

Stigma and the Built Environment

Growing old in an inclusive environment



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* Front page image made by author

Acknowledgements

During this project I gained a lot more respect for those who are being stigmatized as well as given a new perspective of the world. Firstly, I want to thank my mentors and supervisors [Birgit Jurgenhake](#), [Frederique van Anandel](#) and [Lex van Deudekom](#), as well as [Peter Boerenfijn](#) from [Habion](#). They offered a lot of insight in their field of expertise and their opinions were a big help for the development of me as a person but also of the research.

In addition, I would like to memorize my grandmother, who suffered from dementia and passed away during this project. She was one of my role models and inspired me to analyze this topic. She kept doing what she loved until the end, to enjoy her life and to spend time with her family! One of the reasons I got devoted to this topic was my love for her and what my grandmother stood for as a person. But also, the lack of awareness and ignorance she and her family members had to go through. This pushed me to see how I, as an architect but also as a member of society, can contribute to educating and creating awareness for the elderly and other stigmatized social groups.

Next, I want to thank [Kyra Klein Kranenbarg](#) and [Alexia Marie Lund](#), who also choose [Sparrenheide in Driebergen-Rijsenburg](#) as their design location. Working together on the site analysis, discussing designs or just being there for each other really helped me during this process. I'm not certain if I could have made it without your support.

I want to thank the residents and workers at [Hoeverstaete](#), the elderly home my colleague [Baoky King Yang Huang](#) and I visited during our fieldwork. We want to thank you again for the hospitality and kindness you showed that week, I really felt welcomed and at home by all the activities and the talks we experienced together.

I also want to thank everyone who helped with the research and filled in the survey. It made me emotional to hear and read so many great things and experiences. Lastly, I want to thank my family, friends and fellow students who supported me during this research. They helped me discuss difficult topics and to stimulate ideas, but also made sure that I relaxed once a while.

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Project Description

Project background

This booklet shows the project [Sparrenheide Veld](#), a project about an inclusive environment for elderly.

This graduation project is made for the Dwelling studio [AR3AD110: Designing for Care, towards an inclusive living environment](#) from the Technische Universiteit Delft.

Project description according to the study guide:

“Students will design a housing project that is dedicated to the specific topic of housing the elderly in an inclusive living environment. You will not design an elderly home, but think about new concepts in which everybody may live, and which suit the (care needing) elderly as well.”

The process of the studio

The studio focusses on a human centered approach, with a combination of research and design.

The research assignment is human centred and uses anthropological research methods. Which focuses on research done with observation, participation and/or interviews.

The design assignment involves the design of a housing project and its environment.

At the start the studio focusses on understanding the user group and their situation. The group interacts with the environment with glasses that distort the vision and by sitting in a wheelchair, to get a clear view how elderly with disabilities encounter the world, the Experience of being weak as mentioned in the study guide.

To understand the target group and their demands the studio places couples 5 days and nights at an elderly home of Habion, a housing association that specializes in housing the elderly. This fieldwork helps to study the daily life of these target groups and helps to design and the redevelopment of residential and environmental space.

After the workfields the experiences trigger a topic to further research on. The research will be done next to the design assignment and offers design principles for the design assignment.

The studio gives a couple of design sites after the workfields, so that the topic and focus doesn't come forth out of the design site. The studio offers different types of design sites, two sites were given by Habion and another is situated in the Hague.

Design assignment

The main focus is an inclusive living environment, which means a society in which elderly with and without care demands will be part of the community. The students who choose the same design site work together to make a site analysis and make a sketch-master plan for their site. After that they individually start with design concepts

Fieldwork

I chose this studio because I felt there is a **lack of awareness** for the situation for elderly, especially those battling diseases. I experienced with my grandma that she was being **treated differently** since she got dementia. People acted like she was a different person or that they didn't want to visit or do activities with her because she would forget them anyway.

During our workshop with visual impaired goggles and wheelchairs we experienced the life of a weak elderly. I expected to help during my fieldwork elderly with their daily life and was curious how their lives would be with specific **disabilities**.

I made the assumptions the elderly at the elderly home required help. Being there I experienced a bigger problem namely Stigma. Baoky and I stayed at **Hoeverstaete**, an elderly home in Alkmaar focussing on **independent living** and **care in the background**. During our stay nobody we met required to help, everyone was self-sufficient, some even fitter and more capable in doing things than me. I made an **assumption** that was clearly wrong. We participated with the daily activities and talked with several of the residences.

A **woman of 92**, who recently moved from **The Hague** to live closer to her daughter was sad she **lost all her contacts**. But she did find it important to make new ones in the elderly home.



She found it very important to have a **good relationship** with the other residences as they are part of her new **community** and joined with many of the daily activities.

I asked her how important it was for her to interact with the neighbourhood, but she didn't care about the **neighbourhood** as they are **not part of her living situation** there.

I was surprised by this comment as it made me realise that living in an elderly house could make people lose their contacts and required them to build a new community. But also, the elderly homes could make you feel **excluded** from society or at least not part of the neighbourhood. Not specific by the building or the location, but because of the idea of an elderly home.

During the end of the field work, I was still wondering that I couldn't see anyone that required heavy care, during our talks with the residents I asked about this. They told me there are people who requiring care, but they prefer to stay at their appartements and felt uncomfortable to attend activities downstairs, although they were invited plenty of times.

This made me wonder if it could be because of the care in the background concept? Would they be insecure, or do they feel like they are a burden for the others?

This brought me to my research-topic **Stigma**.



Research / focus group

Stigma

Stigma is a social problem which causes problems in health, social connections, and self-esteem. Stigma is affected by expectations and other evaluations, which is being influenced by the surrounding. Not only people and beliefs can influence stigma, architecture can provide expectations as well as limiting or give access to information or functions towards specific stigmatic groups. Architecture defines the context in which social events take place and how care and social systems are organized, meaning that it shapes the experience with the stigmatized group.

Stigma and assumptions over past care concepts influence care giving and age-exclusion, which create a misconception of the current state of care facilities. This misconception limits the possibility of an inclusive built environment for the elderly. The perception of age differs for each individual, culture, country and gender.

Using thematic analysis 5 key design elements were discovered to decrease stigma using the built environment, namely by creating a positive or similar value as the surrounding, through empowering the stigmatized group, by providing the necessary needs and desires for the individual, by creating communities and by facilitating awareness.

Research has indicated that knowing or having contact with the stigmatized target group reduces stigma. To fight against self-stigma, it's important to empower the people and accept them as individuals. By providing functions to help people see what they are capable and by focusing on equality. It's important to be honest and acknowledge the situation, by hiding or avoiding specific characteristics the stigmatized group can feel excluded.

It is important to understand that stigma is a socially constructed concept, which involves what is defined as normal (Robinson & Thompson, 1999). The normalization principle tries to make everyday living conditions available to all people as close as possible to regular circumstances of society and ways of life (Nirje, 1985).

The normalization principles consider two key principles to reinforce normalization through architecture:

1. By creating a situation for all members of society that is as close as possible to societal norms, and
2. By balancing the negative value with neutral and positive value.



The Elderly

There are many different groups that are being stigmatized for **specific characteristics**, like gender, race, sexual orientation, health problems and age.

The focus of this project is on the stigmatized group of **elderly**. All the people **above the age of 65+** are considered part of the elderly. But why is it important to lower stigma of the older adult age group? The older adult age group is the only stigmatized group that **every person will join**, assuming a non-premature death, and it is likely to include the people whom we love and care about. It's important to lower stigma, because stigma can cause problems in **health, social relationships, self-esteem** and hope. It affects **the attitudes** of the stigmatizing person, the stigmatized person as well as the people in their surroundings (Robinson & Thompson, 1999; Borenstein, 2020).

Stigma can form in three ways. **Public stigma** is discriminatory behaviour of others. **Institutional stigma** is caused by government and/or organizations that intentionally or unintentionally limit the stigmatized group, for example inaccurate or misleading media. The last type is **self-stigma**, in which a person creates negative attitudes towards their own condition. Stigma can cause people to not find solutions for or ignore their problems, because they might be **associated** with old age or even associate themselves with being old.

The older adults with behavioural health problems must deal with a double stigma, **a stigma of old age** and a **stigma of health problems**. But these two are being sadly associated with each other. Age is an indicator of old age, but people associate potential markers, like **failing health, memory loss** and **inability to drive** to old age as well. An example is my grandma with hearing problems. She did not want a hearing aid, because she isn't old. She remained silent, keeping a problem that could have easily been fixed with the use of a medical device. The stigma of elderly is based on a **stereotypic kind view**. This makes people believe that elderly have health problems even though this is not the case for most.

Most of the elderly live **independently** and **experience no burden or physical limitations**. But it is true that the older a person gets the chances on diseases increase.

To analyze the elderly further it's better to segment them again, for example again by age, education level, personality and/or healthcare requirements. These segments will show how diverse the needs and desires are for the elderly based on different aspects. It can be noted that the elderly is a very diverse group and grows to be more diverse with the increase of different lifestyles, with each individual having other preferences and needs.



THE INDEPENDENT ELDERLY: (48,7%)

requires no specific care but might need guidance and information to maintain their active lifestyle.

- Maintaining current health, spirit, and functional ability
- Live independently at home

THE ACTIVITY DEFICIT: (41,5%)

requires care/aid with specific tasks and to foster a meaningful life but they can manage their own life. Needs become more focused on particular health problems; they require services in close proximity.

*Examples of health problems:
Loss of balance, mobility difficulties, loneliness, depression, hearing and vision loss*

- Maintain current health
- Having substance to life

THE FRAIL: (9,8%)

requires help with managing their life and needs specific care. They need support with daily tasks and activities, service to treat diseases. The frail has more diseases that are limiting daily activities. It's most important that health care services are in proximity to the home

Dependent of others for mobility, have heavy disabilities like: Parkinson, Multi-infarct cerebrovascular disease or far developed dementia

- Managing diseases without being hospitalized:
- Substance in their life



Preferences of the majority of elderly (Jong et al. 2012):

- To stay put
- Mixed neighbourhood
- Close by to amenities
- Living room, kitchen, bedroom, and bath on one floor
- Rental with less mantances
- Accessible by elevator



Choice of location

We were given three design plots to choose from. Two locations were decided by Habion, and another was inside Den Haag.

CID

The first location was Central Innovation District (CID), it's the economic heart of Den Haag. The area is known for its economical and urban developments and provides work for almost 80,000 people and 23,000 homes. It's situated between and around the stations The Hague Central, Hollands Spoor and Laan van NOI. There is not a specific plot given and the options are endless.

Sparrenheide

The second location was Sparrenheide, an elderly home from Habion and Silverein in Driebergen. Driebergen is a small village in Utrecht, next to the utrechtse heuvelrug. The elderly complex is situated at the border of the village in a forest environment, a peaceful location surrounded by nature.

110 Morgen

The last option was an empty plot in 110 Morgen, a neighbourhood in Rotterdam. It's a post-war working-class district consisting of low-rise flats and single-family houses with public greenery. Close to the plot are different shops and functions like a pharmacy, dentist. Above the plot is the house of the Neighbourhood Arcadia, which organizes different events and activities for the neighbourhood.

Choice of design location

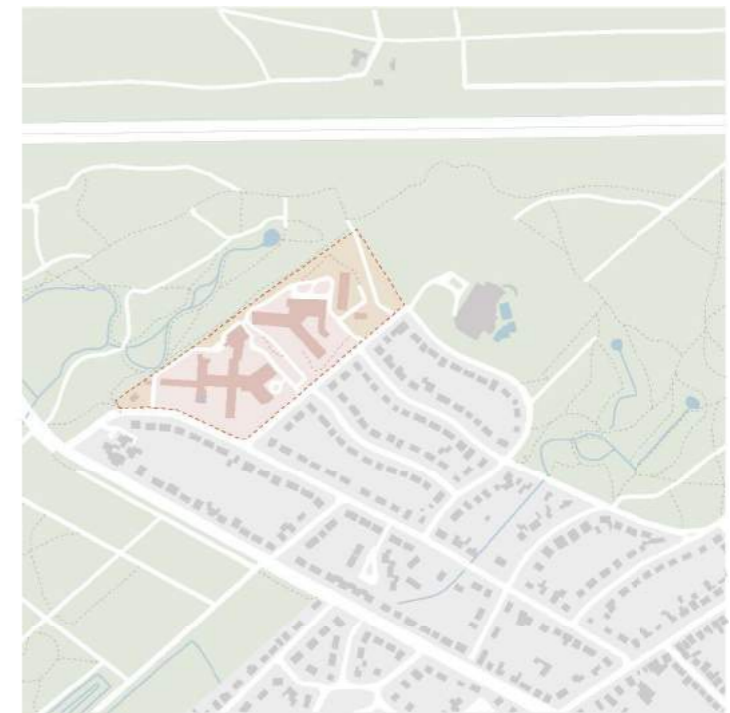
Because of my focus on stigma I decided on Sparrenheide veld. This is the only project already with an elderly home, as well as a location that is similar to the stigmatised nursing homes of the past.

Sparrenheide is an institutional building which has shown to increase stigmatic behaviour. By choosing this location I can compare my design with the existing design to see if it is less or more stigmatizing than the current design.

Location 1: CID Den Haag



Location 2: Sparrenheide / Nassau Odijkhof Driebergen



Location 3: 110 Morgen Hillegersberg Rotterdam



Location analyse

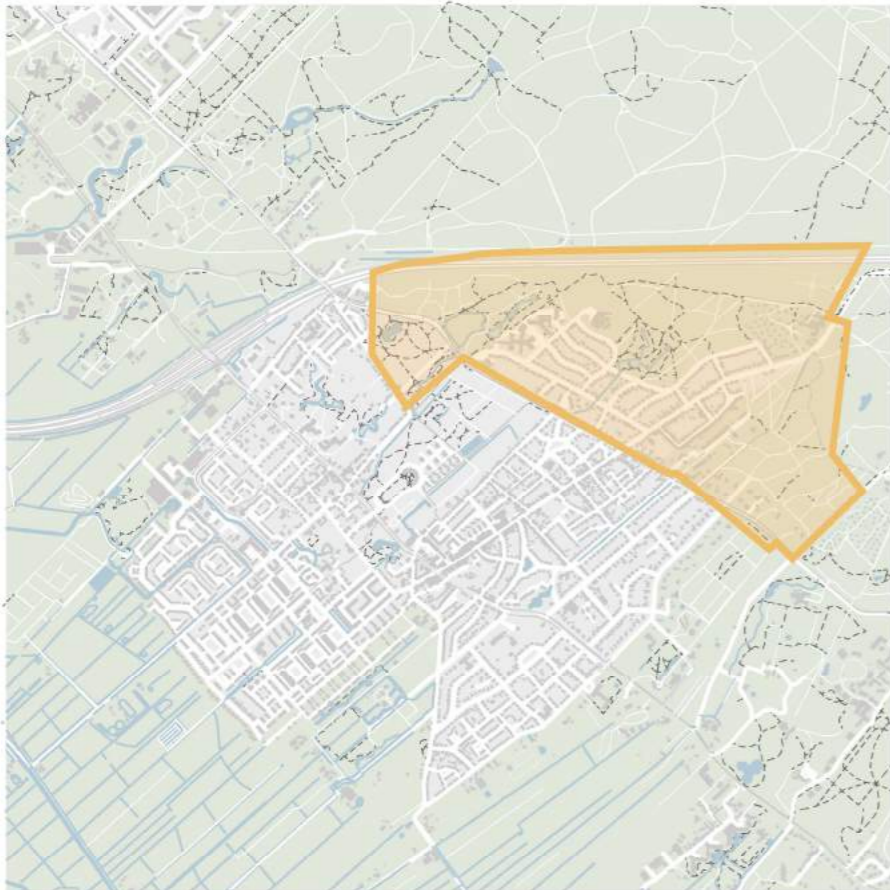
Driebergen-Rijsenburg

I decided on the location Driebergen Rijsenburg as the plot shows an elderly home concept that is being outdated and has a stigmatic appearance that many nursing homes have/had.

The next action in the process was location analysis. The location analysis is made in a group of those who chose the same location. Driebergen-Rijsenburg was analyzed by Alexia, Kyra, and me.

We researched multiple topics, and I would like to point out a couple of aspects that influenced my design. We researched Driebergen-Noord in general, the history of the village, the demographic of the area and the natural influences.

(1.3) Driebergen-Noord



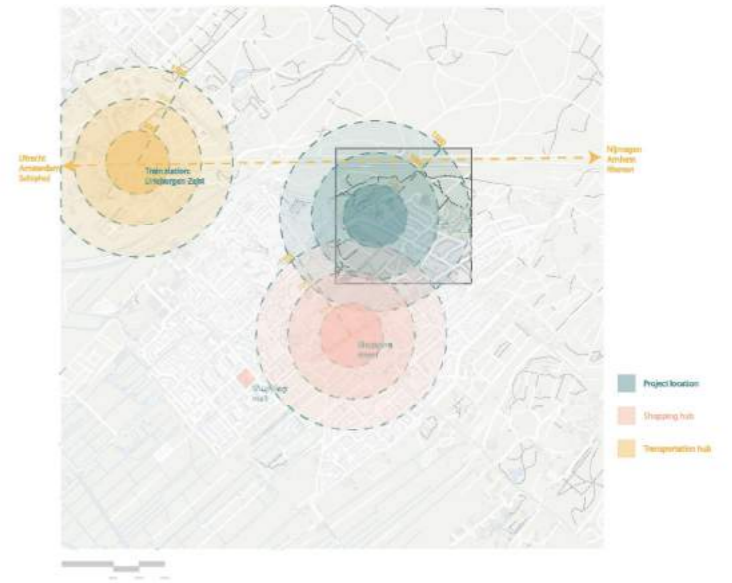
The village is well connected with a train station and the Highway going through the village. It has one main shopping center, which is positioned in the historical center of the village. The project plot is in Driebergen-Noord, a neighborhood on the North side of Driebergen-Rijsenburg. It is at the outskirts of the village, connected to the Utrechtse Heuvelrug, which gives it a natural and green landscape. The plot is on the outskirts of the village in between the shopping center and the train station. But the distance is just too far to walk for elderly, as it is more than 1500 meters away.

Driebergen-Rijsenburg origin comes forth of the arable land and started as a shepherding village named Driebergen. Later, with the construction of the train station the village grew with country estates. In 1920 Villa Sparrenheide was built on the plot's location, in the middle of nature. A bit excluded from the neighborhood at the outskirts of the forest. The villages grew bigger and bigger and, in the end, connecting the two cities together and locating Villa Sparrenheide next to the new neighborhood. During the world war the villa was occupied by Germans and after the war the villa was reformed to a school. In 1969 the villa was replaced for an elderly center, which it remained until now. The village has a strong history which can be seen in the different areas and their corresponding architecture.

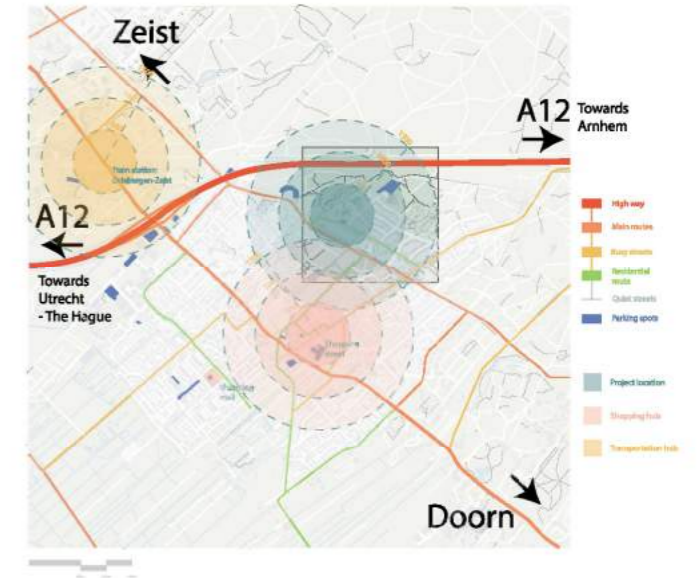
(2.2) Development



(4.4) Public transport acces



(1.6) Accesibility by car



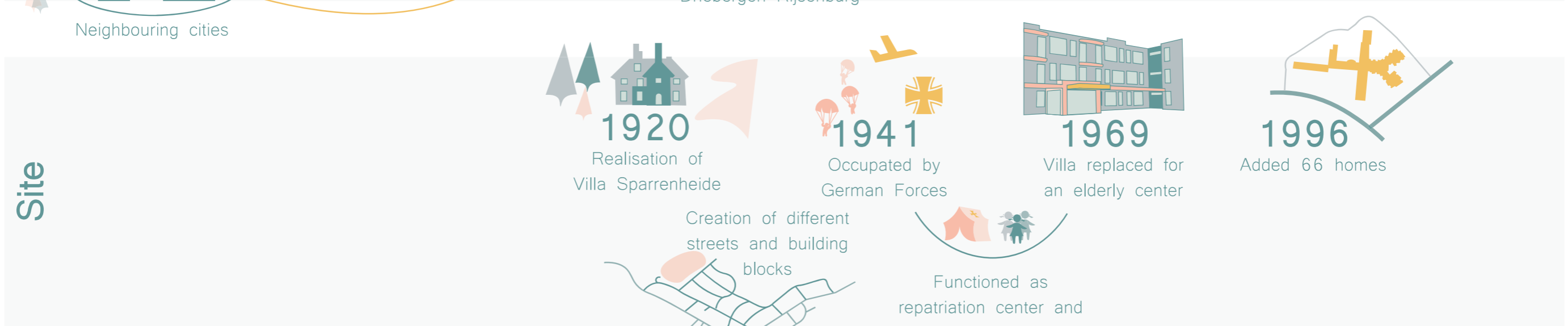
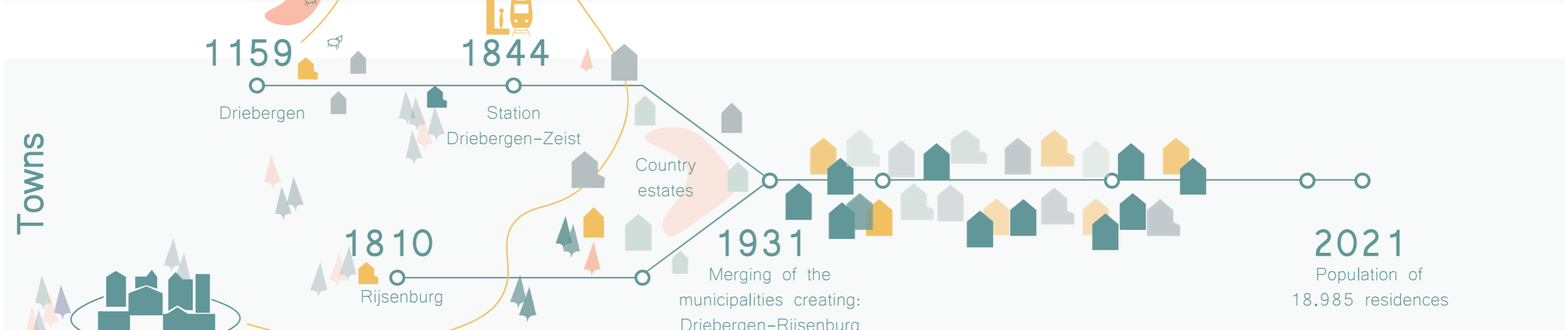
(1.5) Accesibility



(2.1) History

Utrechtse heuvelrug

Protecting and sustaining local wildlife



Typologies of pre-war

A (Pre-war) village area Rijsenburg

Eclectic style
culture-historic towncenter
with the Catholic church

materials used:

- bricks
- white plaster
- (clay) roof tiles



B (Pre-war) village area Driebergen

Big variation of housingtypes
- working-class homes (arbeidershuizen)
- mansions (herenhuizen)
- villa's

The houses have mostly closed facades
in the center, but at the outskirts the
homes have small front yards separating
the front with the street

materials used:

- bricks
- white plaster
- (clay) roof tiles



C Country Estates 19th-20th century

Big variation of architecture styles
(Semi-)Detached homes with big gardens
all around the building.

materials used:

- bricks
- wood
- plaster
- (clay) roof tiles



Typologies of the villa area

Different (semi-)detached homes on avenues.

The residential areas are made of a need for building plots.

The designs are made in consideration of the landscape.

In the area different architectural styles can be noticed:

- The Hague school (Haagse school) and Delftse school (1930)
- Eclectisme (1900's)
- The Amsterdamse school (Haagse school from 1930)

In the most north part (at Driebergse Bos), which is build after 1920.

While this area doesn't possess a dominant architectural style,

it has mostly larger plots with sturdy sized houses in a forest surrounding.

materials used:

- bricks
- wood
- (clay) roof tiles

D



E



Typologies of post-war

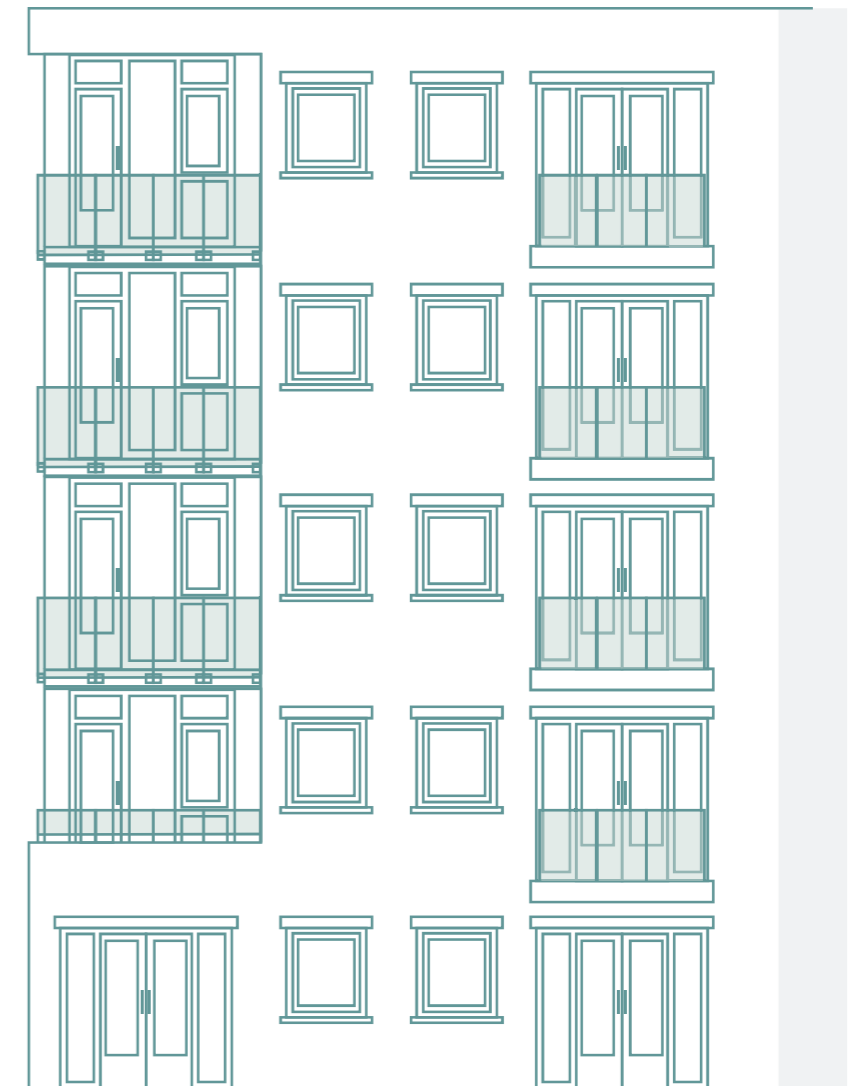
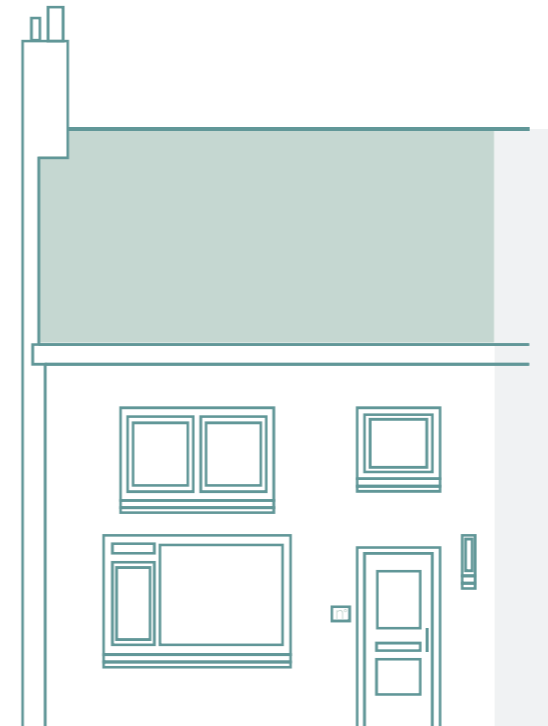
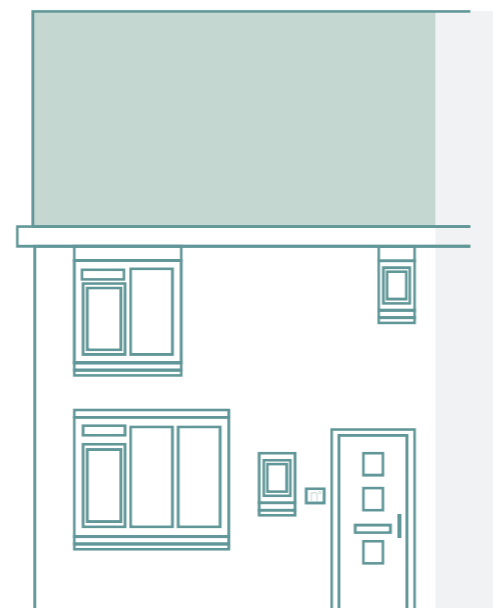
Focused on the housing expansion:
the use of appartement complexes, bungalows
and terraced house (rijtjes woning)

The buildings have characteristic
flatroofs or saddleback roofs.

