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Future Visions for Healthcare, Housing & Work, 22,5 credits  
Examiner: Professor Peter Fröst

# HEALTHCARE IN A PARK

# CONTEXT

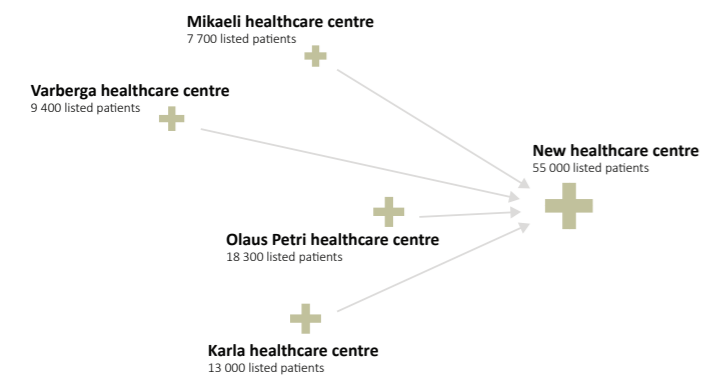
## NEW HEALTHCARE CENTRE

The city of Örebro is currently planning a new specialist healthcare centre. Four healthcare centres Karla, Mikaeli, Olaus Petri and Varberga are intended to be merged together into one bigger unit.

The purpose is to adapt to the challenges of the future, which is about the increasing numbers of inhabitants in the city of Örebro. The experience is also that nowadays more people are contacting the hospital specialists directly, instead of going through a regular healthcare centre.

With a larger unit, work becomes more flexible and professional teams that can learn from each other. Having four healthcare centres under the same roof, creates opportunities to develop specialized care and a more seamless patient care.

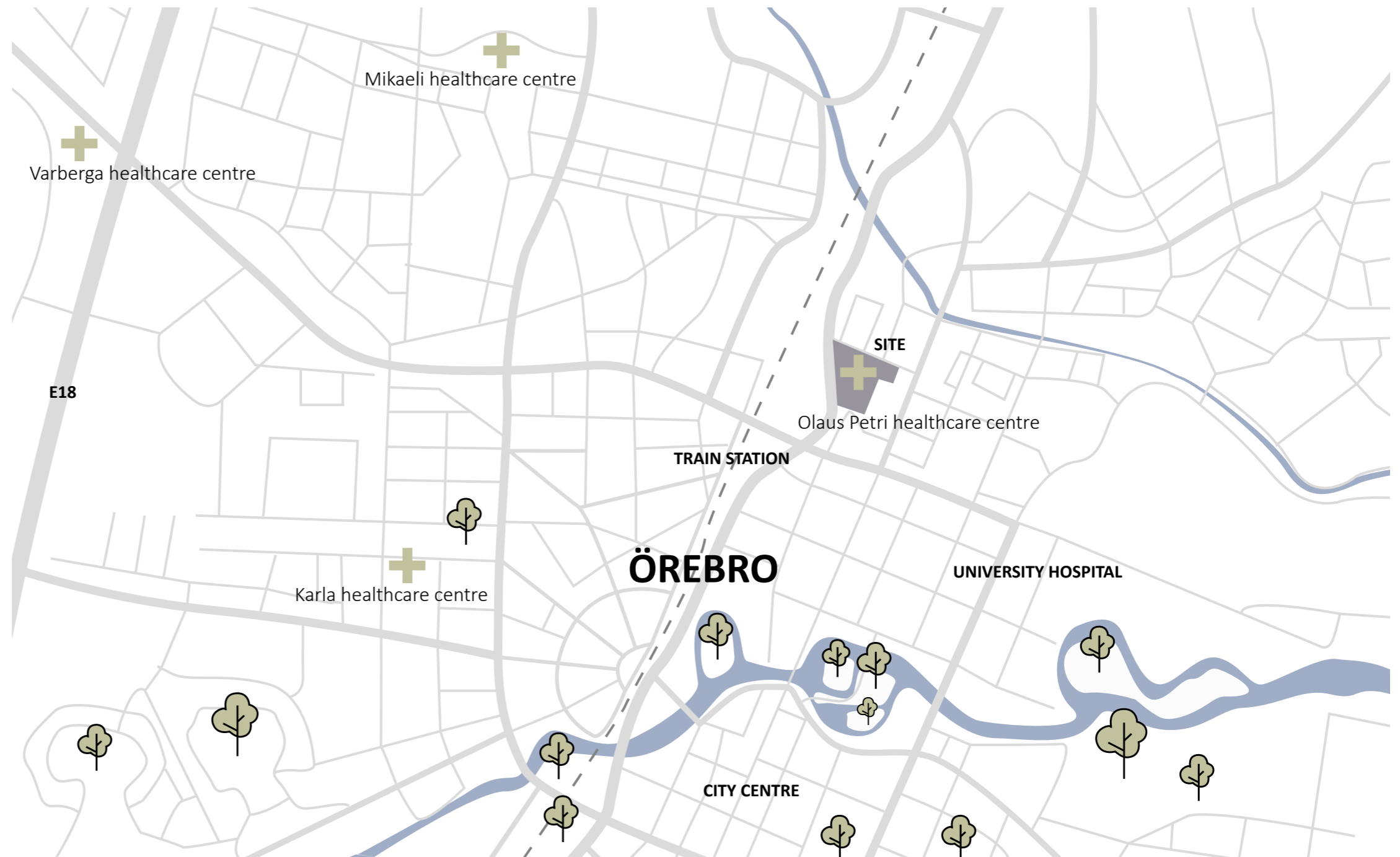
The total amount of listed patients in the new healthcare centre will be around 50 000 patients.



## SUBMISSION

The submission of this master studio is to create a vision for this new healthcare centre in Örebro. It is also about obtaining general knowledge about and ability to design large scale, complex and sustainable buildings integrated into the surrounding environment and urban setting.

The focus is to apply the concepts of four different themes; healing architecture- evidence based design, healthcare + architecture, health promotion and future proofing- flexibility and generic space.



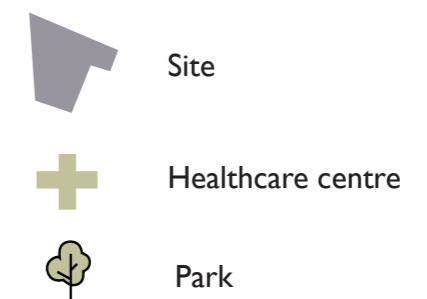
## HEALTHCARE IN A PARK

We live increasingly densely and are in growing need of green oases. Well-being often comes from the direct experience of greenery in the neighborhood and therefore the municipality of Örebro is writing on their webpage orebro.se that they want to fill past, small and often forgotten places with unexpected, green and cured content.

Stora holmen, Castle Park, Kvarnplatsen and Henry Allards Park are the most known parks in Örebro and they are all located in the centre of the city. On the

other hand, there is very few parks and green areas north from the city centre.

However, there is an opportunity to change that when creating this new specialist healthcare centre. Therefore the focus should be to create a healing environment with the concept "Healthcare in a park".



# VISION

## HEALING ENVIRONMENT

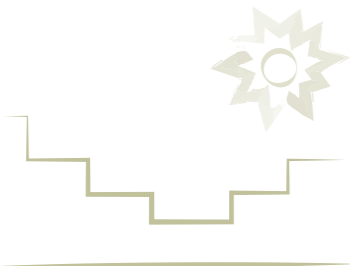
Evidence based design shows that a healing environment with access to nature, lots of daylight and walkability reduces stress, promotes health and decreases medication.

### NATURE



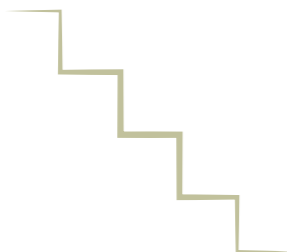
- accessible green terraces and courtyards with different functions
- views of nature directed towards courtyards and outside park

### DAYLIGHT



- lower building height with terraces towards south and east
- large windows letting in lots of light

### HEALTH PROMOTION



- you see the staircases leading to all floor levels directly when entering the building
- inviting green terraces and courtyards gives an opportunity to wait outside and get fresh air and be active

## PATIENT CENTERED CARE

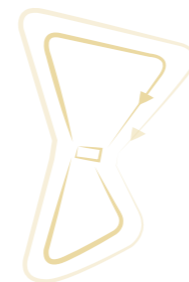
Focus on patients is important to reduce time for treatment. Many patients are also visiting for the first time and need to be able to orientate well in the building and there should be no need to change facility.

### PRIVATE COURTYARDS AND TERRACES



- terraces and courtyards with different degrees of privacy
- optional waiting areas

### SEPERATED FLOWS



- patient, staff and goods flows are separated to minimize spreading of diseases
- this also creates a more calm environment for both staff and patients

### WAYFINDING

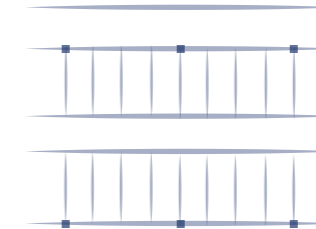


- the main entrance in glass is visible where you can enter from two directions
- patient flows are spreading straight out from this centre point to each department

## FUTURE HEALTHCARE

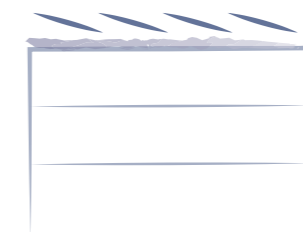
Healthcare is constantly developing and the structure needs to be adaptable to future needs. A sustainable approach to Healthcare Architecture is essential to maximize the long-time effectiveness for the whole life of the facility. It is also of great importance to learn more about what E-health and digital development could mean to us.

