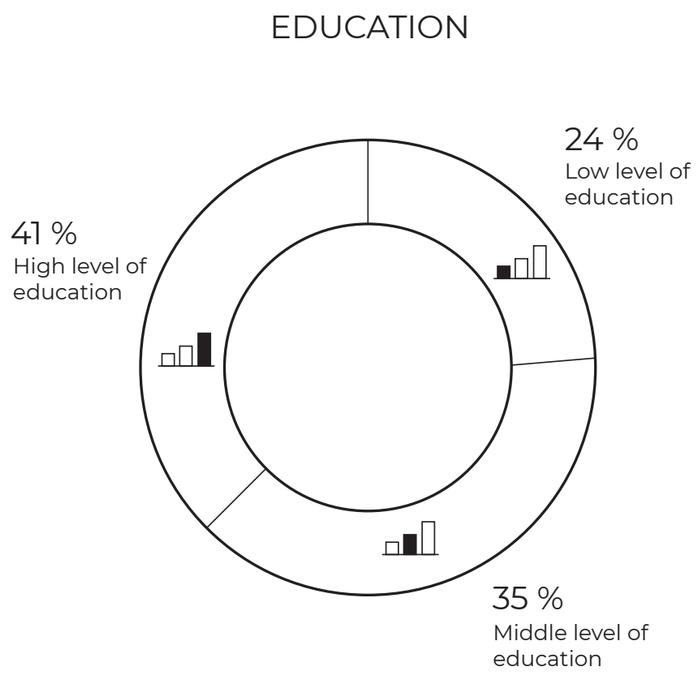
0 1M

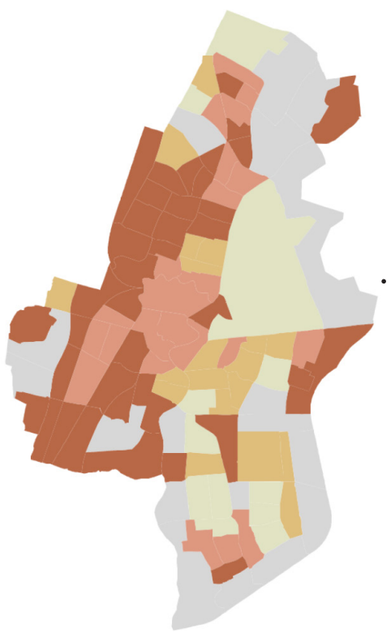
# ANALYSES
## 1.6 Urban analyses

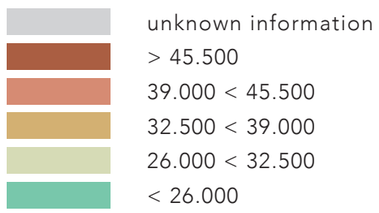
### 1.6.1 Demography

Haarlem has acted as an 'overflow' of Amsterdam since the late 1990s. Because houses in Amsterdam are scarce and expensive, more and more former Amsterdammers chose Haarlem. House prices in Haarlem have therefore risen. This also explains why Haarlem has such a large group of inhabitants between the age group of 25 and 65. Haarlem is also one of the cities in the Netherlands with the highest percentage of journeys done on foot (CBS OV, 2014).



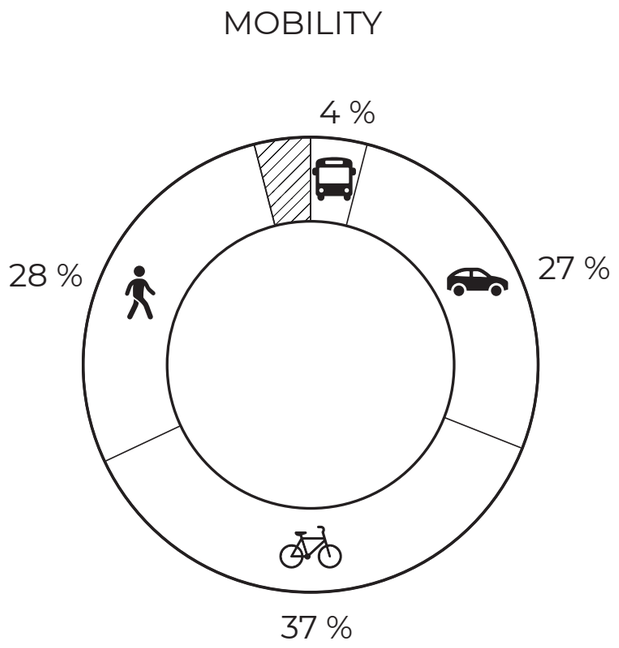




Figure 33: Student group Technical University Delft. (2022, January 1). [Diagrams about the demography of Haarlem].

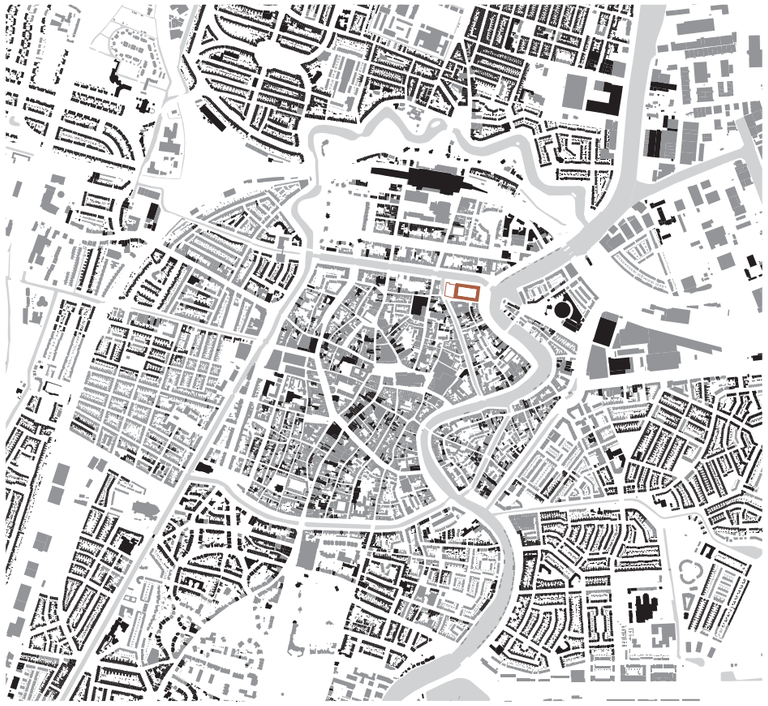
# ANALYSES
## 1.6 Urban analyses

### 1.6.2 Building age

The old centre of Haarlem is mostly concentrated around the Grote Markt, which has been there since the 10th century. Due to its function as a garrison town and provincial capital, Haarlem grew during the 19th century. This was also when our case study, the police station at Koudenhorn, was transformed from an orphanage into a garrison.









Newly build building blocks
Building blocks
Water
Koudenhorn building

0 500M

Figure 34: Student group Technical University Delft. (2022, January 1). [Building age: 1800, 1900, 1950 and 2000].

# ANALYSES
## 1.6 Urban analyses

### 1.6.3 Topography

The topographic elevation map is shown on the side. This map shows that the building heights in the city vary greatly. In the centre, many tall buildings can be found, with the tallest building being the Grote or Sint-Bavokerk. In the neighbourhoods around the centre, the building heights are limited, with a few peaks here and there. The case study is one of the tallest buildings in its immediate surroundings. It also appears that the water is a lot lower than the adjacent land.







Figure 35: Topography height map

# ANALYSES
## 1.6 Urban analyses

### 1.6.4 Functions

A great variety of functions can be seen in the inner city centre of Haarlem. An axis of shops runs throughout the city, with a cluster of shops around the Grote Markt. This square, next to the Grote Kerk creates a space for markets, festivals and concerts that are held here throughout the year.

Different types of buildings with societal functions can be seen throughout the city like the town hall, churches, a court and a library. However, the culture and educational functions are clustered together. All other buildings within the city centre are mainly dwelllings or dwellings in combination with another function.

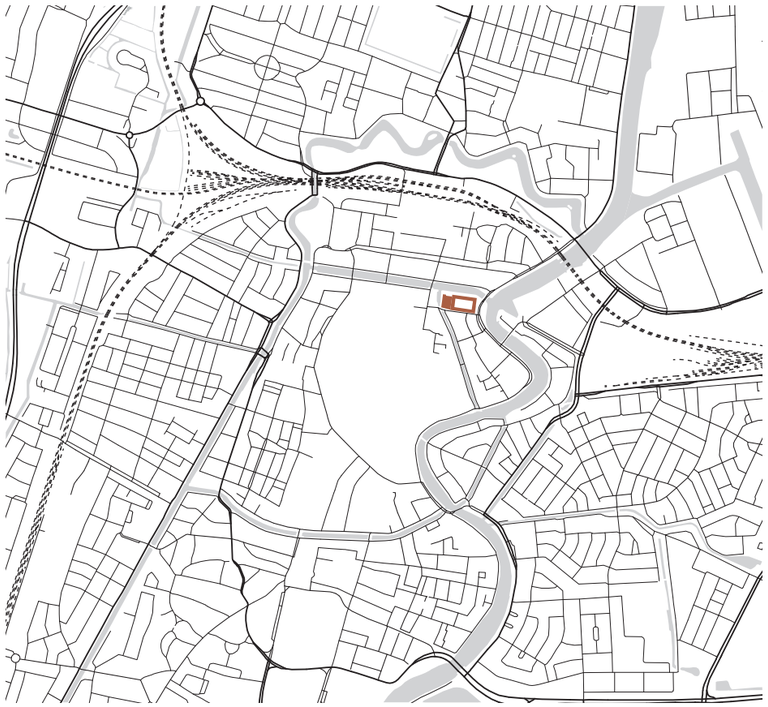



Figure 36: Functions in the city center of Haarlem

# ANALYSES
## 1.6 Urban analyses

### 1.6.5 Infrastructure

Because of its dense inner city, the roads that belong to the tertiary network in the city centre are mostly narrow streets or alleys. Roads along the canals are generally wider than others, leaving space for car parking along the sides. The secondary network connects these smaller streets to the primary network, which runs along the Spaarne and most of the larger canals such as the Nieuwe Gracht and the old ramparts.







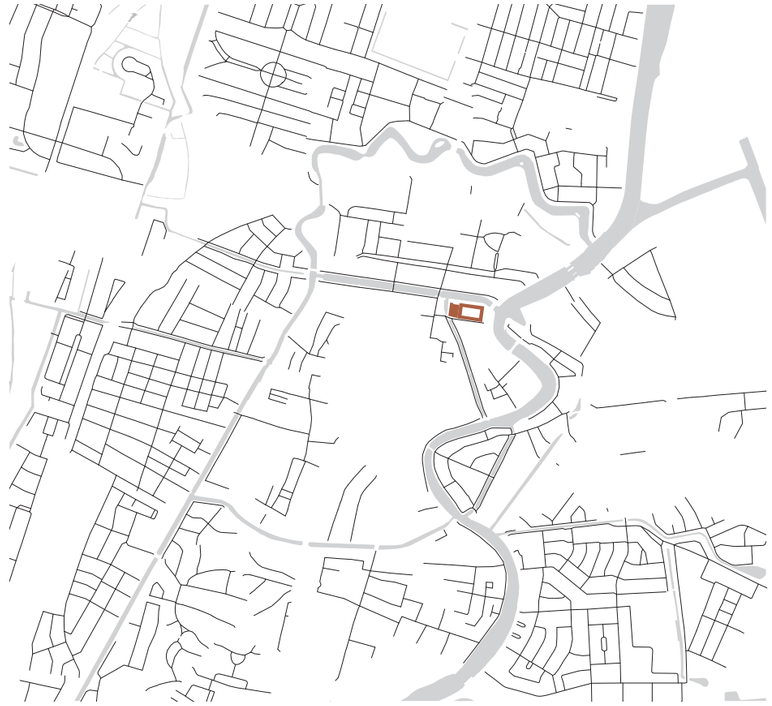


Figure 37: Student group Technical University Delft. (2022, January 1). [Infrastructure: all roads, primary, secondary and tertiary roads.

0 500M

# ANALYSES
## 1.6 Urban analyses

### 1.6.6 Public transport

**Trainstations and busstops**

There is one busstop located on the Koudenhorn in front of the building. However, this is a one direction busline. While the city center of Haarlem is car-free, the busstops are located along the edges of the city center. A larger busstation is located on the square in front of the train station. This busstation is within 10 minutes walking distance from the Koudenhorn, so even without any busstops closeby, the building is still good accessible.




Figure 38: The different busstops and trainstations

# ANALYSES
## 1.6 Urban analyses

**Train and Buslines**

There is one busstop located on the Koudenhorn in front of the building, however, this is a busline in only one direction. While the city center of Haarlen is car-free, the busstops are located along the edges of the city center. A larger busstation is located on the square in front of the train station. This busstation is within 10 minutes walking distance from the Koudenhorn, so even without any busstops closeby, the building is still good accessible.

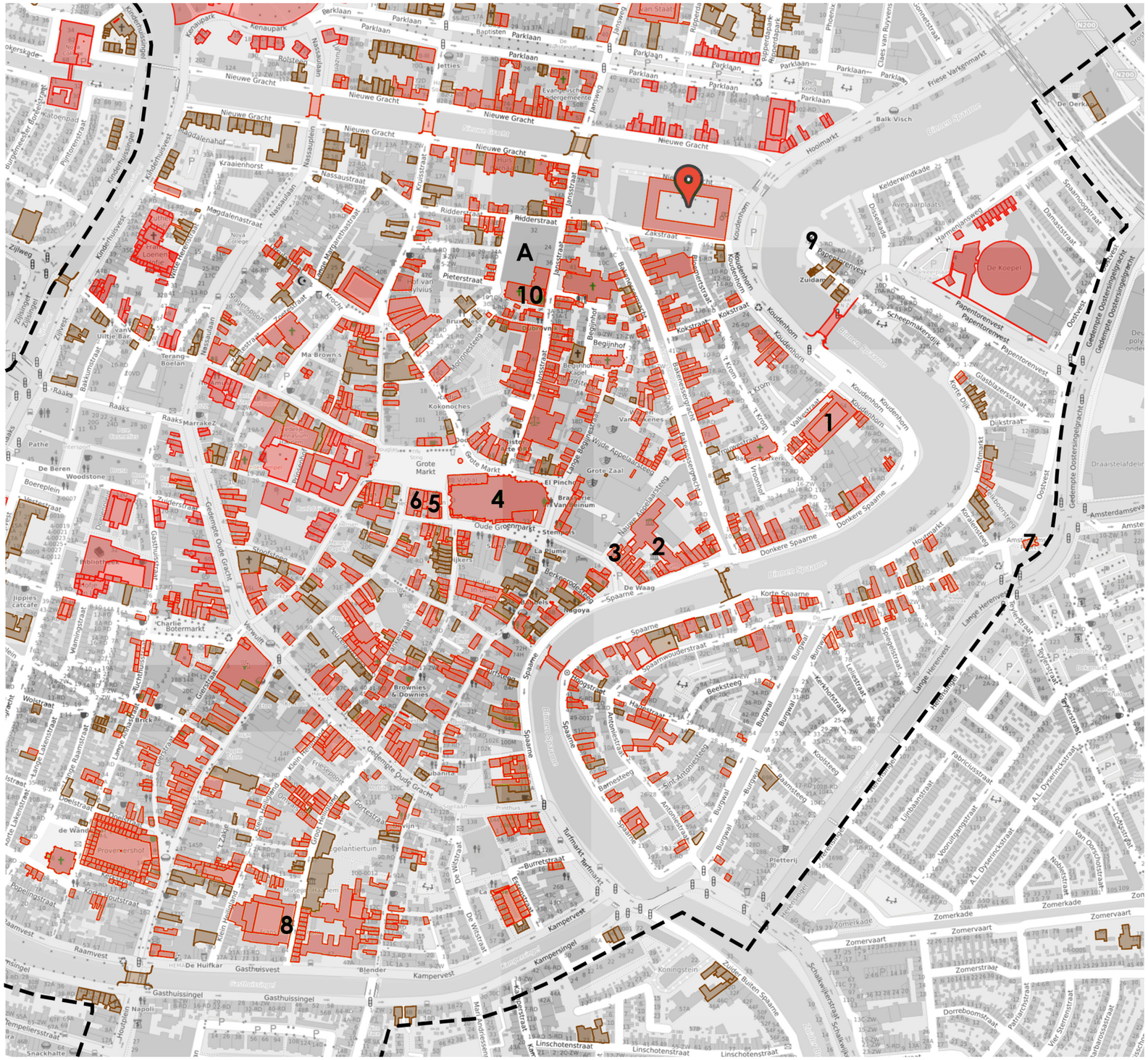



Figure 39: The different train and buslines

# ANALYSES
## 1.6 Urban analyses

### 1.6.7 Cultural historical heritage

In the map on the side, the cultural-historical objects and zones are shown. The map shows that the case study lies within the protected cityscape of Haarlem. A large proportion of the buildings located therein are therefore designated as monumental or image-defining. The case study is a national monument and one of the largest in its immediate vicinity. The numbers show the position of well-known monumental buildings. The case study is fairly close to a number of these monuments. For example, the case study looks out on Molen De adriaan.




| | | | |
|---|---|---|---|
| | National monument | 5 | Vleeshal |
| | Provincial monument | 6 | Frans Hals Museum |
| | Municipal monument | 7 | Amsterdamse poort |
| | Protected cityscape | 8 | Frans Hals Museum |
| A | Haarlem Zuidwest | 9 | Molen De Adriaan |
| B | Haarlem | 10 | Oneindig Noord-Holland |
| 1 | Teylers Hofje | | |
| 2 | Teylers Museum | | |
| 3 | Pieter Teylers Huis | | |
| 4 | De Grote of St. Bavokerk | | |

Figure 40: Cultural historical heritage objects and zones

# ANALYSES
## 1.6 Urban analyses

### 1.6.8 Hofjes in Haarlem

The city of care

Haarlem is known for its many courtyards dotted throughout the centre, although many of these courtyards are hidden away inside urban blocks. The police station at Koudenhorn houses a courtyard, but in this case it is completely closed off from the public.

The care of the poor and the deprived in Haarlem dates back to the end of the 14th century. Haarlem was then already a trading center and in this small society poverty arose. The care expressed itself mainly in a private sense, but the city of Haarlem itself also contributed. In the early years (1431-1593), mainly many hospices and hofjes were founded, to which a few old men's homes were added later. Around 1600 even more hofjes arose, mainly because every church created their own hofjes back then.

The "Nederlandse Hervormde Diaconie" was in financial decline and the Vroedschap (early modern type of college) devised means to help it and saw a vision in the establishment of a large Diaconate House, which was decided in 1767. On the Oxmarket (currently the Koudenhorn), the new Diaconate was built in 1768-1770 on the site of several houses that were demolished. In 1786 the poor of the almshouse, the poor of the almshouse and the workhouse were moved here and it was called the United Diaconate and Almshouse (Kurt, z.d.).

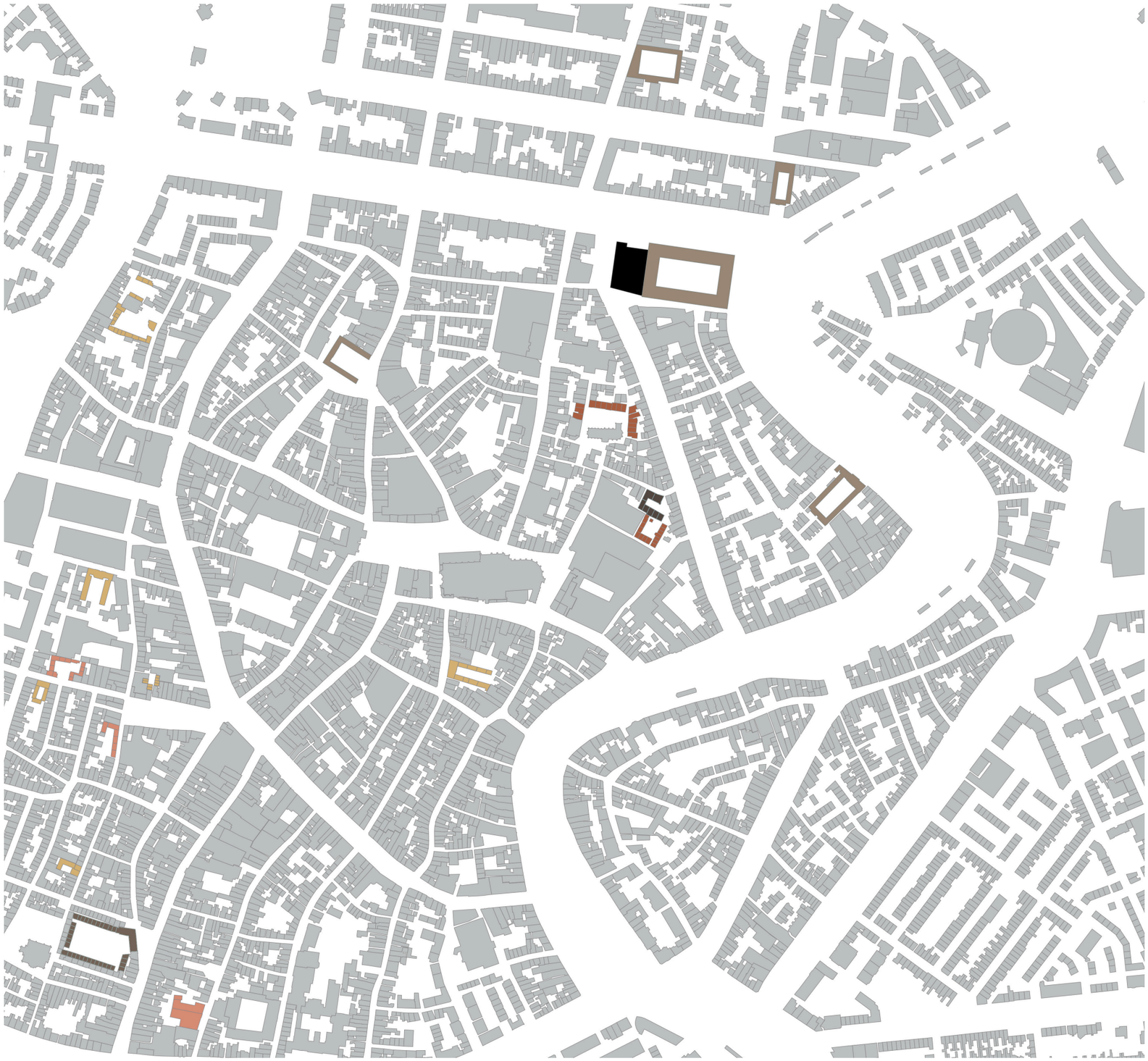



Figure 41: The hofjes of Haarlem and their building age

# ANALYSES
## 1.6 Urban analyses
### 1.6.9 City skyline

Looking West from the Spaarne out over the city skyline, it becomes clear that the city centre consist mainly of lowrise buildings, with a few exceptions. Several churches and their bell towers rise above their surroundings, most significant of which is Saint Bavo's church, located in the very heart of the city. The two modern exceptions are the civic theatre & philharmonic building from the early 20th century and a seemingly out of place residential tower from the 1970's next to the central station.

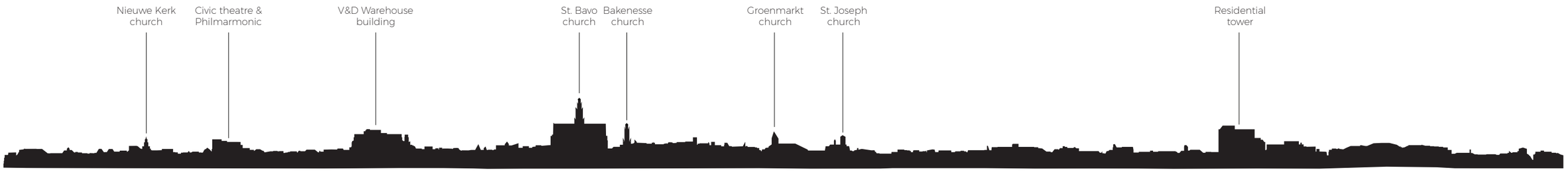



Figure 42: Student group Technical University Delft. (2022, January 1). [Skyline of Haarlem seen from the Spaarne]

0 100M

### 1.6.10 Urban masterplan and policy

The vision of the municipality of Haarlem for 2045 elaborates on six main topics; a climate proof city, energy transition, strengthening of the social tissue, improving the attractiveness as living and working city, Haarlem as a healthy city for humans and animals and the Haarlem as sustainable and accessible city. These topics are translated into six strategical choices formulated as:

1. Mixing and condensing

This first topic relates to three of the in total 12 key focusses that aim to concentrate the construction of new housing in large scale urban developments and add a substantial amount of jobs in the Waarderpolder and close to public transport nodes. The developments however should not impact the exiting neighborhoods with their mix and character.

2. Neighborhood oriented developments

The topic related to the neighborhoods aims to strengthen the so called 10-minute networks and city streets and to strengthen the social basis and places for meeting and encounters in the areas.

3. Greening and rewetting

Two key focusses related to this topic are the aim to create space for climate adaptation at the expense of space for cars and strengthening of the 'boezemwater' structure.

4. Promote healthy living environment

The aims for this strategical choice are to improve the quality in the countryside by upgrading the nature value of farmland and the strengthening of ecological connections between hotspots.

5. Space for energy transition

The fifth strategical choice aims to free up space for energy transition.

6. Mobility transition

The last topic of strategical choices aims to improve the regional bicycle network and connect it to the 10-minute networks and the development and improvement of public transport nodes.




Figure 43: Omgevingsvisie Haarlem 2045 (Gemeente Haarlem, 2021)

# ANALYSES
## 1.6 Urban analyses

### 1.6.11 Zoning plan

The figure shows that the plot is divided into four parts, for which different zoning plans apply. Below, the relevant zoning plans are explained and what applies to that plan area is described. On the next page, the various terms are explained and the rules are described. The information is taken from Ruimtelijkeplannen.nl, n.d..

**Bakenes - irrevocable (2013-06-06) & Reparatieplan C Haarlem 2020 - irrevocable (2021-04-22)**

I
Status: National monument
Functional designation: Societal and residential
Value: Archaelogical & protected cityscape
Specific building indication
Dimensions: Gutter height 10m

II
Functional designation: Garden
Value: Archaelogical & protected cityscape

III
Status: Non-monumental
Functional designation: Societal and residential
Value: Archaelogical & protected cityscape
Non-specific building indication
Dimensions: Maximum building height 4m

IV
Status: Non-monumental
Functional designation: Societal and residential
Value: Archaelogical & protected cityscape
Non-specific building indication
Dimensions: Maximum building height 7m

**Parapluplan parkeernormen Haarlem 2018 - irrevocable (2018-05-17)**

Societal and residential functions
Garden function
Archaeological value and protected cityscape




Figure 44: Zoning plan

# ANALYSES
## 1.6 Urban analyses

### Societal and residential

**Destination description**

• Library, after-school care, cultural, ideological, medical & educational facilities, health care, (public) service, playgroup, practice area, welfare institution and care home
• Sports activities, retail trade and hospitality facilities in categories 1 and 2 that are subordinate to the main function.
• Attached facilities
• Following from the ''Reparatieplan C Haarlem 2020'', in addition to permitted destinations, the function of residential is also permitted

**Building regulations**

• The height of garden fences behind the front façade line shall be a maximum of 2 metres, in front of the front facade line is a maximum of 1 meter
• Other structures shall only be placed behind the frontage and shall have a maximum height of 3 metres
• The height of the construction to support planting in front of the frontage line has a maximum height of 2 metres, provided that 70% of the construction will be open.

**Deviation**

• The competent authority may deviate from the functional zoning, provided that the nature and impact of the function on the environment is comparable to the functional zoning.

### Garden

**Destination description**

• Gardens and paving

**Building regulations**

• The height of garden fences behind the front façade line shall be a maximum of 2 metres
• The depth of an underground structure shall not exceed 7 metres

### Value - Archaeology

**Destination description**

• Protection of archaeological values

**Building regulations**

• For soil-disturbing activities deeper than 0.3 metres, an archaeological report must be submitted.
• It may be necessary to take measures to preserve archaeological remains, such as excavations and guidance by an archaeological expert

### Value - protected townscape

**Destination description**

• Preservation, restoration and development of cultural-historical and spatial value

**Building regulations**

*Building surface*

• Buildings must be placed within the building area.

*Underground structure*

• The depth of an underground structure is maximum 7 metres

*Roof/ ridge direction/ shape*

• For the specific building indication, the existing ridge direction and roof shape must be maintained, with the exception of
the subordinate components
• The maximum ridge height is 4 metres measured from the gutter and the angle of inclination is between 45 and 70 degrees.

*Dormers*

• Dormers are not to exceed 2.5 metres in width.
• The underside of the dormer window must be placed between 0.5 and 1.0 metres above the eaves or less than 0.5 metres at a maximum width of 1.5 metres.
• The distance between the top of the dormer window and the roof peak is at least 0.5 metre.
• For dormers in the front roof plane or the side roof plane facing the public area, the distance from the side of the dormer to the side of the roof plane will be at least 0.9 metres; for other roof planes the minimum distance is 0.5 metres.
• In case of more than one dormer, they must be arranged in a regular way and have a distance of 0.5 metres between them.

*Roof terrace*

• Situated on an extension
• Located at least 2 metres from the property boundary
• The roof terrace is accessed from the inside
• The privacy screens are not higher than 1.5 metres and deeper than 2.5 metres
• The distance to the opposite rear walls is at least 15 metres
• Provided with a partition with a maximum height of 1.2 metres
• No structures are to be placed on the roof terrace

*Collectors and panels*

• Not visible from the public area
• Placed on a roof
• On a pitched roof the collectors and panels remain within the roof plane, are placed in or on the roof plane and have the same slope angle as the roof plane
• On a flat roof the collectors and panels must remain at the same height as the collector or panel from the edge of the roof.

### Parapluplan parkeernormen Haarlem 2018

• Guideline for the parking norms required for the various functions

# ANALYSES
## 1.7 Value assessment

The value assessment is about the surroundings, site, exterior skin, structure, space plan, interior skin, services, stuff and spirit of the place of the building. In the diagram, the various elements are arranged per category and they are valued on 8 values by means of a color code. A blue box means an high value, a green box a positive value and a yellow box an indifferent value. An high value equals 3 points, a positive value equals 2 points and an indifferent value equals 1 point. In the last row, the assigned values are added up. If an element scores below 9 points, it gets an indifferent value, between 9 and 12 points a positive value and above 12 points an high value. In the façade drawings, site plan and floorplans on the following pages, the elements in the façade are indicated by their color. In addition, each element is explained separately as to why it has a certain value.

The diagram shows that the location in the city, water, monumental trees, interior entrances, exterior entrances, clock entrance, wall windows round, roof edges, platform, facade layout main building, roof structure, wooden columns, courtyard, old entrances and the old dinning hall have an high value. The broadcasting tower, bicycle shed, fences, planting, benches around trees, car parking, exterior concrete and glass block walls, bitumen and gravel roof, exterior doors extension, garage doors, wall windows extension, roof windows, roof domes, roof fences, staircase, functional lighting, Koudenhorn and Zakstraat street signs, posterboards, layout South and West facade, layout, interior glass and closed walls, bamboe, carpet & linoleum floor finishes, ceilings, interior wooden doors, interior windows, interior steel and concrete staircases, glass balustrades, ventilation system and spirit of the place have an indifferent value. The final colour code tells which elements can form the basis of a design, which can and cannot be changed, or which elements could best be removed.

High value
Positive value
Indifferent value

| Elements by category / Values | Age value | Historical value | Int. commemorative value | Non int. commemorative value | Use value | New-ness value | (Relative) Art value | Rarity value | Total value |
|---|---|---|---|---|---|---|---|---|---|
| **Surroundings/setting** | | | | | | | | | |
| Location in the city | | | | | | | | | 13 |
| Water | | | | | | | | | 17 |
| **Site** | | | | | | | | | |
| Broadcasting tower | | | | | | | | | 8 |
| Bicycle shed | | | | | | | | | 7 |
| Smoking shelter | | | | | | | | | 9 |
| Quay walls | | | | | | | | | 11 |
| Entrance gate | | | | | | | | | 9 |
| Fences | | | | | | | | | 6 |
| Green | | | | | | | | | |
| Trees | | | | | | | | | 13 |
| Planting | | | | | | | | | 7 |
| Benches around trees | | | | | | | | | 8 |
| Car parking | | | | | | | | | 8 |
| **Skin (exterior)** | | | | | | | | | |
| Exterior walls | | | | | | | | | |
| Exterior brick walls | | | | | | | | | 12 |
| Exterior concrete walls | | | | | | | | | 8 |
| Exterior glass block walls | | | | | | | | | 8 |
| Roof | | | | | | | | | |
| Tile roof | | | | | | | | | 12 |
| Bitumen roof | | | | | | | | | 6 |
| Gravel roof | | | | | | | | | 7 |
| Entrance | | | | | | | | | |
| Exterior entrances | | | | | | | | | 18 |
| Interior entrances | | | | | | | | | 15 |
| Clock entrance | | | | | | | | | 18 |
| Entrance extension | | | | | | | | | 9 |
| Exterior doors | | | | | | | | | |
| Exterior doors main build. | | | | | | | | | 10 |
| Exterior doors extension | | | | | | | | | 8 |
| Garage doors | | | | | | | | | 7 |
| Windows | | | | | | | | | |
| Wall windows main build. | | | | | | | | | 10 |
| Wall windows extension | | | | | | | | | 7 |
| Wall windows round | | | | | | | | | 14 |
| Roof windows | | | | | | | | | 7 |
| Roof domes | | | | | | | | | 7 |
| Roof dormers | | | | | | | | | 10 |
| Roof edges | | | | | | | | | 14 |
| Gutters | | | | | | | | | 11 |
| Facade anchors | | | | | | | | | 10 |
| Roof fences | | | | | | | | | 6 |

Figure 45: Value assessment table

# ANALYSES

## 1.7 Value assessment

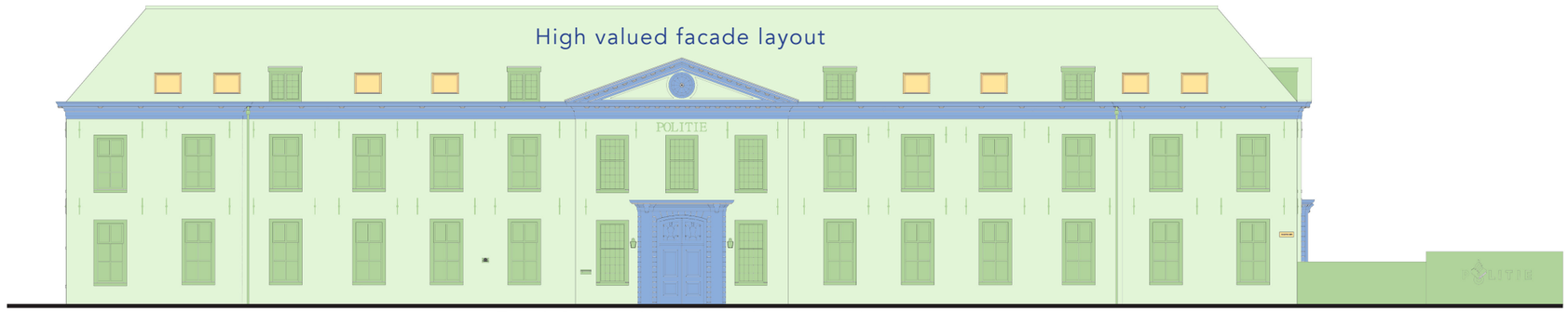
High value
Positive value
Indifferent value

| Elements by category | Values | Age value | Historical value | Int. commemorative value | Non int. commemorative value | Use value | New-ness value | (Relative) Art value | Rarity value | Total value |
|---|---|---|---|---|---|---|---|---|---|---|
| Platform | | | | | | | | | | 13 |
| Staircase | | | | | | | | | | 7 |
| Letterbox | | | | | | | | | | 11 |
| Lighting | | | | | | | | | | |
| Decorative lighting | | | | | | | | | | 10 |
| Functional lighting | | | | | | | | | | 8 |
| Street signs | | | | | | | | | | |
| Koudenhorn street sign | | | | | | | | | | 8 |
| Zakstraat street sign | | | | | | | | | | 8 |
| Police sign | | | | | | | | | | 11 |
| Information sign | | | | | | | | | | 9 |
| Posterboards | | | | | | | | | | 6 |
| Facade layout | | | | | | | | | | |
| Layout main building | | | | | | | | | | 13 |
| Layout South and West | | | | | | | | | | 6 |
| **Structure** | | | | | | | | | | |
| Structural walls | | | | | | | | | | |
| Structural brick walls | | | | | | | | | | 12 |
| Structural concrete walls | | | | | | | | | | 9 |
| Roof structure | | | | | | | | | | 15 |
| Columns | | | | | | | | | | |
| Wooden columns | | | | | | | | | | 13 |
| Concrete columns | | | | | | | | | | 9 |
| Beams | | | | | | | | | | |
| Timber beams | | | | | | | | | | 10 |
| Concrete beams | | | | | | | | | | 9 |
| Floors | | | | | | | | | | |
| Timber floors | | | | | | | | | | 9 |
| Concrete floors | | | | | | | | | | 9 |
| **Space plan** | | | | | | | | | | |
| Courtyard | | | | | | | | | | 17 |
| Old entrances | | | | | | | | | | 13 |
| Old dinning hall | | | | | | | | | | 15 |
| Cell complex | | | | | | | | | | 10 |
| High open space | | | | | | | | | | 8 |
| Layout | | | | | | | | | | 5 |
| **Skin (interior)** | | | | | | | | | | |
| Interior walls | | | | | | | | | | |
| Interior glass walls | | | | | | | | | | 8 |
| Interior closed walls | | | | | | | | | | 8 |
| Floor finishes | | | | | | | | | | |
| Tile floor finish | | | | | | | | | | 9 |
| Bam., car. & li. floor finish | | | | | | | | | | 7 |
| Ceilings | | | | | | | | | | 7 |
| Interior doors | | | | | | | | | | |
| Interior wooden doors | | | | | | | | | | 8 |
| Interior steel doors | | | | | | | | | | 11 |
| Interior windows | | | | | | | | | | 8 |
| Interior stairs | | | | | | | | | | |
| Interior wooden staircas. | | | | | | | | | | 9 |
| Interior steel staircases | | | | | | | | | | 8 |
| Interior concr. staircases | | | | | | | | | | 8 |
| Glass balustrades | | | | | | | | | | 8 |
| **Services** | | | | | | | | | | |
| Radiators | | | | | | | | | | 9 |
| Ventilation system | | | | | | | | | | 7 |
| Lifts | | | | | | | | | | 9 |
| Sunscreens | | | | | | | | | | 9 |
| **Stuff** | | | | | | | | | | |
| Clock | | | | | | | | | | 11 |
| Archive cabinets | | | | | | | | | | 9 |
| **Spirit of the place** | | | | | | | | | | |
| Spirit of the place | | | | | | | | | | 6 |