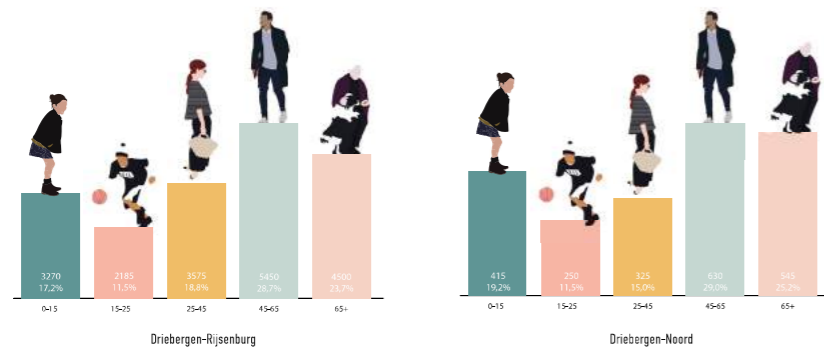
When they have gardens they have small front
and moderate back gardens, with limited
to no space between building plots.

materials used:

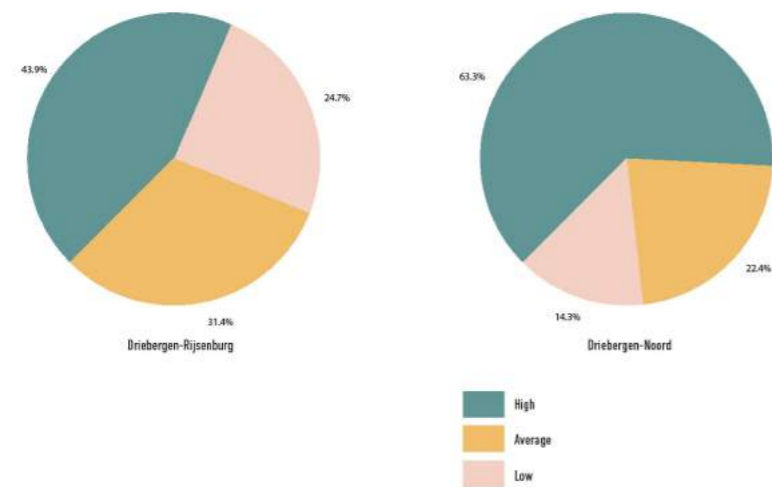
- bricks
- wood
- (clay) roof tiles



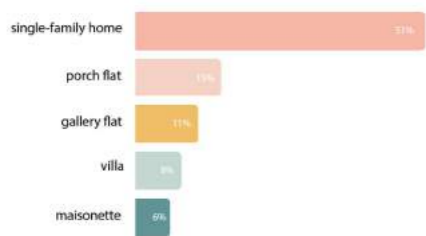
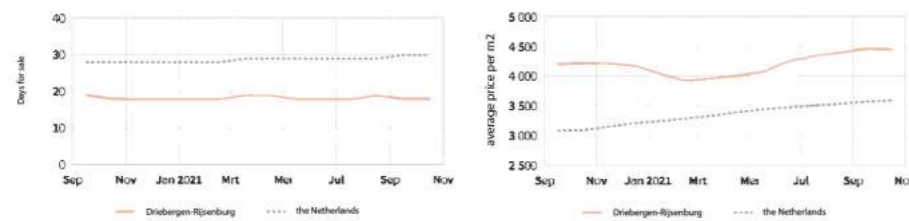
(3.1) Age distribution



(3.3) Level of education



(3.7) Housing market



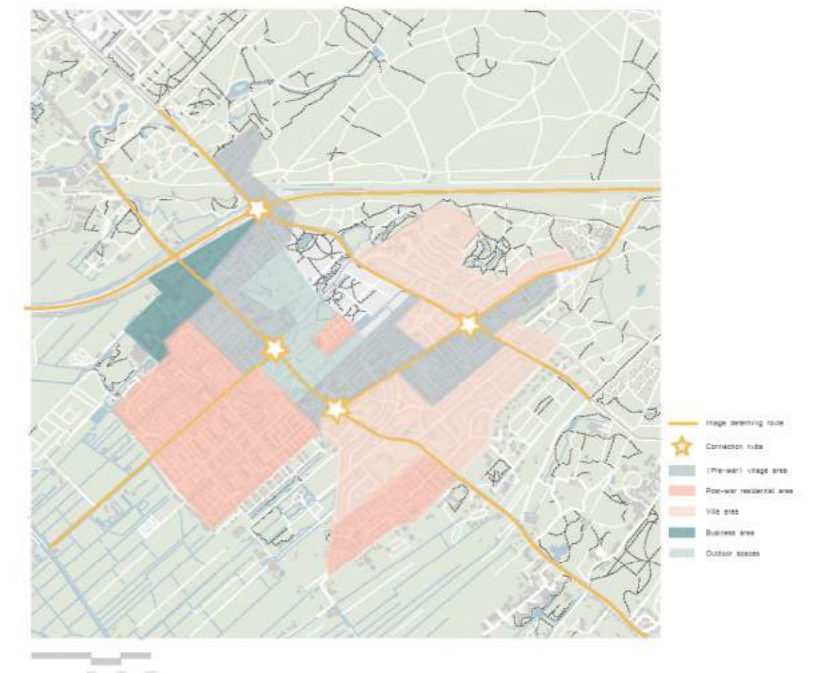
Driebergen-Rijsenburg has five different building typologies which focus on the period or the functionality of the area. Driebergen has a center separated by green spaces with country estates, with the center containing classical pre-war village architecture. In the east side close to the trainstation is a business area with more modern architecture, but the majority of Driebergen consists of Post-war residences and villa areas.

The main building type in Driebergen-Rijsenburg are family homes. The neighborhood of the plot is situated in a villa area, which consist mostly of semi-detached family homes with large gardens fitting for the forest surrounding. It can be noted that the housing market of Driebergen-Rijsenburg is very wanted, as many houses have a short sale period with a high price compared to the general housing market of the Netherlands.

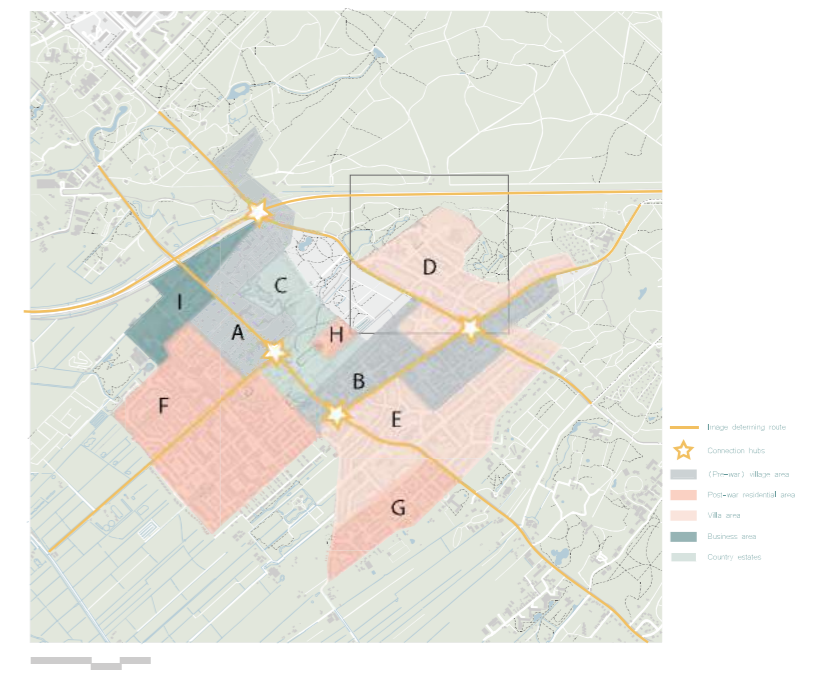
The villa area is gives residence to a diversity of ages and high educated people. Driebergen North has a bigger percentage of elderly than the rest of Driebergen-Rijsenburg but has similar amount of family households.

Most buildings in the area are around 3 floors, between 10 or 12 meters of height. Because of the protected forest and the area being in the outskirts of the town the plot almost has no effect of urban heat island effect and gives the area a cooler atmosphere. The risk is in the noise pollution of the highway, but the small forest in between the project plot gives protection and should be preserved for this function and the recreation it provides.

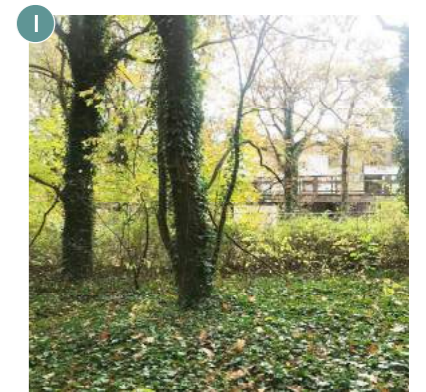
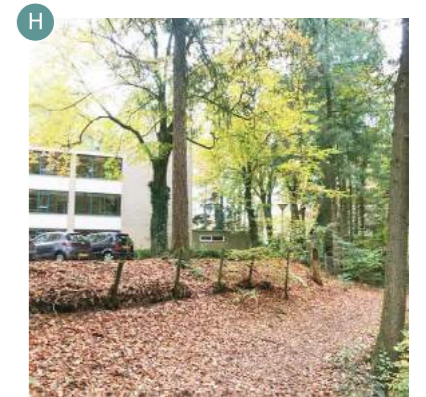
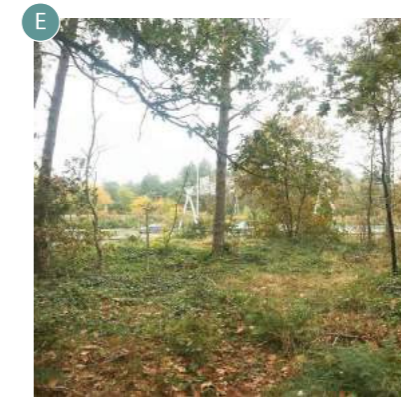
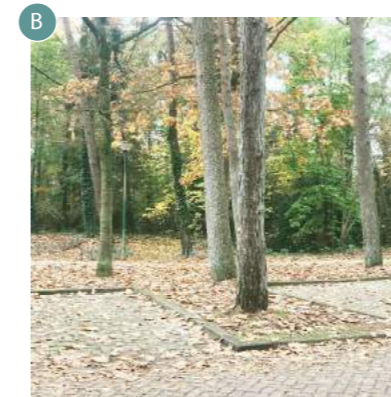
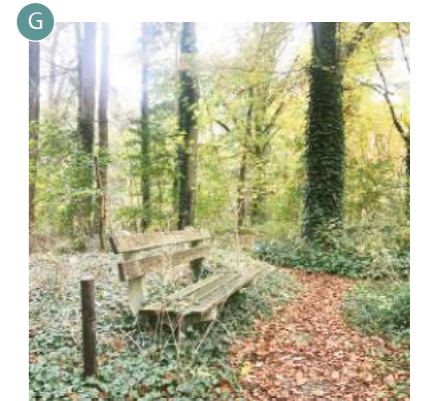
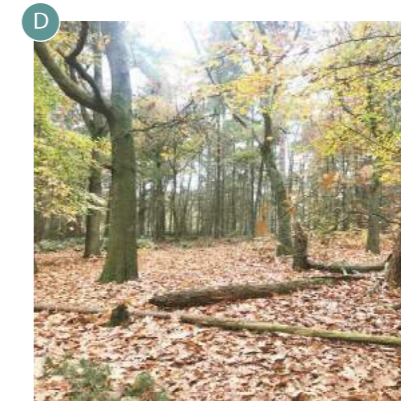
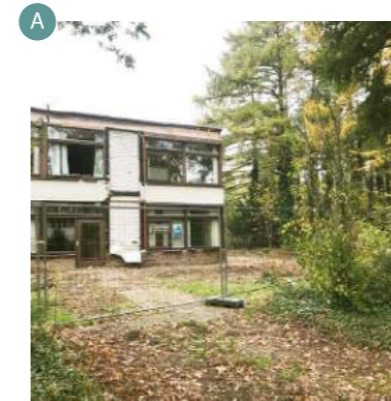
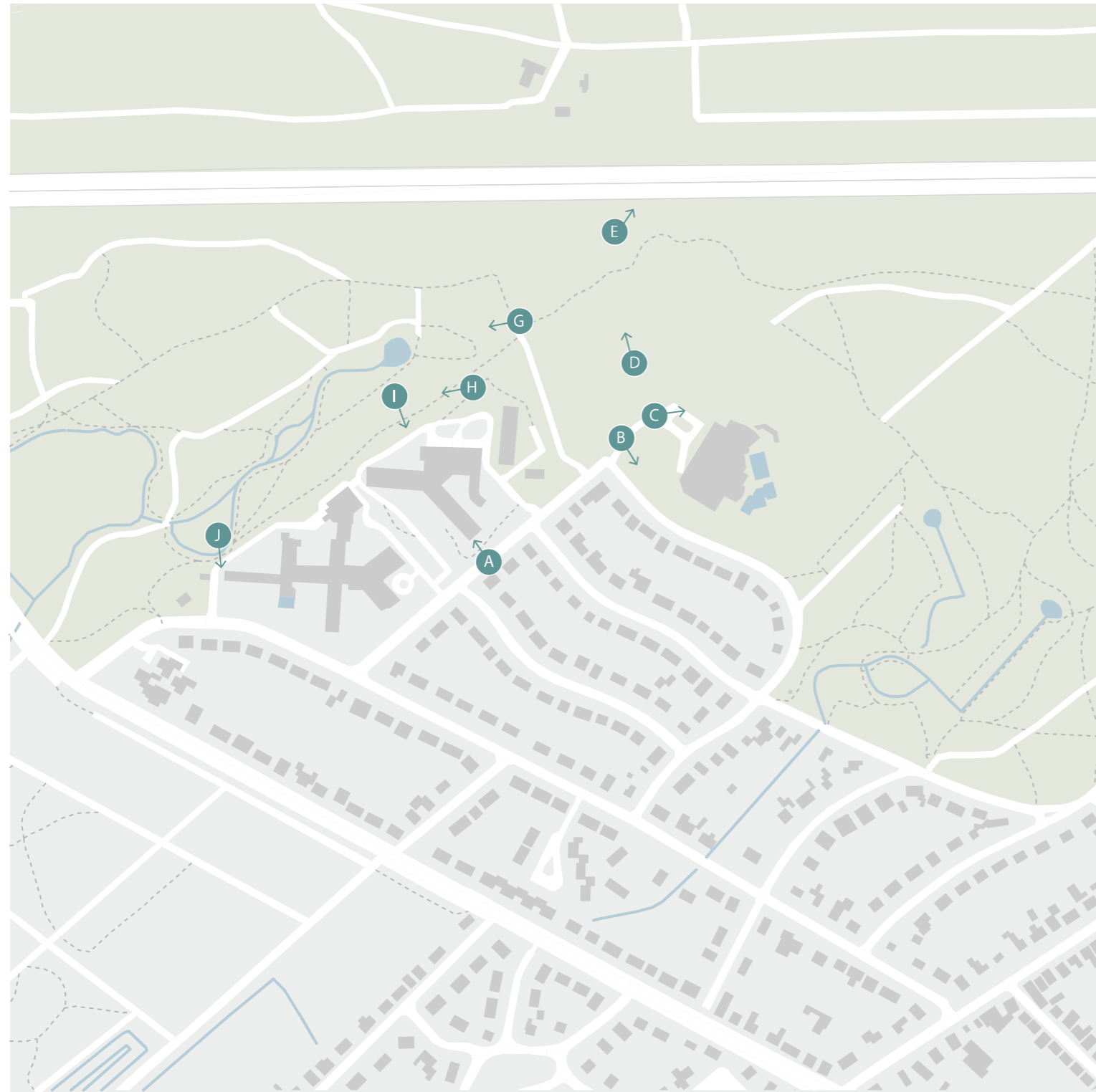
(2.3) Building Period



(2.6) Typologies



(1.4) Site-impresion



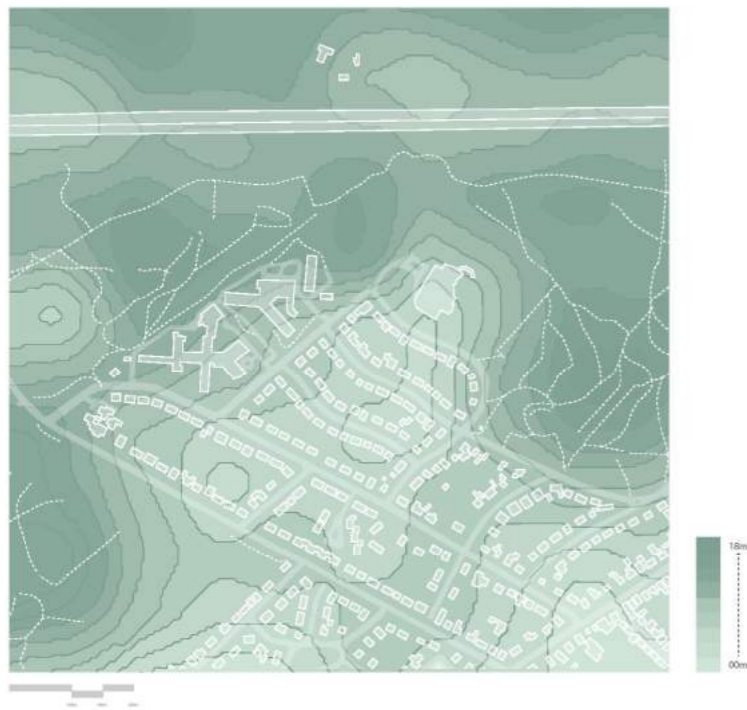
(4.1) Building Heights



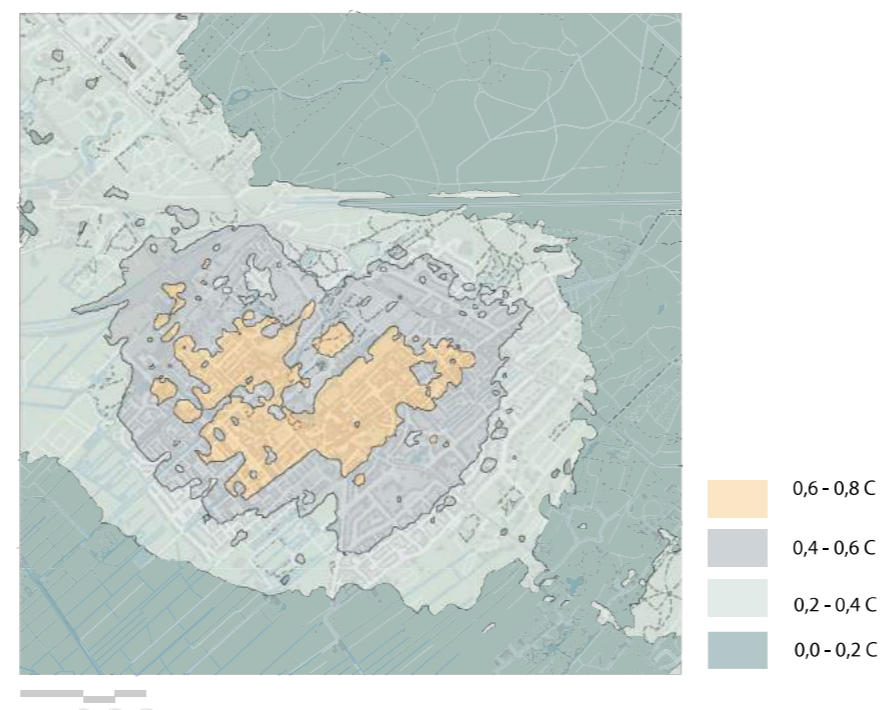
(4.2) Green zones and parks



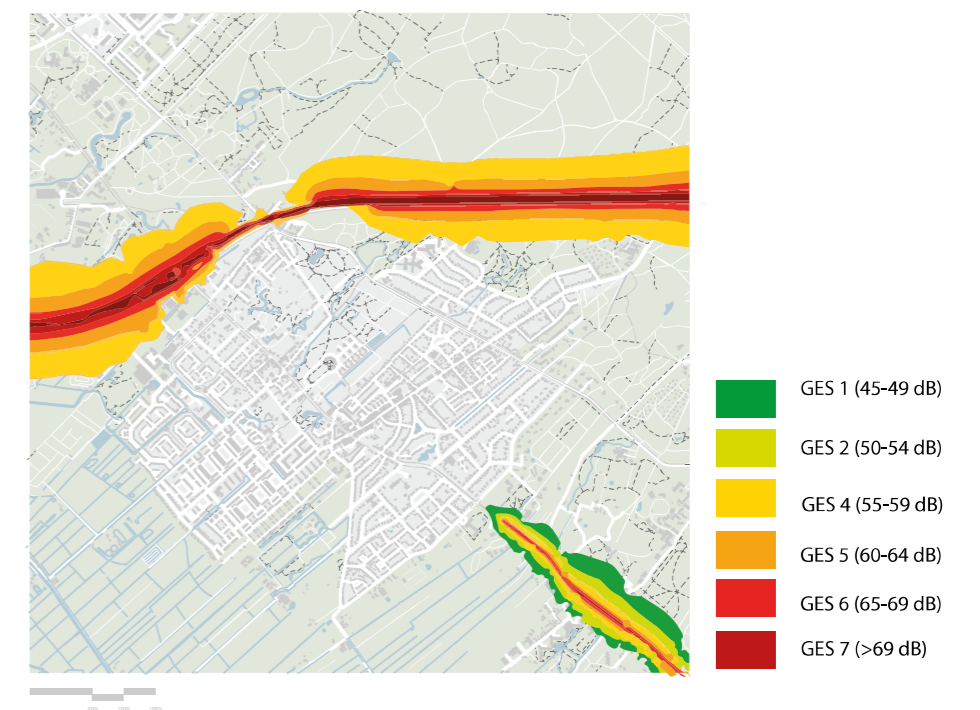
(5.5) Topography



(5.1) Urban Heat Island Effect



(5.2) Noise

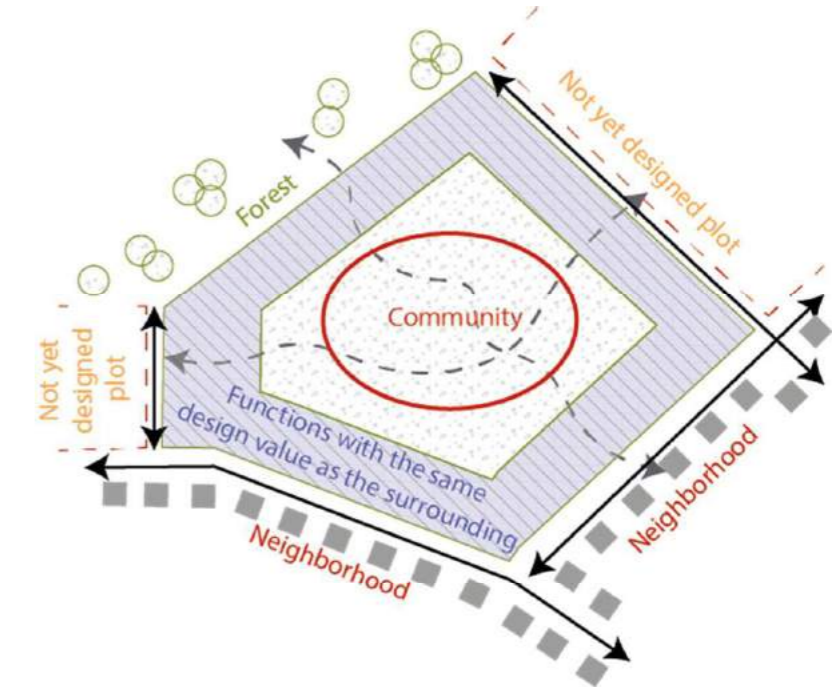
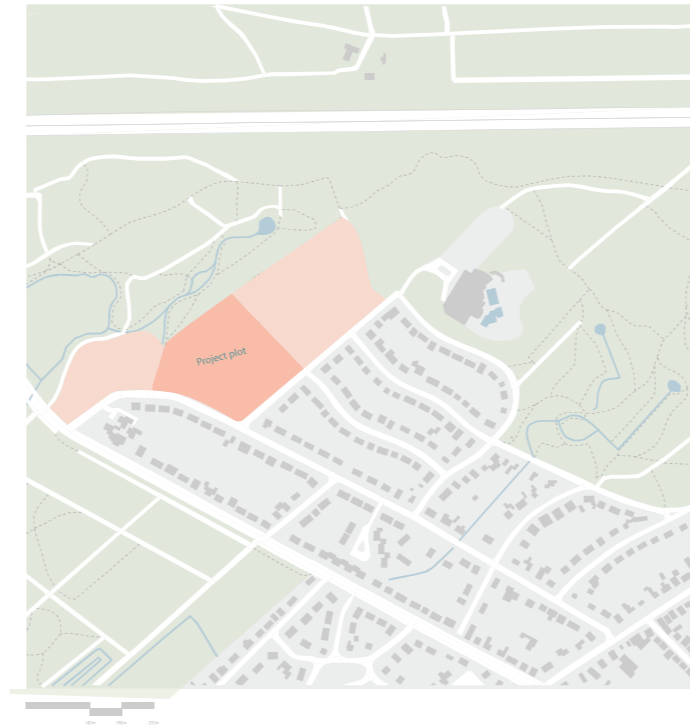


Progress of Concepts

We decided to split the space up in three areas, one for each member. I took the middle plot which offers a closer connection between the center and the neighborhood, while keeping a direct connection with the forest.

Stigma is a social problem, which makes community an important aspect of the design. The main concept is a community space in the middle of the project surrounded by functions and facilities designed with the same value as the surrounding. By creating different roads through the plot, the community will be connected with the neighborhood and grants better access for everyone to enter the area.

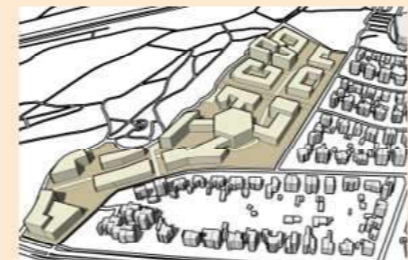
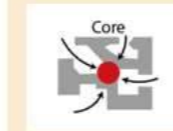
During this year I tried multiple concepts, as there is not one way to solve the problem architecturally. At first, I made three concepts focusing on different ways to interact with community. One was too institutional, just like the original building I combined the other two concepts into one design. This however felt to excluding as the buildings and gardens acted like a barrier towards the neighborhood.