### GENERAL STRUCTURE



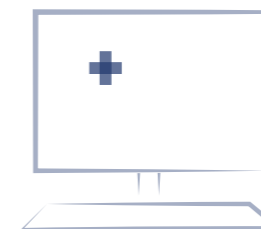
- room sizes are adapted to a general grid to make it flexible and easy to change the room structure for future needs
- the room sizes are large to be able to suit many departments in a healthcare centre

### SUSTAINABILITY



- green roofs with solar panels are covering most parts of the roof structure
- green terraces and walls support biodiversity

### DIGITAL HEALTH

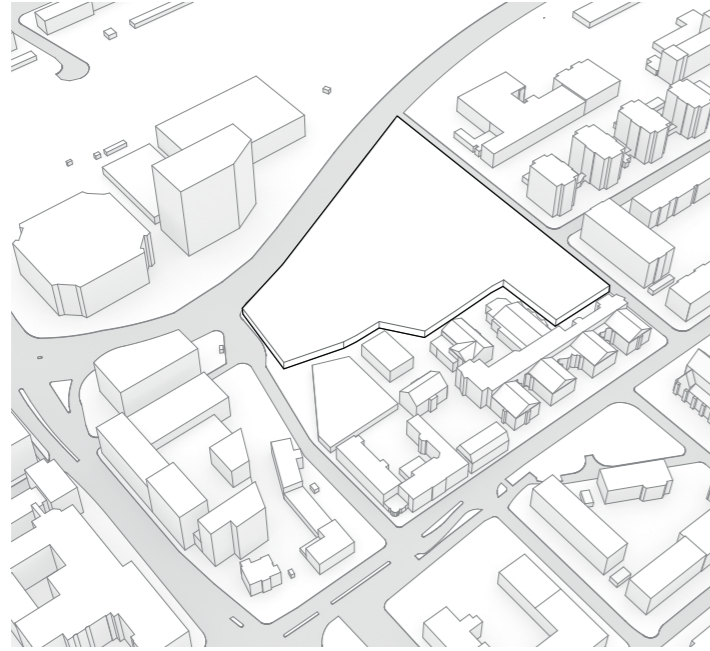


- technology will increase the efficiency of the healthcare
- by having self-check-in systems bring patients knowledge and competences to take responsibility for their own illness

# SITE ANALYSIS AND PROCESS

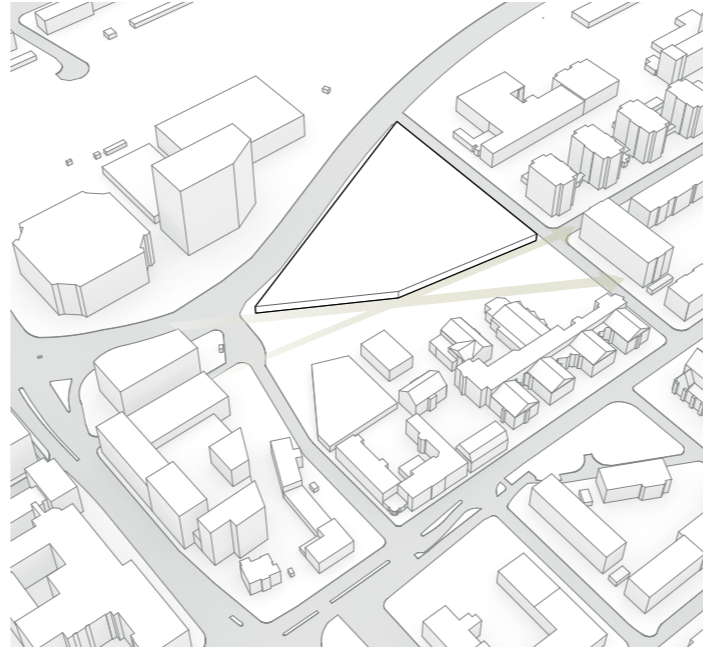
## SITE

This is the site that is given from the client.



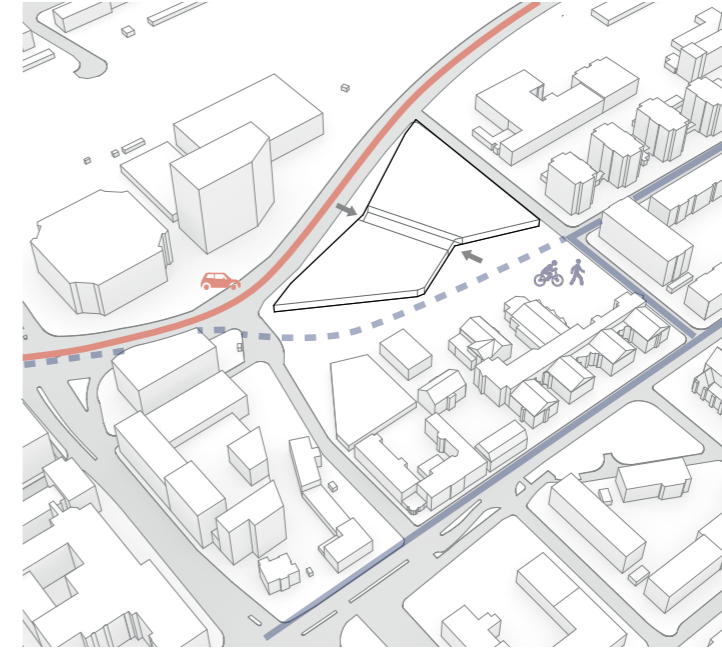
## SIGHTLINES

This is two important sightlines through the area. One allows you to see continuing streets and the other one makes the park visible.



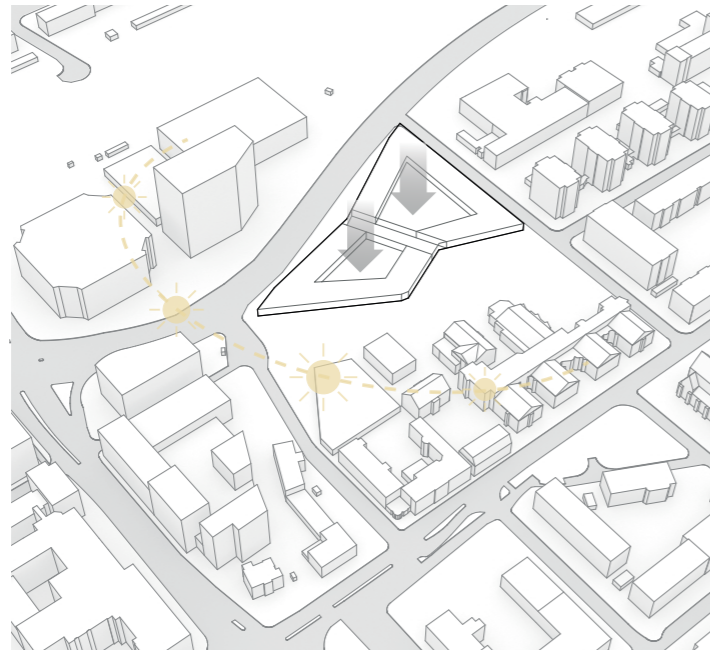
## FLOWS AND VISIBLE ENTRANCES

Two main entrances are visible and easy to reach from the main traffic and pedestrian flows.



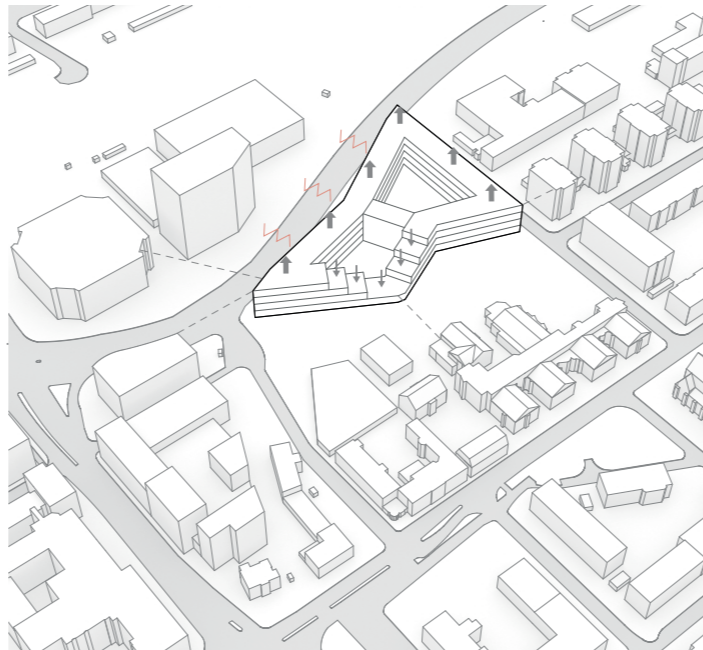
## DAYLIGHT AND PRIVATE COURTYARDS

Two large courtyards bring in lots of daylight into the building.



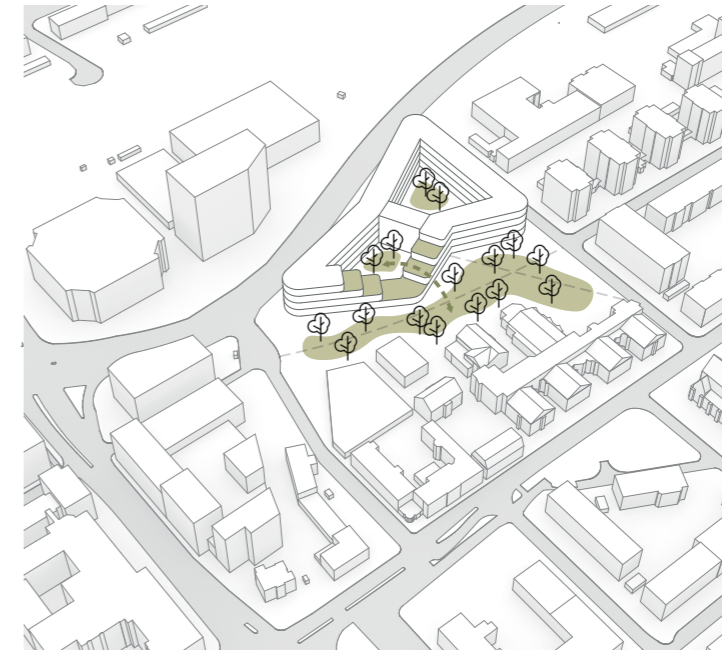
## NOISE AND BUILDING HEIGHTS

In order to protect from the noise, the building is higher by the boulevard and it is also following the height of the other buildings.

