

Connect the Community Again!

Participation as a tool for the redesign of Vacant Heritage

The case of Politiebureau Groningen Centrum
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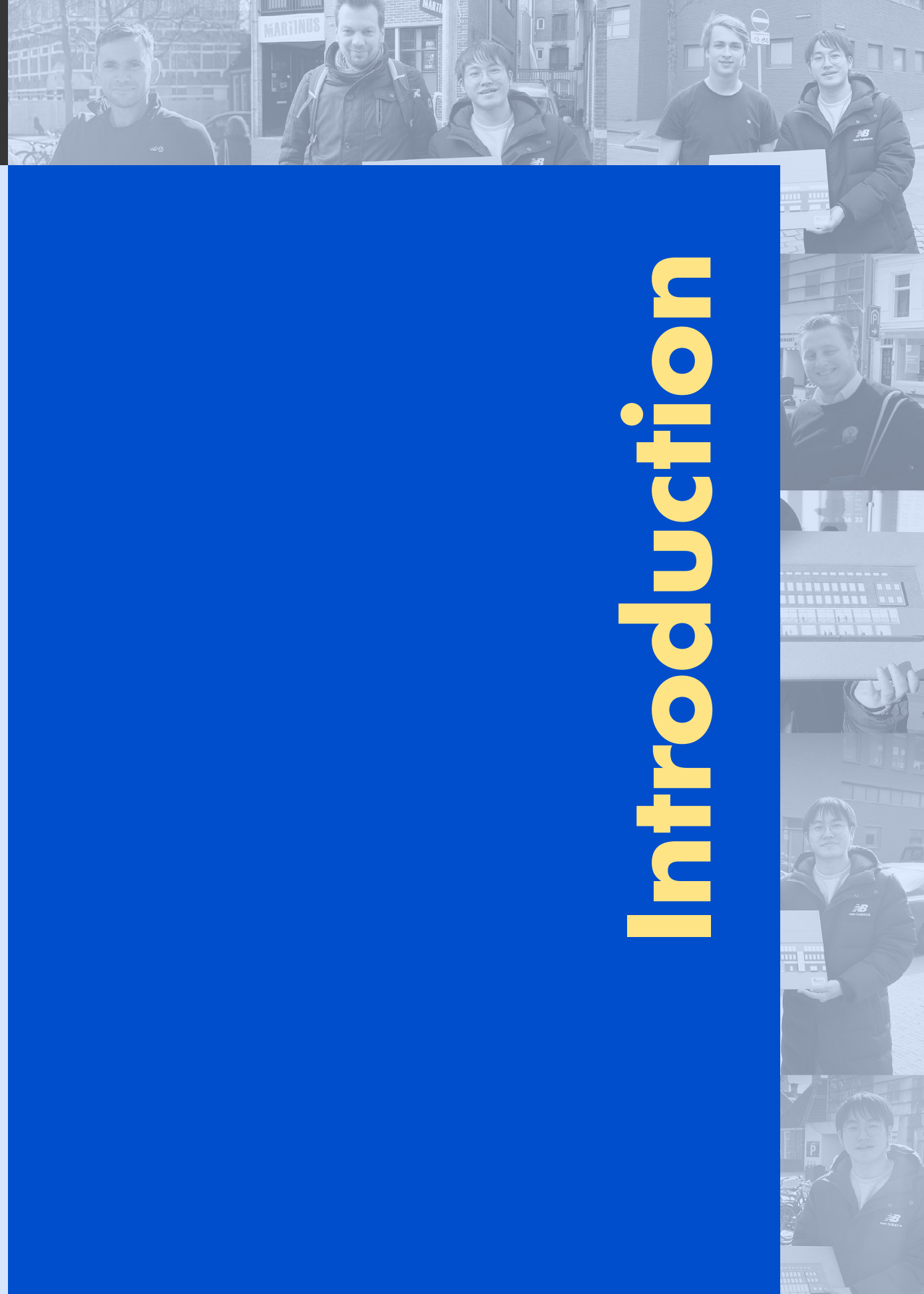
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Introduction



Introduction

These years have seen the growing societal importance of involving stakeholders' participation in cultural heritage activities. As pointed out in the UNESCO Recommendation on the Historic Urban Landscape (HUL) in 2011,

*"rapid and frequently uncontrolled development is transforming urban areas and their settings, which may cause fragmentation and deterioration to urban heritage with deep impacts on community values."*¹

To counter this threat, HUL encourages the involvement of different stakeholders, such as locals, in urban development processes, as a way to keep and pass on community values.² The Council of Europe Framework Convention on the Value of Cultural Heritage for Society (Faro Convention) points out the opportunities in heritage governance and management where society can achieve consensus and boost social values through participatory activities.³ Following the Faro Convention, participation in heritage redevelopment is promoted locally in the Netherlands by the national Cultural Heritage Agency of the Ministry of Education, Cultural, and Science.⁴ Participation plays an essential role in managing the heritage values and shaping a better future. In what way people can actively participate in heritage building redevelopment thus is being questioned and explored.

Participatory design (PD) is a group of design approaches involving different non-expert stakeholders in the co-design process by employing participatory tools.⁵ PD approaches have been developed since

the 1980s in various design fields with multiple tools for multiple purposes.⁶ Rowe introduces a general participatory design methodology that includes a series of divergent and convergent phases for the designer and participants, from scoping to interviewing to generating Points of View (PoV) to iterations to final outputs.⁷ A similar methodology is also summarised by Martin and Hannington into five phases.⁸ Rosalia Leung, a lecturer at The University of Hong Kong, has taught and developed the course "Research on Participatory Design in Architecture" for years and built up a methodology that includes contextual inquiry, idea synthesis, and testing.⁹ The researchers Thomas Binder and Eva Brandt tested a series of inspiring model games for inquiry and layout testing.¹⁰ Other researchers, designers, and organisations contribute to the topic by applying and experimenting with PD approaches, such as the Dutch landscape office Urban Synergy, the community Castro District in the US, and Open Building Concept in the Netherlands.¹¹ By reviewing them, PD is concluded into three levels: inquiry, testing, and acting. Inquiry is the initial phase as getting input from participants. Testing is the middle phase where participants are involved in the co-design process and testing different scenarios. Acting is the continued bottom-up management and development after the buildings' main structure is completed. It is concluded that PD approaches should be improved to achieve sufficient transparency in delivering design possibilities to participants and create a strong sense of participation among stakeholders.

Besides, PD has hardly applied to heritage

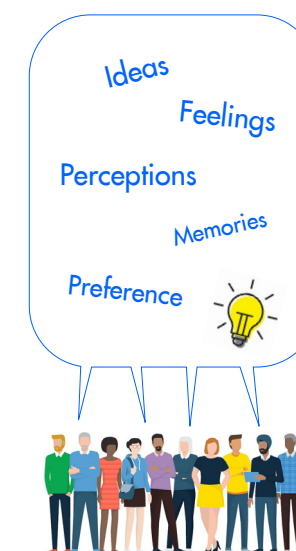
building redesign and integrated with heritage redesign approaches that refer to heritage values and dilemmas.¹² Heritage redevelopment is suggested by the Burra Charter as a value-based approach.¹³ Roders defines eight primary values of heritage: social, economic, political, historic, aesthetical, scientific, age and ecological values, among which social value refers to the connections between people and place.¹⁴ In this sense, ordinary people are the key stakeholders in identifying and promoting social values for a heritage building. Therefore, PD approaches are worth exploring further in heritage redesign.

In the Netherlands, many obsolete buildings recognised as vacant heritage are being reappropriated by the public and reconnected to communities. For example, nearly 30% of police buildings across the nation are becoming vacant and need appropriate redevelopment.¹⁵ Applying PD to these cases is an urgent need in order to open up the sites and promote their social values. PolitieBureau Groningen Centrum, one of the vacant heritage buildings, has been used in the Groningen inner city for 51 years. It was initially built in 1971 by municipal architect Ele de Haas (1921-2010)¹⁶ and renovated in 1996 by local architecture office Karelse Van der Meer (later renamed De Zwarte Hond).¹⁷ The blue and white colour, rich materials, elements, and compositions make its facades stand out from its surroundings. This paper deals with PolitieBureau Groningen as a case study. The building is proposed to be transformed into a mixed housing program due to the location, typology, demographics,

locals' preferences, and the municipality's goal. In order to keep the possible social values and boost more values in the future, it is essential to involve locals in redesigning the building. Therefore, this paper explores the way participation can be used for vacant heritage redesign, and the research question is generated as follows:

How can participation be used for vacant heritage redesign? The case of PolitieBureau Groningen Centrum.

In the following sections, a methodology integrating PD and the case study will be presented, followed by detailed results of the façade PD experiment, before a discussion and conclusion. Extensive redesign outcome transferred from the research results will be presented, followed by a reflection on the whole process of research and design.





Methodology



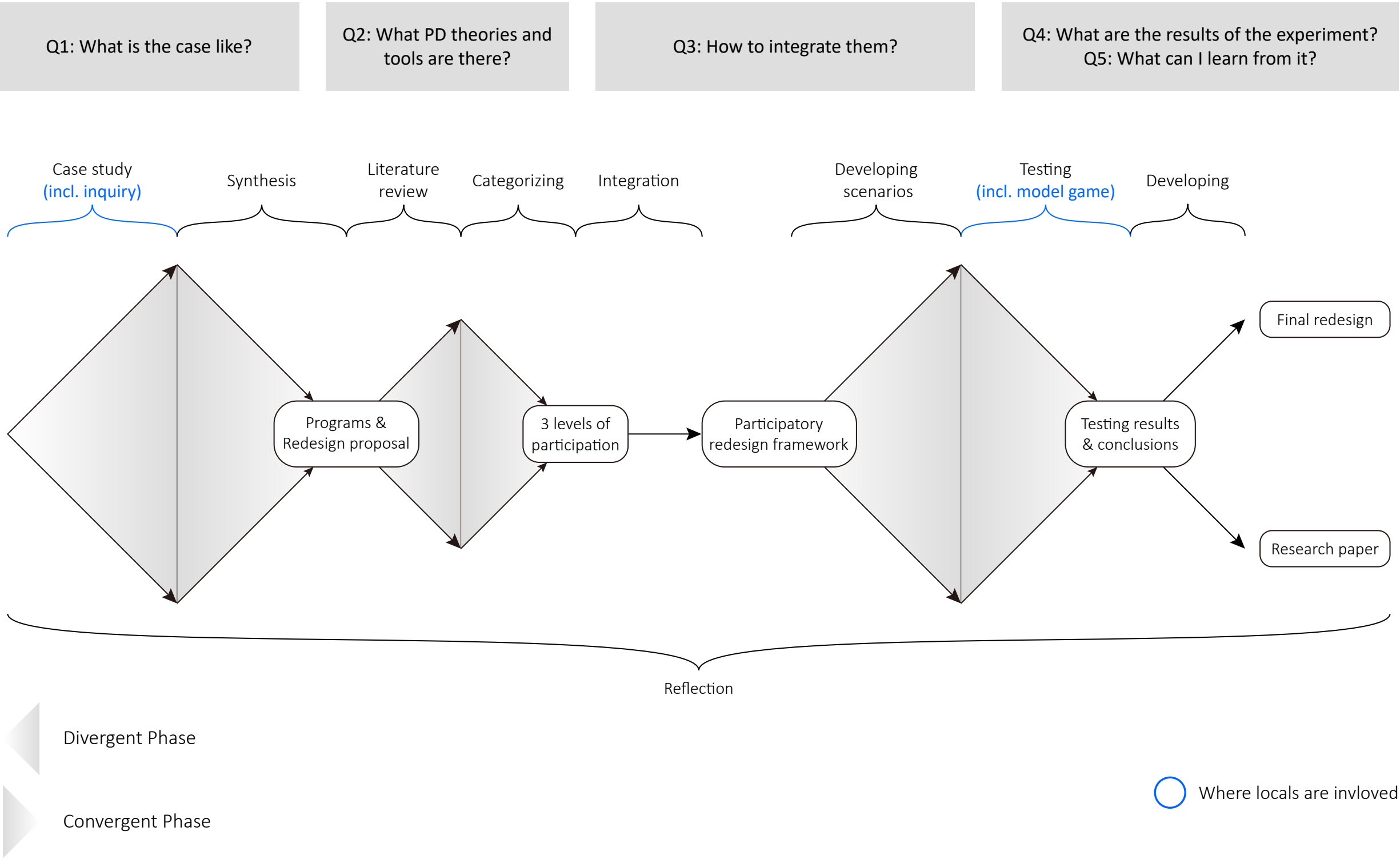


Figure 1. Research-design structure (general scheme)

Methodology

This paper combines methods structured by sets of divergent and convergent phases that build up a complete research-design process (Fig. 1), as instructed by the book Design Thinking.¹⁸

Firstly, a thorough case study was conducted, including inquiry and site analysis. For inquiry, cognitive mapping and semi-structured interviewing are conducted. The cognitive mapping method is inspired by Kevin Lynch in his book The Image of the City¹⁹ and TU Delft pilot methods of identifying values and attributes in Almere.²⁰ By asking locals to draw the building and describe the drawings, their perceptions and remembrance of façade materiality are discovered for generating the redesign starting points. Interviews help to know about locals' feelings about the site and their demands for the future. Site analysis is conducted on three scales, city, building, and façade, defined by TU Delft's research group Spatial Building Typology under Heritage & Architecture studio.²¹ Specifically, coding and mapping of the city's cultural-historic values and future planning are conducted based on municipality documents. Archival research is done at Groninger Archieven and De Zwarte Hond. Photos and drawings are searched for and analysed to identify the materials and techniques used. A site survey is followed to record the details. The method of redrawing the facades and plans is done, through which the different characters of the building are studied, including layout, relations, structure, composition, and materiality, from building scale to façade scale. As a result, the overall profile of the building becomes clear.

Subsequently, by synthesising all the input, the future programs are determined as mixed housing for the elderly, families, and couples, with a community centre and public functions. A list of design starting points is then generated, based on which the site is divided into three categories for three different design proposals: sensitive surface, inclusive core, and attentive home, from outside to inside, public to private, and locals-oriented to residents-oriented.

Then, a literature review on current PD theories and tools is conducted. Three levels of participation are concluded. The literature review also helps to identify problems in current PD approaches, which are improved in this paper. By integrating three levels of PD and design proposals, a participatory redesign framework is created. The framework clarifies different types of target participants for different design objects (Fig. 2).

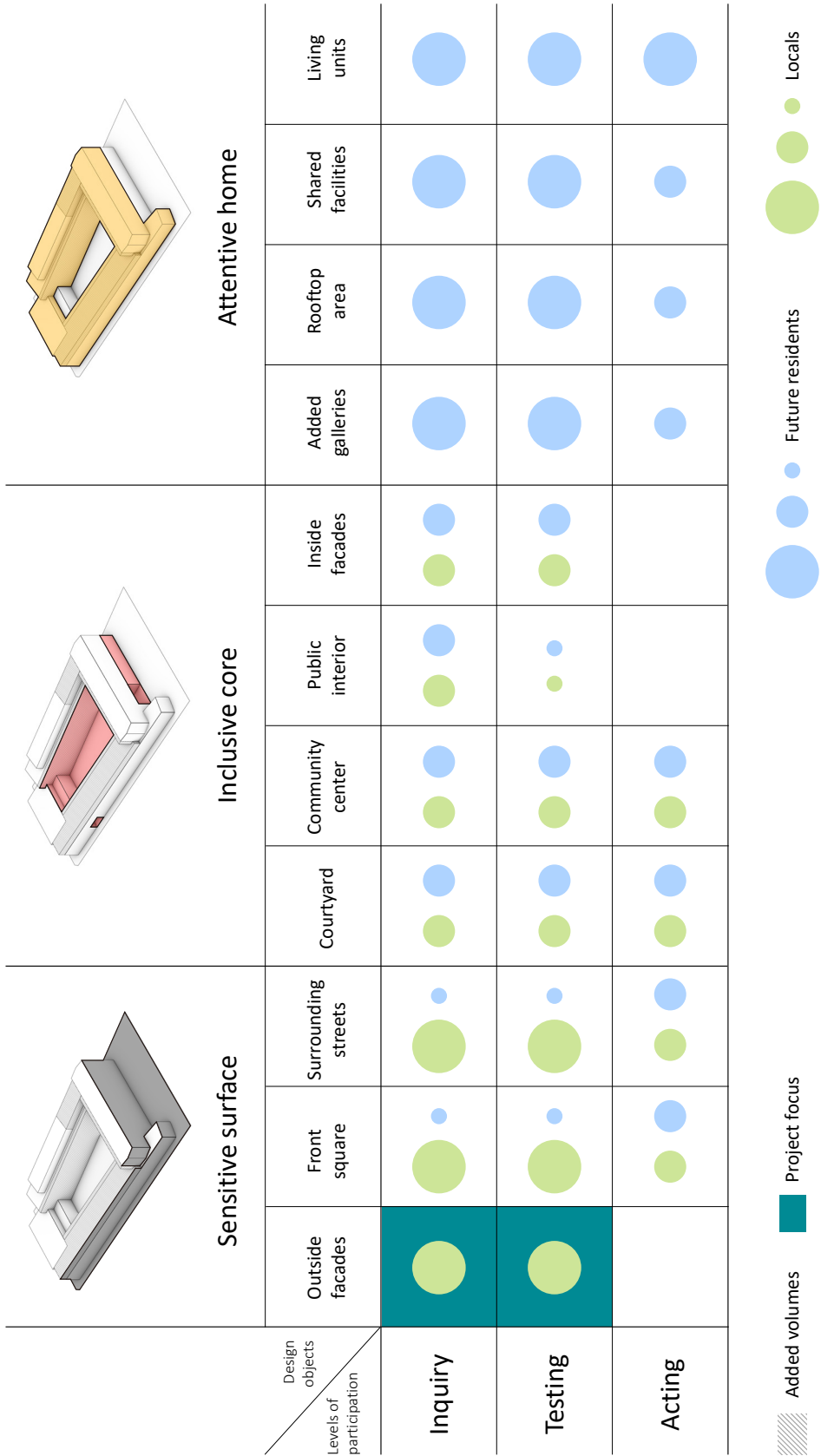


Figure 2. Applying three levels of participation to the case study

Methodology

This paper focuses on the PD for the outside façades. The scope of the outside façades is chosen because locals as participants are easy to reach, and the outside façade redesign concerns both existing values and added values evenly, being a representative case to bridge PD to heritage dilemmas. The testing as an observation-based qualitative study enables participants to interact and exchange with the researcher and vice versa.²² Pickering suggests that participants perform as co-producers in constructive activities such as games in qualitative research.²³ Also inspired by Rosalia Leung, Thomas Binder, and Eva Brandt, who employed mock-up models in PD,²⁴ an innovative approach of a 2,5D façade model game was invented for the façade redesign testing. As Figure 3 shows, the 2,5D façade model is divided into several parts, and for each part, multiple alternative pieces representing different redesign scenarios out of different design starting points are substitutive. Locals can play with and choose the preferred pieces, making up the façade by themselves. In this way, a great number of design possibilities are transparently and equally presented to locals, reducing the latent bias caused by insufficient and untransparent message delivery. Locals are asked to tell why they prefer certain scenarios when playing. In this way, their perceptions, feelings, demands, and taste are revealed without interference by the researcher. The process and outcomes are recorded in photos and videos for coding and analysis. Common ground with all the preferences is sorted and translated to the final redesign. By reflecting on the results, the applicability of this approach

is determined, and recommendations are made for future research.

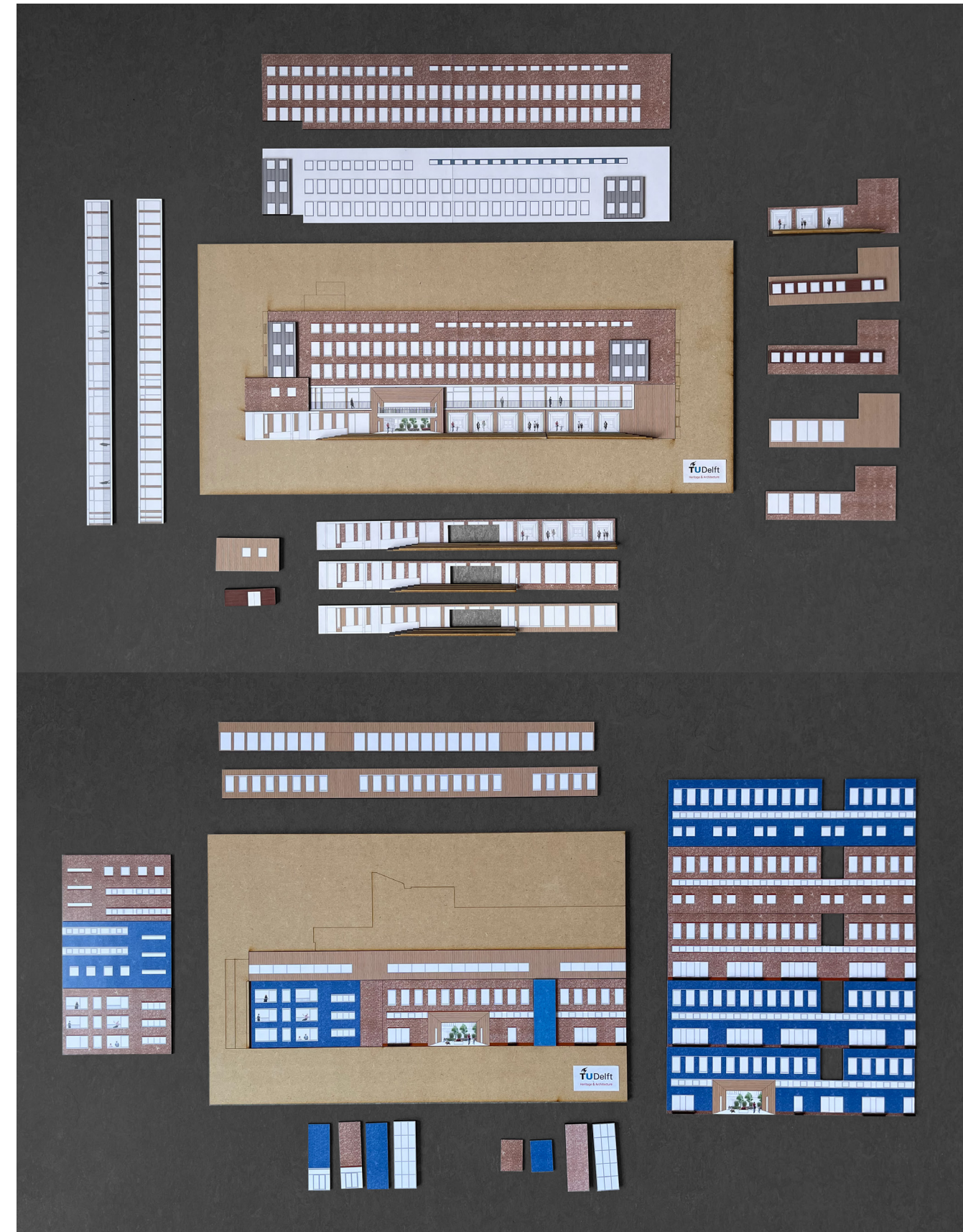


Figure 3. Two models for façade redesign testing

How is Politiebureau Groningen Centrum like?



Figure 4. Location in the Groningen inner city
Source: Google map

Figure 5. Bird view of the building and its historical surroundings
Source: siebeswart.photoshelter.com/image/I0000EAC72Uw84QY

Cityscape Mapping



Figure 6. City attributes mapping
Reference: Besluit Aanwijzing (1991), BESCHERMDE STADS- EN DORPSGEZICHTEN (1988)

Figure 7. Urban public space planning
Source: gemeente Groningen (2017), NIEUWE STADSRUIMTES

Demographics

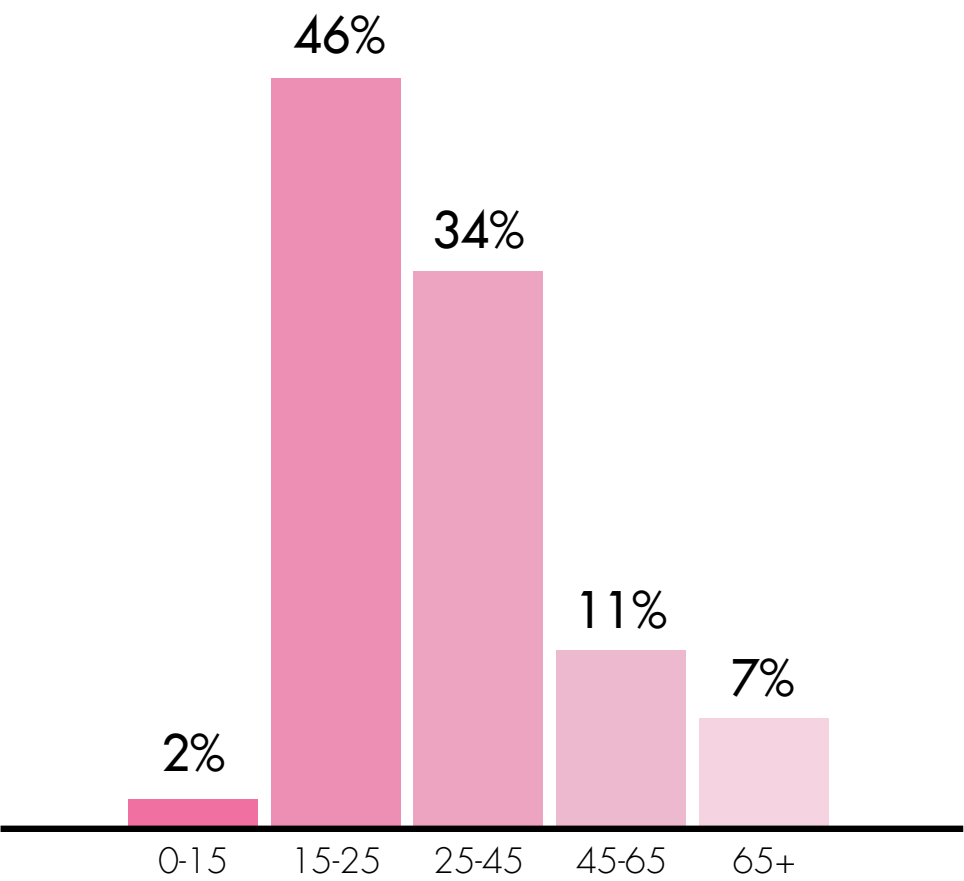
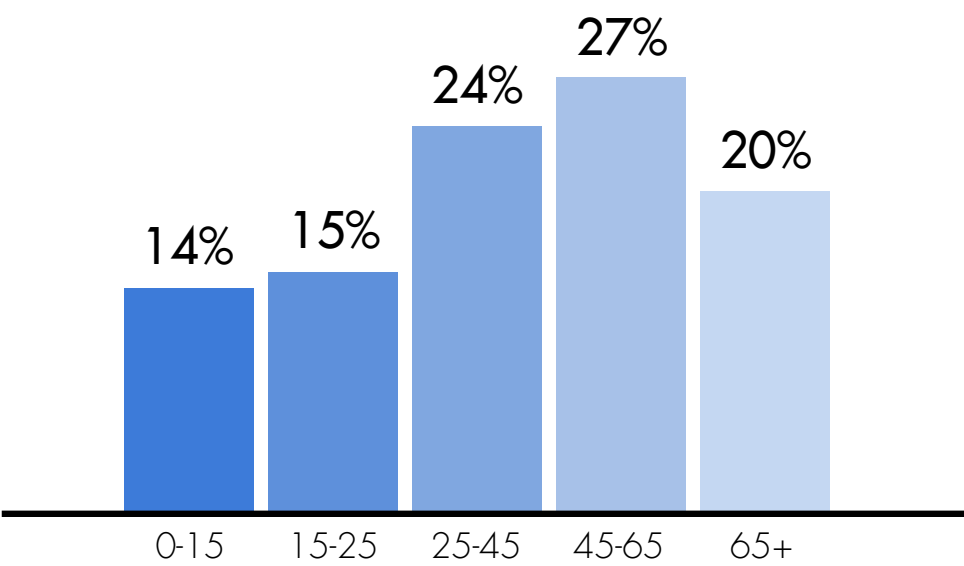


Figure 8. Age distribution of Groningen inner city
Reference: allcharts.info



The neighborhood has been highly urbanized and densified within the region and the country. What's more, these years have seen a rising population in Groningen centrum, requiring more diverse housing programs. The neighborhood has a large proportion of the young generation, most of which are university students, while in the region and the province elderly people account for much more, showing the issue of population aging. By comparing statistics of different scales, we could find elderly

people are moving outside the city while more students are swarming into the center, causing a severe disproportion and homogeneity of population. In the meantime, as research shows, countryside is not as habitable as urban area for elderly people because of their reducing mobility.

Figure 9. Age distribution of Groningen province
Reference: allcharts.info

Historical Development

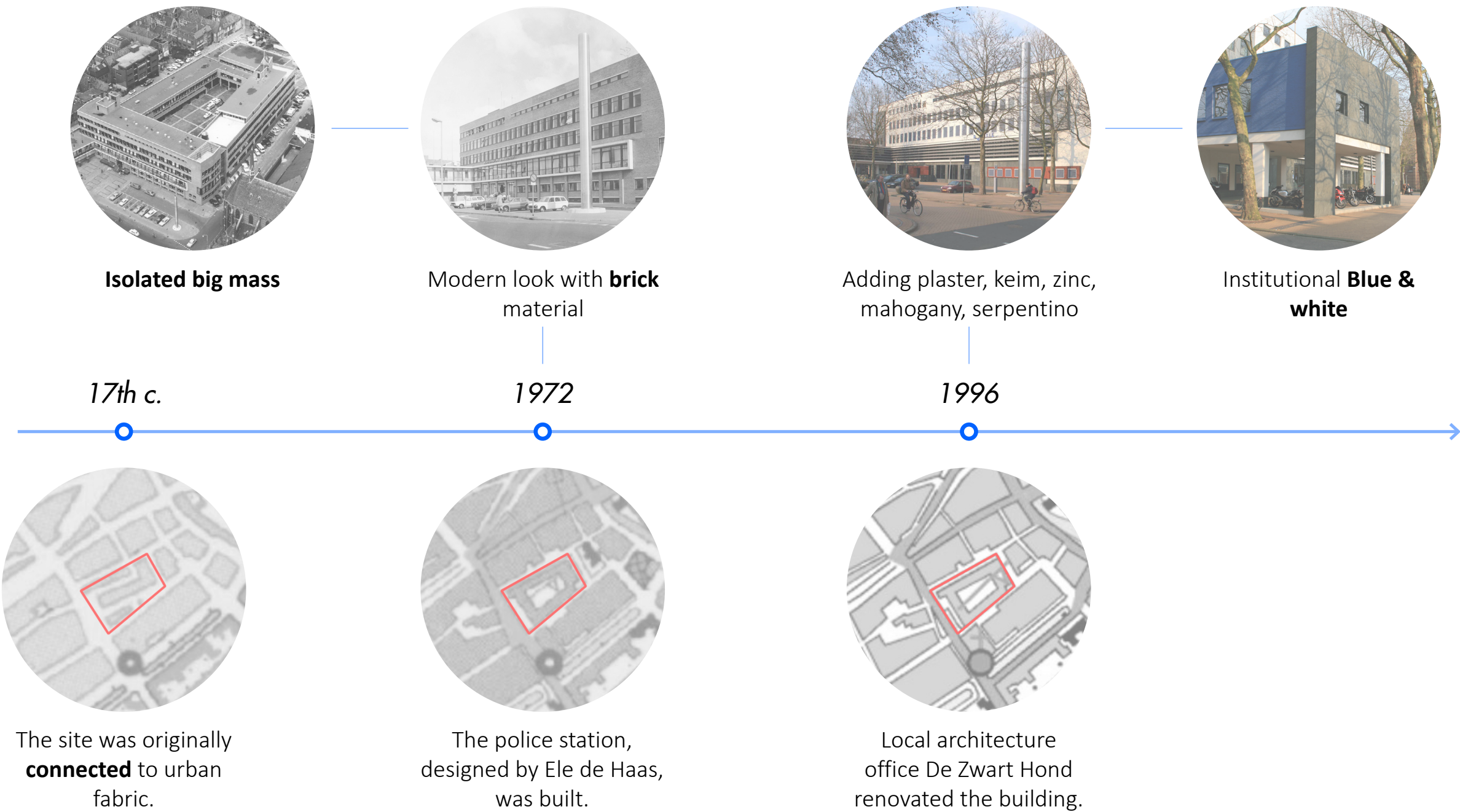


Figure 10. Historical development of the site

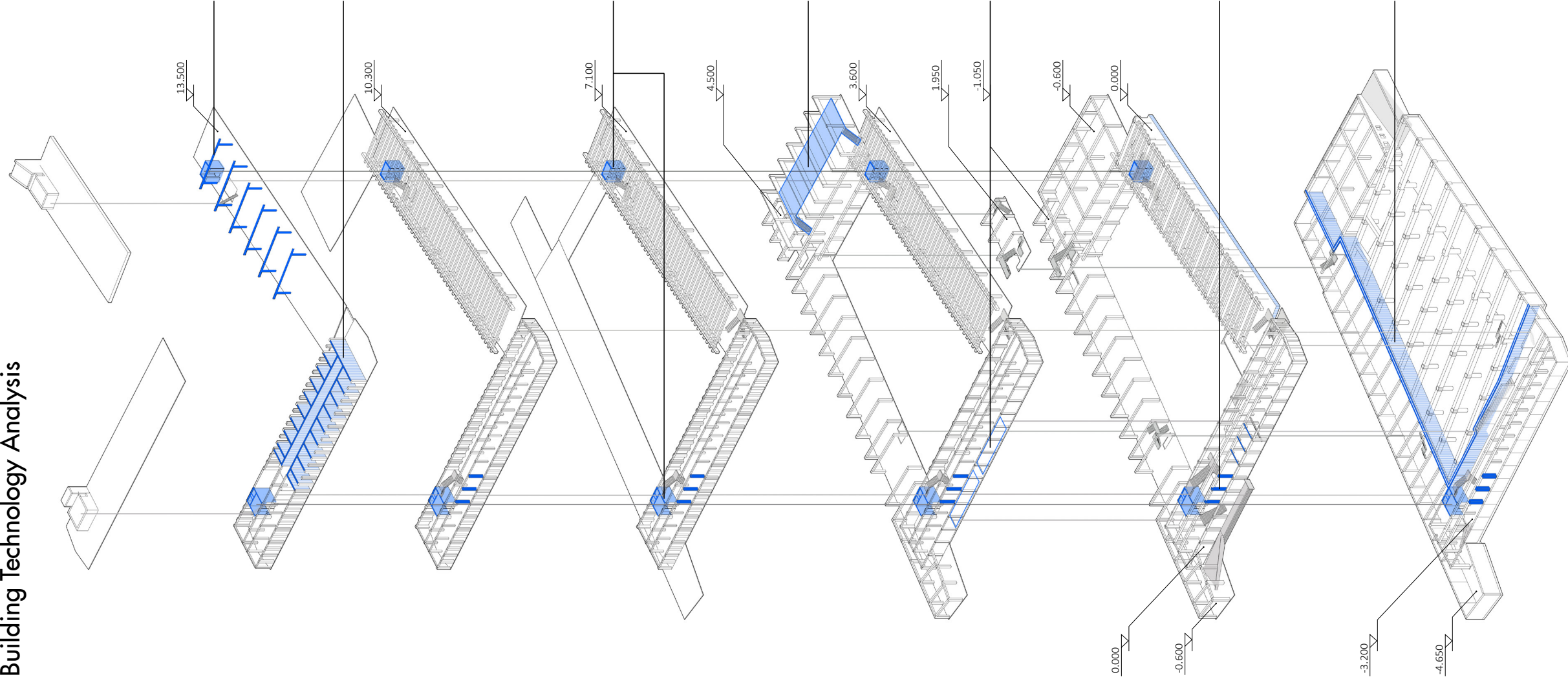
Source: De Zwart Hond, Weesies, R. Politiebouwmeester gezocht, topotijdreis.nl

Interior space



Figure 11. Interior space
Source: De Zwart Hond

Building Technology Analysis



The **steel structure** on top of the concrete frame has the possibilities to replace or remove. This placement also shows the load-bearing capability of the below structure which is capable to bear light structure.

The exceptional **supporting walls** support the roof. The position of the walls is not aligned with the axis, which is fine because it only bears the roof load. It is not suggested to change these walls.

The two **elavator shafts** were built originally. They not only serve as vertical connections, but also help stable the two blocks and resist lateral wind force. It is not suggested to change the elevators.