Design process:

Three extreme design situations

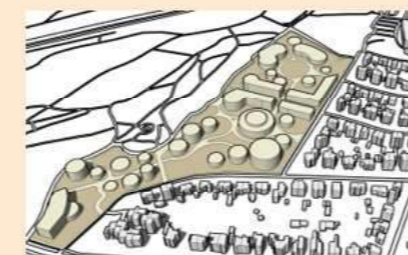
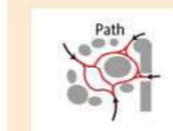
- x Too institutional
- x Doesn't fit the surrounding
- ✓ Protected against elements



- ✓ Open square for public interactions
- x Too urban



- ✓ Provides different paths and options
- x Organic shapes while surrounding is geometric



Combining wanted factors

Concept 1: Sparrenveld



Design flaw: It is excluding the forest and neighborhood

Opposite of exclusive

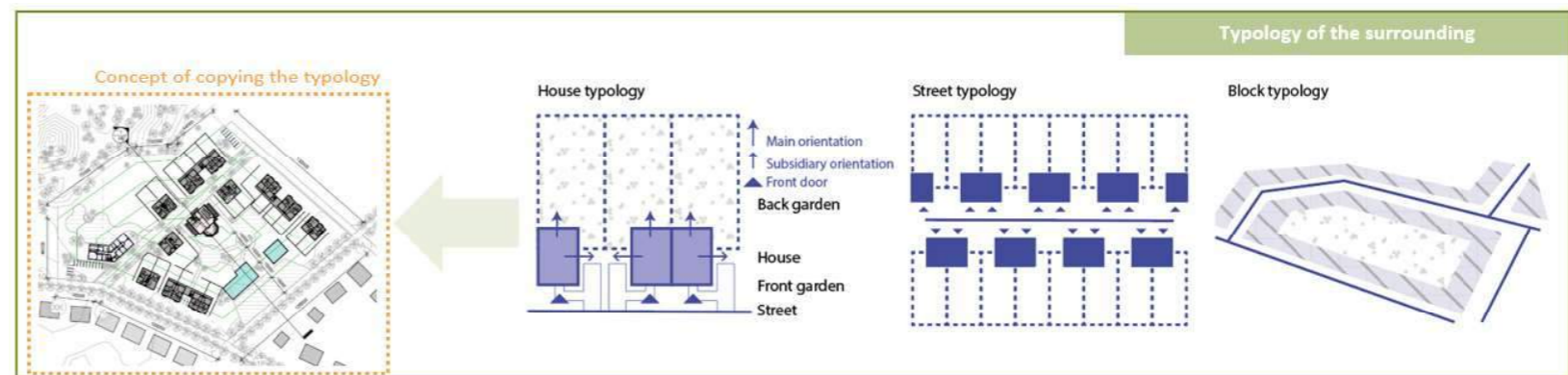
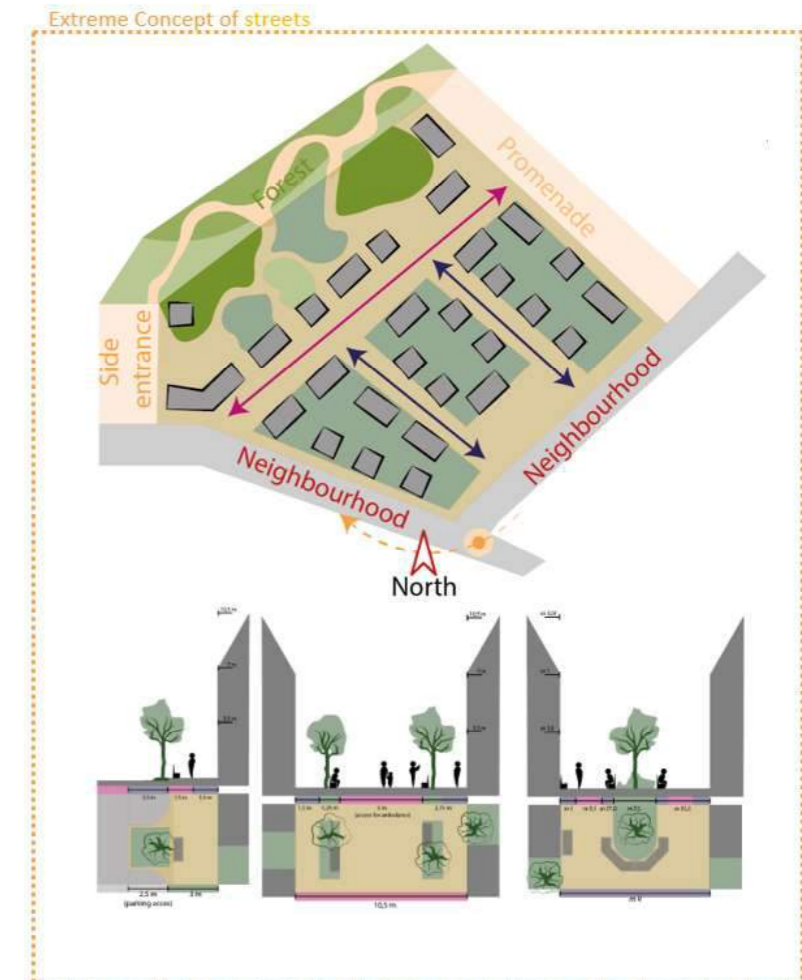
Open

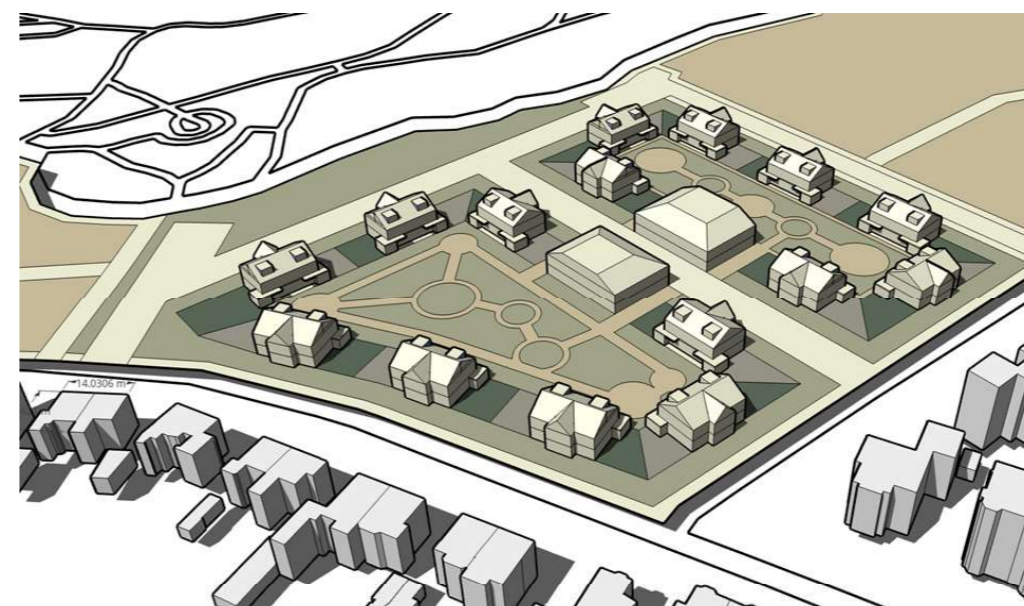
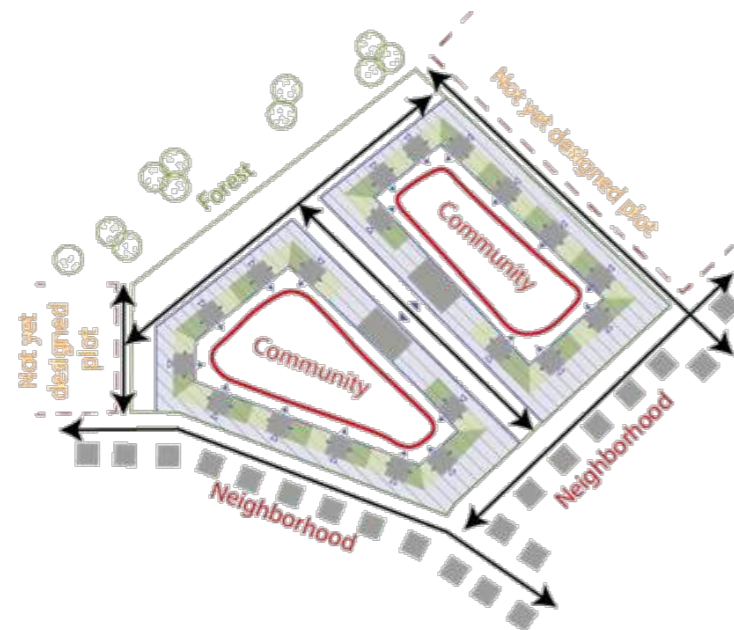
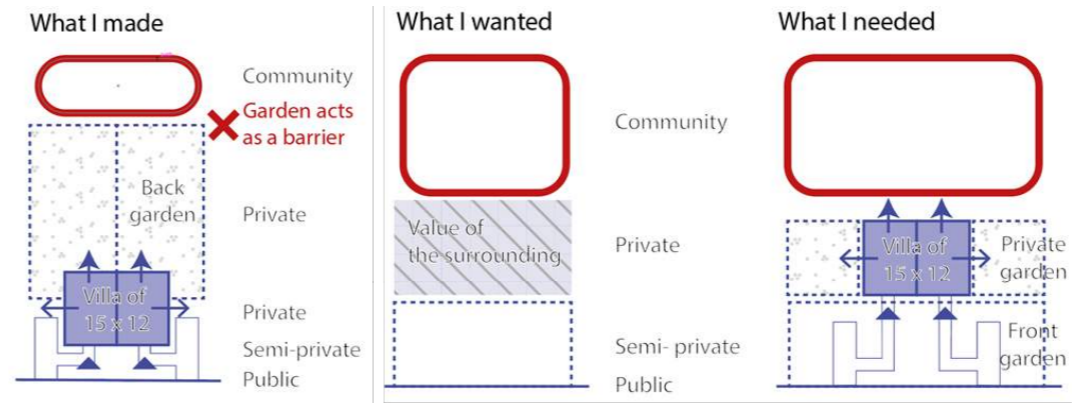
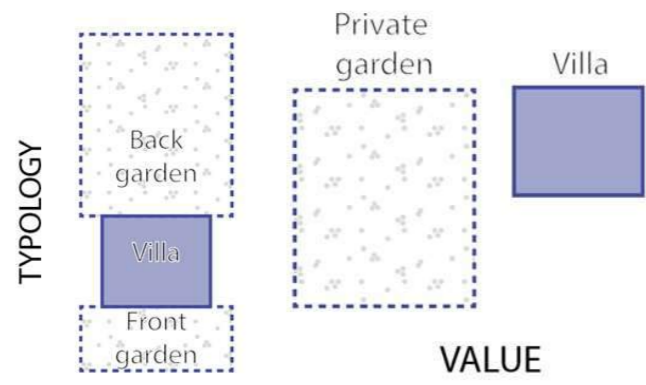
I tried different designs to come to new ideas. With a more open plan, with one building in the center. This put the focus of the plan towards one structure, prioritizing one function. Until now I created squares with the entrances of the residents towards the square. This however created an excluding feeling towards the rest of the neighborhood.

My next concept focused on the typology of the surrounding, which consist of a street typology. I made a design but got a mistake in scale, which created to small gardens for daylight and greenery. I got lost with the design process as I wanted to keep the housing typology inside the project and made a design that possessed no connection between the buildings.

I had the idea that the typology of the neighborhood was the value, but this created a border between the community space I wanted and the residential value I required.

With the help of my other students, I came towards a solution and a rediscovery of my goal. I created a new concept but the big open space in the middle would decrease the social cohesion, to solve this I split the plot into two parts creating two different community spaces. and my final concept was born.





FINAL DESIGN



Masterplan

SWOT analyse

By analysing the plot, the architecture of the surrounding and the location the design options are endless. The true strength of the plot is in the spacious surrounding and the quiet character. Which gives a lot of opportunities and options for the design.

The weakness is certainly the lack of facilities and the connection with public transport. To go against this the new design requires new busstops and a couple of public functions and facilities.

The threat for the design is that it can feel excluded because of the location, as its at the border of the village.

By analysing the architecture it became clear that the existing building is far too different from the surrounding volumes, creating a barrier between the neighbourhood and the elderly home. Something more closely related to the surrounding architecture would help feel the project more inclusive.

Strenghts:

- Spacious
- Quiet, forest character
- Direct connection with nature

Weakness:

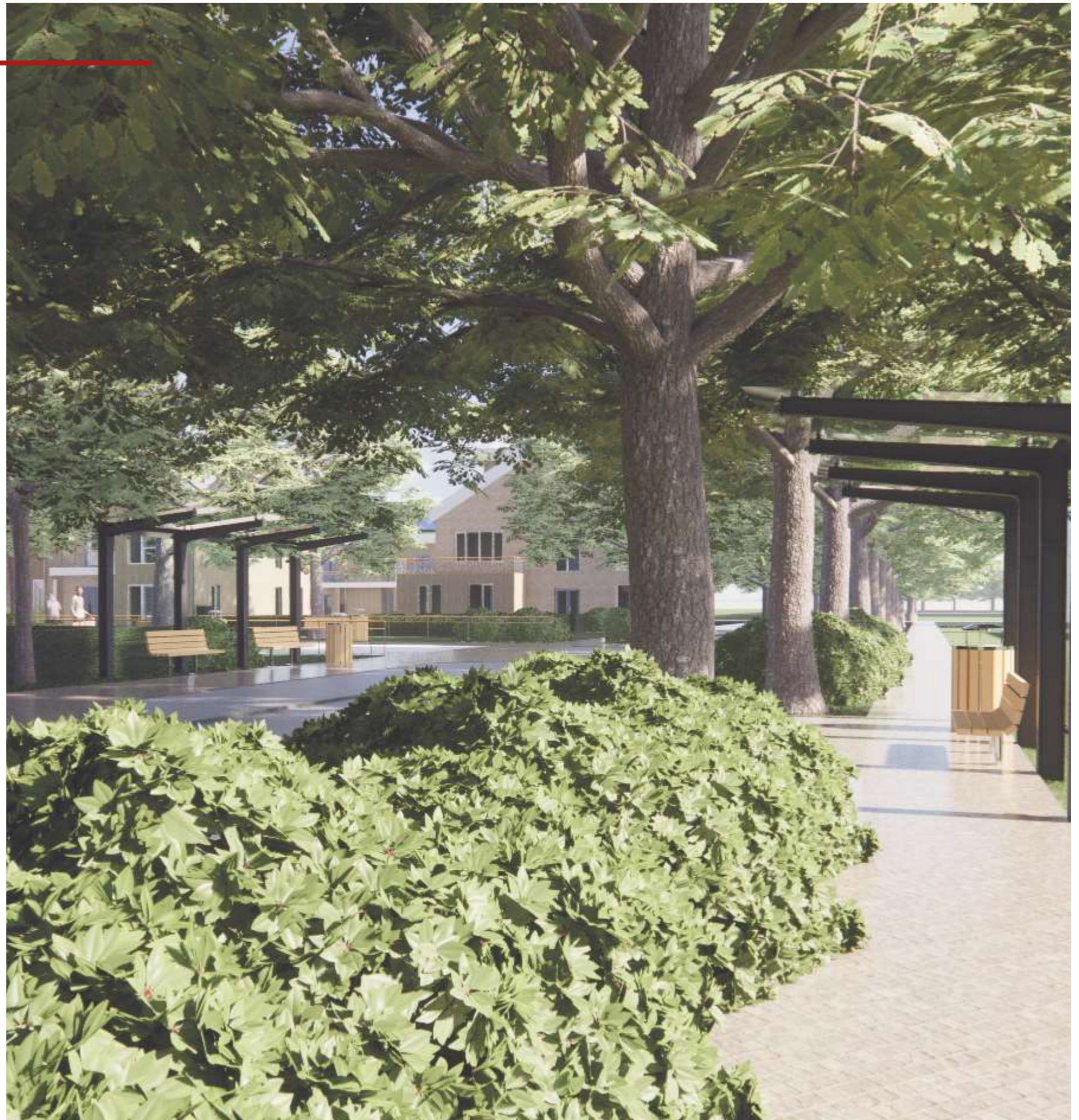
- Institutional appearance
- No facilities nearby in a 2500 m ratio
- Not an optimal connection with public transport

Opportunity:

- Big space with nice viewpoints
- Open for many possibilities

Threat:

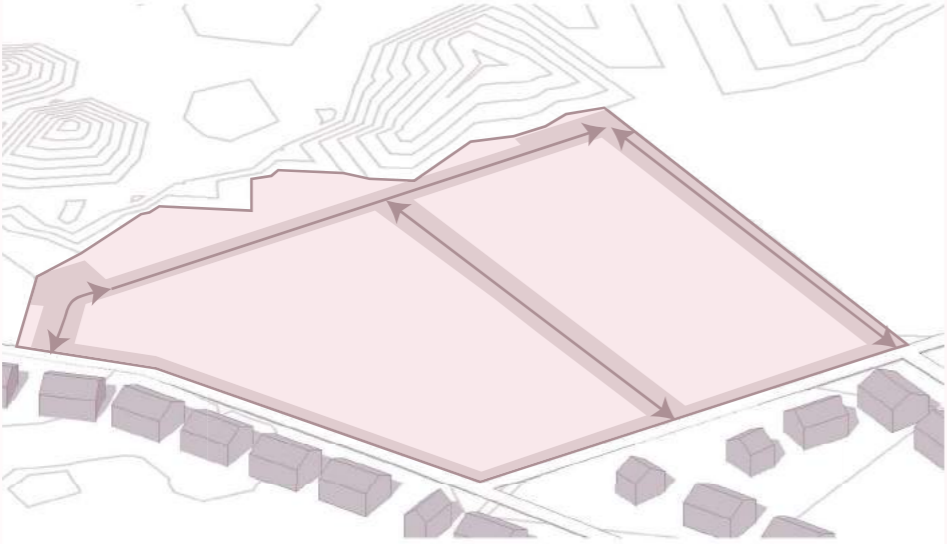
- Exclusion of the area





Design process

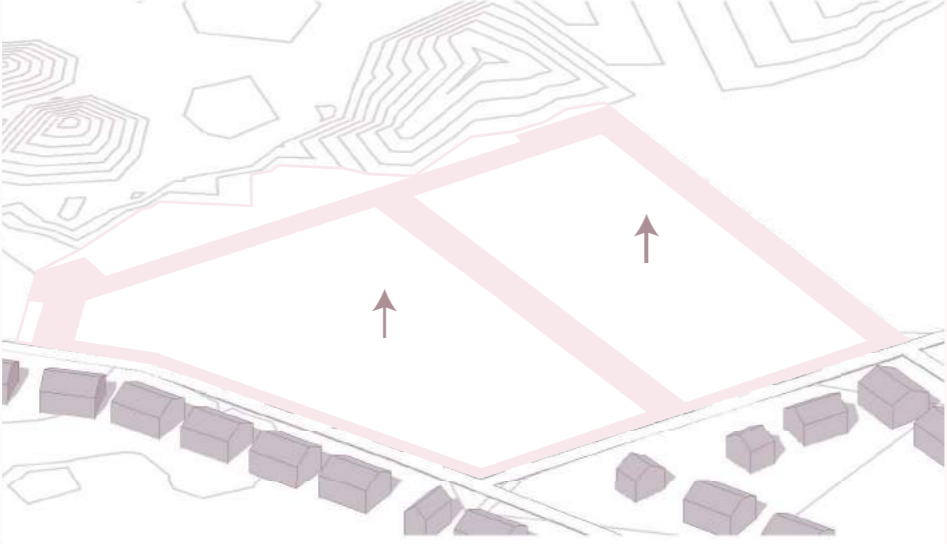
Plot access



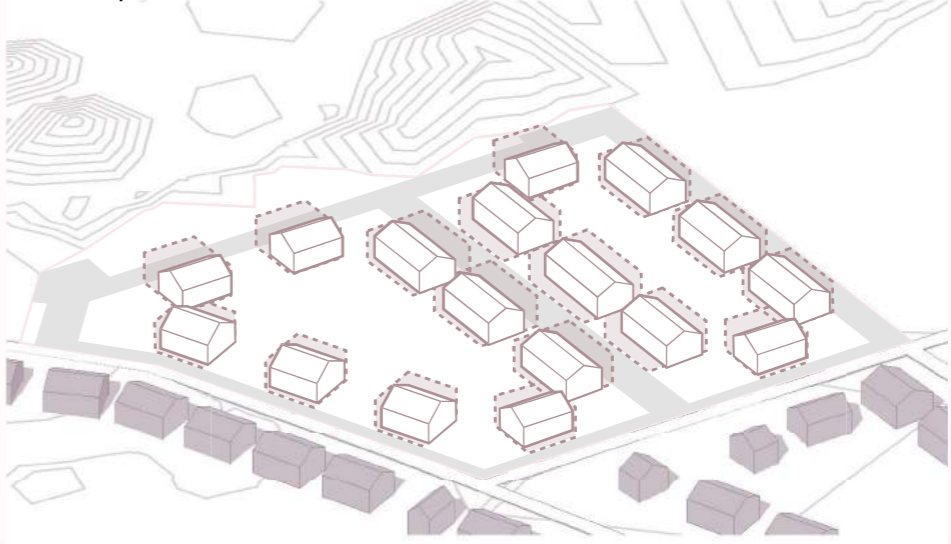
Building sizes



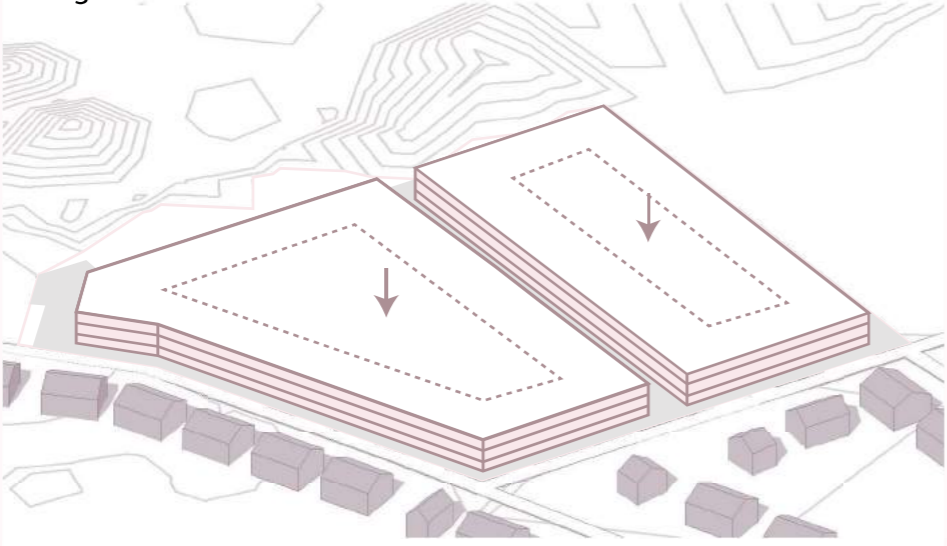
Volume



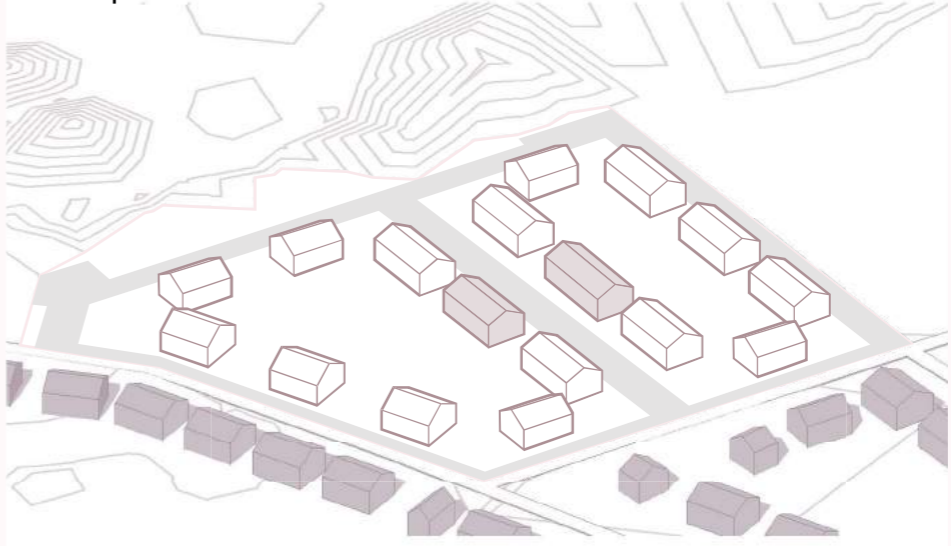
Shape



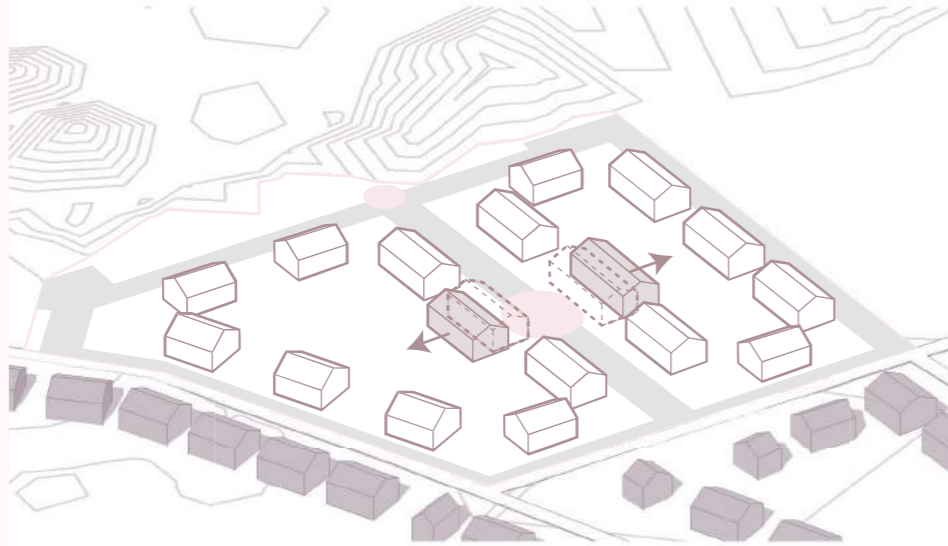
Light



Empowerment



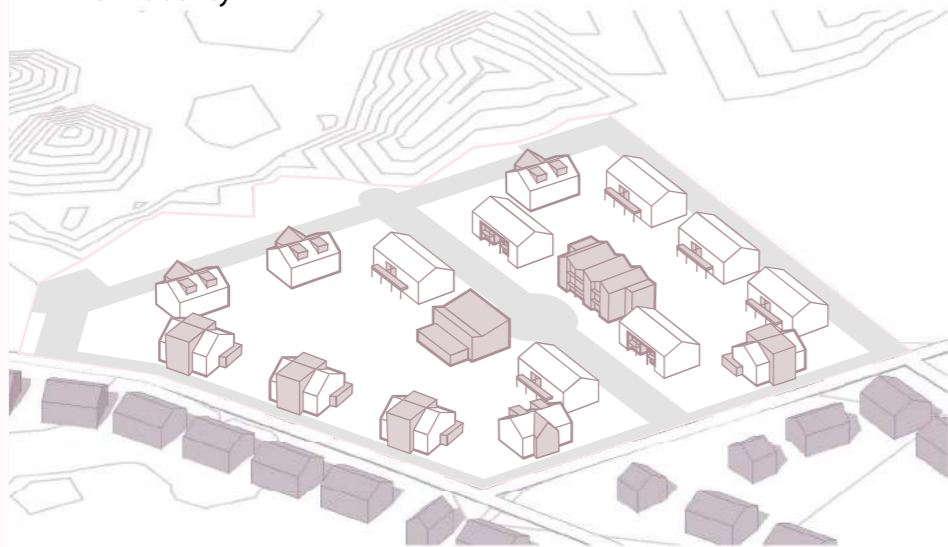
Awareness



Streetscape



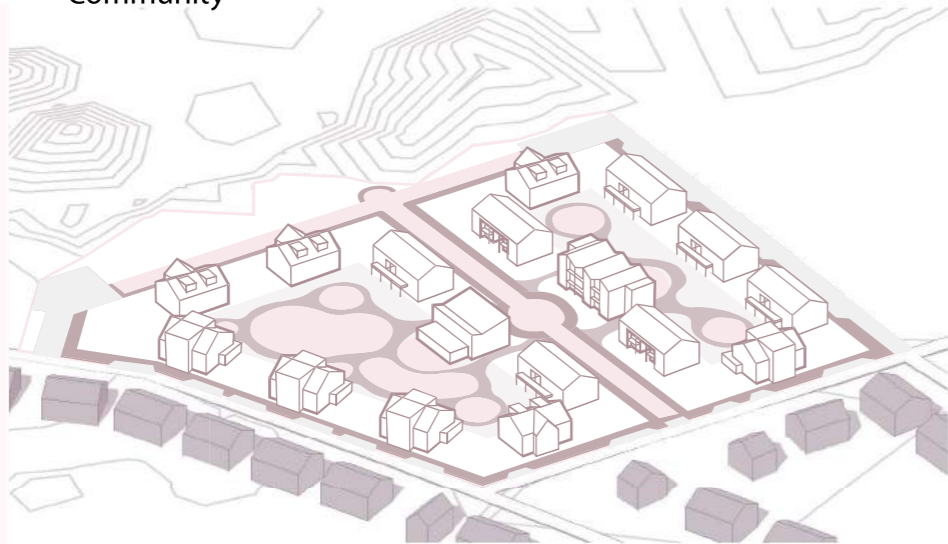
Individuality



Materiality



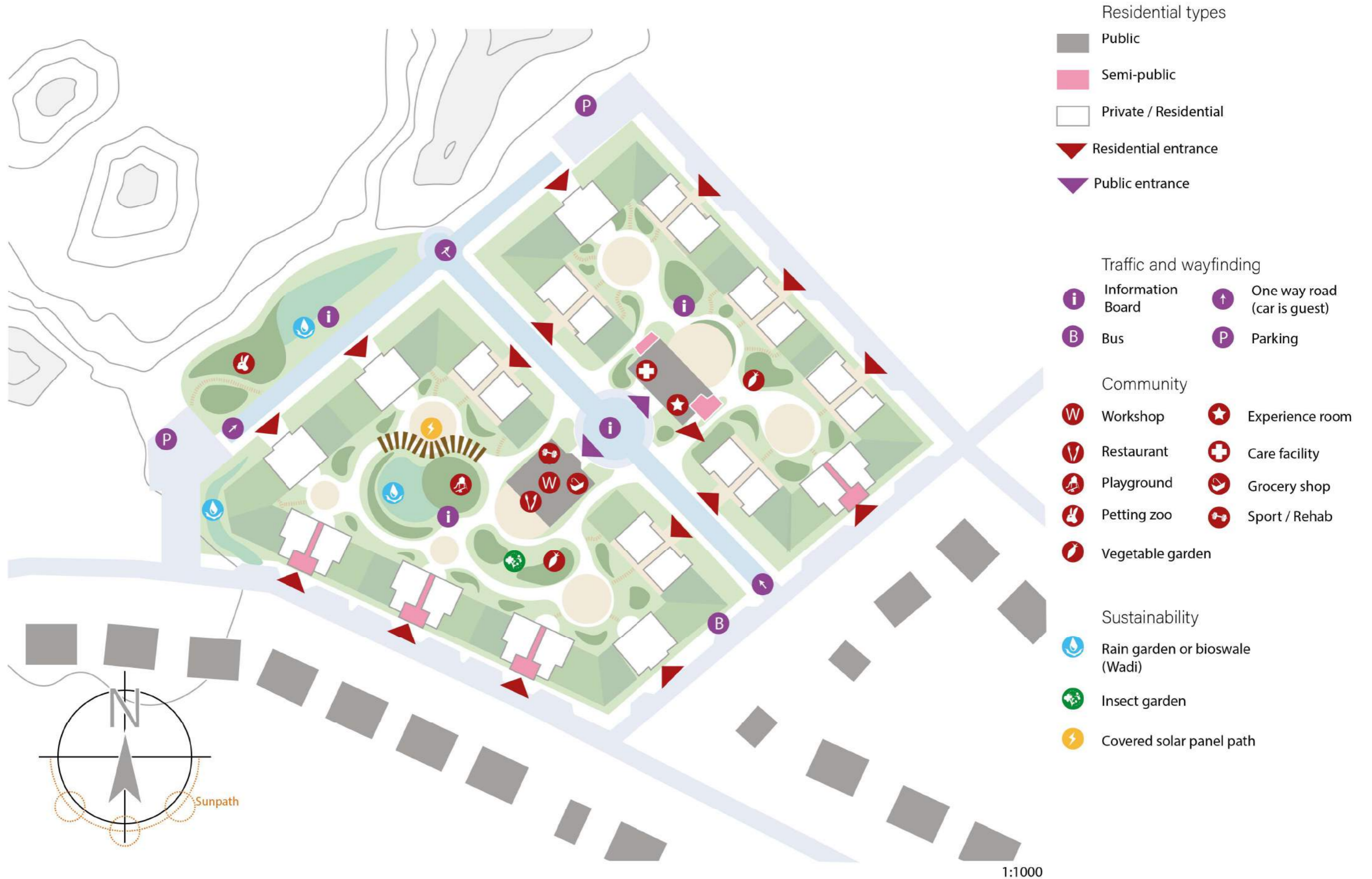
Community

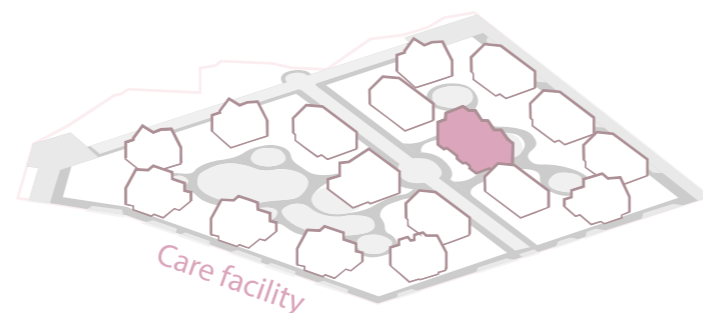
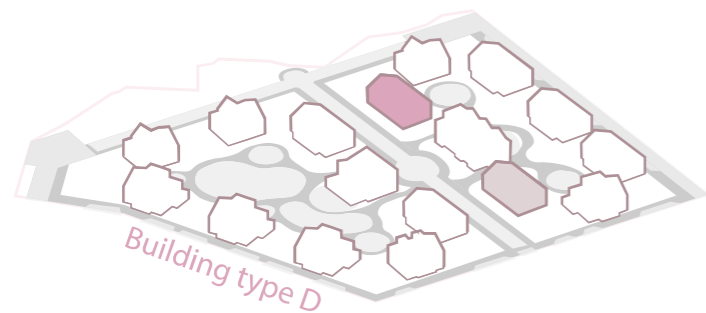
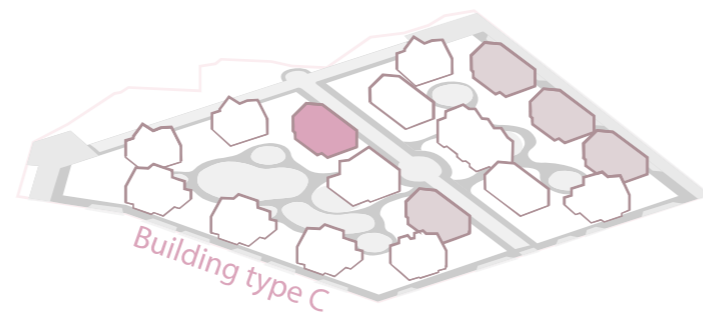
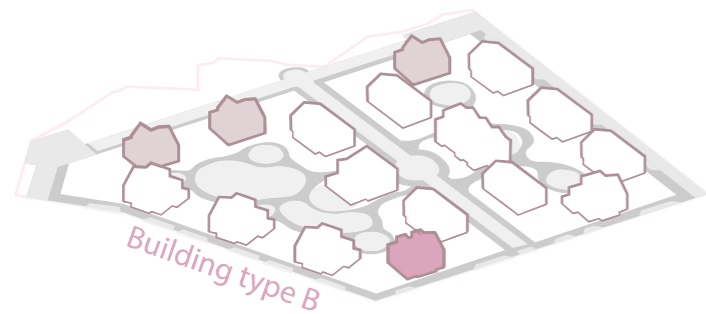
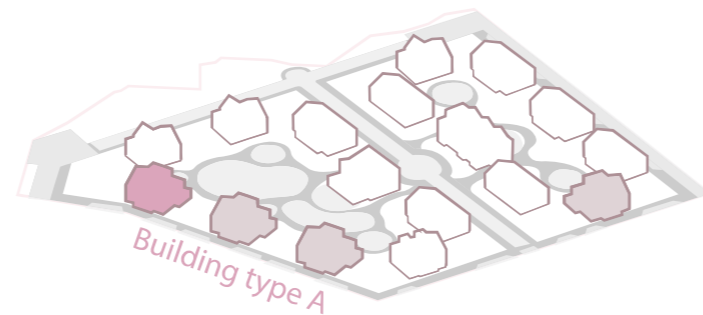
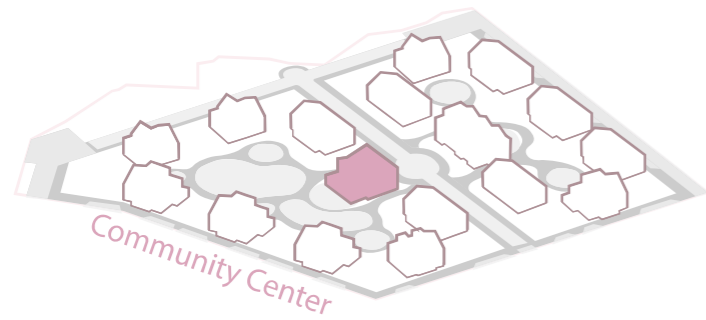


Greenery









The project consists of 6 different types of buildings that are representing different focus points. In the research was found out that each individual of elderly have different needs and desires, the shape and focus point of the houses are embodying this aspect and giving the option to the people to have a house that fits to their liking. Because of the different types of building each street has it's own identity making it easier for the people to find their way around the plot.

All the residences have or the possibility to have a living room, bedroom, kitchen and bathroom on the same floor. The access of each front door is available through stairs and an elevator, making it also possible for those with an mobility disability. The shaft for the elevators have a surface of at least 1,6 m x 2,1 meters which is enough room for a wheelchair or a stretcher.

Community center

The community center represents the society aspect, with a common ground that can be shared by the entire neighbourhood. A public space where people can meet each other and grow as a person. By the use of an eventspace and different workshop areas the community center enforces people to practice different types of hobbies or learn new things.

Building type A

Building type A contains four bigger appartements that are for people who prefer to live big, but are a small household. The ground floor is functional for independent elderly or starters, with the top floors having a maisonnette for a starting family.

Building type B

Building type B are semi-detached housing fitting for a family. The house can be split up in two parts. With two floors having a living space, kitchen, bathroom and bedrooms making it possible that one floor can be specific for an elderly couple while the rest of the house can be used by another part of the family. To make it wheelchair accessible the storage and toilet space on the groundfloor can make space for an elevator. This way the building is future proof and can be kept inside the family, even when someone needs to use a wheelchair.

The split level is inspired by the Spanish culture, where the children built an extra floor on top of the family home to start their own independent life.

Building type C & D

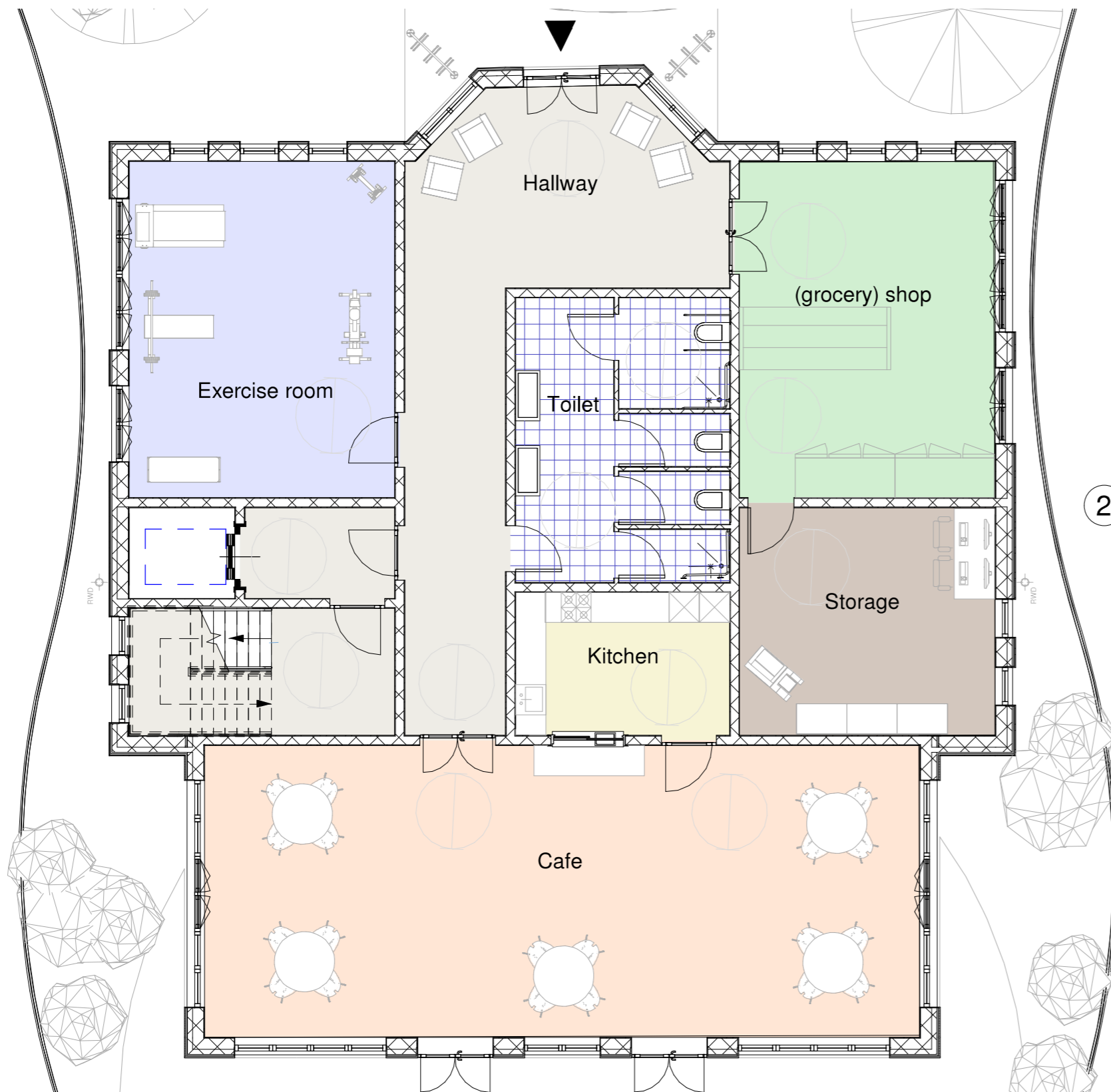
Building type C and D are similar and focus on the same target group, the difference is in the orientation of the buildings which depends on the connection between the street and the house. Building type C and D contain four small appartements which are usable for starters or people that prefer to live smaller. These appartements are easier to maintain but still possess enough space for an small guest room.

Care facility

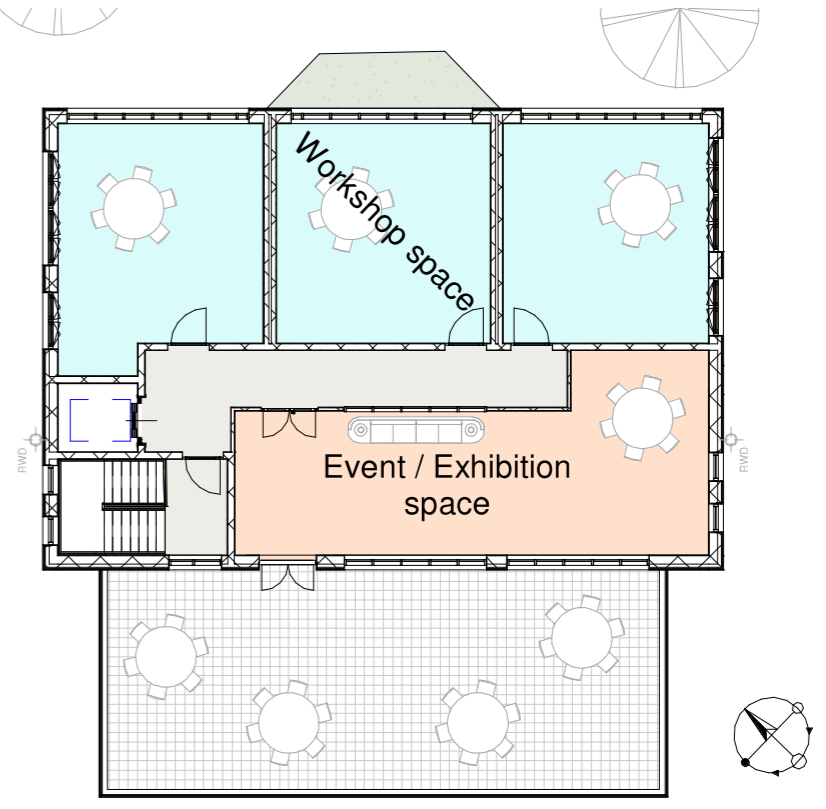
The care facility represents the care aspect of life and possess different functions to maintain a healthy life. These functions are on the ground floor to give easy access to the public. Above these functions are 6 small appartements for those that require daily support. To still empower the people and give the feeling of indepence the appartements have their own entrance. This way the care facility is not the main focus for the residents, but their own capability and lifechoices.

Community Center

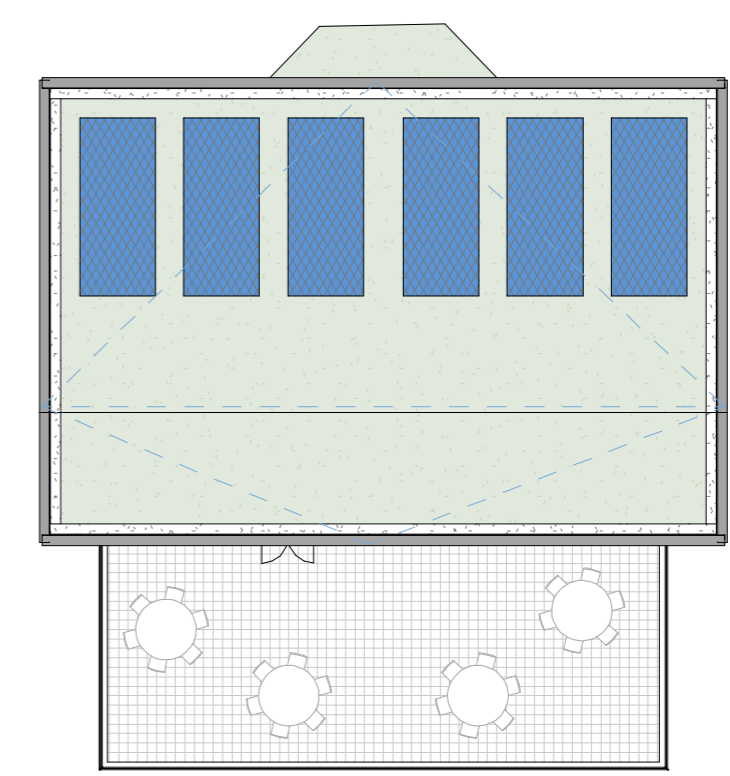




1 Ground floor
1 : 100

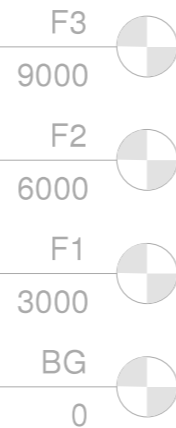


2 F1 - CH
1 : 200



3 Roofplan
1 : 200

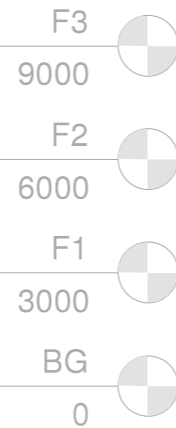
① CH North
1 : 200



② CH West
1 : 200



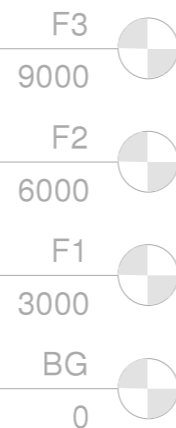
③ CH South
1 : 200



④ CH East
1 : 200



⑤ Section 2
1 : 200



⑥ Section 1
1 : 200



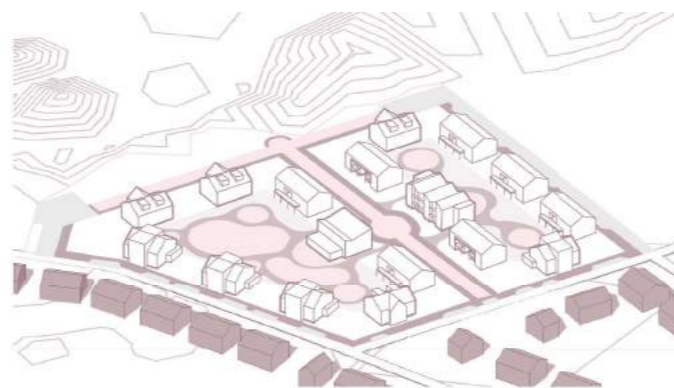
The community squares

In the back of each house there are squares, these are public spaces maintained by the community center. The community center acts as a place where people can discuss their desires and can act upon them by shaping the squares.

The function of the squares focus on sustainability, community or wellbeing. The ratio of each element will depend on the residences. Every community find other aspects more important, and this can shift with each new inhabitants.

Together with the community center the residences can decide what kind of square they prefer in the back of their home or on which aspect they would like to focus. They might prefer more spiritual wellbeing and want a place for Tai chi or meditation. Another focus could be to produce their own vegetables and community greenhouse could be the desired result.

By providing options and the ability to shift between functions these squares can represent the community living here and empower the residences to do activities they desire. This way the community itself can decide and shape their environment.