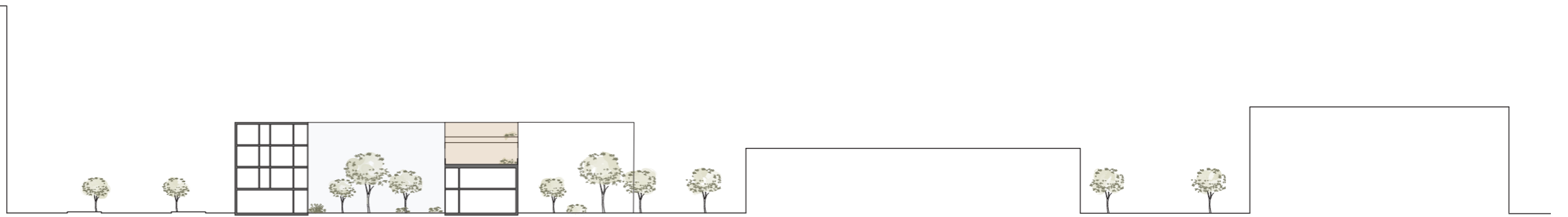
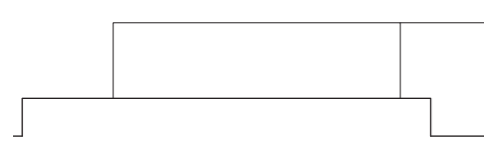
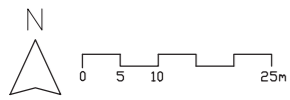
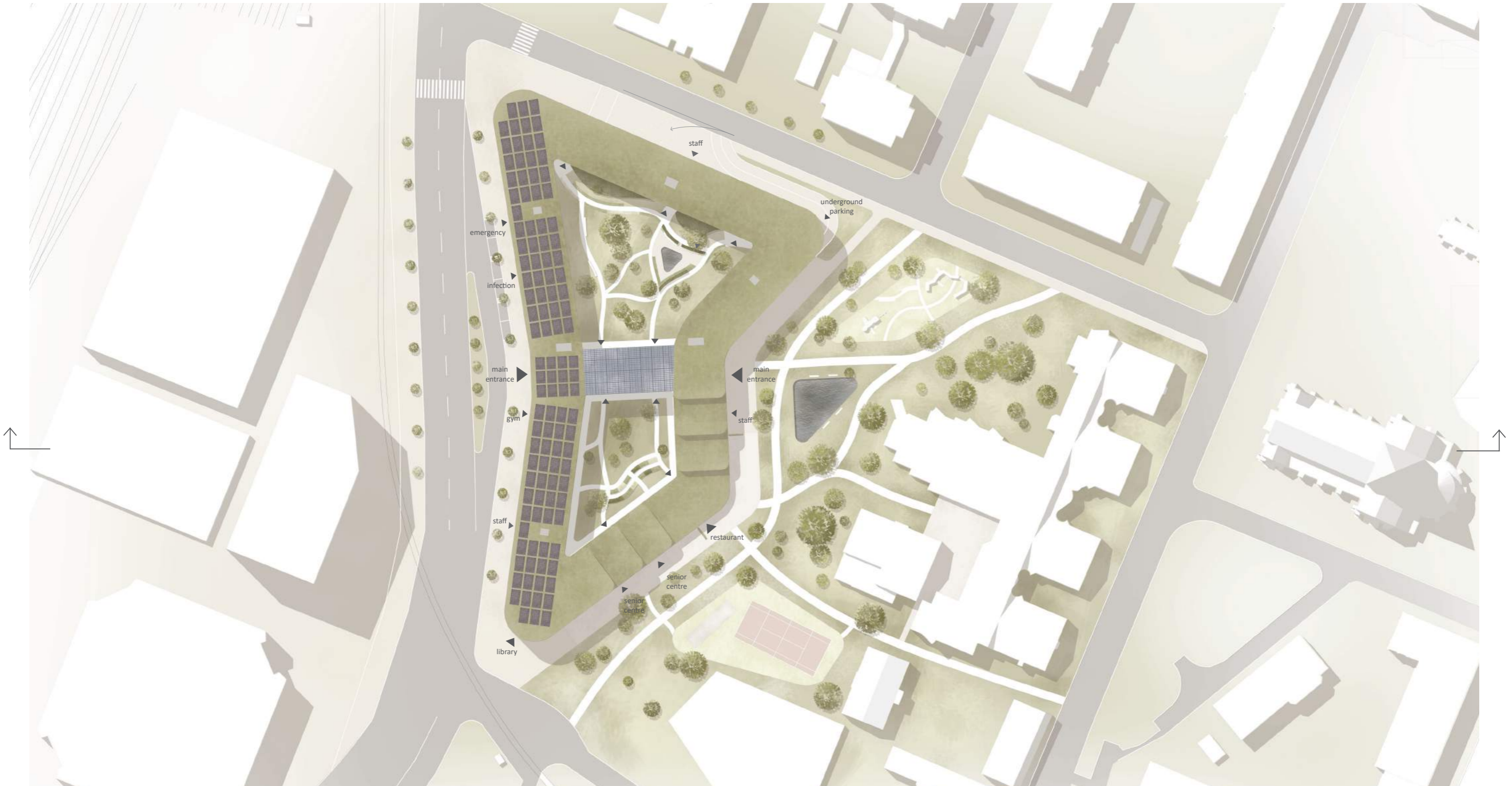


## HEALING NATURE

Green courtyards and terraces are oriented towards the south and the park.



# SITE PLAN



# PRIVATE COURTYARDS AND TERRACES

## GREEN OPEN OUTDOOR SPACES

There are five open terraces in the building directed towards east and south. One is public and the other four are private. The public terrace is the largest and it is located on the second floor. This terrace is available for the patients, especially for kids at the family centre to play at the small playground, but also for restaurant quests.

There is a belief that it is nice to have a social space where patients can see other people and feel more relaxed. The healthcare is not anymore a place where you go only when you are ill. Therefore, this restaurant terrace can become part of everyday life of people living nearby.

The other terraces are mainly for patients and staff and have different focuses. They all have specific groups of people using them. For example the physiotherapy department has a private terrace where patients can do some exercises at the out door gym.

Spending time outdoors and breathing more fresh air while being surrounded by nature, will make the patients feel better and the staff work more motivated.



# PROGRAM

## PUBLIC FIRST FLOOR

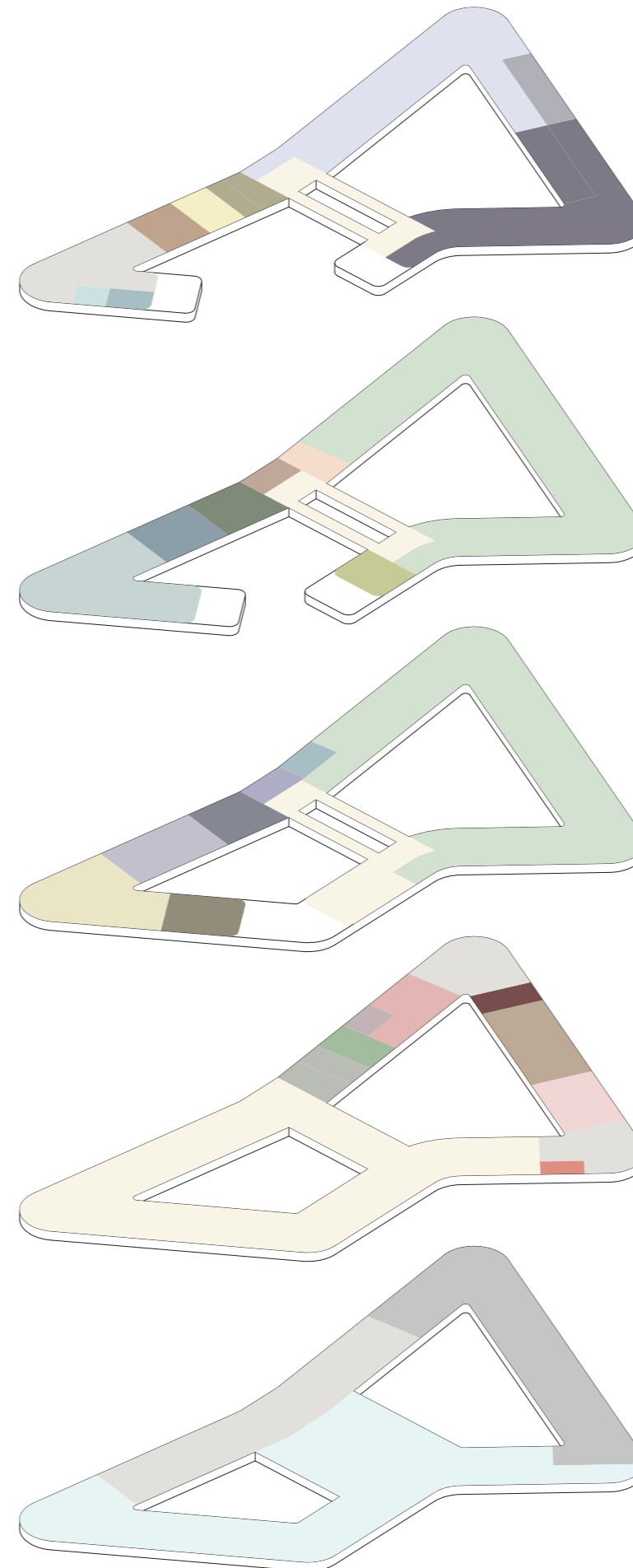
Public functions are located on the first floor which makes it easier for people outside to reach them and the other more private departments is located higher up in the building. The public functions makes it a livelier and a safe area also in the evening. This is also done to make the new primary care center a part of the community.

The first floor has higher ceiling to create extra nice public areas but more important to give space for the heavy surgery and x-ray equipment.

## CLOSE CONNECTIONS

The patient flows are spreading from the entrance hall where there is a close connection from the underground parking, the boulevard and the park. The more urgent functions are located on the first floor and visible from the boulevard.

Departments that benefits from being close together is for example the emergency, surgery, x-ray and ambulance pick up, family centre and children center, staff lunch room and restaurant etc.



- Floor 4**
  - Dental
  - Counselor
  - Psychiatry
  - psychologist
  - Prevention group
  - Gynaecologist
- Floor 3**
  - Physiotherapy
  - Occupational therapy
  - Dietist
  - Footcare
  - Orthopedics
  - Staff lunch room
- Floor 2**
  - Dermatology
  - General internal medicine
  - Geriatrics
  - Family centre
  - Children centre
  - Mobile team
- Entrance floor**
  - 1177
  - Emergency
  - Emergency pickup
  - Goods/waste
  - Surgery
  - X-ray
  - Staff
  - Infection
  - Primary Care
  - Lab, self-care, e-health
  - Public functions
- Basement**
  - Technical floor
  - Staff changing rooms
  - Parking

# FLOWS

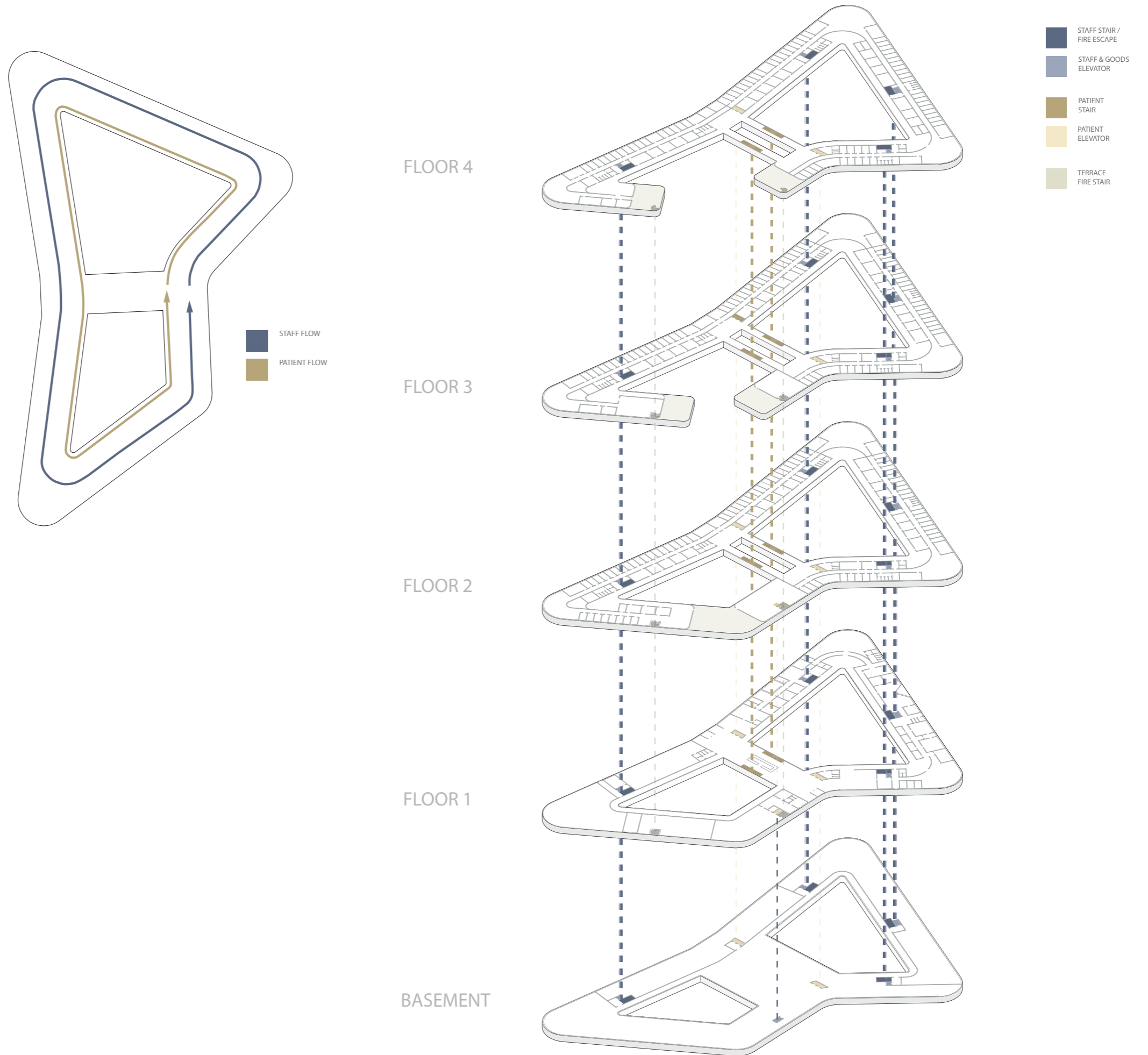
## SEPARATED FLOWS

To make the healing process more effective and to minimize the spreading of diseases, there are separated flows. The patient flow consists of glass corridors on the inside close to the green courtyards. The staff corridors are in the middle of the building with working spaces directed towards the outside science there is not as great need for complete privacy.