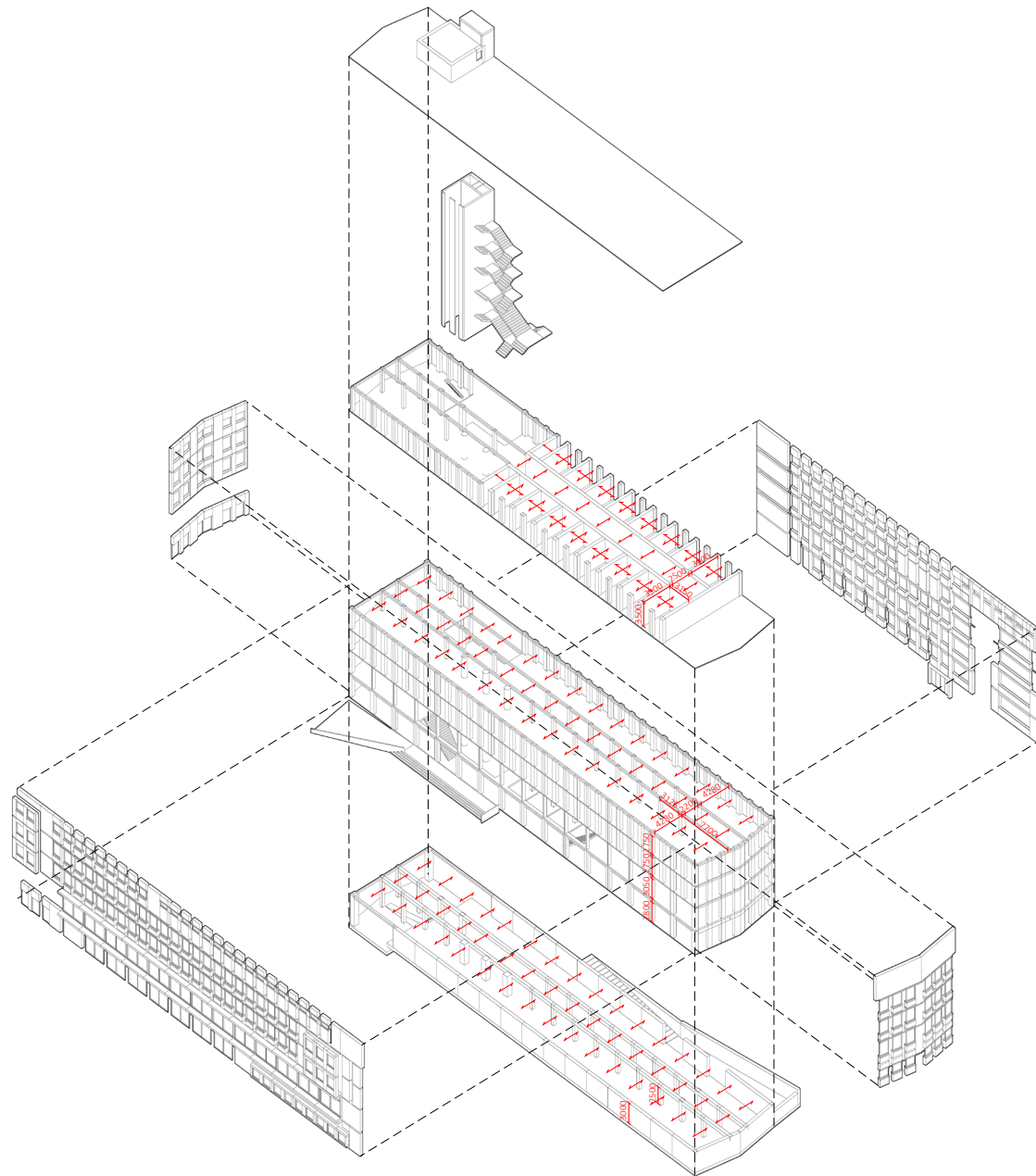
The **mezzanine** was added in the renovation, supported by the original columns and added columns. It is possible to remove it and add new structures in such a way if necessary.

The **openings** on the first floor were cut out in the renovation project. They weaken the structure mainly in the cross direction, therefore, three **steel beams** were added, attached to the existing longitudinal beams.

The three **round columns** shifted from the axis are exceptional in size and shape. The nearby **beams** are also exceptional, which should be consider carefully if adjustment is made.

The **settlement seam** and **double walls** in the basement divides the ensemble into two independent structure systems. It is not suggested to remove them or considerably change them.

Building Technology Analysis



Exploded view- the west wing

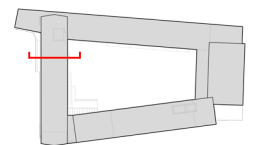
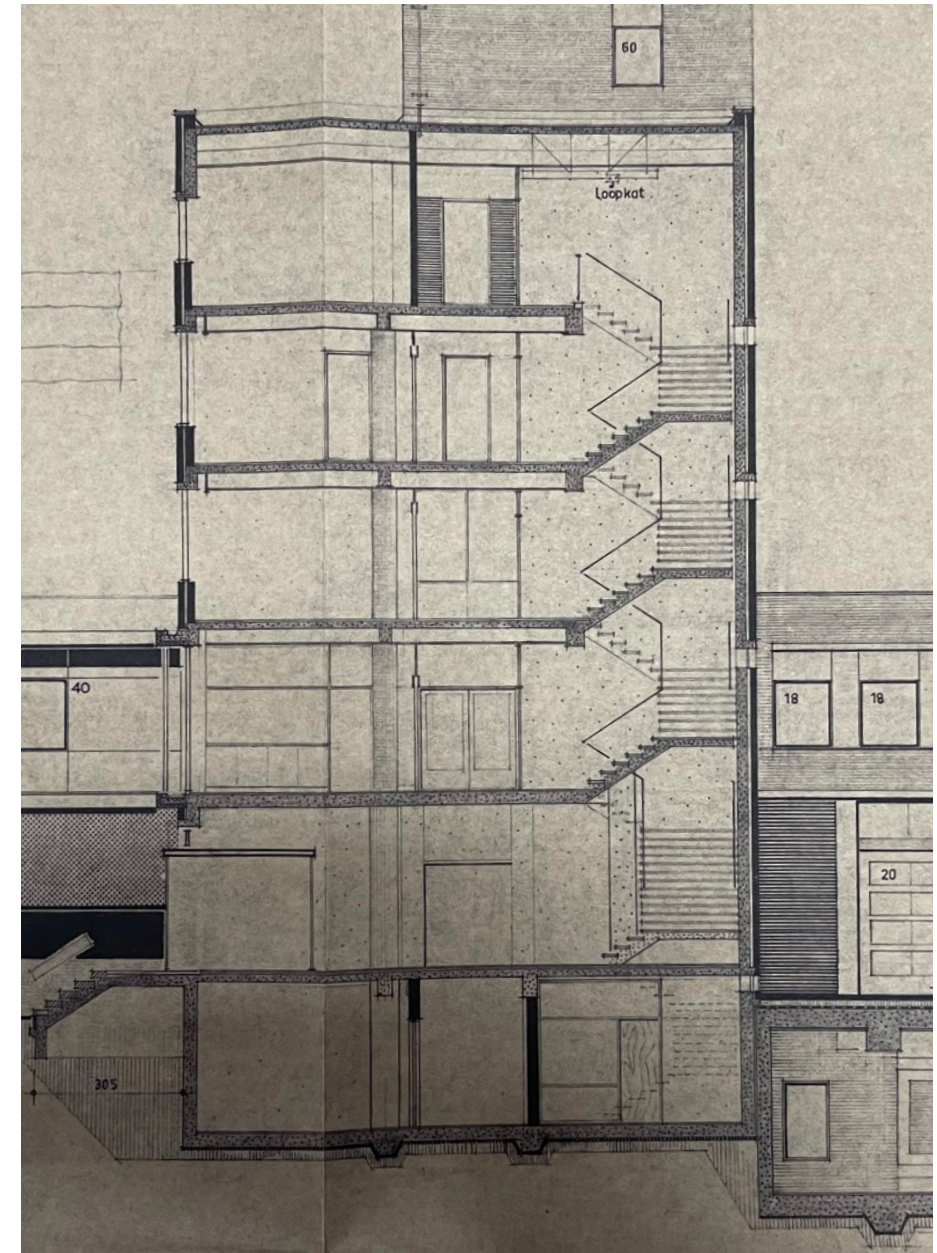
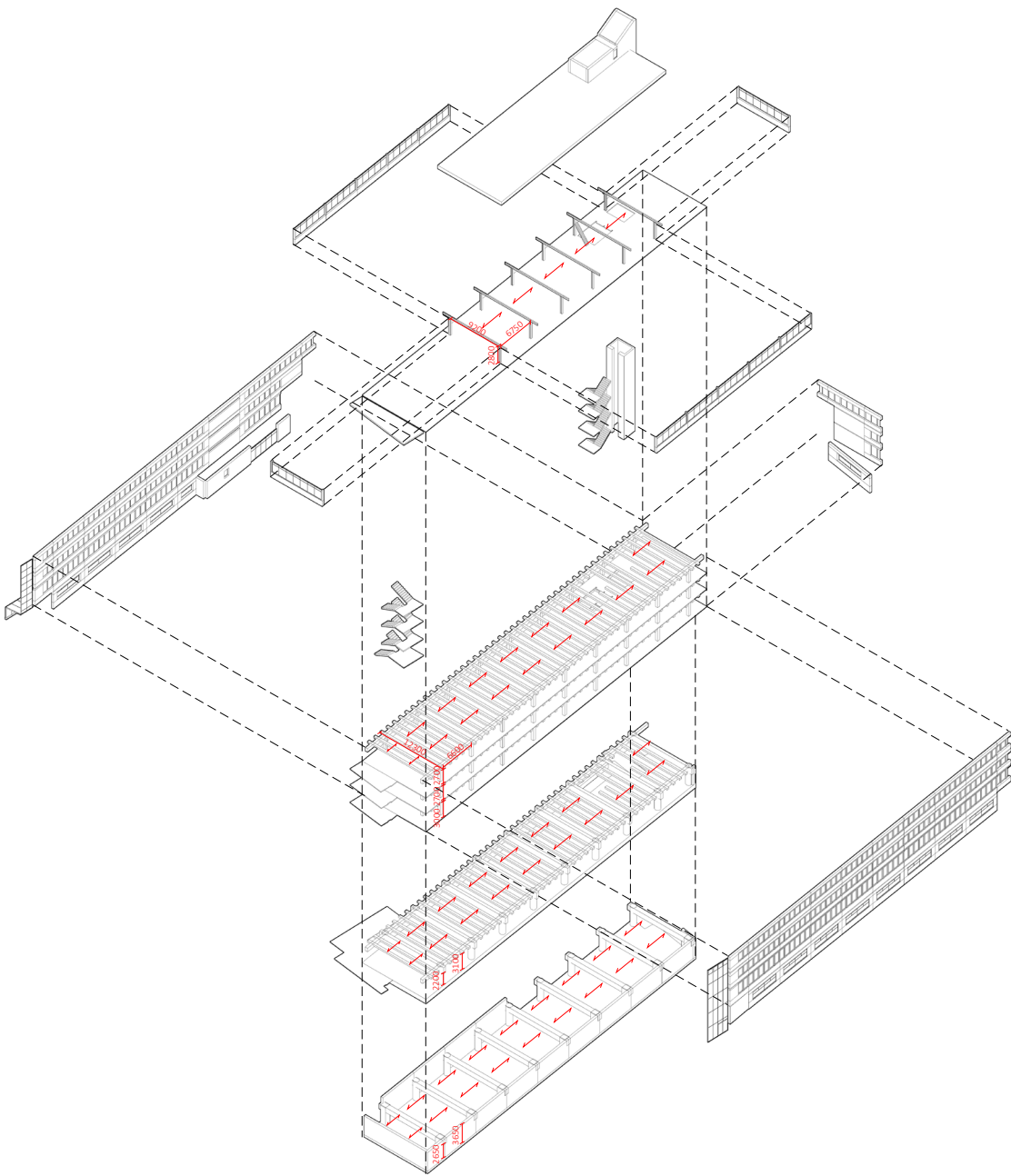


Figure 12. Original section
Source: Groningen Archive

Building Technology Analysis



Exploded view- the south wing

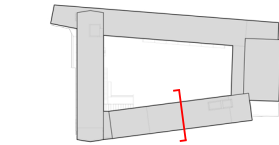
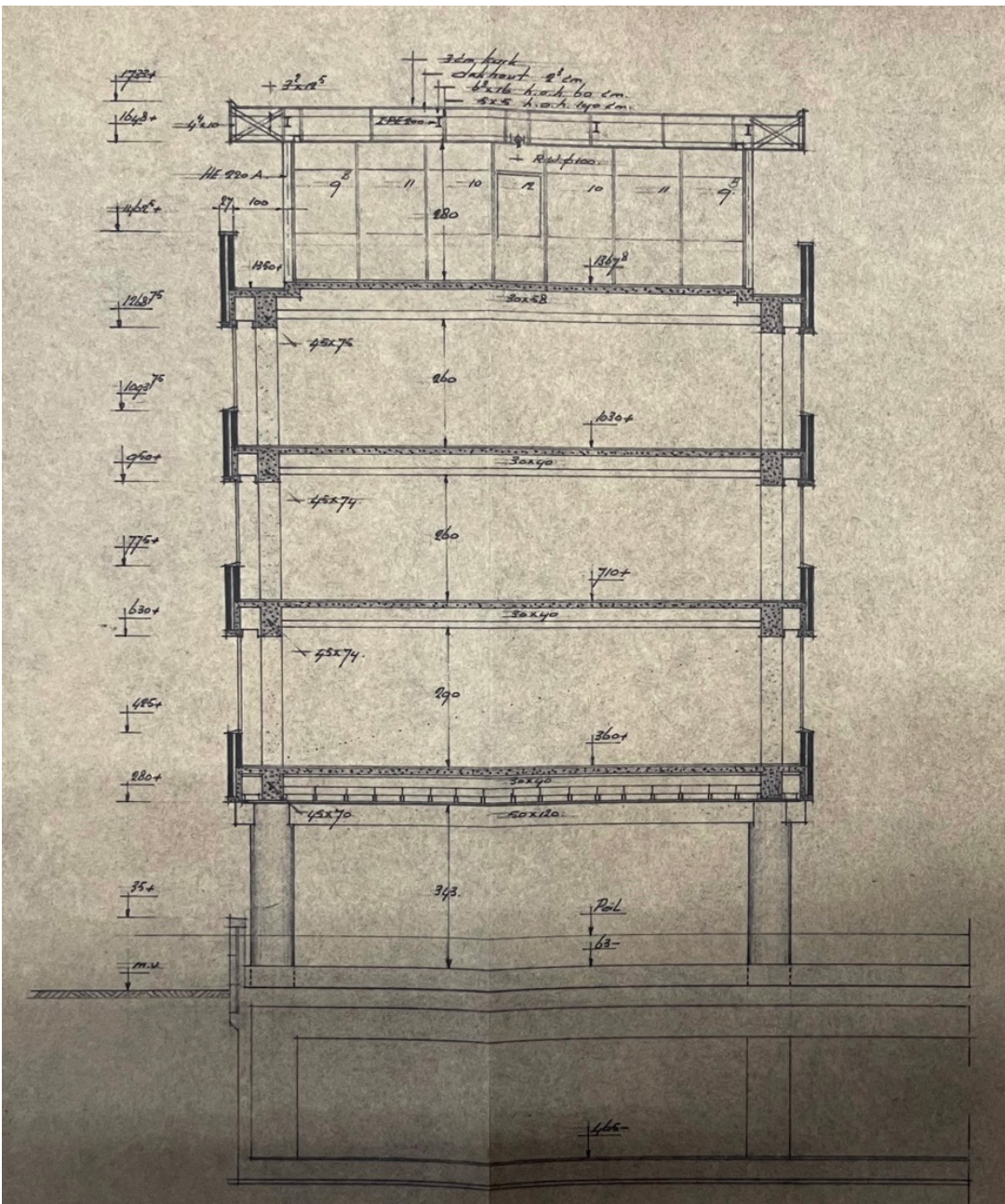


Figure 13. Original section
Source: Groningen Archive

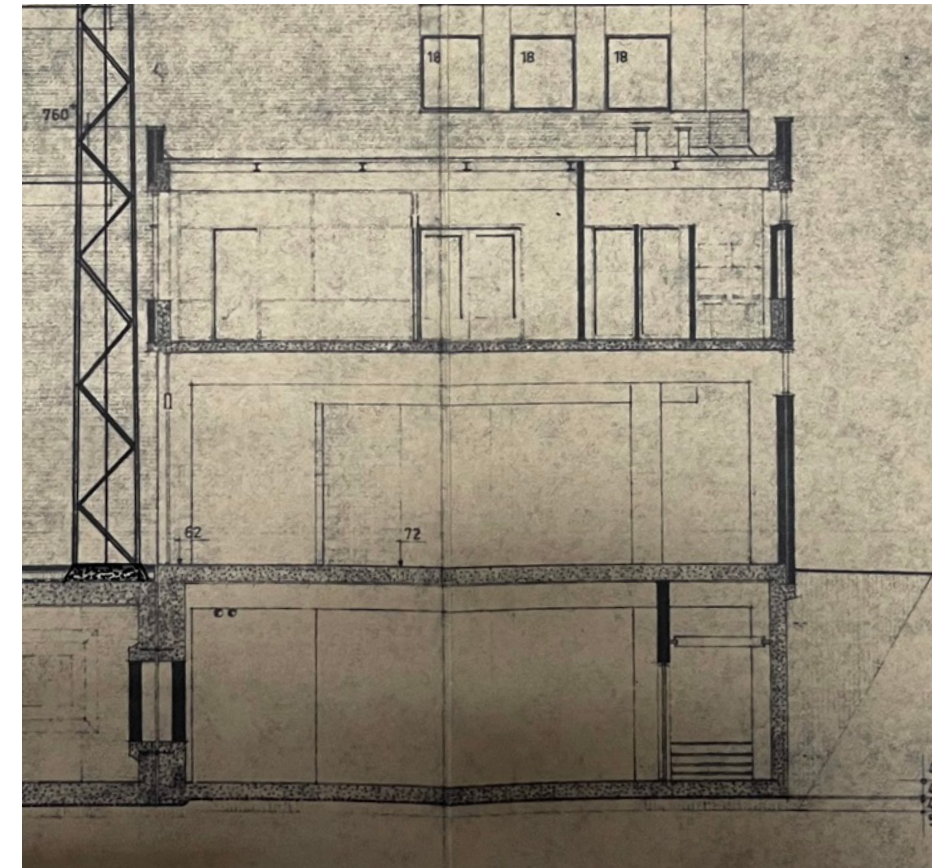
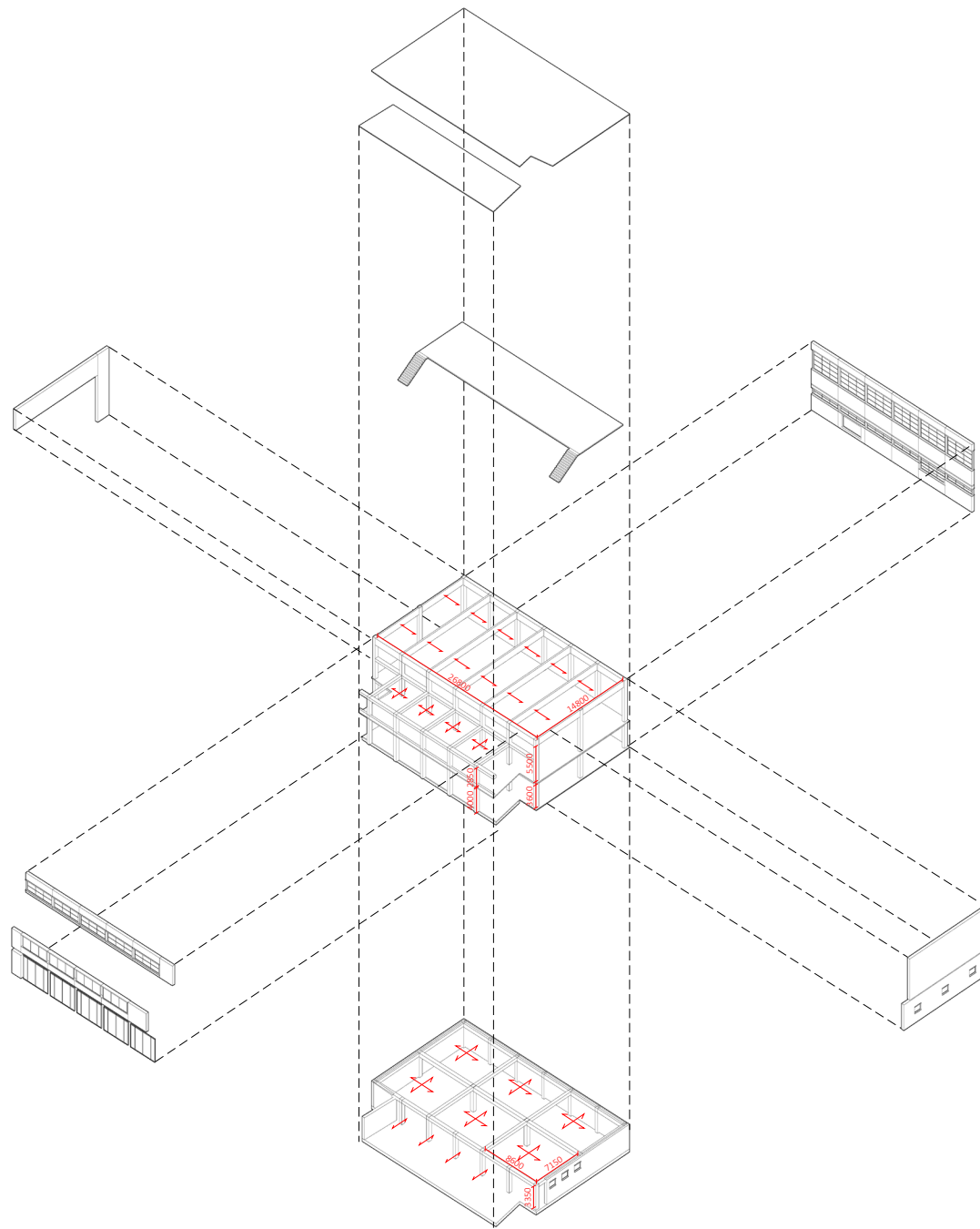
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Figure 14. Original section
Source: Groningen Archive

Building Technology Analysis



Exploded view- the east wing

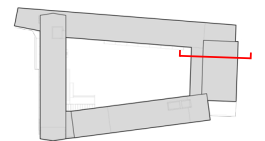
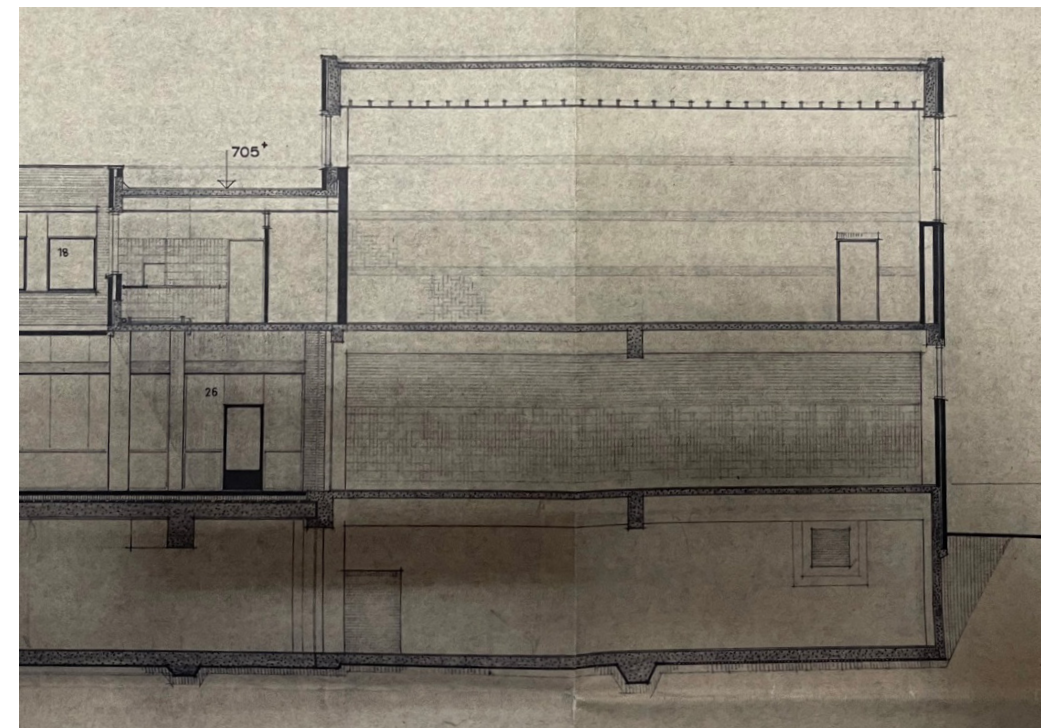


Figure 15. Original section
Source: Groningen Archive

Mapping of the changes on the facade



Interview and Cognitive Mapping

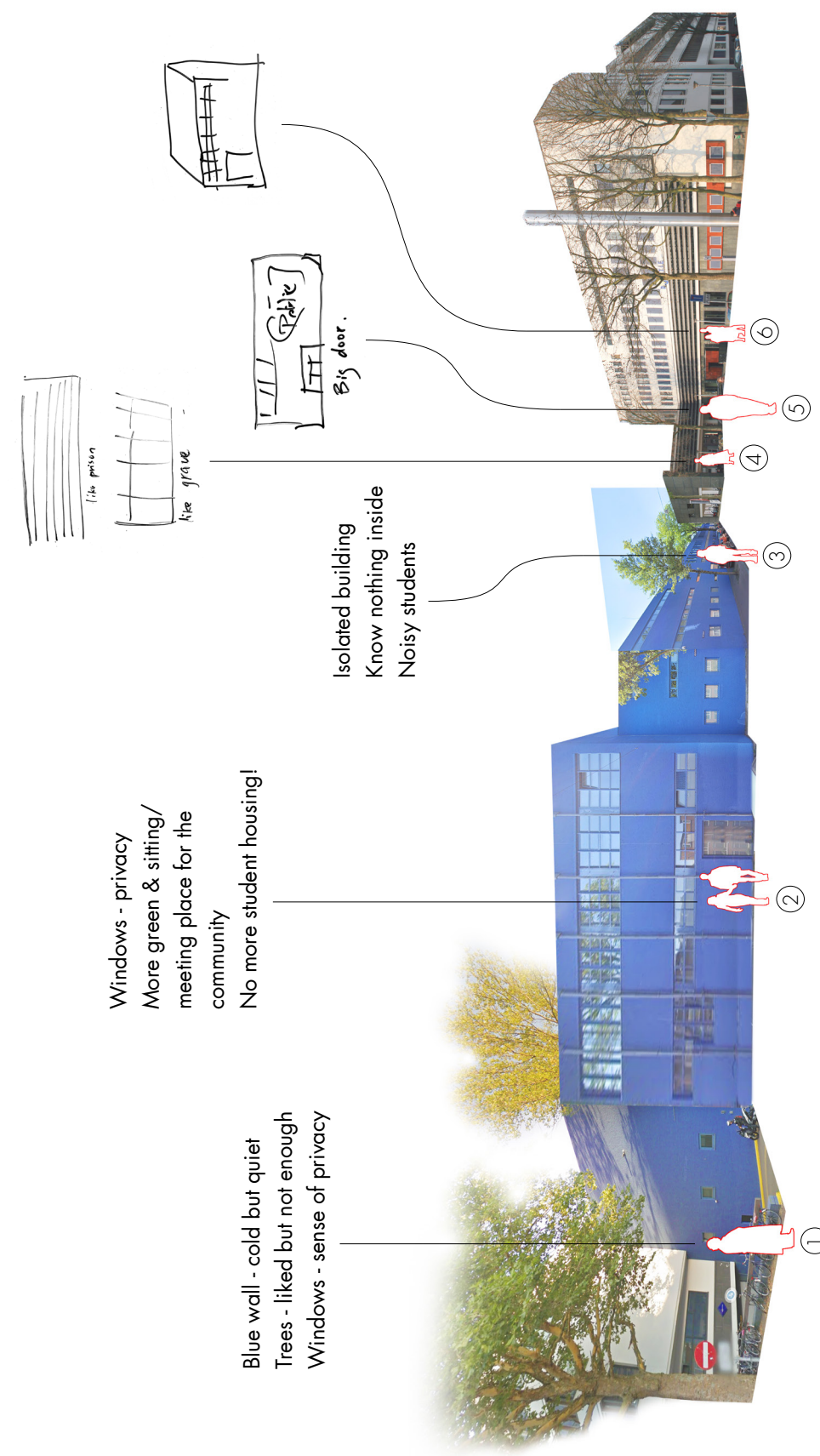
Three locals drew the building in their minds and described it. The first participant drew the horizontal aluminium sun shadings and serpentine claddings of the front façade, which, as she described, are bad and cold materials, giving her the impression of prison and grave. She said there is no communication between her and the building as well as the police officer inside. She was reminded of some terrible memories with the police that the police officer refused to help her find her missing son, who was imprisoned in the building secretly. She hardly passed the north façade, but she said the blue colour was peaceful to her when she saw it. The second participant drew the building with a pitched roof, horizontal windows, and an entrance on the left. He appreciates the building as modern, grand, and imposing for its big volume and modern material. He said it was a landmark in the city, and he had known it for more than twenty years. The third participant drew the building with a square shape, horizontal windows, a big entrance, and a big police logo. He said he has no feeling about the building, which is just a normal one to him.

The other three participants only talked about their opinions about the building and surroundings. The first participant said the police station was isolated and knew nothing about it inside. He complained about the students living nearby who were too noisy. The second participant said the blue colour of the building was cold, and the environment was cold as well, but also quiet, which he appreciated. He likes the trees growing around the building, but he also argues greenery is not enough.

The third participant thinks the building is nice because it is away from her windows, giving her a sense of privacy. She said the neighbours did not communicate a lot, but she wanted the community to be more lively. Besides, she also thinks green and sitting areas are lacking.

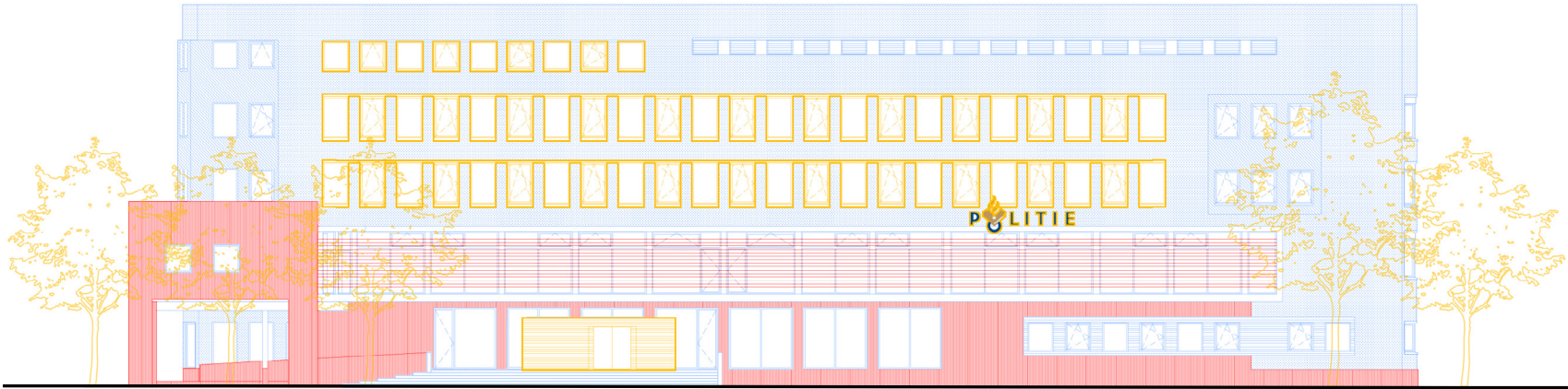
In conclusion, the first three participants drew and talked more about specific façade elements and materials related to their feelings and memories. The second three participants described the satisfying and unsatisfying things happening on the site.

Locals freely expressed their perceptions and remembrance of the site from cognitive mapping and interviewing. Though most of them did not dig into façade details, several things were mentioned to generate the starting points: the characteristic gate, the institutional colours, the layout of windows, the modern materials, and surrounding greenery. Compared to photo-based inquiries conducted by Rosalia Leung, Thomas Binder, Eva Brandt, and TU Delft pioneer students, the results of cognitive mapping are more general without many details. However, they reflect the participants' independent initial thoughts and feelings without interference by the researcher, which are the things worth researching further. It is recommended that a specific photo-based method can follow up. People are more likely to speak than draw. Drawing might become a limitation for them to express themselves and engage in the inquiry.

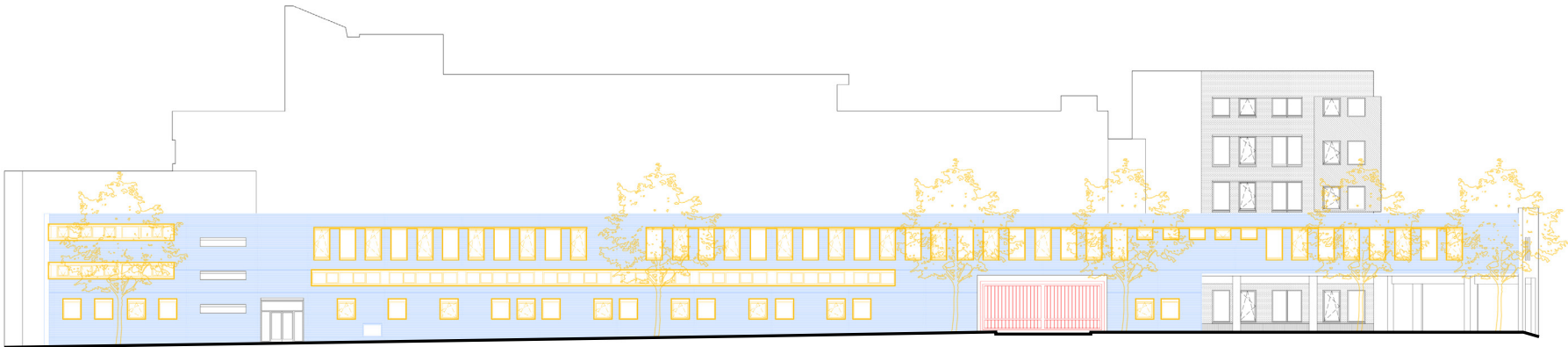


Results of interview and cognitive mapping

Facade-People Attachment Mapping



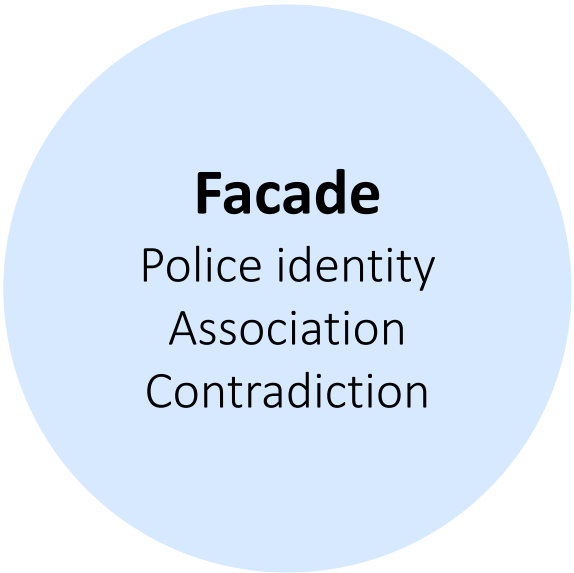
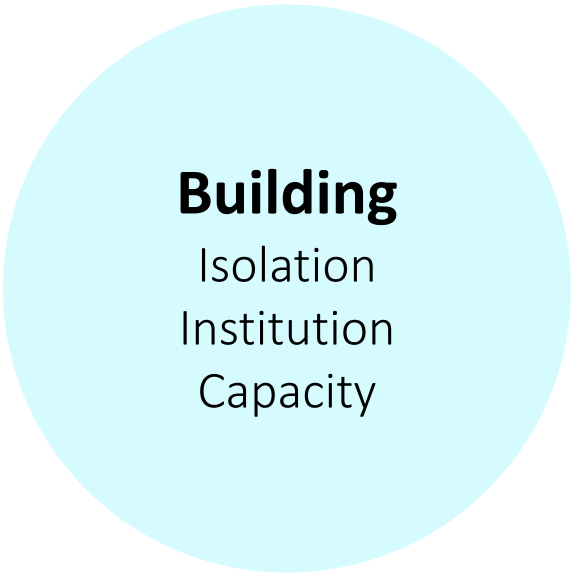
Entrance & Horizontality of Windows: recognized as the landmark characteristics widely remembered by citizens
Metal Shading & Serpentino Finishing: perceived as prison and grave, recalling local's bad memory with the police
White Color & Modern Materials: regarded as cold and unfriendly by some locals but appreciated by others



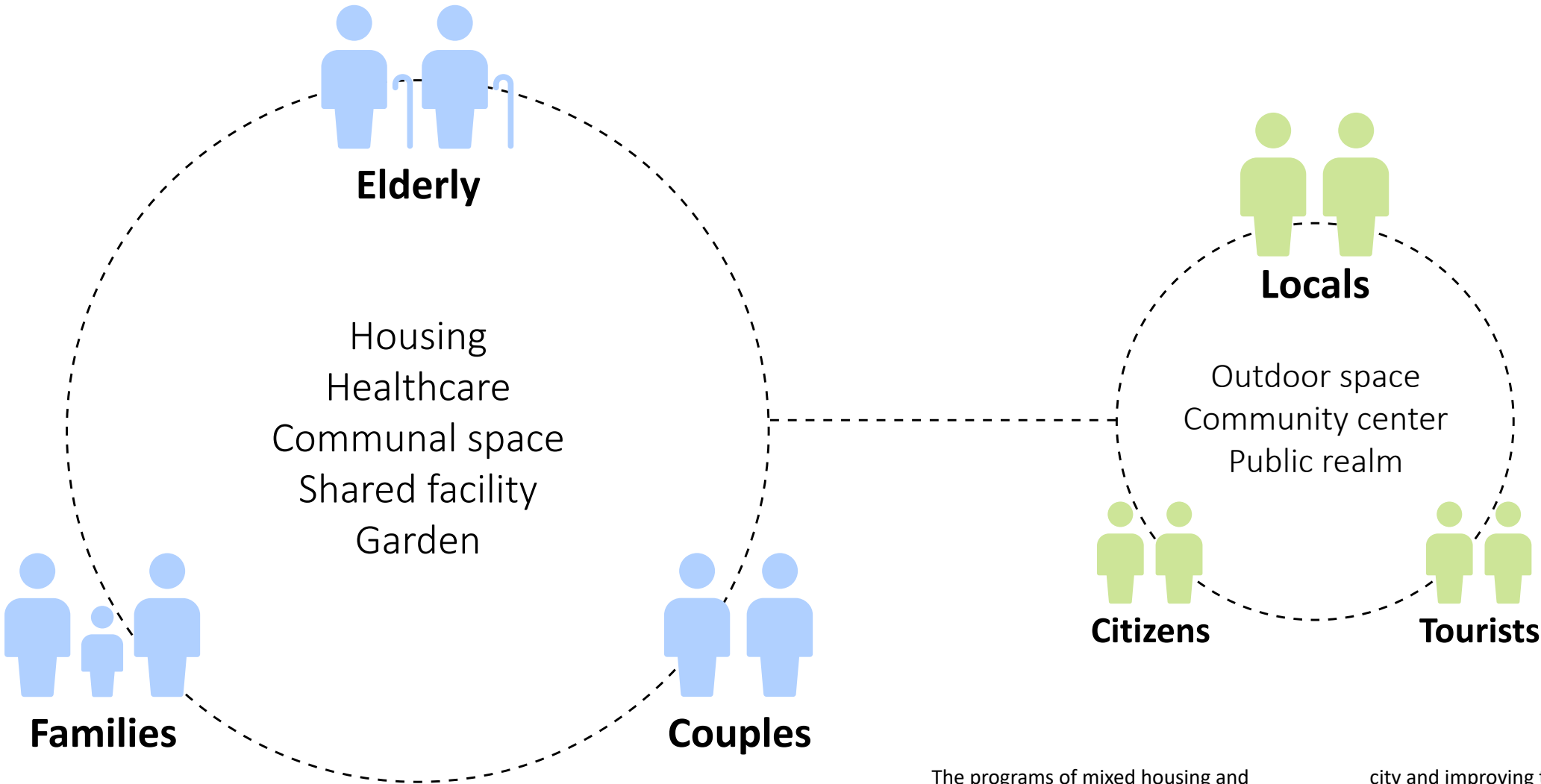
Windows: not bothering the surroundings, bring a sense of privacy and quietness to locals
Metal gate: regarded as a cold barrier between inside-outside, giving a strong institutional feeling
Blue wall: regarded as cold on one hand, but peaceful and bringing quietness to the neighborhood on the other

Positive Negative Contradictory

Key Informant Set



What are the target groups, functions & redesign proposals?