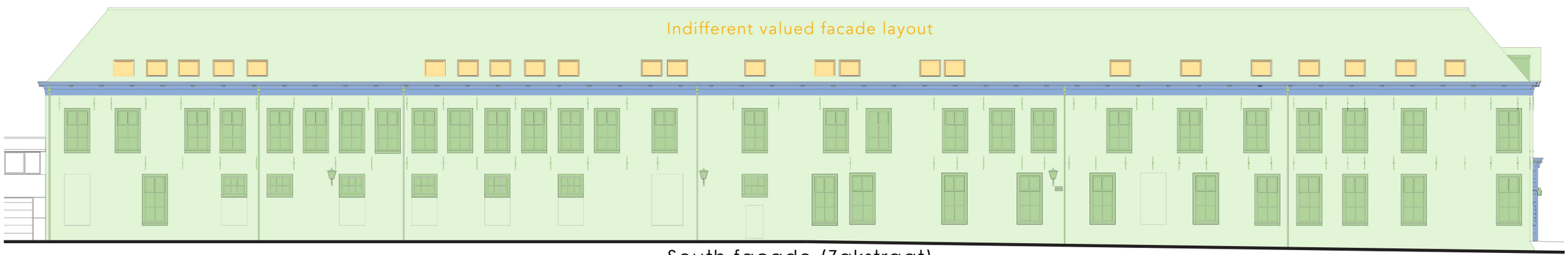
Figure 45: Value assessment table



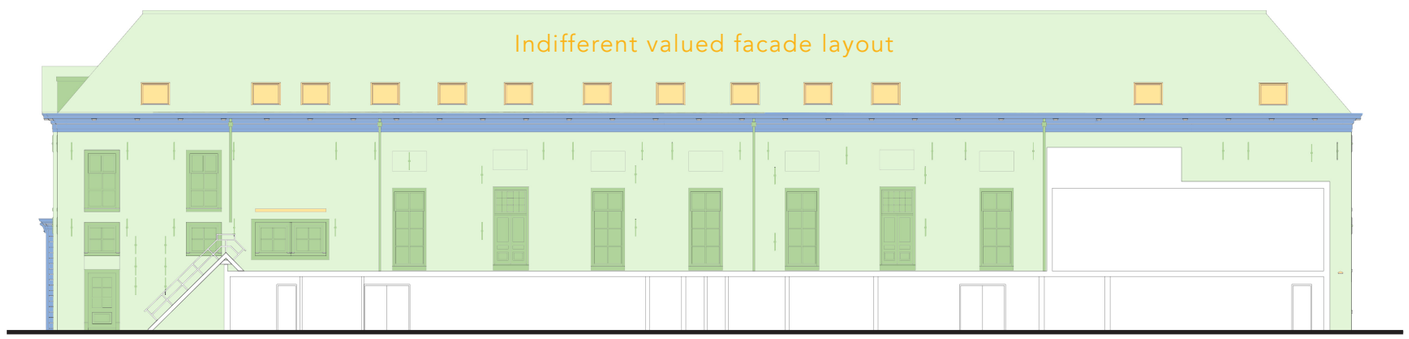

North facade (Nieuwe Gracht)




East facade (Koudenhorn)




South facade (Zakstraat)




West facade (Bakenessergracht)

High value
Positive value
Indifferent value

0 25M

Figure 46: Value assessment facades main building

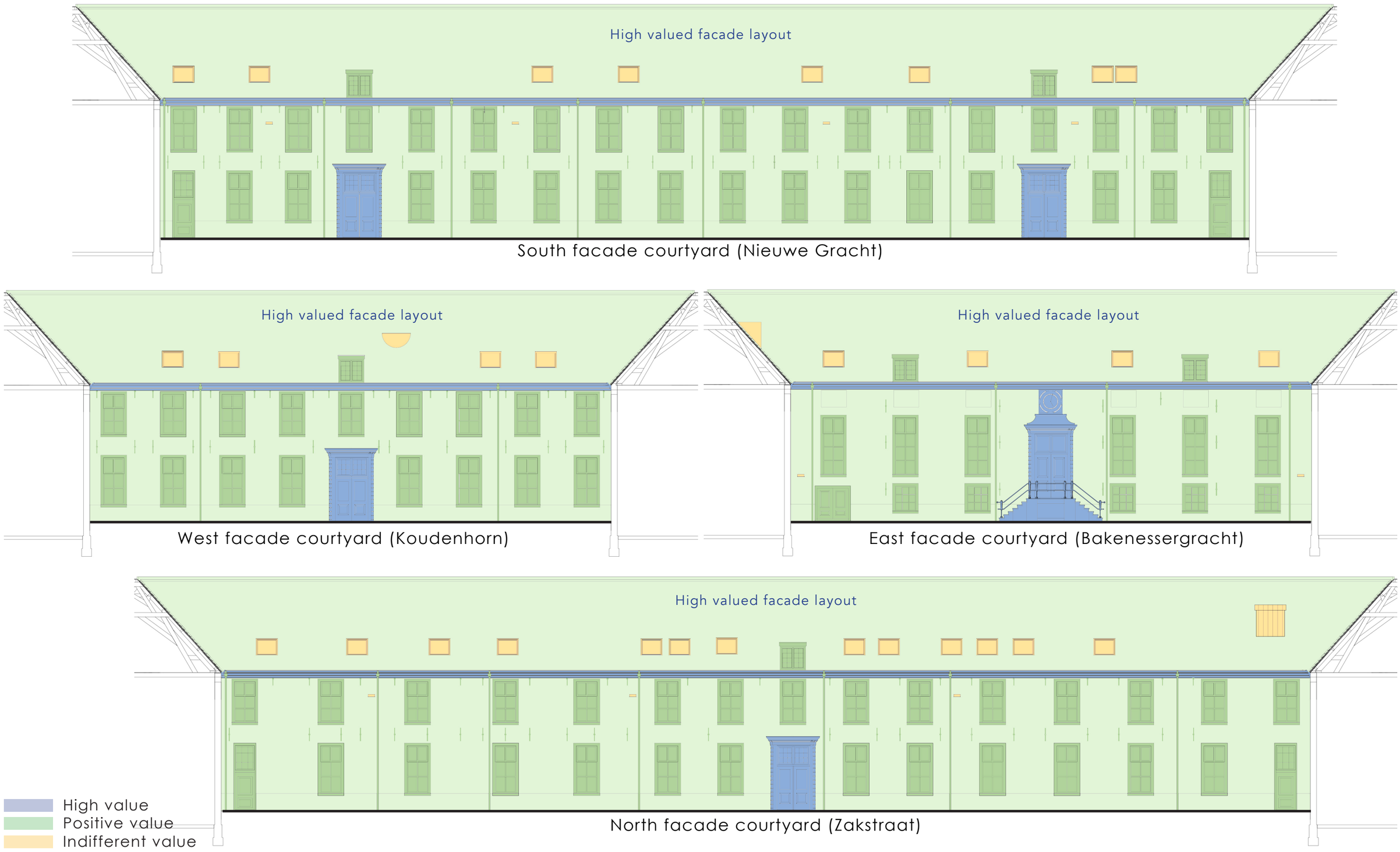
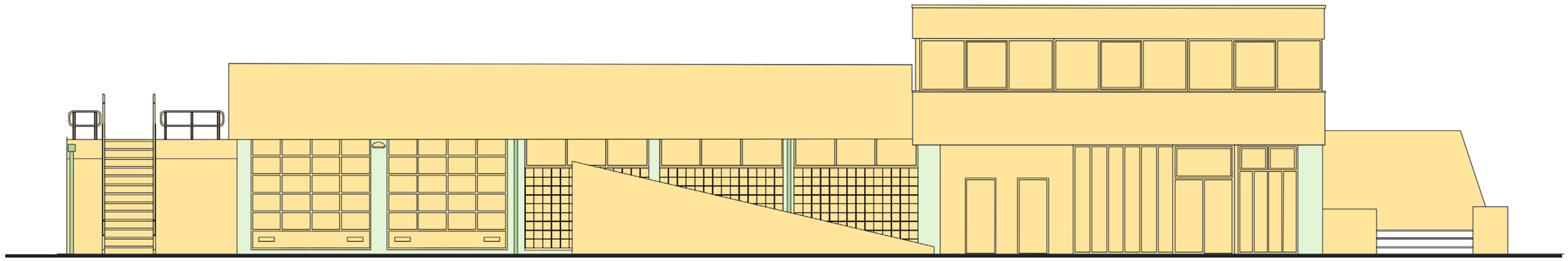



Figure 47: Value assessment facades courtyard main building

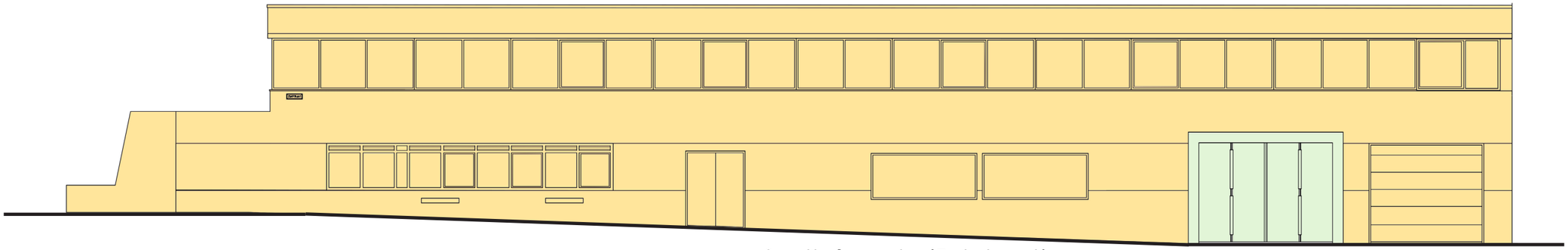
# ANALYSES

## 1.7 Value assessment

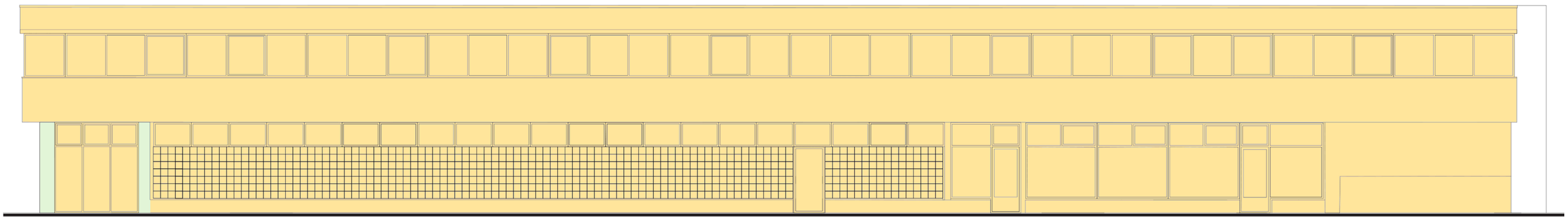
High value
Positive value
Indifferent value



North facade (Nieuwe Gracht)



South facade (Zakstraat)



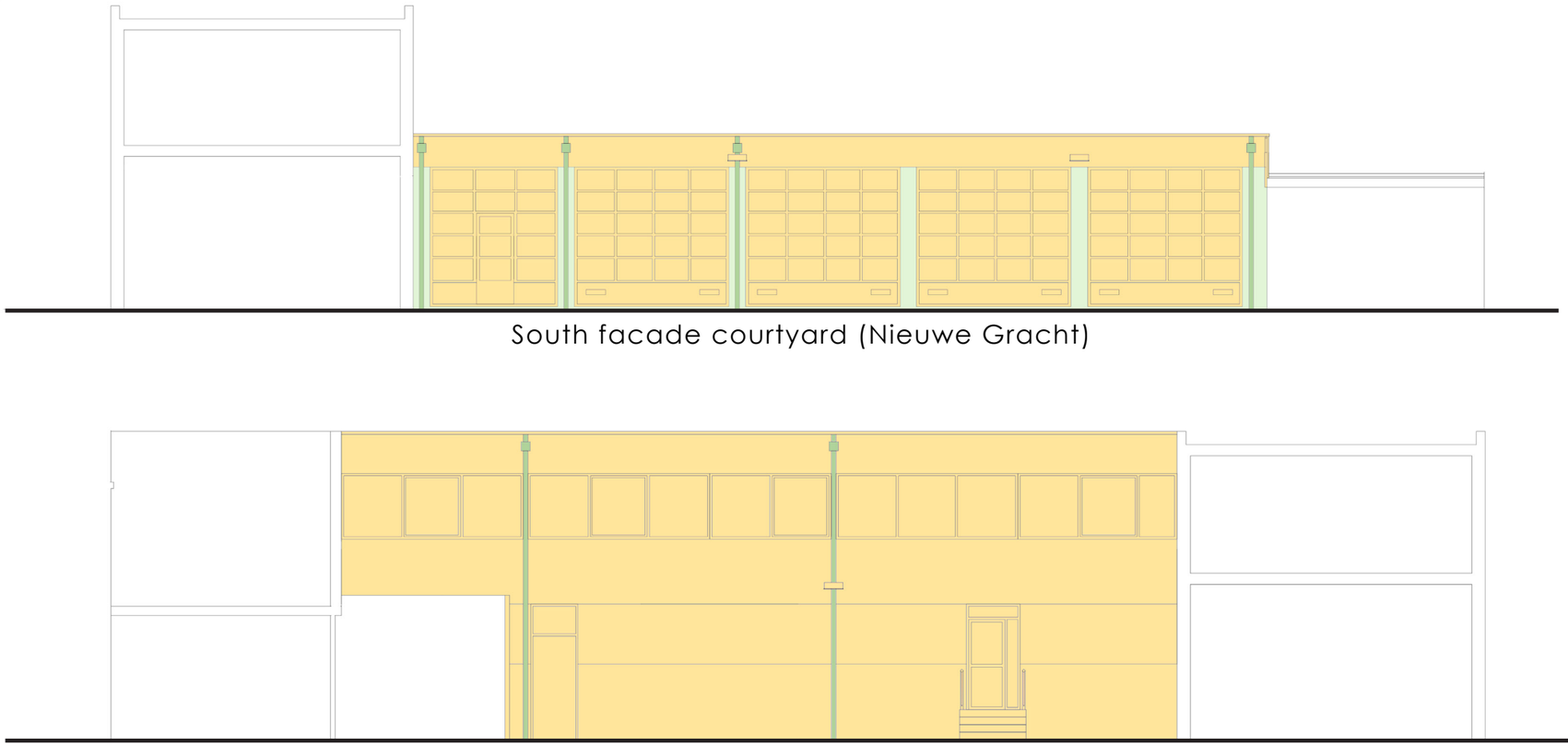
West facade (Bakenessergracht)

Figure 48: Value assessment facades extension

0 10M

# ANALYSES
## 1.7 Value assessment

High value
Positive value
Indifferent value



South facade courtyard (Nieuwe Gracht)

North facade courtyard (Zakstraat)

East facade courtyard (Bakenessergracht)

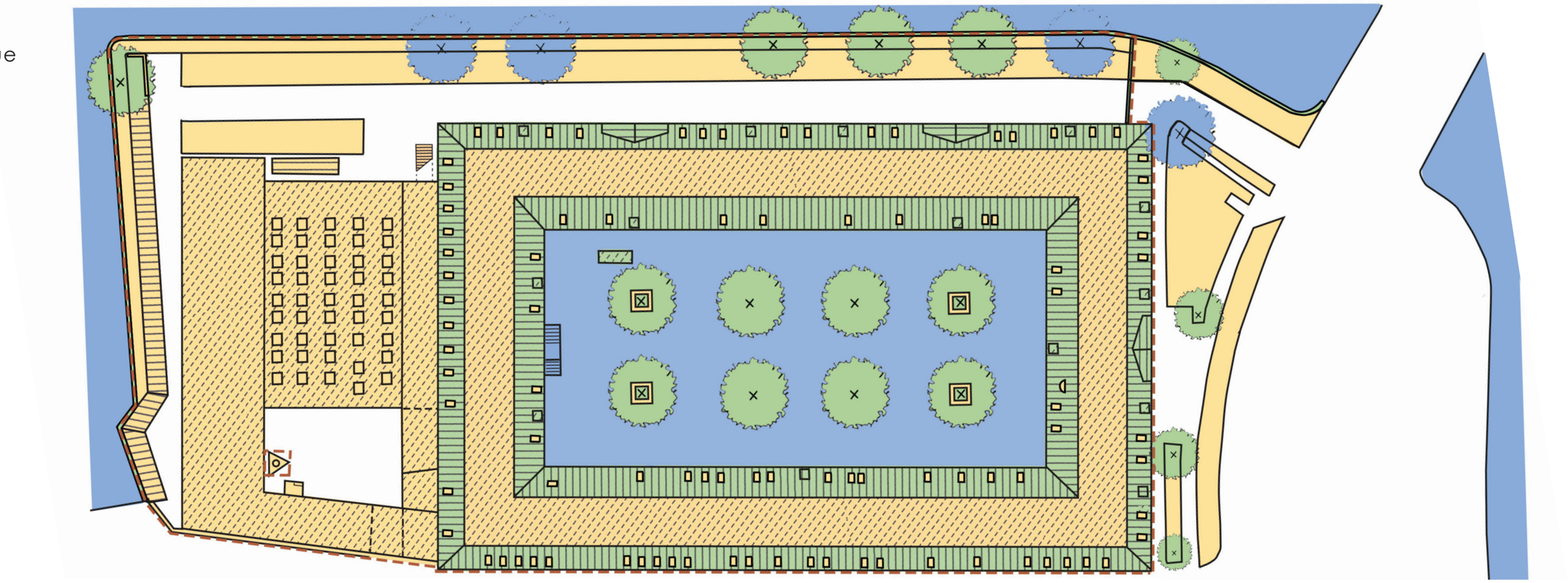
Figure 49: Value assessment facades courtyard extension

0 10M

# ANALYSES

## 1.7 Value assessment

High value
Positive value
Indifferent value



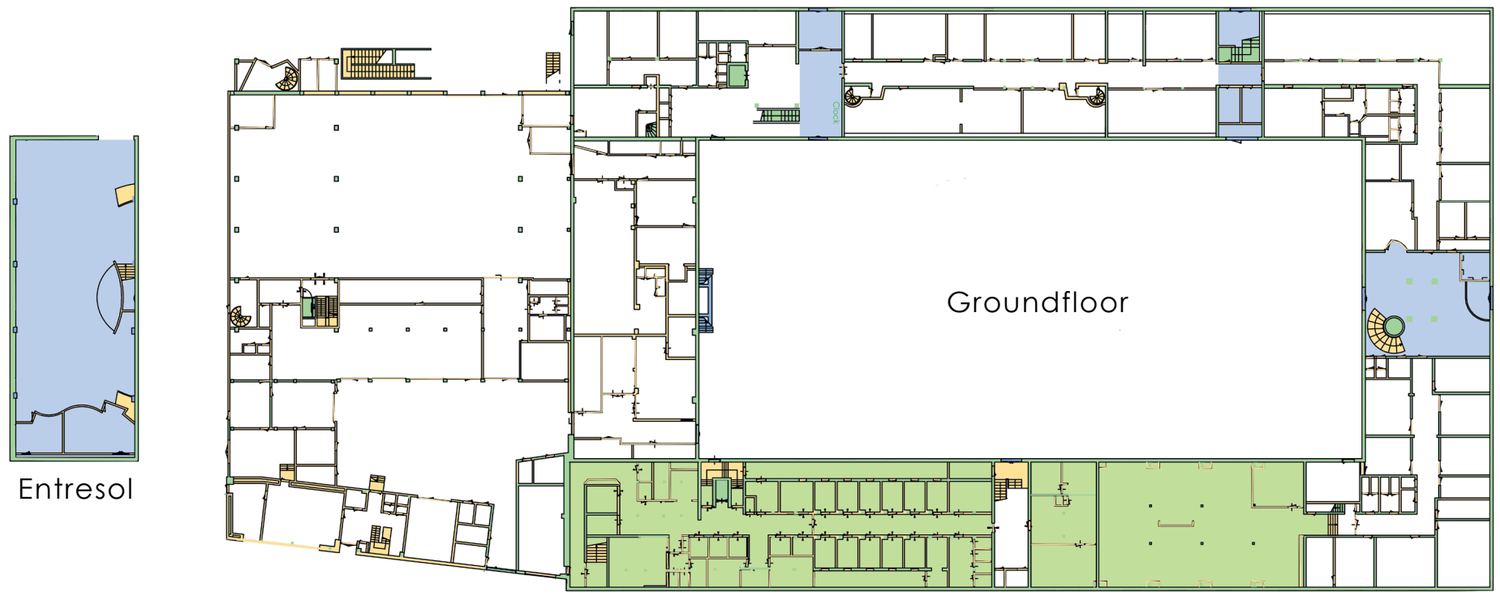
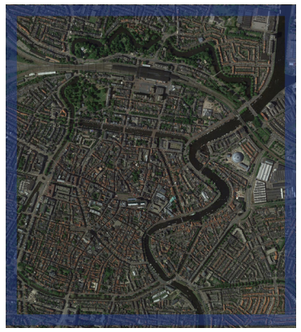



Figure 50: Value assessment plot (top), groundfloor and entresol (bottom)

0 25M

# ANALYSES
## 1.7 Value assessment



### Location in the city
The Koudenhorn building is located on the North-East side of the city centre of Haarlem. That is a favourable place for many functions. It is located next to the Spaarne and the Nieuwe Gracht. This is the oldest part of the city, which was founded around the 10th century and received its city rights in 1245. Before the Koudenhorn building was erected in 1768-1771, an ox market was located here until 1756.



### Smoking shelter
It is unclear what the exact construction date is, but it was installed somewhere in the last decade. It does not remind one of its former functions. Besides, the shelter is still quite usable. Maybe not as a smoking cabin, due to the changing lifestyle, but it can be used in a different way. The condition is quite good and the materials can still last reasonably long. It does not have a great art value and this element is very common.

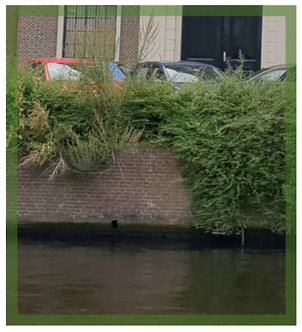


### Trees
There are eight plane trees in the courtyard. Along the quay, there is a single weeping willow and six plane trees. At the front, an oak, an elm and two lime trees. Some of the trees are old, giving them monumental status. This concerns three plane trees along the quay. The oak tree at the front is also protected for dendrological reasons. The trees are in full leaf and show no signs of disease, which means they are still very useful. The trees make the city attractive. The younger trees aren't unique, but the old ones are.

Google Earth. (2021, October 9). [Aerial photo Haarlem]



### Water
On the North side of the lot is the Nieuwe Gracht, on the East side the Spaarne and on the West side the Bakenessergracht. The water was already there when the deaconesses' house was built. The water is important to the city's history. Haarlem was built on the Spaarne River. The water has always been an important part of the building. The monumental entrances therefore face the water. The water has numerous functions, such as regulating the water balance, is good for biodiversity and greatly enhances the spatial quility.



### Quay walls
The quay walls are quite old, so they have a certain age value. The walls are already visible in old drawings and later in photographs. Because of this, these elements form part of the memory. The quay walls still serves its purpose and holds the ground behind it. The status of these walls is unknown but still looks sufficient. This element is common in Haarlem and beyond.



### Planting
There is planting along the quays and in front of the building. On the quays, it mostly consists of berberissen and a few butterfly bushes. The planting at the front is slightly more varied. The planting is poorly maintained. The butterfly bushes are popular among the fauna, but the berberis is less so. The planting makes the building more attractive, but the poor maintenance limits this.



### Broadcasting tower
The transmission tower is not old, as it dates from 2001. This mast adds nothing to history. The mast is used for telecommunications, partly by the police. It is currently still in use and is in good condition. The mast is an eyesore and therefore has a indifferent art value. In addition, these masts are common in the Netherlands.



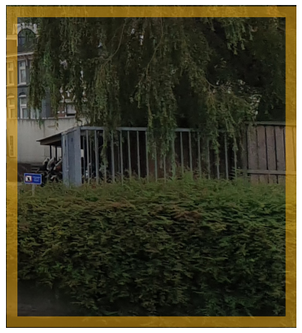

### Entrance gate
The electronic gate is probably not very old, so the age value is limited. The text on the gate is reminiscent of its current function. The gate still functions well and is in good condition. It has a low uniqueness value because it is a frequently used element.



### Benches around trees
The benches around the trees are of limited age. The condition is good and still usable. The simple design has a low art value. The element is more common.



### Bicycle shed
It is unclear what the exact construction date of the bicycle shed is, but it was placed somewhere in the last decade. In addition, it is not intentionally or unintentionally reminding of the (previous) function(s). The shed can still be used. However, the shed disconnects from the water. The shed is in fairly good condition, has no art value and the whole of the Netherlands is full of them.



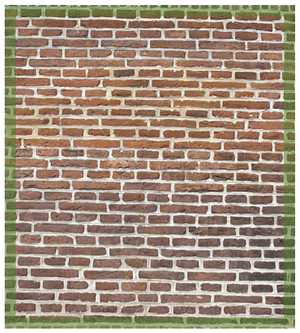
### Fences
Given the reasonably good condition of the fences, it can be assumed that they are not very old. For this reason, this element has a low age value. The current use is unknown. The elements could be reused in the design. In addition, it is a frequently produced element.



### Car parking
Car parking spaces are located along the Nieuwe Gracht and the Koudenhorn. The exact placement date is unknown, but it lies between 1960 and 1975. The parking areas can be used to park cars, but form a physical barrier for fauna. However, they also form a visual barrier. It disrupts the view of the water from the building and the view of the monument from the surrounding area. For this reason, the car parking spaces have an indifferent art value.

Figure 51: Value assessment photo's

# ANALYSES
## 1.7 Value assessment



### Exterior brick walls
The brick outer walls form the exterior facade of the main building. These walls are original and still in good condition. There are no cracks visible and the pointing is still good. The facades have a constructive function. The building material fits well into the context. Bricks are a common facade material in the Netherlands and therefore not unique.



### Bitumen roof
The bitumen roof is located on the flat roof parts of the main building and the higher roof parts of the extension. Originally, there was a mastic roofing package at those places, which may no longer be used due to changing regulations. For this reason, it has been replaced by bitumen. The lifespan of bitumen is short, which is why it has to be replaced regularly. This is not an easy job. It is a simple roof finish without any art value. Bitumen roofs are widely used in the Netherlands.



### Clock entrance
The clock entrance is located on the West side of the courtyard. The entrance is already visible in the original drawings. However, the windows above the doors were placed at a later stage and there was originally a bell above the clock. The door functions properly and the condition is good. In this entrance there are many decorations. The entrance is visible on many photos and drawings and unintentionally reminds visitors of the former function of the building. It was a high-quality entrance.

Haarlems Dagblad. (2012, September 14). [Roof Koudenhorn 2]



### Exterior concrete walls
The concrete facades can be found in the extension. This extension was built in 1967, so its age value is limited. The facades are in good condition. There are no major damages and the paint is still good. This facade is not load-bearing. The facade is in strong contrast with the main building and the context. This contrast is experienced as indifferent.



### Gravel roof
The gravel roof lies on the lower flat roofs of the extension. This type of roof was installed in 1967. The gravel forms the ballast for the underlying roof package. In addition, the design does not add any value to nature. The gravel can be reused and has a low art value and has been applied to many Dutch buildings.



### Entrance extension
The exact date of placement of the entrance extension is unknown, but it certainly dates from after 1995. The steel automatically opening doors work properly and can last for a long time. However, this entrance is purely functional, so there are no decorations to be found. This affects the art value.



### Exterior glass block walls
The glass block facades can be found in the extension. This extension was built in 1967, so its age value is limited. The facades are in good condition. There are no major damages. This facade is not load-bearing and the stones allow daylight to enter. The insulation value is limited and these walls are hard to insulate. The facade is in strong contrast with the main building and the context. This contrast is experienced as indifferent. The bricks are common building materials in industrial buildings from the 1970s.



### Exterior entrances
There are three of these type of entrances in the main building. One in front and two on the side of the Nieuwe Gracht. The entrances are already visible in the original building plans. The tympanums are original, but the doors themselves are most likely replaced. These entrances appear in many photographs and drawings and unintentionally remind visitors of the building's former function. The door functions properly and is in fine condition. The decorations are craftsmanship and provide a high art value.



### Exterior doors main building
These doors are present in 4 different designs in the main building. They match the original design except for the door handles. The doors are less a reminder of the former function of the building compared to the main entrances. The doors function properly and are in good condition. They are functionally designed and have only small profiling in the door surface. Some of the doors are fitted with single-glazed windows with a rod division.



### Tile roof
The tile roof is located on the sloping roof parts of the main building. The tiles are already visible in the original building plans. However, they have a new shape and are made of a different material, namely concrete flat mulden. The tile roof is complete and there are few defects to discover. The roof tiles protect the building from various weather influences. It is possible that birds are nesting under the roof tiles. It is also a very widely used product in the Netherlands. This is because of the many rivers, which provide the raw material for the product. This gives historical value.



### Interior entrances
In the main building, four of these entrances border the courtyard. They are already visible in the original plans, but after some time glass was placed in the doors. The tympani are original. These entrances were high-quality entrances for the users. The entrances appear in many photographs and drawings and unintentionally remind visitors of the building's former function. The door functions properly and is in fine condition. The tympani are decorated, but less than the entrances on the outer side of the building.



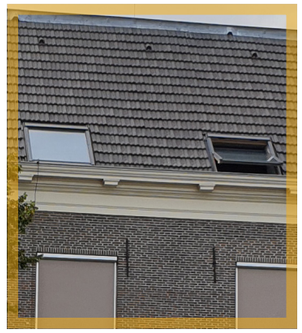
### Exterior doors extension
These doors are located in the extension of the building. Some of these doors are already visible in the original building plans. However, a number of them have also been moved or removed over time. The doors function properly, but have a low insulation value. There is no damage worth mentioning. The doors have a highly functional design and form a strong contrast with the building elements of the main building. For this reason, these elements are given a low art value. In addition, they are common doors.

Figure 51: Value assessment photo's

# ANALYSES
## 1.7 Value assessment



### Garage doors
There are eight garage doors in the building's extension. Seven of them differ from the original building plans. Two additional garage doors can also be seen in these drawings. The doors function properly, but have a low insulation value. The windows in some of the doors are in good condition. The elements still have a remaining life span. Due to the simple design of this widely used element, the doors do not possess any art value.



### Roof windows
The roof windows are located in the sloping roof of the main building. They were not present in the original plan. Sometimes there were dormers at these locations, some of which were replaced by roof windows over time. The windows are positioned high, making it difficult to look outside. The windows do let in a lot of light and provide fresh air. The condition is fine. The simple design of this mass-produced item results in a low art value.



### Gutters
This type of gutter can be found on all facades of the main building. In photos from 1930, these gutters were already visible. However, in the past, a simpler type was used, which was replaced by this type after 1973. The gutters belong to the building. They function properly and are in good condition. Some gutters have a plastic part in them. The gutters have a simple decoration.



### Wall windows main building
These windows are present in 9 different designs in the main building. Some of the windows differ from the original design in that the rod arrangement has been changed. This is not the case for the windows near the exterior entrances. As a result, certain window frames are most likely replaced. The windows have been fitted with single-glazing and the frames with rear windows. These increase the insulation value, but decrease the aesthetic value. The windows provide light views and fresh air. The windows are in good condition. The simple rod arrangement has limited art value.



### Roof domes
The roof lights are located in the flat roof of the extension and were installed in 1967. The roof lights provide a lot of light, but in some places they are closed off. The insulation value is limited. Some windows have broken glass and the exterior is covered with a plastic dome. This functional mass product has a simple design.



### Facade anchors
A simple type of facade anchor is found on the main building, which consists of a black straight bar. The facade anchors are located on the masonry facade. Presumably, the facade anchors have been there for quite some time and may have been installed or removed over time. The wall anchors anchor the floor beams to the wall and keep the same wall in place. In addition, they provide small cold bridges. The simple execution ensures a low art value. These elements can be found on many buildings.



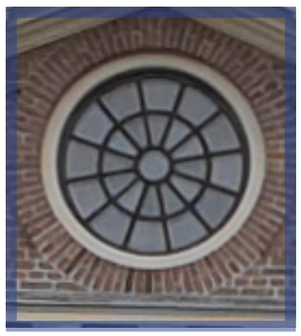
### Wall windows extension
These windows are located in the extension. Many of these windows are already visible in the original building plans, some were later added or removed. It is still possible to see through the windows. A large number can be opened and some are fitted with ventilation grilles. The metal frames are fitted with single glazing, which provides limited insulation value. In addition, the large glass surface poses a danger to birds. The windows do not have any defects. The simple and functional windows are in strong contrast with the building elements of the main building. Also, the elements are not unique.



### Roof dormers
The dormers are located on the sloping roof of the main building. In the original drawings, these elements are already visible, but were more richly detailed with an ornamental edge and boards. In the original design, they were present in a greater number. These have been replaced by roof windows over the years. The condition is good and the windows are lower positioned. The windows provide light, space and fresh air. The windows no longer have the art value it once had. It is a frequently used building element.



### Roof fences
The roof fences are located on the flat roof parts and have been installed in the past decades in order to reach the installations on the roof safely. The installations do not require regular inspection. This can also be done with other safety measures. The fences are visible and detract from the building aesthetics, so the elements are rated with an indifferent art value. The fences are standard elements still in a good condition.



### Wall windows round
These round windows are located above the three main entrances on the outer side of the main building. The windows correspond to the original design. These windows are fitted with single glazing. Also, the frames are equipped with rear windows. These increase the insulation value and reduce the aesthetical value. The windows are in good condition. The shape of the windows with fine rods provides an art value. Round windows are less common, but not unique.



### Roof edges
A roof edge can be found on the inner and outer facades of the main building, both edges differ from each other. The roof edges are already visible in the original drawings. The condition seems good. The roof edges mainly have an aesthetic function, but it is also possible that bats are housed here. The fine detailing ensures a high art value. This element can be found on many old buildings.



### Platform
The platform is located on the West side of the courtyard. It consists of a platform with stairs on either side with a green metal balustrade. The element is already visible in the original building plans. However, it was more ornate in design and contained an opening in the side of the platform. The condition is good, so it can last for a long time. However, the openings in the balustrade do not comply with the current building regulations. The decorations on the balustrade provide an art value. Such a platform is still common.

Figure 51: Value assessment photo's

# ANALYSES
## 1.7 Value assessment



### Staircase
This metal staircase connects the ground level with the roof of the extension. The exact installation date is unknown, but it is around 1995. The staircase is part of the escape route from the East side of the main building. It is well suited for this purpose. However, this route is not usually used. There are no signs of decay on the element and it can last for quite some time. The staircase has a purely functional design and does not fit in with the building elements of the main building. For this reason, the staircase has been given an indifferent art value. Staircases of this kind have been used frequently.




### Koudenhorn street sign
The Koudenhoorn street sign is located on the East facade of the building. The exact date of placement is unknown, but it dates from before 1946. The sign is still clearly readable, but the colours have faded over time. It is a frequently produced element.



### Poster boards
The poster boards are located on the South facade of the extension. The exact date of placement is unknown, but they were placed somewhere between1995 and 2012. The signs are still in use, but due to the simple design of the boards, the posters are deteriorating rapidly. The aluminium boards with the deteriorating posters are heavily smudged, which also results in an indifferent art value. It is a much recurring element.



### Letterbox
This letterbox is located in the East façade of the main building next to the entrance. This letterbox was placed somewhere between 1964-1976. The letterbox is still in use and the natural stone it is made of will still last a long time. It is a rather simple design.




### Zakstraat street sign
There are two Zakstraat street signs on the building. One on the main building and one on the extension. The sign on the main building is, considering its condition, much younger than the one on the extension. The new sign is still clearly readable, the old sign is more difficult to read. It is a much produced element.



### Facade layout main building except South and West facade
For the description see Facade analyses - Facade layout main building.



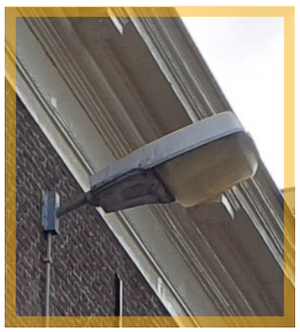
### Decorative lighting
There are five of these decorative lamps on the facades of the main building. Two on the East façade on both sides of the entrance and three on the South façade. The lamps were installed in 1975, but similar lamps can also be found in the same position before that. The lamps next to the entrance bear the inscription Police, which unintentionally serves as a reminder of the building's function. It is unclear if the lamps still work, but the condition seems good. The lamps have decorations that increase their art value.




### Police sign
The poice sign is located on the East façade of the main building above the entrance. The letters were placed in 1975 and unintentionally commemorate the current function of the building. The letters are made of metal in a golden colour, which creates a luxurious look. The letters are in good condition.



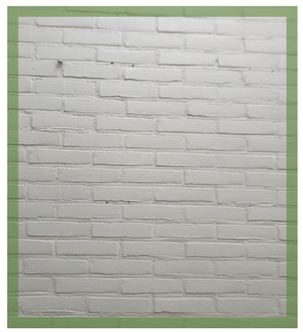
### Layout South and West facade
For the description see Facade analyses - Facade layout main building.



### Functional lighting
There are three types of functional lights on the inside and outside façades of the building. It is unclear when the lamps were installed, but considering the object, they are at most a few decades old. It is unclear if the lamps still function, but the condition looks fine. These mass-produced lamps are extremely simple in design and do not fit the facades. For this reason, the lamps have an indifferent art value.




### Information sign
This information sign is located on the East façade of the main building next to the entrance. The exact date of its placement is unknown, but it was placed somewhere between 1979 and 2002. The sign is informative and a reminder of the former functions of the building. The sign is made of plastic and the text is still clearly readable. The simple design gives it a low art value.



### Structural brick walls
The façade of the main building and certain walls inside it are structural brick walls. The walls are original and date from 1771. Because the exterior brick walls were previously subject to an evaluation, the highest value obtained must be taken into account. The walls are a reminder of the former function of the building. The structural brick walls are of constructive importance and for this reason they can not simply be removed or openings can be made in them. The condition is good. The brickwork has an art value.

Figure 51: Value assessment photo's

# ANALYSES
## 1.7 Value assessment



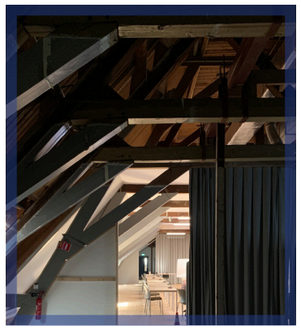
### Structural concrete walls
These structural brick walls are located in both the extension and the main building and were installed between 1967 and 1971. The structural brick walls are of constructive importance and for this reason they cannot simply be removed or openings can be made in to them. The condition is good. In the extension, the wooden formwork is still visible in the wall. In the main building, the walls are finished. This is a very frequently used element.



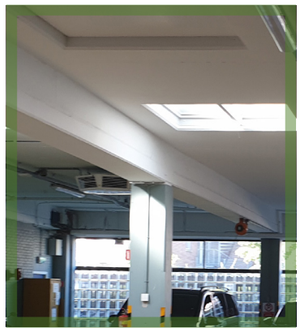
### Timber beams
There are wooden beams under the first floor in the canteen and under the second floor of the main building. The thick girders in the canteen can be found in the original building plans and appear on many old prints, reminding us of the former function of the building. Some of the wooden beams were installed between 1967 and 1971. The beams support the floor above and cannot be easily removed. The beams do not have any defects.



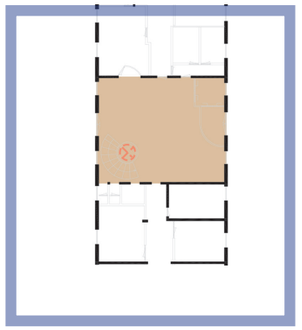
### Courtyards
For the description Functional and spatial analyses - Courtyards.



### Roof structure
This wooden roof structure is located in the roof of the main building and is locally concealed behind the insulation package. Certain sections have been painted. The structure is visible in the original building plans, but has been locally renewed after several fires. The large roof structure supports the roof. The oversized beams allow for the placement of additional mass on the roof. The construction is a reminder of the former function of the building. The complexity of the construction is an expression of craftsmanship, which seems to become increasingly scarce over time. This gives it a high art value.



### Concrete beams
Concrete beams can be found under all the floors of the main building and the extension. These beams were installed between 1967 and 1971. The beams support the floor above and cannot be easily removed. The condition of these beams is good.  The simple design gives them a low art value. This element can be found in many buildings.



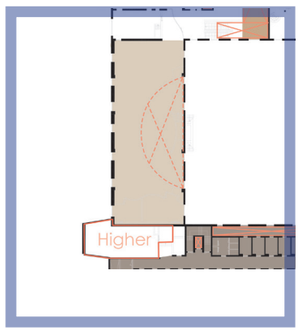
### Old entrances
For the description see Functional and spatial analyses - Temporary building plans and section.



### Wooden columns
There are wooden columns at two places in the main building: smaller grey columns on the first floor in the Zakstraat flank and large white columns in the canteen. These columns are original and can be seen in many old prints. This makes them a reminder of the former function of the building. The columns have a constructive function and provide a lot of free space. There are no signs of deterioration. Wooden columns are very common.