## WAY FINDING

Visitors can immediately see the staircases and the elevators which are also separated for patients and staff. The glass corridors are spreading from the entrance hall straight to each waiting area in the corners of the building. From where ever you are standing in these transparent patient corridors, you can see the main entrance hall and the staircases which helps to orientate in the building.

Staff can use several separated entrances on the first floor and then use the staircases and elevators only for staff. Staff and patients enter the examination rooms from different sides.





# FIRST FLOOR

## ENTRANCE HALL

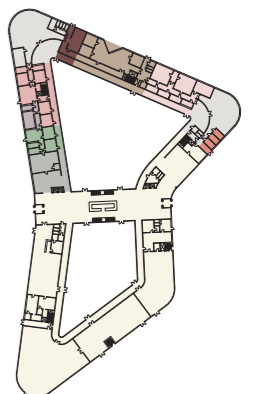
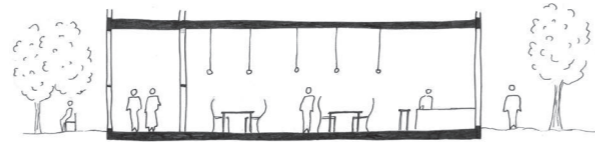
The entrance hall is located in the heart of the building. One of the central elements in the hall are the stairs next to the glass facade. There patients can take the stair or elevator to go directly to their department or go to the reception and ask for information. While waiting, they can go outside to get fresh air in the courtyards or on the terraces. It is also easy to go to the restaurant before the appointment which is located next to the entrance hall. You will be dialed digitally when it is your turn to be examined.



## PUBLIC FUNCTIONS

By the boulevard there is a gym and a library which is open for other people. They can function also in the evening. The pharmacy is next to the entrance and close to the park where people will come to have a walk and relax. The senior center is between the restaurant and the library where they can socialize with other people. Infection department has a separate entrance. The goods delivery is organised on the basement level.

PUBLIC RESTAURANT with close connection to the entrance hall

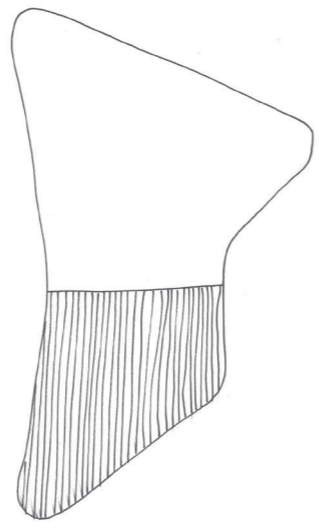


- Entrance floor
- 1177
- Emergency
- Emergency pickup
- Goods/waste
- Surgery
- X-ray
- Staff
- Infection
- Primary Care
- Lab, self-care, e-health
- Public functions



PRIVATE

PUBLIC



# SECOND FLOOR

## MEETING SPACES

There are separated meeting spaces for the patients and staff. Patients have optional waiting areas where the bigger ones are located in all corners of the building with small receptions and oriented towards the courtyards. There is also a possibility to wait in the light glass corridors where there are seating areas by the green walls.

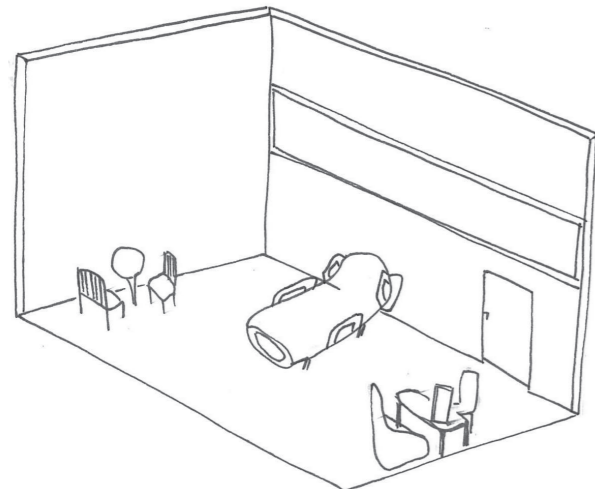
There is also a generous space for staff where they can have a break and meet other colleagues. The patients can partly see the staff area and the outside views through the building.

## PRIMARY CARE

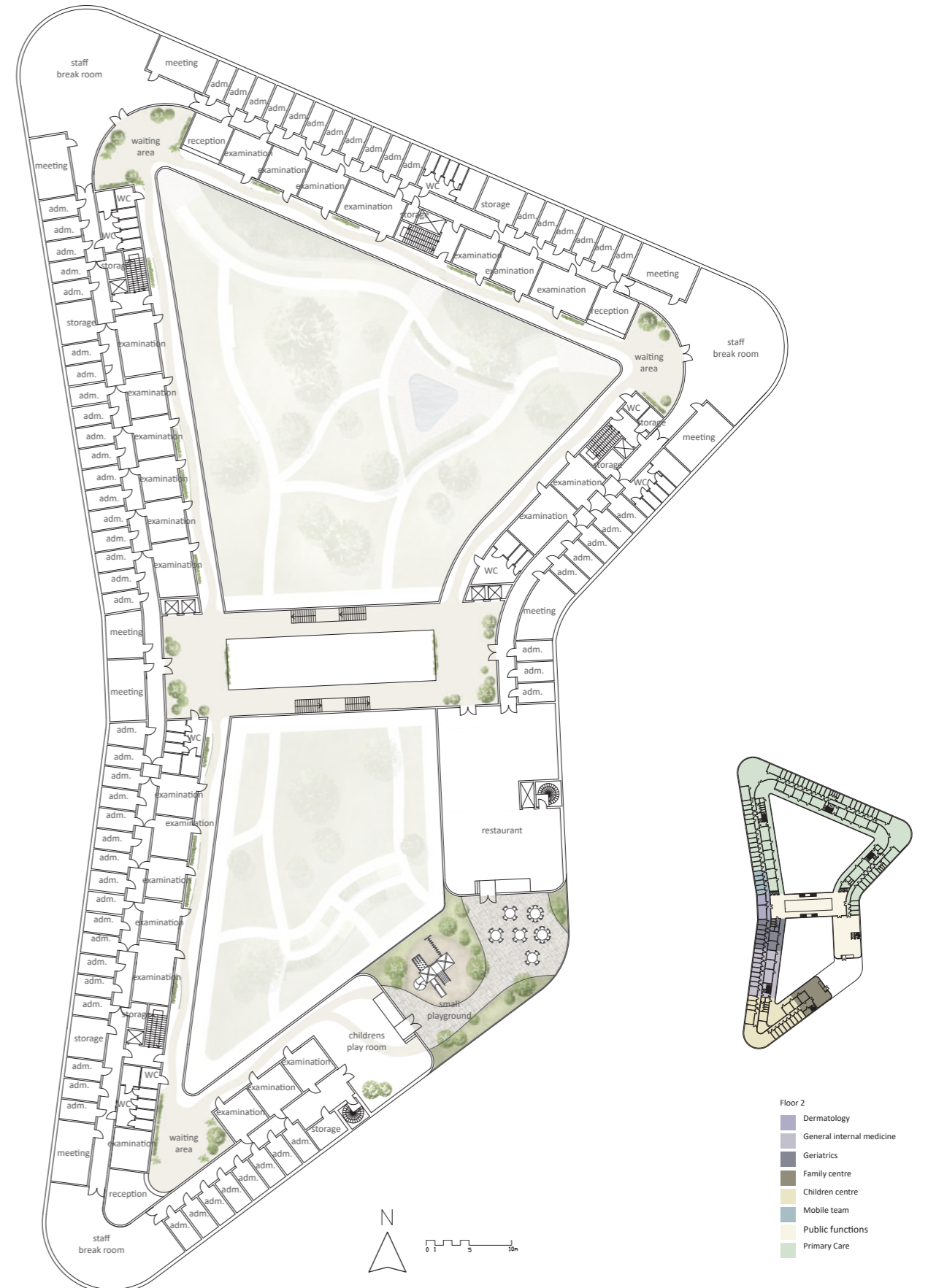
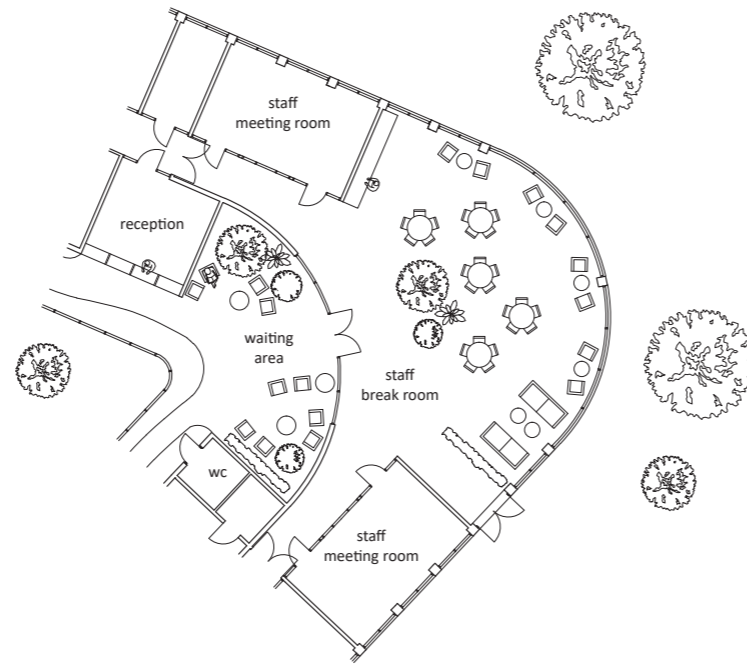
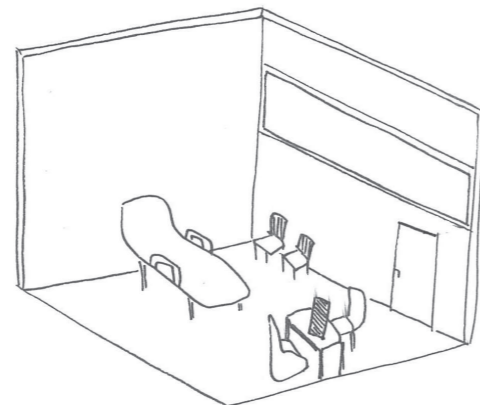
On the north side of the second floor there are primary care rooms. Here there are two general sizes of examination rooms placed in between patients and staff corridors. All examination rooms are the same standardized size so that the departments can share rooms to increase the usage.