The programs of mixed housing and community center are welcomed by locals and suit the typology. The target group comprises people whose children have flown the nest, dual-earner households, senior citizens and new parents. Considering the rising demands for housing in the inner city, the successful precedents providing similar housings, and the benefits of living in the city center, this project will be attractive for the target group. This project also contributes to the goal from the municipality by bringing diversity to the

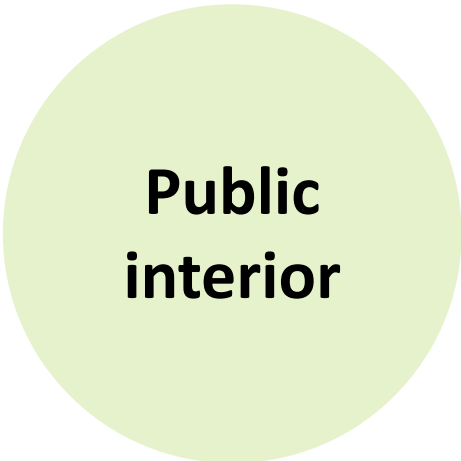
city and improving the public space. From the demographic analysis, the target group is mainly western and Dutch citizens, older than 25-30. Most of them may have secondary or higher education, get married, and have stable income/deposit. They tend to live here for long time with their families. The elderly will stay here for the life long, while kids will be newborn and gradually grow up. The neighborhood is supposed to be stable rather than changable.

Activity Analysis of Target Groups

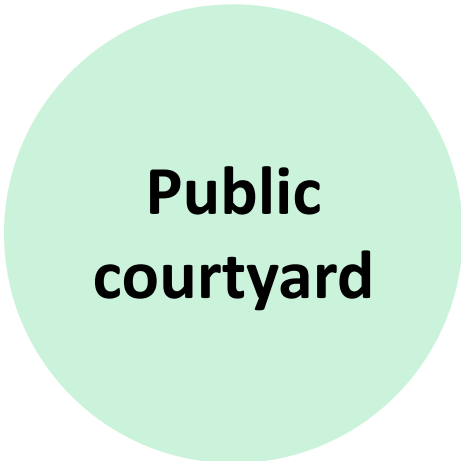


Figure 16. Activity Analysis of Target Groups
Data extracted from Quora, Images from internet

Communal Space Classification



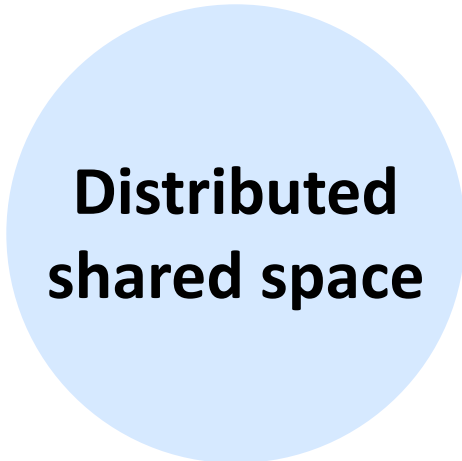
- Gym
- Shops
- Supermarket
- Barber's
- Hotel



- Gardens
- Playground
- Greenery
- Pavillions
- Greenhouse

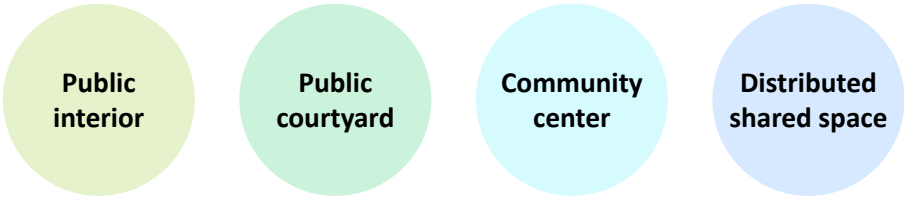
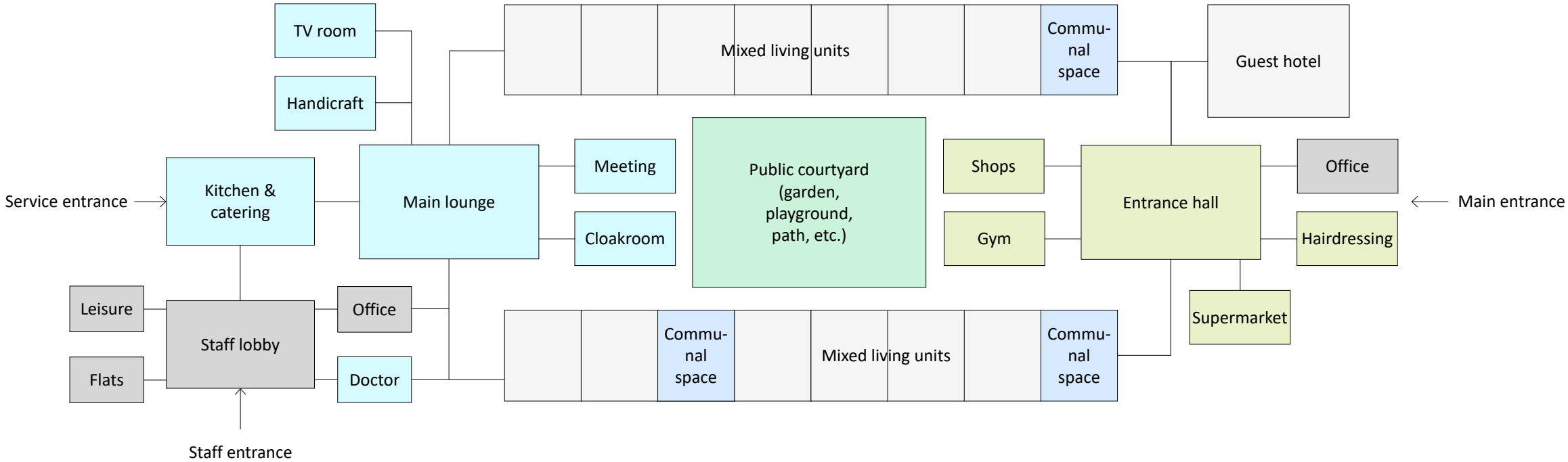


- Kitchen
- Catering
- Workshop
- Meeting room
- Auditorium



- Pocket library
- Laundry
- Shared storage
- Sports place
- Sitting area

Program Distribution



Overall Design Starting Points

Facade

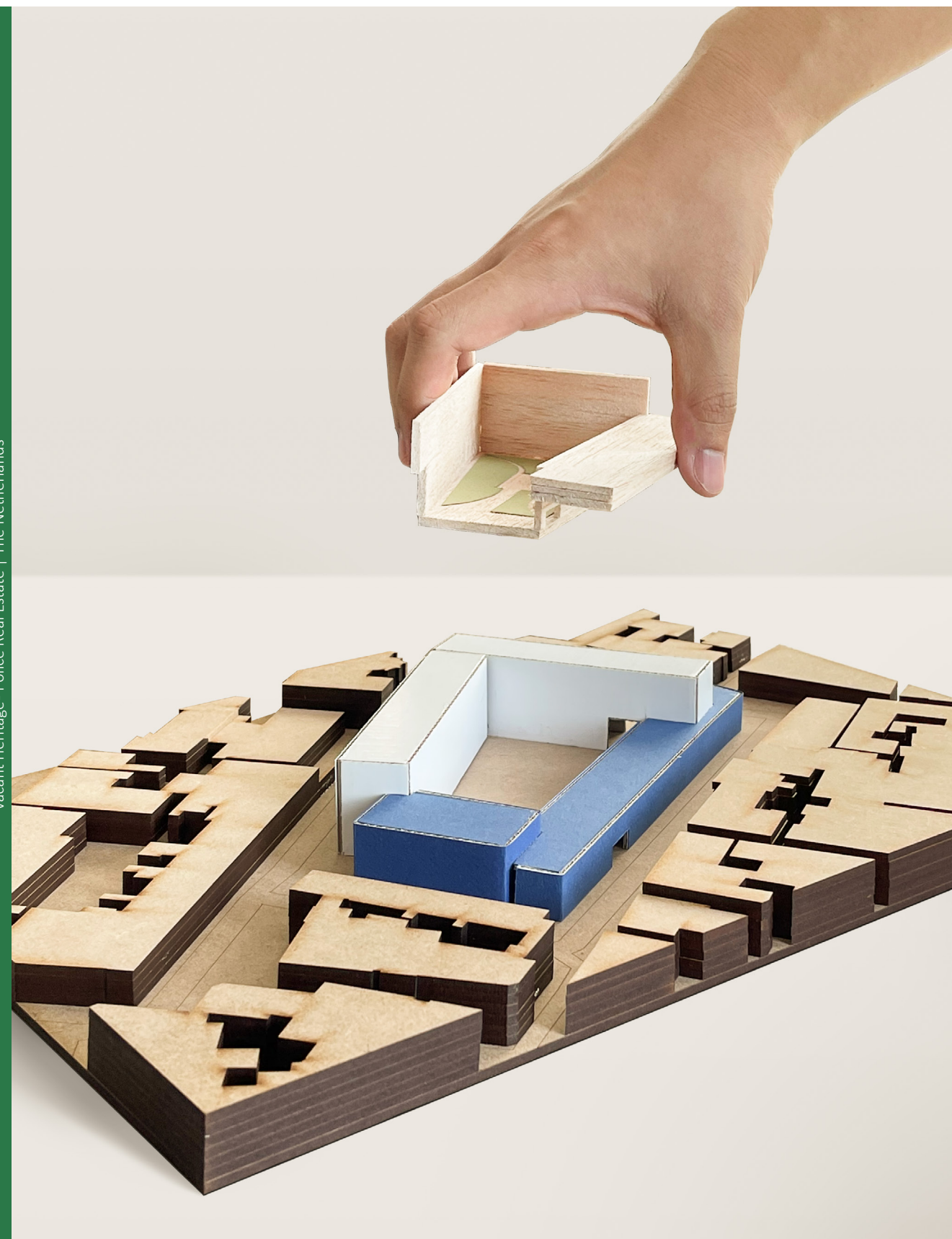
- Keep the quiet and peaceful atmosphere
- Keep the sense of privacy
- Keep the identity of the building as landmark
- Eliminate the sense of isolation
- Eliminate negative materials that bring bad memory
- Connect the building with the outside appropriately
- Add more greenery

Building

- Change the perception from institutional to homely
- Activate the courtyard and interior space
- Create co-living space and celebrate diversity
- Keep the exceptional structure and space
- Ensure the accessibility and convenience for everyone
- Consider circular economy and sustainable solutions

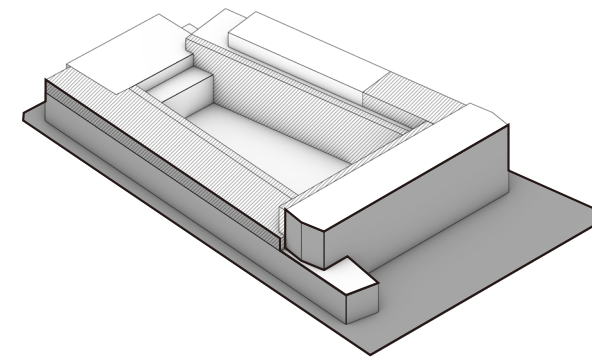
City

- Connect the courtyard to the outside
- Connect the historical lanes
- Emphasize the historic city boundary
- Focus on the continuity of space and material in urban fabric
- Meet the municipal requirement of levels of public space
- Add greenery, meeting spots, sitting area for locals
- Give locals the chance to participate in urban space creation



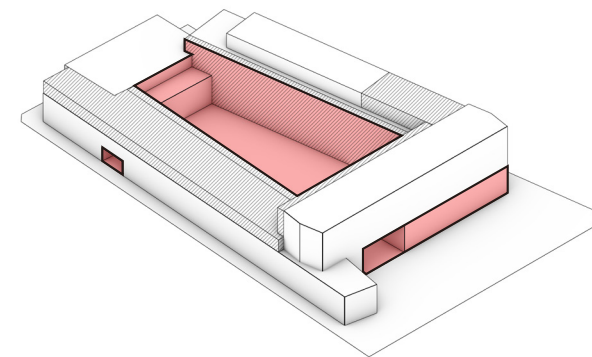
Essance model

Redesign Proposals



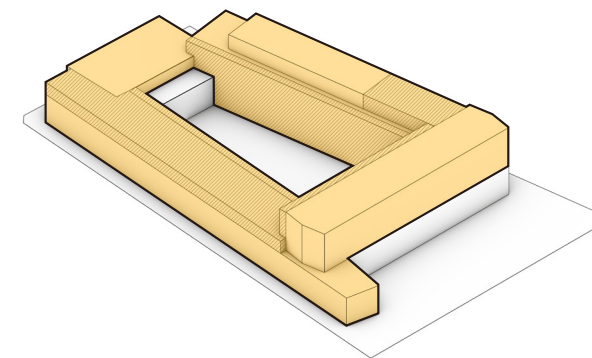
Sensitive surface

Treat the facades and exterior space in a modest manner




Inclusive core

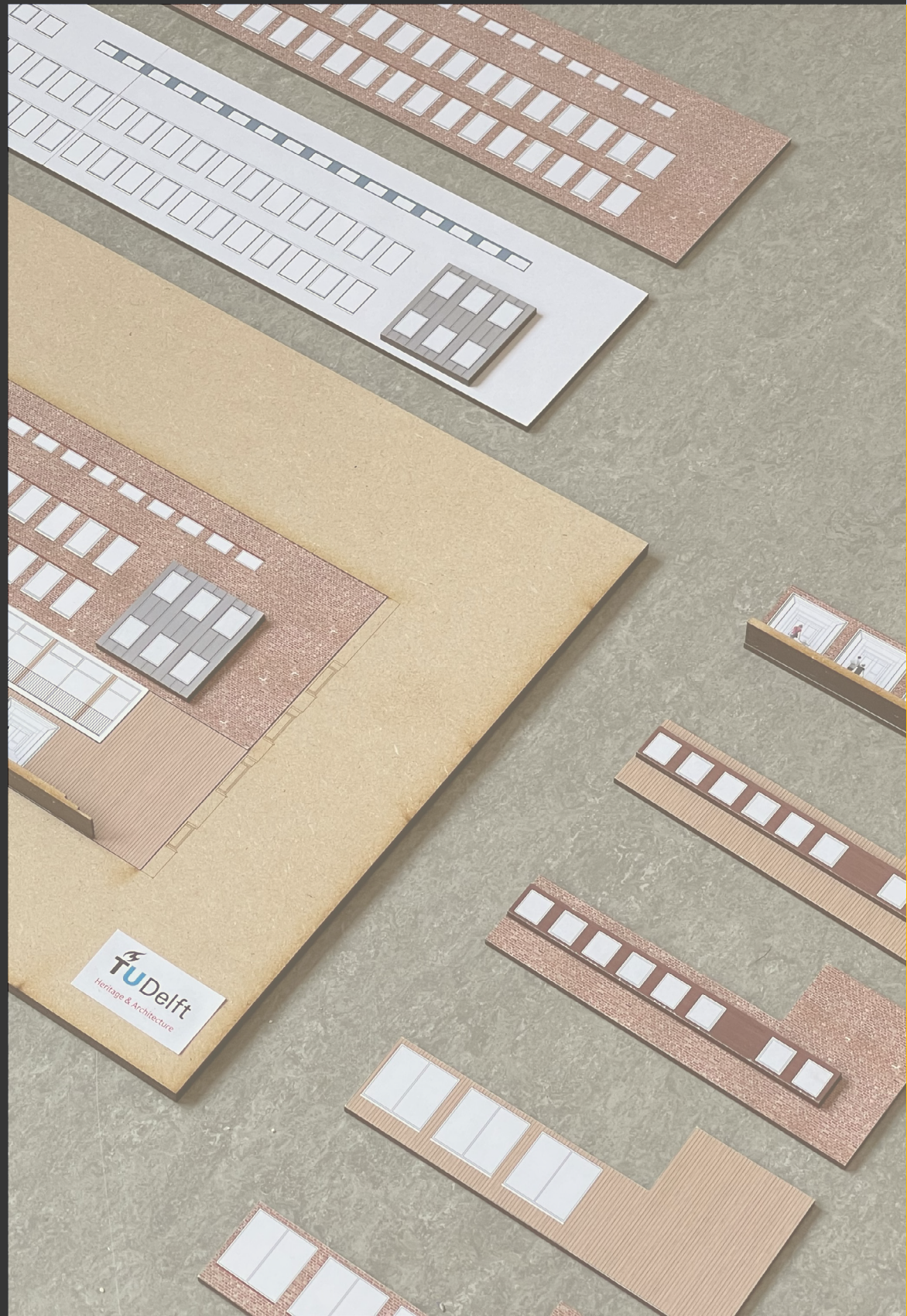
Add volumes and create new perceptions inside the block



Attentive home

Reorganize the interior and encourage comfortable co-living

 Added volumes



PD Research

What participatory design theories and tools are there?

General: participation in heritage activities:

The Faro Way



HUL approach



Caspersen, O. H. (2009). Public participation in strengthening cultural heritage: The role of landscape character assessment in Denmark. *Geografisk Tidsskrift-Danish Journal of Geography*, 109(1), 33-45.

Design & research theories:



Participatory design toolbox:

Aparici, M. M. (2016). Attention, City in the making! Participatory methods in Architectural and Urban Design: Creating public values for urban regeneration. Delft University of Technology, Retrieved from <https://repository.tudelft.nl/islandora/object/uuid%3A5c55107f-07b1-4c87-9b98-0156ff64c7a3>

Binder, T., & Brandt, E. (2008). The design:lab as platform in participatory design research. *Codesign*, 4(2), 115–129. <https://doi.org/10.1080/15710880802117113>

Luck, R. (2003). Dialogue in participatory design. *Design Studies*, 24(6), 523–535. [https://doi.org/10.1016/S0142-694X\(03\)00040-1](https://doi.org/10.1016/S0142-694X(03)00040-1)

North East Social Enterprise Partnership. (2014). Introduction to the Principles of Participatory Appraisal. In. www.NESEP.CO.UK.

Sanders, E. B.-N., Brandt, E., & Binder, T. (2010). Proceedings of the 11th biennial participatory design conference. In *A framework for organizing the tools and techniques of participatory design* (pp. 195–198). essay. <https://doi.org/10.1145/1900441.1900476>

Models in practice:

Baugruppen (German)

<https://www.archdaily.com/593154/r50-nil-cohousing-ifau-und-jesko-fezer-heide-and-von-beckerath>

<https://www.miesarch.com/work/4302>

http://www.french2d.com/cohousing?utm_medium=website&utm_source=archdaily.com

https://issuu.com/bryndavies/docs/baugruppen_in_the_uk--bryn_davies--university_of_s

Open building (The Netherlands)

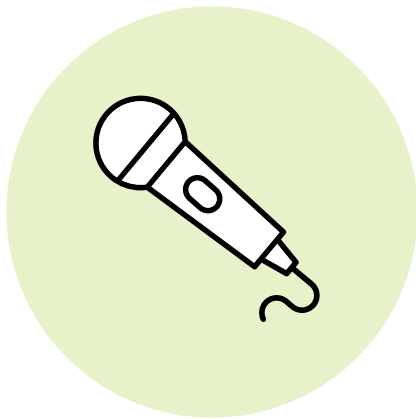
Offices and institutions:



Classification: Three Levels of Participation

Participatory design (PD) is a group of design approaches involving different non-expert stakeholders in the co-design process by employing participatory tools.⁵ PD approaches have been developed since the 1980s in various design fields with multiple tools for multiple purposes.⁶ Rowe introduces a general participatory design methodology that includes a series of divergent and convergent phases for the designer and participants, from scoping to interviewing to generating Points of View (PoV) to iterations to final outputs.⁷ A similar methodology is also summarised by Martin and Hannington into five phases.⁸ Rosalia Leung, a lecturer at The University of Hong Kong, has taught and developed the course "Research on Participatory Design in Architecture" for years and built up a methodology that includes contextual inquiry, idea synthesis, and testing.⁹ The researchers Thomas Binder and Eva Brandt tested a series of inspiring model games for inquiry and layout testing.¹⁰ Other researchers, designers, and organisations contribute to the topic by applying and experimenting with PD approaches, such as the Dutch landscape office Urban Synergy, the community Castro District in the US, and Open Building Concept in the Netherlands.¹¹ By reviewing them, PD is concluded into three levels: inquiry, testing, and acting. Inquiry is the initial phase as getting input from participants. Testing is the middle phase where participants are involved in the co-design process and testing different scenarios. Acting is the continued bottom-up management and development after the buildings' main structure is completed. It is concluded that PD approaches should be

improved to achieve sufficient transparency in delivering design possibilities to participants and create a strong sense of participation among stakeholders.

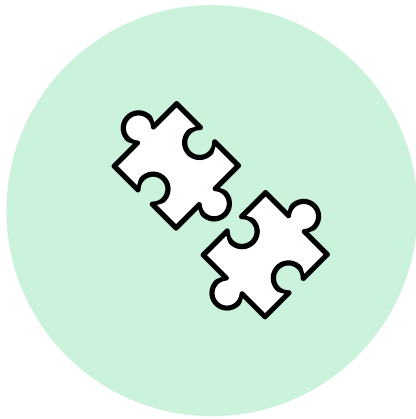


Inquiry

Getting input from participants

Cases:

Interview
Questionnaire
Mapping



Testing

Involving participants in co-design and testing

Cases:

Consulting
mock-up model
Game board



Acting

Bottom-up management and construction

Cases:

Co-organizing
Co-making
Customizing

How to apply the 3 levels of participation to the case?

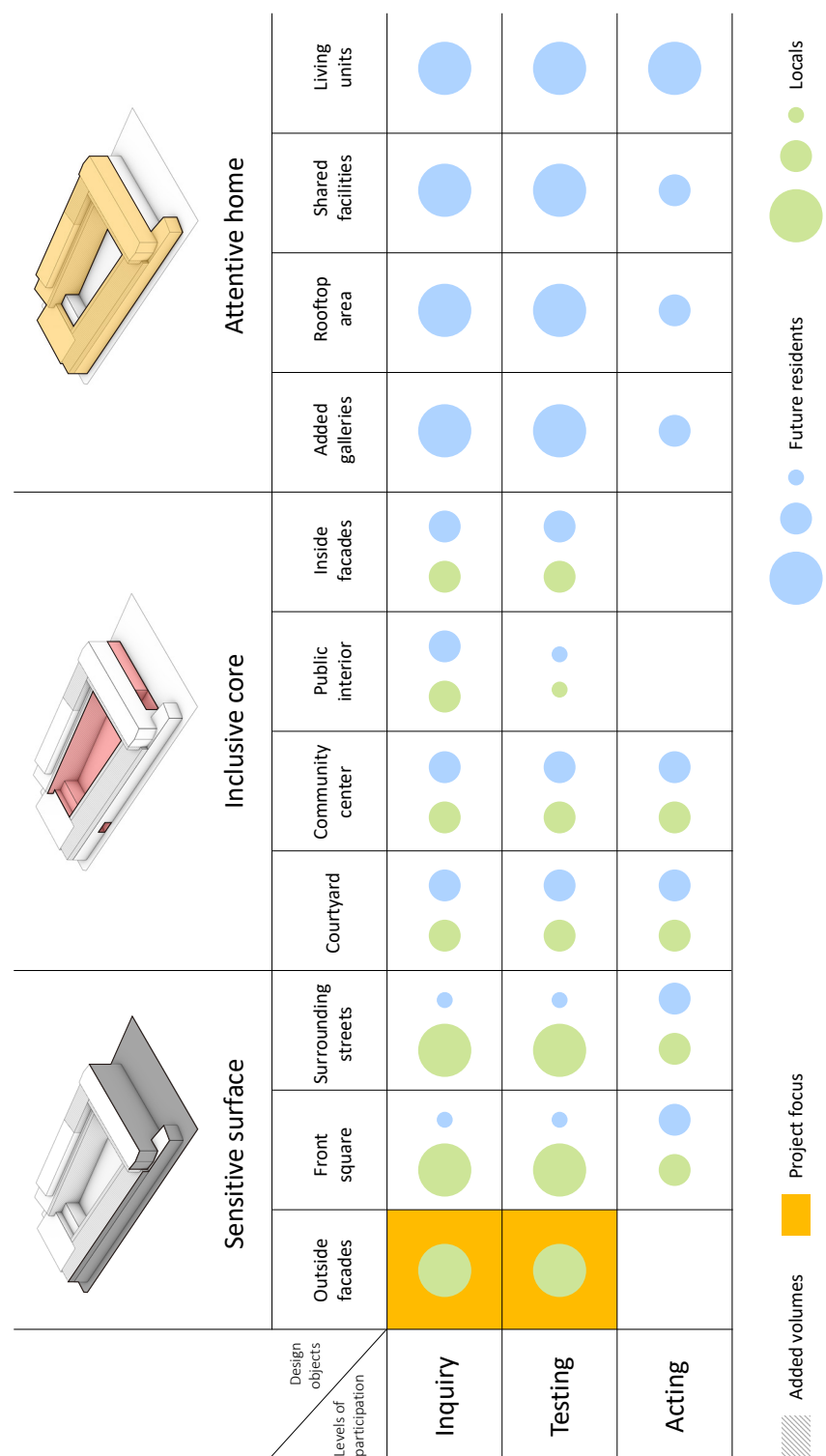


Figure 2. Applying three levels of participation to the case study

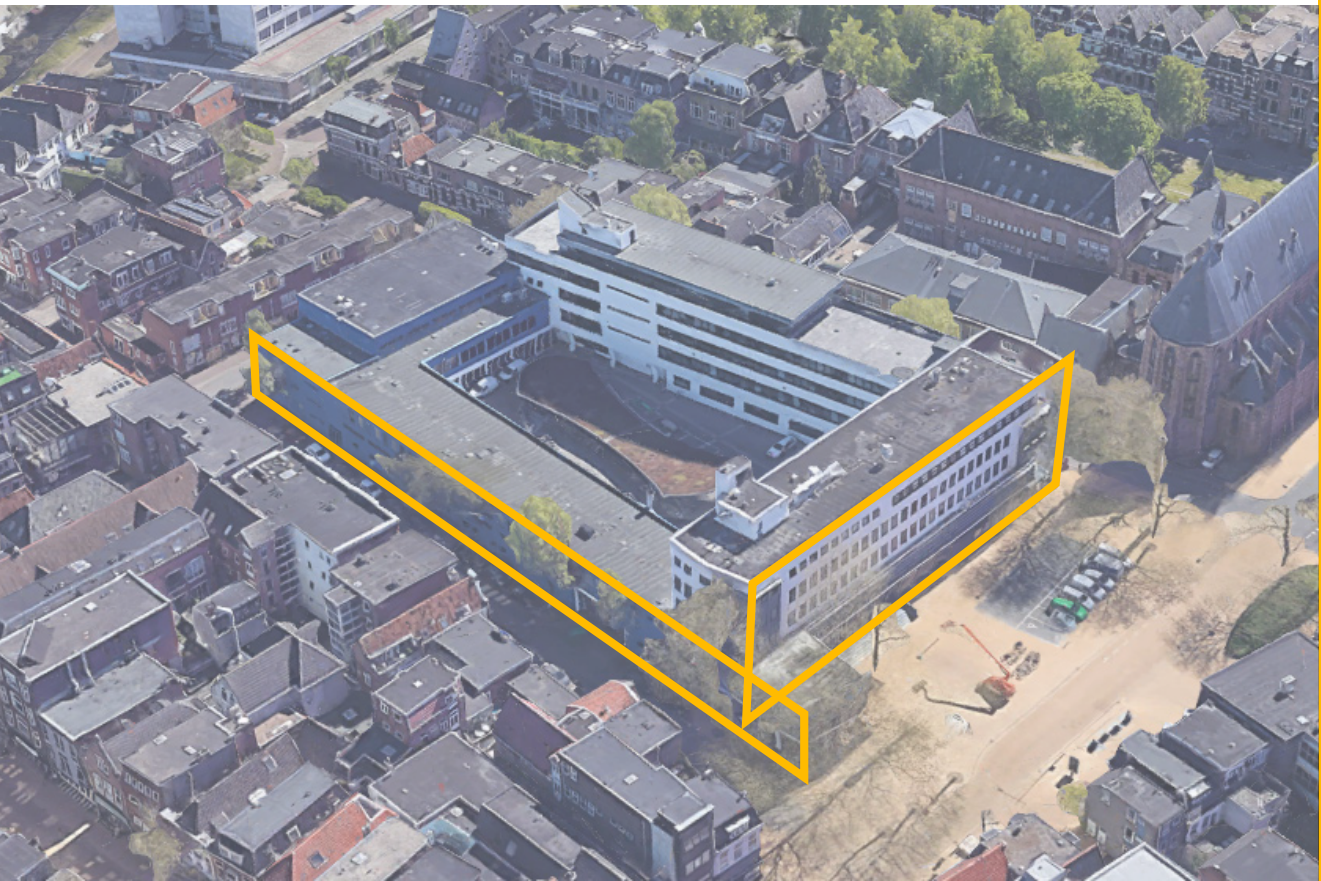
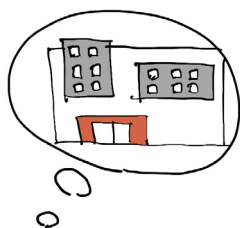


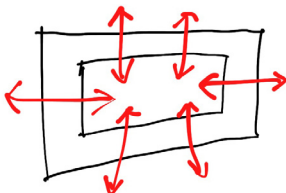
Figure 17. Two facades focused in the project
Source: Google map

Front Facade Redesign Starting Points



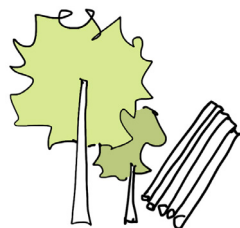
1. Characteristics

Keep the characteristic facade elements



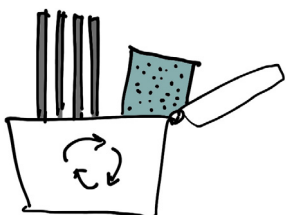
2. Openness

Open up the block to surroundings



4. Nature

Introduce greenery and natural material



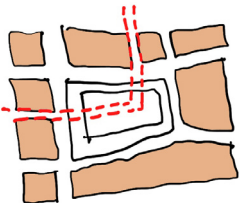
3. Perception

Remove negatively perceived material



5. Function

In line with the functions behind



6. City

Repond to urban fabric and values

Front Facade Redesign Scenarios

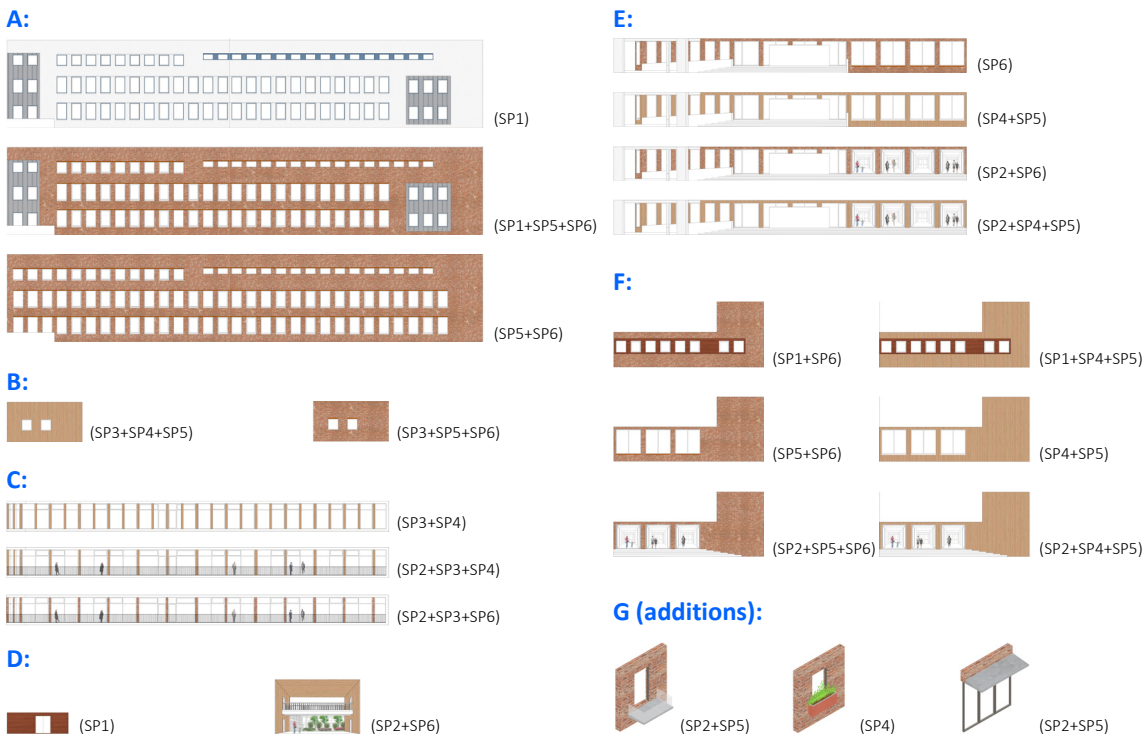
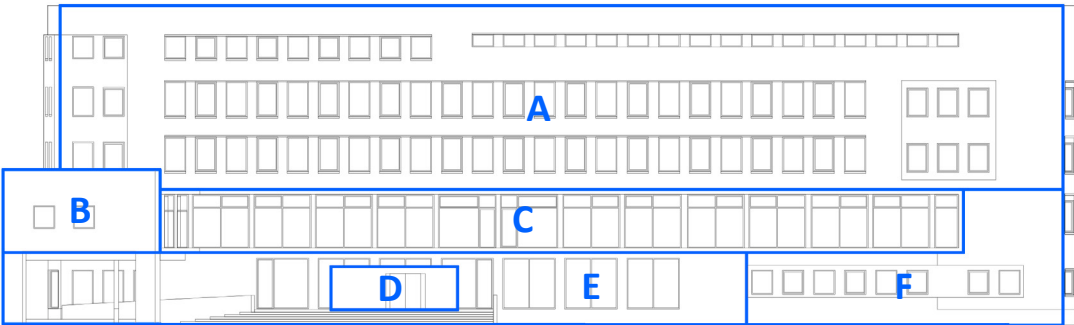
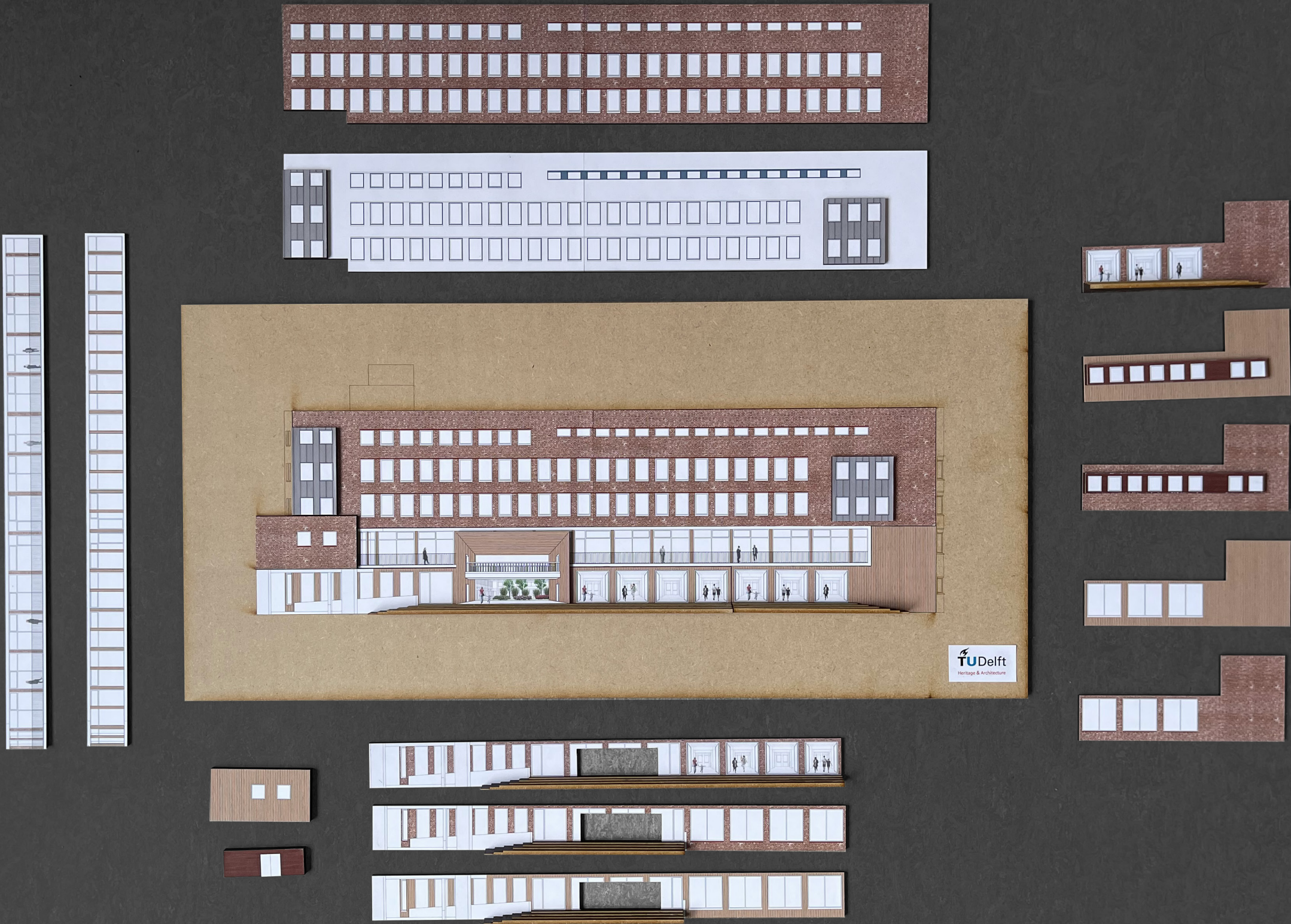
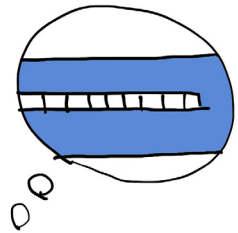