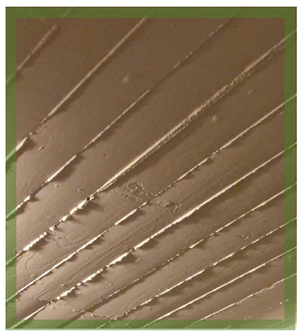
### Timber floors
These wooden floors can be found in the first floor above the canteen and in large parts of the second floor of the main building. Also in some places in the roof structure a wooden floor has been applied. These floors are visible in the original building plans. A load can be applied to this floor. The floor is poorly fire-resistant and soundproof. This must be taken into account. Openings can easily be made in the floor with possible additional constructional provisions. In general, the condition seems adequate. In addition, it is a frequently used element.



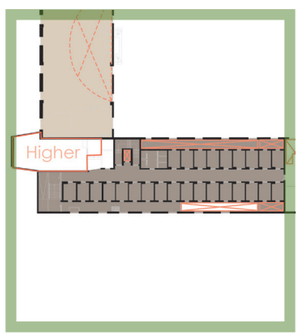

### Old dinning hall
For the description see Functional and spatial analyses - Temporary building plans and section.



### Concrete columns
In the main building and in the extension, numerous concrete columns can be found painted in white and grey. These columns have different dimensions and, in the extension, are provided with an extra concrete head (paddenstoelkop). The columns were installed between 1967 and 1971. The columns have a constructive function and provide a lot of free space. There are no signs of deterioration. It is a functionally designed element that can be found in many buildings.



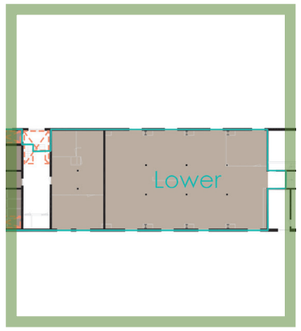
### Concrete floors
These concrete floors can be found in all the storey floors of the main building and the extension. In the extension, the wooden formwork is still visible. These floors were installed between 1967 and 1971. A load can be applied to this floor. The floor is reasonably fire-resistant and soundproof. It is relatively easy to make openings in the floor with possible additional constructional provisions. The condition is good. Moreover, it is a frequently used element.



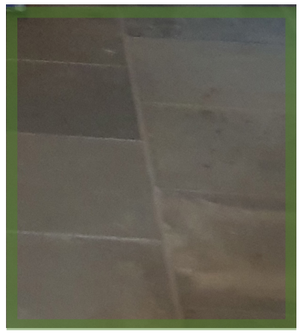

### Cell complex
For the description see Functional and spatial analyses - Temporary building plans and section.

Figure 51: Value assessment photo’s

# ANALYSES
## 1.7 Value assessment



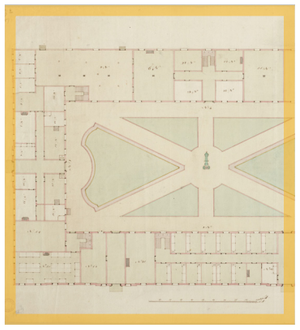

### High open space
For the description see Functional and spatial analyses - Temporary building plans and section.



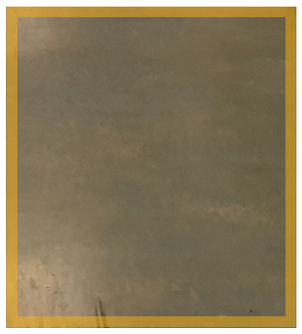
### Tile floor finish
The tile finish can be found on various floors of the main building and consists of different sizes of tiles in various colours and patterns. The exact installation date is unknown, but the tile finish was applied between 1967 and 1971. The floor is durable, easy to maintain and soundproof. The condition is sufficient. The tile floor is not very special and not decorative and therefore has a low art value. It is also a frequently used element.



### Interior steel doors
Some of these doors can be found in the basement of the extension. These doors used to give access to the firing range, ammunition storage, shooting gallery, bicycle storage, command room and the confiscated goods room, among other places. These strong steel doors were installed in 1967 and still function properly. They can also be locked. There is some light damage. These heavy doors are not often used in buildings, which gives it a certain uniqueness value.



### Layout
For the description Functional and spatial analyses - Layout.



### Bamboo, carpet & linoleum floor finishes
The bamboo, carpet and linoleum floor finishes can be found on different floors in the main building and the extension. The floors have different colours. The exact date of placement is unknown, but they were installed after 1967, some of them very recently. The condition is good and the bamboo finish is reasonably durable, but the carpet and linoleum have a limited lifespan. Bamboo and linoleum are easy to clean, carpet requires more work. The finishes have a low art value.



### Interior windows
These interior windows are mainly found on the first and second floors of the main building. The grey wooden frames are fitted with single glazing. These windows were installed between 1967 and 1971 and allow daylight to pass through and to look through. However, their value is limited by their positioning. The condition is good. The windows have no ornamental parts and are very functional. Besides, it is a common element.

Smit, J. (1768). Ontwerpen voor het nieuwe Diaconiehuis



### Interior glass walls
The glass walls can be found in both the main building and the extension. The frames are made of aluminium and wood, and some of the glass panels are sandblasted. The exact date of installation is unknown, but the walls were installed after 1967. The walls separate certain rooms from each other, let light through and allow views. The walls are in good condition. The simple design gives them a low art value. This element is not unique.



### Ceilings
In the main building and the extension, there are several plaster and system ceilings. The exact installation date is unknown, but it is after 1967. The ceilings serve as a finish and hide the building installations. They also influence the height of the room. The ceiling can be freely removed or used to conceal installations. There is no damage to the ceilings. The ceiling has a functional design and for this reason has a low art value. These are often used in buildings.



### Interior wooden staircases
In the main building, there are several staircases with wooden and steel stringers and wooden steps. These staircases were installed between 1967 and 1971. The stairs form the connection between the various floors and are also important for the escape routes. The stairs are in good condition and have a warmer appearance than the steel and concrete stairs. In addition, these wooden stairs are not unique.



### Interior closed walls
The interior closed walls include brick walls, plasterboard walls and system walls. They have been given various finishes, such as plaster, tiles, plasterboard and wallpaper. These walls can be found in both the main building and the extension. The walls are not original and were installed after 1967. The walls separate different rooms from each other, give privacy and are not load-bearing, so that removal is possible. The walls are generally in good condition.



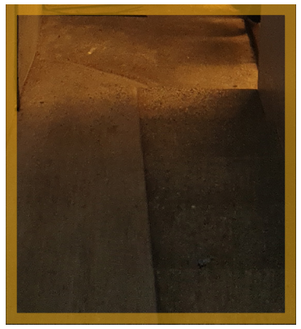
### Interior wooden doors
These interior wooden doors can be found in both the main building and the extension. The doors can be found in various types, such as single and double doors, with and without windows, with and without air vents and in a blue or white colour. The exact installation date is unknown, but it is after 1967. The doors give access to a room and let in fresh air. The doors are in good condition. The functional design results in a low art value. In addition, the doors are not unique.



### Interior steel staircases
There are several steel staircases in the main building and in the extension. These stairs were installed between 1967 and 1971. The stairs form the connection between the various floors and are also important for the escape routes. The staircases are in good condition and have a chilly appearance. In addition, these steel staircases are not unique.

Figure 51: Value assessment photo's

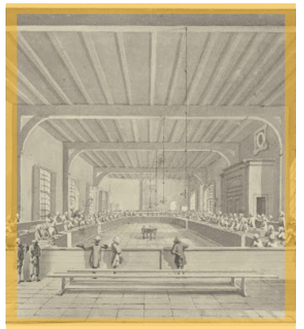
# ANALYSES
## 1.7 Value assessment



### Interior concrete staircases
There are several concrete stairs in the main building and in the extension. These stairs were installed between 1967 and 1971. The stairs form the connection between the various floors and are also important for the escape routes. The staircases are in good condition and have a chilly appearance. In addition, these concrete stairs are not unique.



### Lifts
There are four lifts in the building. A single lift in the extension and three lifts in the main building. The lifts were installed between 1967 and 1971. The lifts serve to transport people, including the disabled, to the higher floors. Only the lift near the main entrance has a glass casing. This lift has a positive art value, the others a low art value. The lifts are not unique

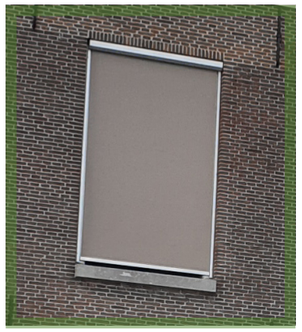


### Spirit of the place
The spirit of the place is difficult to rate and is perceived through all the senses. It is about how much of the original atmosphere remains. This atmosphere is created by the dimensions of the space, the way the light enters, the materialisation, the smell and the audible sound, among other things. Little has remained of the original spirit of the place in the building due to the extensive renovations over the years. Only in the canteen, the space, the light and the materialisation provide a reference to the past.

Van der Vinne, V. J. (1778). Vergadering des Oeconomischen Taks



### Glass balustrades
The glass balustrade is located at the edge of the mezzanine in the canteen. It was installed in 1995. This balustrade is a closed fall protection and meets the current safety requirements. It also makes it possible to see through and let light through. These elements are in good condition and are not unique.



### Sunscreens
In both the main building and the extension, a large number of windows in the façade on the side of the Koudenhorn, Zakstraat and Bakenessergracht have been fitted with sunscreens. A few windows in the courtyard are also fitted with them. These sunscreens are grey-brown and fitted in the façade openings. The sunscreens block out the sun and daylight and provide privacy. The condition looks good. However, the service life is limited. The sunscreens have an appropriate colour and it is a standard element that is often used.



### Radiators
In the building, there are numerous white radiators of different sizes and types. The radiators are attached to the wall or placed in notches in the wall. The exact installation date of the radiators is unknown, but given the appearance, they were most likely installed between 1967 and 1995. A radiator is a high temperature heating system and can be reused in a redesign. Can possibly also be used for cooling. The condition looks good. It is also a frequently used element.



### Clock
This clock currently hangs in the flank on the Nieuwe Gracht of the main building. A similar clock hung centrally in the canteen.  It could possibly be this clock. Moreover, similar clocks are visible in old prints. Given its appearance, this clock seems to date from 1967 to 1971 and to have been moved over time. The time is not right. The movement may need to be repaired. The condition looks good. The visible movement, fine pointers and numbers provide a certain art value. Such clocks are becoming more scarce, but are not unique.



### Ventilation systems
There is a large mechanical ventilation system on the roof of the extension and on the second floor of the main building. There is also a suspended ceiling in certain parts of the building, in which presumably ventilation pipes run. The specifications of the system present require further investigation. It is possible that the existing system can be reused locally, as well as certain air ducts. The exact installation date is unknown. The condition looks fine.



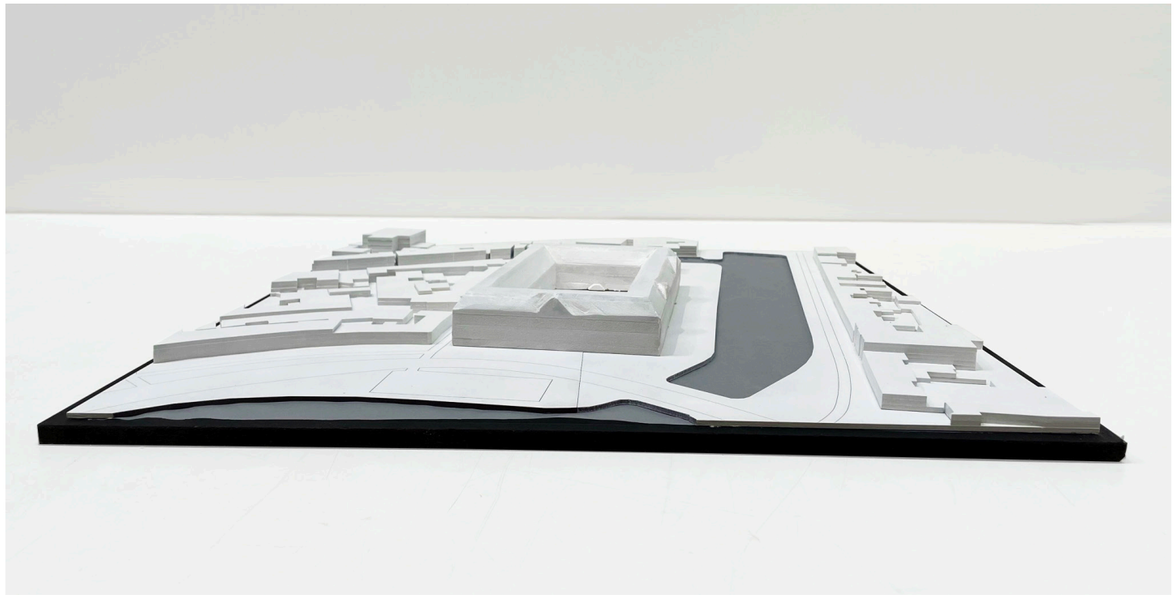
### Archive cabinets
A large number of these movable archive cabinets can be found in the former shooting cinema in the annex. These cabinets were probably installed after 1995. These reasonably deep cabinets are ideal for storing many goods. The cabinets are difficult to relocate. The condition is good. Such functionally designed archive cabinets can be found at certain functions, but they are not often used.

Figure 51: Value assessment photo's

# ANALYSES
## 1.8 Building essence

The model visualises the essence of the building. The essence of the building is a large building around a courtyard with on three sides water.





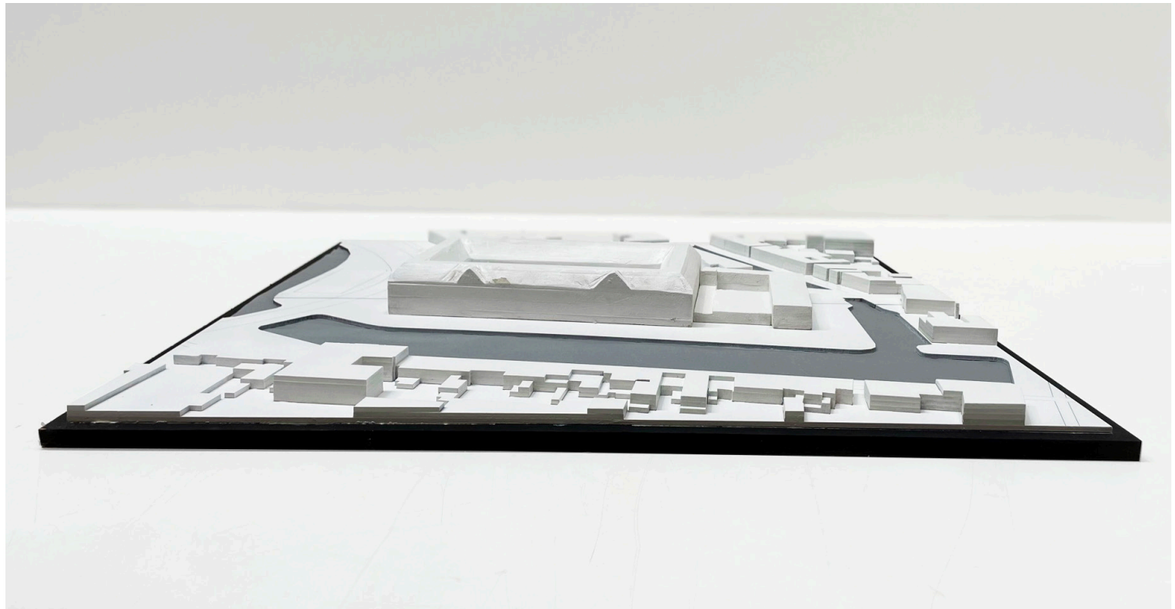


Figure 52: Student group Technical University Delft. (2022, January 1). [Essence model: Big building around a courtyard facing the water]

# ANALYSES
## 1.8 Building essence

The model visualises the essence of the building. The essence of the building is the presence of four monumental entrances. A single entrance in the East wing, two entrances in the North wing and a single entrance on the left side of the courtyard.

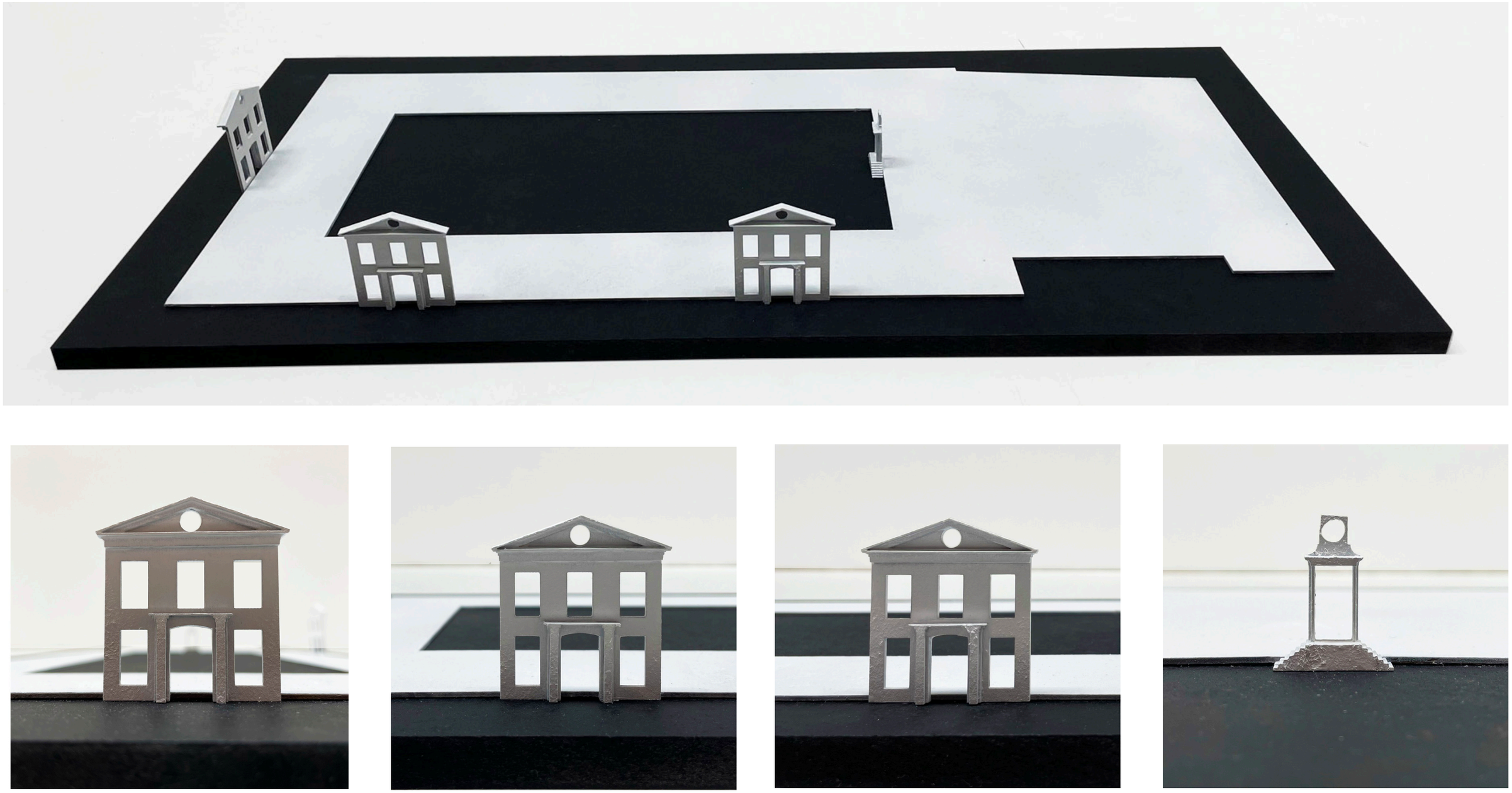


Figure 53: Student group Technical University Delft. (2022, January 1). [Essence model: monumental entrances]

# ANALYSES
## 1.8 Building essence

The model visualises the essence of the building. The essence of the building is the negatively valued blocking extension, which also detracts from the clear volume of the monument. Just like the great contrast between the two parts of the building due to the difference in mass, layout, building elements, materialisation and colour, among other things.



Figure 54: Student group Technical University Delft. (2022, January 1). [Blocking, damaging and contrasting extension]

# DESIGN



Figure 55: Openbare Werken te Haarlem. (1930). [Rear side of Koudenhorn, seen from the Nieuwe Gracht]

Harmony between humans and animals in a vibrant nature-inclusive built environment, in which a strong connection with the courtyard and surrounding strongly increases the quality of living and working.



Figure 56: Vision

# DESIGN
## 2.2 Functional layout and accessibility

New function: Housing in different types and sizes and for various target groups. The target groups are young couples, families and elderly. The housing types are maisonettes, apartements and studios. The building will also house art studios, a community centre and botanical café-restaurant.

In Haarlem, but also in the rest of the Netherlands, there is a large housing shortage. The municipality is looking for 18,000 houses for sale and rent in the city (VastgoedWeb, 2017). The shortage of homes for middle-income households is particularly acute. But the overheated market is driving up house prices, making it very difficult for first-time buyers with little capital (Vastgoed Actueel, 2017). There is also a nationwide shortage of elderly housing (Max Meldpunt, 2021). The municipality states that 7,500 homes can be built on building land and that the remaining demand must be met by transformations and redevelopments of buildings (VastgoedWeb, 2017). For this reason, the aforementioned target groups can easily be accommodated in different housing types in the building. These homes will be placed in the massive monument. In the monument, the various highly valued elements such as the wooden roof construction will be visible in the units on the top floor. The high open space in the Southern flank is the ideal space for open lofts. The studio offers a workspace for various forms of craftsmanship, such as painting and sculpture, woodwork and so on. This function fits the city of Haarlem, which has developed culturally as the city of painters. There is a demand for this function due to the shortage of studios and workspaces in the city (37PK. (n.d.)). The old cell complex is the ideal area for this function. The thick concrete cells can function as an inspiring workplace in the monumental building. Also, this place is located on Zakstraat, which will make the alley into a lively green street. On the other side, there is a connection to the nature-inclusive courtyard and surroundings. The community centre offers the residents of the building and the immediate surroundings space for carrying out joint activities and holding events, thus creating a sense of community. This space will be realised in the old dinning hall. This is a large open space with a void between the two floors, which offers many possibilities. Highly valued elements such as the clock entrance and the wooden columns and beams are also visible here. There is currently no indoor botanical garden in Haarlem. This indoor botanical garden will grow many different types of flora and house certain species of butterflies and birds. A café-restaurant will be placed in it, creating a special and unique ambiance. Which fits well with the nature-inclusive plot and building. This botanical café-restaurant can be positioned very well in the flexible column structure of the extension. This part of the building allows for large-scale adjustments. This will create a vibrant place.

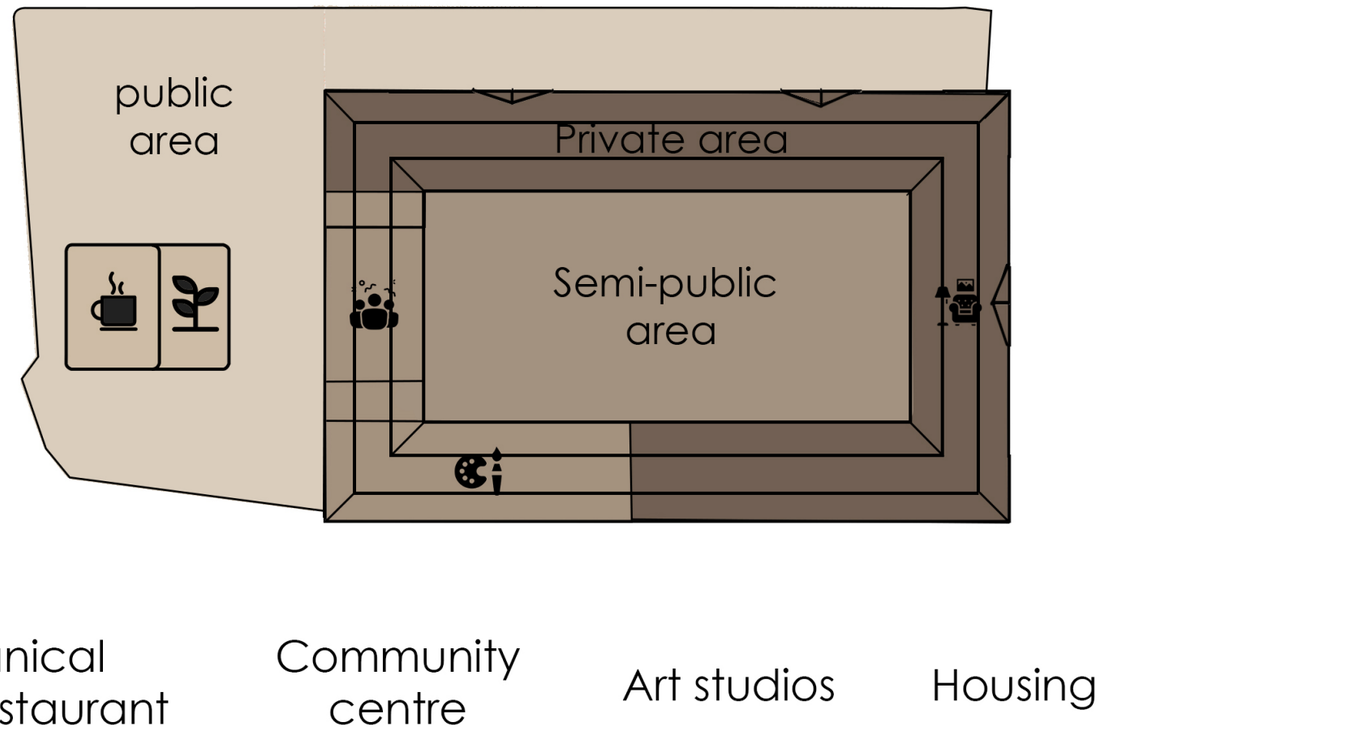



Figure 57: Functional layout and accessibility



## Young couples

Young couples like to live in a studio or apartment that, to a certain extent, does not have to be accessible by a lift. The dwelling has a living room with an attached kitchen, a single bedroom, a possible workspace, toilet and bathroom. The dwelling is connected to the natural courtyard and surroundings and has a space for storing bicycles and a car. Young people like gardening, playing games and having a chat.



## Families

Families like to live in a maisonette or apartment that, to a certain extent, does not have to be accessible by lift. The dwelling has a spacious living room connected to a kitchen, two to three bedrooms, workspace, toilet and bathroom. The dwelling is connected to the nature-inclusive courtyard and surrounding area and has a space for storing bicycles and a car.
Families like gardening, playing games and having a talk.
Optional children like to play in a nature playground.



## Elderly

Elderly people like to live in a ground-floor appartment or on a floor that can be reached by a lift. The flat has a spacious ciculation, a living room connected to the kitchen, a single bedroom and a possible hobby room. In addition, it has a miva toilet and bathroom. The dwelling is connected to the nature-inclusive courtyard and surrounding area and has a space for storing electric bicycles and a car. Elderly people like to do joint activities, such as gardening, playing games and having a talk.



## Residents and neighbours

Residents and neighbours of the Koudenhorn building can hold joint activities and events in the community centre.



## Artists and craftsmen

Artists and craftsmen living in Haarlem are offered a workspace in the art complex. Here they can practise various forms of craftsmanship, such as painting, sculpture, woodworking and so on.



## Everyone

Both residents of the Koudenhorn building and of Haarlem, as well as tourists from elsewhere, can enjoy the botanical café-restaurant.

Figure 58: Target groups

# DESIGN
## 2.4 Requirements functions

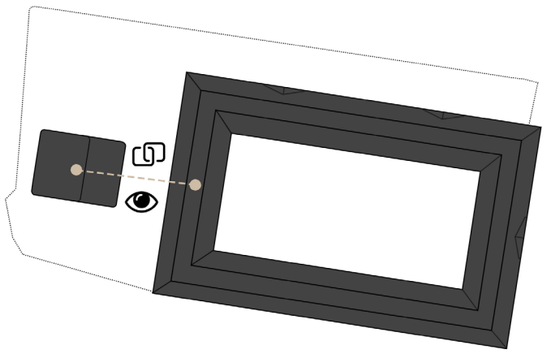
The scheme shows the various functions and the spaces required for them. The spaces in grey are not necessary, but desired. The second column shows the minimum dimensions of the spaces according to the Bouwbesluit 2012 concerns the minimum standard for existing buildings. The last column shows the minimum number required. The parking requirements follow from the Parapluplan parkeernormen Haarlem 2018. These requirements are applied in the design. Under certain conditions it is possible to deviate from the requirement. (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2012; Gemeente Haarlem - Afdeling Ruimtelijk Beleid, 2018)

S = minimal surface space
W = minimal width space
H = minimal height space

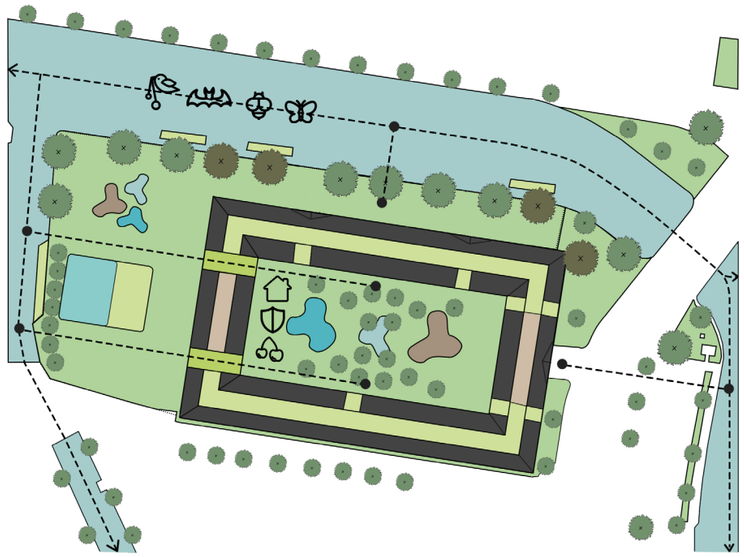
| Function and room | Dimensions | Number |
|---|---|---|
| **Housing (general)** | | |
| • Entrance | | |
| • Circulation space(s) | | |
| • Post room | | |
| • Parking | | 101 |
| • Storage room(s) | | |
| • Technical room | | |
| • Collective vegetable garden | | |
| • Outdoor seating area | | |
| • Nature playground | | |
| **Housing (individual unit)** | | |
| • Hall including wardrobe | | |
| • Circulation space(s) | | |
| • Living room | S=7.5m², W=2.4m, H=2.1m | 1 |
| • Kitchen | H=2.1m | |
| • Bedroom(s) | H=2.1m | |
| • (Workroom) | H=2.1m | |
| • Toilet | S=0.64m², W=0.6m, H=2.0m | 1 |
| • (Miva toilet) | W=1.65mx2.2m | 1 |
| • Bathroom | | |
| • (Miva bathroom) | W=1.6mx1.8m | 1 |
| • (Washing room) | | |
| • (Storage room(s)) | | |
| • (Stockroom) | | |
| • Technical room | | |
| • Outside space(s) | | |
| • Outdoor storage | | |
| **Art complex** | | |
| • Hall including wardrobe | | |
| • Circulation space(s) | | |
| • Studio spaces | H=2.1m | |
| • Exhibition space | H=2.1m | |
| • Aula | H=2.1m | |
| • Kitchen | H=2.1m | |
| • Men's toilets | S=0.64m², W=0.6m, H=2.0m | 1 |
| • Women's toilets | S=0.64m², W=0.6m, H=2.0m | 1 |
| • Miva toilet | W=1.65mx2.2m | |
| • Storage room(s) | | |
| • Technical room | | |
| • Parking | | 10 |

| Function and room | Dimensions | Number |
|---|---|---|
| **Community centre** | | |
| • Hall including wardrobe | | |
| • Circulation space(s) | | |
| • Multifunctional space(s) | H=2.1m | |
| • Podium | H=2.1m | |
| • Kitchen | H=2.1m | |
| • Bar | H=2.1m | |
| • (Washing room) | H=2.1m | |
| • Men's toilets | S=0.64m², W=0.6m, H=2.0m | 1 |
| • Women's toilets | S=0.64m², W=0.6m, H=2.0m | 1 |
| • Miva toilet | W=1.65mx2.2m | |
| • Storage room(s) | | |
| • (Stockroom) | | |
| • Technical room | | |
| • Outdoor seating area | | |
| • Collective vegetable garden | | |
| • Parking | | 10 |
| **Botanical café-restaurant** | | |
| • Hall including wardrobe | | |
| • Circulation space(s) | | |
| • Sitting area(s) | H=2.1m | |
| • (Waiting room) | H=2.1m | |
| • Kitchen | H=2.1m | |
| • Bar | H=2.1m | |
| • Washing room | H=2.1m | |
| • Staff room | H=2.1m | |
| • (Office room) | H=2.1m | |
| • Indoor garden | H=2.1m | |
| • Bird shelter | | |
| • Butterfly box | | |
| • Men's toilets | S=0.64m², W=0.6m, H=2.0m | 1 |
| • Women's toilets | S=0.64m², W=0.6m, H=2.0m | 1 |
| • Miva toilet | W=1.65mx2.2m | |
| • (Laundry room) | | |
| • Storage room(s) | | |
| • (Cold room) | | |
| • Storage room(s) | | |
| • Technical room | | |
| • Outside seating area(s) | | |
| • Parking | | 13 |

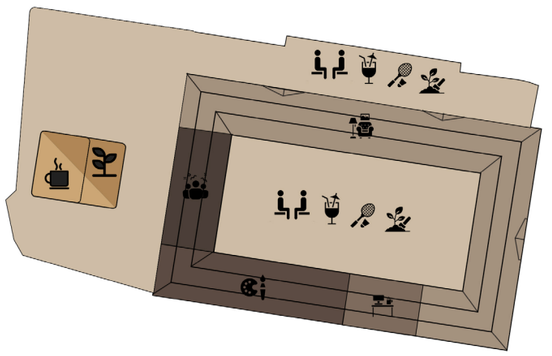
Figure 59: Requirements functions



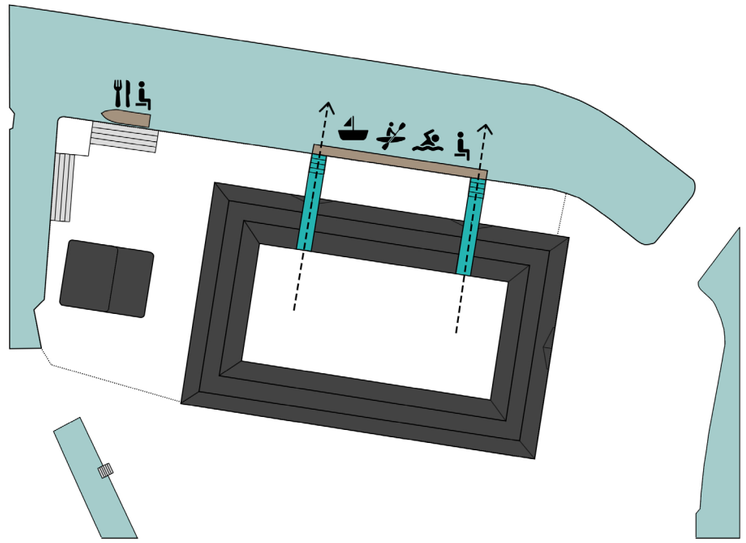
Create unity, and restore sight and the clear volume of the monument



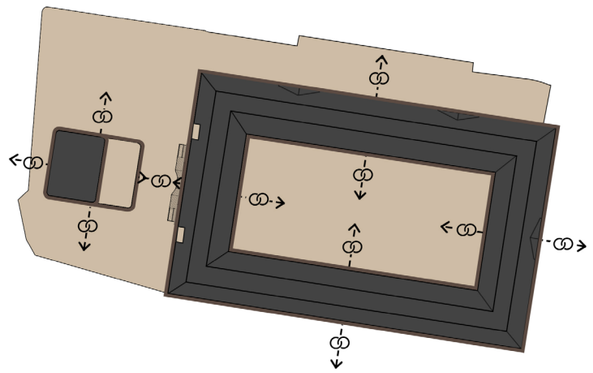
Connecting to and strengthening the ecological structure



Functional mix creating a vibrant place



Connecting to the water



Connected to the vibrant and nature-inclusive courtyard and surroundings

Figure 60: Conceptpoints

# DESIGN
## 2.6 Site plan

The figure shows how more space for nature has been created on the plot, through the realisation of small water and low and high vegetation. The plot is connected to the existing ecological structure, which has also been restored by planting many trees.

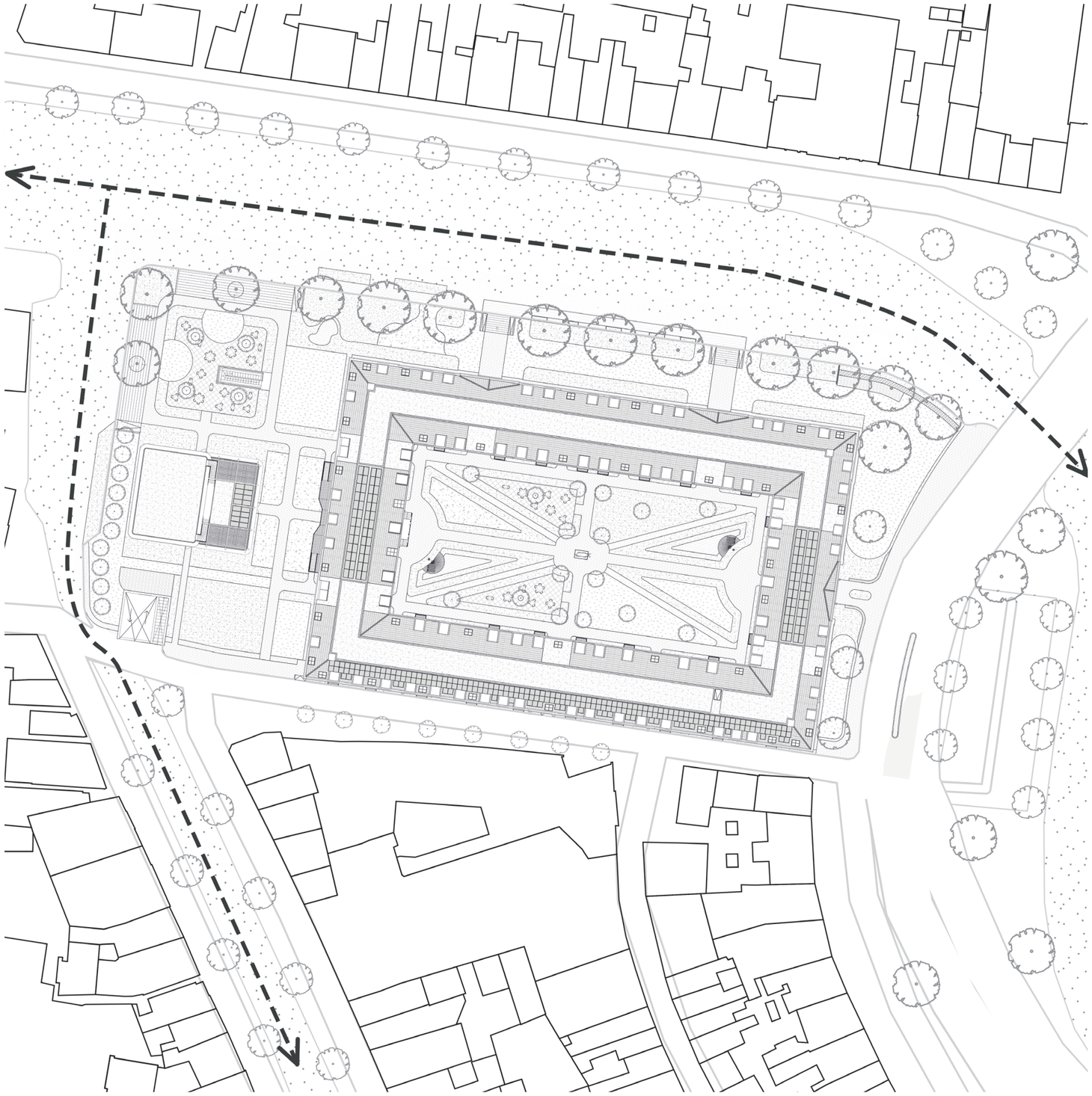


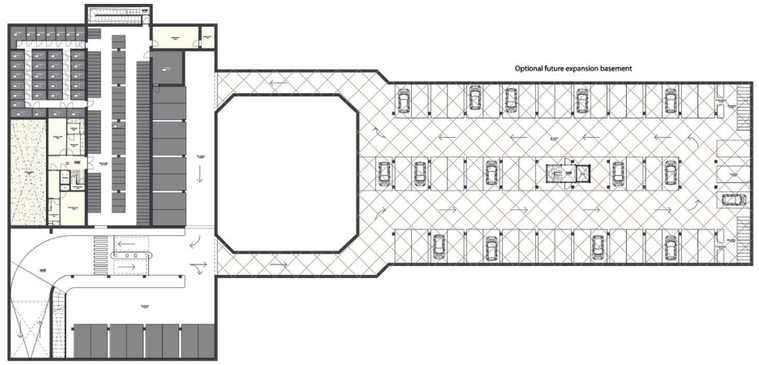

Figure 61: Site plan

# DESIGN
## 2.7 Functional layout and accessibility

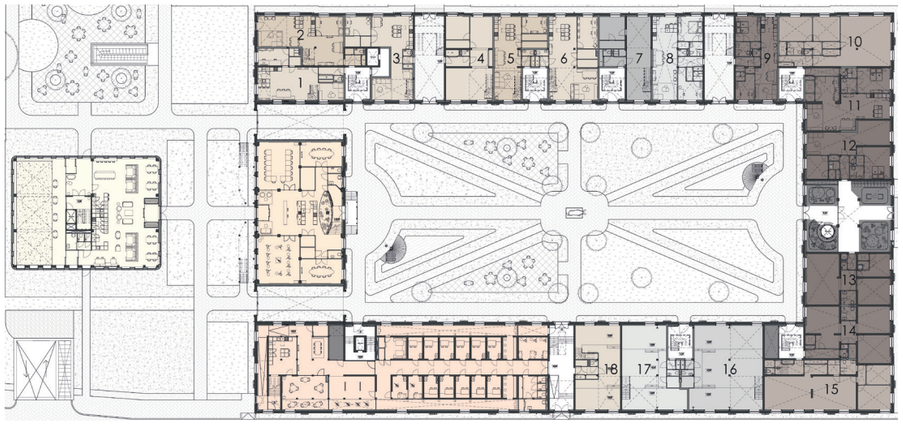
The figure shows the general layout of the building. In the old open dining hall with large vide in the West Wing, the community center was designed. In the cell complex with thick concrete walls in a fixed rhythm, the art studios are placed. In the open column construction in the extension the botonic café-restaurant is designed. In the open and lower space in the South Wing, live-work lofts are designed. In the remaining part of the main building there are various types of housing including maisonettes, apartments and studios. Here the different target groups are mixed together. In total 68 residences were designed. In addition, the basement was expanded and provided with a ramp.