On the other side of the building, children and family center are placed. They have their private terrace with a playground where children can play and mothers can socialize and by some food in the restaurant.

## LARGE EXAMINATION ROOM



## STANDARD EXAMINATION ROOM



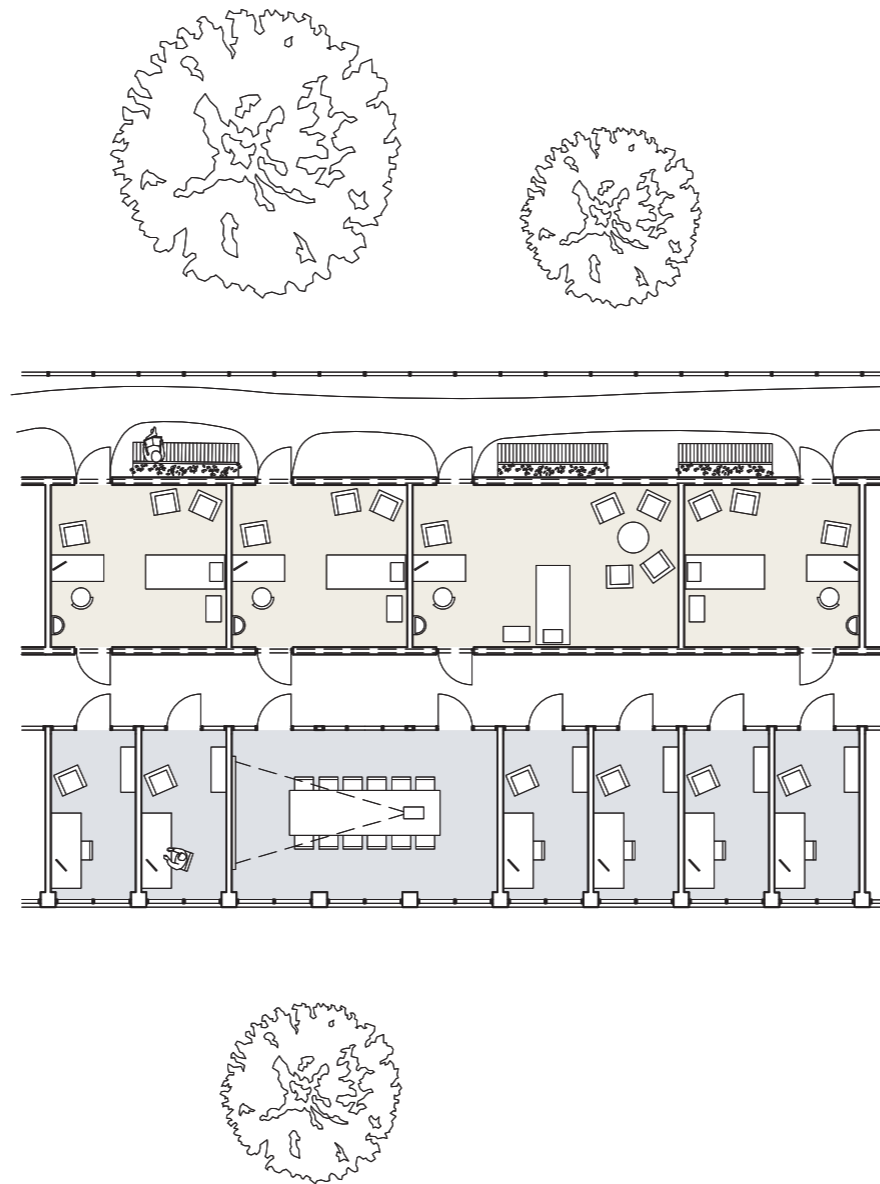
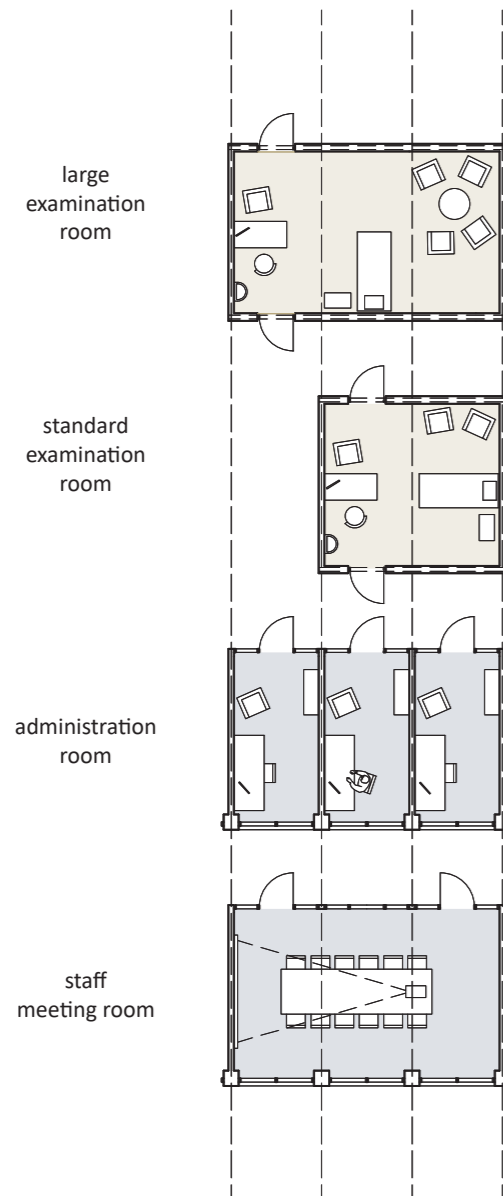
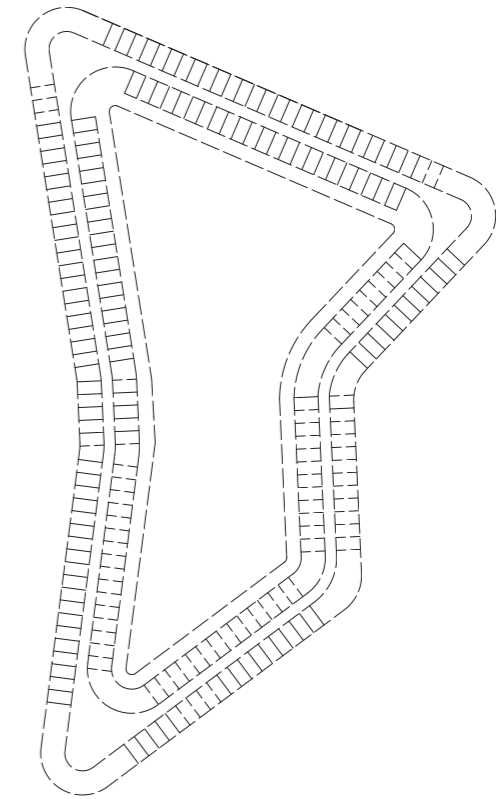
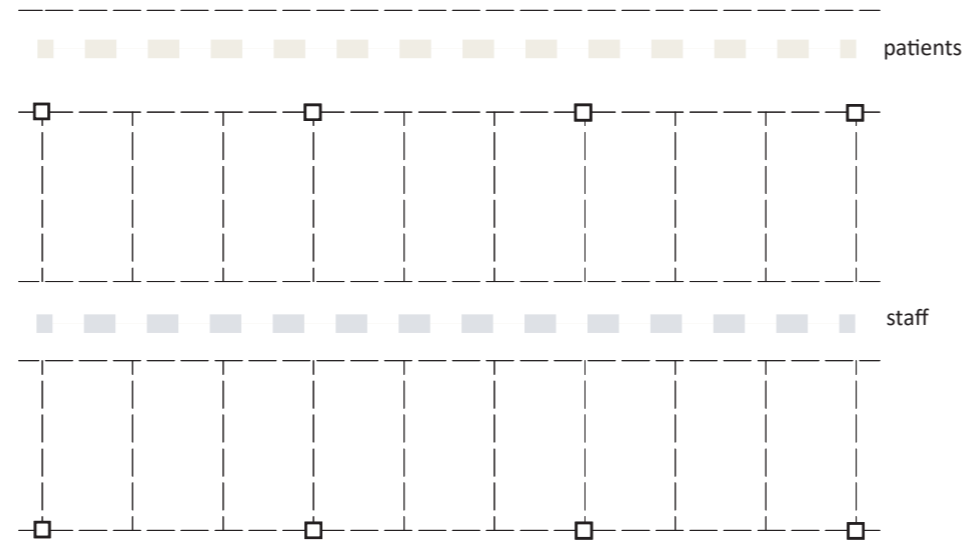
# FUTURE PROOFING

## GENERAL ROOM SIZES

Since many changes are happening in the healthcare, a special attention is paid to the aspect of flexibility. There is a general grid where all rooms fits in and can be combined or transformed in any other function.

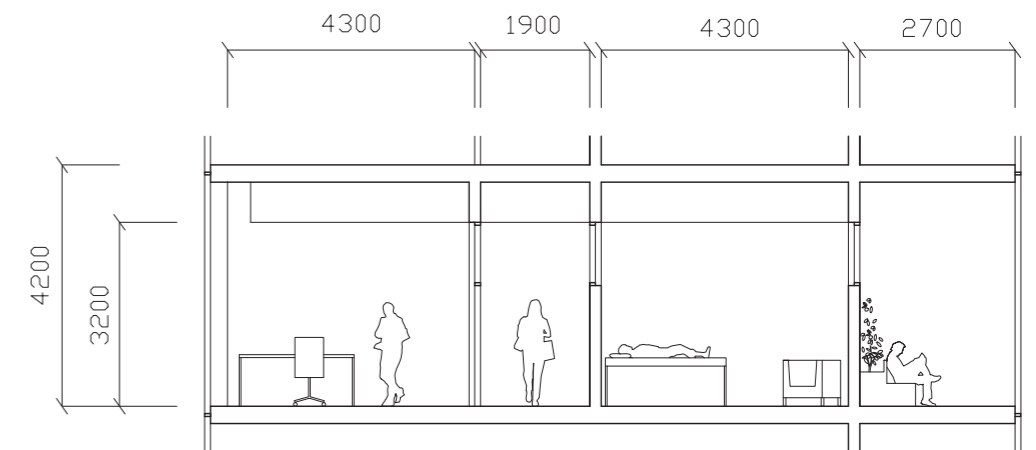
## PILLAR STRUCTURE

A pillar structure allows to add more floors. The light weight walls could be changed over time to meet different needs of treatment.