Figure 18. Scenarios of the front facade

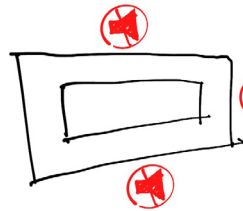


2,5D Facade model gamification

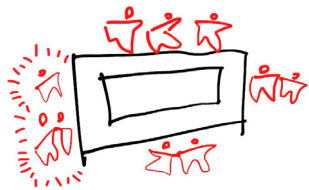
North Facade Redesign Starting Points



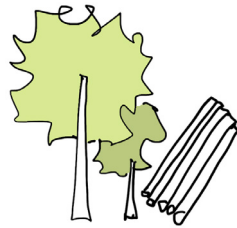
1. Characteristics
Keep the characteristic facade elements



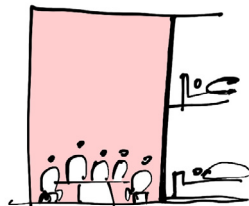
2. Quietness
Keep the quietness of the area



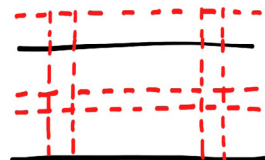
3. Liveliness
Chances to activate the area



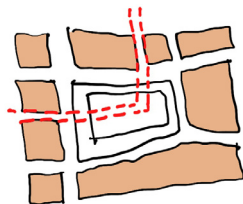
4. Nature
Introduce greenery and natural material



5. Function
In line with the functions behind

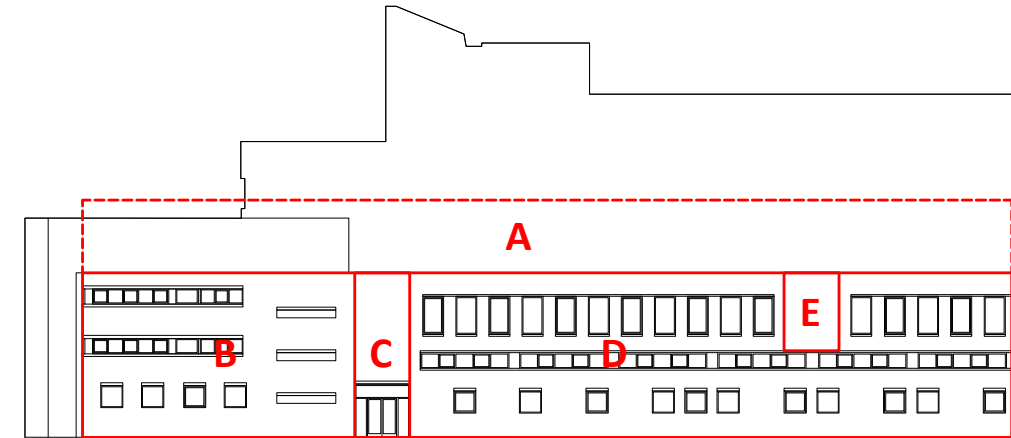


6. Rhythm
Strengthen the facade rhythm

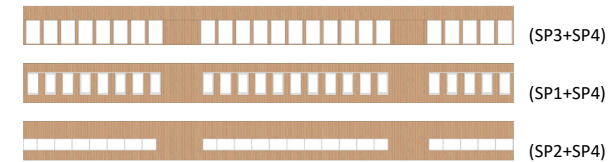


7. City
Repond to urban fabric and values

North Facade Redesign Scenarios



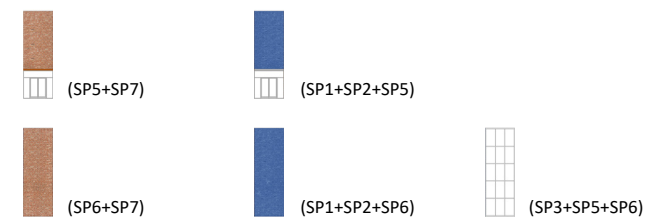
A:



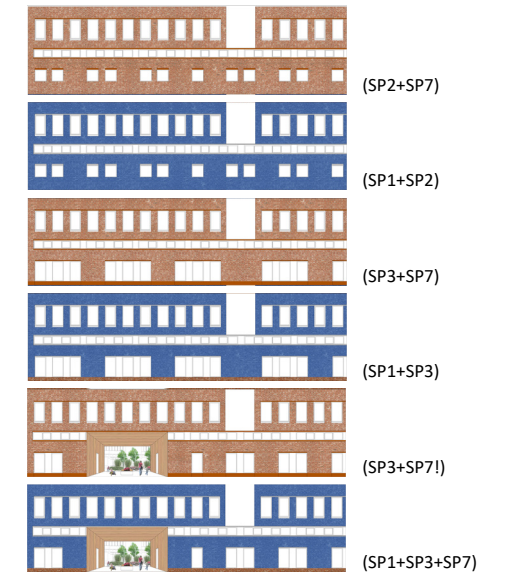
B:



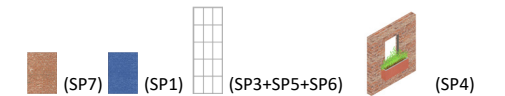
C:



D:

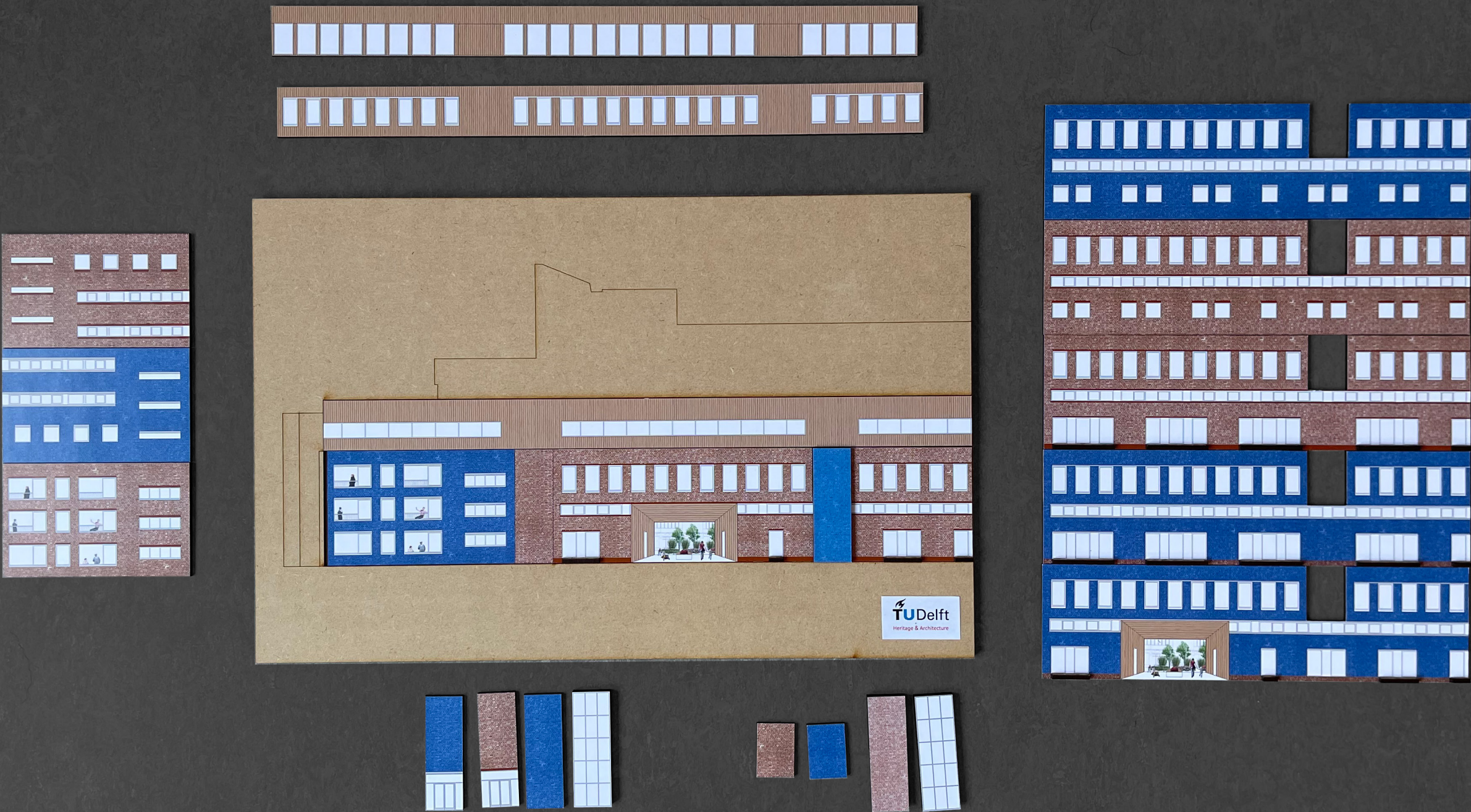


E:



F (additons):





2,5D Facade model gamification



Figure 19. Preparing for on-site testing in front of the front facade
Photo by Baoky. K. Y. Huang



Figure 20. Testing Spot in front of the north facade
Photo by Baoky. K. Y. Huang

Testing Process

In order to evaluate how the approach works, it is essential to observe the way locals participated and played the game. Observations are documented and concluded as follows. At the beginning of the experiment, when we set the table, models, and candies done, locals tended to take a look and join us actively, even spontaneously. For example, Participants 1 (a group of 3), 2, and 5 just walked toward us with curiosity on their faces, asked us what the game was, and were willing to play, when I even did not start to invite them to join. Participant 10 was suddenly very excited and could not wait to join when he heard we had a game for him. There were 14 people we asked to join us, and half of them agreed, which is a high rate compared to the cognitive mapping and interviews. In the experiment, all 10 participants could quickly understand how to play it after I explained it very shortly. Participants 2, 4, 5, 6, and 9 could intuitively play with the pieces by themselves without my instructions (Fig. 21). Others sometimes needed my help to tell them where to put certain parts and which different options they had. Participants 4 and 5 thought out of the box, adding extra pieces to the model, which the researcher did not expect. For the front façade model, all five participants started with the bottom part, either the windows or the entrance on the ground floor. They turned to the next piece adjacent to the last one and gradually made up the whole façade from bottom to top. For the north façade, participants tended to start from bigger part to smaller part, from bottom to top. Attempts to adjust and replace pieces happened during the

two games. In the game, it was not only me asking them questions about their reasons and thoughts, but they also asked me questions, such as the difference between two pieces and the intentions and functions behind the pieces, which helped them make decisions when they had no idea at the moment. Participants in a group sometimes had different opinions in the middle but finally got a satisfactory result for all after sharing and discussing their thoughts. In the end, when participants accomplished their own preferred façade model, all of them said they were satisfied with it. "This is our design!" one group of participants cheered. Participants 1, 2, 4, 8, and 9 spontaneously wanted to document the final model, either taking photos by themselves or asking me to send the photos to them (Fig. 22).



Figure 21. One participant playing the game
Figure 22. The photo to send to one participant
Photo by Baoky. K. Y. Huang

What are the results of the experiment?



Figure 23. Photos of participants, their game outcomes, and me
Photo by Baoky. K. Y. Huang

Testing Results


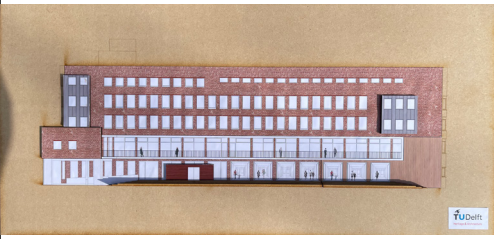



	Peception & feeling	Spatial & functional demand	Aesthetic taste	Overall preference
Participant 1 (group of 3)	The new entrance is very open and inviting.	We like balcony space. I think it will be busy, so doors with lots of openings are better. For housing and public function, I want it more open.	It's better to use same materials as they next to each other.	
Participant 2	I prefer the dark wood to the light one, because dark red color feels more stable and works well with bricks.	I like the scenarios where there are many people.	I'm not sure if wood & brick are compatible on the ground floor. But it seems that all bricks together are nice.	
Participant 3	You have to do something like the passage to make the building open.		The bay windows are 3-dimentional and make the wall a bit different, otherwise it will be too even and boring. The passage doesn't fit the design when compared to bay windows in terms of material & structure.	
Participant 4	I don't like too many railings, because they make the building look too complicated and like prevent me from appraoching.		The combination of the frames (1F) and other parts is better. Add the volume on the right for balance Put same material together!	
Participant 5	I like stairs & openings, because I feel they are contrast to police station. I see there is some stairs and it's good to extend them.	I want to put some coffee shop on the left with colorful look, and red lights. Put more functions on the rooftop		

Figure 24. Participants' preferences and reasons (front facade)

Testing Results

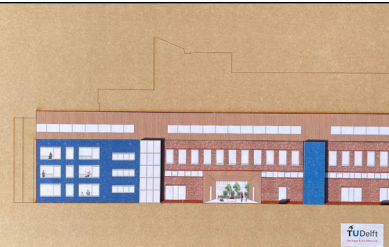

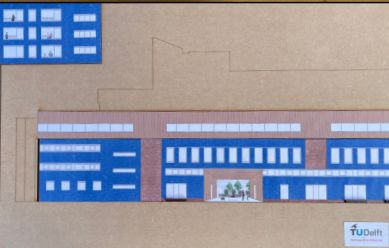
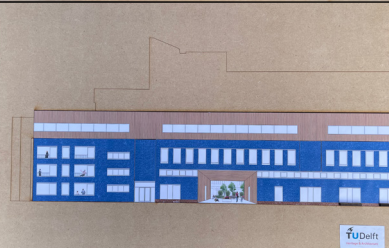
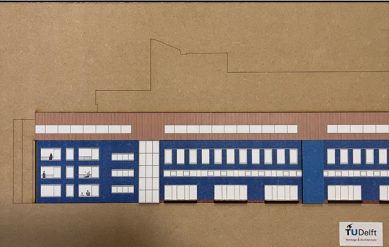
	Peception & feeling	Spatial & functional demand	Aesthetic taste	Overall preference
Participant 6	Considering it's going to be housing program, I prefer big windows.	The passage is a good eye-catcher for the community center.	I choose blue on the left, because I want to keep something from the old building. And for the contiunity of the rest building, I want some blue on the right. Because there is a lot of "vertical" going on, I want the added floor windows to be horizontal to break up the vertical lines.	
Participant 7 (group of 2)		I like natural light, so I want more glasses and bigger windows. I like the scenario with people.	Symetry is important.	
Participant 8	The blue color we have now is nice, which suits in this quiet area. The area is very quiet, and small windows suit here.	The passage is cool because it seems I can walk into the nice courtyard. Because the functions of two parts are separated, I can seperate the facade as well. I don't like too much interaction in this quiet area.	The horizontal one is more in balance with the below part, and responds to the existing windows. Wood works well with stones. Small spicy thing is exciting.	
Participant 9	I like the blue color, because it is vibrant, and it makes the building unique.		(After lots of attempts) I think this proportion and rhythm of the windows are the best.	
Participant 10			The horizontal window is more beautiful than others. It's good to have some parts protruded for aesthetics.	

Figure 25. Participants' preferences and reasons (north facade)

Testing Results

Figure 24 and Figure 25 show the results of ten participants playing the 2,5D model game with their preferences and reasons. The reasons touch upon three aspects: perception & feeling, spatial & functional demand, and aesthetic taste. It is exciting to find a great amount of common ground among their choices. For the front façade, four out of the five participants prefer brick as the main material. Four prefer a big passage instead of the existing entrance because of the openness and inviting atmosphere the passage brings. Four participants chose balconies instead of closed windows for the first floor. Some of them explain that they like balconies and want to see people there. Four also prefer wider stairs and open doors on the ground floor because they want the scenario with many people that suits the new public function and their demands. All five participants prefer to keep the two zinc bay windows on the upper floors instead of removing them. One said that the 3-dimensional bay windows make the façade attractive; otherwise, it would be even and boring. They also mentioned some personal preferences and feelings on materiality, such as the sense of stability from the dark red entrance, which works well with bricks, and the negative perception of vertical railings as too complicated. For the north façade, all five participants chose the bricks painted in blue. Participant 6 said he wanted to keep it from the old. Participant 8 thinks the blue is nice and suitable in this quiet area. Participant 9 thinks the blue is vibrant and makes the building unique. They all prefer larger windows on the ground floor with seats,

partly for fitting the housing program. The passage is also chosen by four participants because one believes it is a good eyecatcher, and another one appreciates the scenario that she can walk into the nice courtyard. Four chose horizontal windows for the added top floor mainly because of balance and aesthetics. One said it also refers to the existing horizontal characters. Four participants added vertical exceptions to the façade for different reasons: responding to another building part, adding natural light, indicating the functions, changing the colour to fit the wood, adding a spicy difference, and creating rhythm. Unlike the common ground, Participation 8 also mentioned her concerns that too big windows and too much interaction might bother this quiet area.

Key Findings: The Common Ground



What can I learn from the research results?

Discussion

The research explores PD methods and approaches, including cognitive mapping, interviewing, and 2,5D model gamification, for PolitieBureau Groningen Centrum's façade redesign. The exploration bridge PD approaches to heritage redesign topic and gives new understandings on how participation can be used for design, overcoming some downsides in previous studies. Sixteen participants were involved in the experiments by which their perceptions, memories, demands, and tastes about the current and future scenarios were studied.

Locals freely expressed their perceptions and remembrance of the site from cognitive mapping and interviewing. Though most of them did not dig into façade details, several things were mentioned to generate the starting points: the characteristic gate, the institutional colours, the layout of windows, the modern materials, and surrounding greenery. Compared to photo-based inquiries conducted by Rosalia Leung, Thomas Binder, Eva Brandt, and TU Delft pioneer students,²⁵ the results of cognitive mapping are more general without many details. However, they reflect the participants' independent initial thoughts and feelings without interference by the researcher, which are the things worth researching further. It is recommended that a specific photo-based method can follow up. People are more likely to speak than draw. Drawing might become a limitation for them to express themselves and engage in the inquiry.

Some significant findings from the 2,5D

model games are the common ground among all the preferences, the variety of reasons participants gave, the readability of the game, and the great sense of participation the participants gained.

By analysing all the façade model results, a great amount of common ground is found. The participants independently chose the scenarios from so many options but made many decisions in common with reasons touching upon "perception/feeling", "spatial/functional demands", and "aesthetic taste". Such common ground indicates what they collectively-unconsciously believe is valuable for the community. The final redesign is directly based on these common ground, thus meeting locals' psychological, spatial, and functional demands. It would then be well perceived, interpreted, and liked by locals. In other words, locals would like to come to the site, meet others, and enjoy themselves. The isolated building would then be transformed into a great joint in the community, maximising the social and community values concerning well-being, sense of belonging, place attachment, and community cohesion.

The 2,5D model games work so efficiently. The model game is so readable that people intuitively know how to play it, ensuring that the approach is repeatable for other cases and participants. Besides, all the participants enjoyed the process well and were satisfied with the results. The process adds value by creating a sense of participation and building new connections between locals and the site. Imagine, when the building was renovated based on the common ground, locals could feel

their contribution and proud of it. A sense of belonging and ownership would then develop. They might share such stories with their families and friends and be more engaged in the site in the future.

Compared to many previous PD testing results, which only touched upon one or two scenarios, this model game shows participants a variety of redesign scenarios. Besides, it encourages them to think in detail from piece to piece. As a result, their feedback is accurate and extensive, covering all the pieces and various aspects. What's more, this approach is more interactive. Rather than simply asking participants to give written or oral feedback on scenarios, gamification ensures they participate and communicate actively.

Conclusion

The paper builds up a framework to bridge PD to vacant heritage redesign. The paper takes PolitieBureau Groningen Centrum as a case study to explore how participation could be used for redesign to boost social and community values. It focuses on the façade, the most representative part of the site. Two levels of PD were tested. Through the cognitive mapping and interview, locals' perceptions, memories, and remembrances about the site are collected and translated into design starting points, based on which different façade scenarios are generated for testing. Through the 2,5D model games, locals were involved in testing different redesign scenarios and making up their preferred façade, revealing a great amount of common ground. A design based on the common ground would meet locals' spatial, functional and psychological demands,

thus becoming a joint reconnecting the community. The 2,5D model is so readable that participants can intuitively play with it and thus repeatable for other sites and participants. It overcomes the previous studies' downsides on low transparency and interactiveness. This paper recommends such an innovative approach to be applied to other community-situated heritage buildings, especially those going to be transformed into housing or community programs, to boost social and community values. As UNESCO points out, we face a worldwide threat of losing community value because of rapid uncontrolled development. Therefore, the approach is essential to promote to other places under such threats worldwide. Some suggestions for future studies and practices are forwarded. If necessary, the models can include more scenarios such as balconies and greenery, and more smart model-making techniques can be explored. More fellows can be invited to test the model game before the on-site experiment to check: if the scenarios are well translated from starting points, if some possibilities are missing, and if one model piece strongly influences the other piece to choose by accident. The researcher should engage more in the experiment by asking more "why" to get more intimate knowledge of participants' feelings and perceptions which are valuable for the redesign. Be noticed not interpreting the message from participants; If the message is unclear, ask more "why." With these improvements, the approach might be better transferred to other cases, and more transparent communication and more in-depth knowledge in PD might be achieved and acquired.



Research > Design

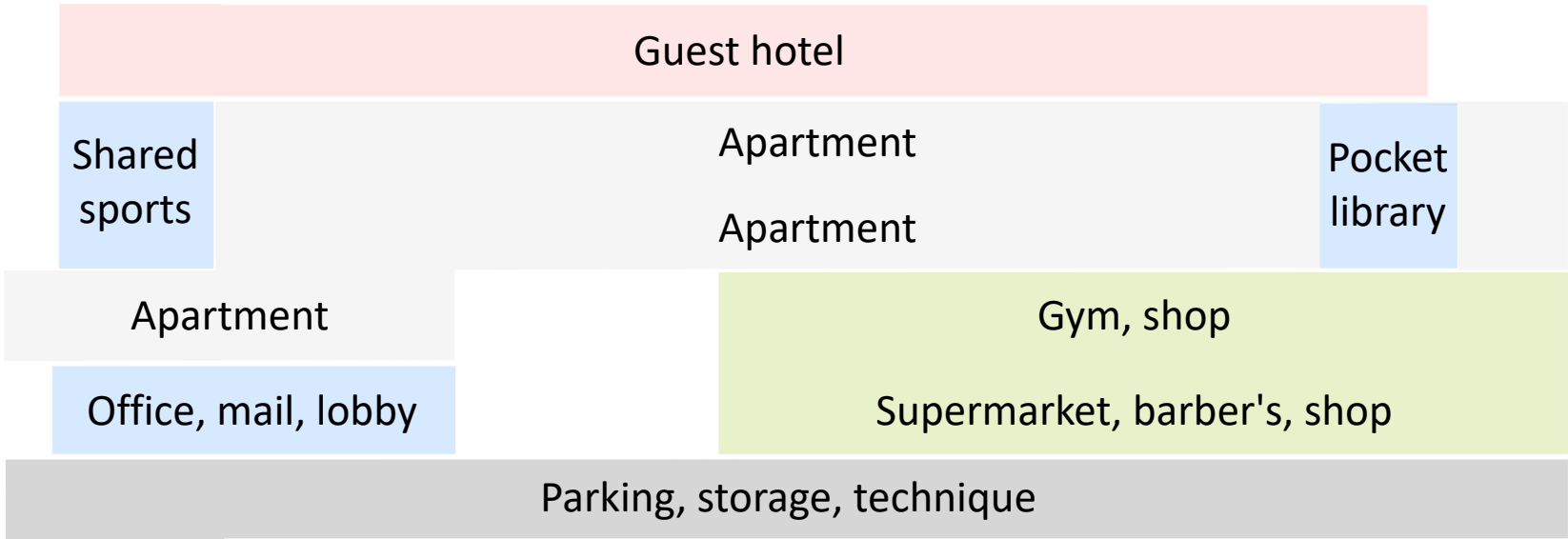
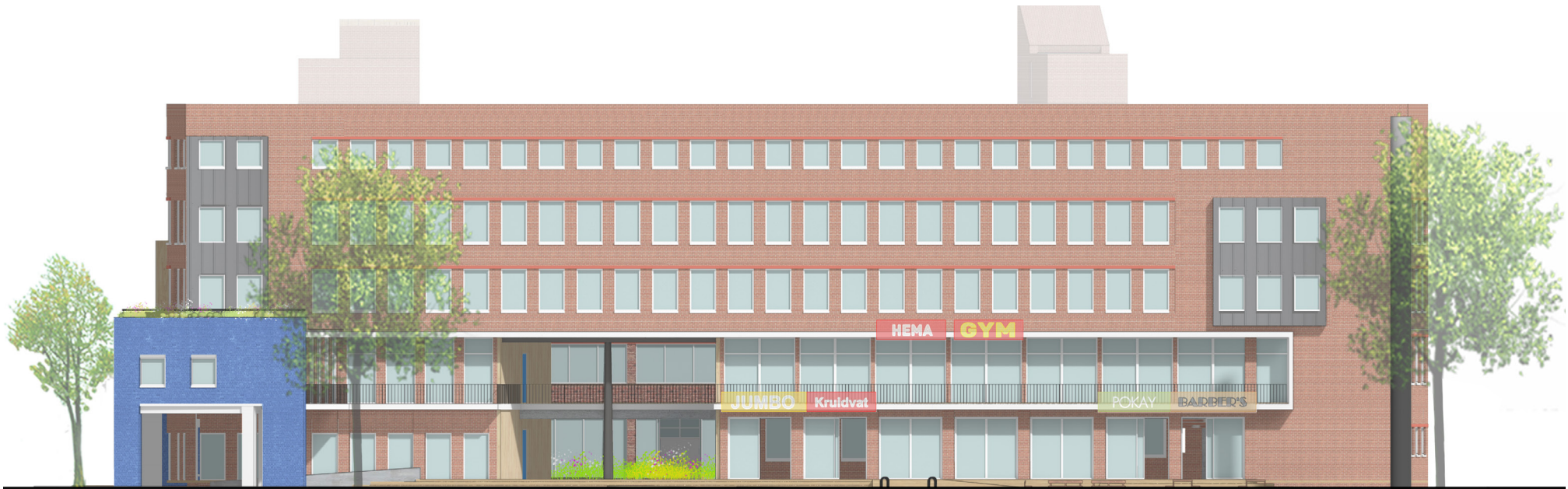




The key findings are the common ground among participants. They have many shared preferences, though their reasons might differ. Such shared preferences indicate what they believe is valuable. For example, when the option was given to remove the bay windows, all the participants did not want that. The common ground directly lead to the final façade redesign because they represent the scenarios with maximum social values. In other words, the redesigned façades would be positively perceived, interpreted and liked by locals. The rest redesign of the site is inspired by the facades concerning locals' spatial and functional demands and possible

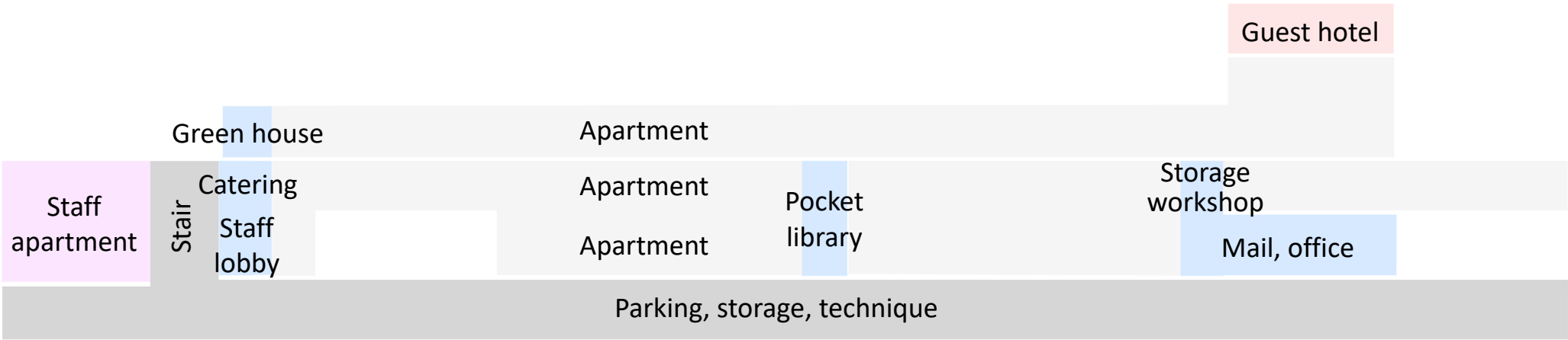
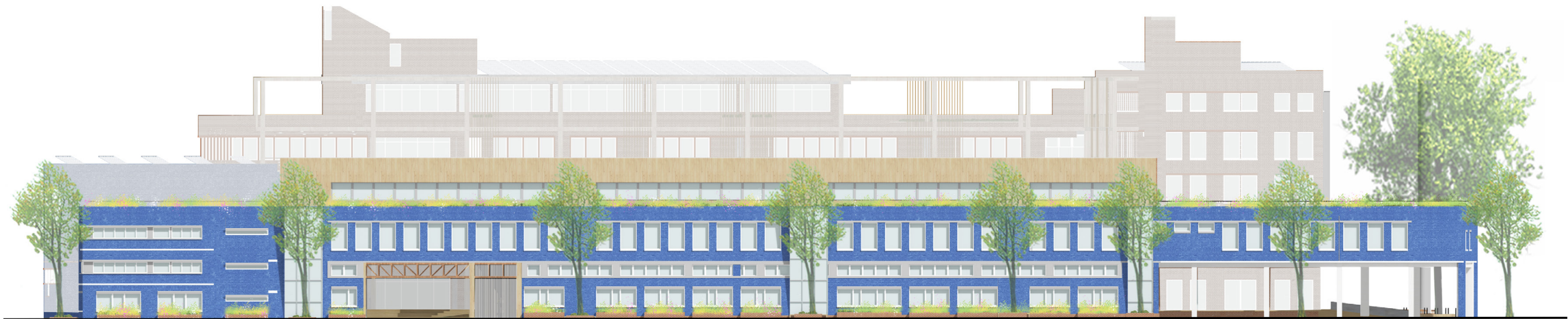
positions of communal functions. As a result, the new design would improve the surrounding atmosphere, connect inside-outside, provide needed functions, and attract locals, thus transforming the isolated building into a great joint in the community. The participatory process also builds up new connections between locals and the facades. Imagine, when the building was renovated based on the common ground, locals could feel their contribution and proud of it. They might share such stories with their families and friends. In this way, the site is activated and connects the community again, boosting social values.