13 Family maisonettes
8 Family appartments
8 Young couple appartments
9 Senior appartments
29 Unspecified appartments
1 Unspecified maisonette
68 Residences

- Circulation space
- Botanical cafë-restaurant
- Community centre
- Art studios
- Family maisonette
- Family appartment
- Young couple studio
- Senior appartment
- Unspecified apartment
- Unspecified Maisonette
- Other



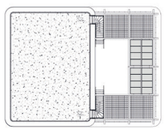

Basement



Ground floor

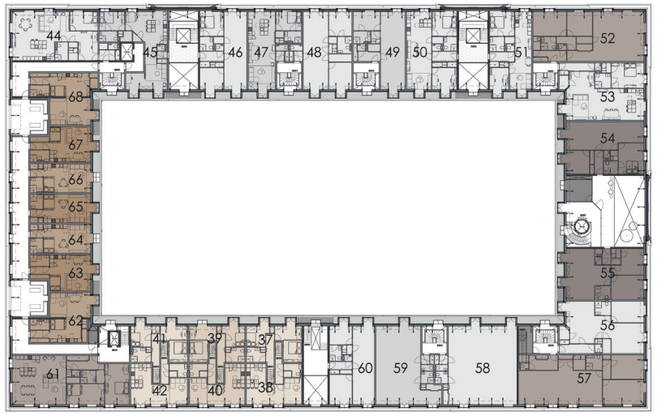


Entresol





First floor



Second floor

0 25M

Figure 62: Functional layout

# DESIGN
## 2.8 Floorplans

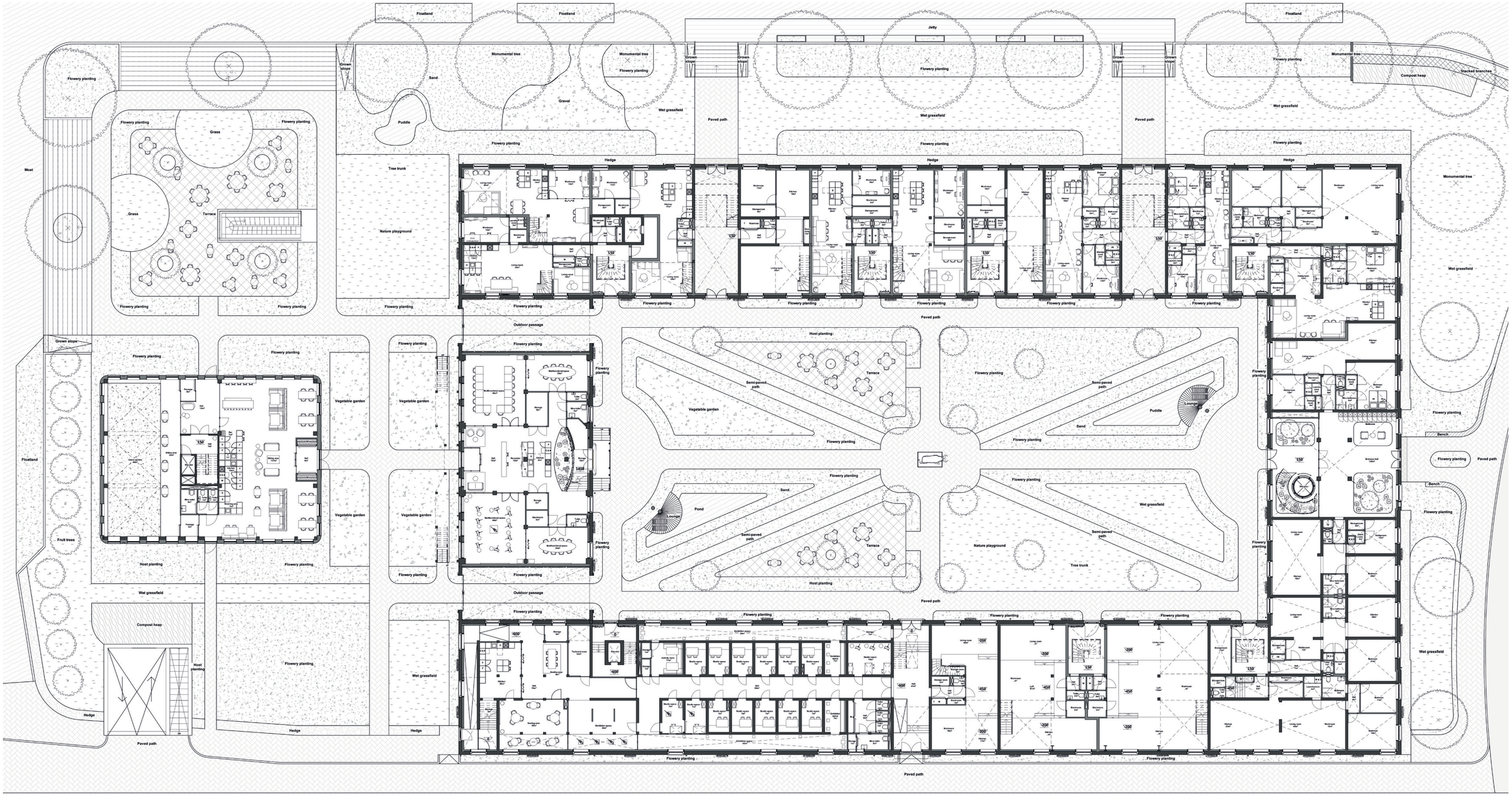



Figure 63: Site plan and ground floor

0 25M

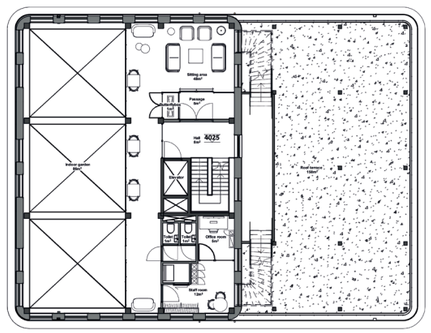



Figure 64: Entresol floor

0 25M

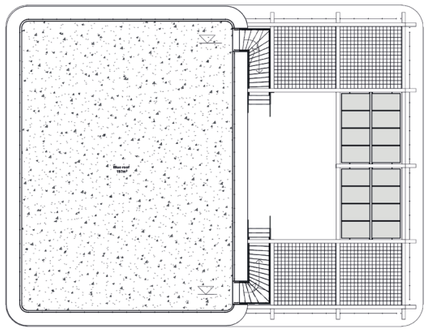




Figure 65: First floor

0 25M




Figure 66: Second floor

0 25M

# DESIGN
## 2.8 Floorplans

By creating a basement, the low-valued blocking bicycle storage and car parking next to the water could be moved underground. This creates more space on the plot, provides a better view from the monument to the surroundings and vice versa and improves the connection to the existing ecological structure. In addition, there is the possibility of expanding the basement under the courtyard in order to create a parking space for each dwelling.

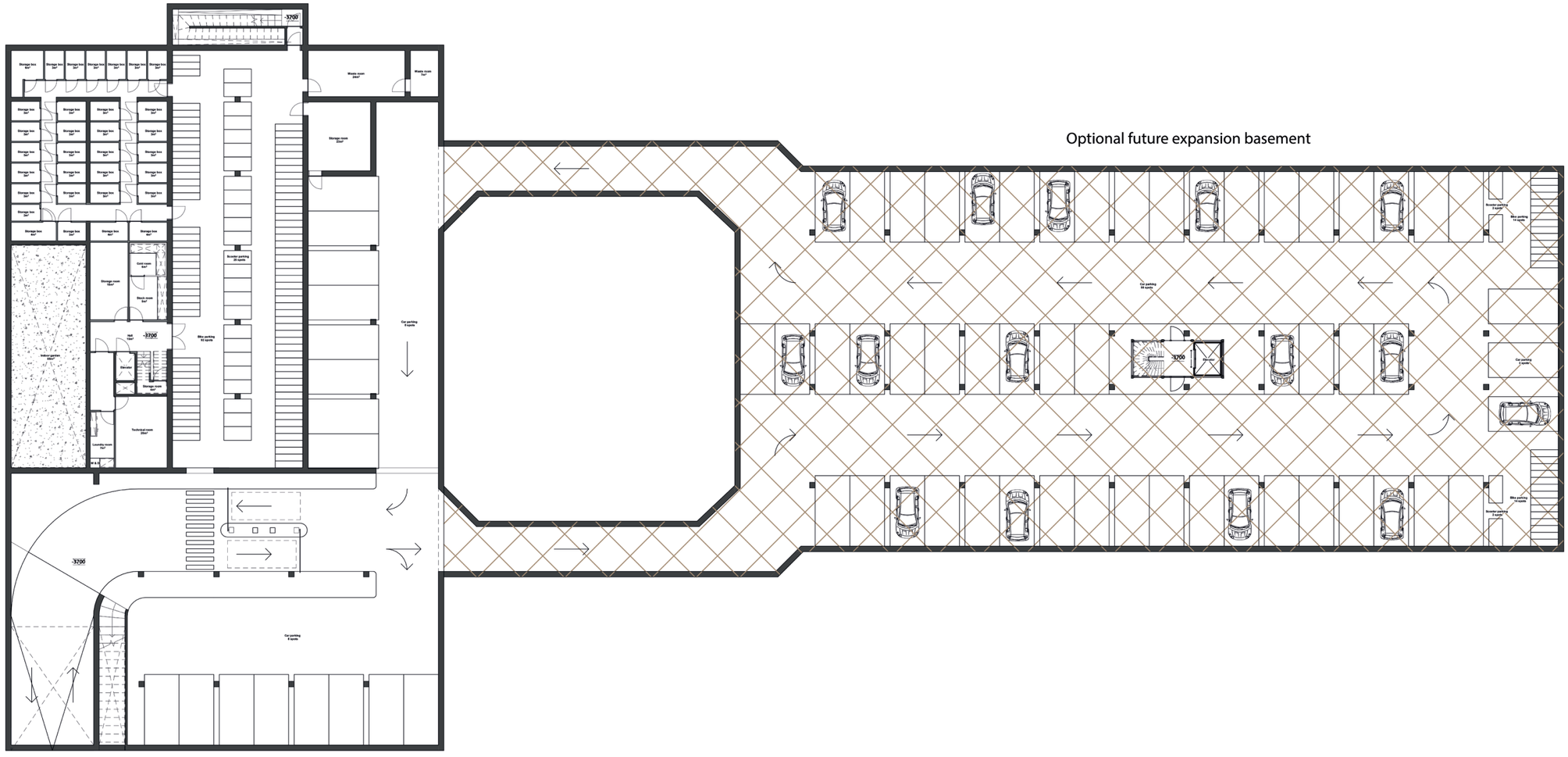
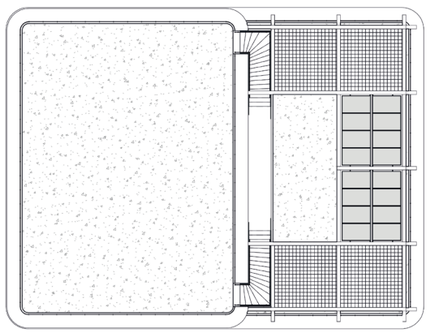



Figure 67: Basement floor

0 25M



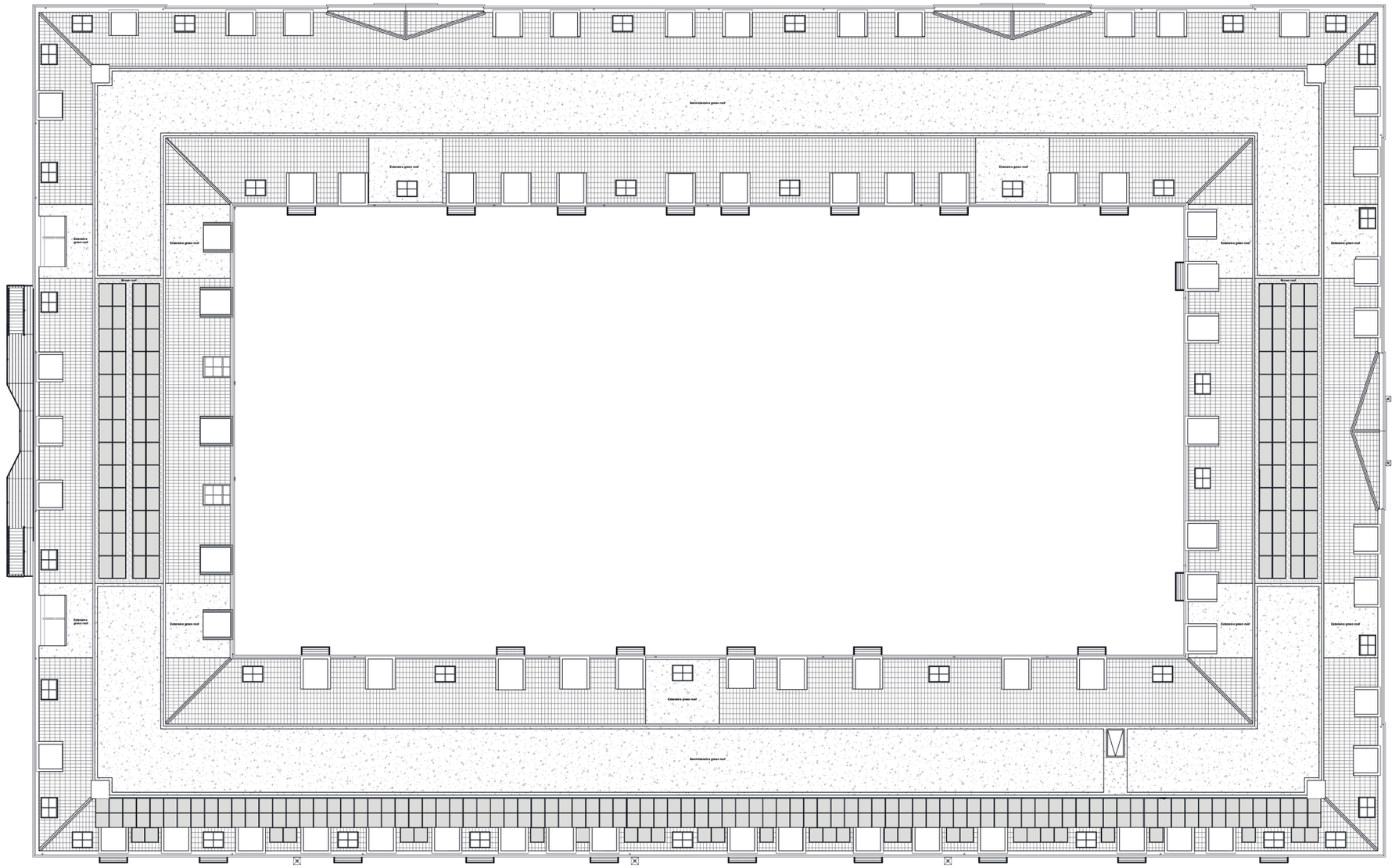



Figure 68: Roof plan

0 25M

# DESIGN
## 2.9 Sections

Between the ground floor and the entresol, maisonette dwellings have been placed. This was done because these floors have a limited height and more spaciousness can be created by placing a void in the entresol floor. In addition, this prevents two different dwellings from sharing a single window.




Figure 69: Cross section

# DESIGN
## 2.9 Sections

It can be seen that there are height differences on the plot and in the building. On the plot, the height differences have been partially eliminated by applying new soil. On top of the basement, a 40-centimetre-high layer of soil has been applied so that vegetation can grow on it. In the building, the height differences have been eliminated by using different thicknesses of floor construction and ramps.




Figure 70: Longitudinal section

0 15M

# DESIGN
## 2.10 Facades

On the representative valued North facade of the monument, no vegetation was applied. This is to preserve the heritage value. Also in the entrances no nature-inclusive possibilities have been applied for the same reason. The degraded low-valued South facade has been restored in a matching style. By removing certain facade openings, relocating some and adding new elements. A large amount of PVT- pannels have been placed on the roof, which are in a favorable orientation and almost not visible from the street. An extra entrance for the art studios has also been designed on the Zakstraat side, bringing more life to the alley.







Figure 71: Facades monument North and South

0 25M

# DESIGN
## 2.10 Facades

The East facade is the new nature-inclusive business card of the building. As a result, vegetation has been applied to this representative facade. On the roof, fauna chimneys have been placed to house starlings and other bird species. These chimneys are a reference to the original chimneys on the building. The degraded low-valued West facade has been restored in a matching style. On the platform, visitors of the community Centre can enjoy the vibrant park. This platform is a reference to the past. The fauna passages have a round shape that fits the time in which the building was made and stand out that increases the plasticity in the facade. The gates in the fauna passage have a matching natural print, which ties in with the building's earlier, more decorative design.







Figure 72: Facades monument East and West

# DESIGN
## 2.10 Facades

The facades show that the nature-inclusive features are symmetrical and balanced applied in the facades. Which ties in with the building's highly valued neoclassical style. The application also takes into account the prevention of nuisance. Above the fauna passages there are two roof terraces which are integrated into the roof surface. This creates a beautiful space where the residents of the studios can dine and play games together.







Figure 73: Facades monument courtyard North and South

0 10M

# DESIGN
## 2.10 Facades

Many new dormers were made in the roof, which greatly improves the quality of the houses behind. The dormers are not placed everywhere. To prevent a monotonous facade image. Thus, the dormers are alternated with roof windows and extendable dormers. Also, the original building had many more dormers than the current site. Larger fauna accommodations have been placed in the existing niches in the West wing. Above the fauna passages, bees were chosen to be housed to prevent nuisance.




Figure 74: Facades monument courtyard East and West

# DESIGN
## 2.10 Facades

The new annex is the smaller brother of the main building. On the highest roof, a blue roof was designed that provides a broadening of biodiversity and as an experience for visitors to the building. On the lower roof, a roof terrace is located where visitors can enjoy a stay. On the roof is a vegetated pergola, in which the PVT-panels are integrated.







Figure 75: Facades botanical café-restaurant North and South

0 10M

# DESIGN
## 2.10 Facades

The facades of the building have an appropriate color and materialisation, which consists of red-brown masonry with wooden eaves and window frames. The masonry rounds out at the corners and has a masonry trim at the top of the façade, which adds to the plasticity of the façade.

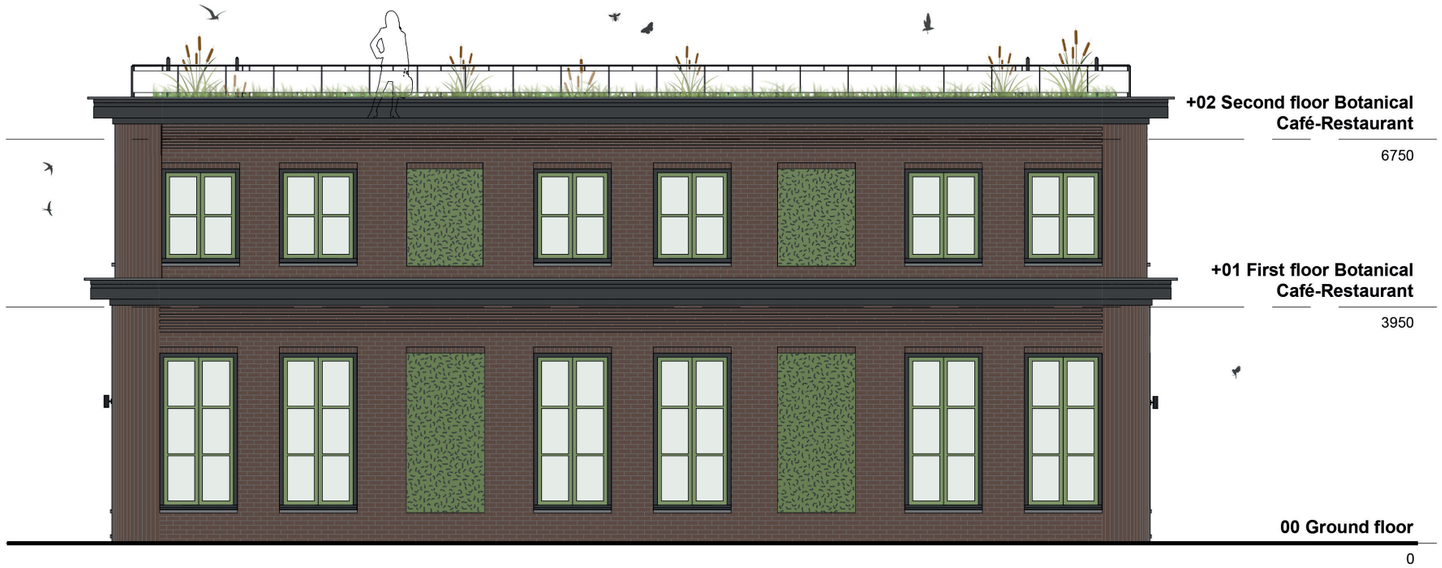






Figure 76: Facades botanical café-restaurant East and West

0 10M

# DESIGN
## 2.11 3D-View




Figure 77: 3D-View Northeast direction

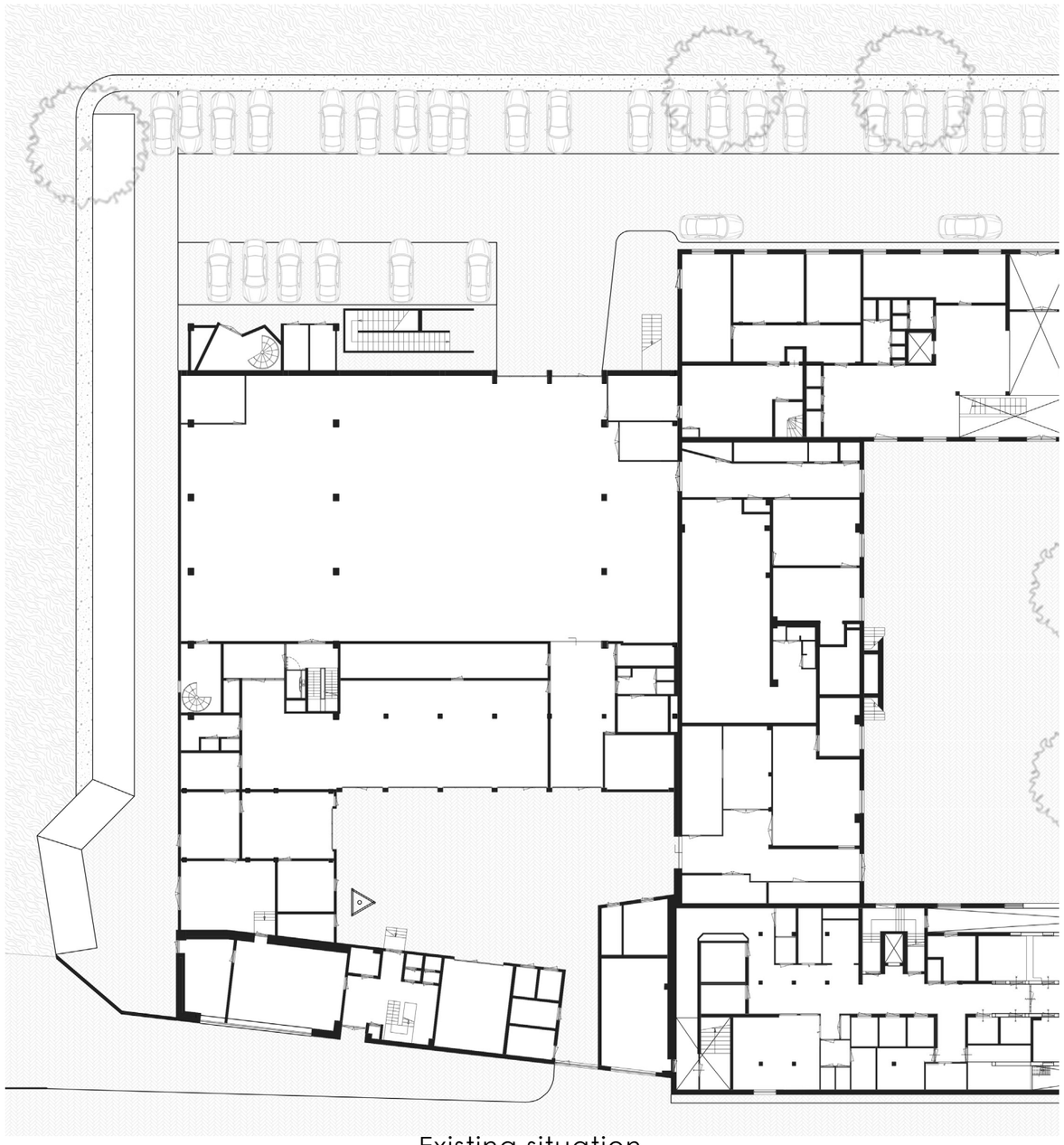



Figure 78: 3D-View Eastsouth direction

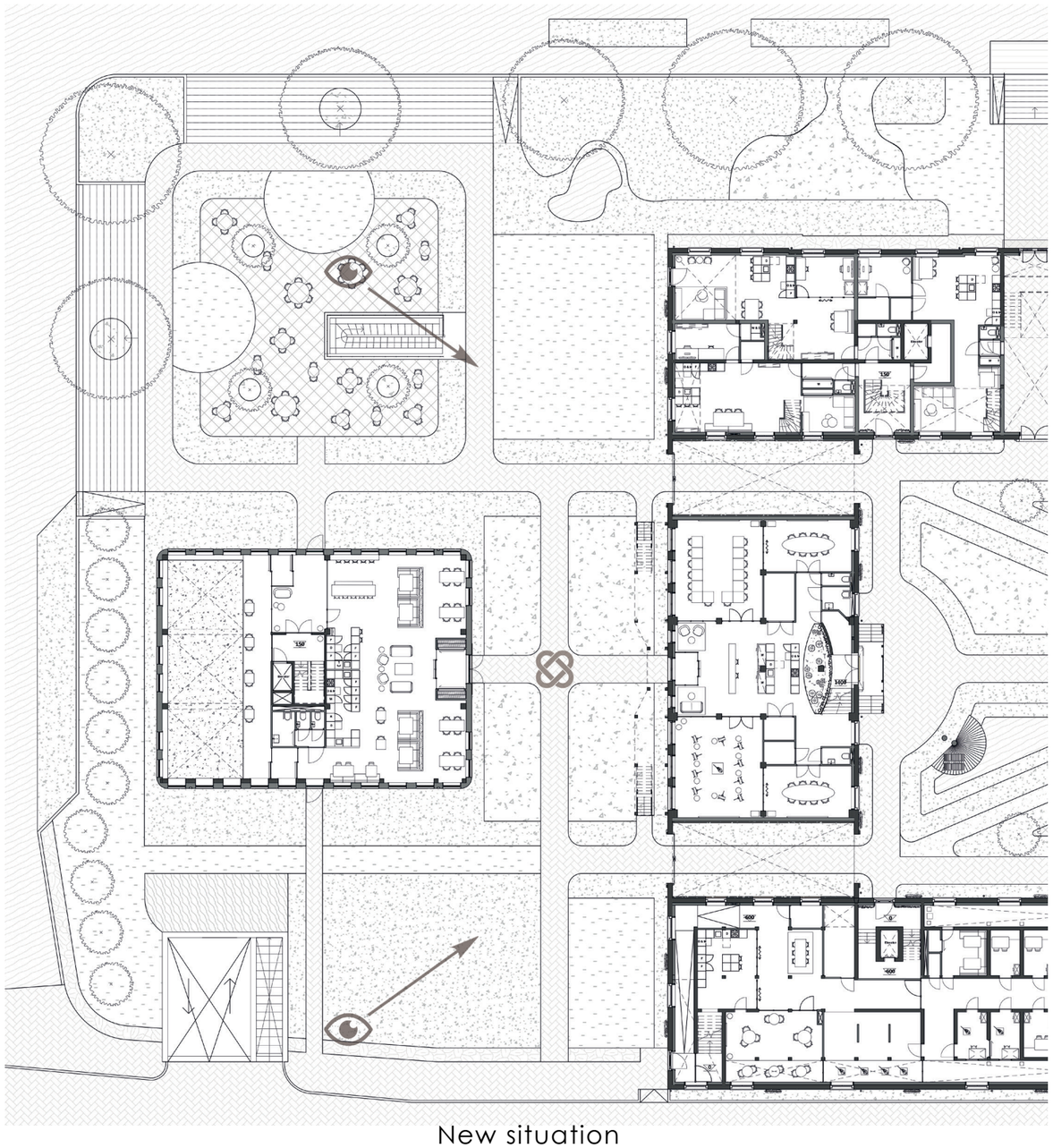
# DESIGN

## 2.12 Conceptpoint - create unity, and restore sight and the clear volume of the monument

The extension blocks the view from the surroundings to the monument and from the monument to the surroundings. The extension also affects the clear volume of the monument. In addition, it contrasts sharply with the main building due to its deviating shape, layout, building elements, materialisation and colour. By removing part of the extension and replacing the non-load-bearing façades with a coherent one, unity is achieved, and the view and the clear monumental volume are restored.



Existing situation



New situation

Figure 79: Existing and new situation

0 25M

# DESIGN

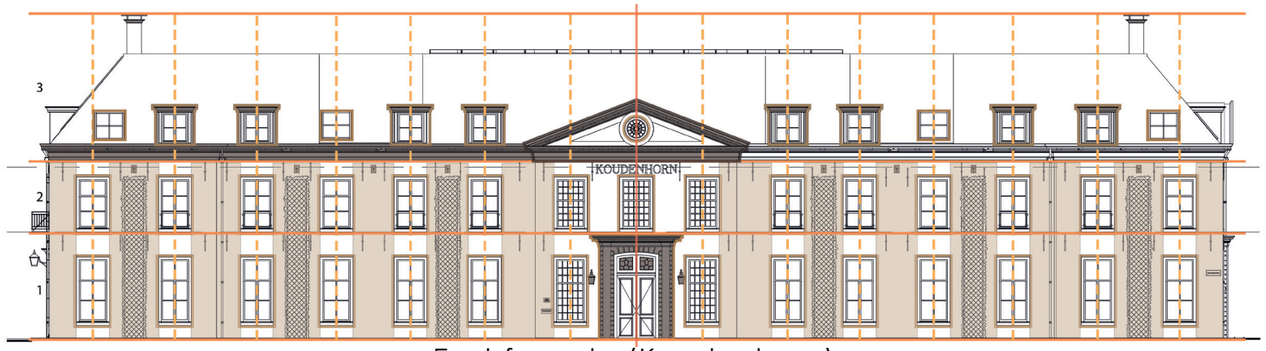
## 2.12 Conceptpoint - create unity, and restore sight and the clear volume of the monument

The main building was built in the neoclassical architectural style. This style is known for the symmetry, hierarchy and rhythm in the facades, with the most important being positioned centrally in the facade. The closed parts seem to indicate a columnar arrangement. The harmony between the facade elements is also important. Pediments are often used in the façades, and the building is restrained in its ornamentation.

On the side is shown the degree to which the new facades connects to neoclassicism. Symmetry and centrality can be found in all façades as well as rhythm and columnar order. A clear hierarchy is present everywhere. In the Northern façade, two pediments are visible and in the Eastern façade, a single one. The existing ornamentation has been retained. The dormers and chimneys have been given a decorative edge. The nesting stones and boxes also function as modern ornamentation. A decorative print has been designed into the gates of the fauna passages. By applying limited ornamentation in the building, it better matches the architectural style. In general, the new facades fit in reasonably well with the neoclassicism. The stylistic features are reminiscent of the building, which gives it value.



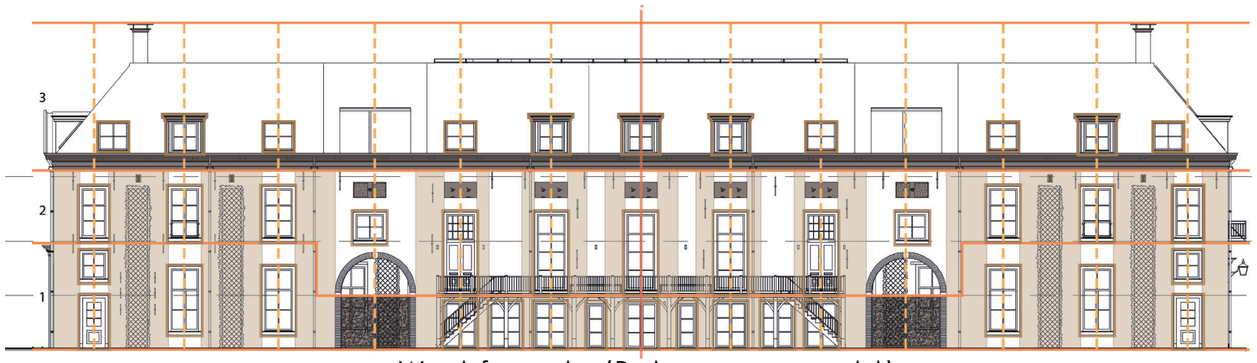

North facade (Nieuwe Gracht)




East facade (Koudenhorn)




South facade (Zakstraat)




West facade (Bakenessergracht)

**Legenda**

- Symmetry and centrality
- Hierarchy
- Rhythm
- Column arrangement
- Harmony of building elements
- Pediment
- Ornamentation

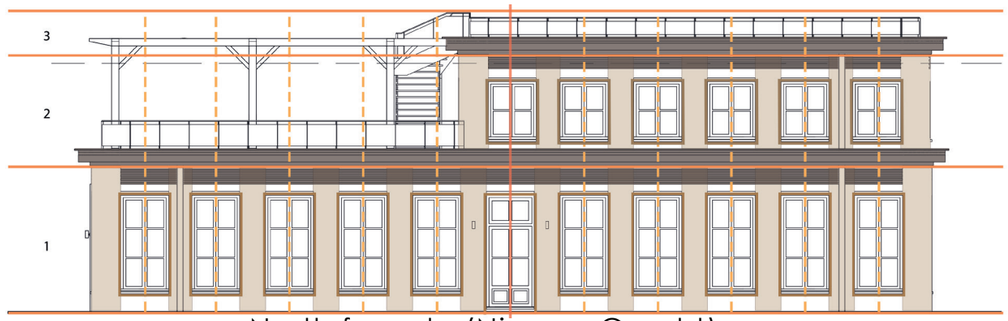
Figure 80: New facade layout main building

0 25M

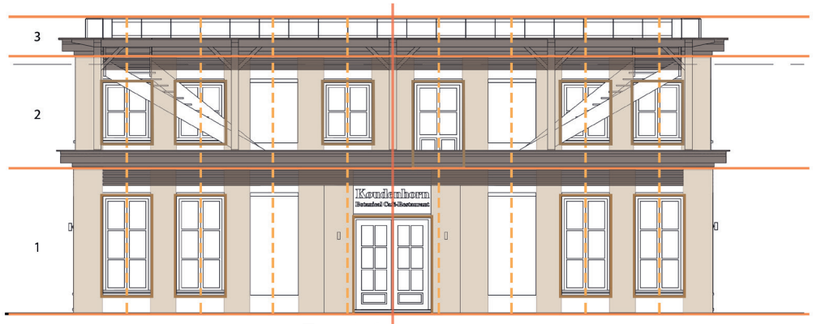
# DESIGN

## 2.12 Conceptpoint - create unity, and restore sight and the clear volume of the monument

To create unity between the main building and the extension, the same neoclassical style features are used in the extension, such as: symmetry and centrality, hierarchy, rhythm, column arrangement, harmony of building elements and ornamentation.




North facade (Nieuwe Gracht)




East facade




South facade (Zakstraat)




West facade (Bakenessergracht)

**Legenda**

- Symmetry and centrality
- Hierarchy
- Rhythm
- Column arrangement
- Harmony of building elements
- Pediment
- Ornamentation

Figure 81: New facade layout extension

0 25M




Figure 82: Impression West facade monument and extension

# DESIGN

## 2.13 Conceptpoint - connecting to and strengthening the ecological structure

Currently, the outdoor space is large and paved and there is little to no shallow water and low vegetation, which is an important basis for biodiversity. The realisation of nature-inclusive buildings and plot creates a vibrant biodiversity. It also improves human activity, health, the immune system and well being. It enhances the quality of the living environment and promotes social interaction.

Bird, mammal and insect species that depend on the city and like to live in or on buildings are targeted in the design. These include the swift, house martin, house sparrow, starling, common pipistrelle, nathusius pipistrelle, soprano pipistrelle, parti-cloured bat, serotine bat, wild bee and butterfly. All these fauna species have individual habitat requirements which have been described in the previous study. The different fauna species have been distributed over the different zones that have been set up according to the habitat requirements.