## MEASURES

The first floor is 4800 mm from floor to floor to make space for emergency equipment. On the rest of the floor levels there is only need for 4200 mm. The staff corridors are 1900 mm and the patients is 2700 mm to make space for extra waiting areas.



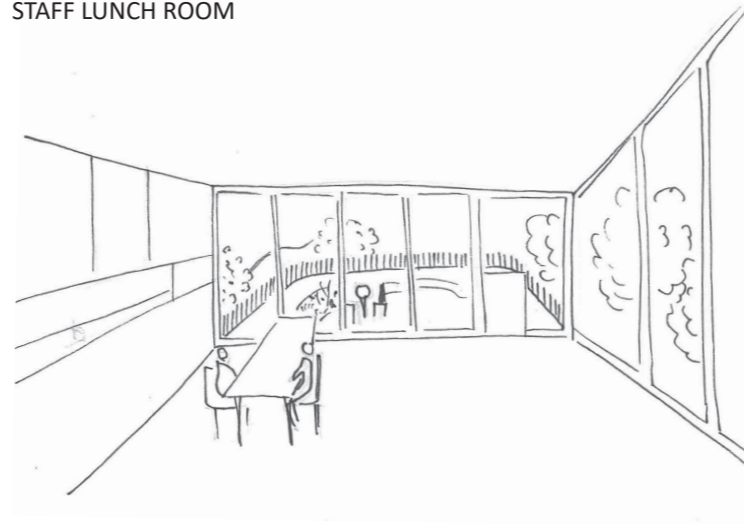
# THIRD FLOOR AND FOURTH FLOOR

## DEPARTMENTS WITH LESS FLOWS

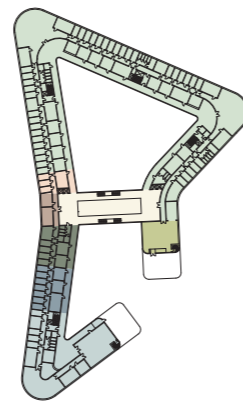
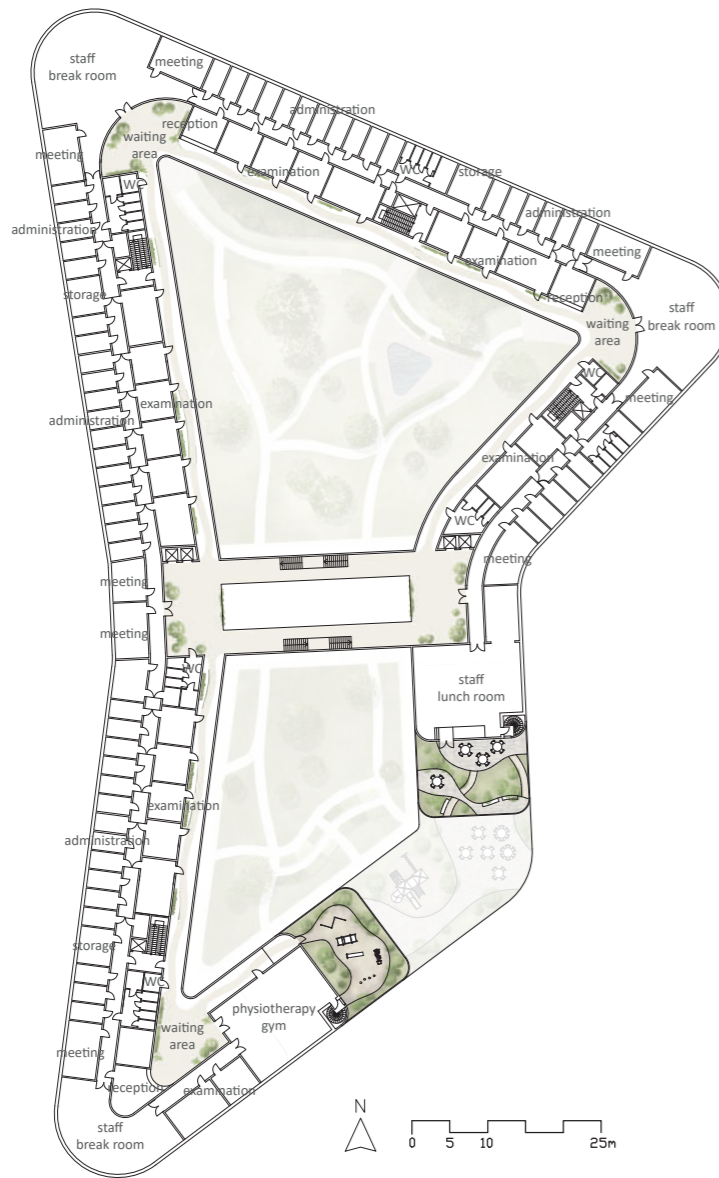
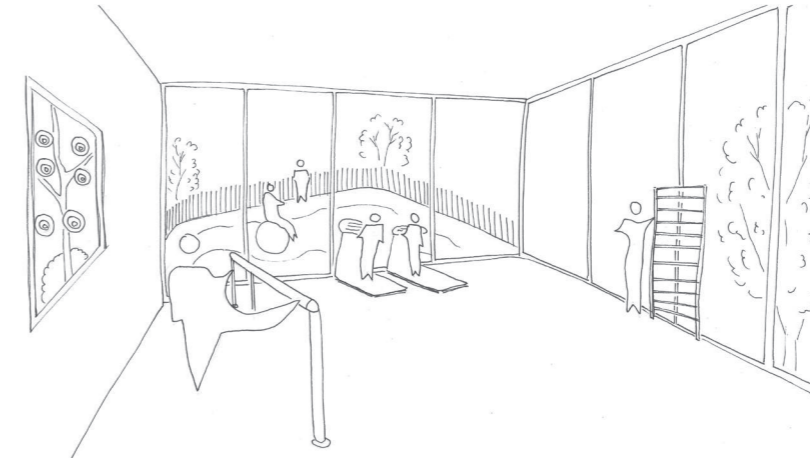
On the third floor there are more primary care rooms. There is also a physiotherapy department which has a room for exercises. This department is connected to their own private terrace with different facilities. Close to the staircases is the staff lunch room with a terrace where they can have nice views or go outside.

On the fourth floor there are different healthcare functions, dental care and municipality offices.

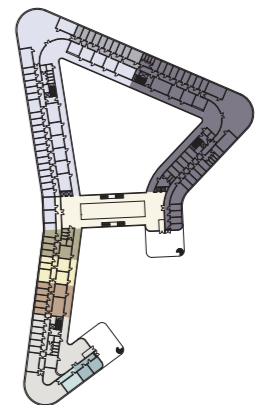
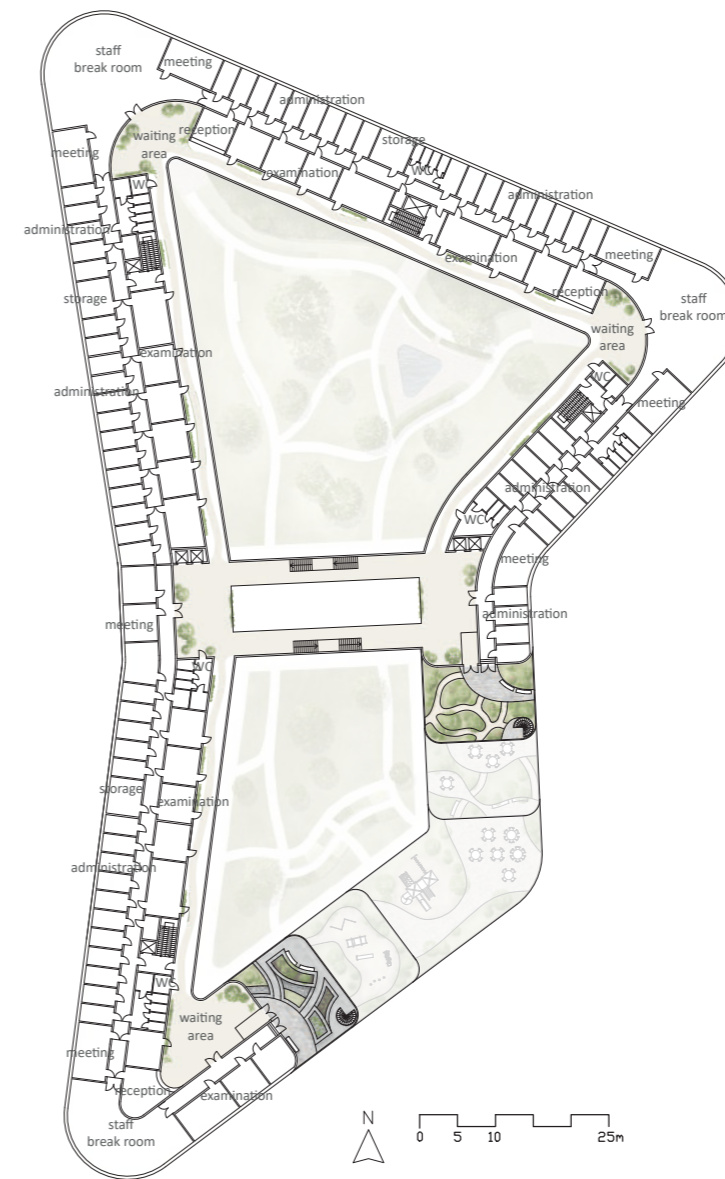
STAFF LUNCH ROOM



STAFF LUNCH ROOM



- Floor 3
- Physiotherapy
  - Occupational therapy
  - Dietist
  - Footcare
  - Orthopedics
  - Staff lunch room
  - Public functions
  - Primary Care



- Floor 4
- Dental
  - Counselor
  - Psychiatry
  - psychologist
  - Prevention group
  - Gynaecologist
  - Staff
  - Internship & research
  - Municipality services
  - Public functions

# FACADES

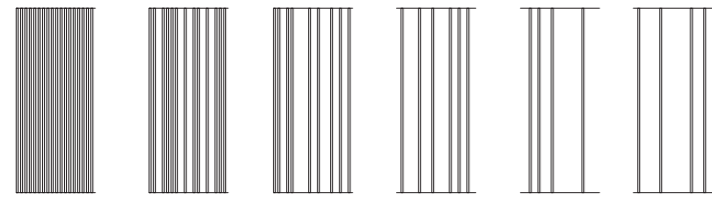
## INSPIRED BY NATURE

The facades are made of wooden vertical elements, glass and green walls. The material choices are inspired by nature qualities that are brought into the design in order to feel the warmth and calmness and also to let in lots of light. The wood is continuing up as a railing going around the terraces.

## PREFABRICATED ELEMENTS

The wooden panels consists of six different types of prefabricated elements. When placing them together in the facade it creates an irregular pattern.

The panels that have most wooden beams are placed in the parts of the facade where the department inside needs the most privacy.



DETAIL FACADE



## GREEN FACADES

There are more green facades by the boulevard. They are used as a buffer between the noisy road and healthcare building. Furthermore, they help to reduce the heat island effect.