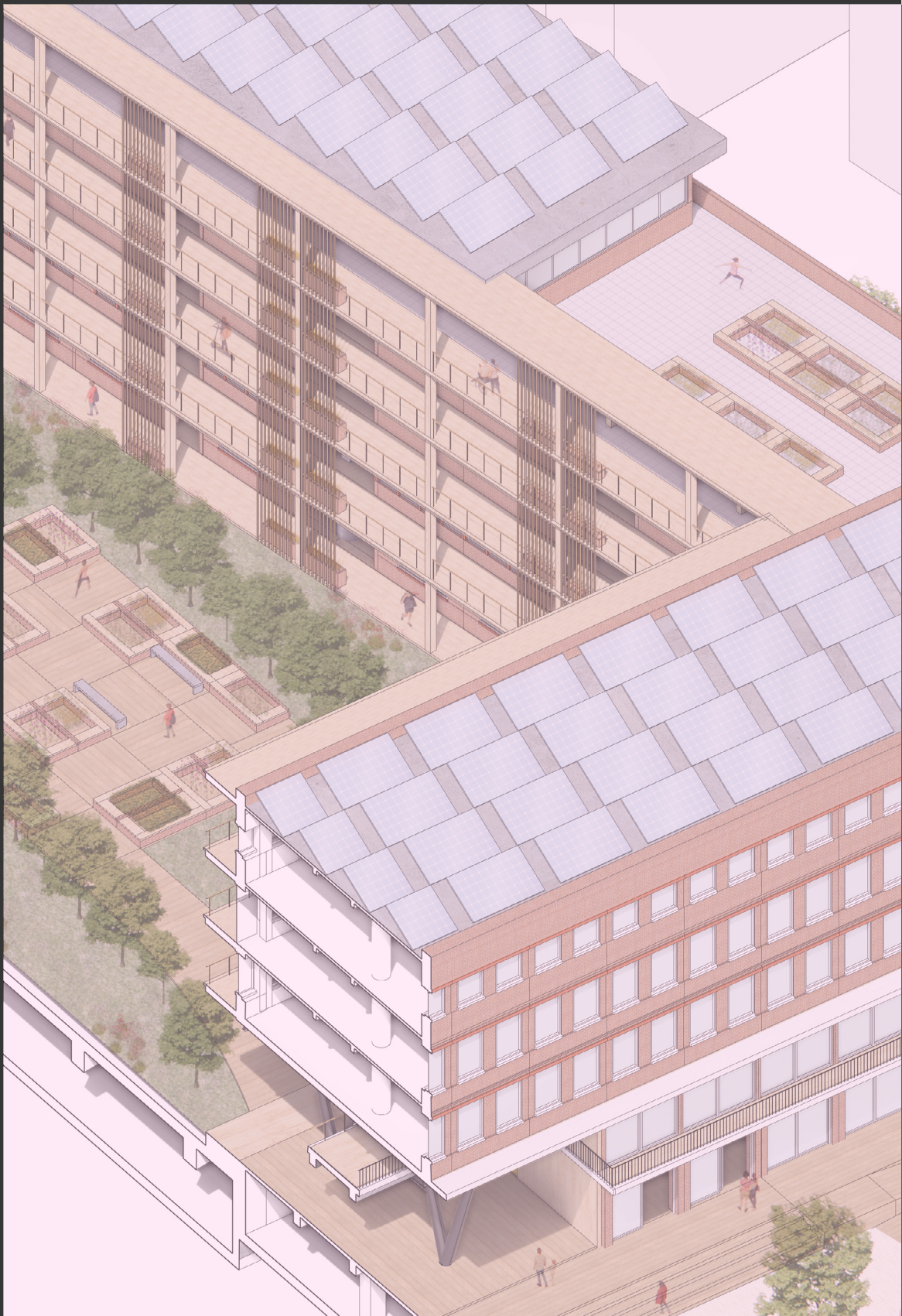
Front Facade Final Redesign



1. Front Elevation 1:200
2. Vertical Program Distribution

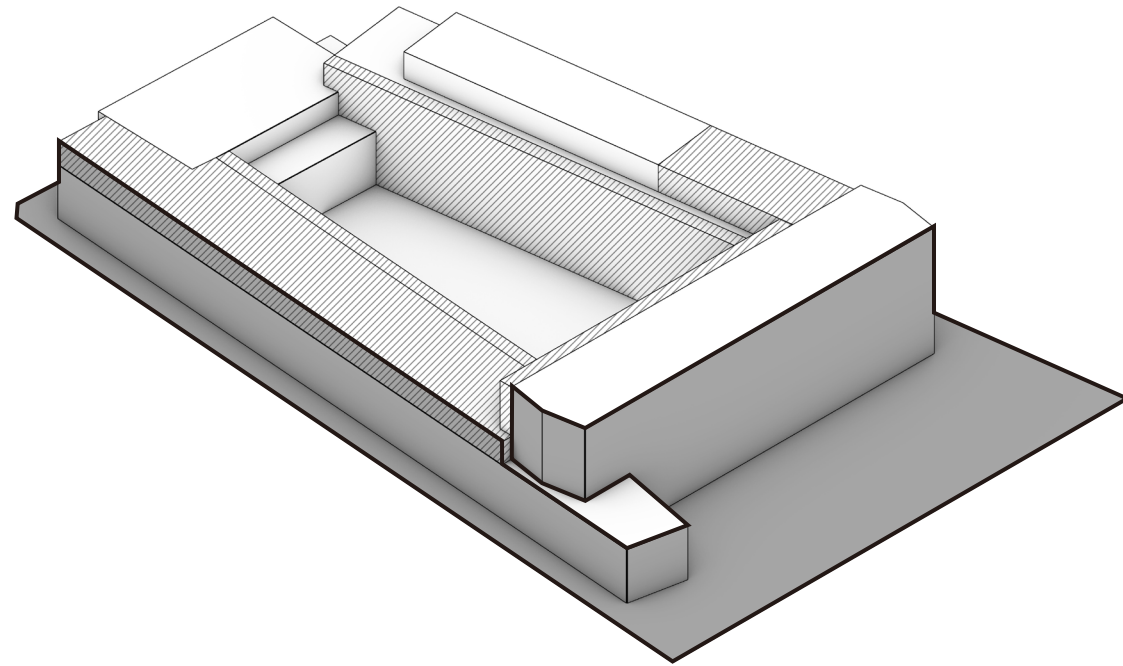
North Facade Final Redesign





Design



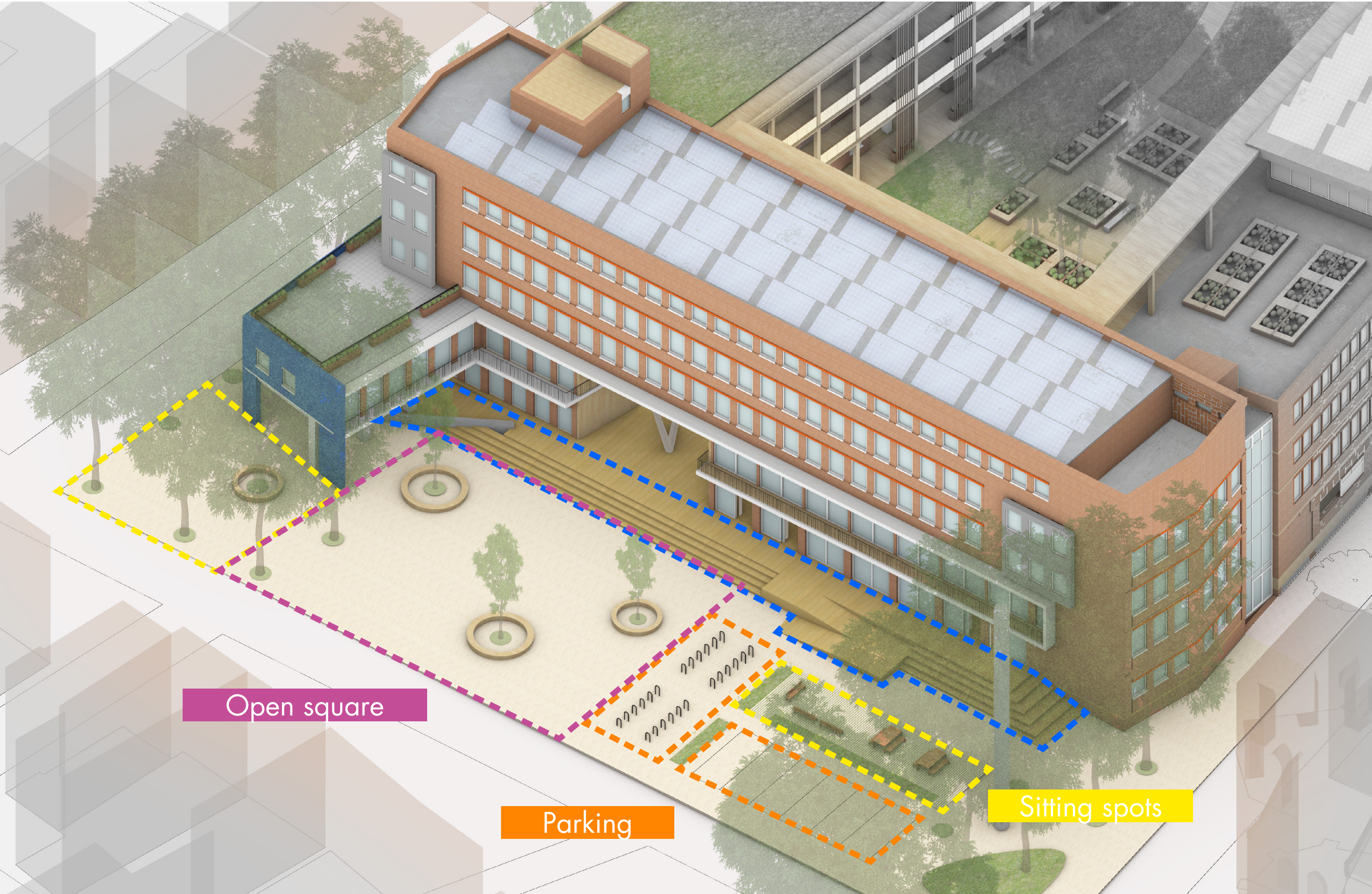


Sensitive Surface



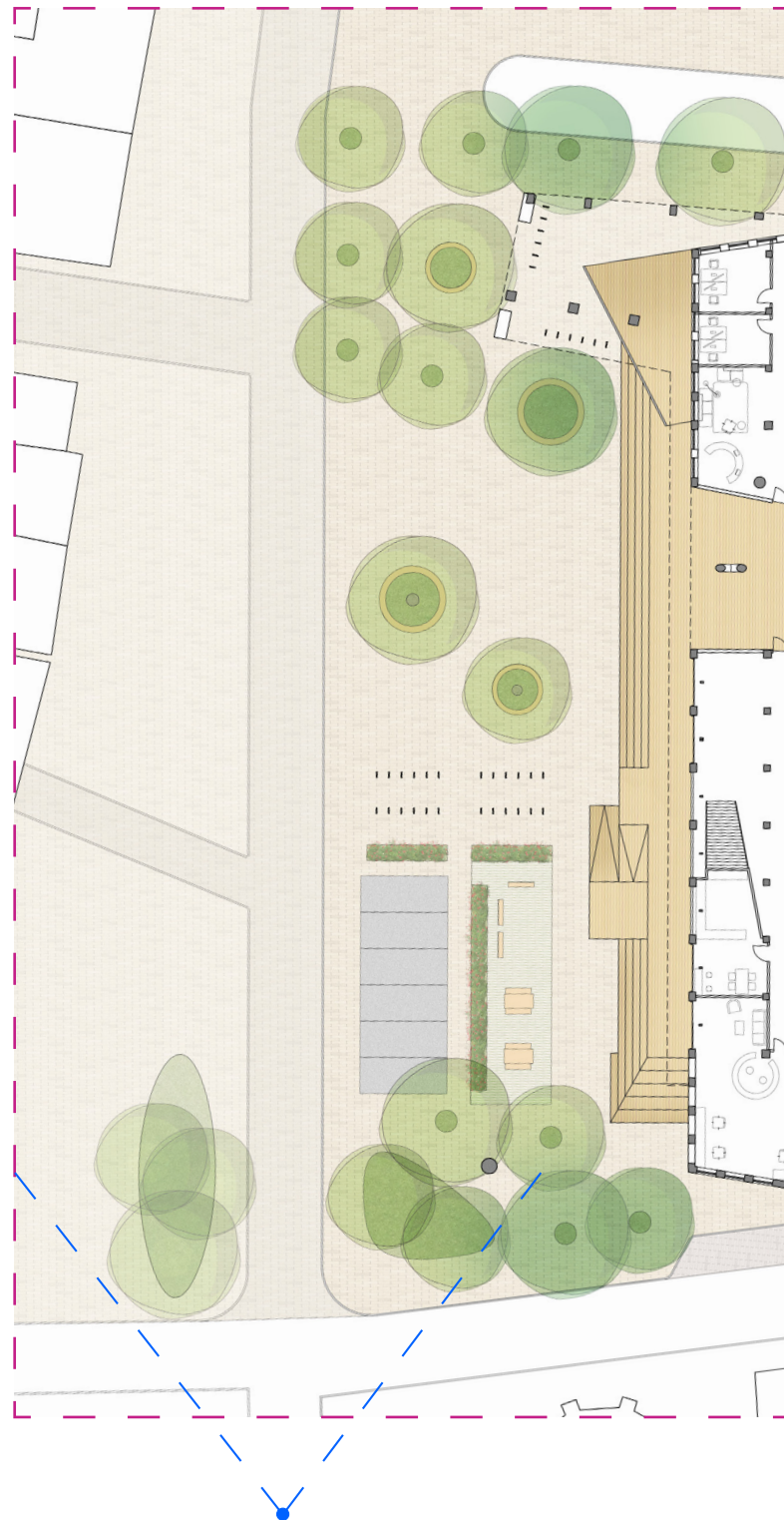
Rademarkt Square

Site plan 1:400



Axonometric drawing - Rademarkt square

Rademarkt Square

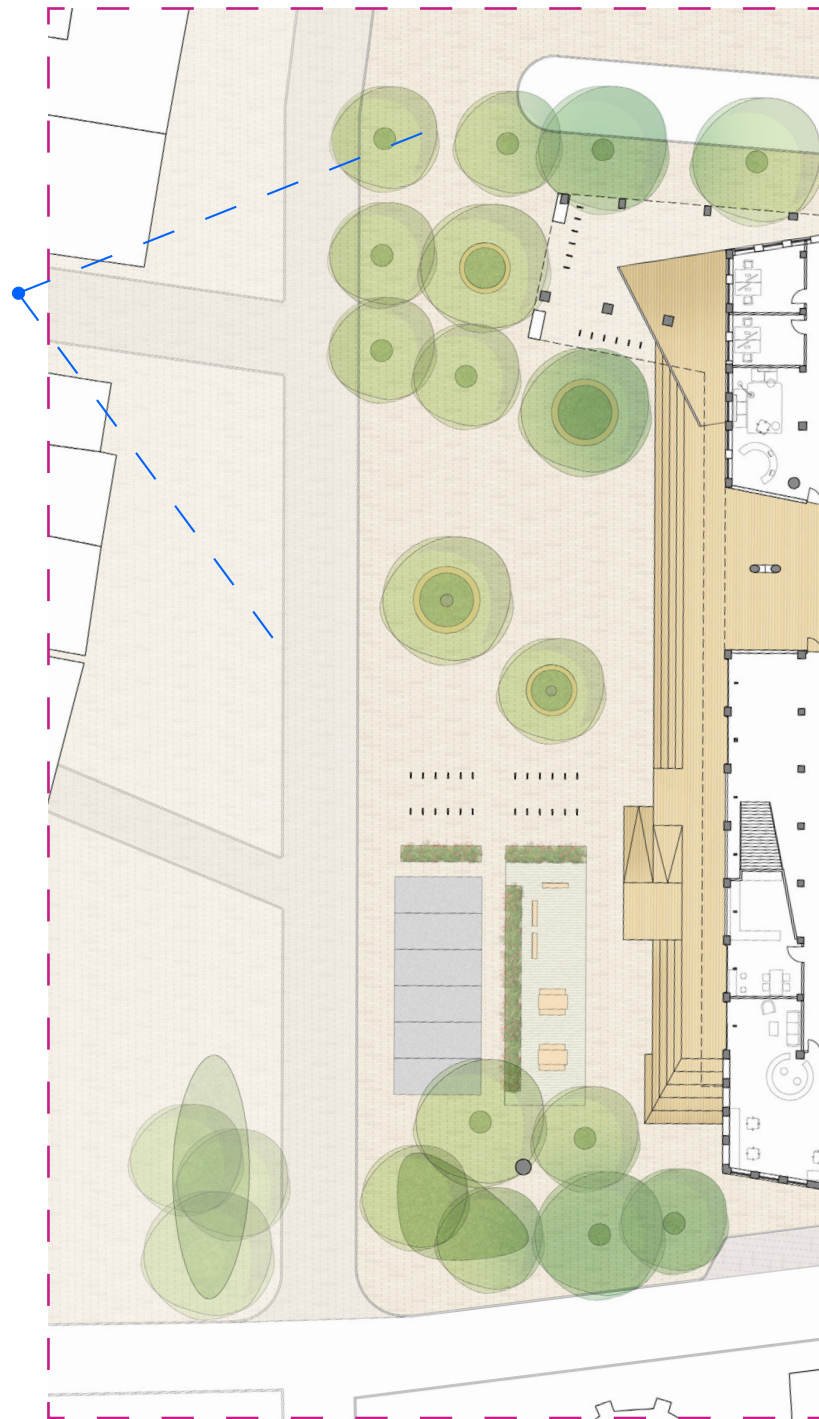


Plan 1:400



Perspective

Rademarkt Square



Plan 1:400

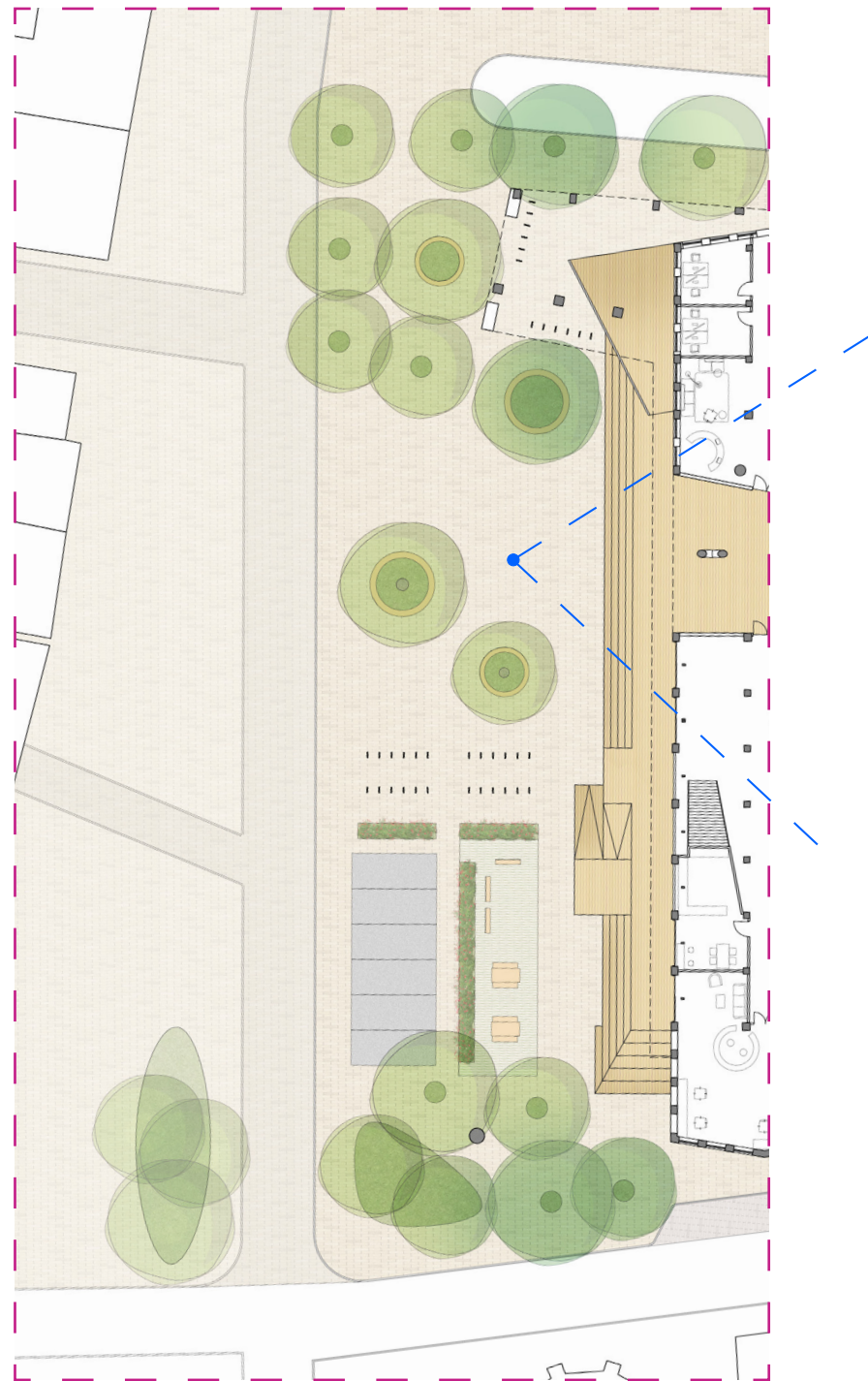


Historic lane

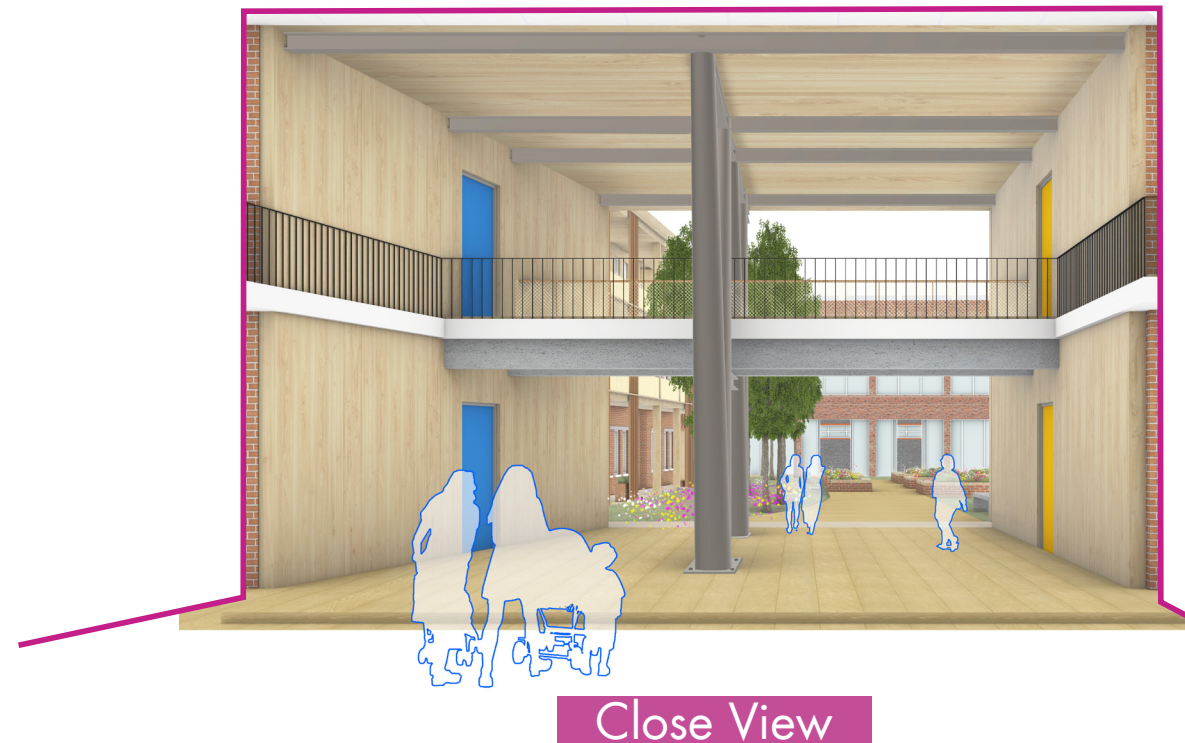
The new entrance implies the reconnection to the historic lane. The opening with V-shape columns and the line of trees lead the eye from the city to the site and vice versa.

Perspective

Rademarkt Square



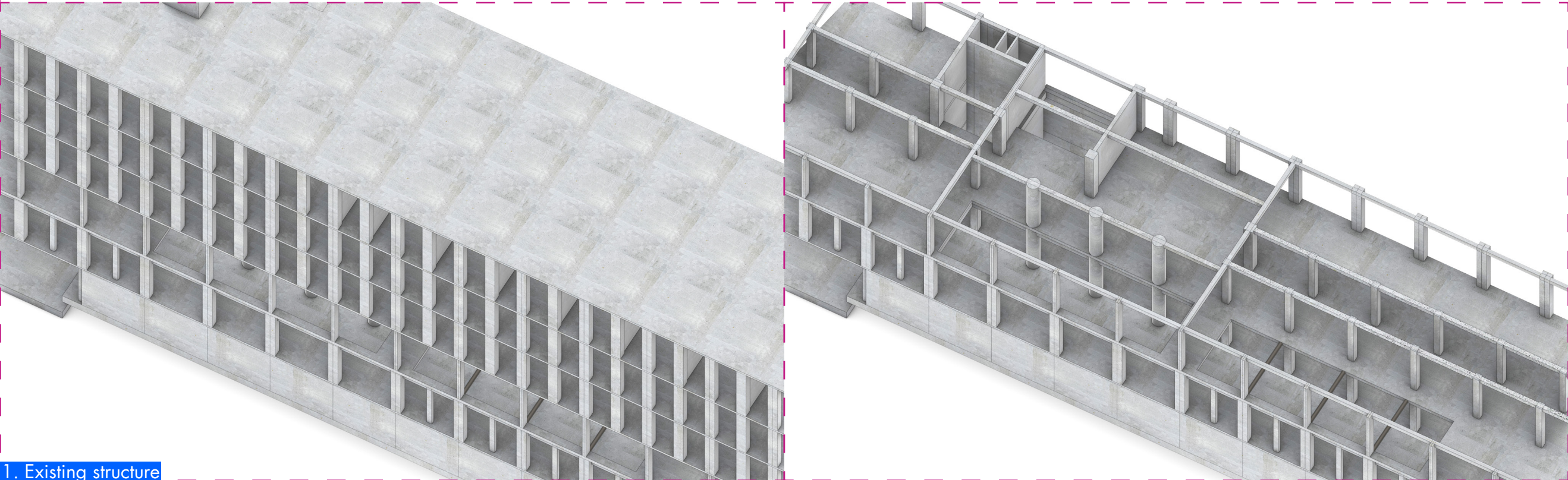
Plan 1:400



You standing at the entrance, the wood and flowers are growing from the inside out. They invite you into the courtyard which is shifted a bit, mysterious and intriguing.