The nature-inclusive redesign uses the following six design criteria:
1 Based on building opportunities
2 Intervention proportional to added value
3 Preserve heritage value
4 Apply to the facade
5 preserve functionality
6 Counteracting nuisance

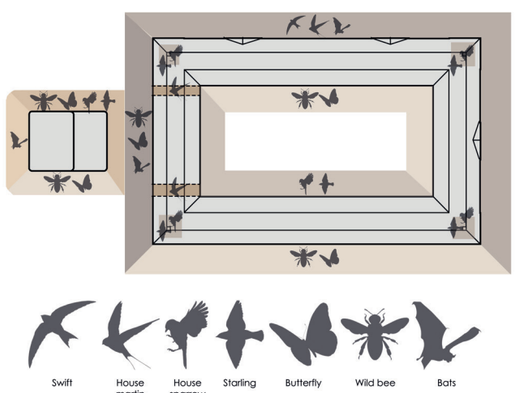



Figure 83: The fauna zones

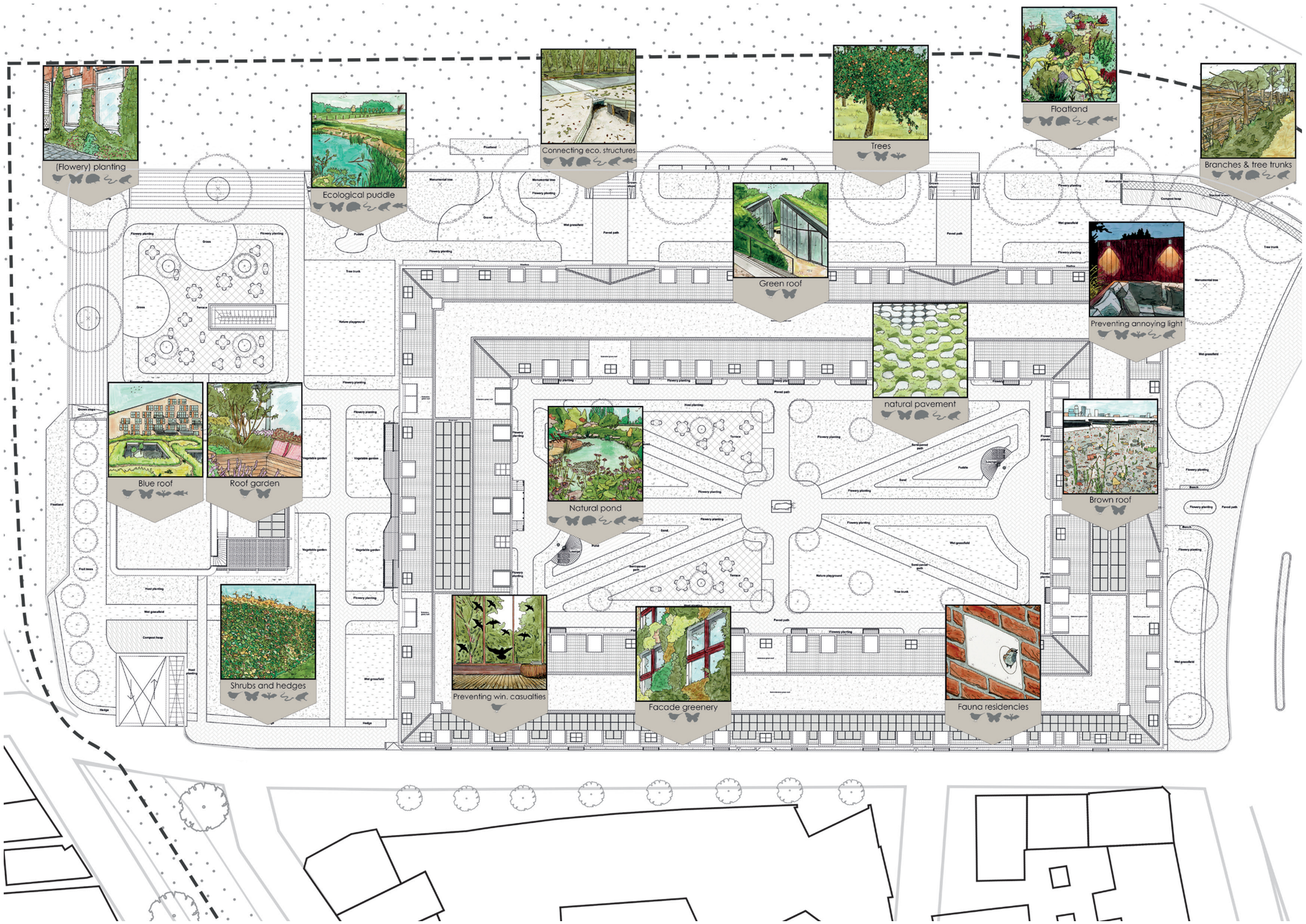
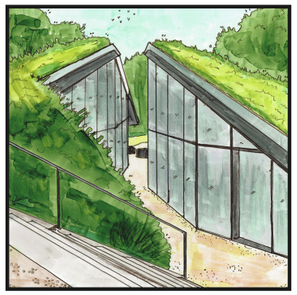



Figure 84: Ecological interventions on the plot

# DESIGN
## 2.13 Conceptpoint - connecting to and strengthening the ecological structure


Green roof


Roof garden

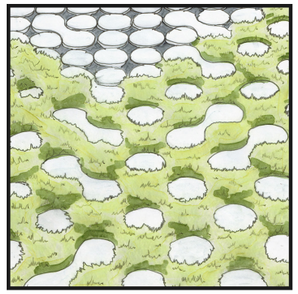

Brown roof


Facade greenery


Trees


Shrubs and hedges


(Flowery) planting


natural pavement

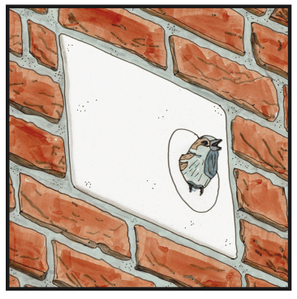

Branches & tree trunks

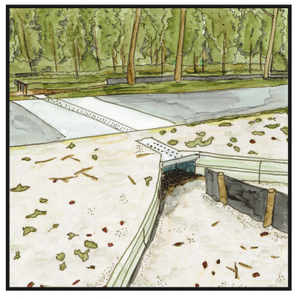

Blue roof

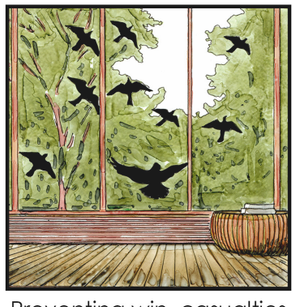

Natural pond


Ecological puddle


Floatland


Fauna residencies


Connecting eco. structures


Preventing win. casualties


Preventing annoying light


Wadi


Green (quay) walls

Figure 85: The used nature-inclusive possibilities

The nature-inclusive options applied as a result of the research carried out earlier are shown on the side. The fauna species that benefit from the various possibilities are indicated. This shows that in addition to swift, house martin, house sparrow, starling, common pipistrelle, nathusius pipistrelle, soprano pipistrelle, parti-cloured bat, seratin bat, wild bee and butterfly, the plot and the building are also an ideal habitat for other birds, insects, mammals, reptiles, amphibians and fish.

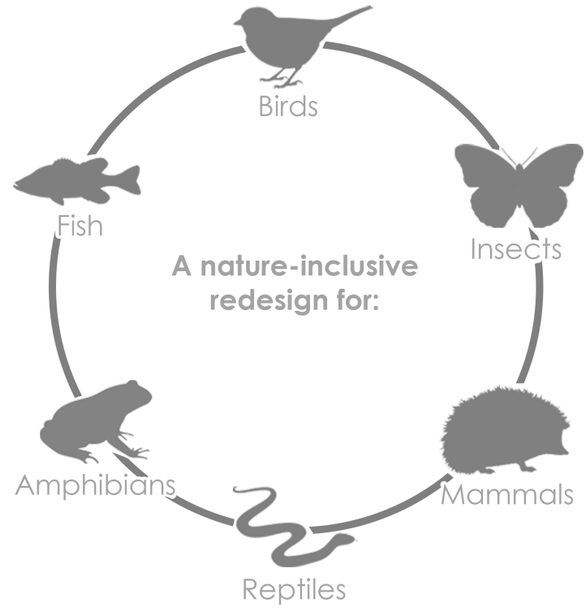



Figure 86: The animal groups for whom the nature-inclusive redesign is made

# DESIGN

## 2.13 Conceptpoint - connecting to and strengthening the ecological structure

The ideal habitat was created for all species. The figure shows how this was done for the house sparrow in the courtyard.



House sparrow

Environment

Food

Accommodation

**Requirements environment**

* Messy human environment
* Shrubs & meadows
* Dust and water bath
* Not many tall trees
* Seads, grains, peanuts, berries, flower buds, fatt balls, bread, and insects

**Requirements Accommodation**

* In or on buildings
* North, East and (West) orriëntation
* 3-15m height
* Preferably not above windows
* Loose colonies (minimum distance 50cm)
* Nesting stones, nesting boxes, bird vides
* Specific dimensions accommodation

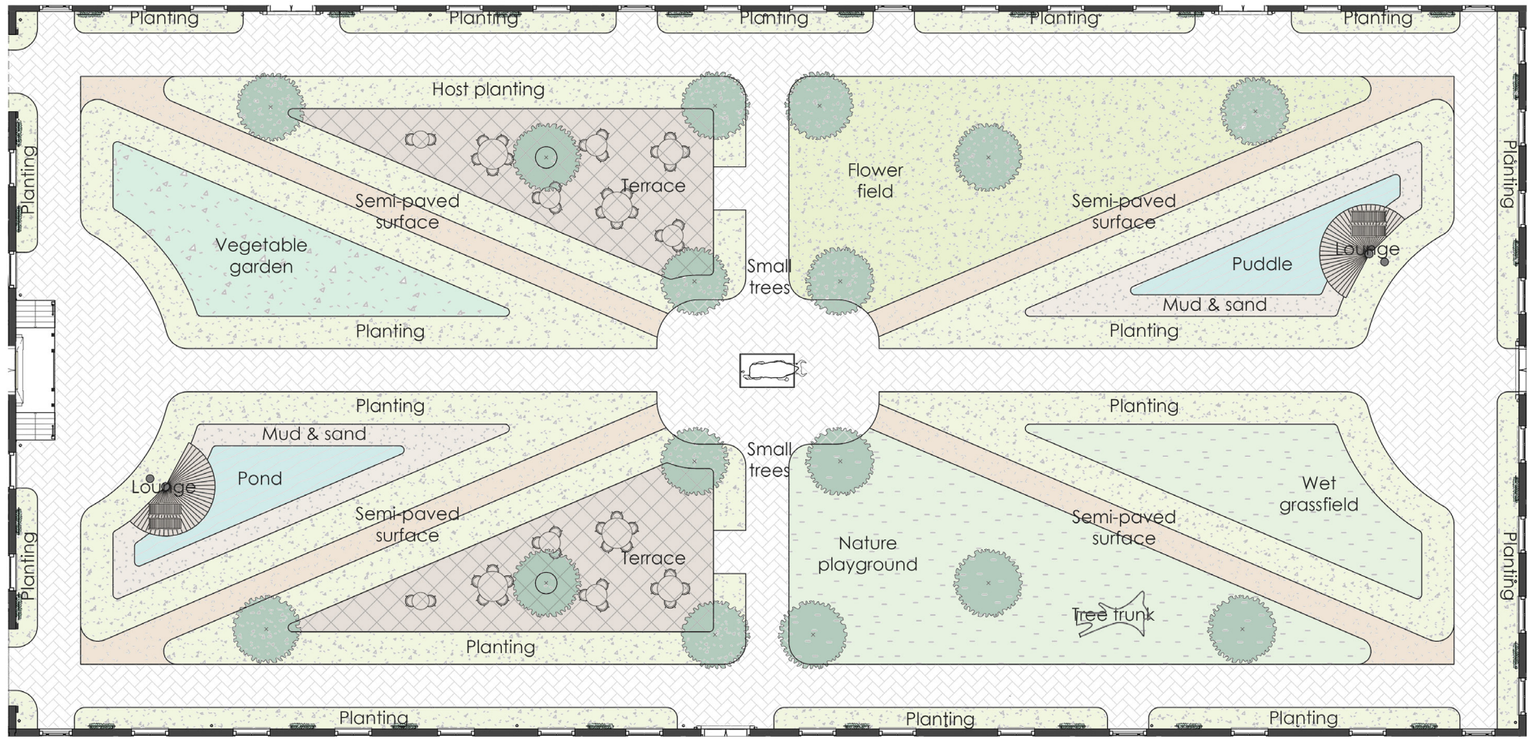






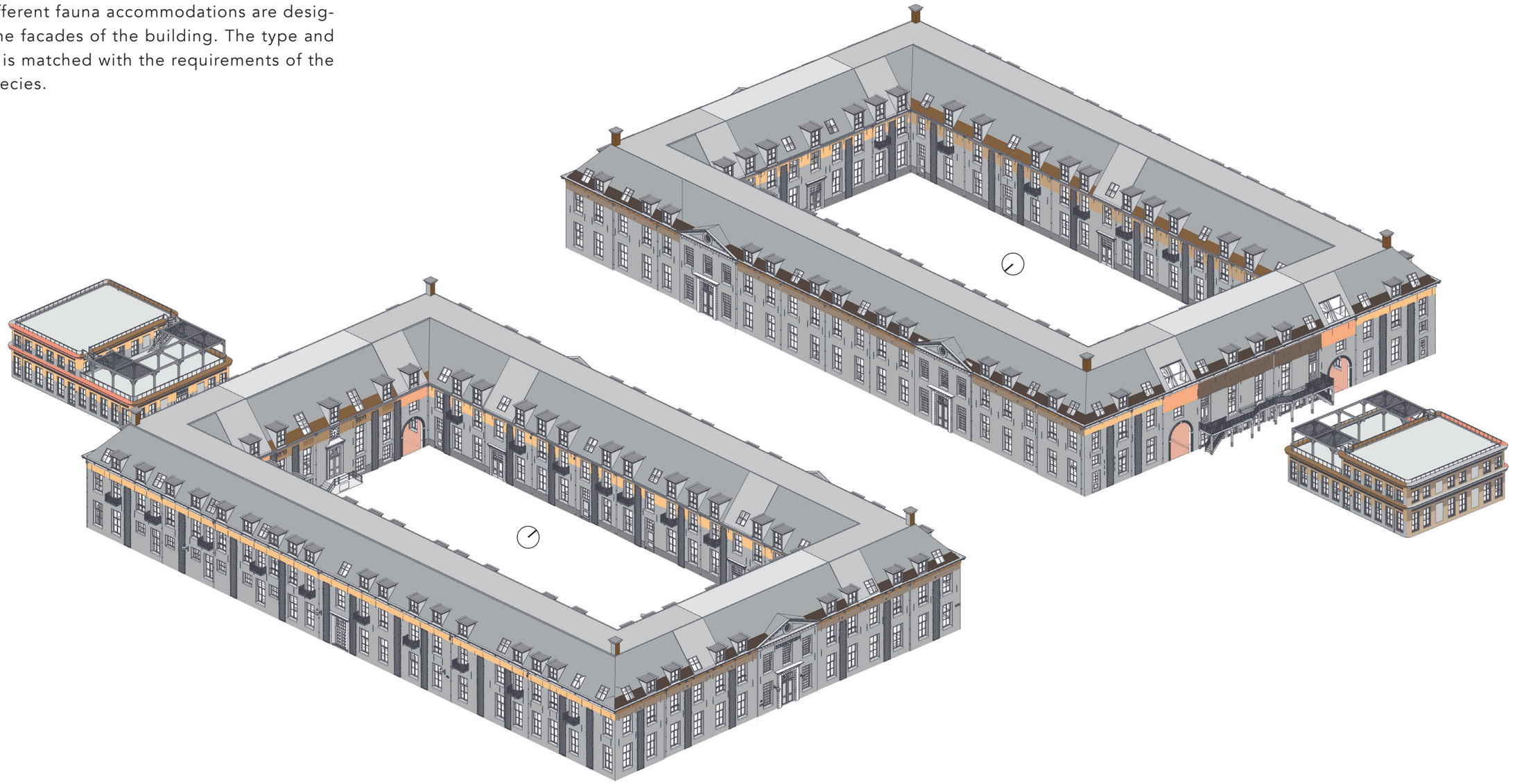
Figure 87: The ideal living environment for the house sparrow

0 25M

# DESIGN

## 2.13 Conceptpoint - connecting to and strengthening the ecological structure

Many different fauna accommodations are designed in the facades of the building. The type and position is matched with the requirements of the fauna species.



Mammals in cavity wall
Mammal stones in wall
Mammal boxes in wall
Mammals between roof layers
Bird stones in wall
Bird boxes in wall
Bird boxes in roof edge
Bird vides between roof layers
Bird boxes in chimney
Bird boxes hanging
Insect stones in wall
Insect boxes in wall
Insect boxes in roof edge

Figure 88: Types of fauna accommodations

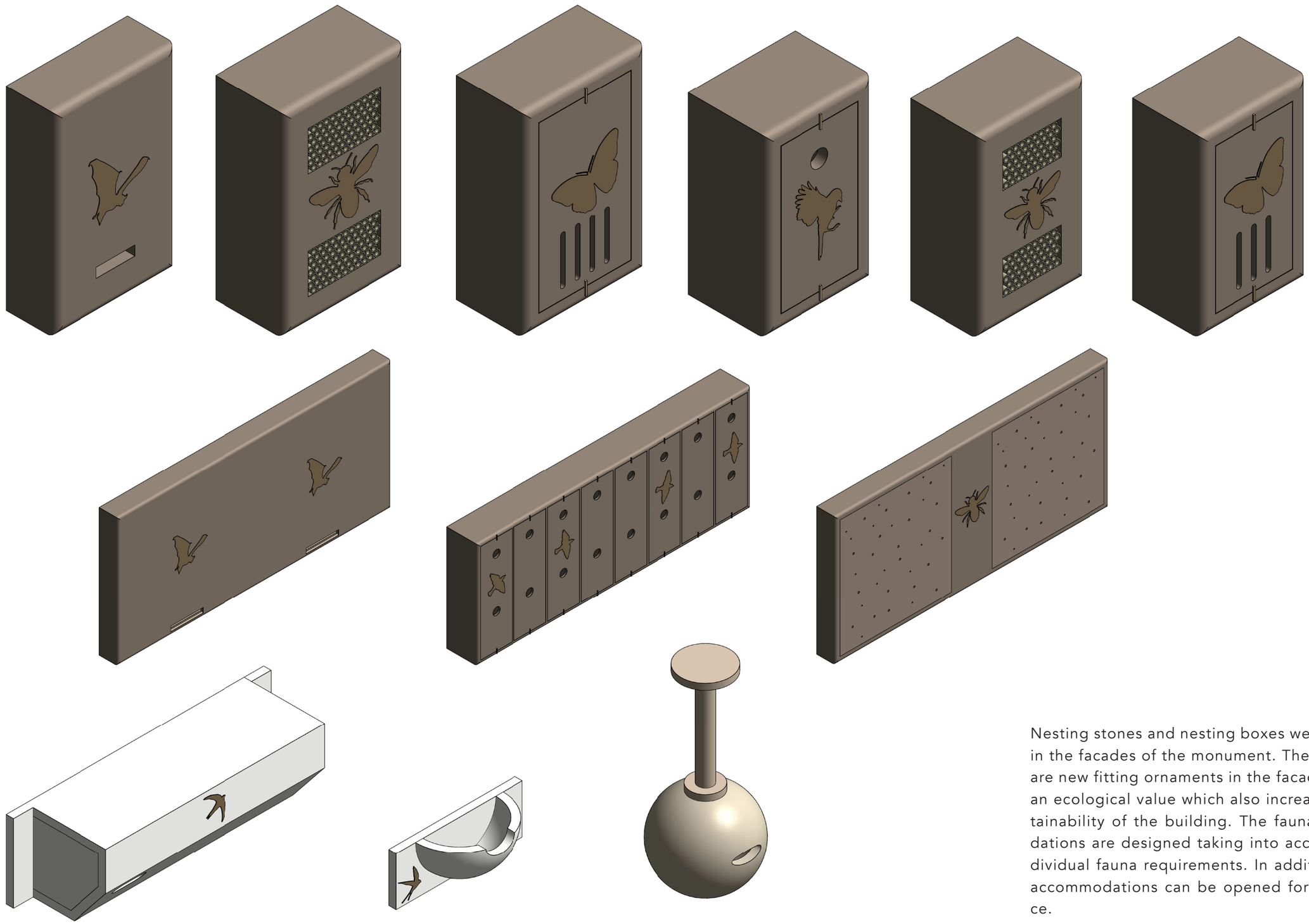


Figure 89: Fauna stones and boxes monument

Nesting stones and nesting boxes were designed in the facades of the monument. These elements are new fitting ornaments in the facades and add an ecological value which also increases the sustainability of the building. The fauna accommodations are designed taking into account the individual fauna requirements. In addition, certain accommodations can be opened for maintenance.



Figure 90: Model house sparrow nesting stone

# DESIGN

## 2.13 Conceptpoint - connecting to and strengthening the ecological structure

In order to create a lively nature-inclusive oasis inside the courtyard as well, two green axes were designed, connecting the courtyard with the ecological structure. In the load-bearing West wing, two openings are made that fit within the highly valued façade layout. Greenery runs through this passage in order to make the transition as gradual as possible. This axis will also be extended over the building. These green axes serve as a fauna passage. Gates have been installed in these passages that can be closed in the evening. wwIn addition, indoor gardens have been designed in the different porticoes, in the community centre, main entrance and botanical café-restaurant.

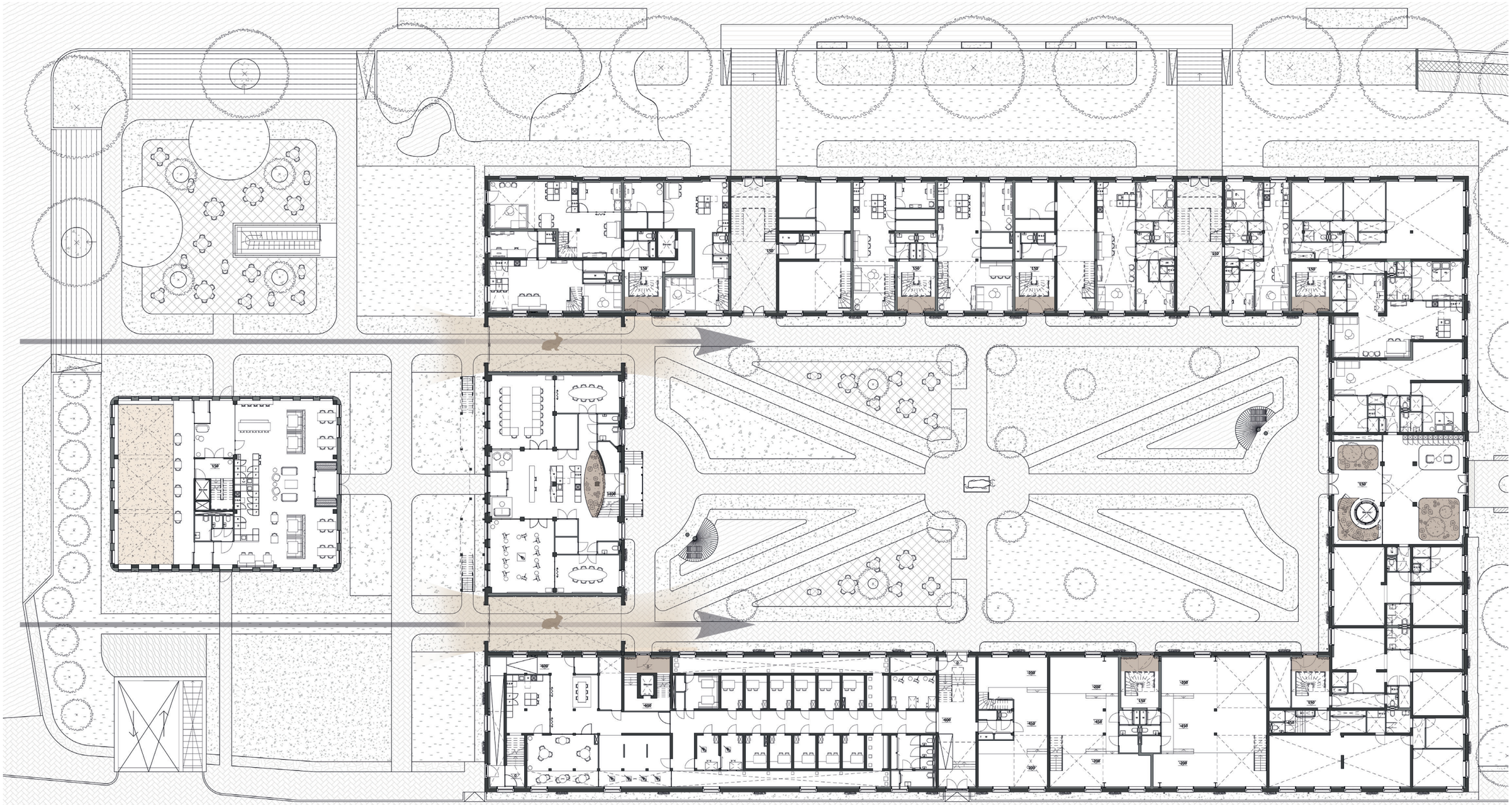


Figure 91: Ecological interventions in the building

0 25M



Figure 92: Impression of the nature-inclusive courtyard




Figure 93: Impression faunapassage

# DESIGN
## 2.14 Conceptpoint - functional mix creating a vibrant place

The building will house a combination of different functions. These include housing, a community centre, an art complex and a botanical café-restaurant. These different functions create a lively place where the different target groups can come together. In the housing complex, the terraces, collective gardens and nature playground bring liveliness and bring people together. Collective activities and events can be held in the community centre.



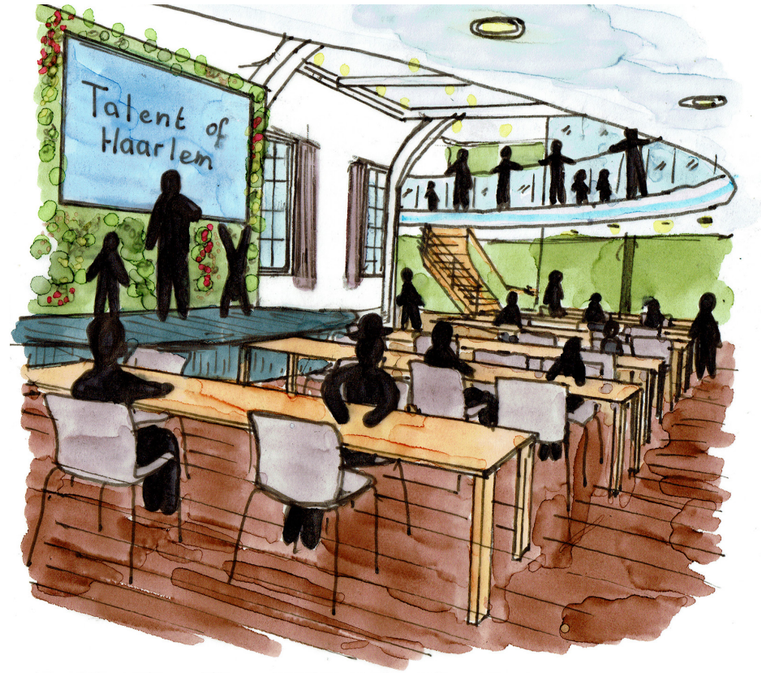









Figure 94: Functional mix creating a vibrant place. On the top left the collective activity space in the community centre, in the top right the collective events in the community centre, in the bottom left the nature playground, in the bottom middle the collective vegetable garden and on the bottom right the collective terrace

# DESIGN

## 2.14 Conceptpoint - functional mix creating a vibrant place

The botanical café-restaurant grows many different species of flora and houses certain species of butterflies and birds. A café-restaurant will be placed in this special ambiance. It is also possible to organise events here.



Figure 95: Pinterest. (n.d.). [Flowery outdoor garden]



Figure 96: Haarkon. (2017, June 12). [Botanical indoor garden]

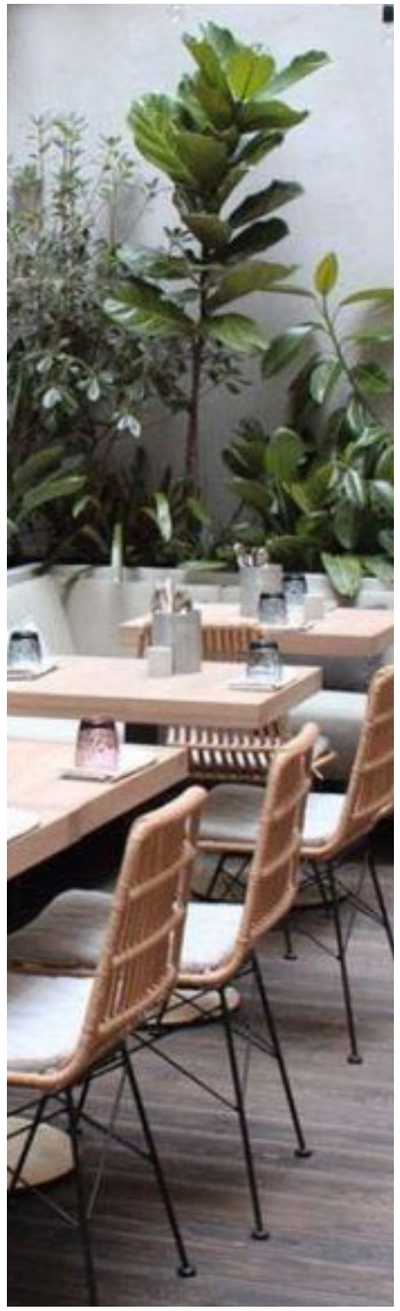


Figure 97: Pinterest. (n.d.). [The café-restaurant]



Figure 98: Cheadle bride. (2019, April 4). [Events in the botanical café-restaurant]



Figure 99: Fauna species in the botanical café-restaurant



Figure 100: Pinterest. (n.d.). [Food production]

# DESIGN

## 2.14 Conceptpoint - functional mix creating a vibrant place

The art complex is a place where art is made with many different techniques such as painting, drawing, carving, sculpturing and photography. The art has a natural theme. The art complex is located in an inspiring place, namely the old cell complex.

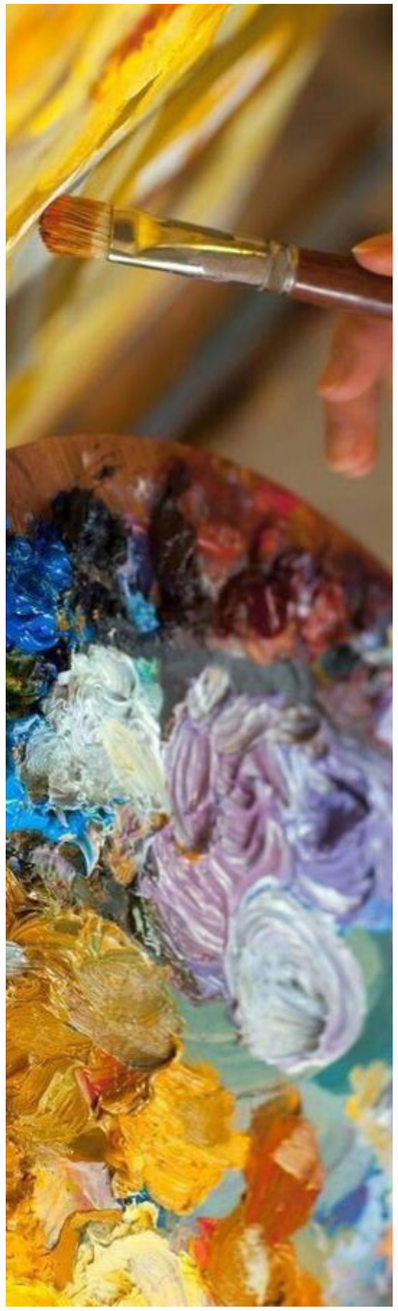


Figure 101: Kataria, S. (2020). [Painting]. Musesymphony.Wordpress



Figure 102: Arejka. (2013, July 10). [Drawing]. Deviantart.

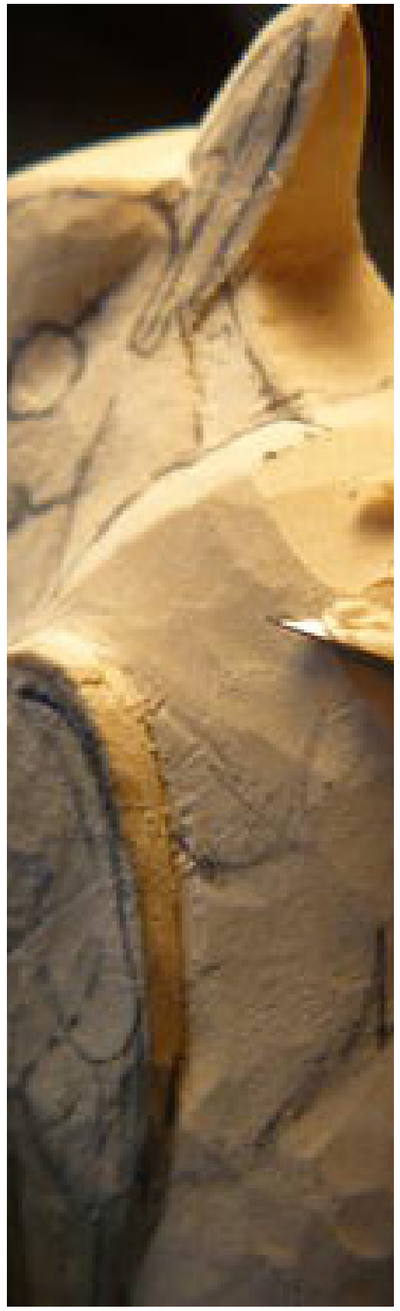


Figure 103: Rechin, J. (n.d.). [Carving]. Wildfowl-Carving

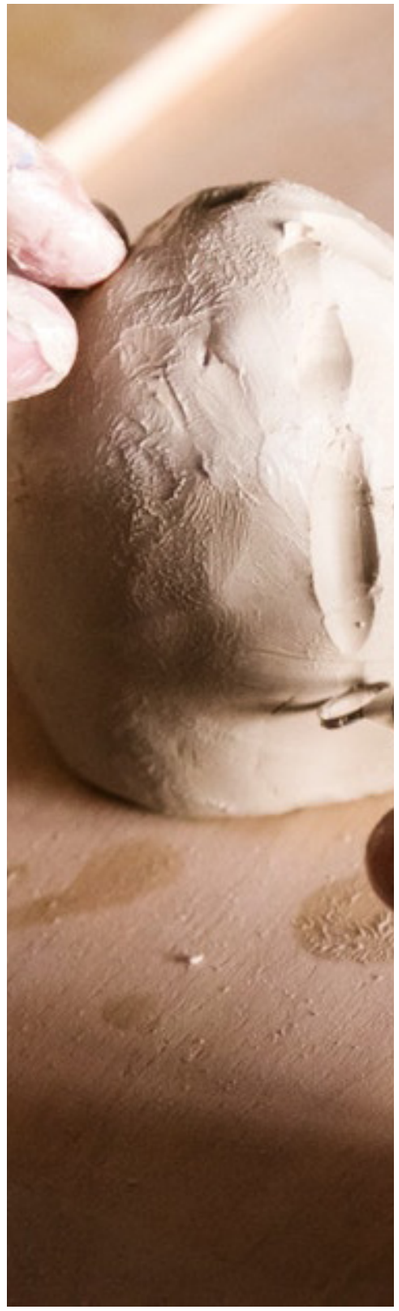


Figure 104: [Sculpturing]. (n.d.). Coursehorse




Figure 105: Pinterest. (n.d.). [Photography]

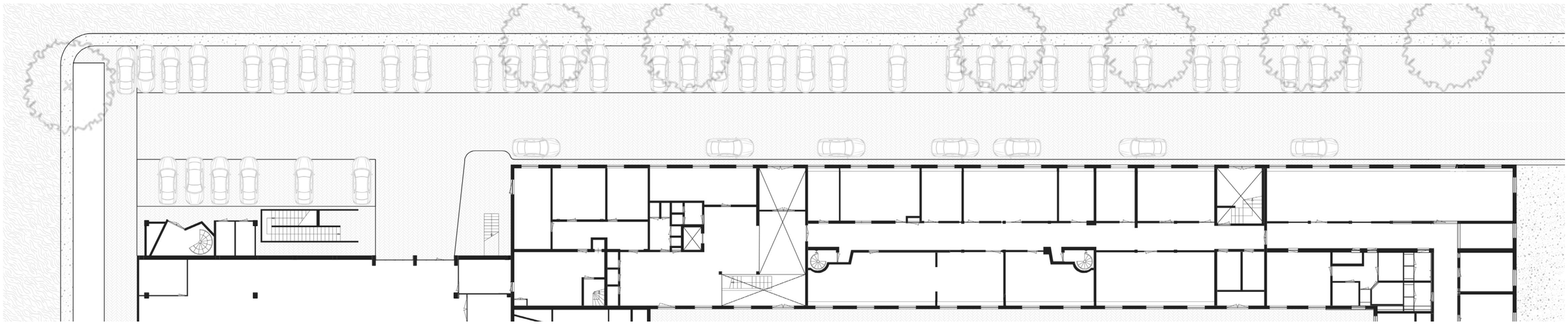


Figure 106: Pinterest. (n.d.). [Cells]. Pinterest

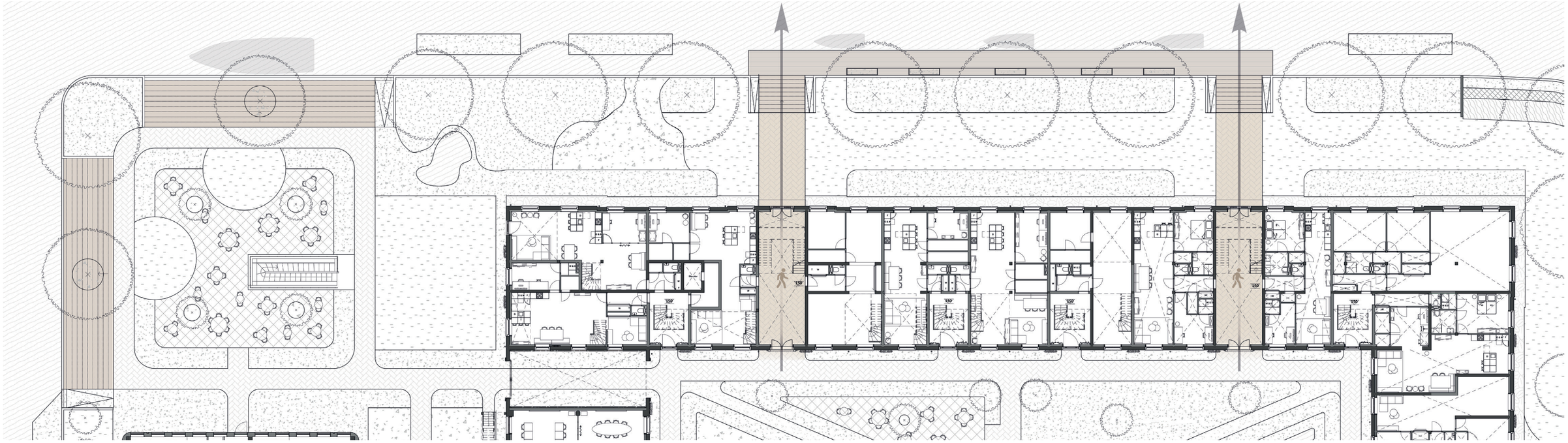
# DESIGN

## 2.15 Conceptpoint - connecting to the water

Despite the fact that the plot is on three sides surrounded by the highly valued water, it is not connected to it. This is due to the high quays and visual and physical barriers such as the bicycle shed and the car park. First of all, the connection with the water is made by removing the bicycle shed and the car parking. In addition, the public area is connected by adding stairs in the quays that descend to a lounge boat on the water. From the courtyard, two axes run through the old, highly valued North entrances to the waterside. Steps have been added to the quayside that descend to a jetty under the monumental trees. In the building itself, walls and floors have been removed. A connection with the water promotes its use and enhances the spatial quality.