VIEW FROM THE PARK



## GLASS ENTRANCES

To make the entrances more visible there is more glass, from the ground and all the way to the top of the building, in these areas. This also makes the entrance hall very light and welcoming.



FACADE VIEW FROM THE BOULEVARD

# SECTIONS

## NATURE VIEWS AND DAYLIGHT

The first section shows how healing nature is part of the concept design with big courtyards and green terraces. The patients corridors always has views towards the greenery in the courtyards but greenery is also part of the interior. The patient corridors are light since is good for the health.

## HEALTH PROMOTION

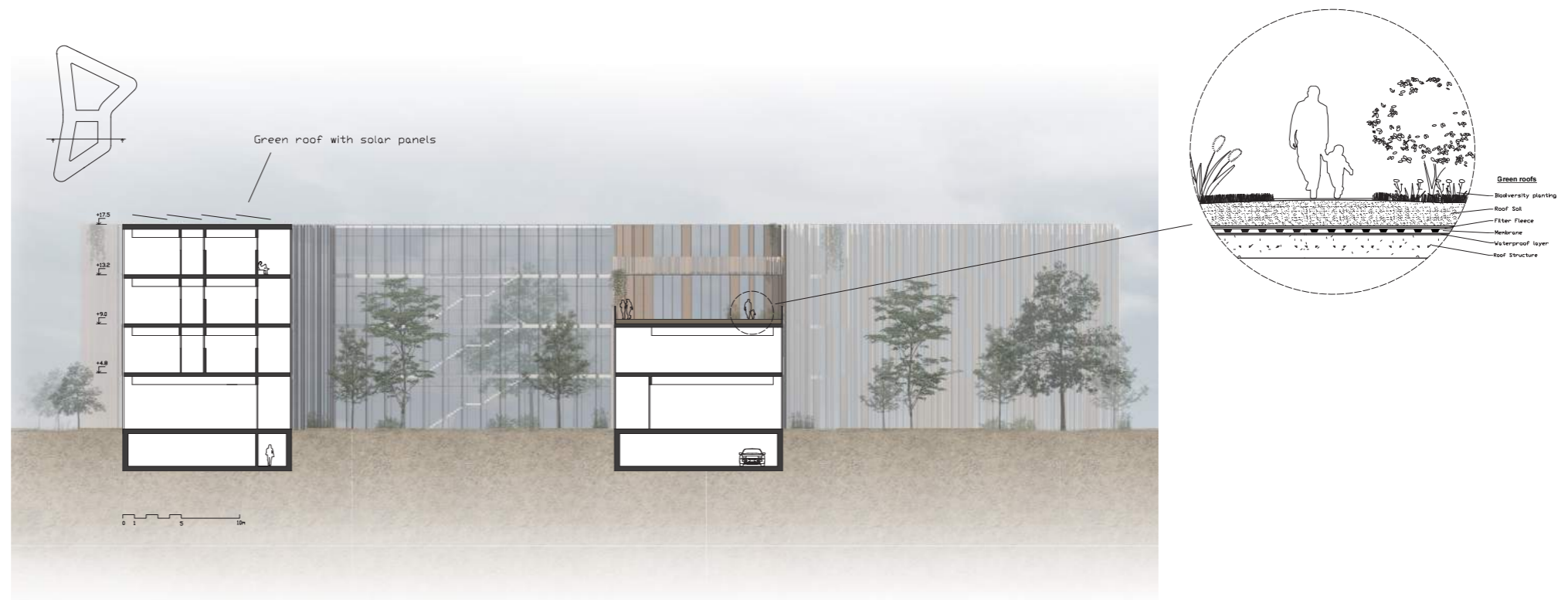
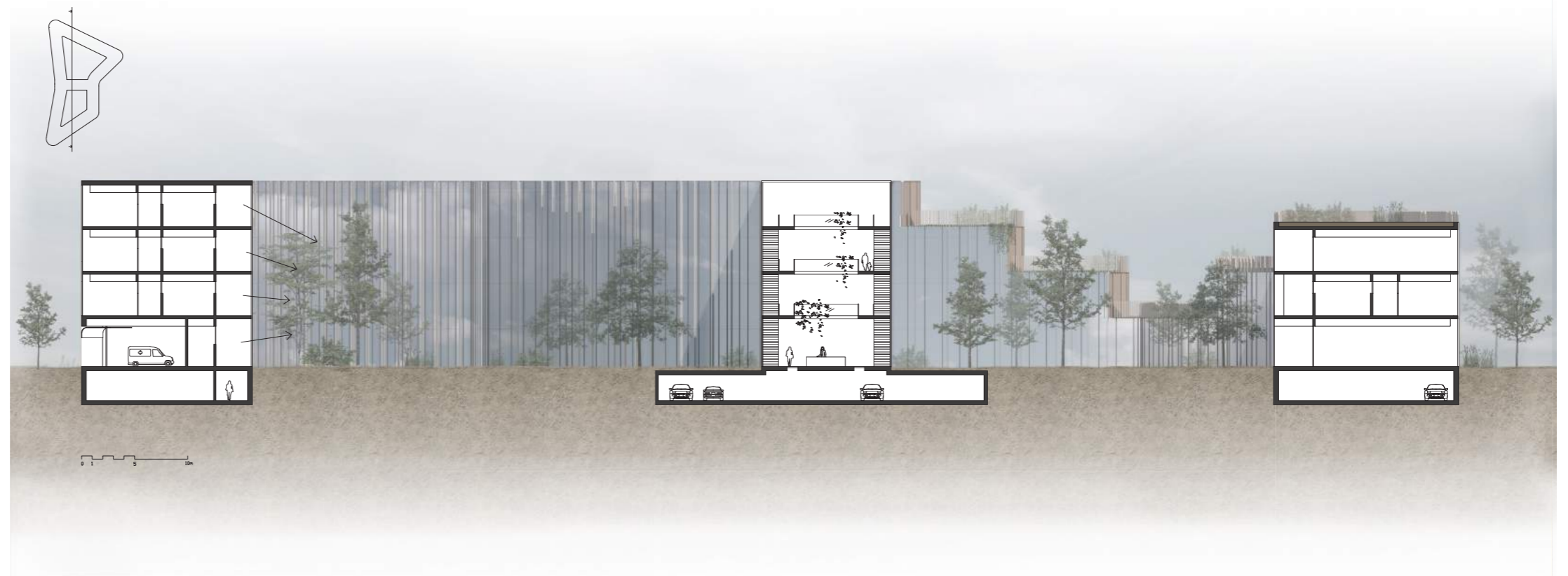
The staircases in the entrance hall is visible from the first moment you are entering the building, which encourage people to use them and works in a health promoting way.

## ACCESS TO GREENARY

The different terraces and green courtyards can motivate people to do more physical activities and spend time outdoors.

## SUSTAINABILITY

The other section is showing different aspects of sustainability such as solar panels and green roofs. Green roofs serve several purposes for a building, such as absorbing rainwater, providing insulation, creating a habitat for wildlife and increasing benevolence. It could also decrease stress of the people around the roof by providing a more aesthetically pleasing landscape, and helping to lower urban air temperatures and mitigate the heat island effect.



# HEALING ARCHITECTURE

## EVIDENCE BASED DESIGN

Architecture can be a powerful tool to affect health. Well designed built environments can reduce stress, enhance wellbeing and promote a healthy lifestyle. A lot of research has been made on this topic and has been implemented mostly in healthcare environments. Evidence based design means to design by taking decisions based on credible research to achieve as good result as possible.

Some of the important qualities that are often mentioned in evidence based texts are nature, daylight and lighting, noise prevention, wayfinding and art. In this project the main focus lies within the topics: nature, daylight and wayfinding.

### Nature

Nature has been proven to be a highly important factor in healing process. To see nature and to be in nature can have a relaxing and calming effect, it can reduce stress and lessen the feeling of pain.

Nature has been one of the main concepts in this project and has been implemented in several different ways. To start with the building is placed at the site in a way that allows to create a small park in the middle between the new healthcare facility and the existing buildings on the site. Also two courtyards are created where there is a lot of space for trees and plants.

The facade of the building is partly covered with plants to create an even more visible connection to nature. Vegetation is put even inside the building. The flooring in the corridor is made of two materials and is designed in a way to imitate a natural organic path.

### Light

Light has a positive effect on human health in such way that it can help to create welcoming and safe environments and prevent depressions.