Perspective

Construction Sequence of the New Entrance

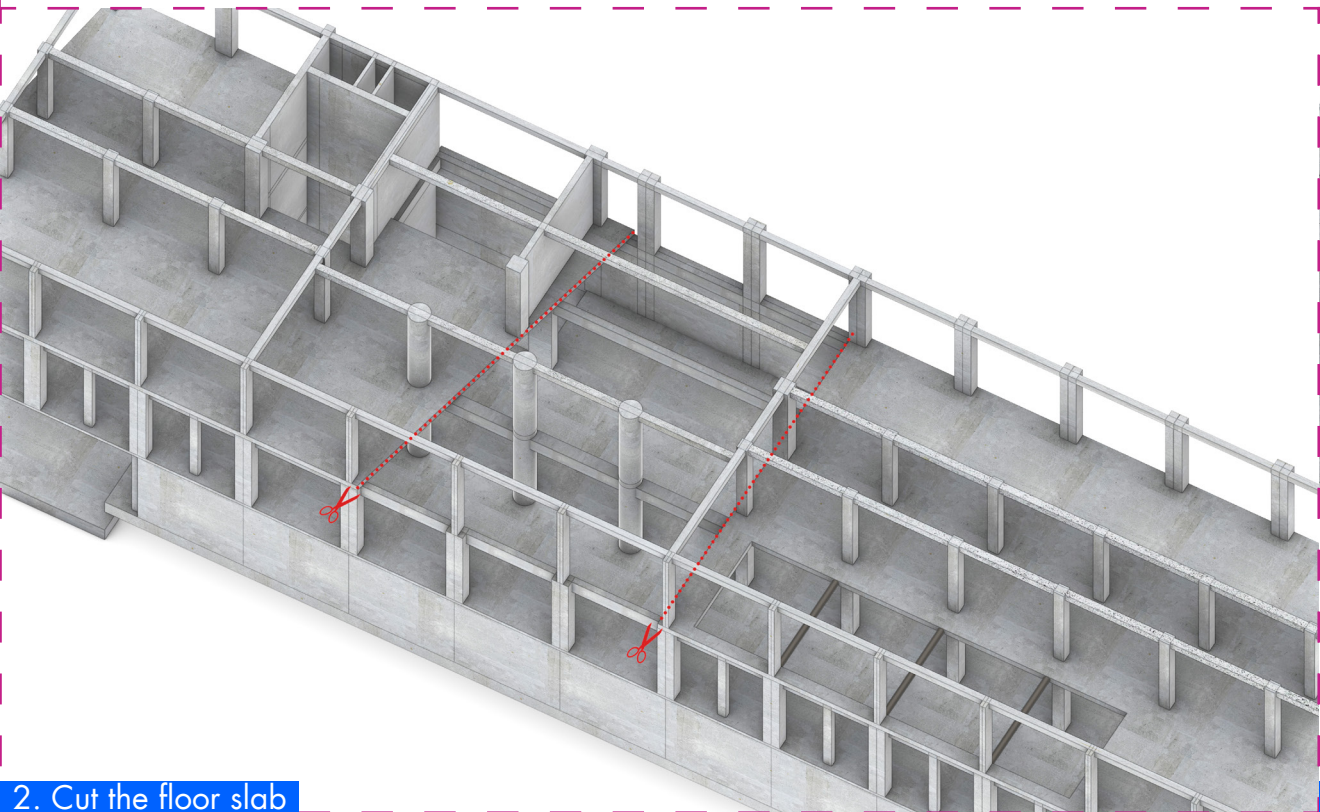


1. Existing structure

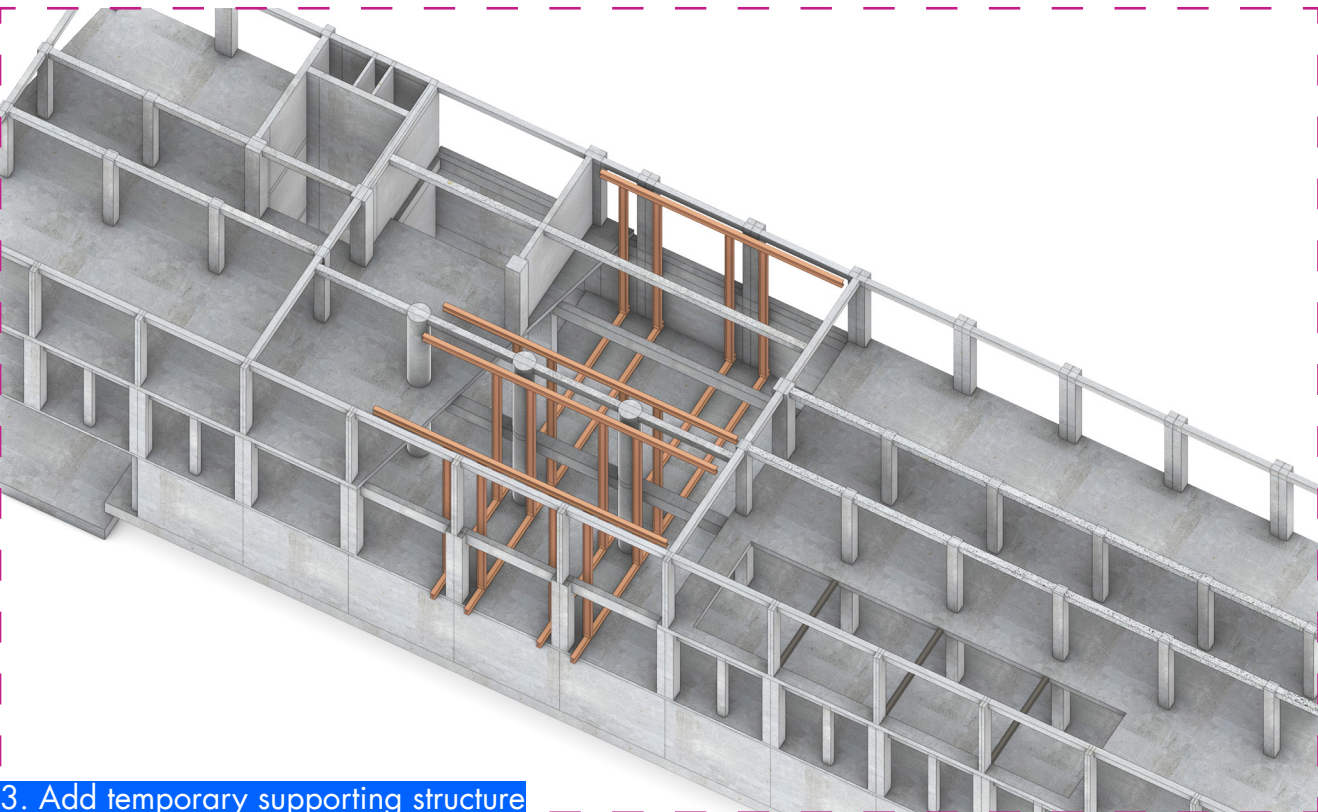
Axonometric view of the west wing

Axonometric view of the west wing

Construction Sequence of the New Entrance

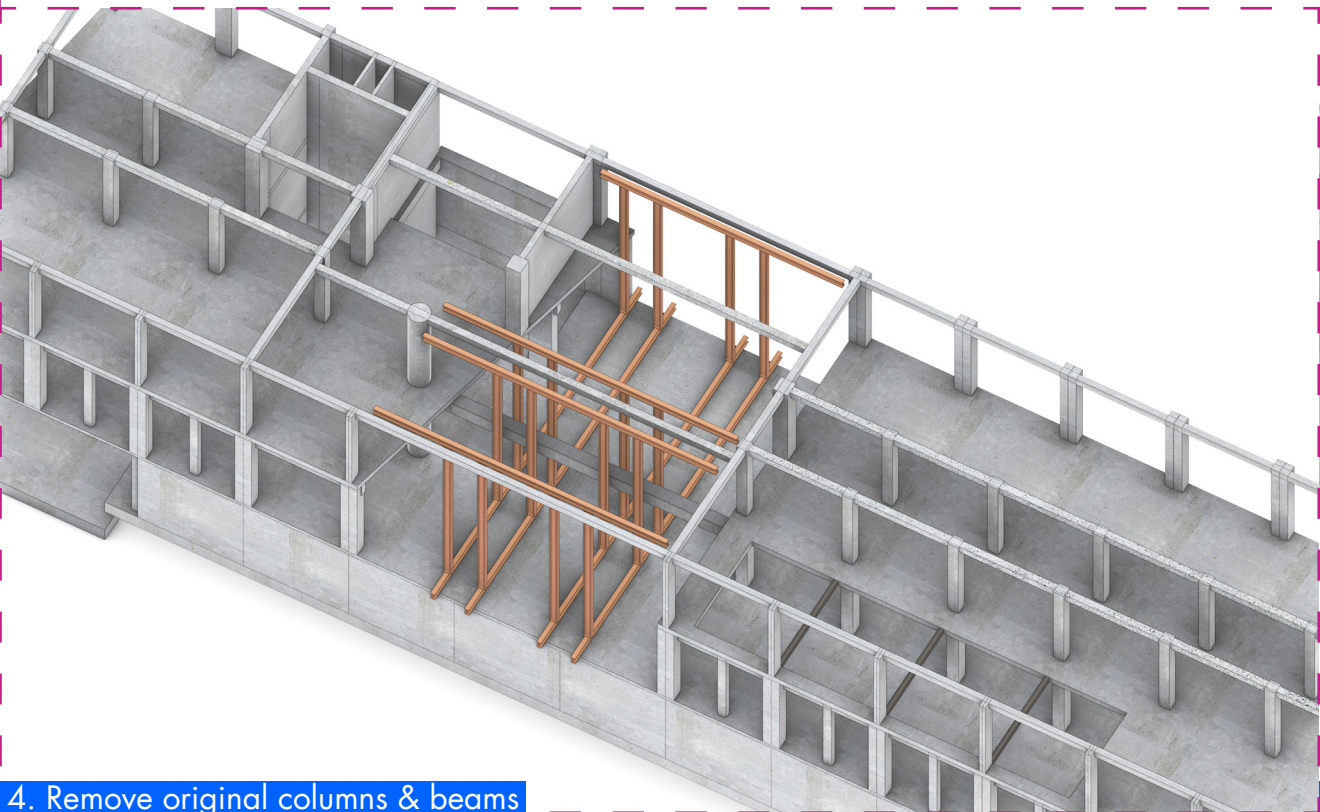


2. Cut the floor slab

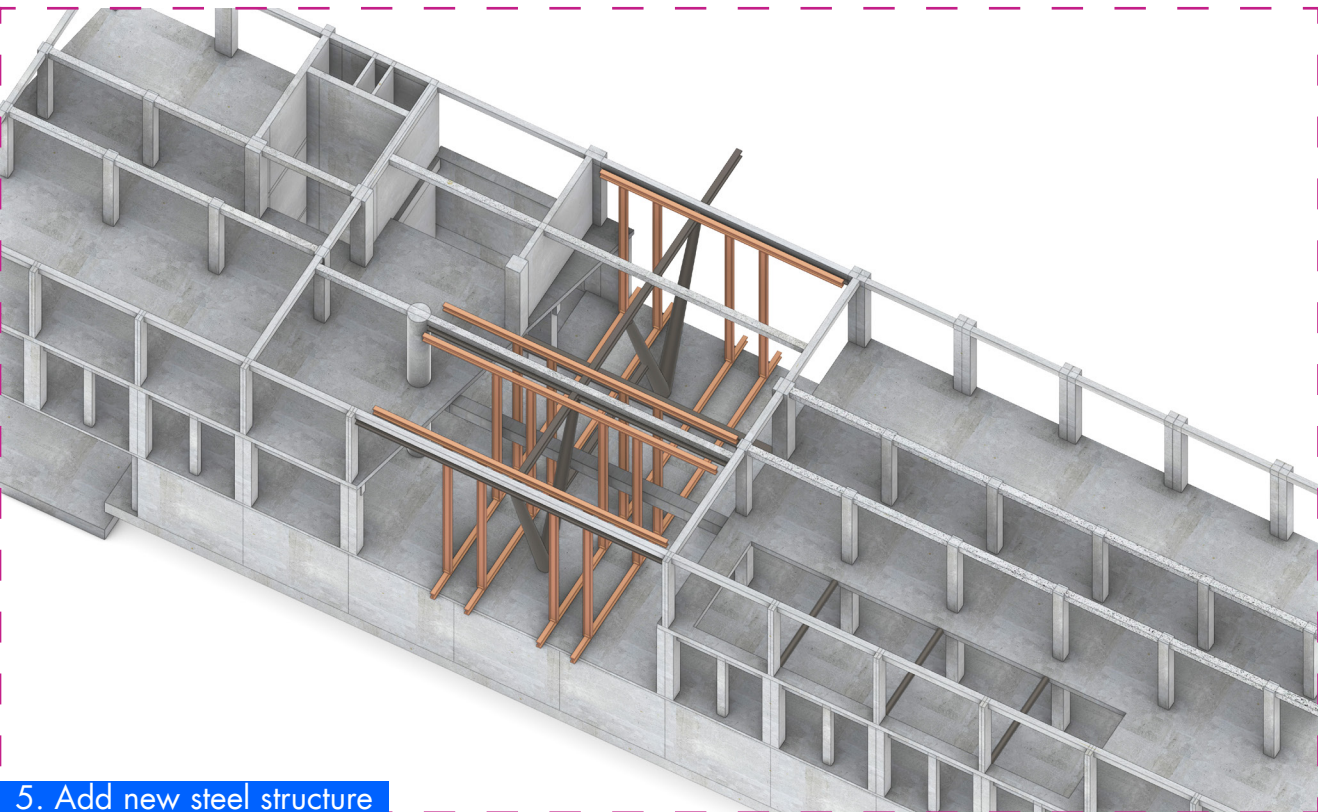


3. Add temporary supporting structure

Construction Sequence of the New Entrance

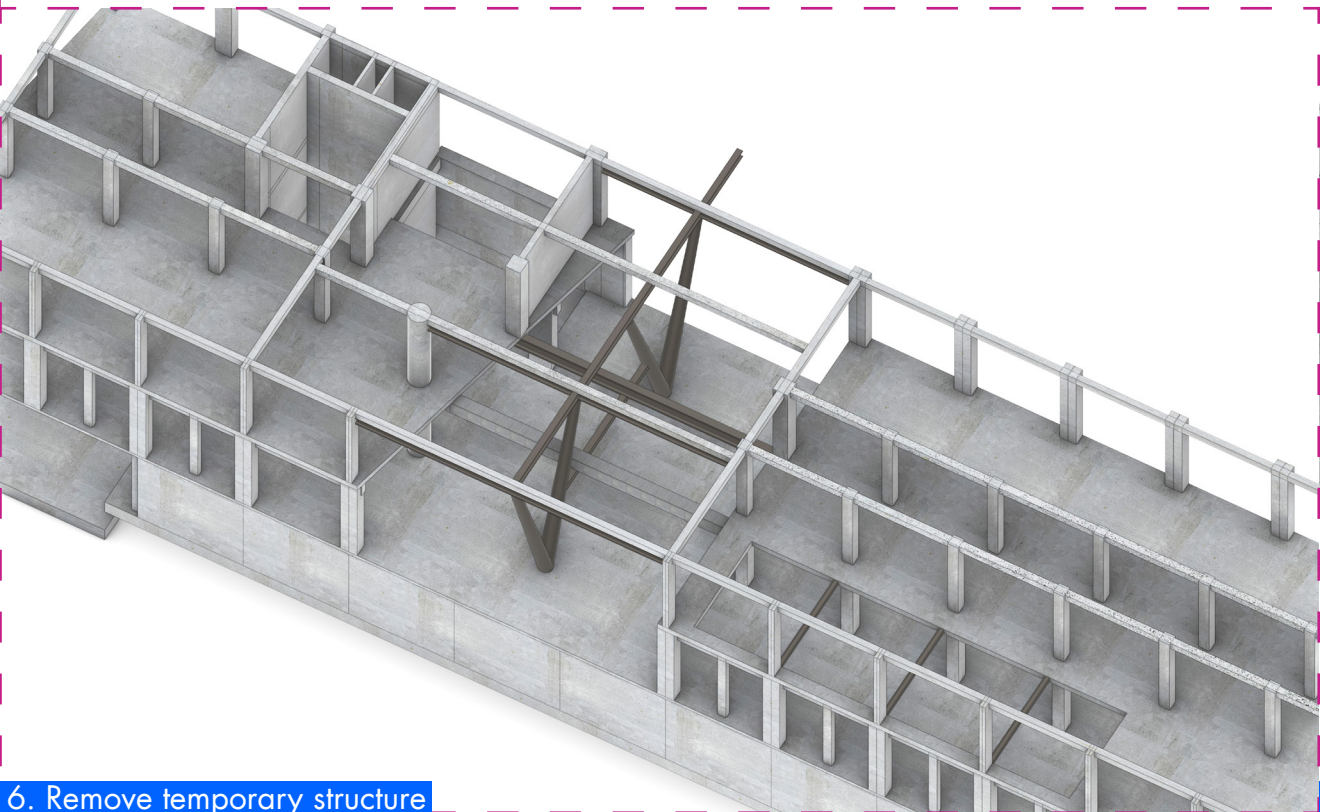


4. Remove original columns & beams

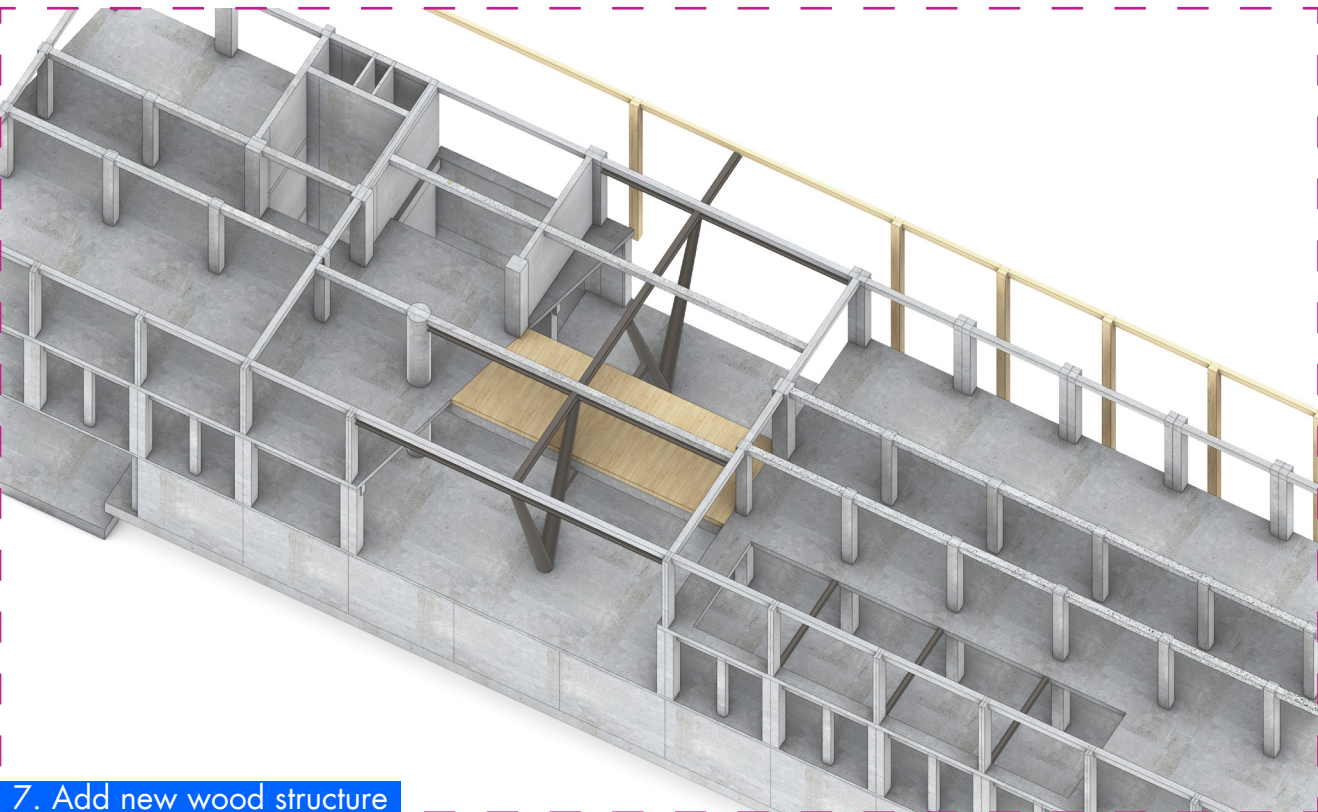


5. Add new steel structure

Construction Sequence of the New Entrance

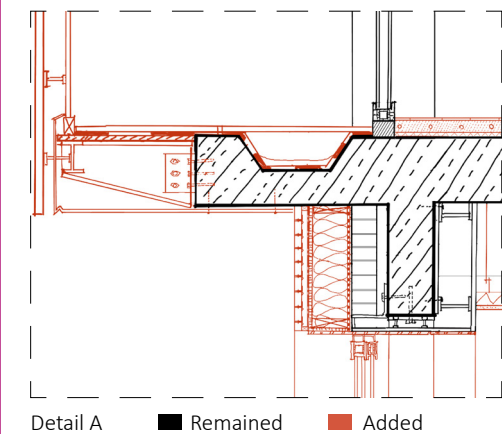


6. Remove temporary structure



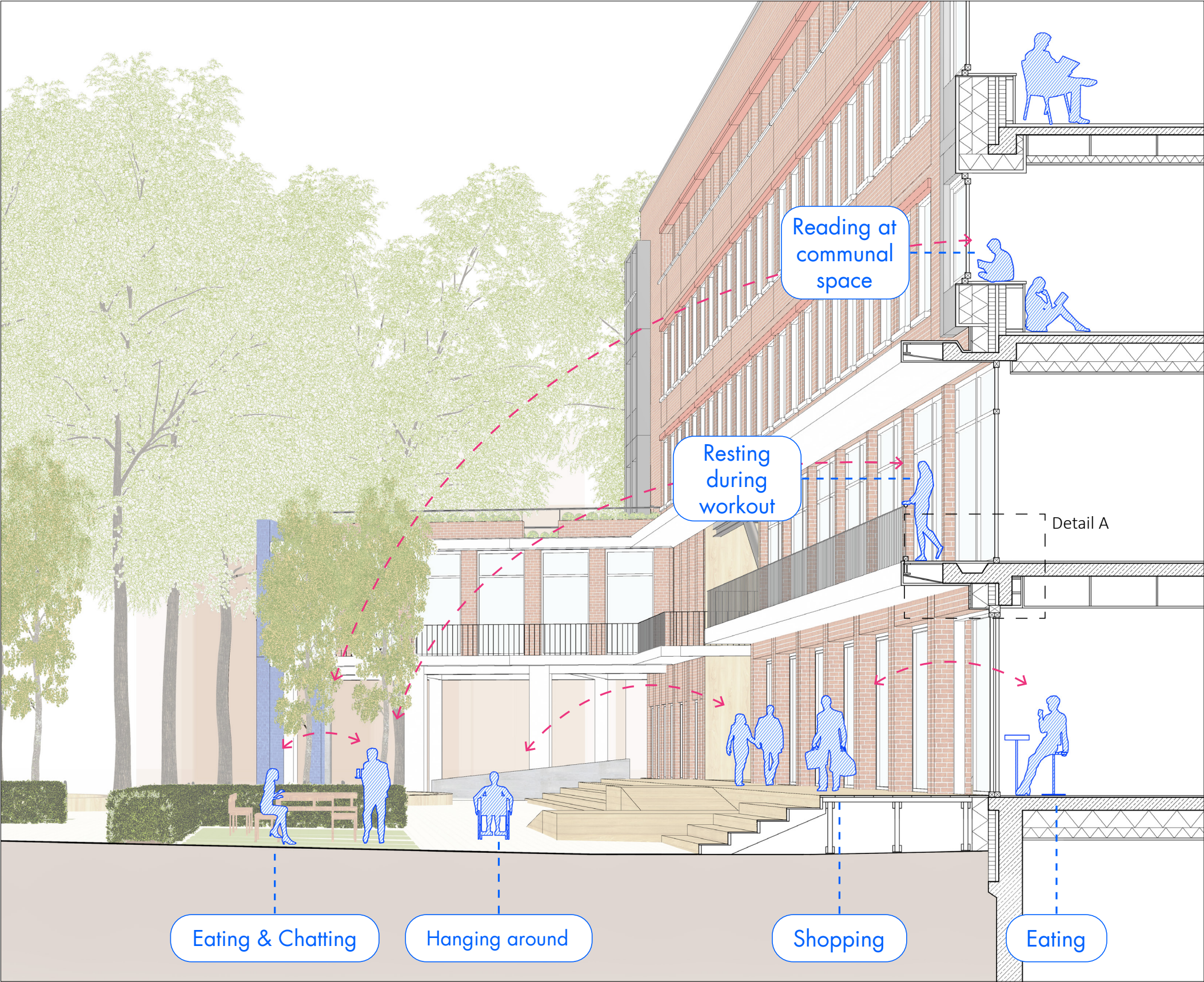
7. Add new wood structure

Rademarkt Square



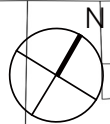
Wall Construction:

- 28mm natural clay brick slips with prespaced 10mm horizontal joints
- 15mm backing tray/rail
- damp-open sealant layer
- 12.5mm fibre cement board
- 250mm EPS thermal insulation
- 12mm OSB
- vapour barrier
- 100mm existing brick
- 50mm cavity
- 200mm existing reinforced concrete
- 150mm existing installation & batten
- existing serpentino board





Kostersgang Street

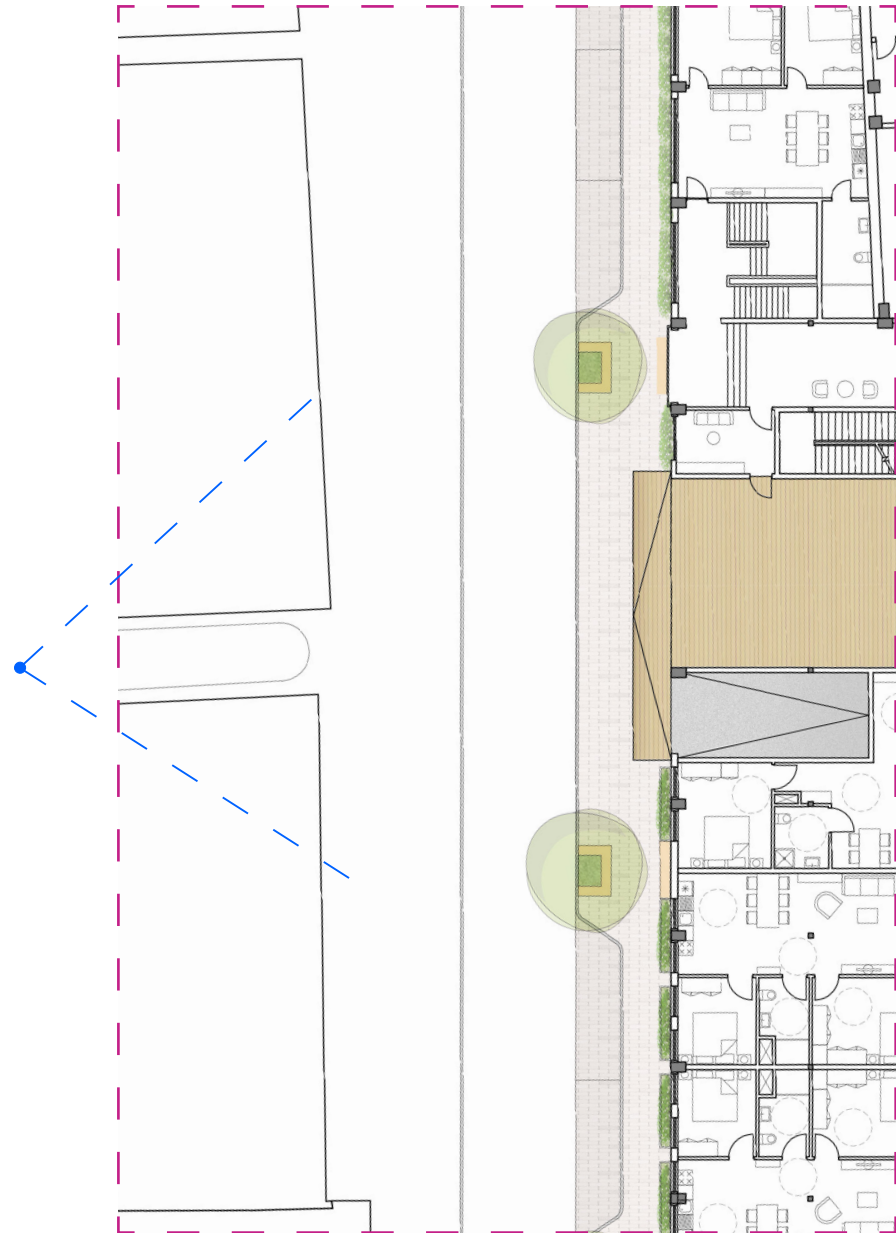


Site plan 1:400

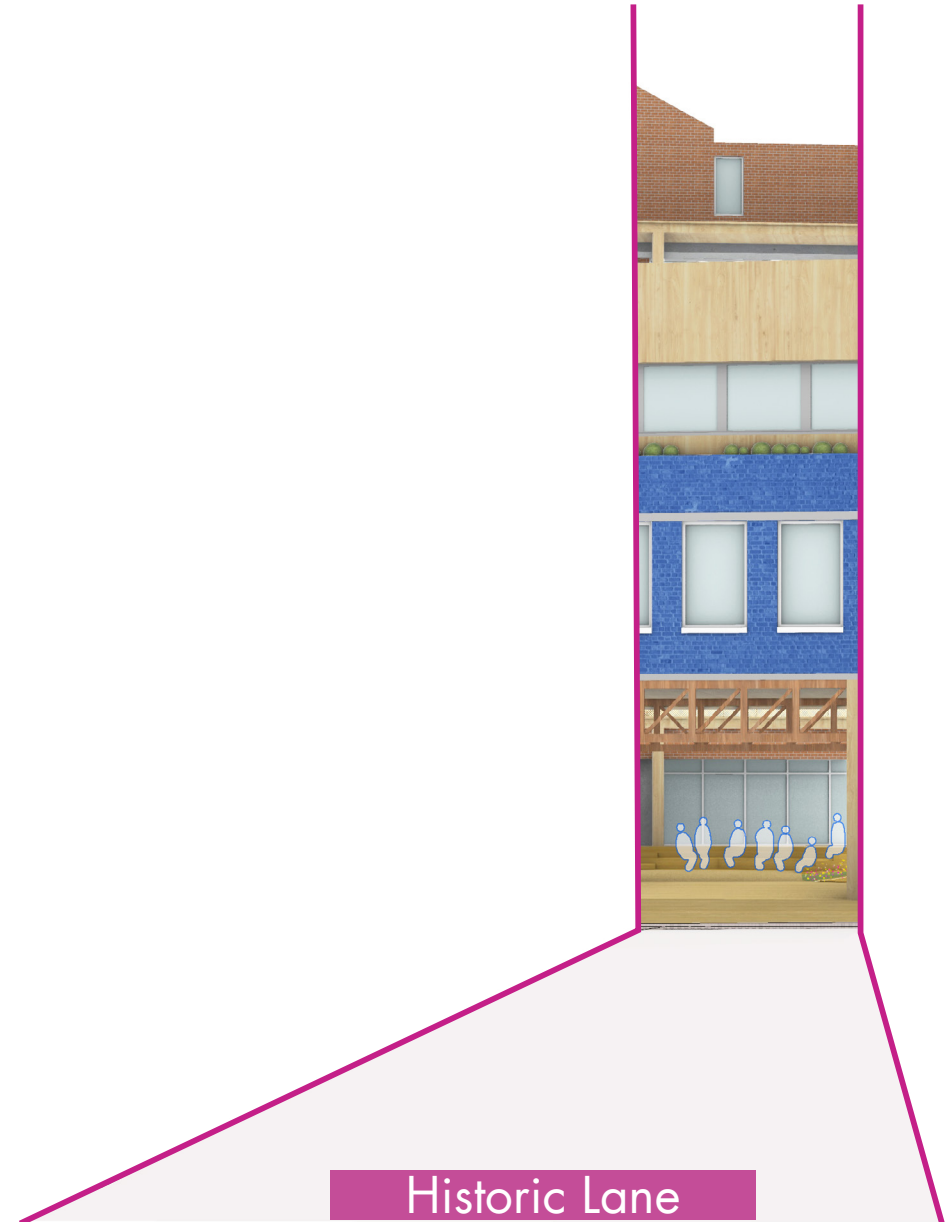


Axonometric drawing

Kostersgang Street

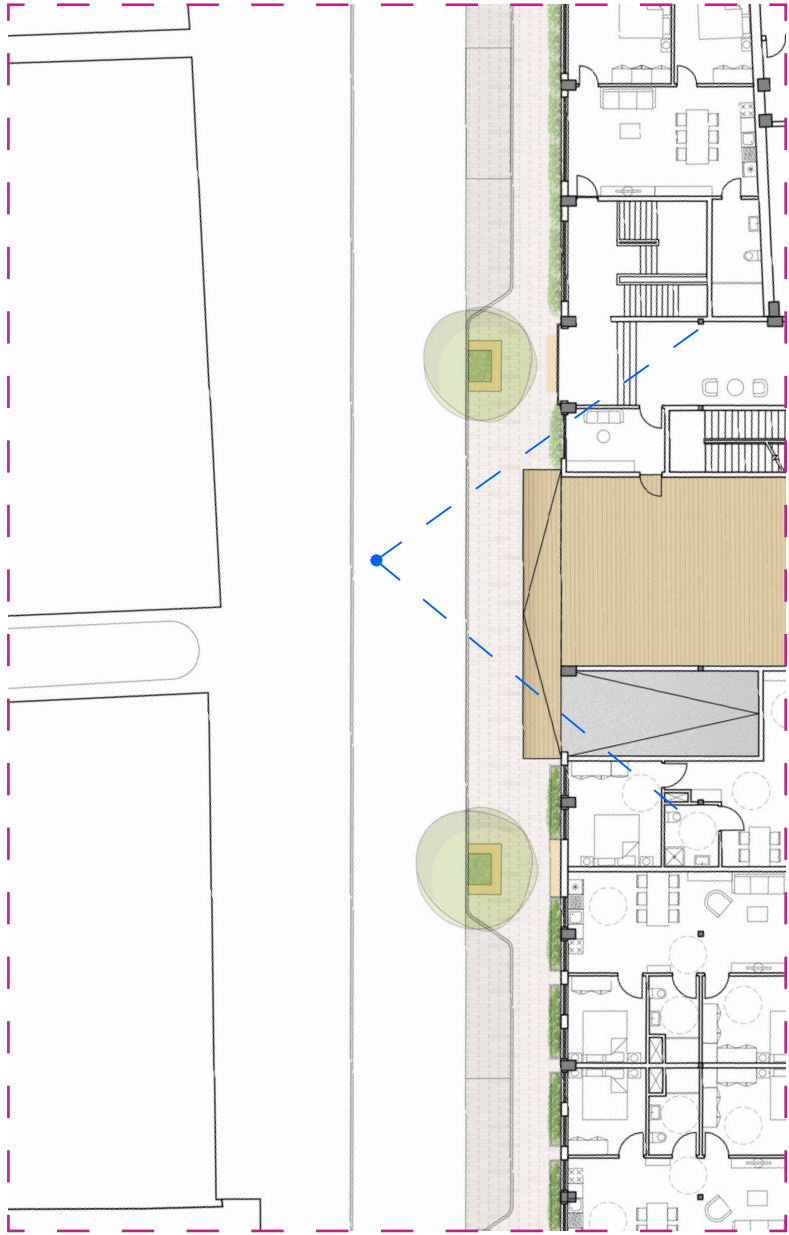


Plan 1:200



Perspective

Kostersgang Street

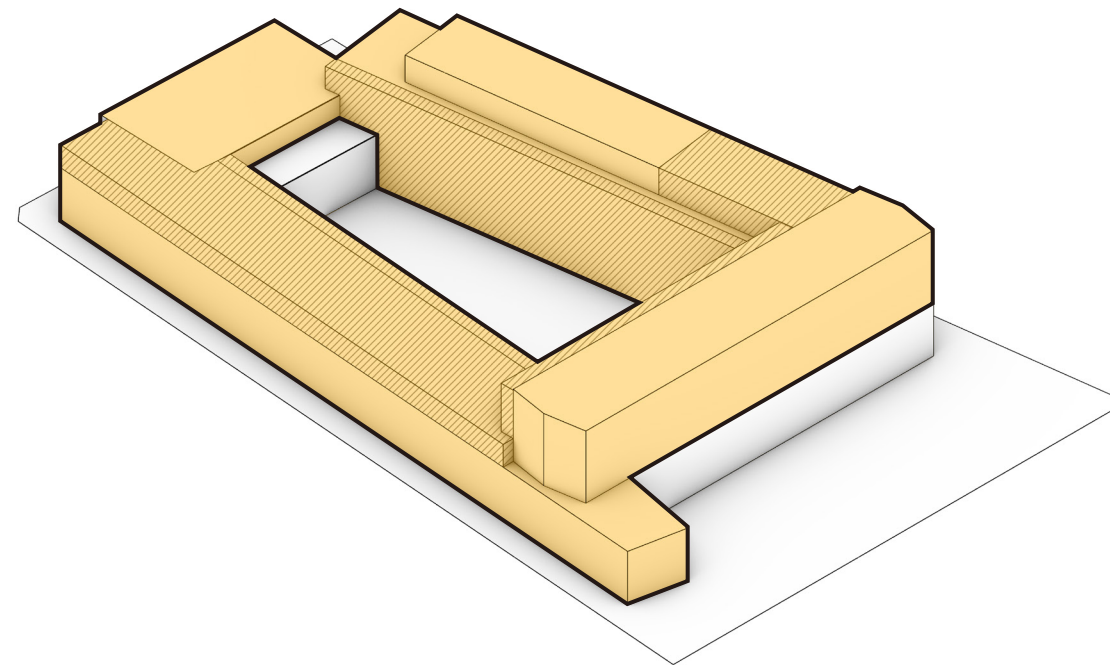


Plan 1:200



Entrance

Perspective



Attentive Home

Apartment Layout

1-bedroom unit *15

2-bedroom unit *31

3-bedroom unit *11

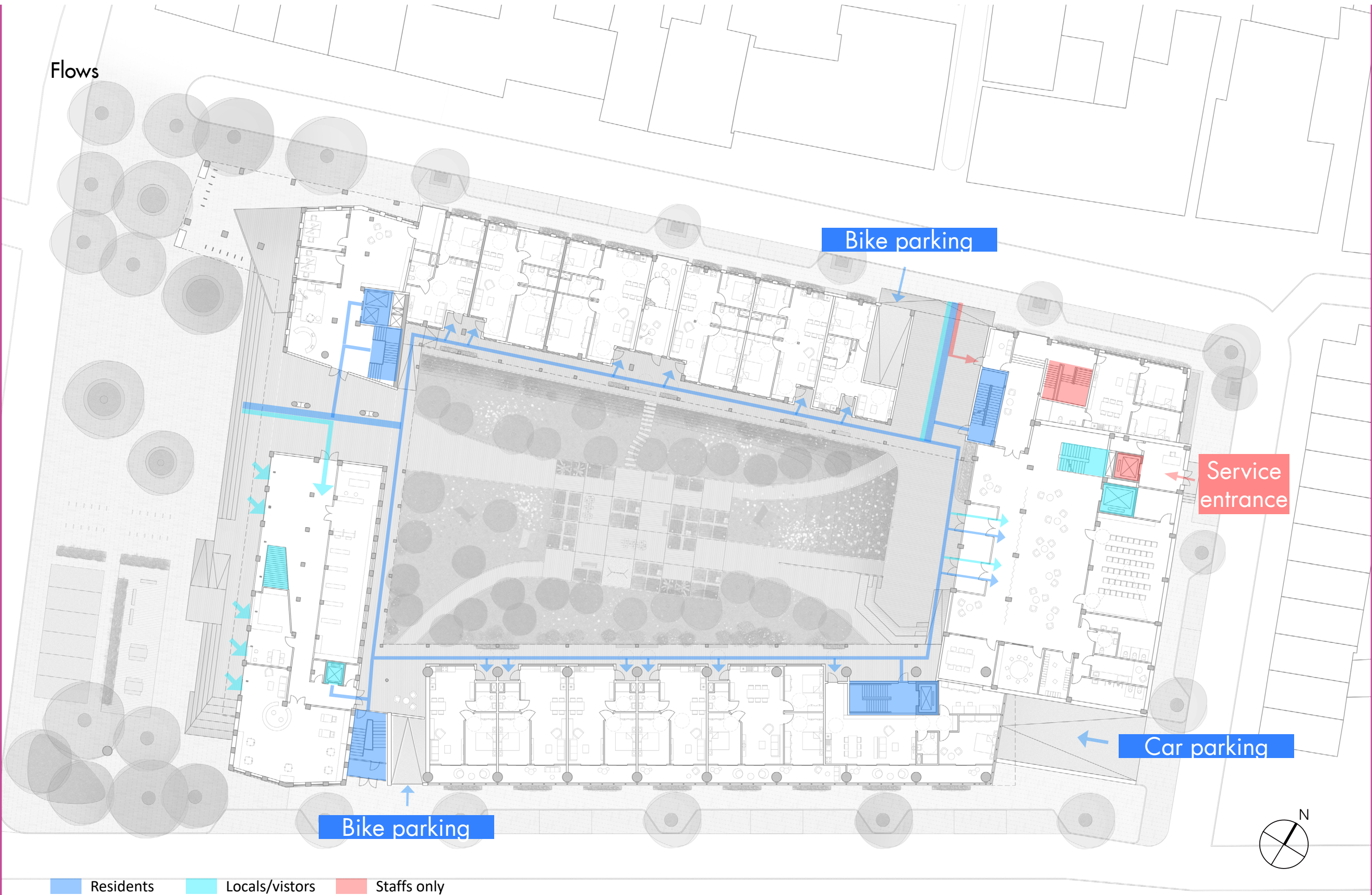
1/2 elderly
(+1 nurse)

2 parents
+1/2 children

1 couple
(+future babies)

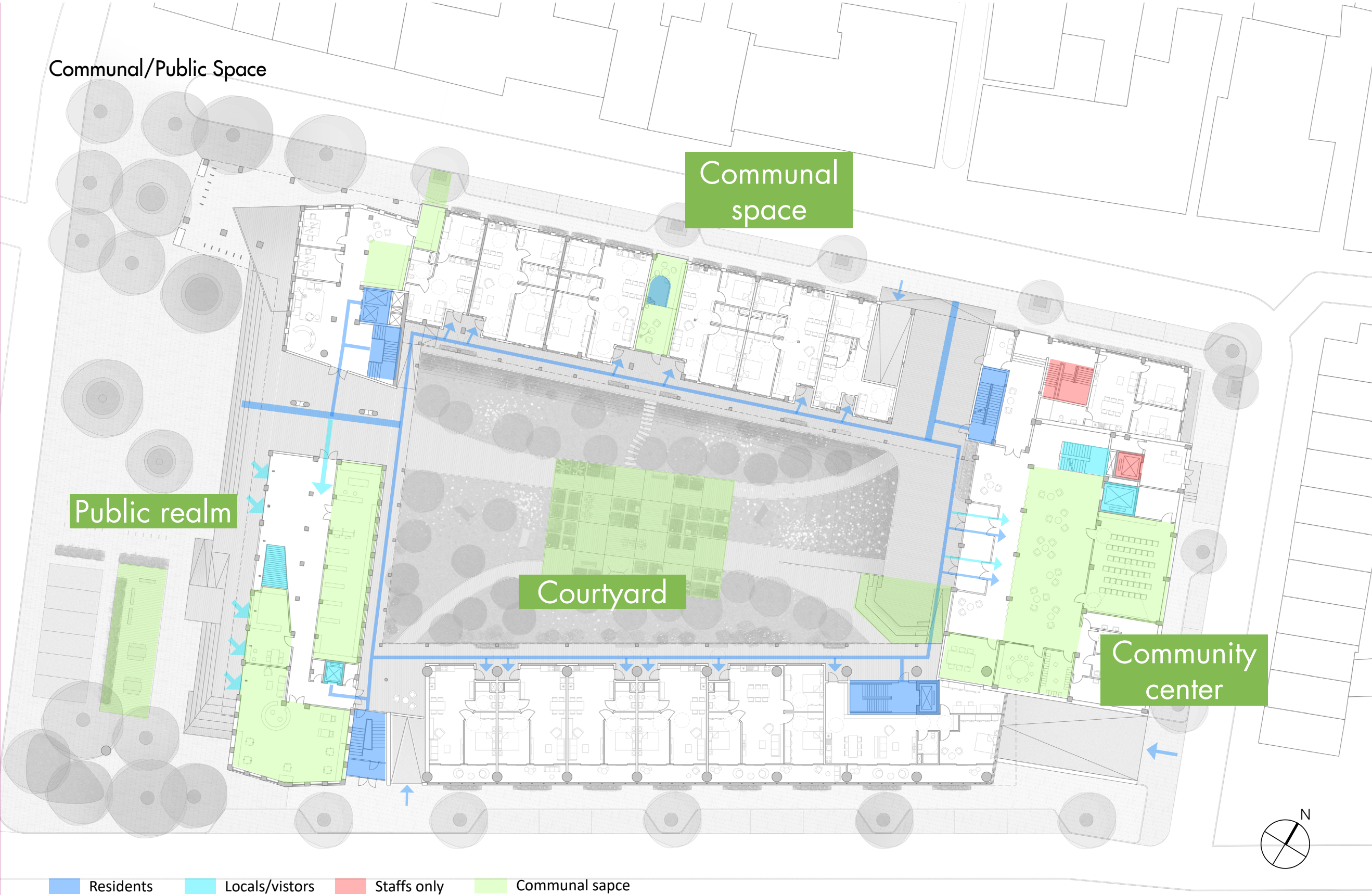


Flows



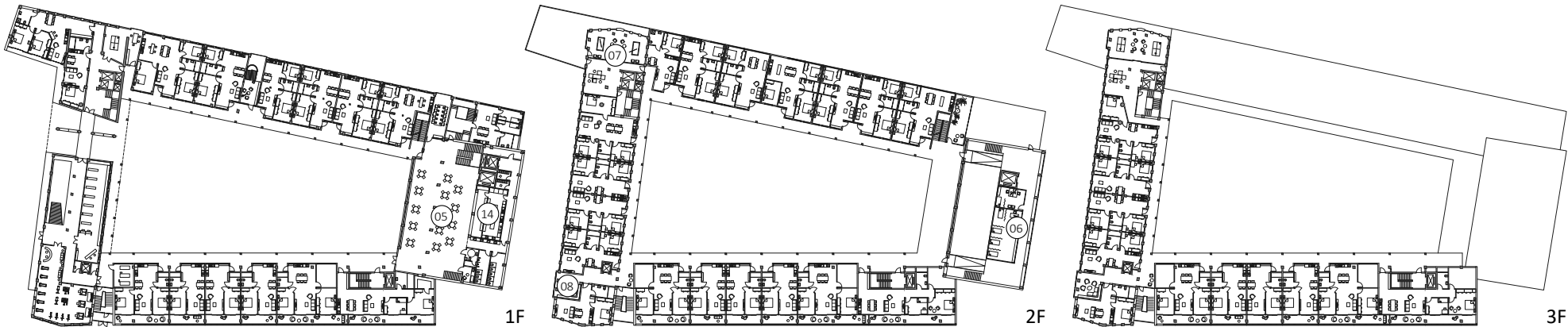
Residents Locals/visitors Staffs only

Ground Floor 1:300



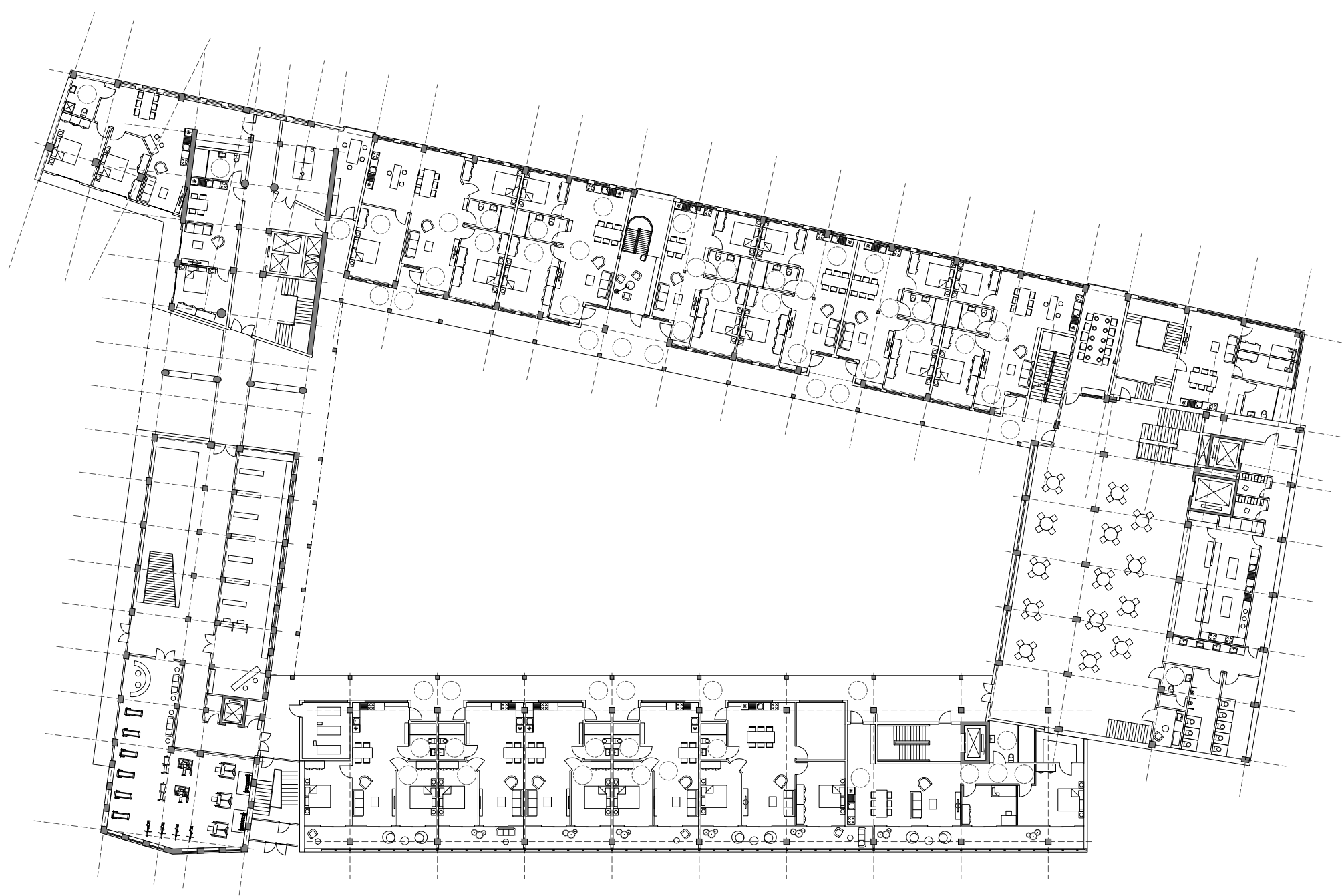


Ground Floor 1:400

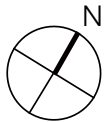


My Grandma's One Day

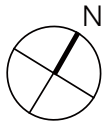
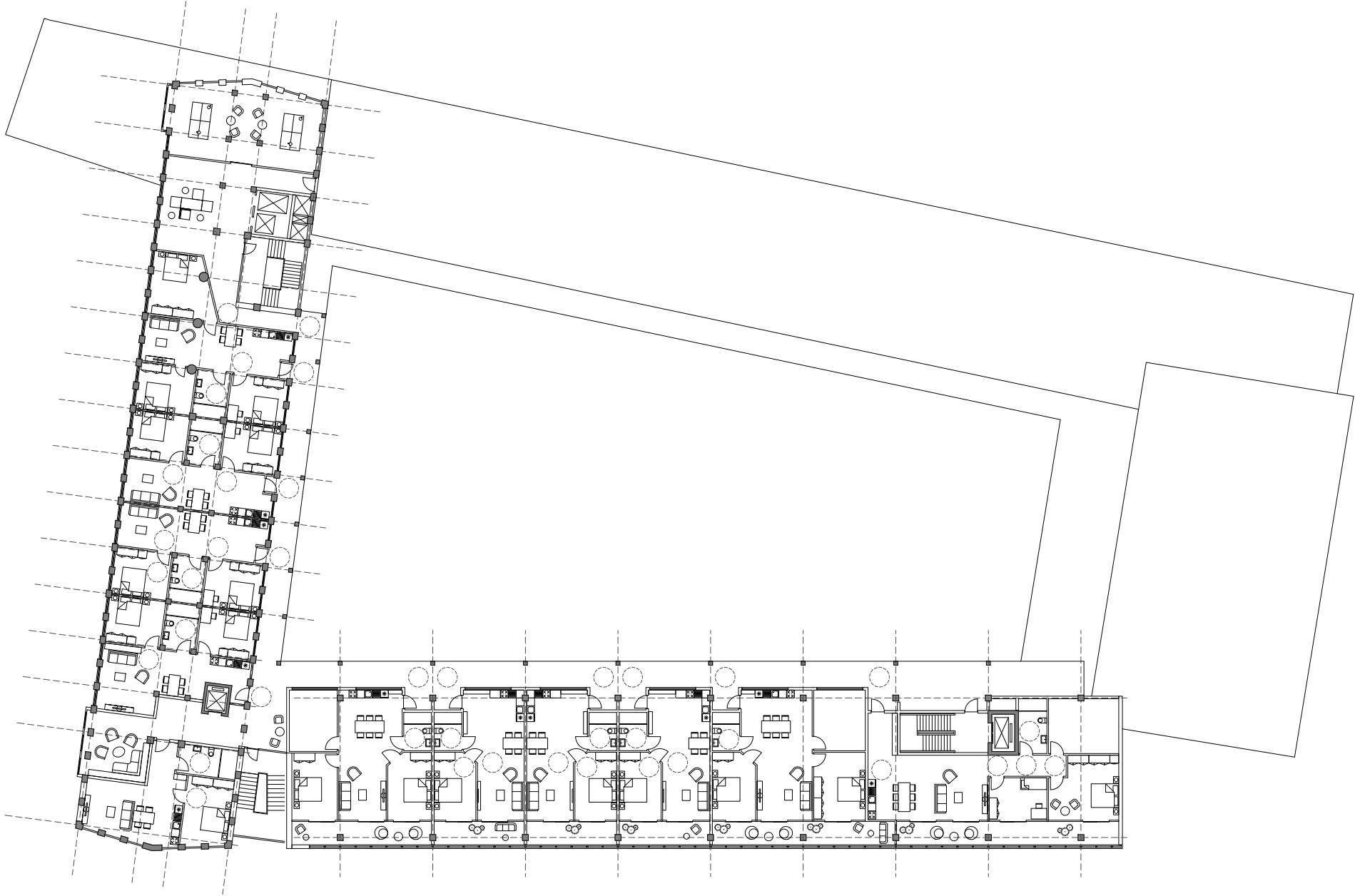
- 08:00 Apartment:**
- Get up 01
 - Take self-made breakfast 02
- 08:30 Courtyard:**
- Take a walk 03
 - Look after the plants 03
- 09:00 Community Center:**
- Read newspaper 04
 - Chat & coffee together 04
- 12:00 Canteen:**
- Take a warm meal 05
- 13:30 Healthcare Center:**
- See the doctor 06
 - Visit friends 06
- 14:00 Communal Space:**
- Do some sports 07
 - Reading in the sun 08
- Community Center:**
- Knitting 04
 - Painting 04
 - Gaming 04
 - Tea & biscuit together 04
- Public Realm:**
- Check the mailbox 09
 - Shopping 10
 - Get the hair cut 11
- 15:15 Garden:**
- Play with kids 03
 - Teach kids gardening 03
- 16:15 Communal Space:**
- Share stories with kids 12
 - Help kids homework 12
- Community Center:**
- Do handicraft together 13
- 17:00**
- Bake together 14
- 19:30**
- Prepare dinner together 14
 - Watch a movie together 15
 - Organize a talent show 16
- 21:30 Courtyard:**
- Take a walk 17
 - Drink a bit 17
- 22:00 Apartment:**
- Prepare to sleep 01