Sustainable



Biodiversity



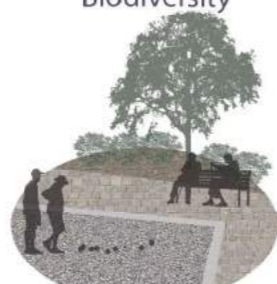
Food production



Water management



Community



Social



Intellectual



Recreation



Wellbeing



Emotional



Physical



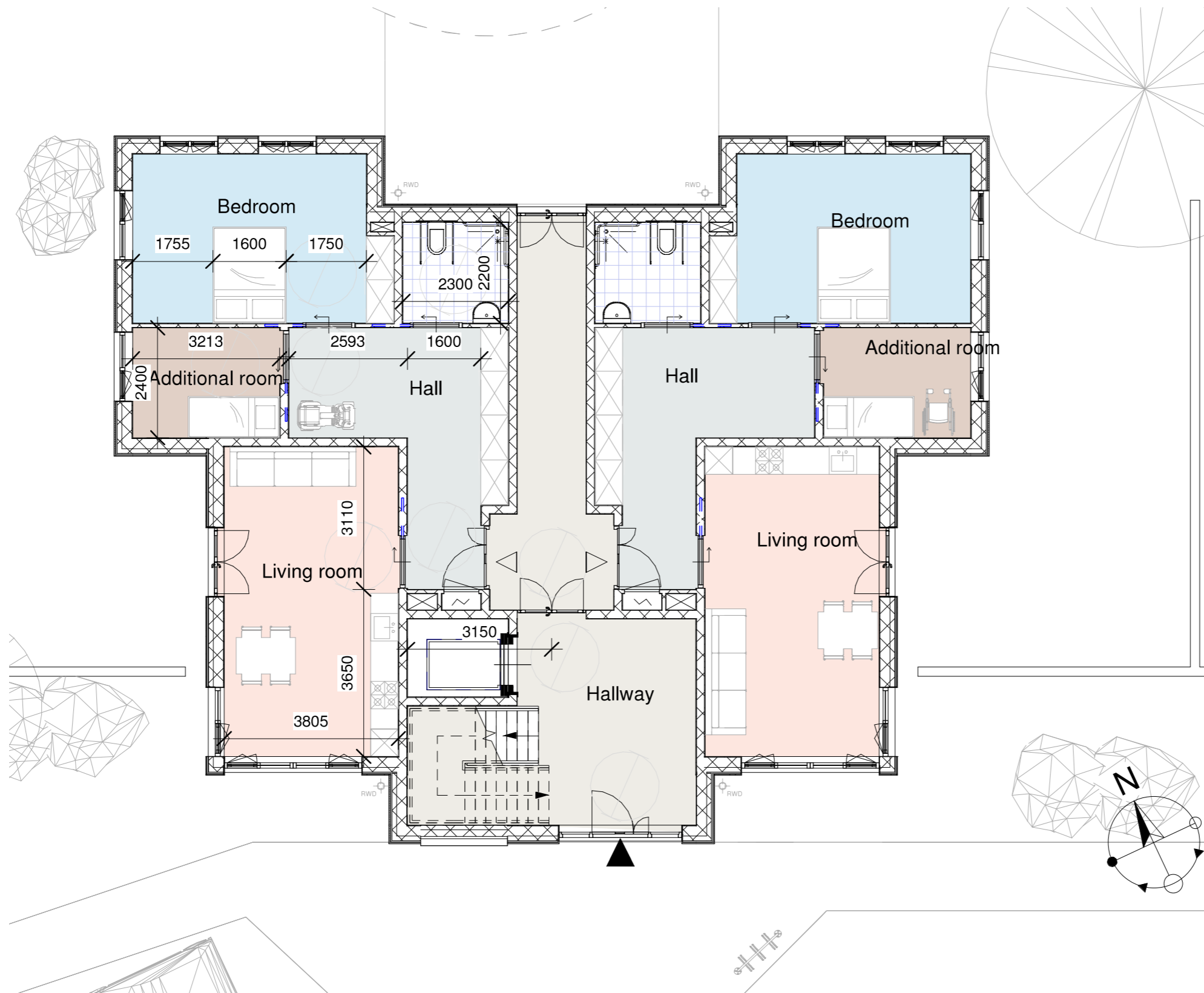
Spiritual



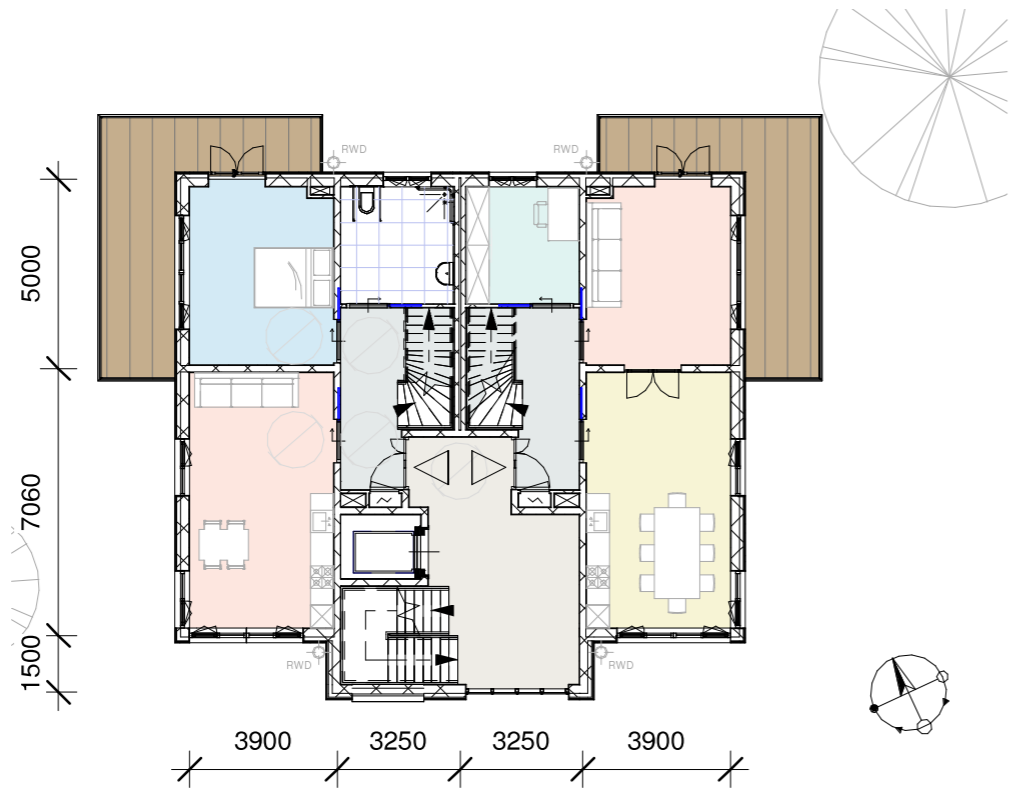
Community parks

Building type A

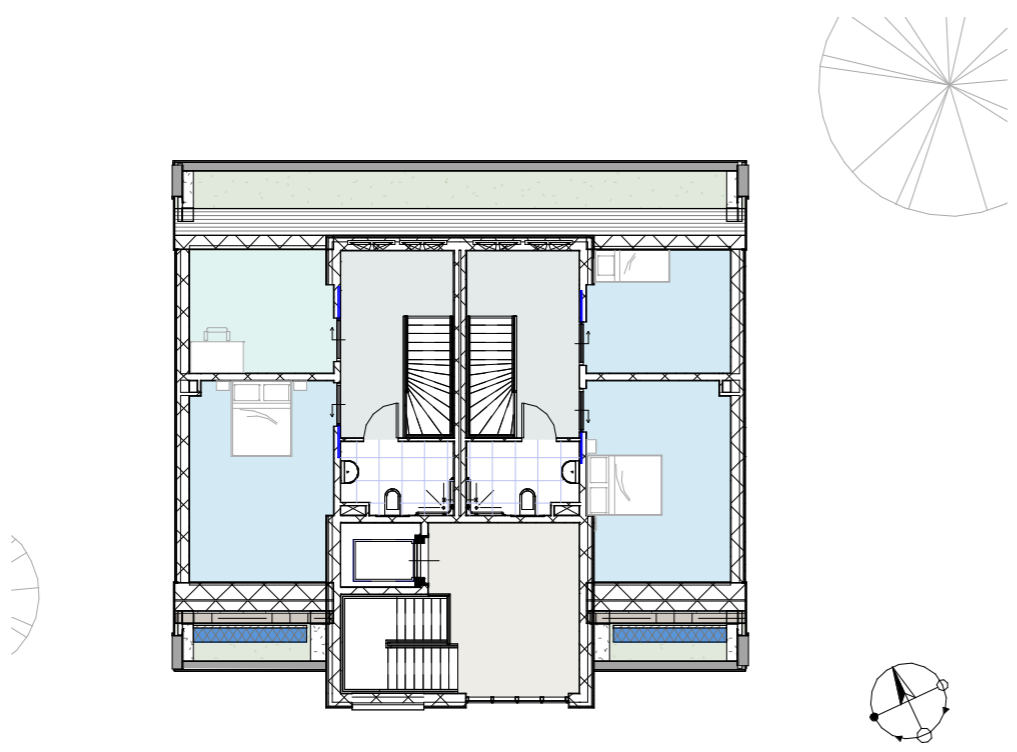




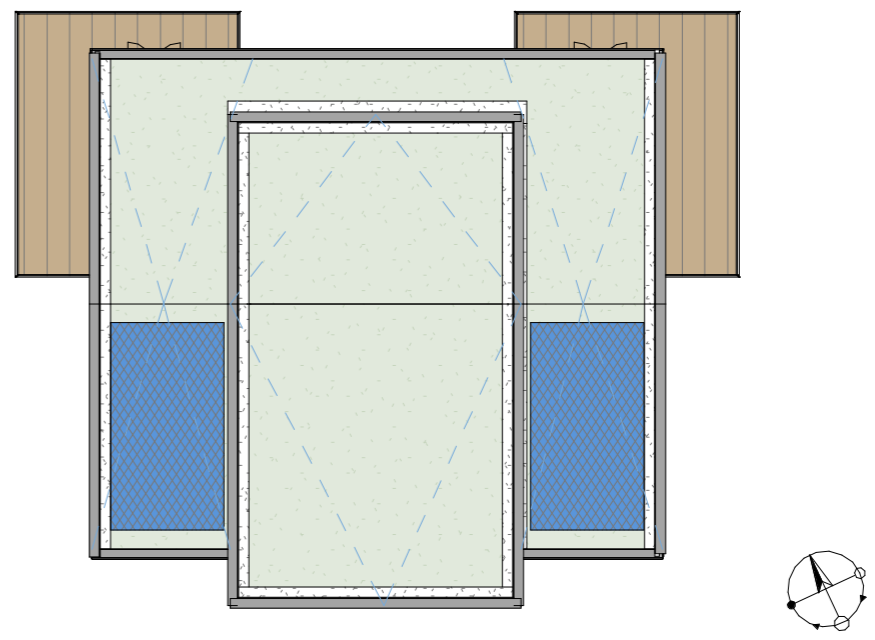
1 Ground floor
1 : 100



① First floor
1 : 200



② Second floor
1 : 200



③ Roofplan
1 : 200



① HA South
1 : 200



③ HA East
1 : 200



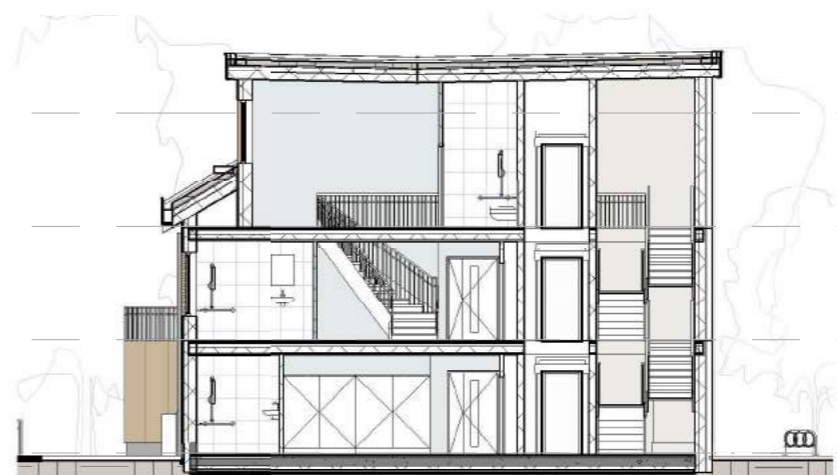
② HA North
1 : 200



④ HA West
1 : 200



⑥ HA section B
1 : 200



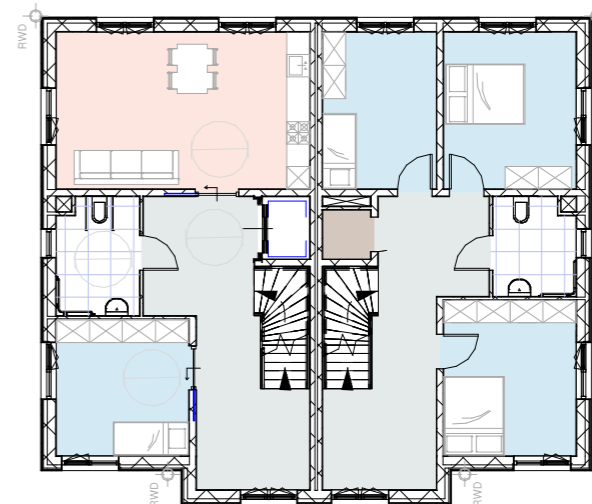
⑤ HA Section A
1 : 200

Building type B

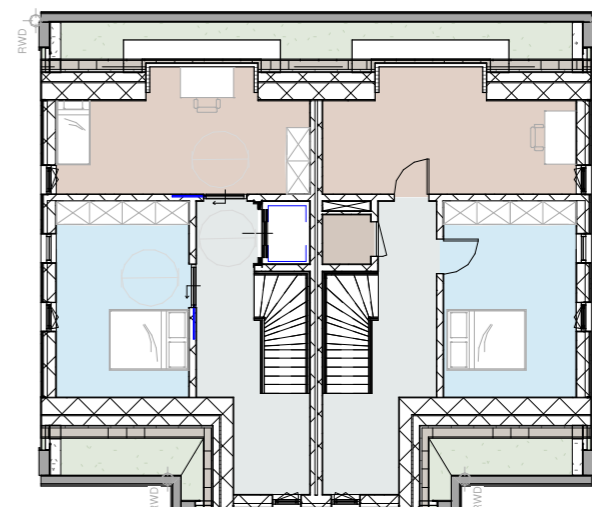




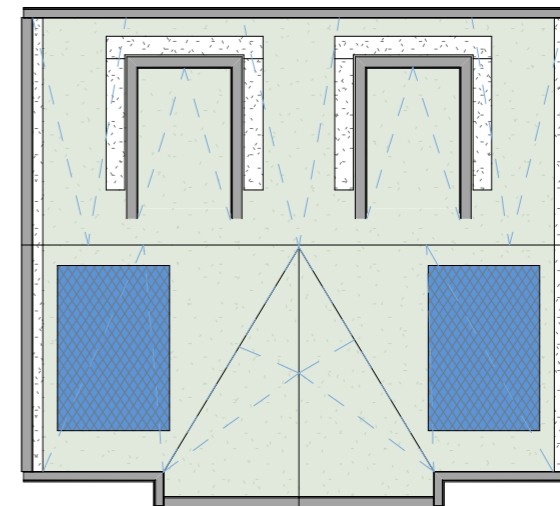
1 Ground floor
1 : 100



2 First floor
1 : 200



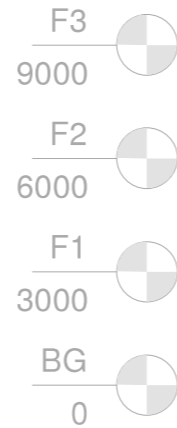
3 Second floor
1 : 200



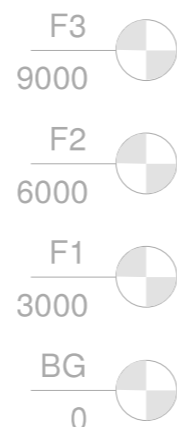
4 Roofplan
1 : 200



1 B South
1 : 200



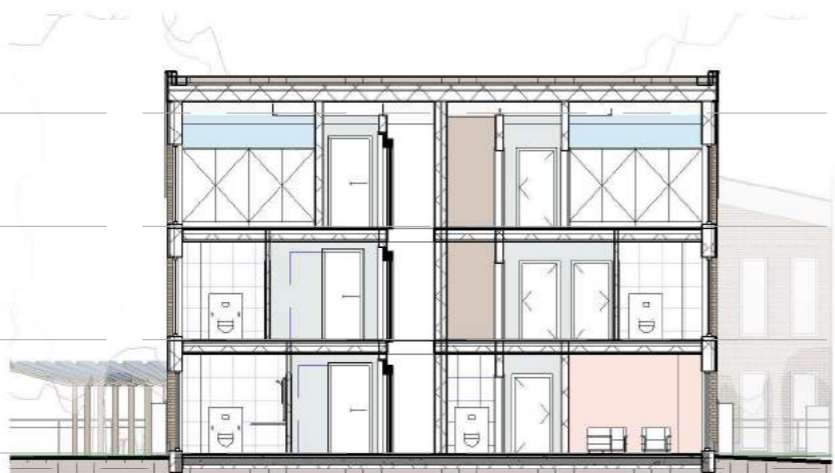
3 B East
1 : 200



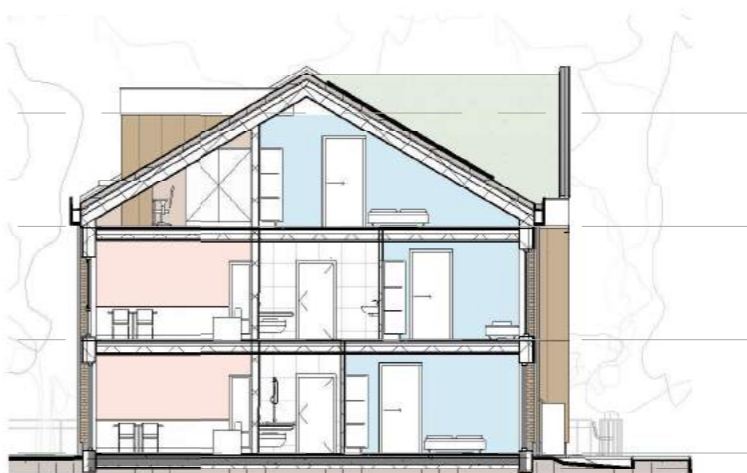
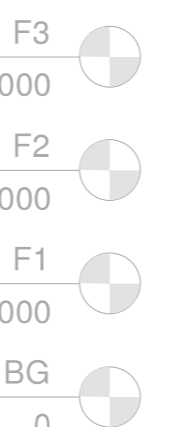
2 B North
1 : 200



4 B West
1 : 200



5 HB section A
1 : 200

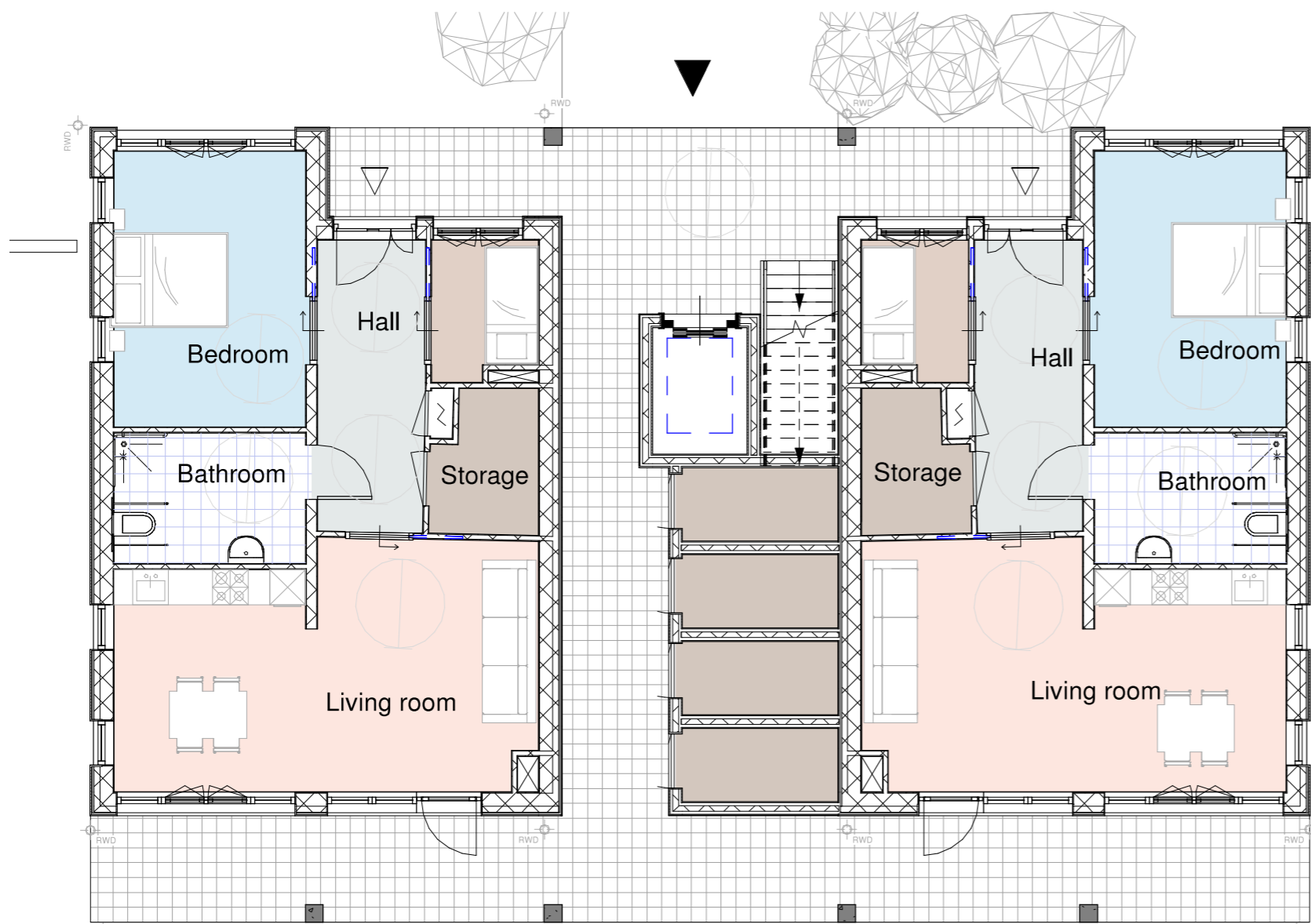


6 HB section B
1 : 200

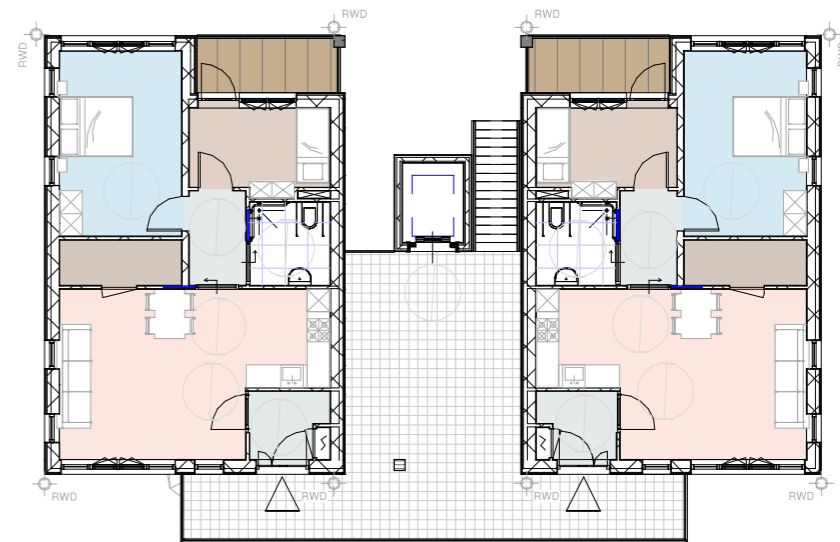


Building type C

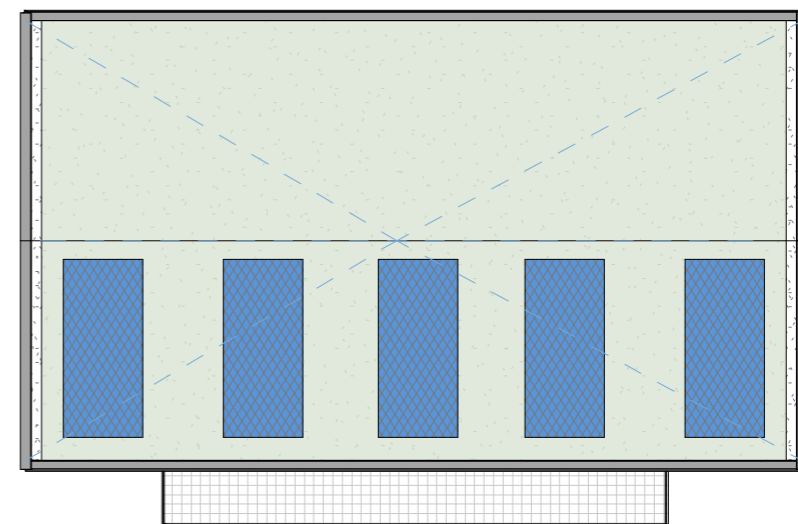




1 Ground floor
1 : 100



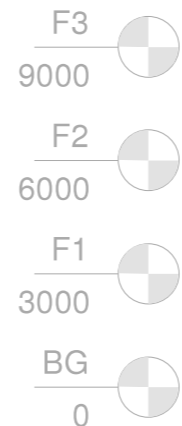
2 First floor
1 : 200



3 Roofplan
1 : 200



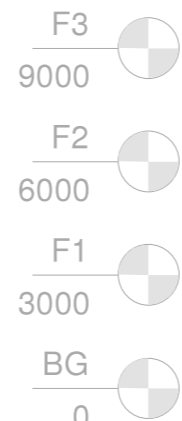
① C North
1 : 200



③ C West
1 : 200



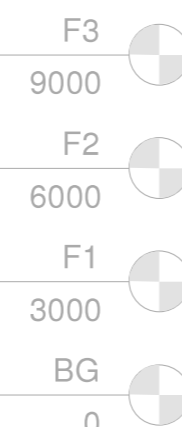
② C South
1 : 200



④ C East
1 : 200



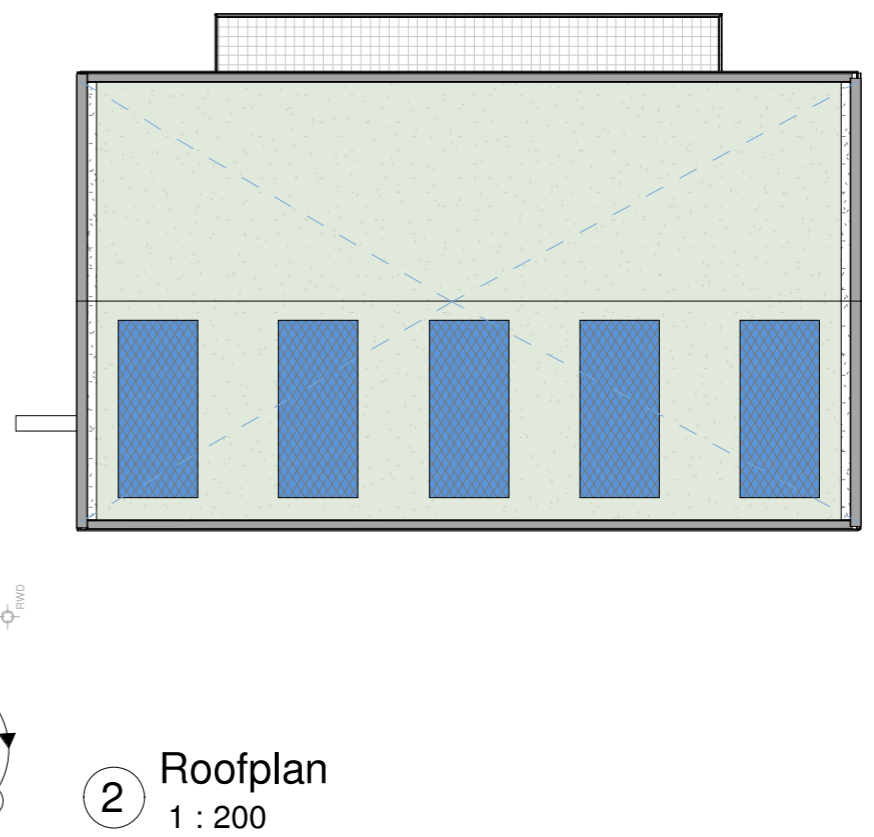
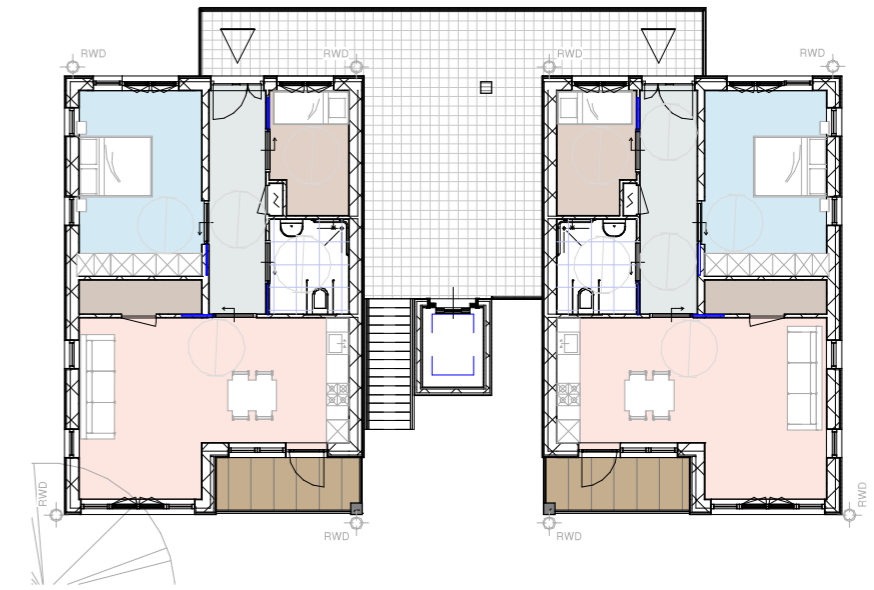
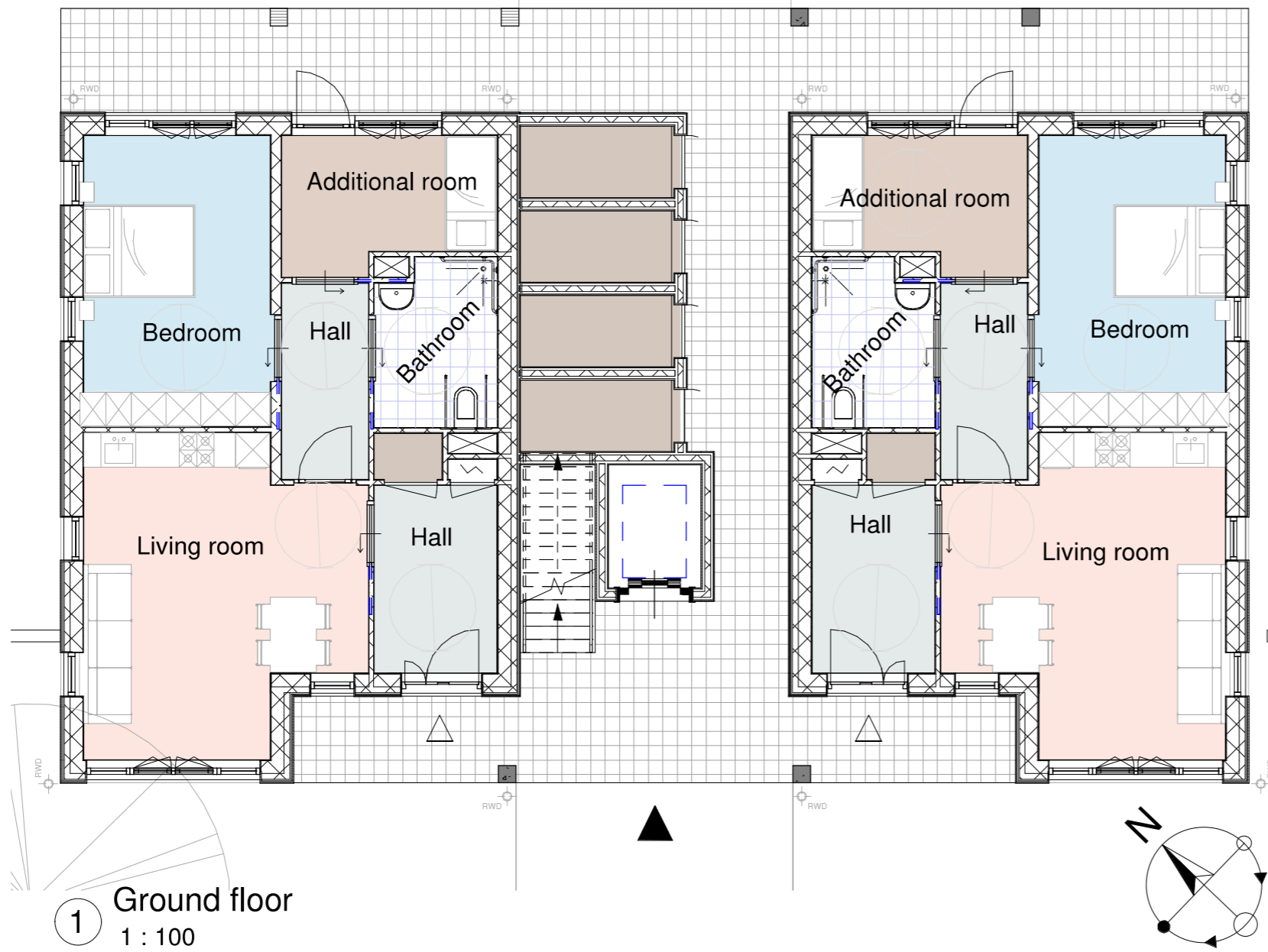
⑥ HC section A
1 : 200