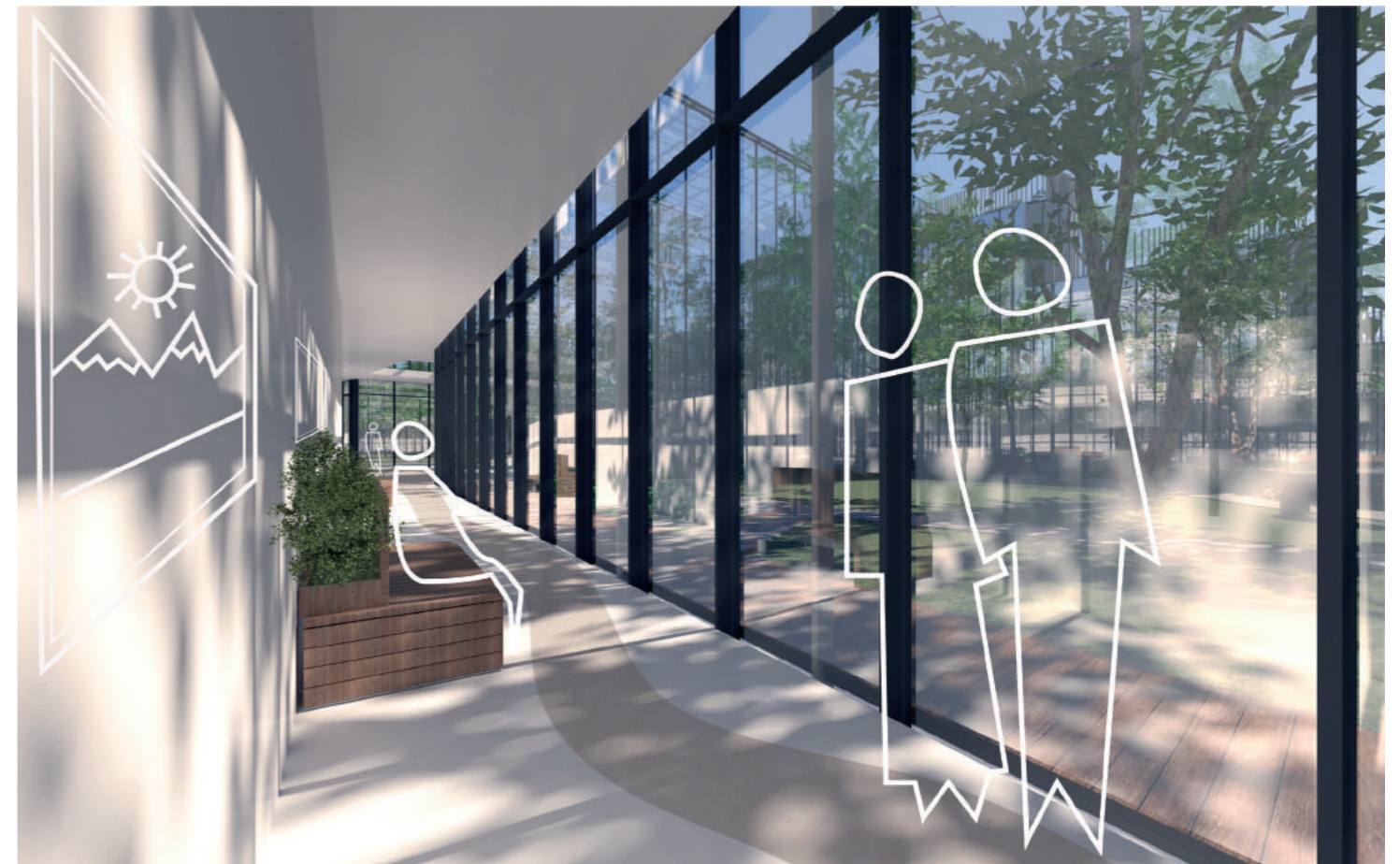
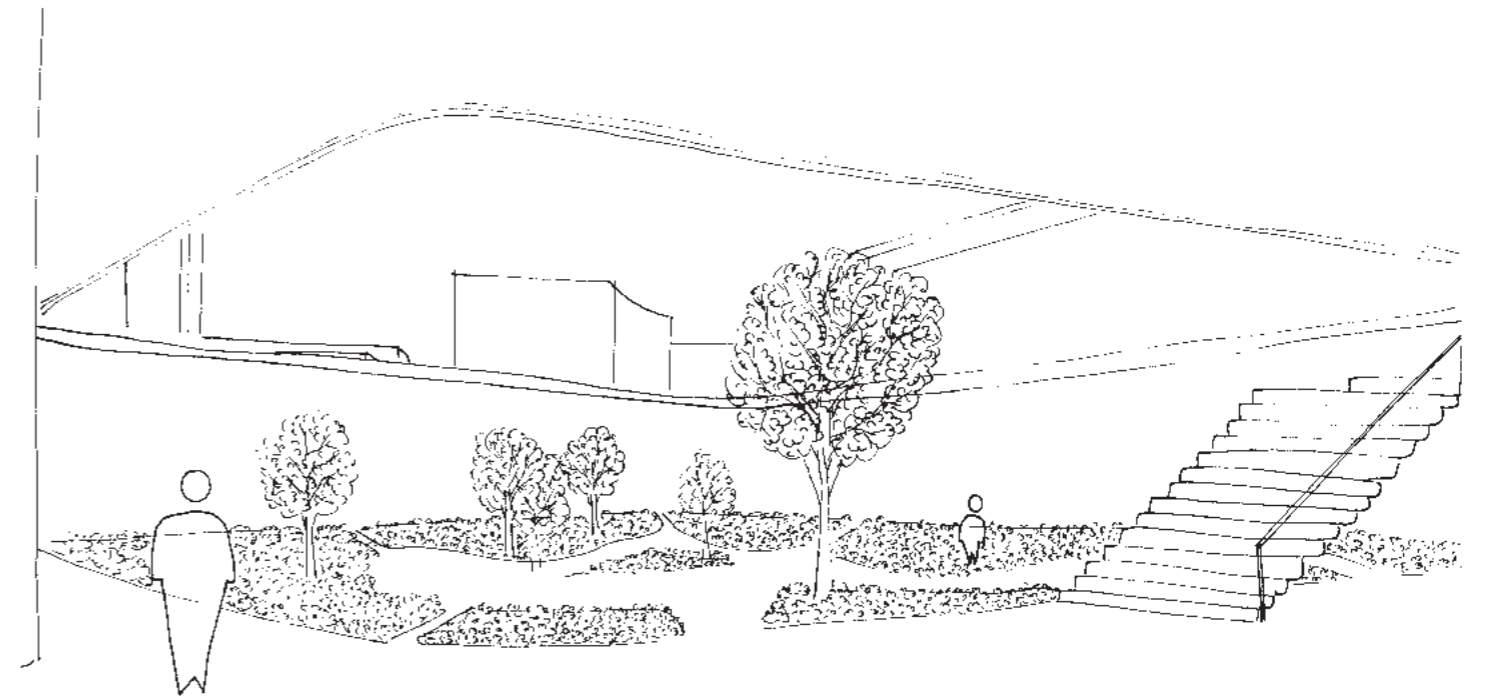
In this project the light aspect is highly emphasized by creating two large courtyards that let a lot of daylight inside the building. The patient corridors are at all places put next to the the courtyards and have whole-glass walls. In this way maximum amount of daylight is let into the patient corridors and makes it a nice experience to walk through them, along with the nice nature views towards the green courtyards and at some places towards the park outside the building.

All offices are placed along the outer wall of the building and have large windows that stretch from floor to ceiling and in this way create good working environment for the staff.

### Wayfinding

Wayfinding is also very important in healthcare context. To create an environment where patient can easily orientate could lower stress levels and enhance wellbeing. When visiting a healthcare facility the patient is already feeling stress because of his or her condition, an environment that is confusing and hard to read can worsen the situation. Therefore in this project wayfinding is emphasized by making it as clear as possible.

This is achieved by creating a light middle core that has 2 visible entrances from each side of the building. The entrances lead to a visible and open staircase in the middle of the building which goes through all four floors of the building. The stair is in turn leading to a light patient corridor that always has a visual connection to the courtyards and the middle core. In this way the patient has always overview over the the whole building.



# HEALTH PROMOTION

## EMPOWERMENT OF PATIENTS AND THE LOCAL COMMUNITY

In the past healthcare tended to focus primarily when the illnesses occur which is not good because sometimes it is already late to prevent it. Nowadays we are more aware of this and that is the reason why health promotion is very important if we want to have better results. Therefore, health promoting architecture is essential for health promotion as a perspective of empowerment.

People are encouraged to participate more and the focus is more on the different needs of all patients.

In the project there are three aspects of health promotion:

- Access to nature
- Patient centred care
- Walkability

### Access to nature

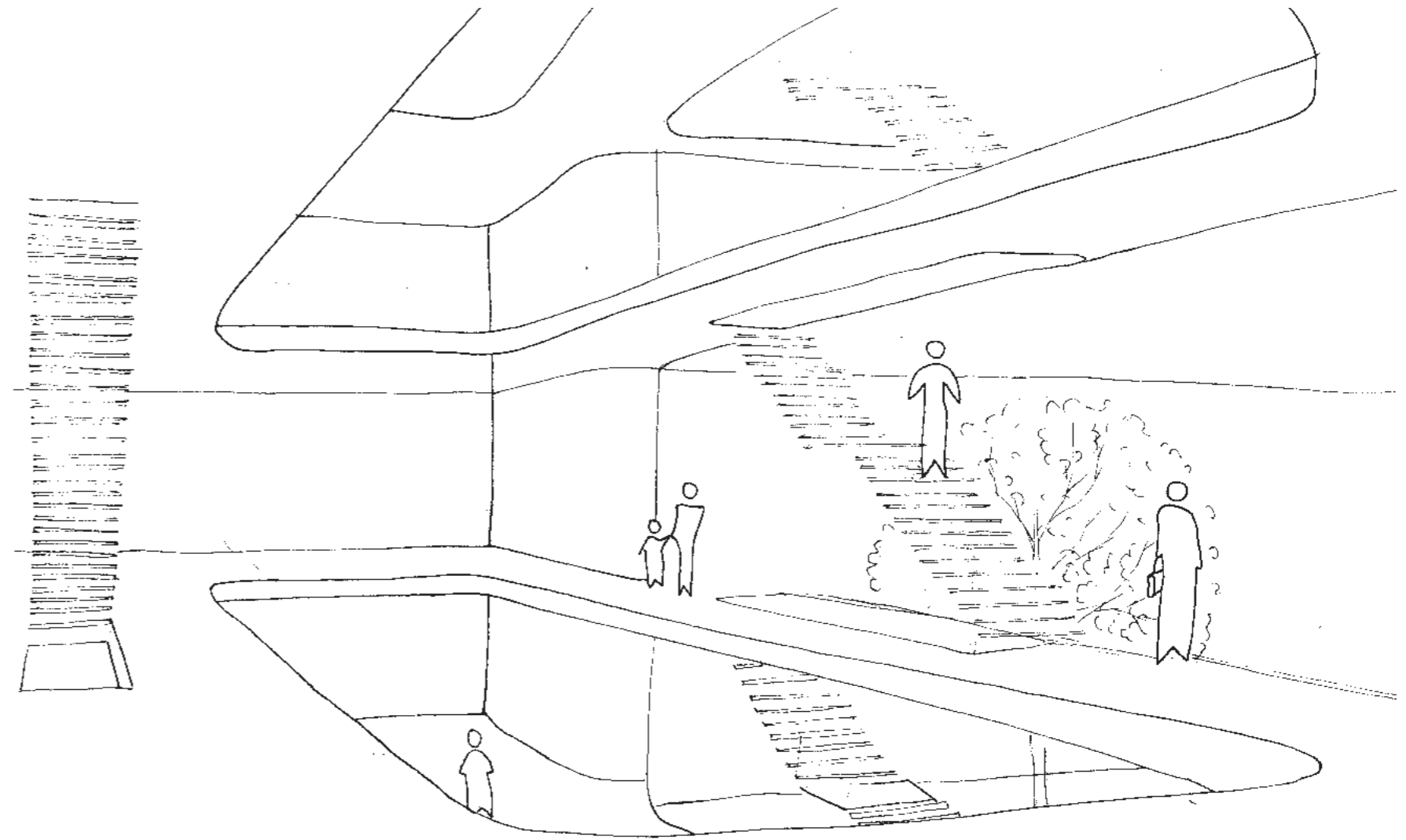
In the project there are lot of open green spaces (courtyards, terraces and the park) where people can take a walk, do some physical activities or relax. All these activities will have good impact on patients' health and other people's health living in the area. This way patients are encouraged to take more control over their health.

### Patient centred care

In the past healthcare was taking place in big institutions usually located out of the city. It was seen as an illness, something that is not part of the local community. In this project we worked more with the local context and how to make patients feel more comfortable. There are private and public spaces, open and closed that will fulfill the different patients' needs.

### Walkability

Since enhanced walkability will help people feel better, there are two staircases in the main entrance hall. When the stairs are well designed, there is bigger possibility that patients will take the stairs instead of elevators.





# HEALTHCARE + ARCHITECTURE

Through the history of healthcare architecture there have been several different approaches to human health and many different hospital typologies.

This project has been inspired by two hospital typologies: pavilion hospital and hospital inspired by functionalism.

The project combines a high level of functionality with nature that is integrated in the built environment.



Pavilion hospital (second half of 19th century)

This type of hospital occurred in the pre-antibiotic era when it was important to separate patients and to avoid spreading of diseases.

At that time it was of great importance the relation with the surroundings and hospitals usually were located outside city center in the nature. It was also important to have high architectural quality.

Since it was discovered that daylight, air and access to nature have good influence on patients' health, this type of hospital took into account these healing environment aspects.



Functionalism, (1960-70)

One concept that became popular within hospital architecture is functionalism. This type of buildings emphasize flexibility, generality, expandability and structure. This type of hospitals start to use technical innovations like elevators, technical floors, air handling systems, transport systems etc. It is important that the hospital is working efficiently and becomes in a way a kind of a machine.