Existing situation



New situation

0 25M

Figure 107: Existing and new situation

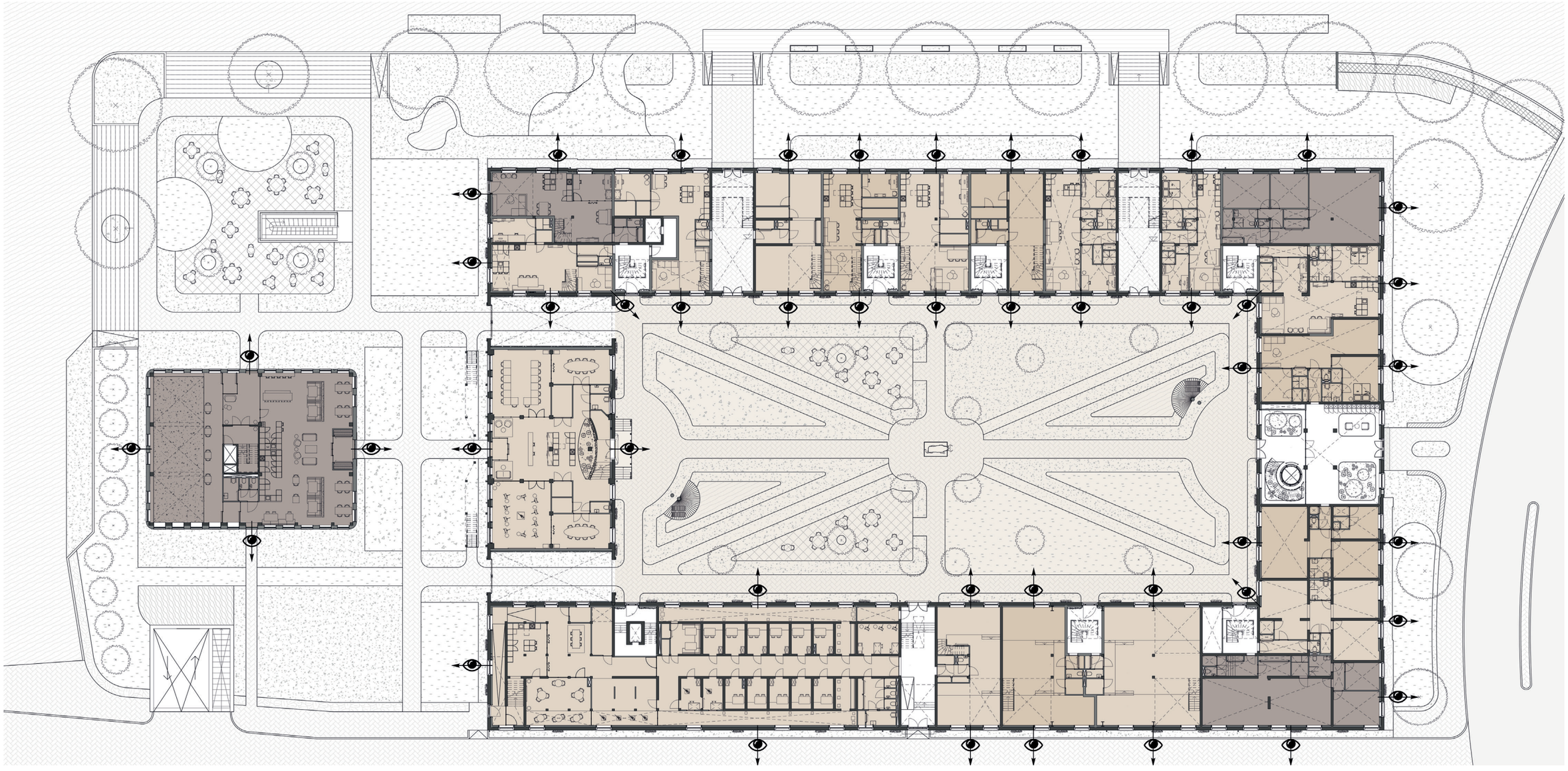



Figure 108: Impression connection with the water

# DESIGN

## 2.16 Conceptpoint - connected to the vibrant and nature-inclusive courtyard and surroundings

By realising porticoes and applying maisonette dwellings at certain positions, almost all dwellings are connected to the valued courtyard. Also almost all homes are oriented to two sides, which provides a view of the nature-inclusive environment and enhances the spatial quality. In addition, certain facade elements will be adapted and new elements will be placed to create a better connection between the interior and exterior space. Such as roof dormer balconies, balconies, indoor balconies and opening windows.



Connected to the courtyard and surrounding
Connected to the surrounding
Courtyard

0 25M

Figure 109: connection of the interior spaces with the nature-inclusive courtyard and surrounding




Figure 110: Impression connection with the nature-inclusive environment

# DESIGN
## 2.17 Circulation

The new circulation consists of porticoes, corridors and connected rooms. These circulation elements are connected to the appreciated courtyard and entrances, thus experiencing these valued elements. Existing elevators and stairs were used as well.

Courtyard
Entrance
Vertical circulation
Routing

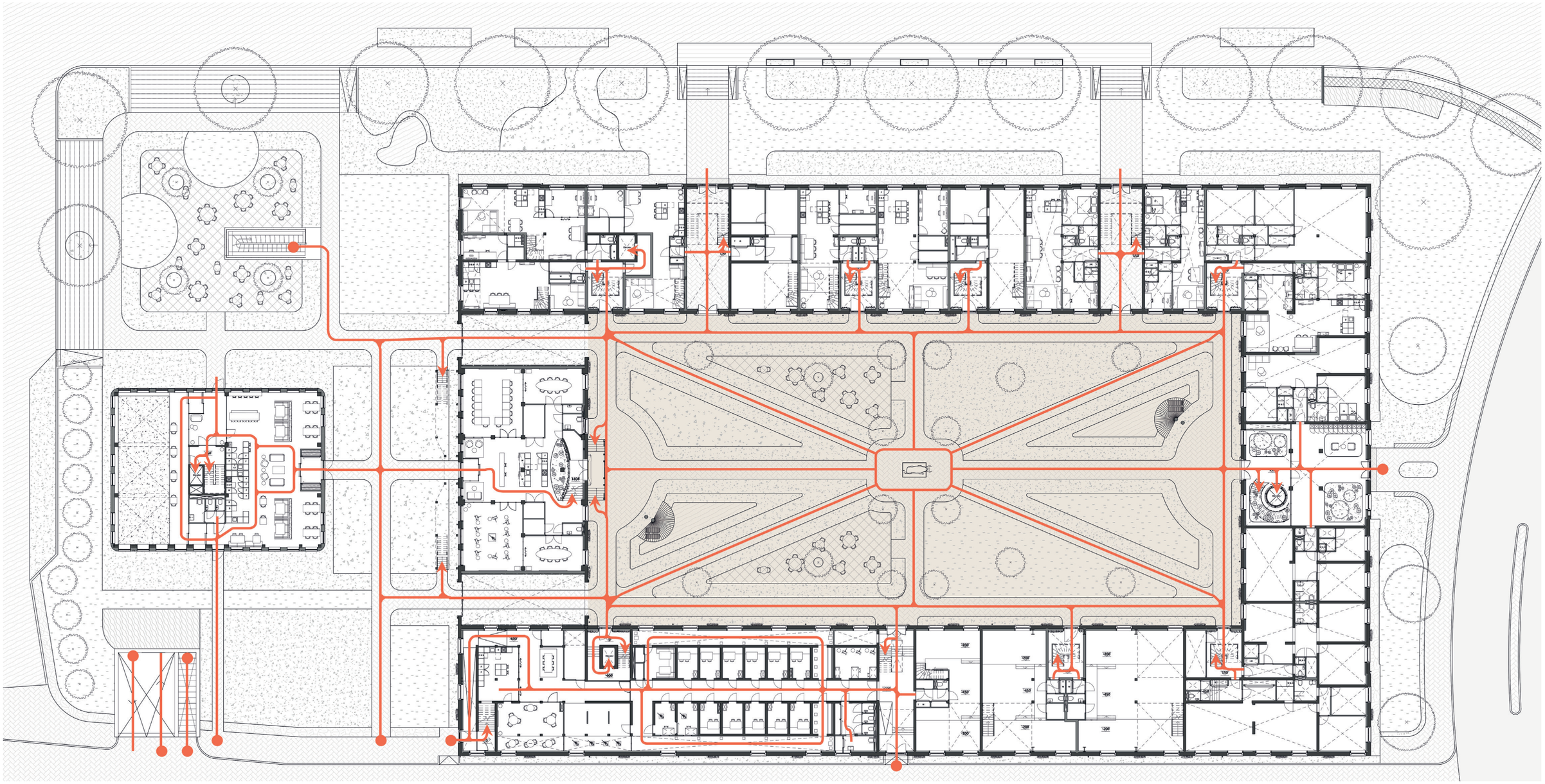


Figure 111: Circulation ground floor

0 25M

# DESIGN
## 2.18 Typologies

A wide variety of housing typologies are designed in the building, including maisonettes, apartments and studios. These dwellings are puzzled into the building. In the figure a part of the dwellings is visible.




Figure 112: Some of the designed typologies

# DESIGN
## 2.18 Typologies

The different homes possess many qualities. The qualities of three homes of the different target groups are outlined. In the figure on the right two family maisonettes on the first and second floor are visible. These residences are located above the cell complex, so these residences are not accessed by a portico but by a corridor on the first floor. To ensure that as many dwellings as possible are connected to the courtyard, the masionettes have been designed in a rotated manner. On the other side the houses look out over the typical green Haarlem alley. The houses have all the functionalities. They are spacious and light. The kitchen and living room are in open connection with each other and the homes are connected to the nature-inclusive environment by balconies, roof dormer balconies and indoor balconies.




Figure 113: Layout family maisonettes first and second floor

# DESIGN
## 2.18 Typologies

The young couple studio on the second floor is located above the community centre, which is why it was decided to access it via a corridor on the West side. This way the studios are connected to the courtyard and less traffic space is lost. The studios have all functionalities, are spacious and the kitchen and living room are in open connection with each other. The studio is connected to the nature-inclusive environment by a roof dormer balcony and a shared roof terrace on the West side.

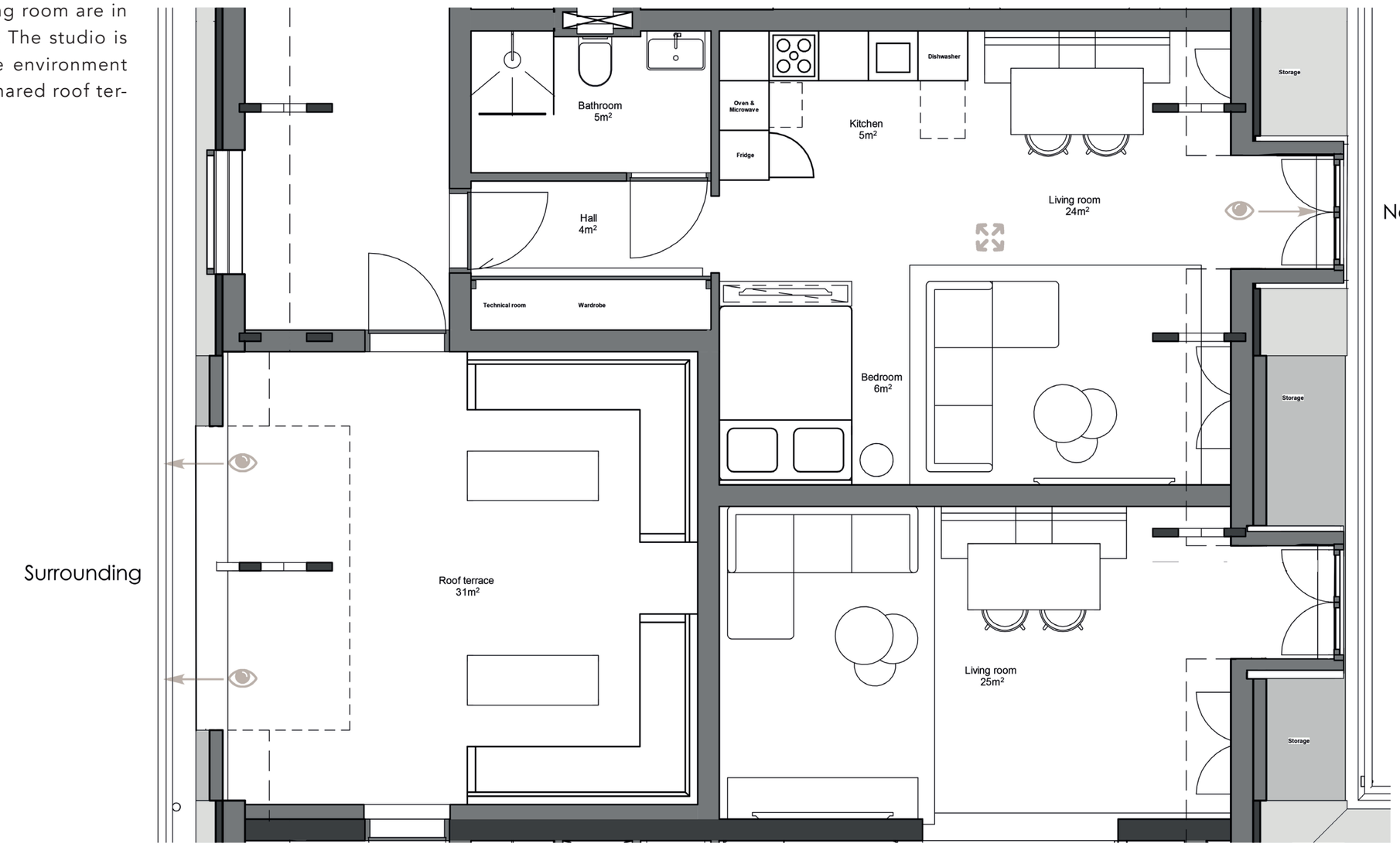



Figure 114: Layout young couple studio second floor

# DESIGN
## 2.18 Typologies

This is a senior apartment on the ground floor. This apartment can be reached via the passage through the old entrance to the water. The apartment is connected to the courtyard on one side and overlooks the Nieuwe Gracht on the other. The apartment has all the functionalities and is designed with integral accessibility. It is a spacious and light house. The kitchen and living room are in open connection to each other. The connection with the nature-inclusive environment is made by openable windows.

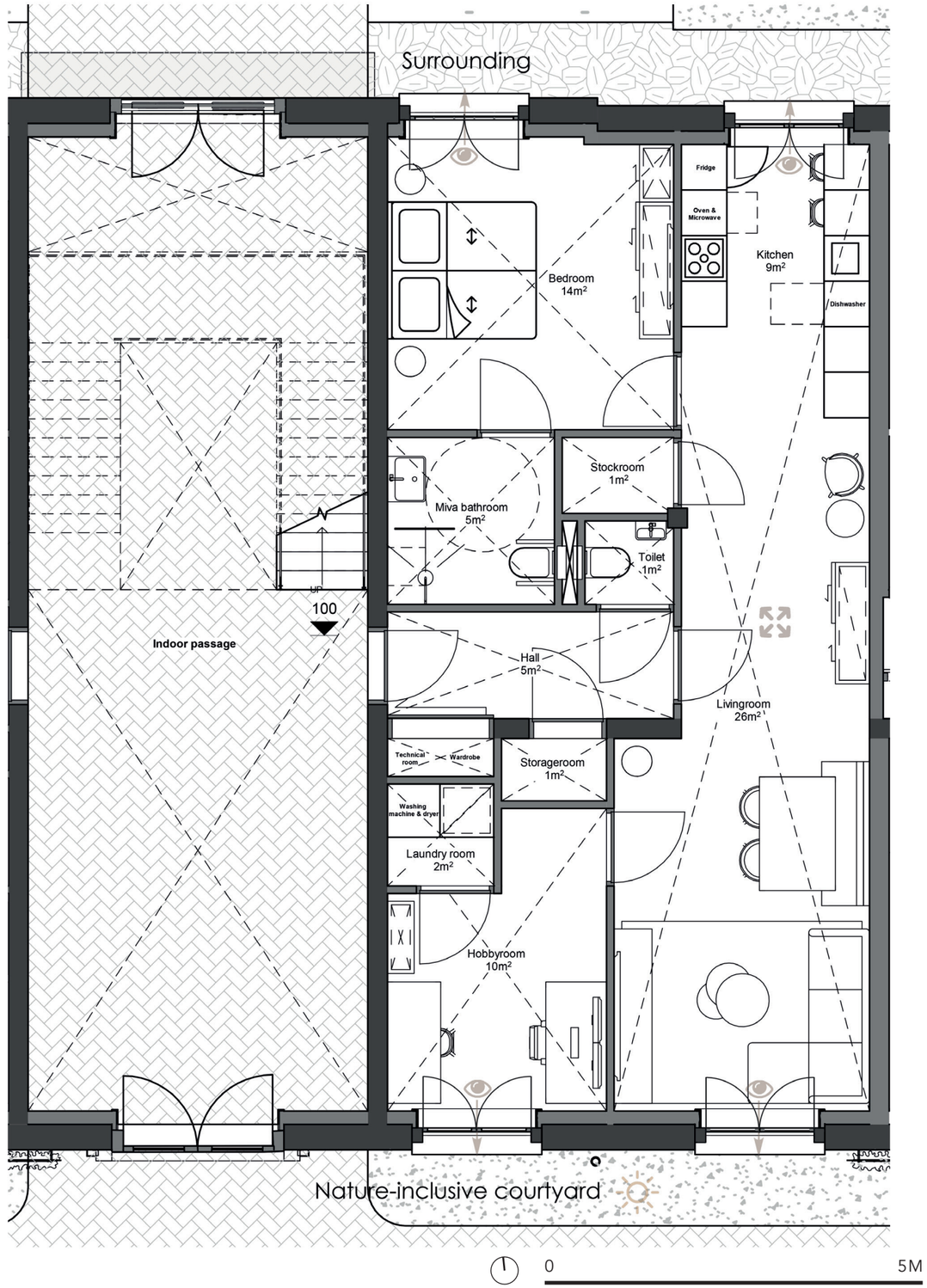



Figure 115: Layout senior appartment ground floor




Figure 116: Overview apartment first floor




Figure 117: Overview two apartment first floor




Figure 118: Living room apartment first floor




Figure 119: Dinning room apartment first floor




Figure 120: Kitchen apartment first floor

# DESIGN
## 2.19 Structure

The existing structure of the extension was partially removed. The basement below was expanded and equipped with a ramp. Balconies have been attached to the facades of the main building by placing two steel plates on either side of the wall, through which bolts run. Voids have been realized in the entresol floor for the creation of more spaciousness and to prevent cold bridges. These voids run to the beam behind them, so no extra supporting structures are needed. Voids have also been created at the locations of the porticoes, where the existing floor will be supported by a wooden frame. In addition, a new wooden platform and pergola construction has been designed. In the upper floor residences, porticoes and old entrances, the highly valued roof structure is visible. Also the thick wooden columns and beams in the communnity centre are left in sight for the same reason. By making the wooden beams visible in the dwellings on the second floor more spatiality is realized, the space seems larger and gives a character to the space.

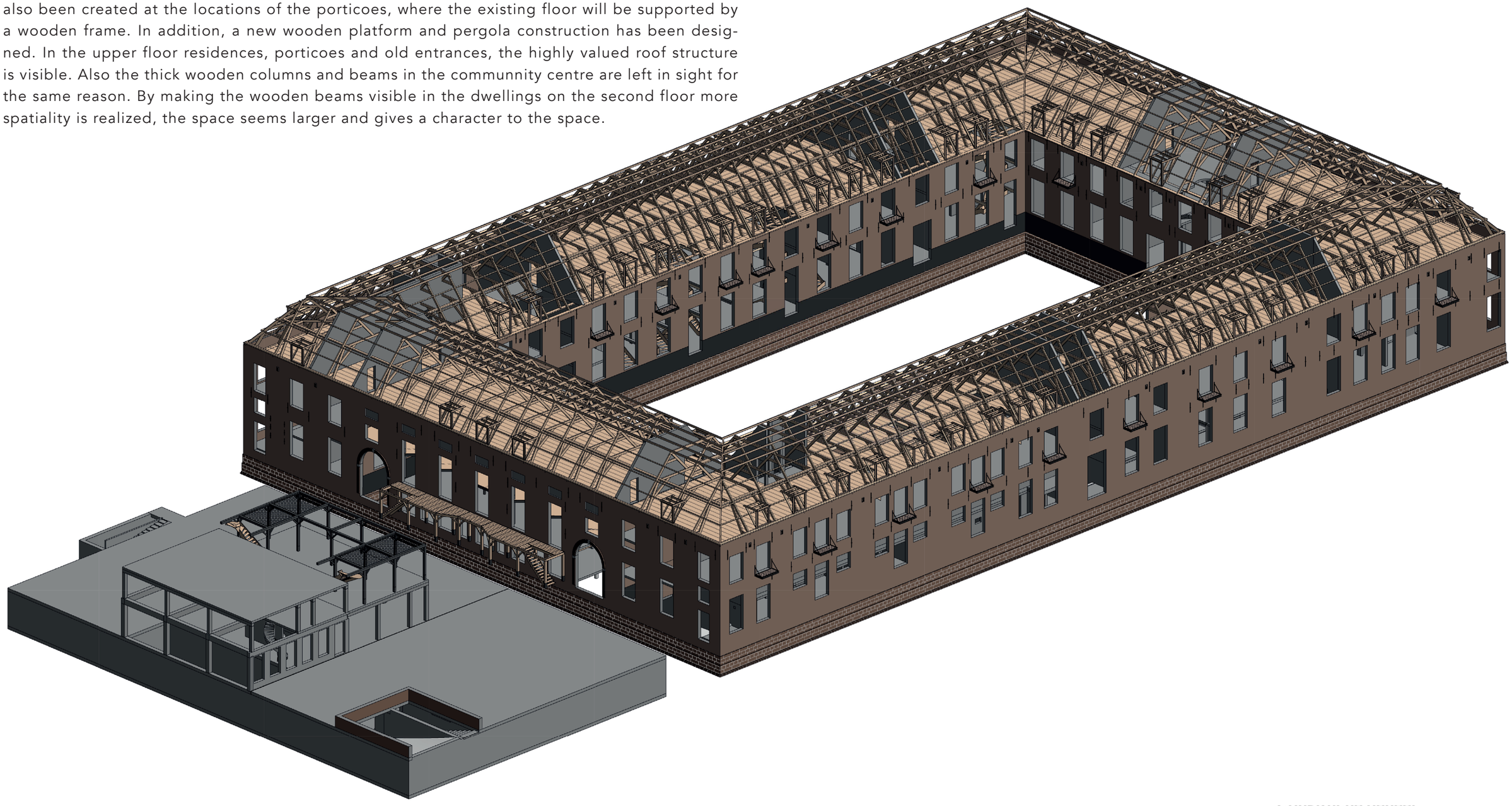


Figure 121: Impression structure

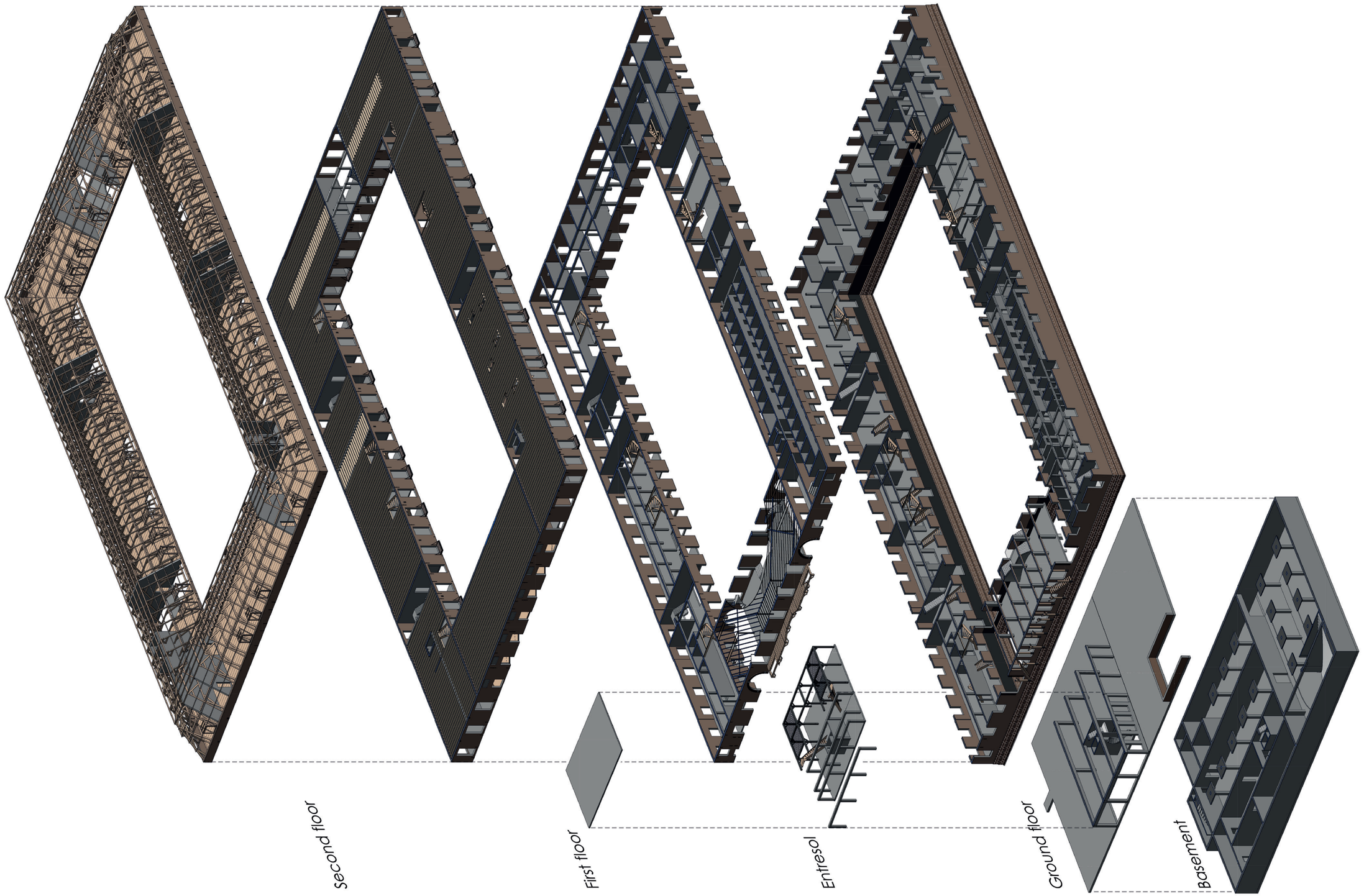
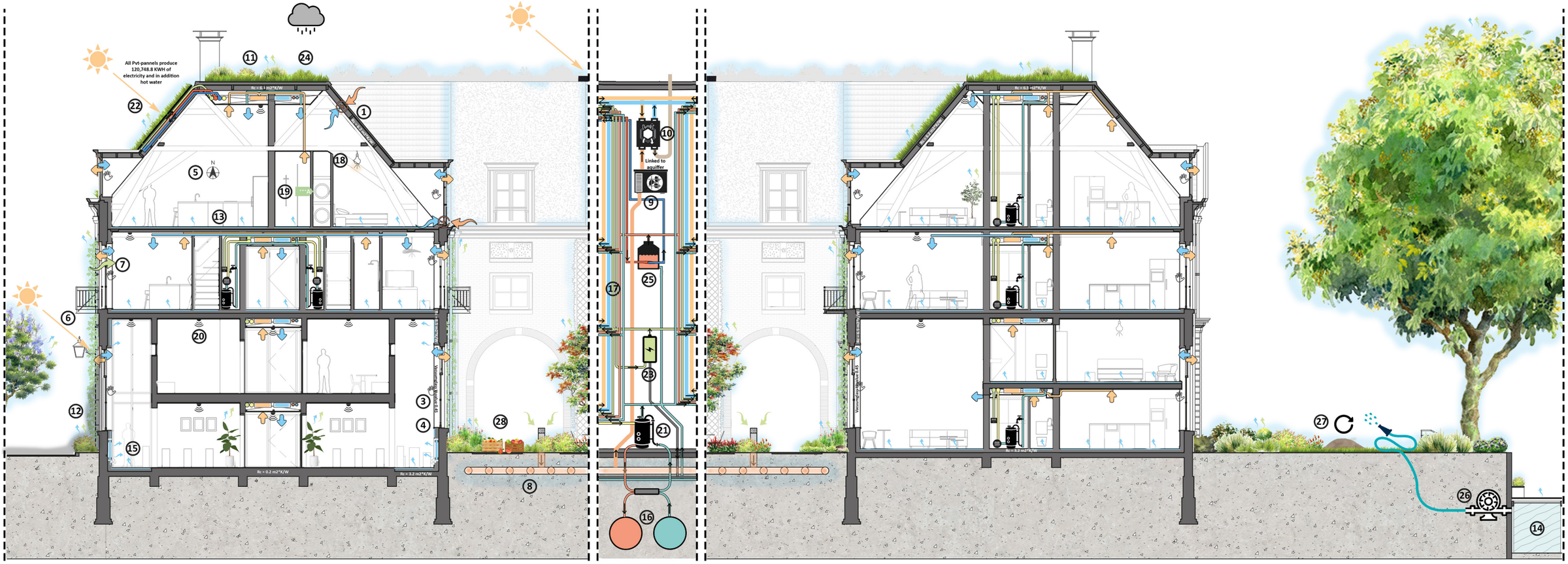



Figure 122: Exploded view structure




The figure shows which measures are used regarding cooling, heating, ventilating, electricity, water and re-use flows. It is a combination of many different measures, of which nature is also a part. The measures shown in bold are the most important in the category. On the monument, PVT-panels have been installed on the South-facing roof and on the flat roof above the main entrance and community centre. As well as on the pergola of the botanical café-restaurant. With these, more than half of the electricity needs can be met. The remaining electricity demand is supplied by using the electricity surplus from solar panels on the adjacent roofs. As well as the green electricity generated by wind turbines.

- Cool fresh air
- Warm fresh air
- Cool waste air
- Warm waste air
- Green elektricity
- Electricity
- Cold water
- Lukewarm water
- Warm water

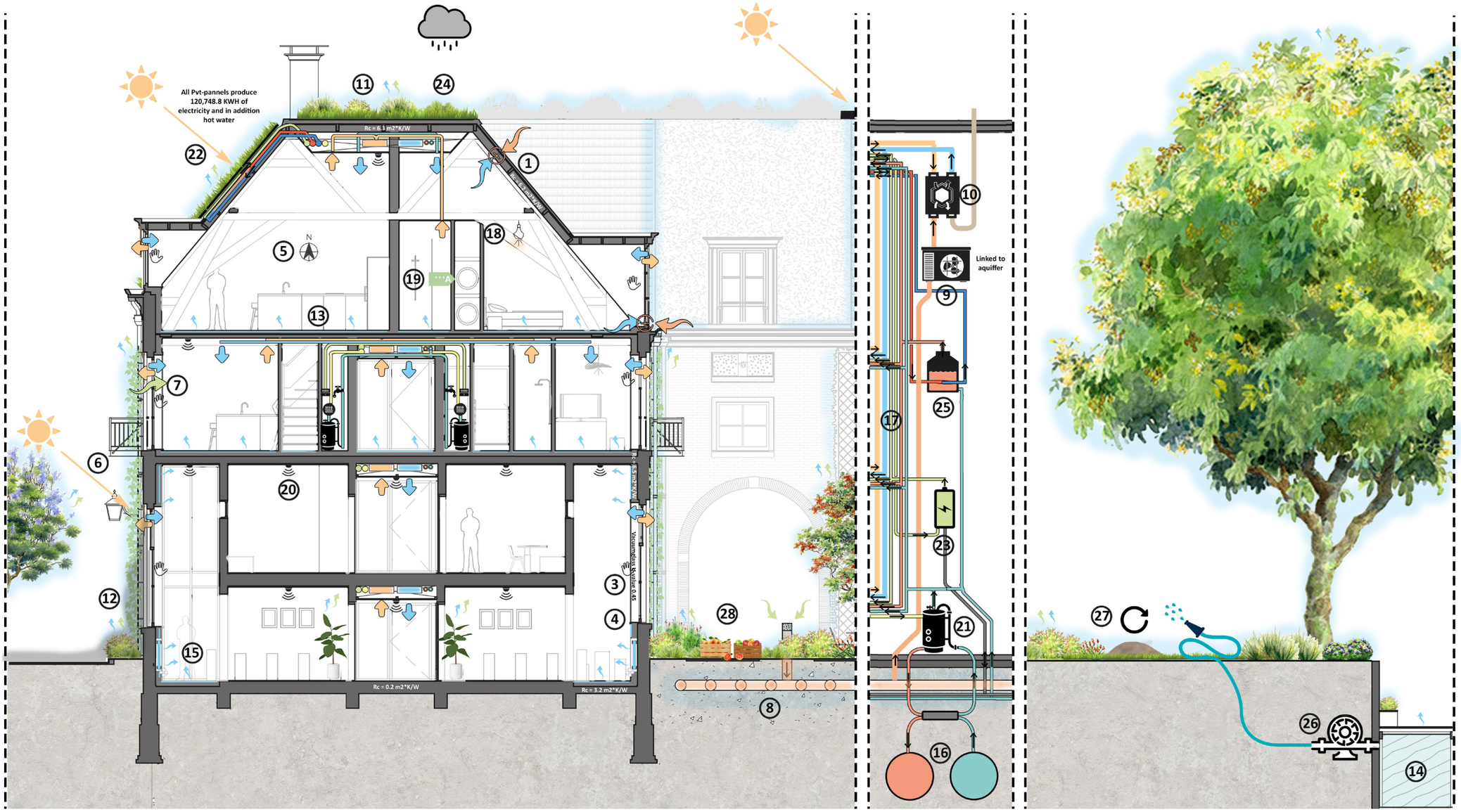
Figure 123: Climateplan summer monument

Measures cooling, heating and ventilating
**1. Thermal insulation**
2. Air tightness
**3. Glazing type**
4. Window frames and doors
5. Organisation floorplans
6. Shading
**7. Openable windows**
**8. Earth tube ventilation**
**9. Hybrid ventilation**
**10. Heat recovery system**
11. Green roofs
12. In and outdoor vegetation
13. Large water buffer
**14. Underfloor (and wall) heating and cooling**
**15. Radiators**
**16. Aquifer**
17. Short insulated pipes

Measures electricity
18. LED-lighting
19. Energy efficient equipment
20. Domotics
21. Heatpump
**22. Pvt-pannels**
**23. Home battery storage**

Measures water
24. Greenery prevents problems heavy rainfall
25. Use of nearby water to water plants
13. Large water buffer
**22. Pvt-pannels**
**26. Short term storage tanks**

Measures re-use flows
**27. Making use of residual flows**
**28. Vegetable and fruit growing**




Measures cooling, heating and ventilating
**1. Thermal insulation**
2. Air tightness
**3. Glazing type**
4. Window frames and doors
5. Organisation floorplans
6. Shading
**7. Openable windows**
**8. Earth tube ventilation**
**9. Hybrid ventilation**
**10. Heat recovery system**
11. Green roofs
12. In and outdoor vegetation
13. Large water buffer
**14. Underfloor (and wall) heating and cooling**
**15. Radiators**
**16. Aquifer**
17. Short insulated pipes

Measures electricity
18. LED-lighting
19. Energy efficient equipment
20. Domotics
21. Heatpump
**22. Pvt-pannels**
**23. Home battery storage**

Measures water
24. Greenery prevents problems heavy rainfall
25. Use of nearby water to water plants
13. Large water buffer
**22. Pvt-pannels**
**26. Short term storage tanks**

Measures re-use flows
**27. Making use of residual flows**
**28. Vegetable and fruit growing**

Figure 124: Simplified climateplan summer monument

0 5M

# DESIGN
## 2.20 Climate

Three technical rooms were designed in the building. One at the main entrance at the location of the existing technical room. One in the Southwest corner of the building and the last one centrally located in the botanical café-restaurant. These technical rooms are located on the different floors. Also in each house a technical room is designed. An installation ceiling is located in the center of the main building, under or adjacent to which all bathrooms, toilets, technical rooms and shafts are located.