⑤ HC section B
1 : 200

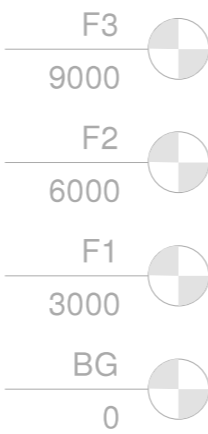
Building type D







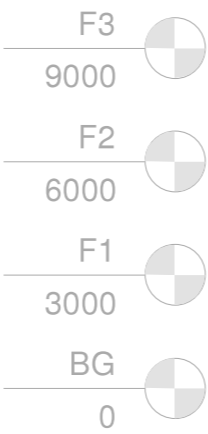
① HD South
1 : 200



② HD East
1 : 200



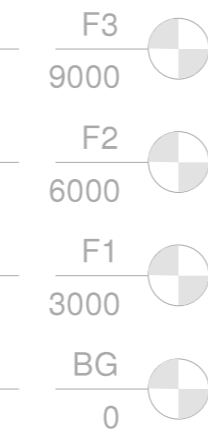
③ HD North
1 : 200



④ HD west
1 : 200



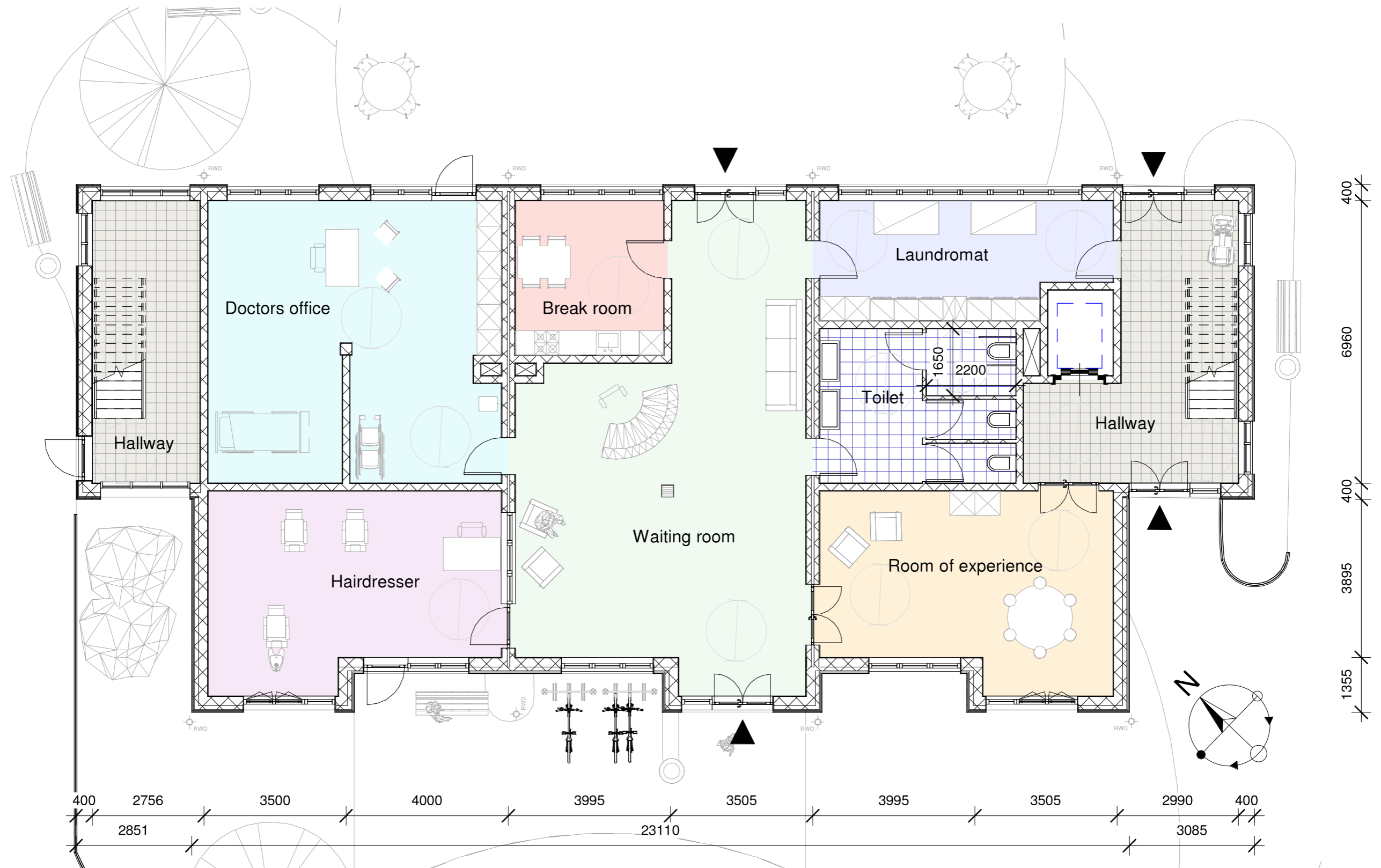
⑥ HD section B
1 : 200



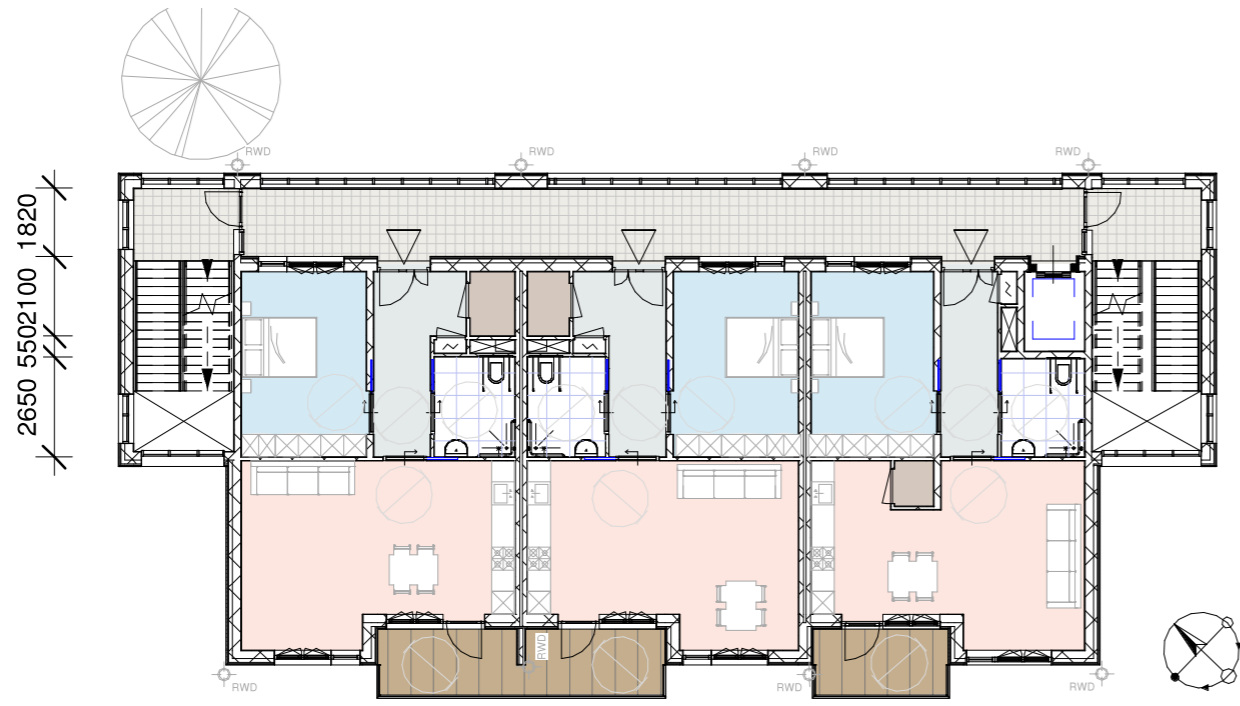
⑤ HD section A
1 : 200

Care facility

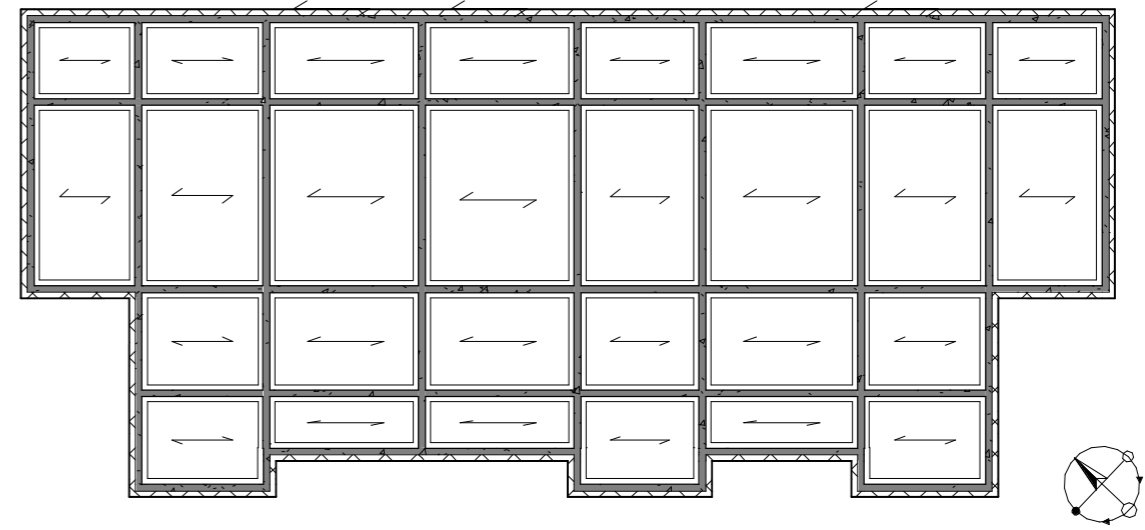




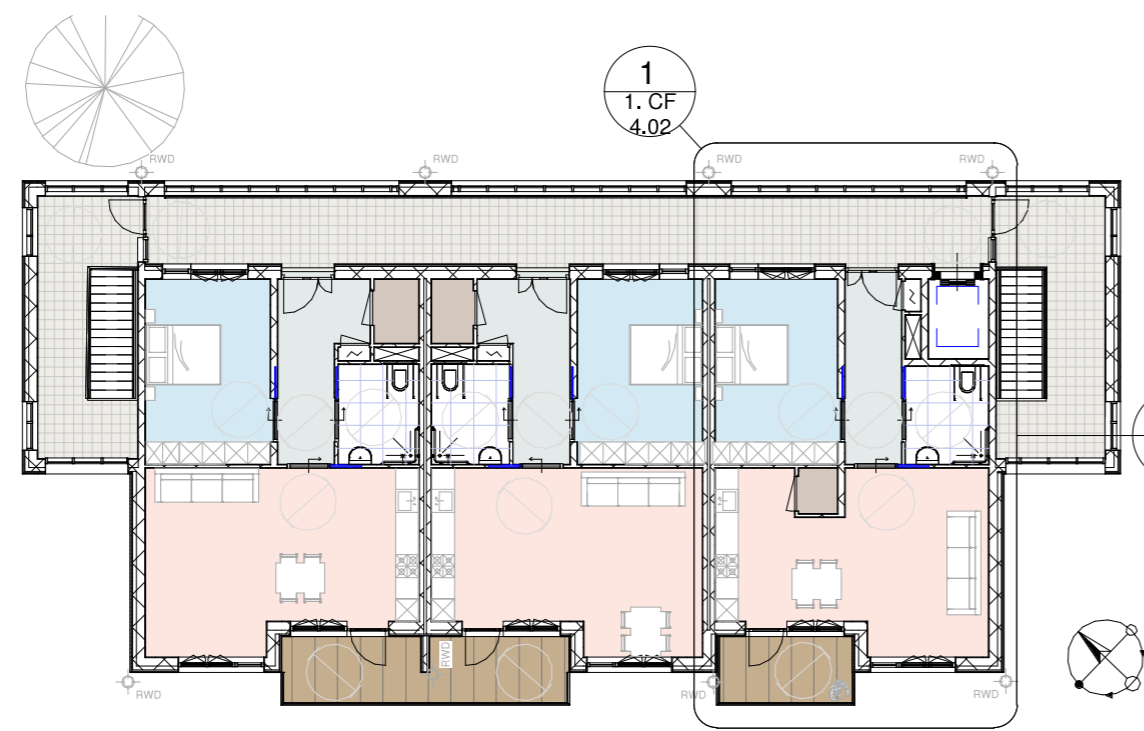
1 BG - CF
1 : 100



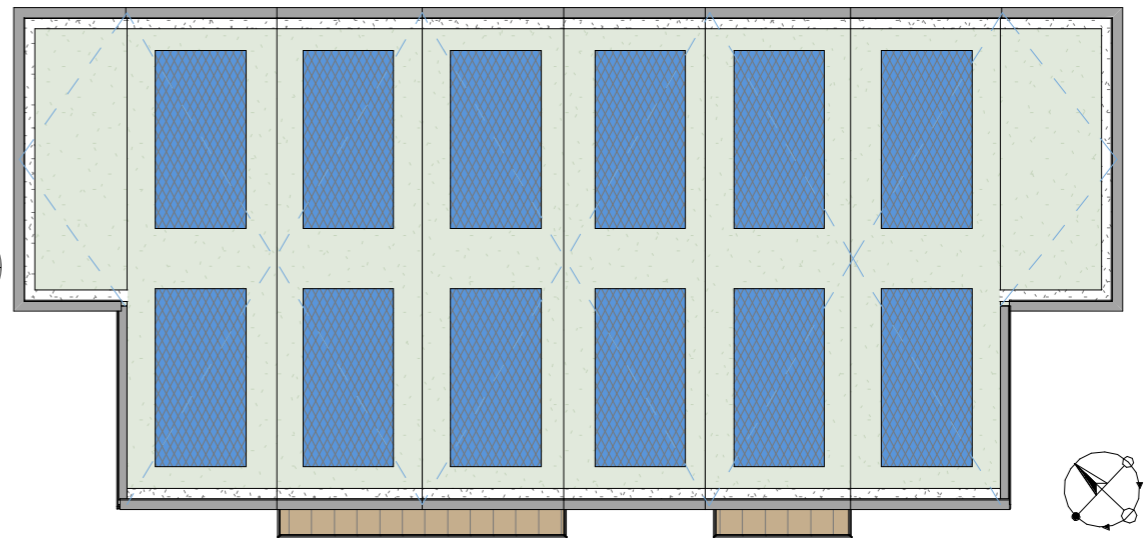
1 First floor
1 : 200



4 Foundation
1 : 200



2 Second floor
1 : 200



3 Roofplan
1 : 200



1 CF South
1 : 200



2 CF East
1 : 200



3 CF North
1 : 200



4 CF West
1 : 200



5 CF section B
1 : 200



6 CF section A
1 : 200

To increase the sustainability of the building the efficiency of the use of energy, water and materiality was important. Most techniques were used to increase empowerment and energy usage, like natural ventilation by to-open windows and a high insulation value. But also rainwater is being caught and being reused for the gardens. The main construction technique is timber construction, consisting of load-bearing walls and floor beams. Timber is more sustainable than concrete or bricks, as it can be harvested naturally, stores carbon and can be reused or recycled into the growth of new material.

Finnjoist I-beam floors

The floors and the roof construction is build up by Finnjoist I-beams. The I-beams are made of oriented strand board web and laminated veneer lumber, delivering a beam that has less dimensional change over time. It does not distort or shrink like traditional wooden construction. Next to that Finnjoist I-beams have a stronger strength and weightratio and is lighter than traditional wooden beams, which makes them able to reach distances of 6-14 meters, lengths that traditional wooden floors cannot make. This strength comes forth out of the homogeneous bonded structure.

Because of the I-shape the construction has a minimum wooden surface creating a small thermal bridge. This makes the floor ideal for low-energy housing and Passive buildings. It can even be made modular to fit a circular economy.

The pre-designed length and height of the floors are calculated according to the design tool provided by Metsa-Wood, one of Europe's leading manufacturers of engineered wood products.

Humidity

To protect the wood construction from humidity foils are needed inside and on the outside of the construction. At the ground level the humidity requires more attention as the construction is in direct contact with the soil. The ground floor is made of an insulated Hollow Core slabfloors, to give protection and create a strong base for the construction above. The insulation at the ground level needs to be rigid to serve as a moisture barrier.

To protect the wooden facade from the splashing of moisture or dirt, there needs to be a distance of at least 200, but preferably 300 mm, distance between the wood and the ground. By providing a base plinth of Styrock, a styrofoam, the facade can be protected against humidity of the ground. Styrock is certified with 'silver' Cradle-to-Cradle and an ecolabel, making it perfect for sustainable buildings.

Comfort

By increasing the insulation barrier above an Rc of 6 the temperature inside would be stable and would lower the requirement of heating and cooling. Heating and cooling is realised by floating hydrolic floorheating.

Floor heating makes use of radiant heat, which ensures a lower moisture concent in the home and spreads dust and germs less quickly as it does not circulate the air like forced airflow or traditional heating systems. It also distributes the heat evenly over the floor generating a constant temperature over a longer time period, which won't create hot or cold spot in the room. To keep the floor light and low a Warmup Total-16 Low profile system is being used that consists of an 16 mm thick insulation panel in which the 12 mm PEX-A pipes are inserted, leaving a flat surface for the finishing. The heating can be monitored by a thermostat and through the use of an app.

User interaction

User interaction is one of the key elements to create empowerment among the residences, because of this I decided on hybrid ventilation system with the use of to-open windows when possible, and mechanical ventilation when needed. Natural ventilation is easy to understand and directly palpable. By using ventilation grilles an constant input is being realised. The Sunstream EVO combines sunprotection with a soundproof ventilation system, which can be manually and/or electrically operated.

The problem with natural ventilation is the lack of ventilation, to create awareness for the air quality I include a fresh air monitor that shows the user when to open a window through a visual indicator. The bird will drop down when the airquality is low, showing when to open a window.

FINNJOIST PREDESIGNER

Type: Floor beams

Span: 4500 mm

Spacing: 600mm 400mm 300mm

Vibration: No demand High demand

Criterion: Lightest Lowest

FJI 89x300

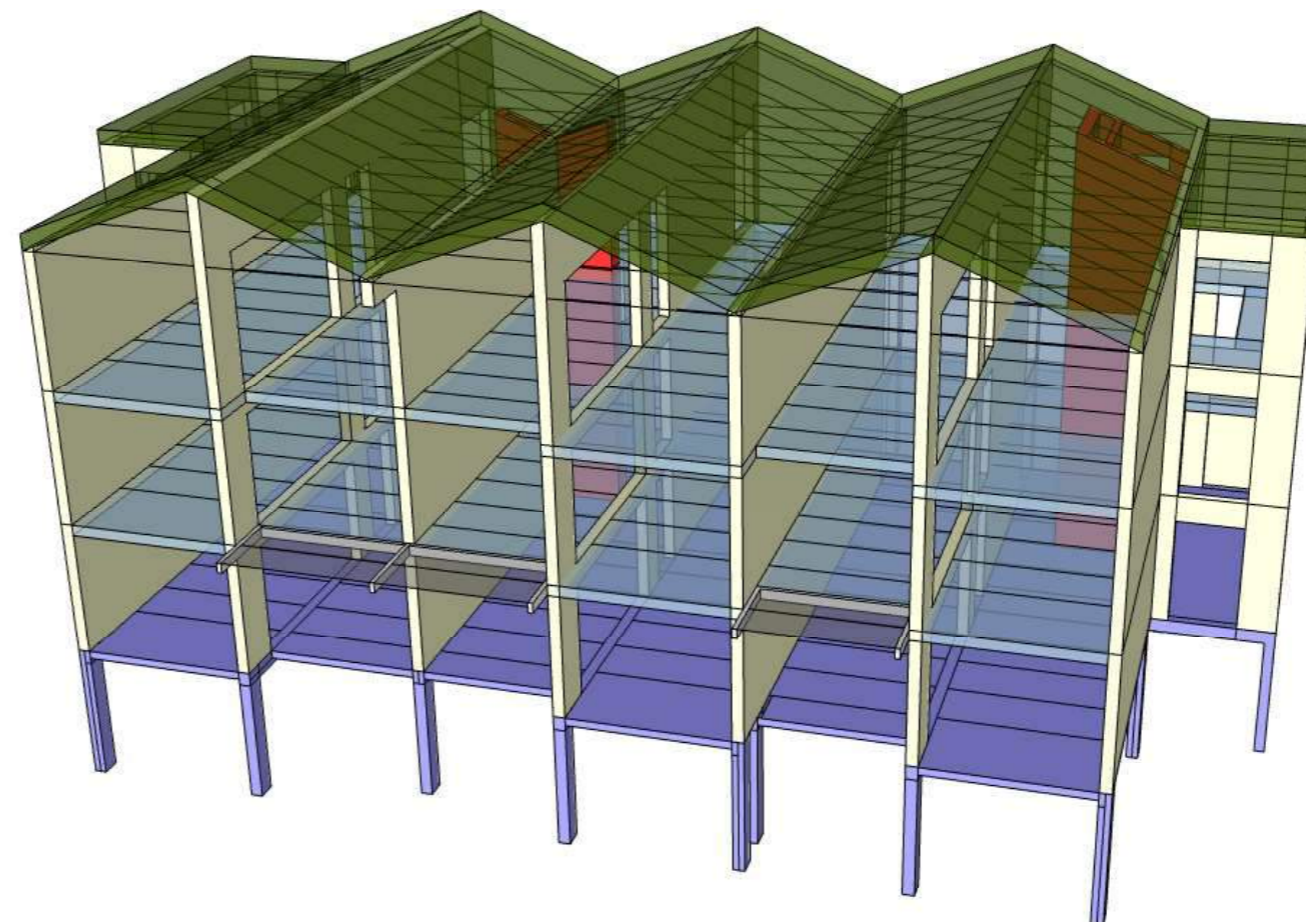
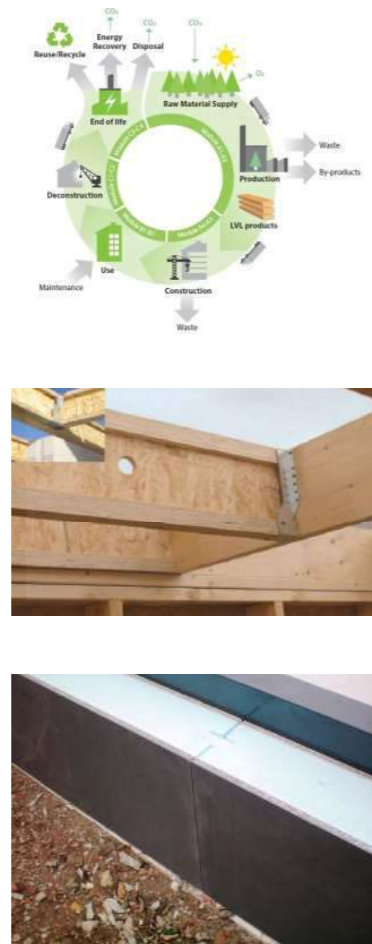
Dimensions: FJI 89x300 hoh 300mm
Beams covered and fixed with 18mm, 6 veneer plywood decking
Load capacity (permanent): 35kg/m² + 50kg/m² (partition walls)
Load capacity (variable): 175kg/m²

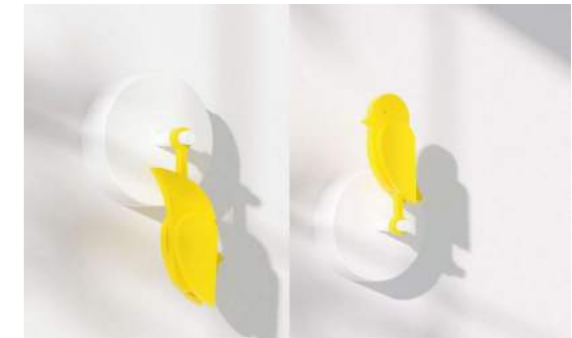
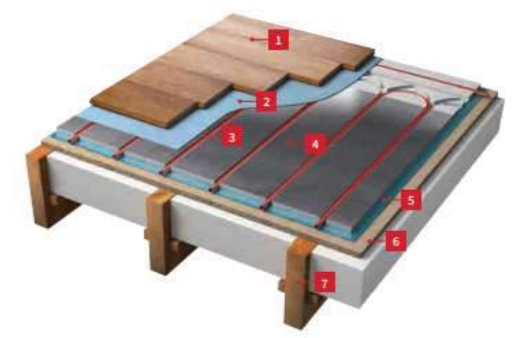
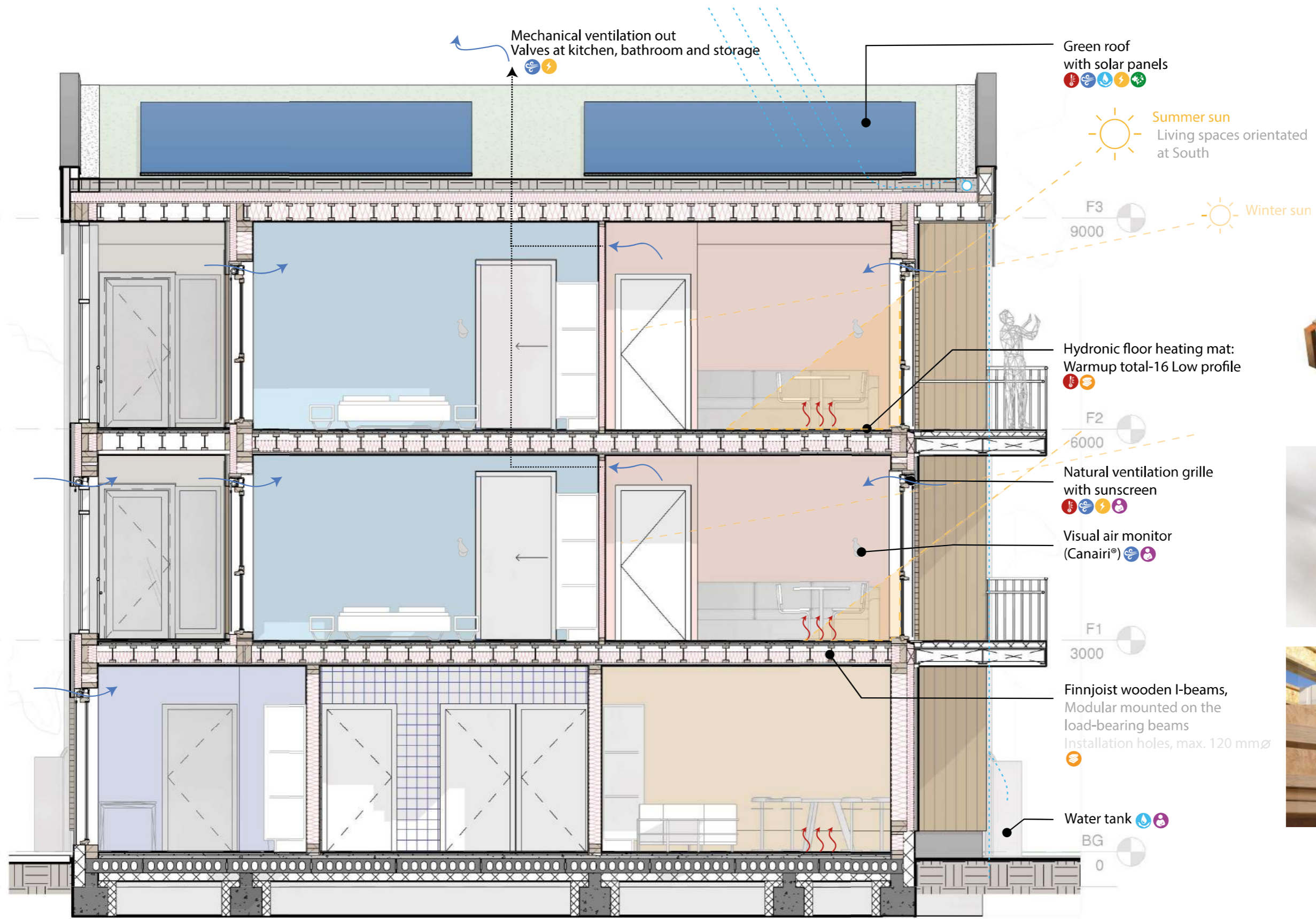
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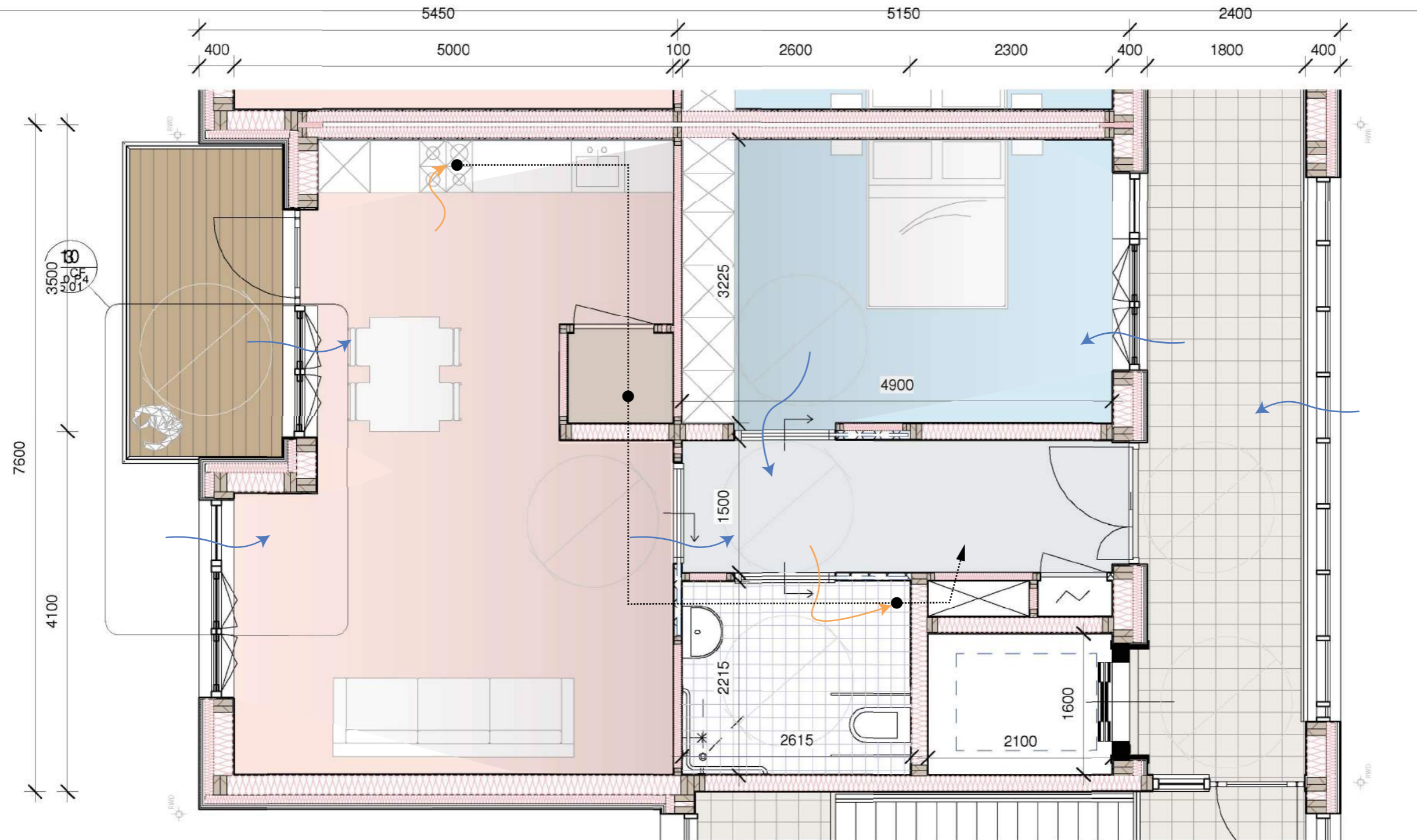
The results obtained using this tool are meant as a first indication. The final design will be determined in consultation with the engineer and building physics consultant. Metsä Wood assumes no liability for any damage caused by such use of this first indication.