1F 1:300



2F 1:300

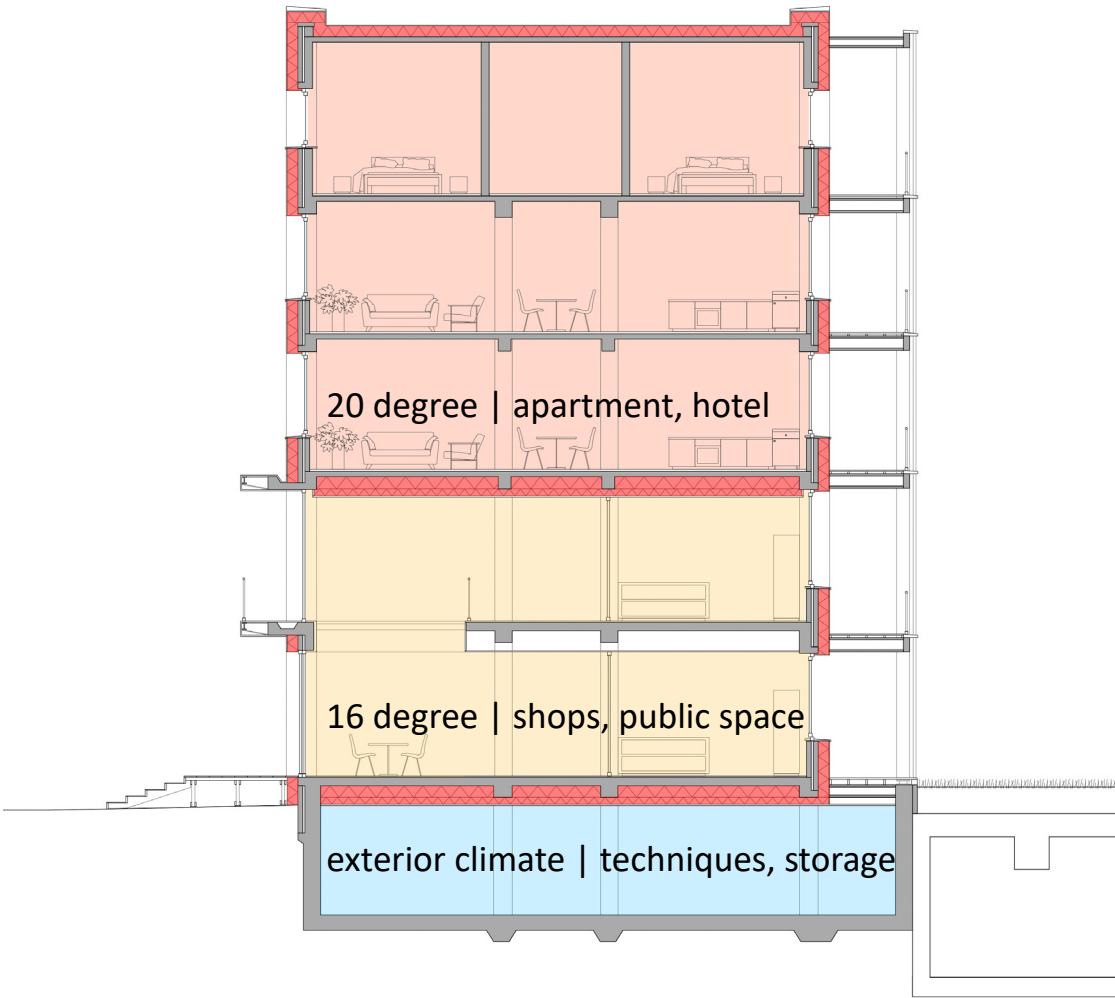


3F 1:300



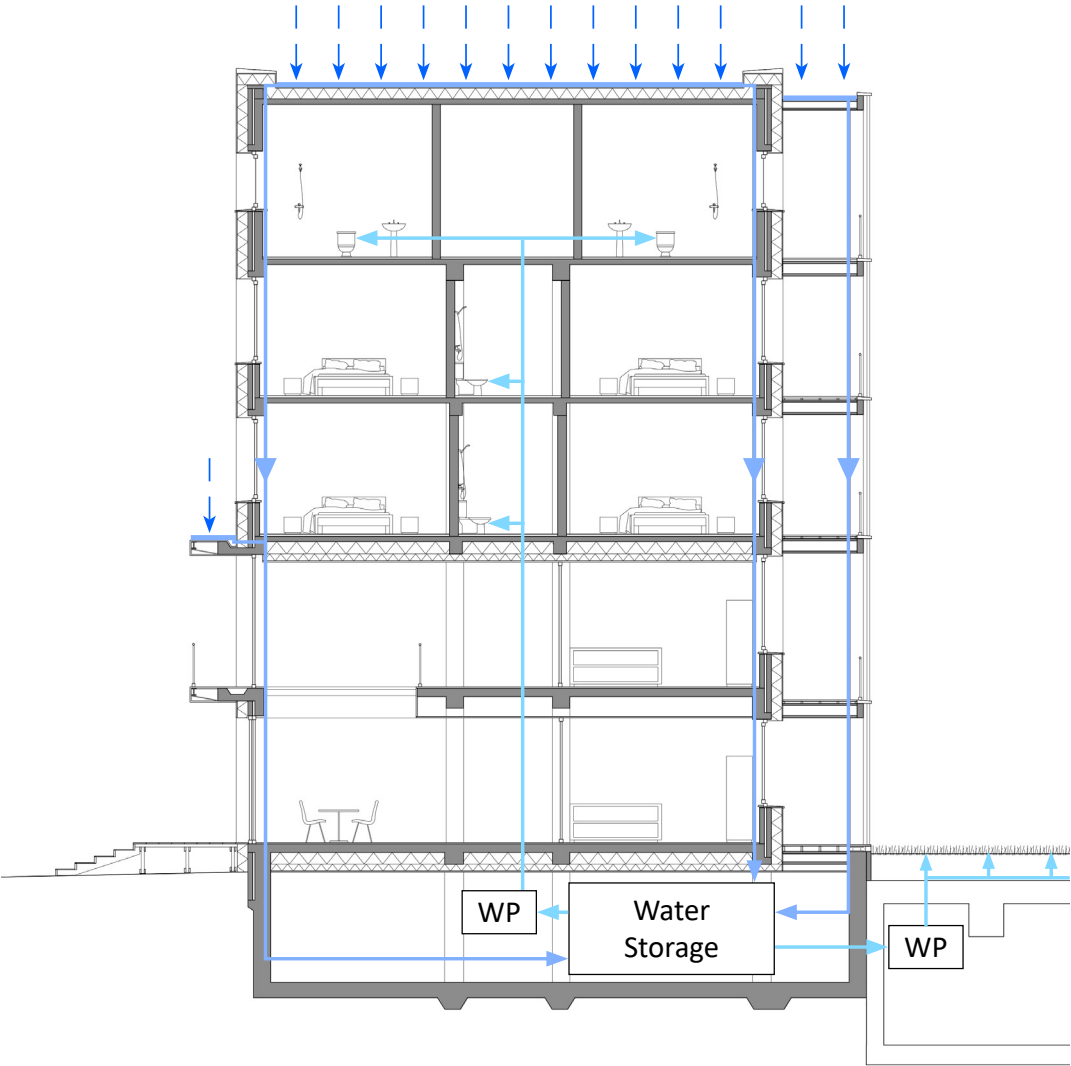
Pocket library | The north wing

Thermal Zone



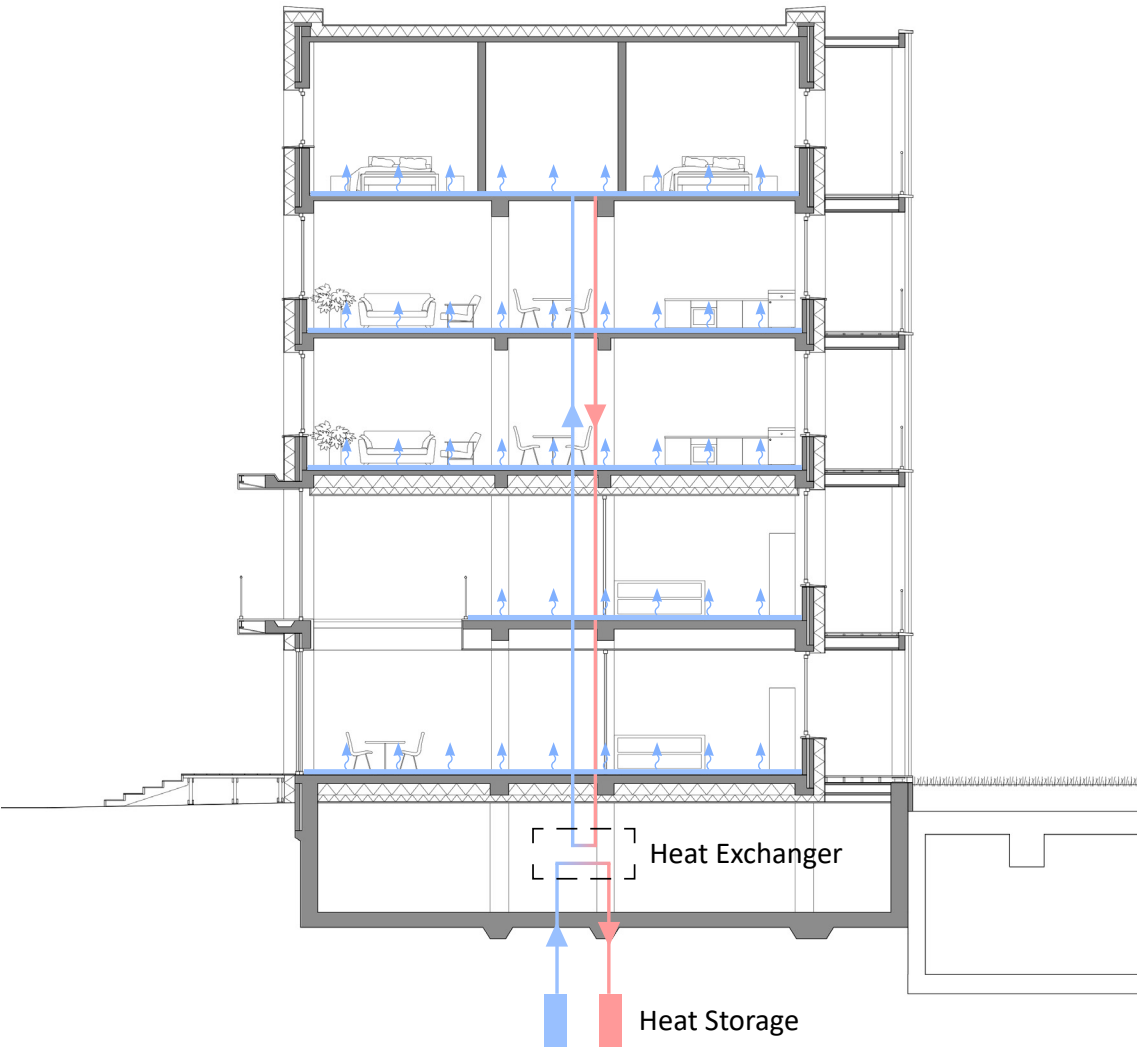
Section of the west wing

Rainwater Harvesting



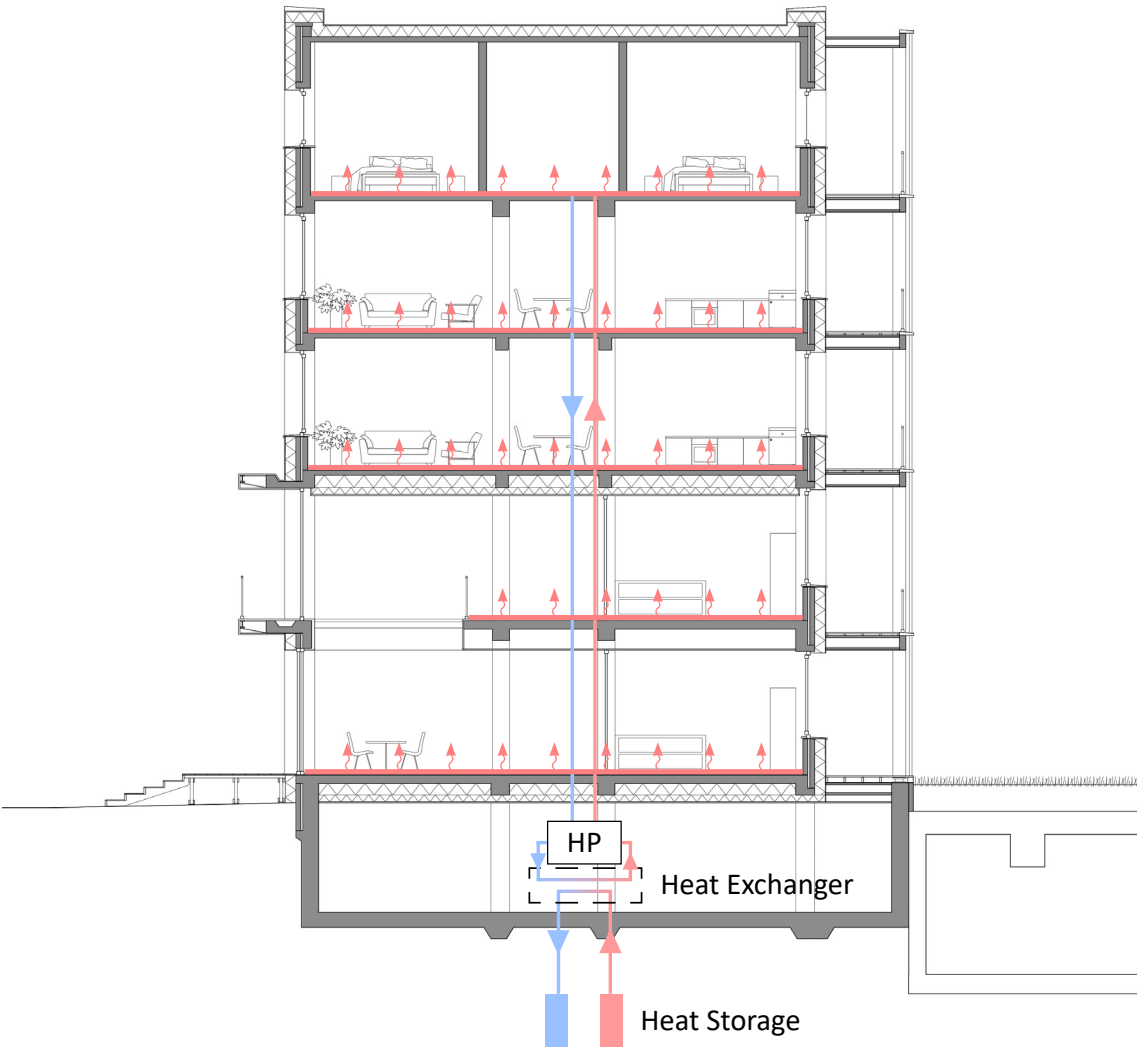
Section of the west wing

Summer: Floor Cooling



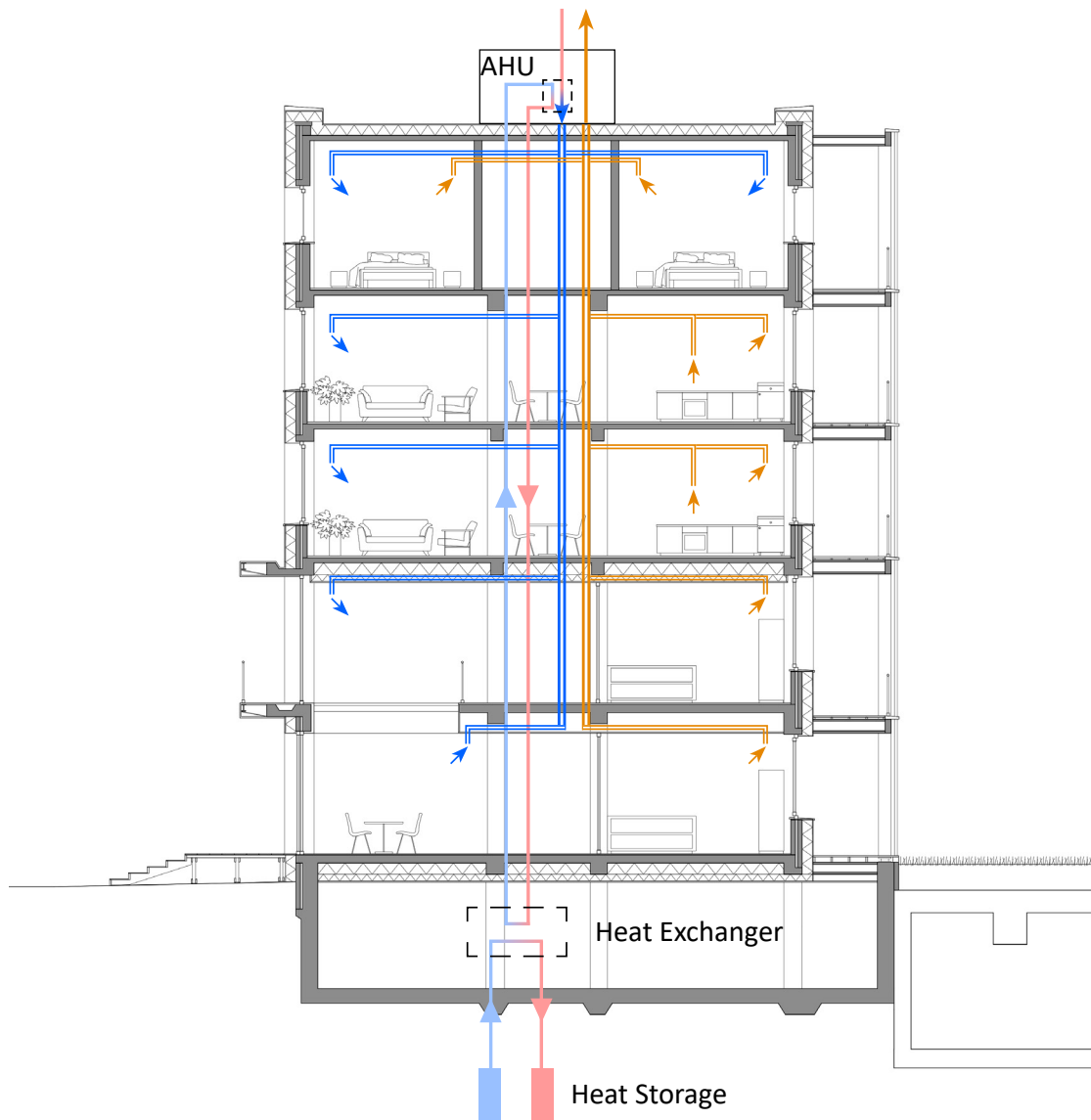
Section of the west wing

Winter: Floor Heating



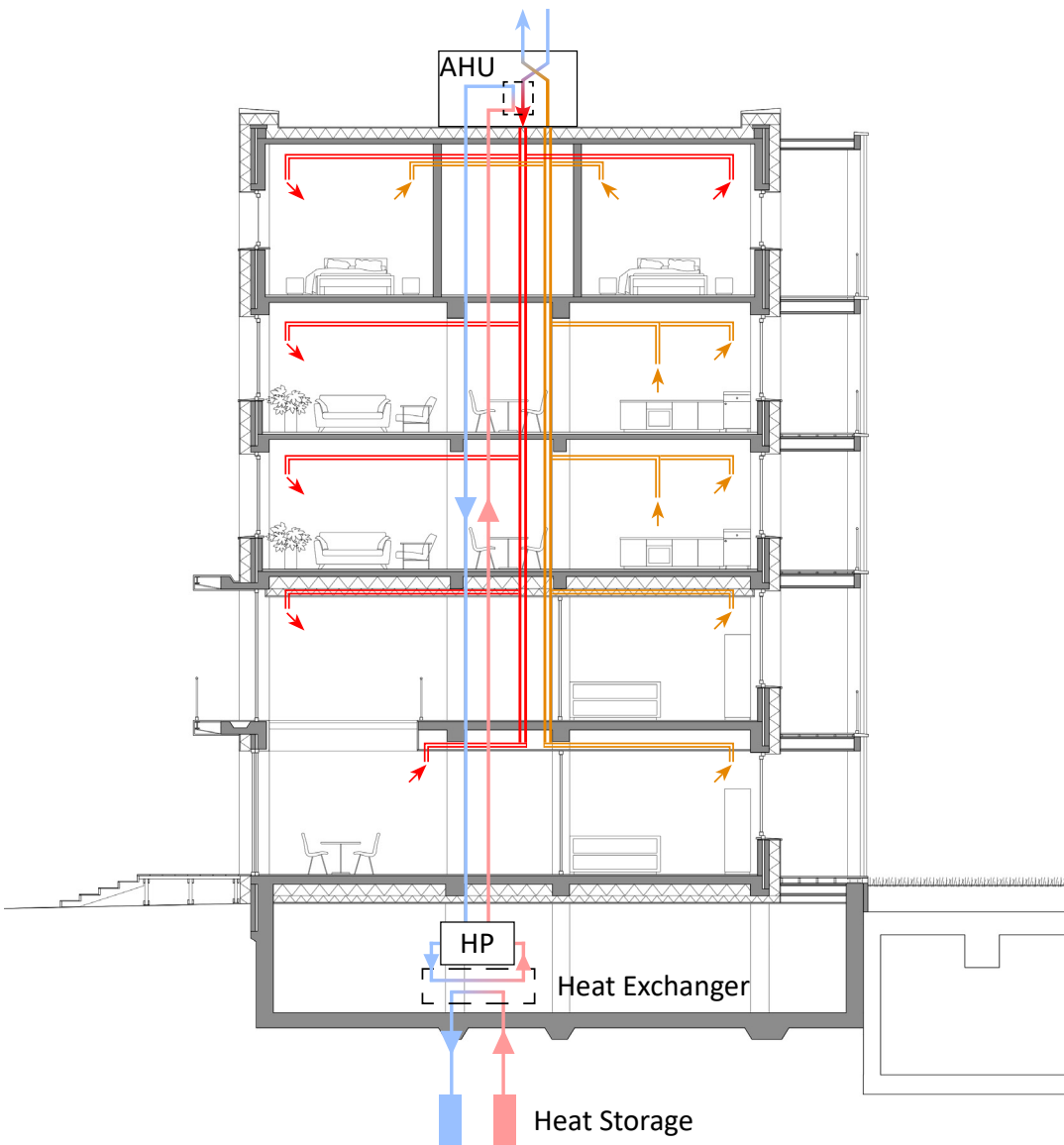
Section of the west wing

Summer: Ventilation



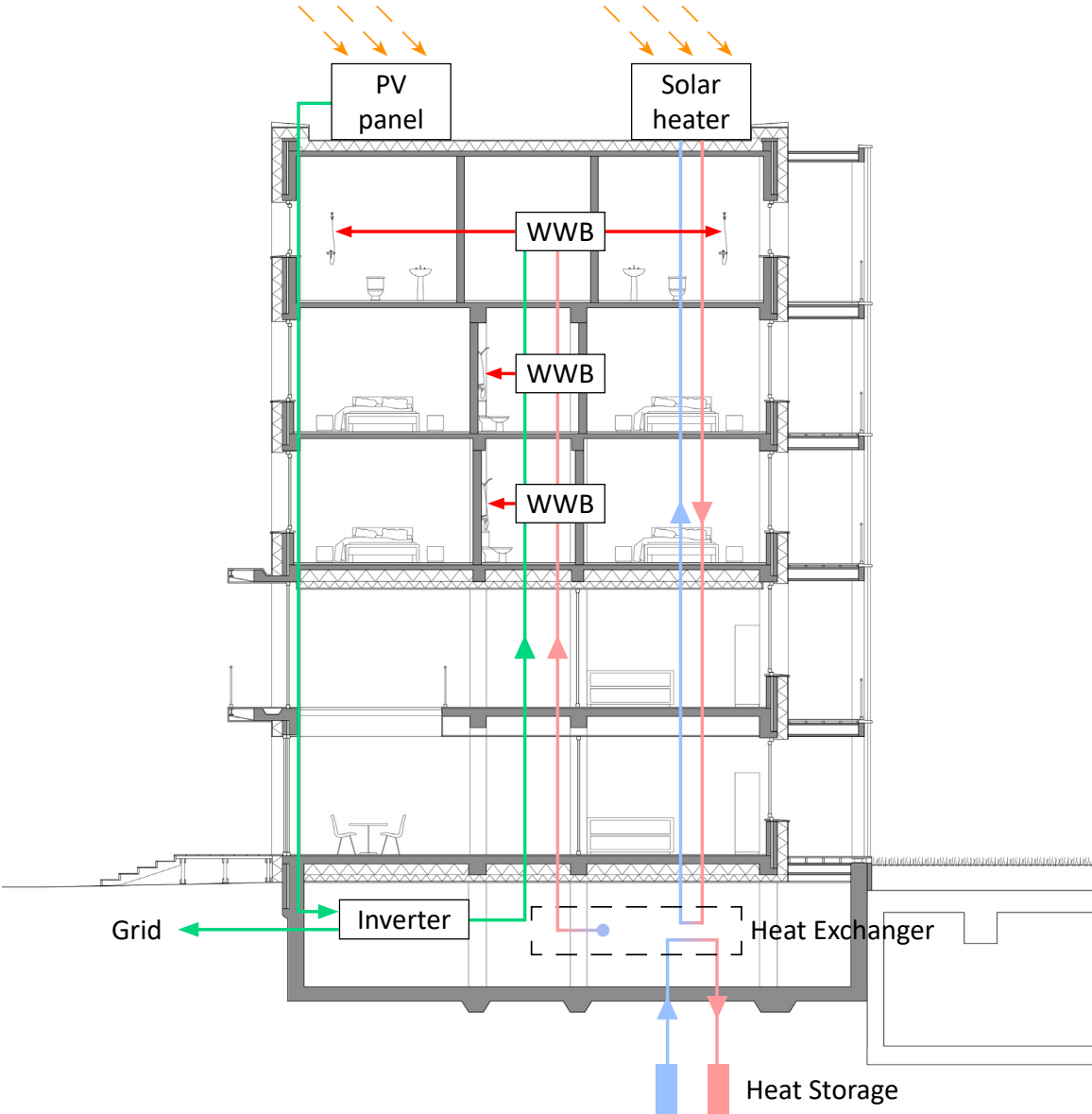
Section of the west wing

Winter: Ventilation



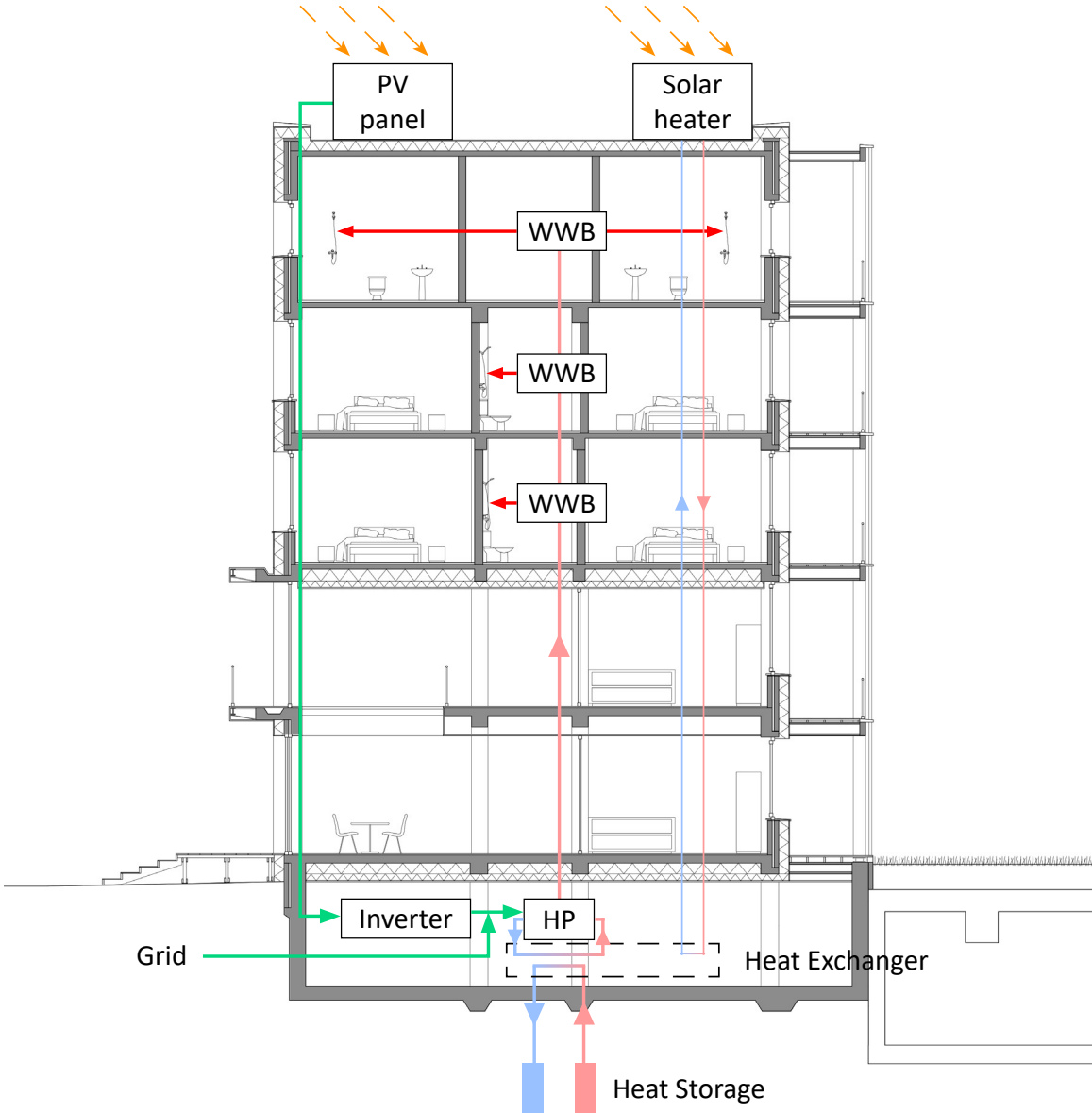
Section of the west wing

Summer: Solar Energy

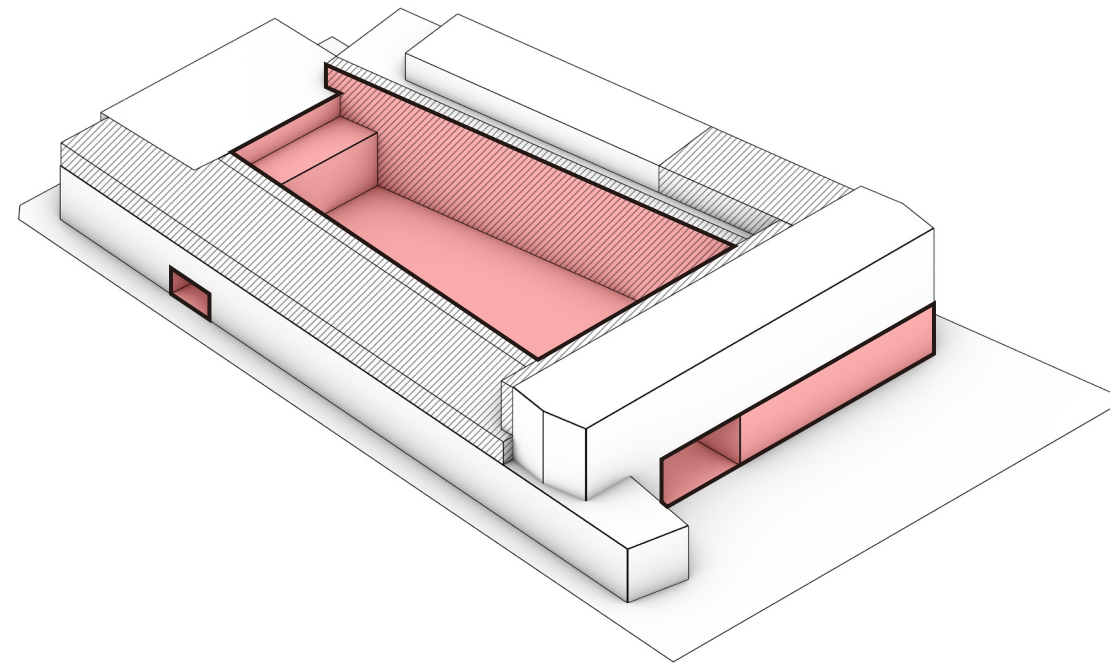


Section of the west wing

Winter: Hot Water Supply

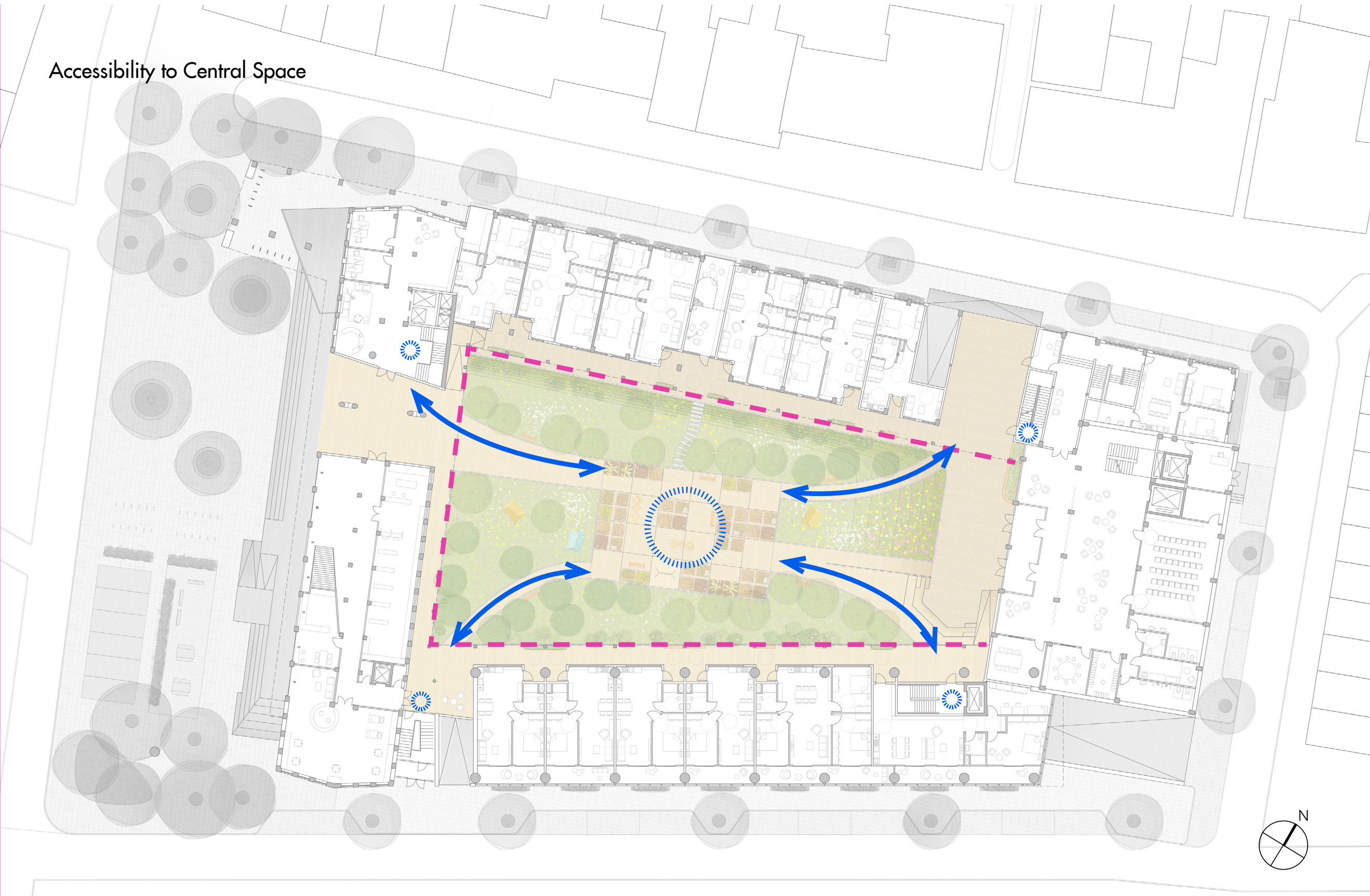


Section of the west wing



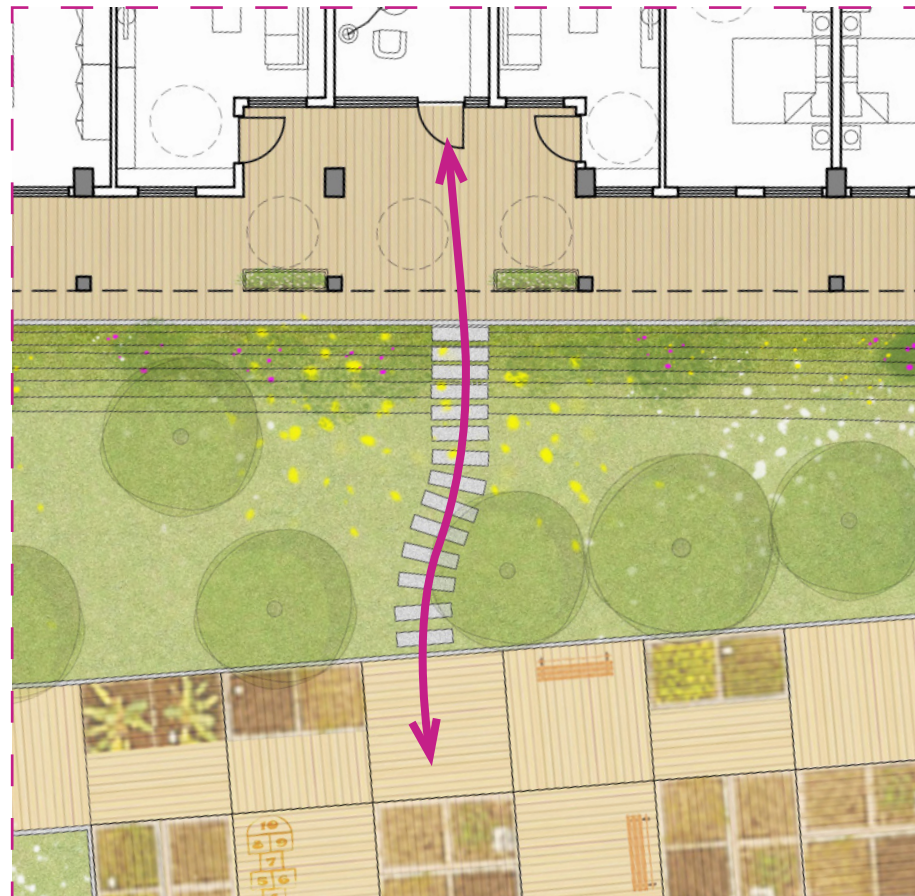
Inclusive Core

Accessibility to Central Space

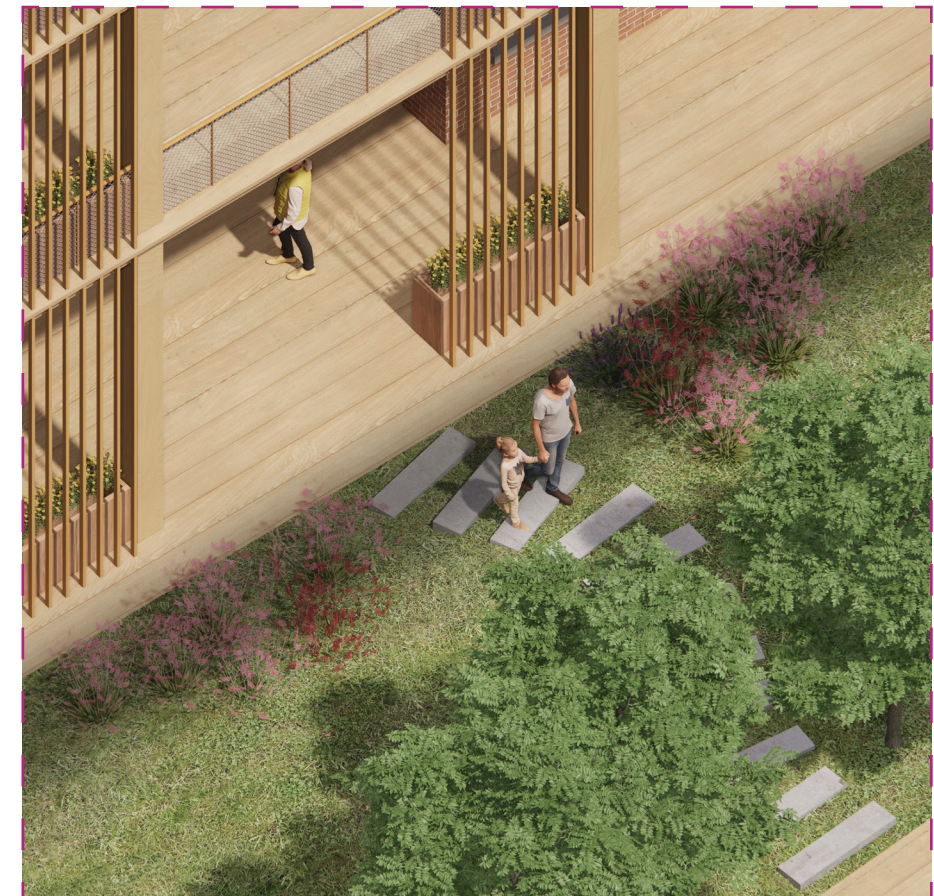


Site plan 1:300

Height Difference & Transition



Plan fragment 1:200



Transition

Axonometric view

Height Difference & Transition



Plan fragment 1:200



Gathering Space

Axonometric view

Modularity - Central Space



Swing	Bench	Green house
Flower	Crop	Pool
Camp	Pavilion	?

Customization

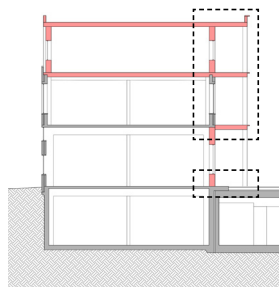


Current situation of the courtyard and inside facades



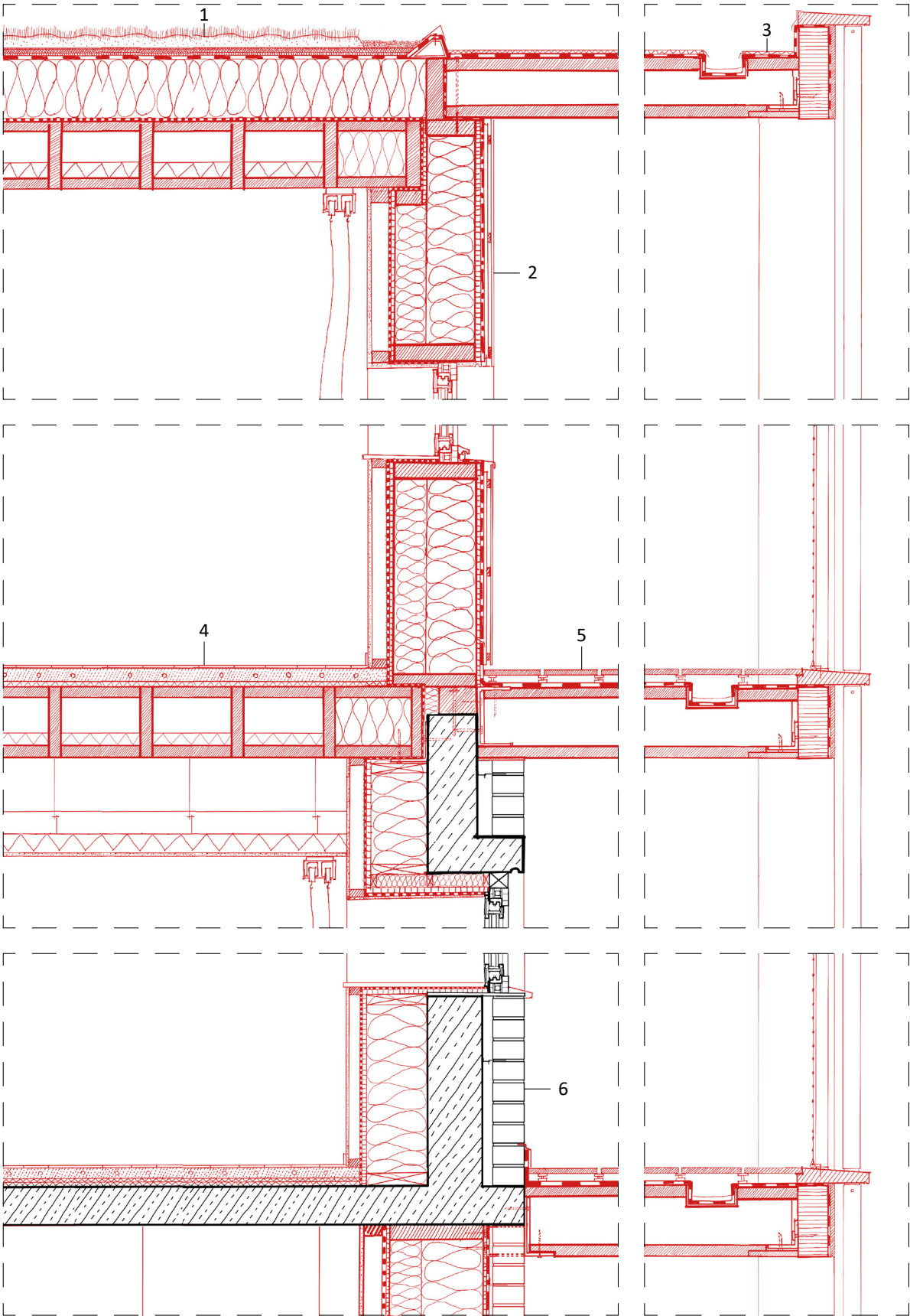
View after transformation

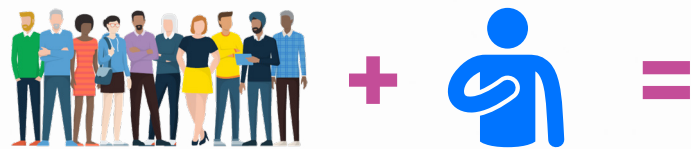
Details: The North Wing 1:5



- 1 100mm extensive green roof
10mm filter fleece
20mm drainage layer
protective fleece
2-ply bituminous sealant layer
(water proofing membrane)
300mm EPS
vapour barrier
250mm load bearing panel with
sounding proofing infill
10mm sheathing
- 2 20/40mm battens/ counter
battens
damp-open sealant layer
12.5mm fibre cement board
350mm timber post inlaid straw
bale
12mm OSB
vapour barrier
80mm installation
gypsum board
- 3 10mm protective layer
1.2mm PVC sealant layer
200mm load-bearing roof panel
- 4 20mm terrazzo/ 8mm oak strip
parquet
70mm cement screed with
underfloor heating
- 20mm EPS impact sound
proofing
20mm EPS thermal insulation
300mm load-bearing floor with
sound proofing infill
300mm service space
alum. supporting structure
30mm acoustic plaster
26mm pine floor board
raised floor pedestal
- 5 1.2mm PVC sealant layer
200mm load-bearing floor
100mm existing brick
- 6 50mm infilled insulation
220mm reinforced concrete
300mm EPS thermal insulation
12mm OSB
vapour barrier
80mm installation
gypsum board
26mm pine floor board
- 7 450mm deck framing
1.2mm PVC sealant layer
450mm load-bearing floor

■ Remained ■ Added





CONNECT THE COMMUNITY AGAIN!

Sectional axonometric drawing

- *Relationship between the Graduation Project, the Studio Topic, the Master Track (Architecture), and the Master Programme*
- *Relationship between Research and Design*
- *Research-Design Methodology*
- *Relationship between the Graduation Project and the Wider Context*
- *The Dilemmas of the Graduation Project*

Reflection



Relationship between the Graduation Project, the Studio Topic, the Master Track (Architecture), and the Master Programme

My graduation project deals with Politiebureau Groningen Centrum on the vacant heritage topic addressed in Heritage & Architecture (HA) graduation studio. In the Netherlands, nearly 30% of police buildings are becoming vacant due to an organisational change within the Dutch police in 2013 (WEESSIES, 2017). This year, in collaboration with MBE and the Atelier Politie Bouwmeester, HA explores the redevelopment solutions for ten given buildings out of police vacant heritages within the Netherlands. These vacant buildings may have various heritage values and chances to boost more values through research and design. My graduation project focuses on Politiebureau Groningen Centrum as one of the case studies.

The case building has been used in the Groningen inner city for 51 years. Its blue and white colour, rich materials, elements, and compositions make its facades stand out from its surroundings. I was curious about how such appearance impacts the community and how the community can help transform the isolated police station into inclusive mixed programs. Therefore, my graduation project investigates how locals can participate in the redesign, trying to answer the above questions. The topic connects to Touch & Feel (T&F) studio line. Touch & Feel focuses on materiality being valued and perceived by different stakeholders and its role in the redesign (Studio Text, 2021). The project investigates the facades' associations with locals and the social values of their materiality. The project develops a participatory design approach

that helps involve locals as essential stakeholders in redesigning the facades. Locals' thoughts and perceptions about the façade scenarios can be transparently delivered through the participatory approach, revealing what they value most and helping shape a community-rooted building. In this sense, the attributes identified and the approach explored in my project contribute to T&F.

The project also focuses on sustainability in line with the MSc program on "innovative ways to create more sustainable development." My graduation project touches upon sustainability from various angles. Firstly, the project makes use of the existing building, the structure and the space, and applies them to future functions. Secondly, the project explores building materials and technologies in terms of decarbonisation, modularity, reversibility, and flexibility. Thirdly, the project stresses the importance of social sustainability and uses participation to achieve it. Social sustainability refers to connections within the community and a sense of community among people, where participation is essential (Dempsey, Bramley, Power, & Brown, 2011). The project investigates how locals can actively participate and how the results can be transferred in the redesign to make a well-connected community.

Relationship between Research and Design

In a complex process of research and design that involves multi-users, a series of divergent and convergent phases from inquiry to testing is suggested to ensure sufficient insights into the project (Rowe, 1987). In my graduation project, research and design are also structured similarly. As figure 1 shows, the research and design are intertwined in a linear process, consisting of several divergent and convergent phases, from the literature review toward the final design & research paper.

The literature review about participatory design (PD) provides fundamental design theories and tools inspiring the case study. The inquiry to locals about their perceptions, demands, and ideas serves as inputs for the redesign. Complemented by other analyses such as cityscape mapping, demographic analyses, and BT analyses, the function of the building is determined as mixed housing targeting the elderly, families, and couples. Based on all the inputs, design starting points are

generated and integrated with three levels of participation (fig 2). The research on PD testing only focuses on the facades because the locals as participants are easy to reach for the façade testing. In the design testing, model games are invented for locals to play, through which their interpretation and preference about the redesign scenarios are figured out. These data are analysed and categorised into "perception & feeling," "spatial & function demand," and "aesthetic taste," with overall façade results from each participant.

The key findings are the common ground among participants. They have many shared preferences, though their reasons might differ. Such shared preferences indicate what they believe is valuable. For example, when the option was given to remove the bay windows, all the participants did not want that. The common ground directly lead to the final façade redesign because they represent the scenarios with maximum social values. In other words, the redesigned

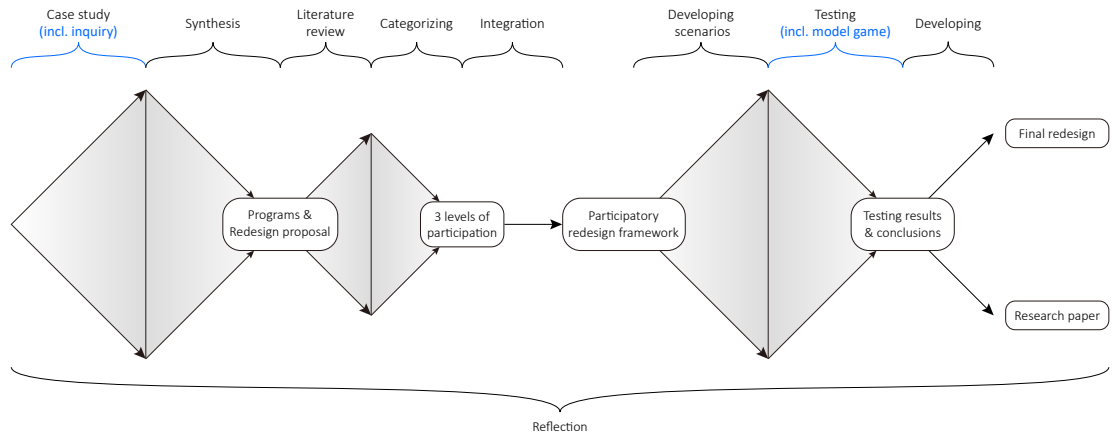


Figure 1. Research-design structure (general scheme)

façades would be positively perceived, interpreted and liked by locals. The rest of the site is redesigned accordingly to the façades to meet locals' spatial and functional demands discovered through participation. As a result, the new design would improve the surrounding atmosphere, connect inside-outside, provide needed functions, and attract locals, thus transforming the isolated building into a great joint in the community. The participatory process also builds up new connections between locals and the façades. Imagine, when the building was renovated based on the common ground, locals could feel their contribution and proud of it. They might share such stories with their families and friends. In this way, the site is activated and connects the community again, boosting social values.

It is critical to clarify my role as an architect throughout the whole approach. As figure 1 shows, before the locals played the façade model, I did an extensive façade scenario design based on various inputs. Specifically, from cognitive mapping, I locate some memorable façade characteristics like the entrance and horizontality of windows that make the building a landmark. I value some windows and the blue colour because they bring quietness and a sense of privacy to the surroundings. I also find negative aspects of the façade, such as the stones, shadings, and metal isolations. Based on these findings, there are three façadewise design starting points: keep the characteristics, keep the quietness and sense of privacy, and eliminate negative

feelings. In the same way, I generated four buildingwise and citywise starting points by interviews and site analysis: closer to nature, related to possible functions, emphasising architectural rhythm, and responding to the urban fabric. Then I designed different scenarios to emphasise and prioritise those different starting points (Fig 18). The principles are to integrate as many starting points as possible into one scenario and to divide the façade into as few pieces as possible. In this way, the scenarios are already very highly efficient solutions, and the model game works efficiently.

Then locals are involved in playing the game and decide which scenario they value most. Based on the results/common ground, I, as an architect, integrate the chosen scenarios further to ensure they are not conflicting. For example, the common ground shows that both the horizontal bay element and the passage are valued, so I found an architectural solution to make a passage while not disrupting the horizontality on the first floor. I also take technical aspects into account through all phases. For example, how to strip the colour, add bricks, extend balconies, add greenery, etc. As a professional, I need to integrate all the aspects to make a decent design out of the research findings.

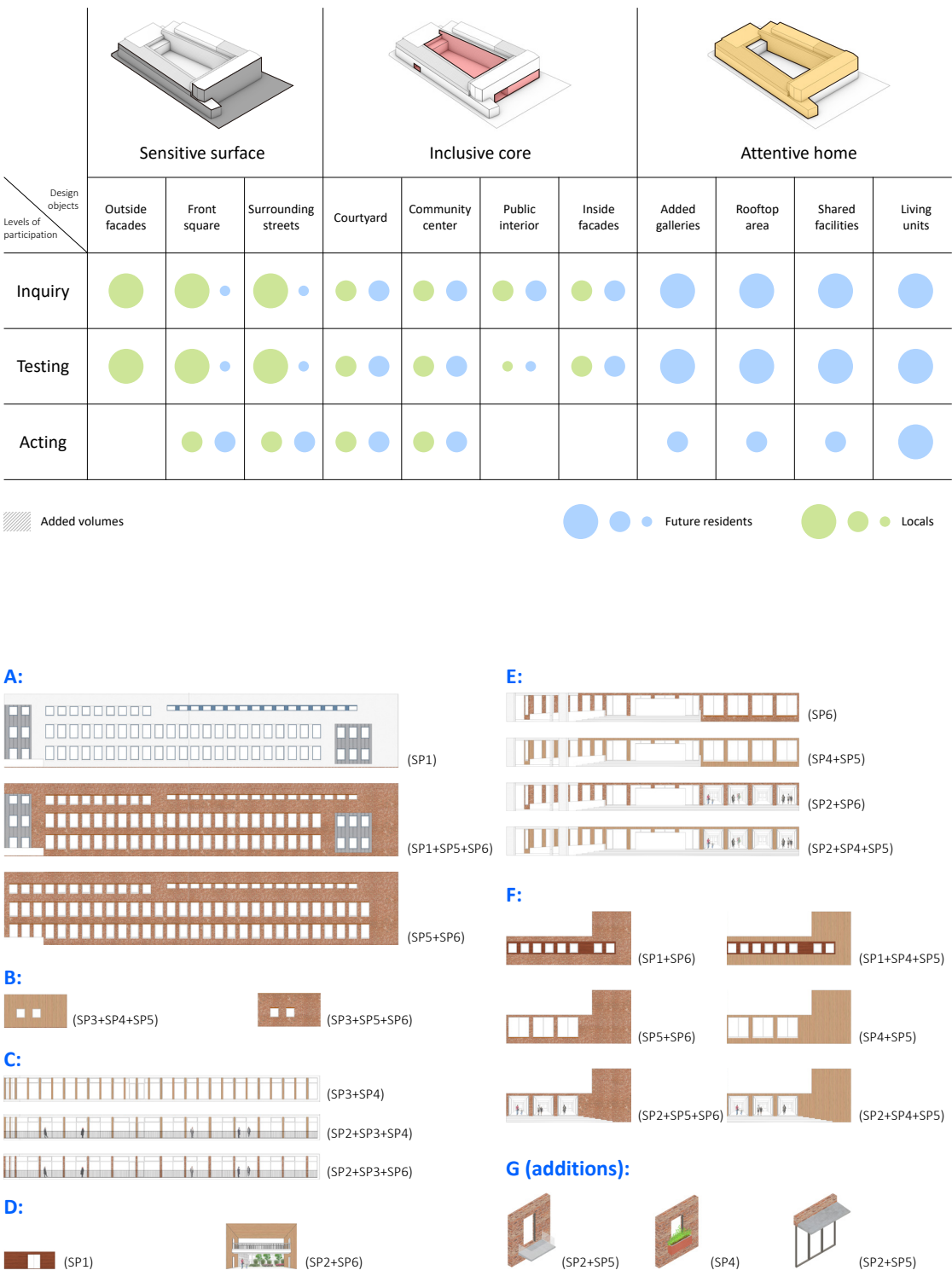


Figure 2. Applying three levels of participation to the case study
Figure 18. Scenarios of the front façade

Research-Design Methodology

In order to reflect on the different methods used, they are listed below.

Literature review on participatory design

The literature review touches upon several theories of design methodology involving multi-users, which helps me build the structure of the research and design. The method investigates a wide range of participatory design tools from papers and precedents, which helps me clarify three levels of participation: inquiry, testing, and acting, where I can develop the approaches further. The method also helps reveal some problems in current approaches. There is usually a lack of transparency in communications between experts and non-experts because current tools fail to show sufficient design possibilities in the design testing phase, and thus participants' views may be limited and narrowed with bias. So to improve, I divide the façade into pieces. There are multiple scenarios for every piece, and thus when putting pieces together, there is a variety of possibilities the façade could be. The participants are fully informed of those scenarios, raising transparency and reducing bias. The comparison of different participation tools drives me to also focus on the process itself of creating a sense of participation among people.