Figure 125: Climate plan first floor monument

# DESIGN
## 2.21 Facade build-up

| Layer | Thickness m | Lambda value W/(m*K) | R-value m²*K/W |
|---|---|---|---|
| **Existing exterior brick facade uninsulated** | | | |
| Brick wall | 0.335 | 0.965 | 0.34715 |
| Plaster layer | 0.010 | 1.200 | 0.00833 |
| Total | 0.345 | | 0.35548 |

Rc = ((Rm + Rsi + Rse) / 1 + a) - Rsi - Rse
Rc = ((0.35548 + 0.13 + 0.04) / 1 + 0.05) - 0.13 - 0.04
Rc = 0.330 m²*K/W

| | | | |
|---|---|---|---|
| **Existing exterior brick facade insulated** | | | |
| Brick wall | 0.335 | 0.965 | 0.34715 |
| Plaster layer | 0.010 | 1.200 | 0.00833 |
| Water barrier foil | - | - | - |
| Insulation material | 0.055 | 0.036 | 1.52778 |
| Vapour barrier foil | - | - | - |
| Gypsum layer | 0.012 | 0.160 | 0.07500 |
| Total | 0.412 | | 1.95826 |

Rc = ((Rm + Rsi + Rse) / 1 + a) - Rsi - Rse
Rc = ((1.95826 + 0.13 + 0.04) / 1 + 0.05) - 0.13 - 0.04
Rc = 1.857 m²*K/W

| | | | |
|---|---|---|---|
| **New exterior brick facade** | | | |
| Brick wall | 0.335 | 0.965 | 0.34715 |
| Plaster layer | 0.010 | 1.200 | 0.00833 |
| Water barrier foil | - | - | - |
| PIR insulation | 0.125 | 0.025 | 5.00000 |
| Vapour barrier foil | - | - | - |
| Cavity for cabling | 0.018 | 0.025 | 0.72000 |
| Wooden panneling | 0.012 | 0.180 | 0.66667 |
| Gypsum layer | 0.012 | 0.160 | 0.07500 |
| Total | 0.512 | | 6.81715 |

Rc = ((Rm + Rsi + Rse) / 1 + a) - Rsi - Rse
Rc = ((6.81715 + 0.13 + 0.04) / 1 + 0.05) - 0.13 - 0.04
Rc = 6.484 m²*K/W

| Layer | Thickness m | U-value m²*K/W |
|---|---|---|
| **Existing single glazed surface** | | |
| Single glazing | 0.004 | 5.8 |

Rc = 5.800 m²*K/W

| | | |
|---|---|---|
| **Existing double glazed surface** | | |
| Double glazing | 0.016 | 2.8 |

Rc = 2.800 m²*K/W

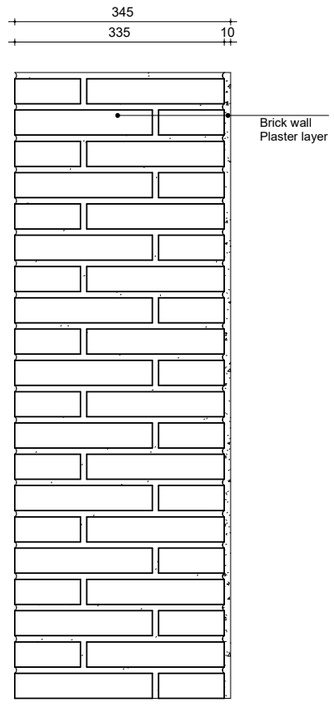
| | | |
|---|---|---|
| **Existing and new insulated glass surface** | | |
| Single glazing | 0.004 | 5.8 |
| Air cavity | 0.060 | |
| Single glazing | 0.004 | 5.8 |

Rc = 2.800 m²*K/W

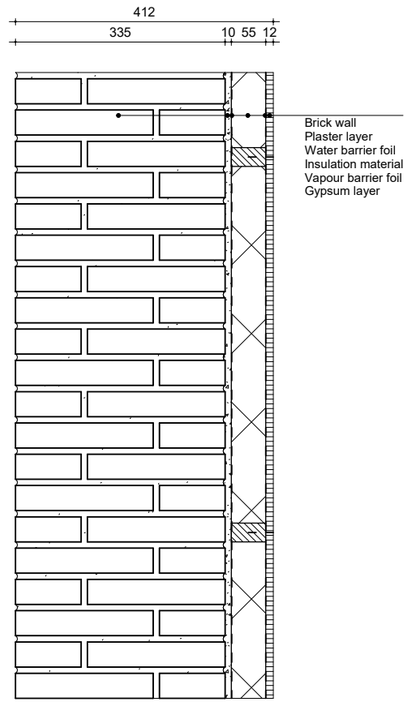
| | | |
|---|---|---|
| **New vacuum glazed surface** | | |
| Vacuum glazing | 0.007 | 0.45 |

Rc = 0.450 m²*K/W

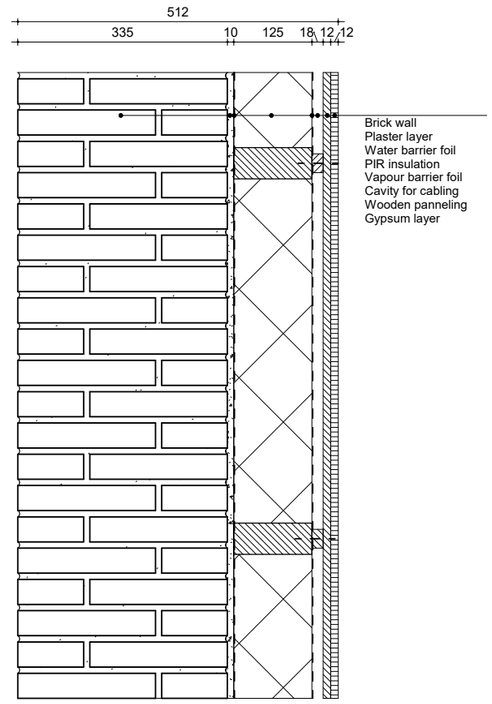
Figure 126: Facade build-up and calculations



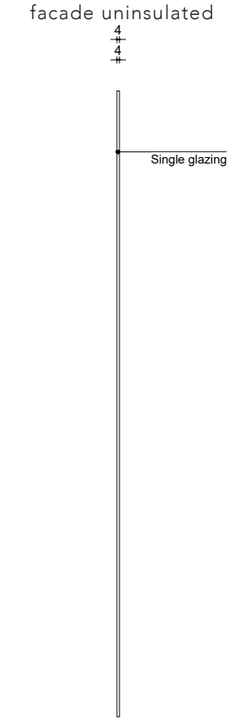

Existing exterior brick facade uninsulated



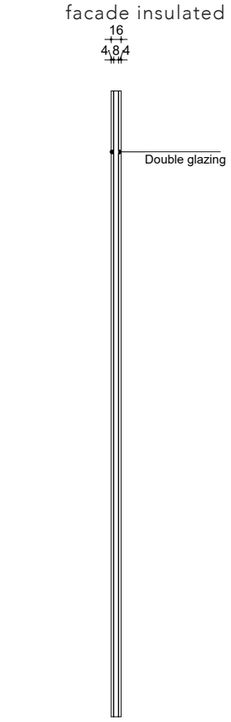

Existing exterior brick facade insulated



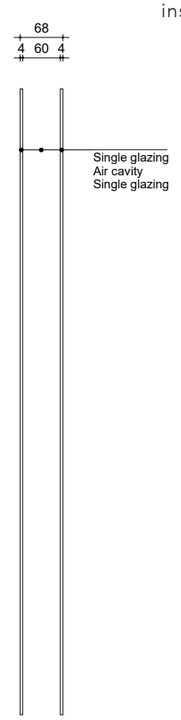

New exterior brick facade insulated



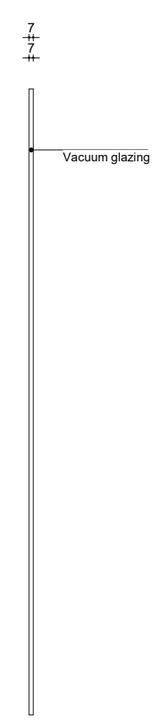

Existing single glazed surface




Existing double glazed surface




Existing and new insulated glass surface




New vacuum glazed surface

# DESIGN
## 2.21 Facade build-up

| Layer | Thickness m | Lambda value W/(m*K) | R-value m²*K/W |
|---|---|---|---|
| **Existing ground floor** | | | |
| Nature stone tiles | 0.020 | 2.600 | 0.00769 |
| Glue layer | 0.005 | 1.215 | 0.00412 |
| Reinforced concrete floor | 0.200 | 1.850 | 0.11111 |
| Total | 0.225 | | 0.12292 |

Rc = ((Rm + Rsi + Rse) / 1 + a) - Rsi - Rse
Rc = ((0.12292 + 0.17 + 0.17) / 1 + 0.05) - 0.17 - 0.17
Rc = 0.101 m²*K/W

| | | | |
|---|---|---|---|
| **Existing ground floor cell complex** | | | |
| Stone tiles | 0.010 | 2.600 | 0.00385 |
| Glue layer | 0.005 | 1.215 | 0.00412 |
| Unreinforced concrete floor | 0.150 | 1.300 | 0.11538 |
| Reinforced concrete floor | 0.200 | 1.850 | 0.11111 |
| Total | 0.365 | | 0.23556 |

Rc = ((Rm + Rsi + Rse) / 1 + a) - Rsi - Rse
Rc = ((0.23556 + 0.17 + 0.17) / 1 + 0.05) - 0.17 - 0.17
Rc = 0.208 m²*K/W

| | | | |
|---|---|---|---|
| **New ground floor with underfloor heating and cooling** | | | |
| Finishing floor | - | - | - |
| Vapour barrier foil | - | - | - |
| Sand-cement floor | 0.055 | 1.250 | 0.04400 |
| PIR insulation | 0.080 | 0.025 | 3.20000 |
| Nature stone tiles | 0.020 | 2.600 | 0.00769 |
| Glue layer | 0.005 | 1.215 | 0.00412 |
| Reinforced concrete floor | 0.200 | 1.850 | 0.11111 |
| Total | 0.375 | | 3.36692 |

Rc = ((Rm + Rsi + Rse) / 1 + a) - Rsi - Rse
Rc = ((3.36692 + 0.17 + 0.17) / 1 + 0.05) - 0.17 - 0.17
Rc = 3.190 m²*K/W

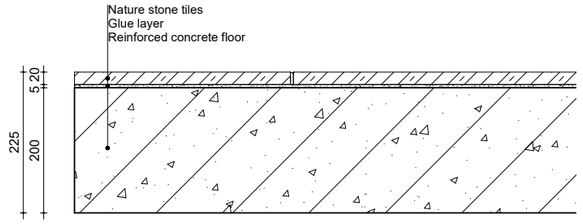
| | | | |
|---|---|---|---|
| **New ground floor cell complex without underfloor heating and cooling** | | | |
| Stone tiles | 0.010 | 2.600 | 0.00385 |
| Glue layer | 0.005 | 1.215 | 0.00412 |
| Unreinforced concrete floor | 0.150 | 1.300 | 0.11538 |
| Reinforced concrete floor | 0.200 | 1.850 | 0.11111 |
| Total | 0.365 | | 0.23446 |

Rc = ((Rm + Rsi + Rse) / 1 + a) - Rsi - Rse
Rc = ((0.23446 + 0.17 + 0.17) / 1 + 0.05) - 0.17 - 0.17
Rc = 0.207 m²*K/W

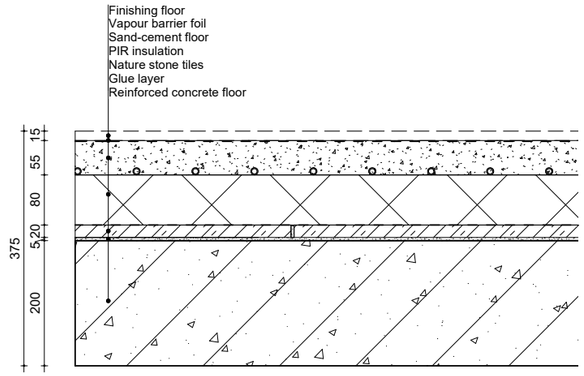
| | | | |
|---|---|---|---|
| **New ground floor with underfloor heating and cooling** | | | |
| Finishing floor | - | - | - |
| Vapour barrier foil | - | - | - |
| Sand-cement floor | 0.030 | 1.250 | 0.02400 |
| PIR insulation | 0.080 | 0.025 | 3.20000 |
| Nature stone tiles | 0.020 | 2.600 | 0.00769 |
| Glue layer | 0.005 | 1.215 | 0.00412 |
| Reinforced concrete floor | 0.200 | 1.850 | 0.11111 |
| Total | 0.335 | | 3.34692 |

Rc = ((Rm + Rsi + Rse) / 1 + a) - Rsi - Rse
Rc = ((3.34692 + 0.17 + 0.17) / 1 + 0.05) - 0.17 - 0.17
Rc = 3.171 m²*K/W

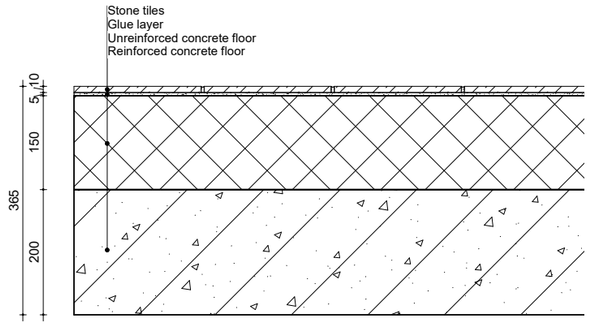
Figure 126: Facade build-up and calculations



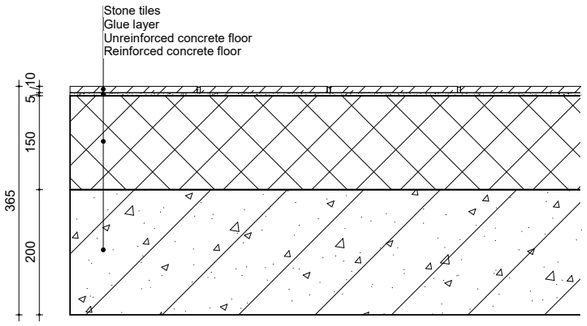

Existing ground floor



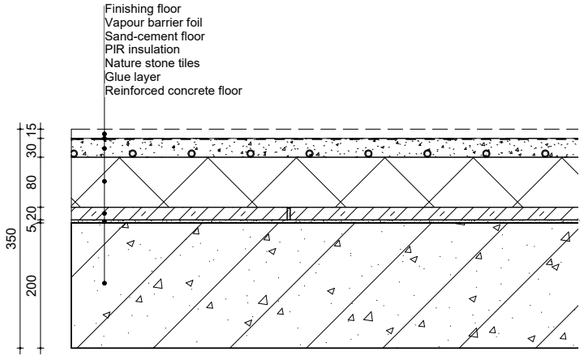

New ground floor without underfloor heating and cooling




Existing ground floor cell complex




New ground floor cell complex without underfloor heating and cooling




New ground floor with underfloor heating and cooling

# DESIGN
## 2.21 Facade build-up

| Layer | Thickness m | Lambda value W/(m*K) | R-value m²*K/W |
|---|---|---|---|
| **Existing tile roof** | | | |
| Roof tiles | 0.010 | 1.500 | 0.00667 |
| Air cavity | 0.036 | - | - |
| Wooden boarding | 0.018 | 0.180 | 0.10000 |
| Total | 0.640 | | 0.10667 |

Rc = ((Rm + Rsi + Rse) / 1 + a) - Rsi - Rse
Rc = ((0.10667 + 0.10 + 0.04) / 1 + 0.05) - 0.10 - 0.04
Rc = 0.095 m²*K/W

| | | | |
|---|---|---|---|
| **Existing bitumen roof** | | | |
| Bitumen layer | 0.004 | 0.185 | 0.02162 |
| Wooden boarding | 0.018 | 0.180 | 0.10000 |
| Total | 0.022 | | 0.12162 |

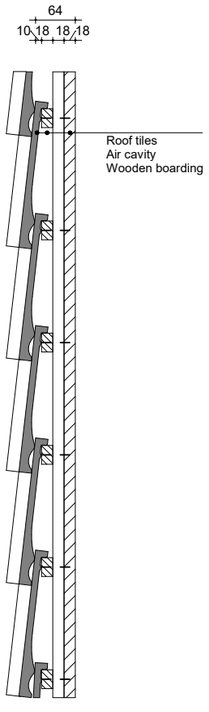
Rc = ((Rm + Rsi + Rse) / 1 + a) - Rsi - Rse
Rc = ((0.12162 + 0.10 + 0.04) / 1 + 0.05) - 0.10 - 0.04
Rc = 0.109 m²*K/W

| | | | |
|---|---|---|---|
| **New tile roof** | | | |
| Roof tiles | 0.010 | 1.500 | 0.00667 |
| Air cavity | 0.036 | - | - |
| Wooden boarding | 0.018 | 0.180 | 0.10000 |
| Ventilated air cavity | 0.030 | - | - |
| Water barrier foil | - | - | - |
| PIR insulation | 0.140 | 0.025 | 5.60000 |
| Vapour barrier foil | - | - | - |
| Cavity for cabling | 0.018 | 0.025 | 0.72000 |
| Wooden panneling | 0.018 | 0.180 | 0.10000 |
| Total | 0.270 | | 6.52667 |

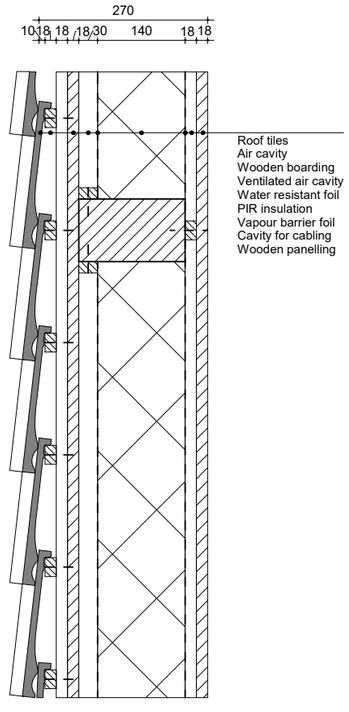
Rc = ((Rm + Rsi + Rse) / 1 + a) - Rsi - Rse
Rc = ((6.52667 + 0.10 + 0.04) / 1 + 0.05) - 0.10 - 0.04
Rc = 6.209 m2*K/W

| | | | |
|---|---|---|---|
| **New bitumen roof** | | | |
| Vegetation or brown roof | - | - | - |
| Substrate | 0.080 | 2.000 | 0.04000 |
| Drainage layer | 0.030 | 2.000 | 0.01500 |
| Root canvas | - | - | - |
| EPDM foil | - | - | - |
| Wooden boarding | 0.018 | 0.180 | 0.10000 |
| Ventilated air cavity | 0.030 | - | - |
| Water resistant foil | - | - | - |
| PIR insulation | 0.140 | 0.025 | 5.60000 |
| Vapour barrier foil | - | - | - |
| Cavity for cabling | 0.018 | 0.025 | 0.72000 |
| Wooden panneling | 0.018 | 0.180 | 0.10000 |
| Total | 0.337 | | 6.57500 |

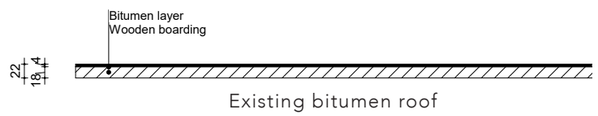
Rc = ((Rm + Rsi + Rse) / 1 + a) - Rsi - Rse
Rc = ((6.57500 + 0.10 + 0.04) / 1 + 0.05) - 0.10 - 0.04
Rc = 6.255 m²*K/W



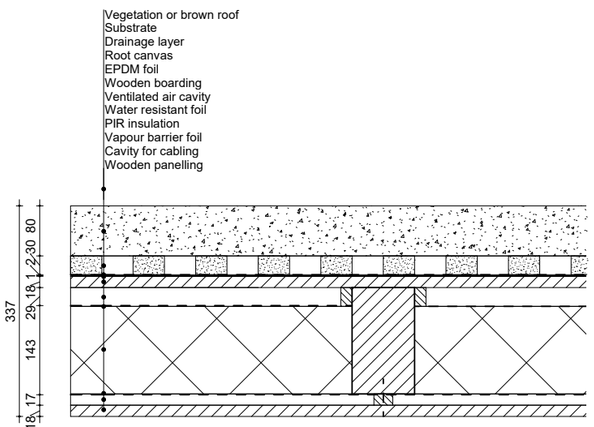

Existing tile roof




New tile roof




Existing bitumen roof




New bitumen roof

Figure 126: Facade build-up and calculations

# DESIGN
## 2.22 Fragment

The fragment shows that different types of facade greenery have been applied. This is good for biodiversity and interrupts the large mass of the building. The facade greenery is attached to a supporting structure at a distance from the facade. This prevents deterioration of and moisture problems in the facade. The roof windows, which do not fit, are also provided with rod division, so that it fits in better with the other facade elements. On the inside, the portico is provided with a green wall. The facade openings on the first and second floor are at almost the same height as the floor, which strengthens the connection with the outside.




Figure 127: Exterior and interior fragment

# DESIGN
## 2.22 Fragment

It was decided to insulate the ground floor at the topside. This was chosen because it wasn't possible to insulate on the underside of the floor, this avoids thermal bridges and unevenness in the floor can be eliminated. The walls and roof are also insulated on the inside to preserve the appearance of the building. The single glass has been replaced with vacuum glass. This fits into the existing frames and is lightweight. As a result of these interventions, the insulation values of the facade are greatly improved.

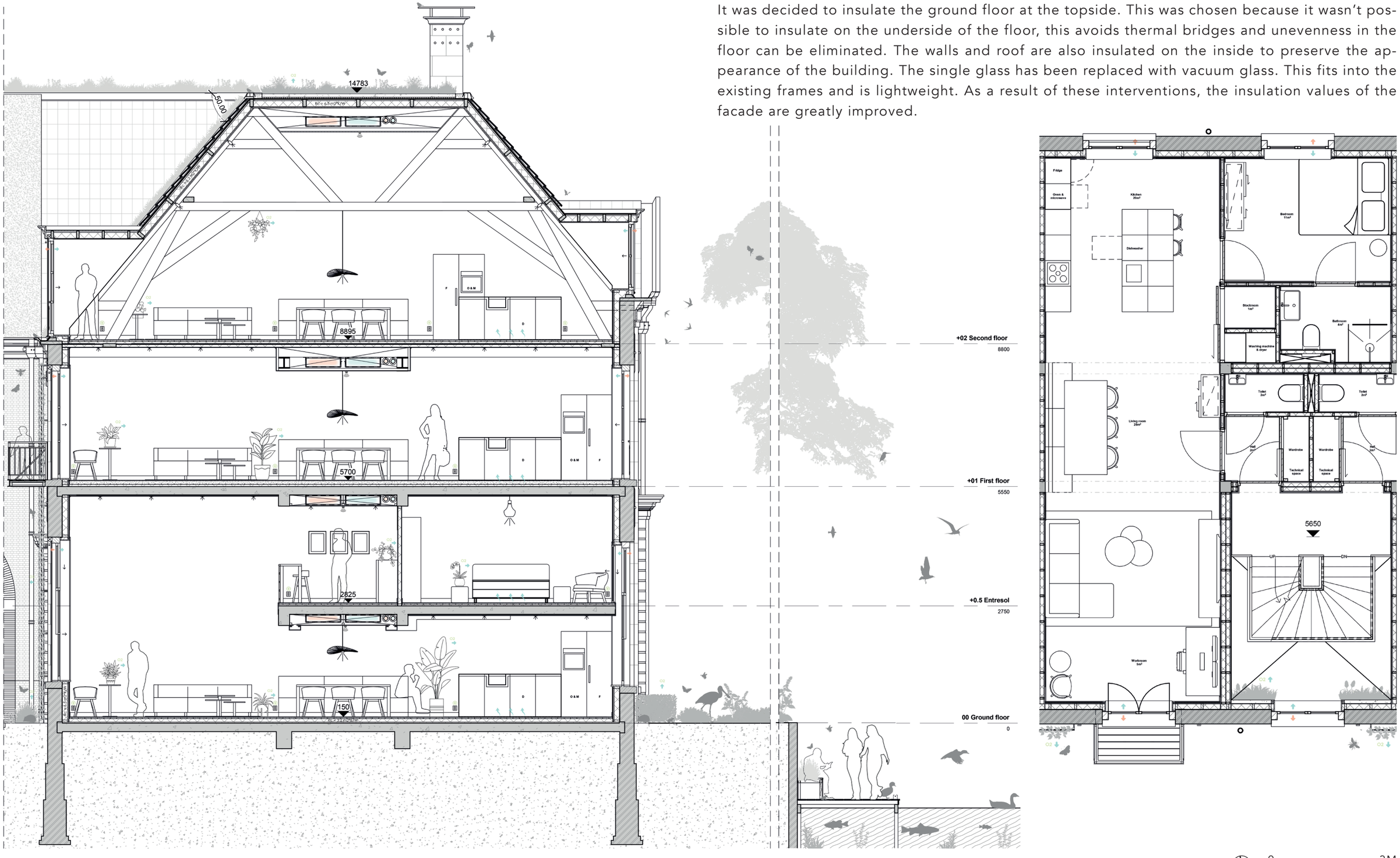



Figure 128: Vertical and horizontal fragment



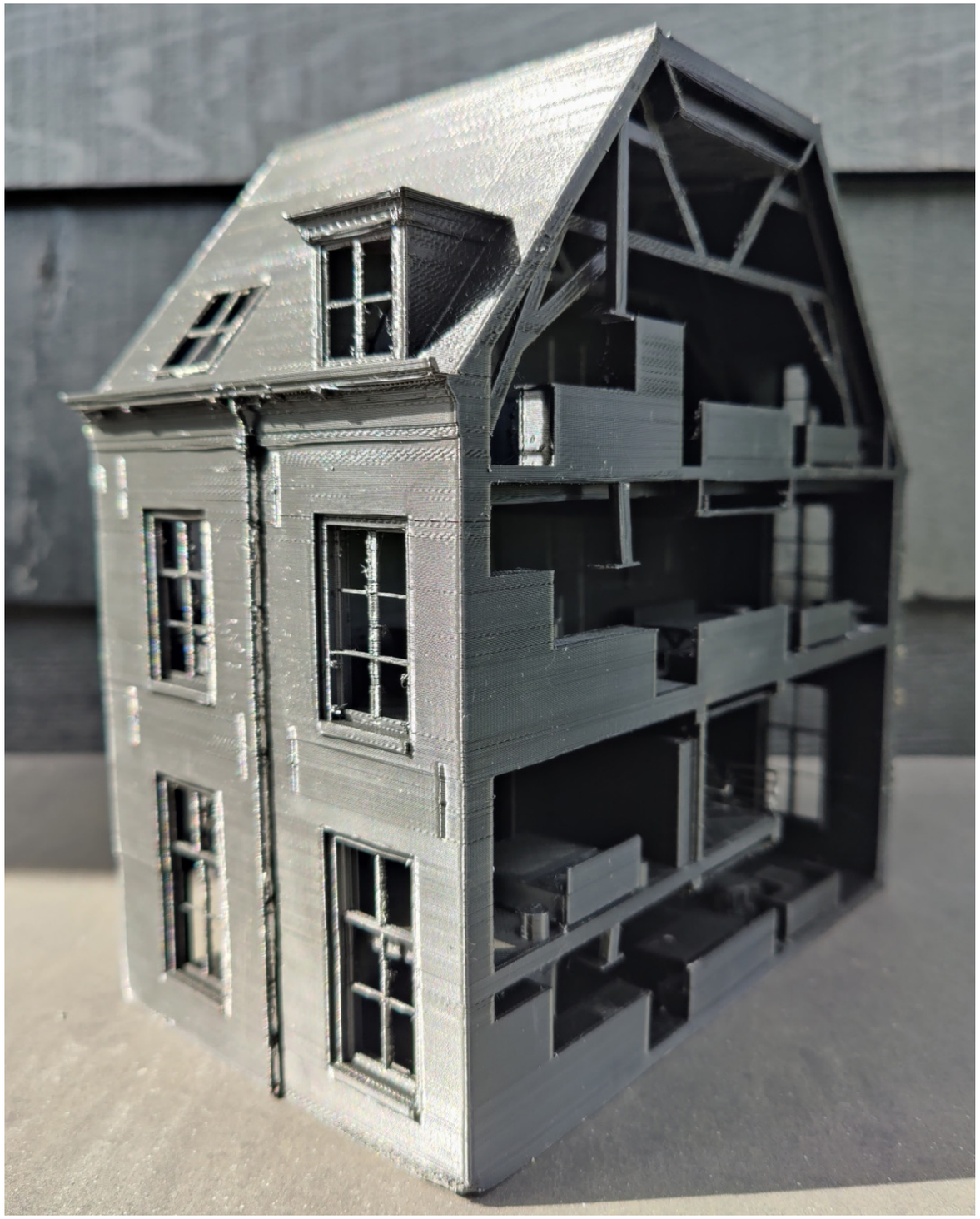


Figure 129: Model fragment









Figure 129: Model fragment

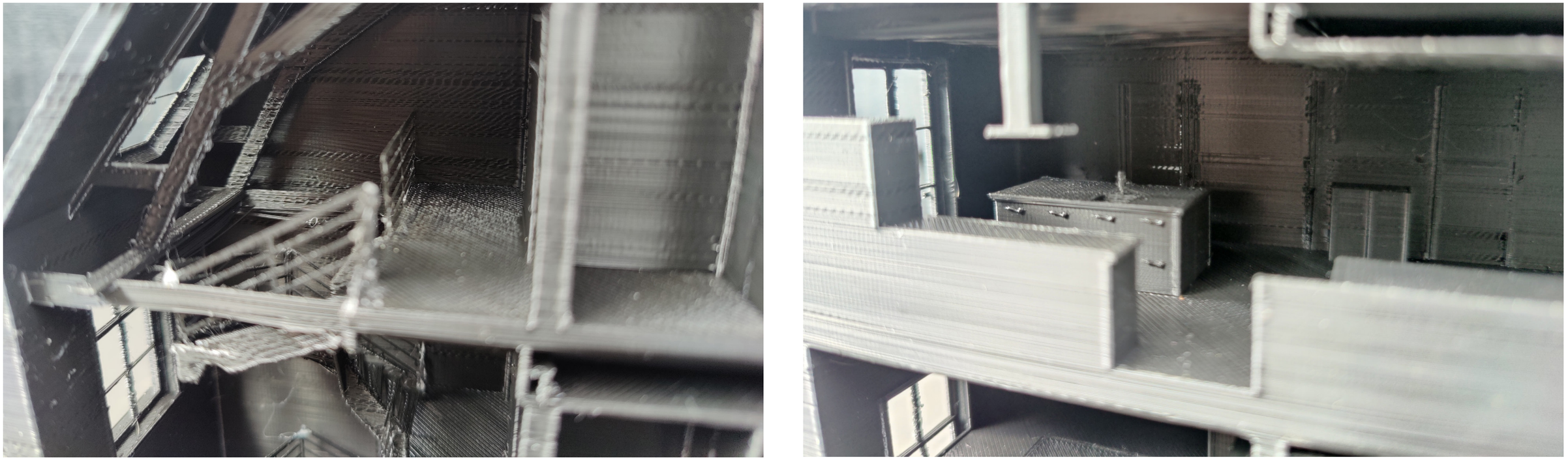


Figure 129: Model fragment

# DESIGN
## 2.23 Detail

This detail shows the eaves on the Northern courtyard side. Here in view you can see how the substructure of the façade greenery is attached to the façade. This is done by means of bolts that are attached to the facade by means of plugs. On the bolts is a stainless steel grid attached against which the plants can grow. Furthermore, a small part of a nesting stone for bees can be seen. It stands out slightly from the wall.

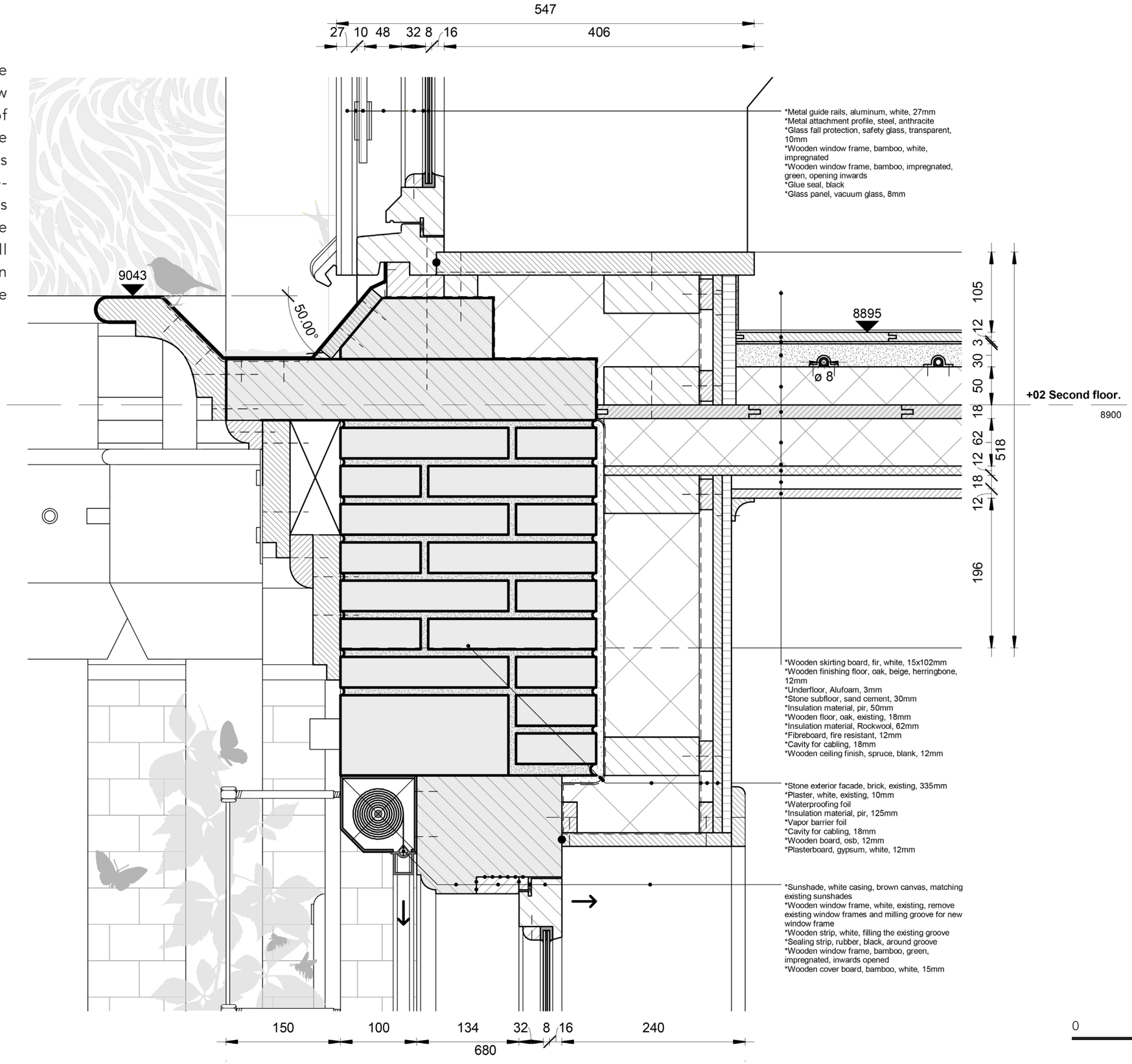



Figure 130: Detail roof edge courtyard North

# DESIGN
## 2.23 Detail

This detail of the eaves on the Nieuwe Gracht side shows how the nesting stones for the bats are integrated into the facade. The bricks are made of concrete and have a 5 centimeter thick concrete edge that transmits the forces acting on it. The nesting stone sits flat in the facade so that the bats can grab onto the masonry and easily climb inside. A swift box can be seen at the eaves. These white wooden boxes are hung camouflaged from the eaves. This is to maintain the valued roof edge. Bats also live between the roof tiles and the roof boarding.

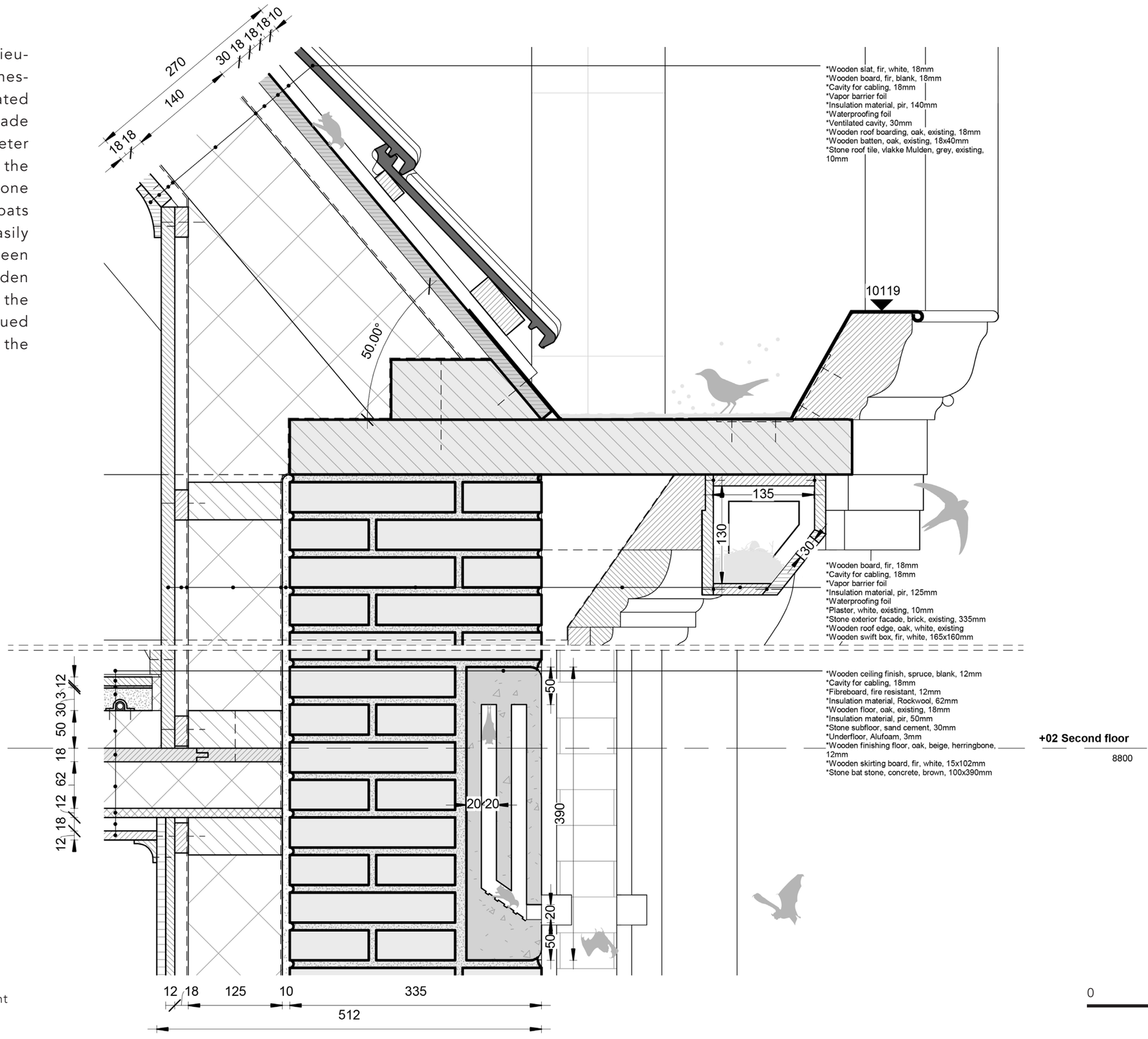



Figure 131: Detail roof edge Nieuwe Gracht

# DESIGN
## 2.23 Detail

This is the balcony detail on the North courtyard side. The balcony consists of a steel I-beam fitted around the natural stone sill. Inside the steel girder are wooden beams with a wooden floor on top. The Balustrade is made of steel and welded to the girder. On either side of the balcony, there is a steel tie rod connected to a plate on the wall.