(c) Metsä Wood Holland 2014



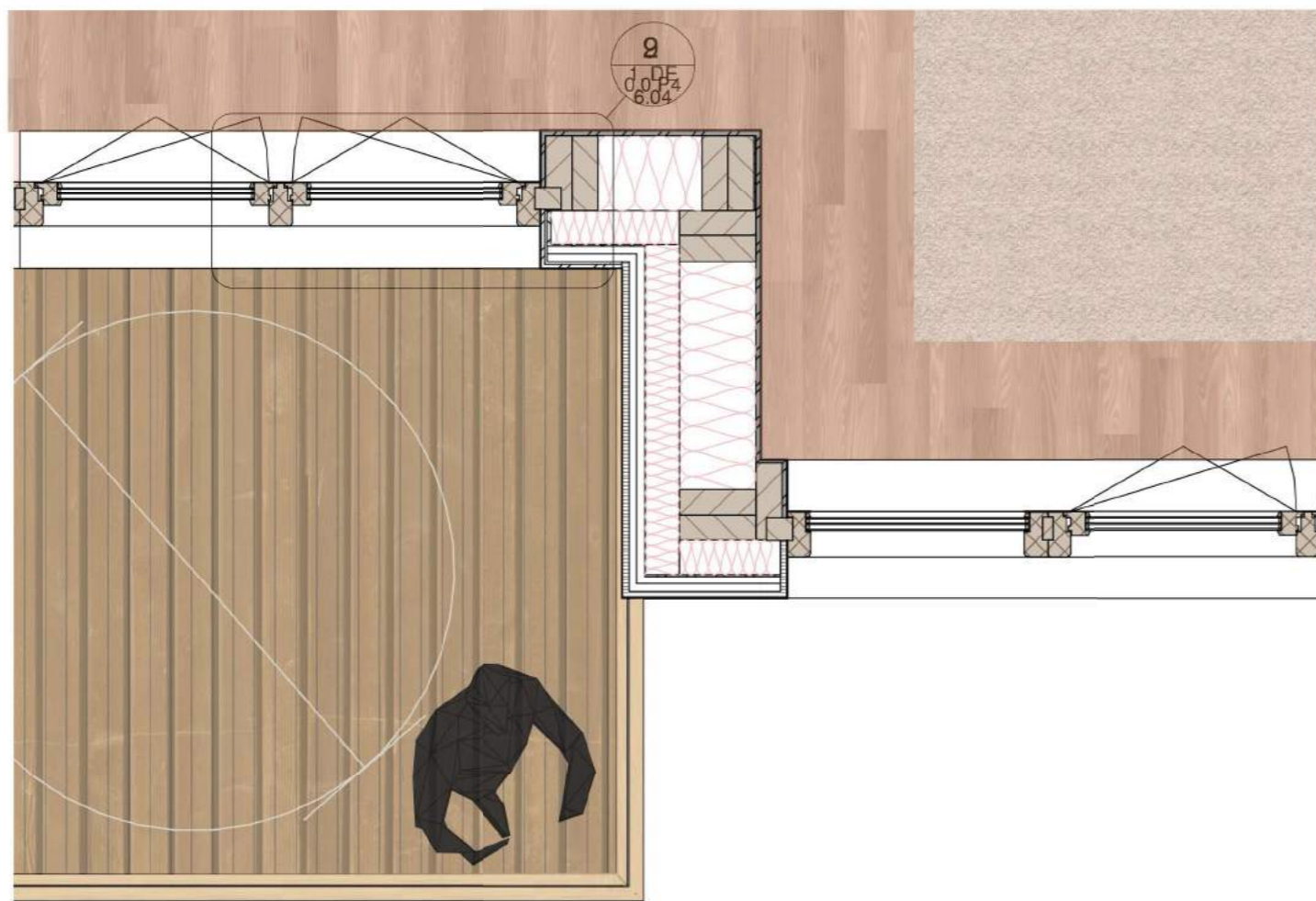


-  Temperature
-  Air quality
-  Water usage
-  Energy
-  Biodiversity
-  User interaction
-  Circularity

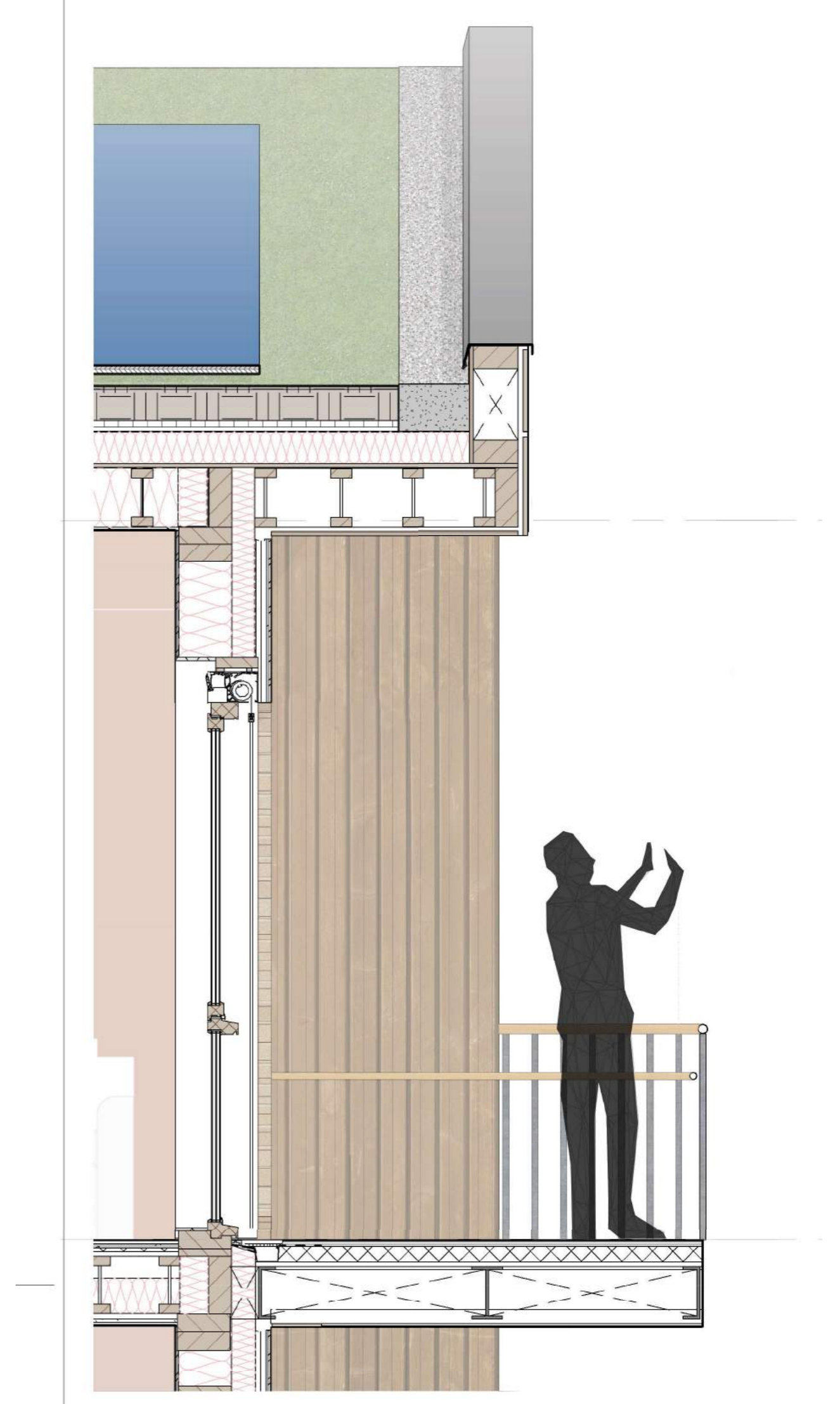


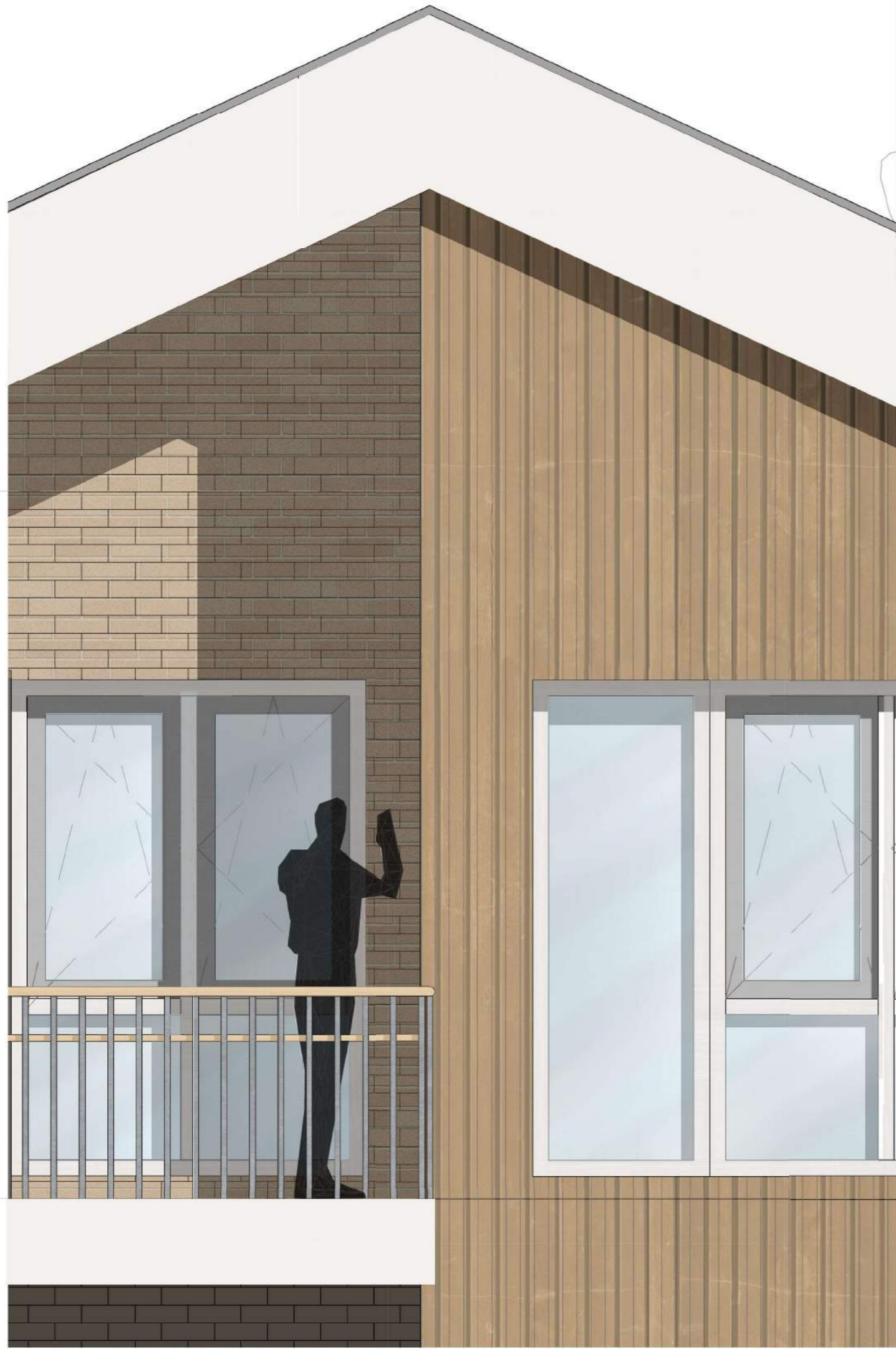
Details

Fragment



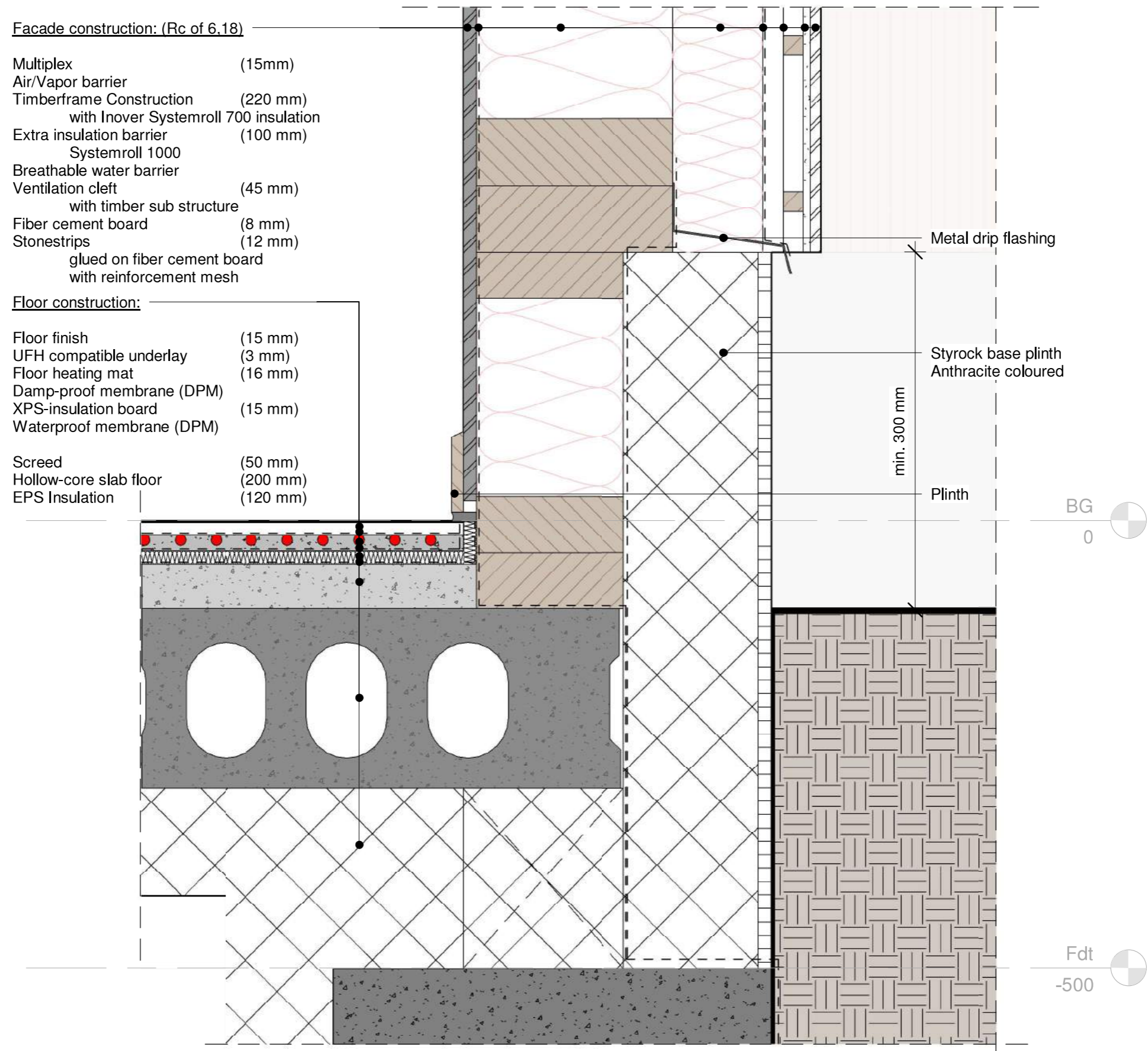
3 Horizontal section
1 : 20





F3
9000

F2
6000



Facade construction: (Rc of 6,18)

- Multiplex (15mm)
- Air/Vapor barrier
- Timberframe Construction (220 mm)
with Inover Systemroll 700 insulation
- Extra insulation barrier (100 mm)
Systemroll 1000
- Breathable water barrier
- Ventilation cleft (45 mm)
with timber sub structure
- Fiber cement board (8 mm)
- Stonestrips (12 mm)
glued on fiber cement board
with reinforcement mesh

Floor construction:

- Floor finish (15 mm)
- UFH compatible underlay (3 mm)
- Floor heating mat (16 mm)
- Damp-proof membrane (DPM)
- XPS-insulation board (15 mm)
- Waterproof membrane (DPM)
- Screed (50 mm)
- Hollow-core slab floor (200 mm)
- EPS Insulation (120 mm)

Metal drip flashing

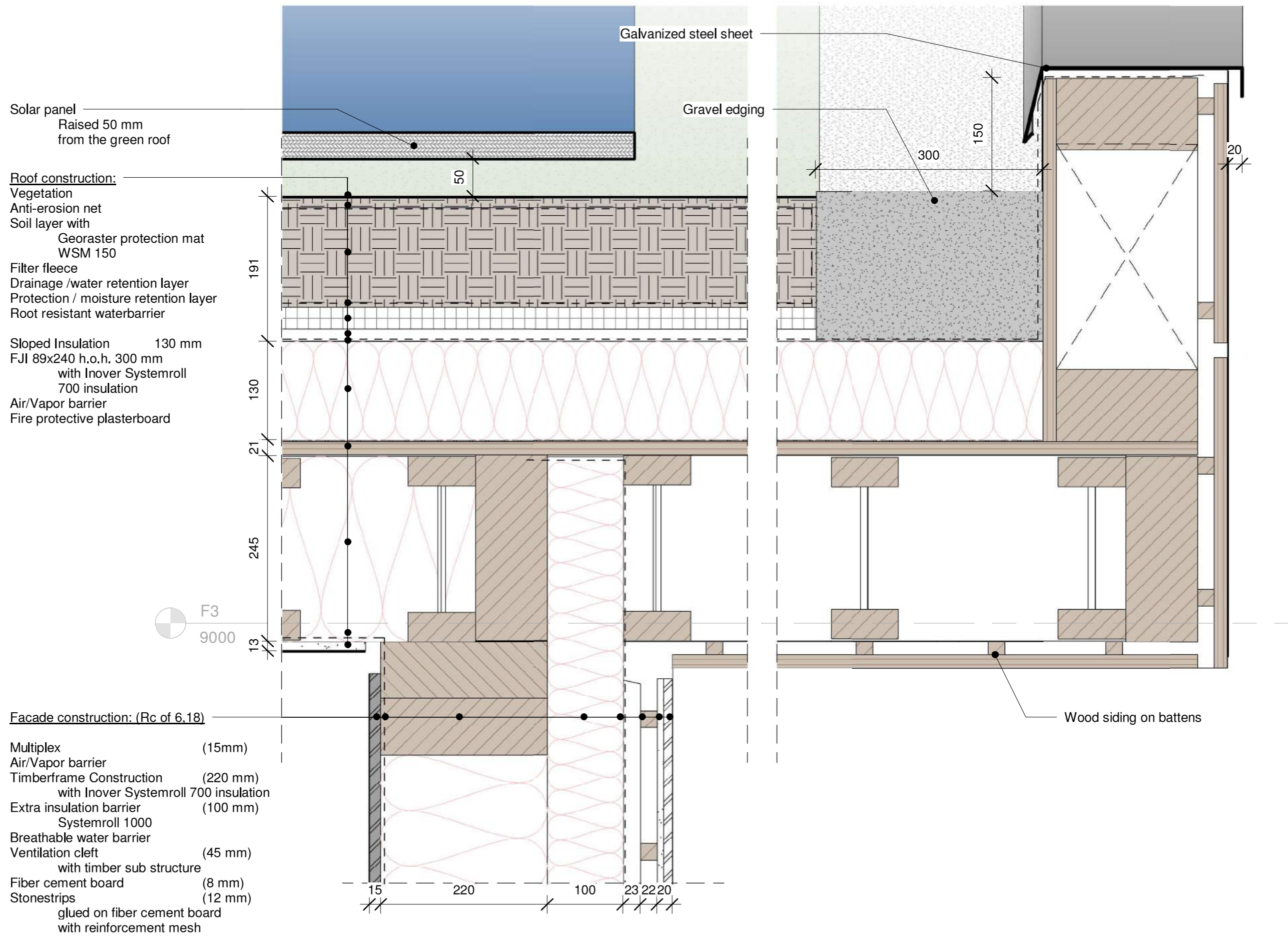
Styrock base plinth
Anthracite coloured

min. 300 mm

Plinth

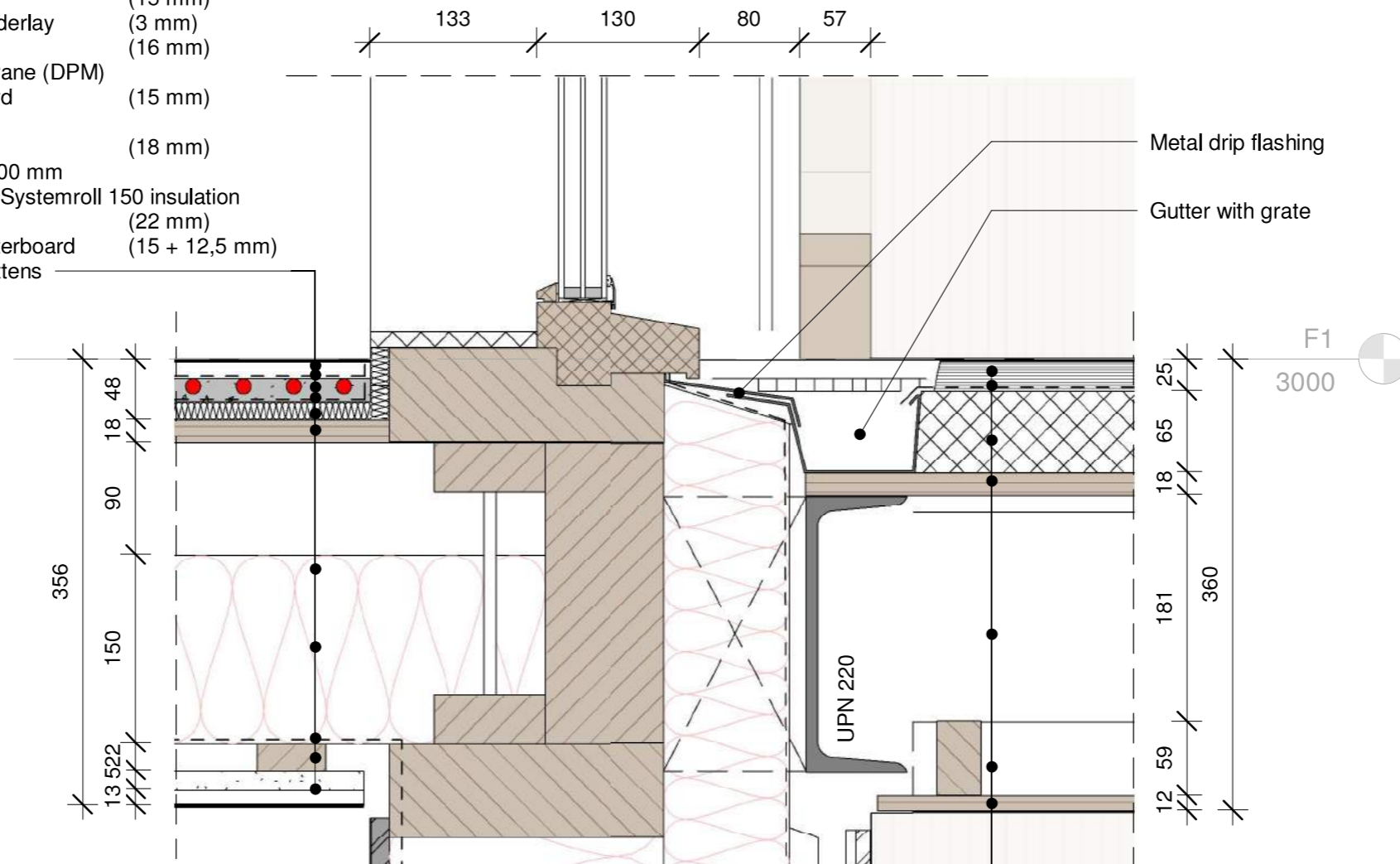
BG
0

Fdt
-500



Floor construction:

- Floor finish (15 mm)
- UFH compatible underlay (3 mm)
- Floor heating mat (16 mm)
- Damp-proof membrane (DPM) (15 mm)
- XPS-insulation board (15 mm)
- OSB plywood (18 mm)
- FJI 89x240 h.o.h. 300 mm
with Inover Systemroll 150 insulation
- Ventilation air gap (22 mm)
- Fire protective plasterboard (15 + 12,5 mm)
fixed on battens

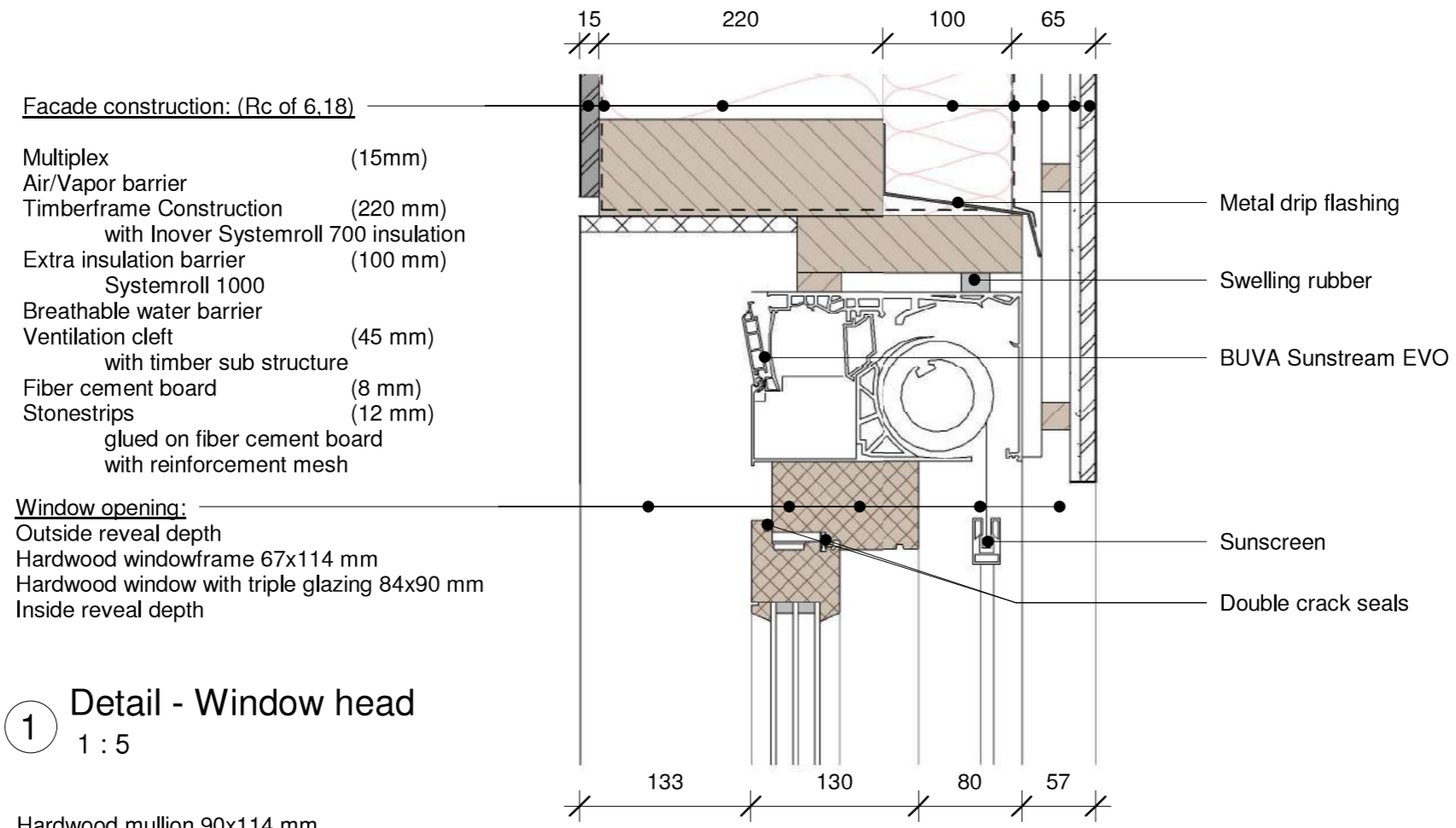


Facade construction: (Rc of 6,18)

- Multiplex (15mm)
- Air/Vapor barrier
- Timberframe Construction (220 mm)
with Inover Systemroll 700 insulation
- Extra insulation barrier (100 mm)
Systemroll 1000
- Breathable water barrier
- Ventilation cleft (45 mm)
with timber sub structure
- Fiber cement board (8 mm)
- Stonestrips (12 mm)
glued on fiber cement board
with reinforcement mesh

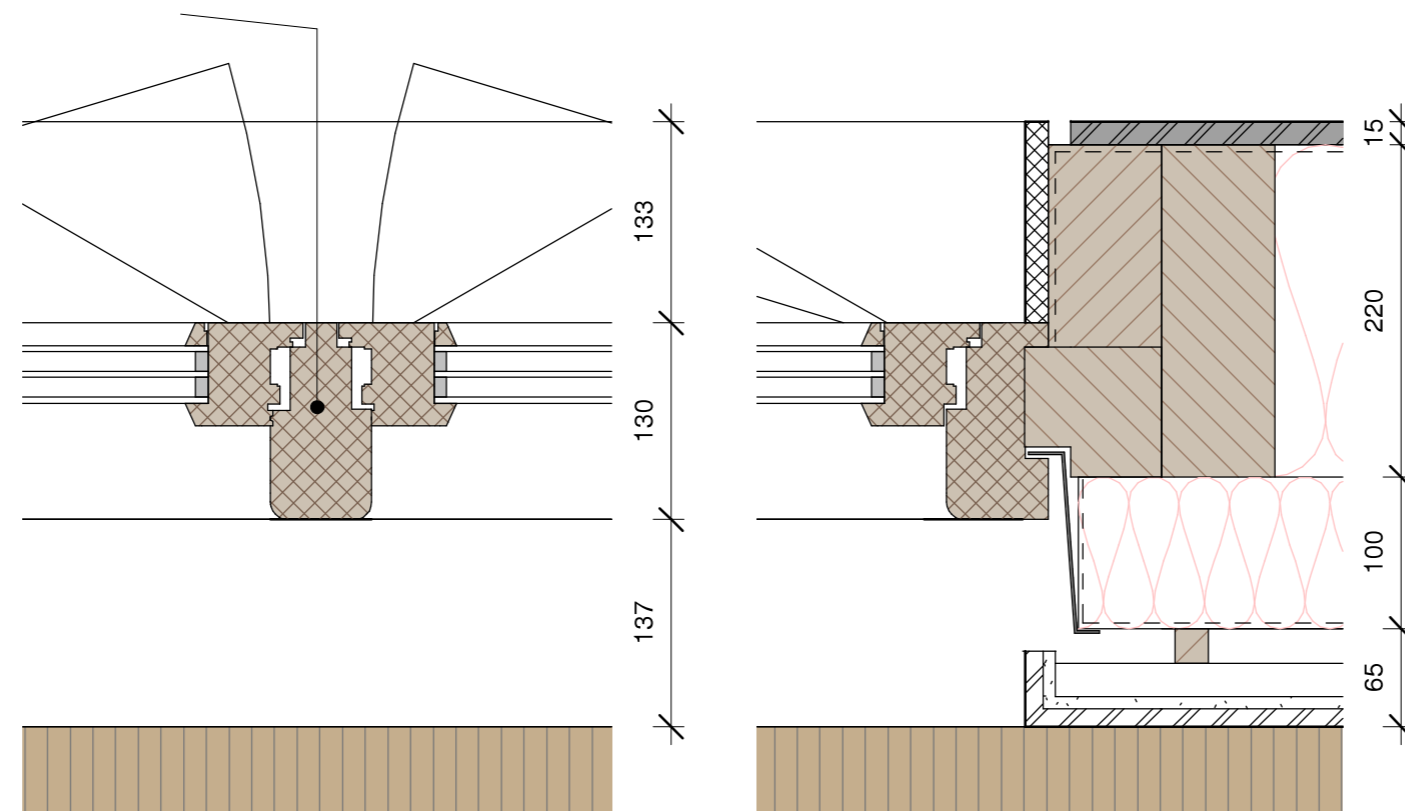
Balcony construction:

- Floor finish (25 mm)
- Damp-proof membrane (DPM)
- Sloped insulation (65 mm)
- OSB plywood (18 mm)
- Steel balcony construction
- Timber sub structure 34x59 mm
- Wooden finish 12,5 mm



① Detail - Window head
1 : 5

Hardwood mullion 90x114 mm



② Details - Window horizontal
1 : 5

Day in the life of: Student Jake



Name: Jake
Age: 18
Personality description: Harmony, Helpful
Health status: Healthy

Story:

Jake has lived his entire life in Driebergen Noord and lives in one of the villas close to Sparrenheide Veld. Jake just became a student for agriculture and as a sidejob he works at the community center. He works at the counter of information, which sells small things for the surrounding houses and organizes community activities. They also provide forms to see what the community want by asking what kind of squares they would like.

In his free time Jake likes to do sports and works out in the morning before school, this way he has enough time after school for his work and his friends, which are an important part of his life.

When he is old:

He didn't think so much about what happens when he is old, that is for the future, now he wants to enjoy his life and his friends. He enjoys helping others and his work, meeting several people in the neighborhood. What he does not know is when he is 45, he will be diagnosed with Dementia, something he thought was only possible when he would be old, but 45 isn't old at all. During his dementia he will need to depend more on his friends and the community to help him through the difficult times.



1.

Jake wakes up, he puts his sportclothes on and eats his breakfast. He prepares his bag, opens the front door and locks it behind him. He takes his bike and leaves his home.

2.

He arrives at the community center and places his bike in one of the bicycle stand.

3.

He goes inside and checks the gym. Sadly all the sportequipment is being used. He places his bag in a locker and goes for a run.

4.

He sees some people do Tai Chi on one of the squares. He does some excersices at the sport equipment in the park.

5.

He arrives back at the community square and takes his bag out of the locker. He takes a shower and puts his school outfit on. He goes out, takes his bike and cycles to the train station.

6.

He comes home after school He prepares something to eat and drink. After he ate he takes his bike and leaves for work.

7.

He arrives at the community center and meets his boss He stands behind the desk and helps the customers. After 8 he leaves the community center through the restaurant.

8.

He greets some people and continues to the park. In the park he meets his friends and after some time he goes home.



Independent Silvia



1. Silvia wakes up, and puts her comfy sports clothes on, it's a bit chilly so she adds a scarf.

2. She meets with some of her neighbours at one of the squares for her daily morning Tai Chi.

3. After the session she goes home for breakfast and makes herself ready to play Pétanque with her friend that lives close by.

4. After the game she tells him goodbye and takes the bus. She needs to do some groceries in the city centre.

5. She comes back sometime later with a bag full. She walks home past the street to her own appartement.

6. She places the groceries away, prepares something to eat and sits in her couch. While eating she reads a book. After she finished eating she continues on her painting that she started yesterday.

7. In the evening she goes out to meet a friend for dinner. On her way to the restaurant she watches the kids play in the park and greets the parents.

8. She sits at one of the tables when a nurse brings her friend over. They talk and eat and after a while the nurse picks her friend up and they both go back home.



Name: Silvia
Age: 92
Personality description: Vitality
Health status: Healthy

Story:
Silvia has lived a healthy life and remains to do so. She loves to travel and made a lot of friends abroad. On one of her travels she met a man and fell in love. She moved with him to The Netherlands and they started a family. They enjoyed hiking and walking through nature. She really enjoyed the calm and quiet of the Utrechtse Heuvelrug and enjoyed her stay there.

Her daughter moved abroad for her work and started her life abroad. Life went on, but sadly her husband became sick at an old age and passed away. She moved to Driebergen-Noord as she would like to be closer to the Utrechtse Heuvelrug.

When she is old:
Silvia wants to maintain her health and her ability to do the things she loves. She loves reading and painting, but also enjoys the company of others. Especially playing games together. She does however enjoy her own space and prefers a big house with enough space for her hobbies.

Her daughter lives abroad, which means she doesn't have much contact with her as she would like. But just in case she comes to visit she has a guestroom ready.



Mother Patricia



1.

The alarm goes off and Patricia stands up. She goes down and prepares breakfast for the children.

2.

She makes sure the kids are ready for their day at school and helps them strick their shoes, before leaving the home and locking the door.

3.

She goes to the car in front of the house and drops the kids off at school before going to her work.

4.

She comes home and parks in the parking lot, her husband who already picked up the kids from school told her before hand that the parking in front of their home was full.

5.

She walks back home and checks where the kids and her husband are. The day is sunny so they are playing outside.

6.

She changes into something more comfortable and prepares to work in the garden. Next to their home they have a small garden with a sandpit for the kids and a greenhouse to grow some vegetables.

7.

After working in the garden she meets up with her husband who is watching the kids. They go together for a small walk around the neighbourhood.

8.

The kids love to greet the animals and feed them some grass. It's getting a quite late, so they agree to walk back home and prepare dinner before they go to sleep.



Name: Patricia

Age: 43

Personality description: Harmony and Security

Health status: Healthy

Story:

Patricia has a big family wish, she has 2 children and a loving husband. They both work office jobs and like to spend their holidays at the beach. She enjoys to spend time with her family and play games. Because of their busy life they like to life close to a playground and a mixed neighborhood so the kids can play and learn from different people.

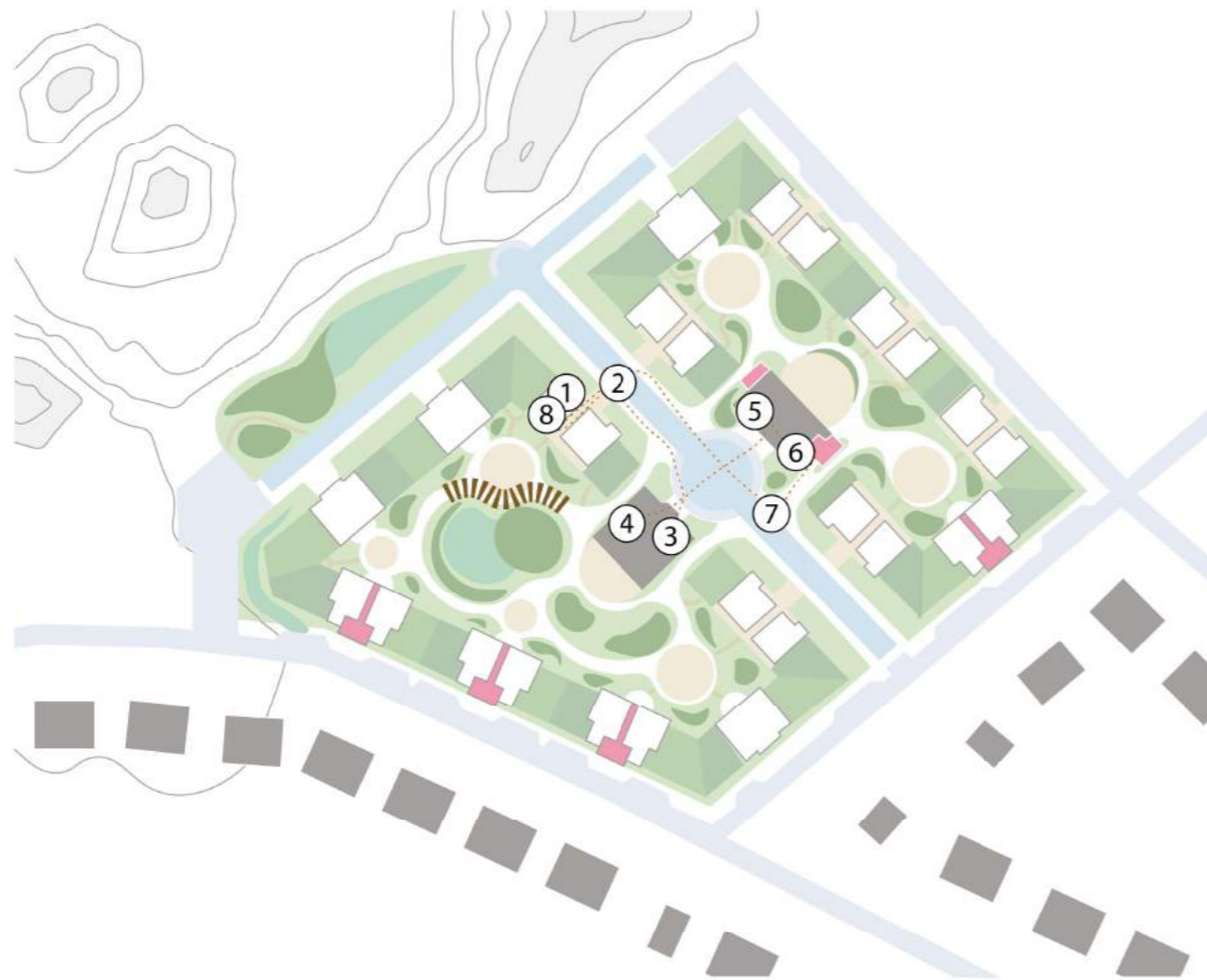
When she is old:

Patricia has a strong emotional bond with her house and environment, she would prefer to stay put in her own home when growing old. She wouldn't like to move out or life smaller.

In the future she would like that the house stays in the family after she passes away. Maybe it would be possible that her kids or her grandchildren could live with them in one home.



Activity deficit Joe



1. Joe just finished unpacking his last box. He goes outside to investigate the neighbourhood.

2. His neighbour welcomes him to the area and tells him to visit the community centre. There are some activities he might like. He arrives at the center and enters.

3. He notices a pinboard and an letterbox just after the entrance. People place forms to do activities or enlist themselves in workshops. The letterbox is for suggestions or desires for activities or the surrounding.

4. While walking around the community center he is greeted by a nurse. She welcomes him and asks him if he would like a tour, to which Joe agrees.

5. She shows him where the hairdresser is, the lobby in case he has questions and the Experience room.

6. Inside the experience room she shows him different domotica equipment to improve the comfort of his home. He declines it as he prefers to have his own stuff and the things he knows.

7. She gets a call and needs to leave. He walks outside and is ready to go home.

8. When he arrives at his door, the neighbour is sitting outside and invites him for a dinner.

Name: Joe
Age: 74
Personality description: Security
Health status: Moderate, mobility problems and loss of balance



Story:
Joe lived a working life, everyday he worked with his hands as a carpenter. In his free time he used to do a lot of sports and woodworking. He started to have problems with his mobility and his balance at the age of 65. After he made a critical fall his son didn't want him to live in his old two story home. So he moved to Sparrenheide Veld, where he could live independently but with care close by.

When he is old:
Joe wants to stay as independent as possible, but has the feeling he lost the ability to do the things he loved. He does not feel old, he just knows he lost things he normally could do. He does not like to depend on others and automatic systems. Domotica is not something he wants in his home, it makes him feel old. He prefers the analog systems he used and knows.



Nurse Joy



Name: Joy
Age: 32
Personality description: Manifestation
Health status: Healthy

Story:
Joy works as a nurse at Sparrenheide Veld. She can usually be seen chatting with people on the street. She likes to be with people and is very adored by the residents and the people living in the neighbourhood. She knows the importance of her job and is proud of her work. She helps the people to find comfort in their life and provides a shoulder for those in need. Her ambition is to be the best in her job and make sure everybody is content.

When she is old:
Joy knows what can happen when she grows old, and would like to know all the possibilities that are offered. Because of this she likes her job so she can teach others about the possibilities in their later life. She can be a helping hand and a guide for the people when she is young, just like she hopes others will be for her when she when she is older.

1. Joy parks her car in the parking lot and continues walking to her work. She greets the people as she passes them and stops for some small talk.

2. She goes to the break room to see her schedule and have a headsup with the other caretakers about the day.

3. Her first activity is to meet Hendrik and help him in the home. He has problems with his fine motor skills. She helps him clean the room and helps him eat.

4. After helping Hendrik in his home, she goes back to the carefacility for her next patient Harold. Harold had a planned visit of his daughter, so Joy knows she just needs to check up on him.

5. Harold is in a wheelchair but loves to go for walks in the fresh air and smell the flowers, and wants to go today aswell. They just left the building, but he is overwhelmed and wants to go home.

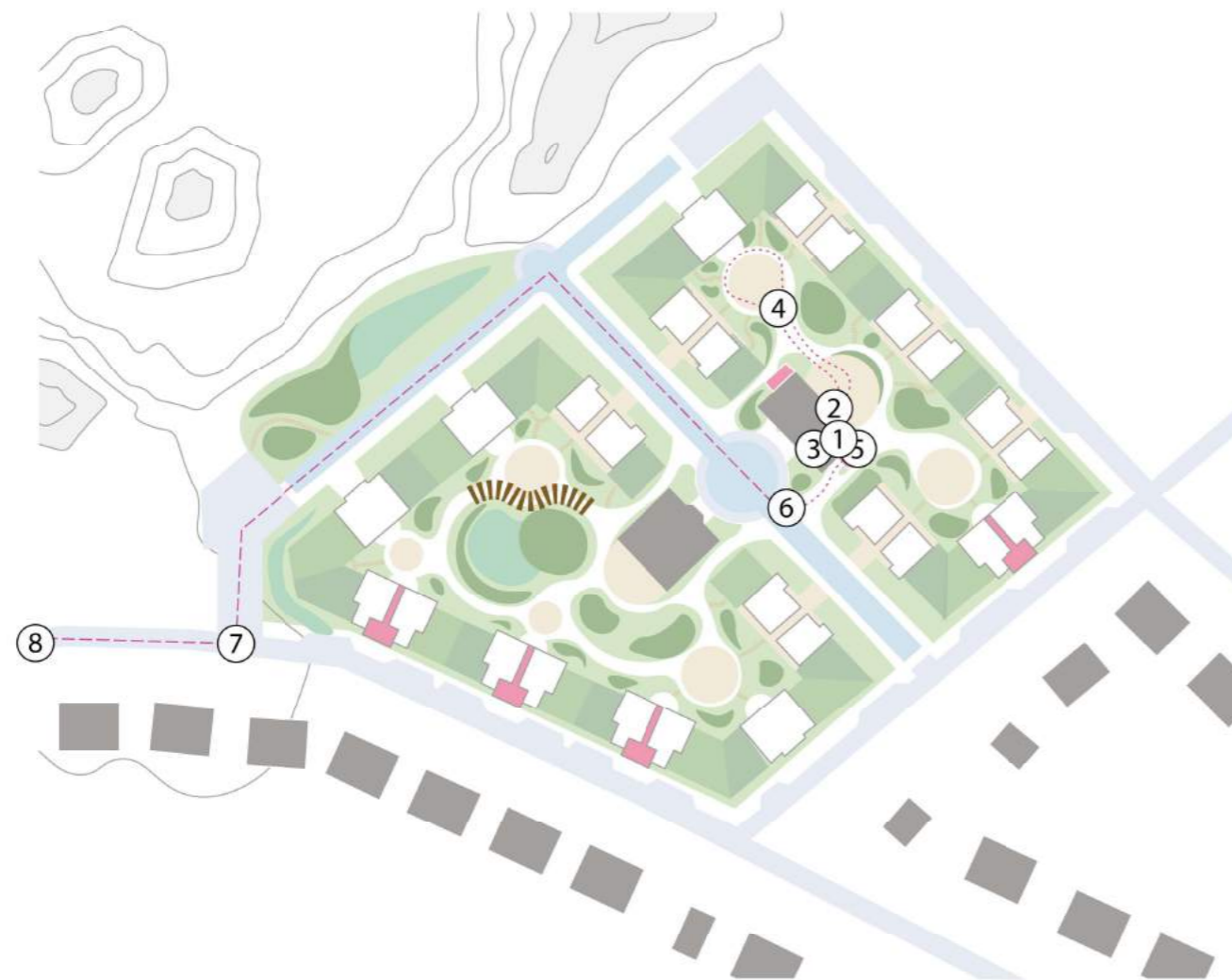
6. After she brings Harold home the person behind the desk asks her if she has time to bring Michella, one of the residents and patients, to the restaurant where she will meet her friend Silvia at the restaurant.

7. Her workday is almost over and she walks back to the carefacility when she sees a new face. She greets the man and they start to talk.

8. She gives him a tour and gets a call. Harold got a seizure and needs help. She stays at Harold side with another caretaker until the ambulance arrives. After the ambulance comes she clocks out and goes home.



Frail Harold



Name: Harold
 Age: 80
 Personality description: Vitality and Harmony
 Health status: Dementia and severe healthproblems.

Story:
 At the age of 65 Harold got into an accident. After he was unable to walk because of a broken nerve. Harold lived with his wife in a city center, but he always loved plants and flowers. He wanted to have a big garden of his own, but it was not possible in their current home. He lived a good life and he could always depend on his wife. His wife had a strong character and always helped him when he couldn't find his words, couldn't find his tie or just to walk with him around the block.

Just a couple of years later his wife passed away. After she died he needed to live smaller because of economic reasons, which gave him the opportunity to live closer to nature. In Sparrenheide veld his health-status got worse, as he apparently lived some years with Dementia unknowingly by others and himself. The change in environment and the loss of his wife progressed the disease more.

When he is old:
 His disease might make him forget most of his life, but that does not mean he can't enjoy. Harold doesn't want to be hospitalized, even though he requires help for almost any activities, he would like to enjoy his life as much as possible.

1. Harold wakes up and waits for the nurse to clean him up and dress him for the day. The nurse helps him and places him close to the window next to a table with a book.

2. While reading his daughter came to visit unexpectedly and takes him outside. They sit outside on the square and have a drink together. He enjoys the company but he doesn't seem to understand who she is.

3. His daughter brings him to the room of experience where they sit. His daughter takes a book with pictures and stories of his life and reads them to him. She enjoys to remember the life her father had, and sometimes it helps him remember too.

4. The daughter brings him back to his room. After a while a new person enters the room, she takes him for a walk, Harold is happy. He hasn't been outside yet. They walk for a small bit but he gets overwhelmed and wants to go home.

5. They go with the elevator up and Harold feels a weird feeling in his body. He makes a sound but forgets the pain he felt when the nurse asks for it. The nurse places him in the bed and he falls asleep.

6. While sleeping Harold gets a seizure, which is being recognized by the seizure monitor on his bed. The nurses are being alarmed at the exact moment.

7. The nurses come upstairs and try to stabilize Harold, his breathing stopped and he looks numb. One of the nurses calls an ambulance. The ambulance arrives within 12 minutes from the closest hospital.

8. Harold needs to stay the night at the hospital for supervision, but he appears to be okay.



Reflection

I have chosen this studio to learn more about the social aspect of architecture. I focussed my entire studies on architectural engineering and complex projects. I preferred to focus during my graduation more on the emotional scale of architecture, to learn more about the spatial elements of architecture and their influence on the social structure of society. I believed this studio to be the perfect fit for this learning goal.

At the start of this studio, I had an idea to make a complex with different sections to increase awareness. But while researching I learned that this was not the approach to take. A complex building would have the opposite effect in the surrounding that I chose. I had to design a smaller complex, villas that I had no experience with so far. I might have had an easier job if I had chosen one of the other design locations or took a different approach.

At the beginning I also desired too much, I wanted to include too many functions and lost the purpose of my design. Before the P3 I got blocked in my design process with no glimpse of inspiration. I was stuck with a design that did not work and got a mental breakdown. The tutors asked me how they could help, but the suggestions I made were not possible for them. It was not without the help of my classmates that I could find the direction that I needed and finish my design.

I did learn that my way of approach is to make multiple scenarios and to test the different designs to find the ultimate solution. Especially with a topic like stigma, in which every action could have a positive or negative outcome depending on a person's association with space, appearance and materiality. It also shows the beauty of architecture because every design can have a different impact on society. Each architect will design something completely different because of their own knowledge and their own way of designing. Even the same architect would design a totally different design with the same topic and location, depending on their own mood, experience and surrounding at that time.

While it was a tough year with a lot of new experiences, I am proud of the final product, considering the circumstances.

In the end I didn't learn as much as I had hoped during the start of the studio, but I did learn more about myself, my way of designing and my preferences. I notice that I find way more joy in the technical aspect and the detailing than the spatial aspect of architecture. I do however like the challenge to learn more and investigate further how to improve myself in this field.





“Rethink growing old”