Cognitive mapping and interview

These methods were conducted to investigate locals' perceptions and memories of the building and their ideas

about the redevelopment. The cognitive mapping method is inspired by Kevin Lynch (1977) in his book *The Image of the City* and TU Delft pilot methods of identifying values and attributes in Almere and H-Buurt (Martynas, 2021). By asking locals to draw the building and describe the drawings, their perceptions and remembrance of specific elements and materials are documented. In practice, the freedom of drawing given to locals, on the one hand, encourages them to think independently, away from my interference on the topic; On the other hand, it is inefficient because the participants are too shy to draw about their minds than describe them in words. From the conversation, I find that there are some parts of the building they value, for example, the small private windows; however, they can hardly remember what the windows look like and are thus unable to draw. I also assume there might be some attributes of the façade they even cannot remember until they see it in a photo. Therefore, I reflect on this cognitive mapping method that it is an initial phase to know some independent general thoughts. But, for inquiring non-experts, a specific photo-based method needs to follow up for more in-depth knowledge. I also reflect on the method of interviewing that specific prompts are necessary to prepare in advance, which can help structure the interview and make participants respond more comprehensively.

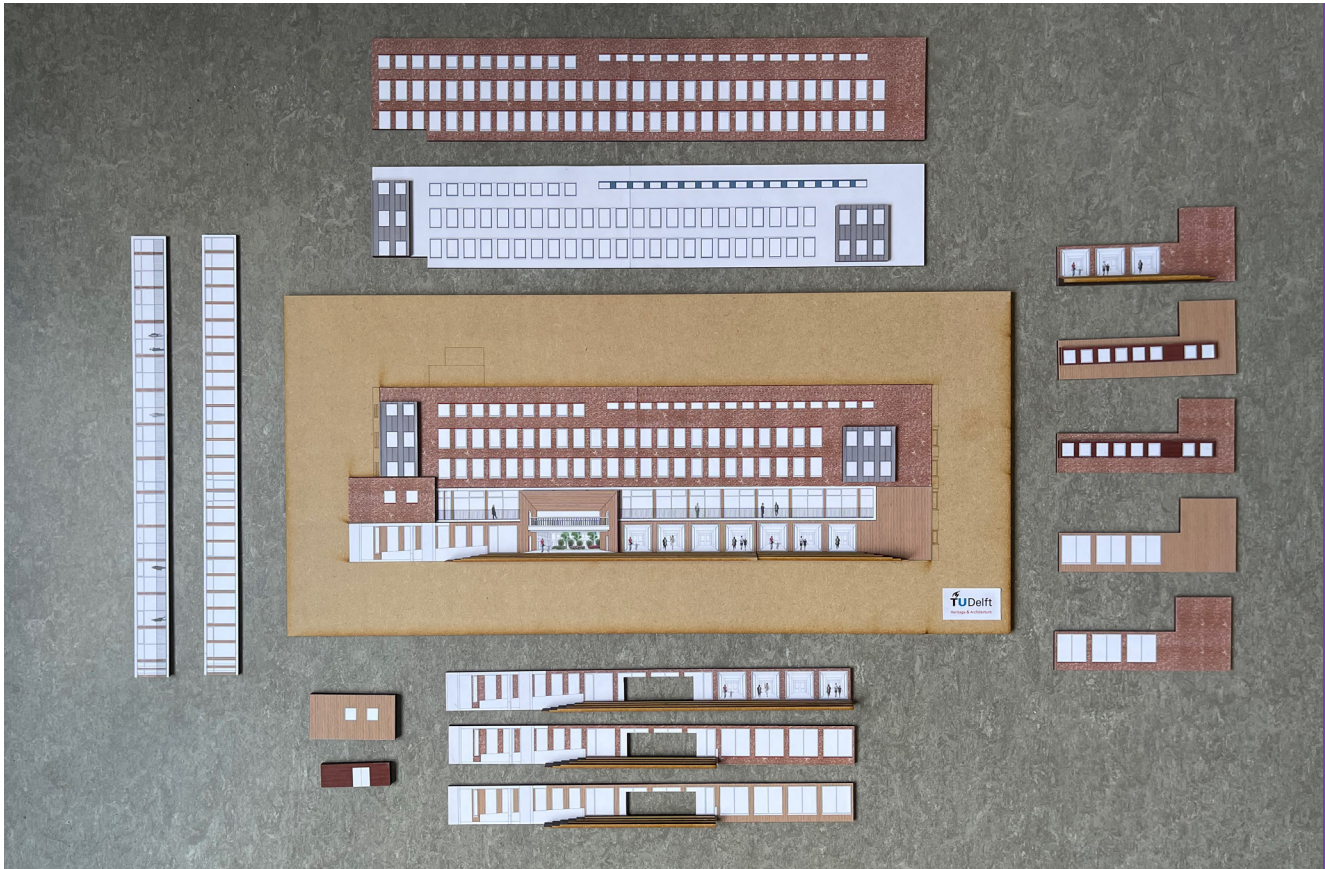


Figure 26. 2,5D model game for testing
Figure 21. One participant playing the game

Relationship between the Graduation Project and the Wider Context

2,5D model game

This method involves locals in the façade redesign testing. It ensures transparent communication between the researcher and participants and enhances their sense of participation. The method of model games is inspired by Rosalia Leung (Leung, 2020) and her course "Research on Participatory Design in Architecture" at Hong Kong University, where she experiments with several participatory model games. The method also considers the context of heritage redesign in Heritage & Architecture studio, where a variety of values, added values, and balancing these values are of great importance. Based on these considerations, a 2,5D model game was invented to represent different design scenarios of the facades by model pieces. Locals can choose, play, and make up these pieces by themselves to get their own façade preferences (fig 26).

As a reflection, for the preparation and improving the scenarios, it is helpful to ask fellows to check if the variations make sense and if there are other possibilities. I asked three fellows to help me improve it before the on-site experiment, and they gave useful feedback. For the on-site experiment, the model game works well in general. Locals are curious to join the game, intuitive in playing it, and satisfied with the process and the outcome "masterpieces." It achieves a high level of participation in the redesign activities, which helps boost community cohesion and add more associations between locals and the site. The model game is so readable that people

intuitively know the way to play it (fig 21), ensuring that the method is repeatable for almost any case and participant. I collected the data from 13 local participants (10 groups) about their preferences and reasons for the redesign. The consenses are translated into final design decisions.

There still are some points where future research can explore and improve. Some model pieces are misleading because of the thickness and colours that I did not intend to emphasise. Some variations, such as balconies and greenery, are not represented in the model for practical issues with model-making techniques. I tried to use hook and loop fasteners to add balconies and greenery to the façade, and in this way, they can also be easily removed if participants don't want them. But because the tapes are white, becoming some misleading lintel-like stuff on the façade, I leave them out. The way of communication with locals while playing the game can be improved. The researcher should ask more "why" to get more intimate knowledge of participants' feelings and perceptions. For example, when they say they like brick, it is time to ask "why" and dig out some underlying reasons. The researcher should not interpret the answers; instead, if the answer is not clear, ask more "why." For example, when one participant says she prefers that door with people, the researcher should not interpret it as the door is more open, but maybe ask why a scenario of more people is fascinating. In this way, more transparent communication and more in-depth knowledge can be achieved and acquired.

The project topic of police vacant heritage contributes to society by exploring the solutions to the issue in the Netherlands that nearly 30% of police buildings are becoming vacant and in urgent need of appropriate redevelopment (WEESSIES, 2017). In collaboration with the department of MBE and Atelier Politie Bouw Meester, the project investigates the value of the vacant heritage and added value through the redesign to achieve a sustainable future.

The project explores how participation can be used in heritage redevelopment, which has been recently stressed of great societal importance. As pointed out in the UNESCO Recommendation on the Historic Urban Landscape (HUL) in 2011, "rapid and frequently uncontrolled development is transforming urban areas and their settings, which may cause fragmentation and deterioration to urban heritage with deep impacts on community values (UNESCO, 2011)." To tackle this challenge, HUL encourages the involvement of different stakeholders, such as locals, in urban development processes, as a way to keep and pass on community values (UNESCO, 2011). The Faro Convention, operated by the Council of Europe, points out the opportunities in heritage governance and management where society can achieve consensus and boost cohesion through participatory activities (Faro Convention, 2022). Following the Faro Convention, participation in heritage redevelopment is promoted locally in the Netherlands by the national Cultural Heritage Agency of the Ministry of Education, Cultural, and

Science (Cultural Heritage Agency, 2019). Participation plays a more and more essential role in managing the heritage values and shaping a better future. In what way people can actively participate in heritage building redevelopment thus is being questioned and explored in this project.

The project fills the gap that there is little research bridging PD approaches to heritage building redesign. PD involves different non-experts in the co-design process by employing participatory tools (Sanders, Brandt, & Binder, 2010). The book "Design Thinking" introduces the general PD methodology that includes a series of divergent and convergent phases for the designer and participants (Rowe, 1987). Participatory design is concluded into three levels: inquiry, testing, and acting, from the existing approaches (Caspersen, 2009; Leung, 2020; Martin & Hanington, 2012; Sanders et al., 2010). The project invented an innovative façade model game and integrated it with the methods of heritage building redesign from heritage values (Kuipers & de Jonge, 2017), thus bridging the two academic fields.

The project builds a framework to combine heritage building redesign and participatory approaches. However, due to the time limit, it only touches upon the façade redesign and thus leaves other redesign parts for future research. The results and reflections of the research and design provide insights into the approach created, which turns out repeatable and efficient for other buildings and participants, though some details can

The Dilemmas of the Graduation Project

be improved in the future. The approach is in need to apply in real projects. There are some "self-initiated and community-oriented" practices, such as Urban Synergy's practices in the Netherlands and the Baugruppe model in Germany, where participatory approaches are promoted, and this approach can be applied (Ring, 2016; Urban Synergy, 2022).

Ethical issue

For the data collecting phase, i.e., cognitive mapping, interviewing, and model gaming, several ethical issues are considered in advance. The participants are informed of my identity as a TU Delft student researcher, the collaborator as Atelier Politie Bouw Meester, the purpose of the research, and the content of the research. They are asked for permission to record for academic purposes and have the right to accept it or not. The participants' identities collected, including their addresses and occupations, are hidden from everyone else. I minimise the number of questions to ask to reduce the psychological harm they may cause. Still, the research activities may remind participants of bad memories. Candies and chocolates are prepared for smoothing and gratitude.

Dilemma

The first dilemma is balancing the existing and added values on the façade. In the first phase of the research, I found several attributes on the façade, such as the mahogany entrance. The entrance is a characteristic remembered by many locals. Some think the dark red colour is lovely and works well with bricks. But a new passage replacing such an entrance is also valuable because the new passage connects the historic city lane and opens the courtyard to the community. There are many such dilemmas in the project. To deal with them, I think back to the intention of my project that I want to open up the isolated

block and connect it to the community again. Therefore, social value is the most important criterion in this case. As we know, social value is about people's well-being, sense of belonging/ownership/identity, place attachment, memories, community cohesion, etc. The stakeholder is the locals in this case. Therefore, the key criteria in the case study are what they think is valuable, what elements and materials they appreciate, what functions they need, and what kind of space they enjoy. By answering these questions, the site can be truly activated and become part of the community again. Participation is a good way to know those answers, thus becoming my strategy to tackle this dilemma.

The second dilemma in the project is whether an old police identity representation is valuable. In the conversation with Atelier Politie Bouw Meester, it is argued by the police that the institutional look in blue and white should be totally abandoned because it represents an opposite position of police from citizens. But from the research, away from the abstract ideological representations, locals value the blue colour very much. The project tends to accept what people value instead of what slogans deliver, even if it looks pretty.

The third dilemma the case might have is the conflicting demands between locals and the future residents of the building. The project does not elaborate on this dilemma, but it can be imagined that in a real project where locals do not invest in the redevelopment, it would be hard to

adopt their opinions, especially when their demands conflict with future residents'. To what extent can different stakeholders be balanced? How to weigh their demands and thoughts? I deeply believe it is not only a matter of who invests more, and we need solutions to be put forward in reality.

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