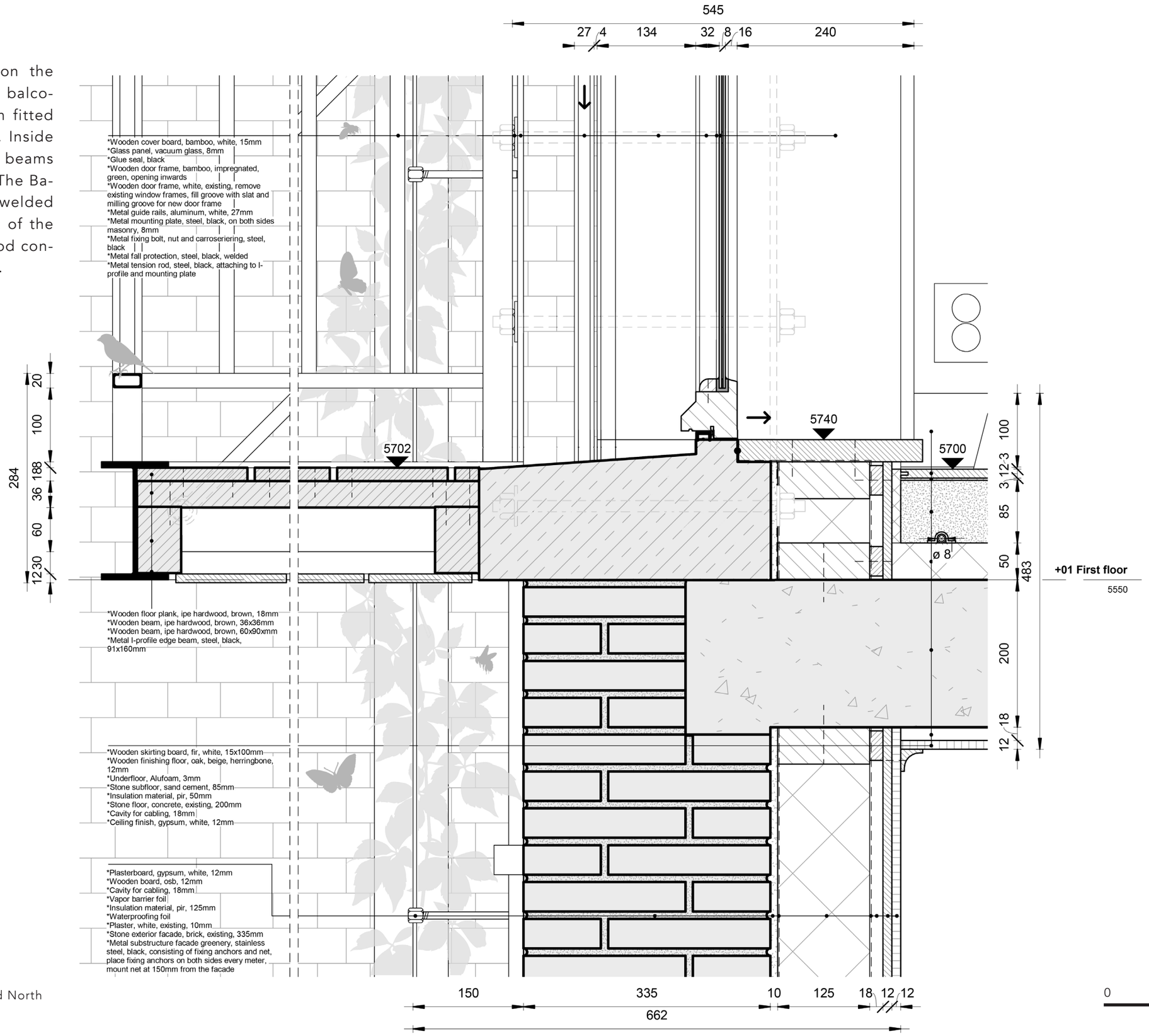
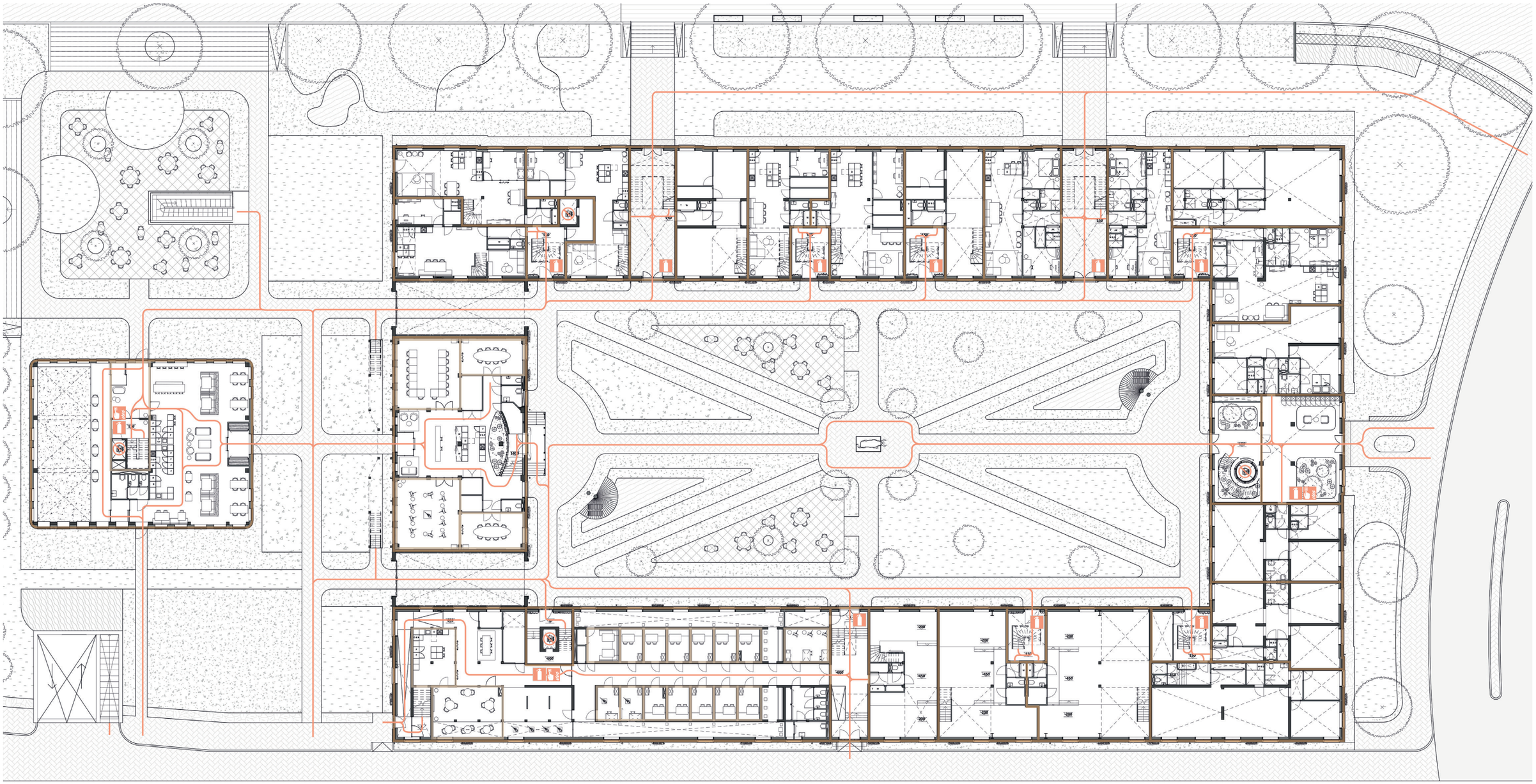



Figure 132: Detail balcony courtyard North

# DESIGN
## 2.24 Fireplan

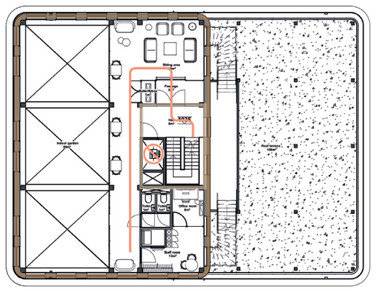


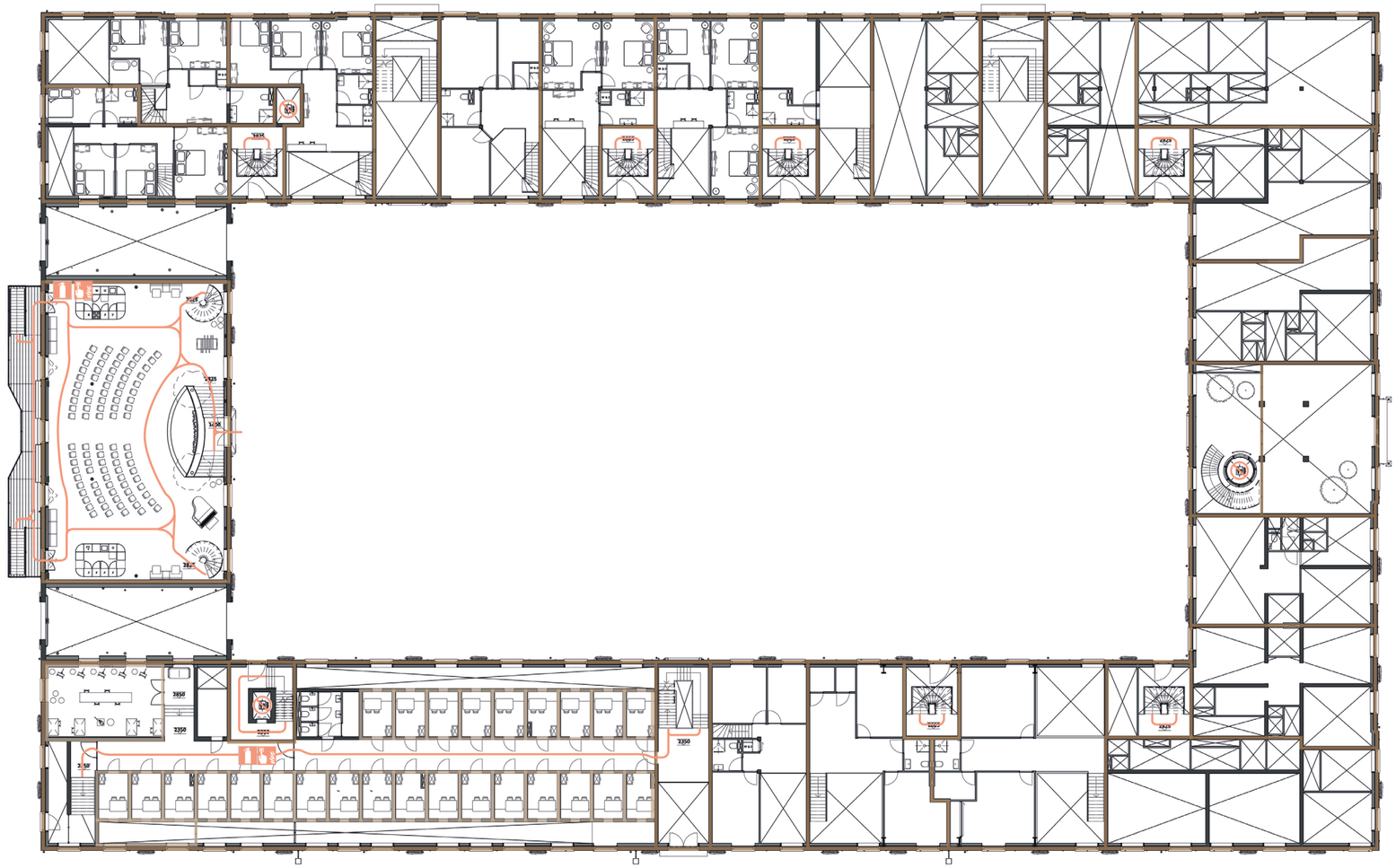
Fire compartment
Sub-fire compartment
Escape route
Manual fire extinguisher
Manual fire alarm
Do not use lift in case of fire

Each dwelling is its own fire compartment that is enclosed by a portico or a corridor. The porticoes are designed as extra protected escape routes. The escape route leads directly to the outdoor area and the fauna passages ensure that the public road can be reached from anywhere.

Figure 133: Fireplan ground floor

0 25M



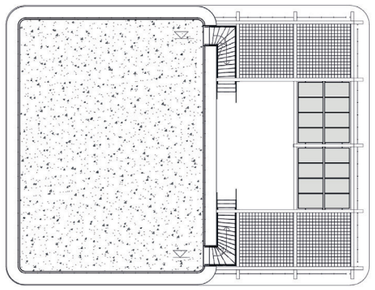


Fire compartment
Sub-fire compartment
Escape route
Manual fire extinguisher
Manual fire alarm
Do not use lift in case of fire

Figure 134: Fireplan entresol

0 25M

# DESIGN
## 2.24 Fireplan

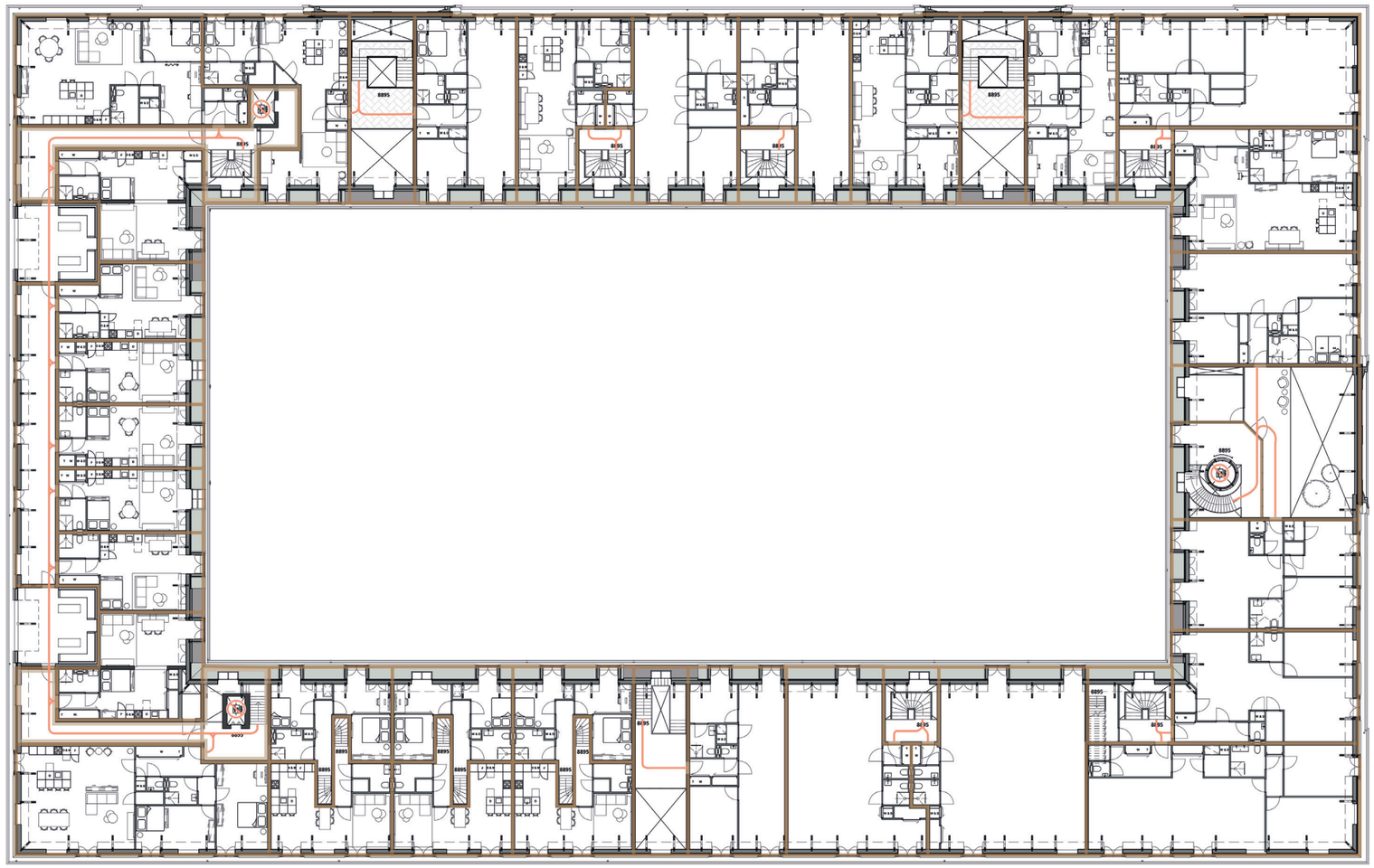




Fire compartment
Sub-fire compartment
Escape route
Manual fire extinguisher
Manual fire alarm
Do not use lift in case of fire

Figure 135: Fireplan first floor

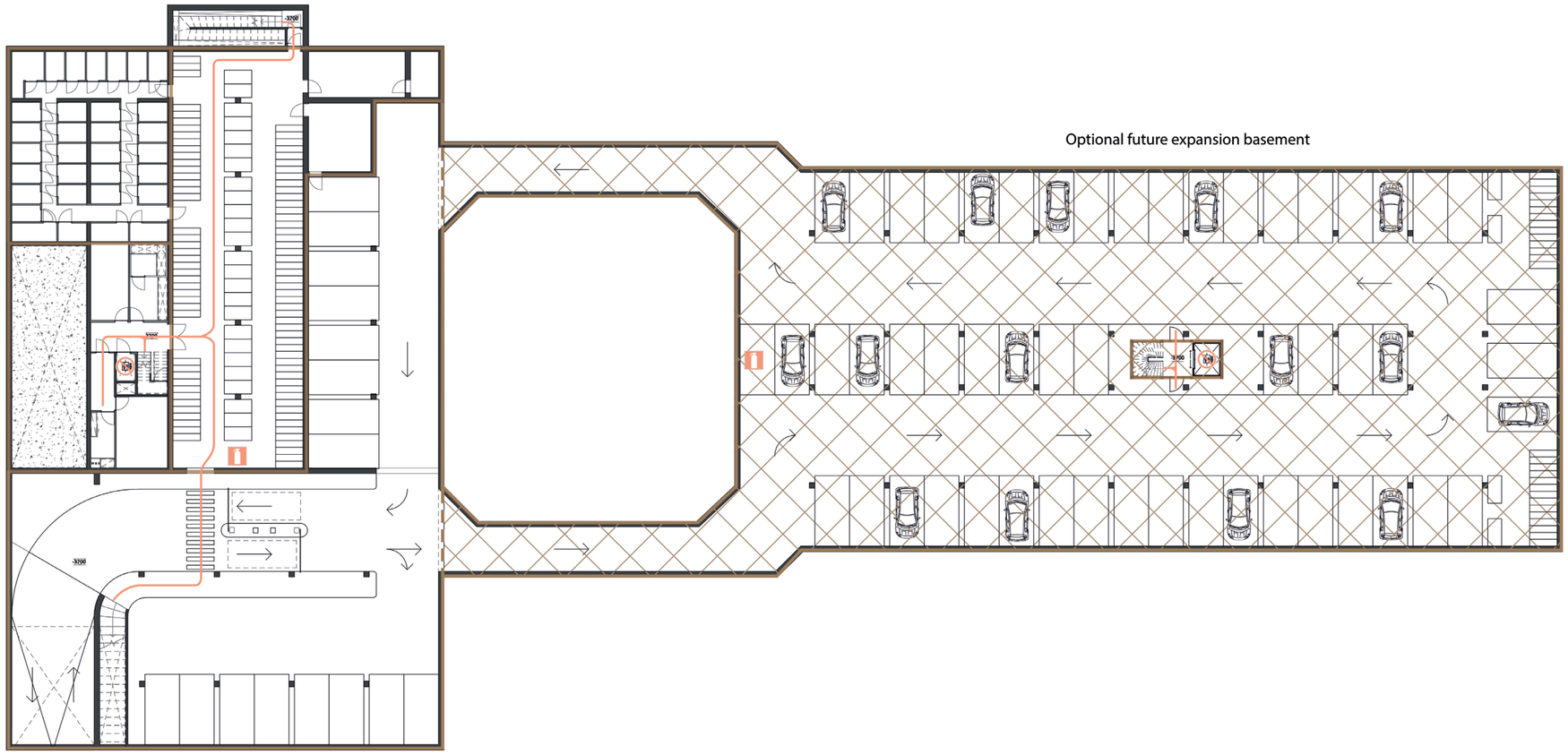
0 25M



Fire compartment
Sub-fire compartment
Escape route
Manual fire extinguisher
Manual fire alarm
Do not use lift in case of fire

Figure 136: Fireplan second floor

0 25M




Fire compartment
Sub-fire compartment
Escape route
Manual fire extinguisher
Manual fire alarm
Do not use lift in case of fire

Figure 137: Fireplan basement

0 25M

# DESIGN
## 2.25 Nature inclusiveness and heritage

The figure shows how nature-inclusiveness and heritage go together in the building.

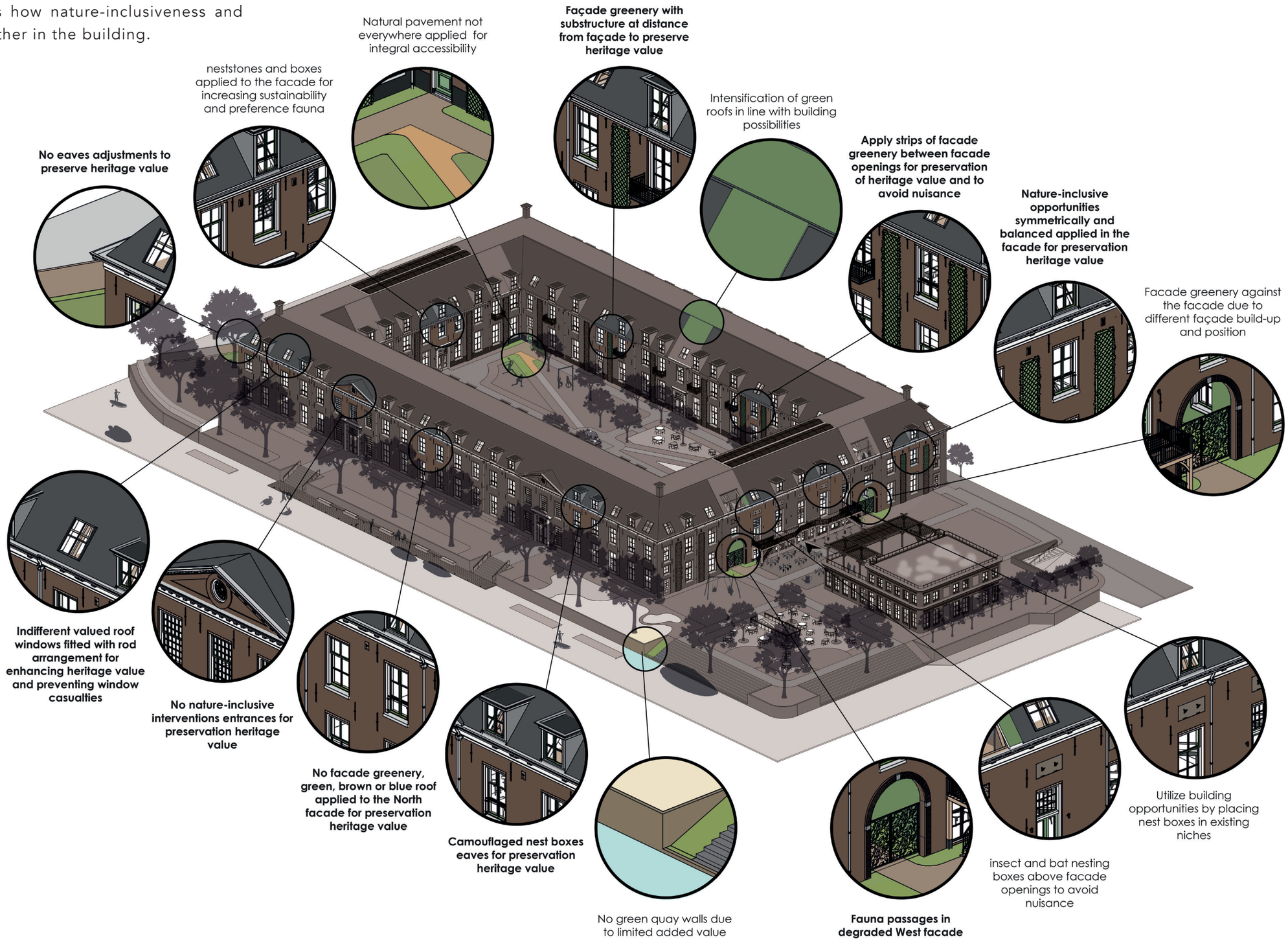



Figure 138: Relation between natureinclusiveness and heritage

# DESIGN
## 2.26 Heritage approach

The design makes use of various heritage approaches. The design mainly applies preservation, restoration, intervention and redesign, and occasionally renovation.

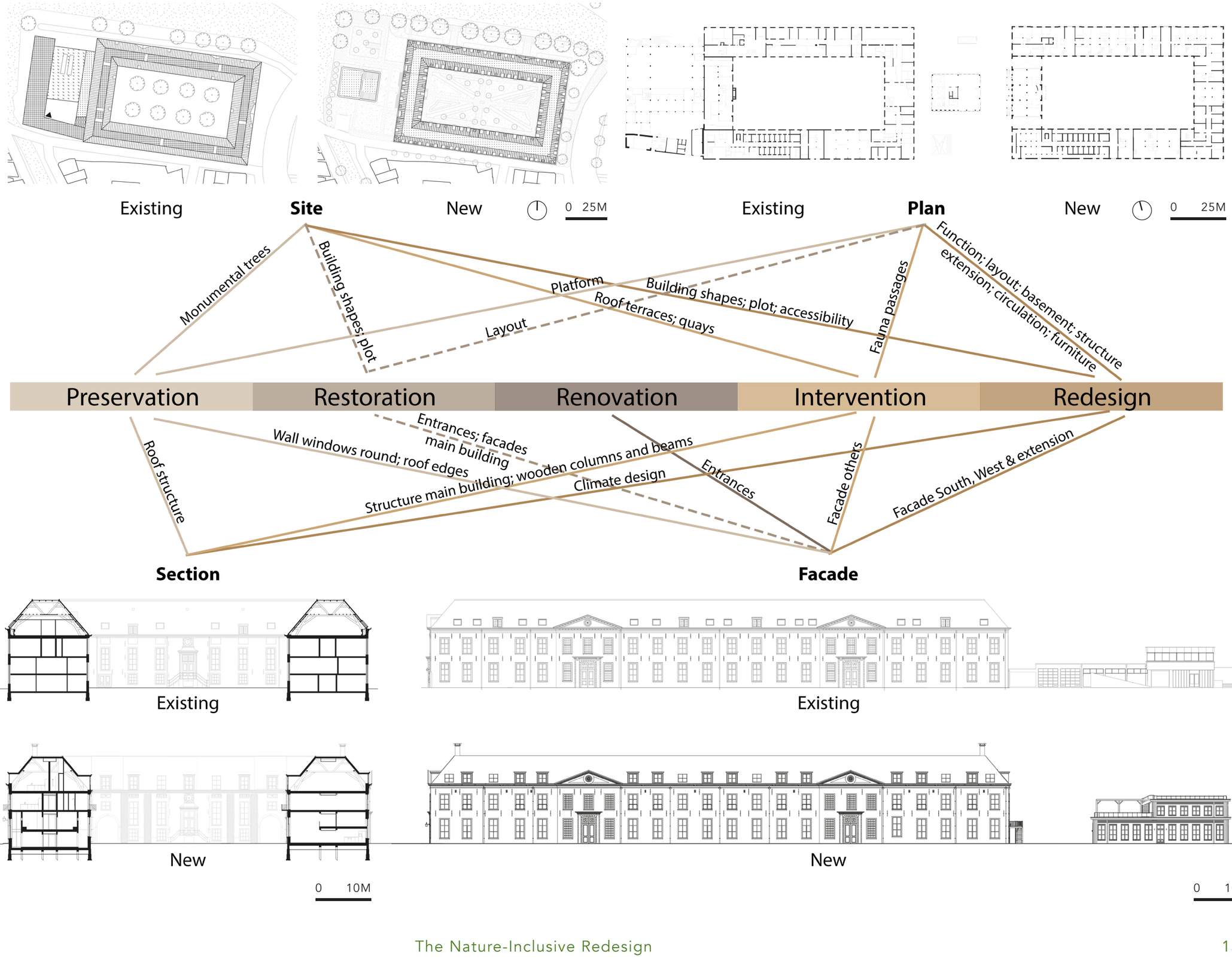



Figure 139: Heritage approach

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## 3.2 Figures list


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• Figure 2: Simons, R. S. (2022, June 1). Emotional map [Sketch]. Own Image.
• Figure 3: Simons, R. S. (2022, June 1). Development of Haarlem and the location in the city: 1500, 1800, 1900 and 2000 [Illustration]. Own Image.
• Figure 4: Simons, R. S. (2022, June 1). Situation plot: before 1768, 1771-1960, 1960-1968, 1968-2022 [Illustration]. Own Image.
• Figure 5: S.b.t. student group Technical University Delft. (2022, January 1). [Facade Koudenhorn building]. [Photo]
• Figure 6: Simons, R. S. (2022, June 1). Original section [Illustration]. Own Image.
• Figure 7: Simons, R. S. (2022, June 1). Original floorplans ground and first floor [Illustration]. Own Image.
• Figure 8: Simons, R. S. (2022, June 1). Original facades [Illustration]. Own Image.
• Figure 9: Simons, R. S. (2022, June 1). Temporary floorplans basement, ground floor, entresol, first & second floor and section [Illustration]. Own Image.
• Figure 10: Simons, R. S. (2022, June 1). Courtyards and layout of the original groundfloor plan 1771 and plan 1970 [Illustration]. Own Image.
• Figure 11: Simons, R. S. (2022, June 1). Circulation plans and section [Illustration]. Own Image.
• Figure 12: Simons, R. S. (2022, June 1). Mass study [Illustration]. Own Image.
• Figure 13: Simons, R. S. (2022, June 1). Mass study birds eye [Illustration]. Own Image.
• Figure 14: Simons, R. S. (2022, June 1). Exploded view spatial layout [Illustration]. Own Image.
• Figure 15: Simons, R. S. (2022, June 1). Site plan [Illustration]. Own Image.
• Figure 16: Student group Technical University Delft. (2022, January 1). [Street profiles]. [Illustration]
• Figure 17: Simons, R. S. (2022, June 1). Facade main building Nieuwe Gracht (above) & Zakstraat (beneath) [Illustration]. Own Image.
• Figure 18: Simons, R. S. (2022, June 1). Facade main building Koudenhorn (above) & Bakenessergracht (beneath) [Illustration]. Own Image.
• Figure 19: Simons, R. S. (2022, June 1). Facade main building courtyard side Nieuwe Gracht (above) & courtyard side Zakstraat (beneath) [Illustration]. Own Image.
• Figure 20: Simons, R. S. (2022, June 1). Facade main building courtyard side Koudenhorn (above) & courtyard side Bakenessergracht (beneath) [Illustration]. Own Image.
• Figure 21: Simons, R. S. (2022, June 1). Facade extension Zakstraat (above), Bakenessergracht (middle) & Nieuwe Gracht (beneath) [Illustration]. Own Image.
• Figure 22: Simons, R. S. (2022, June 1). Facade extension courtyard side Nieuwe Gracht (above), courtyard side Bakenessergracht (middle) & courtyard side Zakstraat (beneath) [Illustration]. Own Image.
• Figure 23: Simons, R. S. (2022, June 1). Exterior facades main building [photo]. Own Image.
• Figure 24: Simons, R. S. (2022, June 1). Courtyard facades main building [photo]. Own Image.
• Figure 25: Simons, R. S. (2022, June 1). Facades extension [photo]. Own Image.
• Figure 26: Student group Technical University Delft. (2022, January 1). [Colour and materialisation South facade]. [Illustration]
• Figure 27: Simons, R. S. (2022, June 1). Building elements in the facades of the extension [Illustration]. Own Image.
• Figure 28: Simons, R. S. (2022, June 1). Building elements in the facades of the main building [Illustration]. Own Image.
• Figure 29: Simons, R. S. (2022, June 1). Facade layout main building [Illustration]. Own Image.
• Figure 30: Simons, R. S. (2022, June 1). Sructural plans [Illustration]. Own Image.
• Figure 31: Simons, R. S. (2022, June 1). Facade build up main building [Illustration]. Own Image.
• Figure 32: Student group Technical University Delft. (2022, January 1). [Facade section]. [Illustration]
• Figure 33: Student group Technical University Delft. (2022, January 1). [Diagrams about the demography of Haarlem]. [Illustration]
• Figure 34: Student group Technical University Delft. (2022, January 1). [Building age: 1800, 1900, 1950 and 2000]. [Illustration]
• Figure 35: Simons, R. S. (2022, June 1). Topography height map [Illustration]. Own Image.
• Figure 36: Simons, R. S. (2022, June 1). Functions in the city center of Haarlem [Illustration]. Own Image.
• Figure 37: Student group Technical University Delft. (2022, January 1). [Infrastructure: all roads, primary, secondary and tertiary roads]. [Illustration]
• Figure 38: Simons, R. S. (2022, June 1). The different busstops and trainstations [Illustration]. Own Image.
• Figure 39: Simons, R. S. (2022, June 1). The different train and buslines [Illustration]. Own Image.
• Figure 40: Simons, R. S. (2022, June 1). Cultural historical heritage objects and zones [Illustration]. Own Image.
• Figure 41: Simons, R. S. (2022, June 1). The hofjes of Haarlem and their building age [Illustration]. Own Image.
• Figure 42: Student group Technical University Delft. (2022, January 1). [Skyline of Haarlem seen from the Spaarne]. [Illustration]
• Figure 43: Gemeente Haarlem. (2021). Omgevingsvisie Haarlem 2045. Retrieved 10 dec. 2021, from https://www.haarlem.nl/bestandsopslag/bestanden/Campagne/Omgevingswet/OGV_lo-Res_19_mei_2021.pdf
• Figure 44: Simons, R. S. (2022, June 1). Zoning plan [Illustration]. Own Image.
• Figure 45: Simons, R. S. (2022, June 1). Value assessment table [Table]. Own Image.
• Figure 46: Simons, R. S. (2022, June 1). Value assessment facades main building [Illustration]. Own Image.
• Figure 47: Simons, R. S. (2022, June 1). Value assessment facades courtyard main building [Illustration]. Own Image.
• Figure 48: Simons, R. S. (2022, June 1). Value assessment facades extension [Illustration]. Own Image.
• Figure 49: Simons, R. S. (2022, June 1). Value assessment facades courtyard extension [Illustration]. Own Image.

# BIBLIOGRAPHY
## 3.2 Figures list


• Figure 50: Simons, R. S. (2022, June 1). Value assessment plot (top), groundfloor and entresol (bottom) [Illustration]. Own Image.
• Figure 51: Simons, R. S. (2022, June 1). Value assessment photo's [Photo]. Own Image.
• Figure 52: Student group Technical University Delft. (2022, January 1). [Essence model: Big building around a courtyard facing the water]. [Photo]
• Figure 53: Student group Technical University Delft. (2022, January 1). [Essence model: monumental entrances]. [Photo]
• Figure 54: Student group Technical University Delft. (2022, January 1). [Blocking, damaging and contrasting extension]. [Photo]
• Figure 55: Openbare Werken te Haarlem. (1930). [Rear side of Koudenhorn, seen from the Nieuwe Gracht]. Noord-Hollandsarchief. https://noord-hollandsarchief.nl/beelden/beeldbank/detail/F1B1E52EFB8E11DF9E4D523BC2E286E2
• Figure 56: Simons, R. S. (2022, June 1). Vision [Illustration]. Own Image.
• Figure 57: Simons, R. S. (2022, June 1). Functional layout and accessibility [Illustration]. Own Image.
• Figure 58: Simons, R. S. (2022, June 1). Target groups [Illustration]. Own Image.
• Figure 59: Simons, R. S. (2022, June 1). Requirements functions [Scheme]. Own Image.
• Figure 60: Simons, R. S. (2022, June 1). Conceptpoints [Illustration]. Own Image.
• Figure 61: Simons, R. S. (2022, June 1). Site plan [Illustration]. Own Image.
• Figure 62: Simons, R. S. (2022, June 1). Functional layout [Illustration]. Own Image.
• Figure 63: Simons, R. S. (2022, June 1). Site plan and ground floor [Illustration]. Own Image.
• Figure 64: Simons, R. S. (2022, June 1). Entresol floor [Illustration]. Own Image.
• Figure 65: Simons, R. S. (2022, June 1). First floor [Illustration]. Own Image.
• Figure 66: Simons, R. S. (2022, June 1). Second floor [Illustration]. Own Image.
• Figure 67: Simons, R. S. (2022, June 1). Basement floor [Illustration]. Own Image.
• Figure 68: Simons, R. S. (2022, June 1). Roof plan [Illustration]. Own Image.
• Figure 69: Simons, R. S. (2022, June 1). Cross section [Illustration]. Own Image.
• Figure 70: Simons, R. S. (2022, June 1). Longitudinal section [Illustration]. Own Image.
• Figure 71: Simons, R. S. (2022, June 1). Facades monument North and South [Illustration]. Own Image.
• Figure 72: Simons, R. S. (2022, June 1). Facades monument East and West [Illustration]. Own Image.
• Figure 73: Simons, R. S. (2022, June 1). Facades monument courtyard North and South [Illustration]. Own Image.
• Figure 74: Simons, R. S. (2022, June 1). Facades monument courtyard East and West [Illustration]. Own Image.
• Figure 75: Simons, R. S. (2022, June 1). Facades botanical café-restaurant North and South [Illustration]. Own Image.
• Figure 76: Simons, R. S. (2022, June 1). Facades botanical café-restaurant East and West [Illustration]. Own Image.
• Figure 77: Simons, R. S. (2022, June 1). 3D-View Northeast direction [Illustration]. Own Image.
• Figure 78: Simons, R. S. (2022, June 1). 3D-View Eastsouth direction [Illustration]. Own Image.
• Figure 79: Simons, R. S. (2022, June 1). Existing and new situation [Illustration]. Own Image.
• Figure 80: Simons, R. S. (2022, June 1). New facade layout main building [Illustration]. Own Image.
• Figure 81: Simons, R. S. (2022, June 1). New facade layout extension [Illustration]. Own Image.
• Figure 82: Simons, R. S. (2022, June 1). Impression West facade monument and extension [Illustration]. Own Image.
• Figure 83: Simons, R. S. (2022, June 1). The fauna zones [Illustration]. Own Image.
• Figure 84: Simons, R. S. (2022, June 1). Ecological interventions on the plot [Illustration]. Own Image.
• Figure 85: Simons, R. S. (2022, June 1). The used nature-inclusive possibilities [Illustration]. Own Image.
• Figure 86: Simons, R. S. (2022, June 1). The animal groups for whom the nature-inclusive redesign is made [Illustration]. Own Image.
• Figure 87: Simons, R. S. (2022, June 1). The ideal living environment for the house sparrow [Illustration]. Own Image.
• Figure 88: Simons, R. S. (2022, June 1). Types of fauna accommodations [Illustration]. Own Image.
• Figure 89: Simons, R. S. (2022, June 1). Fauna stones and boxes monument [Illustration]. Own Image.
• Figure 90: Simons, R. S. (2022, June 1). Model house sparrow nesting stone [Photo]. Own Image.
• Figure 91: Simons, R. S. (2022, June 1). Ecological interventions in the building [Illustration]. Own Image.
• Figure 92: Simons, R. S. (2022, June 1). Impression of the nature-inclusive courtyard [Illustration]. Own Image.
• Figure 93: Simons, R. S. (2022, June 1). Impression faunapassage [Illustration]. Own Image.
• Figure 94: Simons, R. S. (2022, June 1). Functional mix creating a vibrant place [Sketch]. Own Image.
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• Figure 97: Pinterest. (n.d.). [The café-restaurant]. Pinterest. https://www.pinterest.pt/pin/650348002424607374/
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• Figure 101: Kataria, S. (2020). [Painting]. Musesymphony.Wordpress. https://musesymphony.wordpress.com/2020/03/10/my-favourite-color/amp/
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• Figure 103: Rechin, J. (n.d.). [Carving]. Wildfowl-Carving. https://www.wildfowl-carving.com/Demonstrations/Eastern-Bluebird/amp
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•Figure 106: Pinterest. (n.d.). [Cells]. Pinterest. https://www.pinterest.pt/pin/273664114844820779/
• Figure 107: Simons, R. S. (2022, June 1). Existing and new situation [Illustration]. Own Image.
• Figure 108: Simons, R. S. (2022, June 1). Impression connection with the water [Illustration]. Own Image.
• Figure 109: Simons, R. S. (2022, June 1). Connection of the interior spaces with the nature-inclusive courtyard and surrounding [Illustration]. Own Image.
• Figure 110: Simons, R. S. (2022, June 1). Impression connection with the nature-inclusive environment [Illustration]. Own Image.
• Figure 111: Simons, R. S. (2022, June 1). Circulation ground floor [Illustration]. Own Image.
• Figure 112: Simons, R. S. (2022, June 1). Some of the designed typologies [Illustration]. Own Image.
• Figure 113: Simons, R. S. (2022, June 1). Layout family maisonettes first and second floor [Illustration]. Own Image.
• Figure 114: Simons, R. S. (2022, June 1). Layout young couple studio second floor [Illustration]. Own Image.
• Figure 115: Simons, R. S. (2022, June 1). Layout senior appartment ground floor [Illustration]. Own Image.
• Figure 116: Simons, R. S. (2022, June 1). Overview appartment first floor [Illustration]. Own Image.
• Figure 117: Simons, R. S. (2022, June 1). Overview two appartment first floor [Illustration]. Own Image.
• Figure 118: Simons, R. S. (2022, June 1). Living room appartment first floor [Illustration]. Own Image.
• Figure 119: Simons, R. S. (2022, June 1). Dinning room appartment first floor [Illustration]. Own Image.
• Figure 120: Simons, R. S. (2022, June 1). Kitchen appartment first floor [Illustration]. Own Image.
• Figure 121: Simons, R. S. (2022, June 1). Impression structure [Illustration]. Own Image.
• Figure 122: Simons, R. S. (2022, June 1). Exploded view structure [Illustration]. Own Image.
• Figure 123: Simons, R. S. (2022, June 1). Climateplan summer monument [Illustration]. Own Image.
• Figure 124: Simons, R. S. (2022, June 1). Simplified cllimateplan summer monument [Illustration]. Own Image.
• Figure 125: Simons, R. S. (2022, June 1). Climate plan first floor monument [Illustration]. Own Image.
• Figure 126: Simons, R. S. (2022, June 1). Facade build-up and calculations [Illustration]. Own Image.
• Figure 127: Simons, R. S. (2022, June 1). Exterior and interior fragment [Illustration]. Own Image.
• Figure 128: Simons, R. S. (2022, June 1). Vertical and horizontal fragment [Illustration]. Own Image.
• Figure 129: Simons, R. S. (2022, June 1). Model fragment [Photo]. Own image.
• Figure 130: Simons, R. S. (2022, June 1). Detail roof edge coutyard North [Illustration]. Own image.
• Figure 131: Simons, R. S. (2022, June 1). Detail roof edge Nieuwe Gracht [Illustration]. Own image.
• Figure 132: Simons, R. S. (2022, June 1). Detail balcony courtyard North [Illustration]. Own image.
• Figure 133: Simons, R. S. (2022, June 1). Fireplan ground floor [Illustration]. Own image.
• Figure 134: Simons, R. S. (2022, June 1). Fireplan entresol [Illustration]. Own image.
• Figure 135: Simons, R. S. (2022, June 1). Fireplan first floor [Illustration]. Own image.
• Figure 136: Simons, R. S. (2022, June 1). Fireplan second floor [Illustration]. Own image.
• Figure 137: Simons, R. S. (2022, June 1). Fireplan basement [Illustration]. Own image.
• Figure 138: Simons, R. S. (2022, June 1). Relation between natureinclusiveness and heritage [Illustration]. Own image.
• Figure 139: Simons, R. S. (2022, June 1). Heritage approach [Illustration]. Own image.
• Figure 140: Koninklijke Luchtmacht. (1959, June). [Aerial photograph of the Koudenhorn barracks in Haarlem.]. Nimh-Beeldbank.Defensie. https://nimh-beeldbank.defensie.nl/foto-s/detail/e1c9588f-a059-c061-ce84-1ddc7b359917/media/b279e190-060a-658f-ca7b-43a95c1c49a6